DRAWING/MATERIAL ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE	LBS.	POUNDS
AD.	AREA DRAIN	L.C.C.	LEAD COATED COPPER
ADJ.	ADJACENT, ADJUSTABLE	LDR.	LEADER
AHU	AIR HANDLING UNIT	LOC.	LOCATION
ASL	ABOVE SEA LEVEL	LP.	LOW POINT
A.F.F.	ABOVE FINISH FLOOR	LTL.	LINTEL
A.G.	ABOVE GRADE	MAS.	MASONRY
ALUM.	ALUMINUM	MAX.	MAXIMUM
APPROX.	APPROXIMATE	M.D.F.	MEDIUM DENSITY FIBER BOARD
ARCH	ARCHITECTURAL	MECH.	MECHANICAL
@	AT	MFR.	MANUFACTURER
BG	BELOW GRADE	MIN.	MINIMUM
BLDG.	BUILDING	MI.	MIRROR
BLK.	BLOCK	M.O.	MASONRY OPENING
BLKG.	BLOCKING	MRL	MACHINE-ROOMLESS
B.M.	BENCHMARK	MTL.	METAL
BSL	BELOW SEA LEVEL	MTD.	MOUNTED
B.O.	BOTTOM OF	NA	NOT APPLICABLE
BOT.	BOTTOM	N.I.C.	NOT IN CONTRACT
BRK.	BRICK	NOM.	NOMINAL
CAB.	CABINET	N.T.S.	NOT TO SCALE
C.D.	CEILING DIFFUSER	O.A.	OVERALL
C.I.P.	CAST IN PLACE	O.C.	ON CENTER
C.J.	CONTROL JOINT	O.D.	OUTSIDE DIAMETER
CL.	CENTER LINE	OPP.	OPPOSITE
CLOS.	CLOSET	O.T.A.	OPEN TO ABOVE
CLG.	CEILING	O.T.B.	OPEN TO BELOW
CLR.	CLEAR	PC	POWDER COAT
CMU	CONCRETE MASONRY UNIT	PERF.	PERFORATED
COL.	COLUMN	PL.	PLATE
CONST.	CONSTRUCTION	PL. LAM.	PLASTIC LAMINATE
CONT.	CONTINUOUS	PLYWD.	PLYWOOD
CONTR.	CONTRACTOR	PNL.	PANEL
CONC.	CONCRETE	P.T.	PRESSURE TREATED
C.R.	CEILING REGISTER	P OR PTD.	PAINT, PAINTED
C.T.	CERAMIC TILE	R.C.P.	REFLECTED CEILING PLAN
CUST.	CUSTOM	RD	ROOF DRAIN
D.F.	DRINKING FOUNTAIN	REC.	RECESSED
DIA.	DIAMETER	REF.	REFERENCE, REFER TO
DIM.	DIMENSION	REQD.	REQUIRED
DISP.	DISPENSER	RES.	RESILIENT
DN.	DOWN	REST.	RESTORED
D.O.B.	DEPARTMENT OF BUILDINGS	RET.	RETURN
DP	DAMPPROOFING	RM.	ROOM
DTL.	DETAIL	R.O.	ROUGH OPENING
DWG.	DRAWING	RVL.	REVEAL
EA.	EACH	SB.	SAND BLASTED
ELEC.	ELECTRIC, ELECTRICAL	SCH.	SCHEDULE
ELEV.	ELEVATION, ELEVATOR	SEC.	SECTION
EQ.	EQUAL	SEP.	SEPARATE
EQUIP.	EQUIPMENT	SIM.	SIMILAR
EX'G.	EXISTING	SPEC.	SPECIFICATION
EXH.	EXHAUST	SSG.	STRUCTURAL SILICONE GLAZED
EXP	EXPOSED CONSTRUCTION	STD.	STANDARD
EXP. JT.	EXPANSION JOINT	STL.	STEEL
EXT.	EXTERIOR	STN.	STONE
F.D.	FLOOR DRAIN	STOR.	STORAGE
FDN.	FOUNDATION	STR.	STRUCTURAL
F.F.	FINISHED FLOOR	ST.STL.	STAINLESS STEEL
FIN.	FINISH, FINISHED	SUSP.	SUSPENDED
FIXT.	FIXTURE	SYN.	SYNTHETIC
FL.	FLOOR	T.B.D.	TO BE DETERMINED
FLSHG.	FLASHING	TCSS	TERNE COATED STAINLESS STEEL
F.O.B.	FACE OF BRICK/BLOCK	TD	TRENCH DRAIN
F.O.W.	FACE OF WALL	TEL.	TELEPHONE
FLUOR.	FLUORESCENT	TEMP.	TEMPERED
FTG.	FOOTING	TG	TRANSFER GRILLE
GA.	GAUGE	T&G	TONGUE & GROOVE
GALZ.	GALVANIZED	THERM.	THERMOSTAT
GFCMU	GROUND FACE CMU	THK.	THICKNESS
GL.	GLASS	T.O.	TOP OF
GL. BRK.	GLAZED BRICK	T.O.S.	TOP OF SLAB
GR.	GRADE	T.W.G.	TENSION WIRE GRID
GWB	GYPSUM WALL BOARD	TYP.	TYPICAL
HDWR.	HARDWARE	U.N.O.	UNLESS NOTED OTHERWISE
HDWD.	HARDWOOD	V.B.	VAPOR BARRIER
H.M.	HOLLOW METAL	VEN.	VENEER
HSS	HOLLOW SECTION STEEL	V.I.F.	VERIFY IN FIELD
H.P.	HIGH POINT	V.R.M.	VAPOR RETARDENT MEMBRANE
I.D.	INSIDE DIAMETER	W.C.	WATER CLOSET
INSUL.	INSULATION	WD.	WOOD
INT.	INTERIOR	WDW	WINDOW
JT.	JOINT	W.P.	WORK POINT
LAV.	LAVATORY	W.R.	WATER RESISTANT

KEY AND SYMBOL LEGEND

NORTH ARROW

DRAWING IDENTIFICATION
DRAWING TITLE
A-1 1/4" = 1'-0"
SHEET IDENTIFICATION
DRAWING TITLE

DIRECTION VIEWED
1
A-1
EXTERIOR ELEVATION

DIRECTION VIEWED
1
A101
SECTION KEY

1
A101
DETAIL SECTION KEY

1
A101
DETAIL KEY

DRAWING IDENTIFICATION
1
DIRECTION VIEWED
4 A101 2
3
SHEET IDENTIFICATION
INTERIOR & EXTERIOR ELEVATION KEY

1
GRID/COLUMN LINE
GRID REFERENCE

ELEVATION IDENTIFICATION
FINISH ELEVATION
ELEVATION MARK

1
PARTITION TYPE

CENTER LINE

1
WINDOW TAG

100
DOOR TAG

1
REVISION KEY

LINE ABOVE OR BEYOND

ROOM NAME
IDENTIFICATION
Room name
101
150 SF
ROOM NUMBER
SQUARE FEET
ROOMTAG

MATERIAL
NUMBER
M-XX
MATERIAL TAG

EL+110'-4"
EL+110'-0"
SLAB ELEVATION DIFFRENCE

0'0"
SPOT ELEVATION

SHEET
IDENTIFICATION
1/A101
1/A102
MATCH LINE

1
KEYNOTE

MATERIAL LEGEND

	WOOD CONTINUOUS		FIRE PROOFING
	WOOD BLOCKING		NEOPRENE
	WOOD FINISH		RIGID INSULATION
	PLYWOOD		BATT INSULATION
	HARD BOARD		STEEL
	GYPSUM BOARD		ALUMINUM
	BRICK VENEER		FIRESTOPPING
	PRECAST CONCRETE		MORTAR
	CMU		SHEET METAL
	CONCRETE		HOLLOW METAL
	GRAVEL		GLAZING
	SAND		CARPET
	EARTH		METAL LATH & PLASTER

GENERAL NOTES

1. GENERAL NOTES

A. ALL WORK TO CONFORM TO THE GOVERNING JURISDICTION AND THE CONTRACT DOCUMENTS. CODE SHALL ALWAYS TAKE PRECEDENCE.
B. THIS SET OF DRAWINGS, TOGETHER WITH THE SPECIFICATIONS, CONSTITUTES THE COMPLETE DOCUMENT BY WHICH ALL WORK IS TO BE CARRIED OUT. IN CASE OF CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE SPECIFICATIONS SHALL PREVAIL UNLESS OTHERWISE ADVISED IN WRITING BY CONSTRUCTION MANAGER OR ARCHITECT.
C. WHERE ONLY PART OF THE WORK IS INDICATED SIMILAR PARTS SHALL BE CONSIDERED REPETITIONS. WHERE ANY DETAIL IS SHOWN AND THE COMPONENTS ARE DESCRIBED ELSEWHERE SIMILAR DETAILS SHALL BE CONSTRUCTED AS DESCRIBED IN ORIGINAL DETAIL. IF CONSTRUCTION DOCUMENT DRAWINGS ARE NOT CONSISTENT WITH SPECIFICATION VERIFY WITH THE ARCHITECT FOR CLARIFICATION.
D. DRAWINGS ARE GENERIC IN NATURE. CONTRACTOR SHALL FULLY COORDINATE ALL ASPECTS OF THE WORK TO BE PERFORMED. DETAILS ARE NOT INTENDED TO SHOW METHOD, MANNER, AND SEQUENCE OF ACCOMPLISHING THE WORK.
E. ALL MATERIALS AND EQUIPMENT NOTED ON DRAWINGS ARE NEW UNLESS INDICATED AS EXISTING.
F. SHOULD A CONFLICT BE DISCOVERED WITHIN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE DEEMED TO HAVE INCLUDED IN HIS BID THE HIGHEST QUALITY WAY OF PERFORMING THE WORK UNLESS HE HAS REQUESTED AND OBTAINED A DECISION IN WRITING FROM THE ARCHITECT.
G. IF, DURING THE PERFORMANCE OF THE WORK, THE CONTRACTOR FINDS A CONFLICT, ERROR, OR DISCREPANCY IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SO REPORT TO THE CONSTRUCTION MANAGER & ARCHITECT IN WRITING AT ONCE. BEFORE PROCEEDING WITH THE WORK AFFECTED THEREBY, THE CONTRACTOR SHALL OBTAIN A WRITTEN INTERPRETATION OR CLARIFICATION FROM THE CONSTRUCTION MANAGER & ARCHITECT. WORK DONE BEFORE THE CONSTRUCTION MANAGER & ARCHITECT RENDERS HIS DECISION IS AT THE CONTRACTOR'S SOLE RISK.
H. THE CONTRACTOR SHALL THOROUGHLY INSPECT THE SITE TO VERIFY THE EXISTING CONDITIONS AS DEPICTED ON THE DRAWINGS. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & ARCHITECT IMMEDIATELY IF OBSERVED CONDITIONS DIFFER SUBSTANTIALLY FROM THE PLAN
I. NO CHANGES SHALL BE MADE TO THE DESIGN OR LAYOUT WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT. WORK SHALL BE CONSTRUCTED AS DIMENSIONED ON THE PLANS.
J. FIELD ENGINEERING BY CONTRACTOR, PROVIDE ALL SURVEY WORK REQUIRED FOR HORIZONTAL AND VERTICAL LOCATION OF WORK IN THIS PROJECT.
K. THE CONTRACTOR SHALL SUPPLY ALL LABOR, TOOLS, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK AS CALLED FOR ON THE DRAWINGS AND SPECIFICATIONS.
L. THE CONTRACTOR SHALL LAY OUT HIS OWN WORK AND SHALL PROVIDE ALL DIMENSIONS REQUIRED FOR OTHER TRADES (PLUMBING, ELECTRICAL, ETC.).
M. THE CONTRACTOR SHALL DO ALL CUTTING, PATCHING, REPAIRING AS REQUIRED TO PERFORM ALL OF THE WORK INDICATED ON THE DRAWINGS AND ALL OTHER WORK THAT MAY BE REQUIRED FOR THE JOB.
N. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK, FOR THE COORDINATION BETWEEN HIS RESPECTIVE SUBCONTRACTORS AND THEIR PORTION OF WORK, AND ANY OF THE OWNER'S CONTRACTORS OR SUBCONTRACTORS.
O. THE CONTRACTOR IS REQUIRED TO PATCH AND REPAIR ALL ADJACENT WALLS AND SURFACES AT SITE, DAMAGED DURING CONSTRUCTION OR AS A RESULT OF DEBRIS REMOVAL.
P. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL CONDITIONS AND MATERIALS WITHIN THE PROPOSED CONSTRUCTION AREA. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR ALL STRUCTURAL OR REMOVAL TASKS. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ANY DAMAGE OR INJURIES CAUSED BY OR DURING THE EXECUTION OF THE WORK.
Q. ALL PIPING AND WIRING SHALL BE REMOVED TO A POINT OF CONCEALMENT AND SHALL BE PROPERLY CAPPED OR PLUGGED.
R. THE CONTRACTOR SHALL PROTECT ALL ADJACENT EXISTING ELEMENTS TO REMAIN.

2. CODES

A. ALL CONSTRUCTION SHALL COMPLY WITH THE APPLICABLE CODES AS ADAPTED BY THE REGIONAL, STATE, AND NATIONAL AUTHORITIES HAVING JURISDICTION.
B. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FILE ALL REQUIRED CERTIFICATES OF INSURANCE WITH THE LOCAL AUTHORITIES, OBTAIN ALL REQUIRED PERMITS, AND PAY ALL FEES REQUIRED BY GOVERNING AGENCIES.
C. THE CONTRACTOR SHALL COORDINATE ALL WORK PROCEDURES WITH REQUIREMENTS OF LOCAL AUTHORITIES AND BUILDING MANAGEMENT.
D. PLUMBING AND ELECTRICAL WORK SHALL BE PERFORMED BY PERSONS LICENSED IN THEIR TRADES, WHO SHALL ARRANGE FOR AND OBTAIN INSPECTIONS AND REQUIRED SIGN-OFFS.
E. THE CONTRACTOR, UPON COMPLETION OF THE WORK, SHALL ARRANGE FOR GOVERNING AGENCIES' INSPECTIONS AND SIGNOFFS AS REQUIRED.
F. SIDEWALK AND CURB CONSTRUCTION SHALL CONFORM TO THE DEPARTMENT OF HIGHWAYS AND DEPARTMENT OF TRANSPORTATION REGULATIONS (DOT).
G. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL INSPECTIONS AND FINAL APPROVALS FROM ALL GOVERNING AGENCIES, INCLUDING BUT NOT LIMITED TO T HE CERTIFICATE OF OCCUPANCY.
H. SPECIAL INSPECTION ITEMS: ALL MATERIALS DESIGNATED FOR SPECIAL INSPECTION SHALL BE INSPECTED AND TESTED TO VERIFY COMPLIANCE WITH CODE REQUIREMENTS, UNLESS OTHERWISE SPECIFICALLY APPROVED BY CODE PROVISIONS. ALL REQUIRED INSPECTIONS AND TESTS OF MATERIALS SHALL BE MADE AND BE FILED WITH THE GOVERNING AGENCIES.
I. LIFE SAFETY PATH OF EGRESS FROM FLOOR LEVEL TO EXTERIOR IS INDICATED ON SHEETS G-003.
J. ACCESSIBILITY COMPLIANCE DETAILS SHALL BE APPLIED WHEREVER APPLICABLE, WHETHER OR NOT REFERENCED ON THE PLANS.
K. HAZARDOUS MATERIALS MY BE ENCOUNTERED DURING CONSTRUCTION OPERATIONS, INCLUDING ASBESTOS AND LEAD. COMPLY WITH ALL APPLICABLE REGULATIONS, LAWS, AND ORDINANCES CONCERNING THE REMOVAL, HANDLING, AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION.

3. COORDINATION AND VERIFICATION

A. THE DRAWINGS ARE DIVIDED INTO SEPARATE SHEETS AND THE PROJECT SPECIFICATION INTO SEPARATE SECTIONS FOR GENERAL CONVENIENCE ONLY. SHEET DESIGNATION OR NUMBERS SHALL NOT BE CONSIDERED TO LIMIT AREAS OF WORK, RESPONSIBILITY OR TRADES. COORDINATE THE WORK SHOWN ON THE DRAWINGS AND IN THE PROJECT SPECIFICATION IN ORDER TO COMPLETE THE PROJECT AS DESIGNED.
B. VERIFY ALL SIZES OF, AND PREPARE WORK FOR, EQUIPMENT OF OTHERS AND COORDINATE WORK ON THIS CONTRACT WITH ITEMS OR WORK NOT IN CONTRACT (N.I.C.) OR WORK FURNISHED BY OTHERS.
C. LOCATIONS AND SIZES OF MECHANICAL, ELECTRICAL, AND PLUMBING EQUIPMENT ARE BASED ON AVAILABLE INFORMATION. PROVIDE AND COORDINATE THE EXACT DIMENSIONS, SIZES AND POSITIONS.
D. PROVIDE AND COORDINATE THE EXACT DIMENSIONS, SIZES AND POSITIONS OF OPENINGS IN SLABS AND WALLS NECESSARY FOR THE INSTALLATION OF THE WORK. SEE EDGE OF SLAB DRAWINGS IN ARCHITECTURAL SERIES.
E. QUANTITIES INDICATED ON THE DRAWINGS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY QUANTITIES AND INCLUDE ACCURATE QUANTITIES AS PART OF THE WORK.
F. COORDINATE THE WORK OF ALL TRADES WITHIN THE SAME AREA. CRITICAL AREAS ARE TYPICALLY THOSE WHICH MAY BE CONGESTED, INCLUDING, BUT NOT LIMITED TO, AREAS ABOVE THE CEILING, BELOW GRADE, ELECTRICAL ROOMS, MECHANICAL ROOMS, CORRIDORS, AND SHAFTS.
G. BEFORE BEGINNING WORK REQUIRING MULTI-TRADE COORDINATION, CONTRACTOR SHALL PREPARE COORDINATION DRAWINGS FOR REVIEW. THESE DRAWINGS SHALL DEPICT THE ACTUAL CONDITIONS, INCLUDING ALL ELEMENTS, FOR A COMPLETE INSTALLATION, INCLUDING ALL PERTINENT TRADES.

4. UTILITIES AND SITE DEMOLITION

A. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOCATION AND PROTECTION OF ALL EXISTING UTILITY LINES.
B. THE DRAWINGS SHOW DIAGRAMMATICALLY THE APPROXIMATE LOCATION OF UNDERGROUND UTILITIES WHERE INFORMATION IS AVAILABLE, BUT THE DRAWINGS MAY NOT BE EXACT AS TO THE QUANTITY, EXTENT, OR LOCATION.
C. CONTRACTOR SHALL POTHOLE TO LOCATE EXISTING UTILITIES PRIOR TO START OF DIGGING, TRENCHING, OR ANY TYPE OFFSITE EXCAVATION.
D. THE CONTRACTOR SHALL MAINTAIN UTILITIES TO EXISTING ADJACENT BUILDINGS OR PROVIDE TEMPORARY SERVICE CONNECTIONS.

5. DIMENSIONS AND LAYOUT

A. FOR STRUCTURAL GRID LAYOUT POINT REFERENCES SEE SHEET A-111
B. DO NOT SCALE DRAWINGS.
C. ELEVATIONS AND VERTICAL DIMENSIONS ON ARCHITECTURAL DRAWINGS ARE TO TOP OF FINISH CONCRETE SLAB, EXCEPT FOR DEPRESSED SLAB AREAS FOR FLOOR TILE WHERE ELEVATION HEIGHTS ARE TO FACE OF FINISH MATERIAL.
D. DIMENSIONS ARE GIVEN TO FACE OF WALL, UNLESS NOTED OTHERWISE BY FOLLOWING:
   1. COLUMN CENTER LINE - COL
   2. CENTER LINE OF STUD - STUD
   3. FACE OF CONCRETE - F.O.C.
E. TO MAINTAIN PROPER ALIGNMENT OF FINISH FACE OF ADJACENT WALL TYPES, DIMENSIONS ARE SHOWN ONLY ONCE ON PLAN IN THE FOLLOWING PRIORITY
   1. STRUCTURAL DRAWINGS
   2. DETAIL PLANS AND SECTIONS
   3. FLOOR PLANS
F. AT DOOR JAMB CONDITIONS, WALLS PERPENDICULAR TO DOOR OPENINGS ARE POSITIONED BY THE TYPICAL/STANDARD DIMENSION ON THE DETAIL UNLESS OTHERWISE LOCATED BY FLOOR PLAN DIMENSION OR DETAIL.

6. FIRE PROTECTION

A. FIRE PROTECTION SYSTEM: THE SYSTEM INDICATED IN THESE DRAWINGS SHALL BE USED FOR BIDDING PURPOSES ONLY. IT SHALL NOT BE USED FOR CONSTRUCTION. THE DRAWINGS INDICATE SPRINKLER HEAD LOCATIONS IN ARCHITECTURAL FINISH. CEILING AREAS ONLY. CONTRACTOR TO PROVIDE A COMPLETE CODE COMPLIANT LIFE SAFETY SYSTEM SHOP DRAWING SHALL BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION FOR APPROVAL DRAWINGS SHALL BE STAMPED AND/OR SIGNED BY A LICENSED PROFESSIONAL AS REQUIRED.
B. FIRE DETECTION AND ALARM SYSTEM:
C. THE SYSTEM INDICATED IN THESE DRAWINGS SHALL BE USED FOR BIDDING PURPOSES ONLY. IT SHALL NOT BE USED FOR CONSTRUCTION. SYSTEM SHOP DRAWINGS SHALL BE SUBMITTED TO THE STATE FIRE MARSHAL FOR APPROVAL PRIOR TO INSTALLATION.
D. THE FIRE SPRINKLER/FIRE HYDRANT UNDERGROUND PIPING SYSTEM INDICATED IN THESE DRAWINGS SHALL BE USED FOR BIDDING PURPOSES ONLY. IT SHALL NOT BE USED FOR CONSTRUCTION. FIRE SPRINKLER/FIRE HYDRANT UNDERGROUND PIPING SHOP DRAWINGS SHALL BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION FOR APPROVAL PRIOR TO INSTALLATION. DRAWINGS SHALL BE STAMPED AND/OR SIGNED BY A LICENSED PROFESSIONAL AS REQUIRED.
E. FIRE HYDRANT AND WATER MAINS: ALL FIRE HYDRANTS MUST BE INSTALLED, TESTED, FLUSHED, PAINTED, AND PLACED INTO SERVICE PRIOR TO ANY COMBUSTIBLE MATERIALS BEING BROUGHT ONTO THE PROJECT SITE.

7. FIRE RATED ASSEMBLIES

A. REFER TO LIFE SAFETY DRAWINGS FOR LOCATION AND EXTENT OF FIRE RATED ASSEMBLIES.
B. FIRE RESISTANCE RATINGS PER IBC TABLE 601.
C. FIRE RATED ASSEMBLIES TO BE APPROVED BY UL OR ANOTHER TESTING AND INSPECTION AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR USE IN INDICATED FIRE RATED DESIGNS.
D. REFER TO A-300 DRAWINGS FOR UL ASSEMBLIES AT FIRE RATED EXTERIOR WALLS.
E. REFER TO A-801 FOR UL ASSEMBLIES AT FIRE RATED INTERIOR PARTITIONS.
F. AUXILIARY MATERIALS TO BE COMPATIBLE WITH FIREPROOFING AND SUBSTRATES AND APPROVED BY UL OR ANOTHER TESTING AND INSPECTION AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR USE IN INDICATED FIRE RATED DESIGNS.
G. ALL FIREPROOFING DAMAGED BY OTHER WORK TO BE REPAIRED BEFORE CONCEALING IT WITH OTHER CONSTRUCTION.

8. PENETRATION OF RATED ASSEMBLIES

A. MECHANICAL DUCTS, ETC. PENETRATING FIRE-RATED CEILINGS AND FIRE WALLS SHALL BE CORRESPONDINGLY RATED OR DAMPERED. CABINETS, ELECTRICAL PANELS, LIGHTS, ETC. RECESSED INTO FIRE-RATED WALLS OR CEILINGS SHALL BE BACKED WITH CORRESPONDING FIRE-RESISTIVE CONSTRUCTION AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE FIRE PROTECTION.
B. FIRE RESISTIVE ASSEMBLIES FOR PROTECTION OF OPENINGS SHALL COMPLY WITH CODE OF JURISDICTION.
C. PENETRATION OF FIRE RATED ASSEMBLIES WHICH REQUIRE OPENING PROTECTION SHALL BE FIRE STOPPED. FIRE STOPPING SHALL BE IDENTICAL TO AN APPROVED UNDERWRITER'S LABORATORIES (UL) LISTED ASSEMBLY. PENETRATIONS MUST ALSO CONSIST OF APPROVED MATERIALS FOR THROUGH-WALL PENETRATIONS FIRE STOP SYSTEMS AS PRESCRIBED IN UBC STANDARD 7-5. FIRE RATING FOR FIRE STOP SYSTEMS SHALL BE EQUAL TO THE ASSEMBLY PENETRATED.

9. LIGHT FIXTURES AND RECEPTACLES

A. ALL BACK OF HOUSE AND EXPOSED CEILING AREAS WILL HAVE LIGHT FIXTURES LOCATED AS PER ELECTRICAL DRAWINGS.
B. ELECTRICAL RECEPTACLES WHERE IMPORTANT TO DESIGN ARE LOCATED ON ARCHITECTURAL FLOOR PLANS AND/OR INTERIOR ELEVATIONS.

PROJECT NOTES

1. REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL PARTITION, EXTERIOR WALL, ROOF OPENINGS AND WALL OPENINGS.
2. REFER TO EQUIPMENT MANUFACTURERS INSTALLATION INSTRUCTIONS AND SHOP DRAWINGS FOR FINAL DIMENSIONS AND LAYOUTS OF PITS, TRENCHES, CURBS, SUPPORTS, BLOCKING, HOUSEKEEPING PADS AND OTHER CONSTRUCTION ASSOCIATED WITH MEP EQUIPMENT.
3. FOR TYPICAL FLOOR TRANSITION DETAILS THAT ARE NOT KEYED ON PLANS, REFER TO SHEET A8.12.
4. VERIFY DIMENSIONS IN THE FIELD AS REQUIRED TO COORDINATE THE WORK.
5. REFER TO CIVIL DRAWINGS FOR GRADE ELEVATIONS AT BUILDING LINE.
6. OR EXTERIOR MATERIAL INDEX, REFER TO A3 SERIES DRAWINGS.
7. FOR INTERIOR FINISHES, REFER TO SHEET A832.
8. FOR CEILING FINISHES AND HEIGHTS, REFER TO RCP'S ON A-100 SERIES DRAWINGS.
9. AT ALL OUTLET BOXES, CONDUIT, PIPE AND OTHER PENETRATIONS OF EXTERIOR WALL, SEAL OR OTHERWISE MAINTAIN CONTINUITY OF AIR BARRIER AND PROVIDE SEALANT AT OUTER WALL LAYER.
10. SEAL EVERY OPEN JOINT, U.O.I. WITH SCHEDULED SEALANT.
11. WHERE A DETAIL IS INDICATED AS 'TYPICAL', PROVIDE THE WORK INDICATED IN THE DETAIL AT ALL SIMILAR OR APPLICABLE LOCATIONS.
12. ENSURE FIRE CAULK AND STOP ALL PENETRATIONS THROUGH FIRE RATED WALL, FLOOR, AND CEILING ASSEMBLIES.

DIMENSIONING STANDARDS

EXTERIOR DIMENSIONS

1. REFER TO 1/8" FLOOR PLANS IN A-100 SERIES FOR OVERALL BUILDING DIMENSIONS, AND DIMENSION POINTS TO MAJOR CONSTRUCTION TRANSITIONS OR OTHER PRIMARY ELEMENTS. IN SOME CASES ADDITIONAL DIMENSIONS MAY BE PROVIDED WHERE A TYPICAL CONDITION OCCURS, OR WHERE THERE IS NO ENLARGED PLAN PROVIDED.
2. REFER TO 1/2" ENLARGED PLANS IN A-300 SERIES FOR EXTERIOR PLAN DIMENSIONS NOT INCLUDED ON THE 1/8" PLANS. 1/2" ENLARGED PLAN LOCATIONS ARE TYPICALLY REFERENCED FROM 1/2" ENLARGED ELEVATIONS AND NOT THE 1/8" BUILDING PLANS.
3. BUILDING FLOOR HEIGHT ELEVATIONS INDICATED IN PLAN, SECTION AND ELEVATION ARE BASED ON HEIGHT ABOVE SEA LEVEL, AS REFERENCED BY CIVIL DRAWINGS.
4. REFER TO 1/8" ROOF PLAN IN FOR TOP OF ROOF (T.O.ROOF) HEIGHT CONSTRUCTION. REFER TO FLOOR PLANS FOR LOWER ROOFS.
5. REFER TO 1/2" WALL SECTIONS IN A-320 SERIES FOR SECTION DIMENSION POINTS.
6. REFER TO DETAILS IN A-410 SERIES FOR PLAN AND SECTION DETAIL DIMENSIONS.

INTERIOR DIMENSIONS

1. DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION; ALL ELEMENTS ON THE DRAWINGS MAY NOT BE TO THE EXACT SCALE. ALL DIMENSIONS REQUIRED ARE SHOWN OR MAY BE DERIVED FROM THOSE SHOWN ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEDULES AND SPECIFICATIONS.
2. FOR ADDITIONAL DIMENSIONAL INFORMATION TO ARCHITECTURAL DOCUMENTS, SEE STRUCTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DOCUMENTS.
3. REFER TO SYMBOLS ON THIS SHEET FOR ILLUSTRATIONS USED TO INDICATE "FACE OF" OR "CENTERLINE" DIMENSIONS.
4. EXCEPT WHERE SPECIFICALLY NOTED TO THE CONTRARY, ALL THE INTERIOR RELATED DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS CONFORM TO THE FOLLOWING CONVENTIONS:
   A. METAL STUD AND CMU PARTITIONS AT GRID LINES ARE LOCATED WITH THE CENTERLINE OF THE PARTITION ASSEMBLY AT THE GRID CENTERLINE, UNLESS NOTED OTHERWISE.
   B. DIMENSIONS SHOWN AND/OR NOTED TO THE CENTERLINE ARE MEASURED TO THE CENTERLINE OF DOORS, WINDOWS, OR OTHER FEATURES INDICATED.
   C. DIMENSIONS UTILIZING THE "FACE OF" SYMBOL ARE MEASURED TO THE FACE OF PARTITION ASSEMBLY AS DEFINED BY THE PARTITION SCHEDULE, EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS, I.E. CERAMIC TILE, ETC. EXCEPT AS FOLLOWS:
   D. WHERE 'CLEAR' DIMENSIONS ARE SPECIFICALLY NOTED, THE DIMENSION INDICATED IS THE MINIMUM DIMENSION MEASURED TO FINISH FACES AT THE MOST CONSTRICTED POINTS WHERE THE DIMENSION IS SHOWN.
5. AT ELEVATOR AND MECHANICAL SHAFTS, ALIGN THE INSIDE FACE OF THE SHAFT WALL ASSEMBLIES WITH THE INSIDE SLAB OPENINGS, PROVIDING CLEAR DIMENSIONS WHERE INDICATED.
6. REFER TO SHEET A-601 FOR TYPICAL MOUNTING HEIGHTS.
7. WHERE WALLS AND/OR PARTITIONS OF UNEQUAL THICKNESS ABUT, ALIGN EXPOSED FACES, U.N.O

NOTES

IRN016

LEGEND

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761 2
www.landiscm.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES **, PA**
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE

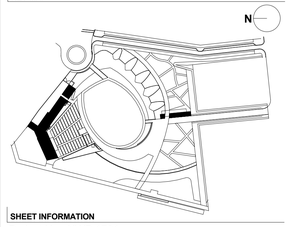
JENNIFER C. SAGE REGISTERED SEAL 036161 ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
2	DESIGN DEVELOPMENT	07/13/2018
3	TRC SITE PLAN APPLICATION	08/01/2018
4	95% CONSTRUCTION DOCUMENTS	03/08/2019
5	TRC SITE PLAN RE-APPLICATION	03/22/2019
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MH
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

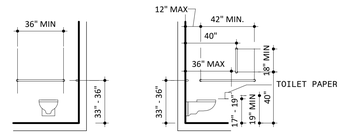
SHEET TITLE

ARCHITECTURE GENERAL NOTES

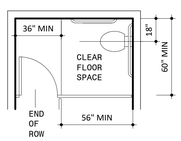
SHEET NO.

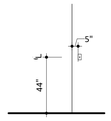
A-001-P1

ANSI DIAGRAMS

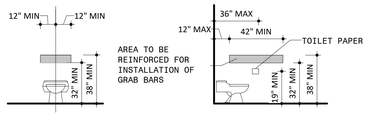


(c) REAR WALL OF STANDARD STALLS

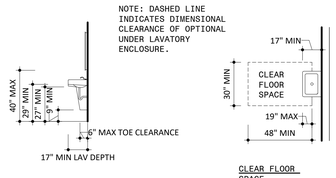




LOCATION OF SWITCHES



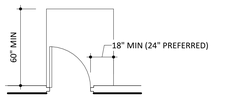
REINFORCED AREA FOR INSTALLATION OF GRAB BARS

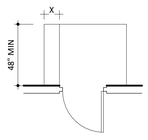


LAVATORY CLEARANCES

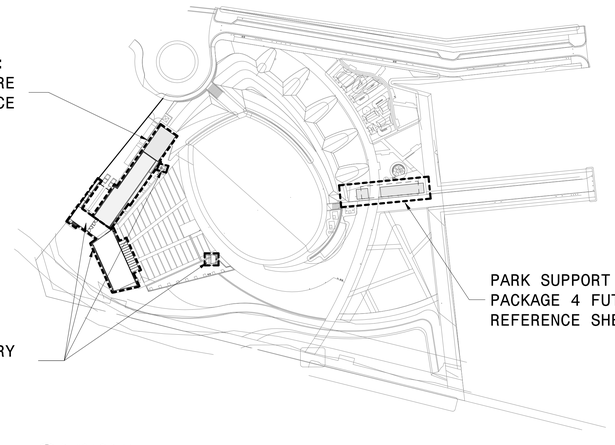
CLEAR FLOOR SPACE @ LAVATORIES

(a) FRONT APPROACHES - SWINGING DOORS





STAGE BUILDING: PACKAGE 3 FUTURE PHASE, REFERENCE SHEET A-131



STAGE, LOADING DOCK & ACCESSORY STRUCTURES: PACKAGE 1

PARK SUPPORT BUILDING: PACKAGE 4 FUTURE PHASE, REFERENCE SHEET A-151

1 PHASING PLAN
1" = 100'-0"

BUILDING CODE NOTES

APPLICABLE CODES

FEDERAL REGULATIONS
OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
US ENVIRONMENTAL PROTECTION AGENCY REGULATIONS (EPA)
AMERICAN DISABILITIES ACT (ADA)

NORTH CAROLINA CODES
2018 BUILDING CODES (2015 ICC WITH NC AMENDMENTS)
2018 MECHANICAL CODE (2015 IMC WITH NC AMENDMENTS)
2018 PLUMBING CODE (2015 IPC WITH NC AMENDMENTS)
2018 FIRE CODE (2015 IFC WITH NC AMENDMENTS)
2018 FUEL GAS CODES (2015 IFGC WITH NC AMENDMENTS)
2018 ENERGY CONSERVATION (2015 IECC WITH NC AMENDMENTS)
2014 ELECTRICAL CODE (2014 NEC ELECTRICAL CODE WITH NC AMENDMENTS)
2018 ADMINISTRATIVE CODE AND POLICIES
2009 ANSI A117.1

NFPA
NFPA 13 AUTOMATIC SPRINKLER SYSTEMS

CITY OF WILMINGTON LAND DEVELOPMENT CODE
SEC. 18-211. - FP, FLOODPLAIN OVERLAY DISTRICT

PROJECT DESCRIPTION

STAGE & LOADING DOCK (PACKAGE 1) AND STAGE BUILDING (PACKAGE 3)

THE STAGE AND STAGE BUILDING IS A FREE-STANDING STRUCTURE BEING BUILT IN TWO-PHASES.

PACKAGE 1 CONSISTS OF THE STAGE AND LOADING DOCK OF 5,871 GSF ON ONE LEVEL

PACKAGE 3 CONSISTS OF THE DRESSING AND APPURTENANT ROOMS OF APROXIMATELY 9,000 GSF ON TWO LEVELS

DESCRIPTION OF SCOPE	FREESTANDING OPEN STRUCTURE (PHASE 1) AND TWO STORY ENCLOSED BUILDING (PHASE 3)
OCCUPANCY TYPE	MIXED USE A-3 (ASSEMBLY), S2 (LOW HAZARD), AND B (BUSINESS), SEPARATED PER 508.4
CONSTRUCTION TYPE	IIB
BLDG AREA / HEIGHT LIMITATIONS	A-3: 28,500 SF (PER TABLE 506.2)/ 75 FT, 3 STORIES (PER TABLES 504.3 & 504.4) B: 69,000 SF (PER TABLE 506.2)/ 75 FT, 4 STORIES (PER TABLES 504.3 & 504.4) S-2: 78,000 SF (PER TABLE 506.2)/ 75 FT, 4 STORIES (PER TABLES 504.3 & 504.4)
PROPOSED GROSS AREA	5,817 GSF (PHASE 1)
PROPOSED BUILDING HEIGHT	52'-6" ABOVE GRADE PLANE (PHASE 1)
REQUIRED FIRE RATING	STRUCTURAL FRAME: 0 HR BEARING WALLS INTERIOR & EXTERIOR: 0 HR NON-BEARING WALLS EXTERIOR: 0 HR W/IN 30' OF SEPARATION NON BEARING WALLS INTERIOR: 0 EXCEPT REQUIRED SEPARATION OF OCCUPANCY BETWEEN MERCANTILE AND UTILITY IN A FULLY SPRINKLERED BUILDING TO BE 1HR RATED (NC BUILDING CODE TABLE 508.4) FLOOR CONSTRUCTION: 0 HR ROOF CONSTRUCTION: 0 HR CORRIDORS - NOT RATED PER BC 1018.1
SEPARATION OF OCCUPANCIES	PER 508.4 B/S2 1 HR, A/B 1 HR, A/S-2 NOT REQUIRED
AUTOMATIC SPRINKLER	THE BUILDING WILL INCORPORATE AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH IBC 903.3 AND NFPA 13 THROUGHOUT
STANDPIPE	NOT REQUIRED PER BC 905.3
FIRE ALARM	NOT REQUIRED PER BC 907

PARK SUPPORT BUILDING (PACKAGE 4)

DESCRIPTION OF SCOPE	ONE STORY ENCLOSED BUILDING
PROPOSED GROSS AREA	
PROPOSED BUILDING HEIGHT	
BLDG AREA / HEIGHT LIMITATIONS	
OCCUPANCY TYPE	
CONSTRUCTION TYPE	
REQUIRED FIRE RATING	
SEPARATION OF OCCUPANCIES	
AUTOMATIC SPRINKLER	
STANDPIPE FIRE ALARM	

ACCESSORY STRUCTURES (PACKAGE 1)

DESCRIPTION OF SCOPE	(2) TWO FOLLOWSPOT TOWERS, USE GROUP U

USE AND OCCUPANCY CLASSIFICATION

IBC CHAPTER 4
SECTION 410 STAGES, PLATFORMS AND TECHNICAL PRODUCTION AREAS

410.3.1 STAGES IS CONSTRUCTED OF MATERIALS AS REQUIRED FOR FLOORS FOR THE TYPE OF CONSTRUCTION OF THE BUILDING.

410.3.1.1 STAGE IS 47'-6" < 50'-0" FROM STAGE TO HIGH POINT OF ROOF.

410.3.2 BEAMS DESIGNED ONLY FOR THE ATTACHMENT OF PORTABLE OR FIXED THEATER EQUIPMENT ARE CONSTRUCTED OF APPROVED MATERIALS CONSISTENT WITH THE REQUIREMENTS FOR THE TYPE OF CONSTRUCTION OF THE BUILDING AND A FIRE-RESISTANCE RATING IS NOT REQUIRED.

410.5.1 THE STAGE SHALL BE SEPARATED FROM DRESSING ROOMS, SCENE DOCKS, PROPERTY ROOMS, WORKSHOPS, STOREROOMS AND COMPARTMENTS APPURTENANT TO THE STAGE AND OTHER PARTS OF THE BUILDING BY FIRE BARRIERS NOT LESS THAN 1 HOUR FOR STAGE HEIGHTS OF 50 FEET OR LESS.

410.5.2 DRESSING ROOMS, SCENE DOCKS, PROPERTY ROOMS, WORKSHOPS, STOREROOMS AND COMPARTMENTS APPURTENANT TO THE STAGE SHALL BE SEPARATED FROM EACH OTHER BY NOT LESS THAN 1-HOUR FIRE BARRIERS.

410.6.1 ONE EXIT ACCESS DOORWAY SHALL BE PROVIDED ON EACH SIDE OF A STAGE.
410.6.2 EXIT ACCESS STAIR-WAYS AND RAMPS SERVING A STAGE OR PLATFORM ARE NOT REQUIRED TO BE ENCLOSED.

410.6.3.1 NO FEWER THAN ONE MEANS OF EGRESS SHALL BE PROVIDED FROM TECHNICAL PRODUCTION AREAS.

410.6.3.2 THE EXIT ACCESS TRAVEL DISTANCE SHALL BE NOT GREATER 400 FEET FOR BUILDINGS EQUIPPED THROUGH-OUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1.

410.6.3.3 THE COMMON PATH OF TRAVEL SHALL BE NOT GREATER THAN 100 FEET (30 480 MM).
EXCEPTION: A MEANS OF ESCAPE TO A ROOF IN PLACE OF A SECOND MEANS OF EGRESS IS PERMITTED.

410.7 STAGES SHALL BE EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1. SPRINKLERS SHALL BE INSTALLED IN DRESSING ROOMS, PER-FORMER LOUNGES, SHOPS AND STOREROOMS ACCESSORY TO SUCH STAGES.

INTERIOR FINISHES

IBC; CHAPTER 8

IBC TABLE 803.9 INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY IN FULLY SPRINKLERED BUILDING

BUSINESS	
EXIT ENCLOSURES AND PASSAGEWAYS	CLASS B
CORRIDORS	CLASS C
ROOMS	CLASS C
ASSEMBLY	
EXIT ENCLOSURES AND PASSAGEWAYS	CLASS B
CORRIDORS	CLASS B
ROOMS	CLASS C

EXIT AND EXIT ACCESS

IBC; CHAPTER 10

EXITING CALCULATIONS ARE BASED ON IBC; TABLE 1004.1.1, SECTION 1005 AND TABLE 1018.1

1004.1.1 MAXIMUM FLOOR AREA ALLOWANCE PER OCCUPANT

ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 GROSS
ASSEMBLY WITHOUT FIXED SEATS	15 NET
BUSINESS AREAS	100 GROSS
STAGES AND PLATFORMS	15 NET

1005.1 EGRESS WIDTH PER OCCUPANT:
STAIRS 0.3" (INCH)
OTHER COMPONENTS 0.2"(INCH)
1004.3 POSTED OCCUPANT LOAD: POSTED OCCUPANT LOAD IS PROPOSED AT ASSEMBLY AREAS
1007.1 ONE ACCESSIBLE MEANS OF EGRESS IS PROVIDED.
1007.3. A CLEAR WIDTH OF 48" BETWEEN HANDRAILS AT EXIT STAIRWAYS AND AN AREA OF REFUGE IS NOT REQUIRED IN BUILDINGS THAT ARE EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM.
1009.1 EXCEPTION 1 STAIRWAYS SERVING AND OCCUPANT LOAD LESS THAN 50 SHALL HAVE A WIDTH OF LESS THAN 36"
1010.2 SLOPE. RAMPS USED AS PART OF A MEANS OF EGRESS SHALL HAVE A RUNNING SLOPE NOT STEEPER THAN ONE UNIT VERTICAL IN 12 UNITS HORIZONTAL (8-PERCENT SLOPE).1 1010.5.1 WIDTH. SHALL NOT BE LESS THAN 36"
1014.2 EGRESS THROUGH INTERVENING SPACES NOT APPLICABLE
1001 4.3 EXCEPTION 1 THE COMMON PATH OF TRAVEL IN GROUP B SHALL NOT BE MORE THAN 100 FEET IN A FULLY SPRINKLERED BUILDING
TABLE 1015.1 ASSEMBLY SPACE WITH OCCUPANT LOAD GREATER THAN 4 9SHALL BE PROVIDED WITH TWO EXISTS
TABLE 1016.1 MAXIMUM TRAVEL DISTANCE 300' FOR B OCCUPANCY WITH SPRINKLER SYSTEM.
1016.1 EXCEPTION 4. UNENCLOSED EXIT ACCESS STAIRWAY IN FIRST AND SECOND STORIES ABOVE GRADE PLANE IN A SPRINKLERED BUILDING IS ALLOWED
1018.1 CORRIDORS IN TYPE B OCCUPANCY IN FULLY SPRINKLERED BUILDING 0 HOUR FIRE RESISTANCE RATING
1018.3 DEAD END CORRIDORS LIMITED TO 50' IN FULLY SPRINKLERED B OCCUPANCY
1022.1 EXCEPTION 9 EGRESS STAIRWAY SERVING ONLY THE FIRST AND SECOND STORIES OF A BUILDING EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM ARE NOT REQUIRED TO BE ENCLOSED PROVIDED AT LEAST TWO MEANS OF EGRESS ARE PROVIDED.

ACCESSIBILITIES

1109.2 EXCEPTION 3 MULTIPLE SINGLE USER TOILET ROOMS OR BATHING FACILITIES ARE CLUSTERED IN ONE LOCATION, AT LEAST 50% BUT NOT LESS THAN 1 SHALL BE ACCESSIBLE
1109.2.2 A FAMILY OR ASSISTED USE TOILET IS REQUIRED WHERE AN AGGREGATE OF SIX OR MORE MALE OR FEMALE WATER CLOSETS IS REQUIRED.
1109.2.2 AT LEAST ONE WHEELCHAIR ACCESSIBLE COMPARTMENT SHALL BE PROVIDED. WHERE THE COMBINES WATER CLOSETS AND URINALS EXCEED SIX ONE AMBULATORY ACCESSIBLE WATER CLOSET SHALL BE PROVIDED

SPECIAL INSPECTIONS

1705.17 FIRE-RESISTANT PENETRATIONS AND JOINTS ARE NOT REQUIRED TO HAVE CONTROLLED INSPECTIONS.

ENERGY CONSERVATION CODE COMPLIANCE

CLIMATE ZONE 3A (WARM HUMID DESIGNATION) PER IECC TABLE C301.1

BUILDING ENVELOPE REQUIREMENTS-OPAQUE ASSEMBLIES THERMAL TABLE IECC C502.2.(1)

ROOFS,INSULATION ENTIRELY ABOVE ROOF DECK:	R-25 CI
WALLS ABOVE GRADE,MASS:	R=7.6 CI
WALLS ABOVE GRADE,METAL FRAMED:	R-13+R-7.5 CI
WALLS BELOW GRADE:	R-7.5 CI
SLAB-ON GRADE FLOORS, UNHEATED SLABS	NR (NO REQUIREMENT)
SWINGING DOORS:	U-0.70
ROLL-UP DOORS:	U-0.50

CI (CONTINUOUS INSULATION)
NR (NO REQUIREMENT)

BUILDING ENVELOPE REQUIREMENTS-FENESTRATION: IECC TABLE 502.3

30% MAXIMUM FENESTRATION

CURTAIN WALL/STOREFRONT:	U-0.45
ENTRANCE DOOR:	U-0.77
SHGC: PF < 0.25	0.25

SHGC
PROJECTION FACTOR
PF=A/B (EQUATION 5-1)
A=X'-XX"
B=X'-XX"

PERCENTAGE OF FENESTRATION:

PHASE 1, PHASE 2, PHASE 3

SKYLIGHTS (3% MAXIMUM, 5% IF USING AUTOMATIC DAYLIGHTING CONTROLS)

U-FACTOR	U-0.60
SHGC	0.35

PERCENTAGE OF SKYLIGHTS:

STAGE BUILDING 0%
PARK SUPPORT BUILDING XX.X%,

502.4.3 THE FOLLOWING CONNECTIONS SHALL BE AIR SEALED:

1. JOINTS AROUND FENESTRATION AND DOOR FRAMES
2. JUNCTIONS BETWEEN WALLS AND FOUNDATIONS, BETWEEN WALLS AT BUILDING CORNERS, BETWEEN WALLS AND STRUC-TURAL FLOORS OR ROOFS, AND BETWEEN WALLS AND ROOF OR WALL
3. PANELS
4. OPENINGS AT PENETRATIONS OF UTILITY SERVICES THROUGH ROOFS, WALLS, AND FLOORS INCLUDING BUT NOT LIMITED TO ELECTRICAL,PLUMBING,MECHANICAL,SECURITY,ANDCOM-MUNICATIONS4. SITE-BUILT FENESTRATION AND DOORS
5. JOINTS,SEAMS,AND PENETRATIONS OF THE AIR BARRIER SYSTEM. OTHER OPENINGS IN THE BUILDING ENVELOPE

502.4.7 VESTIBULES ARE NOT REQUIRED FOR DOORS THAT OPEN DIRECTLY FROM A SPACE LESS THAN 3,000 SQUARE FEET (298 M2) IN AREA.

506.1 REQUIREMENTS. COMMERCIAL BUILDINGS ARE REQUIRED TO COMPLY WITH ONE OF THE FOLLOWING SECTIONS:
1. 506.2.1 MORE EFFICIENT MECHANICAL EQUIPMENT;
2. 506.2.2 REDUCED LIGHTING POWER DENSITY;
3. 506.2.3 ENERGY RECOVERY VENTILATION SYSTEMS;
4. 506.2.4 HIGHER EFFICIENCY SERVICE WATER HEATING;
5. 506.2.5 ON-SITE SUPPLY OF RENEWABLE ENERGY; OR
6. 506.2.6 AUTOMATIC DAYLIGHTING CONTROL SYSTEM.

NOTES

IRN016

LEGEND

FUTURE PHASE

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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www.sageandcoombe.com

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Structural Engineering= S
Geotechnical Engineering = G
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Irrigation= I
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www.clarkirrigationdesign.com

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www.landisplc.com

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Electrical Engineering = E
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SEAL/SIGNATURE

JENNIFER C. SAGE REGISTERED SEAL ARCHITECT NORTH CAROLINA

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7	PERMIT REVIEW COMMENTS	05/03/2019
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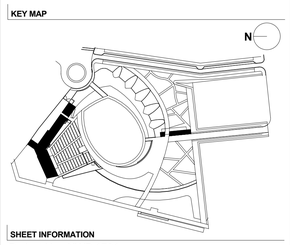
KEY MAP



SHEET INFORMATION

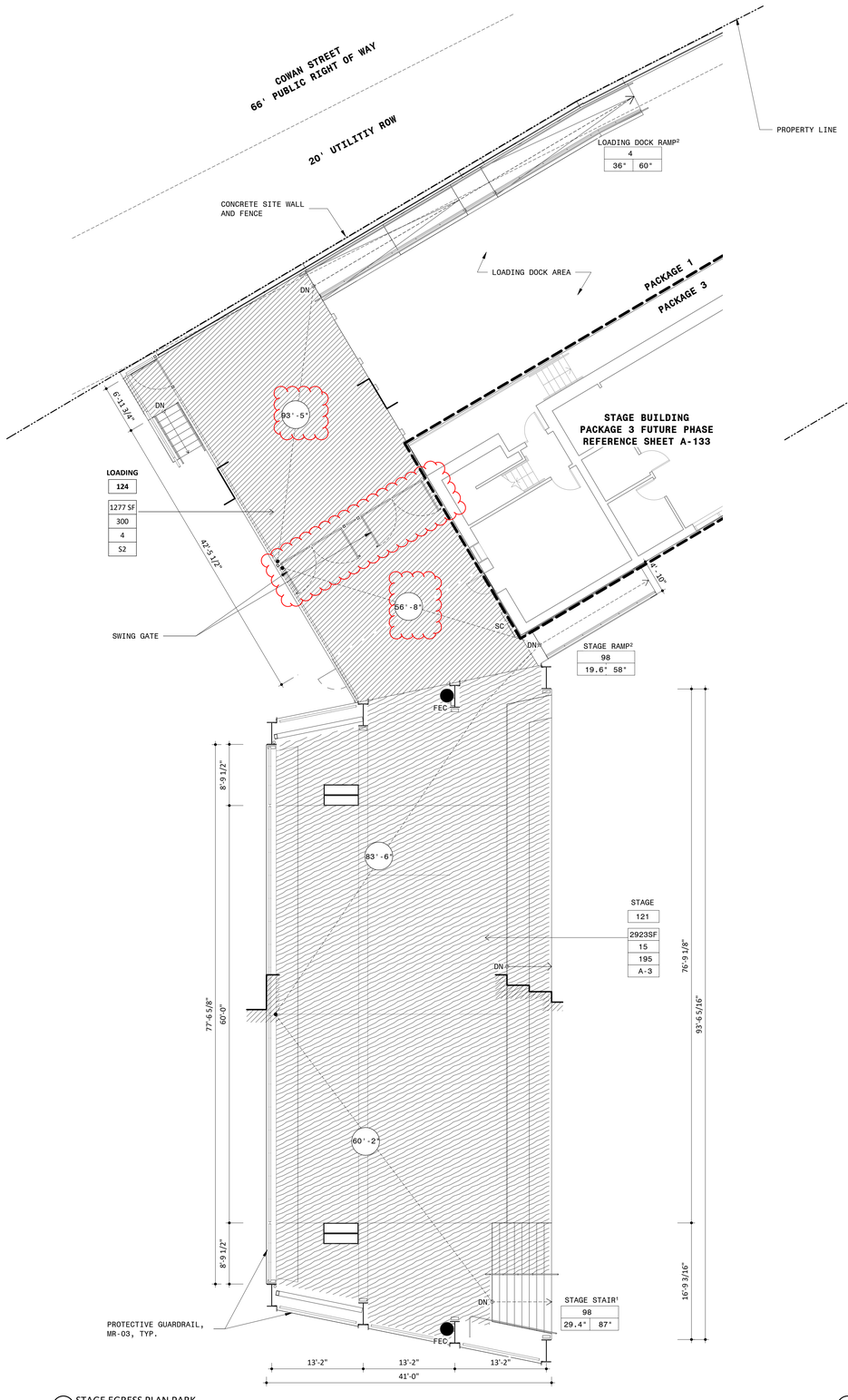
Project No.: NWP 1701
Drawn By: MH
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

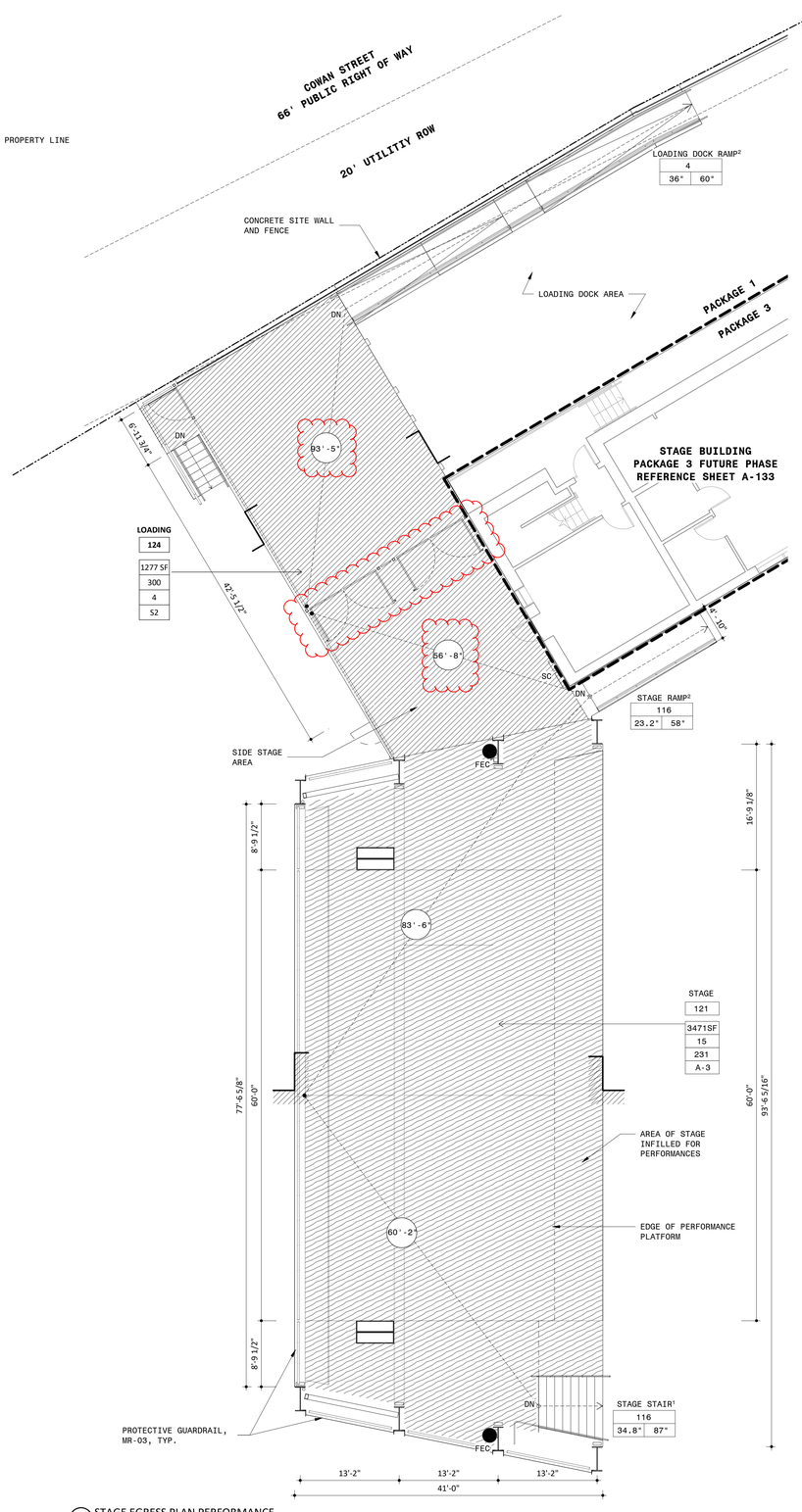
ARCHITECTURE PROJECT SUMMARY AND CODE SUMMARY ANSI DIAGRAMS

SHEET NO.

A-002-P1



2 STAGE EGRESS PLAN PARK
1/8" = 1'-0"



1 STAGE EGRESS PLAN PERFORMANCE
1/8" = 1'-0"

OCCUPANCY: STAGE PERFORMANCE

ROOM NUMBER	ROOM NAME	AREA	USE	SF/OCCUPANCY	OCCUPANCY LOAD
121	STAGE	3471 SF	ASSEMBLY/ STAGE	15	231
124	LOADING DOCK	1277 SF	STORAGE	300	4
TOTAL					235

EGRESS: STAGE PERFORMANCE - MAXIMUM CAPACITY OCCURS DURING PERFORMANCES

EGRESS COMPONENT	WIDTH REQUIRED[1, 2]	WIDTH PROVIDED	CAPACITY REQUIRED	CAPACITY PROVIDED	MAX TRAVEL DISTANCE PERMITTED[5]	MAX TRAVEL DISTANCE PROVIDED
STAGE						
STAGE STAIR	33.8" (44" MIN.)	77"[4]	116	257	250'	83'-6"
STAGE RAMP	23.2" (36" MIN.)	58"	116	210		
TOTAL			222	467		
LOADING DOCK[3]						
LOADING DOCK RAMP	0.8" (36" MIN.)	60"	4	300	250'	93'-5"

NOTES

IRN016

1. PER BC1005.3 STAIRWAY WIDTH IS CALCULATED BY MULTIPLYING THE OCCUPANT LOAD BY A MEANS OF EGRESS CAPACITY FACTOR OF 0.3" PER OCCUPANT. PER BC1011.2 THE CLEAR WIDTH OF A STAIRWAY SHALL BE 44" MINIMUM IF IT SERVES MORE THAN 50 PEOPLE.
2. PER BC1005.3.2 THE WIDTH OF ALL OTHER EGRESS COMPONENTS IS CALCULATED BY MULTIPLYING THE OCCUPANT LOAD BY A MEANS OF EGRESS CAPACITY FACTOR OF 0.2" PER OCCUPANT. PER BC1012.5 THE CLEAR WIDTH OF A RAMP BETWEEN HANDRAILS SHALL BE 36" MINIMUM.
3. LOADING DOCK EGRESS: PER BC1004.5 OUTDOOR AREAS USED EXCLUSIVELY FOR SERVICE OF A BUILDING NEED ONLY TO HAVE ONE MEANS OF EGRESS.
4. PER BC1014.9 ON MONUMENTAL STAIRS HANDRAILS SHALL BE LOCATED ALONG THE MOST DIRECT PATH OF EGRESS TRAVEL.
5. PER TABLE 1017.2 MAXIMUM EXIT ACCESS TRAVEL DISTANCE OF AN A OR S-1 OCCUPANCY WITH A SPRINKLER SYSTEM IS 250'.
6. PER 1006.2.1THE MAXIMUM COMMON PATH OF TRAVEL IS 75'

LEGEND

- 1 HOUR PARTITION
- ROOM NAME
- RM # — ROOM NUMBER
- AREA — ROOM AREA
- SF/PER — SF PER OCCUPANT/USE
- OCC. — NUMBER OF OCCUPANTS
- CLASS — OCCUPANCY CLASSIFICATION
- A — ASSEMBLY
- B — BUSINESS
- M — MERCANTILE
- K — COMMERCIAL
- S1 — STORAGE
- EXIT SIGN
- FE — FIRE EXTINGUISHER
- FEC — FIRE EXTINGUISHER CABINET
- SC — STANDPIPE CABINET
- TRAVEL DISTANCE
- EGRESS PATH
- DOOR — EXIT COMPONENT
- OCCUPANT LOAD
- WIDTH PROVIDED
- WIDTH REQUIRED

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
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Irrigation= I
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P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761 2
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Lighting Design = EL
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www.tillotsondesign.com

SEAL/SIGNATURE

JENNIFER C. GAGE — REGISTERED — SEAL — 040 — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
2	DESIGN DEVELOPMENT	07/13/2018
3	TRC SITE PLAN APPLICATION	08/01/2018
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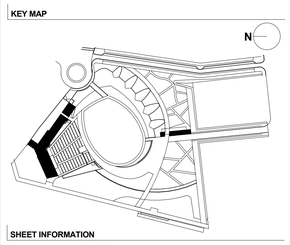
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	PERMIT REVIEW COMMENTS	05/03/2019
8	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

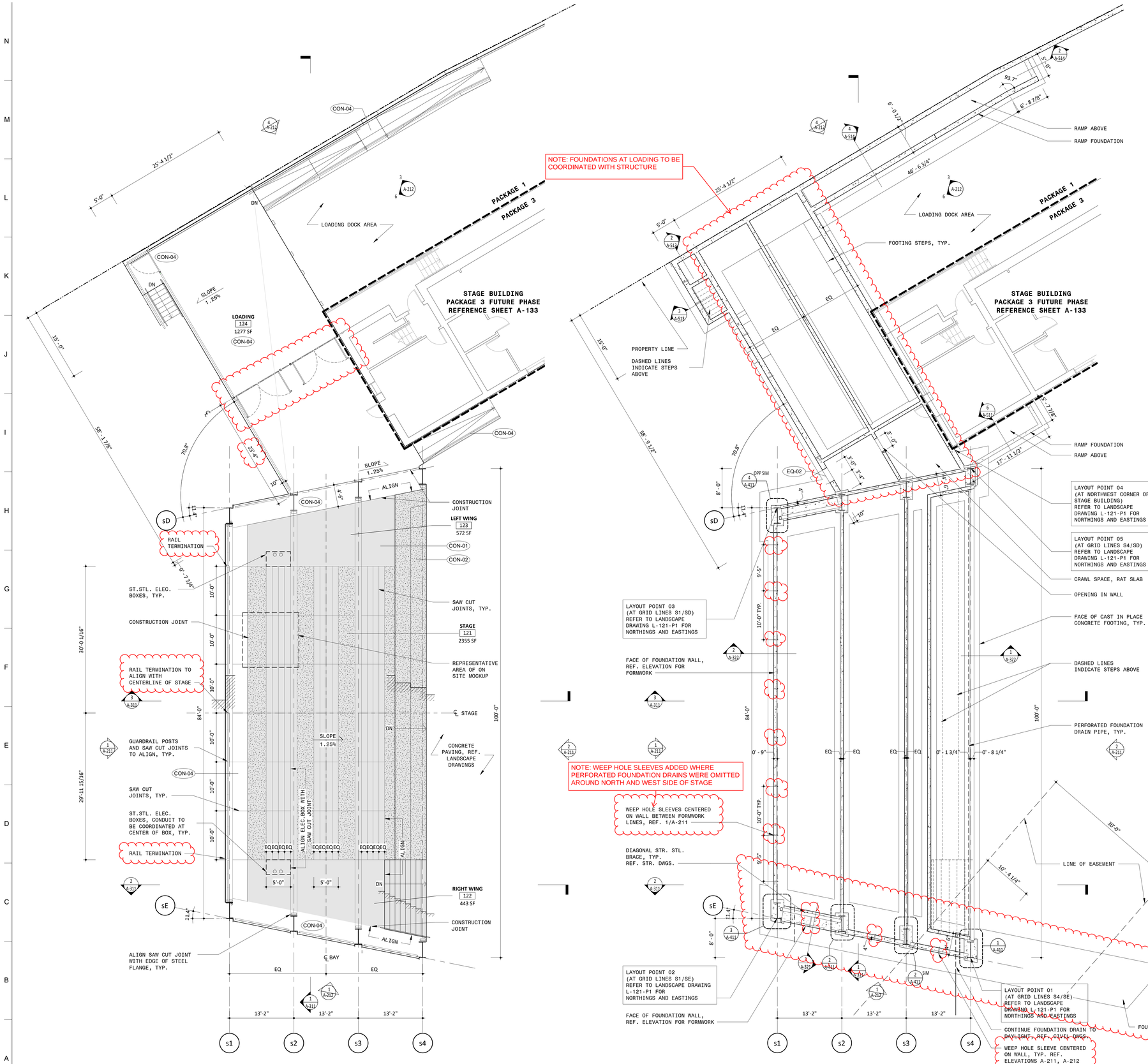
Project No.: NWP 1701
Drawn By: MH
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

ARCHITECTURE OCCUPANCY & EGRESS PLAN - STAGE

SHEET NO.

A-003-P1



NOTES

IRN016

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   ALT #2 NOT USED
   ALT #3 WOOD PANELING WD-02 & WD-03
   ALT #4 NOT USED
   ~~ALT #5 COILING DOORS~~
9. COLUMN LINES sD AND sE ARE SET AT CENTER FACE OF OUTSIDE FLANGE
10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

REFERENCE A-831 FOR SPECIFICATION SECTION

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CON-XX	CONCRETE
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PT-XX	PAINT
PX-XX	HIGH PERFORMANCE COATING
RB-XX	RUBBER BASE
RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

FINISH KEY

CON-01

CON-02

SAW CUT JOINT

sX AND sY GRID LINES INTERSECT AT CENTERLINES OF COLUMN AND OUTSIDE FLANGE

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

PROJECT INFORMATION

NORTH WATERFRONT PARK

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SEAL/SIGNATURE

JENNIFER C. CASE — REGISTERED — SEAL — 0 — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

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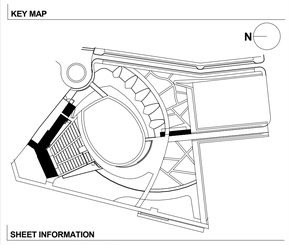
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: CD
Checked By: DH
Date: 03/08/2019
Scale: As indicated

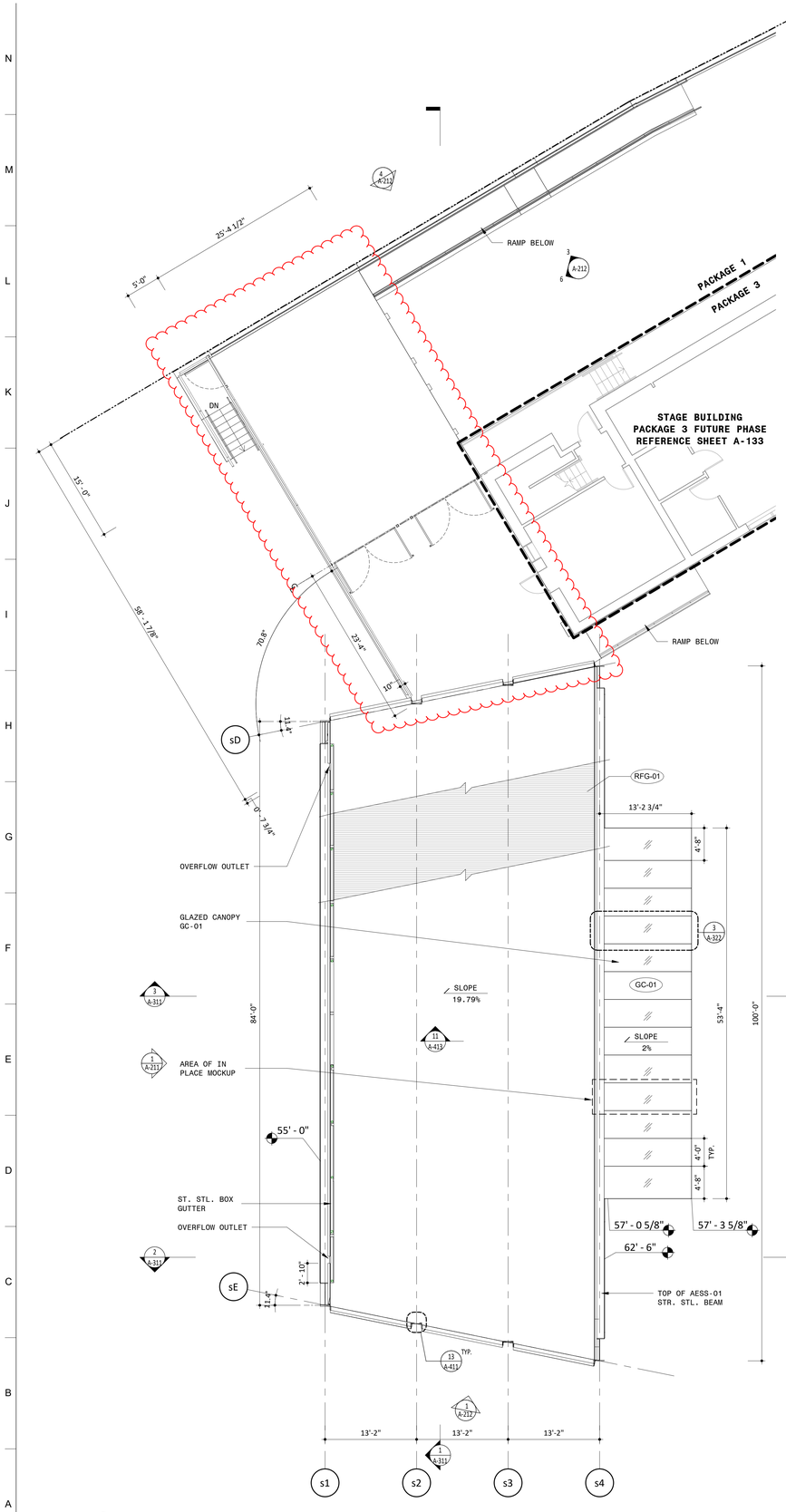
IRN016

SHEET TITLE

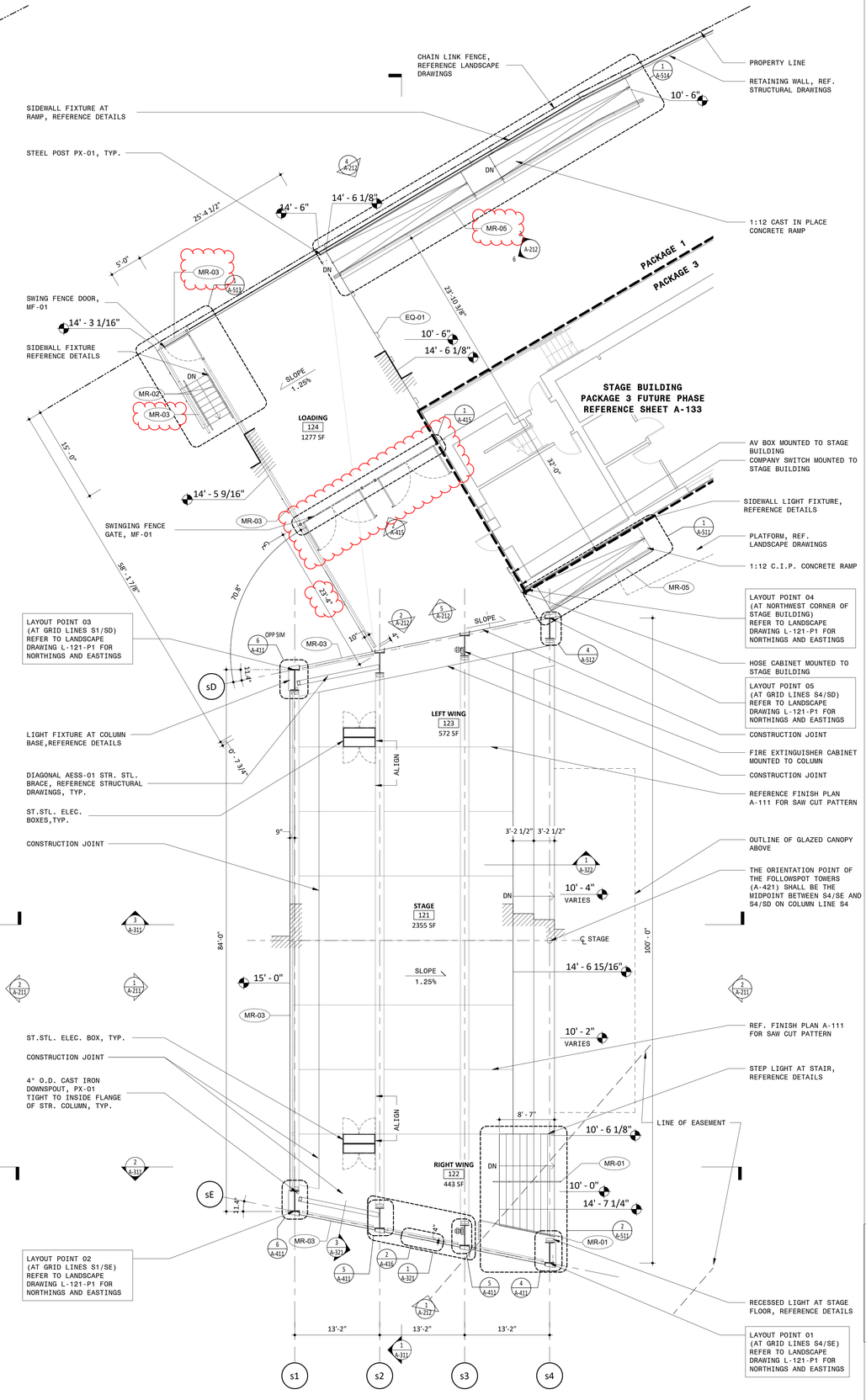
ARCHITECTURE FOUNDATION PLAN AND FINISH FLOOR PLAN - STAGE

SHEET NO.

A-111-P1



2 STAGE ROOF PLAN
1/8" = 1'-0"



1 STAGE PLAN
1/8" = 1'-0"

NOTES

IRN016

GENERAL NOTES

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   ALT #5 FOLLOW SPOTS
9. COLUMN LINES sD AND sE ARE SET AT CENTER FACE OF OUTSIDE FLANGE
10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
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LEGEND

REFERENCE A-831 FOR SPECIFICATION SECTION

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RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

sX AND sY GRID LINES INTERSECT AT CENTERLINES OF COLUMN AND OUTSIDE FLANGE

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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Irrigation= I
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Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761 2
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Mechanical Engineering = M
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Lighting Design = EL
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SEAL/SIGNATURE

JENNIFER C. SAGE — REGISTERED — SEAL — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
2	DESIGN DEVELOPMENT	07/13/2018
3	TRC SITE PLAN APPLICATION	08/01/2018
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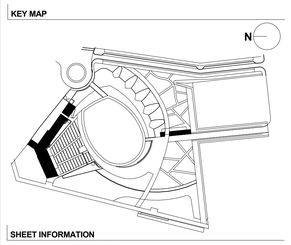
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	PERMIT REVIEW COMMENTS	05/03/2019
8	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

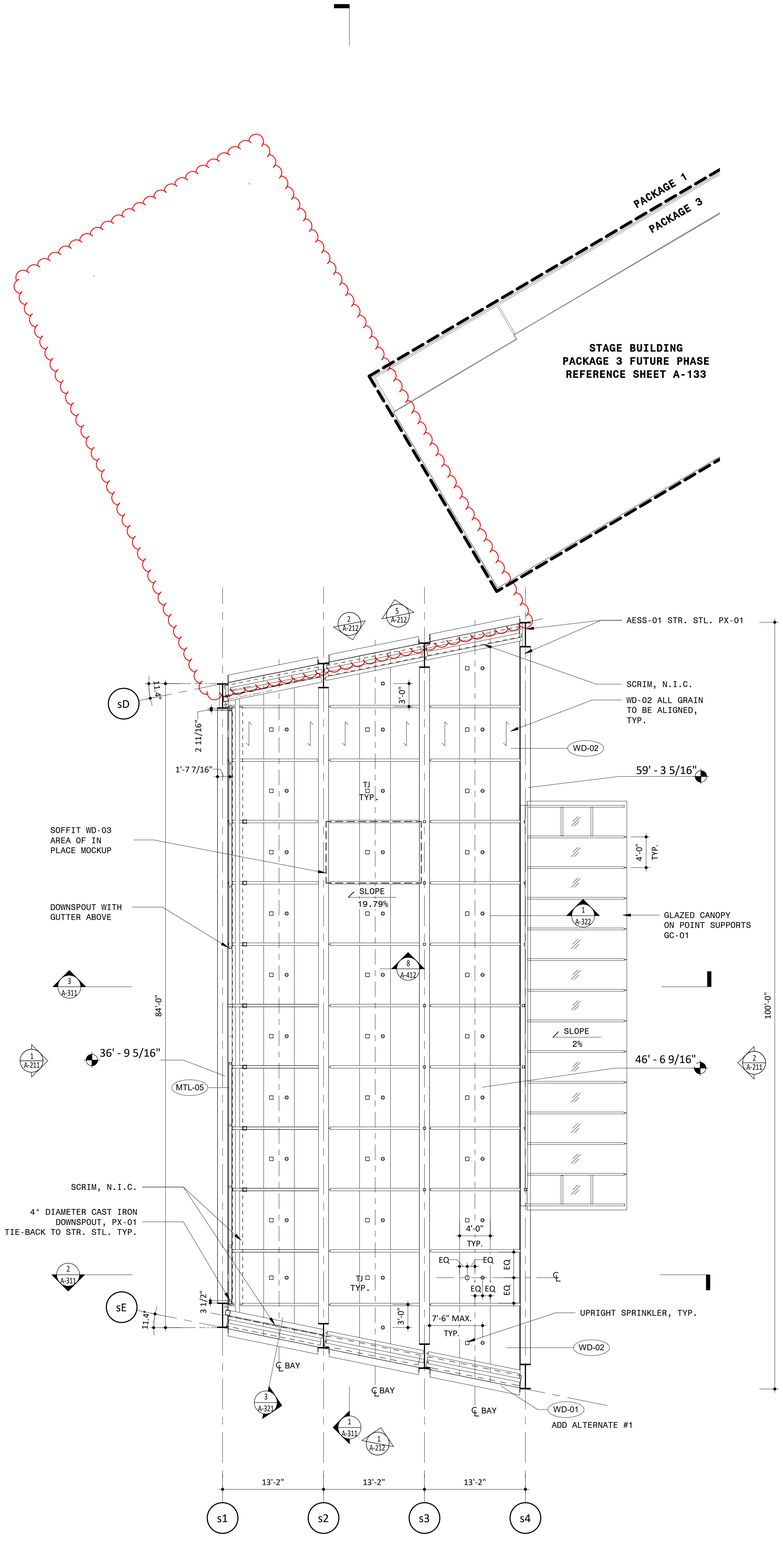
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

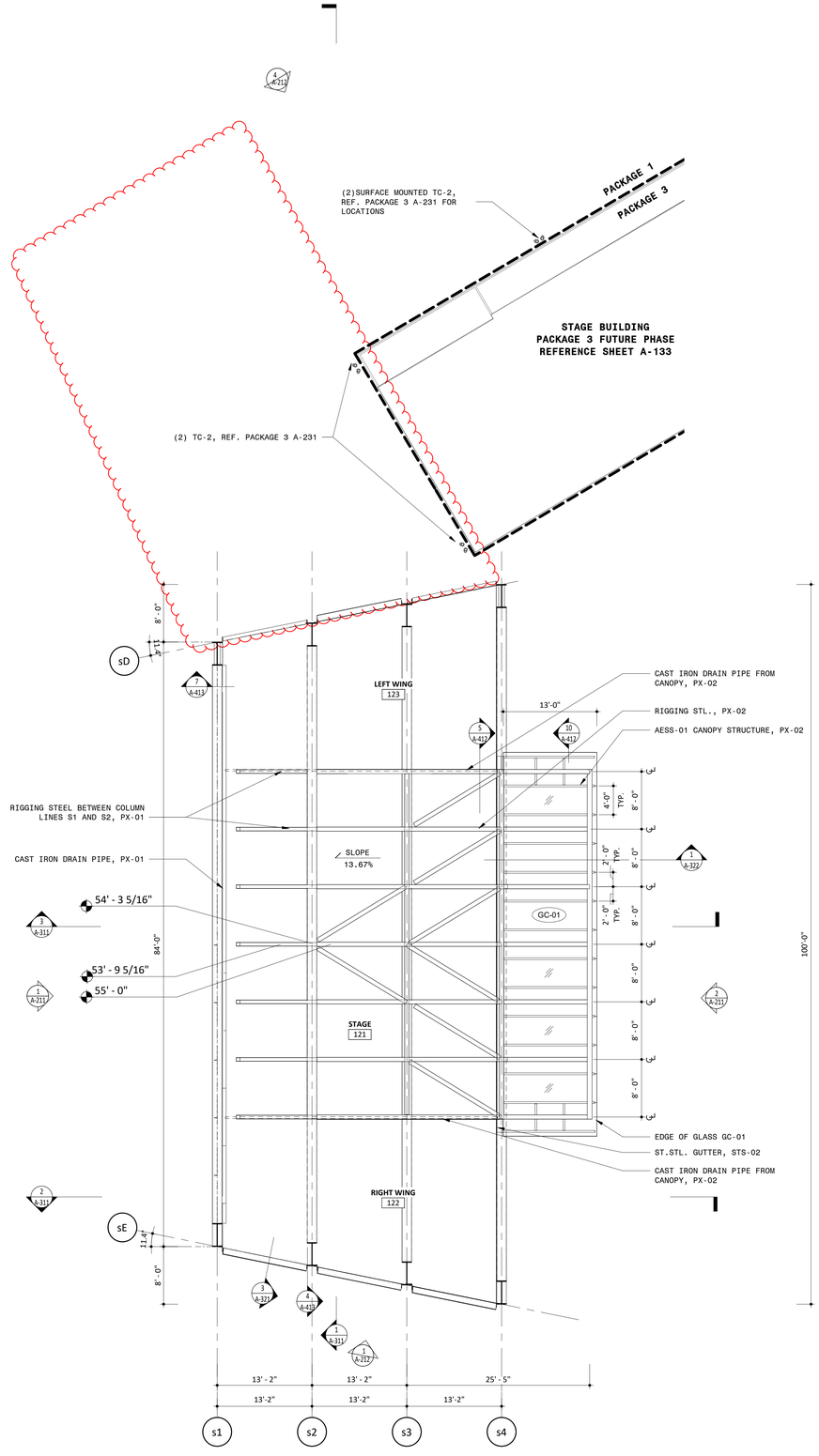
ARCHITECTURE FLOOR PLAN AND ROOF PLAN - STAGE

SHEET NO.

A-112-P1



2 STAGE REFLECTED CEILING PLAN
1/8" = 1'-0"



1 RIGGING STEEL REFLECTED CEILING PLAN
1/8" = 1'-0"

NOTES

IRN016

GENERAL NOTES

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LEGEND

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SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

FIXTURE KEY

- SPRINKLER
- LIGHT FIXTURE
- DIRECTION OF WOOD GRAIN
- DRAIN PIPE

sX AND sY GRID LINES INTERSECT AT CENTERLINES OF COLUMN AND OUTSIDE FLANGE

Approved Construction Plan

Name Date

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IRN016

PROJECT INFORMATION

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JENNIFER C. SAGE REGISTERED SEAL ARCHITECT NORTH CAROLINA

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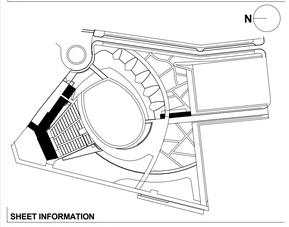


SHEET INFORMATION

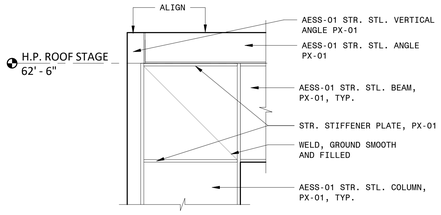
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

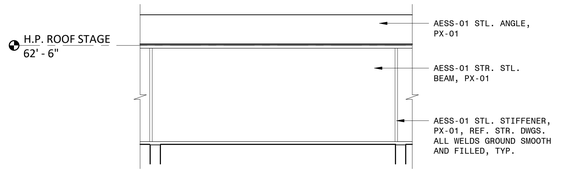
ARCHITECTURE REFLECTED CEILING PLANS - STAGE

SHEET NO.

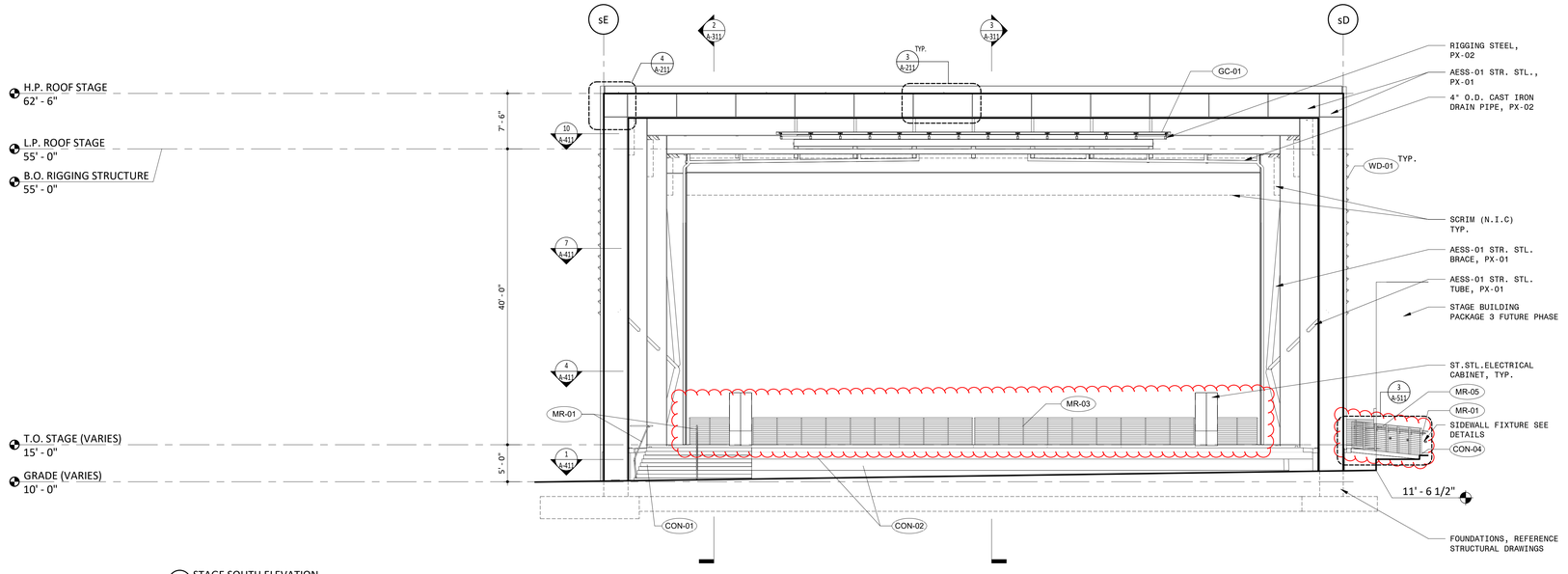
A-121-P1



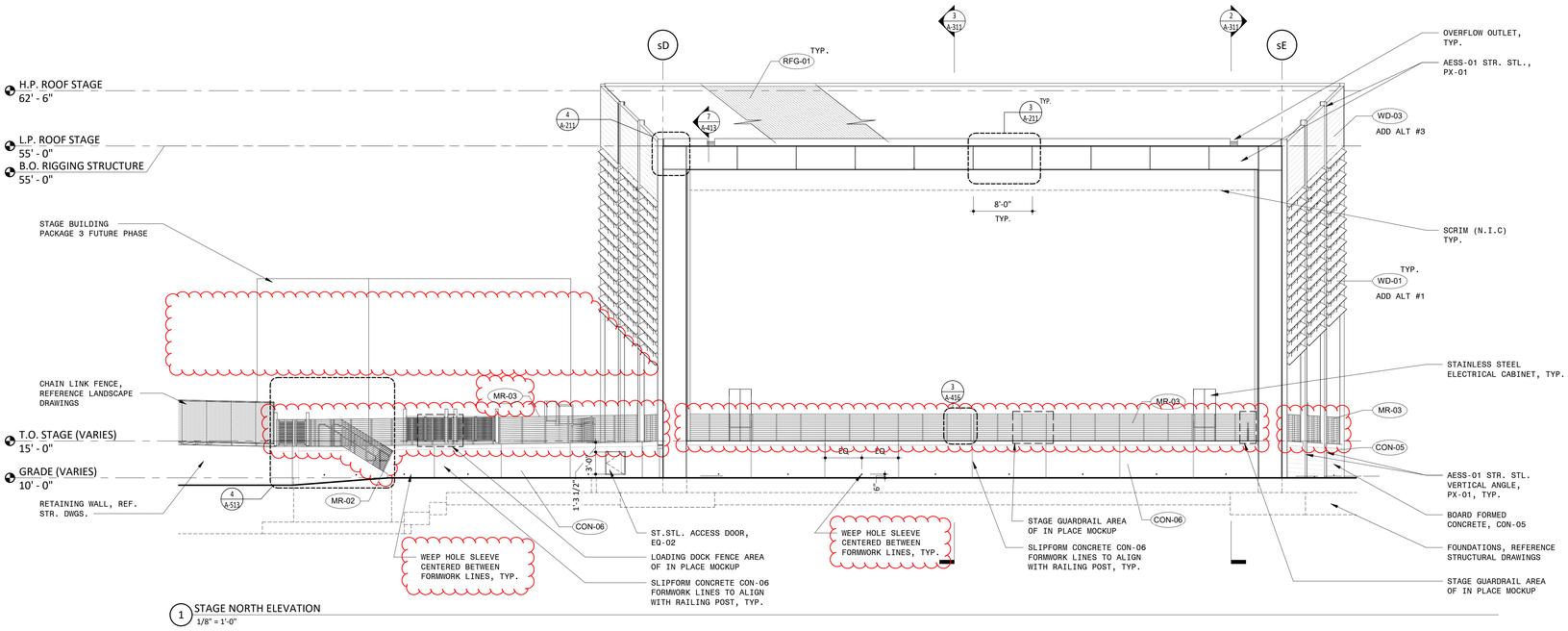
4 STAGE BEAM ELEVATION CORNER DETAIL
1/2" = 1'-0"



3 TYPICAL STAGE BEAM ELEVATION DETAIL
1/2" = 1'-0"



2 STAGE SOUTH ELEVATION
1/8" = 1'-0"



1 STAGE NORTH ELEVATION
1/8" = 1'-0"

NOTES

IRN016

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10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

REFERENCE A-831 FOR SPECIFICATION SECTION

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CMU-XX	CONCRETE MASONRY UNIT
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SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

Approved Construction Plan

Name Date

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Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
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OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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www.sandec.com
EAGLE RESOURCES
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Irrigation= I
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www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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Water Fountain Design = WF
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SEAL/SIGNATURE

JENNIFER C. SAGE REGISTERED SEAL 30470 ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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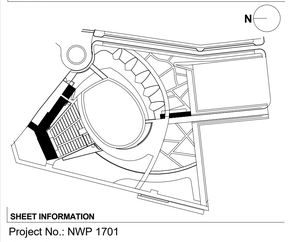
KEY MAP



SHEET INFORMATION

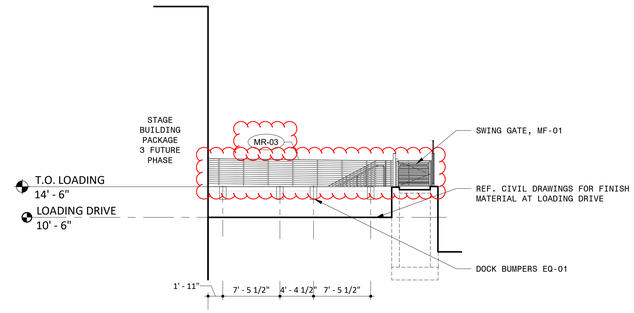
Project No.: NWP 1701
Drawn By: MH
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

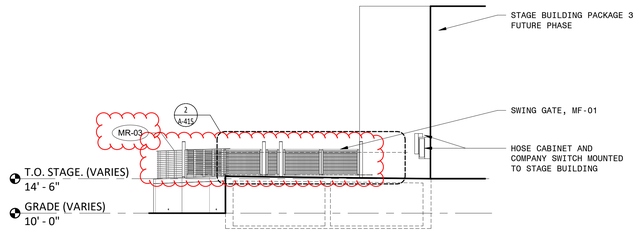
ARCHITECTURE ELEVATIONS - STAGE

SHEET NO.

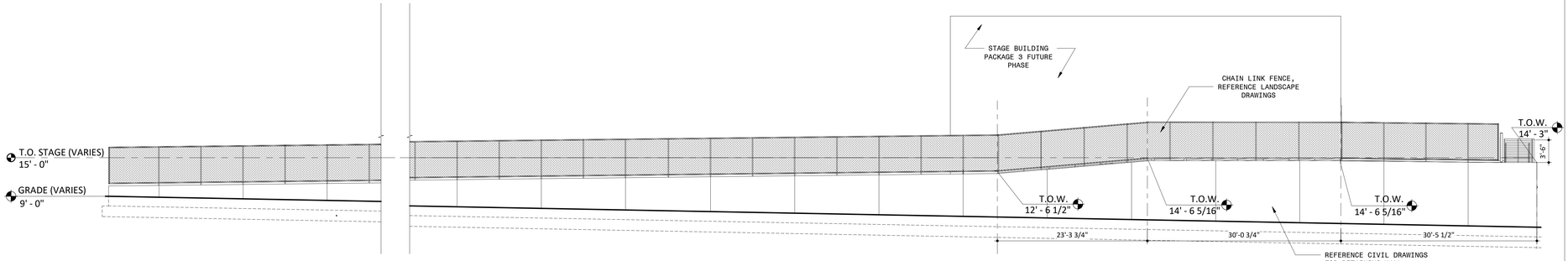
A-211-P1



6 LOADING DOCK ELEVATION LOOKING WEST
1/8" = 1'-0"



5 STAGE FENCE SECTION
1/8" = 1'-0"



4 LOADING DOCK NORTH ELEVATION
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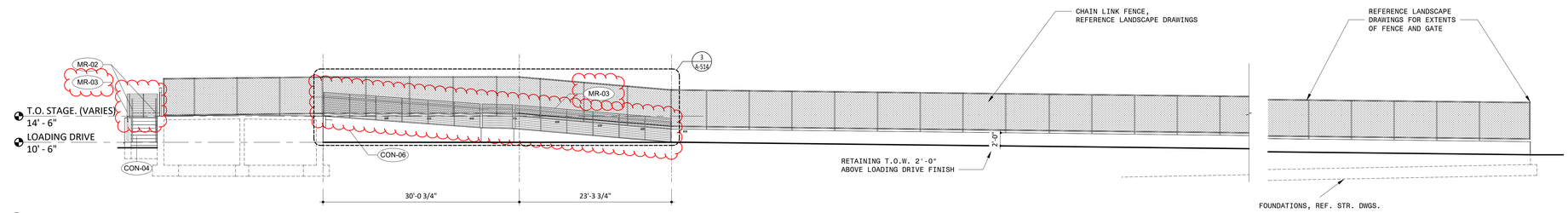

3 LOADING DOCK SOUTH ELEVATION
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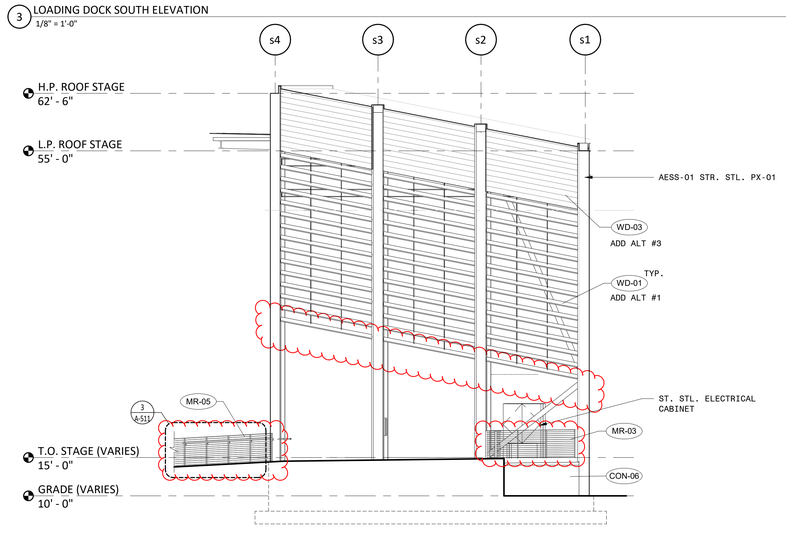

2 STAGE EAST ELEVATION
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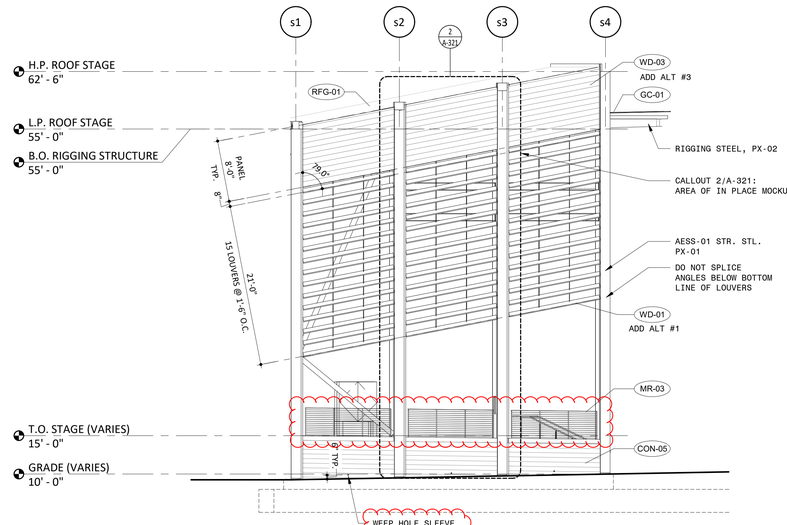

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NOTES

IRN016

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JENNIFER C. SAGE — REGISTERED — SEAL — ARCHITECT — NORTH CAROLINA

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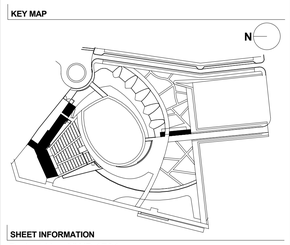
KEY MAP



SHEET INFORMATION

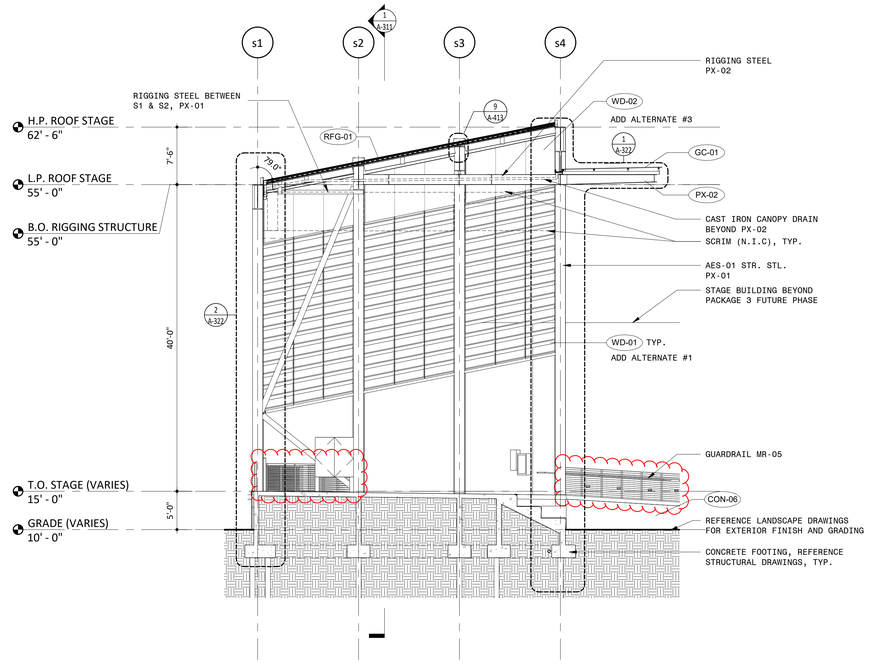
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

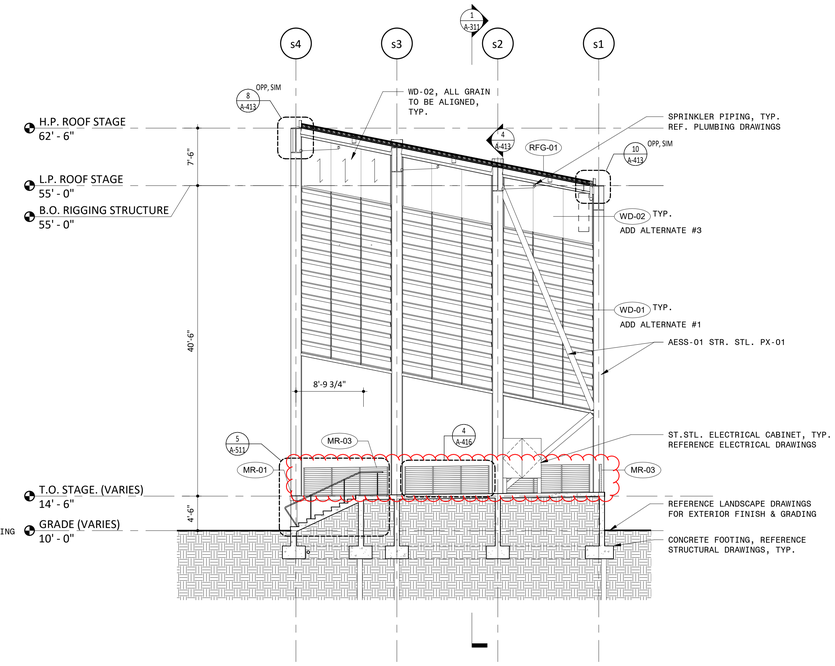
ARCHITECTURE ELEVATIONS - STAGE AND LOADING

SHEET NO.

A-212-P1



3 STAGE NORTH SOUTH SECTION LOOKING EAST
1/8" = 1'-0"



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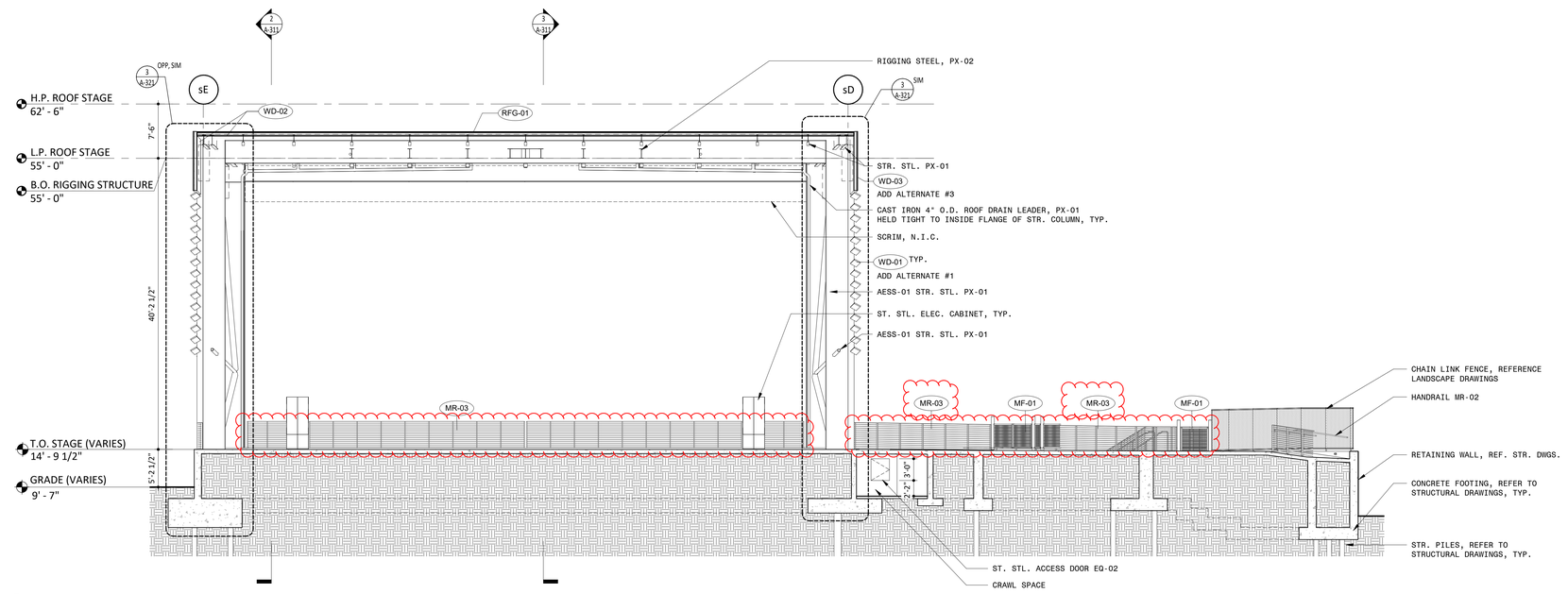

1 STAGE EAST WEST SECTION LOOKING NORTH
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NOTES

IRN016

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LEGEND

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IRN016

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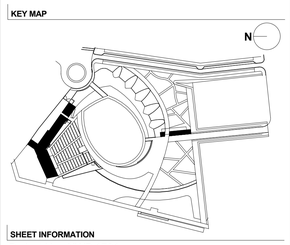


SHEET INFORMATION

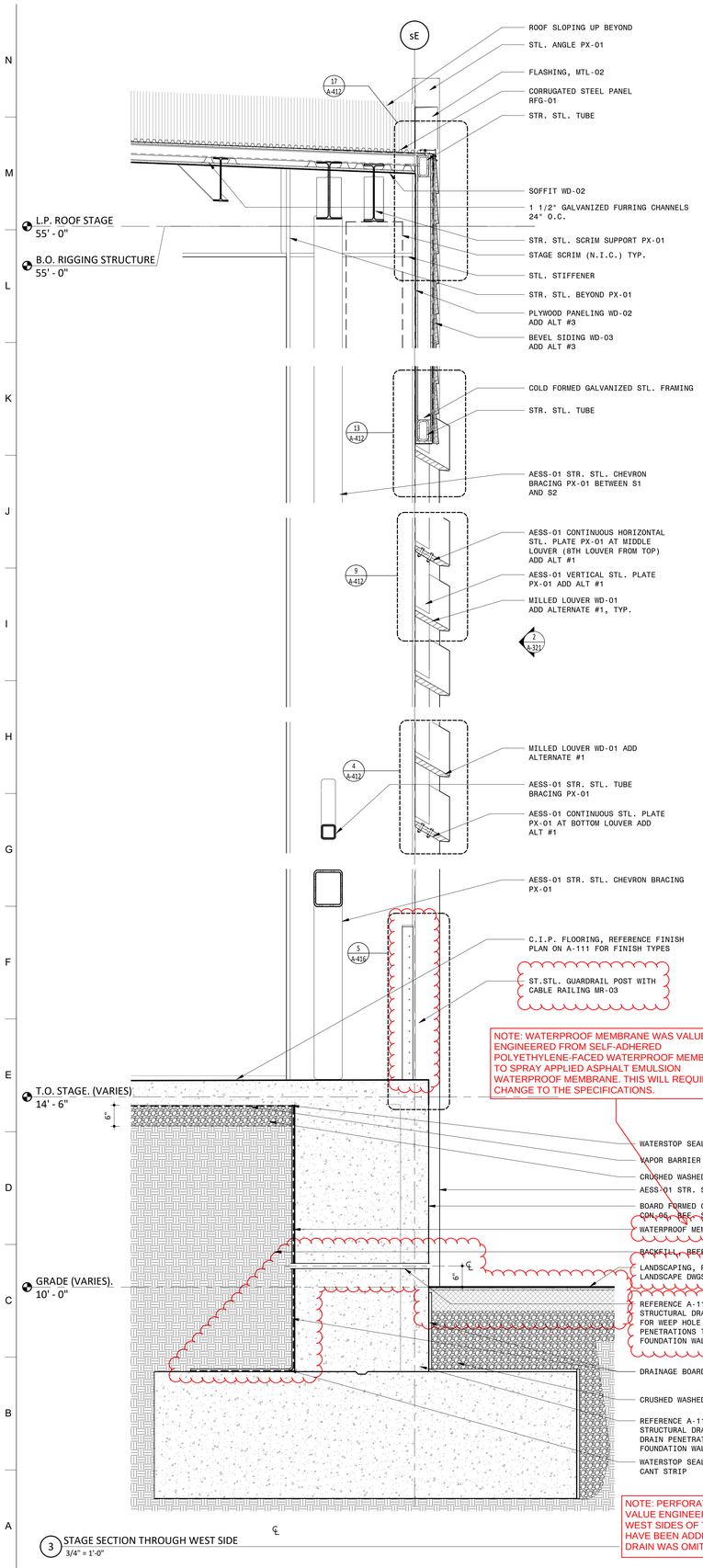
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

ARCHITECTURE BUILDING SECTION - STAGE

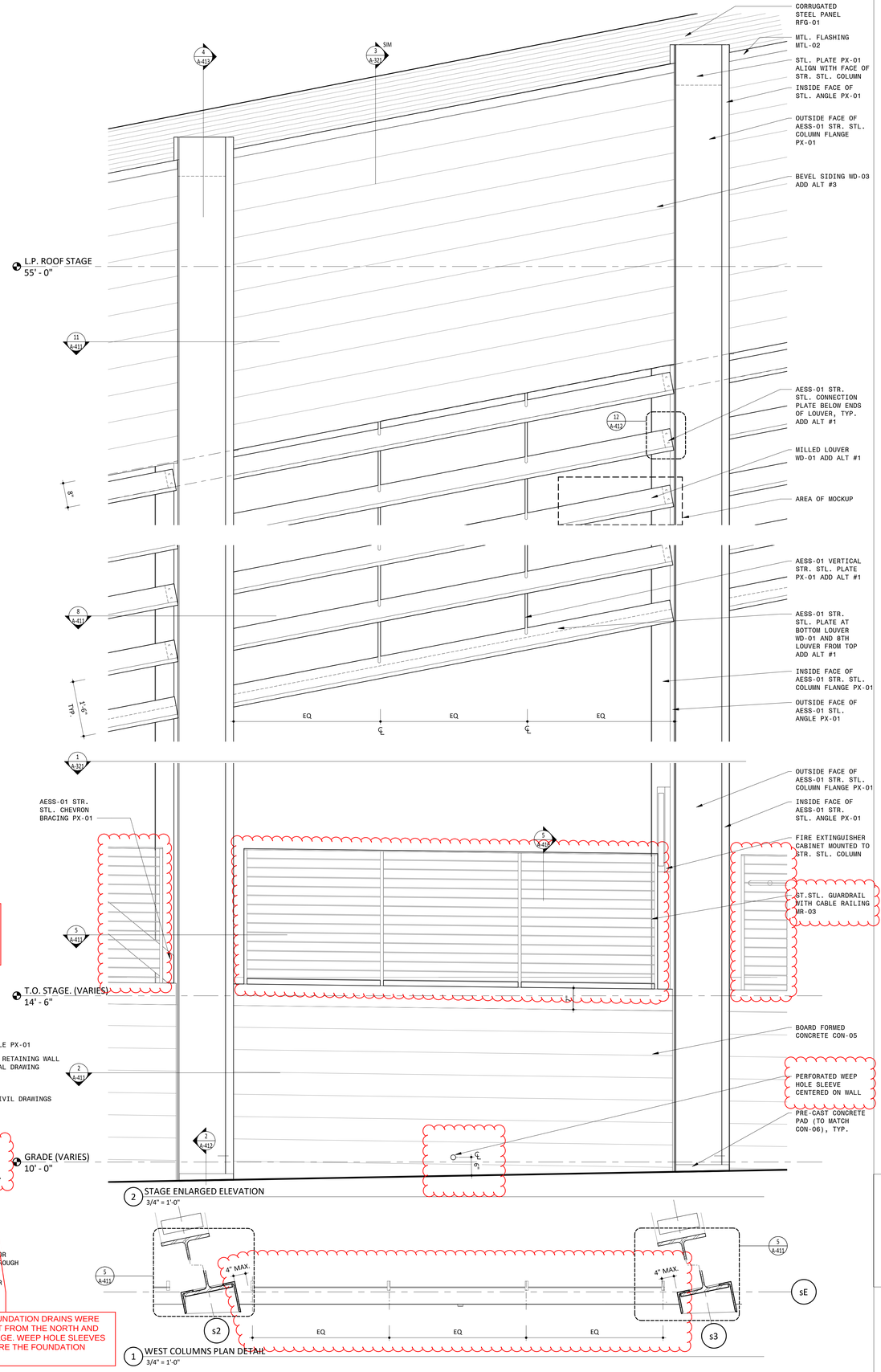
SHEET NO.

A-311-P1



NOTE: WATERPROOF MEMBRANE WAS VALUE ENGINEERED FROM SELF-ADHERED POLYETHYLENE-FACED WATERPROOF MEMBRANE TO SPRAY APPLIED ASPHALT EMULSION WATERPROOF MEMBRANE. THIS WILL REQUIRE A CHANGE TO THE SPECIFICATIONS.

NOTE: PERFORATED FOUNDATION DRAINS WERE VALUE ENGINEERED OUT FROM THE NORTH AND WEST SIDES OF THE STAGE. WEEP HOLE SLEEVES HAVE BEEN ADDED WHERE THE FOUNDATION DRAIN WAS OMITTED.



NOTES

IRN016

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WD-XX	WOOD
WLP-XX	WALL PROTECTION

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vesty Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
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EAGLE RESOURCES
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Irrigation= I
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www.clarkirrigationdesign.com

Landscape Soil = LS
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www.landisplic.com

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SEAL/SIGNATURE



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6	CONSTRUCTION DOCUMENTS	04/19/2019
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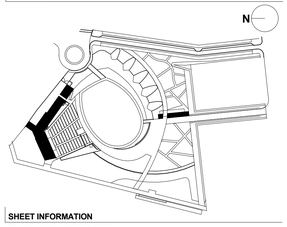
KEY MAP



SHEET INFORMATION

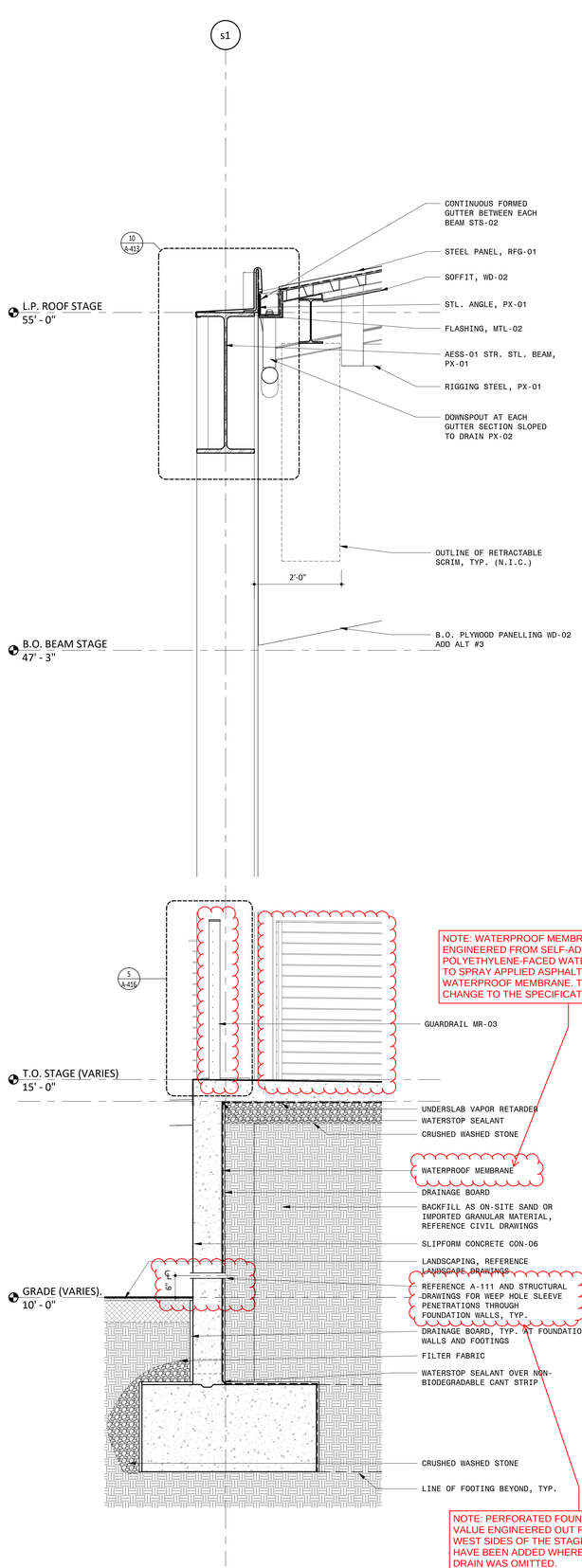
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

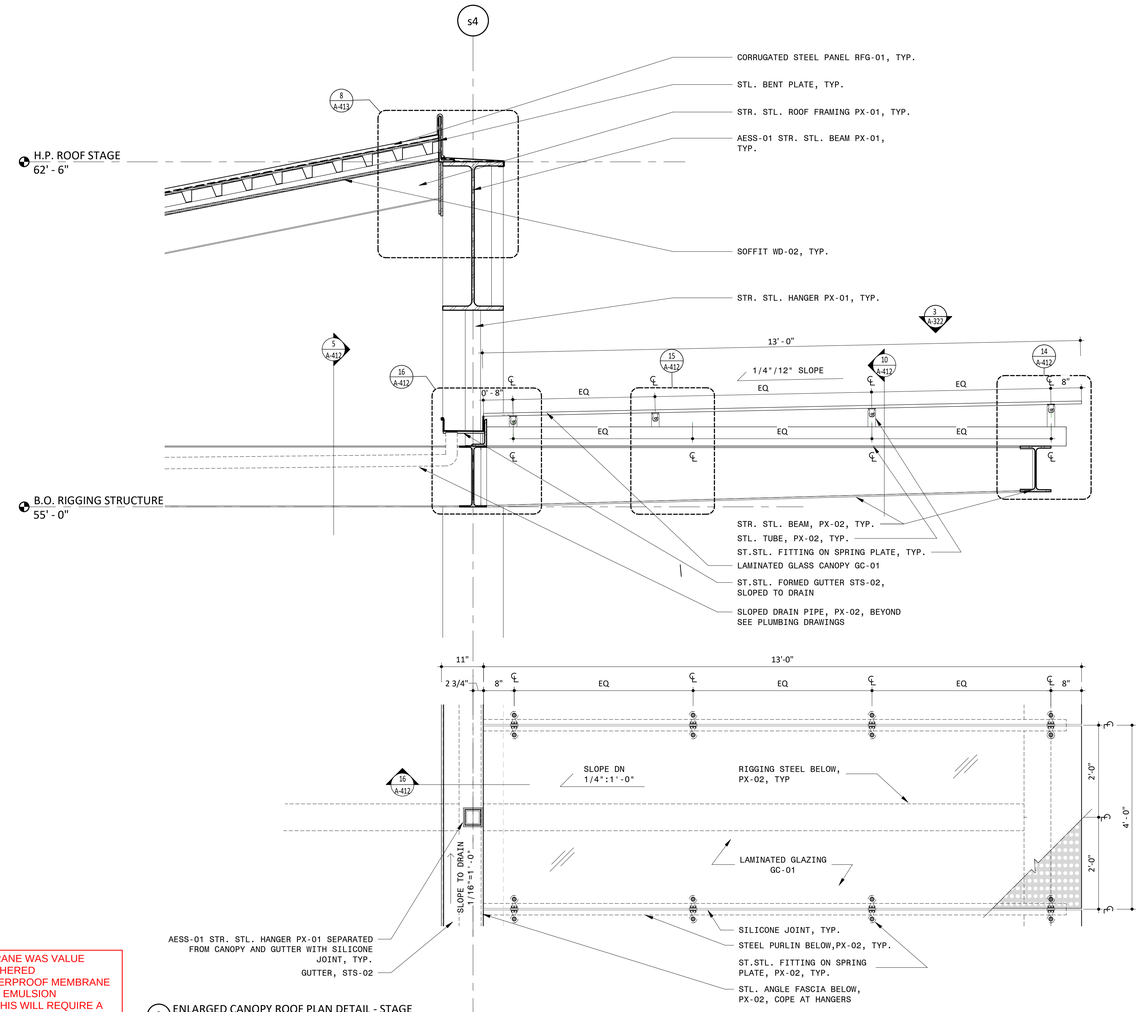
SHEET TITLE

ARCHITECTURE EXTERIOR WALL SECTIONS - STAGE

SHEET NO.

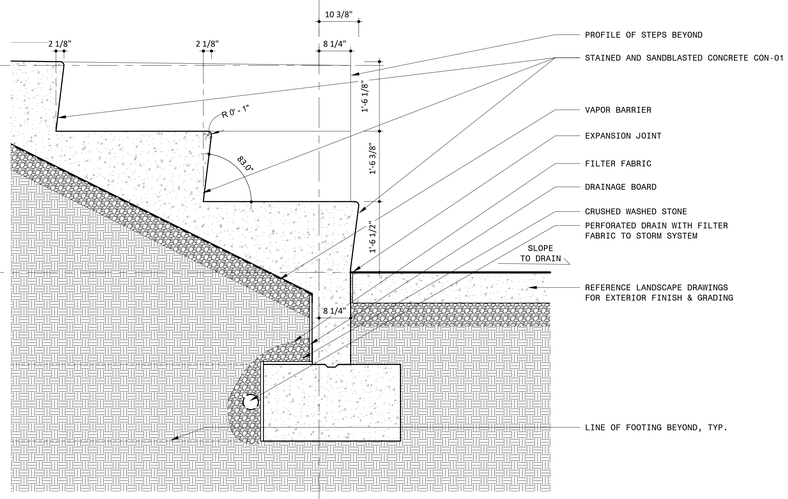
A-321-P1





3 ENLARGED CANOPY ROOF PLAN DETAIL - STAGE
3/4" = 1'-0"

2 WALL SECTION AT BACK OF STAGE
3/4" = 1'-0"



1 STAGE SECTION AT AUDIENCE SIDE
3/4" = 1'-0"

NOTES

IRN016

GENERAL NOTES

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7. LIST OF ADD ALTERNATES:
   ALT #1 WOOD LOUVERS WD-01 AND SUPPORTS
   ALT #2 NOT USED
   ALT #3 WOOD PANELLING WD-02 & WD-03
   ALT #4 NOT USED
   ALT #5 FOLLOW SPOTS
9. COLUMN LINES sD AND sE ARE SET AT CENTER FACE OF OUTSIDE FLANGE
10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

REFERENCE A-831 FOR SPECIFICATION SECTION

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PT-XX	PAINT
PX-XX	HIGH PERFORMANCE COATING
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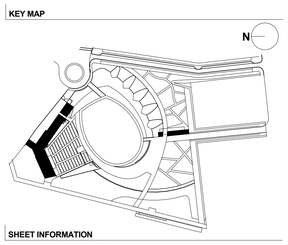
KEY MAP



SHEET INFORMATION

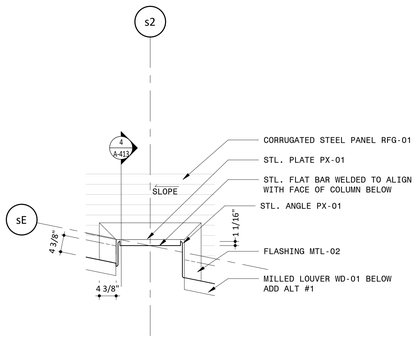
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

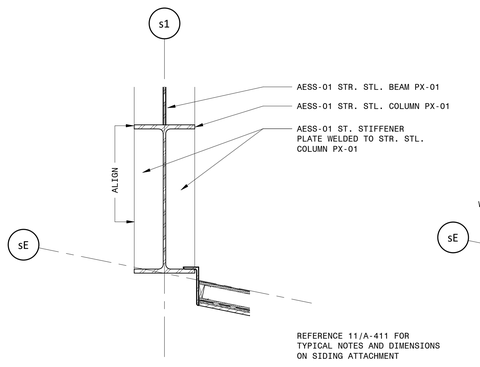
ARCHITECTURE EXTERIOR WALL SECTION AT CANOPY - STAGE

SHEET NO.

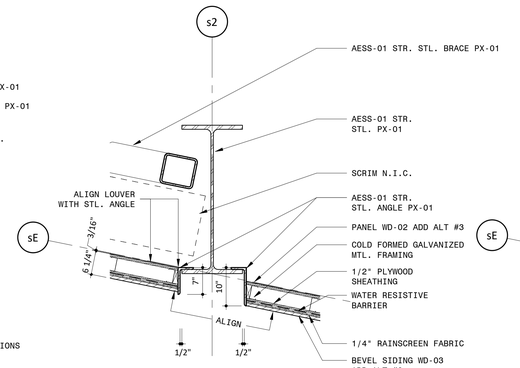
A-322-P1



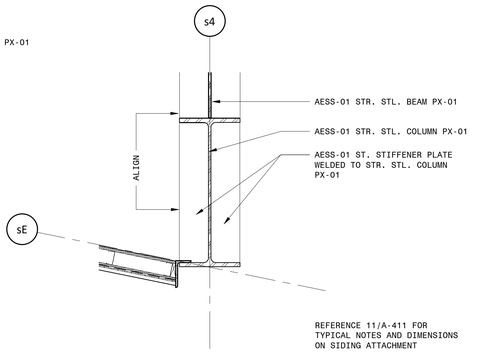
13 STAGE ROOF PLAN DETAIL S2
3/4" = 1'-0"



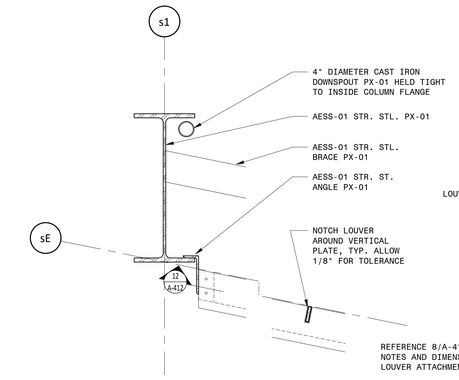
12 STAGE PLAN DETAIL AT WOOD PANELS S1 ADD ALT #3
3/4" = 1'-0"



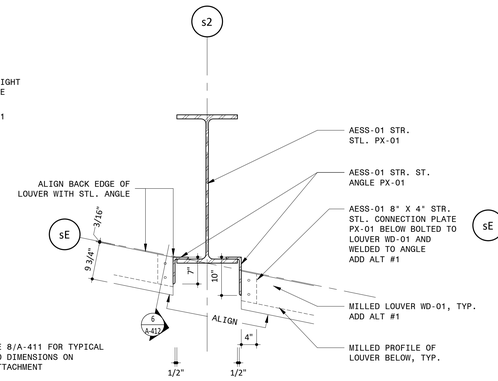
11 STAGE PLAN DETAIL AT WOOD PANELS S2 ADD ALT #3
3/4" = 1'-0"



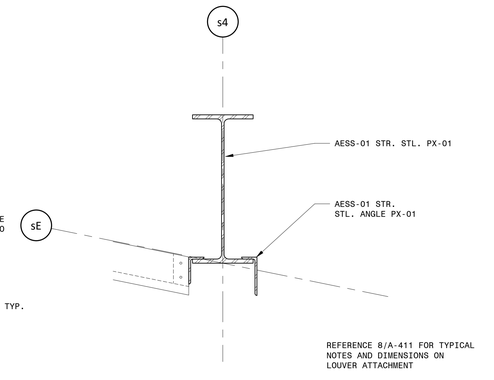
10 STAGE PLAN DETAIL AT WOOD PANELS S4 ADD ALT #3
3/4" = 1'-0"



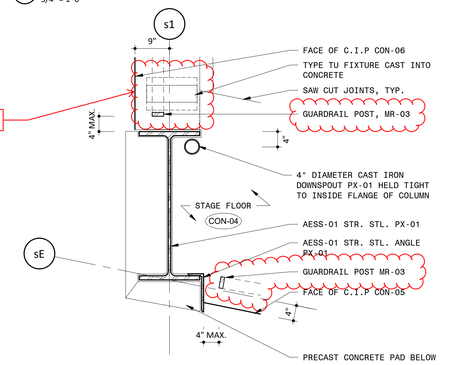
9 STAGE PLAN DETAIL AT LOUVER S1 ADD ALT #1
3/4" = 1'-0"



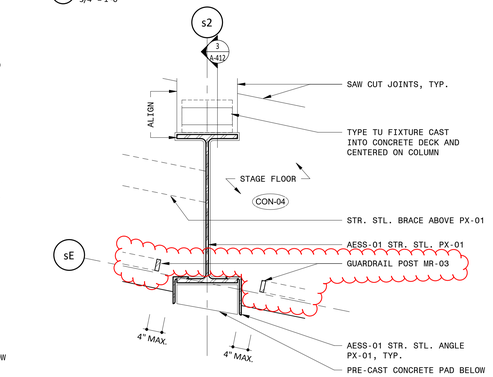
8 STAGE PLAN DETAIL AT LOUVER S2 ADD ALT #1
3/4" = 1'-0"



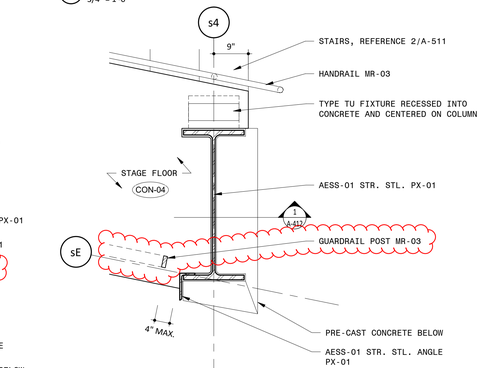
7 STAGE PLAN DETAIL AT LOUVER S4 ADD ALT #1
3/4" = 1'-0"



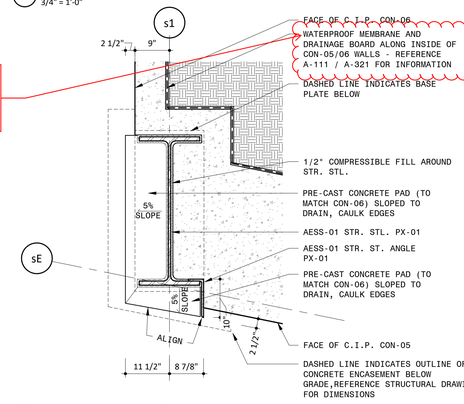
9 STAGE PLAN DETAIL AT LOUVER S1 ADD ALT #1
3/4" = 1'-0"



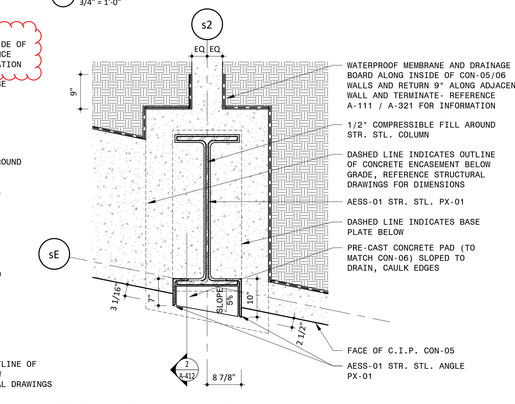
8 STAGE PLAN DETAIL AT LOUVER S2 ADD ALT #1
3/4" = 1'-0"



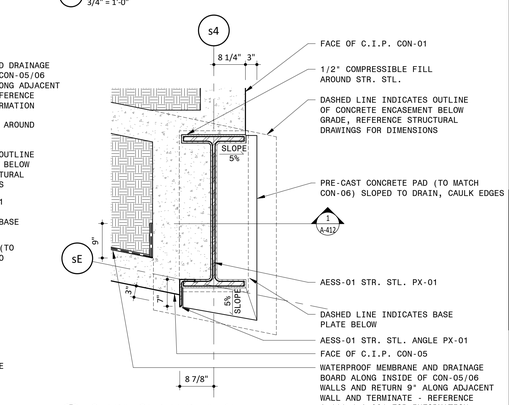
7 STAGE PLAN DETAIL AT LOUVER S4 ADD ALT #1
3/4" = 1'-0"



6 STAGE COLUMN PLAN DETAIL S1
3/4" = 1'-0"



5 STAGE COLUMN PLAN DETAIL S2
3/4" = 1'-0"



4 STAGE WEST COLUMN PLAN DETAIL S4
3/4" = 1'-0"

3 PLAN DETAIL AT GRADE S1
3/4" = 1'-0"

2 FOUNDATION PLAN DETAIL S2
3/4" = 1'-0"

SIM. DETAIL FOR GRID POINT sE/s3

1 FOUNDATION PLAN DETAIL S4
3/4" = 1'-0"

NOTES

IRN016

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Approved Construction Plan

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SEAL/SIGNATURE

JENNIFER C. GAGE REGISTERED SEAL 036 ARCHITECT NORTH CAROLINA

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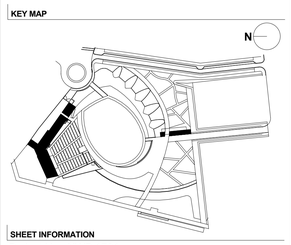


SHEET INFORMATION

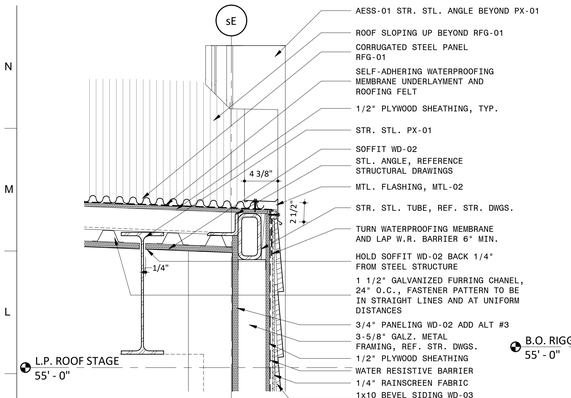
Project No.: NWP 1701
Drawn By: LWA
Checked By: DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

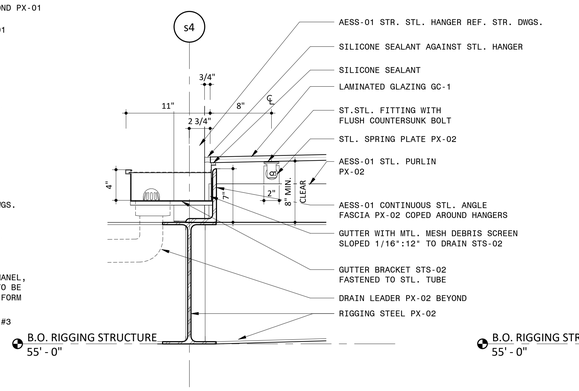
ARCHITECTURE PLAN DETAILS - STAGE

SHEET NO.

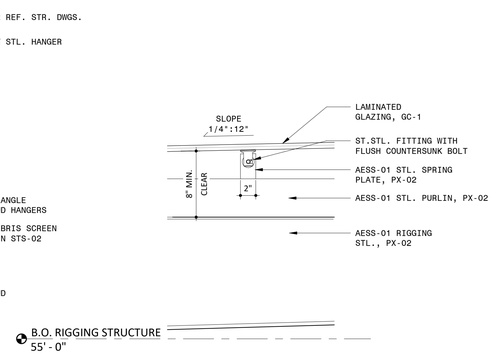
A-411-P1



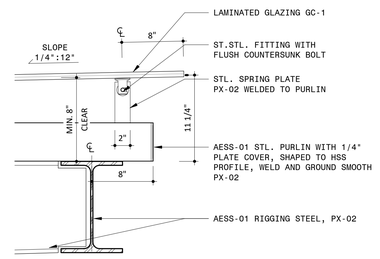
17 SECTION DETAIL AT TOP OF WALL PANEL ADD ALT #3
1 1/2" = 1'-0"



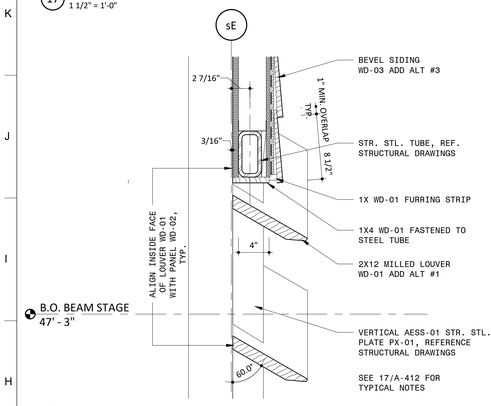
16 CANOPY GUTTER AND HANGER SECTION DETAIL
1 1/2" = 1'-0"



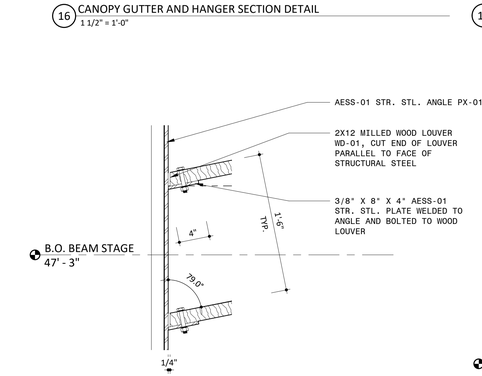
15 CANOPY SPRING PLATE DETAIL
1 1/2" = 1'-0"



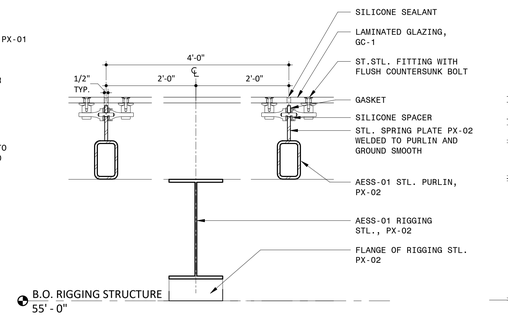
14 CANOPY SECTION DETAIL
1 1/2" = 1'-0"



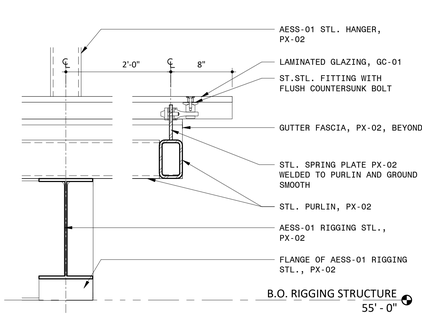
13 SECTION DETAIL AT LOUVER & PANEL ADD ALT #1 & #3
1 1/2" = 1'-0"



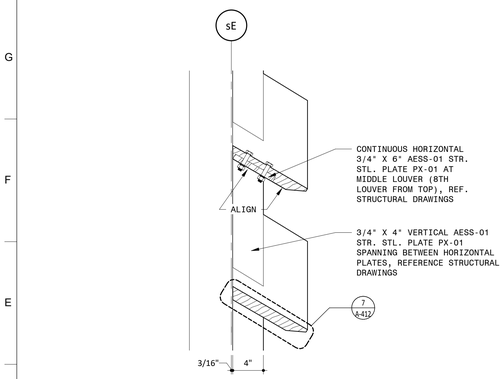
12 SECTION DETAIL THROUGH LOUVER AT ANGLE ADD ALT #1
1 1/2" = 1'-0"



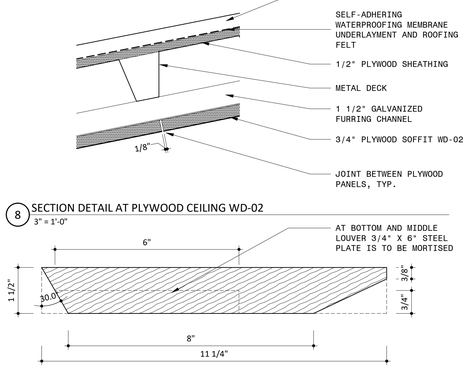
11 CANOPY SECTION AT POINT SUPPORT
1 1/2" = 1'-0"



10 CANOPY EDGE SECTION DETAIL
1 1/2" = 1'-0"

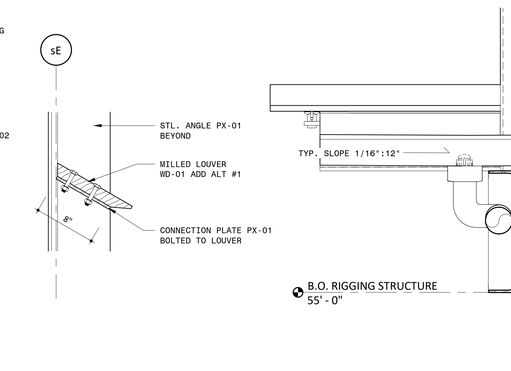


9 SECTION DETAIL AT MIDDLE LOUVER ADD ALT #1
1 1/2" = 1'-0"

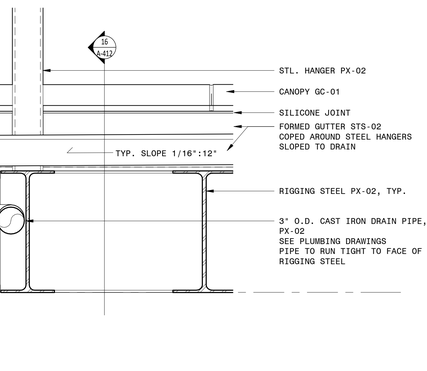


8 SECTION DETAIL AT PLYWOOD CEILING WD-02
3" = 1'-0"

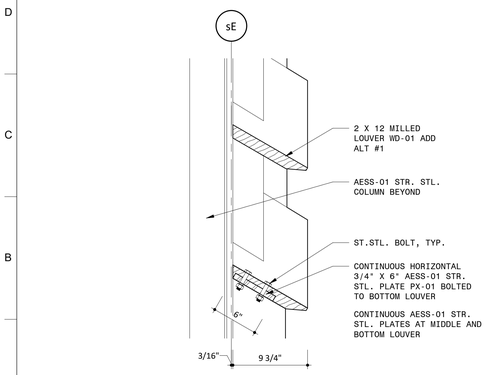
7 MILLED LOUVER WD-01 PROFILE ADD ALT #1
6" = 1'-0"



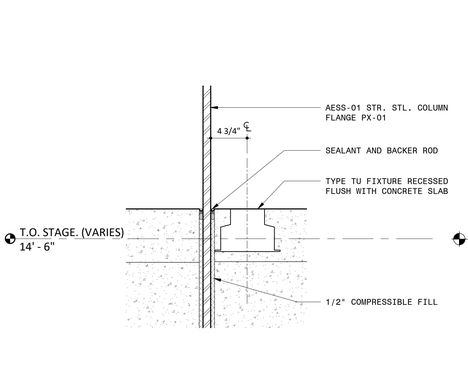
6 LOUVER SECTION DETAIL AT ANGLE SUPPORT
1 1/2" = 1'-0"



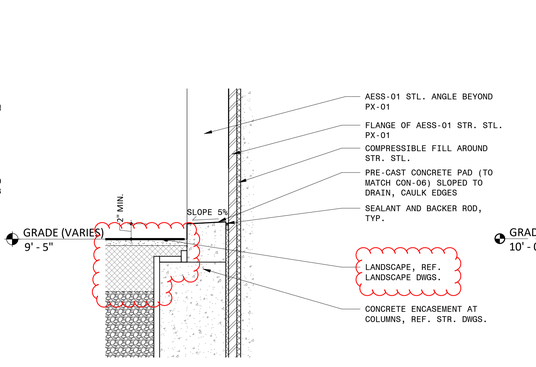
5 CANOPY GUTTER SECTION DETAIL
1 1/2" = 1'-0"



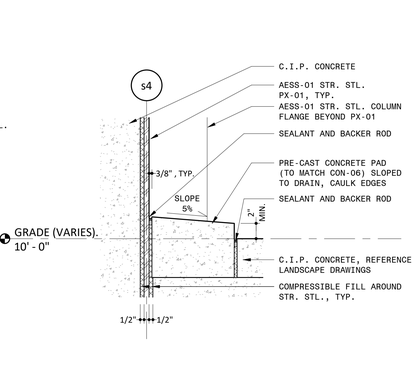
4 SECTION DETAIL AT BOTTOM LOUVER ADD ALT #1
1 1/2" = 1'-0"



3 SECTION DETAIL AT STAGE LEVEL BASE OF COLUMN
1 1/2" = 1'-0"



2 SECTION DETAIL AT GRADE LEVEL BASE OF COLUMN
1 1/2" = 1'-0"



1 SECTION DETAIL AT S4 WEST COLUMN
1 1/2" = 1'-0"

NOTES

IRN016

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   ALT #2 NOT USED
   ALT #3 WOOD PANELING WD-02 & WD-03
   ALT #4 NOT USED
   ALT #5 FOLLOW SPOTS
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10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

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CON-XX	CONCRETE
CT-XX	CERAMIC TILE
EF-XX	EPOXY FLOORING
EQ-XX	EQUIPMENT
F-XX	FIXTURE
FCP-XX	FIBER CEMENT PANEL
GC-XX	GLAZED CANOPY
GL-XX	GLASS
GWB-XX	GYPSUM WALL BOARD
INS-XX	INSULATION
MF-XX	METAL FENCING
MR-XX	METAL RAILING
MTL-XX	METAL
PG-XX	PLASTIC GLAZING
PT-XX	PAINT
PX-XX	HIGH PERFORMANCE COATING
RB-XX	RUBBER BASE
RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761 2
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES **, PA**
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE

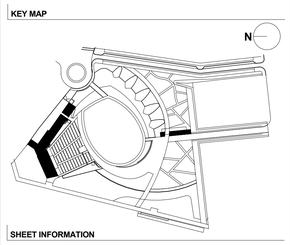
JENNIFER C. SAGE — REGISTERED — SEAL — 036 — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
2	DESIGN DEVELOPMENT	07/13/2018
3	TRC SITE PLAN APPLICATION	08/01/2018
4	95% CONSTRUCTION DOCUMENTS	03/08/2019
5	TRC SITE PLAN RE-APPLICATION	03/22/2019
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

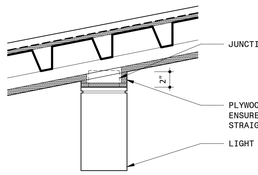
Project No.: NWP 1701
Drawn By: LWA
Checked By: DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

ARCHITECTURE SECTION DETAILS - STAGE

SHEET NO.

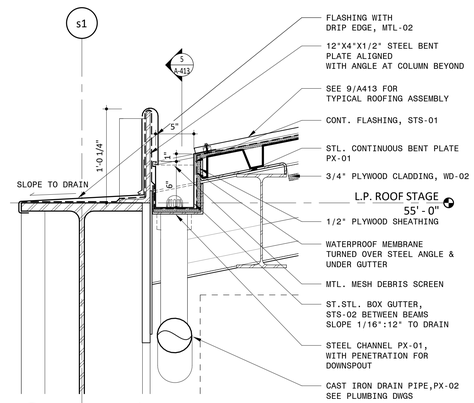
A-412-P1



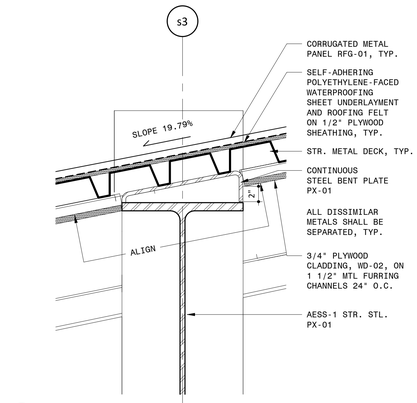
11 SECTION DETAIL AT LIGHT FIXTURE TJ
1 1/2" = 1'-0"



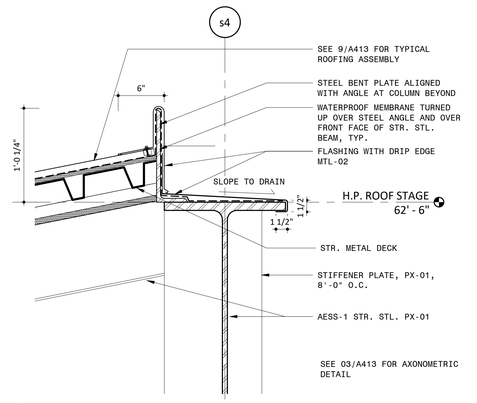
12 PLAN DETAIL AT LIGHT FIXTURE TJ
1 1/2" = 1'-0"



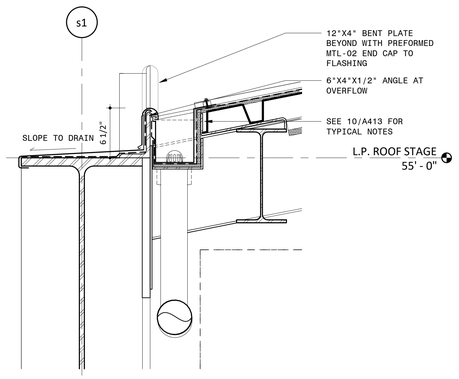
10 ROOF LOW POINT/BUILT-IN GUTTER SECTION DETAIL
1 1/2" = 1'-0"



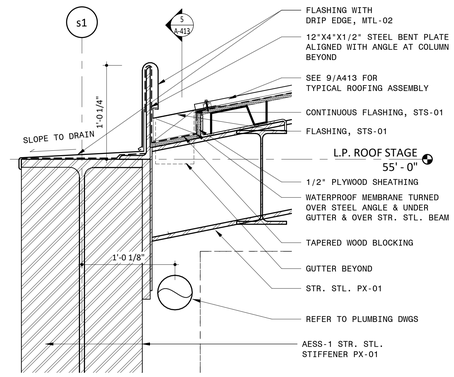
9 TYPICAL STAGE ROOF SECTION DETAIL
1 1/2" = 1'-0"



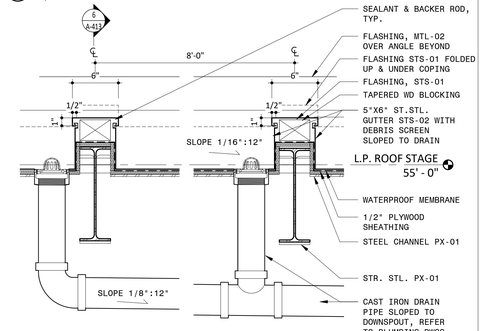
8 ROOF HIGH POINT SECTION DETAIL
1 1/2" = 1'-0"



7 OVERFLOW OUTLET SECTION DETAIL
1 1/2" = 1'-0"

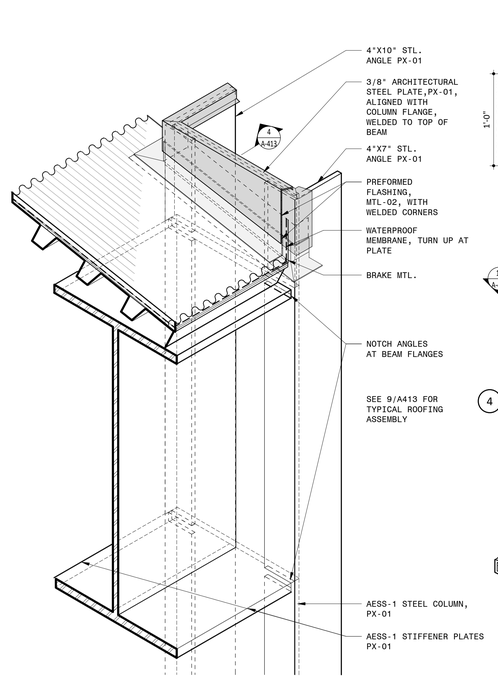


6 ROOF FLASHING ADJACENT TO GUTTER SECTION DETAIL
1 1/2" = 1'-0"

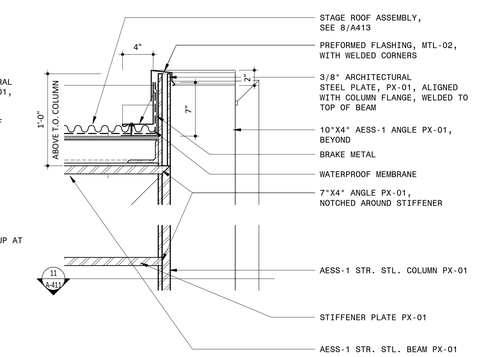


5 GUTTER SECTION DETAIL
1 1/2" = 1'-0"

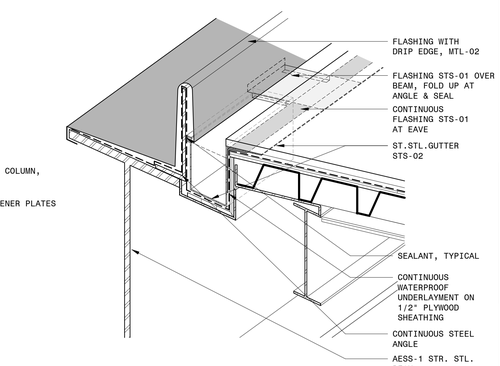
3 STAGE CORNER AXONOMETRIC DETAIL
1 1/2" = 1'-0"



2 TOP OF COLUMN AXONOMETRIC DETAIL
1 1/2" = 1'-0"



4 SECTION DETAIL AT COLUMN S2 TYP.
1 1/2" = 1'-0"



1 STAGE GUTTER AXONOMETRIC DETAIL
1 1/2" = 1'-0"

NOTES

IRN016

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EF-XX	EPOXY FLOORING
EQ-XX	EQUIPMENT
F-XX	FIXTURE
FCP-XX	FIBER CEMENT PANEL
GC-XX	GLAZED CANOPY
GL-XX	GLASS
GWB-XX	GYPSUM WALL BOARD
INS-XX	INSULATION
MF-XX	METAL FENCING
MR-XX	METAL RAILING
MTL-XX	METAL
PG-XX	PLASTIC GLAZING
PT-XX	PAINT
PX-XX	HIGH PERFORMANCE COATING
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RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

Approved Construction Plan

Name Date

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Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vesty Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761 2
www.landisplc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES **, PA**
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE



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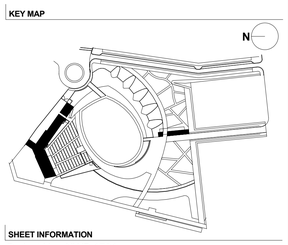
KEY MAP



SHEET INFORMATION

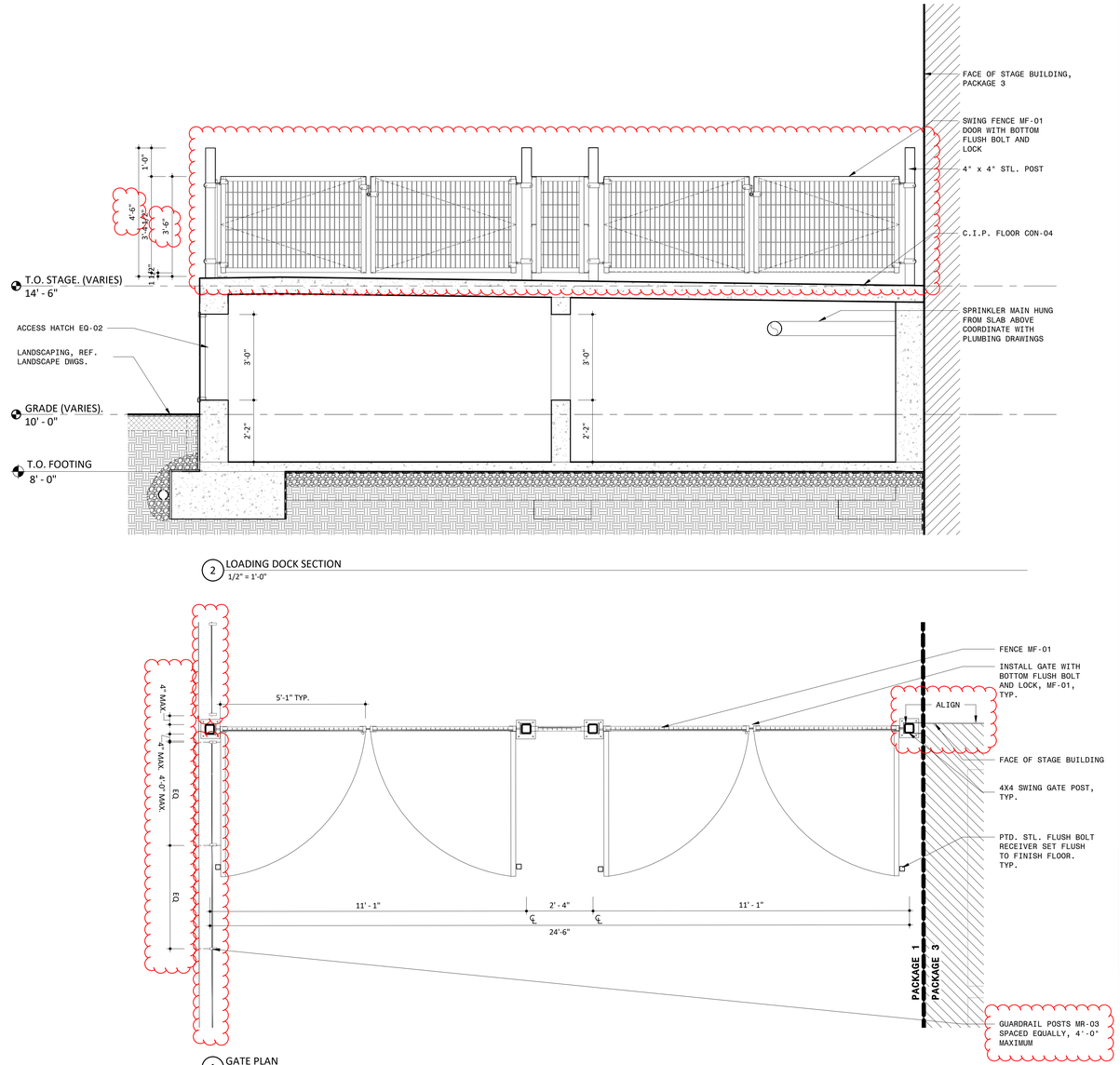
Project No.: NWP 1701
Drawn By: CD
Checked By: PC DWH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

ARCHITECTURE ROOF LEVEL SECTION DETAILS - STAGE

SHEET NO.

A-413-P1



NOTES

IRN016

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RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
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www.landisplic.com

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Electrical Engineering = E
Plumbing Engineering = P
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Lighting Design = EL
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www.tillotsondesign.com

SEAL/SIGNATURE

JENNIFER C. SAGE REGISTERED SEAL ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
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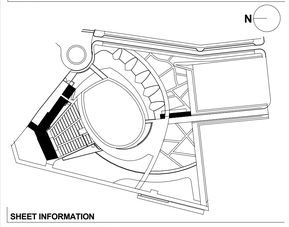
4	95% CONSTRUCTION DOCUMENTS	03/08/2019
5	TRC SITE PLAN RE-APPLICATION	03/22/2019
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	PERMIT REVIEW COMMENTS	05/03/2019
8	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MH
Checked By: DH
Date: 03/08/2019
Scale: 1/2" = 1'-0"

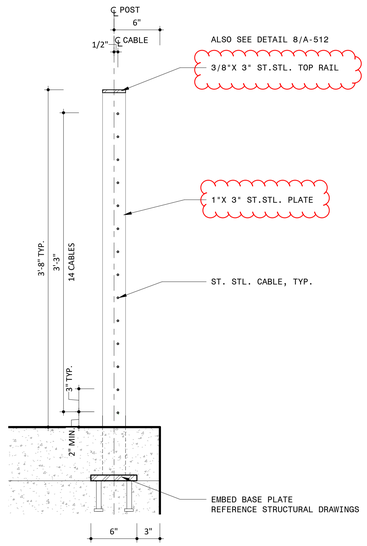
SHEET TITLE

ARCHITECTURE GATE & FENCE DETAILS - LOADING

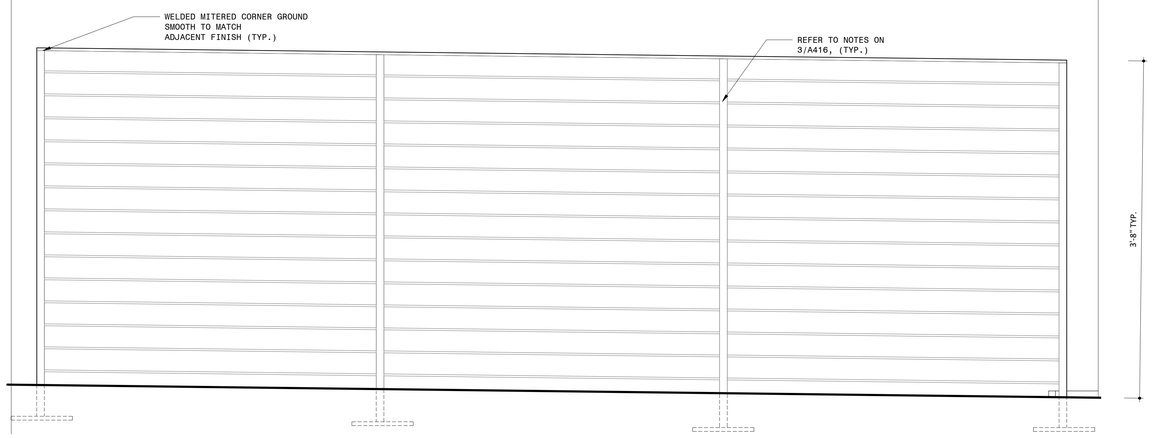
SHEET NO.

A-415-P1

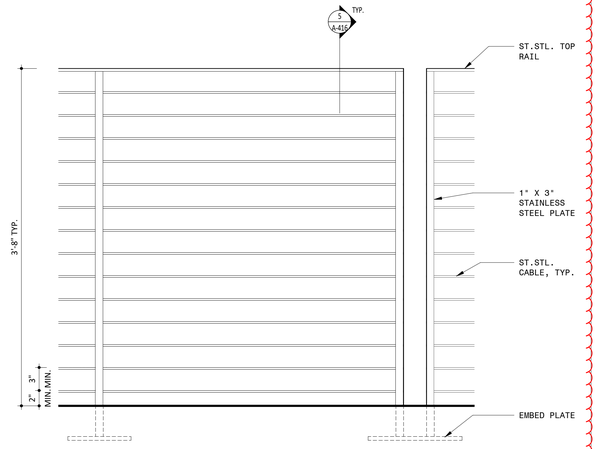
NOTE: GUARDRAIL MR-03 & MR-05 POST / TOP RAIL / EMBED PLATE ARE SCHEMATIC AND REQUIRE COORDINATION WITH STRUCTURE. CABLE FITTINGS ARE TO BE DETERMINED.



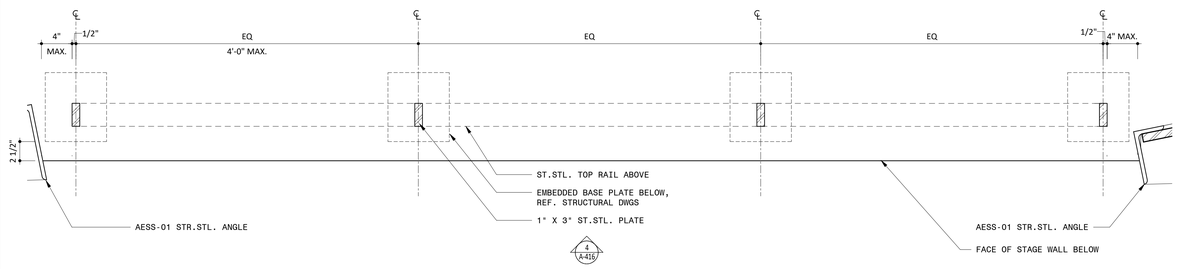
S STAGE GUARDRAIL MR-03 TYPICAL SECTION
1 1/2" = 1'-0"



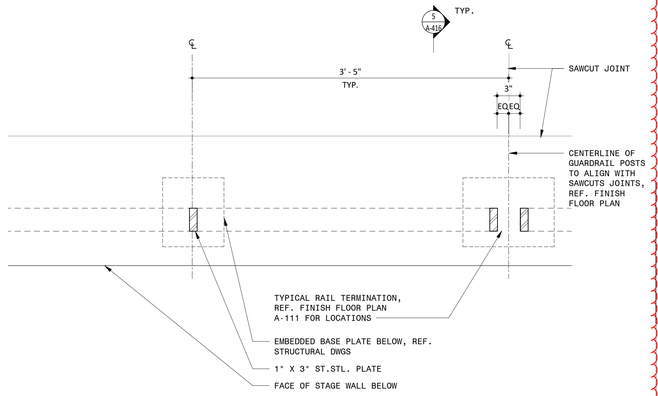
4 EAST/WEST STAGE GUARDRAIL MR-03 ELEVATION
1 1/2" = 1'-0"



3 NORTH STAGE GUARDRAIL MR-03 TYPICAL ELEVATION
1 1/2" = 1'-0"



2 EAST/WEST STAGE GUARDRAIL MR-03 PLAN DETAIL
1 1/2" = 1'-0"



1 NORTH STAGE GUARDRAIL PLAN DETAIL
1 1/2" = 1'-0"

NOTES

IRN016

GENERAL NOTES

1. DO NOT SCALE DRAWINGS FOR DIMENSIONS. ADDITIONAL INFORMATION MAY BE SHOWN ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAIL SCHEDULES AND SPECIFICATIONS.
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6. REFERENCE ELECTRICAL DRAWING SHEET E-601 FOR LIGHT FIXTURE SCHEDULE.
7. LIST OF ADD ALTERNATES:
   ALT #1 WOOD LOUVERS WD-01 AND SUPPORTS
   ALT #2 NOT USED
   ALT #3 WOOD PANELING WD-02 & WD-03
   ALT #4 NOT USED
   ALT #5 FOLLOW SPOTS
9. COLUMN LINES sD AND sE ARE SET AT CENTER FACE OF OUTSIDE FLANGE
10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

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Approved Construction Plan

Name Date

Planning _____

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SEAL/SIGNATURE



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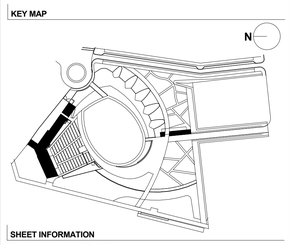
KEY MAP



SHEET INFORMATION

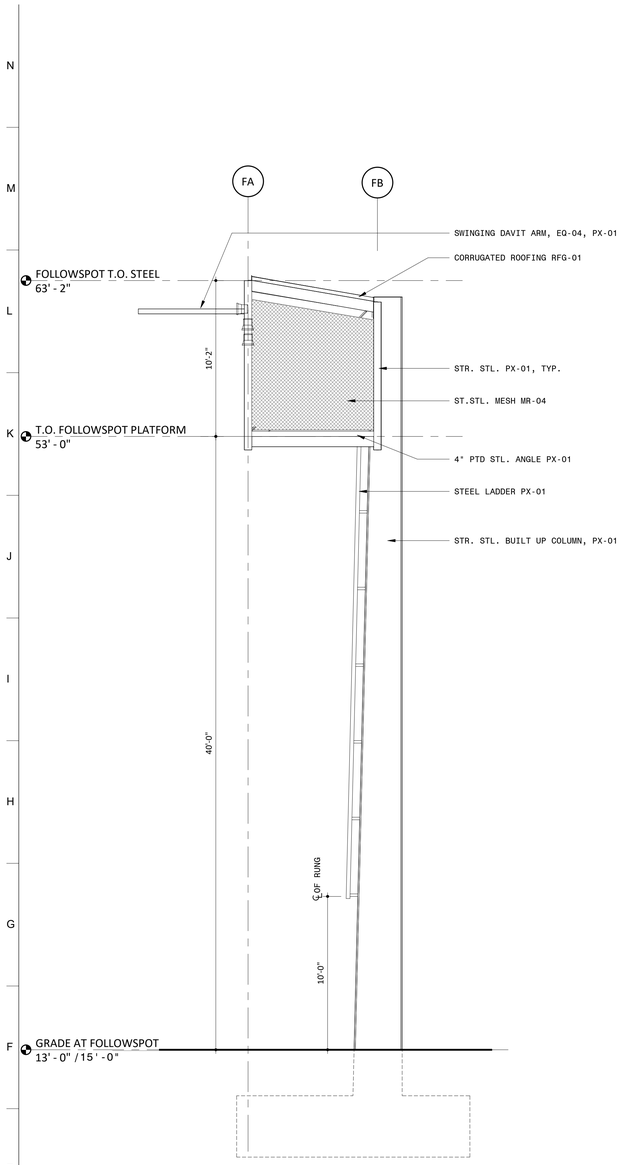
Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

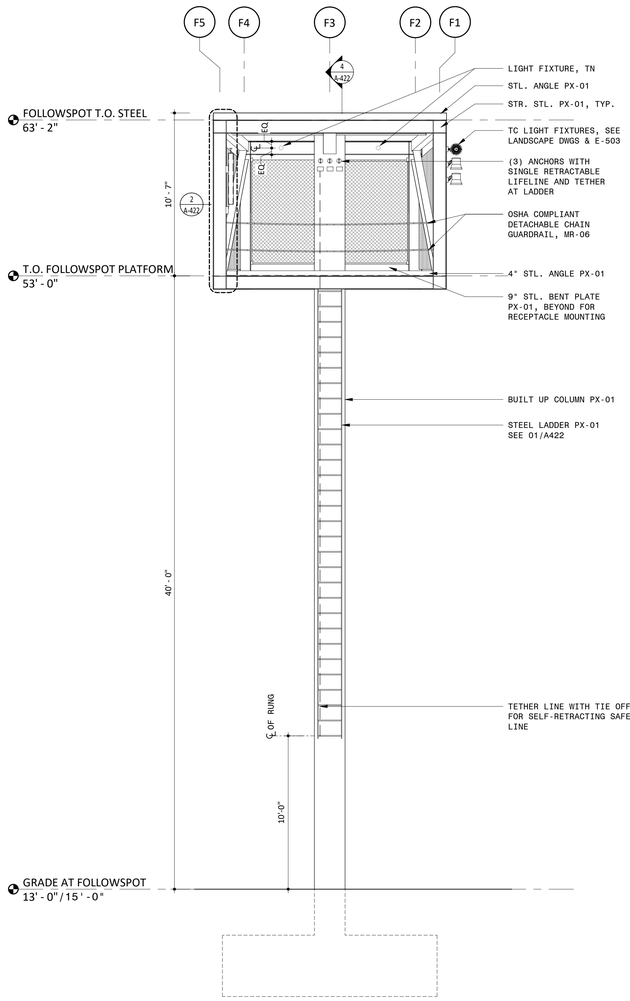
ARCHITECTURE RAILING DETAILS - STAGE

SHEET NO.

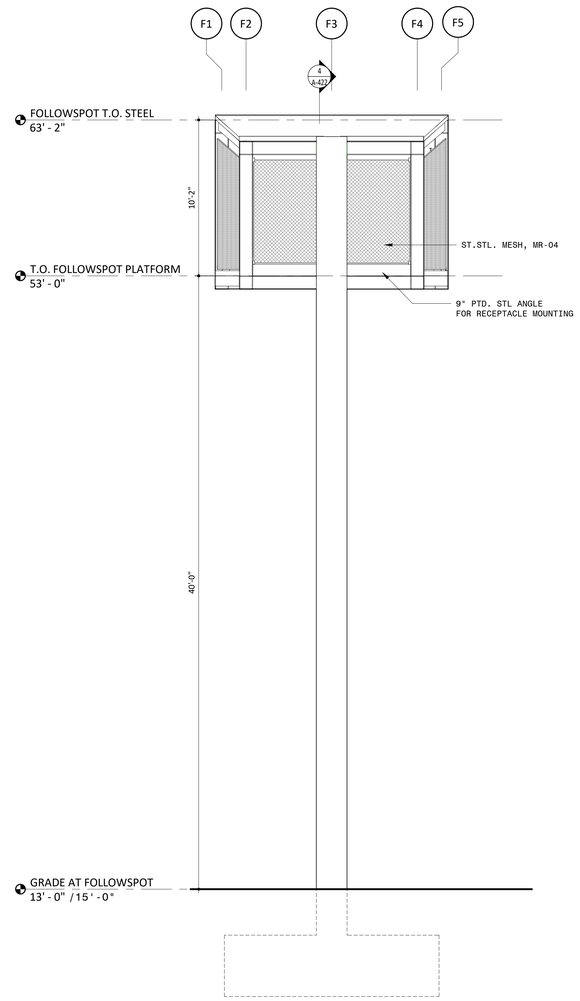
A-416-P1



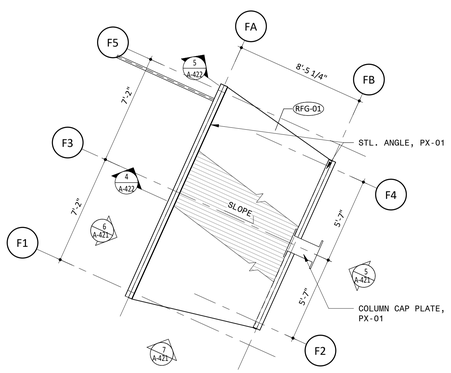
7 TYPICAL FOLLOWSPOT SIDE ELEVATION
1/4" = 1'-0"



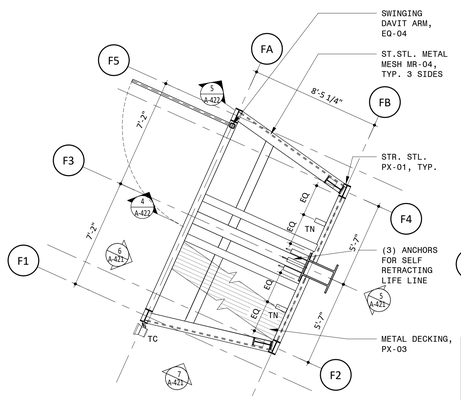
6 FOLLOWSPOT NORTH ELEVATION
1/4" = 1'-0"



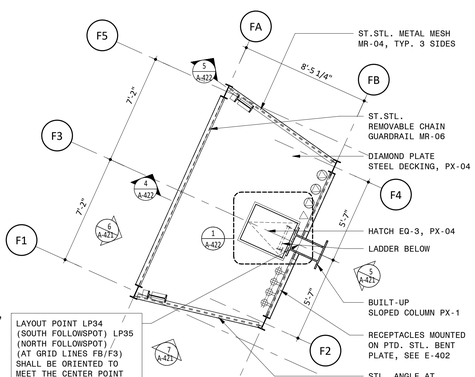
5 TYPICAL FOLLOWSPOT BACK ELEVATION
1/4" = 1'-0"



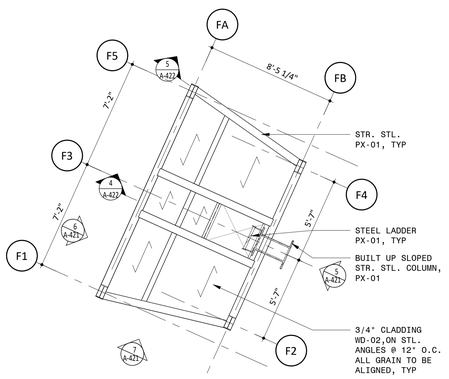
4 FOLLOWSPOT ROOF PLAN
1/4" = 1'-0"



3 FOLLOWSPOT REFLECTED CEILING PLAN
1/4" = 1'-0"



2 FOLLOWSPOT PLATFORM PLAN
1/4" = 1'-0"



1 REFLECTED CEILING PLAN BELOW FOLLOWSPOT PLATFORM
1/4" = 1'-0"

NOTES

IRN016

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LEGEND

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RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

NOTE: FOLLOWSPOT IS SHOWN AS DESIGNED IN BID DOCUMENTS. FOLLOWSPOT ALTERNATE DESIGN TO BE DETERMINED.

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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City of Wilmington Project Code 3CPRK1860

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SEAL/SIGNATURE

JENNIFER C. SAGE — REGISTERED — SEAL — 15 — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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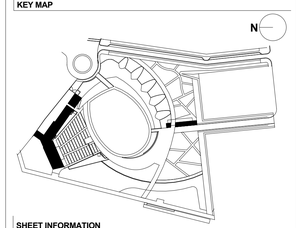
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

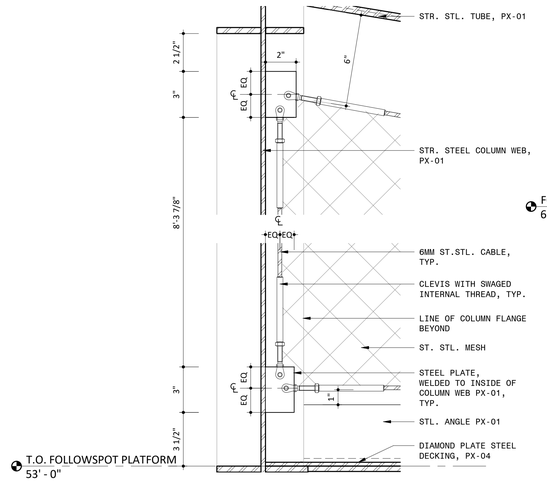
Project No.: NWP 1701
Drawn By: CD
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

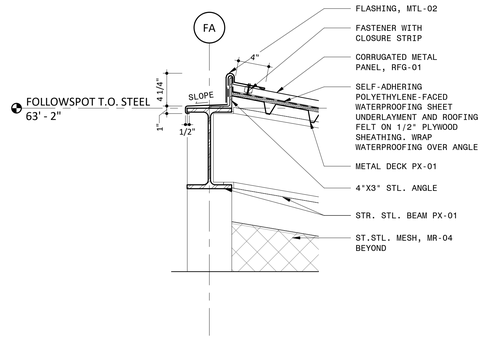
ARCHITECTURE FOLLOWSPOT DETAILS ALTERNATE #5

SHEET NO.

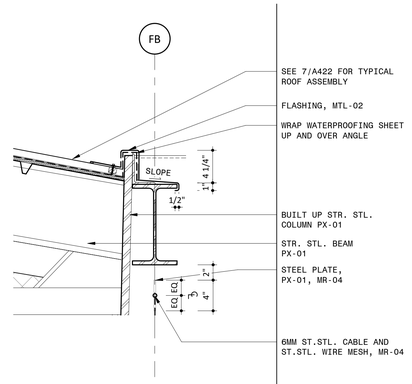
A-421-P1



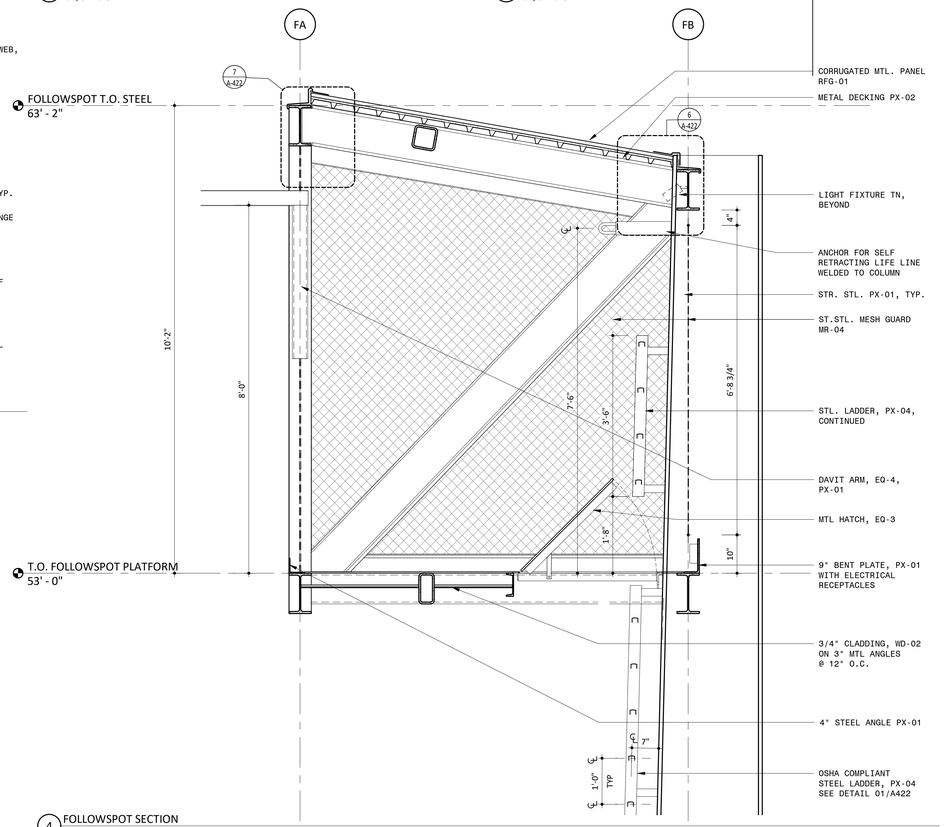
5 FOLLOWSPOT MR-04 SECTION DETAIL
3" = 1'-0"



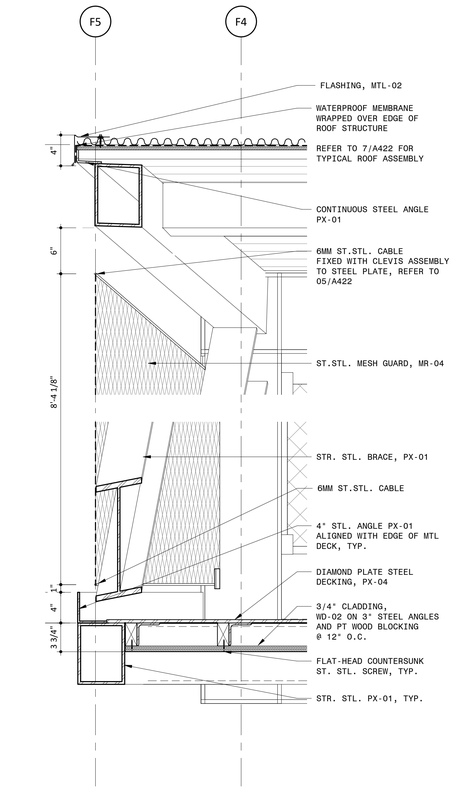
7 FOLLOWSPOT HIGH ROOF DETAIL SECTION
1 1/2" = 1'-0"



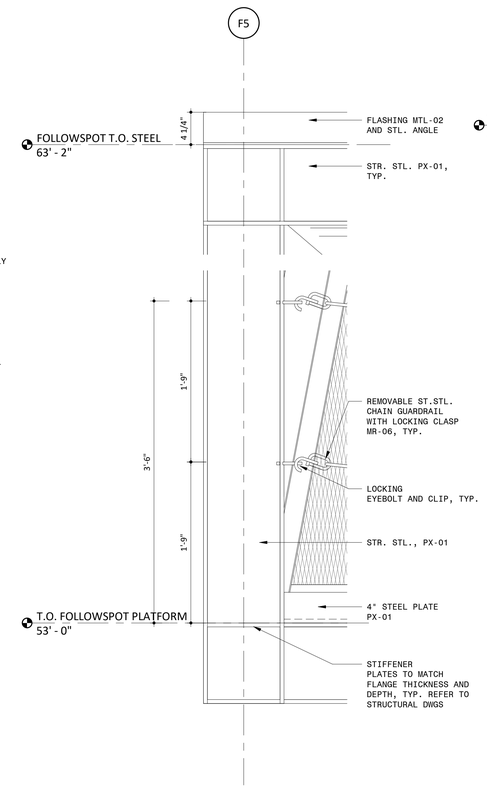
6 FOLLOWSPOT LOW ROOF DETAIL SECTION
1 1/2" = 1'-0"



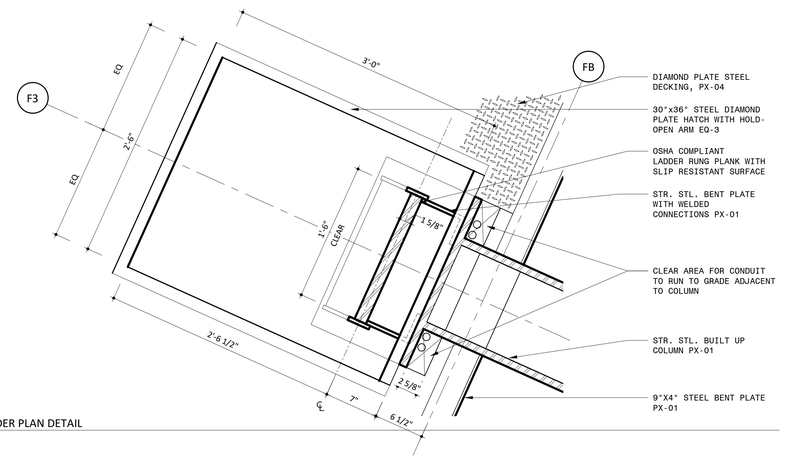
4 FOLLOWSPOT SECTION
3/4" = 1'-0"



3 FOLLOWSPOT SECTION DETAIL
1 1/2" = 1'-0"



2 FOLLOWSPOT CHAIN DETAIL
1 1/2" = 1'-0"



1 FOLLOWSPOT LADDER PLAN DETAIL
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NOTES

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7. LIST OF ADD ALTERNATES:
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   ALT #2 NOT USED
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   ALT #4 NOT USED
   ~~ALT #5 FOLLOW SPOTS~~
9. COLUMN LINES sD AND sE ARE SET AT CENTER FACE OF OUTSIDE FLANGE
10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

REFERENCE A-831 FOR SPECIFICATION SECTION

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A-XX	BATHROOM ACCESSORIES
CMU-XX	CONCRETE MASONRY UNIT
CON-XX	CONCRETE
CT-XX	CERAMIC TILE
EF-XX	EPOXY FLOORING
EQ-XX	EQUIPMENT
F-XX	FIXTURE
FCP-XX	FIBER CEMENT PANEL
GC-XX	GLAZED CANOPY
GL-XX	GLASS
GWB-XX	GYPSUM WALL BOARD
INS-XX	INSULATION
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MTL-XX	METAL
PG-XX	PLASTIC GLAZING
PT-XX	PAINT
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RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

NOTE: FOLLOWSPOT IS SHOWN AS DESIGNED IN BID DOCUMENTS. FOLLOWSPOT ALTERNATE DESIGN TO BE DETERMINED.

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
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SEAL/SIGNATURE



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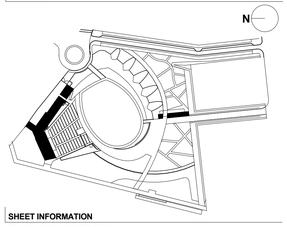
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

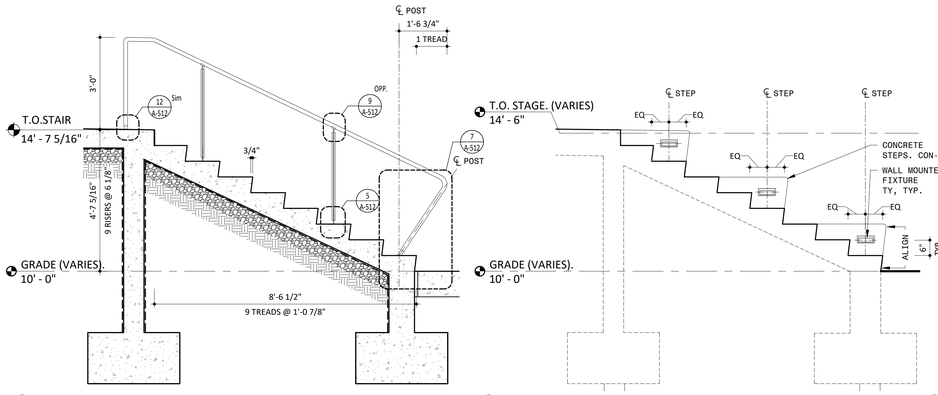
Project No.: NWP 1701
Drawn By: CD
Checked By: DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

ARCHITECTURE FOLLOWSPOT DETAILS ALTERNATE #5

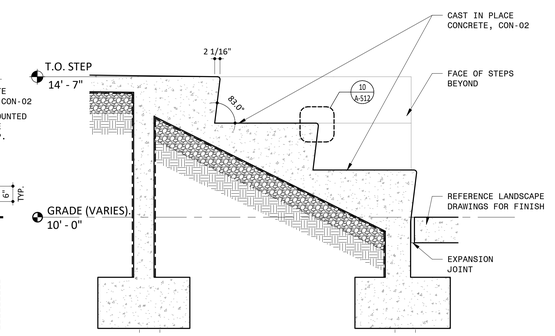
SHEET NO.

A-422-P1

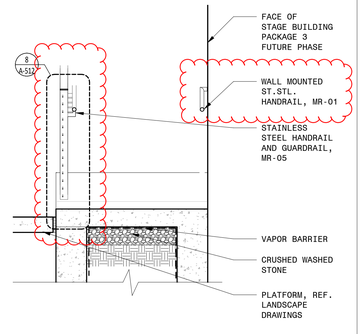


9 STAGE STAIR SECTION @ CENTER HANDRAIL
1/2" = 1'-0"

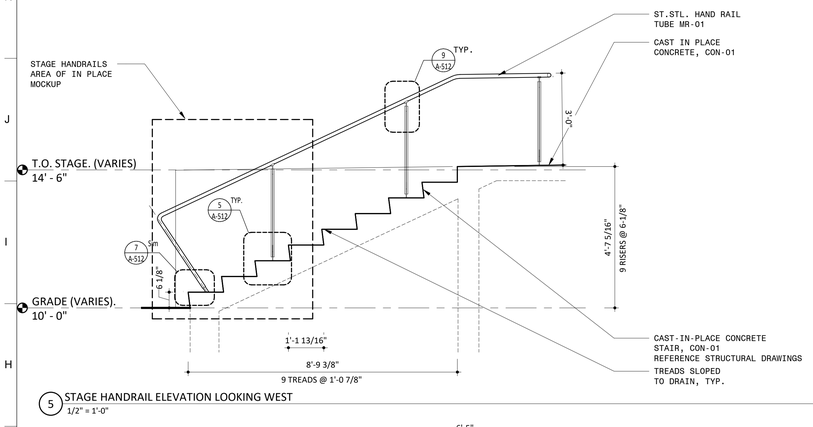
8 STAGE MONUMENTAL STAIR ELEVATION
1/2" = 1'-0"



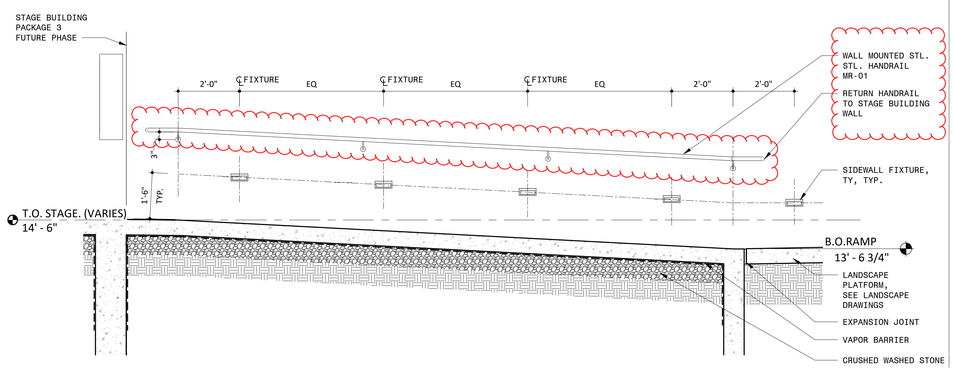
7 STAGE MONUMENTAL STAIR SECTION DETAIL
1/2" = 1'-0"



6 STAGE RAMP SECTION DETAIL
1/2" = 1'-0"

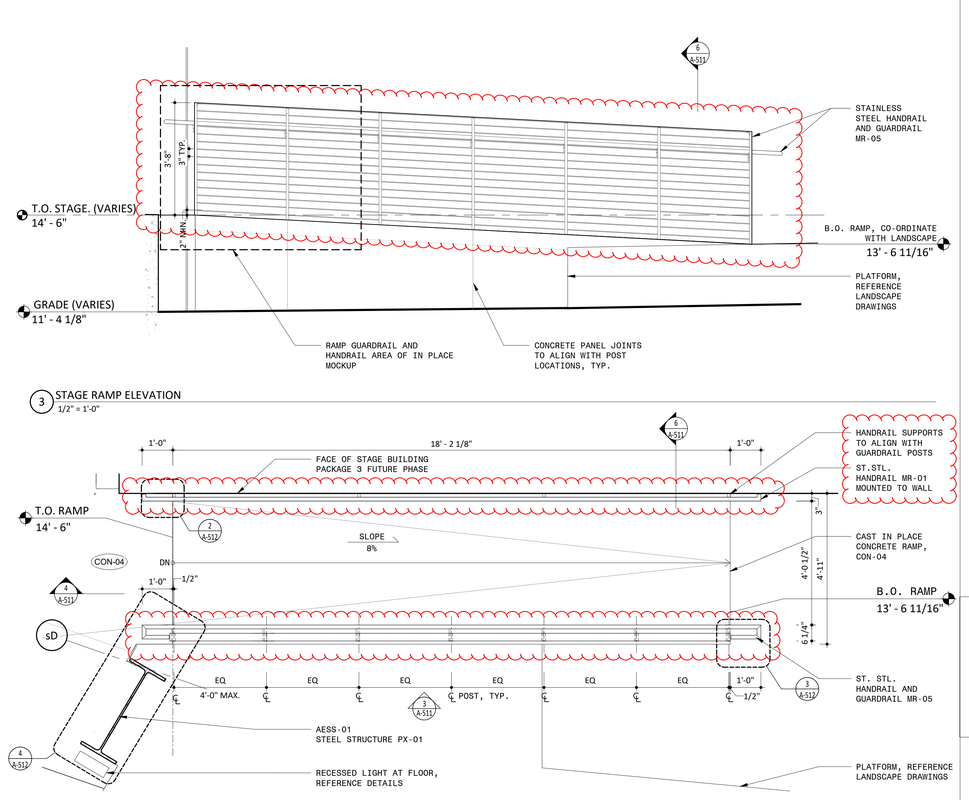


5 STAGE HANDRAIL ELEVATION LOOKING WEST
1/2" = 1'-0"



4 STAGE RAMP SECTION
1/2" = 1'-0"

2 STAGE STAIR PLAN DETAIL
1/2" = 1'-0"



3 STAGE RAMP ELEVATION
1/2" = 1'-0"

1 STAGE RAMP PLAN DETAIL
1/2" = 1'-0"

NOTES

IRN016

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7	PERMIT REVIEW COMMENTS	05/03/2019
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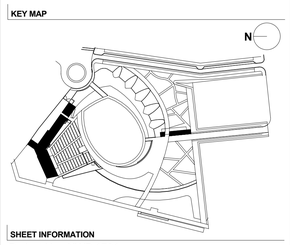
KEY MAP



SHEET INFORMATION

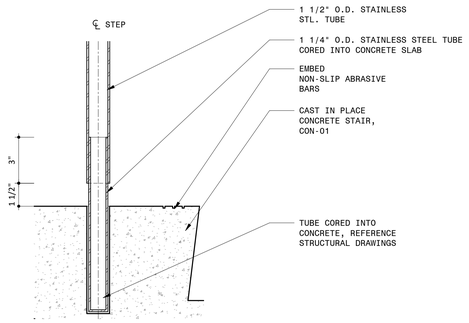
Project No.: NWP 1701
Drawn By: MH
Checked By: DH
Date: 03/08/2019
Scale: 1/2" = 1'-0"

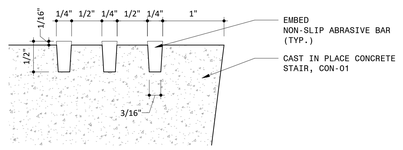
SHEET TITLE

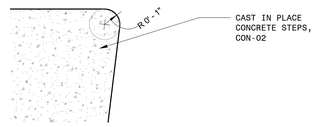
ARCHITECTURE STAIR AND RAMP DETAILS - STAGE

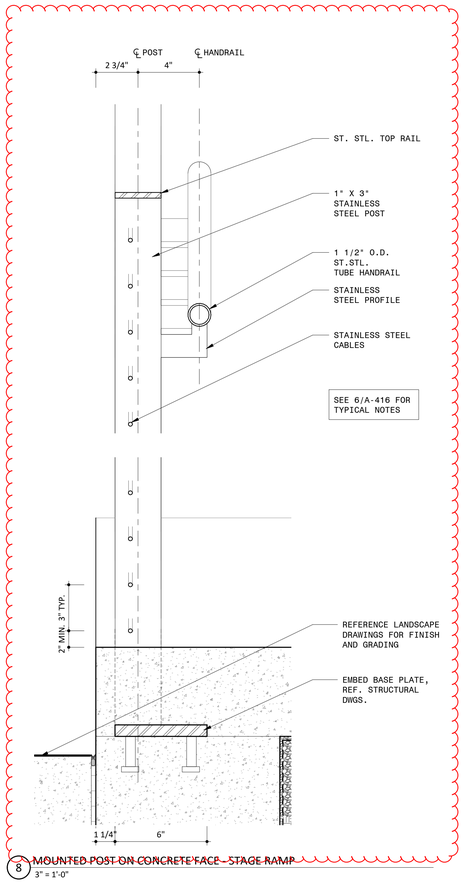
SHEET NO.

A-511-P1

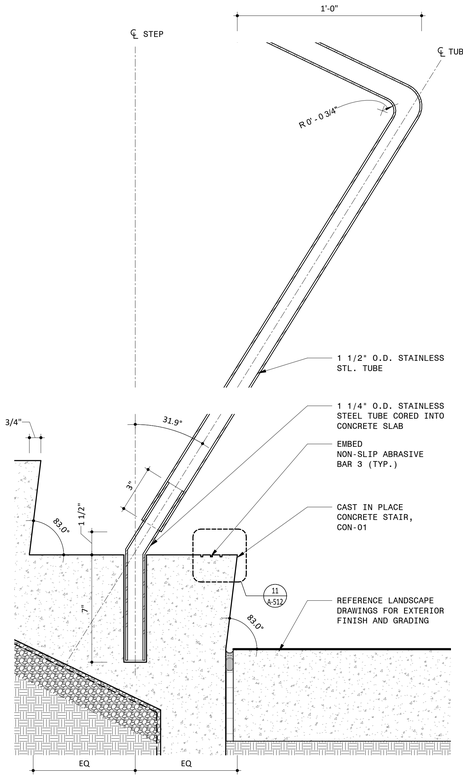






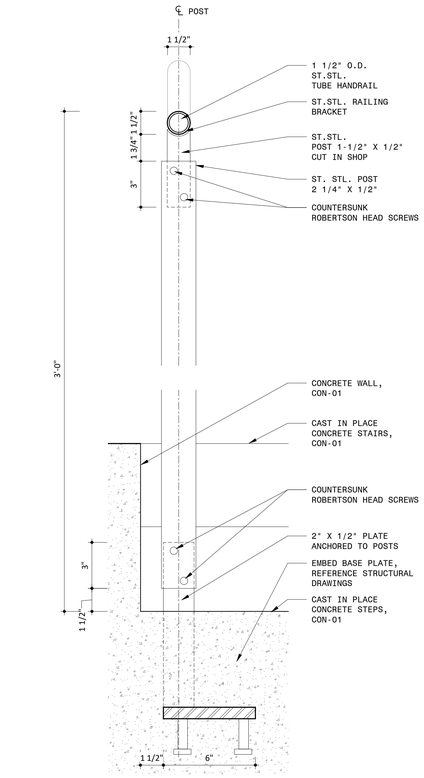


8 MOUNTED POST ON CONCRETE FACE - STAGE RAMP
3" = 1'-0"



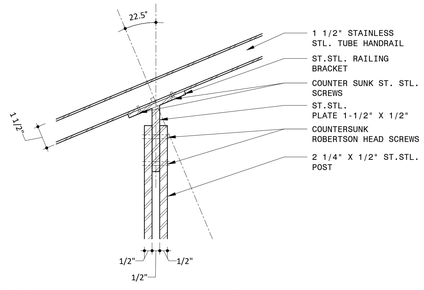
12 STAGE STAIR TUBE POST TYPICAL SECTION DETAIL
3" = 1'-0"

7 STAGE STAIR TUBE POST SECTION DETAIL AT BOTTOM TREAD
3" = 1'-0"

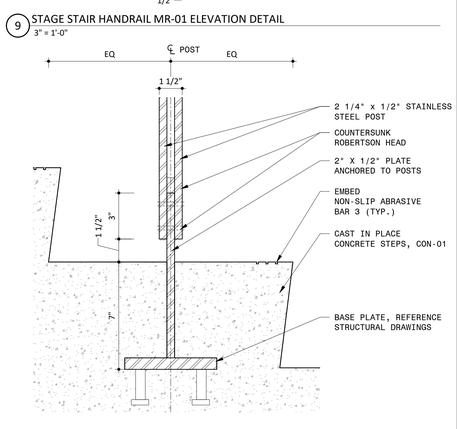


11 NON-SLIP ABRASIVE BAR SECTION DETAIL AT STAGE STAIRS
12" = 1'-0"

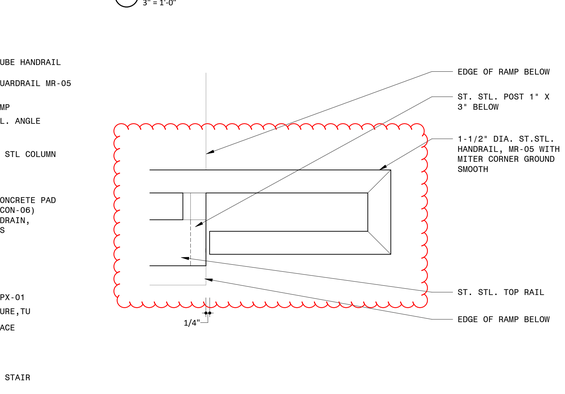
6 STAGE STAIR HANDRAIL SECTION DETAIL
3" = 1'-0"



10 MONUMENTAL STAIR NOSING DETAIL
3" = 1'-0"

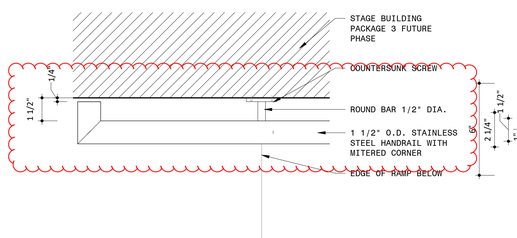


9 STAGE STAIR HANDRAIL MR-01 ELEVATION DETAIL
3" = 1'-0"

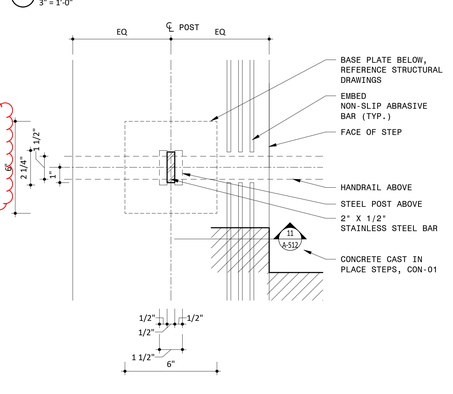


4 STAGE EAST COLUMN PLAN DETAIL S4
3/4" = 1'-0"

3 STAGE RAMP GUARDRAIL MR-05 PLAN DETAIL
3" = 1'-0"



2 STAGE RAMP MOUNTED HANDRAIL MR-01 PLAN DETAIL
3" = 1'-0"



1 STAGE STAIR POST MR-01 PLAN DETAIL
3" = 1'-0"

NOTES

IRN016

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SEAL/SIGNATURE

JENNIFER C. CASE REGISTERED LANDSCAPE ARCHITECT SEAL NORTH CAROLINA

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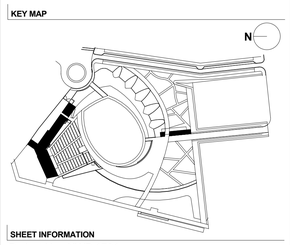


SHEET INFORMATION

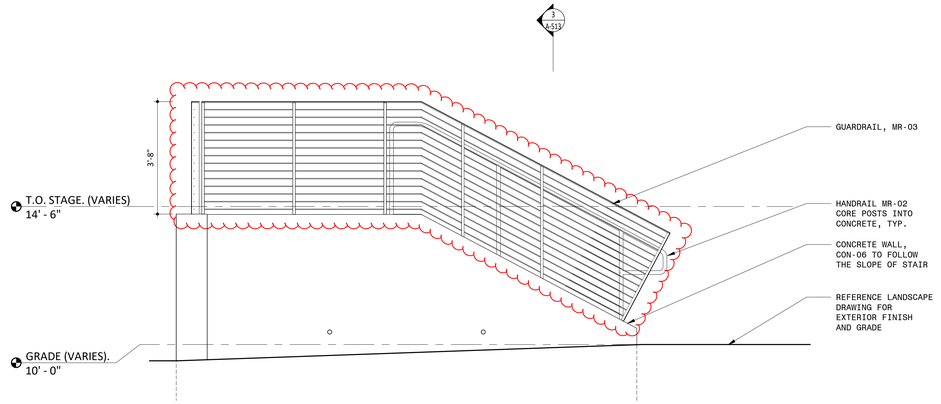
Project No.: NWP 1701
Drawn By: MH
Checked By: DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

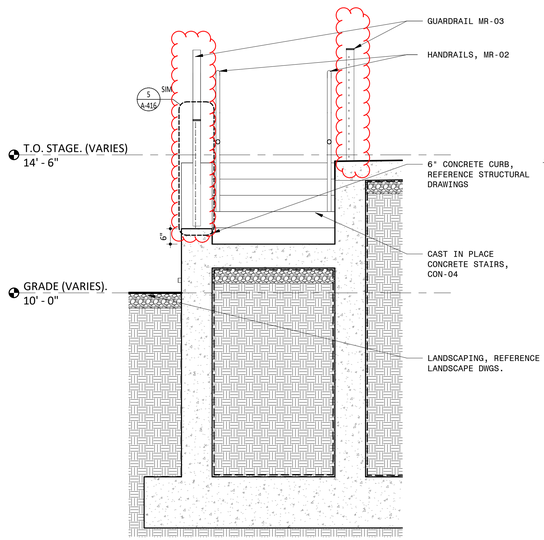
ARCHITECTURE STAIR AND RAMP DETAILS - STAGE

SHEET NO.

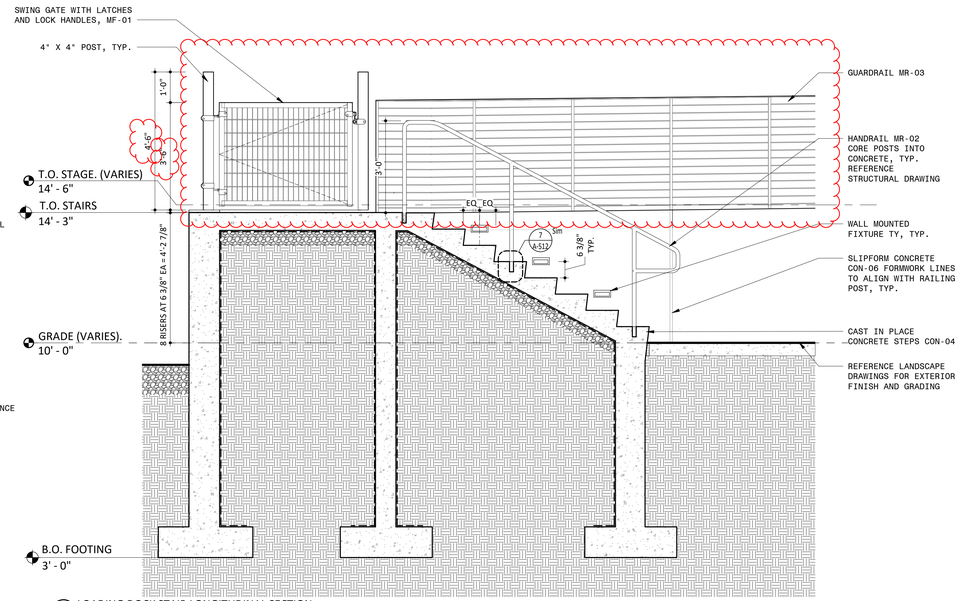
A-512-P1



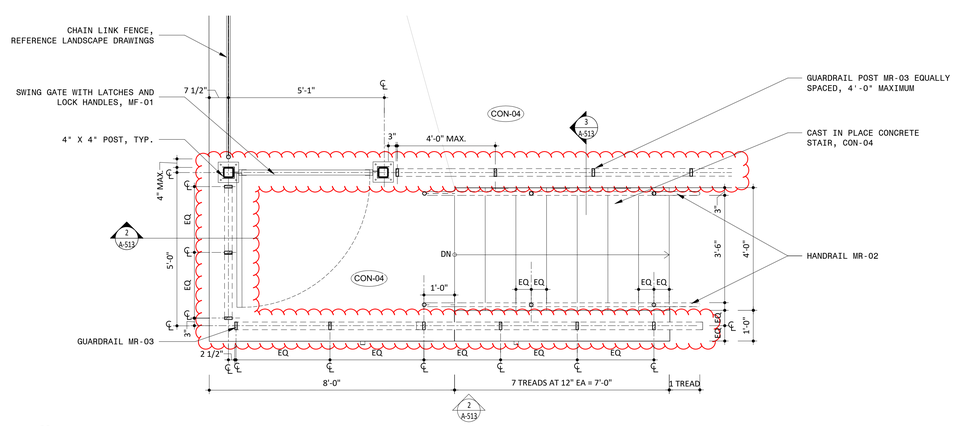
4 LOADING DOCK STAIR ELEVATION
1/2" = 1'-0"



3 LOADING DOCK STAIR CROSS SECTION
1/2" = 1'-0"



2 LOADING DOCK STAIR LONGITUDINAL SECTION
1/2" = 1'-0"



1 LOADING DOCK STAIR PLAN DETAIL
1/2" = 1'-0"

NOTES

IRN016

GENERAL NOTES

1. DO NOT SCALE DRAWINGS FOR DIMENSIONS. ADDITIONAL INFORMATION MAY BE SHOWN ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAIL SCHEDULES AND SPECIFICATIONS.
2. REFER TO SHEET G-001 FOR TYPICAL NOTES, LEGENDS, SYMBOLS & DIMENSIONING STANDARDS.
3. REFER TO SHEET A-831 FOR MATERIAL ABBREVIATION LEGEND.
4. FOR ADDITIONAL INFORMATION REFER TO STRUCTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS.
5. REFERENCE A-821 FOR WINDOW & DOOR SCHEDULE WITH GLASS TYPES.
6. REFERENCE ELECTRICAL DRAWING SHEET E-601 FOR LIGHT FIXTURE SCHEDULE.
7. LIST OF ADD ALTERNATES:
   ALT #1 WOOD LOUVERS WD-01 AND SUPPORTS
   ALT #2 NOT USED
   ALT #3 WOOD PANELING WD-02 & WD-03
   ALT #4 NOT USED
   ALT #5 FOLLOW SPOTS
9. COLUMN LINES sD AND sE ARE SET AT CENTER FACE OF OUTSIDE FLANGE
10. REFERENCE LANDSCAPE & CIVIL DRAWINGS FOR GRADING AND MATERIALS.
11. CENTERLINE OF FIRE HOSE CABINET AND FIRE EXTINGUISHER CABINET MOUNTED 48" A.F.F.

LEGEND

REFERENCE A-831 FOR SPECIFICATION SECTION

ACT-XX	ACOUSTIC CEILING TILE
A-XX	BATHROOM ACCESSORIES
CMU-XX	CONCRETE MASONRY UNIT
CON-XX	CONCRETE
CT-XX	CERAMIC TILE
EF-XX	EPOXY FLOORING
EQ-XX	EQUIPMENT
F-XX	FIXTURE
FCP-XX	FIBER CEMENT PANEL
GC-XX	GLAZED CANOPY
GL-XX	GLASS
GWB-XX	GYPSUM WALL BOARD
INS-XX	INSULATION
MF-XX	METAL FENCING
MR-XX	METAL RAILING
MTL-XX	METAL
PG-XX	PLASTIC GLAZING
PT-XX	PAINT
PX-XX	HIGH PERFORMANCE COATING
RB-XX	RUBBER BASE
RFG-XX	ROOFING
SF-XX	STOREFRONT
ST-XX	STONE
STS-XX	STAINLESS STEEL
WD-XX	WOOD
WLP-XX	WALL PROTECTION

Approved Construction Plan

Name Date

Planning _____

Traffic _____

Fire _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
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Acoustic/Theater/AV = AT
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Civil Engineering = C
Structural Engineering= S
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NC License #C-1051

Environmental Engineering = EE
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Landscape Soil = LS
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Mechanical Engineering = M
Electrical Engineering = E
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Lighting Design = EL
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SEAL/SIGNATURE

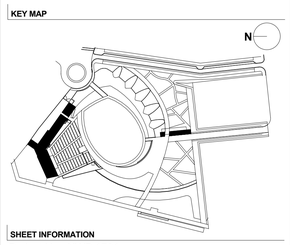
JENNIFER C. CASE REGISTERED LANDSCAPE ARCHITECT SEAL 0 NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
2	DESIGN DEVELOPMENT	07/13/2018
3	TRC SITE PLAN APPLICATION	08/01/2018
4	95% CONSTRUCTION DOCUMENTS	03/08/2019
5	TRC SITE PLAN RE-APPLICATION	03/22/2019
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

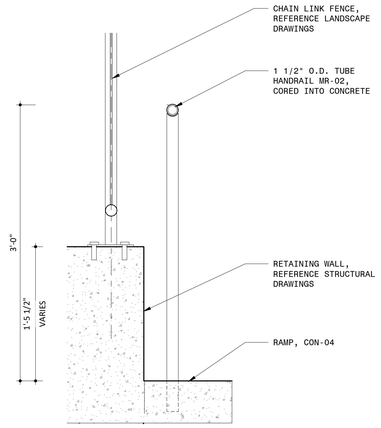
Project No.: NWP 1701
Drawn By: MH
Checked By: DH
Date: 03/08/2019
Scale: 1/2" = 1'-0"

SHEET TITLE

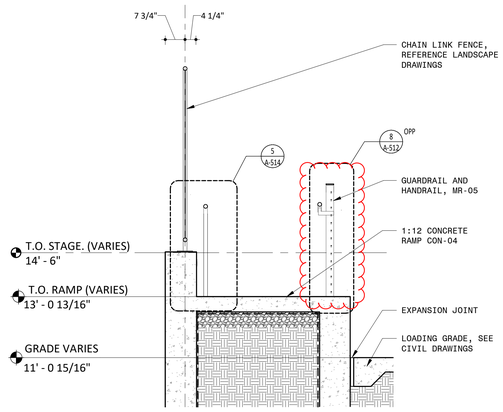
ARCHITECTURE STAIR DETAILS - LOADING

SHEET NO.

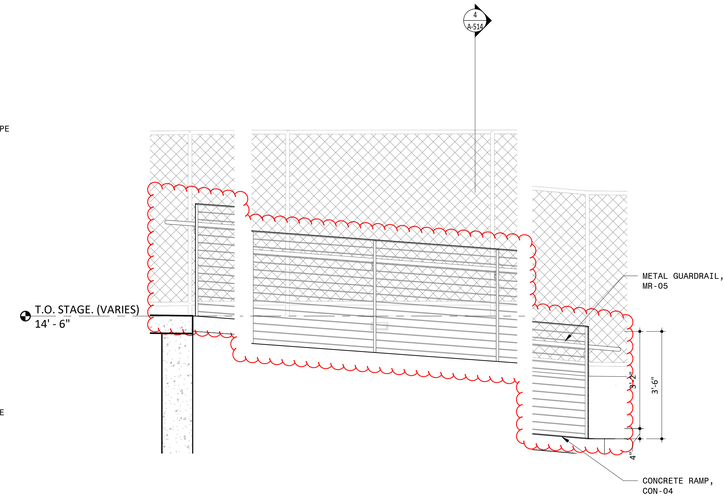
A-513-P1



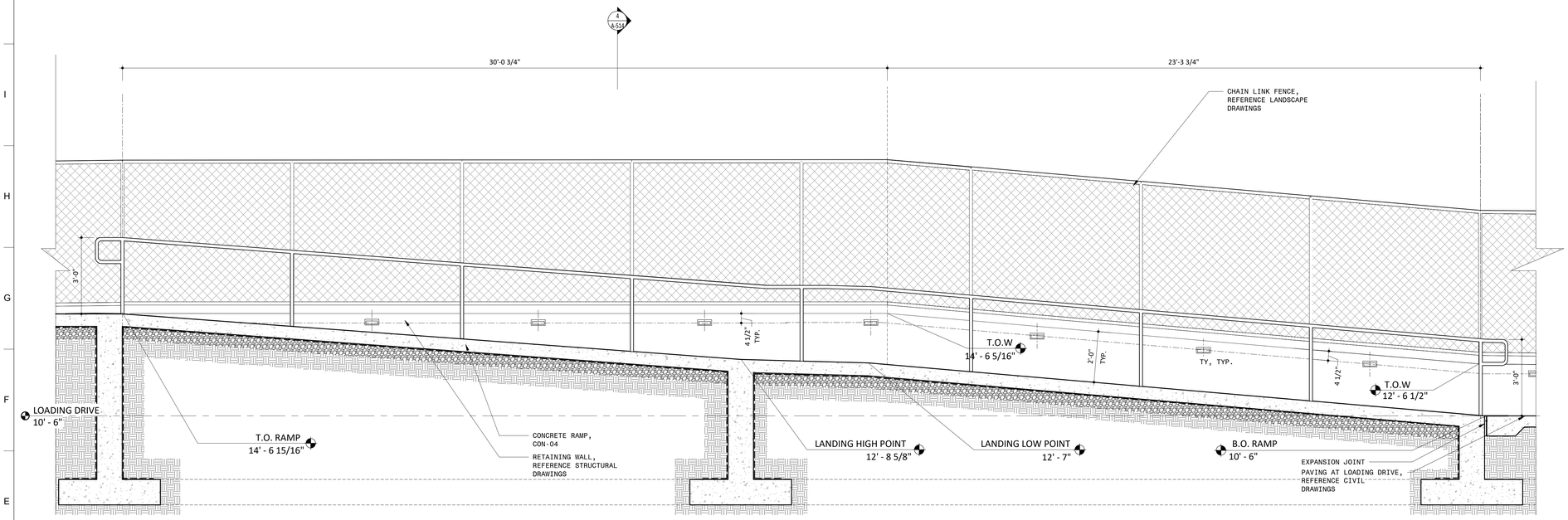
5 RAMP FENCE DETAIL - LOADING DOCK
1 1/2" = 1'-0"



4 LOADING DOCK RAMP CROSS SECTION
1/2" = 1'-0"



3 TYPICAL RAIL ELEVATION MR-02
1/2" = 1'-0"



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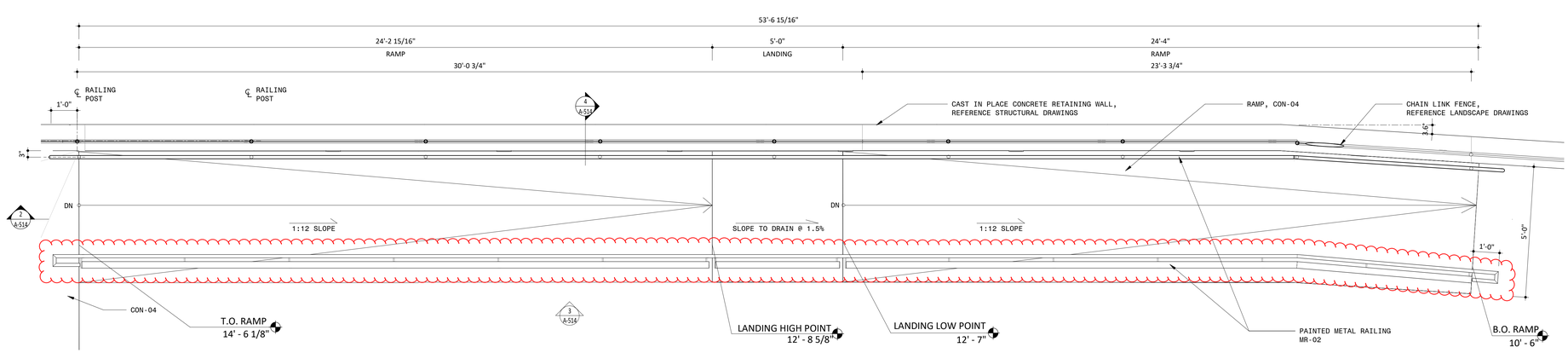

1 LOADING DOCK RAMP PLAN DETAIL
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NOTES

IRN016

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WD-XX	WOOD
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Approved Construction Plan

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SEAL/SIGNATURE

JENNIFER C. SAGE REGISTERED SEAL ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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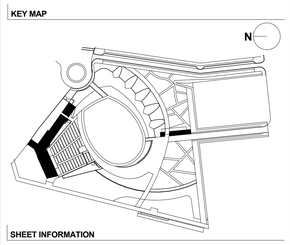
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MH
Checked By: PC DH
Date: 03/08/2019
Scale: As indicated

SHEET TITLE

ARCHITECTURE RAMP DETAILS - LOADING

SHEET NO.

A-514-P1

MATERIAL SCHEDULE

DESIGNATION	MATERIAL	BASIS OF DESIGN	CHARACTERISTICS	FINISH & COLOR	REMARKS/LOCATION	SPECIFICATION SECTION
ACT-XX	**ACOUSTIC CEILING TILE**					
CMU-XX	**CONCRETE MASONRY UNIT**					
CON-XX	**CONCRETE**					
CON-01	CONCRETE		INTEGRAL COLOR, AND BROOM FINISH		STAGE FINISH 1	033300 CAST IN PLACE CONCRETE
CON-02	CONCRETE		INTEGRAL COLOR, SANDBLASTED FINISH AND EXPOSED AGGREGATE		STAGE FINISH 2	033300 CAST IN PLACE CONCRETE
CON-04	CONCRETE		BROOM FINISH		LOADING DOCK	033300 CAST IN PLACE CONCRETE
CON-05	BOARD FORMED CONCRETE		WOOD BOARD FORMED FORMWORK		STAGE VERTICAL SURFACE	033300 CAST IN PLACE CONCRETE
CON-06	SLIPFORM CONCRETE		SLIPFORM FORMWORK		ALL OTHER VERTICAL SURFACES	033300 CAST IN PLACE CONCRETE
CT-XX	**CERAMIC TILE**					
EF-XX	**EPOXY FLOORING**					
FCP-XX	**FIBER CEMENT PANEL**					
GC-XX	**GLAZED CANOPY**					
GC-01	GLAZED CANOPY	PILKINGTON PLANAR	MONOLITHIC CLEAR LAMINATED GLAZING WITH SGP INTERLAYER	STANDARD 40% MESH CERAMIC FRIT PATTERN IN CUSTOM GRAY	STAGE CANOPY	084426 STRUCTURAL GLASS CANOPIES
GWB-XX	**GYPSUM WALL BOARD**					
INS-XX	**INSULATION**					
MF-XX	**METAL FENCE**					
MF-01	METAL FENCE	OMEGA FENCE SYSTEMS OMEGA 10 ORSOGRIL STYLE	HORIZONTAL WIRE, 6GA, VERTICAL BAR 1X .078	POWDER COAT/CUSTOM COLOR	LOADING DOCK	323119 ORNAMENTAL METAL FENCES AND GATES
MR-XX	**METAL RAILING**					
MR-01	METAL RAILING		1 1/2" OD STAINLESS STEEL TUBE	#4 FINISH	STAGE STAIRS AND RAMPS	057300 DECORATIVE METAL RAILINGS
MR-02	METAL RAILING		1 1/2" OD PAINTED PIPE RAIL	PAINTED TO MATCH STS-03	LOADING DOCK STAIRS AND RAMPS	055200 HANDRAILS AND RAILINGS
MR-03	METAL RAILING	JAKOB INOX CABLE RAILING	JAKOB INOX WIRE CABLE RAILING SYSTEM WITH HORIZONTAL CABLES AND FITTINGS	#4 FINISH	STAGE & LOADING DOCK GUARDRAIL	057300 DECORATIVE METAL RAILINGS
MR-04	METAL RAILING	JAKOB INOX WIRE MESH	STAINLESS STEEL CABLE WITH CLEVIS JAKOB INOX WIRE MESH 4"HCS 1.5 WORKING WITH CLEVIS ASSEMBLY	#4 FINISH	FOLLOW SPOT ALTERNATE #5	057300 DECORATIVE METAL RAILINGS
MR-05	METAL RAILING	JAKOB INOX CABLE RAILING	JAKOB INOX WIRE CABLE RAILING SYSTEM WITH HORIZONTAL CABLES AND FITTINGS	#4 FINISH	STAGE & LOADING DOCK RAMPS	057300 DECORATIVE METAL RAILINGS
MR-06	METAL RAILING	JAKOB INOX STAINLESS ROUND STEEL CHAIN 1060060 SOL WITH THREADED CHAIN CONNECTOR (30895-0400) AND TRIGGER SNAP (30815-0055)	STAINLESS STEEL ROUND CHAIN GUARDRAIL 3MM DIA WITH DETACHABLE END		FOLLOW SPOT ALTERNATE #5	057300 DECORATIVE METAL RAILINGS
MTL-XX	**SHEET METAL**					
MTL-01	METAL		GALVALUME GUTTER			076200 SHEET METAL FLASHING AND TRIM
MTL-02	METAL FLASHING		ALUMINUM FLASHING WITH TWO COAT FLUOROPOLYMER FINISH	TO MATCH PX-01	STAGE, LOADING DOCK, FOLLOWSPOT	076200 SHEET METAL FLASHING AND TRIM
PT-XX	**PAINT**					
PX-XX	**HIGH PERFORMANCE COATING**					
PX-01	HIGH PERFORMANCE COATING	TNEMEC	3 PART URETHANE EPOXY FINISH	GLOSS/CUSTOM COLOR	STAGE STEEL STRUCTURE AND FOLLOWSPOT STEEL STRUCTURE	099600 HIGH PERFORMANCE COATINGS
PX-02	HIGH PERFORMANCE COATING	TNEMEC	3 PART URETHANE EPOXY FINISH	GLOSS/CUSTOM COLOR	STAGE RIGGING STRUCTURE	099600 HIGH PERFORMANCE COATINGS
PX-03	HIGH PERFORMANCE COATING	TNEMEC	3 PART URETHANE EPOXY FINISH	GLOSS/CUSTOM COLOR	LOADING DOCK	099600 HIGH PERFORMANCE COATINGS
PX-04	HIGH PERFORMANCE COATING	TNEMEC	3 PART URETHANE EPOXY FINISH WITH NON-SLIP AGGREGATE	CUSTOM COLOR	FOLLOWSPOT PLATFORM AND LADDER	099600 HIGH PERFORMANCE COATINGS
RB-XX	**RUBBER BASE**					
RFG-XX	**ROOFING**					
RFG-01	ROOFING	METAL SALES/7/S" CORRUGATED ROOFING	GALVALUME 24 GAUGE	NATURAL		074110 METAL ROOF PANELS
SF-XX	**STOREFRONT**					
ST-XX	**STONE**					
STS-XX	**STAINLESS STEEL**					
STS-01	STAINLESS STEEL		FACTORY FORMED FLASHING, HEMMED WITH DRIP EDGE		BASE FLASHING	076200 SHEET METAL FLASHING AND TRIM
STS-02	STAINLESS STEEL		PREFORMED WELDED GUTTERS	MILL	TWO FLANGE RNGS AT EACH HORIZONTAL SUN SHADE	076200 SHEET METAL FLASHING AND TRIM
WD-XX	**WOOD**					
WD-01	FIRE RETARDANT TREATED WESTERN RED CEDAR	MILLED WESTERN RED CEDAR CLEAR HEART GRADE	2X12 HORIZONTAL LOUVER MILLED PROFILE	WOODGUARD CLEAR OIL-BASED EXTERIOR FINISH	STAGE LOUVERS	062013 EXTERIOR FINISH CARPENTRY
WD-02	PLYWOOD	DOUGLAS FIR MARINE GRADE PLYWOOD	3/4" DECKING & VERTICAL SIDING	SANSIN 3 COAT, KP-12 UVW WITH TWO COATS PC SDF TOPCOAT	STAGE SOFFIT & INTERIOR VERTICAL PANELING,...	062013 EXTERIOR FINISH CARPENTRY
WD-03	FIRE RETARDANT TREATED WESTERN RED CEDAR	WESTERN RED CEDAR CLEAR HEART GRADE	NOMINAL 1X10 BEVEL SIDING	WOODGUARD CLEAR OIL-BASED EXTERIOR FINISH	STAGE EXTERIOR VERTICAL PANELING	062013 EXTERIOR FINISH CARPENTRY
WLP-XX	**WALL PROTECTION**					

EQUIPMENT SCHEDULE

DESIGNATION	ITEM	BASIS OF DESIGN	CHARACTERISTICS	FINISH & COLOR	REMARKS/LOCATION	SPECIFICATION SECTION
EQ-01	DOCK BUMPERS	RITE HITE / DOCK SAVER				111300 LOADING DOCK EQUIPMENT
EQ-02	VERTICAL ACCESS DOOR	BABCOCK DAVIS	3'-0" X 3'-0" CLEAR OPENING; 3'-0 1/4" X 3'-0 1/4" ROUGH OPENING	STAINLESS STEEL	NORTH WALL OF LOADING	055000 METAL FABRICATIONS
EQ-03	FLOOR DOOR	BABCOCK DAVIS	3'-0"X 2'-6" SINGLE DOOR, 3/16" DIAMOND PLATE STEEL, PRIMED	DIAMOND PLATE STEEL WITH PX-04	FOLLOWSPOT FLOOR	055000 METAL FABRICATIONS
EQ-04	DAVIT ARM	VESTIL	WALL MOUNTED JIB CRANE 300 LB CAPACITY	PRIMED WITH PX-01	FOLLOWSPOT TOWER	

NOTES

IRN016

LEGEND

Approved Construction Plan

Name Date

Planning _____

Traffic _____

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IRN016

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10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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SEAL/SIGNATURE

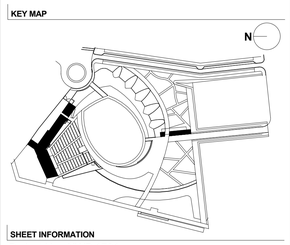
JENNIFER C. SAGE REGISTERED SEAL 15 ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	SCHEMATIC DESIGN	03/09/2018
2	DESIGN DEVELOPMENT	07/13/2018
3	TRC SITE PLAN APPLICATION	08/01/2018
4	95% CONSTRUCTION DOCUMENTS	03/08/2019
5	TRC SITE PLAN RE-APPLICATION	03/22/2019
6	CONSTRUCTION DOCUMENTS	04/19/2019
7	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: LWA
Checked By: PC DH
Date: 03/08/2019
Scale:

SHEET TITLE

ARCHITECTURE MATERIAL & EQUIPMENT SCHEDULE

SHEET NO.

A-831-P1

ELECTRICAL NOTES

1. VERIFY SIZES, DIMENSIONS, AND LOCATIONS WITH ARCHITECTURAL AND INTERIORS DRAWINGS. WHERE CONFLICTS OCCUR, ARCHITECTURAL DRAWINGS TAKE PRECEDENCE.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH NATIONAL, LOCAL, AND OTHER APPLICABLE CODES.
3. ALL AUDIOVISUAL (AV) SYSTEM EQUIPMENT IS FOR REFERENCE ONLY. SUCH EQUIPMENT WILL BE PROVIDED AND INSTALLED BY THE AV SYSTEMS CONTRACTOR, NOT THE ELECTRICAL CONTRACTOR. ALL OTHER CONSTRUCTION WORK ON THESE DRAWINGS IS BY THE GENERAL CONTRACTOR, COMMUNICATIONS CONTRACTOR, OR ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
4. WHERE EXACT DIMENSIONS ARE NOT CALLED FOR, THE SCALE OF THIS DRAWING IS SUFFICIENTLY ACCURATE FOR DETERMINING LOCATIONS OF EQUIPMENT, JUNCTION BOXES, OUTLETS, RACEWAY, ETC. WHERE EXACT DIMENSIONS ARE CALLED FOR, THE REFERENCE SURFACE SHALL BE THE FINAL FINISHED SURFACE INCLUDING ANY ACOUSTICAL TREATMENT.
5. DEVICE MOUNTING HEIGHTS ARE LISTED TO THE MID-POINT OF THE DEVICE. WHERE DEVICES OF UNLIKE SIZE ARE INDICATED TO BE LOCATED ADJACENT TO EACH OTHER, CENTER THE DEVICES VERTICALLY , UON.
6. WHERE POWER, COMMUNICATION, OR AV JUNCTION BOXES MUST COORDINATE WITH FIXED MILLWORK OR ARCHITECTURAL FEATURES, REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS AND DETAILS.
7. WHERE POWER, COMMUNICATION, AND AV JUNCTION BOXES ARE GROUPED TOGETHER AT THE SAME LOCATION AND ELEVATION, INSTALL AS CLOSE TOGETHER AS PHYSICALLY POSSIBLE WITH SUFFICIENT SEPARATION FOR INDIVIDUAL DEVICE COVER PLATES.
8. POWER SOCKET OUTLETS SHOWN ON THESE DRAWINGS ARE DEDICATED FOR USE WITH SPECIFIC AV EQUIPMENT. ADDITIONAL UTILITY SOCKET OUTLETS MAY BE INDICATED ON ARCHITECTURAL DRAWINGS OR REQUIRED BY CODE.
9. ALL AV SYSTEM POWER CIRCUITS SHALL BE PROTECTED BY DEDICATED 20 AMP BREAKERS UNLESS OTHERWISE NOTED.
10. ALL POWER OUTLETS SHOWN ON THESE DRAWINGS ARE ISOLATED GROUND.
11. WHERE POWER CIRCUITS ARE SHOWN TERMINATING IN JUNCTION BOXES WITHOUT RECEPTACLES, THE WIRES SHALL BE TAPED AND THE BOXES COVERED; THESE WILL BE CONNECTED BY THE ELECTRICAL CONTRACTOR DURING THE INSTALLATION OF SPECIAL AV EQUIPMENT, TO BE COORDINATED WITH THE AV CONTRACTOR.
12. AV SYSTEM POWER CIRCUITS SHALL BE KEPT ISOLATED FROM LIGHTING DIMMERS, LARGE MOTORIZED EQUIPMENT, AND OTHER INDUCTIVE OR 'NOISY' ELECTRICAL LOADS.
13. EMPTY CONDUIT RUNS SHOWN ON THESE DRAWINGS SHOW ONLY INTERCONNECTIONS BETWEEN TERMINATION POINTS. THE EXACT PATH OF THE CONDUIT IS TO BE COORDINATED ON SITE.
14. WHERE POSSIBLE, EMPTY CONDUIT RUNS FOR AV SIGNAL CIRCUITS SHALL BE KEPT 3' FROM PARALLEL POWER CIRCUITS IN RUNS UNDER 80'. AND 6FT IN RUNS OVER 80'. AV WIRING, RACEWAYS, AND CONDUIT MUST NOT RUN PARALLEL TO POWER MAINS OF POTENTIAL IN EXCESS OF 600V.
15. ALL EMPTY CONDUIT SHALL BE 3/4" UNLESS OTHERWISE NOTED. ALL CONDUIT SHALL BE DEBURRED, CLEANED, CAPPED, TAGGED, AND FURNISHED WITH PULL STRINGS.
16. THERE SHALL BE A MINIMUM OF ONE PULL BOX FOR EVERY 100' OF STRAIGHT EMPTY CONDUIT AND EXTRA PULL BOXES FOR EVERY TWO 90 DEGREE BENDS IN A CONDUIT RUN.
17. THE METHOD OF INSTALLATION OF BOXES AND THE PASSAGE OF CONDUIT THROUGH ACOUSTICALLY SENSITIVE WALLS SHALL BE COORDINATED WITH THE ACOUSTICAL CONSULTANT. ELECTRICAL JUNCTION BOXES RECESSED INTO ACOUSTICALLY SENSITIVE WALLS SHALL HAVE THEIR BACKS SEALED WITH AIRTIGHT ADHESIVE OUTLET PADS. JUNCTION BOXES PLACED BACK-TO-BACK ON ACOUSTICALLY SENSITIVE WALLS SHALL NOT SHARE THE SAME STUD CAVITY.
18. REFER TO AV ELECTRICAL SPEC SECTION 267000 FOR MORE INFORMATION.

INFRASTRUCTURE SYMBOL LEGEND

NOTE:
- REFER TO RESPONSIBILITY MATRIX FOR THE DETAILED SPECIFICATION OF AV DEVICES
- ELECTRICAL AND DATA OUTLETS SHOWN FOR REFERENCE ONLY.

AV ELECTRICAL DEVICE

WALL-MOUNT CEILING-MOUNT FLOOR-MOUNT

WHERE X = DEVICE ID
Y = ZONE OR PANEL ID
Z = NOTE OR MOUNTING HEIGHT

ELECTRICAL OUTLET

WALL-MOUNT CEILING-MOUNT FLOOR-MOUNT

20A DUPLEX

20A QUAD

20A TWIST LOCK

SHOW POWER (60A 208V)

30A 240V

20A HARD WIRED

WHERE X = CIRCUIT NOTE.

DATA PORT

WALL-MOUNT CEILING-MOUNT FLOOR-MOUNT

WHERE X = QUANTITY OF PORTS (2, UON)

WALL MOUNT RACEWAY (HOOKS) BY EC

LOW VOLTAGE CABLE TRENCH BY EC

OVER-GROUND PROTECTED CABLE RACEWAY BY EC

MARINE CABLE HATCH BY EC

CONDUIT TAG

WHERE X = CONDUIT QUANTITIES AND SIZING
Y = TERMINATION NOTE

AUDIOVISUAL SYSTEM INFRASTRUCTURE RESPONSIBILITY MATRIX

SYMBOL	DEVICE DESCRIPTION	DEVICE SIZE (H x W x D) (INCHES)	MOUNTING HEIGHT, CENTER OF BOX	MOUNT TYPE		DEVICE COMPONENTS	EQUIPMENT							NOTES
				SURFACE	FLUSH		SPECIFIED UNDER DIVISION	FURNISHED UNDER DIVISION	INSTALLED UNDER DIVISION	CONNECTED UNDER DIVISION	TESTED AND CALIBRATED UNDER DIVISION	RACEWAY PROVIDED UNDER DIVISION	CABLE PROVIDED UNDER DIVISION	
AV A	OUTDOOR STAGE BOX	NEMA 3 12 X 12 X 6 LOCKABLE	ALIGN W/ COMPANY SWITCH ELEVATION	X		JUNCTION BOX CABLES PANEL COMPONENTS PLATE/ENGRAVING	26 2741 2741 2741	26 2741 2741 2741	26 2741 2741 2741	--- 2741 2741 2741	--- 2741 --- ---	26 26 --- ---	--- 2741 --- ---	
AV B	MIX PAD JUNCTION BOX	NEMA 3 8 X 8 X 6 LOCKABLE	CURB-MOUNTED	X		JUNCTION BOX CABLES PANEL COMPONENTS PLATE/ENGRAVING	26 2741 2741 2741	26 2741 2741 2741	26 2741 2741 2741	--- 2741 2741 2741	--- 2741 2741 ---	26 26 --- --	--- 2741 --- ---	
AV C	FOLLOW SPOT TOWER JUNCTION BOX	NEMA 3 8 X 8 X 6 LOCKABLE	COORDINATE	X		JUNCTION BOX CABLES PANEL COMPONENTS PLATE/ENGRAVING	26 2741 2741 2741	26 2741 2741 2741	26 2741 2741 2741	--- 2741 2741 2741	--- 2741 2741 ---	26 26 --- ---	--- 2741 --- ---	
AV D	DELAY TOWER JUNCTION BOX	NEMA 3 4 X 4 X 2 LOCKABLE	SRH	X		JUNCTION BOX CABLES PANEL COMPONENTS PLATE/ENGRAVING	26 2741 2741 2741	26 2741 2741 2741	26 2741 2741 2741	--- 2741 2741 2741	--- 2741 2741 ---	26 26 --- ---	--- 2741 --- ---	

GENERAL NOTES:
1. ALL GANG JUNCTION BOXES TO BE 2-1/2" DEEP UNLESS OTHERWISE NOTED.

NUMBERED NOTES:

DRAWING LIST

SHEET #	TITLE
AT-100-P1	AUDIOVISUAL NOTES AND SYMBOLS
AT-101-P1	AUDIOVISUAL CONDUIT AND CABLE PATH RISER DIAGRAM
AT-200-P1	AUDIOVISUAL STAGE FLOOR PLAN
AT-201-P1	AUDIOVISUAL SITE FLOOR PLAN
AT-400-P1	AUDIOVISUAL FUNCTIONAL DIAGRAMS
AT-500-P1	AUDIOVISUAL PANEL DETAILS
AT-600-P1	INFILL AND AND STAGE THRUST PLATFORM LAYOUTS
AT-601-P1	PLATFORM DETAILS
AT-602-P1	PLATFORM SCHEDULE

ARCHITECTURAL NOTES

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3. WHERE EXACT DIMENSIONS ARE NOT CALLED FOR, THE SCALE OF THIS DRAWING IS SUFFICIENTLY ACCURATE FOR DETERMINING LOCATIONS OF WALLS, DOORS, GLAZING, EQUIPMENT, ETC. WHERE EXACT DIMENSIONS ARE CALLED FOR, THE REFERENCE SURFACE SHALL BE THE FINAL FINISHED SURFACE INCLUDING ANY ACOUSTICAL TREATMENT.
4. WHERE METAL OR PLASTIC LOUDSPEAKER GRILLES ARE SHOWN INSTALLED IN PAINTED CEILING OR WALL SURFACES, THE GENERAL CONTRACTOR SHALL PAINT THE GRILLES TO MATCH THE ADJACENT SURFACE PRIOR TO ASSEMBLY AND INSTALLATION. SOUND SYSTEM CONTROL ROOM WALLS, FLOORS, CEILINGS, MILLWORK, EXPOSED STRUCTURAL ELEMENTS, AND FIXTURES SHALL BE FINISHED IN FLAT BLACK TO CONTROL LIGHT REFLECTIONS.

ABBREVIATIONS

AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFC	ABOVE FINISHED CEILING
ALS	ASSISTIVE LISTENING SYSTEM
AMIX	AUTOMATIC MIXER
ARCH'T	ARCHITECT
AV	AUDIOVISUAL
BRKR	BREAKER
C	EMPTY CONDUIT
CKT	CIRCUIT
CL	CENTER LINE
DEL	DELAY DEVICE
DP	DEEP (DEPTH)
DSP	DIGITAL SIGNAL PROCESSING
EA	EACH
EC	ELECTRICAL CONTRACTOR
EQ	EQUALIZER
GC	GENERAL CONTRACTOR
H	HIGH (HEIGHT)
IAM	INTEGRATED AMPLIFIER MIXER
IG	ISOLATED/CLEAN EARTH
IPS	INTERNAL POWER SUPPLY
IWA	INTEGRATED WALL AMPLIFIED
MIN	MINIMUM
MIX	MIXER
MNT'D	MOUNTED
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OFE	OWNER-FURNISHED EQUIPMENT
OT	OUTPUT TRANSFORMER
PA	POWER AMPLIFIER
SRH	PROJECT STANDARD RECEPTACLE HEIGHT
SER	SOUND EQUIPMENT RACKS
SM	SOUND CONTROL MONITOR
SPROC	SIGNAL PROCESSING
SS	SOUND SYSTEM
SSH	PROJECT STANDARD SWITCH HEIGHT
TC	TERMINAL CABINET
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VCA	VOLTAGE CONTROL AMPLIFIER
W	WIDE (WIDTH)

IRN016

PROJECT INFORMATION

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10 COWAN STREET
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CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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Civil Engineering = C
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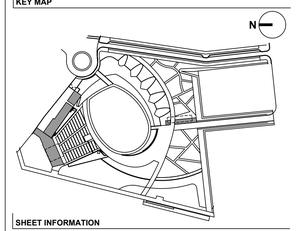
NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: PWB
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

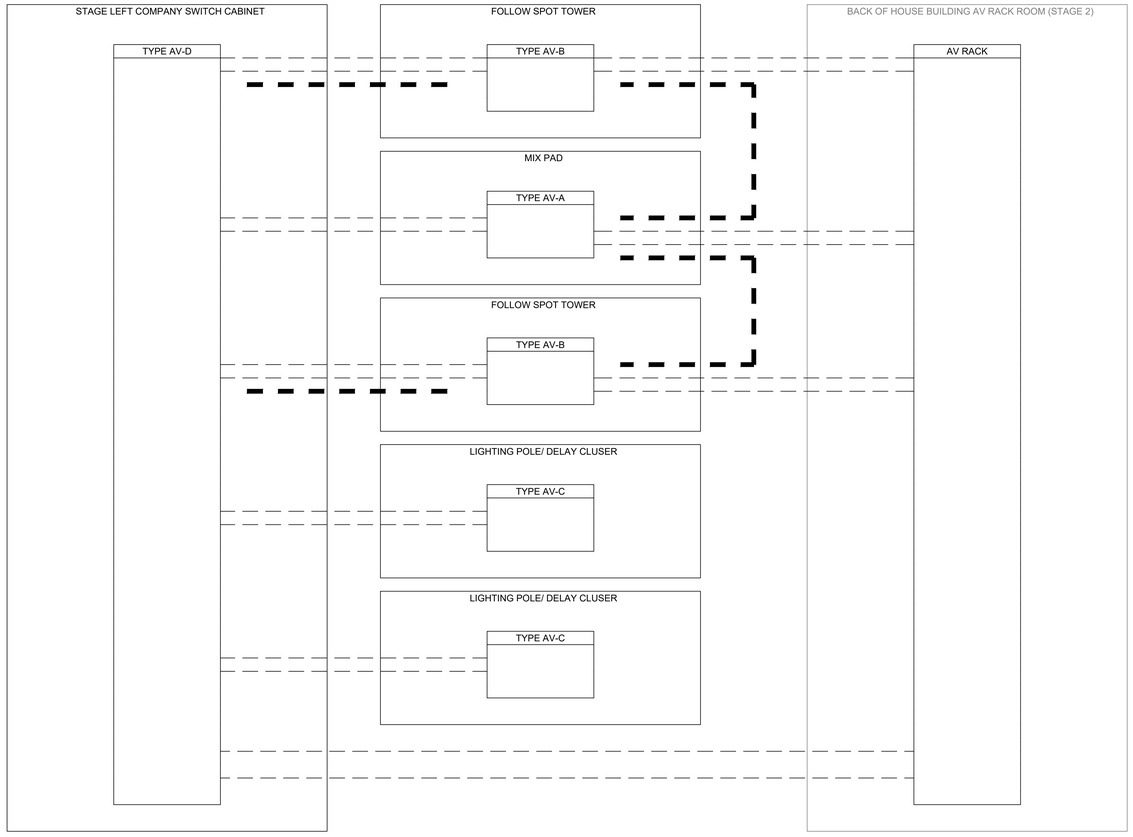
SHEET TITLE

AUDIOVISUAL NOTES AND SYMBOLS

SHEET NO.

AT-100-P1

IRN016



GENERAL NOTES:

- FUNCTIONAL DIAGRAMS ARE FOR INFORMATION ONLY. DIAGRAMS CONVEY DESIGN INTENT FOR SIGNAL INTERCONNECTIONS BETWEEN EQUIPMENT, INFRASTRUCTURE, ETC.
- SIGNAL FLOWS LEFT TO RIGHT, UON. BI-DIRECTIONAL SIGNALS EXCLUDED.
- INTERSECTING LINES DO NOT IMPLY SIGNAL SPLITS, BUSSING, OR OTHERWISE UNLESS NOTED WITH A 'DOT'.
- CONNECTIONS TO EQUIPMENT ARE SPECIFIED BY SIGNAL TYPE. WHERE CABLE OR CONNECTOR INFORMATION IS EXCLUDED, REFER TO SPECIFICATIONS AND VERIFY WITH MANUFACTURER REQUIREMENTS.
- FIBER CABLE QUANTITIES REFER TO INDIVIDUAL STRANDS
- REFER TO SPECIFICATIONS FOR CABLE SEPARATION REQUIREMENTS FOR CABLE CONTAINMENT

CONDUIT (REF. E-SERIES DRAWINGS) BY EC

GROUND TRENCH FOR EVENT CABLING BY OTHERS

OUTDOOR STAGE BOX — AV D

MIX PAD JUNCTION BOX — AV A

LIGHTING TOWER JUNCTION BOX — AV B

DELAY TOWER JUNCTION BOX — AV C

CATEGORY-6 CABLE

OS2 FIBER CABLE

SINGLE PAIR 12AWG SPEAKER CABLE

IRN016

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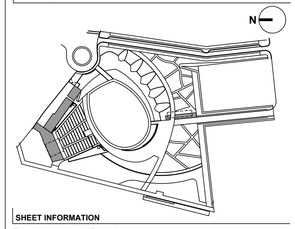
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: PWB
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

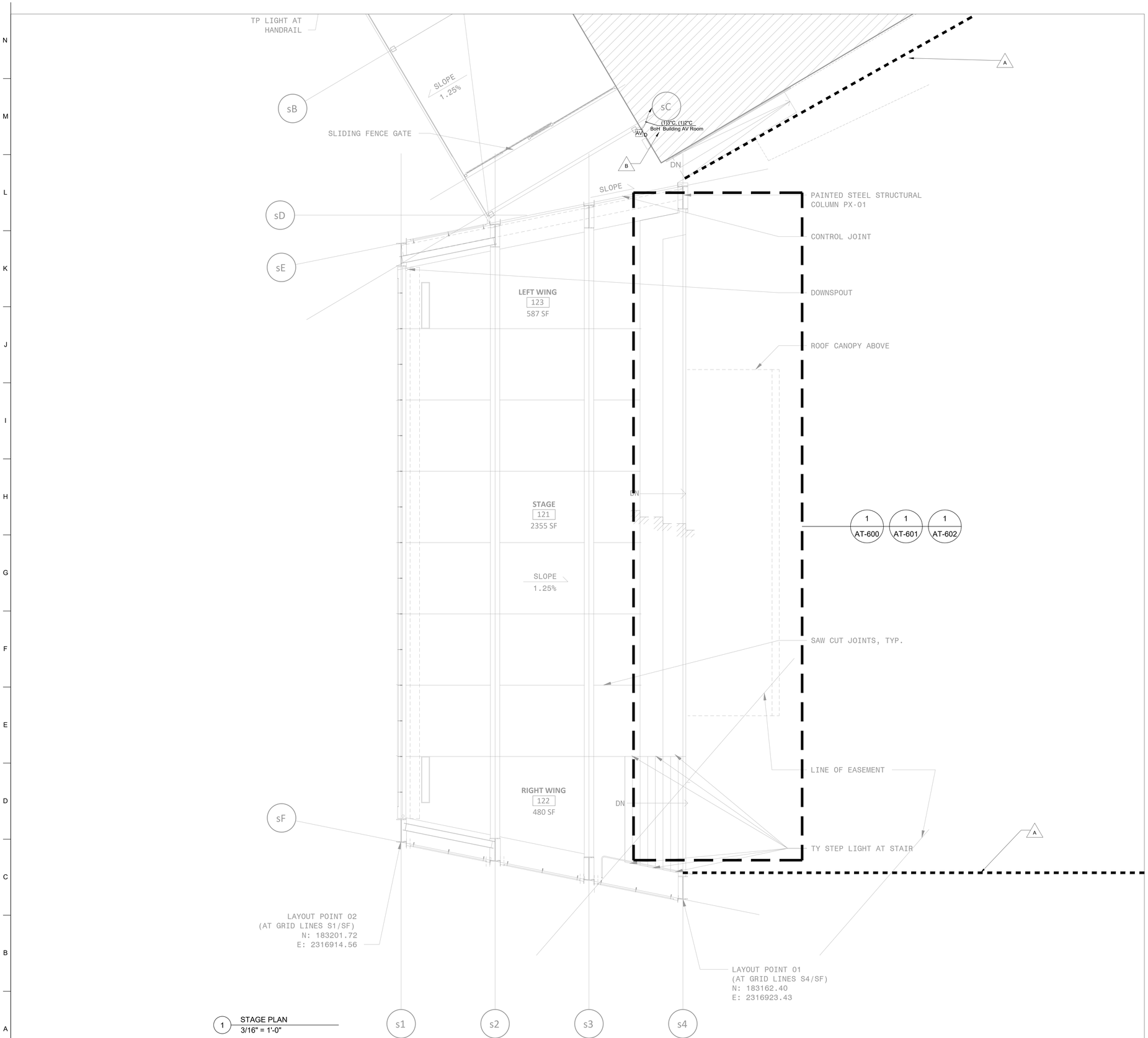
AUDIOVISUAL CONDUIT AND CABLE PATH RISER DIAGRAM

SHEET NO.

AT-101-P1

IRN016

IRN016



A. PATH FOR CABLE TRENCH AND INSTALLED CONDUIT BY OTHERS

B. PANEL RECEPTACLES FOR STAGE 2 TO BE FURNISHED WITH STAGE 1 EQUIPMENT; CONDUIT AND CABLE TO BE FURNISHED IN STAGE 2

CONDUIT (REF. E-SERIES DRAWINGS) BY EC

GROUND TRENCH FOR EVENT CABLING BY OTHERS

OUTDOOR STAGE BOX — AV D

MIX PAD JUNCTION BOX — AV A

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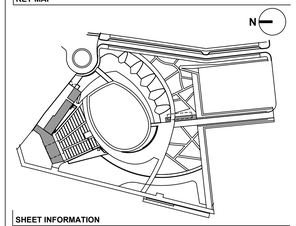


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: PWB
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

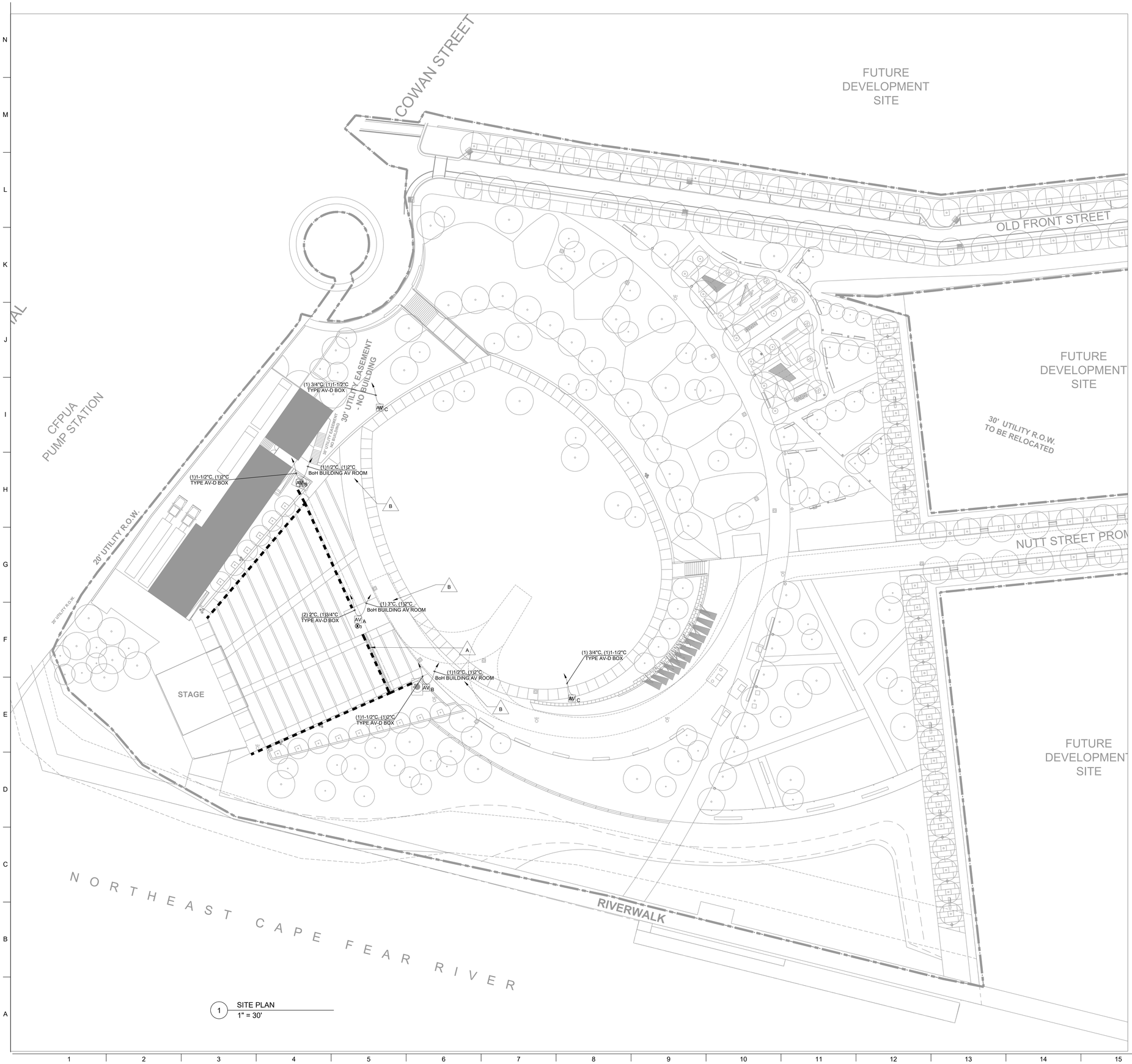
SHEET TITLE

AUDIOVISUAL STAGE PLAN

SHEET NO.

AT-200-P1

IRN016



1 SITE PLAN
1" = 30'

A. PATH FOR CABLE TRENCH AND INSTALLED CONDUIT BY OTHERS

B. PANEL RECEPTACLES FOR STAGE 2 TO BE FURNISHED WITH STAGE 1 EQUIPMENT; CONDUIT AND CABLE TO BE FURNISHED IN STAGE 2

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3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
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Fire Protection = FP
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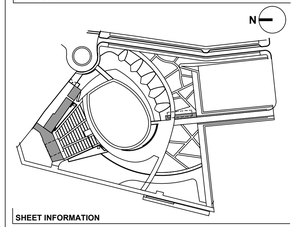
SEAL/SIGNATURE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: PWB
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

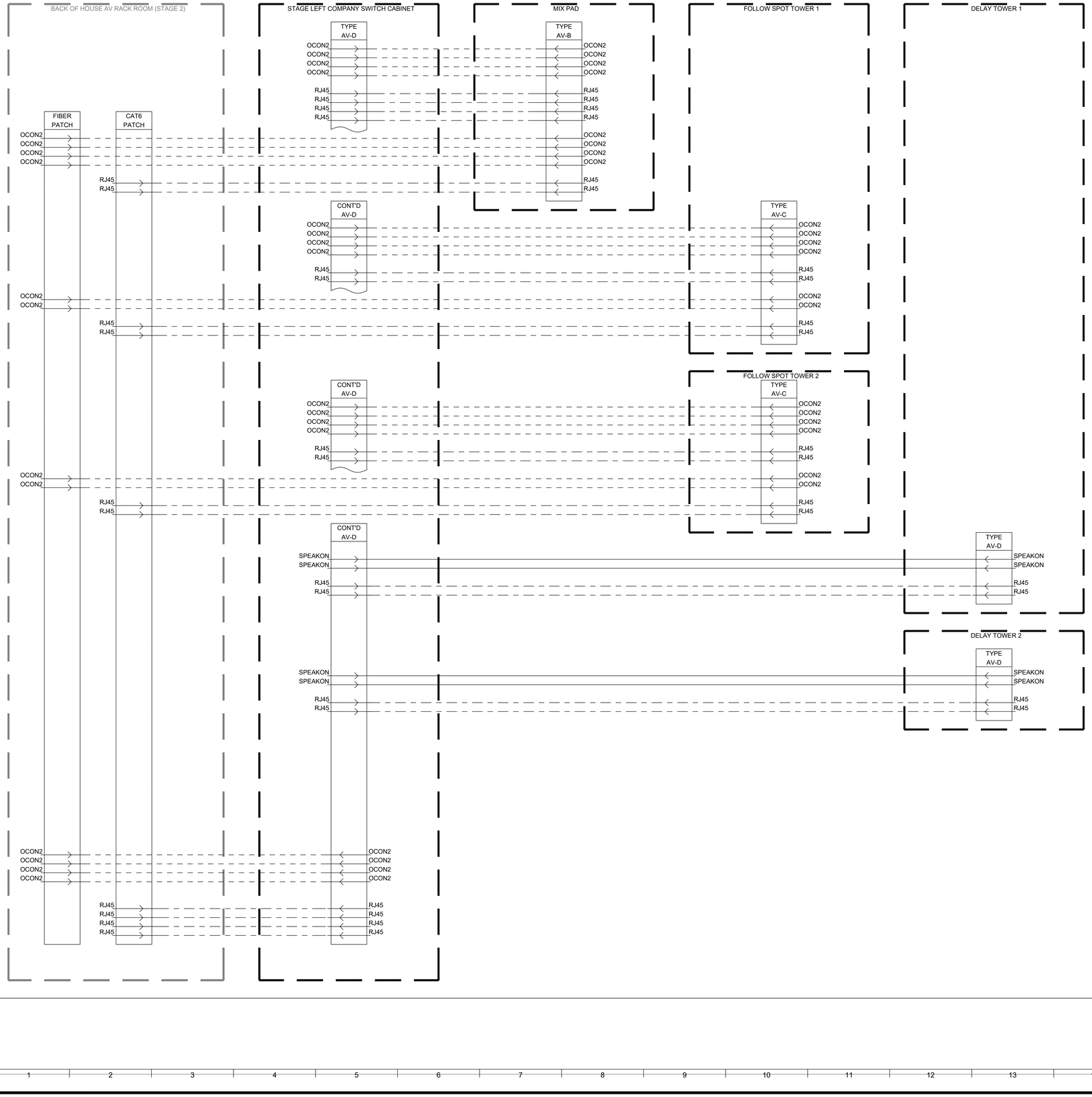
AUDIOVISUAL SITE PLAN

SHEET NO.

AT-201-P1

IRN016

IRN016



IRN016

GENERAL NOTES:

- FUNCTIONAL DIAGRAMS ARE FOR INFORMATION ONLY. DIAGRAMS CONVEY DESIGN INTENT FOR SIGNAL INTERCONNECTIONS BETWEEN EQUIPMENT, INFRASTRUCTURE, ETC.
- SIGNAL FLOWS LEFT TO RIGHT, UON. BI-DIRECTIONAL SIGNALS EXCLUDED.
- INTERSECTING LINES DO NOT IMPLY SIGNAL SPLITS, BUSSING, OR OTHERWISE UNLESS NOTED WITH A 'DOT'
- CONNECTIONS TO EQUIPMENT ARE SPECIFIED BY SIGNAL TYPE. WHERE CABLE OR CONNECTOR INFORMATION IS EXCLUDED, REFER TO SPECIFICATIONS AND VERIFY WITH MANUFACTURER REQUIREMENTS.
- FIBER CABLE QUANTITIES REFER TO INDIVIDUAL STRANDS
- REFER TO SPECIFICATIONS FOR CABLE SEPARATION REQUIREMENTS FOR CABLE CONTAINMENT

CONDUIT (REF. E-SERIES DRAWINGS) BY EC

GROUND TRENCH FOR EVENT CABLING BY OTHERS

OUTDOOR STAGE BOX — AV D

MIX PAD JUNCTION BOX — AV A

LIGHTING TOWER JUNCTION BOX — AV B

DELAY TOWER JUNCTION BOX — AV C

CATEGORY-6 CABLE

OS2 FIBER CABLE

SINGLE PAIR 12AWG SPEAKER CABLE

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
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City of Wilmington Project Code 3CPRK1860

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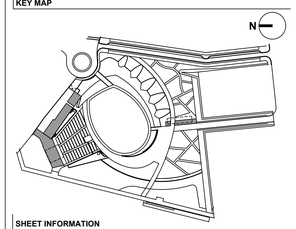


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: PWB
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

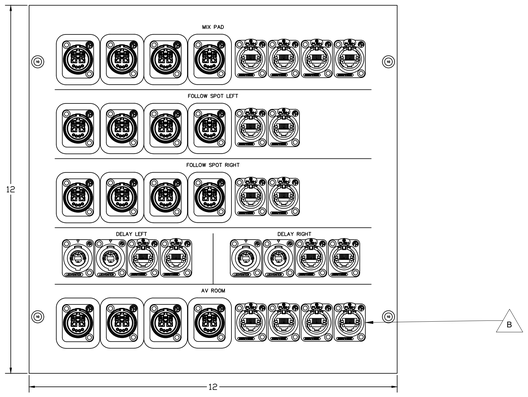
SHEET TITLE

AUDIOVISUAL FUNCTIONAL DIAGRAMS

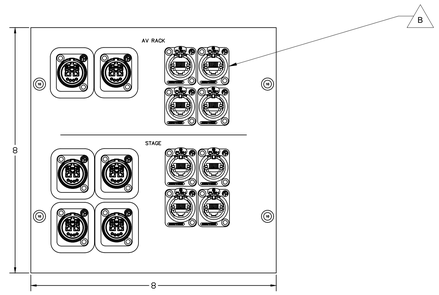
SHEET NO.

AT-400-P1

IRN016



1 TYPE AV-A - STAGE BOX
1:2



2 TYPE AV-B - MIX PAD
1:2

A. PATH FOR CABLE TRENCH AND INSTALLED CONDUIT
B. PANEL RECEPTACLES FOR STAGE 2 TO BE FURNISHED WITH STAGE 1 EQUIPMENT; CONDUIT AND CABLE TO BE FURNISHED IN STAGE 2

CONDUIT (REF. E-SERIES DRAWINGS) BY EC

GROUND TRENCH FOR EVENT CABLING BY OTHERS

OUTDOOR STAGE BOX AV D

MIX PAD JUNCTION BOX AV A

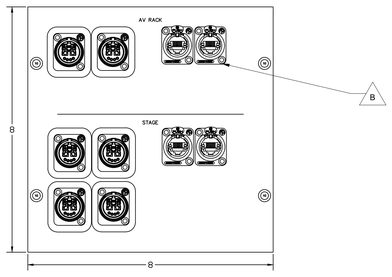
LIGHTING TOWER JUNCTION BOX AV B

DELAY TOWER JUNCTION BOX AV C

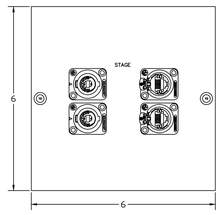
CATEGORY-6 CABLE

OS2 FIBER CABLE

SINGLE PAIR 12AWG SPEAKER CABLE



3 TYPE AV-C - FOLLOW SPOT TOWER
1:2



4 TYPE AV-D - DELAY TOWER
1:2

IRN016

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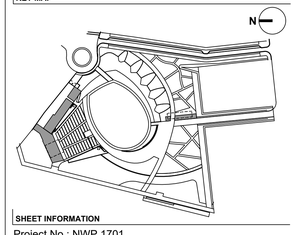


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: PWB
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

AUDIOVISUAL PANEL DETAILS

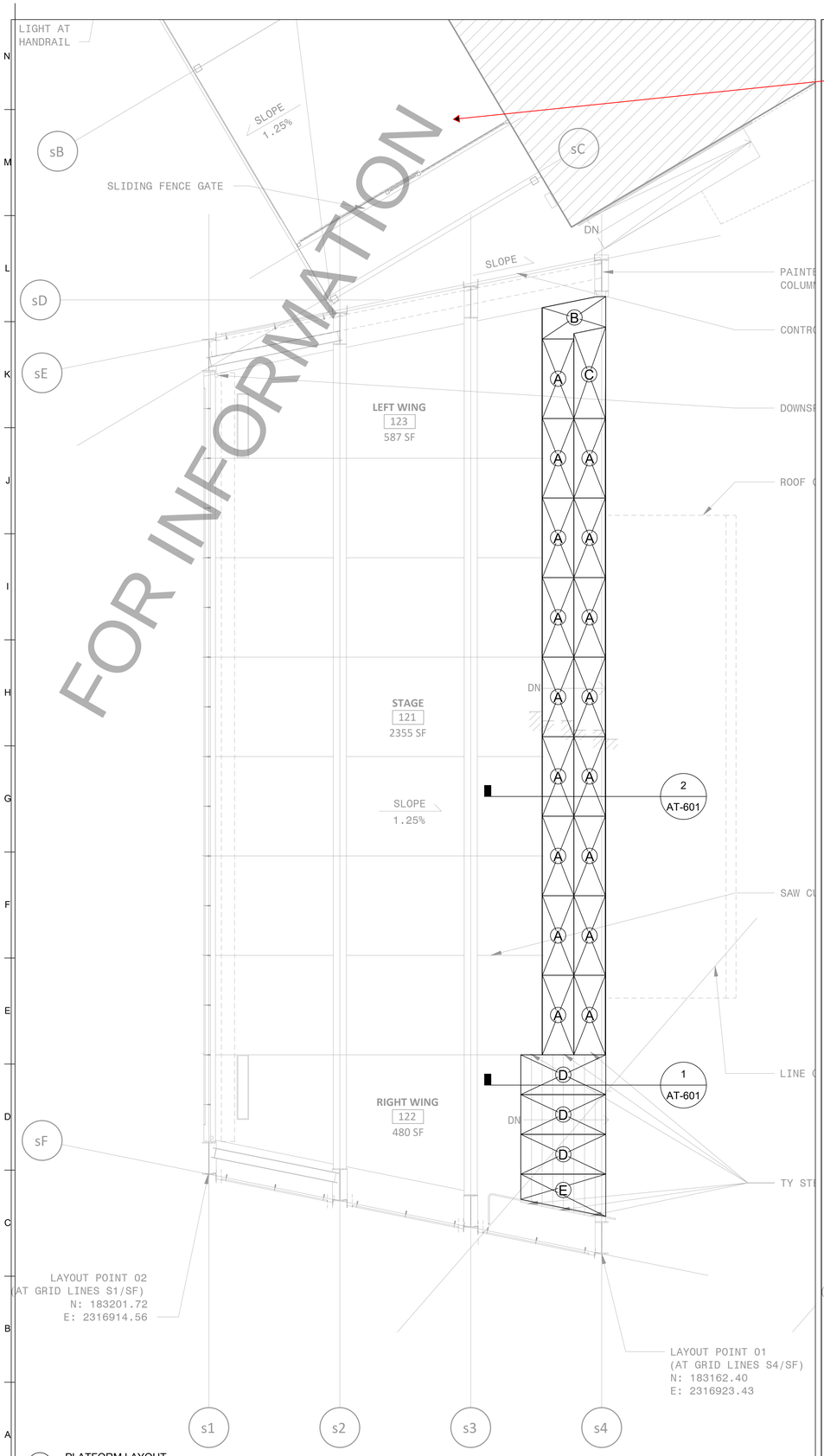
SHEET NO.

AT-500-P1

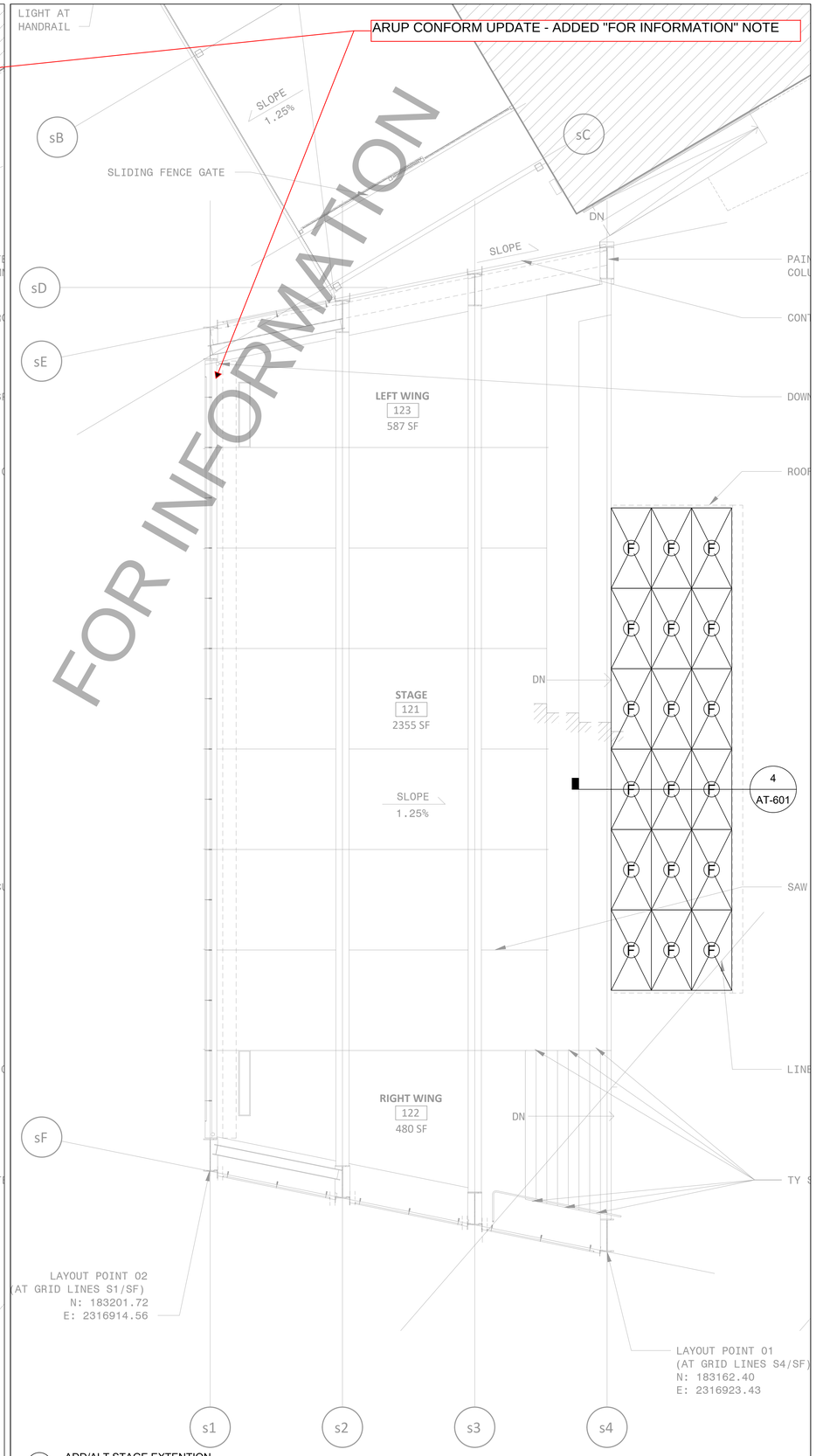
IRN016

IRN016

ARUP CONFORM UPDATE - ADDED "FOR INFORMATION" NOTE



1 PLATFORM LAYOUT
3/16" = 1'-0"



2 ADD/ALT STAGE EXTENTION
3/16" = 1'-0"

IRN016

A. SEE AT-601 FOR DIMENSION OF PLATFORMS

B. ALL DIMENSIONS TO THE VERIFIED IN FIELD

C. ALL PLATFORMS TO BE SECURED TOGETHER BY BOLTED CONNECTIONS

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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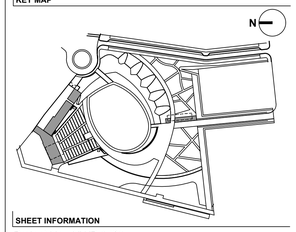


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: JCC
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

AUDIOVISUAL THEATRE EQUIPMENT INFILL PLATFORM LAYOUT

SHEET NO.

AT-600-P1

IRN016

ARUP CONFORM UPDATE - ADDED "FOR INFORMATION" NOTE

FOR INFORMATION

FOR INFORMATION

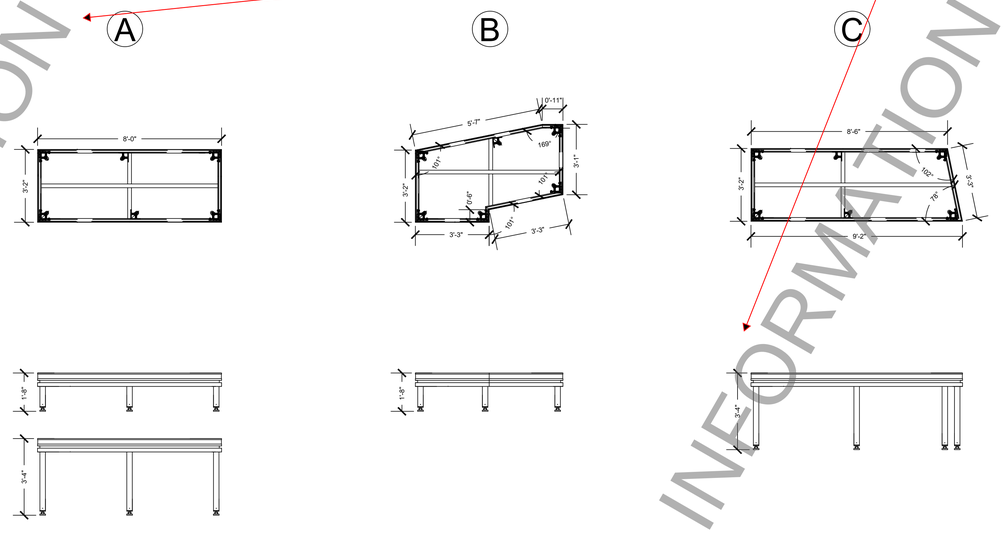
A. HEIGHT OF PLATFORM IS DISTANCE FROM THE WALKING SURFACE OF PLATFORM TO THE SURFACE THE PLATFORM IS SITTING ON. LENGTH OF LEGS TBD BY MANUFACTURER.

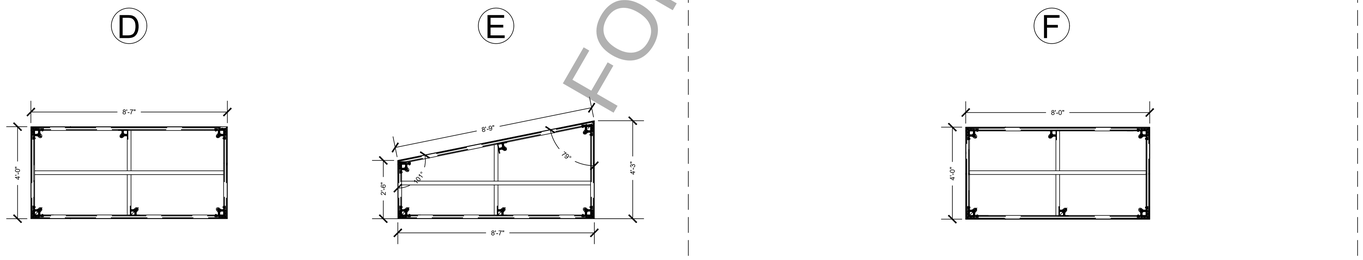
B. ALL DIMENSIONS TO THE VERIFIED IN FIELD.

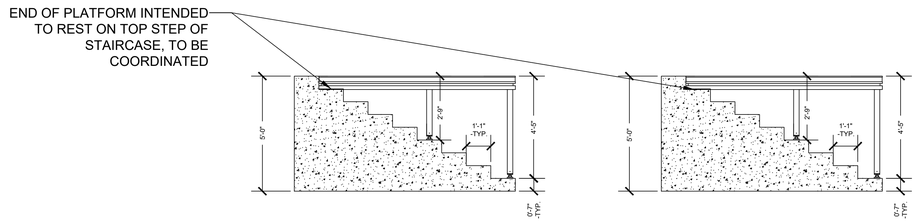
C. ALL PLATFORMS TO BE SECURED TOGETHER BY BOLTED CONNECTIONS.

D. ANGLES OF PLATFORM CORNERS ARE 90° UNLESS OTHERWISE NOTED.

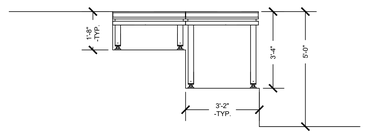
E. PLATFORMS WITH LEGS OVER 20" TO BE PROVIDED WITH CROSS-BRACING. THEATRE EQUIPMENT CONTRACTOR TO DETERMINE APPROPRIATE CROSS-BRACING



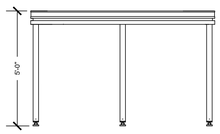




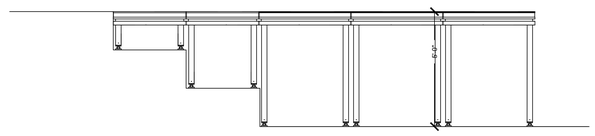
1 PLATFORM DETAILS AND SECITON THROUGH STAIRS
3/8" = 1'-0"



2 SECTION THROUGH STAGE EDGE
3/8" = 1'-0"



3 ADD/ALT: STAGE EXTENTION DETAILS
3/8" = 1'-0"



4 ADD/ALT: SECTION THROUGH STAGE EXTENTION
3/8" = 1'-0"

IRN016

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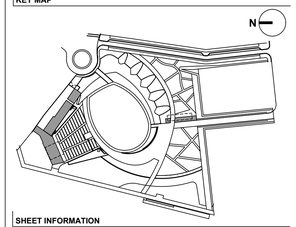

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: JCC
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

THEATRE EQUIPEMNTNINFILL PLANTORM DETAILS

SHEET NO.

AT-601-P1

IRN016

FOR INFORMATION

FOR INFORMATION

ARUP CONFORM UPDATE - ADDED "FOR INFORMATION" NOTE

PLATFORM SCHEDULE

TYPE	DIMENSIONS	LEG HEIGHT	QTY OF PLATFORMS	QTY OF LEGS
A	3'-2" x 8'-0"	20", 40"	17	102
B	SEE AT-601	20"	1	6
C	SEE AT-601	40"	1	6
D	4'-0" x 8'-7"	33", 53"	3	12
E	SEE AT-601	33", 53"	1	4

TOTAL QTY OF LEGS BY HEIGHT	
20"	60
33"	8
40"	54
53"	8

ADD\ALT PLATFORM SCHEDULE

TYPE	DIMENSIONS	LEG HEIGHT	QTY OF PLATFORMS	QTY OF LEGS
F	4'-0" x 8'-0"	60"	18	108

TOTAL QTY OF LEGS BY HEIGHT	
60"	108

NOTE: HEIGHT IS DISTANCE FROM WALKING SURFACE OF PLATFORM TO SURFACE PLATFORM IS SITTING ON, HEIGHT OF LEG TBD BY MANUFACTURER

A. HEIGHT OF PLATFORM IS DISTANCE FROM THE WALKING SURFACE OF PLATFORM TO THE SURFACE THE PLATFORM IS SITTING ON. LENGTH OF LEGS TBD BY MANUFACTURER.

B. ALL DIMENSIONS TO THE VERIFIED IN FIELD.

C. ALL PLATFORMS TO BE SECURED TOGETHER BY BOLTED CONNECTIONS.

IRN016

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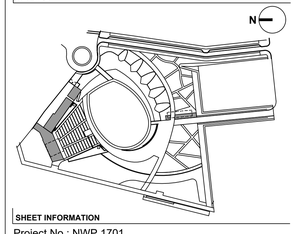
Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: JCC
Checked By: CD/ CP
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

THEATRE EQUIPMENT INFILL PLATFORM SCHEDULE

SHEET NO.

AT-602-P1

IRN016

GENERAL NOTES:

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE OFFICE OF STATE CONSTRUCTION, DEPARTMENT OF INSURANCE, NCDENR, AND ALL OTHER APPLICABLE LOCAL, STATE AND FEDERAL GUIDELINES. ALL UTILITY CONSTRUCTION SHALL COMPLY WITH APPLICABLE LOCAL JURISDICTIONAL STANDARDS AND SPECIFICATIONS.
2. EXISTING SURVEY INFORMATION INCLUDING TOPOGRAPHIC INFORMATION PROVIDED BY CITY OF WILMINGTON ENGINEERING DIVISION, DATED SEPTEMBER 15, 2015. 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 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 PROVIDE NOTICE OF EXCAVATION TO NOTIFICATION CENTER AND FACILITY OWNERS (PER NC STATUTE) NO LESS THAN 3 BUSINESS DAYS AND NO MORE THAN 12 WORKING DAYS PRIOR TO BEGINNING DEMOLITION, EXCAVATION OR ANY OTHER FORM OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES OR CONFLICTS. NO EXCAVATION OR DEMOLITION SHALL BE STARTED WITHOUT ALL UTILITIES BEING LOCATED.
4. ALL SUB-SURFACE UTILITIES IDENTIFIED ON THE CONSTRUCTION DOCUMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATION BASED ON SURVEY INFORMATION GATHERED FROM 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.
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 WHICH MUST BE MET UNDER THIS CONTRACT.
7. THE CONTRACTOR SHALL MAINTAIN "AS-BUILT" DRAWINGS TO RECORD THE ACTUAL LOCATION OF ALL PIPING PRIOR TO CONCEALMENT, VALVE AND MANHOLE CHANGES, AND HARDSCAPE OR LANDSCAPE CHANGES. DRAWINGS SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE AT REGULAR INTERVALS, 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 THERE OF SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW. 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 THE RELOCATION OF ANY EXISTING UTILITY LINES REQUIRED TO COMPLETE ANY PORTION OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE COORDINATION AND COSTS OF THE RELOCATION AND ASSOCIATED WORK.
10. 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.
11. 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.
12. ROADWAYS (TEMPORARY OR PERMANENT) MUST BE CAPABLE OF SUPPORTING FIRE FIGHTING APPARATUS (85,000 LBS) DURING ALL PHASES OF CONSTRUCTION ONCE VERTICAL CONSTRUCTION HAS BEGUN.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL REMOVE CONCRETE (WHERE REQUIRED) TO THE FIRST COLD JOINT OR SAW CUT TO OBTAIN A CLEAN EDGE.
2. THE CONTRACTOR SHALL SAWCUT EXISTING ASPHALT (WHERE REQUIRED) TO OBTAIN A CLEAN EDGE.
3. CLEANOUTS AND WATER VALVES LOCATED IN AREAS OF DEMOLITION OR SUBSEQUENT CONSTRUCTION SHALL BE PROTECTED FROM DAMAGE AND RAISED TO BE FLUSH WITH NEW GRADE.
4. ANY UTILITY SERVICES SHOWN TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY PROVIDER. CONTRACTOR IS RESPONSIBLE FOR APPROPRIATE SEQUENCING OF UTILITY DEMOLITION WITH THE RESPECTIVE UTILITY AGENCIES.
5. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITIES PRIOR TO BEGINNING DEMOLITION OPERATIONS. NOTIFY "NORTH CAROLINA ONE CALL" (TELEPHONE 1-800-632-4949) AT LEAST 48 HOURS PRIOR TO START OF DEMOLITION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NORTH CAROLINA ONE CALL."
6. CLEAN SOILS SHALL BE UTILIZED FOR BACKFILL. COMPACTION OF THESE SOILS SHALL BE PERFORMED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
7. ALL ITEMS DESIGNATED TO BE REMOVED SHALL BE REMOVED COMPLETELY, INCLUDING ALL SUBGRADE MATERIALS DIRECTLY ASSOCIATED WITH ITEMS TO BE REMOVED.
8. ALL ITEMS DESIGNATED TO BE REMOVED SHALL BE DISPOSED OF LEGALLY OFF-SITE UNLESS OTHERWISE NOTED ON THIS PLAN.
9. REFER TO EROSION CONTROL DRAWINGS FOR TREE PROTECTION PLAN AND REQUIREMENTS.
10. ALL DEMOLITION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL JURISDICTIONAL CODES OR REQUIREMENTS.
11. TREE PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING DEMOLITION
12. EROSION CONTROL PERMIT SHALL BE OBTAINED AND ONSITE PRIOR TO BEGINNING DEMOLITION.
13. ITEMS DESIGNATED TO BE SALVAGED AND/OR RE-USED SHALL BE REMOVED BY THE CONTRACTOR AND PROVIDED TO THE OWNER. COORDINATE STORAGE LOCATION WITH OWNER'S REPRESENTATIVE.
14. DEMOLITION AND SUBSEQUENT CONSTRUCTION OF STORM DRAINAGE PIPING SHALL BE PERFORMED IN SUCH A MANNER THAT THE OLD PIPE AND STRUCTURES REMOVED DO NOT IMPACT DRAINAGE UPSTREAM OF THE SYSTEM. PROVISIONS SHALL BE MADE TO MAINTAIN STORM WATER DRAINAGE PATTERNS DURING CONSTRUCTION.
15. DEMOLITION AND SUBSEQUENT CONSTRUCTION OF UTILITIES (WATER, SEWER, ETC) SHALL BE PERFORMED IN SUCH A MANNER THAT THE OLD PIPE AND STRUCTURES REMOVED DO NOT IMPACT OR MINIMIZE SERVICE INTERRUPTION TO EXISTING FACILITIES TO REMAIN. PROVISIONS SHALL BE MADE TO MAINTAIN SERVICE DURING CONSTRUCTION.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL DAMAGES TO THE EXISTING DRIVEWAY, PARKING LOT, SIDEWALK AND CURB AND GUTTER AS A RESULT OF CONSTRUCTION ACTIVITY AND TRAFFIC. CONTRACTOR SHALL MAINTAIN A PRE-CONSTRUCTION VIDEO OR PHOTO DOCUMENTATION TO SHOW NO DAMAGES OCCURRED.
17. ALL MATERIALS, FURNISHINGS, UTILITIES, AND PAVEMENT THAT ARE NOT SCHEDULED TO BE DEMOLISHED AND ARE DAMAGED BY THE CONTRACTOR AS A RESULT OF THE DEMOLITION OR CONSTRUCTION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
18. CONTRACTOR SHALL PROVIDE PEDESTRIAN INGRESS / EGRESS TO ALL EXISTING BUILDINGS, PARKING LOTS, AND PATHS OF PEDESTRIAN TRAVEL THROUGHOUT THE CONSTRUCTION PERIOD
19. ALL MATERIALS, FURNISHINGS, UTILITIES, AND PAVEMENT THAT ARE NOT SCHEDULED TO BE DEMOLISHED AND ARE DAMAGED BY THE CONTRACTOR AS A RESULT OF THE DEMOLITION OR CONSTRUCTION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

PROPOSED UTILITY SEPARATION:

1. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT HORIZONTAL SEPARATION IN WHICH CASE;
   a. THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER; OR
   b. THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE OF A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP TO THE SEWER.
2. CROSSING A WATER MAIN OVER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION, IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.
3. CROSSING A WATER MAIN UNDER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

SEPARATION OF SANITARY SEWERS AND STORM SEWERS:

1. A 24" VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN STORM SEWER AND SANITARY SEWER LINES OR BOTH THE SANITARY AND THE STORM LINES SHALL BE CONSTRUCTED OF FERROUS MATERIALS.

SEWER NOTES:

1. SANITARY SEWER CLEANOUTS LOCATED IN PAVEMENT AREAS SHALL BE HEAVY DUTY TRAFFIC BEARING CASTINGS.
2. UNLESS OTHERWISE NOTED, ALL SANITARY SEWER MANHOLES ARE 4' DIA.
3. MANHOLES LOCATED IN PAVEMENT, CONCRETE OR OTHER TRAFFIC AREAS SHALL BE SET AT GRADE. MANHOLES LOCATED IN OTHER AREAS (I.E. GRASS OR WOODED AREAS) SHALL HAVE THEIR RIMS RAISED SIX INCHES ABOVE THE SURROUNDING GRADE. MANHOLES SUBJECT TO POSSIBLE WATER INFILTRATION SHALL HAVE WATERTIGHT, BOLTED LIDS.
4. MINIMUM REQUIRED SLOPES FOR SEWER SERVICES:
   4" SEWER SERVICE - 2.00% SLOPE
   6" SEWER SERVICE - 1.00% SLOPE
   8" SEWER SERVICE - 0.50% SLOPE
5. UNLESS OTHERWISE NOTED, LOCATE SANITARY SERVICE CLEANOUTS AT ALL HORIZONTAL OR VERTICAL CHANGES IN DIRECTION. MAXIMUM SPACING BETWEEN CLEANOUTS SHALL BE 75 FEET.
6. SEWER LINES LESS THAN 3 FEET OF COVER SHALL BE CLASS 50 DUCTILE IRON PIPE. SEWER LINES WITH GREATER THAN 3 FEET OF COVER SHALL BE AS NOTED BELOW:
   4" SEWER SERVICE - SCH 80
   6" SEWER SERVICE - SCH 80
   8" SEWER SERVICE - SDR-35
7. SEWER LINES UNDER CONSTRUCTION SHALL BE PROTECTED FROM DIRT, DEBRIS OR OTHER CONTAMINANTS ENTERING THE NEW SYSTEM. A MECHANICAL PLUG SHALL BE UTILIZED BOTH IMMEDIATELY UPSTREAM OF THE NEW CONSTRUCTION AND AT THE FIRST MANHOLE DOWNSTREAM IN THE EXISTING SYSTEM. EXISTING STRUCTURES, PIPING AND APPURTENANCES SHALL BE PROTECTED FROM ANY INFLOW OF WATER, DIRT OR DEBRIS DUE TO NEW CONSTRUCTION CONNECTING TO OR IN THE VICINITY OF THE EXISTING SYSTEM. CONTRACTOR TO REMOVE DEBRIS AND PLUG PRIOR TO OCCUPANCY
8. ALL MANHOLES COVERS SHALL BE PAINTED TO LOCAL JURISDICTIONAL REQUIREMENTS.

WATER NOTES:

1. AS INDICATED, ALL WATERLINES SHALL BE DUCTILE IRON PIPE MEETING THE REQUIREMENTS OF ANSI-AWWA C151 PRESSURE CLASS 350 OR SOFT COPPER TYPE K PIPE PER ASTM B88. IF PVC WATERLINE IS INDICATED ON THE PLANS IT SHALL MEET THE REQUIREMENTS OF AWWA C-900; CLASS 200.
2. ALL WATERLINES SHALL HAVE A MINIMUM OF 3.5 FEET OF COVER.
3. TESTING NOTES:
   PRESSURE:
   LEAKAGE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE LEAKAGE SPECIFIED IN AWWA C 600. MINIMUM TEST PRESSURE SHALL BE 150 PSI FOR DOMESTIC AND 200 PSI FOR FIRE PROTECTION.
   BACTERIOLOGICAL:
   TWO SAMPLES FOR BACTERIOLOGICAL SAMPLING SHALL BE COLLECTED AT LEAST 24 HOURS APART. IF CONTAMINATION IS INDICATED, THEN THE DISINFECTION PROCEDURE AND TESTING SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.
4. THE CHLORINE IN HEAVILY CHLORINATED WATER FLUSHED FROM MAINS NEEDS TO BE NEUTRALIZED BEFORE DISCHARGE. CONTRACTORS SHALL NEUTRALIZE HEAVILY CHLORINATED WATER FLUSHED FROM MAINS PRIOR TO DISCHARGE OR TRANSPORT ALL HEAVILY CHLORINATED WATER OFFSITE FOR PROPER DISPOSAL.
5. PAINT VALVE COVERS, FIRE HYDRANTS AND OTHER WATER APPARATUS TO MEET THE LOCAL JURISDICTIONAL REQUIREMENTS.

BROWNFIELDS NOTES:

1. CONTRACTOR SHALL REFERENCE THE BROWNFIELDS AGREEMENT FOR THE PROPERTY RECORDED IN BOOK 53, PAGE 55-59, DATED JUNE 25, 2008. DOCUMENT IS AVAILABLE IN NEW HANOVER COUNTY REGISTER OF DEEDS BOOK 5326, PAGE 1093-1153.
2. ALL REQUIREMENTS OF THE ABOVE REFERENCED BROWNFIELDS AGREEMENT SHALL BE ADHERED TO ENVIRONMENTAL MANAGEMENT PLAN G-008A, G-008B, G-008C.

IRN016

CITY OF WILMINGTON NORTH CAROLINA
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

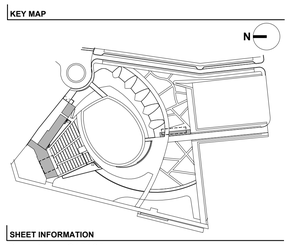
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PYKE 10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: N.T.S.

SHEET TITLE

CIVIL NOTES AND LEGEND

SHEET NO.

C-001-P1

IRN016

SURVEYOR CERTIFICATION

I CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION FROM DEED AND MAP REFERENCES SHOWN HEREON AND THAT THE BOUNDARIES NOT SURVEYED ARE INDICATED AS DRAWN FROM INFORMATION SHOWN HEREON; THAT THE RATIO OF PRECISION OR POSITIONAL ACCURACY IS 1:10,000+; AND THAT THIS MAP MEETS THE REQUIREMENTS OF THE STANDARDS OF PRACTICE FOR LAND SURVEYING IN NORTH CAROLINA (21 NCAC 56. 1600)." THIS 5th DAY OF SEPTEMBER, 2015.

PETER J. BRENNAN, JR.
CITY SURVEYOR, NCPLS # 3743

NORTH CAROLINA PROFESSIONAL SEAL L-3743 LAND SURVEYOR PETER J. BRENNAN, JR.

I, PETER J BRENNAN, JR, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL (GPS) SURVEY MADE UNDER MY SUPERVISION; THAT THIS SURVEY WAS PERFORMED TO MEET FEDERAL GEOGRAPHIC STANDARDS AS APPLICABLE; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON (9/15/2015); THAT THE SURVEY WAS COMPLETED ON (9/15/2015); THAT CONTOURS SHOWN AS BROKEN LINES MAY NOT MEET THAT STATED STANDARD; AND ALL COORDINATES ARE BASED ON NAD '83 (2011).

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	S38°54'08"W	33.00'

EXISTING PK NAIL #20
N=182,821.6241'
E=2,317,676.8818'
EL=40.44'

STR #	TOP EL.	INV IN	INV IN	INV IN	INV OUT
SDMH'A'	13.08'	(SE)10.98'			(NW)8.43'
SDMH'B'	10.13'	(SE)6.08'			(SW)6.03'
SDMH'C'	9.92'	(SE)1.92'	(SW)6.02'		(NW)1.72'
SDMH'D'	9.85'	(SE)1.65'	(SW-NE) X-PIPE 3.33'		(NW)1.65'
SDHM'E'	9.89'	(SE)1.49'	(W)4.44'		(NW)1.49'
C/'A'	8.91'				(NE)5.68'
C/'B'	9.04'	(SW)3.60'			(SE)5.31'
SDMH'F'	4.22'	(SW)-1.68			(NW)-1.68
C/'C'	8.84'				(NE)5.33'
C/'D'	8.49'	(SW)5.08'			(NW)4.95'
D/'A'	4.48'				(NE)0.98'
SDMH'G'	4.87'	(SW)0.98'	(SE)0.66		(SW)-1.11'
D/'B'	4.21'	(SE)1.31'			(NW)0.99'

STR #	TOP EL.	INV IN	INV IN	INV IN	INV OUT
SSMH'A'	8.27'	(NE)-3.13'			(SW)-3.13'
SSMH'B'	8.52'	(NE)-3.08'			(SW)-3.08'
SSMH'C'	10.50'	(NE)-2.45'	(SE)-3.21'		(NW)-3.77'
SSMH'D'	10.63'	(SW)-3.77'			(NW)-3.96'
SSMH'E'	7.98'	(SW)-2.72'			(NE)-2.72'
SSMH'F'	10.61'	(NE)-2.68'			(S)-2.68'
SSMH'G'	10.64'	(S)-3.04'	(SW)0.24'	(E)-2.58'	(N)-3.17'
SSMH'H'	10.98'	(W)0.56'			(NE)0.56'
SSMH'I'	17.37'	(E)10.02'			(W)10.02'
SSMH'J'	9.86'	(E)-0.99'	(S)-2.86'		(N)-2.89'

STR #	TOP EL.	INV IN	INV IN	INV IN	INV OUT
C/'E'	14.68'				(NE)8.43'
C/'F'	18.77'				(S)16.10'
D/'C'	17.89'	(N)16.34'	(SW)6.02'		(NW)1.72'
SDMH'H'	17.28'	(E)10.00'	(SE)13.49'		(W)2.76'
SDMH'I'	14.86'	(E)2.14'	(SW)6.26'	(S)6.06	(NW)2.11'
SDMH'J'	11.96'	(S)0.21'			(W)0.21'
C/'G'	11.43'				(S)7.93'
C/'H'	11.45'	(N)7.79'			(SW)7.72'
SDMH'K'	10.55'	(E)6.55'	(S)6.65'		(W)6.55'
SDMH'L'	10.44'	(E)-0.24			(W)-0.24
SDMH'M'	10.41'	(E)-0.31			(W)-.031

CURVE TABLE				
CURVE #	LENGTH	RADIUS	CHORD	CHORD BEARING
C1	142.22	75.00	121.85'	S18° 16' 42"E
C2	33.18	75.00	32.91'	S85° 16' 27"E
C3	33.27	150.00	33.21'	S88° 24' 31"W
C4	47.26	150.00	47.06'	S76° 12' 39"E

LEGEND

	PUBLIC UTILITY RIGHT-OF-WAY (DB 1904 PG 147)
	UTILITY RIGHT-OF-WAY
—ROW—	RIGHT OF WAY LINES
	NC GRID MONUMENT
	CENTERSTONE FOUND
	IRON ROD FOUND
	IRON PIPE FOUND
	COMPUTED POINT
MAG	MAG NAIL SET
	REBAR PIN SET
NHWL	(NORMAL HIGH WATER LINE)
A	404 WETLANDS
CW	COASTAL WETLANDS

NOTES
1. ALL DISTANCES ARE HORIZONTAL GROUND.
2. ALL AREAS BY COORDINATE COMPUTATION.
3. TRACTS 1A, 1B, 2 & 3 LIE PARTIALLY WITHIN A SPECIAL FLOOD HAZARD ZONE "AE" AS SHOWN ON FIRM MAP 3720311800K, REVISED JUNE 2, 2006.
4. TRACT 1–A AND 2 ARE SUBJECT TO THE EASEMENT FOR RIVERWALK AS RECORDED IN DEED BOOK 5364 PAGE 914.
5. HARNETT STREET RIGHT–OF–WAY CLOSED BY DEED BOOK 906 PAGE 74 AND DEED BOOK 1094 PAGE 139.
6. PARCEL 2A AND THOSE SHOWN ON THIS PLAT SHALL BE SERVED BY INFRASTRUCTURE (INCLUDING, BUT NOT LIMITED TO ROAD ACCESS, WATER, SEWER AND STORM WATER MANAGEMENT) ON WHICH PARTIES TO THE DEVELOPMENT AGREEMENT (DA) HAVE COMMITTED TO CONSTRUCTING. THE DA IS THE AGREEMENT BETWEEN RIVERFRONT HOLDINGS AND THE CITY OF WILMINGTON, AS EXECUTED ON NOVEMBER 5, 2008 AND AS AMENDED.

SURVEY REFERENCES:
DEED BOOK 5105 PAGE 729–SUBJECT PROPERTY DEED.
MAP BOOK 58 PAGE 310
MAP BOOK 50 PAGES 155–159
MAP BOOK 12 PAGE 3
MAP BOOK 31 PAGE 97
DEED BOOK 1094 PAGE 139–HARNETT STREET CLOSURE AND EASEMENT RESERVATION.
DEED BOOK 906 PAGE 75–HARNETT STREET CLOSURE
DEED BOOK 1094 PAGE 147–SEABOARD COAST LINE RAILROAD COMPANY UTILITY RIGHT–OF–WAY AND EASEMENT.
DEED BOOK 5199 PAGE 2054–RAIL CORRIDOR VACATION AGREEMENT.
DEED BOOK 5646 PAGE 1465.–AMENDMENT TO DECLARATION OF EASEMENTS, COVENANTS AND RESTRICTIONS.
ADDITIONALLY THE PARCEL MAY BE SUBJECT TO, OR BENEFIT FROM THE FOLLOWING DEEDS OF EASEMENTS:
DEED BOOK 5891 PAGE 1700
DEED BOOK 5820 PAGE 1205
DEED BOOK 5797 PAGE 1679
DEED BOOK 5797 PAGE 1687

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

TOPOGRAPHIC SURVEY NOTES
1. HORIZONTAL COORDINATE SYSTEM IS NAD 83 (2011).
2. VERTICAL DATUM IS NAVD 88 (2012B).
3. CONTOUR INTERVAL IS 1.0'.
4. UNDERGROUND UTILITIES SHOWN AS LOCATED BY CAROLINA 811. TICKET No. C172422503 DATED: 8/30/17
5. WATERLINE PLOTTED FROM RECORD AS–BUILTS (CFPUA DID NOT RESPOND TO 811 MARKOUT REQUEST).

PZ No.	NORTHING	EASTING	ELEV
PZ–1	182858.2320	2317128.8170	16.58
PZ–1A	182965.3100	2317130.7300	16.54
PZ–2	183241.3110	2316982.2770	13.37
PZ–3	183133.4720	2317122.4160	14.64
PZ–4	182853.1140	2317244.9290	16.40
PZ–5	182976.4370	2316911.3180	14.03
PZ–6	182706.4200	2316848.5120	13.42
PZ–7	182714.0960	2317211.7010	17.20
PZ–8	182836.7110	2316963.5220	14.99
PZ–9	182721.2880	2316964.3940	14.88

GB No.	NORTHING	EASTING	ELEV
GB–2	182849.703	2316853.285	9.73
GB–4	182661.759	2316808.928	9.73

CPT No.	NORTHING	EASTING	ELEV
CPT–1	183083.469	2317162.224	11.75
CPT–2	183130.842	2317143.417	11.33
CPT–3	183106.075	2317104.477	12.30
CPT–4	183152.493	2317069.582	11.99
CPT–5	183227.073	2317026.939	11.14
CPT–6	183238.904	2316995.798	10.73
CPT–7	183154.821	2316975.063	11.72
CPT–8	183190.200	2316921.735	10.18
CPT–9	183006.573	2316994.353	13.10
CPT–10	182820.760	2317133.184	13.74
CPT–11	182834.871	2317070.398	13.28
CPT–12	183010.002	2317323.817	8.99
CPT–13	182717.767	2317232.985	14.01
CPT–14	182493.585	2317231.790	13.49
CPT–15	182992.946	2317118.267	13.40
CPT–16	182921.990	2317025.857	13.04
CPT–17	182993.003	2316918.095	11.32
CPT–18	183241.519	2316982.121	10.96
CPT–19	182665.650	2317060.169	12.36
CPT–20	182473.178	2317098.899	10.32
CPT–21	182685.129	2316813.889	9.96

LEGEND-ENVIRONMENTAL

CW	COASTAL WETLANDS LINE
NHWL	NORMAL HIGH WATER LINE
404	U.S. ARMY CORP 404 WETLANDS

LEGEND-UTILITIES

SS	SANITARY SEWER LINE
GIS–W	WATERLINE FROM GIS
OHE	OVERHEAD POWERLINE
UE	UNDERGROUND ELECTRIC LINE
	STORMWATER LINE
	COMPUTED POINT

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

IRN016

REV. #	REVISIONS	DATE
4	REVISED INFORMATION SSMH 'C','D','G' & 'I'	5/29/2019
3	ADDED TEST BORING LOCATIONS	5/28/2018
2	ADDED SPOT ELEVS, ADDRESS DESIGNER COMMENTS	2/7/2018
1	ADDED ENVIRONMENTAL FLAGGING, REVISIONS TO TOPOGRAPHIC SURVEY AND NOTES	1/10/2018

NORTH CAROLINA PROFESSIONAL SEAL L-3743 LAND SURVEYOR PETER J. BRENNAN, JR.

DATE

CITY OF WILMINGTON NORTH CAROLINA
Peter J. Brennan, Jr. - NCPLS # 3743
Engineering Division
P.O. Box 1810 • 212 Operations Center Dr. • Wilmington NC 28412 • (910) 341-7807

DATE OF SURVEY: SEPTEMBER 15, 2015	
DRAWN	CTR
CHECKED	PJB
SURVEYED	JBB/FHA

PATH G:\Surveys\Project Files\Park Bond–N Riverfront Park–2017\Design\Drawings\N Riverfront Park–2017.dwg
FILE NAME N Riverfront Park–2017.dwg

TOPOGRAPHIC SURVEY OF
9.37 ACRES ± ALMONT SHIPPING COMPANY TRACT
(NON–MARINA LAND) DEED BOOK 5105 PAGE 729
OWNER: THE CITY OF WILMINGTON
CITY OF WILMINGTON WILMINGTON TOWNSHIP NEW HANOVER COUNTY, NORTH CAROLINA

SCALE 1"= 50'
SHEET 1 of 1

IRN016

C-100-P1

IRN016

REMOVE CROSSWALK STRIPING CONCRETE, AND BRICK AND REPLACE WITH ASPHALT

REMOVE AND REPLACE ASPHALT IMPACTED BY PROPOSED FRONT STREET CONNECTION AND WATER LINE CONNECTION

ROUNDABOUT SIGN

CURB INLET "B" TOP=9.04' INV IN (S) 5.44' INV OUT (NE)

REMOVE 55 LF CURB AND GUTTER

PROTECT ROUNDABOUT PERIMETER CURB AND BRICK SKIRT IN PLACE.

REMOVE TREES

PROTECT CATCH BASIN IN PLACE

REMOVE AND REPLACE ASPHALT, BRICK, AND CURBING IMPACTED BY PROPOSED SANITARY SEWER CONNECTION

REMOVE CURB AND CATCH BASIN TOP. PROTECT BOX IN PLACE TO REPLACE WITH NEW FLUSH GRATE

RIVER VENTURES LLC
DEED BOOK 4311 PAGE 325

REMOVE WOODS 3,900 SF.

TIMBER PILE

TIMBER PILES TO BE REMOVED BY ADJACENT PROPERTY OWNER

TIMBER PILES

CONCRETE AND SOILS PILES TO BE REMOVED BY OUTSIDE DEVELOPER PRIOR TO PARK CONSTRUCTION.

30' UTILITY RIGHT-OF-WAY DEED BOOK 825 PAGE 216 MAP BOOK 12 PAGE 3

24" CONCRETE GRAVITY SEWER

CLOSURE OF EXISTING SANITARY SEWER MAIN TO BE COORDINATED WITH CFPUA

CONTRACTOR TO COORDINATE PUMP AROUND FOR PROPOSED SEWER INSTALLATION

CONCRETE WALL TO REMAIN PROTECT IN PLACE

REMOVE TIMBER WALL.

COORDINATE TELECOM RELOCATION WITH PROVIDER

REMOVE LIGHT POLE

OLD FRONT STREET (66' CLOSED R/W)

OLD FRONT STREET (66' RIGHT-OF-WAY) (NOT OPEN OR IN USE)

HARNETT STREET (66' RIGHT-OF-WAY)

REMOVE AND REPLACE ASPHALT IMPACTED BY PROPOSED FRONT STREET CONNECTION AND STORMWATER EXTENTION

REMOVE 66 LF CURB AND GUTTER

REMOVE TREE (TYP)

REMOVE CONCRETE SIDEWALK

SIDEWALK TO REMAIN PROTECT IN PLACE

SOIL PILE

CONC PILE

500-YEAR FLOOD PLAIN
100-YEAR FLOOD PLAIN

500 YEAR FEMA SPECIAL FLOOD HAZARD AREA

2013 LOMAR SET BASE FLOOD ELEVATION AT 9' FOR THIS PARCEL. FLOOD HAZARD AREAS HAVE NOT BEEN REDRAWN

100 YEAR FEMA SPECIAL FLOOD HAZARD AREA BFE 9.0'

NOW OR FORMERLY
GOLDEN MARINA LLC
DEED BOOK 6052 PAGE 2424

SIZE & MATERIAL UNKNOWN

GRAVEL SURFACE

ELEC. PANEL

SIDEWALK TO REMAIN PROTECT IN PLACE

REMOVE CONCRETE SIDEWALK

REMOVE AND REPLACE EXISTING PAVEMENT IMPACTED BY REPLACEMENT OF SANITARY SEWER AND WATER LINE TAP

REMOVE 10,300 SF GRAVEL

PROTECT EXISTING ASPHALT PARKING LOT AND CURB IN PLACE

LIMITS OF DISTURBANCE

REMOVE CONCRETE SIDEWALK
REMOVE SHRUBS (TYP)

NOW OR FORMERLY
NRHM HOLDINGS, LLC
DEED BOOK 6007 PAGE 1025

ASPHALT PARKING LOT

ELECT. VAULT

CHAIN LINK FENCE

20' UTILITY R/W DB 825 PG 216 MAP BOOK 12 PAGE 3

COWAN STREET (66' PUBLIC R/W)

30' CFPUA EASEMENT TO MAINTAIN

20' CFPUA EASEMENT TO MAINTAIN

30' UTILITY EASEMENT DEED BOOK 3814 PAGE 2955

50' STORM EASEMENT TO BE ABANDONED

TRACT 1-B REVISED
(DEED BOOK 5785 PAGE 2955)
(MAP BOOK 58 PAGE 310)
TOTAL AREA
280,084 S.F.= 6.43 ACRES ±

CITY OF WILMINGTON 50' EASEMENT DEED BOOK 903 PAGE 674 (LARGE STORM DRAIN PIPE LINES) MAP BOOK 17 PAGE 9

COASTAL JURISDICTIONAL WETLAND LIMITS DO NOT DISTURB

TREE PROTECTION FENCE

LIMITS OF DISTURBANCE

EXISTING BOARDWALK PROTECT IN PLACE (TYP)

SEE MARINE ENGINEERING PLANS FOR EXTENTS OF RIP RAP REMOVAL AND SHORE LINE PROTECTION

RIVERWALK

NORTHEAST CAPE FEAR RIVER

EBB

NORMAL HIGH WATER LINE

CAPE FEAR PUBLIC UTILITY AUTHORITY DEMO NOTES FOR CUTTING AND CAPPING OF MANHOLE:
1. CUT THE LINE OUTSIDE THE MANHOLE WITHIN 6" OF THE WALL.
2. REMOVE 1' OF PIPE AND CAP.
3. GROUT REMAINING PIPE IN THE WALL.
4. REWORK INVERT.

NOTES:

1. REFER TO SHEET C-001-P1 FOR GENERAL AND DEMOLITION NOTES.

DEMOLITION LEGEND

- REMOVE ASPHALT
- REMOVE GRAVEL
- REMOVE CONCRETE
- REMOVE RIPRAP
- REMOVE VEGETATION
- REMOVE WATER LINE
- REMOVE SANITARY SEWER LINE
- REMOVE STORM DRAINAGE
- REMOVE FENCE
- TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- COORDINATE LIGHT POLE REMOVAL
- REMOVE TREE
- REMOVE TREELINE
- REMOVE WHEEL STOP
- REMOVE CURB & GUTTER
- REMOVE SIGN

0 15 30 60
SCALE: 1"=30'

NORTH

IRN016

CITY OF WILMINGTON NORTH CAROLINA
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

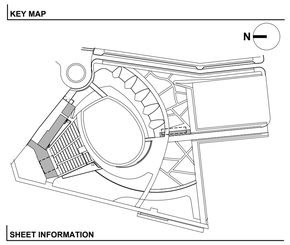
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PIKE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 30'

SHEET TITLE

CIVIL DEMOLITION PLAN

SHEET NO.

C-101-P1

IRN016

SEQUENCE OF CONSTRUCTION ACTIVITIES:

PHASE I

1. OBTAIN GRADING PERMIT - REQUIRES NPDES NCGO 10000 PERMIT INSPECTIONS.
2. DETERMINE AND MARK LIMITS OF DISTURBANCE
3. A PRECONSTRUCTION CONFERENCE MUST BE HELD 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. THE EROSION CONTROL INSPECTOR, ARCHITECT, ENGINEER, AND CONTRACTOR SHALL BE PRESENT TO SATISFY REQUIREMENTS.
4. INSTALL CONSTRUCTION ENTRANCE, TREE PROTECTION FENCING, SILT FENCE, PERIMETER EROSION CONTROL DEVICES AND ALL REQUIRED BASINS AND TRAPS.
5. SCHEDULE SITE INSPECTION.
6. CONSTRUCT REMAINING EROSION CONTROL MEASURES AS REQUIRED.
7. REMOVE AND/OR STORE TOPSOIL.
8. BEGIN CONSTRUCTION OF SEWER REROUTE - INSTALL SEWER MAIN IN OLD FRONT ST - INSTALL CONNECTION OF SEWER TO EXISTING SYSTEM - UTILIZE BYPASS PUMPING SYSTEM TO REROUTE SEWER AND ABANDON EXISTING SYSTEM. REMOVE SEWER STRUCTURES ASSOCIATED WITH PREVIOUS SYSTEM AND DEMOLISH EXISTING SEWER LINE / FILL WITH FLOWABLE FILL IN AREAS WHERE DEMOLITION IS NOT PRACTICAL
9. BEGIN GRADING OPERATIONS – CONTAMINATED SOILS ARE TO BE REMOVED AND HANDLED APPROPRIATELY. IMPORTED FILL MATERIAL MUST BE INSPECTED AND APPROVED AN ACCEPTABLE TO BE USED ONSITE – NOTE THAT ENGINEERED SOIL MIXES ARE SPECIFIED THROUGHOUT THE SITE
10. DEMOLISH EXISTING SITE FEATURES ACCORDING TO DEMOLITION PLAN
11. ALL STREETS SURROUNDING THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES.
12. PLACE TEMPORARY SEEDING ON ALL DISTURBED AREAS THAT WILL BE IDLE. SEE SLOPE STABILIZATION TIME FRAME SCHEDULE BELOW

PHASE II

6. CONTINUE GRADING OPERATIONS AND INSTALLATION OF THE PROPOSED IMPROVEMENTS.
7. INSTALL STORMWATER CONVEYANCE NETWORK FORM DOWNSTREAM TIE IN POINT UPSTREAM - MONITOR AND MAINTAIN STORM SYSTEM, KEEPING IT FREE OF SEDIMENT IN PORTIONS OF THE SYSTEM THAT ARE NOT DIRECTED TO THE SEDIMENT BASIN. REMOVE SEDIMENT AFTER EACH RAIN EVENT. INSTALL TEMPORARY PIPE FROM STRUCTURE 52-JB TO SEDIMENT BASIN
8. ALL STREETS SURROUNDING THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES.
9. PLACE TEMPORARY SEEDING ON ALL DISTURBED AREAS THAT WILL BE IDLE. SEE SLOPE STABILIZATION TIME FRAME SCHEDULE ON THIS SHEET
10. SEDIMENT BASIN IS TO BE SHIFTED AND EXPANDED TO ALLOW FOR SHORELINE WORK. SEE MAJOR CAMA PERMIT DOCUMENTATION, DESIGN AND INFORMATION BY OTHERS FOR SPECIFIC SEDIMENTATION CONTROL AND EROSION ACTIVITIES FOR AREAS ALONG THE SHORLINE OF THE RIVER

PHASE III

1. COMPLETE REMAINING PROPOSED GRADING
2. INSTALL REMAINING SITE FEATURES
3. FLUSH ALL SEDIMENT OUT OF STORMWATER NETWORK AND REMOVE TEMPORARY EROSION CONTROL PIPE GROUT 52-JB UP TO DESIGNED INVERT. NETWORK IS TO BE INSPECTED BEFORE REMOVING SEDIMENT BASIN.
4. ALL GROUNDS AND SLOPES MUST BE STABILIZED WITH GRASS/SOD/PLANTINGS BEFORE REMOVING SEDIMENT BASIN
5. DE-WATER SEDIMENT BASIN WITH PUMP AND SEDIMENT FILTER BAG. PREPARE BASIN TO BE REMOVED
6. ONCE THE DENUDED AREA THAT DRAINS TO THE BMP HAS BEEN COMPLETELY STABILIZED, THE SKIMMER BASIN SHALL BE REMOVED ALONG WITH ALL FINES THAT HAS ACCUMULATED DURING CONSTRUCTION. CONFIRMATION OF SITE STABILIZATION REQUIRED BY ENGINEER OR ENGINEER'S REPRESENTATIVE. FLUSH STORM LINES AND HAVE SYSTEM INSPECTED PRIOR TO REMOVAL OF BASIN

NOTES:

1. INSPECTOR REFERS TO LOCAL JURISDICTIONAL (DEMLR OR LOCAL) LAND QUALITY INSPECTOR OR HIS REPRESENTATIVE. FIELD INSPECTIONS MAY REQUIRE ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE INSPECTOR.
2. CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES LAND QUALITY SECTION EROSION AND SEDIMENT CONTROL PLANNING LAND DESIGN MANUAL.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL METHODS DURING CONSTRUCTION. INCLUDING ADDITIONAL MEASURES AS NECESSARY TO PREVENT SEDIMENT FROM LEAVING THE PERMITTED LIMITS OF DISTURBANCE THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL PERMANENT EROSION CONTROL METHODS AFTER CONSTRUCTION IS COMPLETE, IF ANY PERMANENT METHODS ARE REQUIRED.
4. NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM: THE PERSON RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES IS REQUIRED TO INSPECT THE PROJECT AFTER EACH PHASE OF THE PROJECT AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131 TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED.

Sediment Basin Summary:	Basin ID	=	BASIN 1	
	Bottom Width	=	45	ft
	Bottom Length	=	100	ft
	Surface Width	=	55	ft
	Surface Length	=	110	ft
	Top Width	=	61	ft
	Top Length	=	116	ft
	Stone Outlet Width	=	30	ft
	Outlet Sideslopes	=	2	:1
	Storage Depth	=	2.5	ft
	Dam Height	=	4	ft
	Sideslopes	=	2	:1
	Skimmer Size	=	4	in
	Head on Skimmer	=	0.333	ft
	Orifice Size	=	2.75	in
Note:	*All Calculations are based on a 25 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.*			

BASIN SIZING REQUIREMENTS

BASIN VOLUME REQUIRED:	11,088 CF
BASIN VOLUME PROVIDED:	13,188 CF
BASIN SURFACE AREA REQUIRED:	5,842 SF
BASIN SURFACE AREA PROVIDED:	6,050 SF

Sediment Basin Summary:	Basin ID	=	BASIN 2	
	Bottom Width	=	60	ft
	Bottom Length	=	110	ft
	Surface Width	=	70	ft
	Surface Length	=	120	ft
	Top Width	=	76	ft
	Top Length	=	126	ft
	Stone Outlet Width	=	20	ft
	Outlet Sideslopes	=	2	:1
	Storage Depth	=	2.5	ft
	Dam Height	=	4	ft
	Sideslopes	=	2	:1
	Skimmer Size	=	4	in
	Head on Skimmer	=	0.333	ft
	Orifice Size	=	2.75	in
Note:	*All Calculations are based on a 25 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.*			

BASIN SIZING REQUIREMENTS

BASIN VOLUME REQUIRED:	14,940 CF
BASIN VOLUME PROVIDED:	18,750 CF
BASIN SURFACE AREA REQUIRED:	7,871 SF
BASIN SURFACE AREA PROVIDED:	8,400 SF

EROSION CONTROL NOTES:

1. REFER TO C-001-P1 FOR GENERAL NOTES.
2. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN BEST LOCATION BASED ON FIELD CONDITIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CONSTRUCTION ENTRANCES AS NECESSARY TO PREVENT THE TRACKING OF SEDIMENT OFF-SITE. THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL PERMANENT EROSION CONTROL METHODS AFTER CONSTRUCTION IS COMPLETE, IF ANY PERMANENT METHODS ARE REQUIRED.
5. APPROVAL OF THIS EROSION AND SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
6. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR AND ESC SUPERVISOR UNTIL ALL CONSTRUCTION IS APPROVED.
7. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE LIMITS OF DISTURBANCE (L.O.D.) SHALL BE PERMITTED. THE L.O.D. SHALL BE MAINTAINED BY THE ESC SUPERVISOR FOR THE DURATION OF CONSTRUCTION.
8. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
9. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.).
10. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE ESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT. COPIES OF THE WRITTEN INSPECTION REPORTS SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE TWICE PER WEEK AND AFTER RAINS OF GREATER THAN 0.5". RAIN GAUGE REQUIRED ON SITE.
11. ANY AREAS OF EXPOSED SOILS THAT WILL NOT BE DISTURBED FOR FOURTEEN DAYS SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
12. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN FORTY EIGHT (48) HOURS FOLLOWING A STORM EVENT.
13. AT NO TIME SHALL MORE THAN ONE (1) FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.
14. STABILIZED CONSTRUCTION ENTRANCES AND ROADS SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
15. WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE A MINIMUM THICKNESS OF 2 TO 3 INCHES.
16. INTERIM SLOPES MAY BE GRADED TO A MAXIMUM SLOPE OF 2:1 (HORIZONTAL: VERTICAL); CUT SLOPES SHALL BE LIMITED TO A MAXIMUM SLOPE OF 1.5:1.
17. THE SURFACE OF AREAS SLOPES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL THAT ARE TO RECEIVE INTERIM FILL SHALL BE PLOWED, FURROWED, TILLED OR BROKEN UP PRIOR TO PLACING FILL SO THAT FILL MATERIAL WILL BOND WITH EXISTING. " SURFACE. INTERIM FILL SHALL BE PLACED AS SPECIFIED FOR PERMANENT FILLS AND IN LIFTS NOT GREATER THAN 6".
18. PROVIDE DUST CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, WETTING DOWN TO CONTROL DUST ON SITE, IN ORDER TO PREVENT ANNOYANCE/AND OR DAMAGE TO ADJACENT SITES. CALCIUM CHLORIDE OR ANY OTHER CHEMICAL MATERIAL MAY NOT BE USED ON SUBGRADES OF AREAS TO BE SEEDED OR PLANTED.
19. SEDIMENT LADEN RUNOFF FROM EXCAVATIONS SHALL NOT BE PUMPED DIRECTLY TO STORM DRAINAGE.
20. INSPECTOR REFERS TO LOCAL JURISDICTIONAL (NCDENR OR LOCAL) LAND QUALITY INSPECTOR OR HIS REPRESENTATIVE. FIELD INSPECTIONS MAY REQUIRE ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE INSPECTOR.
21. CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES LAND QUALITY SECTION EROSION AND SEDIMENT CONTROL PLANNING LAND DESIGN MANUAL.
22. NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM: THE PERSON RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES IS REQUIRED TO INSPECT THE PROJECT AFTER EACH PHASE OF THE PROJECT AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131 TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. THE SELF-INSPECTION REPORT FORM IS AVAILABLE AS AN EXCEL SPREADSHEET FORM HTTP://WWW.DLR.ENR.STATE.NC.US/PAGES/SEDIMENTATION_NEW.HTML

TREE PROTECTION NOTES:

TREE PROTECTION NOTES:

1. NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS (18-457(B)).
2. PROTECTIVE FENCING IS TO BE PROPERLY MAINTAINED THROUGH THE DURATION OF THE PROJECT (18-458).
3. LAND CLEARING AND CONSTRUCTION CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION F TREE PROTECTION REQUIREMENTS AND METHODS (18-457(D)).
4. ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING AND GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS (18-458).
5. NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED (18-458).
6. REGULATED AND SIGNIFICANT TREES IN THE STREET YARD (18-456(C)) AND ANY TREES IN ANY REQUIRED BUFFERS (18-456(B)) ARE REQUIRED TO BE RETAINED.

SEEDING PREPARATION:

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONED, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY ALL AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW).
5. CONTINUE TILLAGE UNTIL A WELL PULVERIZED, FIRM, REASONABLY UNIFORM 4 TO 6 INCHES DEEP SEEDBED IS PREPARED.
6. SEED ON A FRESHLY PREPARED SEED BED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESENDING WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED , REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESENDING WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 50% DAMAGED , REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES AND LANDSCAPING PLANS.
10. SEE LANDSCAPING PLANS FOR PERMANENT SEEDING, MULCHING, AND FERTILIZING RATES. ALL AREAS NOT DESIGNATED TO RECEIVE PLANTS SHALL BE SEEDED PER THE LANDSCAPING PLANS.

ADMIXTURES:

AGRICULTURAL LIMESTONE: 2 TONS/ACRE

FERTILIZER: 1,000 LBS/ACRE - 10-10-10

SUPERPHOSPHATE: 500 LBS/ACRE - 20% ANALYSIS

MULCH: 2 TONS/ACRE - SMALL GRAIN STRAW

ANCHOR: ASPHALT EMULSION AT 300 GALS/ACRE

TEMPORARY SEEDING PREPARATION:

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO SIX INCHES DEEP.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE ADMIXTURE BELOW).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RE-SEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT S&EC ENVIRONMENTAL ENGINEERS ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

SEEDING SCHEDULE (COAST):

TEMPORARY SEEDING FOR COASTAL PLAIN:

DATE	TYPRE	PLANTING RATE
DEC 1 – APR 15	ANNUAL LESPEDEZA (KOBE)	50 LBS/ACRE
	RYE (GRAIN)	120 LBS/ACRE
	AGRICULTURAL LIMESTONE	2,000 LBS/ACRE
	10-10-10 FERTILIZER	750 LBS/ACRE
	MULCH (STRAW)	4,000 LBS/ACRE
APR 15 – AUG 15	GERMAN MILLET	40 LBS/ACRE
	AGRICULTURAL LIMESTONE	2,000 LBS/ACRE
	10-10-10 FERTILIZER	750 LBS/ACRE
	MULCH (STRAW)	4,000 LBS/ACRE
AUG 15 – DEC 30	RYE	120 LBS/ACRE
	AGRICULTURAL LIMESTONE	2,000 LBS/ACRE
	10-10-10 FERTILIZER	1,000 LBS/ACRE
	MULCH (STRAW)	4,000 LBS/ACRE

PERMANENT SEEDING FOR COASTAL PLAIN

DATE	TYPE	PLANTING RATE
FEB 15 – APR 15*	TALL FESCUE	80 LBS/ACRE
	PENSACOLA BAHIAGRASS	50 LBS/ACRE
	SERICA LESPEDEZA	30 LBS/ACRE
	KOBE LESPEDEZA	40 LBS/ACRE
APR 15 – AUG 15	ADD GERMAN MILLET	10 LBS/ACRE
SEP 1 – SEP 30*	TALL FESCUE	80 LBS/ACRE
	PENSACOLA BAHIAGRASS	50 LBS/ACRE
	SERICA LESPEDEZA	30 LBS/ACRE
	KOBE LESPEDEZA	40 LBS/ACRE
AUG 15 – MAY 1	ADD RYE (GRAIN)	25 LBS/ACRE
SEP 1 – MAR 1	SERICA LESPEDEZA (UNSCARIFIED)	30 LBS/ACRE

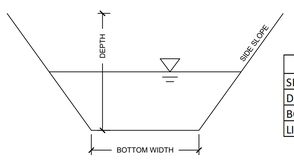
CONSULT S&EC ENVIRONMENTAL ENGINEERS FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE THAT DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

*** TEMPORARY: RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW MORE THAN 12" IN HEIGHT BEFORE MOWING; OTHERWISE, FESCUE MAY BE SHADED OUT.

SITE AREA DESCRIPTION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTION
Perimeter dikes, swales, ditches and slopes	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 feet in length
All other area with slopes flatter than 4:1	14 days	None (except as shown in chart)

NPDES SLOPE STABILIZATION CHART
NOTE:
CONTRACTOR MUST PERFORM NPDES EROSION AND SEDIMENT CONTROL INSPECTIONS AT LEAST ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT GREATER THAN .5 INCHES PER 24HR PERIOD

TOTAL AREA OF DISTURBANCE
7.33 AC



	DITCH A	DITCH B
SIDE SLOPE	1.5	1.5
DEPTH	1.5	1.5
BOTTOM WIDTH	1	1
LINING	JUTE NET	JUTE NET

CITY OF WILMINGTON NORTH CAROLINA
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

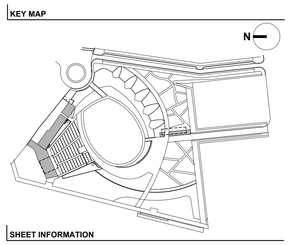
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PYKE 10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: N.T.S.

SHEET TITLE

CIVIL EROSION & SEDIMENTATION CONTROL NOTES

SHEET NO.

C-111-P1

IRN016

IRN016

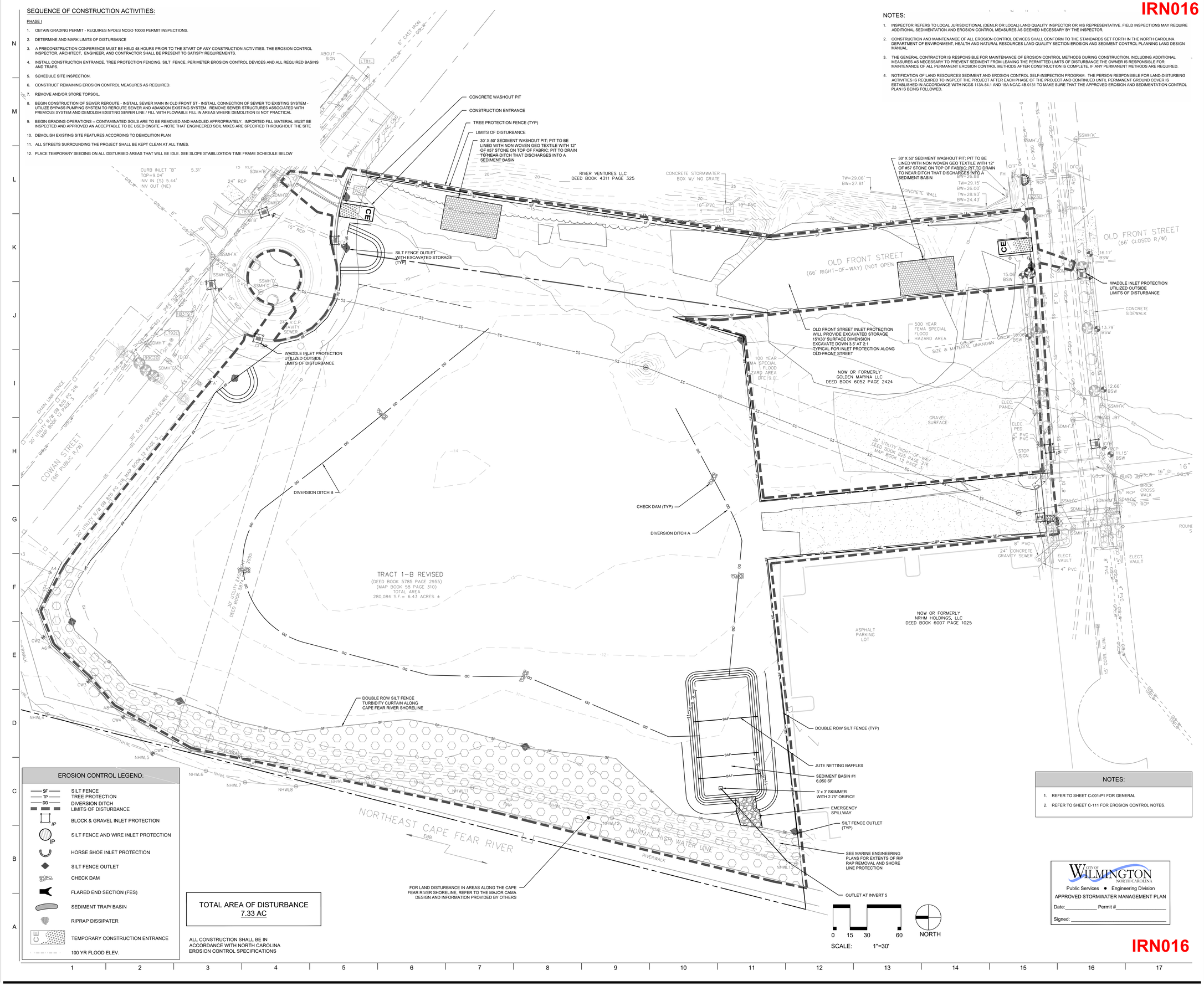
SEQUENCE OF CONSTRUCTION ACTIVITIES:

PHASE I

1. OBTAIN GRADING PERMIT - REQUIRES NPDES NCGO 10000 PERMIT INSPECTIONS.
2. DETERMINE AND MARK LIMITS OF DISTURBANCE
3. A PRECONSTRUCTION CONFERENCE MUST BE HELD 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. THE EROSION CONTROL INSPECTOR, ARCHITECT, ENGINEER, AND CONTRACTOR SHALL BE PRESENT TO SATISFY REQUIREMENTS.
4. INSTALL CONSTRUCTION ENTRANCE, TREE PROTECTION FENCING, SILT FENCE, PERIMETER EROSION CONTROL DEVICES AND ALL REQUIRED BASINS AND TRAPS.
5. SCHEDULE SITE INSPECTION.
6. CONSTRUCT REMAINING EROSION CONTROL MEASURES AS REQUIRED.
7. REMOVE AND/OR STORE TOPSOIL.
8. BEGIN CONSTRUCTION OF SEWER REROUTE - INSTALL SEWER MAIN IN OLD FRONT ST - INSTALL CONNECTION OF SEWER TO EXISTING SYSTEM - UTILIZE BYPASS PUMPING SYSTEM TO REROUTE SEWER AND ABANDON EXISTING SYSTEM. REMOVE SEWER STRUCTURES ASSOCIATED WITH PREVIOUS SYSTEM AND DEMOLISH EXISTING SEWER LINE / FILL WITH FLOWABLE FILL IN AREAS WHERE DEMOLITION IS NOT PRACTICAL
9. BEGIN GRADING OPERATIONS -- CONTAMINATED SOILS ARE TO BE REMOVED AND HANDLED APPROPRIATELY. IMPORTED FILL MATERIAL MUST BE INSPECTED AND APPROVED AN ACCEPTABLE TO BE USED ONSITE -- NOTE THAT ENGINEERED SOIL MIXES ARE SPECIFIED THROUGHOUT THE SITE
10. DEMOLISH EXISTING SITE FEATURES ACCORDING TO DEMOLITION PLAN
11. ALL STREETS SURROUNDING THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES.
12. PLACE TEMPORARY SEEDING ON ALL DISTURBED AREAS THAT WILL BE IDLE. SEE SLOPE STABILIZATION TIME FRAME SCHEDULE BELOW

NOTES:

1. INSPECTOR REFERS TO LOCAL JURISDICTIONAL (DEMLR OR LOCAL) LAND QUALITY INSPECTOR OR HIS REPRESENTATIVE. FIELD INSPECTIONS MAY REQUIRE ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE INSPECTOR.
2. CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES LAND QUALITY SECTION EROSION AND SEDIMENT CONTROL PLANNING LAND DESIGN MANUAL.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL METHODS DURING CONSTRUCTION. INCLUDING ADDITIONAL MEASURES AS NECESSARY TO PREVENT SEDIMENT FROM LEAVING THE PERMITTED LIMITS OF DISTURBANCE THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL PERMANENT EROSION CONTROL METHODS AFTER CONSTRUCTION IS COMPLETE, IF ANY PERMANENT METHODS ARE REQUIRED.
4. NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM: THE PERSON RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES IS REQUIRED TO INSPECT THE PROJECT AFTER EACH PHASE OF THE PROJECT AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131 TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED.


CONCRETE WASHOUT PIT
CONSTRUCTION ENTRANCE
TREE PROTECTION FENCE (TYP)
LIMITS OF DISTURBANCE
30' X 50' SEDIMENT WASHOUT PIT; PIT TO BE LINED WITH NON WOVEN GEO TEXTILE WITH 12" OF #57 STONE ON TOP OF FABRIC; PIT TO DRAIN TO NEAR DITCH THAT DISCHARGES INTO A SEDIMENT BASIN
SILT FENCE OUTLET WITH EXCAVATED STORAGE (TYP)
WADDLE INLET PROTECTION UTILIZED OUTSIDE / LIMITS OF DISTURBANCE
DIVERSION DITCH B
CHECK DAM (TYP)
DIVERSION DITCH A
DOUBLE ROW SILT FENCE TURBIDITY CURTAIN ALONG CAPE FEAR RIVER SHORELINE
DOUBLE ROW SILT FENCE (TYP)
JUTE NETTING BAFFLES
SEDIMENT BASIN #1 6,050 SF
3' x 3' SKIMMER WITH 2.75" ORIFICE
EMERGENCY SPILLWAY
SILT FENCE OUTLET (TYP)
SEE MARINE ENGINEERING PLANS FOR EXTENTS OF RIP RAP REMOVAL AND SHORE LINE PROTECTION
OUTLET AT INVERT 5
FOR LAND DISTURBANCE IN AREAS ALONG THE CAPE FEAR RIVER SHORELINE, REFER TO THE MAJOR CAMA DESIGN AND INFORMATION PROVIDED BY OTHERS
RIVER VENTURES LLC DEED BOOK 4311 PAGE 325
NOW OR FORMERLY GOLDEN MARINA LLC DEED BOOK 6052 PAGE 2424
NOW OR FORMERLY NRHM HOLDINGS, LLC DEED BOOK 6007 PAGE 1025
OLD FRONT STREET (66' RIGHT-OF-WAY) (NOT OPEN
OLD FRONT STREET (66' CLOSED R/W)
OLD FRONT STREET INLET PROTECTION WILL PROVIDE EXCAVATED STORAGE 15'X30' SURFACE DIMENSION EXCAVATE DOWN 3.5 AT 2:1 TYPICAL FOR INLET PROTECTION ALONG OLD FRONT STREET
WADDLE INLET PROTECTION UTILIZED OUTSIDE LIMITS OF DISTURBANCE
COWAN STREET (66' PUBLIC R/W)
TRACT 1-B REVISED
(DEED BOOK 5785 PAGE 2955)
(MAP BOOK 58 PAGE 310)
TOTAL AREA
280,084 S.F.= 6.43 ACRES ±
NORTHEAST CAPE FEAR RIVER
NORMAL HIGH WATER LINE
RIVERWALK
ASPHALT PARKING LOT
100 YEAR FEMA SPECIAL FLOOD HAZARD AREA BFE 9.0'
500 YEAR FEMA SPECIAL FLOOD HAZARD AREA
GRAVEL SURFACE
CONCRETE SIDEWALK
BRICK CROSS WALK
ELECT. VAULT
24" CONCRETE GRAVITY SEWER
8" PVC
4" PVC
15" RCP
24" RCP
18"X19" RCP
CURB INLET "B" TOP=9.04' INV IN (S) 5.44' INV OUT (NE)
CONCRETE STORMWATER BOX W/ NO GRATE
CONCRETE WALL
TW=29.06' BW=27.81'
TW=29.15' BW=26.00'
TW=28.93' BW=24.43'
SSMH'A'
SSMH'B'
SSMH'C'
SSMH'D'
SSMH'E'
SSMH'F'
SSMH'G'
SSMH'H'
SSMH'I'
SSMH'J'
SSMH'K'
SSMH'L'
SSMH'M'
SSMH'N'
SSMH'O'
SSMH'P'
SSMH'Q'
SSMH'R'
SSMH'S'
SSMH'T'
SSMH'U'
SSMH'V'
SSMH'W'
SSMH'X'
SSMH'Y'
SSMH'Z'
CHAIN LINK FENCE
20' UTILITY R/W DB 825 PG 216 MAP BOOK 12 PAGE 3
30" D.I.P GRAVITY SEWER
36" UTILITY EASEMENT DEED BOOK 5815 PAGE 2955
8" V.C.P. GRAVITY SEWER
PIPE SIZE UNKNOWN
5.31'
5.44'
10.33'
11.15'
12.66'
13.79'
16.17'
15.06' BSW
BLIND JB'
BLIND
ROUND S
NHWL1
NHWL2
NHWL3
NHWL4
NHWL5
NHWL6
NHWL7
NHWL8
NHWL9
NHWL10
NHWL11
NHWL12
NHWL13
CW1
CW2
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A43

IRN016

SEQUENCE OF CONSTRUCTION ACTIVITIES:

PHASE II

6. CONTINUE GRADING OPERATIONS AND INSTALLATION OF THE PROPOSED IMPROVEMENTS.
7. INSTALL STORMWATER CONVEYANCE NETWORK FORM DOWNSTREAM TIE IN POINT UPSTREAM - MONITOR AND MAINTAIN STORM SYSTEM, KEEPING IT FREE OF SEDIMENT IN PORTIONS OF THE SYSTEM THAT ARE NOT DIRECTED TO THE SEDIMENT BASIN. REMOVE SEDIMENT AFTER EACH RAIN EVENT. INSTALL TEMPORARY PIPE FROM STRUCTURE 52-JB TO SEDIMENT BASIN
8. ALL STREETS SURROUNDING THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES.
9. PLACE TEMPORARY SEEDING ON ALL DISTURBED AREAS THAT WILL BE IDLE. SEE SLOPE STABILIZATION TIME FRAME SCHEDULE ON THIS SHEET

NOTES:

1. INSPECTOR REFERS TO LOCAL JURISDICTIONAL (DEMLR OR LOCAL) LAND QUALITY INSPECTOR OR HIS REPRESENTATIVE. FIELD INSPECTIONS MAY REQUIRE ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE INSPECTOR.
2. CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES LAND QUALITY SECTION EROSION AND SEDIMENT CONTROL PLANNING LAND DESIGN MANUAL.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL METHODS DURING CONSTRUCTION. INCLUDING ADDITIONAL MEASURES AS NECESSARY TO PREVENT SEDIMENT FROM LEAVING THE PERMITTED LIMITS OF DISTURBANCE THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL PERMANENT EROSION CONTROL METHODS AFTER CONSTRUCTION IS COMPLETE. IF ANY PERMANENT METHODS ARE REQUIRED.
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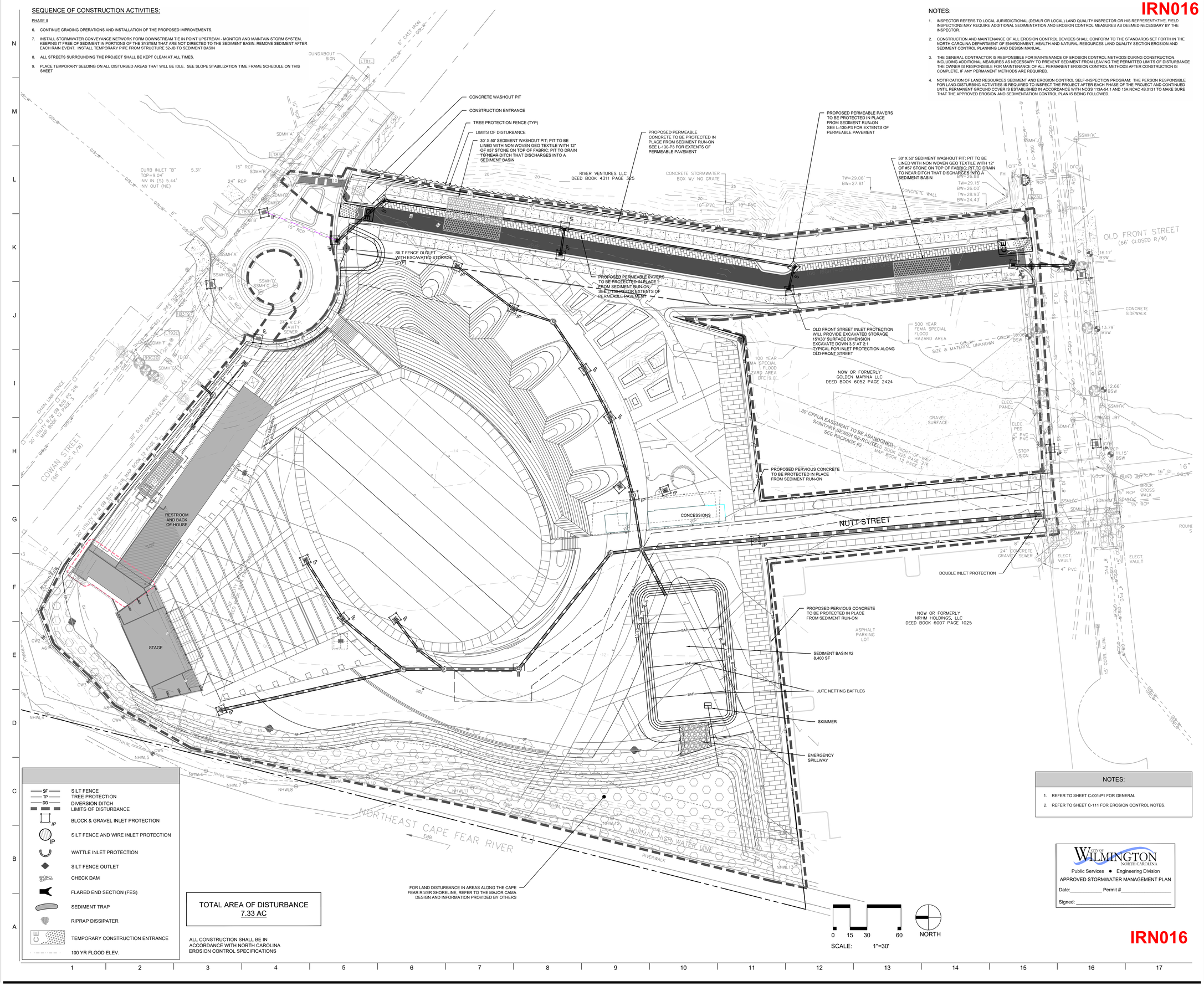


NOTES:

1. REFER TO SHEET C-001-P1 FOR GENERAL
2. REFER TO SHEET C-111 FOR EROSION CONTROL NOTES.

TOTAL AREA OF DISTURBANCE
7.33 AC

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NORTH CAROLINA EROSION CONTROL SPECIFICATIONS

SCALE: 1"=30'

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

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

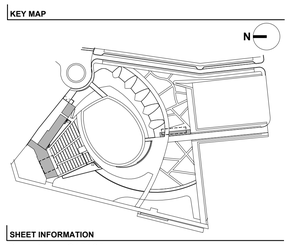
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PIKE 10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 30'

SHEET TITLE

CIVIL EROSION & SEDIMENTATION (PHASE II)

SHEET NO.

C-113-P1

IRN016

CITY OF WILMINGTON NOTES:
- CONTRACTOR SHALL MAINTAIN AN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION
- NEW HYDRANTS MUST BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS DELIVERED TO THE JOB SITE
- A HYDRANT MUST BE WITHIN 150' OF THE FDC (MEASURED AS THE TRUCK DRIVES FOR PRACTICAL USE)
- FDC MUST BE WITHIN 40' OF FIRE APPARATUS PLACEMENT
- LANDSCAPING OR PARKING CANNOT BLOCK OR IMPEDE THE FDC OR FIRE HYDRANTS. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT AND FDC
- ADDITIONAL FIRE PROTECTION AND/OR ACCESSIBILITY REQUIREMENTS MAY BE REQUIRED DUE TO ANY SPECIAL CIRCUMSTANCES CONCERNING THE PROJECT.
- PRIVATE UNDERGROUND FIRE LINES REQUIRE A SEPARATE UNDERGROUND FIRE LINE PERMIT FROM THE WILMINGTON FIRE AND LIFE SAFETY DIVISION 910-343-0696
- ALL ISOLATION VALVES WITHIN THE "HOT BOX" MUST BE ELECTRICALLY SUPERVISED
- ALL UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET.

COWAN STREET
66' PUBLIC ROW
66.00' PROP ROW ALIGNMENT
8" X 6" TAPPING SLEEVE AND VALVE ONTO EXISTING WATER MAIN
SEE STRUCTURAL FOR FOUNDATION DRAIN DETAILS
SEE BID PACKAGE P-2 FOR RELOCATION OF SANITARY SEWER
PUBLIC FIRE HYDRANT AND VALVE
6" X 6" TEE
01-CB
02-CB
03-CB
04-CB
24" DR 14 PVC PUBLIC SANITARY SEWER
8" DIP PUBLIC WATER MAIN
MH-03 RIM ELEV = 8.99
PROPOSED CONNECTION TO EXISTING GRAVITY SANITARY SEWER MANHOLE
SSMH'D' RIM ELEV = 10.64
MH-01 RIM ELEV = 9.30
5/8" SCH40 PVC SERVICE TO HOSE BIB CONNECTION (TYP)
64-AD
63-AD
62-JB
61-AD
60-AD
4" METER
4" BFP
IRRIGATION LINE METER AND BFP
BACKFLOW PREVENTION DEVICES TO BE ARCHITECTURAL BROWN
IRRIGATION BOOSTER PUMP. SEE IRRIGATION DRAWINGS
SEE IRRIGATION PLANS FOR CONTINUATION
8" X 16" TAPPING SLEEVE AND VALVE ONTO EXISTING 16" DIP WATER LINE. COORDINATE INSTALLATION WITH CFPUA
66' PUBLIC ROW
MH-20 RIM ELEV = 8.50
SEE NOTE 13
6" DIP FDC CONNECTION
UNDER DRAIN FOR ENGINEERED SOILS
SEE NOTE 13
6" HDPE POSITIVE SLOPE
4" DIP DOMESTIC WATER LINE
8" DIP FIRE PROTECTION LINE
4" DIP DOMESTIC CONNECTION RPZ ASSEMBLY INSIDE BUILDING
6" DIP FIRE CONNECTION
RESTROOM (ON HOLD)
BACK OF HOUSE (ON HOLD)
24' CFPUA EASEMENT TO MAINTAIN
SUBSURFACE CONTRACTOR TO DESIGN AND INSTALL SHEET PILE SHORING SYSTEM ON NORTH SIDE OF WALL TO DEPTH OF 15' BELOW FINISHED GRADE (DESIGNED BY OTHERS).
STAGE
SEE UTILITY ENLARGEMENT C-121-P1
1" COPPER WATER SERVICE TO OUTDOOR SHOWER
SPLASH PAD ALTERNATE 7B
CO-SHOWER_SERVICE RIM ELEV = 13.00
57-JB
CO C RIM ELEV = 13.13
CO A RIM ELEV = 13.00
CO B RIM ELEV = 13.43
5/8" SCH40 PVC SERVICE TO HOSE BIB CONNECTION (TYP)
53-JB
52-JB
51-AD
50-AD-EX
45° BEND (TYP)
MH-02C RIM ELEV = 13.50
MH-02B RIM ELEV = 12.80
MH-02A RIM ELEV = 10.33
EX-SSMH-G RIM ELEV = 10.48
LIMITS OF DISTURBANCE
PRIVATE FIRE HYDRANT AND VALVE
TIE-ON TO EXISTING STUB
8" RPDA BACKFLOW PREVENTION DEVICE
FIRELINE FOR CONCESSIONS BLDG. (SEE MEP PLANS FOR MORE INFORMATION)
8" X 6" TEE
PERMABLE PAVERS (SEE L SERIES)
PERVIOUS CONCRETE (TYP)
8" DIP PRIVATE FIRE PROTECTION LINE
TREE PIT (TYP) SEE SHEET L-121-P1 AND L122-P1
PROPOSED CONNECTION TO EXISTING GRAVITY SANITARY SEWER MANHOLE (EXISTING MANHOLE TO BE REPLACED)
(2) 6" HDPE FORCE MAIN. APPROXIMATE LOCATION BASED OFF DRAWING PROVIDED BY CFPUA. CONTRACTOR TO CONFIRM
103-AD
102-AD
101-AD
151-AD
150-AD
54-JB
WATER FEATURE ALTERNATE 7A
PRIVATE FIRE HYDRANT AND VALVE
101-JB
104-AD
INFILTRATION SYSTEM SEE SHEET C-133
DIVERSION STRUCTURE A
5/8" SCH40 PVC SERVICE TO HOSE BIB CONNECTION (TYP)
5/8" WATERLINE TO HOSE BIBS HAVE BEEN ADDED TO DRAWINGS TO BE INCLUDED IN ADDENDUM. WATERLINES HAVE NOT BEEN REV CLOUDED FOR CLARITY

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES.
1. ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) WATER DISTRIBUTION AND SANITARY SEWER COLLECTION SYSTEMS, AS SHOWN AND SPECIFIED HEREIN, SHALL BE DESIGNED AND CONSTRUCTED TO CONFORM TO STATE RULES AND THE CFPUA'S MINIMUM TECHNICAL STANDARDS. THE CFPUA MINIMUM TECHNICAL STANDARDS ARE CONTAINED IN THE CURRENT DESIGN GUIDANCE MANUAL, MATERIAL SPECIFICATION MANUAL, TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, AND STANDARD DRAWING DETAILS.
2. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
3. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE.
4. ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL ALSO BE CONSTRUCTED OF DIP.
5. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
6. NO FLEXIBLE COUPLINGS SHALL BE USED. NO FLEXIBLE COUPLINGS SHALL BE USED.
7. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316.
8. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.
9. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
10. UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER SERVICES SHALL BE DISCONNECTED FROM MAIN.
11. A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR NEW CONNECTIONS TO EXISTING CLAY GRAVITY SEWER MAINS.

UTILITY LEGEND:

- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED CLEANOUT
- PROPOSED FDC
- PROPOSED BACKFLOW METER
- PROPOSED POST INDICATOR VALVE (PIV)
- GREASE INTERCEPTOR
- 300' HYDRANT COVERAGE CIRCLE
- LIMITS OF DISTURBANCE

FIRE AND LIFE SAFETY NOTES:

1. CONTRACTOR SHALL MAINTAIN AN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
2. NEW HYDRANTS MUST BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS DELIVERED TO THE JOB SITE.
3. A HYDRANT MUST BE WITHIN 150' OF THE FDC (MEASURED AS THE TRUCK DRIVES FOR PRACTICAL USE).
4. FDC MUST BE WITHIN 40' OF FIRE APPARATUS PLACEMENT.
5. LANDSCAPING OR PARKING CANNOT BLOCK OR IMPEDE THE FDC OR FIRE HYDRANTS. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT AND FDC.
6. ADDITIONAL FIRE PROTECTION AND/ OR ACCESSIBILITY REQUIREMENTS MAY BE REQUIRED DUE TO ANY SPECIAL CIRCUMSTANCES CONCERNING THE PROJECT.
7. PRIVATE UNDERGROUND FIRE LINES REQUIRE A SEPARATE UNDERGROUND FIRE LINE PERMIT FROM THE WILMINGTON FIRE AND LIFE SAFETY DIVISION 910-343-0696.
8. ALL ISOLATION VALVES WITHIN THE "HOT BOX" MUST BE ELECTRONICALLY SUPERVISED.
9. CONTRACTOR SHALL SUBMIT A RADIO SIGNAL STRENGTH STUDY THAT DEMONSTRATES THAT EXISTING EMERGENCY RESPONDER RADIO SIGNAL LEVELS MEET THE REQUIREMENTS OF SECTION 510 OF THE 2018 NC FIRE CODE

UTILITY NOTES:

1. REFER TO SHEET C-001-P1 FOR GENERAL NOTES.
2. UNLESS OTHERWISE NOTED, ALL MANHOLES SHALL BE PRE-CAST CONCRETE STRUCTURES.
3. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF UNDERGROUND UTILITIES (WATER, SEWER, STORM, ELECTRICAL, GAS, OR OTHER) FOR THIS PROJECT WITH THE BUILDING PLANS. THE UTILITY CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE INSTALLATION OF ALL UTILITY SERVICES TO WITHIN FIVE (5) FEET OF THE BUILDING CONNECTION POINT.
4. THE CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS ON SITE AND UTILITY PROVIDERS DURING CONSTRUCTION TO ENSURE SMOOTH TRANSITION BETWEEN DISCIPLINES.
5. THE CONTRACTOR SHALL COORDINATE ALL PEDESTRIAN AND VEHICULAR INTERRUPTIONS WITH OWNER'S REPRESENTATIVE AT LEAST 72 HOURS PRIOR TO BEGINNING WORK.
6. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK INSIDE THE PUBLIC RIGHT OF WAY PRIOR TO RECEIPT AND COMPLIANCE WITH ALL APPLICABLE NCDOT PERMITS. ADDITIONALLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY FLAGGERS AND TRAFFIC CONTROL DURING ALL WORK INSIDE THE PUBLIC RIGHTS OF WAY.
7. ALL EXISTING SUB-SURFACE UTILITIES IDENTIFIED ON THE CONSTRUCTION DOCUMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATION BASED ON SURVEY INFORMATION GATHERED FROM FIELD INSPECTION AND/OR ANY OTHER APPLICABLE RECORD DRAWINGS WHICH MAY BE AVAILABLE. DEPTHS OF EXISTING UTILITIES SHOWN IN PROFILE VIEWS ARE BASED ON STANDARD ASSUMPTIONS. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION, DEPTH, SIZE AND MATERIAL OF ANY AND ALL SUB-SURFACE CONDITIONS REFERENCED IN THESE PLANS PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES OR CONFLICTS.
8. ELEVATIONS OF UTILITIES ARE GIVEN TO THE EXTENT OF INFORMATION AVAILABLE, WHERE ELEVATIONS ARE NOT GIVEN AT POINTS OF EXISTING UTILITY CROSSINGS, SUCH ELEVATIONS SHALL BE DETERMINED BY THE CONTRACTOR AND REPORTED TO THE ENGINEER, WHEN UNKNOWN LINES ARE EXPOSED, THEIR LOCATIONS AND ELEVATIONS SHALL ALSO BE REPORTED TO THE ENGINEER.
9. UNDERGROUND UTILITIES SHOWN ON THIS PLAN SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION OF PARKING AREA, DRIVES, CURB AND GUTTER OR CONCRETE WALKS / PADS. IF UTILITIES SHOWN ON THIS PLAN CANNOT BE INSTALLED PRIOR TO INSTALLATION OF IMPERVIOUS (ASPHALT / CONCRETE) CONDUIT SHALL BE INSTALLED FOR THE "FUTURE" UTILITY INSTALLATION.
10. AS-BUILT DOCUMENTATION REQUIREMENTS: PRIOR TO APPROVAL FROM LOCAL JURISDICTION OR ENGINEER THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS (IN BOTH PAPER AND ELECTRONIC FORMAT (CAD / PDF) PREPARED AND SEALED BY A PROFESSIONAL LAND SURVEYOR SHOWING ALL UTILITY INSTALLATION. HORIZONTAL AND VERTICAL INFORMATION SHALL BE PROVIDED FOR WATER, SEWER, STORM INCLUDING ALL STRUCTURES, VALVES, HYDRANTS, AND OTHER APPURTENANCES.
11. ALL TREES TO INCLUDE SOCK DRAINS AT BOTTOM OF TREE PIT.
12. ALL NEW UTILITIES SHALL BE INSTALLED UNDERGROUND, EXCEPT WHERE SUCH PLACEMENT IS PROHIBITED OR DEEMED IMPRACTICAL BY THE UTILITY PROVIDER. UNDERGROUND TERMINAL FACILITIES FOR STREET LIGHTING ALONG ALL PUBLIC STREETS ABUTTING THE SUBJECT SITE SHALL BE INSTALLED BY THE DEVELOPER.
13. FOR EXISTING 8" FORCEMAINS PENETRATING PROPOSED WALL, CONTRACTOR TO INSTALL A 12" STAINLESS STEEL SLEEVE. EACH SLEEVE AND PIPE TO BE RESTRAINED WITH MECHANICAL JOINTS FOR EACH FORCEMAIN. PER AS BUILTS PROVIDED BY CFPUA, FORCEMAINS AREA AT APPROXIMATE ELEVATION OF 5'.

0 15 30 60
SCALE: 1"=30'
NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1610, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

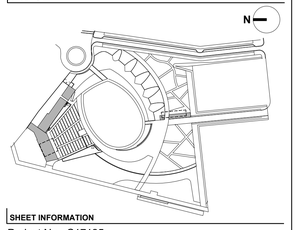
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PIKE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 30'

SHEET TITLE

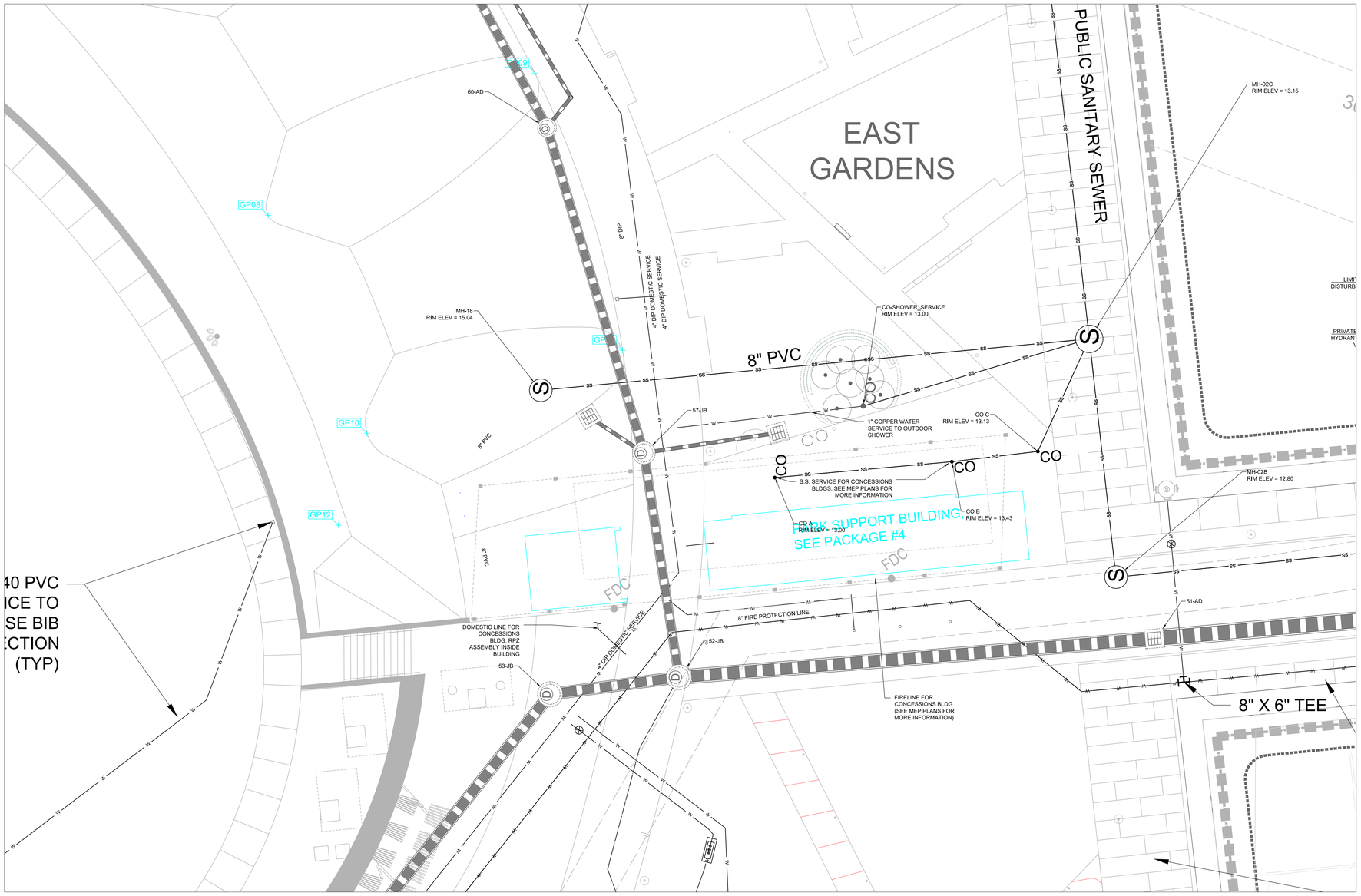
CIVIL UTILITY PLAN

IRN016

SHEET NO.

C-120-P1

IRN016



UTILITY ENLARGEMENT
SCALE: 1"=10'

UTILITY LEGEND:

- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED CLEANOUT
- PROPOSED FDC
- PROPOSED BACKFLOW METER
- PROPOSED POST INDICATOR VALVE (PIV)
- GREASE INTERCEPTOR
- 300' HYDRANT COVERAGE CIRCLE
- LIMITS OF DISTURBANCE

FIRE AND LIFE SAFETY NOTES:

1. CONTRACTOR SHALL MAINTAIN AN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
2. NEW HYDRANTS MUST BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS DELIVERED TO THE JOB SITE.
3. A HYDRANT MUST BE WITHIN 150' OF THE FDC (MEASURED AS THE TRUCK DRIVES FOR PRACTICAL USE).
4. FDC MUST BE WITHIN 40' OF FIRE APPARATUS PLACEMENT.
5. LANDSCAPING OR PARKING CANNOT BLOCK OR IMPEDE THE FDC OR FIRE HYDRANTS. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT AND FDC.
6. ADDITIONAL FIRE PROTECTION AND/ OR ACCESSIBILITY REQUIREMENTS MAY BE REQUIRED DUE TO ANY SPECIAL CIRCUMSTANCES CONCERNING THE PROJECT.
7. PRIVATE UNDERGROUND FIRE LINES REQUIRE A SEPARATE UNDERGROUND FIRE LINE PERMIT FROM THE WILMINGTON FIRE AND LIFE SAFETY DIVISION 910-343-0696.
8. ALL ISOLATION VALVES WITHIN THE "HOT BOX" MUST BE ELECTRONICALLY SUPERVISED.

UTILITY NOTES:

1. REFER TO SHEET C-001-P1 FOR GENERAL NOTES.
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CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) WATER DISTRIBUTION AND SANITARY SEWER COLLECTION SYSTEMS, AS SHOWN AND SPECIFIED HEREIN, SHALL BE DESIGNED AND CONSTRUCTED TO CONFORM TO STATE RULES AND THE CFPUA'S MINIMUM TECHNICAL STANDARDS. THE CFPUA MINIMUM TECHNICAL STANDARDS ARE CONTAINED IN THE CURRENT DESIGN GUIDANCE MANUAL, MATERIAL SPECIFICATION MANUAL, TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, AND STANDARD DRAWING DETAILS.
2. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
3. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE.
4. ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL ALSO BE CONSTRUCTED OF DIP.
5. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
6. NO FLEXIBLE COUPLINGS SHALL BE USED. NO FLEXIBLE COUPLINGS SHALL BE USED.
7. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316.
8. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.
9. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
10. UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER SERVICES SHALL BE DISCONNECTED FROM MAIN.
11. A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR NEW CONNECTIONS TO EXISTING CLAY GRAVITY SEWER MAINS.

0 5 10 20
SCALE: 1"=10'

NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1610, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

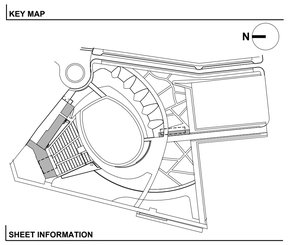
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER DRAWING IS PRELIMINARY NOT FOR CONSTRUCTION

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

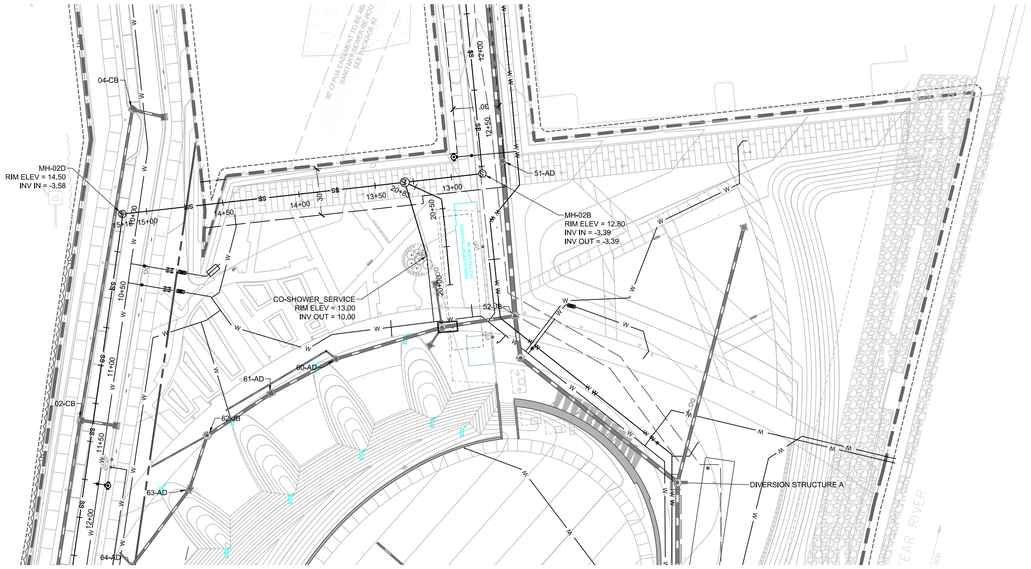
Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 10'

SHEET TITLE

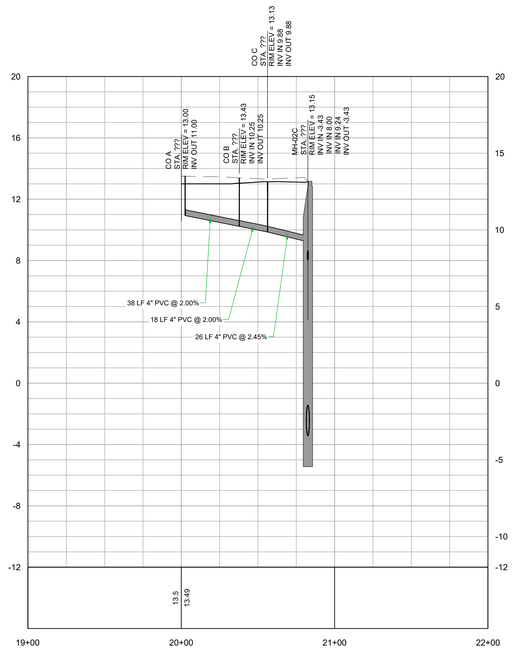
CIVIL UTILITY PLAN ENLARGEMENT

SHEET NO.

C-121-P1



SANITARY SEWER - PLAN VIEW-PRIVATE
SCALE: 1"=40'



SANITARY SEWER - PROFILE VIEW-PRIVATE
SCALE: H 1"=40' V 1"=4'

0 20 40 80 NORTH

SCALE: 1"=40'

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

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IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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Water Fountain Design = WF
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

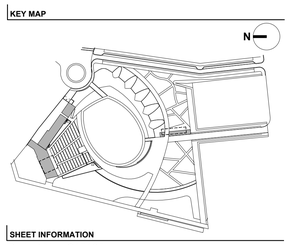
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER WILLIAM C. PYLE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 40'

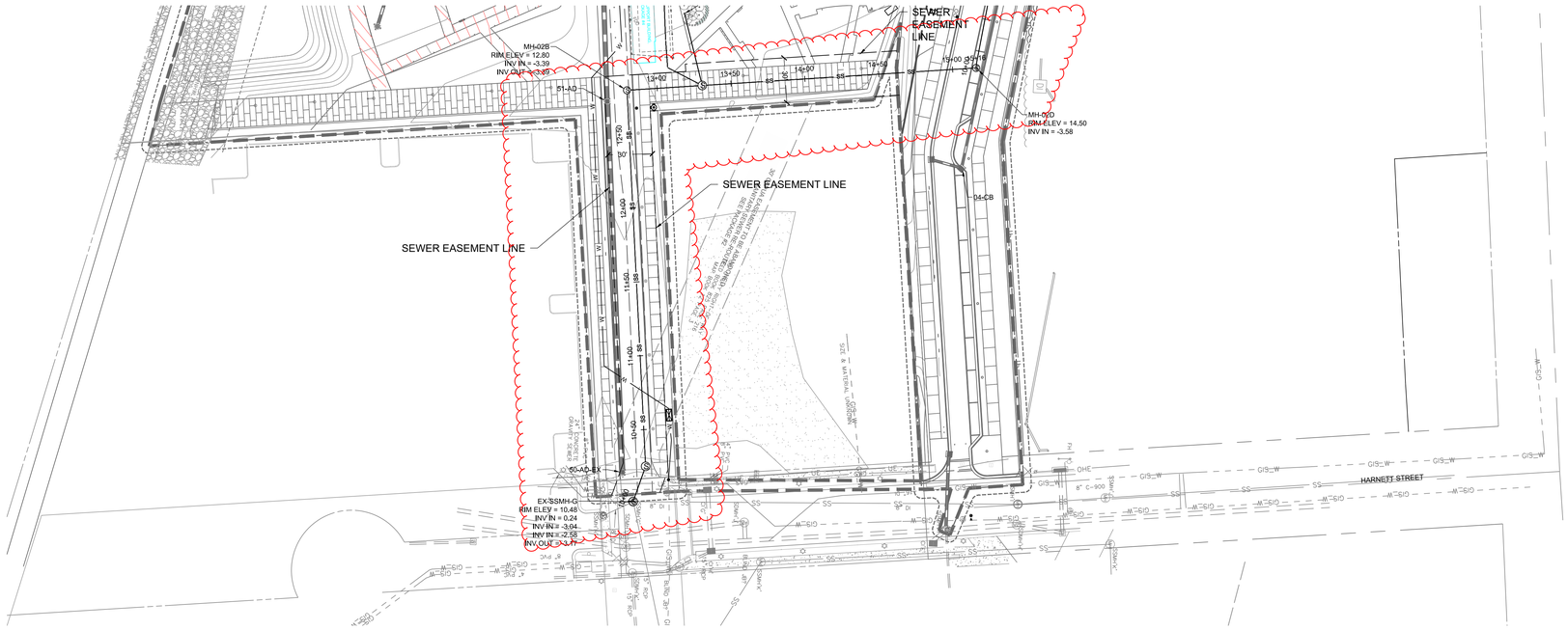
SHEET TITLE

CIVIL ON-SITE SANITARY SEWER PLAN & PROFILE

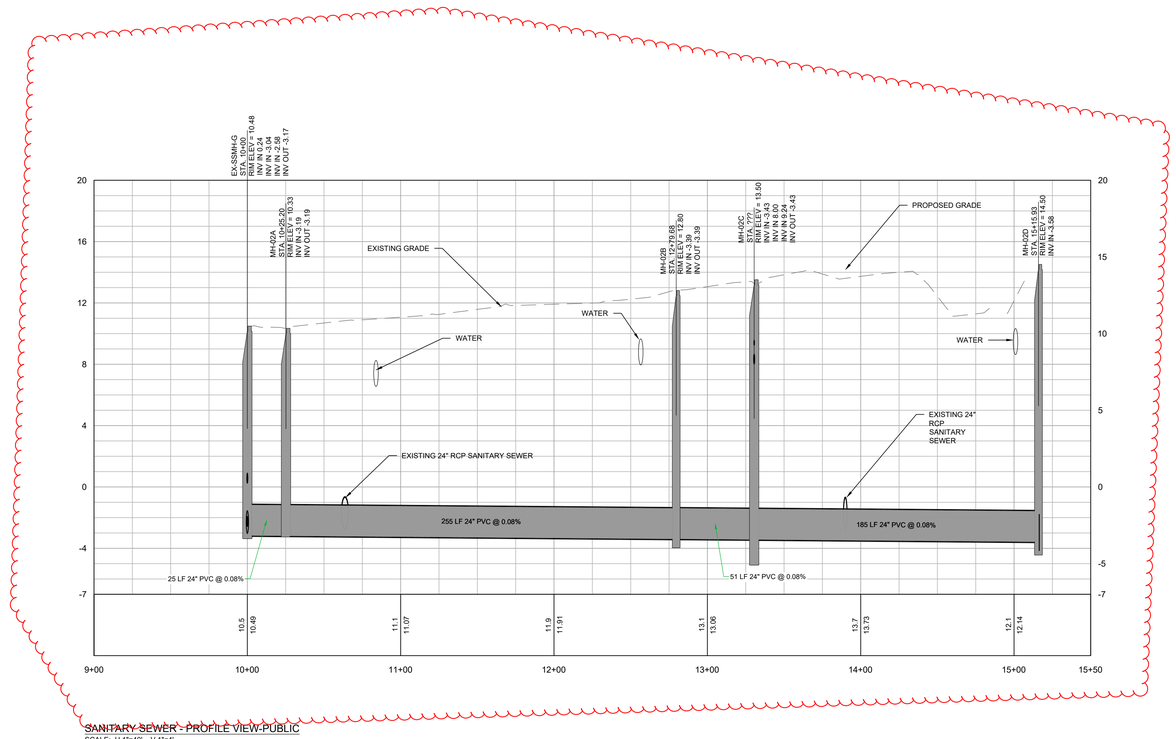
SHEET NO.

C-122-P1

IRN016



SANITARY SEWER - PLAN VIEW-PUBLIC
SCALE: 1"=40'



SANITARY SEWER - PROFILE VIEW-PUBLIC
SCALE: H 1"=40' V 1"=4'

24" GRAVITY SANITARY SEWER NOTES

1. SPECIFIED SLOPE IS THE STATE MIN. ALLOWED FOR A 24" SANITARY SEWER GRAVITY MAIN. CONTRACTOR TO FIELD VERIFY EACH SEGMENT OF PIPE IS INSTALLED TO NOTED SLOPE.
2. A MIN. OF 24" OF EXISTING MATERIAL TO BE REMOVED BELOW THE BOTTOM OF THE PIPE AND 24" OF GRAVEL TO BE INSTALLED FOR NECESSARY BEDDING OF PIPE.
3. IF SUBSURFACE WATER MITIGATION IS OBSERVED DURING INSTALLATION, SANITARY SEWER PIPE TO BE WRAPPED WITH FILTER FABRIC ALONG THE BOUNDARY BETWEEN THE IN SITEU SOILS AND INSTALLED GRAVEL MATERIAL.
4. ALSO IF WATER MIGRATION IS OBSERVED, TRENCH PLUGS TO BE INSTALLED EVERY OTHER PIPE SECTION. TRENCH PLUG TO CONSIST OF OF COHESIVE SOILS (GC, SC, AND CL) THAT ARE TO INSTALLED TO ABOVE TOP OF PIPE FOR A MIN. OF 1' SECTION IN WIDTH COMPACTED AT 95% STANDARD PROCTOR.
5. ALL MANHOLES ASSOCIATED WITH 24" SANITARY SEWER REROUTE TO BE A MIN. OF 5' INSIDE DIAMETER.
6. ALL ASSOCIATED 24" PROPOSED GRAVITY SEWER TO BE PVC DR-14 MATERIAL.

UTILITY LEGEND:

- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED CLEANOUT
- PROPOSED FDC
- PROPOSED BACKFLOW METER
- PROPOSED POST INDICATOR VALVE (PIV)
- GREASE INTERCEPTOR
- 300' HYDRANT COVERAGE CIRCLE
- LIMITS OF DISTURBANCE

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IRN016

0 20 40 80 NORTH
SCALE: 1"=40'

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
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Irrigation= I
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www.tillotsondesign.com

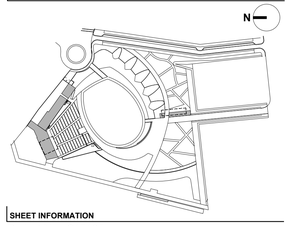
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER C. P. I. E.

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

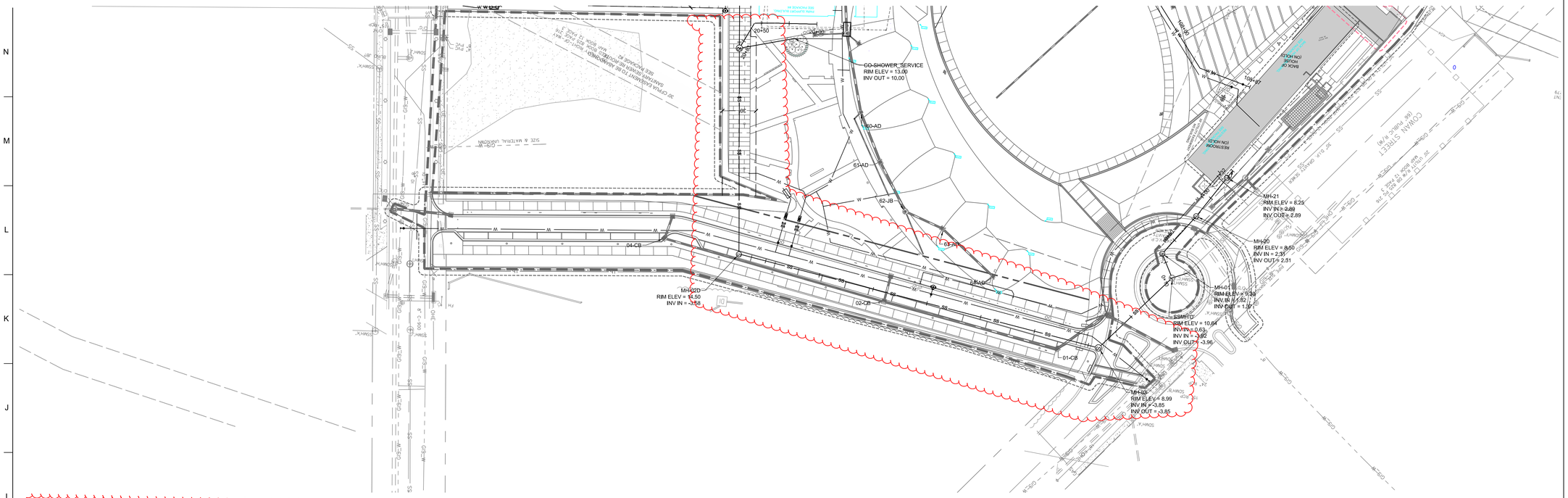
Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 30'

SHEET TITLE

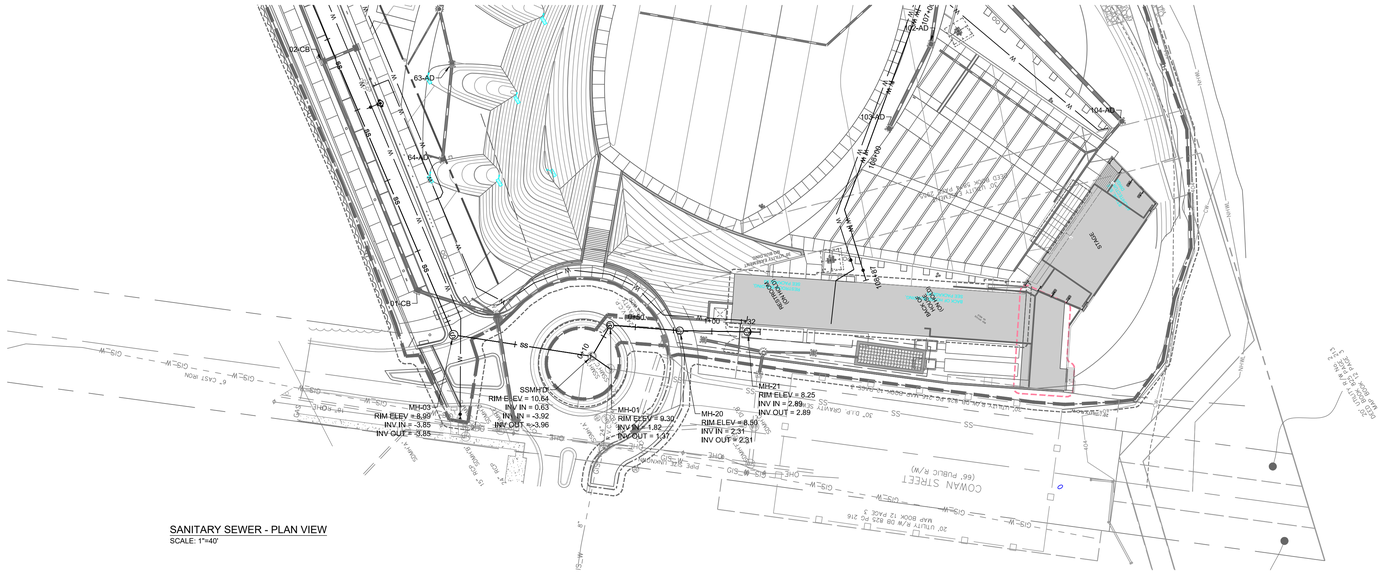
CIVIL HARNETT ST. SANITARY SEWER PLAN & PROFILE

SHEET NO.

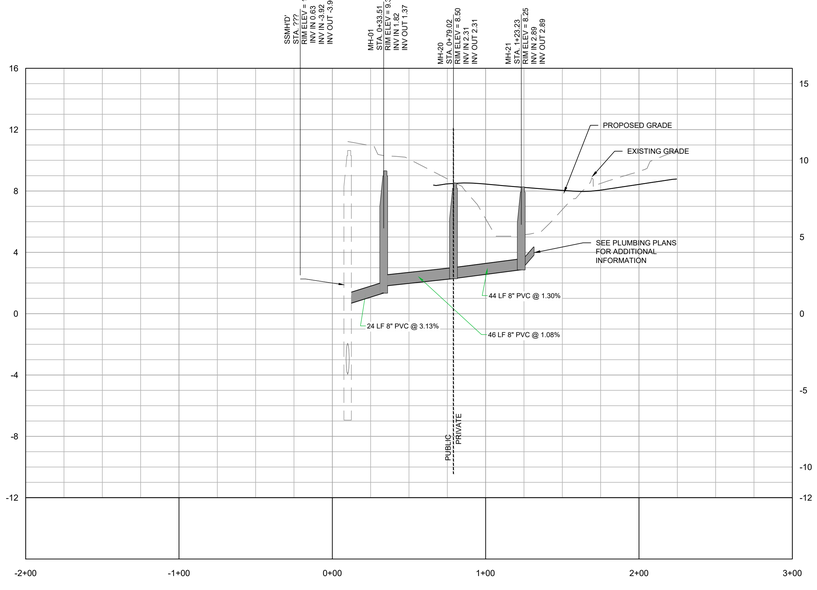
C-123-P1


GO-SHOWER_SERVICE
RIM ELEV = 13.00
INV OUT = 10.00
60-AD
61-AD
62-JB
63-AD
64-AD
04-CB
02-CB
01-CB
MH-02D
RIM ELEV = 14.50
INV IN = -3.58
MH-21
RIM ELEV = 8.25
INV IN = 2.88
INV OUT = 2.89
MH-20
RIM ELEV = 8.50
INV IN = 2.31
INV OUT = 2.31
MH-01
RIM ELEV = 9.30
INV IN = 1.62
INV OUT = 1.35
SSMH 07
RIM ELEV = 10.64
INV IN = 0.63
INV IN = -3.62
INV OUT = -3.96
MH-03
RIM ELEV = 8.99
INV IN = -3.85
INV OUT = -3.85
COWAN STREET
(ONE PUBLIC R/W)
SIZE & MATERIAL UNKNOWN
SEE CURB & GUTTER DETAIL
SEE ROADWAY DETAILS
SEE SIDEWALK DETAILS
SEE ENTRANCE DETAILS
SEE ROADWAY DETAILS
SEE SIDEWALK DETAILS

IRN016



SANITARY SEWER - PLAN VIEW
SCALE: 1"=40'



SANITARY SEWER - PROFILE VIEW
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0 20 40 80 NORTH

SCALE: 1"=40'

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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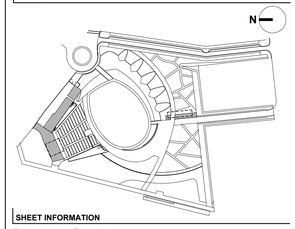
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PORTER

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 40'

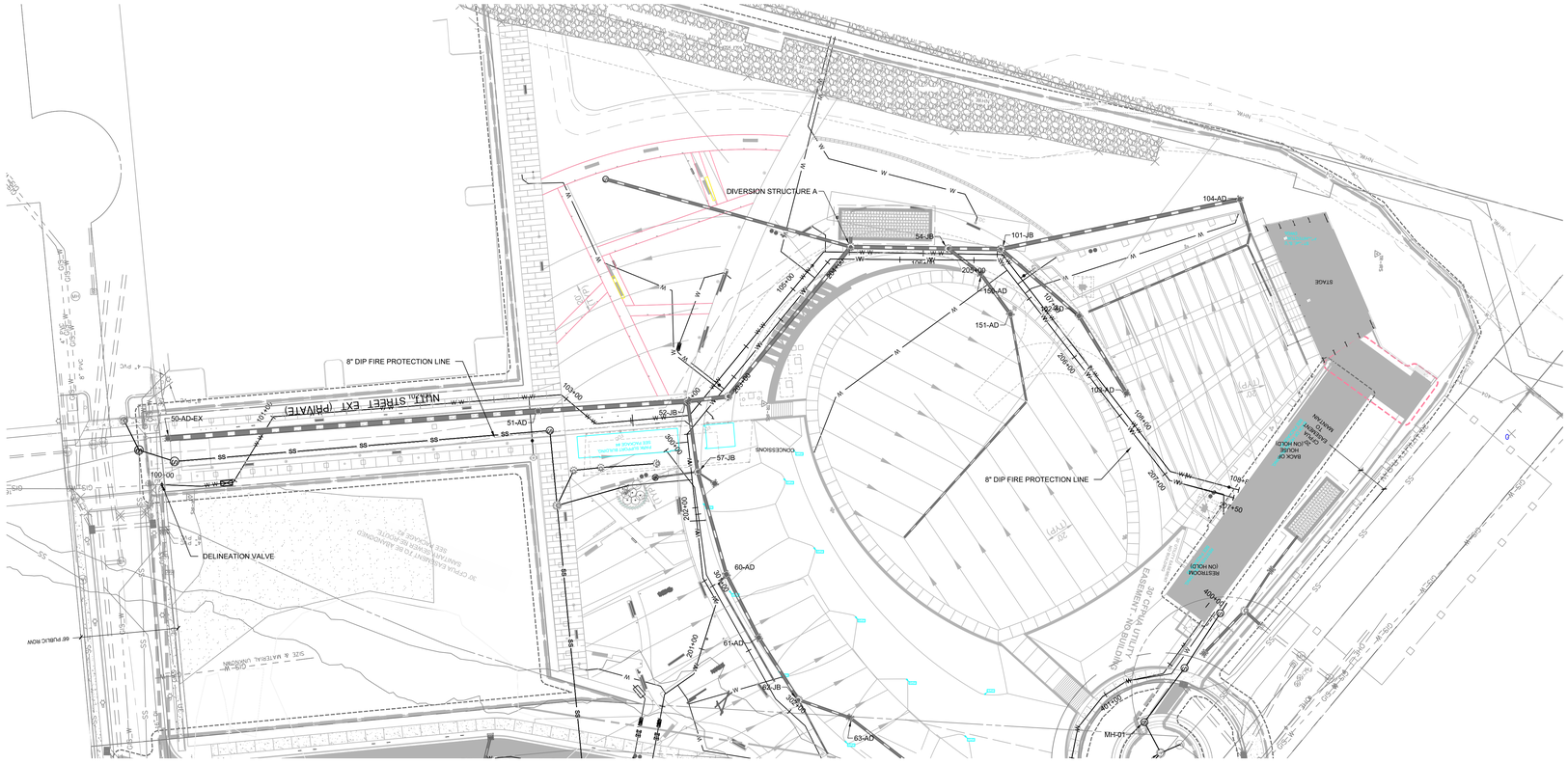
SHEET TITLE

CIVIL SANITARY SEWER PLAN AND PROFILE

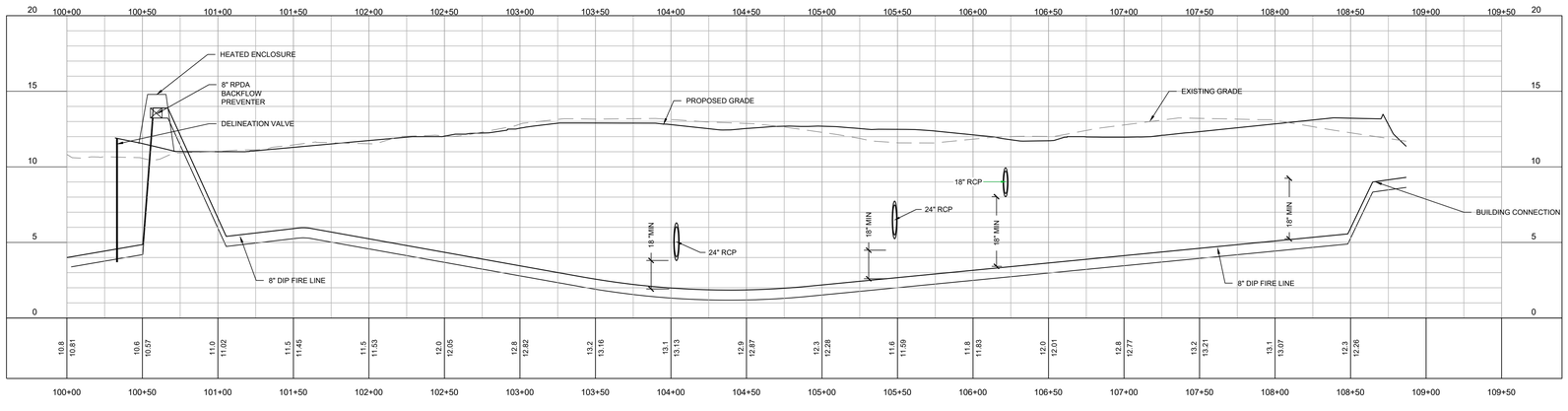
SHEET NO.

C-125-P1

IRN016



FIRE PROTECTION LINE - PLAN VIEW
SCALE: 1"=40'



FIRE PROTECTION LINE - PROFILE VIEW
SCALE: H 1"=40' V 1"=10'

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IRN016

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NORTH WATERFRONT PARK

IRN016

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
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Mechanical Engineering = M
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Fire Protection = FP
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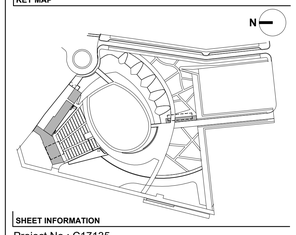
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PYLE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 40'

SHEET TITLE

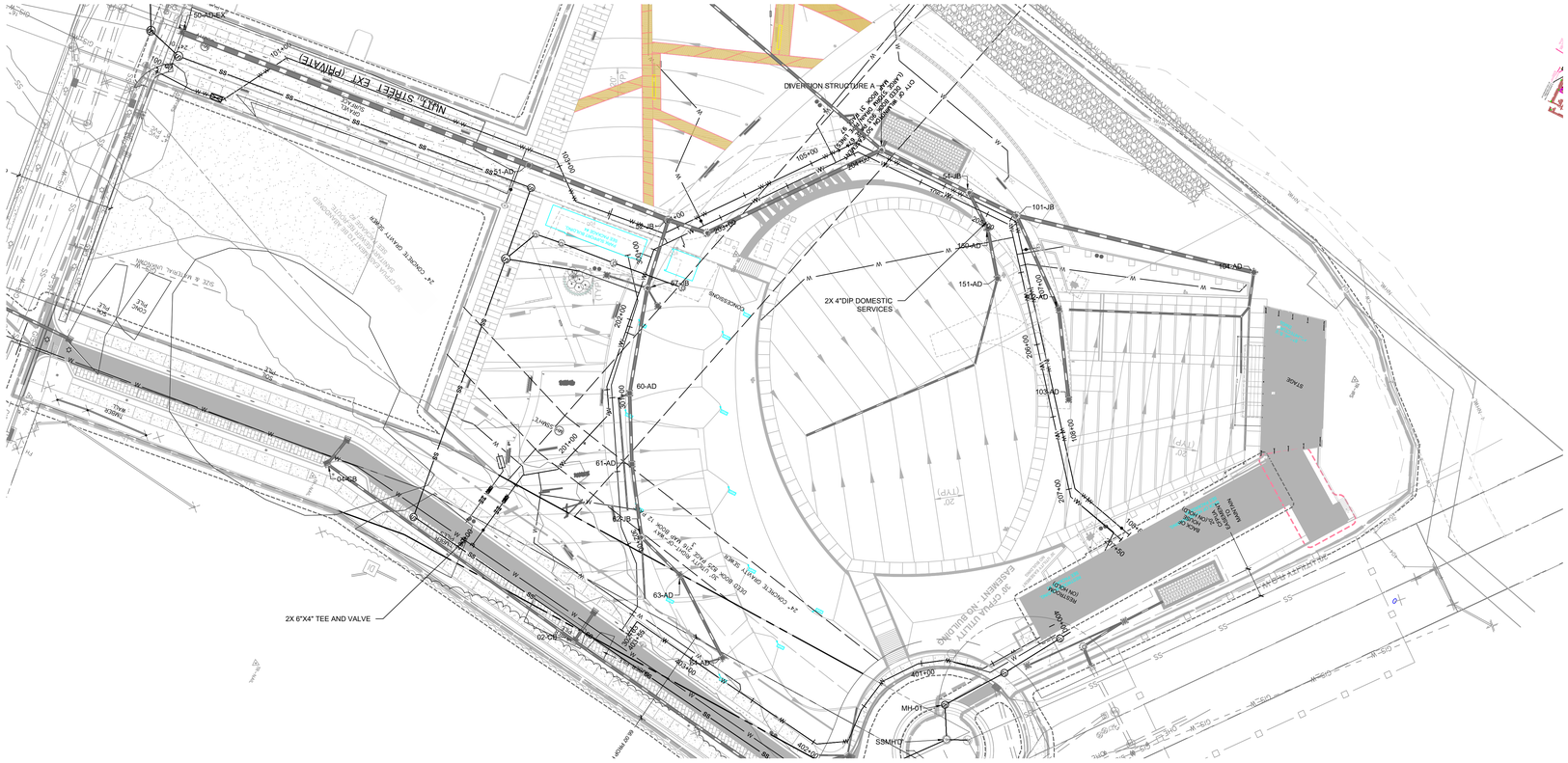
CIVIL FIRE PROTECTION WATERLINE PLAN AND PROFILE

SHEET NO.

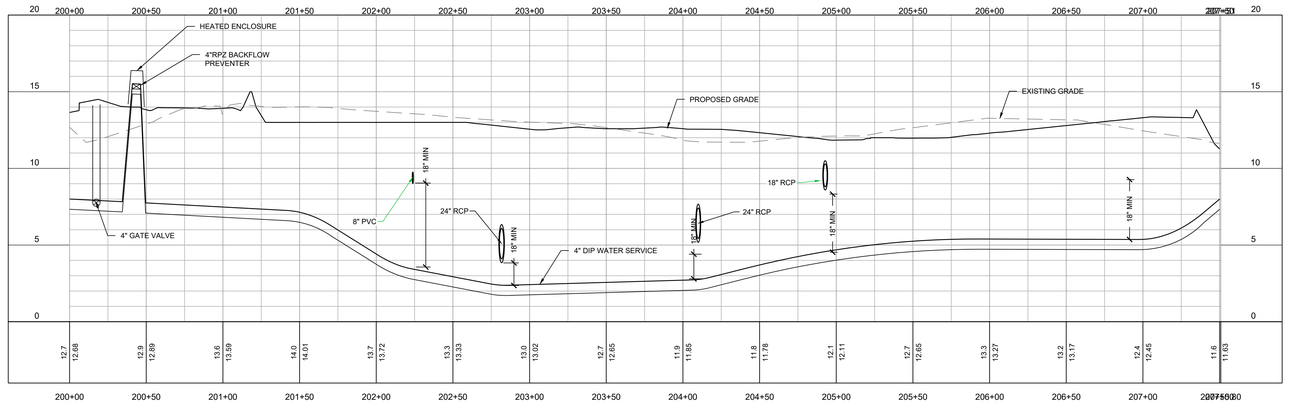
C-126-P1

IRN016

IRN016



DOMESTIC SERVICE LINE - PLAN VIEW
SCALE: 1"=40'



DOMESTIC SERVICE LINE - PROFILE VIEW
SCALE: H 1"=40' V 1"=10'

UTILITY LEGEND:

- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED CLEANOUT
- PROPOSED FDC
- PROPOSED BACKFLOW METER
- PROPOSED POST INDICATOR VALVE (PIV)
- GREASE INTERCEPTOR
- 300' HYDRANT COVERAGE CIRCLE
- LIMITS OF DISTURBANCE

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) WATER DISTRIBUTION AND SANITARY SEWER COLLECTION SYSTEMS, AS SHOWN AND SPECIFIED HEREIN, SHALL BE DESIGNED AND CONSTRUCTED TO CONFORM TO STATE RULES AND THE CFPUA'S MINIMUM TECHNICAL STANDARDS. THE CFPUA MINIMUM TECHNICAL STANDARDS ARE CONTAINED IN THE CURRENT DESIGN GUIDANCE MANUAL, MATERIAL SPECIFICATION MANUAL, TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, AND STANDARD DRAWING DETAILS.
2. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
3. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE.
4. ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL ALSO BE CONSTRUCTED OF DIP.
5. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
6. NO FLEXIBLE COUPLINGS SHALL BE USED. NO FLEXIBLE COUPLINGS SHALL BE USED.
7. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316.
8. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.
9. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
10. UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER SERVICES SHALL BE DISCONNECTED FROM MAIN.
11. A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR NEW CONNECTIONS TO EXISTING CLAY GRAVITY SEWER MAINS.

0 20 40 80 NORTH

SCALE: 1"=40'

Approved Construction Plan

	Name	Date
Planning		
Traffic		
Fire		

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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Lighting Design = EL
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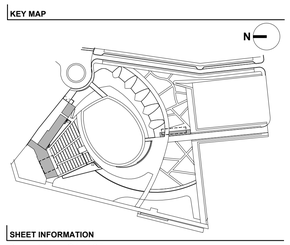
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PATE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 40'

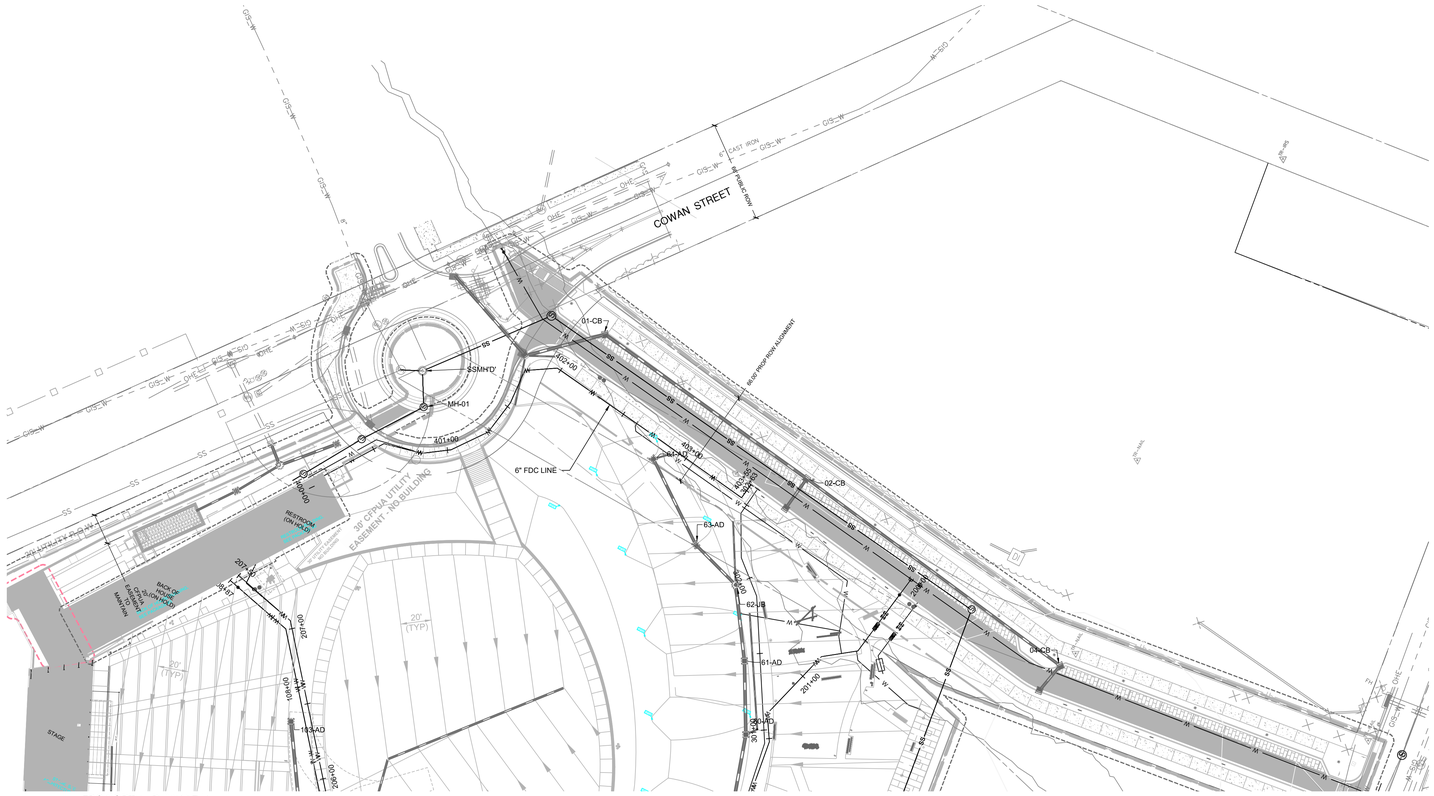
SHEET TITLE

CIVIL DOMESTIC WATERLINE PLAN AND PROFILE

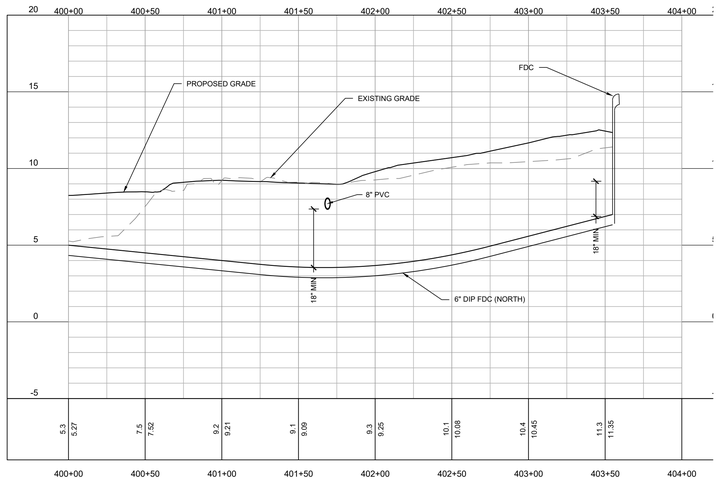
SHEET NO.

C-127-P1

IRN016



FDC NORTH - PLAN VIEW
SCALE: 1"=40'



FDC NORTH - PROFILE VIEW
SCALE: H 1"=40' V 1"=4'

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UTILITY LEGEND:

W	EXISTING WATER LINE
W	PROPOSED WATER LINE
SS	EXISTING SANITARY SEWER LINE
SS	PROPOSED SANITARY SEWER LINE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
S	EXISTING SANITARY SEWER MANHOLE
S	PROPOSED SANITARY SEWER MANHOLE
CO	PROPOSED CLEANOUT
FDC	PROPOSED FDC
	PROPOSED BACKFLOW METER
PIV	PROPOSED POST INDICATOR VALVE (PIV)
	GREASE INTERCEPTOR
	300' HYDRANT COVERAGE CIRCLE
	LIMITS OF DISTURBANCE

0 10 20 40
SCALE: 1"=20'
NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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Irrigation= I
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Landscape Soil = LS
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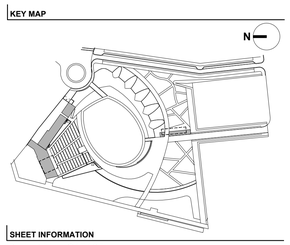
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PIKE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 40'

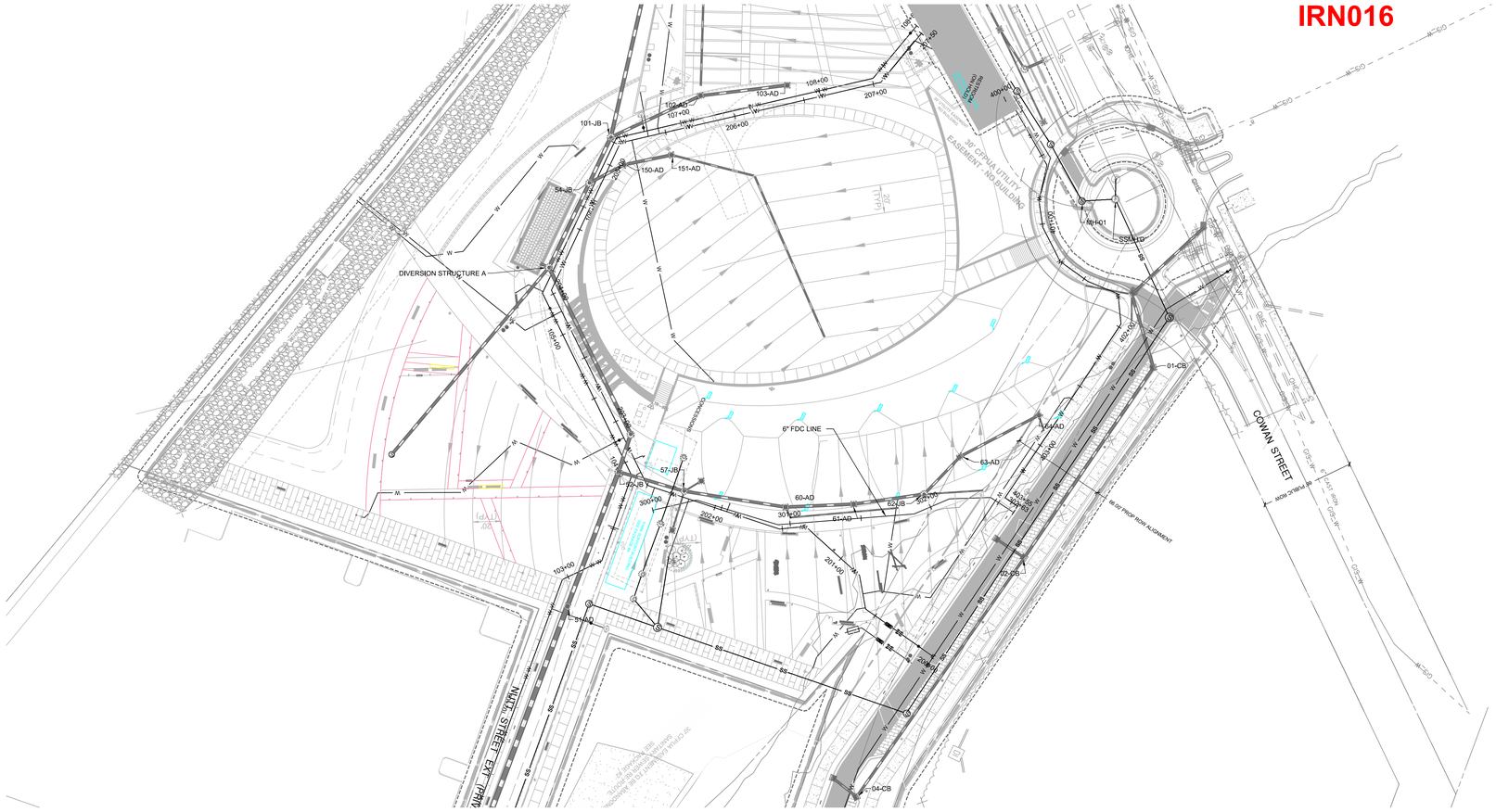
SHEET TITLE

CIVIL FDC SOUTH PLAN AND PROFILE

SHEET NO.

C-128-P1

IRN016


DIVERSION STRUCTURE A
6" FDC LINE
20' CFPUA UTILITY EASEMENT NO BUILDING
COWAN STREET
NMRL STREET EXT. PRIVATE
101-JB
54-JB
150-AD
151-AD
57-JB
60-AD
62-JB
61-AD
63-AD
64-AD
01-CB
04-CB
02-CB
03-CB
102-AD
103-AD
104-AD
105-AD
106-AD
107+00
108+00
109+00
206+00
207+00
400+00
401+00
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406+00
300+00
301+00
302+00
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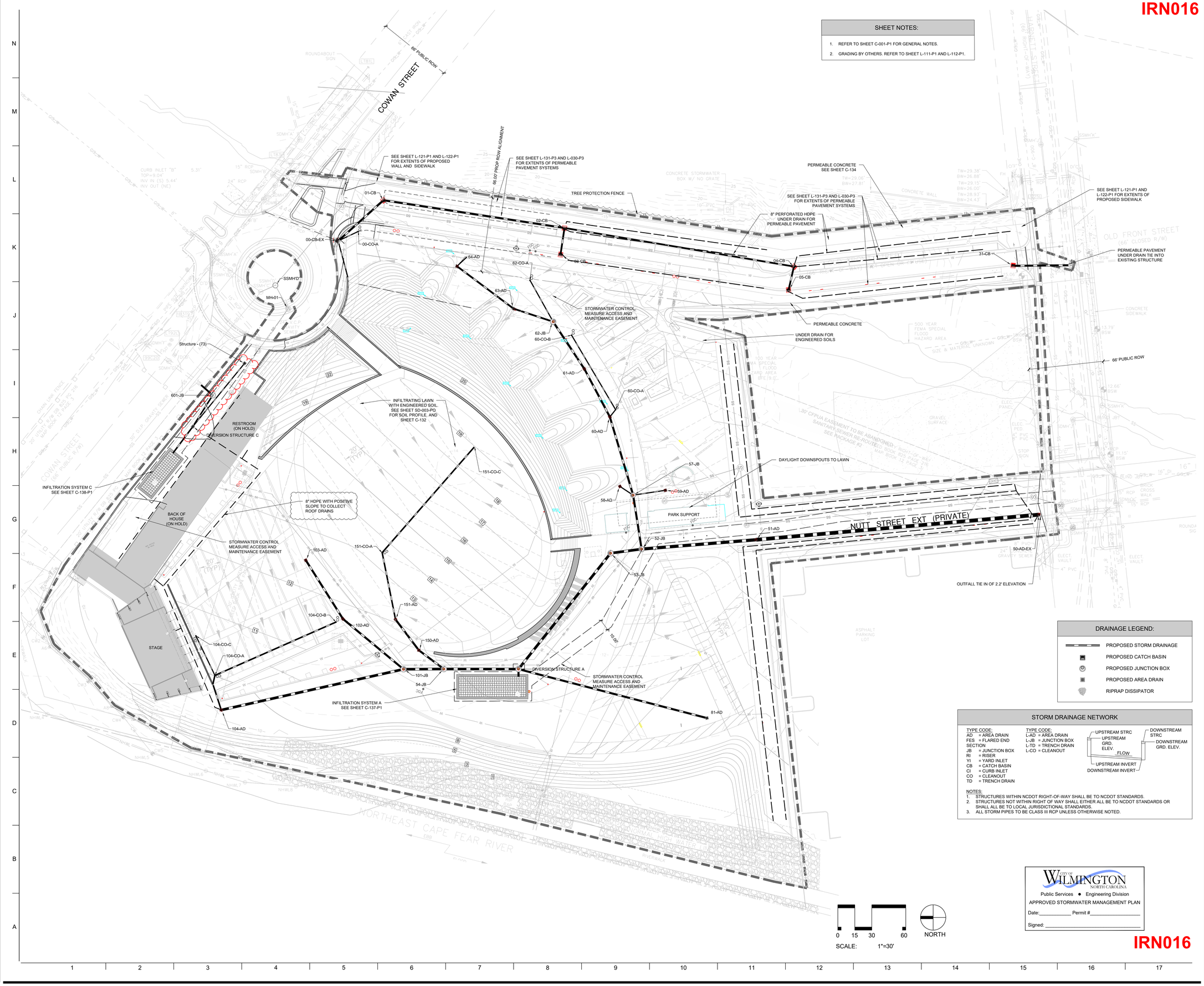
SS#33-MD
SS#34-MD
SS#35-MD
SS#36-MD
SS#37-MD
SS#38-MD
SS#39-MD
SS#40-MD

IRN016

SHEET NOTES:

1. REFER TO SHEET C-001-P1 FOR GENERAL NOTES.
2. GRADING BY OTHERS. REFER TO SHEET L-111-P1 AND L-112-P1.



DRAINAGE LEGEND:

- PROPOSED STORM DRAINAGE
- PROPOSED CATCH BASIN
- PROPOSED JUNCTION BOX
- PROPOSED AREA DRAIN
- RIPRAP DISSIPATOR

STORM DRAINAGE NETWORK

TYPE CODE:
AD = AREA DRAIN
FES = FLARED END SECTION
JB = JUNCTION BOX
RI = RISER
YI = YARD INLET
CB = CATCH BASIN
CI = CURB INLET
CO = CLEANOUT
TD = TRENCH DRAIN

TYPE CODE:
L-AD = AREA DRAIN
L-JB = JUNCTION BOX
L-TD = TRENCH DRAIN
L-CO = CLEANOUT

UPSTREAM STRC
UPSTREAM GRD. ELEV.
FLOW
UPSTREAM INVERT
DOWNSTREAM INVERT
DOWNSTREAM STRC
DOWNSTREAM GRD. ELEV.

NOTES:
1. STRUCTURES WITHIN NCDOT RIGHT-OF-WAY SHALL BE TO NCDOT STANDARDS.
2. STRUCTURES NOT WITHIN RIGHT OF WAY SHALL EITHER ALL BE TO NCDOT STANDARDS OR SHALL ALL BE TO LOCAL JURISDICTIONAL STANDARDS.
3. ALL STORM PIPES TO BE CLASS III RCP UNLESS OTHERWISE NOTED.

0 15 30 60
SCALE: 1"=30'

NORTH

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

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
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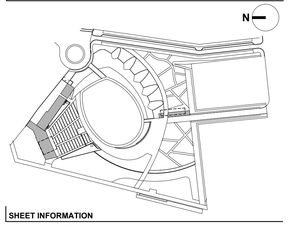
KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019 10/25/2019
Scale: 1" = 30'

SHEET TITLE

CIVIL SUBDRAINAGE PLAN

SHEET NO.

C-131-P1

IRN016

PIPE TABLE							
START STRUCTURE	END STRUCTURE	START INVERT	END INVERT	SIZE	LENGTH	SLOPE	MATERIAL
00-CB-EX	EXISTING STORM SYSTEM	5.86	5.31	15"	69.62'	0.79%	RCP
DIVERSION STRUCTURE A	INFILTRATION SYSTEM A	5.50	5.50	18"	6.62'	0.00%	RCP
DIVERSION STRUCTURE C	INFILTRATION SYSTEM C	5.75	5.75	12"	29.20'	0.00%	PVC
601-JB	EXISTING CATCH BASIN	2.62	2.32	15"	13.57'	2.20%	RCP
104-CO-A	110-TRENCH-STAGE	8.55	8.45	12"	8.02'	1.19%	PVC
00-CO-D	00-CB-EX	7.50	7.25	8"	33.32'	0.75%	PVC
00-CO-A	00-CB-EX	7.50	7.25	8"	19.57'	1.28%	PVC
01-CB	00-CB-EX	6.15	5.88	18"	53.73'	0.51%	RCP
02-CB	01-CB	7.16	6.35	18"	161.71'	0.50%	RCP
03-CB	02-CB	7.59	7.36	15"	23.97'	0.98%	RCP
04-CB	02-CB	11.80	7.50	15"	205.40'	2.09%	RCP
05-CB	04-CB	12.50	12.00	15"	21.43'	2.33%	RCP
31-CB	30-JB-EX	11.50	10.00	18"	51.26'	2.93%	RCP
51-AD	50-AD-EX	3.20	2.20	36"	250.85'	0.40%	RCP
52-JB	51-AD	3.61	3.20	30"	101.27'	0.40%	RCP
57-JB	52-JB	6.31	4.66	18"	48.19'	3.42%	RCP
53-JB	52-JB	4.13	4.00	24"	27.59'	0.46%	RCP
DIVERSION STRUCTURE A	53-JB	5.54	4.13	24"	130.74'	1.08%	RCP
101-JB	54-JB	6.00	5.86	24"	35.63'	0.40%	RCP
150-AD	54-JB	10.00	7.75	18"	27.63'	8.14%	RCP
58-AD	57-JB	10.00	9.50	8"	13.99'	3.58%	PVC
59-AD	57-JB	9.29	9.01	8"	28.75'	0.96%	PVC
60-AD	57-JB	6.65	6.31	18"	72.07'	0.48%	RCP
60-CO-A	60-AD	8.50	8.00	8"	8.18'	6.11%	PVC
61-AD	60-AD	6.89	6.65	18"	48.02'	0.49%	RCP
60-CO-B	60-CO-A	10.25	8.50	8"	76.37'	2.29%	PVC
62-JB	61-AD	7.14	6.89	18"	49.92'	0.51%	RCP
62-CO-A	62-JB	8.95	8.50	8"	41.90'	1.07%	PVC
63-AD	62-JB	7.53	7.34	15"	36.89'	0.51%	RCP
64-AD	63-AD	7.89	7.63	15"	62.37'	0.42%	RCP
64-CO-A	64-AD	8.50	8.00	8"	12.06'	4.15%	PVC
102-AD	101-JB	7.29	7.00	18"	69.45'	0.42%	RCP
104-AD	101-JB	6.67	6.00	24"	164.83'	0.40%	RCP
103-AD	102-AD	7.95	7.71	18"	61.40'	0.39%	RCP
110-TRENCH-STAGE	104-AD	8.75	8.33	12"	23.93'	1.76%	RCP
104-CO-C	104-CO-A	8.69	8.55	8"	38.64'	0.36%	PVC
104-CO-B	104-CO-A	10.00	8.55	12"	116.80'	1.24%	PVC
151-AD	150-AD	10.22	10.00	18"	34.08'	0.65%	RCP
151-CO-A	151-AD	11.51	10.22	12"	60.15'	2.15%	PVC
151-CO-C	151-CO-A	15.00	11.51	12"	124.01'	2.81%	PVC
DIVERSION STRUCTURE C	601-JB	5.75	3.86	12"	30.72'	6.16%	PVC
81-AD	DIVERSION STRUCTURE A	7.00	5.50	18"	171.88'	0.87%	RCP
54-JB	DIVERSION STRUCTURE A	5.86	5.54	24"	65.80'	0.49%	RCP
Structure - (73)	DIVERSION STRUCTURE C	6.20	5.80	8"	72.16'	0.55%	DIP

STRUCTURE TABLE			
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
00-CB-EX	RIM = 9.46 INV IN = 7.25 INV IN = 5.88 INV IN = 7.25 INV OUT = 5.86	00-A, 8" PVC INV IN =7.25 01, 18" RCP INV IN =5.88 00-D, 8" PVC INV IN =7.25	Pipe - (30), 15" RCP INV OUT =5.86
00-CO-A	RIM = 8.25 INV OUT = 7.50		00-A, 8" PVC INV OUT =7.50
00-CO-D	RIM = 8.25 INV OUT = 7.50		00-D, 8" PVC INV OUT =7.50
01-CB	RIM = 9.36 INV IN = 6.35 INV OUT = 6.15	02, 18" RCP INV IN =6.35	01, 18" RCP INV OUT =6.15
02-CB	RIM = 11.82 INV IN = 7.50 INV IN = 7.36 INV OUT = 7.16	04, 15" RCP INV IN =7.50 03, 15" RCP INV IN =7.36	02, 18" RCP INV OUT =7.16
03-CB	RIM = 12.79 INV OUT = 7.59		03, 15" RCP INV OUT =7.59
04-CB	RIM = 15.42 INV IN = 12.00 INV OUT = 11.80	05, 15" RCP INV IN =12.00	04, 15" RCP INV OUT =11.80
05-CB	RIM = 16.20 INV OUT = 12.50		05, 15" RCP INV OUT =12.50
30-JB-EX	RIM = 14.98 INV IN = 10.00	31, 18" RCP INV IN =10.00	
31-CB	RIM = 16.16 INV OUT = 11.50		31, 18" RCP INV OUT =11.50
50-AD-EX	RIM = 7.03 INV IN = 2.20	51, 36" RCP INV IN =2.20	
51-AD	RIM = 12.52 INV IN = 3.20 INV OUT = 3.20	52, 30" RCP INV IN =3.20	51, 36" RCP INV OUT =3.20
52-JB	RIM = 12.74 INV IN = 4.00 INV IN = 4.66 INV OUT = 3.61 INV OUT = 5.44	53, 24" RCP INV IN =4.00 57 (2), 18" RCP INV IN =4.66	52, 30" RCP INV OUT =3.61 EROSION CONTROL, 24" RCP INV OUT =5.44
53-JB	RIM = 12.75 INV IN = 4.13 INV OUT = 4.13	54, 24" RCP INV IN =4.13	53, 24" RCP INV OUT =4.13
54-JB	RIM = 11.82 INV IN = 5.86 INV IN = 7.75 INV OUT = 5.86	100, 24" RCP INV IN =5.86 150, 18" RCP INV IN =7.75	55, 24" RCP INV OUT =5.86
57-JB	RIM = 13.00 INV IN = 6.31 INV IN = 9.01 INV IN = 9.50 INV OUT = 6.31	60, 18" RCP INV IN =6.31 59, 8" PVC INV IN =9.01 58, 8" PVC INV IN =9.50	57 (2), 18" RCP INV OUT =6.31
58-AD	RIM = 13.00 INV OUT = 10.00		58, 8" PVC INV OUT =10.00
59-AD	RIM = 13.00 INV OUT = 9.29		59, 8" PVC INV OUT =9.29
60-AD	RIM = 13.00 INV IN = 8.00 INV IN = 6.65 INV OUT = 6.65	60-A, 8" PVC INV IN =8.00 61, 18" RCP INV IN =6.65	60, 18" RCP INV OUT =6.65
60-CO-A	RIM = 10.82 INV IN = 8.50 INV OUT = 8.50	60-C, 8" PVC INV IN =8.50	60-A, 8" PVC INV OUT =8.50

STRUCTURE TABLE			
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
60-CO-B	RIM = 11.00 INV OUT = 10.25		60-C, 8" PVC INV OUT =10.25
61-AD	RIM = 12.97 INV IN = 6.89 INV OUT = 6.89	63, 18" RCP INV IN =6.89	61, 18" RCP INV OUT =6.89
62-CO-A	RIM = 10.75 INV OUT = 8.95		62-A, 8" PVC INV OUT =8.95
62-JB	RIM = 12.86 INV IN = 7.34 INV IN = 8.50 INV OUT = 7.14	64, 15" RCP INV IN =7.34 62-A, 8" PVC INV IN =8.50	63, 18" RCP INV OUT =7.14
63-AD	RIM = 12.00 INV IN = 7.63 INV OUT = 7.53	65, 15" RCP INV IN =7.63	64, 15" RCP INV OUT =7.53
64-AD	RIM = 11.98 INV IN = 8.00 INV OUT = 7.89	64-A, 8" PVC INV IN =8.00	65, 15" RCP INV OUT =7.89
64-CO-A	RIM = 10.75 INV OUT = 8.50		64-A, 8" PVC INV OUT =8.50
81-AD	RIM = 10.21 INV OUT = 7.00		81, 18" RCP INV OUT =7.00
101-JB	RIM = 11.61 INV IN = 6.00 INV IN = 7.00 INV OUT = 6.00	104, 24" RCP INV IN =6.00 102, 18" RCP INV IN =7.00	100, 24" RCP INV OUT =6.00
102-AD	RIM = 11.89 INV IN = 7.71 INV OUT = 7.29	103, 18" RCP INV IN =7.71	102, 18" RCP INV OUT =7.29
103-AD	RIM = 12.48 INV OUT = 7.95		103, 18" RCP INV OUT =7.95
104-AD	RIM = 9.68 INV IN = 8.33 INV OUT = 6.67	110, 12" RCP INV IN =8.33	104, 24" RCP INV OUT =6.67
104-CO-A	RIM = 9.30 INV IN = 8.55 INV IN = 8.55 INV OUT = 8.55	105-B, 12" PVC INV IN =8.55 105-C, 8" PVC INV IN =8.55	105-A, 12" PVC INV OUT =8.55
104-CO-B	RIM = 10.75 INV OUT = 10.00		105-B, 12" PVC INV OUT =10.00
104-CO-C	RIM = 9.44 INV OUT = 8.69		105-C, 8" PVC INV OUT =8.69
110-TRENCH-STAGE	RIM = 10.05 INV OUT = 8.75		110, 12" RCP INV OUT =8.75
150-AD	RIM = 13.21 INV IN = 10.00 INV OUT = 10.00	151, 18" RCP INV IN =10.00	150, 18" RCP INV OUT =10.00
151-AD	RIM = 12.77 INV IN = 10.22 INV OUT = 10.22	151-A, 12" PVC INV IN =10.22	151, 18" RCP INV OUT =10.22
151-CO-A	RIM = 12.68 INV IN = 11.51 INV OUT = 11.51	151-C, 12" PVC INV IN =11.51	151-A, 12" PVC INV OUT =11.51
151-CO-C	RIM = 12.62 INV OUT = 15.00		151-C, 12" PVC INV OUT =15.00

STRUCTURE TABLE			
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
601-JB	RIM = 8.12 INV IN = 3.86 INV OUT = 2.62	600, 12" INV IN =3.86	601, 15" RCP INV OUT =2.62
DIVERSION STRUCTURE A	RIM = 12.43 INV IN = 5.54 INV IN = 5.50 INV OUT = 5.54 INV OUT = 5.50	55, 24" RCP INV IN =5.54 81, 18" RCP INV IN =5.50	54, 24" RCP INV OUT =5.54 Pipe - (24), 18" INV OUT =5.50
DIVERSION STRUCTURE C	RIM = 8.30 INV IN = 5.80 INV OUT = 5.75 INV OUT = 5.75	Pipe - (37), 8" INV IN =5.80	600, 12" INV OUT =5.75 Pipe - (22), 12" INV OUT =5.75
EROSION CONTROL HW	RIM = 7.75 INV IN = 5.00	EROSION CONTROL, 24" RCP INV IN =5.00	

IRN016

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

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

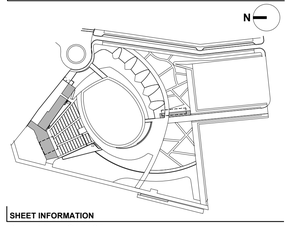
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PATE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 30'

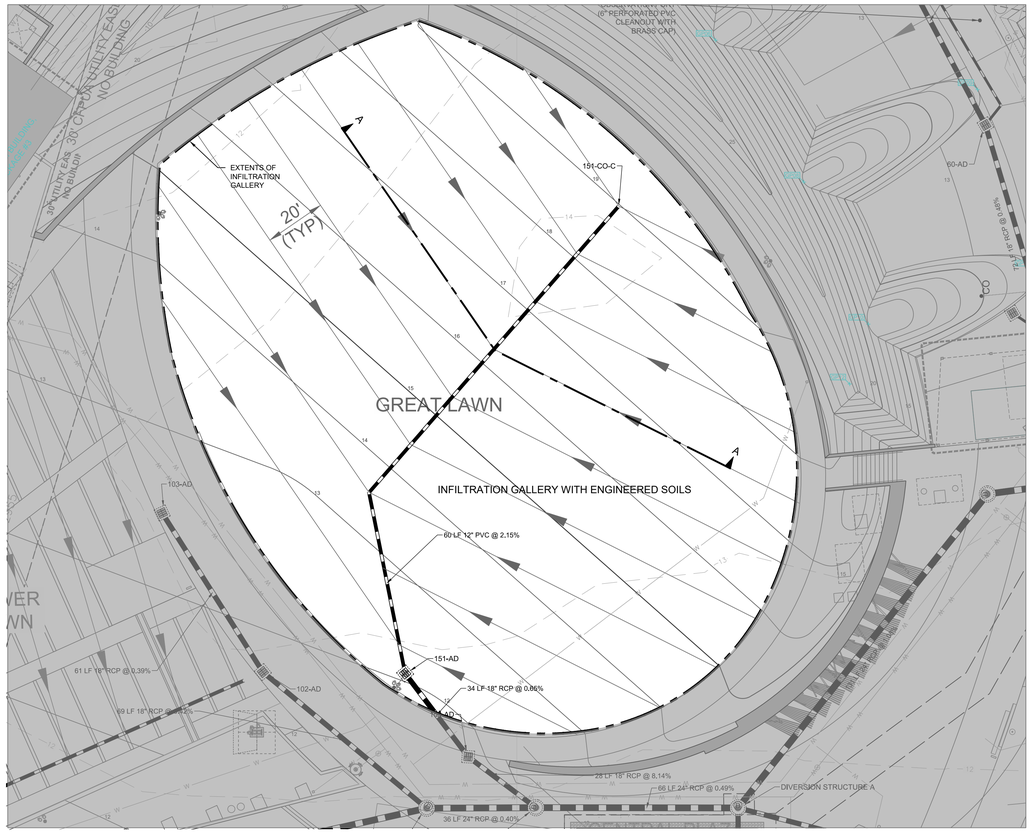
SHEET TITLE

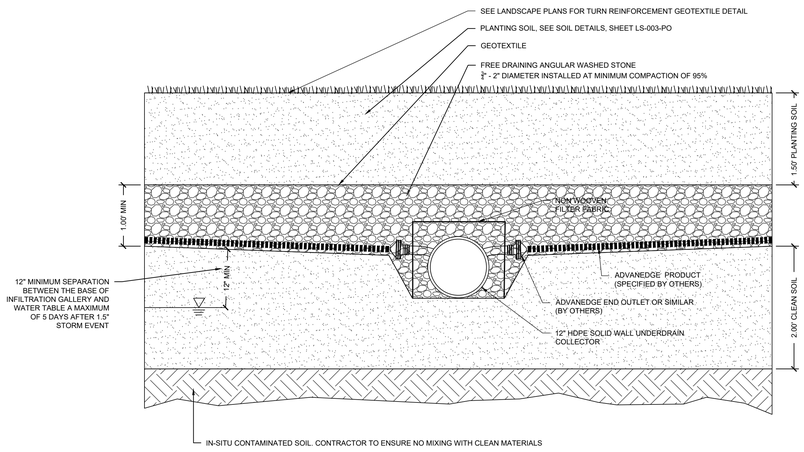
CIVIL STORM PIPE TABLE

SHEET NO.

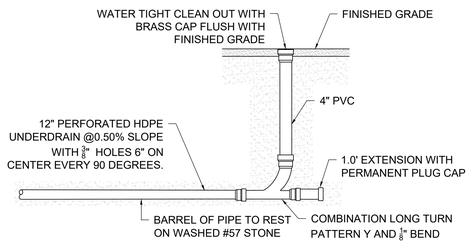
C-132-P1

IRN016





1 INFILTRATION GALLERY MEDIA DETAIL NTS
SECTION A-A



2 TYPICAL UNDERDRAIN CLEANOUT NTS
SECTION

GRADING LEGEND:

- 200 — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 200 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED STORM DRAINAGE
- PROPOSED CATCH BASIN
- PROPOSED JUNCTION BOX
- PROPOSED AREA DRAIN (GRATE DETAIL SHEET C-530-P1)
- 44.50 PROPOSED ELEVATION
- TC 44.50 / BC 44.00 TOP/BOTTOM OF CURB
- TW 46.00 / BW 44.00 TOP/BOTTOM OF WALL
- RIPRAP DISSIPATOR
- FLOW DIRECTION
- LIMITS OF DISTURBANCE

0 10 20 40 NORTH

SCALE: 1"=20'

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

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1610, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
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Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

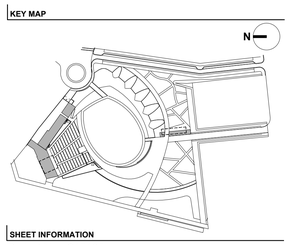
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PIRT

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 20'

SHEET TITLE

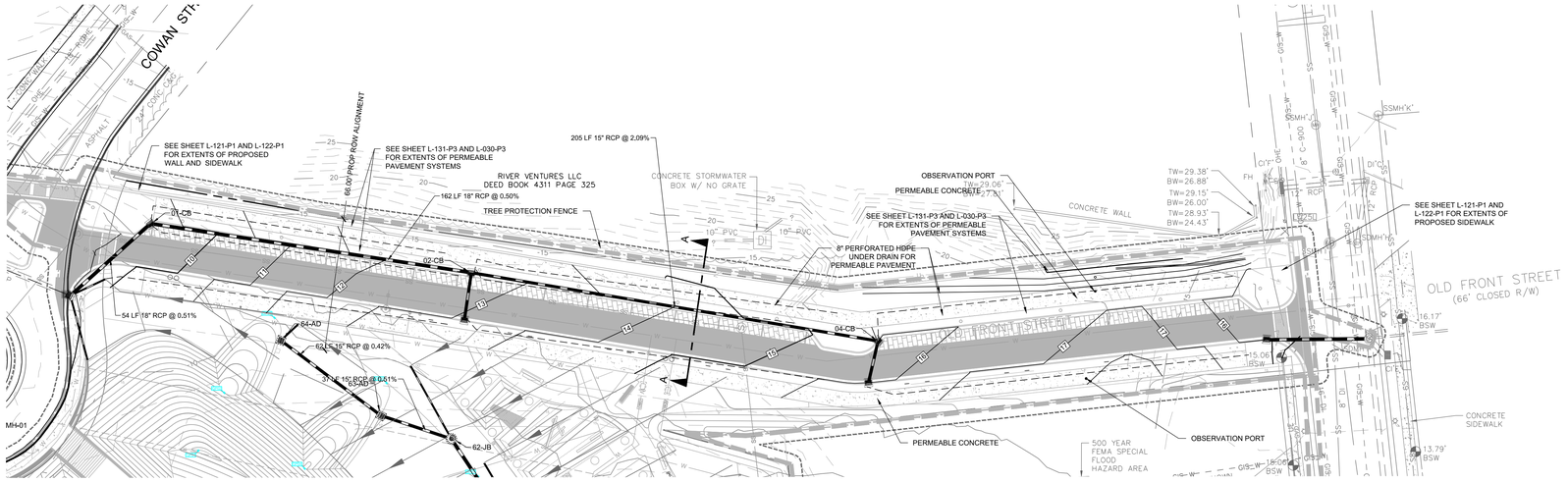
CIVIL INFILTRATION GALLERY DETAILS

SHEET NO.

C-134-P1

IRN016

IRN016



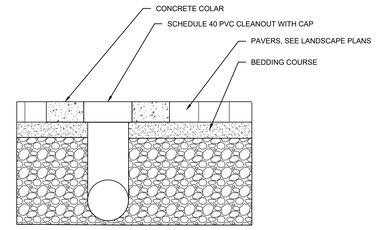
NOTE:
STEWART IS ONLY RESPONSIBLE FOR GRADING INSIDE THE RIGHT OF WAY ALONG OLD FRONT STREET ROAD.

GRADING LEGEND:

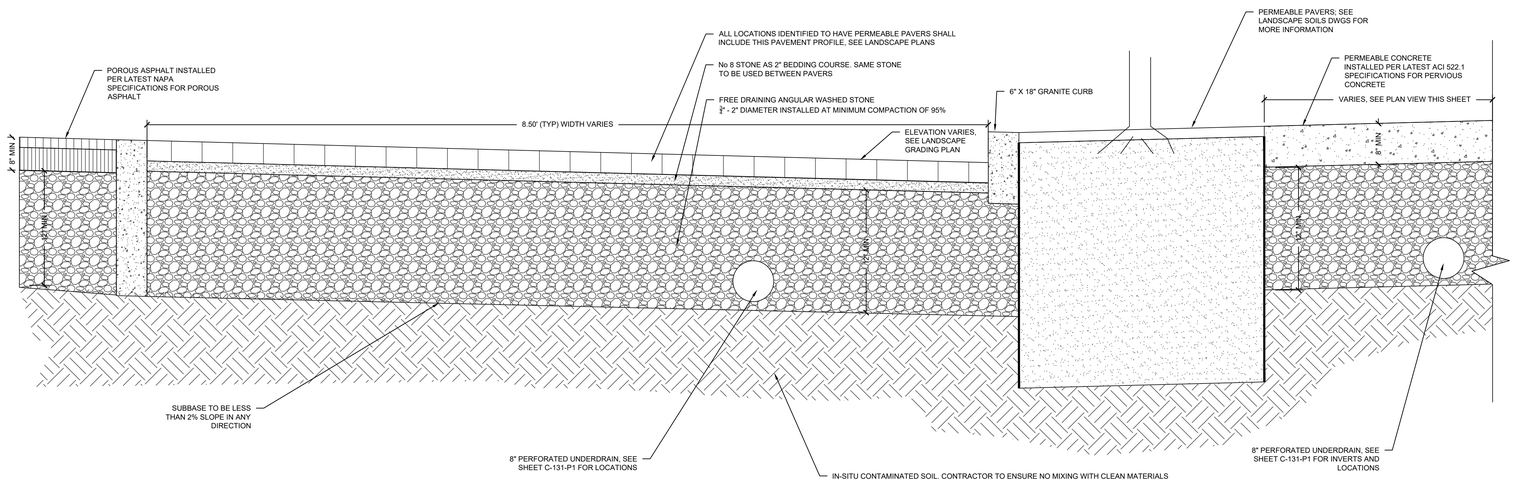
200	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
200	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED STORM DRAINAGE
	PROPOSED CATCH BASIN
	PROPOSED JUNCTION BOX
	PROPOSED AREA DRAIN (GRATE DETAIL SHEET C-530-P1)
44.50	PROPOSED ELEVATION
TC 44.50 BC 44.00	TOP/BOTTOM OF CURB
TW 46.00 BW 44.00	TOP/BOTTOM OF WALL
	RIPRAP DISSIPATOR
	FLOW DIRECTION
	LIMITS OF DISTURBANCE

0 15 30 60 NORTH

SCALE: 1"=30'



2 CLEAN OUT SECTION NTS



1 PERMEABLE PAVEMENT OLD FRONT ST - EAST NTS
SECTION

CITY OF WILMINGTON
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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NC License #C-513

Architecture = A
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Geotechnical Engineering = G
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NC License #C-1051

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www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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www.tillotsondesign.com

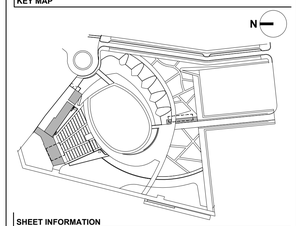
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PYLE 10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 30'

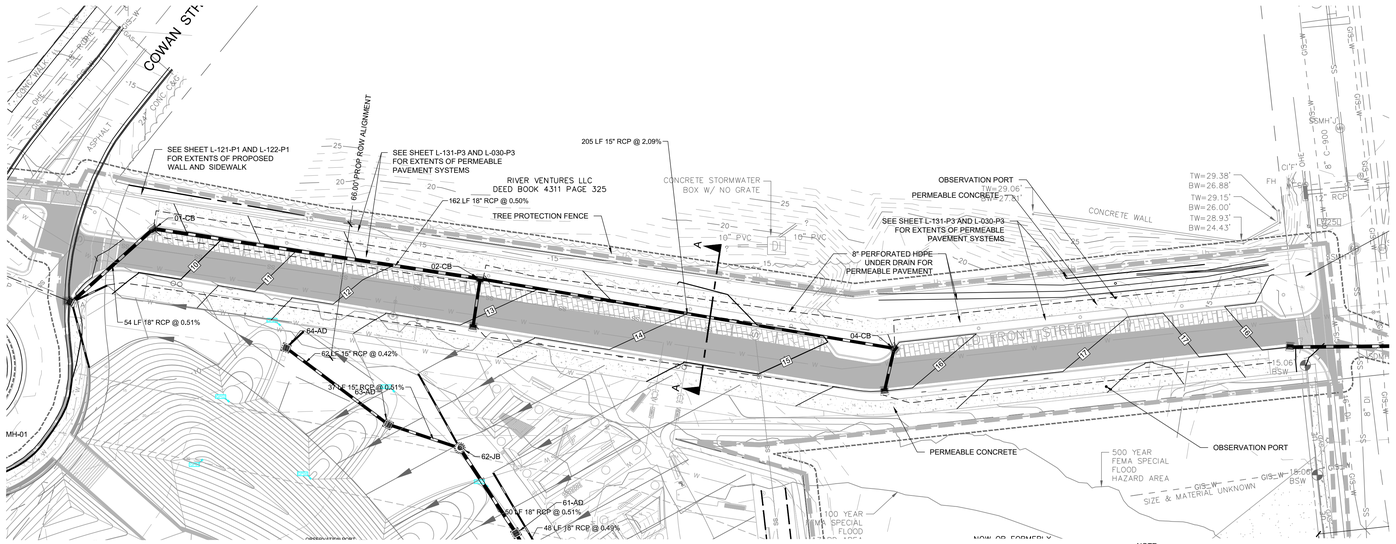
SHEET TITLE

CIVIL PERMEABLE PAVEMENT DETAILS

SHEET NO.

C-135-P1

IRN016



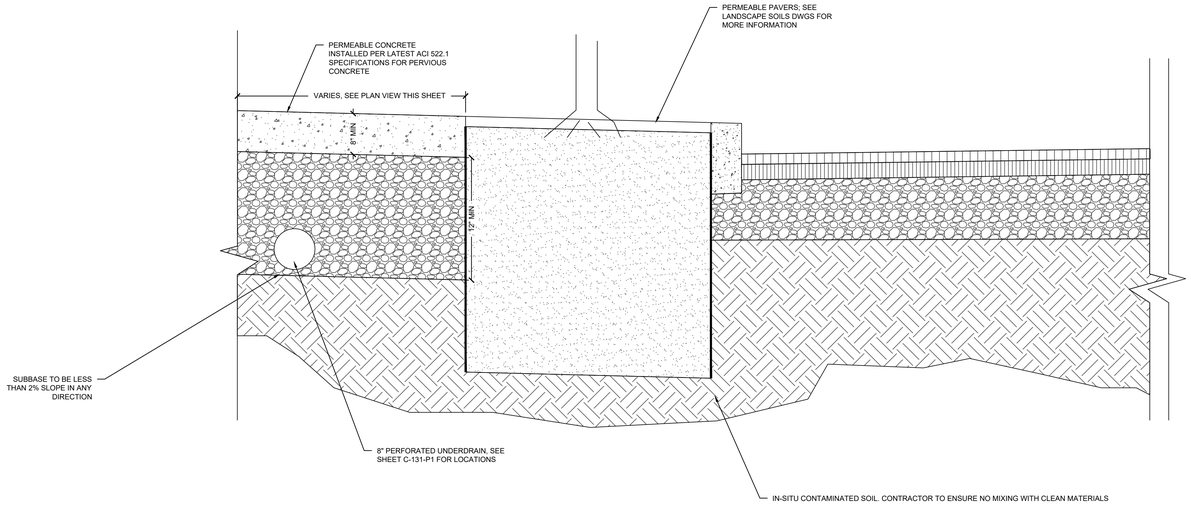
NOTE:
STEWART IS ONLY RESPONSIBLE FOR GRADING INSIDE THE RIGHT OF WAY ALONG OLD FRONT STREET ROAD.

GRADING LEGEND:

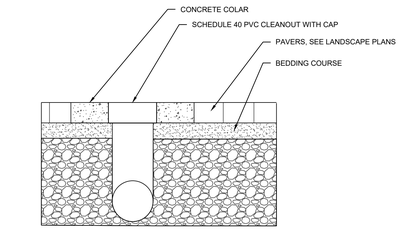
- 200 — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 200 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED STORM DRAINAGE
- PROPOSED CATCH BASIN
- PROPOSED JUNCTION BOX
- PROPOSED AREA DRAIN (GRATE DETAIL SHEET C-530-P1)
- 44.50 — PROPOSED ELEVATION
- TC 44.50 / BC 44.00 — TOP/BOTTOM OF CURB
- TW 46.00 / BW 44.00 — TOP/BOTTOM OF WALL
- RIPRAP DISSIPATOR
- FLOW DIRECTION
- LIMITS OF DISTURBANCE

0 15 30 60 NORTH

SCALE: 1"=30'



1 PERMEABLE PAVEMENT OLD FRONT ST - WEST NTS
SECTION



2 CLEAN OUT NTS
SECTION

Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
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www.sandec.com
EAGLE RESOURCES
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
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Fire Protection = FP
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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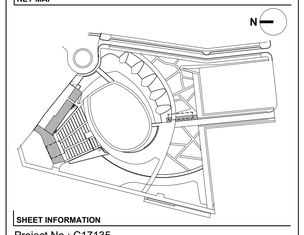
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PYLE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 30'

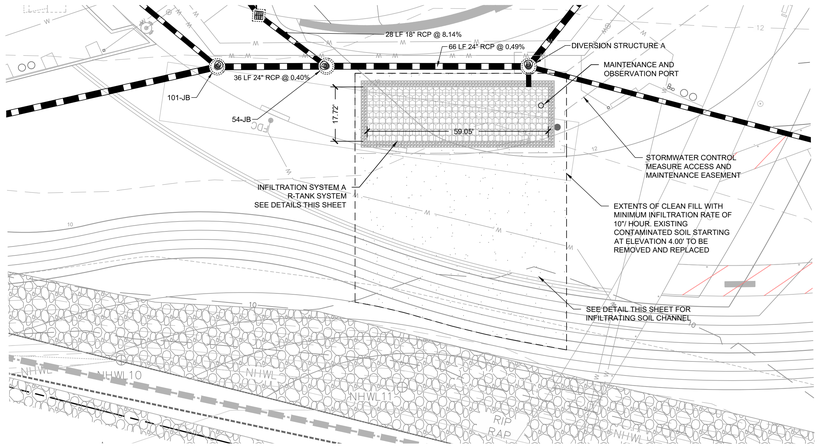
SHEET TITLE

CIVIL PERMEABLE PAVEMENT DETAILS

SHEET NO.

C-136-P1

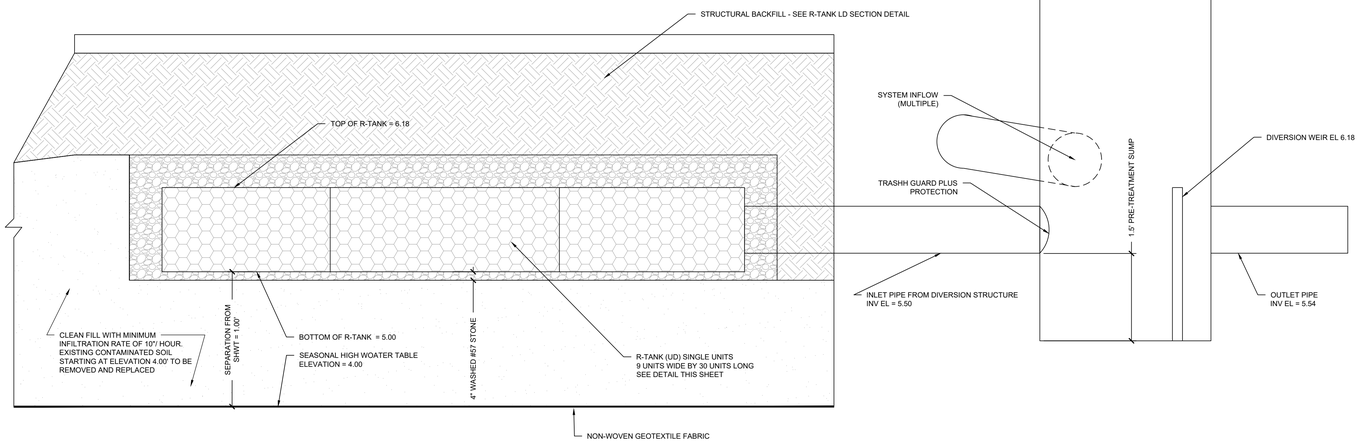
IRN016



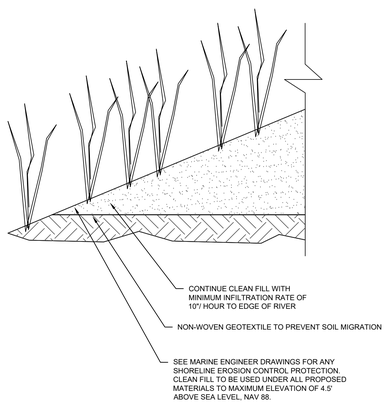
0 10 20 40 NORTH

SCALE: 1"=20'

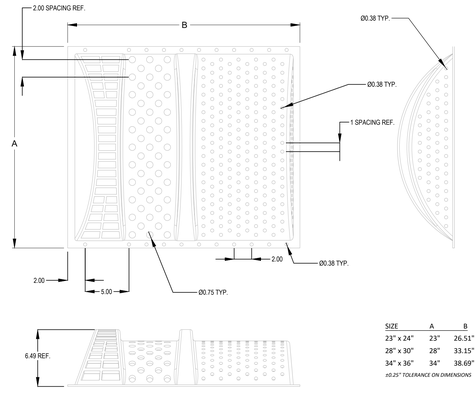
INFILTRATION SYSTEM A PLAN VIEW
SCALE: 1"=20'



INFILTRATION SYSTEM A SECTION VIEW



INFILTRATION SOIL CHANNEL DETAIL



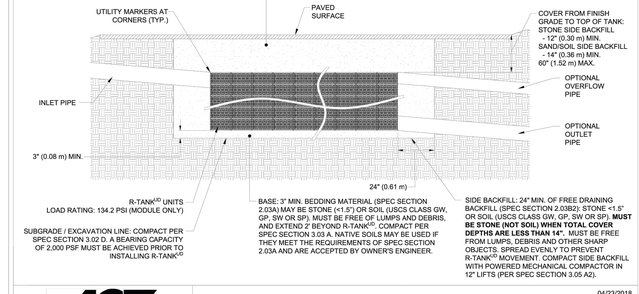
SIZE	A	B
23" x 24"	23"	26.51"
28" x 30"	28"	33.15"
34" x 36"	34"	38.69"

±0.25" TOLERANCE ON DIMENSIONS

TRASH GUARD PLUS DETAIL

TOTAL COVER: 12"(STONE)/14"(SAND/SOIL) MINIMUM AND 60" MAXIMUM. FIRST 12" (OR FROM TOP OF MODULE TO BOTTOM OF PAVEMENT SECTION WHEN MINIMUM COVER CONDITIONS APPLY) MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B2): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP); ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 5'. CONTACT ACF ENVIRONMENTAL IF MORE THAN 5' OR LESS THAN 12" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{UD} MODULE SHEET .
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{UD} FOOTPRINT.

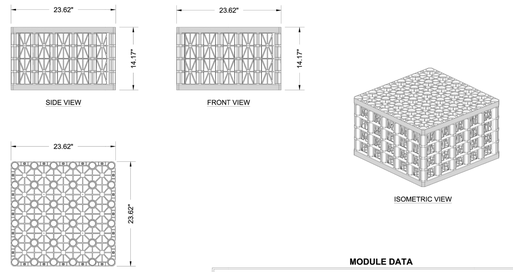


04/23/2018

ACF ENVIRONMENTAL — LET'S GET IT DONE

R-TANK^{UD} & HS-20 LOADS - SECTION VIEW

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com



MODULE DATA

GEOMETRY: LENGTH = 23.62 IN. (600 MM)
WIDTH = 23.62 IN. (600 MM)
HEIGHT = 14.17 IN. (360 MM)
TANK VOLUME = 4.57 CF
STORAGE VOLUME = 4.35 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 95%

LOAD RATING: 134.20 PSI, (MODULE ONLY)
HS25, (WITH ACF COVER SYSTEM)

MATERIAL: 100% RECYCLED POLYPROPYLENE

03/22/18

ACF ENVIRONMENTAL

R-TANK^{UD} - SINGLE MODULE

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

CITY OF WILMINGTON
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
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CITY OF WILMINGTON
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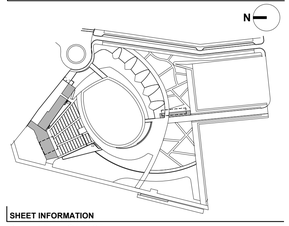
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ENGINEER ADAM C. PIKE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 20'

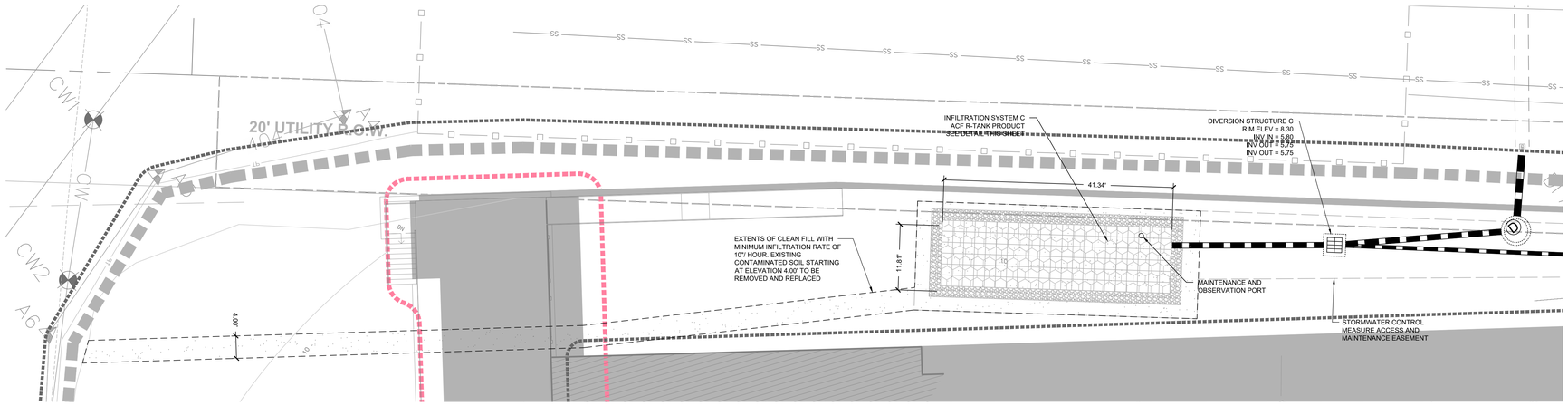
SHEET TITLE

CIVIL INFILTRATION SYSTEM A DETAILS

SHEET NO.

C-137-P1

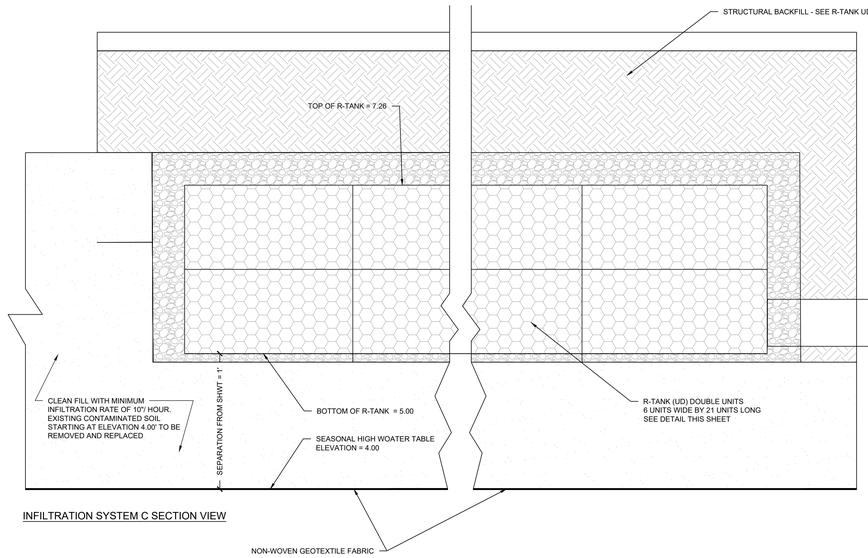
IRN016



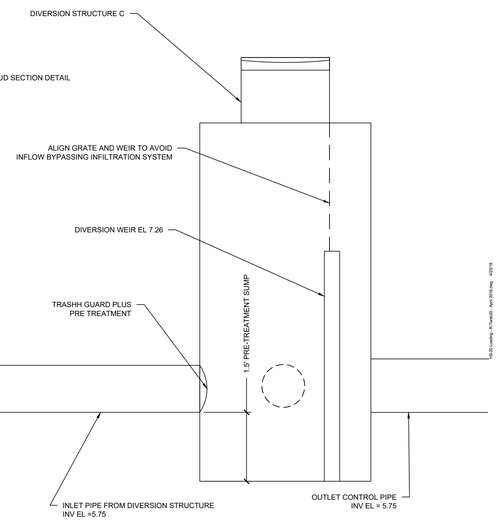
INFILTRATION SYSTEM C - PLAN VIEW
SCALE: 1"=10'

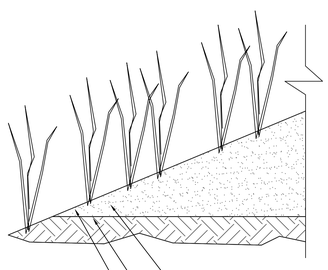
0 5 10 20 NORTH

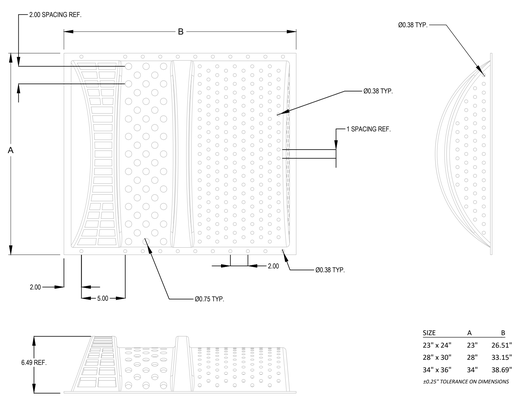
SCALE: 1"=10'



INFILTRATION SYSTEM C SECTION VIEW







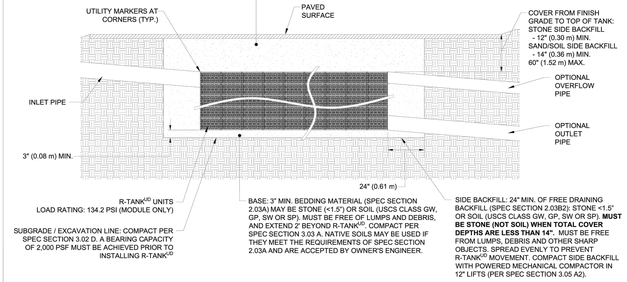
SIZE	A	B
23" x 24"	23"	26.51"
28" x 30"	28"	33.15"
34" x 36"	34"	38.69"

±0.25" TOLERANCE ON DIMENSIONS

TRASH GUARD PLUS DETAIL

TOTAL COVER: 12"(STONE)/14"(SAND/SOIL) MINIMUM AND 60" MAXIMUM. FIRST 12" (OR FROM TOP OF MODULE TO BOTTOM OF PAVEMENT SECTION WHEN MINIMUM COVER CONDITIONS APPLY) MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B2): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 5'. CONTACT ACF ENVIRONMENTAL IF MORE THAN 5' OR LESS THAN 12" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

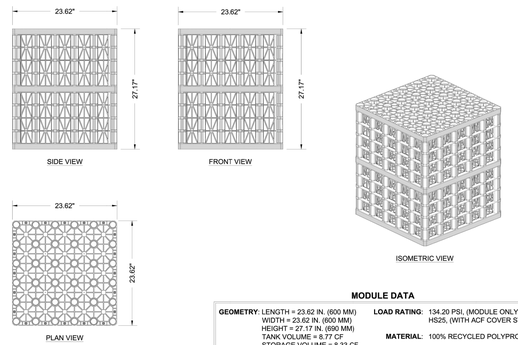
NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK[UD] MODULE SHEET.
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK[UD] FOOTPRINT.



04/23/2018

R-TANK[UD] & HS-20 LOADS - SECTION VIEW

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com



MODULE DATA

GEOMETRY: LENGTH = 23.62 IN. (600 MM)
WIDTH = 23.62 IN. (600 MM)
HEIGHT = 27.17 IN. (690 MM)
TANK VOLUME = 8.77 CF
STORAGE VOLUME = 8.33 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 95%

LOAD RATING: 134.20 PSI, (MODULE ONLY) HS25, (WITH ACF COVER SYSTEM)

MATERIAL: 100% RECYCLED POLYPROPYLENE

03/22/18

R-TANK[UD] - DOUBLE MODULE

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

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

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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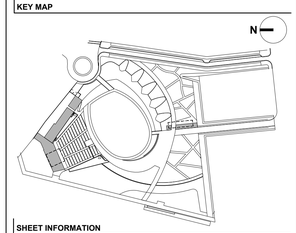
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER LAP WILLIAM C. PYLE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 20'

SHEET TITLE

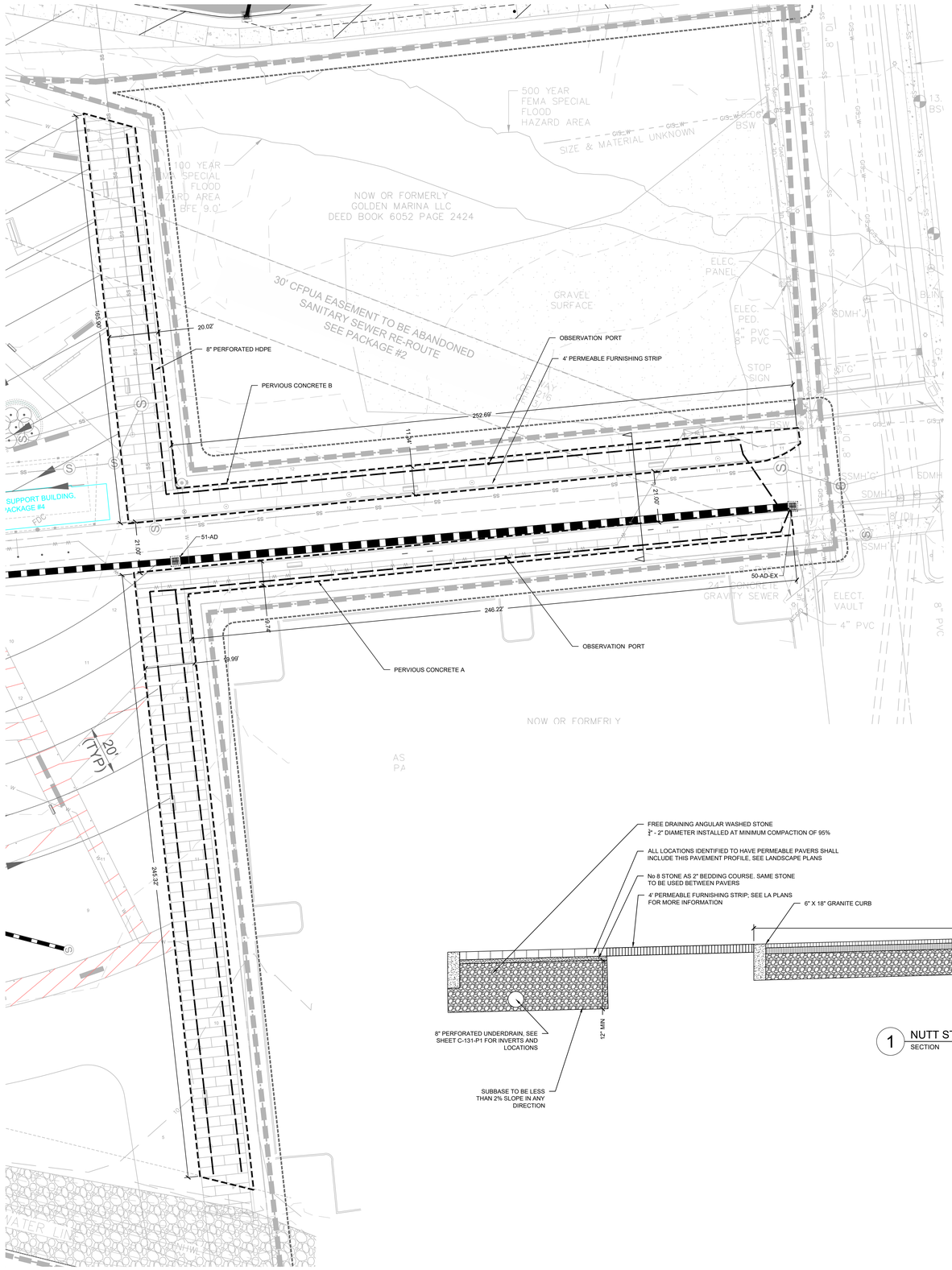
CIVIL INFILTRATION SYSTEM C DETAILS

SHEET NO.

C-138-P1

IRN016

IRN016

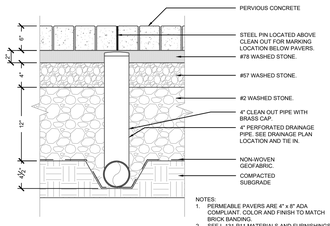


PERMEABLE PAVEMENT - PLAN VIEW
SCALE: 1"=20'

GRADING LEGEND:	
200	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
200	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED STORM DRAINAGE
	PROPOSED CATCH BASIN
	PROPOSED JUNCTION BOX
	PROPOSED AREA DRAIN (GRATE DETAIL SHEET C-530-P1)
44.50	PROPOSED ELEVATION
TC 44.50 BC 44.00	TOP/BOTTOM OF CURB
TW 46.00 BW 44.00	TOP/BOTTOM OF WALL
	RIPRAP DISSIPATOR
	FLOW DIRECTION
	LIMITS OF DISTURBANCE

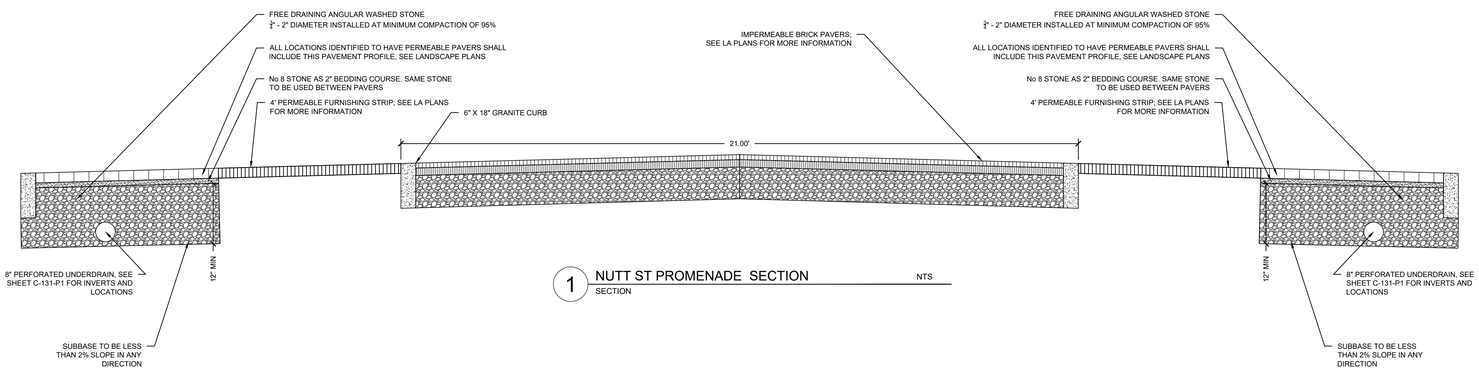
0 10 20 40 NORTH

SCALE: 1"=20'



NOTES:
1. PERMEABLE PAVERS ARE 4" x 8" ADA COMPLIANT. COLOR AND FINISH TO MATCH BRICK BANDING.
2. SEE L-131-P1 MATERIALS AND FURNISHINGS PLAN FOR ADDITIONAL INFORMATION.
3. SECTION CONFORMS TO NCDENR BMP MANUAL.
4. CONTRACTOR TO PROVIDE INFILTRATION TESTING ON SOIL TO ENGINEER PRIOR TO CONSTRUCTION OF PAVER SYSTEM.

1 PERMEABLE PAVEMENT SECTION NTS



1 NUTT ST PROMENADE SECTION NTS
SECTION

Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
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Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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www.sandec.com
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Irrigation= I
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Landscape Soil = LS
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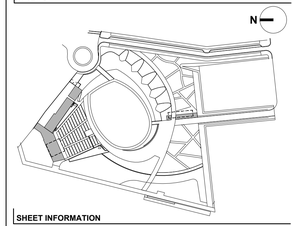
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER LAP MACK C.

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 20'

SHEET TITLE

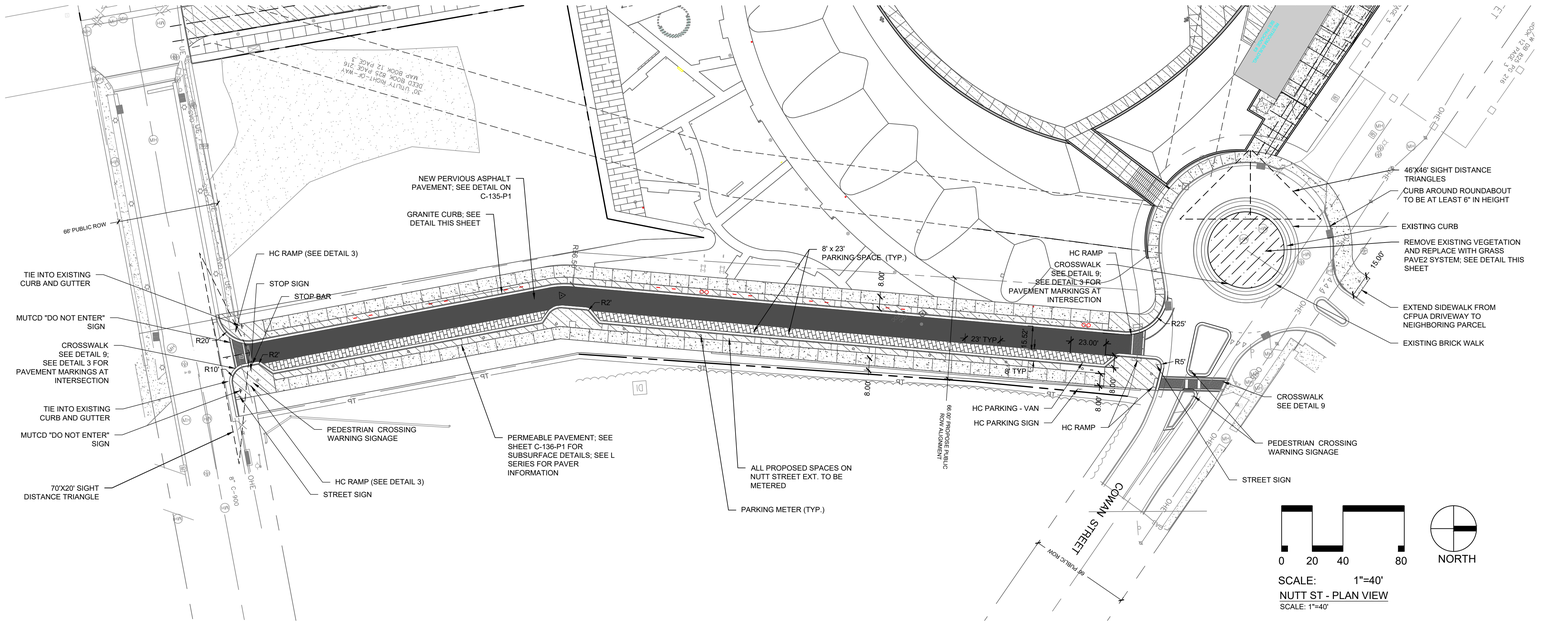
CIVIL PERMEABLE PAVEMENT DETAILS

SHEET NO.

C-139-P1

IRN016

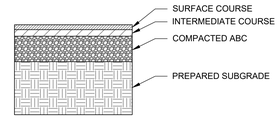
IRN016



NUTT ST - PLAN VIEW
SCALE: 1"=40'

PAVEMENT AND MARKING NOTES:

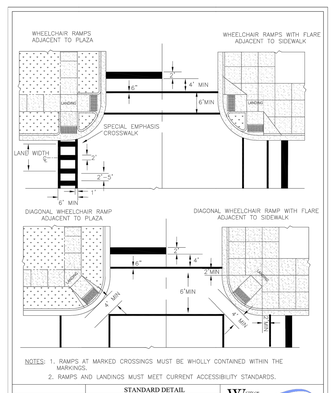
1. REFER TO L-131-P1 FOR MATERIALS PLAN
2. ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS. [DETAIL SD 11-03 AND SD 15-13 COFW TECH STDS]
3. ALL SIGNS AND PAVEMENT MARKINGS IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS. [DETAIL SD 15-13 COFW TECH STDS]
4. ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
5. ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
6. A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET. CONTACT 341-5888 FOR MORE DETAILS.
7. ANY BROKEN OR MISSING CURBING WILL BE REPLACED.
8. CONTACT TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT OF WAY.



	SURFACE	INTERMEDIATE	STONE
PAVEMENT TYPE	S9.5B	I19.0C	ABC
STND. DUTY	1.5"	2.5	8"

1 ASPHALT PAVING ON AGGREGATE BASE
NTS

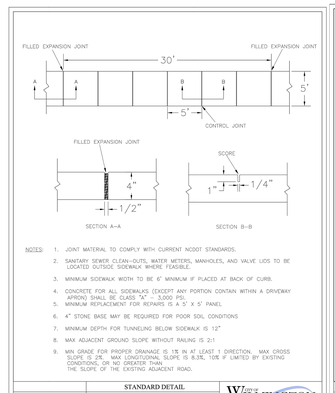
NOTE: FOR PATCHING AT CONNECTION TO EXISTING DRIVE ISLE. THE NEW PORTION OF ASPHALT TO BE POROUS. SEE C-135-P1 FOR MORE INFORMATION



STANDARD DETAIL	
DATE: AUGUST, 2011	INTERSECTION LAYOUT
DRAWN: PB/DB	
CHECKED: DEC	
SCALE: NOT TO SCALE	

CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON N.C. 28402 (910) 341-7807 — SD 3-09

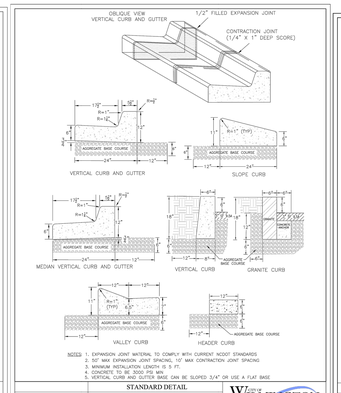
3 INTERSECTION LAYOUT
NTS



STANDARD DETAIL	
DATE: OCTOBER, 2010	SIDEWALK
DRAWN: PB/DB	
CHECKED: DEC	
SCALE: NOT TO SCALE	

CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON N.C. 28402 (910) 341-7807 — SD 3-10

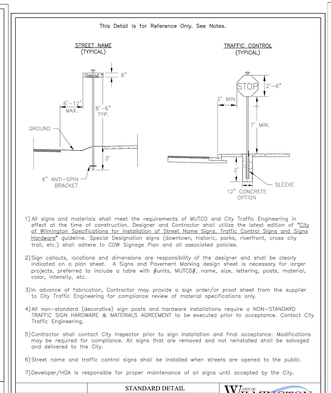
4 SIDEWALK DETAIL
NTS



STANDARD DETAIL	
DATE: AUGUST, 2011	CURBING
DRAWN: PB/DB	
CHECKED: DEC	
SCALE: NOT TO SCALE	

CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON N.C. 28402 (910) 341-7807 — SD 3-11

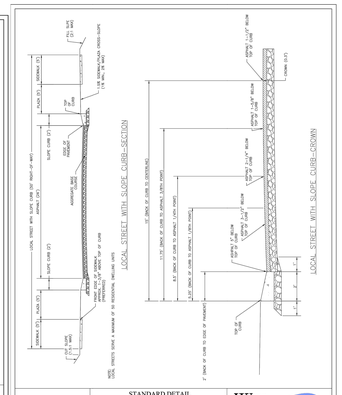
5 GRANITE CURB
NTS



STANDARD DETAIL	
DATE: FEBRUARY, 2019	STREET & TRAFFIC SIGNS REFERENCE DETAIL
DRAWN BY JSR	
CHECKED BY BDB, P.E.	
SCALE: NOT TO SCALE	

CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807 — SD 15-03

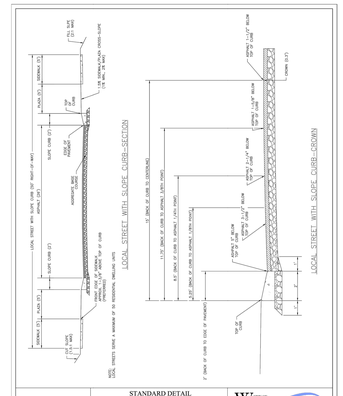
6 SIGN DETAIL
NTS



STANDARD DETAIL	
DATE: MAY, 2015	LOCAL STREET WITH SLOPE CURB (SECTION AND CROWN)
DRAWN BY JSR	
CHECKED BY D.E.C., P.E.	
SCALE: NOT TO SCALE	

CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON N.C. 28402 (910) 341-7807 — SD 3-01.4

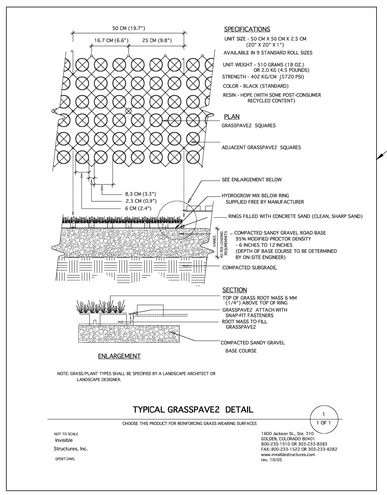
7 STREET DETAIL
NTS



STANDARD DETAIL	
DATE: MAY, 2015	LOCAL STREET WITH SLOPE CURB (SECTION AND CROWN)
DRAWN BY JSR	
CHECKED BY D.E.C., P.E.	
SCALE: NOT TO SCALE	

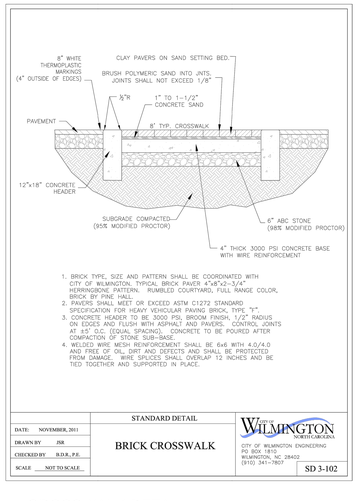
CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON N.C. 28402 (910) 341-7807 — SD 3-01.4

8 STREET DETAIL
NTS



GRASS PAVE TO BE INCLUDED FOR PACKAGE #2 PRICING

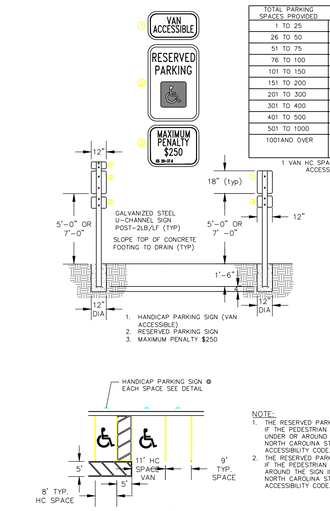
2 GRASS PAVERS DETAILS
NTS



STANDARD DETAIL	
DATE: NOVEMBER, 2011	BRICK CROSSWALK
DRAWN BY JSR	
CHECKED BY B.D.B., P.E.	
SCALE: NOT TO SCALE	

CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807 — SD 3-102

9 CROSSWALK DETAIL
NTS



10 ACCESSIBLE PARKING/SIGNAGE DETAIL
NTS

CITY OF WILMINGTON NORTH CAROLINA
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
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NC License #C-1051

Environmental Engineering = EE
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EAGLE RESOURCES
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
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NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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Water Fountain Design = WF
DELTA FOUNTAINS
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

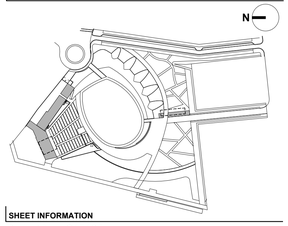
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED SEAL 036231 ENGINEER ADAM C. PEK

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: 1" = 30'

SHEET TITLE

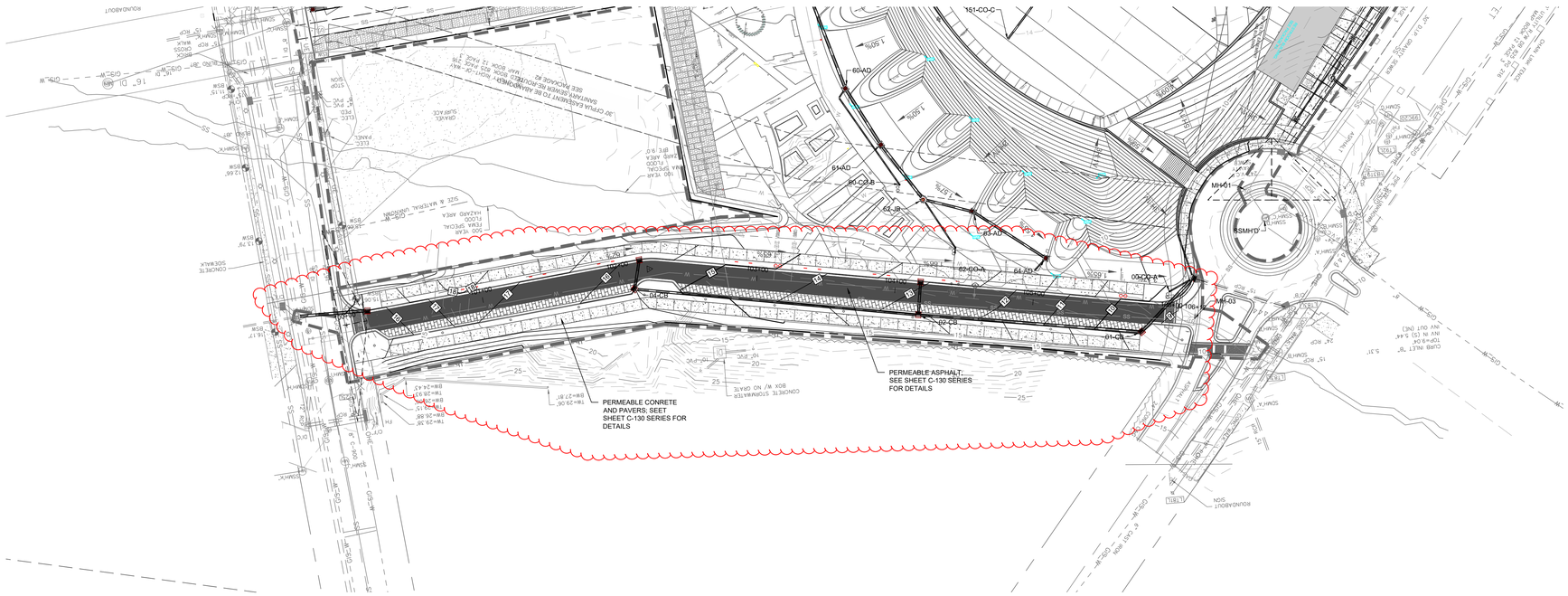
CIVIL NUTT STREET LAYOUT PLAN

SHEET NO.

C-150-P1

IRN016

IRN016

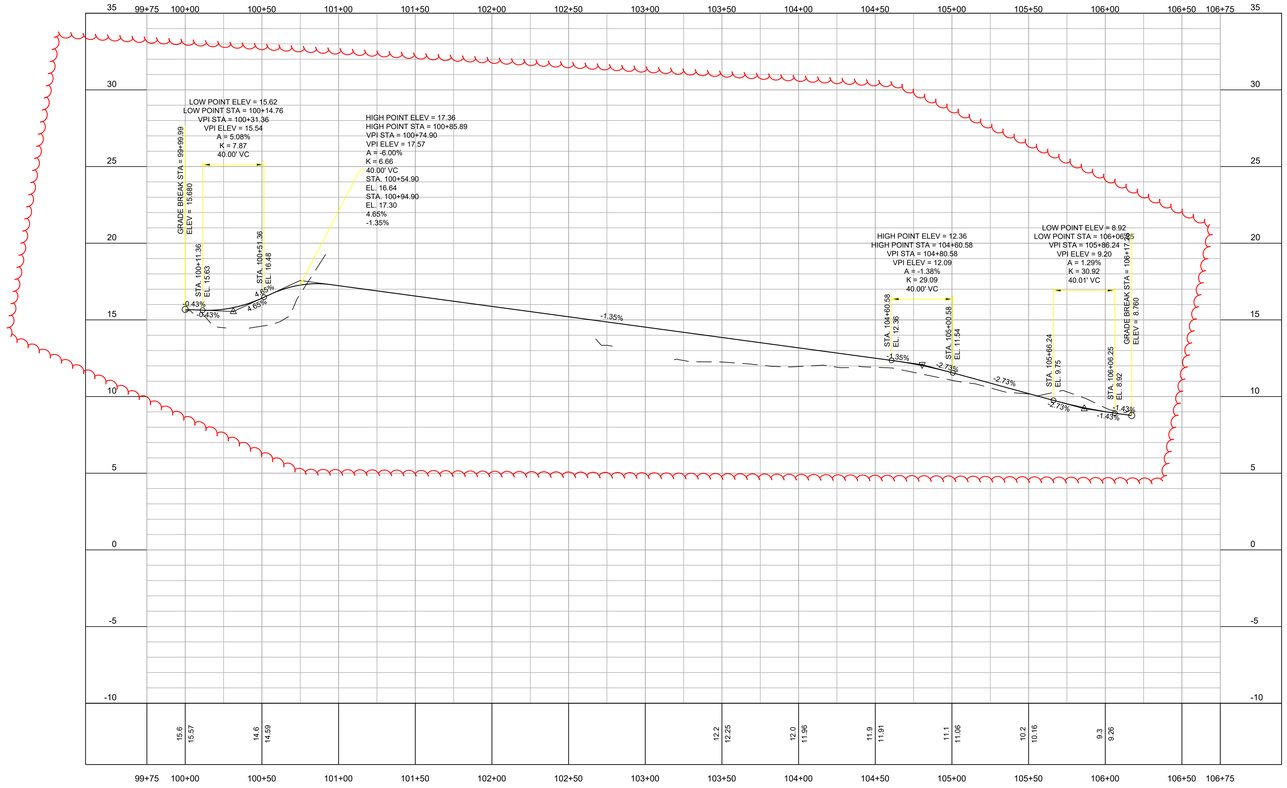


OLD FRONT ST - PLAN VIEW
SCALE: 1"=40'

0 20 40 80 NORTH

SCALE: 1"=40'

SEE BID PACKAGE P-2 FOR RELOCATION OF SANITARY SEWER



OLD FRONT ST - PROFILE VIEW
SCALE: H 1"=40' V 1"=10'

CITY OF WILMINGTON NORTH CAROLINA
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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Lighting Design = EL
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www.tillotsondesign.com

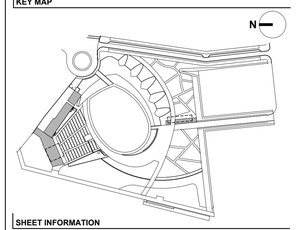
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PYLE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: LAP
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 30'

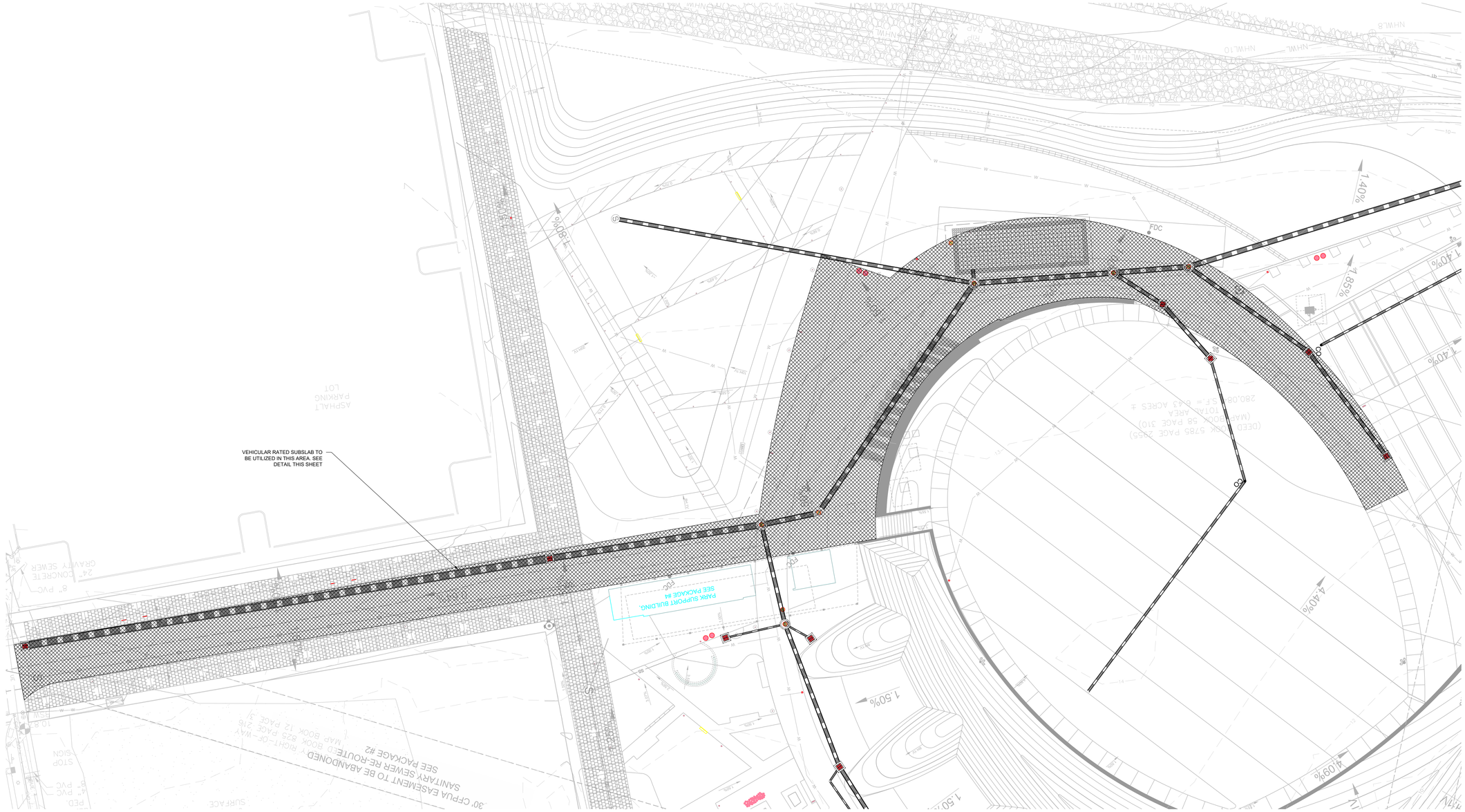
SHEET TITLE

CIVIL NUTT STREET PLAN AND PROFILE

SHEET NO.

C-151-P1

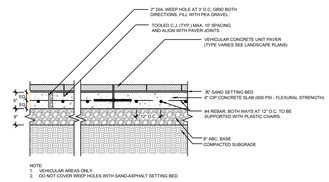
IRN016



NUTT ST - PLAN VIEW
SCALE: 1"=40'

0 10 20 40 NORTH

SCALE: 1"=20'



NOTE:
1. VEHICULAR AREAS ONLY
2. DO NOT COVER WEEP HOLES WITH SAND-ASPHALT SETTING BED.

SUBLSAB DETAIL FOR VEHICULAR LOADING - SECTION
SCALE: NTS

CITY OF WILMINGTON NORTH CAROLINA
Public Services ● Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

IRN016

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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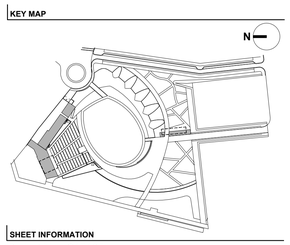
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PIKE 10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: 1" = 30'

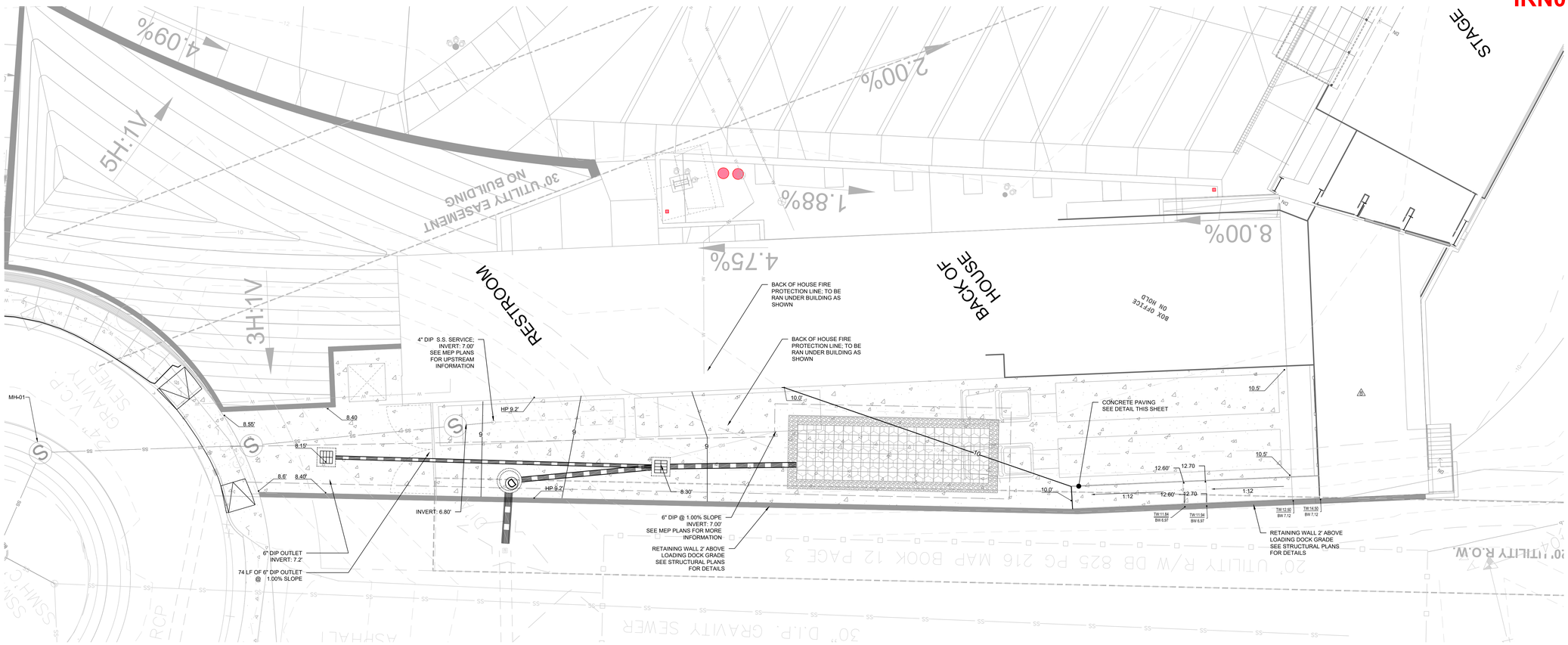
SHEET TITLE

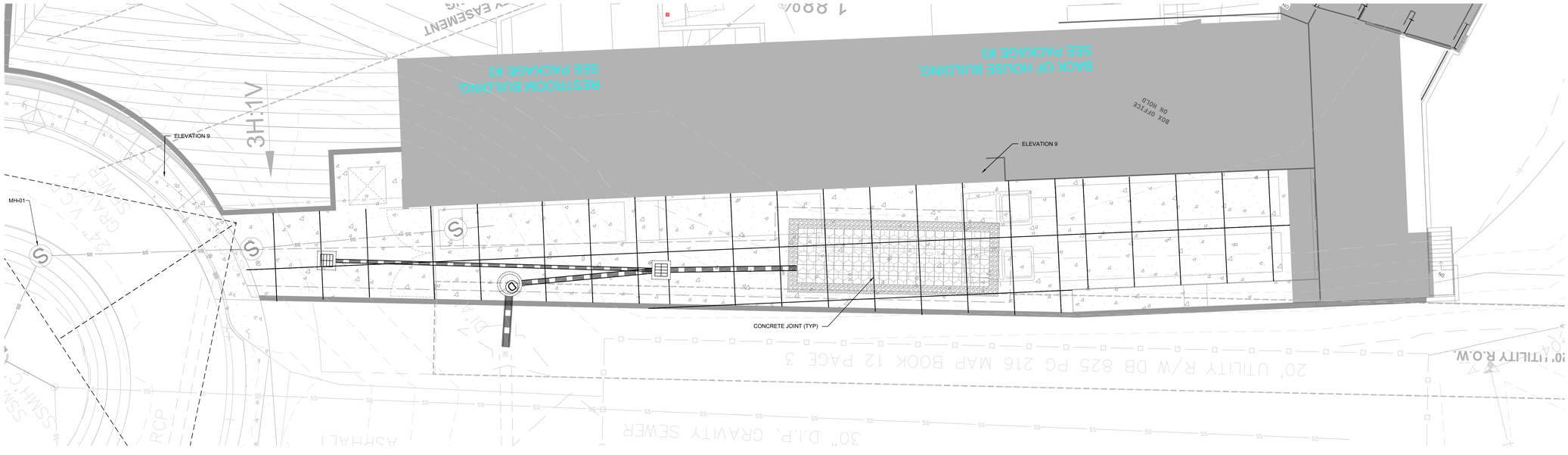
CIVIL SUB-SLAB PLAN AND DETAILS

SHEET NO.

C-152-P1

IRN016



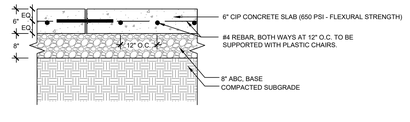


LOADING DOCK - PLAN VIEW
SCALE: 1"=10'

0 5 10 20
SCALE: 1"=10'

NORTH

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



LOADING DOCK CONCRETE PAVING - SECTION
SCALE: NTS

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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NC License #C-1073

Marine Structural Engineering = SM
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Water Fountain Design = WF
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

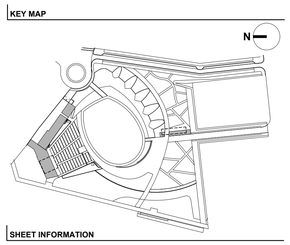
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PIKE
10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

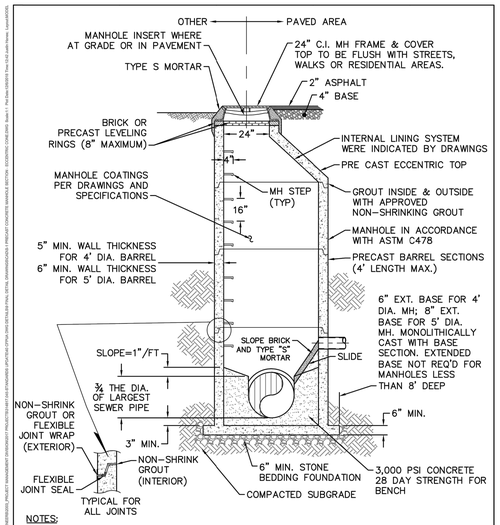
Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019 10/25/2019
Scale: 1" = 30'

SHEET TITLE

LOADING DOCK GRADING PLAN AND DETAILS

SHEET NO.

C-153-P1



NOTES:

1. FOR MANHOLES UP TO 12 FEET IN DEPTH MINIMUM BARREL DIAMETER SHALL BE 4 FEET. MANHOLES GREATER THAN 12 FEET IN DEPTH SHALL BE A MINIMUM OF 5 FEET IN DIAMETER.

FOR LESS THAN 30" INSIDE DROP

DETAIL: PRECAST CONCRETE MANHOLE SECTION - ECCENTRIC CONE		DETAIL NO: S-1
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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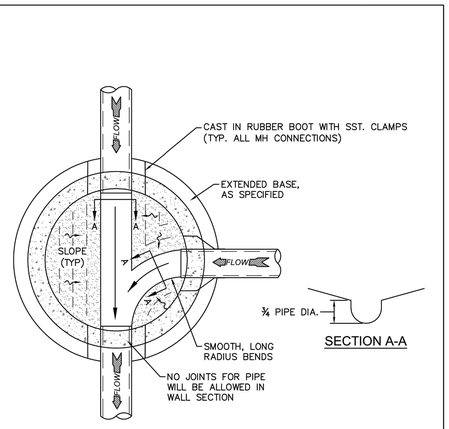

DETAIL: MANHOLE FLOOR PLAN		DETAIL NO: S-5
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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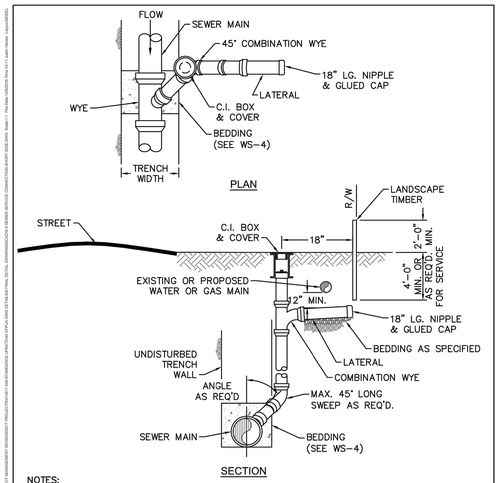

NOTES:

1. SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
2. ALL SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF DIP, WITH PROTECTIVE LINING.
3. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.
4. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO MAIN.

DETAIL: SEWER SERVICE CONNECTION - SHORT-SIDE		DETAIL NO: S-9
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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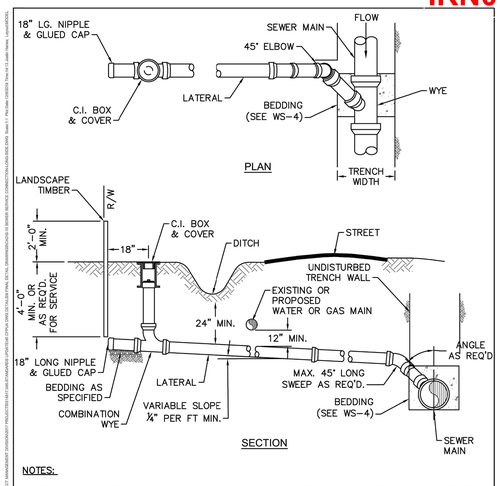

NOTES:

1. SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
2. ALL SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF DIP, WITH PROTECTIVE LINING.
3. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.
4. MINIMUM 1'-6" NIPPLE SPACING BETWEEN FITTINGS.
5. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO MAIN.

DETAIL: SEWER SERVICE CONNECTION - LONG-SIDE		DETAIL NO: S-10
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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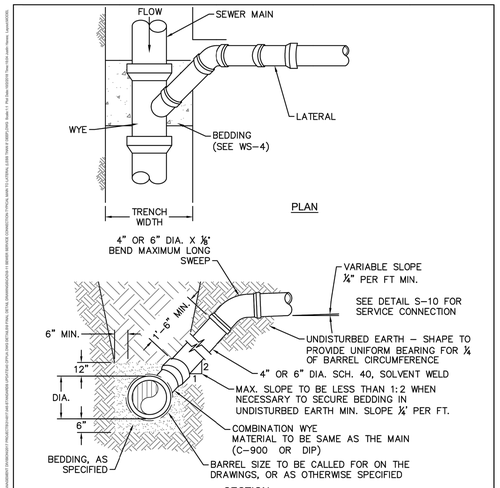

NOTES:

1. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
2. ALL SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF DIP, WITH PROTECTIVE LINING.

DETAIL: SEWER SERVICE CONNECTION - MAIN to LATERAL (LESS THAN 8' DEEP)		DETAIL NO: S-11
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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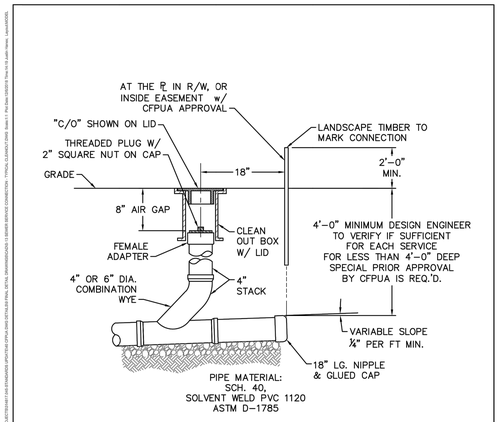

NOTES:

1. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
2. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.

DETAIL: SEWER SERVICE CONNECTION - TYPICAL CLEAN-OUT		DETAIL NO: S-13
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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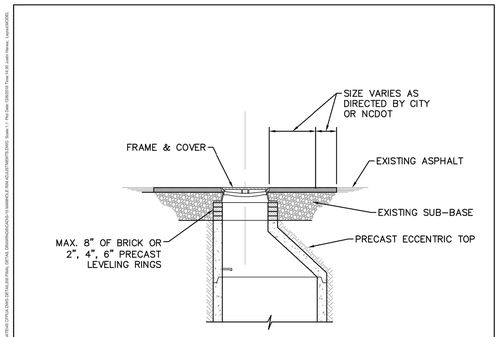

DETAIL: MANHOLE RIM ADJUSTMENTS		DETAIL NO: S-15
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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IRN016

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Architecture = A
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Irrigation= I
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NC License #C-1073

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www.tillotsondesign.com

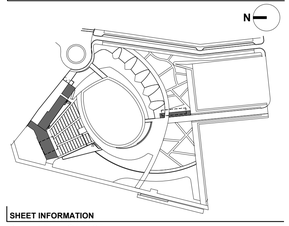
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ENGINEER C. P. I. E.

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019 10/25/2019
Scale: N.T.S.

SHEET TITLE

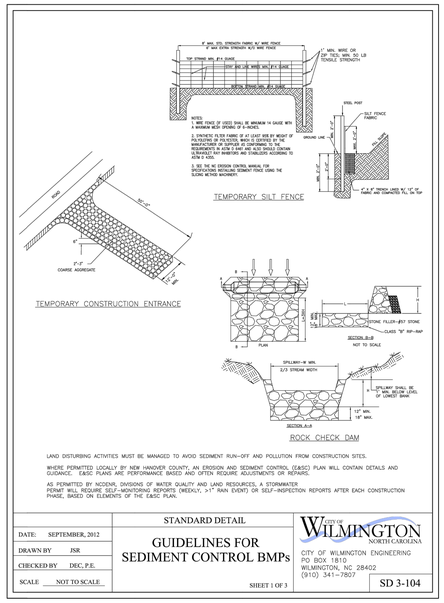
CIVIL DETAILS

IRN016

SHEET NO.

C-501-P1

IRN016



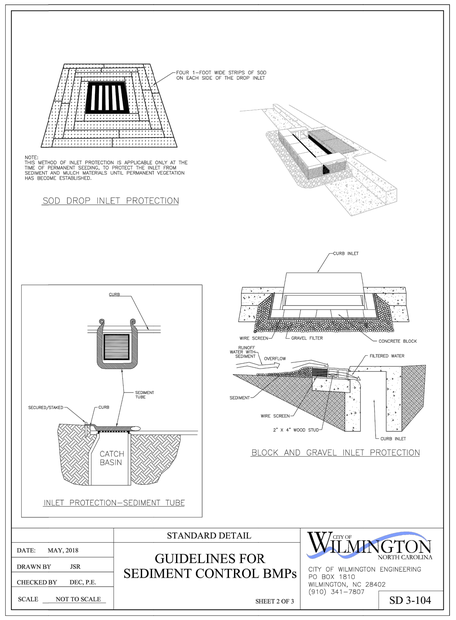
LAND DISTURBING ACTIVITIES MUST BE MANAGED TO AVOID SEDIMENT RUN-OFF AND POLLUTION FROM CONSTRUCTION SITES.

WHERE PERMITTED LOCALLY BY NEW HANOVER COUNTY, AN EROSION AND SEDIMENT CONTROL (E&SC) PLAN WILL CONTAIN DETAILS AND GUIDANCE. E&SC PLANS ARE PERFORMANCE BASED AND OFTEN REQUIRE ADJUSTMENTS OR REPAIRS.

AS PERMITTED BY NCDENR, DIVISIONS OF WATER QUALITY AND LAND RESOURCES, A STORMWATER PERMIT WILL REQUIRE SELF-MONITORING REPORTS (WEEKLY, >1" RAIN EVENT) OR SELF-INSPECTION REPORTS AFTER EACH CONSTRUCTION PHASE, BASED ON ELEMENTS OF THE E&SC PLAN.

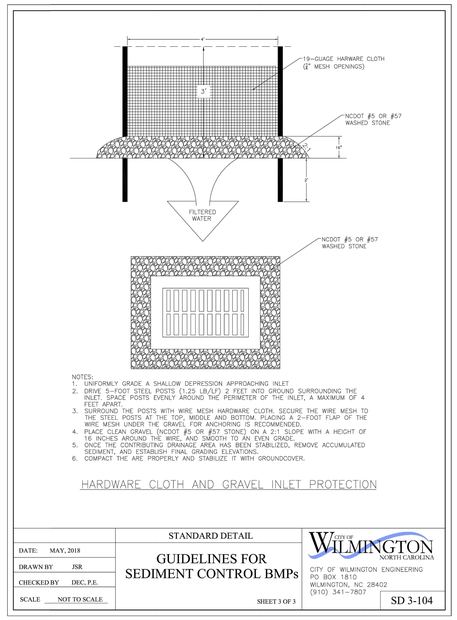
STANDARD DETAIL		
DATE: SEPTEMBER, 2012	GUIDELINES FOR SEDIMENT CONTROL BMPs	CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807
DRAWN BY JSR		
CHECKED BY DEC, P.E.		
SCALE NOT TO SCALE	SHEET 1 OF 3	SD 3-104

1 CITY OF WILMINGTON EROSION CONTROL DETAILS NTS
PLAN



STANDARD DETAIL		
DATE: MAY, 2018	GUIDELINES FOR SEDIMENT CONTROL BMPs	CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807
DRAWN BY JSR		
CHECKED BY DEC, P.E.		
SCALE NOT TO SCALE	SHEET 2 OF 3	SD 3-104

2 CITY OF WILMINGTON EROSION CONTROL DETAILS NTS
PLAN

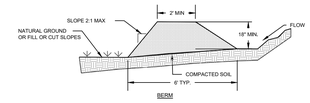


STANDARD DETAIL		
DATE: MAY, 2018	GUIDELINES FOR SEDIMENT CONTROL BMPs	CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807
DRAWN BY JSR		
CHECKED BY DEC, P.E.		
SCALE NOT TO SCALE	SHEET 3 OF 3	SD 3-104

3 CITY OF WILMINGTON EROSION CONTROL DETAILS NTS
PLAN

MAINTENANCE NOTES:

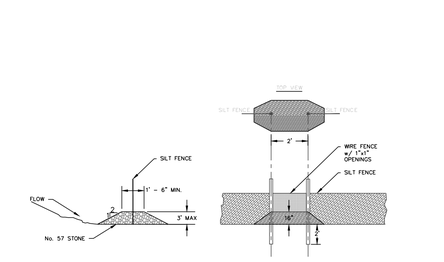
1. MACHINE COMPACTION OF ALL FILL IS REQUIRED. ALLOW AT LEAST 10% SETTLEMENT FOR THE TOTAL FILL HEIGHT. DIVERSIONS SUFFICIENT TO DIRECT ALL SEDIMENT- LADEN STORMWATER SEDIMENT CONTROL DEVICE MUST BE INSTALLED PRIOR TO INTO A CLEARING AND GRUBBING OF THE AREA.
2. DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGE DURING CONSTRUCTION OPERATIONS.
3. DIVERSIONS SHALL BE SEEDED AND MULCHED IF THEY ARE REMAIN TO IN PLACED OVER 30 DAYS.
4. CHECK DEVICE AFTER EACH RAIN, BUT ONCE A WEEK REGARDLESS. REPAIR AS NECESSARY.



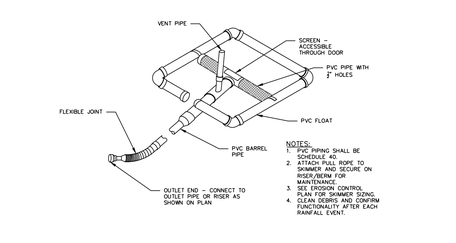
NOTES:

1. POSITIVE GRADE MUST BE PROVIDED TO ASSURE DRAINAGE. IF SLOPE EXCEEDS 2%, SEED AND MULCH DIVERSION. TRY NOT TO EXCEED 5% (HIGH VELOCITIES RESULT). MAXIMUM D. A. = 5 ACRES WITHOUT SUPPORTING CALCS.. DIVERSIONS AT THE TOP OF SLOPES MUST EMPTY INTO AN APPROVED SLOPE DRAIN. BERM/DITCH IS MOST USED.

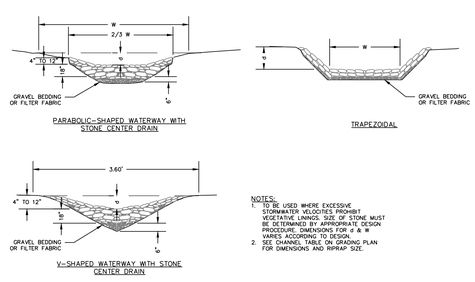
4 DIVERSION DITCH NTS
PLAN



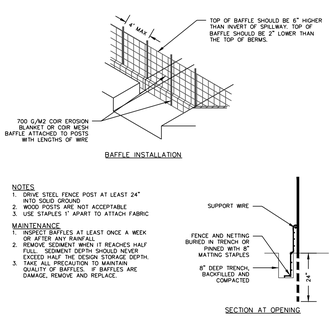
5 SILT FENCE OUTLET NTS
PLAN



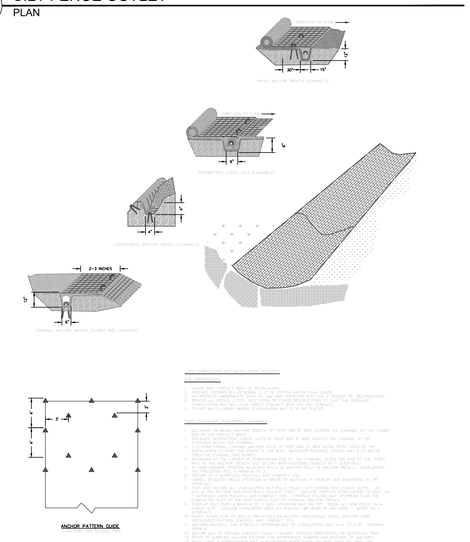
6 SKIMMER NTS
PLAN



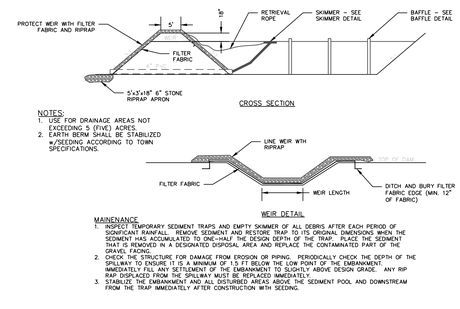
7 RIP-RAP LINED CHANNEL NTS
PLAN



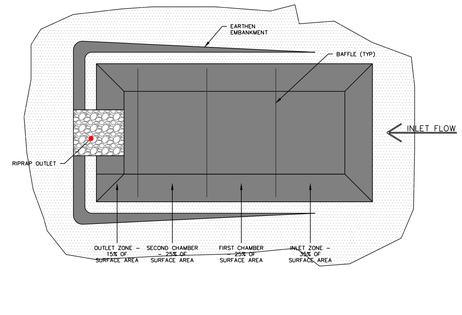
8 BAFFLE NTS
PLAN



9 STABILIZATION MAT NTS
PLAN



10 SKIMMER SEDIMENT BASIN NTS
PLAN



11 BAFFLE SPACING DETAIL NTS
PLAN

IRN016

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Irrigation= I
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SEAL/SIGNATURE



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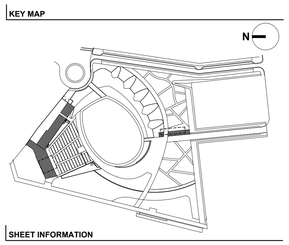
KEY MAP



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Scale: N.T.S.

SHEET TITLE

CIVIL EROSION CONTROL DETAILS

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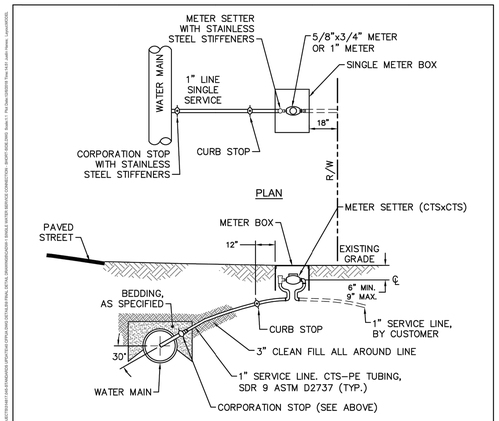
SHEET NO.

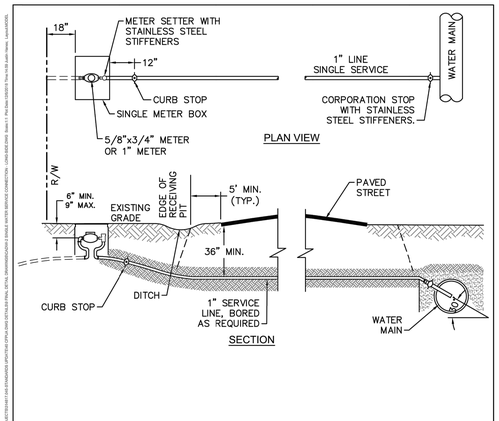
C-510-P1



SECTION

NOTES:
1. NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY.
3. METER BOXES SUBJECT TO TRAFFIC LOADS SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS.
4. WATER SERVICE LINE SHALL TERMINATE 18" WITHIN RIGHT-OF-WAY LINE.
5. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
6. SERVICE PIPING AND METER SETTER TO BE CENTERED IN THE METER BOX.

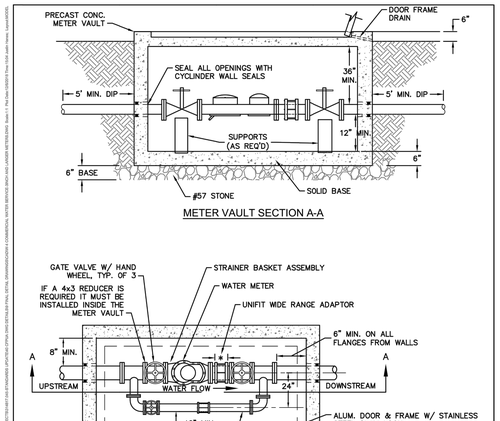
DETAIL:		DETAIL NO:
SINGLE WATER SERVICE CONNECTION - TYPICAL SHORT-SIDE CONNECTION	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	W-1
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		



SECTION

NOTES:
1. NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY.
3. METER BOXES SUBJECT TO TRAFFIC LOADS SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS
4. WATER SERVICE LINE SHALL BE PERPENDICULAR TO MAIN AND TERMINATE 18" WITHIN RIGHT-OF-WAY LINE.
5. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
6. SERVICE PIPING AND METER SETTER TO BE CENTERED IN THE METER BOX.

DETAIL:		DETAIL NO:
SINGLE WATER SERVICE CONNECTION - LONG-SIDE	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	W-2
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		

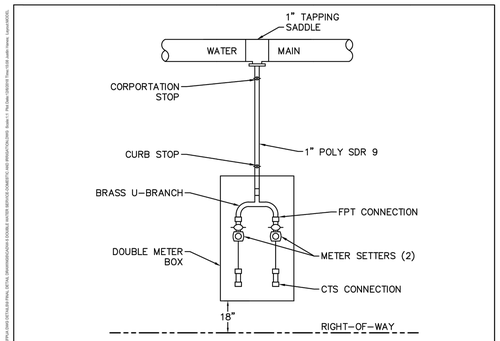


Meter Size	By-Pass Size
3"	4"
4"	4"
6"	4"
8"	4"
10"	6"
12"	8"

NOTES
1. DOOR OPENING MUST CLEAR ALL COMPONENTS.
2. MUST MEET H20 LOADING REQUIRED IF IN TRAFFIC AREA.
3. FOR VAULTS GREATER THAN 5 FEET DEEP PROVIDE AN ALUMINUM ACCESS LADDER w/ SAFETY EXTENSION AND NON-SKID RUNGS @ 12" o/c ANCHORED TO THE WALL.

* FLANGED COUPLING ADAPTER IS BOLTED DIRECTLY TO METER, ONLY ONE PEAFLG PIECE THAT IS 3 TIMES THE PIPE DIAMETER.

DETAIL:		DETAIL NO:
COMMERCIAL WATER SERVICE - 3-INCH AND LARGER METERS	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	W-4
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		



PLAN VIEW

NOTES:
1. ALL WATER SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN AND TERMINATE 18" INSIDE THE RIGHT OF WAY.
2. WATER SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY.
3. METER BOXES SUBJECT TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS.
4. 3" CLEAN FILL REQUIRED ALL AROUND 1" POLY SERVICE LINE.
5. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI OR C-900 PVC PIPE.
6. METER BOXES SHALL BE LOCATED MINIMUM 5-FEET FROM THE PROPERTY CORNER.
7. ASSEMBLY TO BE CENTERED IN THE METER BOX.

DETAIL:		DETAIL NO:
DOUBLE WATER SERVICE - DOMESTIC AND IRRIGATION SPLIT	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	W-5
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		

DETAIL:		DETAIL NO:
SAMPLING STATION	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	W-8
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		

NOTES
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI.
2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
3. CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ T-BOLT AND GASKET KITS, AS AN ALTERNATIVE.
4. HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
5. WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.
6. MJ TEE SHALL BE RESTRAINED ON EACH SIDE OF MAIN PLUS MAIN VALVES, FITTING, OR JOINTS WITHIN 10-FEET OF MJ TEE.
7. TRACING WIRE SHALL EXTEND ALONG HYDRANT LATERAL AND UP TO FINISHED GRADE WITH 2-FEET EXTENDED ABOVE THE BREAK RING OF HYDRANT.

DETAIL:		DETAIL NO:
FIRE HYDRANT ASSEMBLY	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	W-9
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		

NOTES:
1. CONTRACTOR SHALL ENSURE BOTTOM OF TRENCH IS SUITABLE FOR INSTALLATION AND DOES NOT REQUIRE FOUNDATION CONDITIONING STONE.
2. FILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
3. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57 STONE, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
4. SOIL SHALL BE INSTALLED IN 6"-8" LIFTS AND COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
5. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
6. COMPACT MATERIALS TO MINIMUM % DENSITY SHOWN IN DIAGRAM AS DETERMINED BY THE STANDARD PROCTOR METHOD ASTM D-698-A FOR SOILS, AND ASTM D-698-C FOR ABC STONE, AND BY NUCLEAR GAGE OR CORE SAMPLE FOR ASPHALT.
7. CUTBACKS OF ASPHALT SHALL BE PREPARED ON EDGE OF EXCAVATION OVER TOP OF UNDISTURBED SOIL.

(FOR PRIVATE ROADS AND PAVED AREAS: CONTRACTOR TO MEET MINIMUM REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

DETAIL:		DETAIL NO:
CITY OF WILMINGTON PAVEMENT REPAIRS-UTILITY CUTS	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	WS-1
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		

COMPACTION NOTES:
1. ALL ZONES: 95% STD EFFORT PER ASTM D698, EXCEPT AS STATED IN COMPACTION NOTE 2.
2. 12" SUBGRADE UNDER PAVEMENT: 98% STD EFFORT PER ASTM D698.

DETAIL:		DETAIL NO:
PIPE EMBEDMENT TYPES	CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	WS-4
SCALE: NOT TO SCALE / CFPUA DETAIL DATE: 01/01/19	Stewardship. Sustainability. Service.	SHEET NO: -
CFPUA REV. No: 1		

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

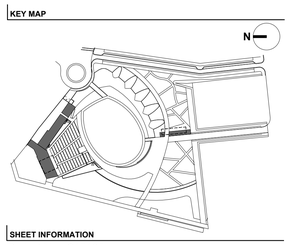
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C PIKE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION
Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: N.T.S.

SHEET TITLE

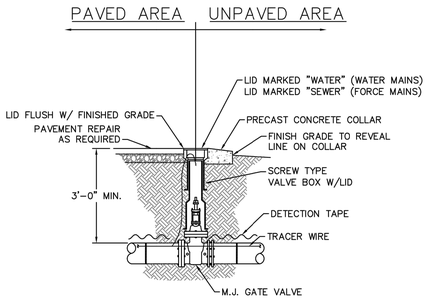
CIVIL UTILITY DETAILS

SHEET NO.

C-520-P1

IRN016

IRN016



NOTES:

1. TRACER WIRE SHALL PENETRATE VALVE BOX THROUGH DRILLED HOLE APPROX. 6" BELOW GRADE WITH MINIMUM 2-FEET EXTRA LENGTH COILED IN THE VALVE BOX. SEE WS-6.

DETAIL: VALVE DETAIL		DETAIL NO: WS-5
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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WILMINGTON, NC 28403
OFFICE: (910)332-6560
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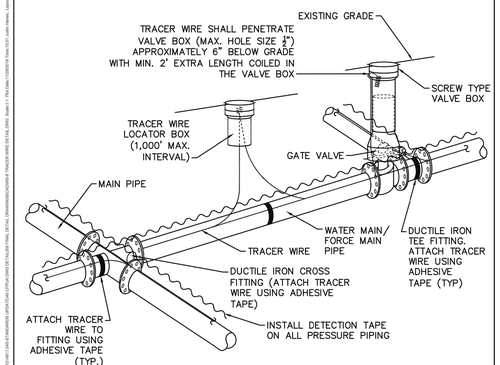

NOTES:

1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION AND DIRECT BURY RATING.
2. WIRE SHALL BE STRAPPED TO ALL PVC PIPING WITH ADHESIVE TAPE AT 12 FOOT INTERVALS.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH ADHESIVE TAPE.
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KITS.

DETAIL: TRACER WIRE DETAIL		DETAIL NO: WS-6
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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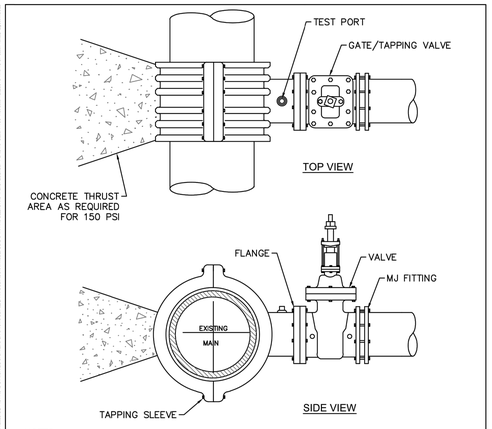

NOTES:

1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. TEST PRESSURE SHALL NOT BE APPLIED FOR A MINIMUM OF 7 DAYS AFTER THRUST BLOCK PLACEMENT.
3. BRANCH SHALL NOT EQUAL RUN DIAMETER UNLESS APPROVED BY CFPUA ENGINEERING.
4. TAPPING SLEEVE & VALVE TO BE HYDROSTATICALLY TESTED AT 150 PSI FOR 15 MINUTES WITH ZERO PRESSURE LOSS.

DETAIL: TAPPING SLEEVE AND VALVE ASSEMBLY (4"-24")		DETAIL NO: WS-9
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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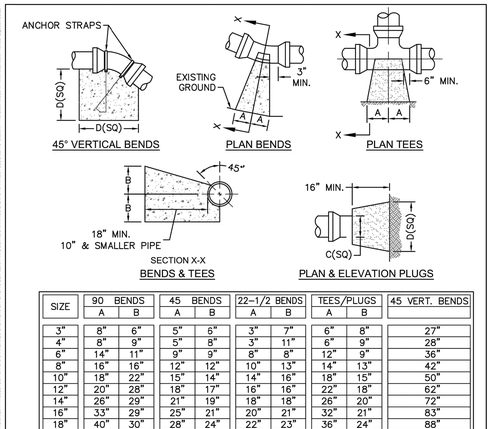

SIZE	90 BENDS A	90 BENDS B	45 BENDS A	45 BENDS B	22-1/2 BENDS A	22-1/2 BENDS B	TEES/PLUGS A	TEES/PLUGS B	45 VERT. BENDS
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

NOTES:

1. THRUST BLOCKING IS NOT PERMITTED EXCEPT IN SPECIAL INSTALLATIONS WHERE DESIGNED BY ENGINEER AND APPROVED BY CFPUA.
2. ALLOW 7-DAY MINIMUM CONCRETE CURE TIME BEFORE PLACING LOAD ON THRUST BLOCK
3. BASED ON 160 PSI TEST PRESSURE AND 2,000 PSF SOIL BEARING CAPACITY.
4. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
5. PIPE & FITTINGS TO BE WRAPPED IN 10 MIL PLASTIC PRIOR TO THRUST BLOCK BEING POURED.

DETAIL: THRUST BLOCK		DETAIL NO: WS-13
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. ALL PROPOSED ADDITIONS TO THE CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) WATER DISTRIBUTION AND SANITARY SEWER COLLECTION SYSTEMS, AS SHOWN AND SPECIFIED HEREIN, SHALL BE DESIGNED AND CONSTRUCTED TO CONFORM TO STATE RULES AND THE CFPUA'S MINIMUM TECHNICAL STANDARDS. THE CFPUA MINIMUM TECHNICAL STANDARDS ARE CONTAINED IN THE CURRENT DESIGN GUIDANCE MANUAL, MATERIAL SPECIFICATION MANUAL, TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, AND STANDARD DRAWING DETAILS.
2. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
3. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE 18" INSIDE RIGHT-OF-WAY LINE.
4. ALL SEWER SERVICES CONNECTING INTO DUCTILE IRON MAINS SHALL ALSO BE CONSTRUCTED OF DIP.
5. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
6. NO FLEXIBLE COUPLINGS SHALL BE USED.
7. ALL STAINLESS STEEL FASTENERS SHALL BE TYPE 316.
8. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.
9. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
10. UNUSED SERVICES SHALL BE ABANDONED. ABANDONED WATER SERVICES SHALL BE DISCONNECTED FROM MAIN.
11. A MINIMUM OF 10' OF MAIN LINE SHALL BE REPLACED FOR NEW CONNECTIONS TO EXISTING CLAY GRAVITY SEWER MAINS.

DETAIL: STANDARD NOTES (REQUIRED ON ALL PLAN AND PROFILE SHEETS)		DETAIL NO: WS-14
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/02/19	SHEET NO: -
CFPUA REV. No: 2		

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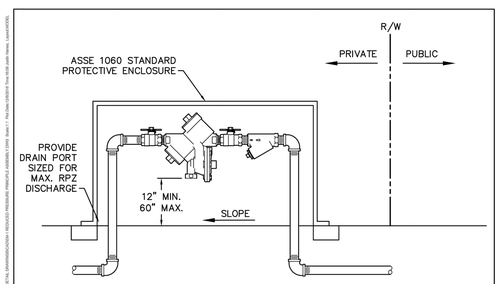

NOTES:

1. MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
2. VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
3. VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA EMD FOR APPROVAL.
4. LOCATE AS NEAR TO RIGHT-OF-WAY AS POSSIBLE.
5. MUST COMPLETE CFPUA'S BACKFLOW INSTALLATION FORM. CONTACT COMMUNITY COMPLIANCE AT 910-332-6558 OR COMMUNITY.COMPLIANCE@CFPUA.ORG.
6. ONLY IN-LINE TESTABLE ASSEMBLIES APPROVED BY THE USC FOUNDATION FOR CROSS CONNECTION CONTROL OR ASSE SHALL BE ACCEPTED.

OUTDOOR HORIZONTAL INSTALLATION

DETAIL: REDUCED PRESSURE PRINCIPLE ASSEMBLY		DETAIL NO: EM-1
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

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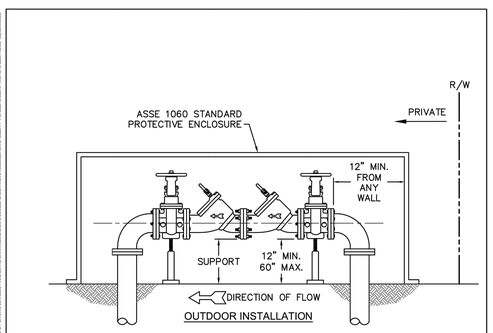

NOTES:

1. MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
2. VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
3. VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA EMD FOR APPROVAL.
4. LOCATE AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE.
5. INDOOR INSTALLATIONS MUST BE APPROVED BY CFPUA.
6. MUST COMPLETE CFPUA'S BACKFLOW INSTALLATION FORM. CONTACT COMMUNITY COMPLIANCE AT 910-332-6558 OR COMMUNITY.COMPLIANCE@CFPUA.ORG.
7. ONLY IN-LINE TESTABLE ASSEMBLIES APPROVED BY THE USC FOUNDATION FOR CROSS CONNECTION CONTROL OR ASSE SHALL BE ACCEPTED.

DETAIL: DOUBLE CHECK VALVE ASSEMBLY		DETAIL NO: EM-2
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

CAPE FEAR PUBLIC UTILITY AUTHORITY
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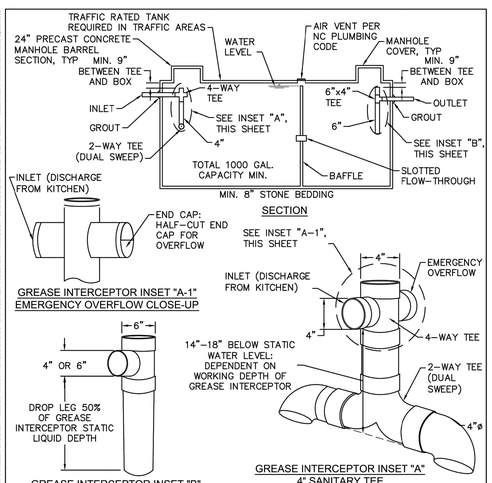

NOTES:

1. MUST COMPLETE CFPUA'S APPLICATION FOR AUTHORIZATION TO CONSTRUCT. CONTACT COMMUNITY COMPLIANCE AT 910-332-6558 OR COMMUNITY.COMPLIANCE@CFPUA.ORG.
2. SHALL BE SIZED TO ACHIEVE A MINIMUM 20 MINUTE DETENTION TIME.
3. ALL FIXTURES AND DRAINS RECEIVING GREASE LADEN SOURCES FROM KITCHEN OR FOOD PREPARATION WASTE WATER SHALL PASS THROUGH THE GREASE INTERCEPTOR.

DETAIL: CONCRETE GREASE INTERCEPTOR		DETAIL NO: EM-4
SCALE: NOT TO SCALE	CFPUA DETAIL DATE: 01/01/19	SHEET NO: -
CFPUA REV. No: 1		

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
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PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
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Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
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NC License #C-1073

Marine Structural Engineering = SM
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3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

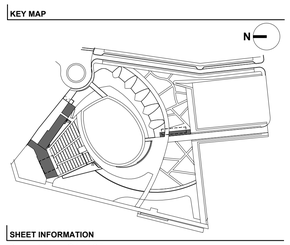
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: N.T.S.

SHEET TITLE

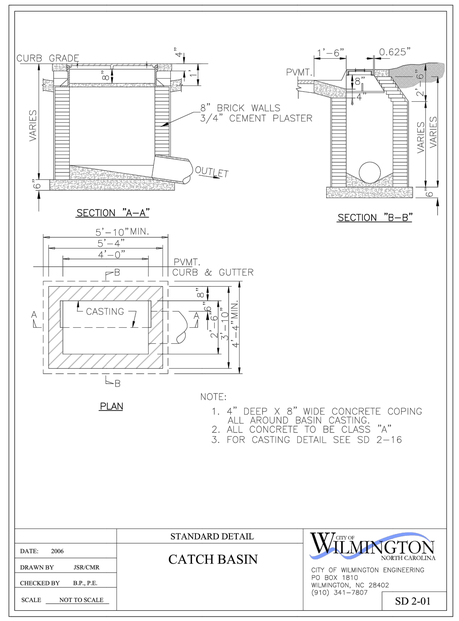
CIVIL UTILITY DETAILS

SHEET NO.

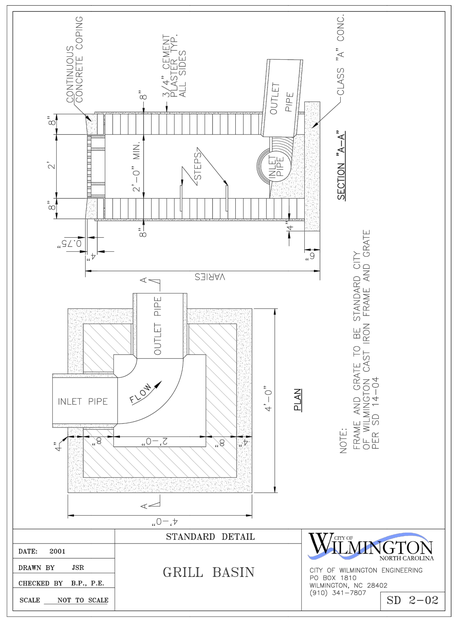
C-521-P1

IRN016

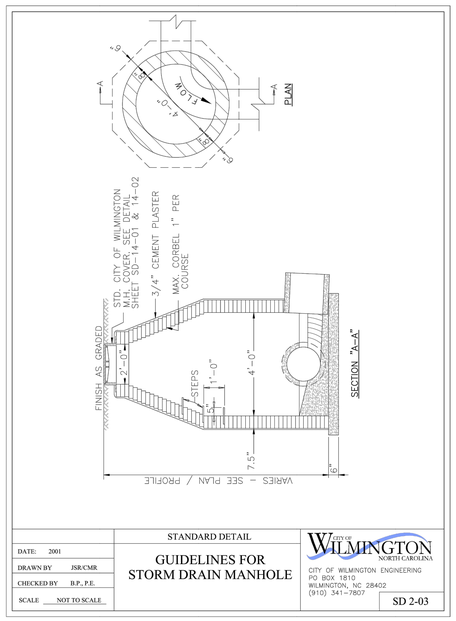
IRN016



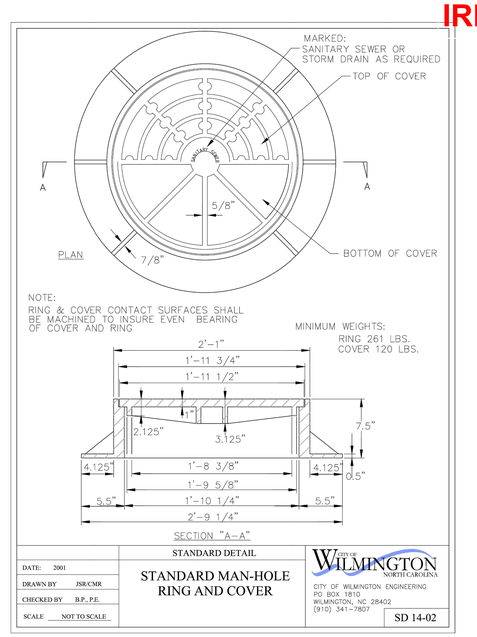
DATE: 2006	STANDARD DETAIL
DRAWN BY JSR/CMR	CATCH BASIN
CHECKED BY B.P., P.E.	CITY OF WILMINGTON ENGINEERING, PO BOX 1810, WILMINGTON, NC 28402, (910) 341-7807
SCALE NOT TO SCALE	SD 2-01



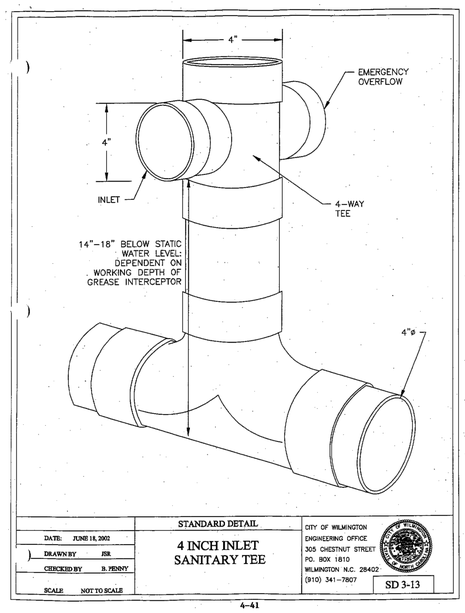
DATE: 2001	STANDARD DETAIL
DRAWN BY JSR	GRILL BASIN
CHECKED BY B.P., P.E.	CITY OF WILMINGTON ENGINEERING, PO BOX 1810, WILMINGTON, NC 28402, (910) 341-7807
SCALE NOT TO SCALE	SD 2-02



DATE: 2001	STANDARD DETAIL
DRAWN BY JSR/CMR	GUIDELINES FOR STORM DRAIN MANHOLE
CHECKED BY B.P., P.E.	CITY OF WILMINGTON ENGINEERING, PO BOX 1810, WILMINGTON, NC 28402, (910) 341-7807
SCALE NOT TO SCALE	SD 2-03

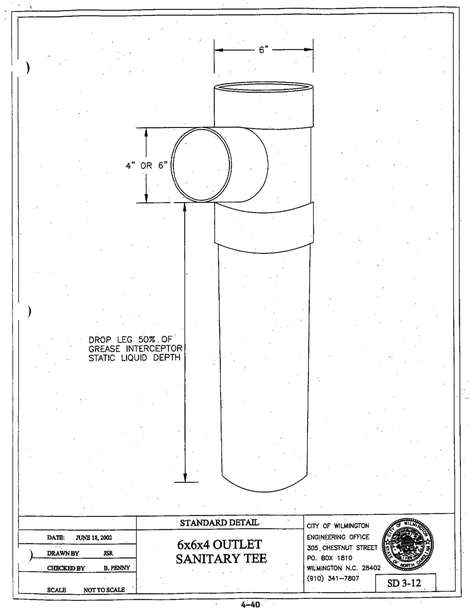


DATE: 2001	STANDARD DETAIL
DRAWN BY JSR/CMR	STANDARD MAN-HOLE RING AND COVER
CHECKED BY B.P., P.E.	CITY OF WILMINGTON ENGINEERING, PO BOX 1810, WILMINGTON, NC 28402, (910) 341-7807
SCALE NOT TO SCALE	SD 14-02



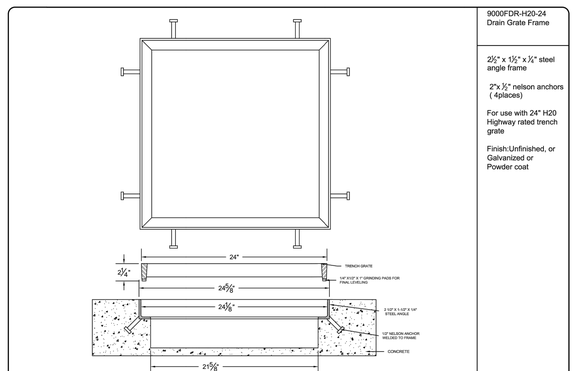
DATE: JUNE 18, 2002	STANDARD DETAIL
DRAWN BY JSR	4 INCH INLET SANITARY TEE
CHECKED BY B. PENNY	CITY OF WILMINGTON ENGINEERING OFFICE, 305 CHESTNUT STREET, P.O. BOX 1810, WILMINGTON N.C. 28402, (910) 341-7807
SCALE NOT TO SCALE	SD 3-13

4-41



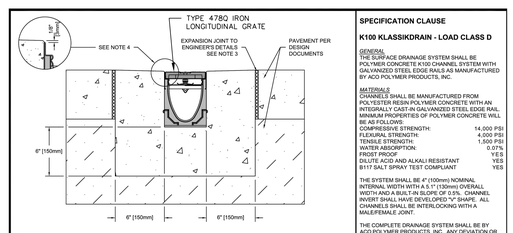
DATE: JUNE 18, 2002	STANDARD DETAIL
DRAWN BY JSR	6x6x4 OUTLET SANITARY TEE
CHECKED BY B. PENNY	CITY OF WILMINGTON ENGINEERING OFFICE, 305 CHESTNUT STREET, P.O. BOX 1810, WILMINGTON N.C. 28402, (910) 341-7807
SCALE NOT TO SCALE	SD 3-12

4-40



TYPICAL NOTES
SEE GRATE TYPE ON C-531

(-) AREA DRAIN FRAME DETAIL NTS
PLAN



NOTES:
1. IT IS NECESSARY TO ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. ENGINEERING ADVICE MAY BE REQUIRED.
2. MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
3. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. ENGINEERING ADVICE MAY BE REQUIRED.
4. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" [5mm] ABOVE THE TOP OF THE CHANNEL EDGE.
5. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.
6. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATION CLAUSE

K100 KLASSIKDRAIN - LOAD CLASS D

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE K100 CHANNEL SYSTEM WITH GALVANIZED STEEL EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS
CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN GALVANIZED STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH:	14,000 PSI
FLEXURAL STRENGTH:	4,000 PSI
TENSILE STRENGTH:	1,500 PSI
WATER ABSORPTION:	0.07%
FROST PROOF	YES
DILUTE ACID AND ALKALI RESISTANT	YES
B117 SALT SPRAY TEST COMPLIANT	YES

THE SYSTEM SHALL BE 4" (100mm) NOMINAL INTERNAL WIDTH WITH A 5.1" (130mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

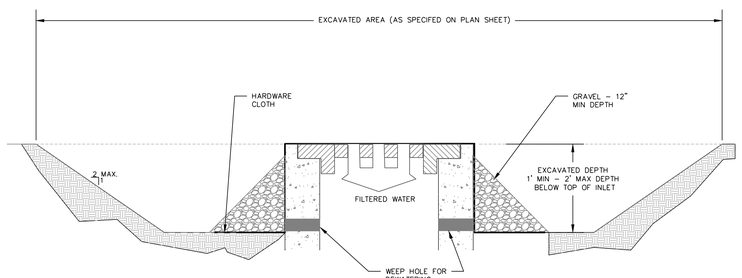
THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO POLYMER PRODUCTS, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO POLYMER PRODUCTS, INC.

CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING 'QUICKLOK' BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

K1-D-ECP	K100 - KLASSIKDRAIN - LOAD CLASS: D	ACO Polymer Products, Inc.
DATE: 08/24/15	Exposed Concrete Pavement	825 W. Beechcraft St, Casa Grande, AZ 85122, Tel: 520-421-9999, Fax: 520-421-9899
	INSTALLATION DRAWING - ACO DRAIN	9470 Pinecone Dr, Mentor, OH 44060, Tel: 440-639-7230, Fax: 440-639-7235
		4211 Pleasant Rd, Fort Mill, SC 29708, Tel: 440-639-7230, Fax: 800-802-1063

Arizona Tel: 888-490-9552 e-mail: sales@acousa.com Ohio Tel: 800-543-4764 www.acousa.com South Carolina Tel: 800-543-4764

(-) TRENCH DRAIN AT STAGE
PLAN



TYPICAL NOTES
1. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2" OPENINGS SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS A MINIMUM OF 8" BELOW EACH SIDE OF THE WEEP HOLES OF INLET STRUCTURE. MESH TO BE KEYED IN. IF MORE THAN ONE STRIP OF MESH IS NECESSARY, OVERLAP STRIPS 1 FOOT (MIN).
2. NCDOT #5 WASHED STONE SHALL BE PLACED OVER THE MESH TO A MINIMUM 1 FOOT DEPTH AND EXTENDING BEYOND THE INLET OPENING BY 18" (MIN).
3. CHECK DEVICE AFTER EACH RAIN. REPLACE WASHED STONE IF IT CLOGS WITH SEDIMENT.
4. TO PROVIDE SATISFACTORY BASIN EFFCIENCY, REMOVE SEDIMENT WHEN THE VOLUME OF THE BASIN OF THE BASIN HAS BEEN REDUCED BY ONE-HALF. SPREAD ALL EXCAVATED MATERIAL EVENLY OVER THE SURROUNDING LAND AREA OR STOCKPILE AND STABILIZE IT APPROPRIATELY.

(X) EXCAVATED DROP INLET PROTECTION
NTS

CITY OF WILMINGTON
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date:_____ Permit #_____
Signed: _____

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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Water Fountain Design = WF
DELTA FOUNTAINS
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

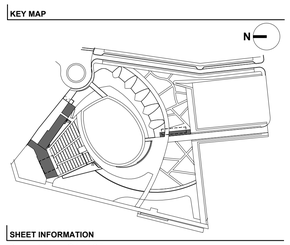
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PYKE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: C17135
Drawn By: NBC
Checked By: JWP
Date: 10/25/2019
Scale: N.T.S.

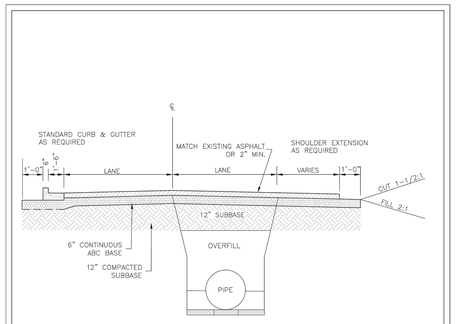
SHEET TITLE

CIVIL STORM DETAILS

SHEET NO.

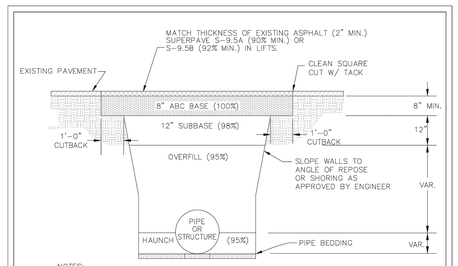
C-530-P1

IRN016



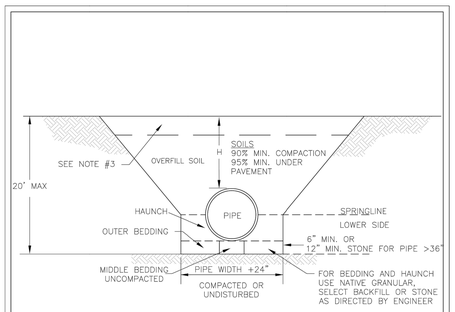
NOTES:
1. PAVEMENT RESTORATION DESIGN IS DEPENDENT ON CITY STREET CUT POLICY AND PERMITTED CONDITIONS.
2. PIPE TRENCH AND COMPACTION REQUIREMENTS PER SPECIFICATIONS. SEE SD 1-07 AND SD1-05.

	STANDARD DETAIL	
DATE: MAY, 2013	TYPICAL ROAD REBUILD	CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING 212 OPERATIONS CENTER DR. WILMINGTON, NC 28412 (910) 341-7807
DRAWN BY JSR		
CHECKED BY B.R., P.E.		
SCALE NOT TO SCALE		SD 1-04



NOTES:
1. CONTRACTOR SHALL ENSURE BOTTOM OF TRENCH IS SUITABLE FOR INSTALLATION AND DOES NOT REQUIRE FOUNDATION CONDITIONING STONE.
2. FILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
3. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
4. SOIL SHALL BE INSTALLED IN 6"-8" LIFTS AND COMPACTED BY A MECHANIZED TAMPER (I.E JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
5. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
6. COMPACT MATERIALS TO MINIMUM % DENSITY SHOWN IN DIAGRAM AS DETERMINED BY THE STANDARD PROCTOR METHOD ASTM D-698-A FOR SOILS; AND ASTM D-698-C FOR ABC STONE; AND BY NUCLEAR GAUGE OR CORE SAMPLE FOR ASPHALT.
7. CUTBACKS OF ASPHALT SHALL BE PREPARED ON EDGE OF EXCAVATION OVER TOP OF UNDISTURBED SOIL.

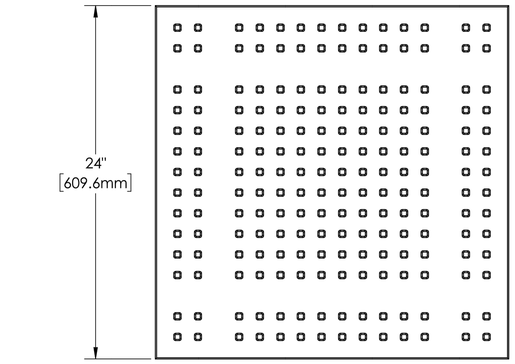
	STANDARD DETAIL	
DATE: MAY, 2013	PAVEMENT REPAIRS- UTILITY CUTS	CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING OFFICE 212 OPERATIONS CENTER DRIVE WILMINGTON N.C. 28412 (910) 341-7807
DRAWN BY JSR		
CHECKED BY D.E.C., P.E.		
SCALE NOT TO SCALE		SD 1-05



NOTES:
1. CONTRACTOR SHALL ENSURE BOTTOM OF TRENCH IS SUITABLE FOR PIPE INSTALLATION AND DOES NOT REQUIRE FOUNDATION CONDITIONING STONE.
2. CONTRACTOR TO INSTALL BEDDING AND PIPE BEFORE INSTALLING HAUNCH AND THEN OVERFILL. SOILS SHALL BE INSTALLED IN 6"-8" LIFTS AND COMPACTED TO MIN. % DENSITY AS DETERMINED BY THE STANDARD PROCTOR ASTM D-698-A METHOD.
3. WHERE IN PAVEMENT, CONTRACTOR SHALL ADHERE TO CITY STREET CUT POLICY AND SD 1-04 OR SD 1-05 FOR ROAD AND PAVEMENT REBUILD.
4. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMP (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
5. THIS DETAIL IS REPRESENTATIVE AND PIPE TRENCH DESIGN IS SUBJECT TO SPECIFIC SOIL CATEGORY (I, II, III), AND INSTALLATION TYPE (1, 2, 3, 4), AS DIRECTED BY THE ENGINEER AND SITE CONDITIONS.

	STANDARD DETAIL	
DATE: MAY, 2013	PIPE TRENCH TYPICAL	CITY OF WILMINGTON NORTH CAROLINA CITY OF WILMINGTON ENGINEERING OFFICE 212 OPERATIONS CENTER DRIVE WILMINGTON N.C. 28412 (910) 341-7807
DRAWN: JSR		
CHECKED: BDR, P.E.		
SCALE: NOT TO SCALE		SD 1-07

9053DR-24-H20 Market Street H-20 Drain Grate





24" x 24" Square Drain Grate. H-20 Rated for vehicular loads.

1/2" maximum slot opening for A.D.A. compliance and pedestrian safety.

Cast from Gray Iron from 100% Recycled Materials.

Finish: Unfinished, or Black Dip, or Enamel Paint, or Polyurethane Paint, or Powder Coat. Zinc undercoat available.

Specify finish and color.

Use Frame Model: 9000FDR-H20-24

Clear opening: 50 sq.In.

Weight per Each Iron: 200lb / 91 Kg

DO NOT SCALE DRAWING

IRONSMITH
41-701 Corporate Way #3
Palm Desert, CA 92260
(800) 338-4766
(760) 776-5080 Fax

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AREA DRAIN GRATE DETAIL (24" X 24") NTS
PLAN

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
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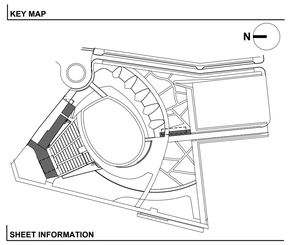
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PYLE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION
Project No.: C17135
Drawn By: LAP
Checked By: ACP
Date: 10/25/2019
Scale: N.T.S.

SHEET TITLE

CIVIL DETAILS

SHEET NO.

C-531-P1

ELECTRICAL NOTES

1. ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. PERMITS FOR ELECTRICAL WORK SHALL BE OBTAINED BY AND PAID BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ANY ADDITIONAL FEES FOR INSPECTIONS, TESTS, AND OTHER SERVICES AS REQUIRED FOR THE COMPLETION OF THE WORK.
3. THE ELECTRICAL CONTRACTOR AND ANY OF HIS SUBCONTRACTORS SHALL VISIT THE PROJECT SITE TO WITNESS EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE SCOPE OF THE WORK REQUIRED PRIOR TO SUBMITTING PROPOSALS. WORK REQUIRED BY EXISTING JOB CONDITIONS NOT INDICATED ON DRAWINGS SHALL BE INCLUDED IN THE BID.
4. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO RESULT IN THE PRODUCTION OF A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, EQUIPMENT, AND OTHER SERVICES AS NECESSARY TO COMPLETE THE WORK.
5. DISCREPANCIES IN THE DRAWINGS AND SPECIFICATIONS THAT WILL AFFECT THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE **ARCHITECT,** ENGINEER, AND/OR OWNER PRIOR TO SUBMITTING PROPOSALS.
6. UNLESS NOTED OTHERWISE, ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND INCLUDE A 3RD PARTY LABEL (I.E.: UL, CSA, ETL, ETC.) LISTING APPROVAL FOR ITS INSTALLED APPLICATION.
7. REVIEW PLANS OF OTHER TRADES FOR COORDINATION OF WORK AND FOR RELATED AND ADJOINING WORK.
8. REVIEW COMPLETE PLAN SET FOR CONSTRUCTION TYPE, FINISHES, HEADROOM, ROOF FINISHES, CEILINGS, ETC. REVIEW COMPLETE PLAN SET FOR PROJECT PHASING AND STAGING. REVIEW COMPLETE PLAN SET FOR WORK COVERED BY ALTERNATE BID ITEMS.
9. COORDINATE DEVICE AND EQUIPMENT MOUNTING HEIGHTS WITH OTHER DISCIPLINE DRAWINGS, CASEWORK DETAILS & SUBMITTALS, EQUIPMENT DETAILS & SUBMITTALS, ETC.
10. PENETRATIONS OF FIRE-RATED WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE FIRE STOPPED IN ACCORDANCE WITH REQUIREMENTS OF THE STATE BUILDING CODE. COORDINATE WORK TO INSURE THAT FIRE STOPPING IS COMPLETED.
11. PENETRATIONS OF SMOKE PARTITIONS SHALL BE SEALED IN ACCORDANCE WITH REQUIREMENTS OF THE STATE BUILDING CODE. COORDINATE WORK TO INSURE THAT SMOKE PARTITION SEALING IS COMPLETED.
12. PENETRATIONS OF EXTERIOR BUILDING WALLS, FLOORS, OR ROOFS SHALL BE SEALED WATERTIGHT. INTERIORS OF RACEWAY PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE SEALED WITH NON-HARDENING ELECTRICAL PUTTY.
13. CUTTING AND PATCHING TO INSTALL DEVICES AND EQUIPMENT SHALL BE PERFORMED WITH FINISHES RESTORED TO THEIR ORIGINAL CONDITION. SUCH WORK SHALL BE COMPLETED TO A DEGREE THAT IS ACCEPTABLE TO THE **ARCHITECT,** ENGINEER, AND/OR OWNER.
14. PROVIDE NATIONAL ELECTRICAL CODE REQUIRED CLEARANCES FOR ALL ELECTRICAL EQUIPMENT. COORDINATE RESOLUTION OF CONFLICTS WITH OTHER TRADES.
15. PRIOR TO ORDERING LIGHT FIXTURES, CONTRACTOR SHALL VERIFY TYPE OF CEILING OR WALL BY REVIEW OF ARCHITECTURAL FINISH SCHEDULES AND PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL INDICATED.
16. EXIT AND EMERGENCY LIGHTS SHALL BE CONNECTED TO THE NEAREST UNSWITCHED CIRCUIT THAT SERVES LIGHT FIXTURES WITHIN THE SAME SPACE.
17. NO MOUNTING HARDWARE SHALL BE ATTACHED TO ROOF DECKS. ATTACHMENTS SHALL BE MADE TO THE ROOF SUPPORTING STRUCTURE.
18. PANEL BUS MATERIAL: COPPER.
19. SHARED NEUTRAL CONDUCTORS SHALL NOT BE USED UNLESS SPECIFICALLY INDICATED SO ON HOMERUN CIRCUITRY DESIGNATIONS.
20. PANEL BREAKER CONFIGURATIONS SHALL BE INSTALLED AS INDICATED ON THE PANEL SCHEDULES OR AS NOTED. BREAKER POSITION REVISIONS WILL NOT BE ACCEPTED UNLESS APPROVED IN WRITING BY THE ENGINEER.
21. LOAD CIRCUITS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. CIRCUITRY REVISIONS WILL NOT BE ACCEPTED UNLESS APPROVED IN WRITING BY THE ENGINEER.

PA & SECURITY LEGEND

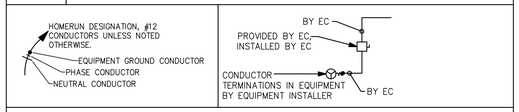
SYMBOL	DESCRIPTION	MOUNTING	NOTES
CR	SECURITY CAMERA	POLE	INFRASTRUCTURE CONDUIT ONLY INTO POLE BASE

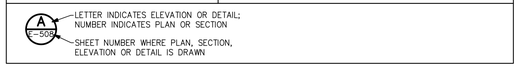
ABBREVIATIONS

ADA	AMERICAN DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLER UNIT
AIC	AMPS INTERRUPTING CAPABILITY
BKR	BREAKER
C	CONDUIT
C/B	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CLG	CEILING
CKT	CIRCUIT
COMP	COMPRESSOR
CS	COMPANY SWITCH
CU	COPPER
DIA	DIAMETER
DWG	DRAWING
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSED
EXSTG	EXISTING
FACP	FIRE ALARM CONTROL PANEL
FACU	FIRE ALARM CONTROL UNIT
G	EQUIPMENT GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
HPF	HIGH POWER FACTOR
HP	HEAT PUMP
HP	HORSEPOWER
IMC	INTERMEDIATE METAL CONDUIT
K	KILO (THOUSAND)
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
LTS	LIGHTS
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MLO	MAIN LUG ONLY
MSB	MAIN SWITCHBOARD
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
NTS	NOT TO SCALE
P	PHASE OR POLE
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
POS	POINT OF SALE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
RECPT	RECEPTACLE
REQ.	REQUIRED
RGC	RIGID GALVANIZED CONDUIT
RGS	RIGID GALVANIZED STEEL
S.S.	STAINLESS STEEL
SYS	SYSTEM
S/N	SOLID NEUTRAL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPS
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
W	WIRE
W/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER

MISC. ELECTRICAL SYMBOL LEGEND

- ENCLOSED CIRCUIT BREAKER, NEMA 1 (UNO), AMPERAGE AS INDICATED OR BASED ON SUPPLY CIRCUIT RATING.
- EQUIPMENT CONNECTION
- SAFETY SWITCH DISCONNECT, HEAVY-DUTY, NON-FUSED, NEMA 1 INSIDE, NEMA 4X OUTSIDE (UNO), AMPERAGE AS INDICATED OR BASED ON SUPPLY CIRCUIT BREAKER RATING.
- SAFETY SWITCH DISCONNECT, HEAVY-DUTY, FUSED AT NAMEPLATE RATING OF EQUIPMENT SERVED, NEMA 1 INSIDE, NEMA 4X OUTSIDE (UNO), AMPERAGE AS INDICATED OR BASED ON SUPPLY CIRCUIT BREAKER RATING.
- MOTOR CONTROLLER, STARTER OR VFD, NEMA 1 ENCLOSURE INSIDE, NEMA 4X OUTSIDE ENCLOSURE (UNO). PROVIDE OVERLOAD DEVICES BASED ON NAMEPLATE RATING OF EQUIPMENT SERVED.
- MOTOR CONTROLLER, COMBINATION CIRCUIT BREAKER DISCONNECT / MOTOR STARTER OR VFD, NEMA 1 ENCLOSURE INSIDE, NEMA 4X OUTSIDE ENCLOSURE (UNO). PROVIDE OVERLOAD DEVICES BASED ON NAMEPLATE RATING OF EQUIPMENT SERVED.
- MANUAL MOTOR STARTER, SIZED IN ACCORDANCE WITH NAMEPLATE RATING OF EQUIPMENT SERVED
- PANELBOARD, SEE PANEL SCHEDULE
- GROUND ROD, 3/4" X 10' COPPER CLAD. WHERE TWO RODS ARE INDICATED, SPACE A MINIMUM OF 20' APART.





APPENDIX B, BUILDING CODE SUMMARY
ELECTRICAL SUMMARY - STAGE

METHOD OF COMPLIANCE
- ENERGY CODE: ☒ PRESCRIPTIVE ☐ PERFORMANCE
- ASHRAE 90.1: ☐ PRESCRIPTIVE ☐ PERFORMANCE

LIGHTING SCHEDULE
Lamp Type Required in Fixtures
Number of Lamps in Fixtures
Ballast Types Used in Fixtures
Number of Ballasts Used in Fixtures
Total Wattage per Fixture
→ SEE LIGHT FIXTURE / LUMINARE SCHEDULE

TOTAL WATTAGE SPECIFIED VERSUS ALLOWED
Interior Specified: **1254 Watts**
Interior Allowed: **4486 Watts**

ADDITIONAL METHOD OF COMPLIANCE:
- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☒ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

DESIGNER STATEMENT

To the best of my knowledge and belief, the design of this building complies with the electrical systems and equipment requirements of the North Carolina State Building Code, Section 406 of the North Carolina Energy Conservation Code.

SIGNED: Mark A. Ciarrocca
NAME: Mark A. Ciarrocca, P.E.
TITLE: Engineer

RECEPTACLE LEGEND

SYMBOL	NEMA	VOLTS	DESCRIPTION
B60	14-60R	208V 2P 2W	TOUR BUS POWER. MTD 42" AFG.
TW/G	5-20R	120V 1P 2W	DUPLEX, MOUNTED TO LIGHT POLE FOR LIGHT FIXTURE TYPE 'TA' IN WEATHERPROOF BOX WITH WEATHERPROOF IN-USE COVER. SUPPLY FROM GFCI TYPE C/B. SEE DETAIL C/E-504-P1.
W/G	5-20R	120V 1P 2W	DUPLEX GFCI, MTD 18" AFG UNO; LISTED WEATHER-RESISTANT TYPE; PROVIDE CAST ALUMINUM WEATHERPROOF IN-USE COVER WITH CAST ALUMINUM FD WEATHERPROOF BOX
W/G	5-20R	120V 1P 2W	QUAD GFCI, MTD 18" AFG UNO; LISTED WEATHER-RESISTANT TYPE; PROVIDE PAD LOCKABLE CAST ALUMINUM WEATHERPROOF IN-USE COVER WITH CAST ALUMINUM FD WEATHERPROOF BOX
FLS	L14-30R	208/120V 2P 3W	FOLLOWSPOT RECEPTACLE. COORDINATE MOUNTING LOCATION WITH LIVE NATION.
HB	5-20R	120V 1P 2W	DUPLEX FOR HOT BOX HEATER; SUPPLY FROM GFEP C/B (30mA); LISTED WEATHER-RESISTANT TYPE; PROVIDE CAST ALUMINUM WEATHERPROOF IN-USE COVER WITH CAST ALUMINUM FD WEATHERPROOF BOX. COORDINATE MTG HEIGHT WITH ENCLOSURE PROVIDED.
S30	14-30R	208V 2P 2W	STAGE RECEPTACLE. LISTED WEATHER-RESISTANT TYPE; PROVIDE PAD LOCKABLE CAST ALUMINUM WEATHERPROOF IN-USE COVER WITH CAST ALUMINUM FD WEATHERPROOF BOX. COORDINATE MOUNTING HEIGHT WITH LIVE NATION.

SWITCH LEGEND

SYMBOL	DESCRIPTION	NOTES
$	TOGGLE SWITCH, SINGLE POLE	RATED FOR VOLTAGE WHERE APPLIED, 20A; MTD 42" AFF UNO
$ WP	TOGGLE SWITCH WITH CAST ALUMINUM WEATHERPROOF BOX WITH IN-USE COVER	RATED FOR VOLTAGE WHERE APPLIED, 20A; MTD 42" AFG UNO

DATA & TELEPHONE OUTLET LEGEND

SYMBOL	DESCRIPTION	MOUNTING	NOTES
AP	DATA OUTLET FOR WIRELESS ACCESS POINT	4" SQUARE BOX. COORDINATE EXACT LOCATION WITH LIVE NATION.	INSTALL (1) CAT 6A CABLE TO IT ROOM LOCATED IN BACK OF HOUSE. MOUNT OWNER PROVIDED EQUIPMENT AT CEILING OR WALL MOUNTED IF INDICATED. PROVIDE PATCH CORDS AT BOTH ENDS.
A	AV OUTLET	WALL, COORDINATE LOCATION WITH LIVE NATION; 8"x8"x6" DEEP BOX AT MIX PAD	INSTALL: - 3"C W/ (3) 2", 3-CELL FABRIC INNERDUCTS, 6-STRAND SINGLE MODE FIBER IN ONE INNERDUCT TO IT ROOM - 2"C, (4) CAT 6A CABLES TO IT ROOM - 2"C, (4) CAT 6A CABLES TO STAGE LEFT - 2"C, 24 STRAND FIBER TO STAGE LEFT - 3/4"C, (2) 10AWG SPEAKER CABLES TO STAGE LEFT
B	AV OUTLET	WALL, COORDINATE LOCATION WITH LIVE NATION; 8"x8"x6" DEEP BOX AT LIGHTING TOWER	INSTALL: - 1 1/2"C, (2) CAT6A CABLES TO IT ROOM - 2"C, 6 STRAND SINGLE MODE FIBER TO IT ROOM - 1 1/2"C, (2) CAT6A CABLES TO STAGE LEFT - 2"C, 12 STRAND SINGLE MODE FIBER TO STAGE LEFT - 1"C SPARE TO "TYPE A" BOX AT MIX PAD
C	AV OUTLET	POLE, 6"x6"x4" DEEP BOX AT LIGHTING TOWER FOR DELAY LOUDSPEAKERS.	INSTALL: - 3/4"C, (2) 10AWG SPEAKER CABLES TO STAGE LEFT - 1 1/2"C, (2) CAT6A CABLES TO STAGE LEFT
D	AV OUTLET	WALL, COORDINATE LOCATION WITH LIVE NATION; 10"x10"x6" DEEP BOX AT STAGE LEFT	INSTALL: - 3"C W/ (3) 2", 3-CELL FABRIC INNERDUCTS, 6-STRAND SINGLE MODE FIBER IN ONE INNERDUCT TO IT ROOM - 2"C, (4) CAT 6A CABLES TO IT ROOM

LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	DESCRIPTION	LAMP	BALLAST	VOLTS	MOUNTING	MANUFACTURER / MODEL	NOTES	CALLOUT
A		AREA LIGHT	(1) 55W LED	LED DRIVER	240V 2P 2W	POLE	DESIGN BASIS: BEACON PIERWALK PIE31 (LED) CITY OF WILMINGTON APPROVED EQUIVALENTS	FIXTURE: BLACK FINISH; SINGLE SHADE STYLE; TYPE III DISTRIBUTION; DOUBLE BREAK-AWAY BANNER ARMS; COATED LAMP; CUSTOM SANDBLAST GLOBE; FUSES IN POLE BASE. POLE: 14'; VANDAL RESISTANT; PROVIDE DUPLEX ADAPTER & NEOPRENE GASKET THAT ARE INSTALLED BETWEEN THE POLE AND THE DUPLEX RECEPTACLE. STRUCTURALLY SUITABLE FOR FIXTURES AND ACCESSORIES IN 140 MPH WIND ZONE. FIXTURE APPEARANCE IS TO MATCH EXISTING FIXTURES INSTALLED IN PREVIOUS RIVERWALK PROJECTS.	A
INV25		INVERTER, EGRESS LIGHTING	N/A	BATTERY	120V 1P 2W	SURFACE	EMERGI-LITE #EMIU SERIES HIGH-LITES #PCF SERIES IOTA #IIS SERIES	INVERTER FOR BATTERY BACKUP OF EGRESS LIGHTING; 250W FOR 90 MINUTES (MINIMUM). INCLUDE SELF-DIAGNOSTIC OPTION.	INV25
TA		POST TOP	(1) 66W LED	LED DIMMABLE DRIVER	120V 1P 2W	POLE; MTD 12' AFG	STERNBERG #PT-A850SRLED-588-4ARC-35-T3-MDL05 IUC-BKT PRE-APPROVED EQUIVALENT PRE-APPROVED EQUIVALENT	5300 NOMINAL LUMENS. 3500K COLOR TEMPERATURE. POLE DESIGN BASIS: STERNBERG #42-12-FP4-BCC-FH-BK COORDINATE GFI RECEPTACLE HEIGHT WITH CITY OF WILMINGTON.	TA
TB		PATH LIGHT	(1) 36W LED	LED DIMMABLE DRIVER	208V 2P 2W	POLE; MTD 13'-8" AFG	BECA LIGHTING #84-120-K3 LUMEC #URBANSCAPE SERIES SELUX #QUADRO SERIES	3380 NOMINAL LUMENS. 3000K COLOR TEMPERATURE. POLE DESIGN BASIS: BEGA LIGHTING #1308HR	TB
TC		FLOOD LIGHT	(1) 50W LED	LED DIMMABLE DRIVER	208V 2P 2W	POLE; SEE PLAN	BEGA LIGHTING #77-651-K3-70758 WE-EF #FLC24OLED SERIES LUMENPULSE #LUMENBEAM SERIES	3000K COLOR TEMPERATURE. 10 DEGREE BEAM SPREAD. 180 DEGREE GLARE SHIELD.	TC
TC-1		FLOOD LIGHT	(1) 50W LED	LED DIMMABLE DRIVER	208V 2P 2W	POLE; SEE PLAN	BEGA LIGHTING #77-652-K3-70775 WE-EF #FLC24OLED SERIES LUMENPULSE #LUMENBEAM SERIES	3000K COLOR TEMPERATURE. 25 DEGREE BEAM SPREAD. CONCENTRIC RING LOUVER.	TC-1
TC-2		FLOOD LIGHT	(1) 50W LED	LED DIMMABLE DRIVER	208V 2P 2W	POLE; SEE PLAN	BEGA LIGHTING #77-653-K3-70775 WE-EF #FLC24OLED SERIES LUMENPULSE #LUMENBEAM SERIES	3000K COLOR TEMPERATURE. 50 DEGREE BEAM SPREAD. 180 DEGREE GLARE SHIELD.	TC-2
TC-21		FLOOD LIGHT	(1) 50W LED	LED DIMMABLE DRIVER	120V 1P 2W	WALL	BEGA LIGHTING #77-653-K3 WE-EF #FLC24OLED SERIES LUMENPULSE #LUMENBEAM SERIES	3000K COLOR TEMPERATURE. 50 DEGREE BEAM SPREAD. CONCENTRIC RING LOUVER. COORDINATE MOUNTING HEIGHT WITH LIGHTING CONSULTANT.	TC-21
TD		LIGHTED BOLLARD	(1) 5W LED	LED DIMMABLE DRIVER	208V 2P 2W	BOLLARD	BEGA LIGHTING #99-862-99-622-K3 ERCO #CASTOR SERIES KIM LIGHTING #GEM PERFORMANCE SERIES	3000K COLOR TEMPERATURE. 360 DEGREE LIGHT DISTRIBUTION. PROVIDE ANCHORAGE KIT, DESIGN BASIS: BEGA #79-824.	TD
TF		LIGHTED BOLLARD	(1) 2W LED	LED DIMMABLE DRIVER	120V 1P 2W	BOLLARD	BEGA LIGHTING #88--671 HUNZA #PATH LITE SERIES BEACH SIDE LIGHTING #E17 SERIES	3000K COLOR TEMPERATURE. 60 DEGREE LIGHT SELECTOR. CONTRACTOR TO COORDINATE WITH LANDSCAPE ARCHITECT REMOTE DRIVER LOCATION. INDICATE REMOTE DRIVER LOCATION ON AS-BUILT MARKUPS.	TF
TJ		6" ADJUSTABLE SURFACE MOUNT	(1) 33W LED	LED DIMMABLE DRIVER	120V 1P 2W	SURFACE	LUCIFER #CY3-AD-2-CF-90C-27A-2-3-CA2-4 USA ARCHITECTURAL LIGHTING #BEVELED SERIES AMERLUX #ROOK SERIES	2800 NOMINAL LUMENS. 3000K COLOR TEMPERATURE. 40 DEGREE BEAM SPREAD. SOFT FOCUS LENS.	TJ
TJE		6" ADJUSTABLE SURFACE MOUNT, BACKED UP BY BATTERY INVERTER	(1) 33W LED	LED DIMMABLE DRIVER	120V 1P 2W	SURFACE	LUCIFER #CY3-AD-2-CF-90C-27A-2-3-CA2-4 USA ARCHITECTURAL LIGHTING #BEVELED SERIES AMERLUX #ROOK SERIES	2800 NOMINAL LUMENS. 3000K COLOR TEMPERATURE. 40 DEGREE BEAM SPREAD. SOFT FOCUS LENS.	TJE
TN		WALL MOUNTED CYLINDER	(1) 7W LED	LED DIMMABLE DRIVER	120V 1P 2W	CEILING	BK LIGHTING #DS-LED-E65-MFL-A9-RAL-12/11-B-360SL HUNZA #WALL SPOT HIGH POWER HEVI LITE #HL-920	3000K COLOR TEMPERATURE. MEDIUM FLOOD. SOFT FOCUS LENS. HONEYCOMB BAFFLE. 90 DEGREE CAP STYLE. 360 DEGREE ROTATABLE KNUCKLE MOUNTING SYSTEM. IP66 WET LOCATION LISTED. COORDINATE LOCATION WITH ARCHITECT.	TN
TU		COLUMN ACCENT LIGHT	(1) 52W LED	LED DIMMABLD DRIVER	120V 1P 2W	IN GRADE	LUMENPULSE #L010100/277-36-RGB-8X8-TSO-INTL-DMX-RDM-ASL ECOSENSE #TROV SERIES BOCA FLASHER #HPNLS-LO SERIES	2100 NOMINAL LUMENS/4FT. WET LOCATION LISTED. 8 DEGREE X 8 DEGREE OPTICS. 2.5 DEGREE FACTORY SET TILT. IP68 RATED. CONTRACTOR TO COORDINATE WITH LANDSCAPE ARCHITECT REMOTE DRIVER LOCATION. INDICATE REMOTE DRIVER LOCATION ON AS-BUILT MARKUPS.	TU
TY		STEP LIGHT	(1) 11W LED	LED DRIVER	120V 1P 2W	WALL; RECESSED	BEGA #33-053-K3-BLK ERCO #AXIS WALKLIGHT SERIES COLE LIGHTING #600 SERIES	380 NOMINAL LUMENS. 3000K COLOR TEMPERATURE.	TY

NOTES:
1. LIGHTING FIXTURE SELECTION AND LAYOUT WAS PERFORMED BY TILLOTSON DESIGN ASSOCIATES. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE FIXTURE SELECTION AND LAYOUT IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, PA.
2. COORDINATE FINAL FINISH SELECTION WITH ARCHITECT AND LANDSCAPE ARCHITECT.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

IRN016

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
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www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
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Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
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www.sandec.com
EAGLE RESOURCES
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www.eagleresources.com

Irrigation= I
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www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
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Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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www.cheathampa.com
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Marine Structural Engineering = SM
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www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
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www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

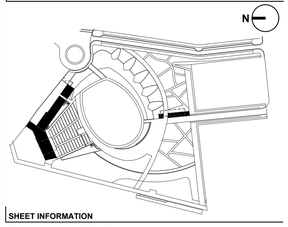
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

ELECTRICAL LEGENDS, SCHEDULES, NOTES, DETAILS

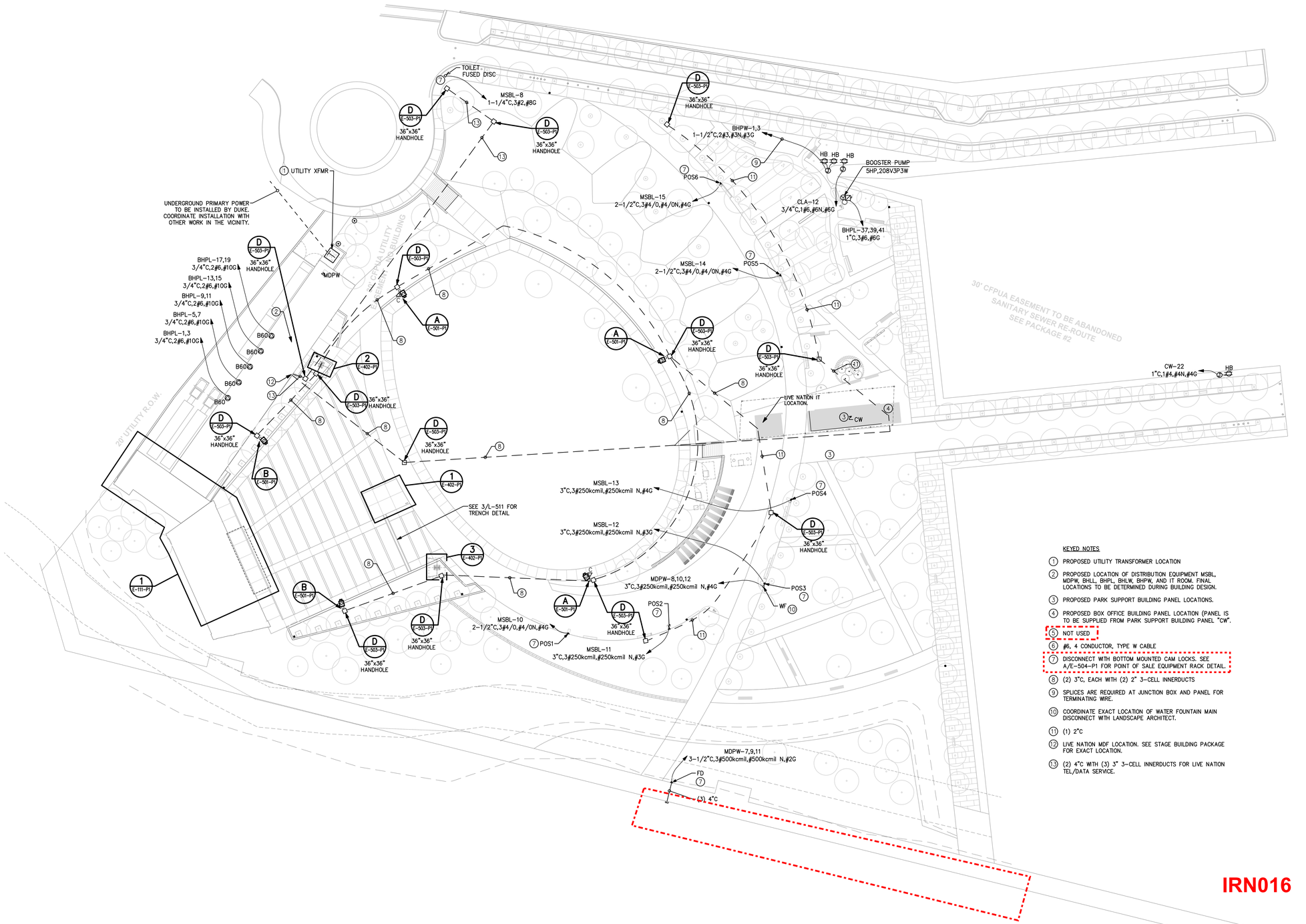
SHEET NO.

E-001-P1

IRN016

NOTES:

1. PLANS ARE INTENDED TO BE PART OF SITE PACKAGE. WORK SHOWN IN AREAS OTHER THAN THE STAGE ARE SUBJECT TO CHANGES AS DESIGN PROGRESSES IN OTHER AREAS.



KEYED NOTES

1. PROPOSED UTILITY TRANSFORMER LOCATION
2. PROPOSED LOCATION OF DISTRIBUTION EQUIPMENT MSBL, MDPW, BHLL, BHPL, BHLW, BHPW, AND IT ROOM. FINAL LOCATIONS TO BE DETERMINED DURING BUILDING DESIGN.
3. PROPOSED PARK SUPPORT BUILDING PANEL LOCATIONS.
4. PROPOSED BOX OFFICE BUILDING PANEL LOCATION (PANEL IS TO BE SUPPLIED FROM PARK SUPPORT BUILDING PANEL "CW".
5. NOT USED
6. #6, 4 CONDUCTOR, TYPE W CABLE
7. DISCONNECT WITH BOTTOM MOUNTED CAM LOCKS. SEE A/E-504-P1 FOR POINT OF SALE EQUIPMENT RACK DETAIL.
8. (2) 3"C, EACH WITH (2) 2" 3-CELL INNERDUCTS
9. SPLICES ARE REQUIRED AT JUNCTION BOX AND PANEL FOR TERMINATING WIRE.
10. COORDINATE EXACT LOCATION OF WATER FOUNTAIN MAIN DISCONNECT WITH LANDSCAPE ARCHITECT.
11. (1) 2"C
12. LIVE NATION MDF LOCATION. SEE STAGE BUILDING PACKAGE FOR EXACT LOCATION.
13. (2) 4"C WITH (3) 3" 3-CELL INNERDUCTS FOR LIVE NATION TEL/DATA SERVICE.

IRN016

1 E-101-P1 ELECTRICAL POWER PLAN
SCALE: 1" = 30'

GRAPHIC SCALE: 1"=30'
0 7.5 15 30 60

TRUE NORTH

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
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Architecture = A
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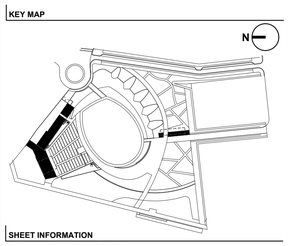
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER 17273 MARK A. CIARROCCA
25 OCT 2019

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

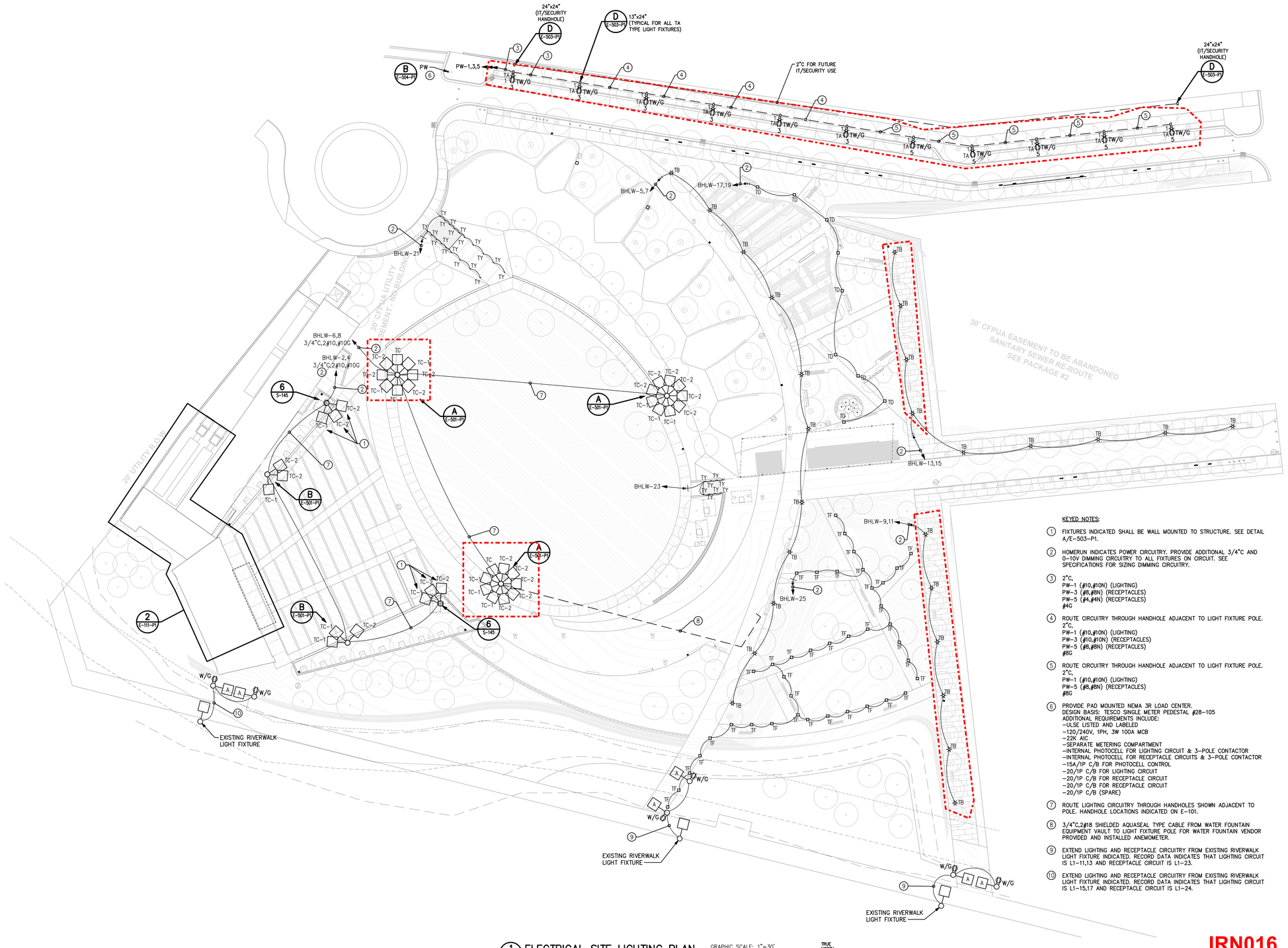
ELECTRICAL POWER AND AUXILIARY SYSTEMS SITE PLAN

SHEET NO.

E-101-P1

NOTES:

1. PLANS ARE INTENDED TO BE PART OF SITE PACKAGE. WORK SHOWN IN AREAS OTHER THAN THE STAGE ARE SUBJECT TO CHANGES AS DESIGN PROGRESSES IN OTHER AREAS.
2. LIGHTING FIXTURE SELECTION AND LAYOUT WAS PERFORMED BY TILLOTSON DESIGN ASSOCIATES. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE FIXTURE SELECTION AND LAYOUT IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, P.A.
3. REFER TO LANDSCAPE DRAWINGS FOR FINAL LOCATIONS OF SITE LIGHTING.
4. REFER TO DETAILS A/E-503-P1, B/E-503-P1, AND E/E-503-P1 FOR MOUNTING LIGHT FIXTURE TYPES TC, TC-1, AND TC-2.



KEYED NOTES:

1. FIXTURES INDICATED SHALL BE WALL MOUNTED TO STRUCTURE. SEE DETAIL A/E-503-P1.
2. HOMERUN INDICATES POWER CIRCUITRY. PROVIDE ADDITIONAL 3/4"C AND 0-10V DIMMING CIRCUITRY TO ALL FIXTURES ON CIRCUIT. SEE SPECIFICATIONS FOR SIZING DIMMING CIRCUITRY.
3. 2"C,
   PW-1 (#10,#10N) (LIGHTING)
   PW-3 (#8,#8N) (RECEPTACLES)
   PW-5 (#4,#4N) (RECEPTACLES)
   #4G
4. ROUTE CIRCUITRY THROUGH HANDHOLE ADJACENT TO LIGHT FIXTURE POLE. 2"C,
   PW-1 (#10,#10N) (LIGHTING)
   PW-3 (#10,#10N) (RECEPTACLES)
   PW-5 (#8,#8N) (RECEPTACLES)
   #8G
5. ROUTE CIRCUITRY THROUGH HANDHOLE ADJACENT TO LIGHT FIXTURE POLE. 2"C,
   PW-1 (#10,#10N) (LIGHTING)
   PW-5 (#8,#8N) (RECEPTACLES)
   #8G
6. PROVIDE PAD MOUNTED NEMA 3R LOAD CENTER.
   DESIGN BASIS: TESCO SINGLE METER PEDESTAL #28-105
   ADDITIONAL REQUIREMENTS INCLUDE:
   -ULSE LISTED AND LABELED
   -120/240V, 1PH, 3W 100A MCB
   -22K AIC
   -SEPARATE METERING COMPARTMENT
   -INTERNAL PHOTOCELL FOR LIGHTING CIRCUIT & 3-POLE CONTACTOR
   -INTERNAL PHOTOCELL FOR RECEPTACLE CIRCUITS & 3-POLE CONTACTOR
   -15A/1P C/B FOR PHOTOCELL CONTROL
   -20/1P C/B FOR LIGHTING CIRCUIT
   -20/1P C/B FOR RECEPTACLE CIRCUIT
   -20/1P C/B FOR RECEPTACLE CIRCUIT
   -20/1P C/B (SPARE)
7. ROUTE LIGHTING CIRCUITRY THROUGH HANDHOLES SHOWN ADJACENT TO POLE. HANDHOLE LOCATIONS INDICATED ON E-101.
8. 3/4"C,2#18 SHIELDED AQUASEAL TYPE CABLE FROM WATER FOUNTAIN EQUIPMENT VAULT TO LIGHT FIXTURE POLE FOR WATER FOUNTAIN VENDOR PROVIDED AND INSTALLED ANEMOMETER.
9. EXTEND LIGHTING AND RECEPTACLE CIRCUITRY FROM EXISTING RIVERWALK LIGHT FIXTURE INDICATED. RECORD DATA INDICATES THAT LIGHTING CIRCUIT IS L1-11,13 AND RECEPTACLE CIRCUIT IS L1-23.
10. EXTEND LIGHTING AND RECEPTACLE CIRCUITRY FROM EXISTING RIVERWALK LIGHT FIXTURE INDICATED. RECORD DATA INDICATES THAT LIGHTING CIRCUIT IS L1-15,17 AND RECEPTACLE CIRCUIT IS L1-24.

1 E-102-P1 ELECTRICAL SITE LIGHTING PLAN
SCALE: 1" = 30'

GRAPHIC SCALE: 1"=30'
0 7.5 15 30 60

TRUE NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

IRN016

10 COWAN STREET
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Lighting Design = EL
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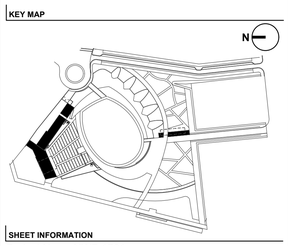
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 17393 25 Oct 2019 M. A. CIARROCCA

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.:	NWP 1701
Drawn By:	M.STAUBLIN
Checked By:	M.CIARROCCA
Date:	10/25/2019
Scale:	AS NOTED

SHEET TITLE

ELECTRICAL SITE LIGHTING PLAN

SHEET NO.

E-102-P1

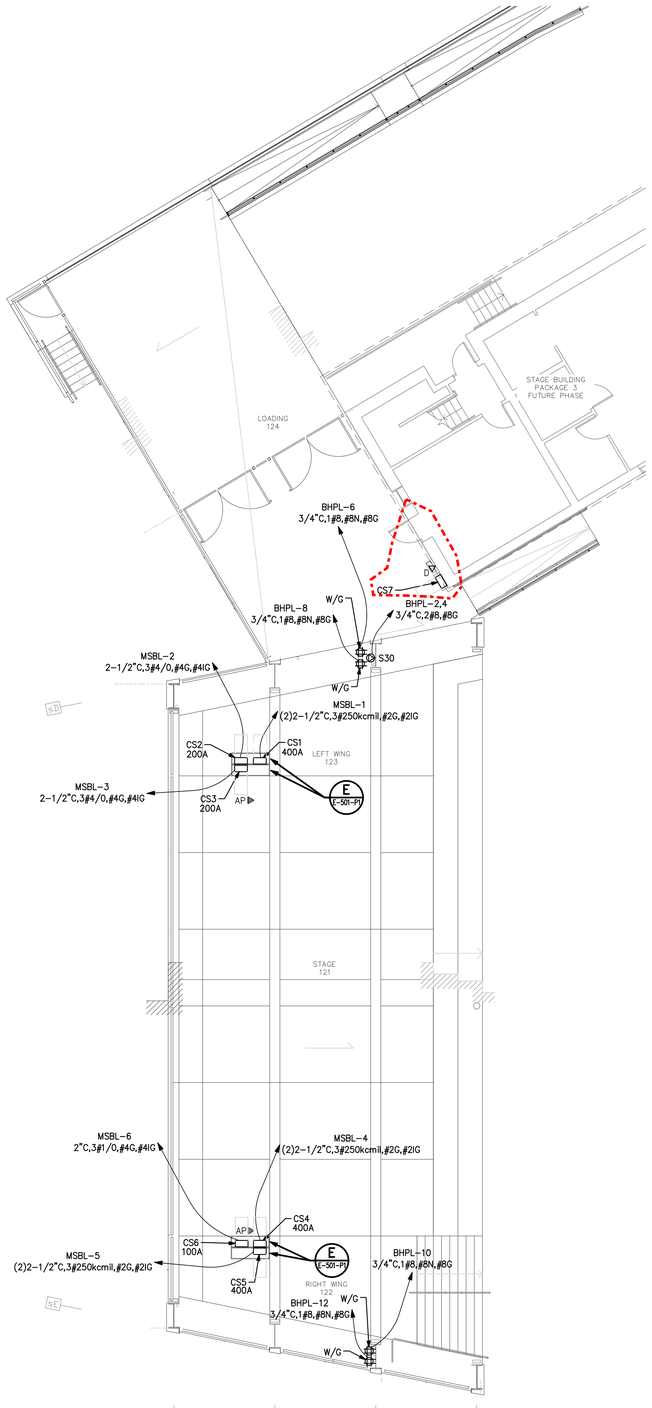
IRN016

NOTES:

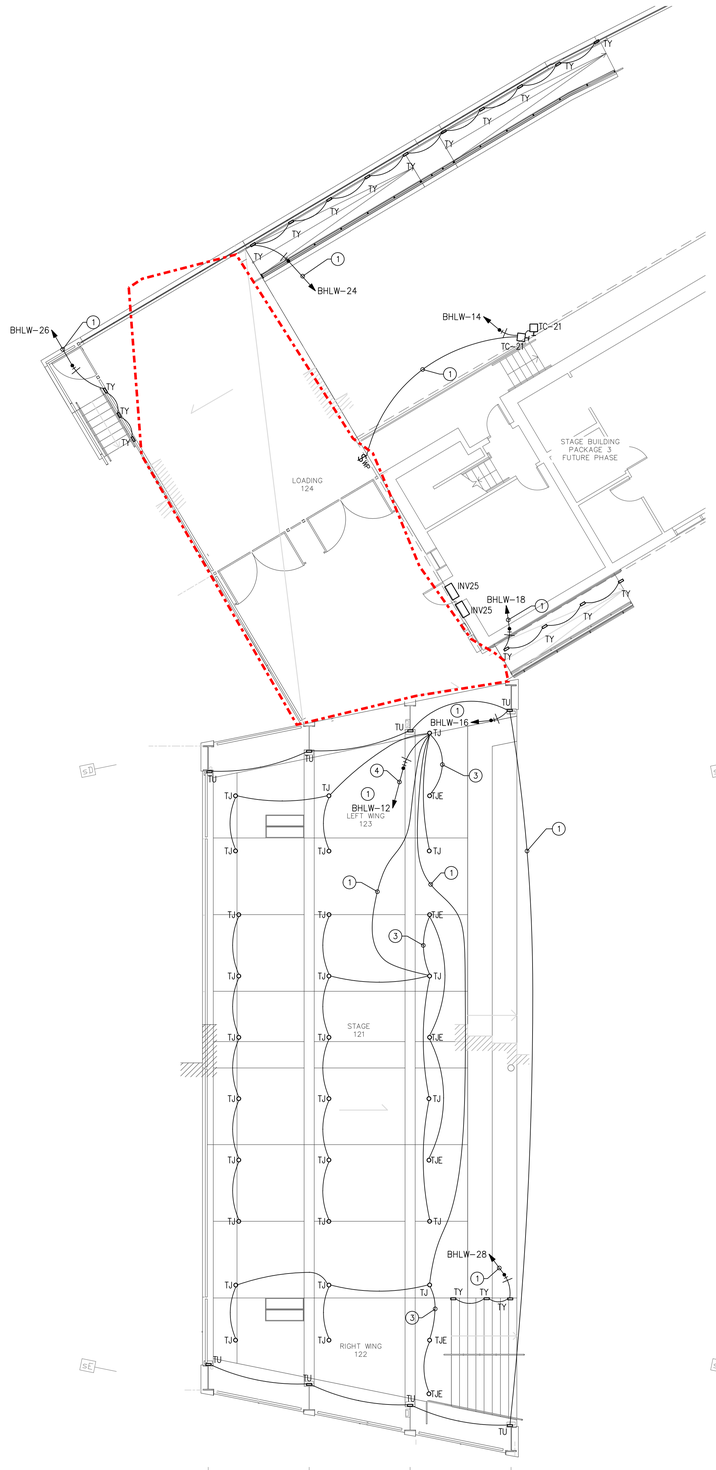
1. PLANS ARE INTENDED TO BE PART OF SITE PACKAGE. WORK SHOWN IN AREAS OTHER THAN THE STAGE ARE SUBJECT TO CHANGES AS DESIGN PROGRESSES IN OTHER AREAS.
2. LIGHTING FIXTURE SELECTION AND LAYOUT WAS PERFORMED BY TILLOTSON DEIGN ASSOCIATES. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE FIXTURE SELECTION AND LAYOUT IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, P.A.
3. SEE SITE PLAN E-101 FOR LOCATION OF PANELS BHPL AND BHLL.
4. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE QUANTITIES AND LOCATION.
5. ALL DOCK CANOPY LIGHT FIXTURE TYPES "TX" AND "TXE" ARE ALTERNATE BID.

KEYED NOTES

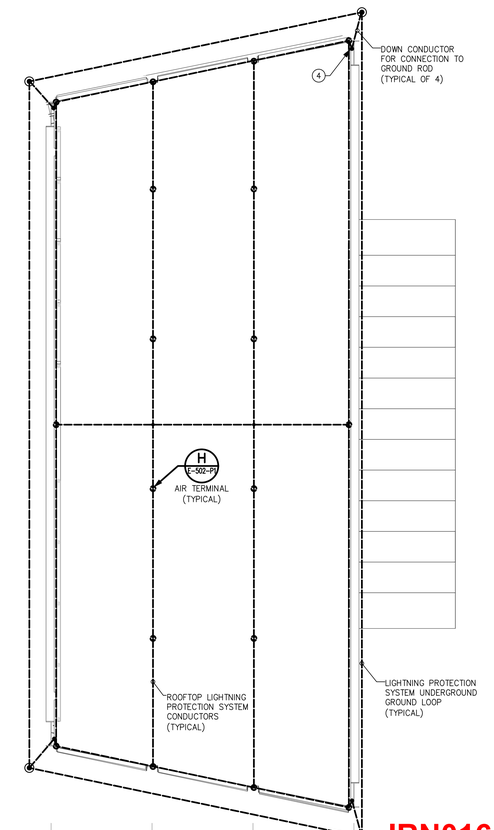
1. SWITCHES FOR STAGE AREA WILL BE LOCATED IN BACK OF HOUSE BUILDING.
2. CANOPY LIGHTING, CIRCUITRY, AND ASSOCIATED SWITCHING IS ADD ALTERNATE #4.
3. BATTERY BACKUP FROM INV25 LOCATED INSIDE BACK OF HOUSE BUILDING.
4. #8 CONDUCTORS AND #8G FOR CIRCUIT INDICATED.
5. CONCEAL DOWN CONDUCTOR FOR GROUND ROD CONNECTION IN 3/4"C WITHIN THE WEB OF VERTICAL I-BEAM.



1 E-111-P1 ELECTRICAL POWER AND SYSTEMS PLAN
SCALE: 1/8" = 1'-0"
GRAPHIC SCALE: 1/8"=1'-0" (0 2 4 8 16) TRUE NORTH



2 E-111-P1 ELECTRICAL LIGHTING PLAN
SCALE: 1/8" = 1'-0"
GRAPHIC SCALE: 1/8"=1'-0" (0 2 4 8 16) TRUE NORTH



3 E-111-P1 ELECTRICAL LIGHTNING PROTECTION PLAN
SCALE: 1/8" = 1'-0"
GRAPHIC SCALE: 1/8"=1'-0" (0 2 4 8 16) TRUE NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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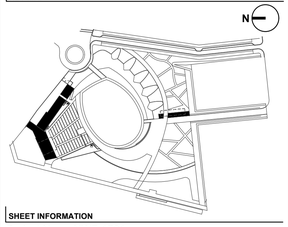
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17513 MICHAEL A. CIARROCCA

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

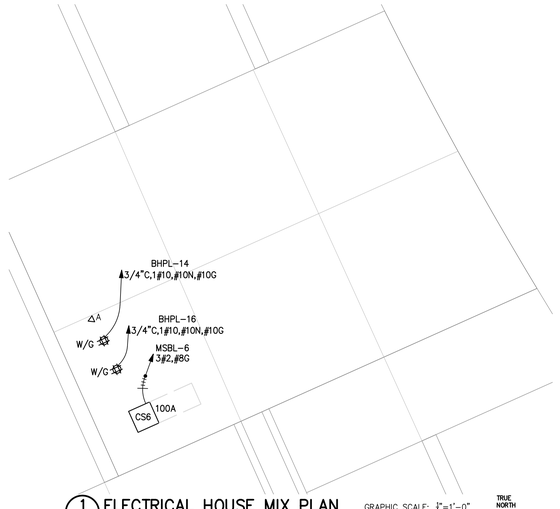
ELECTRICAL PLANS - STAGE

SHEET NO.

E-111-P1

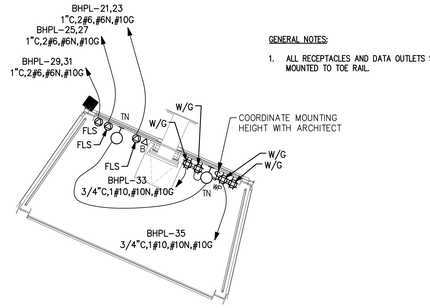
NOTES:

1. PLANS ARE INTENDED TO BE PART OF SITE PACKAGE. WORK SHOWN IN AREAS OTHER THAN THE STAGE ARE SUBJECT TO CHANGES AS DESIGN PROGRESSES IN OTHER AREAS.



1 E-402-P1 ELECTRICAL HOUSE MIX PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1"=1'-0" (0 1 2 4 8) TRUE NORTH

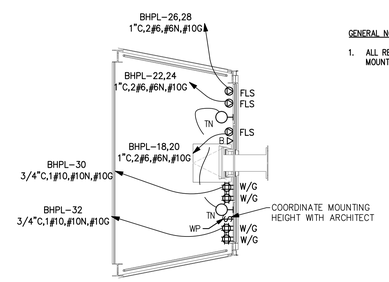


GENERAL NOTES:

1. ALL RECEPTACLES AND DATA OUTLETS SHALL BE MOUNTED TO TOE RAIL.

2 E-402-P1 ELECTRICAL FOLLOWSPOT TOWER 1 PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1"=1'-0" (0 1 2 4 8) TRUE NORTH



GENERAL NOTES:

1. ALL RECEPTACLES AND DATA OUTLETS SHALL BE MOUNTED TO TOE RAIL.

3 E-402-P1 ELECTRICAL FOLLOWSPOT TOWER 2 PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1"=1'-0" (0 1 2 4 8) TRUE NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

IRN016

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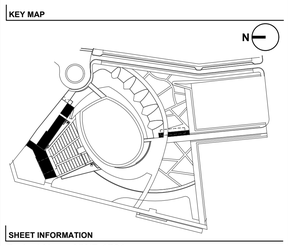
SEAL/SIGNATURE

NORTH CARO... 17... ENGINEER MARK A. CIARROCCA 25 OCT 2019

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

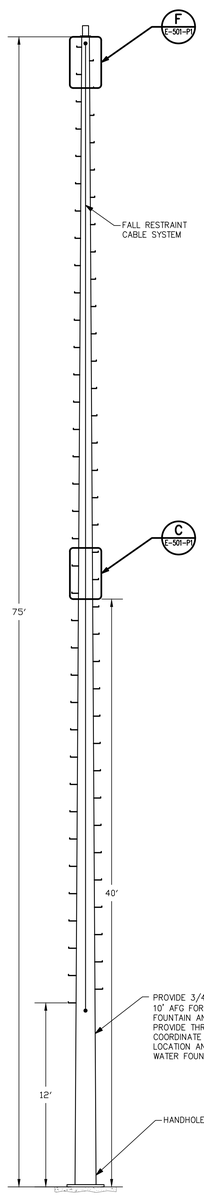
ELECTRICAL ENLARGED PLANS

SHEET NO.

E-402-P1

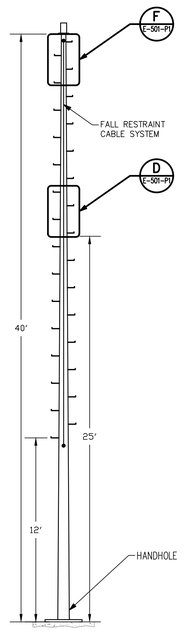
IRN016

NOTES:
1. POLE SHALL BE TAPERED STEEL.
2. POLE SUITABLE FOR FIXTURES AND BRACKET(S) EPA LOADING IN ACCORDANCE WITH NORTH CAROLINA BUILDING CODE WIND ZONE FOR WILMINGTON, NC.
3. COORDINATE POLE FINISH SELECTION WITH LANDSCAPE ARCHITECT.



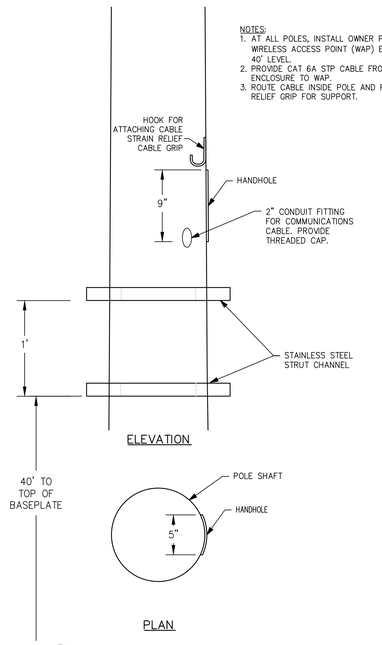
A E-501-P1 75' POLE ELEVATION REFERENCE
SCALE: 1/4" = 1'-0"
GRAPHIC SCALE: 1/4"=1'-0" (0 1 2 4 8)

NOTES:
1. POLE SHALL BE TAPERED STEEL.
2. POLE SUITABLE FOR FIXTURES AND BRACKET(S) EPA LOADING IN ACCORDANCE WITH NORTH CAROLINA BUILDING CODE WIND ZONE FOR WILMINGTON, NC.
3. COORDINATE POLE FINISH SELECTION WITH LANDSCAPE ARCHITECT.



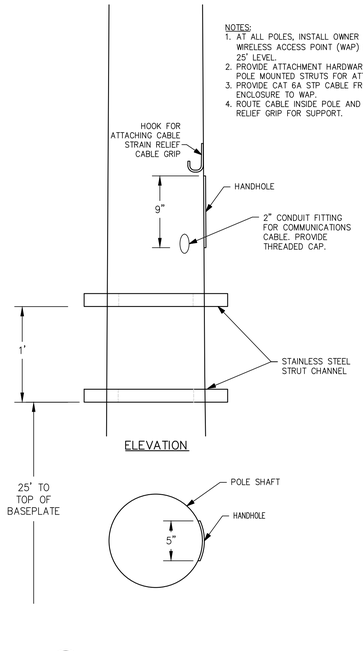
B E-501-P1 40' POLE ELEVATION REFERENCE
SCALE: 1/4" = 1'-0"
GRAPHIC SCALE: 1/4"=1'-0" (0 1 2 4 8)

NOTES:
1. AT ALL POLES, INSTALL OWNER PROVIDED WIRELESS ACCESS POINT (WAP) EQUIPMENT AT 40' LEVEL.
2. PROVIDE CAT 6A STP CABLE FROM COMM EQPT ENCLOSURE TO WAP.
3. ROUTE CABLE INSIDE POLE AND PROVIDE STRAIN RELIEF GRIP FOR SUPPORT.

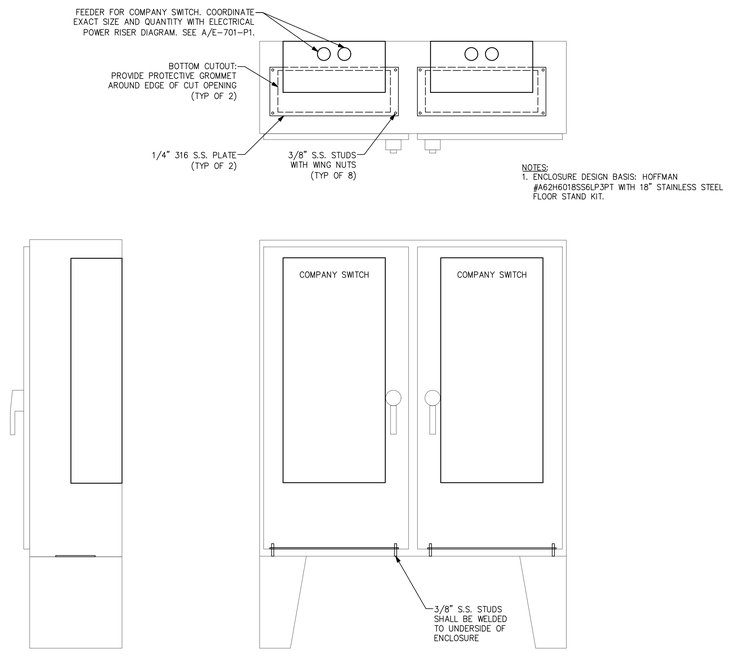


C E-501-P1 EQUIPMENT MOUNTING AND POLE FITTING DETAIL
SCALE: NO SCALE

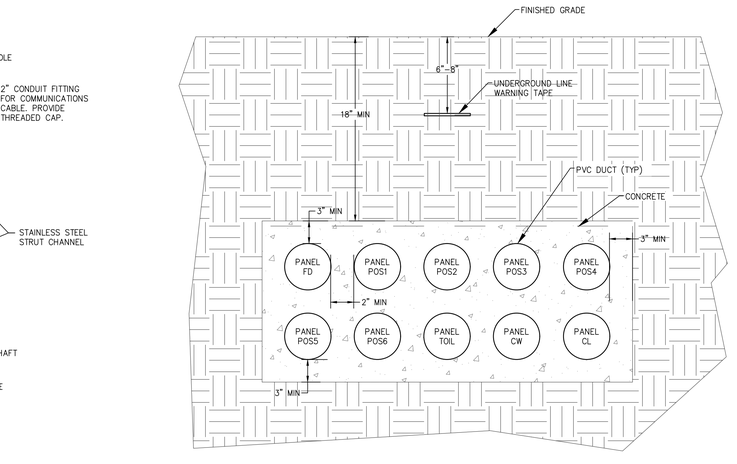
NOTES:
1. AT ALL POLES, INSTALL OWNER PROVIDED WIRELESS ACCESS POINT (WAP) EQUIPMENT AT 25' LEVEL.
2. PROVIDE ATTACHMENT HARDWARE TO UTILIZE POLE MOUNTED STRUTS FOR ATTACHMENT.
3. PROVIDE CAT 6A STP CABLE FROM COMM EQPT ENCLOSURE TO WAP.
4. ROUTE CABLE INSIDE POLE AND PROVIDE STRAIN RELIEF GRIP FOR SUPPORT.



D E-501-P1 EQUIPMENT MOUNTING AND POLE FITTING DETAIL
SCALE: NO SCALE



E E-501-P1 COMPANY SWITCH ENCLOSURE
SCALE: 1" = 1'-0"
GRAPHIC SCALE: 1"=1'-0" (0 1 2)



G E-501-P1 DUCTBANK, CONCRETE ENCASED
NO SCALE

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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NC License #C-1073

Marine Structural Engineering – SM
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Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

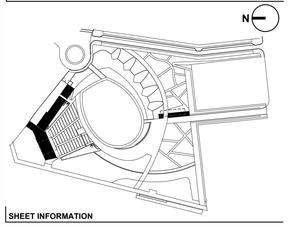
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 17503 MICHAEL A. CIARROCCA 25OCT2019

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

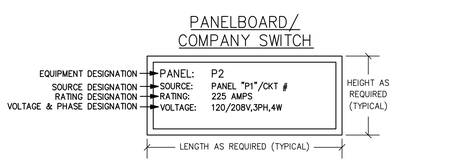
SHEET TITLE

ELECTRICAL DETAILS

SHEET NO.

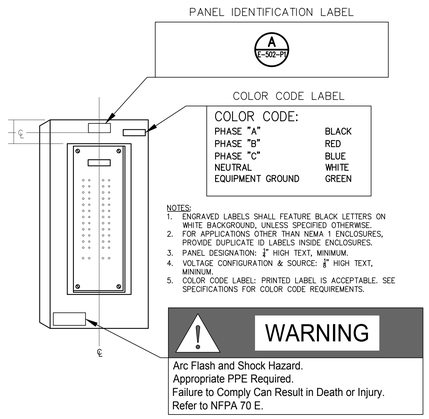
E-501-P1

IRN016



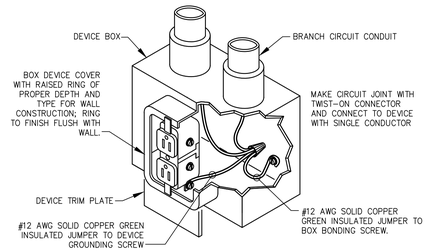
NOTES:
1. ENGRAVED PLASTIC FOR NAMEPLATE.
2. HIGH PERFORMANCE, DOUBLE COATED TAPE WITH ADHESIVE TO ATTACH LABELS. DESIGN BASIS: 3M #06383 OR APPROVED EQUIVALENT.
3. 3/8" ENGRAVED LETTERS EQUIPMENT NAME DESIGNATION AND 1/4" ENGRAVED LETTERS ON ALL OTHER DESIGNATIONS.

A E-502-P1 TYPICAL NAMEPLATE DETAILS
NO SCALE



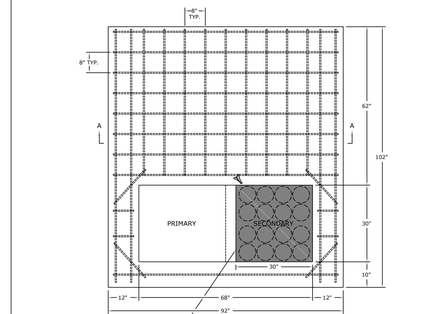
NOTES:
1. ENGRAVED LABELS SHALL FEATURE BLACK LETTERS ON WHITE BACKGROUND, UNLESS SPECIFIED OTHERWISE.
2. FOR APPLICATIONS OTHER THAN NEMA 1 ENCLOSURES, PROVIDE DUPLICATE ID LABELS INSIDE ENCLOSURES.
3. PANEL DESIGNATION: ½" HIGH TEXT, MINIMUM.
4. VOLTAGE CONFIGURATION & SOURCE: ⅜" HIGH TEXT, MINIMUM.
5. COLOR CODE LABEL: PRINTED LABEL IS ACCEPTABLE. SEE SPECIFICATIONS FOR COLOR CODE REQUIREMENTS.

B E-502-P1 TYPICAL PANELBOARD IDENTIFICATION
NO SCALE



C E-502-P1 OUTLET GROUNDING DETAIL
SCALE: N/A

APPENDIX C - PAGE 2 (DEP ONLY)



NOTES:
1. TRANSFORMER PADS SHALL BE INSTALLED IN A LOCATION TO REMAIN READILY ACCESSIBLE FOR CRANES, LINE TRUCKS OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT. PADS SHALL HAVE A MINIMUM CLEARANCE FROM OBSTRUCTIONS AND BUILDINGS AS GIVEN IN FIGURE 52.
2. SOIL UNDERNEATH PADS SHALL BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS AND BE THOROUGHLY TAMPED TO PREVENT WASHING. EXERCISE CARE IN BACKFILLING AND GRADING AROUND PAD.
3. SERVICE CONDUIT SHALL BE LOCATED IN THE EXTREME RIGHT SIDE OF THE SECONDARY COMPARTMENT. AND SHALL NOT EXTEND MORE THAN 30" LEFT OF THIS AS INDICATED IN THE ABOVE DRAWING.
4. OTHER UTILITIES ARE NOT TO BE INSTALLED UNDER TRANSFORMER PAD.

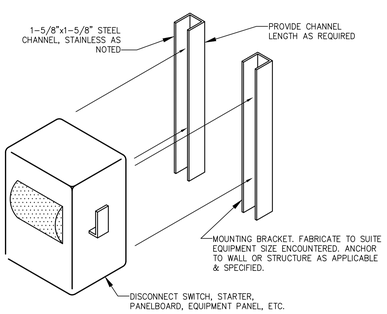
3				
2				
1	2/21/17	SAMIS EMAIL ADDED		
0	11/09/15	ORIGINAL ISSUED		
REVISED BY	CK'D	APPR.		

PRECAST PADS FOR THREE-PHASE, 500KVA - 3750KVA

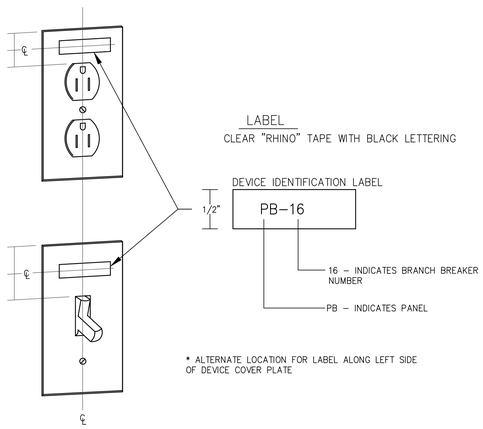
DUKE ENERGY.

DEC DEM	DEP DEF
	X

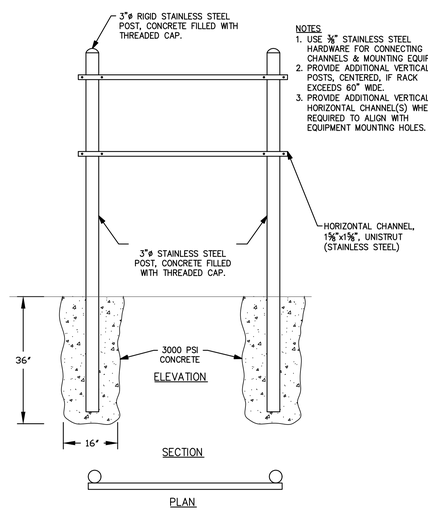
D E-502-P1 UTILITY TRANSFORMER PAD DETAIL
NO SCALE



E E-502-P1 EQUIPMENT MOUNTING DETAIL
NO SCALE

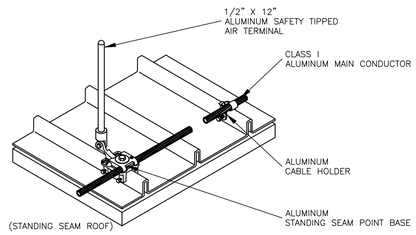


F E-502-P1 WIRING DEVICE IDENTIFICATION LABEL

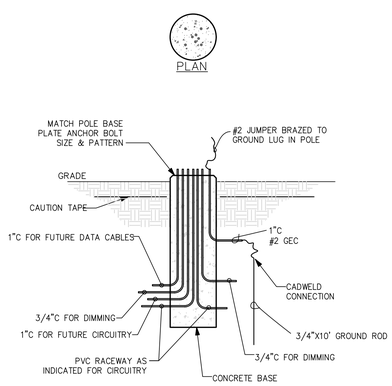


NOTES
1. USE ⅜" STAINLESS STEEL HARDWARE FOR CONNECTING CHANNELS & MOUNTING EQUIPMENT.
2. PROVIDE ADDITIONAL VERTICAL POSTS, CENTERED, IF RACK EXCEEDS 60" WIDE.
3. PROVIDE ADDITIONAL VERTICAL AND HORIZONTAL CHANNEL(S) WHERE REQUIRED TO ALIGN WITH EQUIPMENT MOUNTING HOLES.

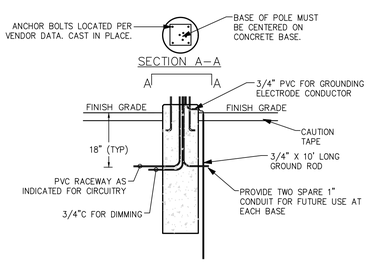
G E-502-P1 EQUIPMENT RACK DETAIL
NO SCALE



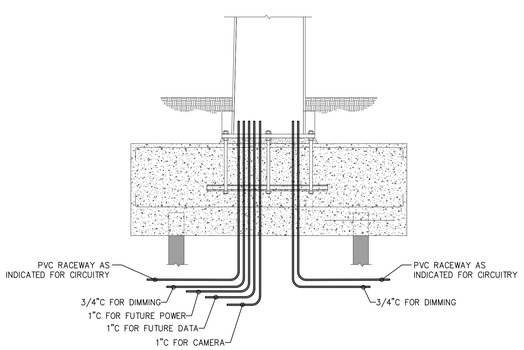
H E-502-P1 STANDING SEAM ROOF AIR TERMINAL
NO SCALE



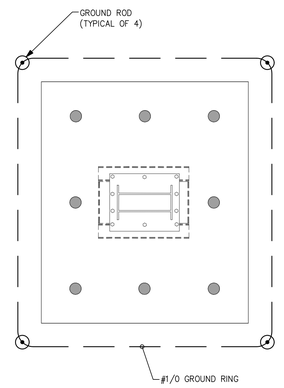
J E-502-P1 POLE BASE DETAIL, TYPE TB
NO SCALE
NOTE: SEE STRUCTURAL DRAWINGS FOR POLE BASE CONSTRUCTION



K E-502-P1 BOLLARD LIGHT BASE
NO SCALE
NOTE: SEE STRUCTURAL DRAWINGS FOR POLE BASE CONSTRUCTION



L E-502-P1 FOLLOW SPOT BASE DETAIL
NO SCALE
NOTE: SEE STRUCTURAL DRAWINGS FOR FOLLOW SPOT BASE CONSTRUCTION



M E-502-P1 FOLLOW SPOT GROUNDING DETAIL
NO SCALE

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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www.hargreavesjonesla.com
NC License #C-513

Architecture = A
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
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NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
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EAGLE RESOURCES
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.org

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
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Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

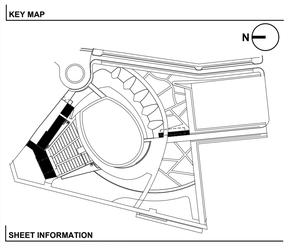
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1756 MARK A. CIARROCCA 25 OCT 2019

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

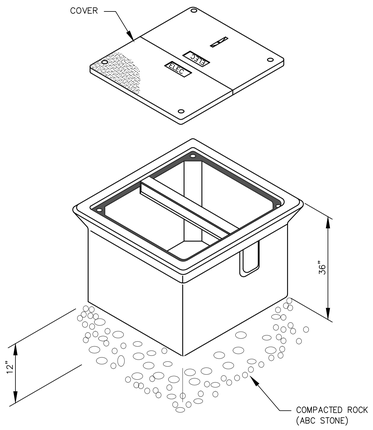
ELECTRICAL DETAILS

IRN016

SHEET NO.

E-502-P1

IRN016



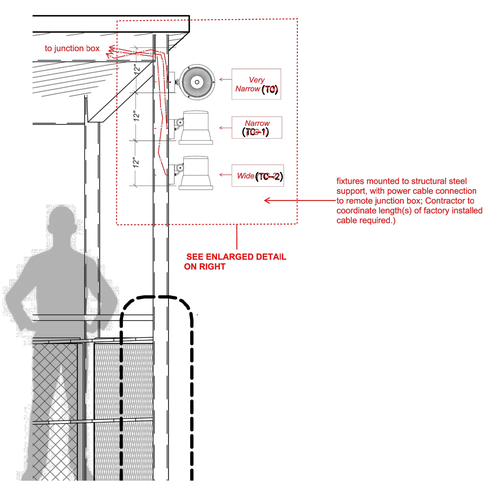
TYPICAL HANDHOLE DETAIL

D / E-503-P1

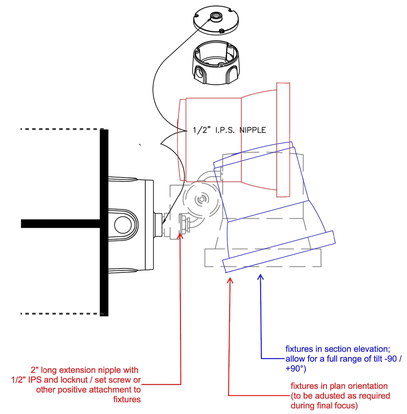
NO SCALE

DESIGN BASIS: QUAZITE #PG3636HH00-PG3636BA36 (36"X36")
QUAZITE #PG1324HH00-PG1324BA24 (13"X24")
QUAZITE #PG2424HH00-PG2424BA24 (24"X24")

NOTE: PROVIDE DIVIDER TO SEPARATE POWER AND DATA CABLES.



FRONT ELEVATION



MOUNTING DETAIL

FOLLOWSOT TYPE TC MOUNTING
Scale_ NA

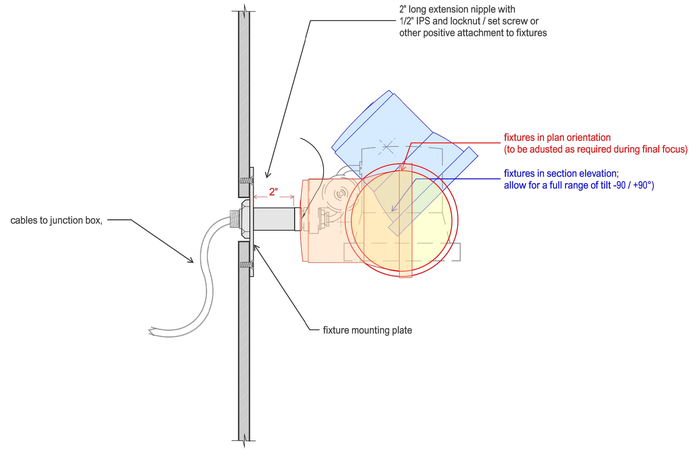
NORTH WATERFRON PARK
2019.02.20

LIGHT FIXTURE TYPES TC, TC-1,TC-2 MOUNTING DETAIL

A / E-503-P1

NO SCALE

NOTE: LIGHTING FIXTURE SELECTION AND DETAIL WAS PERFORMED BY TILLOTSON DESIGN ASSOCIATES. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE FIXTURE SELECTION AND DETAIL IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, PA.



TYPE TC MOUNTING
Scale_ NA

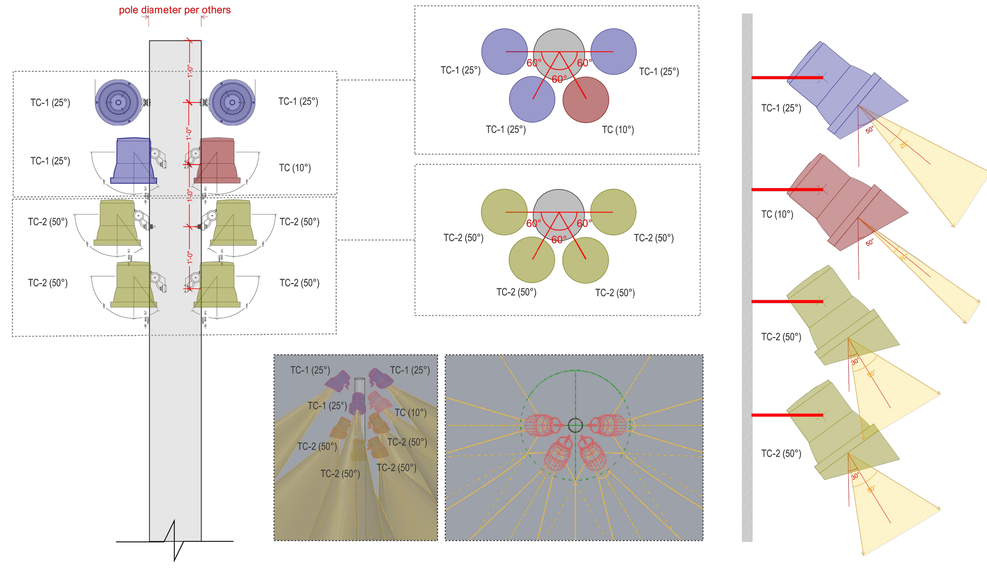
NORTH WATERFRON PARK
2019.03.11

LIGHT FIXTURE TYPES TC, TC-1,TC-2 HIGH MAST MOUNTING DETAIL

E / E-503-P1

NO SCALE

NOTE: LIGHTING FIXTURE SELECTION AND DETAIL WAS PERFORMED BY TILLOTSON DESIGN ASSOCIATES. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE FIXTURE SELECTION AND DETAIL IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, PA.



TYPE TC MOUNTING
Scale_ NA

NORTH WATERFRON PARK
2019.03.11

LIGHT FIXTURE TYPES TC, TC-1,TC-2 HIGH MAST MOUNTING DETAIL

B / E-503-P1

NO SCALE

NOTE: LIGHTING FIXTURE SELECTION AND DETAIL WAS PERFORMED BY TILLOTSON DESIGN ASSOCIATES. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE FIXTURE SELECTION AND DETAIL IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, PA.

IRN016

TILLOTSON DESIGN ASSOCIATES

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
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www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
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www.landisplllc.com

Mechanical Engineering = M
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CHEATHAM & ASSOCIATES, PA
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Marine Structural Engineering – SM
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Water Fountain Design = WF
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40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

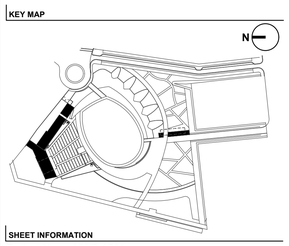
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17513 MARK A. CIARROCCA 25 OCT 2019

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

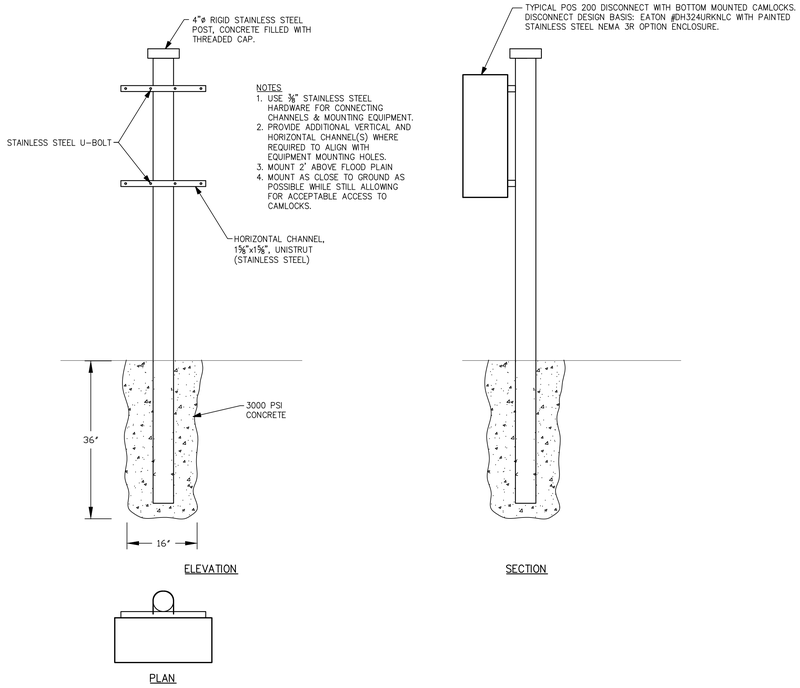
SHEET TITLE

ELECTRICAL DETAILS

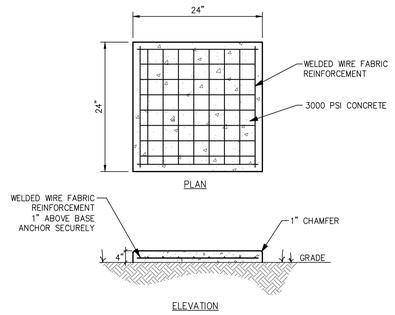
SHEET NO.

E-503-P1

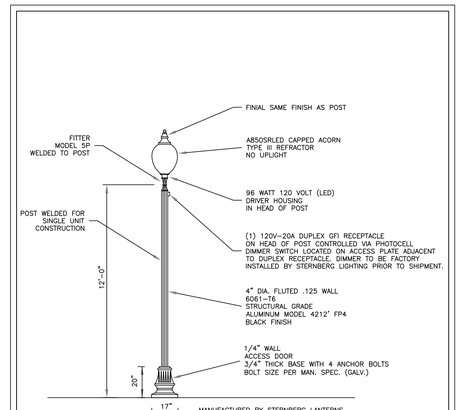
IRN016



A E-504-P1 TYPICAL POINT OF SALE EQUIPMENT RACK DETAIL
NO SCALE



B E-504-P1 EQUIPMENT PAD DETAIL
NO SCALE

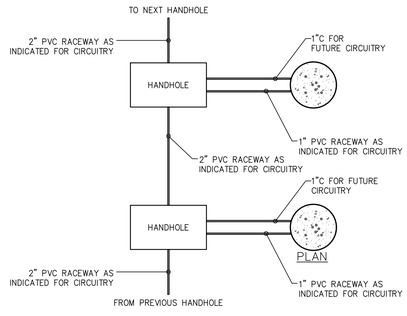


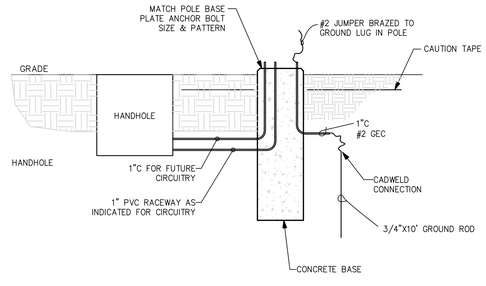
NOTES:
1. CONTRACTOR SHALL COORDINATE FIXTURE POLE FIXTURE CAPS, SIZES, AND OTHER ACCESSORIES TO MATCH THE CITY STANDARD FIXTURE PRIOR TO FURNISHING.
2. FIXTURE AND DUPLEX GFI RECEPTACLE TO BE CONTROLLED VIA 2 SEPARATE PHOTOCELLS.

	STANDARD DETAIL	CITY OF WILMINGTON NORTH CAROLINA
DATE: SEPT. 2018	TYPICAL STREET LAMP	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807
DRAWN BY: JSR		
CHECKED BY: DLF, P.E.		
SCALE: NOT TO SCALE		SD 9-04

C E-504-P1 CITY OF WILMINGTON TYPICAL STREET LAMP DETAIL
NO SCALE

NOTES:
THIS DETAIL IS A CITY OF WILMINGTON STANDARD AND IS PROVIDED AS A REFERENCE FOR CONTRACTOR INFORMATION. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE DETAIL IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, P.A.



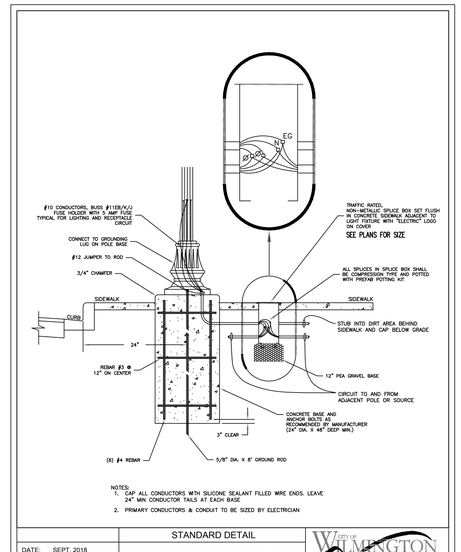


F E-504-P1 POLE BASE DETAIL, TYPES TA
NO SCALE
NOTE: SEE STRUCTURAL DRAWINGS FOR POLE BASE CONSTRUCTION

WARNING

Maximum Available Fault Current:
3,171 Symmetrical RMS Amperes L-L
2,279 Symmetrical RMS Amperes L-N
Date: 04/19/2019
Based on :
Utility Transformer: 25 kVA (Maxiumum)
Utility Transformer: 1.5% Impedance (Minimum)
Service Feeder: #6 (1 SET) (Maximum) Copper
Service Feeder Length: 55' (Minimum)
Motor Load: 0 kW (Maximum)

E E-504-P1 FAULT CURRENT LABEL FOR SERVICE EQUIPMENT – PANEL PW
NO SCALE



NOTES:
1. CAP ALL CONDUCTORS WITH SILICONE SEALANT FILLED WIRE ENDS. LEAVE 24" MIN CONDUCTOR TAILS AT EACH BASE
2. PRIMARY CONDUCTORS & CONDUIT TO BE SIZED BY ELECTRICIAN

	STANDARD DETAIL	CITY OF WILMINGTON NORTH CAROLINA
DATE: SEPT. 2018	TYPICAL STREET BASE AND ELECTRIC DETAIL	CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, NC 28402 (910) 341-7807
DRAWN BY: JSR		
CHECKED BY: DLF, P.E.		
SCALE: NOT TO SCALE		SD 9-05

D E-504-P1 CITY OF WILMINGTON TYPICAL STREET BASE AND ELECTRIC DETAIL
NO SCALE

NOTES:
THIS DETAIL IS A CITY OF WILMINGTON STANDARD AND IS PROVIDED AS A REFERENCE FOR CONTRACTOR INFORMATION. INCLUSION HERE IS NOT INTENDED TO REPRESENT THAT THE DETAIL IS THE WORK PRODUCT OF CHEATHAM & ASSOCIATES, P.A.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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TILLOTSON DESIGN ASSOCIATES
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www.tillotsondesign.com

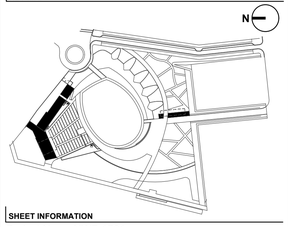
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17523 DANIEL L. FRANKLIN 25 OCT 2019 MICHAEL A. CIARROCCA

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

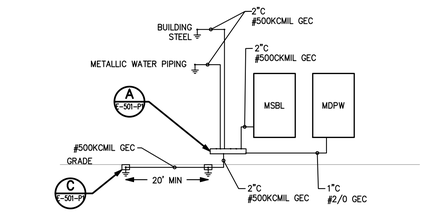
SHEET TITLE

ELECTRICAL DETAILS

SHEET NO.

E-504-P1

IRN016



B E-701-P1 ELECTRICAL GROUNDING SYSTEM RISER DIAGRAM
SCALE: N/A

FD

ROOM: EQUIPMENT RACK
MOUNTING: SURFACE
FED FROM: MDPW
NOTE: NEMA 4X

VOLTS: 208Y/120V 3P 4W
BUS AMPS: 300
NEUTRAL: 100%

AIC: 10,000
MAIN BKR: 300
LUGS: STANDARD

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	20/2	SPARE	0			2	20/2	SPARE	0		
3	|			0		4	|			0	
5	20/2	SPARE			0	6	20/2	SPARE			0
7	|		0			8	|		0		
9	20/2	SPARE		0		10	20/2	SPARE		0	
11	|				0	12	|				0
13	-/2	SPACE ONLY	0			14	-/2	SPACE ONLY	0		
15	|			0		16	|			0	
17	-/2	SPACE ONLY			0	18	-/2	SPACE ONLY			0
19	|		0			20	|		0		
21	-/2	SPACE ONLY		0		22	-/2	SPACE ONLY		0	
23	|				0	24	|				0
								TOTAL CONNECTED KVA BY PHASE	31.2	36.4	26
								TOTAL CONNECTED AMPS BY PHASE	265	304	218

MARINA WITH SUB-METERS CALCULATION (NEC 555.12 NOTE 2)

	CONN KVA	CALC KVA			CALC KVA
SHORE POWER	93.6	67.4	(80% * 90%)	TOTAL LOAD	67.4
RECEPTACLES	9			BALANCED 3-PHASE AMPS	187

PW

ROOM: PAD MOUNT
MOUNTING: SURFACE
FED FROM: UTILITY
NOTE: ULSE LISTED AND LABELED

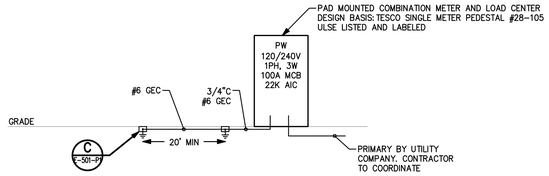
VOLTS: 240/120V 2P 3W
BUS AMPS: 100
NEUTRAL: 100%

AIC: 10,000
MAIN BKR: 100
LUGS: STANDARD

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B
1	20/1	LIGHTING	0.77		2	20/1	LTG CONTROL	0.1	
3	20/1	(*) REC-ON POLE		1.08	4	20/1	(*) SPARE		0
5	20/1	(*) REC-ON POLE	0.9		6	20/1	(*) SPARE	0	
7	20/1	SPARE		0	8	20/1	SPARE		0
9	20/1	SPARE	0		10	20/1	SPARE	0	
11	20/1	SPARE		0	12	20/1	SPARE		0
							TOTAL CONNECTED KVA BY PHASE	1.77	1.08
							TOTAL CONNECTED AMPS BY PHASE	14.8	9

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	0.87	1.09	(125%)	CONTINUOUS	0	0	(125%)
LARGEST MOTOR	0	0	(N/A)	HEATING	0	0	(N/A)
OTHER MOTORS	0	0	(100%)	COOLING	0	0	(N/A)
RECEPTACLES	1.98	1.98	(50%>10)	NONCONTINUOUS	0	0	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	2.85	3.07	
				BALANCED AMPS		12.8	

(*) PROVIDE GFCI TYPE C/B



C E-701-P1 ELECTRICAL COW POWER RISER DIAGRAM
SCALE: N/A

A E-701-P1 ELECTRICAL POWER RISER DIAGRAM
SCALE: NO SCALE

NOTES:
1. DRAWING DEPICTS FEEDER REQUIREMENTS.
2. COMPANY SWITCHES ARE TO BE INCLUDED AS PART OF THIS SITE PACKAGE.
3. POS PANELS AND FLOATING DOCK PANEL ARE PART OF THIS SITE PACKAGE.
4. BUILDING PANEL SCHEDULES WILL BE INCLUDED IN FUTURE BUILDING PACKAGES.
5. BUILDING PANELS AND SWITCHBOARD WILL BE PROVIDED IN FUTURE BUILDING PACKAGES.

FEEDER SCHEDULE

ID	*FEEDER AMPS*	*CONDUIT AND FEEDER*	*FEEDING THESE DEVICES*
60	60	1"C,3#6,#6N,#10G	CLA
100/1	100	1"C,1#2,#2N,#8G	LCPL
100ADI	110	1-1/2"C,3#1,#6G,#6IG	CS7
100D	100	1-1/4"C,3#2,#8G	TOILET
100DI	150	2"C,3#1/0,#4G,#4IG	CS6
100I	100	1-1/2"C,3#2,#2N,#8G,#8IG	BHLL
175J	175	2"C,3#2/0,#2/0N,#4G	CW
200	250	3"C,3#250kcmil,#250kcmil N,#4G	POS3, POS4, WF
200DI	225	2-1/2"C,3#4/0,#4G,#4IG	CS2, CS3
225	225	2-1/2"C,3#4/0,#4/0N,#4G	BHLW, BHPLL, FIRE PUMP CONTROLLER, POS1, POS5, POS6
225/1J	225	2"C,1#4/0,#4/0N,#2G	LCPW
225A	250	3"C,3#250kcmil,#250kcmil N,#3G	POS2
250J	250	3"C,3#250kcmil,#250kcmil N,#2G	CL
300	400	3-1/2"C,3#500kcmil,#500kcmil N,#2G	FD
400	400	3-1/2"C,3#500kcmil,#500kcmil N,#3G	BHPLM
400DI	500	(2)2-1/2"C,3#250kcmil,#2G,#2IG	CS1, CS4, CS5
400I	400	3-1/2"C,3#500kcmil,#500kcmil N,#3G,#3IG	BHPL, BHPW
800U	800	(2)3-1/2"C,3#500kcmil,#500kcmil N	MDPW
3000U	3000	(8)3-1/2"C,3#500kcmil,#500kcmil N	MSBL

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/0 AND ABOVE

IRN016

PROJECT INFORMATION

NORTH IRN016 WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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Geotechnical Engineering = G
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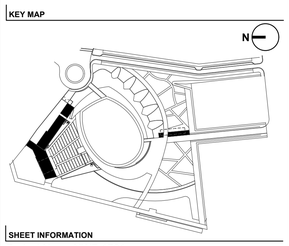
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: M.STAUBLIN
Checked By: M.CIARROCCA
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

ELECTRICAL RISERS, SCHEDULES, AND DETAILS

SHEET NO.

E-701-P1

GENERAL NOTES: (APPLIES TO ALL FIRE PROTECTION DRAWINGS)

1. SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH BUILDING STRUCTURE AND SYSTEMS, AS WELL AS THE WORK OF OTHER TRADES IN ORDER TO ELIMINATE CONFLICTS.
2. SPRINKLER CONTRACTOR'S DESIGN SHALL BE PER NFPA 13 AND THE NC STATE FIRE CODE (LATEST EDITION APPROVED BY THE NC BUILDING CODE COUNCIL WITH NC AMENDMENTS).
3. PROVIDE AUXILIARY DRAINS WHEREVER DRY SYSTEM PIPING IS ROUTED SUCH THAT ANY AMOUNT OF WATER IS TRAPPED.
4. SLOPE DRY SYSTEM BACK TO RISER OR AUXILIARY DRAINS. MAINS SHALL BE SLOPED AT 1/4" PER 10 FT. AND BRANCHES SHALL BE SLOPED AT 1/2" PER 10 FT. PER NFPA 13.
5. ORDINARY HAZARD 2 OCCUPANCIES: PER NFPA 13, DESIGN DENSITY SHALL BE 0.2 GPM PER SQUARE FOOT OVER THE MOST REMOTE 1,500 SQUARE FEET (WET SYSTEM) OR MOST REMOTE 1,950 SQUARE FEET (DRY SYSTEM). REMOTE AREA SHALL BE INCREASED BY 30% WHERE SPRINKLER ARE LOCATED BELOW SLOPED CEILINGS OR ROOFS WITH SLOPE GREATER THAN 2:12 PER NFPA 13. HOSE ALLOWANCE FOR ORDINARY HAZARD 2 SHALL BE 250 GPM PER NFPA 13.
6. LOCATE SPRINKLER HEADS IN-LINE WITH LIGHTS AND OTHER CEILING MOUNTED ITEMS.

FIRE PUMP CONTROLLER
208V, 3Ø

(PS)

LOW TEMPERATURE	(S)
FIRE PUMP RUNNING	(S)
LOSS OF PHASE	(S)
LOSS OF POWER	(S)
PHASE REVERSAL	(S)
OFF AUTO	(S)

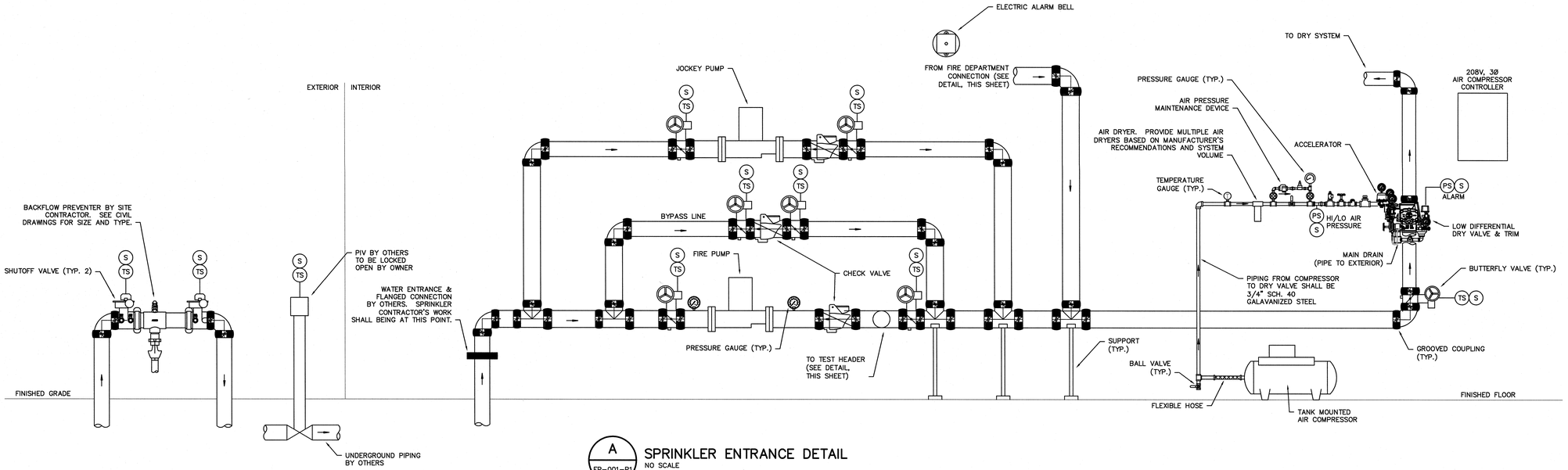
JOCKEY PUMP CONTROLLER
208V, 3Ø

(PS)

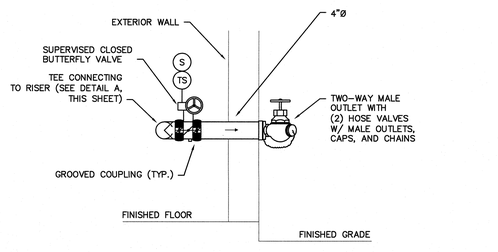
LEGEND

SYMBOL	DESCRIPTION
(PS)	PRESSURE SWITCH
(TS)	TAMPER SWITCH
(S)	SIGNALING SYSTEM INTERFACE

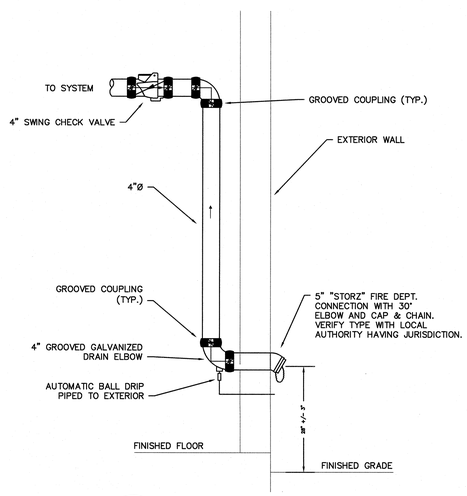
THIS DRAWING HAS BEEN PREPARED FOR RELEASE OF AN EARLY SITE CONSTRUCTION PACKAGE. ALL EQUIPMENT AND COMPONENTS ARE NOT INCLUDED IN THIS SITE PACKAGE FOR SYSTEMS TO BE FULLY FUNCTIONAL. THE INTENT IS FOR FOLLOW-UP BUILDING PACKAGES TO INCLUDE APPLICABLE EQUIPMENT, COMPONENTS, AND REQUIREMENTS FOR FUNCTIONAL SYSTEMS.



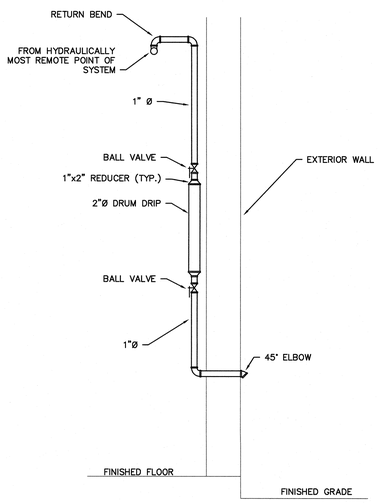
A FP-001-P1 SPRINKLER ENTRANCE DETAIL
NO SCALE



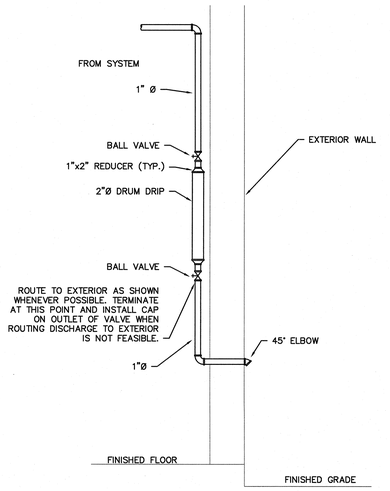
B FP-001-P1 BACKFLOW PREVENTER TEST HEADER DETAIL
NO SCALE



C FP-001-P1 FIRE DEPT. CONNECTION AT BACK OF HOUSE BUILDING
NO SCALE



D FP-001-P1 INSPECTOR'S TEST CONNECTION (DRY)
NO SCALE



E FP-001-P1 AUXILIARY DRAIN DETAIL (DRY)
NO SCALE

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PROJECT INFORMATION

NORTH WATERFRONT PARK IRN016

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WILMINGTON, NORTH CAROLINA

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Community Services Department
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City of Wilmington Project Code 3CPRK1860

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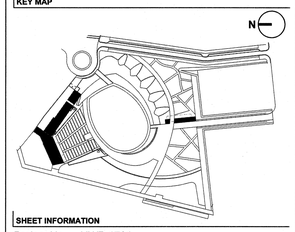
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 043164 ENGINEER CASEY D. GIMA
10/25/19

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: CG, SL
Checked By: CG
Date: 10/25/2019
Scale: AS NOTED

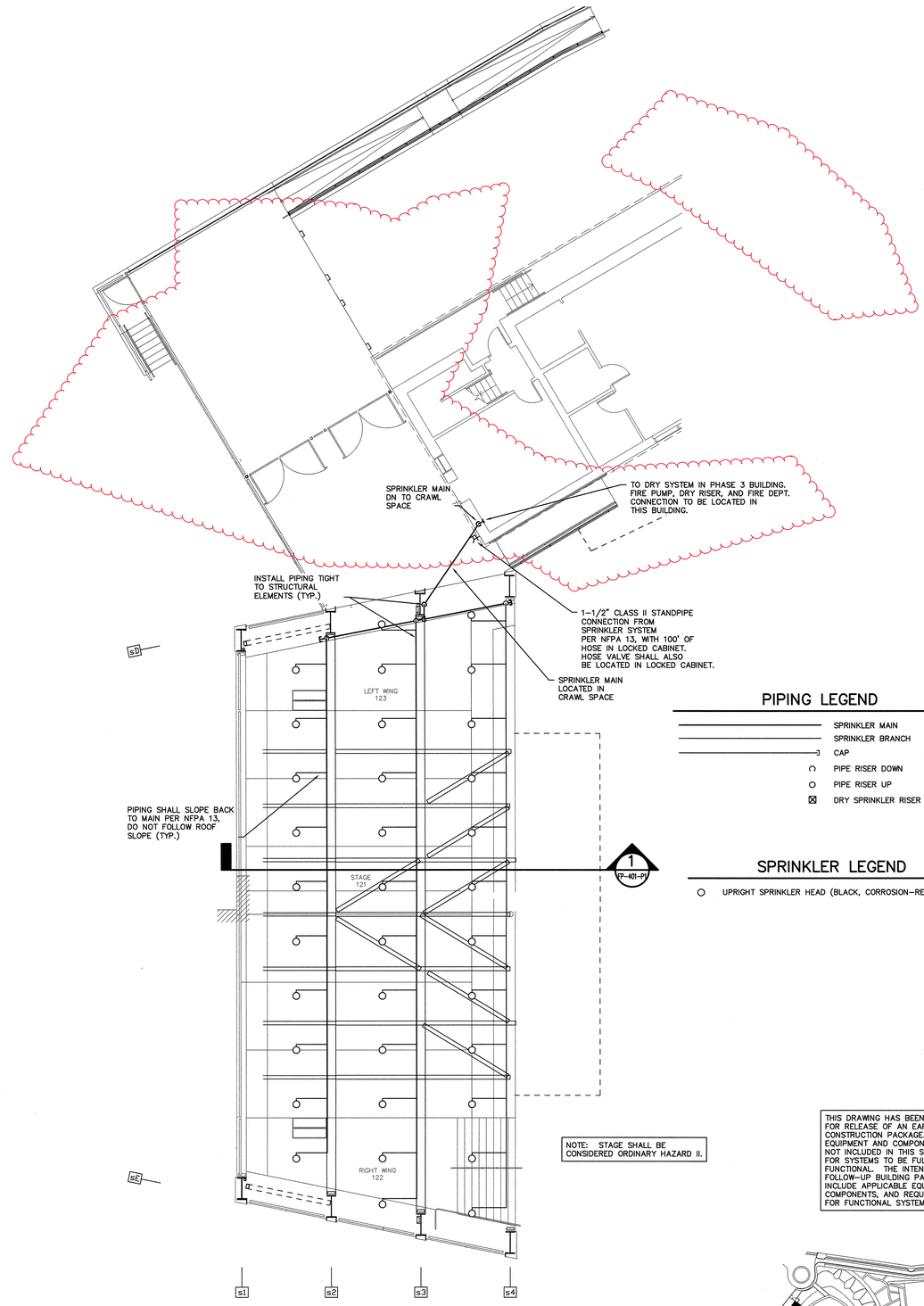
SHEET TITLE

FIRE PROTECTION DETAILS

SHEET NO.

FP-001-P1

IRN016



PIPING LEGEND

- SPRINKLER MAIN
- SPRINKLER BRANCH
- CAP
- PIPE RISER DOWN
- PIPE RISER UP
- DRY SPRINKLER RISER

SPRINKLER LEGEND

- UPRIGHT SPRINKLER HEAD (BLACK, CORROSION-RESISTANT)

NOTE: STAGE SHALL BE CONSIDERED ORDINARY HAZARD II.

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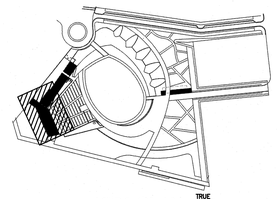

KEY PLAN

1 FP-111-P1 FIRE PROTECTION FLOOR PLAN – STAGE
SCALE: 1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
0 2 4 8 16

TRUE NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

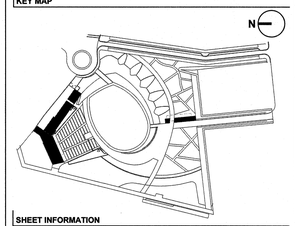
SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 043164 ENGINEER CASEY D. GRAY

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: CG, SL
Checked By: CG
Date: 10/25/2019
Scale: AS NOTED

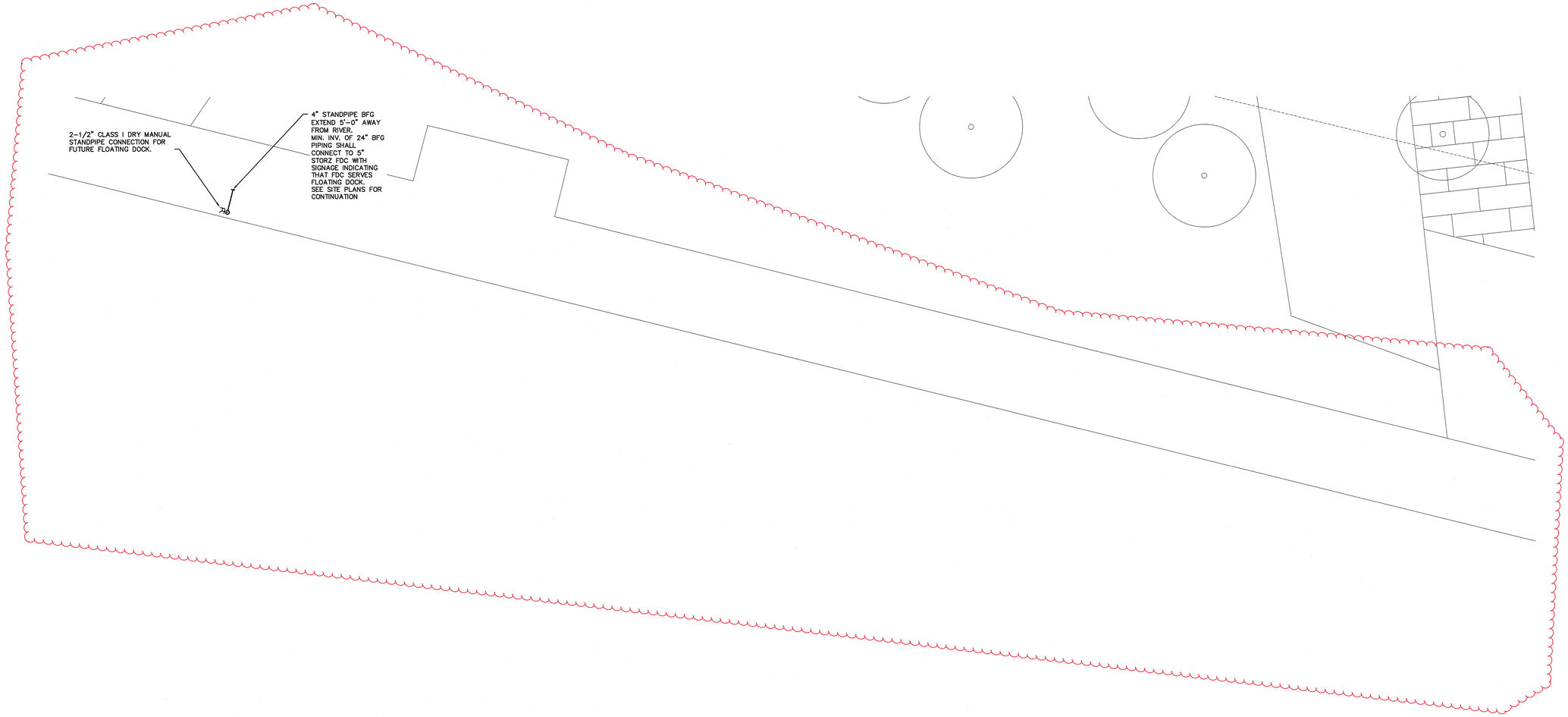
SHEET TITLE

FIRE PROTECTION PLANS - STAGE

SHEET NO.

FP-111-P1

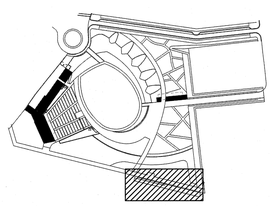
IRN016



1 FP-112-P1 FIRE PROTECTION PLAN – FLOATING DOCK
SCALE: 1/8" = 1'–0"

GRAPHIC SCALE: 1/8"=1'–0"
0 2 4 8 16
TRUE NORTH

THIS DRAWING HAS BEEN PREPARED FOR RELEASE OF AN EARLY SITE CONSTRUCTION PACKAGE. ALL EQUIPMENT AND COMPONENTS ARE NOT INCLUDED IN THIS SITE PACKAGE FOR SYSTEMS TO BE FULLY FUNCTIONAL. THE INTENT IS FOR FOLLOW–UP BUILDING PACKAGES TO INCLUDE APPLICABLE EQUIPMENT, COMPONENTS, AND REQUIREMENTS FOR FUNCTIONAL SYSTEMS.



KEY PLAN TRUE NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
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www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
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Environmental Engineering = EE
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NORTH CAROLINA PROFESSIONAL SEAL 043164 ENGINEER CASEY D. GILMAN

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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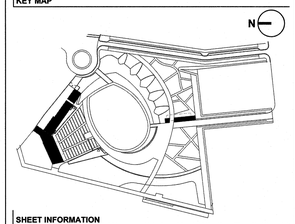
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: CG, SL
Checked By: CG
Date: 10/25/2019
Scale: AS NOTED

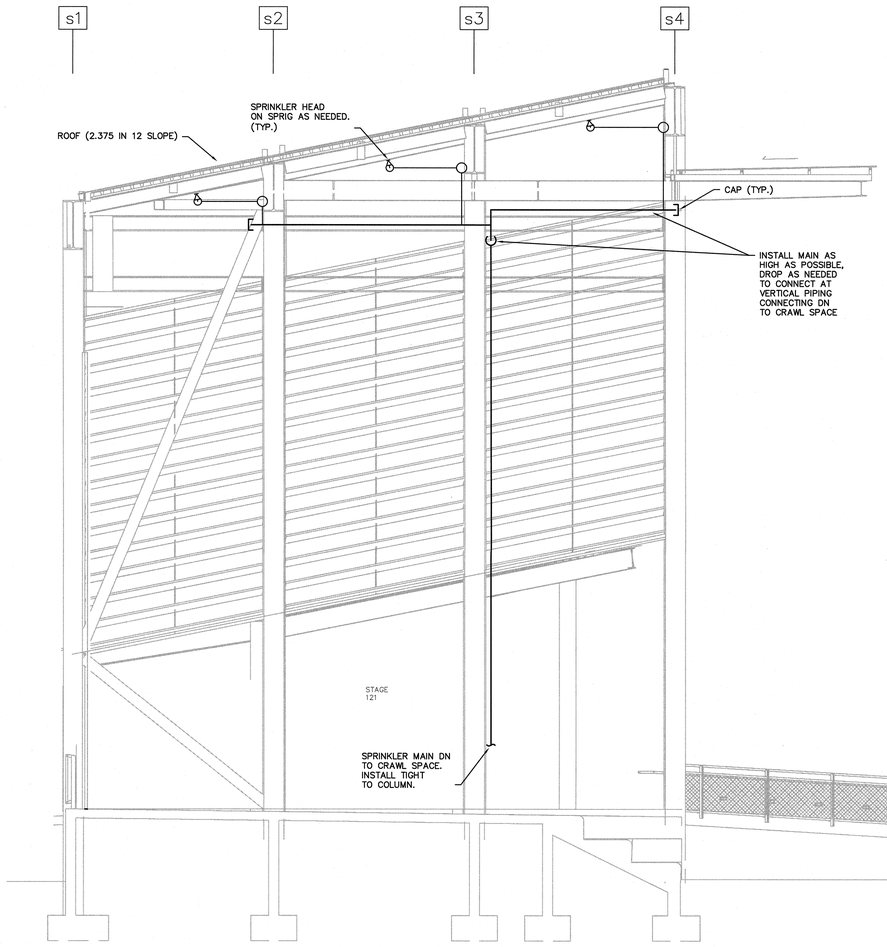
SHEET TITLE

FIRE PROTECTION PLAN - FLOATING DOCK

SHEET NO.

FP-112-P1

IRN016



IRN016

1 FP-401-P1 FIRE PROTECTION SECTION
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1/4"=1'-0"
0 1 2 4 8
TRUE NORTH

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PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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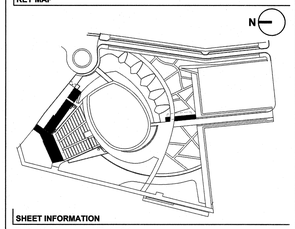


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: CG, SL
Checked By: CG
Date: 10/25/2019
Scale: AS NOTED

SHEET TITLE

FIRE PROTECTION SECTIONS

SHEET NO.

FP-401-P1

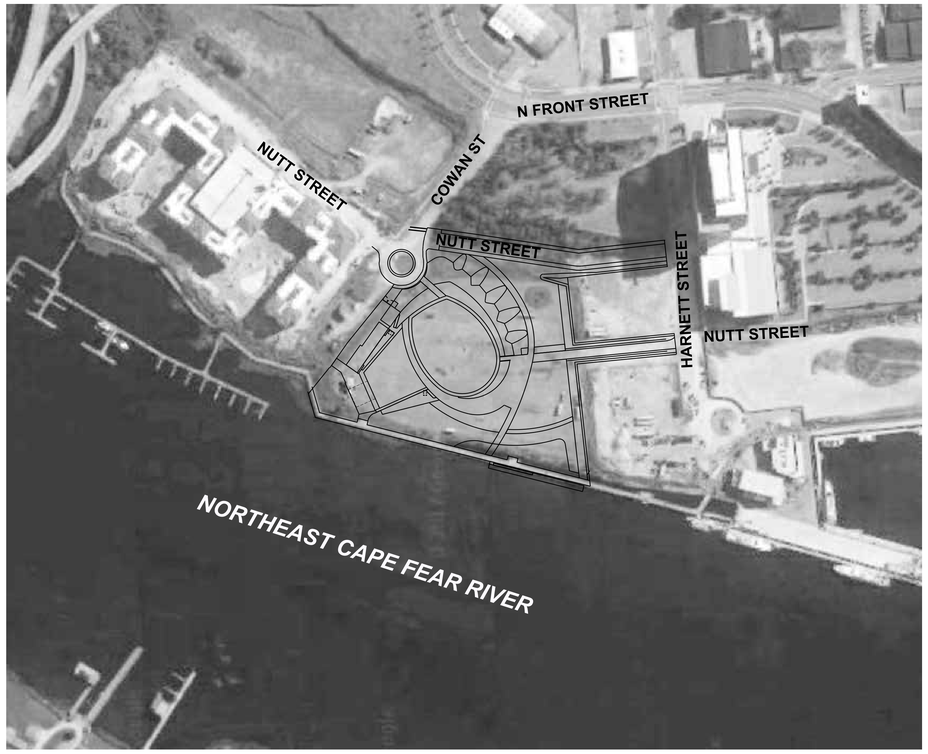
IRN016

WILMINGTON, NORTH CAROLINA

NORTH WATERFRONT PARK



ILLUSTRATIVE VIEW



VICINITY PLAN

0' 100' 200'

CONSTRUCTION DOCUMENTS

25 OCTOBER 2019

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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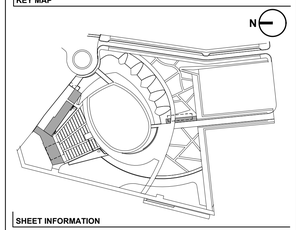
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NTS

SHEET TITLE

GENERAL COVER SHEET & LOCATION MAP

SHEET NO.

G-001-P1

IRN016

SHEET INDEX

SHEET NUMBER	SHEET TITLE	AUTHOR	REVISION
GENERAL			
G-001-P1	COVER SHEET & LOCATION MAP	HARGREAVES JONES	10/25/2019
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G-005A-P1	VEHICLE ACCESS PLAN	HARGREAVES JONES	10/25/2019
G-005B-P1	VEHICULAR LOAD PLAN	HARGREAVES JONES	10/25/2019
G-006-P1	EVENT LAYOUT PLAN	HARGREAVES JONES	10/25/2019
G-007-P1	ALTERNATES PLAN	HARGREAVES JONES	10/25/2019
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G-008B-P1	ENVIRONMENTAL MANAGEMENT PLAN	S&EC/EAGLE RESOURCES	11/8/2019
G-008C-P1	ENVIRONMENTAL MANAGEMENT PLAN	S&EC/EAGLE RESOURCES	11/8/2019
LANDSCAPE			
L-001-P1	GENERAL NOTES, ABBREVIATIONS & SYMBOLS	HARGREAVES JONES	10/25/2019
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L-004-P1	SITE SOFTSCAPE PLAN	HARGREAVES JONES	10/25/2019
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L-031-P1	MATERIALS SCHEDULE	HARGREAVES JONES	10/25/2019
L-040-P1	FURNITURE, LIGHTING, & SIGNAGE SCHEDULE	HARGREAVES JONES	10/25/2019
L-041-P1	FURNITURE, LIGHTING, & SIGNAGE SCHEDULE	HARGREAVES JONES	10/25/2019
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L-070-P1	PLANTING SCHEDULE	HARGREAVES JONES	10/25/2019
L-071-P1	PLANTING SCHEDULE	HARGREAVES JONES	10/25/2019
L-111-P1	GRADING PLAN	HARGREAVES JONES	10/25/2019
L-121-P1	LAYOUT PLAN	HARGREAVES JONES	10/25/2019
L-131-P1	MATERIALS PLAN	HARGREAVES JONES	10/25/2019
L-131-P1	MATERIALS PLAN (INTERIM)	HARGREAVES JONES	11/13/2019
L-141-P1	FURNITURE, LIGHTING, & SIGNAGE PLAN	HARGREAVES JONES	10/25/2019
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L-171-P1	PLANTING PLAN	HARGREAVES JONES	10/25/2019
L-400-P1	ENLARGEMENTS KEY PLAN	HARGREAVES JONES	10/25/2019
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L-431-P1	ENLARGEMENT AREA 1	HARGREAVES JONES	10/25/2019
L-432-P1	ENLARGEMENT AREA 2	HARGREAVES JONES	10/25/2019
L-433-P1	ENLARGEMENT AREA 3	HARGREAVES JONES	10/25/2019
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L-461-P1	PLANTING ENLARGEMENT AREA 1	HARGREAVES JONES	10/25/2019
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L-505-P1	DETAILS - GRADING	HARGREAVES JONES	10/25/2019
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L-511-P1	DETAILS - UTILITIES	HARGREAVES JONES	10/25/2019
L-512-P1	DETAILS - SUBDRAINAGE	HARGREAVES JONES	10/25/2019
L-513-P1	DETAILS - UTILITIES	HARGREAVES JONES	10/25/2019
L-514-P1	DETAILS - HATCHES	HARGREAVES JONES	10/25/2019
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L-521-P1	DETAILS - PLAY SURFACE	HARGREAVES JONES	10/25/2019
L-522-P1	DETAILS - PAVING	HARGREAVES JONES	10/25/2019
L-523-P1	DETAILS - PAVING	HARGREAVES JONES	10/25/2019
L-524-P1	DETAILS - PAVING LAYOUT	HARGREAVES JONES	10/25/2019
L-525-P1	DETAILS - DECKING	HARGREAVES JONES	10/25/2019
L-526-P1	DETAILS - DECKING	HARGREAVES JONES	10/25/2019
L-530-P1	DETAILS - STAIRS	HARGREAVES JONES	10/25/2019
L-531-P1	DETAILS - STAIRS	HARGREAVES JONES	10/25/2019
L-532-P1	DETAILS - TERRACES	HARGREAVES JONES	10/25/2019
L-533-P1	DETAILS - TERRACES	HARGREAVES JONES	10/25/2019
L-534-P1	WATER FEATURE PLANS	HARGREAVES JONES	10/25/2019
L-535-P1	DETAILS - WALLS	HARGREAVES JONES	10/25/2019
L-536-P1	DETAILS - WALLS	HARGREAVES JONES	10/25/2019
L-537-P1	DETAILS - WALLS	HARGREAVES JONES	10/25/2019
L-538-P1	DETAILS - WALLS	HARGREAVES JONES	10/25/2019
L-539-P1	DETAILS - WALLS	HARGREAVES JONES	10/25/2019
L-540-P1	DETAILS - FURNITURE	HARGREAVES JONES	10/25/2019
L-541-P1	DETAILS - FURNITURE	HARGREAVES JONES	10/25/2019
L-542-P1	DETAILS - FURNITURE	HARGREAVES JONES	10/25/2019
L-545-P1	DETAILS - PLAY LAYOUT	HARGREAVES JONES	10/25/2019
L-546-P1	DETAILS - PLAY	HARGREAVES JONES	10/25/2019
L-547-P1	DETAILS - PLAY	HARGREAVES JONES	10/25/2019
L-548-P1	DETAILS - PLAY	HARGREAVES JONES	10/25/2019
L-549-P1	DETAILS - PLAY	HARGREAVES JONES	10/25/2019
L-550-P1	DETAILS - GUARDRAILS	HARGREAVES JONES	10/25/2019
L-551-P1	DETAILS - HANDRAILS	HARGREAVES JONES	10/25/2019
L-552-P1	DETAILS - FENCE	HARGREAVES JONES	10/25/2019
L-555-P1	DETAILS - LIGHTING	HARGREAVES JONES	10/25/2019
L-560-P1	DETAILS - TREE PLANTING	HARGREAVES JONES	10/25/2019
L-561-P1	DETAILS - TREE PLANTING	HARGREAVES JONES	10/25/2019
L-570-P1	DETAILS - PLANTING	HARGREAVES JONES	10/25/2019
L-571-P1	DETAILS - PLANTING	HARGREAVES JONES	10/25/2019
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A-111-P1	FOUNDATION AND FINISH FLOOR PLAN - STAGE	SAGE & COOMBE	10/25/2019
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A-121-P1	REFLECTED CEILING PLAN - STAGE	SAGE & COOMBE	10/25/2019
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A-212-P1	ELEVATIONS - STAGE AND LOADING	SAGE & COOMBE	10/25/2019
A-311-P1	BUILDING SECTION - STAGE	SAGE & COOMBE	10/25/2019
A-321-P1	EXTERIOR WALL SECTIONS - STAGE	SAGE & COOMBE	10/25/2019
A-322-P1	EXTERIOR WALL SECTIONS AT CANOPY - STAGE	SAGE & COOMBE	10/25/2019
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A-412-P1	SECTION DETAILS - STAGE	SAGE & COOMBE	10/25/2019
A-413-P1	ROOF LEVEL SECTION DETAILS - STAGE	SAGE & COOMBE	10/25/2019
A-415-P1	GATE AND FENCE DETAILS - LOADING	SAGE & COOMBE	10/25/2019
A-416-P1	RAILING DETAILS - STAGE	SAGE & COOMBE	10/25/2019
A-421-P1	FOLLOW SPOT DETAILS - ALTERNATE NO. 5	SAGE & COOMBE	10/25/2019
A-422-P1	FOLLOW SPOT DETAILS - ALTERNATE NO. 5	SAGE & COOMBE	10/25/2019
A-511-P1	STAIR AND RAMP DETAILS - STAGE	SAGE & COOMBE	10/25/2019
A-512-P1	STAIR AND RAMP DETAILS - STAGE	SAGE & COOMBE	10/25/2019
A-513-P1	STAIR DETAILS - LOADING	SAGE & COOMBE	10/25/2019
A-514-P1	RAMP DETAILS - LOADING	SAGE & COOMBE	10/25/2019
A-831-P1	MATERIAL & EQUIPMENT SCHEDULE	SAGE & COOMBE	10/25/2019
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AT-101-P1	CONDUIT AND CABLE PATH RISER DIAGRAM	OAP PC	10/25/2019
AT-200-P1	STAGE PLAN	OAP PC	10/25/2019
AT-201-P1	SITE PLAN	OAP PC	10/25/2019
AT-400-P1	FUNCTIONAL DRAWINGS	OAP PC	10/25/2019
AT-500-P1	PANEL DETAILS	OAP PC	10/25/2019
AT-600-P1	INFILL PLATFORM LAYOUT	OAP PC	10/25/2019
AT-601-P1	INFILL PLATFORM DETAILS	OAP PC	10/25/2019
AT-602-P1	INFILL PLATFORM SCHEDULE	OAP PC	10/25/2019
CIVIL ENGINEERING			
C-001-P1	NOTES & LEGEND	STEWART	10/28/2019
C-100-P1	TOPOGRAPHIC SURVEY	STEWART	10/28/2019
C-101-P1	DEMOLITION PLAN	STEWART	10/28/2019
C-111-P1	EROSION CONTROL & SEDIMENTATION NOTES	STEWART	10/28/2019
C-112-P1	EROSION CONTROL & SEDIMENTATION PLAN (PHASE I)	STEWART	10/28/2019
C-113-P1	EROSION CONTROL & SEDIMENTATION PLAN (PHASE II)	STEWART	10/28/2019
C-120-P1	UTILITY PLAN	STEWART	10/28/2019
C-121-P1	UTILITY PLAN ENLARGEMENT	STEWART	10/28/2019
C-122-P1	ON-SITE SANITARY SEWER PLAN & PROFILE	STEWART	10/28/2019
C-123-P1	HARNETT ST. SANITARY SEWER & PROFILE	STEWART	10/28/2019
C-124-P1	NUTT ST. SANITARY SEWER & PROFILE	STEWART	10/28/2019
C-125-P1	SEWER PLAN AND PROFILE	STEWART	10/28/2019
C-126-P1	FIRE PROTECTION WATERLINE PLAN AND PROFILE	STEWART	10/28/2019
C-127-P1	DOMESTIC WATERLINE PLAN AND PROFILE	STEWART	10/28/2019
C-128-P1	DOMESTIC WATERLINE PLAN AND PROFILE	STEWART	10/28/2019
C-129-P1	FDC SOUTH PLAN AND PROFILE	STEWART	10/28/2019
C-131-P1	SUBDRAINAGE PLAN	STEWART	10/28/2019
C-132-P1	PIPE TABLE	STEWART	10/28/2019
C-133-P1	STORM STRUCTURE TABLE	STEWART	10/28/2019
C-134-P1	INFILTRATION GALLERY DETAILS	STEWART	10/28/2019
C-135-P1	PERMEABLE PAVEMENT DETAILS	STEWART	10/28/2019
C-136-P1	PERMEABLE PAVEMENT DETAILS	STEWART	10/28/2019
C-137-P1	INFILTRATION SYSTEM DETAILS	STEWART	10/28/2019
C-138-P1	INFILTRATION SYSTEM DETAILS	STEWART	10/28/2019
C-139-P1	PERMEABLE PAVEMENT DETAILS	STEWART	10/28/2019
C-150-P1	NUTT STREET LAYOUT PLAN	STEWART	10/28/2019
C-151-P1	NUTT STREET PLAN AND PROFILE	STEWART	10/28/2019
C-152-P1	SUB-SLAB PLAN AND DETAILS	STEWART	10/28/2019
C-153-P1	LOADING DOCK GRADING PLAN AND DETAILS	STEWART	10/28/2019
C-501-P1	DETAILS	STEWART	10/28/2019
C-510-P1	EROSION CONTROL DETAILS	STEWART	10/28/2019
C-520-P1	UTILITY DETAILS	STEWART	10/28/2019
C-521-P1	UTILITY DETAILS	STEWART	10/28/2019
C-530-P1	STORM DETAILS	STEWART	10/28/2019
C-531-P1	DETAILS	STEWART	10/28/2019
ELECTRICAL ENGINEERING			
E-001-P1	LEGENDS, SCHEDULES, NOTES, DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
E-101-P1	POWER AND AUXILIARY SYSTEMS SITE PLAN	CHEATHAM & ASSOCIATES	10/25/2019
E-102-P1	SITE LIGHTING PLAN	CHEATHAM & ASSOCIATES	10/25/2019
E-111-P1	PLAN - STAGE	CHEATHAM & ASSOCIATES	10/25/2019
E-402-P1	ENLARGED PLANS	CHEATHAM & ASSOCIATES	10/25/2019
E-501-P1	DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
E-502-P1	DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
E-503-P1	DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
E-504-P1	DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
E-701-P1	RISERS, SCHEDULES, AND DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
FIRE PROTECTION			
FP-001-P1	DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
FP-111-P1	PLANS - STAGE	CHEATHAM & ASSOCIATES	10/25/2019
FP-112-P1	PLANS - FLOATING DOCK - ALTERNATE NO. 12	CHEATHAM & ASSOCIATES	10/25/2019
FP-401-P1	SECTIONS	CHEATHAM & ASSOCIATES	10/25/2019
LANDSCAPE IRRIGATION			
LI-100-P1	SHEET LAYOUT	CLARK IRRIGATION	10/25/2019
LI-111-P1	IRRIGATION PLAN - NORTH	CLARK IRRIGATION	10/25/2019
LI-112-P1	IRRIGATION PLAN - SOUTH	CLARK IRRIGATION	10/25/2019
LI-113-P1	IRRIGATION PLAN - WEST AND NOTES	CLARK IRRIGATION	10/25/2019
LI-501-P1	DETAILS	CLARK IRRIGATION	10/25/2019
LI-502-P1	DETAILS	CLARK IRRIGATION	10/25/2019
LANDSCAPE SOILS			
LS-001-P1	SITE PLAN	LANDIS	10/25/2019
LS-002-P1	OUTLINE OF GRAVEL DRAINAGE LAYER	LANDIS	10/25/2019
LS-003-P1	PROFILE DETAILS	LANDIS	10/25/2019
PLUMBING ENGINEERING			
P-001-P1	LEGEND, SCHEDULE, AND DETAILS	CHEATHAM & ASSOCIATES	10/25/2019
P-111-P1	PLAN - STAGE	CHEATHAM & ASSOCIATES	10/25/2019
P-112-P1	PLANS - FLOATING DOCK - ALTERNATE NO. 12	CHEATHAM & ASSOCIATES	10/25/2019
P-501-P1	RISER DIAGRAMS	CHEATHAM & ASSOCIATES	10/25/2019
STRUCTURAL			
S-001-P1	GENERAL NOTES AND ABBREVIATIONS	STEWART	10/25/2019
S-002-P1	STAGE 3D VIEWS	STEWART	10/25/2019
S-101-P1	OVERALL SITE PLAN	STEWART	10/25/2019
S-101.1-P1	PARTIAL SITE WALL FOUNDATION PLAN	STEWART	10/25/2019
S-101.2-P1	PARTIAL SITE WALL FOUNDATION PLAN	STEWART	10/25/2019
S-101.3-P1	PARTIAL SITE WALL FOUNDATION PLAN	STEWART	10/25/2019
S-101.4-P1	PARTIAL SITE WALL FOUNDATION PLAN	STEWART	10/25/2019
S-101.5-P1	BOARDWALK FRAMING PLAN - ALTERNATE NO. 8	STEWART	10/25/2019
S-101.6-P1	PARTIAL SITE WALL FOUNDATION PLAN	STEWART	10/25/2019
S-105-P1	STAGE LOADING PLANS	STEWART	10/25/2019
S-110-P1	STAGE AND LOADING DOCK PILE LAYOUT PLAN	STEWART	10/25/2019
S-111-P1	STAGE AND LOADING DOCK FOUNDATION AND FLOOR PLANS	STEWART	10/25/2019
S-112-P1	STAGE RIGGING AND ROOF FRAMING PLANS	STEWART	10/25/2019
S-140-P1	FOLLOW SPOT FOUNDATION PLANS AND DETAILS - ALTERNATE NO. 5	STEWART	10/25/2019
S-145-P1	FOLLOW SPOT FRAMING PLANS AND DETAILS - ALTERNATE NO. 5	STEWART	10/25/2019
S-220-P1	STAGE SECTIONS AND DETAILS	STEWART	10/25/2019
S-221-P1	STAGE SECTIONS AND DETAILS	STEWART	10/25/2019
S-222-P1	STAGE GRID ELEVATION	STEWART	10/25/2019
S-223-P1	STAGE GRID ELEVATION	STEWART	10/25/2019
S-224-P1	STAGE GRID ELEVATION	STEWART	10/25/2019
S-225-P1	STAGE GRID ELEVATION	STEWART	10/25/2019
S-226-P1	STAGE AND LOADING DOCK SECTIONS AND DETAILS	STEWART	10/25/2019
S-227-P1	STAGE AND LOADING DOCK SECTIONS AND DETAILS	STEWART	10/25/2019
S-228-P1	STAGE COLUMN DETAILS	STEWART	10/25/2019
S-229-P1	STAGE COLUMN DETAILS	STEWART	10/25/2019
S-230-P1	SITE WALL SECTIONS	STEWART	10/25/2019
S-231-P1	SITE WALL SECTIONS	STEWART	10/25/2019
S-232-P1	SITE WALL SECTIONS	STEWART	10/25/2019
S-233-P1	BOARDWALK DETAILS - ALTERNATE NO. 8	STEWART	10/25/2019
S-301-P1	SLAB ON GRADE DETAILS	STEWART	10/25/2019
S-311-P1	FOUNDATION DETAILS	STEWART	10/25/2019
S-321-P1	CONCRETE DETAILS	STEWART	10/25/2019
S-400-P1	WOOD DETAILS	STEWART	10/25/2019
S-500-P1	STAGE STEEL COLUMN SCHEDULE AND DETAILS	STEWART	10/25/2019
S-501-P1	STEEL DETAILS	STEWART	10/25/2019
STRUCTURAL - MARINE			
SM-001-P1	NOTES	ANDREW CONSULTING	10/25/2019
SM-101-P1	STRUCTURAL MARINE OVERALL PLAN	ANDREW CONSULTING	10/25/2019
SM-102-P1	SHORELINE STABILIZATION PLAN	ANDREW CONSULTING	10/25/2019
SM-103-P1	RIVERWALK CONNECTIONS	ANDREW CONSULTING	10/25/2019
SM-301-P1	STRUCTURAL SECTIONS	ANDREW CONSULTING	10/25/2019
SM-302-P1	STRUCTURAL SECTIONS	ANDREW CONSULTING	10/25/2019
SM-501-P1	FRAMING DETAILS	ANDREW CONSULTING	10/25/2019
SM-502-P1	FRAMING DETAILS	ANDREW CONSULTING	10/25/2019
SM-701-P1	MARINE MATTRESS DETAILS	ANDREW CONSULTING	10/25/2019
SM-702-P1	FLEXAMAT DETAILS	ANDREW CONSULTING	10/25/2019

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
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Community Services Department
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City of Wilmington Project Code 3CPRK1860

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Lighting Design = EL
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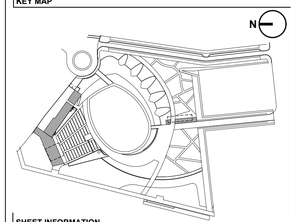
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NTS

SHEET TITLE

GENERAL SHEET INDEX & AUTHORSHIP

SHEET NO.

G-002-P1

IRN016

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

66' OLD FRONT STREET R.O.W.

LIMIT OF WORK (2' OFFSET FOR CLARITY)

46' x 46' STREET CORNER SIGHT TRIANGLE PROPOSED VEGETATION SHALL NOT INTERFERE WITH SIGHT LINES BETWEEN 30" AND 10'

HARNETT STREET

EXISTING CROSSWALK (TO BE REMOVED)

PARKING

NUTT STREET

COWAN ST. STEPS

PLAY

ARCING PATH

20' x 70' DRIVEWAY SIGHT TRIANGLE PROPOSED WALL SHALL NOT INTERFERE WITH SIGHT LINES BETWEEN 30" AND 10'

CFPUA PUMP STATION

30' CFPUA UTILITY EASEMENT

PROGRAM ROOMS

EAST GARDENS

FUTURE DEVELOPMENT SITE

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

20' x 70' STREET CORNER SIGHT TRIANGLE PROPOSED VEGETATION SHALL NOT INTERFERE WITH SIGHT LINES BETWEEN 30" AND 10'

SLOPED LAWNS

PARK SUPPORT BUILDING CANOPY

LOADING DOCK DRIVE

20' UTILITY R.O.W.

FOLLOW SPOT TOWER

STAGE BUILDING PACKAGE #3

NORTH PLINTH

GREAT LAWN

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENSY ACCESS)

HOUSE MIX PLATFORM

LOADING DOCK

GREAT LAWN STEPS

ADA RAMP TO STAGE

LOWER LAWN

FOLLOW SPOT TOWER

INTERACTIVE WATER FOUNTAIN

PROPOSED NEW EASEMENT

STAGE

SOUTH PLINTH

WEST GARDENS

CENTRAL PLAZA

ALLEY PATH

FUTURE DEVELOPMENT SITE

RIVERFRONT LAWN

COASTAL LANDSCAPE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

RIVERWALK CONNECTION 1

RIVERWALK CONNECTION 2
FOR CONNECTIONS TO EXISTING RIVERWALK,
SEE STRUCTURAL MARINE DWGS

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

N M L K J I H G F E D C B A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

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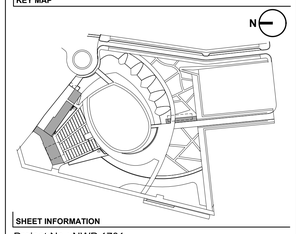
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

IRN016

SHEET TITLE

GENERAL SITE ORIENTATION PLAN

SHEET NO.

G-003-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

70' SEMI-TRAILER

FUTURE DEVELOPMENT SITE

HARNETT STREET

46' x 46' STREET CORNER SIGHT TRIANGLE
PROPOSED VEGETATION SHALL
NOT INTERFERE WITH SIGHT LINES
BETWEEN 30" AND 10'

(5) REMOVABLE BOLLARDS

LIMIT OF WORK
(2' OFFSET FOR CLARITY)

(15) PARKING SPACES

(8) PARKING SPACES

NUTT STREET

SECONDARY
EMERGENCY VEHICLE
ACCESS ROUTE
15' WIDE

20' x 70' DRIVEWAY SIGHT TRIANGLE
PROPOSED WALL SHALL NOT
INTERFERE WITH SIGHT LINES
BETWEEN 30" AND 10'

EVENT VENUE
LOADING / UNLOADING

CFPUA
PUMP STATION

30' CFPUA UTILITY EASEMENT

FUTURE DEVELOPMENT SITE

30' CFPUA EASEMENT TO BE ABANDONED
SANITARY SEWER RE-ROUTE
SEE PACKAGE #2

20' x 70' STREET CORNER SIGHT TRIANGLE
PROPOSED VEGETATION SHALL
NOT INTERFERE WITH SIGHT LINES
BETWEEN 30" AND 10'

(4) REMOVABLE BOLLARDS

13'-6" MINIMUM
CLEARANCE
AT CANOPY

PARK SUPPORT
BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN)

20' UTILITY R.O.W.

STAGE BUILDING
PACKAGE #3

LOADING
DOCK

STAGE

FIRE TRUCK ACCESS ROUTE

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL
WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.

LEGEND

- LIMIT OF WORK (2' OFFSET)
- 70' SEMI-TRAILER
- 35' FIRE TRUCK
- 20' AMBULANCE
- FIRE TRUCK ACCESS ROUTE 15' MIN REQUIRED
- SECONDARY EMERGENCY VEHICLE ACCESS ROUTE 21' MIN REQUIRED
- VENUE LOADING/ UNLOADING
- PUBLIC ON-STREET PARKING

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No. 1980
MARY MARGARET JONES

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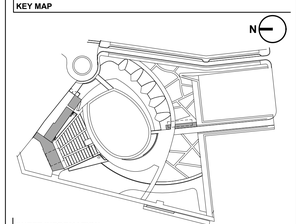
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

GENERAL VEHICLE ACCESS PLAN

SHEET NO.

G-005A-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

HARNETT STREET

LIMIT OF WORK (2' OFFSET FOR CLARITY)

NUTT STREET

FUTURE DEVELOPMENT SITE

CFPUA PUMP STATION

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

30' UTILITY EASEMENT BOOK 5290 PAGE 2060

STAGE BUILDING PACKAGE #3

LOADING DOCK

STAGE

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 & L-131-P1 FOR MATERIALS SCHEDULE AND PLAN.
3. NUTT STREET SERVES AS FIRE DEPARTMENT ACCESS.
4. VEHICULAR LOADING PER GEOTECHNICAL ENGINEER RECOMMENDATION, SEE CIVIL DRAWINGS.
5. VEHICLE LOADING REFLECTS A CONSISTENT PAVING ASSEMBLY, DESIGNED TO CHANGE AT CLEAR LAYOUT BREAKLINES, LIMITING DIFFERENTIAL SETTLEMENT AND ALLOWING APPROPRIATE VEHICLE SITE ACCESS.
6. SET PLYWOOD OR STEEL PLATES ON LIGHT LOAD PAVING OR PLANTED SURFACES PRIOR TO VEHICULAR ACCESS TO DISTRIBUTE LOADS.
7. ALL UNDESIGNATED AREAS ARE NOT SUITABLE FOR VEHICULAR ACCESS.

LEGEND

- LIMIT OF WORK (2' OFFSET)

1 — **HEAVY LOAD MED-HIGH FREQUENCY**
9-10 ton, H-20 loading, no solid rubber tires or casters, forklifts and pallet jacks prohibited.

2A — **HEAVY LOAD LOW FREQUENCY A**
9-10 ton, H-20 loading, no solid rubber tires or casters, forklifts and pallet jacks prohibited.

2B — **HEAVY LOAD LOW FREQUENCY B**
9-10 ton H-20 loading, forklifts and pallet jacks allowed.

3 — **MEDIUM LOAD MED-HIGH FREQUENCY**
Limited passenger trucks/vans, no solid rubber tires or casters, forklifts and pallet jacks prohibited.

4 — **LTD. LIGHT LOAD INFREQUENT/ DISCOURAGED**
Limited slow turning autos/trucks/vans, no solid rubber tires or casters, forklifts and pallet jacks prohibited.

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
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NC License #C-1051

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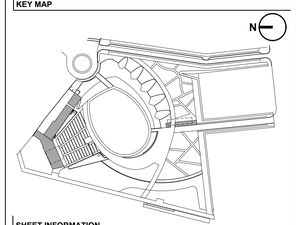
SEAL/SIGNATURE

NORTH CAROLINA LANDSCAPE ARCHITECT No. 1980 REGISTERED MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

GENERAL VEHICLE LOADING PLAN

SHEET NO.

G-005B-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

HARNETT STREET

LIMIT OF WORK (2' OFFSET FOR CLARITY)

25 PORTABLE TOILETS

DUMPSTER

10' x 10'

*HOSE BIB

10' x 10'

TEMPORARY FENCE

NUTT STREET

TRUCK, BUS, AND EVENT STAGING

*POWER SOURCE

*HOSE BIB

SPONSOR ACTIVATION (TENTS)

20' x 20'

FUTURE DEVELOPMENT SITE

8' FENCE & GATE

CFPUA PUMP STATION

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

7,516 SF SLOPED LAWN SEATING (835 PPL @ 9sf/ person

DELAY SYSTEM

43,112 SF LAWN SEATING (4,380 PPL @ 9sf / person)

3,700 SF (reduced sight line)

TEMPORARY FENCE

PARK SUPPORT BUILDING PACKAGE #4

FOLLOW SPOT TOWER (ALT NO. 5)

2-BAY LOADING

STAGE BUILDING PACKAGE #3

LOADING DOCK

(18) ADA & COMPANION SEATS

HOUSE MIX

14,400 SF TEMP. FIXED SEATING 2,400 PPL @ 6sf / person)

14' WIDE FIRE TRUCK ACCESS

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

VIP / GENERAL ADMISSION ENTRANCE (8 gates)

(4) ADA & COMPANION SEATS

STAGE

FOLLOW SPOT TOWER (ALT NO. 5)

(33) VIP BOX SEATS (INCL. 5 ADA & COMPANION SEATS)

TEMPORARY FENCE

(73) POINTS OF SALE 6' x 6' carts

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.

LEGEND

- LIMIT OF WORK (2' OFFSET)
- TEMPORARY FENCE
- PARK OPEN TO PUBLIC DURING EVENTS
- 6'X6' POINT OF SALE

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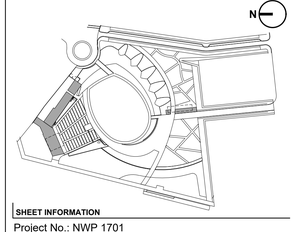
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

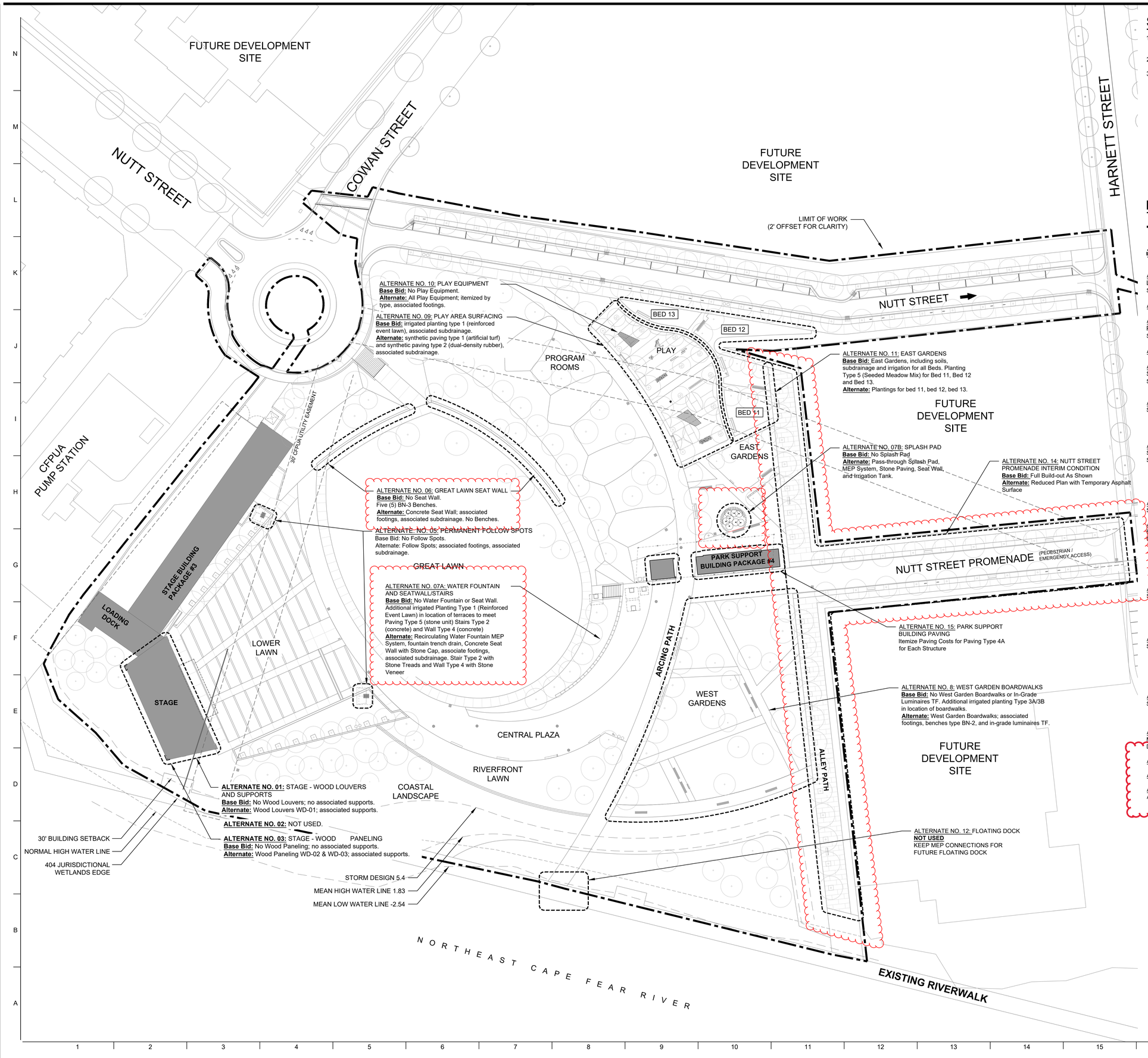
SHEET TITLE

GENERAL EVENT LAYOUT PLAN

SHEET NO.

G-006-P1

IRN016



SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE MATERIALS SCHEDULE L-030-P1 & L-031-P1 & MATERIALS PLAN L-131-P1.
3. SEE FURNISHING, LIGHTING, AND SIGNAGE SCHEDULE L-040-P1 & L-041-P1 & FURNISHING, LIGHTING AND SIGNAGE PLAN L-141-P1

LEGEND

LIMIT OF WORK (2' OFFSET)

ALTERNATES TO BASE BID

ALTERNATE NO. 01: STAGE - WOOD LOUVERS AND SUPPORTS
SEE: ARCHITECTURAL DWGS

ALTERNATE NO. 02: NOT USED

ALTERNATE NO. 03: STAGE - WOOD PANELING
SEE: ARCHITECTURAL DWGS

ALTERNATE NO. 04: NOT USED

ALTERNATE NO. 05: PERMANENT FOLLOW SPOTS
SEE: ARCHITECTURAL AND STRUCTURAL DWGS

ALTERNATE NO. 06: GREAT LAWN SEAT WALL
SEE: L-030-P1 MATERIALS SCHEDULE
L-131-P1 MATERIALS PLAN
L-433-P1 ENLARGEMENT PLAN
L-538-P1 WALL DETAILS

ALTERNATE NO. 07A: WATER FOUNTAIN AND STONE VENEER TERRACES
SEE: L-030-P1 MATERIALS SCHEDULE
L-131-P1 MATERIALS PLAN
L-431-P1 ENLARGEMENT PLAN
L-532-P1 TERRACE DETAILS
L-534-P1 WATER FEATURE DETAILS

ALTERNATE NO. 07B: SPLASH PAD
SEE: L-534-P1 WATER FEATURE DETAILS

ALTERNATE NO. 8: WEST GARDEN BOARDWALKS
SEE: L-030-P1 MATERIALS SCHEDULE
L-131-P1 MATERIALS PLAN
L-431-P1 ENLARGEMENT PLAN
L-525-P1 DECKING DETAILS
L-542-P1 FURNISHING DETAILS
L-555-P1 LIGHTING DETAILS

ALTERNATE NO. 09: PLAY AREA SURFACING
SEE: L-030-P1 MATERIALS SCHEDULE
L-131-P1 MATERIALS PLAN
L-432-P1 ENLARGEMENT PLAN
L-521-P1 PLAY SURFACE DETAILS
L-545-P1 PLAY LAYOUT PLAN

ALTERNATE NO. 10: PLAY EQUIPMENT
SEE: L-030-P1 FURNISHING SCHEDULE
L-131-P1 FURNISHING PLAN
L-432-P1 ENLARGEMENT PLAN
L-545-P1 PLAY LAYOUT PLAN
L-546-P1 TO L-549-P1 PLAY EQUIPMENT DETAILS

ALTERNATE NO. 11: EAST GARDENS
SEE: L-070-P1 PLANTING SCHEDULE
L-171-P1 PLANTING PLAN
L-462-P1 PLANTING ENLARGEMENT PLAN

ALTERNATE NO. 12: FLOATING DOCK
MEP CONNECTIONS FOR FUTURE FLOATING DOCK

ALTERNATE NO. 13: NOT USED

ALTERNATE NO. 14: NUTT STREET PROMENADE

ALTERNATE NO. 15: PARK SUPPORT BUILDING ADDITIONAL PAVING.

IRN016

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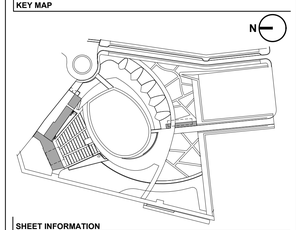


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

GENERAL ALTERNATES PLAN

SHEET NO.

G-007-P1

IRN016

1.0 ENVIRONMENTAL MANAGEMENT PLAN APPROVED BY NC BROWNFIELDS PROGRAM (PAGES 1-15 OF 21)

NORTH CAROLINA BROWNFIELDS PROGRAM
ENVIRONMENTAL MANAGEMENT PLAN

This form is to be used to prepare an Environmental Management Plan (EMP) for projects in the North Carolina Brownfields Program at the direction of a Brownfields project manager.

The EMP is a typical requirement of a Brownfields Agreement (BFA). Its purpose is to clarify actions to be taken during the demolition and construction at Brownfields properties in an effort to avoid delays in the event of the discovery of new contamination sources or other environmental conditions. The EMP provides a means to document redevelopment plans and environmental data for each applicable environmental medium to inform regulatory-compliant decision-making at the site. As much detail as possible should be included in the EMP, including contingency planning for unknowns. Consult your project manager if you have questions.

Prospective Developers and/or their consultants must complete and submit this form and all pertinent attachments, see checklist below, to their Brownfields project manager prior to any earthmoving or other development-related activities that have the potential to disturb soil at the Brownfields Property, including demolition. For the resultant EMP to be valid for use, it must be completed, reviewed by the program, signed by all parties working on the project, and approved by the Brownfields project manager. Failure to comply with the requirements of the EMP could jeopardize project eligibility, or in the event of a completed agreement, be cause for a reopener

So that the EMP provides value in protecting brownfields eligibility and public health, the preparer shall ensure that the following steps have been completed prior to submitting the EMP for review. **Any EMP prepared without completing these steps is premature.**

☒ Site sampling and assessment that meets Brownfields' objectives is complete and has been reviewed and approved by the Brownfields Project Manager.

☒ Specific redevelopment plans, even if conceptual, have been developed for the project, submitted and reviewed by the Brownfields Project Manager.

Please submit, along with the completed EMP form, the following attachments, as relevant and applicable to the proposed redevelopment:

☒ A set of redevelopment plans, including architectural/engineering plans, if available; if not conceptual plans may suffice if updated when detailed plans are drafted. **See Attachment 1**

☒ A figure overlaying redevelopment plans on a map of the extent of contamination for each media. **See Attachment 2 for extent of the Brownfields property. It is assumed that some degree of soil contamination is present under all of the property. The extent of contamination under the Brownfields program is documented in previous reports. It is assumed that all of the portions of the site that received dredge spoil from the Marina that were deposited on the site to the depths shown on Attachment 2 are contaminated with low levels of metals based upon the analyses included in Attachment 2**

☒ Site grading plans that include a cut and fill analysis. **See Attachment 3 Cut and Fill Analysis**

☒ A figure showing the proposed location and depth of impacted soil that would remain on site after construction grading. **See Attachment 2 – All impacted soil will remain on site – see table in Attachment 3 for impacted soil volume to be reused on site**

☒ Any necessary permits for redevelopment (i.e. demolition, etc.). **See Attachment 4 - Approved Sediment and Erosion Control Plan. An Industrial Discharge Permit has been applied for with Cape Fear Public Utility Authority for discharge of dewatering water and is in process. – See Attachment 5 The Stormwater Permit for the project is in the approval process – See Attachment 6.**

☒ A detailed construction schedule that includes timing and phases of construction. **See Attachment 7**

☒ Tabulated data summaries for each impacted media (i.e. soil, groundwater, soil gas, etc.) applicable to the proposed redevelopment. **See Attachment 2**

☒ Figures with the sampling locations and contamination extents for each impacted media applicable to the proposed redevelopment. **See Attachment 2**

☒ A full final grade sampling and analysis plan, if the redevelopment plan is final. **See Sheets ___ and ___ in Attachment 1.**

☒ If known, information about each proposed potential borrow soil source, such as aerial photos, historic site maps, historic Sanborn maps, a site history, necessary for brownfields approval. **To be Determined and Approved by Brownfields**

☒ Information and, analytical data if required, for quarries, or other borrow sources, detailing the type of material proposed for importation to the Brownfields Property. **To be**

Determined and Approved by Brownfields

☒ A work plan for the sampling and analysis of soil to be brought onto the Brownfields Property. Refer to Issue Resolution 15 in Brownfields Program Guidelines. **To be determined and submitted to Brownfields once the sources of materials subject to sampling and analysis are identified**

☒ A map of the Brownfields Property showing the location of soils proposed for export and sampling data from those areas. **No materials from the site are to be exported permanently. See Attachment 3 for the volume of clean cap material to be removed, stored temporarily at a site to be determined, mixed with mulch and brought back on site.**

☐ If a Vapor Mitigation System is required by the Brownfields Program, the Vapor Intrusion Mitigation System (VIMS) plan will be signed and sealed by a NC Professional Engineer. The VIMS Plan may also be submitted under separate cover. **Not Applicable to Site**

GENERAL INFORMATION

Date: 4/18/2019 **Revision Date (if applicable):** Click or tap to enter a date.

Brownfields Assigned Project Name: Aliment Shipping – North Waterfront Park Portion

Brownfields Project Number: 10040-06-65

Brownfields Property Address: Between Harnett and Cowan Streets West of Front Street

Brownfields Property Area (acres): 6.5

Is Brownfields Property Subject to RCRA Permit?..... ☐ Yes ☒ No
If yes, enter Permit No.: Click or tap here to enter text.
Is Brownfields Property Subject to a Solid Waste Permit..... ☐ Yes ☒ No
If yes, enter Permit No.: Click or tap here to enter text.

COMMUNICATIONS

A copy of this EMP shall be distributed to all the parties below as well as any contractors or site workers that may be exposed to site vapors, soil, groundwater, and/or surface water. Additionally, a copy of the EMP shall be maintained at the Brownfields Property during redevelopment activities. NOTE, THE EMP DOES NOT TAKE THE PLACE OF A SITE-SPECIFIC HEALTH AND SAFETY PLAN.

Prospective Developer (PD): City of Wilmington
Contact Person: Amy Beatty
Phone Numbers: Office: 910-341-7854 **Mobile:** Click or tap here to enter text.
Email: amy.beatty@wilmingtonnc.gov

Contractor for PD: Clancy & Theys Construction Company
Contact Person: David Gadaila
Phone Numbers: Office: 910.392.5220 **Mobile:** 910.465.1338
Email: davidgadaila@clancytheys.com

Environmental Consultant: Eagle Resources, P.A.
Contact Person: Eric Lapsley
Phone Numbers: Office: Click or tap here to enter text. **Mobile:** 919-345-1013
Email: elapsley@eagleresources.com

Brownfields Program Project Manager: Samuel P. Watson
Phone Numbers: Office: 910-796-7408 **Mobile:** Click or tap here to enter text.
Email: mailto:samuel.watson@ncdenr.gov

Other DEQ Program Contacts (if applicable, i.e., UST Section, Inactive Hazardous Site Branch, Hazardous Waste, Solid Waste):

Click or tap here to enter text.

NOTIFICATIONS TO THE BROWNFIELDS PROGRAM

Written advance Notification Times to Brownfields Project Manager: Check each box to accept minimum advance notice periods (in calendar days) for each type of onsite task:

On-site assessment or remedial activities:..... **10 days Prior** ☒

Construction or grading start:..... **10 days Prior** ☒

Discovery of stained soil, odors, USTs, buried drums or waste, landfill, or other signs of previously unknown contamination:..... **Within 48 hours** ☒

Implementation of emergency actions (e.g. dewatering, flood or soil erosion control measures in area of contamination, ventilation of work zones):..... **Within 48 hours** ☒

Installation of mitigation systems:..... **10 days Prior** ☒

Other notifications as required by local, state or federal agencies to implement redevelopment activities: (as applicable):..... **Within 30 days** ☒

REDEVELOPMENT PLANS

1) Type of Redevelopment (check all that apply):
☐Residential ☒Recreational ☐Institutional ☐Commercial ☐Office ☐Retail ☐Industrial
☐Other specify:
Click or tap here to enter text.

2) Check the following activities that will be conducted prior to commencing earth-moving activities at the site:
☒ **Review of historic maps (Sanborn Maps, facility maps)**
☒ **Conducting geophysical surveys to evaluate the location of suspect UST, fuel lines, utility lines, etc.**
☒ **Interviews with employees/former employees/facility managers/neighbors**

3) Summary of Redevelopment Plans (MANDATORY: attach detailed plans or conceptual plans, if detailed plans are not available, EMP review without such information would be premature)
Provide brief summary of redevelopment plans, including demolition, removal of building slabs/pavement, grading plans and planned construction of new structures:
See Attachment 1

4) Do plans include demolition of structure(s)?: See Sheet C-101-P1 in Attachment 1
☐ **Yes** ☒ **No** ☐ **Unknown**

☐ **If yes**, please check here to confirm that demolition will be conducted in accordance with applicable legal requirements, including without limitation those related to lead and asbestos abatement that are administered by the Health Hazards Control Unit within the Division of Public Health of the North Carolina Department of Health and Human Services. If available, please provide a copy of your demolition permit.

5) Are sediment and erosion control measures required by federal, state, or local regulations?
☒ Yes ☐ No ☐ Unknown
☒ **If yes**, please check here to confirm that demolition will be conducted in accordance with applicable legal requirements. If soil disturbance is necessary to install sediment and erosion control measures, they may not begin until this EMP is approved.

See Attachment 1 Sheets C-112-P1 and C-113-P-1 Note that 30 ft x 50 ft Vehicle Washdown pads will be included at the construction entrances Each to be 12 inches of #57 stone over non-woven geotextile.
Attachment 1A: Approved S&EC Permit from NC DEQ. (Washdown pad approval from Land Quality Division is in process)

6) Which category of risk-based screening level is used or is anticipated to be specified in the Brownfields Agreement? Note: If children frequent the property, residential screening levels shall be cited in the Brownfields Agreement for comparison purposes.
☐ **Residential** ☒ **Non-Residential or Industrial/Commercial**

7) Schedule for Redevelopment (attach construction schedule):
a) Construction start date: 7/8/2019

b) Anticipated duration (specify activities during each phase):
See Attachment 5

c) Additional phases planned? ☐ **Yes** ☒ **No**
If yes, specify the start date and/or activities if known:
Start Date: Click or tap to enter a date.
Planned Activity:
Click or tap here to enter text.

Start Date: Click or tap to enter a date.
Planned Activity:
Click or tap here to enter text.

Start Date: Click or tap to enter a date.
Planned Activity:
Click or tap here to enter text.

Provide the planned date of occupancy for new buildings: no buildings will be occupied

CONTAMINATED MEDIA

1) Contaminated Media on the Brownfields Property
Part 1. Soil:..... ☒ **Yes** ☐ **No** ☐ **Suspected**
Part 2. Groundwater:..... ☒ **Yes** ☐ **No** ☐ **Suspected**
Part 3. Surface Water:..... ☐ **Yes** ☐ **No** ☐ **Suspected**
Part 4. Sediment:..... ☐ **Yes** ☐ **No** ☒ **Suspected**
Part 5. Soil Vapor:..... ☐ **Yes** ☐ **No** ☐ **Suspected**
Part 6. Sub-Slab Soil Vapor:..... ☐ **Yes** ☐ **No** ☐ **Suspected**
Part 7. Indoor Air:..... ☐ **Yes** ☐ **No** ☐ **Suspected**

2) For the Area of Proposed Redevelopment on the Brownfields Property, attach tabulated data summaries for each impacted media and figure(s) with sample locations.
Entire Brownfields portion of property is underlain by dredge spoil from the Wilmington Marina and is covered with 2 feet of clean cover. See Attachment 2

PART 1. Soil – Please fill out the information below, using detailed site plans, if available, or estimate using known areas of contaminated soil and a conceptual redevelopment plan. Provide a figure overlaying new construction onto figure showing contaminated soil and groundwater locations.

1) Known or suspected contaminants in soil (list general groups of contaminants):
See Attachmebt 2

2) Depth of known or suspected contaminants (feet):
6-10 feet See Attachment 2

3) Area of soil disturbed by redevelopment (square feet):
Approximately 6 acres

4) Depths of soil to be excavated (feet):
0 to 9 feet

5) Estimated volume of soil (cubic yards) to be excavated (attach grading plan):
See Attachment 3

6) Estimated volume of excavated soil (cubic yards) anticipated to be impacted by contaminants:
Approximately 3,600 CY – See Attachment 3

7) Estimated volume of contaminated soil expected to be disposed of offsite, if applicable:
None

Part 1.A. MANAGING ONSITE SOIL

If soil is anticipated to be excavated from the Brownfield Property, relocated on the Brownfields Property, or otherwise disturbed during site grading or other redevelopment activities, please provide a grading plan that clearly illustrates areas of cut and fill (approximate areas & volumes are acceptable, if only preliminary data available).

1) HAZARDOUS WASTE DETERMINATION:

a) Does the soil contain a LISTED WASTE as defined in the North Carolina Hazardous Waste Section under 40 CFR Part 261.31-261.35?..... ☐Yes ☒No

☐ **If yes, explain why below, including the level of knowledge regarding processes generating the waste (include pertinent analytical results as needed).**
Click or tap here to enter text.

☐ **If yes, do the soils exceed the "Contained-Out" levels in Attachment 1 of the North Carolina Contained-In Policy?**..... ☐ Yes ☐ No

b) NOTE: IF SOIL MEETS THE DEFINITION OF A LISTED HAZARDOUS WASTE AND EXCEEDS THE CONTAINED-OUT LEVELS IN ATTACHMENT 1 TO THE NORTH CAROLINA CONTAINED-IN POLICY THE SOIL MAY NOT BE RE-USED ON SITE AND MUST BE DISPOSED OF IN ACCORDANCE WITH DEQ HAZARDOUS WASTE SECTION RULES AND REGULATIONS.

c) Does the soil contain a CHARACTERISTIC WASTE?..... ☐ Yes ☒ No

☐ **If yes,** mark reason(s) why below (and include pertinent analytical results).
☐ **Ignitability** Click or tap here to enter text.
☐ **Corrosivity** Click or tap here to enter text.
☐ **Reactivity** Click or tap here to enter text.
☐ **Toxicity** Click or tap here to enter text.
☐ **TCLP results** Click or tap here to enter text.
☐ **Rule of 20 results** (20 times total analytical results for an individual hazardous constituent on TCLP list cannot, by test method, exceed regulatory TCLP standard)
Click or tap here to enter text.

☐ **If no,** explain rationale:
Click or tap here to enter text.

d) NOTE: IF SOIL MEETS THE DEFINITION OF A CHARACTERISTIC HAZARDOUS WASTE, THE SOIL MAYNOT BE RE-USED ON SITE AND MUST BE DISPOSED OF IN ACCORDANCE WITH DEQ HAZARDOUS WASTE SECTION RULES AND REGULATIONS.

2) Screening criteria by which soil disposition decisions will be made (e.g., left in place, capped in place with low permeability barrier, removed to onsite location and capped, removed offsite):
☐ **Preliminary Health-Based Residential SRGs**
☐ Preliminary Health-Based Industrial/Commercial SRGs
☒ **Division of Waste Management Risk Calculator (For Brownfields Properties Only)**
☐ **Site-specific risk-based cleanup level. Please provide details of methods used for determination/explanation.**
Click or tap here to enter text.

Additional comments:
Click or tap here to enter text.

3) If known impacted soil is proposed to be reused within the Brownfields Property Boundary, please check the measures that will be utilized to ensure safe placement and documentation of same. Please attach a proposed location diagram/site map.
☐ Provide documentation of analytical report(s) to Brownfields Project Manager
☒ **Provide documentation of final location, thickness and depth of relocated soil on site map to Brownfields Project Manager once known**
☐ Geotextile to mark depth of fill material.
Provide description of material:
See drawing Sheet LS-003-P1 in Attachment 1
☒ **Manage soil under impervious cap** ☒ **or clean fill** ☒
☒ **Describe cap or fill:**
2 feet of clean sand fill mixed with organic mulch. Clean sand fill will comprise 1 foot of existing on-site clean cap removed to off-site facility supplemented with additional clean sand and organic mulch. Sources of additional clean sand and organic mulch to be identified, sampled, and tested for the constituents listed in the attached table and results provided to NC Brownfields contact person. Such materials may not be placed on site without approval of NC Brownfields
☐ Confer with NC BF Project Manager if Brownfield Flat must be revised (or re-recorded if actions are Post-Recordation).
☐ **GPS the location and provide site map with final location.**
☐ **Other. Please provide a description of the measure:**
Click or tap here to enter text.

4) Please describe the following action(s) to be taken during and following excavation and management of site soils:
Management of fugitive dust from site
☐ **Yes, describe the method will include:**
Periodic wetting of dry areas subject to traffic or other activities that produce potential for

fugitive dust

☐ **No, explain rationale:**
Click or tap here to enter text.

Field Screening of site soil
☐ **Yes, describe the field screening method, frequency of field screening, person conducting field screening**
Click or tap here to enter text.
☒ **No, explain rationale:**
Excavated contaminated materials will be replaced on site and do not need screening

Soil Sample Collection
☐ **Yes, describe the sampling method (e.g., in-situ grab, composite, stockpile, etc.):**
☒ **No, explain rationale:**
No contaminated materials are to be removed from the site

If soil samples are collected for analysis, please check the applicable chemical analytes:
☐ **Volatile organic compounds (VOCs) by EPA Method 8260**
☐ **Semi-volatile organic compounds (SVOCs) by EPA Method 8270**
☐ **Metals RCRA List (8)** (arsenic, barium, cadmium, chromium, mercury, lead, selenium and silver): Specify Analytical Method Number(s):
Click or tap here to enter text.
☐ **Pesticides:** Specify Analytical Method Number(s):
Click or tap here to enter text.
☐ **PCBs:** Specify Analytical Method Number(s):
Click or tap here to enter text.
☐ **Other Constituents & Respective Analytical Method(s)** (i.e. Hexavalent Chromium, Herbicides, etc.): Specify Analytical Method Number(s):
Click or tap here to enter text.

☒ **Check to confirm that stockpiling of known or suspected impacted soils will be conducted in accordance with Figure 1 of this EMP. Stockpile methodology should provide erosion control, prohibiting contact between surface water/precipitation and contaminated soil, and preventing contaminated runoff. Explain any variances or provide additional details as needed:**
See Attachment 4

☐ **Final grade sampling of exposed native soil (i.e., soil that will not be under buildings or permanent**

hardscape). Select chemical analyses for final grade samples with check boxes below (Check all that apply):
☐ **Volatile organic compounds (VOCs) by EPA Method 8260**
☐ **Semi-volatile organic compounds (SVOCs) by EPA Method 8270**
☐ **Metals RCRA List (8)** (arsenic, barium, cadmium, chromium, mercury, lead, selenium and silver): **Specify Analytical Method Number(s)**
Click or tap here to enter text.
☐ **Pesticides: Specify Analytical Method Number(s):**
Click or tap here to enter text.
☐ **PCBs: Specify Analytical Method Number(s):**
Click or tap here to enter text.
☐ **Other Constituents & Respective Analytical Method(s) (i.e. Hexavalent Chromium, Herbicides, etc.):**
Click or tap here to enter text.

Please provide a scope of work for final grade sampling, including a diagram of soil sampling locations, number of samples to be collected, and brief sampling methodology. Samples should be collected from 0-2 ft below ground surface, with the exception of VOCs which should be taken from 1-2 ft below ground surface. Alternatively, a work plan for final grade sampling may be submitted under separate cover.
Click

☒ ***If final grade sampling was NOT selected please explain rationale:***
final grade will be established using 2 feet of clean sand fill mixed with organic mulch. In all areas not covered by hardscape. Clean sand fill will comprise 1 foot of existing on-site clean cap removed to off-site facility supplemented with additional clean sand and organic mulch. Sources of additional clean sand and organic mulch to be identified, sampled, and tested for the constituents listed in the attached table and results provided to NC Brownfields contact person. Such materials may not be placed on site without approval of NC Brownfields.

Part 1.B. IMPORTED FILL SOIL

NO SOIL MAY BE BROUGHT ONTO THE BROWNFIELDS PROPERTY WITHOUT PRIOR APPROVAL FROM THE BROWNFIELDS PROGRAM. According to the Brownfields IR 15, "Documenting imported soil (by sampling, analysis, and reporting in accordance with review and written approval in advance by the Brownfields Program), will safeguard the liability protections provided by the brownfields agreement and is in the best interest of the prospective developer/property owner."

Requirements for importing fill

1) Will fill soil be imported to the site?..... ☒ **Yes** ☐ **No** ☐ **Unknown**

2) If yes, what is the estimated volume of fill soil to be imported?
Approximately 1,900 CY of mulch – See Attachment 3

3) If yes, what is the anticipated depth that fill soil will be placed at the property? ***(if a range of depths, please list the range.)***
Two feet to 12 feet

4) Provide the source of fill, including: location, site history, nearby environmental concerns, etc.
Attach aerial photos, map, historic Sanborn maps and a borrow source site history:
Clean sand fill will comprise 1 foot of existing on-site clean cap removed to off-site facility supplemented with additional clean sand and organic mulch. Sources of additional clean sand and organic mulch to be identified, sampled, and tested for the constituents listed in the attached table and results provided to NC Brownfields contact person. Such materials may not be placed on site without approval of NC Brownfields.
The proposed sources of organic material are to be determine by contractor , tested and approved by Brownfields.
The proposed sources of inorganic sand material are to be determine by contractor , tested and approved by Brownfields.

5) PRIOR TO ITS PLACEMENT AT THE BROWNFIELDS PROPERTY, provide a plan to analyze fill soil to demonstrate that it meets acceptable standards applicable to the site and can be approved for use at the Brownfields property.
To be provided by contractor once the source of muck is identified.

6) Please check the applicable chemical analytes for fill soil samples. (Check all that apply):
☒ **Volatile organic compounds (VOCs) by EPA Method 8260**
☒ **Semi-volatile organic compounds (SVOCs) by EPA Method 8270**
☒ **Metals RCRA List (8)** (arsenic, barium, cadmium, chromium, mercury, lead, selenium and silver): **Specify Analytical Method Number(s):**
EPA Method 6020 / 200.8
☐ **Pesticides: Specify Analytical Method Number(s):**
Click or tap here to enter text.

☐ **PCBs: Specify Analytical Method Number(s):**
Click or tap here to enter text.
☐ **Other Constituents & Respective Analytical Method(s) (i.e. Hexavalent Chromium, Herbicides, etc.):**
Click or tap here to enter text.

7) The scope of work for import fill samples may be provided below or in a Work Plan submitted separately for DEQ review and approval. Attach specific location maps for in-situ borrow sites. If using a quarry, provide information on the type of material to be brought onto the Brownfields Property.
To be provided by once muck source is identified

Part 1.C. EXPORTED SOIL

NO SOIL MAY LEAVE THE BROWNFIELDS PROPERTY WITHOUT APPROVAL FROM THE BROWNFIELDS PROGRAM. FAILURE TO OBTAIN APPROVAL MAY VIOLATE A BROWNFIELDS AGREEMENT CAUSING A REOPENER OR JEOPARDIZING ELIGIBILITY IN THE PROGRAM, ENDANGERING LIABILITY PROTECTIONS AND MAKING SAID ACTION POSSIBLY SUBJECT TO ENFORCEMENT. JUSTIFICATIONS PROVIDED BELOW MUST BE APPROVED BY THE PROGRAM IN WRITING PRIOR TO COMPLETING TRANSPORT ACTIVITIES. Please refer to Brownfields IR 15 for additional details.

1) If export from a Brownfields Property is anticipated, please provide details regarding the proposed export actions. Volume of exported soil, depths, location from which soil will be excavated on site, related sampling results, etc. Provide a site map with locations of export and sampling results included.
Export will be limited to approximately 9,100 CY of the existing clean cap that will be removed prior to any other construction and temporarily stored off-site for mixing with organic mulch. See Attachment 3.

2) To what type of facility will the export Brownfields soil be sent? Not Applicable
☐ **Subtitle D/Municipal Solid Waste Landfill** (analytical program to be determined by landfill)
☐ **Permitted but Unlined Landfill** (i.e. LCID, C&D, etc.) Analytical program to be determined by the accepting Landfill;
☐ **Landfarm or other treatment facility**
☐ **Use as fill at another suitable Brownfields Property –** determination that a site is suitable will require, at a minimum, that similar concentrations of the same or similar contaminants already exist at both sites, use of impacted soil will not increase the potential for risk to human health and the environment at the receiving Brownfields property, and that a record of the acceptance of such soil from the property owner of the receiving site is provided to Brownfields. Please provide additional details below.
☐ **Use as Beneficial Fill off-site at a non-Brownfields Property -** Please provide documentation of approval from the property owner for receipt of fill material. This will also require approval by the DEQ Solid Waste Section. Additional information is provided in IR 15. Please provide additional details below.
3) Additional Details: (If transfer of soil to another property is requested above, please provide details related to the proposed plans).
Click or tap here to enter text.

Part 1.D. MANAGEMENT OF UTILITY TRENCHES

☐ **Install liner between native impacted soils and base of utility trench before filling with clean fill (Preferred)**
☒ **Last out, first in principle for impacted soils (if soil can safely be reused onsite and is not a hazardous waste), i.e., impacted soils are placed back at approximately the depths they were removed from such that impacted soil is not placed at a greater depth than the original depth from which it was excavated.**
☐ Evaluate whether necessary to install barriers in conduits to prevent soil vapor transport, and/or degradation of conduit materials due to direct impact with contaminants?
☐ **If yes,** provide specifications on barrier materials:
Click or tap here to enter text.
☒ **If no**, include rationale here:
Previous IR Investigations show no vapor hazard under site

Other comments regarding managing impacted soil in utility trenches:
Click or tap here to enter text.

PART 2. GROUNDWATER – Please fill out the information below.

1) What is the depth to groundwater at the Brownfields Property?
Perched watertable at 2-3 feet permanent water table at 8 to 10 feet

2) Is groundwater known to be contaminated by ☒onsite ☐offsite ☐both or ☐**unknown sources? Describe source(s).**
Previous usage of site and placement of dredge spoils

3) What is the direction of groundwater flow at the Brownfields Property?
East to west towards the Northeast Cape Fear River

4) Will groundwater likely be encountered during planned redevelopment activities?
☒Yes ☐No
If yes, describe these activities:
Excavation of materials adjacent to the NE Cape Fear River, foundation excavations

Regardless of the answer in the event that contaminated groundwater is encountered during redevelopment activities (even if no is checked above), list activities for contingent management of groundwater (e.g., dewatering of groundwater from excavations or foundations, containerizing, offsite disposal, discharge to sanitary sewer, NPDES permit, or sampling procedures).
To be disposed of under Industrial Discharge Permit to CFPUA sanitary sewer

5) Are monitoring wells currently present on the Brownfields Property?.....☒**Yes** ☐**No**
If yes, are any monitoring wells routinely monitored through DEQ or other agencies?..... ☐**Yes** ☐**No**

6) Please check methods to be utilized in the management of known and previously unidentified wells.
☒ **Abandonment of site monitoring wells in accordance with all applicable regulations. It is the Brownfields Program's intent to allow proper abandonment of well(s) as specified in the Brownfields Agreement, except if required for active monitoring through another section of DEQ or the EPA.**
☐ **Location of existing monitoring wells marked**
☐ **Existing monitoring wells protected from disturbance**
☐ **Newly identified monitoring wells will be marked and protected from further disturbance until notification to DEQ Brownfields can be made and approval for abandonment is given.**

7) Please provide additional details as needed:
Click or tap here to enter text.

Please note, disturbance of existing site monitoring wells without approval by DEQ is not permissible. If monitoring wells are damaged and/or destroyed, DEQ may require that the PO be responsible for replacement of the well.

PART 3. SURFACE WATER –Please fill out the information below.

1) Is surface water present at the property? ☒ **Yes** ☐ **No**

2) Attach a map showing the location of surface water at the Brownfields Property. **See attached site map in Attachment 2**

3) Is surface water at the property known to be contaminated? ☐ **Yes** ☒ **No**

4) Will workers or the public be in contact with surface water during planned redevelopment activities? ☒ **Yes** ☐ **No**

5) In the event that contaminated surface water is encountered during redevelopment activities, or clean surface water enters open excavations, list activities for management of such events (e.g. flooding, contaminated surface water run-off, stormwater impacts):
Only equipment contact during excavation of embayment into site from NE Cape Fear River

PART 4. SEDIMENT – Please fill out the information below.

1) Are sediment sources present on the property? ☒ **Yes** ☐ **No**

2) If yes, is sediment at the property known to be contaminated: ☒ **Yes** ☐ **No**

3) Will workers or the public be in contact with sediment during planned redevelopment activities? ☐ **Yes** ☒ **No**

4) Attach a map showing location of known contaminated sediment at the property. **See Attachment 2**

CONCLUDED ON SHEET G 008B-P1

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landisplc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

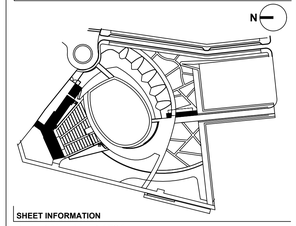
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale:

SHEET TITLE

ENVIRONMENTAL MANAGEMENT PLAN

SHEET NO.

G-008A-P1

IRN016

IRN016

1.0 ENVIRONMENTAL MANAGEMENT PLAN APPROVED BY NC BROWNFIELDS PROGRAM (PAGES 16-21 OF 21)

5) **In the event that contaminated sediment is encountered during redevelopment activities, list activities for management of such events (stream bed disturbance):**
See Approved Sediment and Erosion Control Plan in Attachment 4

PART 5. SOIL VAPOR – Please fill out the information below.

1) **Do concentrations of volatile organic compounds at the Brownfields property exceed the following vapor intrusion screening levels (current version) in the following media:**
IHSB Residential Screening Levels:
Soil Vapor:……☐ **Yes** ☒ **No** ☐ **Unknown**
Groundwater:…☐ **Yes** ☒ **No** ☐ **Unknown**
IHSB Industrial/Commercial Screening Levels:
Soil Vapor:……☐ **Yes** ☒ **No** ☐ **Unknown**
Groundwater:…☐ **Yes** ☒ **No** ☐ **Unknown**
2) **Attach a map showing the locations of soil vapor contaminants that exceed site screening levels.**
3) **If applicable, at what depth(s) is soil vapor known to be contaminated?**
Click or tap here to enter text.
4) **Will workers encounter contaminated soil vapor during planned redevelopment activities?**
☐ **Yes** ☒ **No** ☐ **Unknown**
5) **In the event that contaminated soil vapor is encountered during redevelopment activities (trenches, manways, basements or other subsurface work,) list activities for management of such contact:**
Click or tap here to enter text.

PART 6. SUB-SLAB SOIL VAPOR – Please fill out the information below if existing buildings or foundations will be retained in the redevelopment.

1) **Are sub-slab soil vapor data available for the Brownfields Property?** ☐ **Yes** ☒ **No** ☐ **Unknown**
2) **If data indicate that sub-slab soil vapor concentrations exceed screening levels, attach a map showing the location of these exceedances.**
3) **At what depth(s) is sub-slab soil vapor known to be contaminated?** ☐**0-6 inches** ☐**Other, please describe:**
Click or tap here to enter text.
4) **Will workers encounter contaminated sub-slab soil vapor during planned redevelopment activities?**
☐ **Yes** ☒ **No** ☐ **Unknown**
5) **In the event that contaminated soil vapor is encountered during redevelopment activities,list activities for management of such contact**
Click or tap here to enter text.

PART 7. INDOOR AIR – Please fill out the information below.

1) **Are indoor air data available for the Brownfields Property?** ☐ **Yes** ☒ **No** ☐ **Unknown**
2) **Attach a map showing the location(s) where indoor air contaminants exceed site screening levels.**
3) **If the structures where indoor air has been documented to exceed risk-based screening levels will not be demolished as part of redevelopment activities, will workers encounter contaminated indoor air during planned redevelopment activities?** ☐ **Yes** ☐ **No** ☐ **Unknown Not Applicable**
4) **In the event that contaminated indoor air is encountered during redevelopment activities, list activities for management of such contact:**
Click or tap here to enter text.

VAPOR INTRUSION MITIGATION SYSTEM – Please fill out the information below.

Is a vapor intrusion mitigation system (VIMS) proposed for this BrownfieldsProperty?
☐ **Yes** ☒ **No** ☐ **Unknown**

If yes, ☐ **VIMS Plan Attached or** ☐ **VIMS Plan to be submitted separately**
If submitted separately provide date:
Click or tap here to enter text.

VIMS Plan shall be signed and sealed by a NC Professional Engineer

If no, please provide a brief rationale as to why no vapor mitigation plan is warranted:
Click or tap here to enter text.

CONTINGENCY PLAN – encountering unknown tanks, drums, or other waste materials

In this section please provide actions that will be taken to identify or manage unknown potential new sources of contamination. During redevelopment activities, it is not uncommon that unknown tanks, drums, fuel lines, landfills, orother waste materials are encountered. Notification to DEQ Brownfields Project Manager, UST Section, Fire Department, and/or other officials, as necessary and appropriate, is required when new potential source(s) of contamination are discovered. These Notification Requirements were outlined on Page 1 of this EMP.

Should potentially impacted materials be identified that are inconsistent with known site impacts, the DEQ Brownfields Project Manager will be notified and a sampling plan will be prepared based on the EMP requirements and site-specific factors. Samples will generally be collected to document the location of the potential impacts.

Check the following chemical analysis that are to be conducted on newly identified releases:
☒ **Volatile organic compounds (VOCs) by EPA Method 8260**

☒ **Semi-volatile organic compounds (SVOCs) by EPA Method 8270**
☒ **Metals RCRA List (8)** (arsenic, barium, cadmium, chromium, mercury, lead, selenium and silver) EPA 6020 / 200.8

☐ **Pesticides:** Specify Analytical Method Number(s):
Click or tap here to enter text.

☐ **PCBs:** Specify Analytical Method Number(s):
Click or tap here to enter text.

☐ **Other Constituents & Analytical Method(s)** (i.e. Hexavalent Chromium, Herbicides, etc.)
Please note, if field observations indicate the need for additional analyses, they should be conducted, even if not listed here.
Click or tap here to enter text.

Please provide details on the proposed methods of managing the following commonly encountered issues during redevelopment of Brownfields Properties.

Click or tap here to enter text.

Underground Storage Tanks:
Click or tap here to enter text.

Sub-Grade Feature/Pit:
Click or tap here to enter text.

Buried Waste Material:
Click or tap here to enter text.

Re-Use of Impacted Soils On-Site:
Click or tap here to enter text.

If unknown, impacted soil is identified on-site, management on-site can be considered after the project team provides the necessary information, outlined in Part 1.A. Item 11, for Brownfields Project Manager approval prior to final placement on-site.

If other potential contingency plans are pertinent, please provide other details or scenarios as needed below:
Click or tap here to enter text.

POST-REDEVELOPMENT REPORTING

☒ Check this box to acknowledge that a Redevelopment Summary Report will be required for the project. If the project duration is longer than one year, an annual update is required and will be due by January 31 of each year, or 30 days after each one-year anniversary of the effective date of this EMP (as agreed upon with the Project Manager). These reports will be required for as long as physical redevelopment of the

Brownfields Property continues, except that the final Redevelopment Summary Report will be submitted within 90 days after completion of redevelopment. Based on the estimated construction schedule, the first Redevelopment Summary Report is anticipated to be submitted on Click or tap to enter a date.

The Redevelopment Summary Report shall include environment-related activities since the last report, with a summary and drawings, that describes:

1. actions taken on the Brownfields Property;
2. soil grading and cut and fill actions;
3. methodology(ies) employed for field screening, sampling and laboratory analysis of environmental media;
4. stockpiling, containerizing, decontaminating, treating, handling, laboratory analysis and ultimate disposition of any soil, groundwater or other materials suspected or confirmed to be contaminated with regulated substances; and
5. removal of any contaminated soil, water or other contaminated materials (for example, concrete, demolition debris) from the Brownfields Property (copies of all legally required manifests shall be included).

☐ Check box to acknowledge consent to provide a NC licensed P.G. or P.E. sealed, Redevelopment Summary Report in compliance with the site's Brownfields Agreement.

APPROVAL SIGNATURES

Brownfields Project Number: 10040-06-65

Brownfields Project Name: Almont Stripping – North Waterfront Park Portion

Prospective Developer: Click or tap here to enter text. **Date** 5/8/2019
Printed Name/Title/Company City of Wilmington

Consultant: Click or tap here to enter text. **Date** 5/7/2019
Printed Name/Title/Company Eric G. Lapraik/P.E.

Brownfields Project Manager: Click or tap here to enter text. **Date** 5/9/2019 Click or tap to enter a date.

Figure 1
NCBP Diagram for Temporary Containment of Impacted or Potentially Impacted Soil

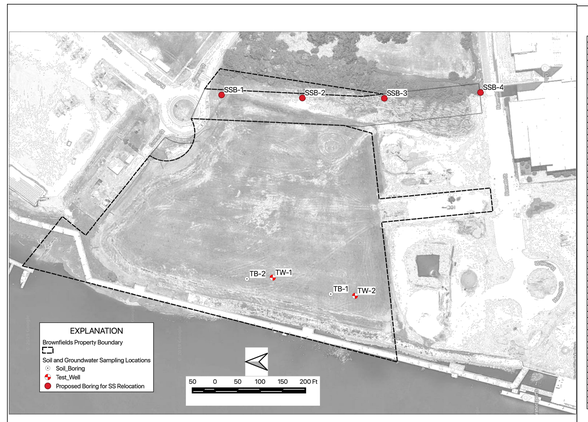
Cross-Section View



Map View

Note: Adapted from NCDEQ/UST Section "Guidelines for In Situ Petroleum-Contaminated Soil Remediation" dated December 5, 2013

2.0 LOCATIONS AND DATA FOR SOIL & GROUNDWATER SAMPLES REGULATED CONSTITUENTS (see Note 2.0)



2.0 RESULTS OF TESTING OF SOIL AND GROUNDWATER SAMPLES FROM SANITARY SEWER RELOCATION BORINGS WILL BE PROVIDED AS ADDITIONAL INFORMATION

Soils and Groundwater

Gen.Test Analysis	Client	S&EC (Soil & Environmental Consultants, PA)					
Analytical Testing	Attention	Don Wells					
Work Order: 19L1	Project Name	NWP					
Report Date: 1/31/	Project Number	13300.56					
Note: This is not the original data. Please refer to PDF / Hardcopy report							
General Method	Analyte	Units					
LAB ID		19L1070 - 01	19L1070-02	19L1070-03	19L1070-04	19L1070-05	19L1070-06
CLIENT ID		TB-2	TB-1	TW-1	TW-2	TW-1	TW-2
DATE SAMPLED		12/12/19	12/13/19	12/13/19	12/13/19	12/13/19	12/13/19
MATRIX		Soil	Soil	Soil	Soil	Water	Water
VOCs by GCMS	Acetone	µg/L				<66	<97
VOCs by GCMS	Acetone	mg/kg	0.051	0.083	0.052	0.042	<2.9	<5.8
VOCs by GCMS	Acrylonitrile	µg/L					<0.0039	<0.0039
VOCs by GCMS	Acrylonitrile	mg/kg	<0.0039	<0.0039	<0.0039	<0.0039	<0.53	<1.1
VOCs by GCMS	tert-Amyl Methyl Ether (TAME)	µg/L						
VOCs by GCMS	tert-Amyl Methyl Ether (TAME)	mg/kg	<0.00078	<0.00073	<0.00073	<0.00071	<0.00071	<0.00071
VOCs by GCMS	Benzene	µg/L					<0.60	<1.9
VOCs by GCMS	Benzene	mg/kg	<0.00078	<0.00073	<0.00073	<0.00071	<0.75	<1.5
VOCs by GCMS	Bromobenzene	µg/L	<0.00089	<0.00083	<0.00083	<0.00081	<0.00081	
VOCs by GCMS	Bromobenzene	mg/kg					<1.1	<2.2
VOCs by GCMS	Bromochloromethane	µg/L	<0.0018	<0.0015	<0.0014	<0.0014		
VOCs by GCMS	Bromochloromethane	mg/kg					<1.5	<3.0
VOCs by GCMS	Bromodichloromethane	µg/L	<0.00067	<0.00062	<0.00062	<0.00061	<0.00061	
VOCs by GCMS	Bromodichloromethane	mg/kg					<1.0	<2.1
VOCs by GCMS	Bromoform	µg/L	<0.0016	<0.0015	<0.0014	<0.0014		
VOCs by GCMS	Bromoform	mg/kg					<1.7	<9.4
VOCs by GCMS	Bromomethane	µg/L	<0.0047	<0.0044	<0.0043	<0.0043		
VOCs by GCMS	Bromomethane	mg/kg					<12	<24
VOCs by GCMS	2-Butanone (MEK)	µg/L	<0.035	<0.018	<0.018	<0.018		
VOCs by GCMS	tert-Butyl Alcohol (TBA)	µg/L					<11	<22
VOCs by GCMS	tert-Butyl Alcohol (TBA)	mg/kg	<0.023	<0.022	<0.021	<0.021		
VOCs by GCMS	n-Butylbenzene	µg/L					<0.75	<1.5
VOCs by GCMS	n-Butylbenzene	mg/kg	<0.00078	<0.00073	<0.00073	<0.00071		
VOCs by GCMS	sec-Butylbenzene	µg/L					<0.65	<1.3
VOCs by GCMS	sec-Butylbenzene	mg/kg	<0.0011	<0.0010	<0.0013	<0.0010		
VOCs by GCMS	tert-Butylbenzene	µg/L					<0.60	<1.2
VOCs by GCMS	tert-Butylbenzene	mg/kg	<0.0010	<0.00093	<0.00092	<0.00091		
VOCs by GCMS	tert-Butyl Ethyl Ether (TBEE)	µg/L					<0.48	<0.95
VOCs by GCMS	tert-Butyl Ethyl Ether (TBEE)	mg/kg	<0.00067	<0.00062	<0.00062	<0.00061		
VOCs by GCMS	Carbon Disulfide	µg/L					<5.1	<10
VOCs by GCMS	Carbon Disulfide	mg/kg	<0.0048	<0.0045	<0.0044	<0.0044		
VOCs by GCMS	Carbon Tetrachloride	µg/L					<1.2	<2.5
VOCs by GCMS	Carbon Tetrachloride	mg/kg	<0.00088	<0.00083	<0.00082	<0.00081		
VOCs by GCMS	Chlorobenzene	µg/L					<0.80	<1.6
VOCs by GCMS	Chlorobenzene	mg/kg	<0.00078	<0.00073	<0.00073	<0.00071		
VOCs by GCMS	Chlorodibromomethane	µg/L					<0.52	<1.0
VOCs by GCMS	Chlorodibromomethane	mg/kg	<0.00078	<0.00073	<0.00073	<0.00071		
VOCs by GCMS	Chloroethane	µg/L					<1.4	<2.8
VOCs by GCMS	Chloroethane	mg/kg	<0.0017	<0.0016	<0.0013	<0.0015		
VOCs by GCMS	Chloroform	µg/L					<1.1	<2.2
VOCs by GCMS	Chloroform	mg/kg	<0.00078	<0.00073	<0.00073	<0.00071		
VOCs by GCMS	Chloromethane	µg/L					<2.8	<5.5
VOCs by GCMS	Chloromethane	mg/kg	<0.0071	<0.0066	<0.0066	<0.0065		
VOCs by GCMS	2-Chlorotoluene	µg/L					<0.60	<1.2
VOCs by GCMS	2-Chlorotoluene	mg/kg	<0.00080	<0.00083	<0.00082	<0.00081		
VOCs by GCMS	4-Chlorotoluene	µg/L					<0.70	<1.4
VOCs by GCMS	4-Chlorotoluene	mg/kg	<0.00080	<0.00083	<0.00082	<0.00081		

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VOCs by GCMS	n-Propylbenzene	µg/L					<1.5	<1.5
VOCs by GCMS	n-Propylbenzene	mg/kg	<0.00078	<0.00073	<0.00072	<0.00071		
VOCs by GCMS	Styrene	µg/L					<0.75	<1.5
VOCs by GCMS	Styrene	mg/kg	<0.00097	<0.00092	<0.00092	<0.00091		
VOCs by GCMS	1,1,1,2-Tetrachloroethane	µg/L					<0.50	<1.0
VOCs by GCMS	1,1,1,2-Tetrachloroethane	mg/kg	<0.0020	<0.0019	<0.0018	<0.0018		
VOCs by GCMS	1,1,2,2-Tetrachloroethane	µg/L					<0.80	<1.6
VOCs by GCMS	1,1,2,2-Tetrachloroethane	mg/kg	<0.0010	<0.00093	<0.00092	<0.00091		
VOCs by GCMS	Tetrachloroethylene	µg/L					<1.4	<2.7
VOCs by GCMS	Tetrachloroethylene	mg/kg	<0.0015	<0.0013	<0.0013	<0.0013		
VOCs by GCMS	Tetrahydrofuran	µg/L					<5.4	<11
VOCs by GCMS	Tetrahydrofuran	mg/kg	<0.0025	<0.0023	<0.0023	<0.0022		
VOCs by GCMS	Toluene	µg/L					<0.85	<1.7
VOCs by GCMS	Toluene	mg/kg	<0.00099	<0.00093	<0.00092	<0.00091		
VOCs by GCMS	1,2,3-Trichlorobenzene	µg/L					<0.70	<1.4
VOCs by GCMS	1,2,3-Trichlorobenzene	mg/kg	<0.0011	<0.0010	<0.0012	<0.0010		
VOCs by GCMS	1,2,4-Trichlorobenzene	µg/L					<0.95	<1.9
VOCs by GCMS	1,2,4-Trichlorobenzene	mg/kg	<0.00099	<0.00093	<0.00092	<0.00091		
VOCs by GCMS	1,1,2-Trichloroethane	µg/L					<0.85	<1.7
VOCs by GCMS	1,1,2-Trichloroethane	mg/kg	<0.00078	<0.00073	<0.00072	<0.00071		
VOCs by GCMS	1,1,1-Trichloroethane	µg/L					<1.4	<1.4
VOCs by GCMS	1,1,1-Trichloroethane	mg/kg	<0.0011	<0.0010	<0.0010	<0.0010		
VOCs by GCMS	Trichloroethylene	µg/L					<1.2	<2.4
VOCs by GCMS	Trichloroethylene	mg/kg	<0.0013	<0.0012	<0.0012	<0.0012		
VOCs by GCMS	Trichlorofluoromethane (Freon 11)	µg/L					<1.1	<2.2
VOCs by GCMS	Trichlorofluoromethane (Freon 11)	mg/kg	<0.0012	<0.0011	<0.0011	<0.0011		
VOCs by GCMS	1,2,3-Trichloropropane	µg/L					<0.98	<2.0
VOCs by GCMS	1,2,3-Trichloropropane	mg/kg	<0.0012	<0.0011	<0.0011	<0.0011		
VOCs by GCMS	1,2,3-Trichloro-1,2,2-trifluoroethane	µg/L					<0.90	<1.8
VOCs by GCMS	1,2,3-Trichloro-1,2,2-trifluoroethane	mg/kg	<0.0010	<0.00093	<0.00092	<0.00091		
VOCs by GCMS	1,2,4-Trimethylbenzene	µg/L					<0.65	<1.3
VOCs by GCMS	1,2,4-Trimethylbenzene	mg/kg	<0.00097	<0.00092	<0.00092	<0.00091		
VOCs by GCMS	1,3,5-Trimethylbenzene	µg/L					<0.56	<1.1
VOCs by GCMS	1,3,5-Trimethylbenzene	mg/kg	<0.0012	<0.0011	<0.0011	<0.0011		
VOCs by GCMS	Vinyl Chloride	µg/L					<1.3	<2.6
VOCs by GCMS	Vinyl Chloride	mg/kg	<0.0019	<0.0018	<0.0017	<0.0017		
VOCs by GCMS	m,p-Xylene	µg/L					<0.96	<1.9
VOCs by GCMS	m,p-Xylene	mg/kg	<0.00078	<0.00073	<0.00072	<0.00071		
VOCs by GCMS	o-Xylene	µg/L					<0.56	<1.1
VOCs by GCMS	o-Xylene	mg/kg	<0.00078	<0.00073	<0.00072	<0.00071		
VOCs by GCMS	Xylenes, Total	µg/L	0.69	0.6	1.5	0.5	6.1	<1.5
SVOCs by GCMS	Acenaphthene	µg/L					<1.4	<1.4
SVOCs by GCMS	Acenaphthene	mg/kg	<0.071	<0.069	<0.068	<0.066		
SVOCs by GCMS	Acetophenone	µg/L					<1.7	<1.7
SVOCs by GCMS	Acetophenone	mg/kg	<0.084	<0.082	<0.079	<0.078		
SVOCs by GCMS	Aniline	µg/L					<2.5	<2.5
SVOCs by GCMS	Aniline	mg/kg	<0.12	<0.12	<0.11	<0.11		
SVOCs by GCMS	Anthracene	µg/L					<1.5	<1.5
SVOCs by GCMS	Anthracene	mg/kg	0.47	0.41	3.6	0.095		
SVOCs by GCMS	Benzidine	µg/L					<8.7	<8.7
SVOCs by GCMS	Benzidine	mg/kg	<0.53	<0.52	<0.50	<0.49		
SVOCs by GCMS	Benzo(a)anthracene	µg/L					<1.5	<1.5
SVOCs by GCMS	Benzo(a)anthracene	mg/kg	0.92	0.68	1.9	0.37		
SVOCs by GCMS	Benzo(a)pyrene	µg/L					<1.5	<1.5
SVOCs by GCMS	Benzo(a)pyrene	mg/kg	0.71	0.56	1.1	0.45		
SVOCs by GCMS	Benzo(b)fluoranthene	µg/L					<1.2	<1.2
SVOCs by GCMS	Benzo(b)fluoranthene	mg/kg	0.89	0.71	1.4	0.47		
SVOCs by GCMS	Benzo(g,h,i)perylene	µg/L					<2.2	<2.2
SVOCs by GCMS	Benzo(g,h,i)perylene	mg/kg	0.53	0.37	0.56	0.31		

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SVOCs by GCMS	Benzo(k)fluoranthene	µg/L					<1.5	<1.5
SVOCs by GCMS	Benzo(k)fluoranthene	mg/kg	0.38	0.3	0.55	0.18		
SVOCs by GCMS	Benzoic Acid	µg/L					6.8	6.6
SVOCs by GCMS	Benzoic Acid	mg/kg	<0.33	<0.22	<0.21	<0.21		
SVOCs by GCMS	Benzyl chloride	µg/L					<1.8	<1.8
SVOCs by GCMS	Benzyl chloride	mg/kg	<0.081	<0.079	<0.077	<0.076		
SVOCs by GCMS	Bis(2-chloroethoxy)methane	µg/L					<1.7	<1.7
SVOCs by GCMS	Bis(2-chloroethoxy)methane	mg/kg	<0.084	<0.082	<0.079	<0.078		
SVOCs by GCMS	Bis(2-chloroethyl)ether	µg/L					<2.2	<2.2
SVOCs by GCMS	Bis(2-chloroethyl)ether	mg/kg	<0.091	<0.089	<0.087	<0.085		
SVOCs by GCMS	Bis(2-Ethylhexyl)phthalate	µg/L					<2.0	<2.0
SVOCs by GCMS	Bis(2-Ethylhexyl)phthalate	mg/kg	<0.17	<0.16	<0.16	<0.15		
SVOCs by GCMS	4-Bromophenylphenylether	µg/L					<1.4	<1.4
SVOCs by GCMS	4-Bromophenylphenylether	mg/kg	<0.071	<0.069	<0.068	<0.066		
SVOCs by GCMS	Butylbenzylphthalate	µg/L					<1.9	<1.9
SVOCs by GCMS	Butylbenzylphthalate	mg/kg	<0.10	<0.099	<0.096	<0.094		
SVOCs by GCMS	Carbazole	µg/L					<1.6	<1.6
SVOCs by GCMS	Carbazole	mg/kg	0.18	0.11	0.52	<0.051		
SVOCs by GCMS	4-Chloroaniline	µg/L					<1.5	<1.5
SVOCs by GCMS	4-Chloroaniline	mg/kg	<0.078	<0.095	<0.093	<0.091		
SVOCs by GCMS	4-Chloro-3-methylphenol	µg/L					<1.4	<1.4
SVOCs by GCMS	4-Chloro-3-methylphenol	mg/kg	<0.091	<0.089	<0.087	<0.085		
SVOCs by GCMS	2-Chloronaphthalene	µg/L					<1.5	<1.5
SVOCs by GCMS	2-Chloronaphthalene	mg/kg	<0.080	<0.078	<0.076	<0.074		
SVOCs by GCMS	2-Chlorophenol	µg/L					<1.2	<1.2
SVOCs by GCMS	2-Chlorophenol	mg/kg	<0.076	<0.074	<0.072	<0.071		
SVOCs by GCMS	4-Chlorophenylphenylether	µg/L					<1.5	<1.5
SVOCs by GCMS	4-Chlorophenylphenylether	mg/kg	<0.071	<0.069	<0.068	<0.066		
SVOCs by GCMS	Chrysene	µg/L					<1.4	<1.4
SVOCs by GCMS	Chrysene	mg/kg	0.96	0.67	1.7	0.42		
SVOCs by GCMS	Dibenz(a,h)anthracene	µg/L					<2.0	<2.0
SVOCs by GCMS	Dibenz(a,h)anthracene	mg/kg	<0.13	<0.13	0.16	<0.12		
SVOCs by GCMS	Dibenzofuran	µg/L					<1.4	<1.4
SVOCs by GCMS	Dibenzofuran	mg/kg	0.35	0.24	0.92	0.069		
SVOCs by GCMS	3,3-Dichlorobenzidine	µg/L					<1.8	<1.8
SVOCs by GCMS	3,3-Dichlorobenzidine	mg/kg	<0.093	<0.090	<0.088	<0.086		
SVOCs by GCMS	1,2-Dichlorobenzene	µg/L					<1.3	<1.3
SVOCs by GCMS	1,2-Dichlorobenzene	mg/kg	<0.075	<0.073	<0.071	<0.070		
SVOCs by GCMS	1,3-Dichlorobenzene	µg/L					<1.5	<1.5
SVOCs by GCMS	1,3-Dichlorobenzene	mg/kg	<0.079	<0.071	<0.069	<0.067		
SVOCs by GCMS	1,4-Dichlorobenzene	µg/L					<1.5	<1.5
SVOCs by GCMS	1,4-Dichlorobenzene	mg/kg	<0.076	<0.074	<0.072	<0.071		
SVOCs by GCMS	2,4-Dichlorophenol	µg/L					<1.3	<1.3
SVOCs by GCMS	2,4-Dichlorophenol	mg/kg	<0.073	<0.071	<0.069	<0.067		
SVOCs by GCMS	Diethylphthalate	µg/L					<1.5	<1.5
SVOCs by GCMS	Diethylphthalate	mg/kg	<0.076	<0.074	<0.072	<0.071		
SVOCs by GCMS	2,4-Dimethylphenol	µg/L					<3.7	<3.7
SVOCs by GCMS	2,4-Dimethylphenol	mg/kg	<0.079	<0.077	<0.075	<0.073		
SVOCs by GCMS	Dimethylphthalate	µg/L					<1.5	<1.5
SVOCs by GCMS	Dimethylphthalate	mg/kg	<0.075	<0.073	<0.071	<0.070		
SVOCs by GCMS	4,6-Dinitro-2-methylphenol	µg/L					<0.2	<0.2
SVOCs by GCMS	4,6-Dinitro-2-methylphenol	mg/kg	<0.40	<0.39	<0.38	<0.38		
SVOCs by GCMS	2,4-Dinitrophenol	µg/L					<3.4	<3.4
SVOCs by GCMS	2,4-Dinitrophenol	mg/kg	<0.24	<0.24	<0.23	<0.23		
SVOCs by GCMS	2,4-Dinitrotoluene	µg/L					<1.8	<1.8
SVOCs by GCMS	2,4-Dinitrotoluene	mg/kg	<0.069	<0.067	<0.065	<0.064		
SVOCs by GCMS	2,6-Dinitrotoluene	µg/L					<1.5	<1.5
SVOCs by GCMS	2,6-Dinitrotoluene	mg/kg	<0.075	<0.073	<0.071	<0.070		
SVOCs by GCMS	Di-n-octylphthalate	µg/L					<2.1	<2.1
SVOCs by GCMS	Di-n-octylphthalate	mg/kg	<0.22	<0.22	<0.21	<0.21		

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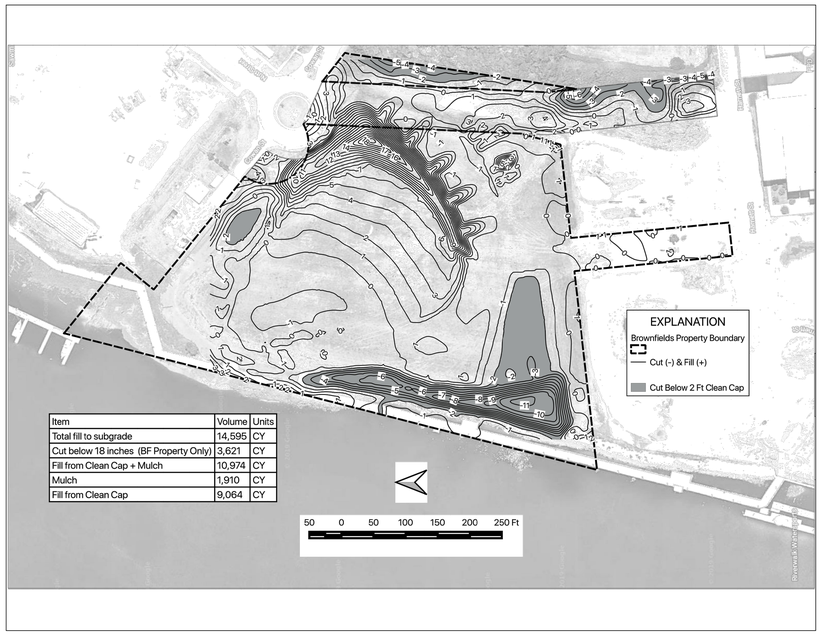
SVOCs by GCMS	1,2-Diphenylhydrazine (Azobenz	µg/L					<2.6	<2.6
SVOCs by GCMS	1,2-Diphenylhydrazine (Azobenz	mg/kg	<0.069	<0.067	<0.065	<0.064		
SVOCs by GCMS	Fluoranthene	µg/L					<1.8	<1.8
SVOCs by GCMS	Fluoranthene	mg/kg	2.6	2.2	7.6	0.62		
SVOCs by GCMS	Fluorene	µg/L					2.3	<1.5
SVOCs by GCMS	Fluorene	mg/kg	0.48	0.25	1.7	<0.064		
SVOCs by GCMS	Hexachlorobenzene	µg/L					<1.5	<1.5
SVOCs by GCMS	Hexachlorobenzene	mg/kg	<0.075	<0.073	<0.071	<0.070		
SVOCs by GCMS	Hexachlorobutadiene	µg/L					<1.5	<1.5
SVOCs by GCMS	Hexachlorobutadiene	mg/kg	<0.075	<0.073	<0.071	<0.070		
SVOCs by GCMS	Hexachlorocyclopentadiene	µg/L					<1.9	<1.9
SVOCs by GCMS	Hexachlorocyclopentadiene	mg/kg	<0.090	<0.088	<0.085	<0.084		
SVOCs by GCMS	Hexachloroethane	µg/L					<1.6	<1.6
SVOCs by GCMS	Hexachloroethane	mg/kg	<0.085	<0.083	<0.081	<0.079		
SVOCs by GCMS	Indeno(1,2,3-cd)pyrene	µg/L					<0.1	<0.1
SVOCs by GCMS	Indeno(1,2,3-cd)pyrene	mg/kg	0.53	0.4	0.63	0.29		
SVOCs by GCMS	Isophorone	µg/L					<1.9	<1.9
SVOCs by GCMS	Isophorone	mg/kg	<0.083	<0.080	<0.078	<0.077		
SVOCs by GCMS	1-Methylnaphthalene	µg/L					<1.8	<1.8
SVOCs by GCMS	1-Methylnaphthalene	mg/kg	0.15	<0.079	0.25	<0.076		
SVOCs by GCMS	2-Methylnaphthalene	µg/L					<1.6	<1.6
SVOCs by GCMS	2-Methylnaphthalene	mg/kg	0.16	<0.072	0.33	<0.069		
SVOCs by GCMS	2-Methylphenol	µg/L					<1.4	<1.4
SVOCs by GCMS	3-Methylphenol	mg/kg	<0.11	<0.10	<0.10	<0.099		
SVOCs by GCMS	3/4-Methylphenol	µg/L					<1.1	<1.1
SVOCs by GCMS	3/4-Methylphenol	mg/kg	<0.14	<0.13	<0.13	<0.13		
SVOCs by GCMS	Naphthalene	µg/L					<1.7	<1.7
SVOCs by GCMS	Naphthalene	mg/kg	0.3	0.12	0.36	<0.10		
SVOCs by GCMS	2-Nitroaniline	µg/L					<2.2	<2.2
SVOCs by GCMS	2-Nitroaniline	mg/kg	<0.071	<0.069	<0.068	<0.066		
SVOCs by GCMS	3-Nitroaniline	µg/L					<2.0	<2.0
SVOCs by GCMS	3-Nitroaniline	mg/kg	<0.061	<0.060	<0.058	<0.057		
SVOCs by GCMS	4-Nitroaniline	µg/L					<1.9	<1.9
SVOCs by GCMS	4-Nitroaniline	mg/kg	<0.071	<0.069	<0.068	<0.066		
SVOCs by GCMS	Nitrobenzene	µg/L					<1.6	<1.6
SVOCs by GCMS	Nitrobenzene	mg/kg	<0.080	<0.078	<0.076	<0.074		
SVOCs by GCMS	2-Nitrophenol	µg/L					<1.6	<1.6
SVOCs by GCMS	2-Nitrophenol	mg/kg	<0.11	<0.11	<0.11	<0.10		
SVOCs by GCMS	4-Nitrophenol	µg/L					<1.0	<1.0
SVOCs by GCMS	4-Nitrophenol	mg/kg	<0.093	<0.090	<0.088	<0.086		
SVOCs by GCMS	N-Nitrosodimethylamine	µg/L					<1.5	<1.5
SVOCs by GCMS	N-Nitrosodimethylamine	mg/kg	<0.27	<0.26	<0.26	<0.25		
SVOCs by GCMS	N-Nitrosodiphenylamine(Diphenyl	µg/L					<1.9	<1.9
SVOCs by GCMS	N-Nitrosodiphenylamine(Diphenyl	mg/kg	<0.088	<0.085	<0.083	<0.081		
SVOCs by GCMS	N-Nitroso-di-n-propylamine	µg/L					<1.7	<1.7
SVOCs by GCMS	N-Nitroso-di-n-propylamine	mg/kg	<0.088	<0.085	<0.083	<0.081		
SVOCs by GCMS	Pentachloronitrobenzene	µg/L					<1.7	<1.7
SVOCs by GCMS	Pentachloronitrobenzene	mg/kg	<0.10	<0.099	<0.096	<0.094		
SVOCs by GCMS	Pentachlorophenol	µg/L					<1.1	<1.1
SVOCs by GCMS	Pentachlorophenol	mg/kg	<0.10	<0.10	<0.097	<0.095		
SVOCs by GCMS

3.0 AREAS WHERE CUT WILL BE BELOW EXISTING 2-FOOT CLEAN COVER AND VOLUME TO BE CUT, STORED ONSITE PER THE EMP PAGE 21 AND REUSED ON SITE



Item	Volume	Units
Total fill to subgrade	14,595	CY
Cut below 18 inches (BF Property Only)	3,621	CY
Fill from Clean Cap + Mulch	10,974	CY
Mulch	1,910	CY
Fill from Clean Cap	9,064	CY

4.0 REQUIREMENT FOR WASHDOWN OF ALL EQUIPMENT LEAVING CONSTRUCTION SITE:

4.1 WASHDOWN pads at construction entrances shown on Sheets C-112P1 and C-113-P2 are to be used for all equipment leaving the site
4.2 As noted on Sheets C-112-P1 and C-113-P1, all water and sediment from washdown pads is to be directed to the nearest Sediment Control Basin
4.3 All washdown pads and basins are to be kept clean of accumulated sediment at the end of each construction day.

5.0 HANDLING AND DISPOSAL OF ALL GROUNDWATER PRODUCED ON SITE DURING CONSTRUCTION DEWATERING AND OTHER ACTIVITIES SHALL BE IN ACCORDANCE WITH ALL OF THE PROVISIONS OF THE FOLLOWING AND THE PERMIT FROM CFPUA SHOWN ON SHEETS G-008C-P-2 AND G-008C-P3.

DISPOSAL OF GROUNDWATER REMOVED DURING CONSTRUCITON ACTIVITIES
NOTE: These requirements will be supplemented by the final Industrial Discharge Permit from CFPUA

1. All groundwater collected as part of dewatering or other construction activities is to be discharge directly into the first of three temporary holding tanks connected in series.
2. Water is to be transferred from the first tank to the second tank after a residence time in the first tank of 3 days and from the second tank to the third tank after a residence time of 3 days.
3. Each tank is to be sized to contain the total volume of water removed while the dewatering or other systems are in operation.
4. Prior to discharge from the third tank to the sanitary sewer manhole the contents are to be sampled and analyzed for all the parameters shown on the attached sheet by a North Carolina Certified Testing Laboratory. Discharge to the sanitary sewer shall not occur until the written laboratory results have been received and approved by a representative of Cape Fear Public Utility Authority.
5. Maximum flow rate from the final holding tank into the sanitary sewer shall not exceed 50 gallons per minute.
6. All held water shall be discharged to Manhole number SDMH'D' as shown on Sheets C-100-P1 and C-120-P1 Note: The designated manhole to be used may be updated by Cape Fear Public Utilities Authority and will be provided as additional information

(CONTINUED ON SHEET G-008C-P2

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4.0 The designated manhole to be used may be updated by Cape Fear Public Utilities Authority and will be provided as additional information.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

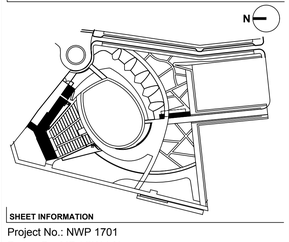
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale:

SHEET TITLE

ENVIRONMENTAL MANAGEMENT PLAN

SHEET NO.

G-008C-P1

IRN016

GENERAL NOTES

CONTRACT DOCUMENTS

1. THE WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS.
2. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY. READ THE DRAWINGS IN CONJUNCTION WITH THE SPECIFICATIONS AND EXECUTE THE WORK AS THOUGH SHOWN ON ALL.
3. THE WORK IS DEPENDENT ON SEVERAL DISCIPLINES. READ THE DRAWINGS BY CROSS-REFERENCING BETWEEN DISCIPLINES.
4. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR DIRECTION BEFORE PROCEEDING WITH THE WORK.

SITE ACCESS & PROTECTION

1. STAGING AREA IS WITHIN THE CONTRACT LIMIT LINE. STAGING AREA DOES NOT INCLUDE ACCESS ROUTES TO THE SITE. THE CONSTRUCTION (AND REMOVAL) OF TEMPORARY STAGING AREAS AND/OR ACCESS ROUTES SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY AND EXPENSE.
2. FOLLOW EROSION CONTROL PLAN, SEE CIVIL DRAWINGS. ALL CONSTRUCTION RELATED VEHICLES REQUIRED FOR THE WORK EXITING AND/OR ENTERING THE SITE SHALL NOT DEPOSIT DIRT, MUD, OR OTHER DELETERIOUS MATERIALS THAT WOULD PRESENT A NUISANCE OR HAZARD TO THE PUBLIC TRAVELING ON RIGHT OF WAYS. ALL PREVENTION AND CLEANING SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY AND EXPENSE. FOLLOW EROSION CONTROL PLAN
3. NO WORK, EQUIPMENT OR STAGING IS PERMITTED IN THE RIGHT OF WAY AT ANY TIME UNLESS THE CONTRACTOR HAS APPROVAL FROM THE GOVERNMENT AUTHORITIES HAVING JURISDICTION. ALL COORDINATION PERMITS AND TRAFFIC CONTROL REQUIRED SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY AND EXPENSE.
4. THE DOCUMENTS DO NOT SPECIFY SAFETY MATERIALS, EQUIPMENT, METHODS OR SEQUENCING TO PROTECT PERSONS AND PROPERTY. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY AND EXPENSE TO DIRECT AND IMPLEMENT SAFETY OPERATIONS TO PROTECT PERSONS AND PROPERTY.

QUALITY ASSURANCE

1. EXECUTE THE WORK AND SCHEDULE INSPECTIONS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL STANDARDS, LAWS AND REGULATIONS.
2. ENSURE SUBCONTRACTORS, MANUFACTURERS AND SUPPLIERS HAVE THE LATEST CONTRACT DOCUMENTS PRIOR TO THE SUBMITTAL OF THEIR SHOP DRAWINGS AND/OR DELEGATED DESIGN DRAWINGS.
3. REFER TO THE SPECIFICATION FOR REQUIRED SUBMITTALS, INSPECTIONS AND NOTICE PERIODS.

EXISTING CONDITIONS SURVEY

1. THE DOCUMENTS ARE BASED ON THE FOLLOWING TOPOGRAPHIC AND UTILITY SURVEY:
   - "N RIVERFRONT PARK-2018-FEB 7" PROVIDED BY THE CITY OF WILMINGTON.
2. SURVEYED UNDERGROUND UTILITIES ARE PROVIDED FOR INFORMATION ONLY AS THEY ARE INFERRED BY SURFACE MARKINGS AND FEATURES AND AS SUCH MAY NOT BE ACCURATE OR COMPLETE.

GEOTECHNICAL REPORT

1. THE DOCUMENTS ARE BASED ON THE FOLLOWING GEOTECHNICAL REPORTS:
   - GEOTECHNICAL ENGINEERING REPORT: NORTH WATERFRONT PARK, WILMINGTON, NORTH CAROLINA, DATED 4 JUNE 2018 BY STEWART.
   - GEOTECHNICAL ADDENDUM #1: PAVEMENT RECOMMENDATIONS, DATED 7 AUGUST 2018 BY STEWART.
   - GEOTECHNICAL ADDENDUM #2: SEISMIC SITE CLASSIFICATION, DATED 20 AUGUST 2018 BY STEWART.
   - REPORT OF SUBSURFACE EXPLORATION: NORTH WATERFRONT PARK, WILMINGTON, NORTH CAROLINA, DATED 21 MAY 2018 BY RFS SOILS ENGINEERING AND TESTING SERVICES.
   - REPORT OF SUBSURFACE EXPLORATION: NORTH WATERFRONT PARK, WILMINGTON, NORTH CAROLINA, DATED 16 JANUARY 2019 BY S+EC / EAGLE RESOURCES.
   - NOTICE OF BROWNFIELDS PROPERTY / BROWNFIELDS AGREEMENT, DATED 25 JUNE 2008 BETWEEN RIVERFRONT HOLDINGS II, LLC AND THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES.
   - G-008A/B/C-P1 ENVIRONMENTAL MANAGEMENT PLAN
2. THE GEOTECHNICAL REPORTS ARE MADE AVAILABLE FOR INFORMATION ONLY AS SOME RECOMMENDATIONS IN THE REPORT MAY NOT BE RELEVANT OR USED IN THE DOCUMENTS.

UTILITIES

1. THE LOCATIONS AND SIZES OF EXISTING UTILITIES (IF SHOWN) ARE APPROXIMATE ONLY. IDENTIFY, LOCATE AND PROTECT ALL UNDERGROUND AND OVERHEAD UTILITIES TO REMAIN.
2. COORDINATE WITH THE LOCAL UTILITY COMPANIES AND/OR AGENCIES. CALL YOUR LOCAL '811' NO LESS THAN 72 HOURS PRIOR TO DIGGING TO LOCATE UNDERGROUND UTILITIES OR AS REQUIRED BY LOCAL REGULATIONS.
3. BE FULLY RESPONSIBLE FOR THE COST OF ANY AND ALL DAMAGES WHICH OCCUR AS A RESULT OF A FAILURE TO ACCURATELY LOCATE AND/OR RETAIN ANY AND/OR ALL UTILITIES TO REMAIN.

LAYOUT

1. THE HORIZONTAL CONTROL FOR THE PROJECT IS: STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM (NAVD83) UNLESS OTHERWISE NOTED.
2. THE VERTICAL CONTROL FOR THE PROJECT IS: NORTH AMERICAN VERTICAL DATUM (NAVD88) UNLESS OTHERWISE NOTED.
3. VERIFY THE LOCATION OF EXISTING FEATURES TO REMAIN THAT CONNECT TO NEW WORK, ALL DIMENSIONAL CLEARANCES, SETBACKS AND OFFSETS AND VERTICAL DATUM. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR DIRECTION BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.
4. VERIFY ALL PREVIOUS UNDERLYING TRADEWORK CONFORMS TO THE DOCUMENTS PRIOR TO PROCEEDING WITH OVERLYING TRADEWORK. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR DIRECTION BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.
5. GENERAL CONTRACTOR SHALL RETAIN SURVEY CONTROL FOR LAYOUT OF THE WORKS AND AS-BUILT SURVEYS.
6. COORDINATE AND COLLATE SUBCONTRACTOR'S SURVEYS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXISTING SITE CONDITIONS AND EVOLVING SITE CONDITIONS PRIOR TO THE START OF ANY SITE WORK. ANY DISCREPANCY AND/OR UNFORESEEN CONDITIONS FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE OWNER'S REPRESENTATIVE PRIOR TO STARTING THE SITE WORK. DO NOT BEGIN WORK IN ANY SUCH AFFECTED AREA UNTIL THE DISCREPANCY HAS BEEN RESOLVED.
7. ERECT AND INSTALL ALL WORK LEVEL, PLUMB, SQUARE, TRUE, STRAIGHT AND IN PROPER ALIGNMENT.
8. DO NOT SCALE FROM DRAWINGS. USE DIMENSIONS SHOWN.
9. DIMENSIONS NOTED [CLR] OR CLEAR MUST BE STRICTLY MAINTAINED ALLOWING FOR THICKNESS OF ALL FINISHES. FIELD VERIFY PRIOR TO CONSTRUCTION.
10. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED.
11. ALL CURVES FOR PAVING, BANDS, PATHS, EDGING AND HEADER BOARDS SHALL BE SMOOTH AND CONTINUOUS WITHOUT ABRUPT CHANGES, OBVIOUS TANGENTS OR BENDS.
12. PITCH EVENLY BETWEEN SPOT GRADES AND CONTOUR LINES UNLESS GRADE BREAKS, RIDGELINES, SWALES ARE INDICATED OR OTHERWISE NOTED. ALL PAVED AREAS SHALL PITCH AT A MINIMUM OF 1% UNLESS OTHERWISE NOTED ON DRAWINGS. ANY DISCREPANCIES OR CONDITIONS NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION PRIOR TO CONTINUING WORK.
13. PEDESTRIAN SIDEWALKS AND PAVING SHALL HAVE A CROSS PITCH LESS THAN 2% UNLESS OTHERWISE NOTED TO MEET ADA REQUIREMENTS.
14. PEDESTRIAN SIDEWALKS AND PAVING SHALL HAVE A RUNNING SLOPE NOT TO EXCEED 5% UNLESS OTHERWISE NOTED TO MEET ADA REQUIREMENTS.
15. REQUEST A FIELD REVIEW BY THE LANDSCAPE ARCHITECT OF THE LAYOUT OF ELEMENTS AS SHOWN. STAKE ALL LOCATIONS. OBTAIN LANDSCAPE ARCHITECT'S APPROVAL OF LAYOUT BEFORE INSTALLING THE FOLLOWING;
    - ALL SITE LIGHTING FIXTURES, JUNCTION BOXES, TRANSFORMERS,
    - ALL SITE UTILITY FIXTURES, INCLUDING BUT NOT LIMITED TO BOXES, VAULTS, PULL BOXES, MAN HOLES, AIR RELEASE VALVES, VENTS, BFP, AND OTHER CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, TELECOM, HEATING/COOLING, AND IRRIGATION STRUCTURES,
    - ALL FORMWORK OR A TYPICAL FORMWORK PORTION REPRESENTING SIMILAR WORK. OBTAIN LANDSCAPE ARCHITECTS APPROVAL OF FORMWORK FOR FLATWORK AND WALL WORK PRIOR TO CONCRETE POURING,
    - ALL TREE LOCATIONS. STAKE ALL TREE LOCATIONS. OBTAIN APPROVAL OF LANDSCAPE ARCHITECT BEFORE PLANTING TREES,
    - ALL CURVED EDGING AND CUTTING.
    - EXPANSION JOINTS IN CONCRETE PAVING.
15. COORDINATE PLANT LAYOUT WITH IRRIGATION EQUIPMENT LAYOUT. PLANT LAYOUT TAKES PRECEDENCE OVER IRRIGATION EQUIPMENT LAYOUT.

DELEGATED DESIGN

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN NORTH CAROLINA. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN NORTH CAROLINA. SEE SPECIFICATION.
2. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS FOR DELEGATED DESIGN ELEMENTS ARE TO INDICATE DESIGN INTENT ONLY.
3. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
4. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

WATERING

2. AREAS NOT SHOWN TO BE IRRIGATED PERMANENTLY BUT ARE PLANTED SHALL BE WATERED BY TEMPORARY MEANS UNTIL PLANTS ARE ESTABLISHED.
3. TEMPORARY WATERING MEANS AND METHODS, INCLUDING WATER SUPPLY AND SCHEDULING, SHALL BE THE CONTRACTORS' RESPONSIBILITY. REMOVE ALL TEMPORARY WATERING EQUIPMENT UPON PLANT ESTABLISHMENT.

WORK BY OTHERS

1. COOPERATE AND COORDINATE WITH OTHER CONTRACTORS WORKING CONCURRENTLY SO AS TO NOT VIOLATE EACH OTHER'S PERMITS AND TO AVOID DAMAGE TO EACH OTHER'S WORK. OTHER CONTRACTS THAT MAY BE ACTIVE DURING THIS WORK ARE:
   - CFPUA UTILITY INSTALLATION WORK, INCLUDING PUMP STATION NORTH OF THE PROJECT SITE
   - ADJACENT BUILDING DEVELOPMENT WORK (EAST AND SOUTH OF THE PROJECT SITE)
   - STREET RIGHT OF WAY WORK (NUTT STREET AND HARNETT STREET SOUTH OF THE PROJECT SITE)
2. EACH CONTRACTOR SHALL PROTECT AND MAINTAIN THEIR OWN WORK FOR THE DURATION OF THEIR CONTRACTS.

CODE COMPLIANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LAWS, CODES AND REQUIREMENTS OF REGULATORY AGENCIES HAVING JURISDICTION.
2. NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCY BETWEEN THE WORK AND APPLICABLE CODES. DO NOT WORK IN ANY SUCH AFFECTED AREA UNTIL THE DISCREPANCY HAS BEEN RESOLVED.
3. VERIFY ALL CODES IN EFFECT AT THE TIME OF THE NOTICE TO PROCEED AND STAY CURRENT WITH ALL CODE CHANGES WHICH AFFECT THE WORK UNTIL SUBSTANTIAL COMPLETION.
4. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND PAY FOR ALL CONSTRUCTION RELATED PERMITS.

CODES IN EFFECT

1. CODES, INCLUDING BUT NOT LIMITED TO THE FOLLOWING, ARE APPLICABLE AND IN EFFECT:
   - 2010 ADA ACCESSIBILITY GUIDELINES (ADAAG)
   - 2003 IBC-INTERNATIONAL BUILDING CODE
   - ASCE 7-02 (WIND DESIGN)
   - ACI 318-02 (CONCRETE DESIGN)
   - AISC LRFD 3RD (EDITION OR ASD 8TH EDITION) NOTED BELOW
   - 2000-IFC-INTERNATIONAL FIRE CODE
   - 2000-UMC- UNIFORM MECHANICAL CODE
   - 2000 UPC-UNIFORM PLUMBING CODE
   - 2005-NEC-NATIONAL ELECTRIC CODE
   - AISC LRFD 3RD EDITION OR ASD 8TH EDITION
   - CITY OF WILMINGTON NOISE ORDINANCE
   - 2018 NORTH CAROLINA STATE BUILDING CODE
   - ALL APPLICABLE NORTH CAROLINA AND CITY OF WILMINGTON CODES
2. ANY REVISIONS TO THE APPROVED AND PERMITTED DRAWINGS OR DOCUMENTS SHALL BE SUBMITTED TO THE CITY PLANNING DEPARTMENT AND/OR NEW HANOVER COUNTY BUILDING INSPECTIONS DEPARTMENT FOR REVIEW. NOTIFY THE OWNER'S REPRESENTATIVE OF THE PROCESSING TIME FOR EACH REVISION SUBMITTED FOR PLAN CHECK.

COPYRIGHT AND REPRODUCTION

1. THE USE OF REPRODUCTIONS OF THE CONTRACT DOCUMENTS OR ELECTRONIC FILES AS SHOP DRAWING DOCUMENTS BY THE CONTRACTOR IS AT THEIR OWN RISK. THE DESIGN CONSULTANTS ASSUME NO LIABILITY AS A RESULT OF THE USE OF REPRODUCTIONS OF THE CONTRACT DOCUMENTS FOR SHOP DRAWINGS AND/OR DELEGATED DESIGN DRAWINGS.
2. THE ENTIRE CONTRACT DOCUMENT PACKAGE HEREIN IS THE ORIGINAL AND UNPUBLISHED PROPERTY OF THE CITY OF WILMINGTON AND MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT THE PRIOR EXPLICIT WRITTEN CONSENT OF PLANNING & DEVELOPMENT REVIEW.
3. THE USE OF DIGITAL DESIGN FILES SHALL REQUIRE THE CONTRACTOR TO AGREE TO PRIME CONSULTANT'S LICENSE CONDITIONS BEFORE USE.

CONSTRUCTION LOADS, DAMAGES & REPAIRS

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SLOPE STABILITY AND DEWATERING DURING THE WORKS.
2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROTECTING THE WORKS FROM CONSTRUCTION LOADS AND DAMAGES TO EXISTING STRUCTURES TO REMAIN, NEW STRUCTURES AND NEW PAVEMENTS DURING THE WORKS.
3. BE FULLY RESPONSIBLE FOR THE COST OF ANY AND ALL DAMAGES WHICH OCCUR AS A RESULT OF A FAILURE TO MITIGATE CONSTRUCTION LOADS AND/OR PROTECT THE WORKS FROM ANY CONSTRUCTION RELATED IMPACTS. REPAIRS SHALL BE TO A NEW OR BETTER CONDITION COMPARED TO THE EXISTING CONDITION BEFORE DAMAGE, AND AS APPROVED BY THE OWNER'S REPRESENTATIVE.
4. CONFIRM ON-STRUCTURE UNIFORM AND POINT LOAD LIMITS WITH ENGINEER PRIOR TO IMPORTING AND HANDLING LANDSCAPE MATERIALS OVER VAULTS, AND/OR TUNNELS, INCLUDING UTILITY STRUCTURES, AND FLOOD CONTROL STRUCTURES.

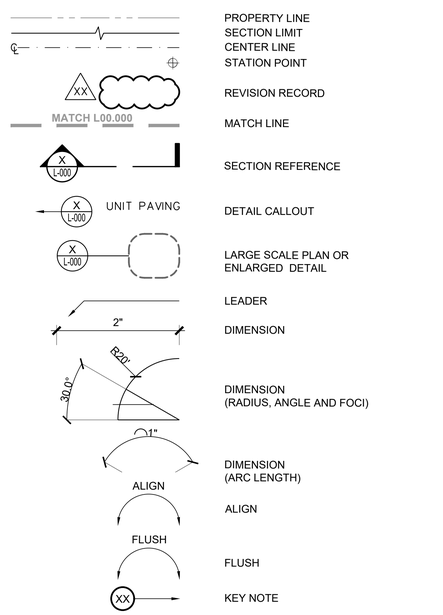
CONSTRUCTION WASTE MANAGEMENT

1. REMOVE FROM THE SITE ANY EXCESS MATERIAL AND/OR DEBRIS. DISPOSAL OF MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL EXCESS MATERIAL AND/OR DEBRIS NOT ABLE TO BE RECYCLED OR REUSED SHALL BE DISPOSED OF OFF THE PROJECT SITE IN A PERMITTED LANDFILL.
2. PLEASE REFER TO G-008A-P1, G-008B-P1, AND G-008C-P1 ENVIRONMENTAL MANAGEMENT PLAN.

ABBREVIATIONS

ALT	ALTERNATE
AMP	AMPERE
APPROX	APPROXIMATE
AVG	AVERAGE
B&B	BALL AND BURLAP
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BM	BENCHMARK
BO__	BOTTOM OF ___
BOS	BOTTOM OF STAIR
BOT	BOTTOM
BOW	BOTTOM OF WALL
CB	CATCH BASIN
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLR	CLEAR
CLL	CONTRACT LIMIT LINE
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CTR	CENTER
DAT	DATUM
DEG	DEGREE
DIA	DIAMETER
DIM	DIMENSION
DIST	DISTANCE
DIV	DIVISION
DWG	DRAWING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
EP	EDGE OF PAVEMENT
EQ	EQUAL
EQL SP	EQUALLY SPACED
EQUIV	EQUIVALENT
EXIST, EX	EXISTING
F	FAHRENHEIT
FC	FOOTCANDLE
FFE	FINISH FLOOR ELEVATION
FF&E	FURNITURE, FIXTURE, AND EQUIPMENT
FIN GR	FINISH GRADE
FOC	FACE OF CURB
FOW	FACE OF WALL
FV	FIELD VERIFY
GALV	GALVANIZED
GB	GRADE BREAK
GDR	GUARD RAIL
H	HIGH
HB	HOSE BIBB
HDPE	HIGH DENSITY POLYETHYLENE
HH	HAND HOLE
HDR	HANDRAIL
HORIZ	HORIZONTAL
HT	HEIGHT
HV	HIGH VOLTAGE
HWL	HIGH WATER LINE
ID	INSIDE DIMENSION
IJ	ISOLATION JOINT
INV EL	INVERT ELEVATION
kW	KILOWATT
LDPE	LOW DENSITY POLYETHYLENE
LED	LIGHT EMITTING DIODE
LF	LINEAR FEET
LPT	LOW POINT
LTD	LIMITED
LV	LOW VOLTAGE
LWL	LOW WATER LINE
MAX	MAXIMUM
MFR REC	MANUFACTURER'S RECOMMENDATION
MH	MANHOLE
MID	MIDDLE
MIN	MINIMUM
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NP	NORMAL POOL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHANG
PB	PULL BOX
PC	POINT OF CURVE
PCC	PRECAST CONCRETE
PERF	PERFORATED
PERP	PERPENDICULAR
pH	ACID/ALKALINE SCALE
PH	PHASE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PROPERTY LINE
PLBG	PLUMBING
PRCST	PRECAST
PREFAB	PREFABRICATE
PROV	PROVISIONAL
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTR	QUARTER
QTY	QUANTITY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RECIRC	RECIRCULATE
RECPT	RECEPTACLE
REINF	REINFORCE
REQD	REQUIRED
REV	REVISION
RLG	RAILING
ROW	RIGHT OF WAY
S	SOUTH
SALV	SALVAGE
SEG	SEGMENT
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SSD	SUBSOIL DRAIN
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
SUCT	SUCTION
TAN	TANGENT
TBD	TO BE DETERMINED
TB-xx	TEST BORING-XX (E.G., TB-01)
TD	TRENCH DRAIN
TEMP	TEMPORARY
THK	THICKNESS
THRU	THROUGH
THRUOUT	THROUGHOUT
TO__	TOP OF ___
TOC	TOP OF CURB
TOL	TOLERANCE
TOS	TOP OF SLOPE
TOW	TOP OF WALL
TR	TOP OF RIM
TS	TOP OF STAIR
TYP	TYPICAL
UGND	UNDERGROUND
UNIF	UNIFORM
UP	UTILITY POLE
UV	ULTRAVIOLET
VAR	VARIES
VERT	VERTICAL
VRFY	VERIFY
W	WEST
W/	WITH
W/O	WITHOUT
WL	WATER LINE
WLD	WELDED
WT EL	WATER ELEVATION
XFMR	TRANSFORMER
YR	YEAR
@	AT
&	AND
+ / -	DIMENSION TOLERANCE

SYMBOLS



PROPERTY LINE
SECTION LIMIT
CENTER LINE
STATION POINT
REVISION RECORD
MATCH LINE
SECTION REFERENCE
DETAIL CALLOUT
LARGE SCALE PLAN OR ENLARGED DETAIL
LEADER
DIMENSION
DIMENSION (RADIUS, ANGLE AND FOCI)
DIMENSION (ARC LENGTH)
ALIGN
FLUSH
KEY NOTE

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
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EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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www.tillotsondesign.com

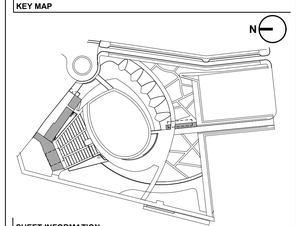
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NTS

SHEET TITLE

LANDSCAPE GENERAL NOTES ABBREVIATIONS & SYMBOLS

SHEET NO.

L-001-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

HARNETT STREET

LIMIT OF WORK (2' OFFSET FOR CLARITY)

NUTT STREET

ALT. NO. 9 - PLAY AREA SURFACING

FUTURE DEVELOPMENT SITE

INFILTRATING LAWN, SEE CIVIL DWGS

CFPUA PUMP STATION

30' UTILITY EASEMENT PER BOOK 1240, PAGE 1

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

30' UTILITY R.O.W.

STAGE BUILDING PACKAGE #3

LOADING DOCK

STAGE

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

ALT. NO. 8 - WEST GARDEN BOARDWALK

INFILTRATION SYSTEM, SEE CIVIL DWGS

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE MATERIALS SCHEDULE L-030-P1 & L-031-P1 & MATERIALS PLAN L-131-P1.

LEGEND

- LIMIT OF WORK (2' OFFSET)
- HARDSCAPE, IMPERMEABLE (PAVING, TERRACES, WALLS, BUILDINGS)
- HARDSCAPE, PERMEABLE (POROUS UNIT PAVING, PERMEABLE CONCRETE ARTIFICIAL TURF, SHORE STABILIZATION)

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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Lighting Design = EL
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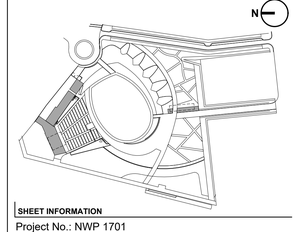
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

LANDSCAPE SITE HARDSCAPE PLAN

SHEET NO.

L-003-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

HARNETT STREET

LIMIT OF WORK (2' OFFSET FOR CLARITY)

NUTT STREET

ALT. NO. 11 - EAST GARDENS

FUTURE DEVELOPMENT SITE

CFPUA PUMP STATION

30' UTILITY EASEMENT

INFILTRATING LAWN, SEE CIVIL DWGS

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

STAGE BUILDING PACKAGE #3

LOADING DOCK

30' UTILITY EASEMENT

STAGE

LANDSCAPE IS CONTINUOUS BELOW WEST GARDEN BOARDWALK

INFILTRATION SYSTEM, SEE CIVIL DWGS

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE TREE PLANING SCHEDULE L-060-P1 & TREE PLANTING PLAN L-161-P1; SEE PLANTING SCHEDULE L-070-P1 & PLANTING PLAN L-171-P1.

LEGEND

- LIMIT OF WORK (2' OFFSET)
- PROPERTY LINE
- TREES
- SOFTSCAPE (PLANT COMMUNITIES, TREES)
- 404 WETLANDS (OUTSIDE PROJECT LIMIT OF WORK, TO BE PROTECTED

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT MARY MARGARET JONES No. 1980

ISSUE/REVISIONS

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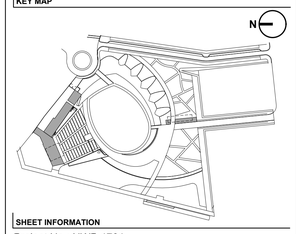
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

LANDSCAPE SITE SOFTSCAPE PLAN

SHEET NO.

L-004-P1

MATERIALS

SYMBOL / ABBREVIATION	ELEMENT	MATERIAL PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*
PAVEMENT - MONOLITHIC			
1	**PAVING - TYPE 1** PERVIOUS ASPHALT PAVING HEAVY LOAD, MED-HIGH FREQUENCY *Nutt Street*	SEE CIVIL DWGS	
2A	**PAVING - TYPE 2A** CONCRETE PAVING W/ INTEGRAL COLOR HEAVY LOAD, LOW FREQUENCY *Cowan Street Sidewalk, Lower Lawn, & Loading Dock Access*	INTEGRAL CONCRETE COLOR, ROCK SALT FINISH REINFORCED CONCRETE PAVEMENT, SAW CUT JOINTS COMPACTED AGGREGATE BASE COURSE SEE CIVIL DWGS *See Detail 01 / L-520-P1*	PRODUCT: CHROMIX INTEGRAL COLOR ADMIXTURE MANUFACTURER: SCOFIELD COLOR: BEIGE/TAN FAMILY SUBMIT SAMPLE
2B	**PAVING - TYPE 2B** PERVIOUS CONCRETE PAVING *MEDIUM LOAD,MED-HIGH FREQUENCY* *Nutt Street Sidewalk and Alley Path*	CONCRETE PAVEMENT, PERVIOUS, SAW CUT JOINTS COMPACTED AGGREGATE BASE COURSE, SEE CIVIL DWGS *See Detail 02 / L-520-P1*	SUBMIT SAMPLE
PAVEMENT - UNIT			
3A	**PAVING - TYPE 3A** BRICK UNIT PAVING, *HEAVY LOAD, LOW FREQUENCY* *Nutt Street Promenade* *MEDIUM LOAD, MED-HIGH FREQUENCY* *North & South Plinths*	4" x 8" by 2.75" BRICK UNIT PAVER, POLYMERIC SAND SWEPT JOINTS 1" SAND SETTING BED REINFORCED CONCRETE SUBSLAB W/ SAND FILLED WEEPHOLES SEE CIVIL DWGS *See Detail 03 / L-520-P1*	PRODUCT: ENGLISH EDGE PAVERS MANUFACTURER: PINE HALL BRICK FINISH: IRONSPOT SUBMIT SAMPLE
3B	**PAVING - TYPE 3B** BRICK UNIT PAVING, PERMEABLE *HEAVY LOAD, MED-HIGH FREQUENCY* *Old Front Street Parking* *LTD. LIGHT LOAD* *Old Front Street and Nutt St. Furnishing Strips*	4" x 8" by 2.75" BRICK UNIT PAVER, PERMEABLE JOINT WITH OPEN-GRADED CRUSHED ANGULAR STONE, WASHED PERMEABLE SETTING BED, BASE, SUBBASE SEE CIVIL DWGS *See Detail 04 / L-520-P1*	PRODUCT: RUMBLED STORMPAVE PERMEABLE PAVERS MANUFACTURER: PINE HALL BRICK FINISH: FULL RANGE SUBMIT SAMPLE
4A	**PAVING - TYPE 4A** CONCRETE UNIT PAVING *HEAVY LOAD, LOW FREQUENCY* *Central Plaza*	6" x 12" x 4" NOMINAL CONCRETE UNIT PAVING, RUNNING BOND, POLYMERIC SAND SWEPT JOINTS 1" SAND SETTING BED REINFORCED CONCRETE SUBSLAB W/ SAND FILLED WEEPHOLES SEE CIVIL DWGS *See Detail 04 / L-520-P1*	PRODUCT: MODULINE MANUFACTURER: BELGARD COLOR: SEE PAVING ENLARGEMENTS (L-523-P1) FINISH: GRANITIZED SUBMIT SAMPLE
4B	**PAVING - TYPE 4B** CONCRETE UNIT PAVING *HEAVY LOAD, LOW FREQUENCY* *Arcing Path*	4" x 8" x 4" NOMINAL CONCRETE UNIT PAVING, RUNNING BOND, POLYMERIC SAND SWEPT JOINTS 1" SAND SETTING BED REINFORCED CONCRETE SUBSLAB W/ SAND FILLED WEEPHOLES SEE CIVIL DWGS *See Detail 05 / L-520-P1*	PRODUCT: MODULINE MANUFACTURER: BELGARD COLOR: SEE PAVING ENLARGEMENTS (L-523-P1) FINISH: GRANITIZED SUBMIT SAMPLE
5	**PAVING - TYPE 5** STONE UNIT PAVING *HEAVY LOAD, LOW FREQUENCY* *Central Plaza*	8" x 12" x 3" NOMINAL STONE UNIT PAVING, RUNNING BOND, GROUT JOINTS 1" MORTAR SETTING BED REINFORCED CONCRETE SUBSLAB W/ SAND FILLED WEEPHOLES SEE CIVIL DWGS *See Detail 07 / L-520-P1*	PRODUCT: JET MIST FINISH: WATER JET MANUFACTURER: NC GRANITE SUBMIT SAMPLE
PAVEMENT - GRANULAR			
6	**PAVING - TYPE 6** STABILIZED CRUSHED STONE, *East Garden Paths*	4" COMPACTED CRUSHED STONE (2) 2" LIFTS, STABILIZING BINDER COMPACTED AGGREGATE BASE COURSE SEE CIVIL DWGS *See Detail 06 / L-520-P1*	PRODUCT: CHAPEL HILL GRAVEL/GRIT PRODUCT: STA-LOK BINDER MANUFACTURER: STABILIZER SOLUTIONS SUBMIT SAMPLE
7	**PAVING - TYPE 7** URETHANE BOUND CRUSHED STONE & RUBBER PAVING *Tree Surrounds*	1-1/2" NOMINAL DEPTH 1-2" #57 STONE, COMPACTED *See Detail 07 / L-522-P1 and 02, 04, 05, and 06 / L-560-P1*	*TO BE SUPPLIED AND INSTALLED BY CITY OF WILMINGTON* PRODUCT: FLEXI-PAVE HD 2000 MANUFACTURER: KBI INDUSTRIES COLOR: GRANITE SUBMIT SAMPLE

SYMBOL / ABBREVIATION	ELEMENT	MATERIAL PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*
SYNTHETIC SURFACE			
SYN-1	**ALT. NO. 9 - SYNTHETIC SURFACE - TYPE 1** ARTIFICIAL TURF *Play Area*	ARTIFICIAL TURF AIRGRID OPEN CELL PADDING, DEPTH PER MFG ARTIFICIAL TURF SOIL PROFILE. SEE LANDSCAPE SOILS DWGS *See Detail 01 / L-521-P1*	PRODUCT: PLAY PREMIUM MANUFACTURER: SYNLAWN SUBMIT SAMPLE
SYN-2	**ALT. NO. 9 - SYNTHETIC SURFACE - TYPE 2** SYNTHETIC DUAL-DENSITY SEAMLESS SURFACE *Play Area*	SYNTHETIC DUAL-DENSITY SEAMLESS SURFACE DEPTH TO BE DETERMINED BY CRITICAL HEIGHT OF EQUIPMENT, SEE SPECIFICATIONS *See Detail 02 / L-520-P1*	
DECKING			
DCK-1	**DECKING - TYPE 1** BOARDWALK *Riverwalk Connections 1 & 2*	MATCH EXISTING RIVERWALK WOOD DECKING & GUARDRAIL CONSTRUCTION SEE STRUCTURAL MARINE DWGS	
DCK-2	**ALT. NO. 8 - DECKING - TYPE 2** BOARDWALK *West Garden Boardwalk*	WOOD DECKING W/ INTEGRATED BENCHES DETECTABLE WARNING, STAINLESS STEEL TACTILE INDICATORS (8 PER BOARD) SEE STRUCTURAL DWGS *See Details 01-08 / L-525-P1*	PRODUCT: IPE SUBMIT SAMPLE
WALLS			
WL-1	**WALL - TYPE 1** CONCRETE - STRAIGHT *North Loading Dock & Nutt Street Retaining Walls*	0' - 9' HIGH CONCRETE RETAINING WALL REINFORCED CONCRETE FOOTING, WITH SHEET PILING FOR FUTURE UTILITY EXCAVATION AT LOADING DOCK, SEE STRUCTURAL DWGS *See Detail 01 / L-535-P1*	
WL-2	**WALL - TYPE 2** CONCRETE - STRAIGHT *Cowan St Stair Retaining Wall*	0' - 9' HIGH CONCRETE RETAINING WALL REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-536-P1*	
WL-3	**WALL - TYPE 3** CONCRETE - CURVED *Cowan St Roundabout Retaining Wall*	0' - 9' HIGH CONCRETE RETAINING WALL REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-537-P1*	
WL-4	**WALL - TYPE 4** CONCRETE - STRAIGHT *Great Lawn Stairs*	0' -3' HIGH CONCRETE RETAINING WALL ALT 7A: CONCRETE RETAINING WALL W/ STONE VENEER REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-538-P1*	PRODUCT: JET MIST FINISH: WATER JET MANUFACTURER: NC GRANITE SUBMIT SAMPLE
WL-5	**ALT. NO. 6 - WALL - TYPE 5** CONCRETE - CURVED *Great Lawn Seat Wall*	18" HIGH CONCRETE SEAT WALL REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 02 / L-538-P1*	
WL-6	**WALL - TYPE 6** CONCRETE - STRAIGHT *North & South Plinths*	VARIES, 18"-24" HIGH / 12" DEEP CONCRETE RETAINING WALL REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-539-P1*	
WL-7	**WALL - TYPE 7** SOLID STONE - STRAIGHT *East Garden Donor Wall*	36" HIGH / 12" DEEP / 18' LONG SOLID STONE WALL REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 02 / L-539-P1*	PRODUCT: JET MIST FINISH: HONED MANUFACTURER: NC GRANITE SUBMIT SAMPLE
STAIRS & TERRACES			
ST-1	**STAIR - TYPE 1** CONCRETE - STRAIGHT *Cowan St Entry*	CONCRETE TREADS / RISERS REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-530-P1*	
ST-2	**STAIR - TYPE 2** CONCRETE - SOLID STRAIGHT *Central Plaza*	CONCRETE TREADS / RISERS ALT 7A: STONE TREADS / RISERS REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-531-P1*	
TC-1	**ALT. NO. 7A - TERRACE - TYPE 1** CONCRETE / STONE - CURVED *Central Plaza*	18 - 24" HIGH / 24" DEEP CONCRETE TERRACE W/ STONE CAP REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS WATER FOUNTAIN CONDUIT TO JETS IN WALL, SEE WF DWGS *See Detail 01 / L-532-P1* AND L-534-P1	PRODUCT: JET MIST FINISH: THERMAL MANUFACTURER: NORTH CAROLINA GRANITE SUBMIT SAMPLE
TC-2	**TERRACE - TYPE 2** CONCRETE - CURVED *Riverfront Lawn*	CONCRETE TREADS / RISERS REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-533-P1*	

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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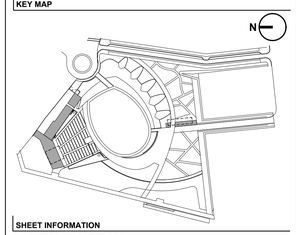
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
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Scale: NTS

SHEET TITLE

LANDSCAPE MATERIALS SCHEDULE

SHEET NO.

L-030-P1

IRN016

MATERIALS

SYMBOL / ABBREVIATION	ELEMENT	MATERIAL PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*
CURBS AND EDGES			
CRB-1	**CURB - TYPE 1** *Nutt Street*	6" WIDE GRANITE CURB WITH 18" WIDE CIP CONCRETE CONCRETE GUTTER SEE CIVIL DWGS	
CRB-2	**CURB - TYPE 2** *Nutt Street Pedestrian Promenade & Nutt Street Parking*	6" WIDE FLUSH CONCRETE CURB SEE CIVIL DWGS *See Detail 05 / L-522-P1*	
CRB-3	**CURB - TYPE 3** *Lower Lawn*	12" WIDE FLUSH CONCRETE CURB SEE CIVIL DWGS *See Detail 06 / L-522-P1*	
EDG-1	**EDGING - TYPE 1** *East and West Gardens*	3/16" X 5" DEEP GALVANIZED STEEL EDGING W/ 24" STAKES *See Detail 08 / L-522-P1*	
EDG-2	**EDGING - TYPE 2**	3.5" X 3.5" GALVANIZED STEEL PAVER RESTRAINT W/ 1" POST INSTALLED ANCHORS ATTACHED TO CONCRETE SUBSLAB OR CONCRETE CURB *See Detail 09 / L-522-P1*	
SOIL STABILIZATION			
SS-1	**SOIL STABILIZATION - TYPE 1** EROSION CONTROL MAT *Coastal Landscape*	TIED CONCRETE BLOCK EROSION CONTROL MATS SEE STRUCTURAL MARINE DWGS *See Details 01 / L-571-P1*	

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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City of Wilmington Project Code 3CPRK1860

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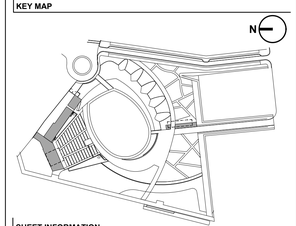
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
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SHEET TITLE

LANDSCAPE MATERIALS SCHEDULE

SHEET NO.

L-031-P1

IRN016

FURNITURE

SYMBOL / ABBREVIATION	ELEMENT	PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*	QUANTITY	MOCK UP	NOTES
BN-1A	**BENCH - TYPE 1A** *Riverfront Lawn & Arcing Path*	WOOD AND STEEL BENCH, (2) ARMRESTS, NO BACK REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 01 / L-541-P1*	MODEL: 120IN TRAPECIO BACKLESS BENCH MANUFACTURER: LANDSCAPE FORMS	6		
BN-1B	**BENCH - TYPE 1B** *Urban Gardens & Arcing Path*	WOOD AND STEEL BENCH, (2) ARMRESTS, BACK REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 03 / L-541-P1*	MODEL: 132IN TRAPECIO BENCH MANUFACTURER: LANDSCAPE FORMS	4		
BN-1C	**BENCH - TYPE 1C** *Central Plaza*	WOOD AND STEEL BENCH (2) ARMRESTS, BACK REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 02 / L-541-P1*	MODEL: 210IN TRAPECIO BENCH MANUFACTURER: LANDSCAPE FORMS	2		
BN-2	**BENCH - TYPE 2** *Urban Gardens & Boardwalks*	WOOD AND STEEL BENCH (2) ARMRESTS, NO BACK REINFORCED CONCRETE FOOTING AT URBAN GARDENS, SEE CIVIL DWGS INSTALLED ON DECKING AT BOARDWALK *See Detail 01 / L-540-P1*	MODEL: BLOCQ MANUFACTURER: MMCITE	13		
BN-3	**BENCH - TYPE 3** *Nutt Street Promenade & Alley Path*	WOOD AND STEEL BENCH (2) ARMRESTS, NO BACK REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 01 / L-542-P1*	MODEL: GENERATION 50 MANUFACTURER: LANDSCAPE FORMS	8		
BO-1	**BOLLARD - TYPE 1**	BOLLARD, REMOVABLE, ALUMINUM REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 05 / L-544-P1*	WILMINGTON CITY STANDARD MODEL: 4555QR MANUFACTURER: STERNBERG LIGHTING	13		
BR-1	**BICYCLE RACK - TYPE 1**	BICYCLE RACK REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 03 / L-544-P1*	WILMINGTON CITY STANDARD, PROVIDED BY CITY	18		
DF-1	**DRINKING FOUNTAIN - TYPE 1**	DRINKING FOUNTAIN WITH PET FOUNTAIN AND HOSE BIB WATER CONNECTION, REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 01 / L-544-P1*	WILMINGTON CITY STANDARD MODEL: 5400-90 MANUFACTURER: STERN WILLIAMS	3		
TR-1	**TRASH / RECYCLING RECEPTACLE - TYPE 1**	TRASH / RECYCLE RECEPTACLE REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 02 / L-544-P1*	WILMINGTON CITY STANDARD MODEL: SD-42 WITH CAP MANUFACTURER: VICTOR STANLEY FINISH: BLACK POWDERCOAT (TRASH) BLUE POWDERCOAT (RECYCLE)	6 SETS (12 TOTAL)		
	MOVABLE - TABLES & CHAIRS	1 TABLE/4 CHAIRS PER SET	MODEL: PARC CENTRE MANUFACTURER: LANDSCAPE FORMS	10 SETS		**NOTE: MOVABLE FURNITURE NOT SHOWN IN PLANS**

RAILING

SYMBOL / ABBREVIATION	ELEMENT	PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*	MOCK UP	NOTES
FN-1	**FENCE - TYPE 1** *Loading Dock Retaining Wall*	8' HIGH POST FENCE 1" PVC-COATED CHAIN MESH WITH PRIVACY SLATS *See Detail 01 / L-552-P1*	MANUFACTURER: MERCHANT METALS COLOR: BLACK		
FN-2	**FENCE - TYPE 2** *Nutt St. Retaining Wall*	42" HIGH POST FENCE 1" PVC-COATED CHAIN MESH *See Detail 01 / L-552-P1*	MANUFACTURER: MERCHANT METALS COLOR: BLACK		
GT-1	**GATE - TYPE 1** *Cowan Street Loading Area*	8' POST SWINGING GATE 1" PVC-COATED CHAIN MESH WITH PRIVACY SLATS *See Detail 01 / L-552-P1*	MANUFACTURER: MERCHANT METALS COLOR: BLACK		
HR-1	**HANDRAIL - TYPE 1** *Cowan Street Stairs*	1-1/2" DIA STAINLESS STEEL HANDRAIL, WALL-MOUNTED *See Detail 01 / L-551-P1*			
HR-2	**HANDRAIL - TYPE 2** *Great Lawn Stairs*	1-1/2" DIA STAINLESS STEEL HANDRAIL, GROUND MOUNTED REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 02 / L-551-P1*			
GR-1	**GUARDRAIL - TYPE 1** *Riverwalk Connections*	42" HIGH GUARDRAIL TO MATCH WILMINGTON CITY STANDARD RIVERWALK GUARDRAIL SEE STRUCTURAL MARINE DWGS			
GR-2	**GUARDRAIL - TYPE 2** *Cowan St. Entry*	42" HIGH STEEL CABLE GUARDRAIL REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS *See Detail 01 / L-550-P1*			

PLAY EQUIPMENT

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PL-1	**ALT. NO. 10 PLAY EQUIPMENT - TYPE 1**	STEEL AND PLASTIC SPINNER	MODEL: SPICA 3 MANUFACTURER: KOMPAN
PL-2	**ALT. NO. 10 PLAY EQUIPMENT - TYPE 2**	12" & 18" STEPPING LOGS, MAX 28" TALL	
PL-3	**ALT. NO. 10 PLAY EQUIPMENT - TYPE 3**	EMBEDDED LOG BALANCE BEAM	
PL-4	**ALT. NO. 10 PLAY EQUIPMENT - TYPE 4**	ROPE CLIMBING WEB	MODEL: TERRANO (CUSTOMIZED) MANUFACTURER: BERLINER PLAYEQUIPMENT
PL-5	**ALT. NO. 10 PLAY EQUIPMENT - TYPE 5**	WOODEN CLIMBING STRUCTURE	MODEL: DRACO-1 MANUFACTURER: EARTHSCAPE
PL-6	**ALT. NO. 10 PLAY EQUIPMENT - TYPE 6**	MUSICAL PLAY EQUIPMENT	MODEL: CUSTOM MANUFACTURER: NATURE'S INSTRUMENTS

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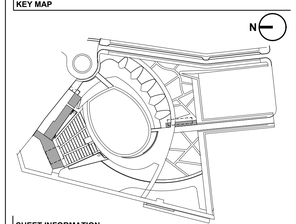

SHEET INFORMATION

Project No.: NWP 1701
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SHEET TITLE

LANDSCAPE FURNITURE LIGHTING & SIGNAGE SCHEDULE

SHEET NO.

L-040-P1

IRN016

LIGHTING

SEE LANDSCAPE FURNITURE, LIGHTING, AND SIGNAGE PLAN FOR LIGHTING LOCATIONS.
SEE ELECTRICAL DWGS FOR ADDITIONAL INFORMATION.

SYMBOL / ABBREVIATION	ELEMENT	PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*	QUANTITY
TA	**STREET POLE** *Nutt Street*	WILMINGTON CITY STANDARD 12' POLE MOUNTED STREET LIGHT, DIMMABLE REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 01 / L-555-P1*	SEE ELECTRICAL DWGS FOR MANUFACTURERS AND MODELS	12
TB	**PEDESTRIAN POLE** *Arcing Path, Alley Path, and Nutt St. Pedestrian Promenade*	13'-8" POLE MOUNTED LED PATH LIGHT POLE, DIMMABLE REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 02 / L-555-P1*	SEE ELECTRICAL DWGS FOR MANUFACTURERS AND MODELS	26
TC	**HIGH MAST POLE** *Great Lawn and Lower Lawn*	40'-75' TALL HIGH MAST POLE WITH FLOODLIGHTS, DIMMABLE REINFORCED CONCRETE FOOTING, SEE STRUCTURAL DWGS *See Detail 03 / L-555-P1*	SEE ELECTRICAL DWGS FOR MANUFACTURERS AND MODELS	2 (40') 3 (75')
TD	**PEDESTRIAN BOLLARD** *East Gardens and Play Area*	CAST ALUMINUM BOLLARD WITH 180° LIGHT DISTRIBUTION, DIMMABLE REINFORCED CONCRETE FOOTING *See Detail 04 / L-555-P1*	SEE ELECTRICAL DWGS FOR MANUFACTURERS AND MODELS	10
TF	**IN-GRADE LUMINAIRE** *West Garden Boardwalk*	IN GRADE LED LUMINAIRE, DIMMABLE *See Detail 05 / L-555-P1*	SEE ELECTRICAL DWGS FOR MANUFACTURERS AND MODELS	35
WG	**RIVERWALK POLE** *Boardwalk Connections*	WILMINGTON CITY STANDARD RIVERWALK POLE	SEE ELECTRICAL DWGS FOR MANUFACTURERS AND MODELS	4

SIGNAGE

SYMBOL / ABBREVIATION	ELEMENT	PROFILE / ASSEMBLY SUMMARY *REFER TO SPECIFICATION & DETAILS FOR COMPLETE DESCRIPTION*	PRODUCTS / MANUFACTURER *OR APPROVED EQUAL, REFER TO SPECIFICATION*	QUANTITY
ID-1	**SIGNAGE - IDENTIFICATION** *Cowan St. Wall*	WALL-MOUNTED CUSTOM IDENTIFICATION SIGN		1
ID-2	**SIGNAGE - IDENTIFICATION** *Park Support Building*	BUILDING-MOUNTED OR FREE STANDING CUSTOM IDENTIFICATION SIGN		1
ID-3	**SIGNAGE - IDENTIFICATION**	STAINLESS STEEL, APPLIED VINYL CUSTOM GRAPHICS, UV PROTECTIVE COATING REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS. *See Detail 01 / L-580-P1*		3
INT-1A INT-1B	**SIGNAGE - INTERPRETIVE**	STAINLESS STEEL, APPLIED VINYL CUSTOM GRAPHICS, UV PROTECTIVE COATING REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS. *See Detail 02 / L-580-P1*		2
REG-1A	**SIGNAGE - REGULATORY 1** PLAY AREA RULES	STAINLESS STEEL, APPLIED VINYL CUSTOM GRAPHICS, UV PROTECTIVE COATING REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS. *See Detail 02 / L-580-P1*		1
REG-1B	**ALT. 7A/7B** **SIGNAGE - REGULATORY 2** WATER FOUNTAIN RULES	STAINLESS STEEL, APPLIED VINYL CUSTOM GRAPHICS, UV PROTECTIVE COATING REINFORCED CONCRETE FOOTING, SEE CIVIL DWGS. *See Detail 02 / L-580-P1*		

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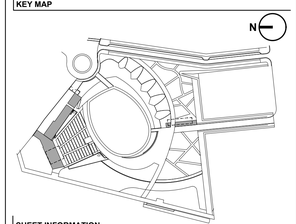

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SHEET TITLE

LANDSCAPE FURNITURE LIGHTING & SIGNAGE SCHEDULE

SHEET NO.

L-041-P1

IRN016

TREES

SYMBOL / ABBREVIATION	SCIENTIFIC NAME	COMMON NAME	SIZE	NOTES	QTY
Ag	AMELANCHIER X GRANDIFLORA	DOWNY SERVICEBERRY	8' HT. MIN.	MULTI-STEM B&B	14
Ab	ACER BUERGERIANUM	TRIDENT MAPLE	3" CALIPER	B&B	4
Bn	BETULA NIGRA 'DURAHEAT'	'DURAHEAT' RIVER BIRCH	16' HT. MIN.	MULTI-STEM B&B	9
Cb	CARPINUS BETULUS	EUROPEAN HORNBEAM	4" CALIPER	B&B	6
Cv	CHIONANTHUS VIRGINICUS	FRINGE TREE	8' HT. MIN.	MULTI-STEM B&B	7
Gl	GORDONIA LASIANTHUS	LOBLOLLY BAY	2.5" CALIPER	B&B	7
Hc	HALESIA CAROLINA	CAROLINA SILVERBELL	9' HT. MIN.	MULTI-STEM B&B	6
Lt	LIRIODENDRON TULIPIFERA 'EMERALD CITY'	'EMERALD CITY' TULIP POPLAR	3-4" CALIPER	B&B	6
Mv	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	10' HEIGHT	MULTI-STEM, B&B	4
Ns	NYSSA SYLVATICA	BLACK GUM	4" CALIPER	B&B SALT TOLERANT	12
Pc	PRUNUS CAROLINIANA	CAROLINA CHERRY LAUREL	9' HT. MIN.	B&B	6
Pa	PLATANUS X ACERIFOLIA 'MORTON CIRCLE'	'EXCLAMATION' LONDON PLANE TREE	3" CALIPER	B&B	4
Pp	PINUS PALUSTRUS	LONGLEAF PINE	3" CALIPER	B&B	13
Qa	QUERCUS ACUSTISSIMA	SAWTOOTH OAK	3" CALIPER	B&B	21
Qb	QUERCUS BICOLOR	SWAMP WHITE OAK	3" CALIPER	B&B	19
Qp	QUERCUS PHELLOS	WILLOW OAK	4" CALIPER	B&B	21
Qs	QUERCUS SHUMARDII	SHUMARD OAK	3" CALIPER	B&B	22
Qv	QUERCUS VIRGINIANA 'CATHEDRAL'	'CATHEDRAL' LIVE OAK	4" CALIPER	B&B	10
Td	TAXODIUM DISTICHUM	BALD CYPRESS	4" CALIPER	B&B SALT-TOLERANT	7
Ua	ULMUS PARVIFOLIA 'ALLEE'	'ALLEE' LACEBARK ELM	4" CALIPER	B&B	20
Up	ULMUS PARVIFOLIA 'BOSQUE'	'BOSQUE' LACEBARK ELM	4" CALIPER	B&B	18

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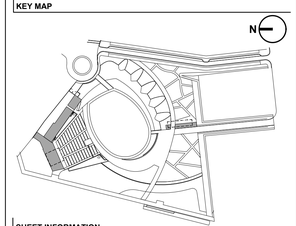

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NTS

SHEET TITLE

LANDSCAPE TREE PLANTING SCHEDULE

SHEET NO.

L-060-P1

IRN016

PLANTING SCHEDULE

PLANT COMMUNITY - TYPE 1	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES	COMMON NAME
1 FIBER REINFORCED EVENT LAWN	1" DEEP LAWN SODDING FIBER REINFORCING MIXED INTO UPPER 6" OF LANDSCAPE SOILS SOIL PROFILE AT LOWER LAWN: LAWN SOIL - SEE LANDSCAPE SOILS DWGS SOIL PROFILE AT GREAT LAWN &C12 RIVERFRONT LAWN: LAWN SOIL (48" DEPTH) - SEE LANDSCAPE SOILS DWGS SOIL PROFILE AT LANDFORM: LANDFORM SOILS - SEE LANDSCAPE SOILS DWGS	72,945 SF	CYNODON SPP. ALT 1: AXONUS AFFINIS ALT 2: PASPALUM NOTATUM	 CARPET GRASS BAHIA GRASS

PLANT COMMUNITY - TYPE 2A	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES	COMMON NAME	SIZE	SPACING	% OF MIX	AREA/ SPP.	QTY.
2A UPLAND SLOPE - HIGH	2" DEEP ORGANIC MULCH, HAND SPREAD SOIL PROFILE: LANDFORM SOILS - SEE LANDSCAPE SOILS DWGS	13,004 SF	**GRASSES**						
			SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	#1	30" OC	40%	5,202 SF	**961**
			FORBS						
			ECHINACEA PURPUREA 'FATAL ATTRACTION'	CONEFLOWER	#3	24" OC	20%	2,601 SF	**751**
			ERYNGIUM GIGANTEUM	RATTLESNAKE MASTER	#3	18" OC	20%	2,601 SF	**1335**
			GAURA LINDHEIMERI	GAURA	#1	24" OC	10%	1,300 SF	**375**
			SEDUM MATRONA	STONECROP	#1	18" OC	10%	1,300 SF	**667**

PLANT COMMUNITY - TYPE 2B	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES
2B UPLAND SLOPE - LOW	1" DEEP NO-MOW FESCUE SOD SOIL PROFILE: LANDFORM SOILS - SEE LANDSCAPE SOILS DWGS	5,970 SF	FESCUE MIX

PLANT COMMUNITY - TYPE 3A/3B	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	BASE BID AREA	ALT 11 AREA
3A 3B URBAN GARDENS	2" DEEP ORGANIC MULCH, HAND SPREAD SOIL PROFILE: TREE/GARDEN SOILS - SEE LANDSCAPE SOILS DWGS	20,311 SF	4,389 SF

ABBR.	SPECIES	COMMON NAME	SIZE	SPACING	% OF MIX	BASE BID AREA	BASE BID QTY.	ALT 11 AREA	ALT 11 QTY.	NOTE
	MIX 1					**784 SF**		**201 SF**		**NOTE**
Mc 'W'	MULENBERGIA CAPILLARIS 'WHITE CLOUD'	MUHLY GRASS	#1	18" OC	70%	549 SF	**282**	141 SF	**72**	SEE L-462-P1 FOR LAYOUT AND ORIENTATION
Ey	ERYNGIUM YUCCIFOLIUM	RATTLESNAKE MASTER	#3	24" OC	15%	118 SF	**34**	30 SF	**9**	
Al	ASTER LAEVIS 'BLUEBIRD'	SMOOTH ASTER	#1	18" OC	15%	118 SF	**60**	30 SF	**15**	
	MIX 2					**1,176 SF**				**NOTE**
Mc	MULENBERGIA CAPILLARIS	MUHLY GRASS	#1	18" OC	70%	823 SF	**422**			SEE L-462-P1 FOR LAYOUT AND ORIENTATION
Gl	GAURA LINDHEIMERI	LINDHEIMER'S BEEBLOSSOM	#1	18" OC	15%	176 SF	**91**			
Gg 'C'	GAILLARDIA X GRANDIFLORA 'CELEBRATION'	BLANKET FLOWER	#1	18" OC	15%	176 SF	**91**			
	MIX 3					**1,866 SF**				**NOTE**
Ag	ANDROPOGON GLOMERATUS	BUSHY BLUESTEM	#1	24" OC	40%	746 SF	**215**			SEE L-461-P1 FOR LAYOUT AND ORIENTATION
Cl	CHASMNATHIUM LATIFOLIUM	NORTHERN SEA OATS	#1	24" OC	30%	560 SF	**162**			
Ep	EUPATORIUM PERFOLIATUM	AMERICAN BONESET	#1	24" OC	15%	280 SF	**81**			
Sr ' F'	SOLIDAGO RUGOSA 'FIREWORKS'	ROUGH GOLDENROD	#1	24" OC	15%	280 SF	**81**			
	MIX 4					**129 SF**				**NOTE**
Ig 'S'	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	#5	36" OC	70%	90 SF	**12**			SEE L-461-P1 FOR LAYOUT AND CLUSTERING
Mc	MYRICA CERIFERA 'DON'S DWARF'	SOUTHERN WAX MYRTLE	#5	48" OC	30%	39 SF	**3**			
	MIX 5					**229 SF**		**100 SF**		**NOTE**
Iv 'N'	ILEX VOMITORIA 'NANA'	DWARF YAUPON HOLLY	#5	36" OC	SEE PLAN	120 SF	**15**	30 SF	**4**	SEE L-462-P1 FOR LAYOUT AND ORIENTATION
Vo 'D'	VIBURNUM OBOVATUM 'DENSA'	DWARF WALTER'S VIBURNUM	#5	48" OC	SEE PLAN	109 SF	**8**	70 SF	**5**	SEE ENLARGEMENT PLANS FOR DISTRIBUTIONS IN BED
	MIX 6					**1,958 SF**		**1,381 SF**		**NOTE**
Am	ACHILLEA MILLEFOLIUM	WHITE YARROW	#1	24" OC	40%	783 SF	**226**	552 SF	**159**	SEE L-462-P1 FOR LAYOUT AND ORIENTATION
Ls 'FW'	LIATRIS SPICATA 'FLORISTAN WHITE'	BLAZING STAR	#1	24" OC	15%	294 SF	**85**	207 SF	**60**	
Pm	PYNCANTHEMUM MUTICUM	BLUE MOUNTAINMINT	#1	18" OC	25%	490 SF	**251**	345 SF	**177**	
Ls	LIATRIS SPICATA	BLAZING STAR	#1	24" OC	20%	392 SF	**113**	276 SF	**80**	
	MIX 7					**3,527 SF**				**NOTE**
Csq	CAREX SQUARROSA	NARROW-LEAVED CATTAIL SEDGE	#1	120" OC	60%	2,116 SF	**24**			SEE L-461-P1 FOR SEEDING AND CLUSTERING INFORMATION
Vh	VERBENA HASTATA	AMERICAN BLUE VERVAIN	#3	120" OC	40%	1,411 SF	**16**			
	MIX 8					**383 SF**				**NOTE**
Al	ASCLEPIAS INCARNATA	SWAMP MILKWEED	#1	100" OC	40%	153 SF	**3**			SEE L-461-P1 FOR SEEDING AND CLUSTERING INFORMATION
Ep	EUPATORIUM PERFOLIATUM	AMERICAN BONESET	#1	100" OC	30%	115 SF	**2**			
Vv	VERONICASTRUM VIRGINICUM	CULVER'S ROOT	#3	100" OC	30%	115 SF	**2**			
	MIX 9					**3,757 SF**				**NOTE**
Cs	CAREX STRICTA	TUSSOCK SEDGE	#1	120" OC	60%	2,254 SF	**26**			SEE L-461-P1 FOR SEEDING AND CLUSTERING INFORMATION
Lsi	LOBELIA SIPHILITICA	BLUE CARDINAL FLOWER	#1	120" OC	40%	1,503 SF	**17**			
	MIX 10					**1,548 SF**				**NOTE**
A 'H'	AGASTACHE 'HEATWAVE'		#1	24" OC	SEE PLAN	561 SF	**162**			SEE ENLARGEMENT PLANS FOR DISTRIBUTION IN BEDS
Ed 'LJ'	EUTROCHIUM DUBIUM 'LITTLE JOE'		#1	24" OC	SEE PLAN	572 SF	**165**			
Vn	VERNONIA NOVEBORACENSIS		#3	24" OC	SEE PLAN	415 SF	**120**			
	NON-MIX FORBS									
Af	AGASTACHE FOENICULUM	ANISE HYSSOP	#1	24" OC		23 SF	**7**	180 SF	**52**	
Ba 'IT'	BAPTISIA 'IVORY TOWERS'	FALSE INDIGO ' IVORY TOWERs	#3	24" OC		76 SF	**22**	37 SF	**11**	
Ct	COREOPSIS TRIPTERIS	TALL COREOPSIS	#3	18" OC		23 SF	**12**	37 SF	**19**	
Epa	ECHINACEA PALLIDA	PALE PURPLE CONEFLOWER	#3	24" OC		92 SF	**27**	266 SF	**77**	
Ec 'FA'	ECHINACEA 'FRAGRANT ANGEL'	CONEFLOWER	#3	18" OC		220 SF	**113**	72 SF	**37**	
Ep 'PB'	ECHINACEA PURPUREA 'PICA BELLA'	CONEFLOWER	#3	24" OC		118 SF	**34**	88 SF	**25**	
Er 'VB'	ECHINOPS RITRO 'VEITCHS BLUE'	SMALL GLOBE THISTLE	#1	24" OC		73 SF	**21**	35 SF	**10**	
Gl	GAURA LINDHEIMERI	LINDHEIMER'S BEEBLOSSOM	#1	18" OC		81 SF	**42**	107 SF	**55**	
La	LAVANDULA ANGUSTIFOLIA	ENGLISH LAVENDER	#1	18" OC				134 SF	**69**	
Nr	NEPETA RACEMOSA 'WALKERS LOW'	CATMINT	#3	24" OC		45 SF	**13**	114 SF	**33**	
Rh	RUDBECKIA HIRTA	BROWN EYED SUSAN	#1	18" OC				134 SF	**69**	
Rt	RUDBECKIA TRILOBA	BLACK EYED SUSAN	#1	18" OC				34 SF	**17**	
	NON-MIX GRASSES									
Bc	BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA	#1	18" OC		108 SF	**55**	233 SF	**120**	
Pa	PANICUM AMARUM	BITTER SWITCHGRASS	#1	30" OC		409 SF	**76**	322 SF	**59**	
Pv 'S'	PANICUM VIRGATUM 'SHENANDOAH'	SWITCHGRASS	#1	24" OC		1,354 SF	**391**			
Sh	SPOROBOLOUS HETEROLEPSIS	PRARIE DROPSEED	#1	30" OC				127 SF	**23**	
Sn	SORGHASTRUM NUTANS	INDIAN GRASS	#1	18" OC		445 SF	**228**	102 SF	**52**	
Ss	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	#1	24" OC		336 SF	**97**	55 SF	**16**	
	NON-MIX SHRUBS									
Ag 'LR'	ABELIA GRANDIFLORA 'LITTLE RICHARD'	GLOSSY ABELIA	#3	36" OC		183 SF	**23**			
Ca 'C'	CLETHRA ALNIFOLIA 'CRYSTALINA'	SUMMERSWEET	#3	36" OC		125 SF	**16**			
Cc 'BM'	CARYOPTERIS X CLANDONENSIS 'BLUE MIST'	BLUEBEARD	#3	30" OC				34 SF	**6**	
Fg	FOTHERGILLA GARDENII	DWARF FOTHERGILLA	#5	36" OC		187 SF	**24**			
H 'LL'	HYDRANGEA 'LITTLE LIME'	LITTLE LIME HYDRANGEA	#5	36" OC		51 SF	**7**	93 SF	**12**	
Iv 'LH'	ITEA VIRGINICA 'LITTLE HENRY'	VIRGINIA SWEETSPIRE	#5	36" OC		143 SF	**18**			
Lr	LEUCOTHOE RACEMOSA	FETTERBUSH	#3	30" OC		246 SF	**45**			
Po	PHYSOCARPUS OPULIFOLIUS VAR INTERMEDIUS	NINEBARK	#5	48" OC		88 SF	**6**	68 SF	**5**	
Sr 'LL'	SAMBUCUS RACEMOSA 'LEMONY LACE'	ELDERBERRY	#5	36" OC		303 SF	**39**			
St	SPIREA TOMENTOSA	STEEPLEBUSH	#5	36" OC		182 SF	**23**			
Va 'BD'	VITEX AGNUS-CASTUS 'BLUE DIDDLY'	DWARF CHASTE TREE	#5	36" OC				97 SF	**12**	
Vc 'O'	VACCINIUM CORYMBOSUM 'ONEAL'	HIGH BUSH BLUEBERRY	#5	48" OC				210 SF	**15**	
Vd 'C'	VIBURNUM DENTATUM 'CHRISTOM'	ARROWWOOD VIBURNUM	#5	36" OC		43 SF	**6**	128 SF	**16**	

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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City of Wilmington Project Code 3CPRK1860

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Electrical Engineering = E
Plumbing Engineering = P
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Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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www.tillotsondesign.com

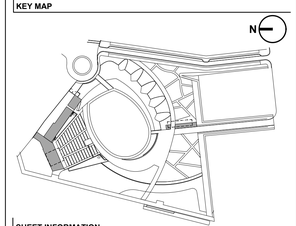
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NTS

SHEET TITLE

LANDSCAPE PLANTING SCHEDULE

SHEET NO.

L-070-P1

IRN016

PLANTING SCHEDULE

PLANT COMMUNITY - TYPE 4A	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES		% OF MIX
4A COASTAL MEADOW	SEED MIX SEEDING RATE PER SEED SUPPLIER SOIL PROFILE: NATIVE GRASS SOILS - SEE LANDSCAPE SOILS DWGS	10,379 SF	PANICUM VIRGATUM 'SHENANDOAH' AMSONIA HUBRITCHII ECHINACEA PALLIDA ERYNGIUM YUCCIFOLIUM PARTHENIUM INTEGRIFOLIUM PYNCANTHEMUM MUTICUM	SWITCHGRASS BLUE STAR PALE PURPLE CONEFLOWER RATTLESNAKE MASTER WILD QUININE BLUE MOUNTAINMINT	25% 15% 15% 15% 15% 15%

PLANT COMMUNITY - TYPE 4B	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES	COMMON NAME	SPACING	% OF MIX	AREA/ SPP.	QTY.
4B RIVER BANK	SEED MIX AND LIVE STAKES SEEDING RATE PER SEED SUPPLIER SOIL PROFILE: NATIVE GRASS SOILS - SEE LANDSCAPE SOILS DWGS	17,356 SF	**LIVE STAKES**					
			SALIX X COTETTII	COTTET WILLOW	36" OC	50%	8,678 SF	**1113**
			BACCHARIS HAMIFOLIA	GROUNDSEL BUSH	36" OC	50%	8,678 SF	**1113**
			SEED MIX					
			CHASMANTHIUM LATIFOLIUM	RIVER OAT		20%		
			SCHIZACHYRIUM LITTORALE	SEASIDE LITTLE BLUESTEM		20%		
			ASTER LAEVIS 'BLUEBIRD'	SMOOTH ASTER		20%		
			RUDBECKIA TRILOBA	BLACK EYED SUSAN		20%		
			SOLIDAGO SEMPERVIVENS	SEASIDE GOLDENROD		20%		

PLANT COMMUNITY - TYPE 4C	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES	COMMON NAME	SIZE	SPACING	% OF MIX	AREA/ SPP.	QTY.	
4C RIVER LEDGE	SOIL PROFILE: COASTAL SOIL - SEE LANDSCAPE SOILS DRAWINGS	6,080 SF	**PLUGS**							
			PANICUM AMARUM	BITTER SWITCHGRASS		18" OC	50%	3,040 SF	**1560**	
			SCHIZACHYRIUM LITTORALE	SEASIDE LITTLE BLUESTEM		24" OC	50%	3,040 SF	**878**	
			CONTAINER PLANTS							
			BACCHARIS HAMIFOLIA	GROUNDSEL BUSH	#3	120" OC	50%	3,040 SF	**35**	CONTAINER PLANTS CLUSTERED IN GROUPS OF 3-5
			MYRICA CERIFERA	SOUTHERN WAX MYRTLE	#5	120" OC	50%	3,040 SF	**35**	

PLANT COMMUNITY - TYPE 4D	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SPECIES	COMMON NAME	SPACING	% OF MIX	AREA/ SPP.	QTY.	
4D INTERTIDAL ZONE	SOIL PROFILE: COASTAL SOIL - SEE LANDSCAPE SOILS DRAWINGS	10,828 SF	**PLUGS**						
			ELEOCHARIS PALUSTRUS	CREEPING SPIKE RUSH	12" OC	100%	10,828 SF	**12503**	ALTERNATE: SCHOENOPLECTUS PUNGENS

PLANT COMMUNITY - TYPE 5	MATERIAL PROFILE (SEE DETAILS FOR COMPLETE DESCRIPTION)	TOTAL AREA	SEED MIX
5 SEEDED 3:1 SLOPE	2" DEEP ORGANIC MULCH, HAND SPREAD SOIL PROFILE: TREE/GARDEN SOILS - SEE LANDSCAPE SOILS DWGS	10,363 SF	TALLGRASS PRAIRIE SEED MIX FOR MEDIUM SOILS PRAIRIE MOON NURSERY

IRN016

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NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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City of Wilmington Project Code 3CPRK1860

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Structural Engineering= S
Geotechnical Engineering = G
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Plumbing Engineering = P
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Lighting Design = EL
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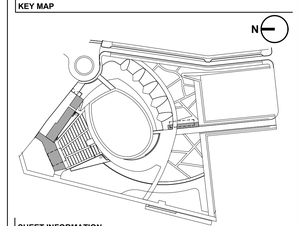
SEAL/SIGNATURE

NORTH CAROLINA · LANDSCAPE ARCHITECT · REGISTERED · MARY MARGARET JONES · No. 1980

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NTS

SHEET TITLE

LANDSCAPE PLANTING SCHEDULE

SHEET NO.

L-071-P1

IRN016

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENT PLANS

LEGEND

- LIMIT OF WORK (2' OFFSET)
- EXISTING CONTOUR
- 00 PROPOSED CONTOUR (MAJOR)
- 00 PROPOSED CONTOUR (MINOR)
- BREAK LINE
- LANDSCAPE / CIVIL — COORDINATE LANDSCAPE DWGS WITH CIVIL DWGS
- (XXX.XX) EXISTING SPOT GRADE
- XXX.XX PROPOSED SPOT GRADE
- X.XX% SLOPE
- TD TRENCH DRAIN, SEE CIVIL DWGS & WF DWGS — 01-02 / L-511
- AD AREA DRAIN, SEE CIVIL DWGS — 04 / L-511
- MH MANHOLE COVER SEE CIVIL DWGS — 05 / L-511

FUTURE DEVELOPMENT SITE

SEE ENLARGEMENT L413-P1

SEE ENLARGEMENT L412-P1

NUTT STREET

COWAN STREET

HARNETT STREET

RETAINING WALL, SEE MATERIALS PLAN & STRUCTURAL DWGS

LIMIT OF WORK (2' OFFSET FOR CLARITY)

FUTURE DEVELOPMENT SITE

PROGRAM ROOMS

PLAY

EAST GARDENS

CFPUA PUMP STATION

EARTHWORK LAYOUTS (L-412, L-413)

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

STAGE BUILDING PACKAGE #3

LOADING DOCK

REGRADE RAMP SET TR TO 14.50

ADA RAMP TO STAGE

LOWER LAWN

STAGE

GREAT LAWN

PARK SUPPORT BUILDING PACKAGE #4

WATER FOUNTAIN TRENCH DRAIN, SEE WF DWGS

WATER FOUNTAIN CATCHMENT AREA, DRAINS TOWARD WATER FOUNTAIN DRAIN, SEE WF DWGS

ARCING PATH

WEST GARDENS

CENTRAL PLAZA

RIVERFRONT LAWN

COASTAL LANDSCAPE

ALLEY PATH

GARDEN GRADES SHALL NOT EXCEED 28" MEASURED VERTICALLY FROM TOP OF BOARDWALK TO FINISH GRADE BELOW

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

SURVEY OBSCURED - RESOLVE GRADING, BY TYING INTO EXISTING CONTOURS

FUTURE DEVELOPMENT SITE

NOW OR FORMERLY NRHM HOLDINGS, LLC DEED BOOK 6007 PAGE 1025

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

NOTE: FIELD VERIFY TIE-IN POINTS AT ELEVATIONS 0, 1, & 2

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

SEE ENLARGEMENT L414-P1

SEE ENLARGEMENT L411-P1

IRN016

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NC License #C-513

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Irrigation= I
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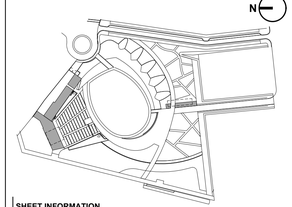
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

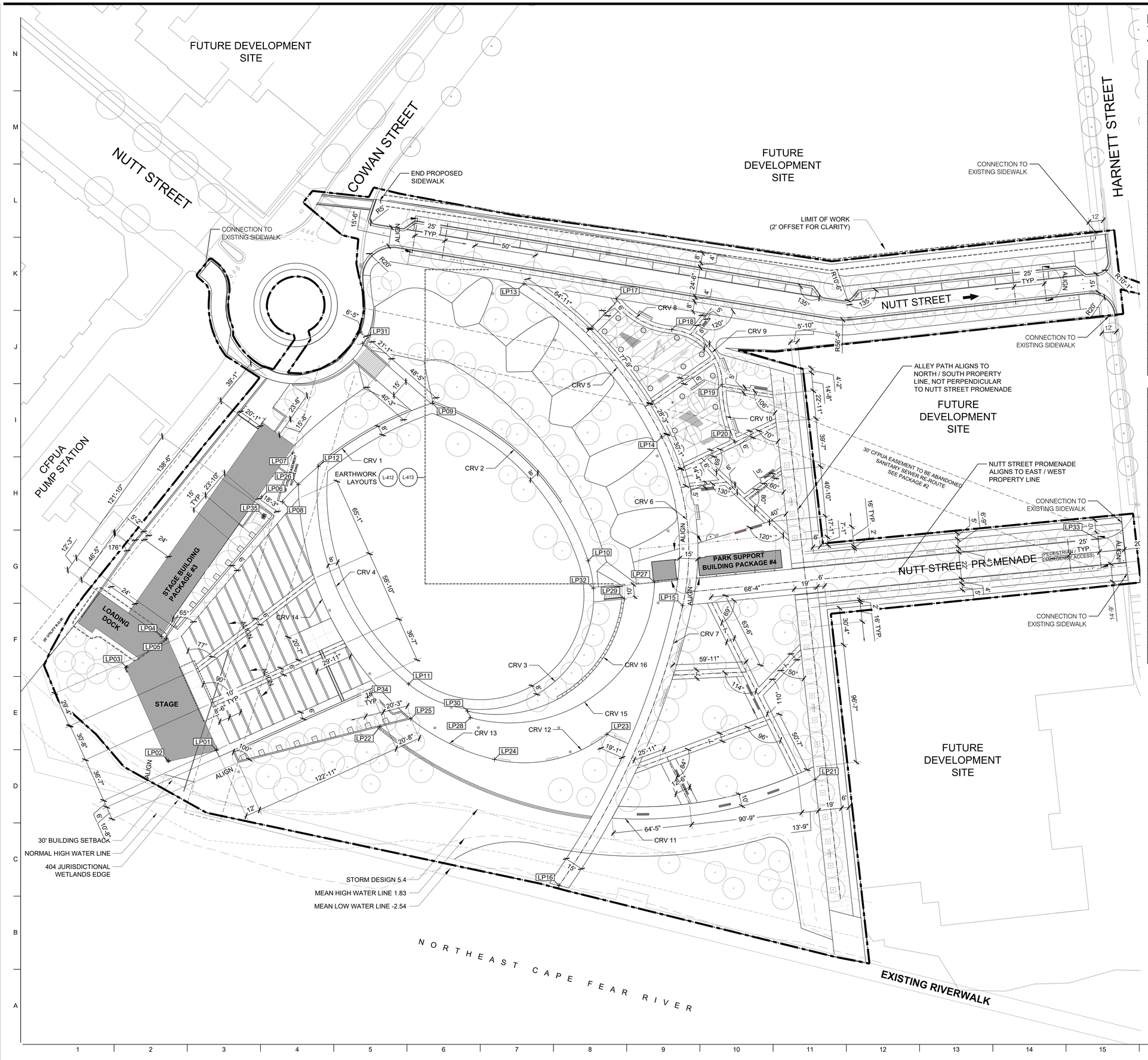
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

LANDSCAPE GRADING PLAN

SHEET NO.

L-111-P1



LEGEND

LIMIT OF WORK (2' OFFSET)

LAYOUT POINTS		
LP##	NORTHING	EASTING
LP01	183162.40	2316923.43
LP02	183201.71	2316914.55
LP03	183236.11	2316991.19
LP04	183207.37	2317016.48
LP05	183203.35	2317014.66
LP06	183125.33	2317130.85
LP07	183099.93	2317166.84
LP08	183108.35	2317126.71
LP09	182985.64	2317207.68
LP10	182857.98	2317078.48
LP11	183005.10	2316977.50
LP12	183078.88	2317155.85
LP13	182914.81	2317308.29
LP14	182797.54	2317180.09
LP15	182780.46	2317041.65
LP16	182881.71	2316812.34
LP17	182837.75	2317297.17
LP18	182789.46	2317267.81
LP19	182748.11	2317223.02
LP20	182737.64	2317175.67
LP21	182672.02	2316899.18
LP22	183028.52	2316942.60
LP23	182842.58	2316936.25
LP24	182934.69	2316915.70
LP25	183003.32	2316948.96
LP26	183095.35	2317140.97
LP27	182803.52	2317060.69
LP28	182954.38	2316949.97
LP29	182828.24	2317047.23
LP30	182956.73	2316955.21
LP31	183042.80	2317256.60
LP32	182853.58	2317055.81
LP33	182440.07	2317096.15
LP34	183038.86	2316966.37
LP35	183123.65	2317114.99

CURVE LAYOUT					
CRV #	LAYOUT POINTS	DELTA	RADIUS	TAN	LENGTH
1	LP08 – LP09	29.96°	285.00'	76.26	149.03'
2	LP09 – LP10	53.13°	203.00'	101.50	188.24'
3	LP10 – LP11	147.21°	93.00'	316.09	238.95'
4	LP11 – LP12	56.77°	203.00'	109.69	201.13'
5	LP13 – LP14	31.55°	319.50'	90.26	175.92'
6	LP14 – LP15	39.28°	207.50'	74.05	142.27'
7	LP15 – LP16	22.69°	644.50'	129.31	255.19'
8	LP17 – LP18	53.30°	63.00'	31.62	58.61'
9	LP18 – LP19	85.28°	45.00'	41.44	66.98'
10	LP19 – LP20	24.78°	113.00'	24.82	48.88'
11	LP21 – LP22	64.61°	336.00'	212.45	379.90'
12	LP23 – LP24	50.80°	110.00'	52.23	97.54'
13	LP24 – LP25	25.92°	170.00'	39.12	76.92'
14	LP25 – LP26	49.35°	255.00'	117.15	219.65'
15	LP27 – LP28	103.67°	119.00'	151.41	215.31'
16	LP29 – LP30	97.63°	105.00'	120.00	178.92'

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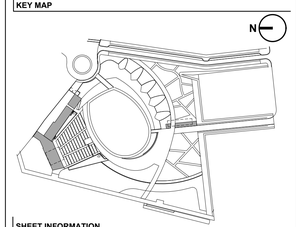

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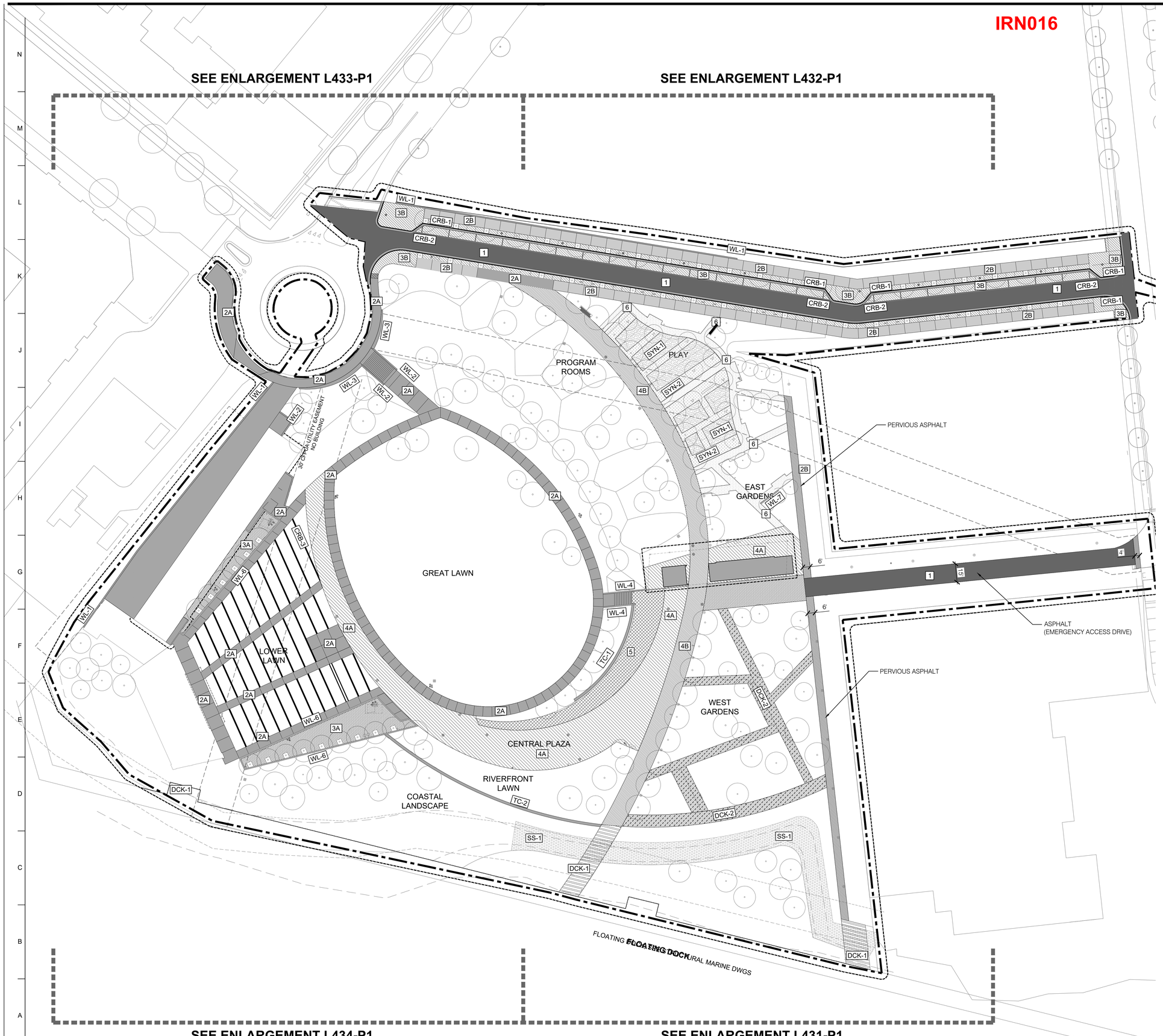
SHEET TITLE

LANDSCAPE LAYOUT PLAN

SHEET NO.

L-121-P1

IRN016



IRN016

SHEET NOTES

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2. SEE SHEET L-030-P1 & L-031-P1 FOR MATERIALS SCHEDULE.
3. SEE L-431-P1 TO L-434-P1 FOR MATERIALS ENLARGEMENTS.

LEGEND

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- 2A — PAVING - TYPE 2A — 01 / L-520
- 2B — PAVING - TYPE 2B — 02 / L-520
- 3A — PAVING - TYPE 3A — 03 / L-520
- 3B — PAVING - TYPE 3B — 04 / L-520
- 4A — PAVING - TYPE 4A — 05 / L-520
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- DCK-2 — ALT. NO. 8 - DECKING - TYPE 2 — ALL / L-525
- WL-1 — ALT. NO. 13 - WALL - TYPE 1 — 01 / L-535
- WL-2 — WALL - TYPE 2 — 01 / L-536
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- WL-4 — WALL - TYPE 4 — 01 / L-538
- WL-5 — ALT. NO. 6 - WALL - TYPE 5 — 02 / L-538
- WL-6 — WALL - TYPE 6 — 01 / L-539
- WL-7 — WALL - TYPE 7 — 02 / L-539
- ST-1 — STAIRS - TYPE 1 — 01 / L-530
- ST-2 — STAIRS - TYPE 2 — 01 / L-531
- TC-1 — ALT. NO. 7 - TERRACE - TYPE 1 — 01 / L-532
- TC-2 — TERRACE - TYPE 2 — 01 / L-533
- CRB-1 — CURB - TYPE 1
- CRB-2 — CURB - TYPE 2 — 05 / L-522
- CRB-3 — CURB - TYPE 3 — 06 / L-522
- SS-1 — SOIL STABILIZATION - TYPE 1 — 01 / L-571

IRN016

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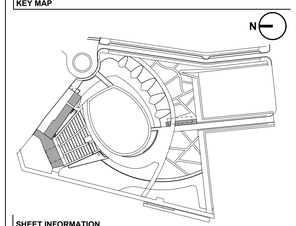

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

LANDSCAPE MATERIALS PLAN (INTERIM)

SHEET NO.

L-131-P1

IRN016

FUTURE DEVELOPMENT SITE

SEE ENLARGEMENT L433-P1

SEE ENLARGEMENT L432-P1

NUTT STREET

COWAN STREET

HARNETT STREET

FUTURE DEVELOPMENT SITE

CROSSWALK

SECONDARY EMERGENCY VEHICLE ACCESS

LIMIT OF WORK (2' OFFSET FOR CLARITY)

GRASS PAVING IN TRAFFIC CIRCLE, SEE CIVIL DWGS PACKAGE #2

ST-1 COWAN ST. STEPS

PROGRAM ROOMS

PLAY

ALT. NO. 9 - PLAY AREA SURFACING

FUTURE DEVELOPMENT SITE

NUTT STREET

CFPUA PUMP STATION

30' CFPUA UTILITY EASEMENT

WL-4 ALT. NO. 6 - GREAT LAWN SEAT WALL

EAST GARDENS

ADA RAMP TO STAGE, NO INTEGRAL COLOR, MATCH WALL & STAGE, SEE ARCH DWGS

GREAT LAWN

ST-2 GREAT LAWN STEPS

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

STAGE BUILDING PACKAGE #3

LOADING DOCK

ELECTRICAL TRENCH TO HOUSE MIX

LOWER LAWN

STAGE

ARCING PATH

WEST GARDENS

ALLEY PATH

CENTRAL PLAZA

RIVERFRONT LAWN

COASTAL LANDSCAPE

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

RIVERWALK CONNECTION 1

FLOATING DOCK, SEE STRUCTURAL MARINE DWGS

RIVERWALK CONNECTION 2

EXISTING RIVERWALK

NORTHEAST CAPE FEAR RIVER

SEE ENLARGEMENT L434-P1

SEE ENLARGEMENT L431-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
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- 4A — PAVING - TYPE 4A — 05 L-520
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- DCK-1 — DECKING - TYPE 1
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- WL-1 — ALT. NO. 13 - WALL - TYPE 1 — 01 L-535
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- WL-7 — WALL - TYPE 7 — 02 L-539
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- TC-2 — TERRACE - TYPE 2 — 01 L-533
- CRB-1 — CURB - TYPE 1
- CRB-2 — CURB - TYPE 2 — 05 L-522
- CRB-3 — CURB - TYPE 3 — 06 L-522
- SS-1 — SOIL STABILIZATION - TYPE 1 — 01 L-571

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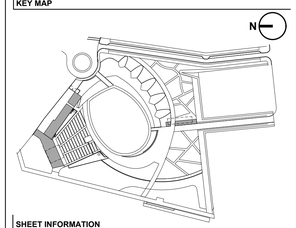

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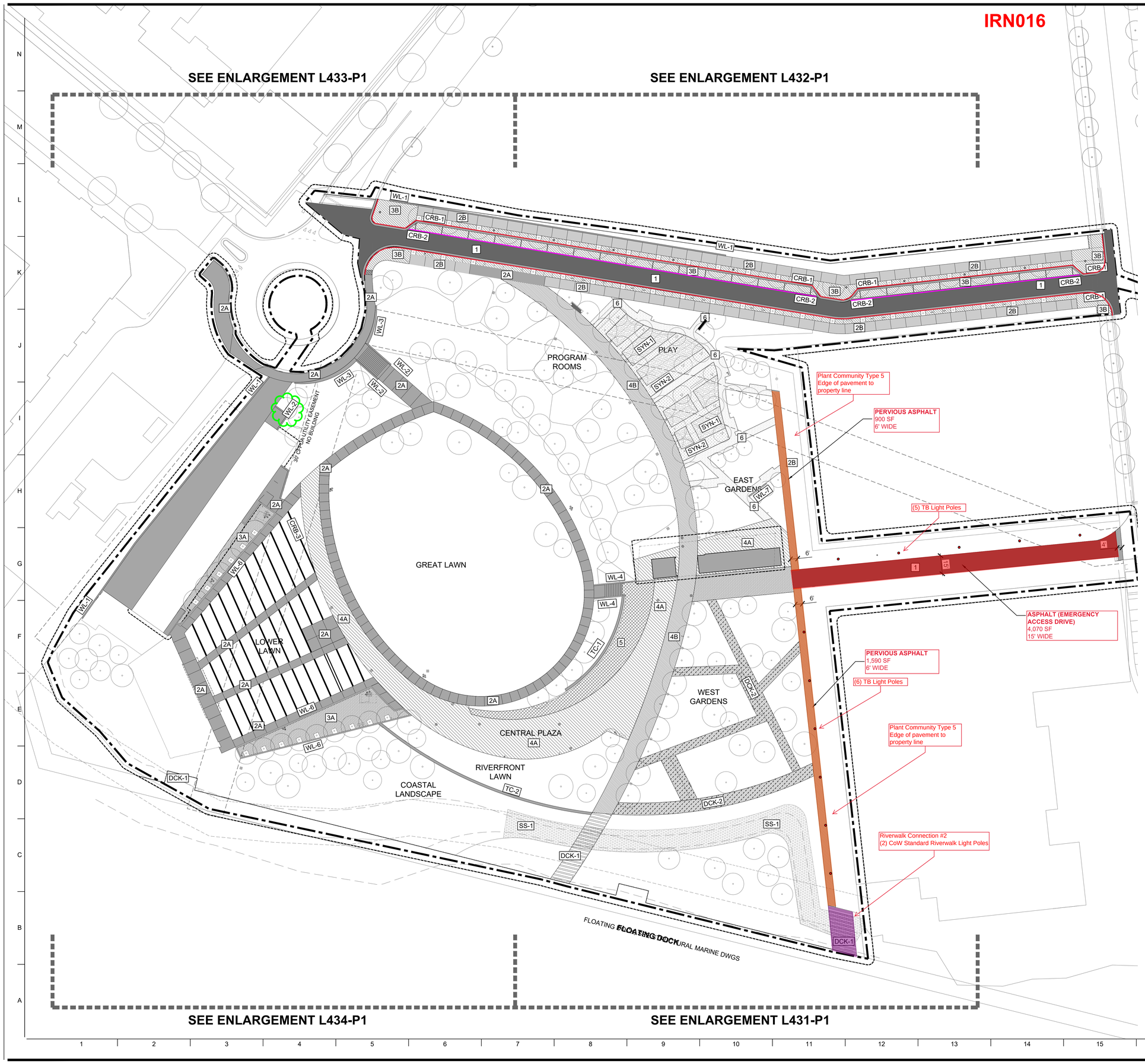
SHEET NO.

L-131-P1

IRN016



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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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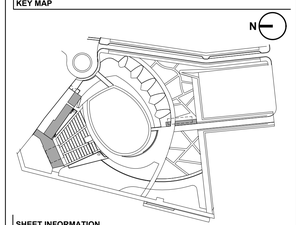
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0 (0 5 10 15 30)

SHEET TITLE

LANDSCAPE MATERIALS PLAN (INTERIM)

SHEET NO.

L-131-P1

IRN016

FUTURE DEVELOPMENT SITE

SEE ENLARGEMENT L433-P1

SEE ENLARGEMENT L432-P1

NUTT STREET

COWAN STREET

HARNETT STREET

FUTURE DEVELOPMENT SITE

SECONDARY EMERGENCY VEHICLE ACCESS

LIMIT OF WORK (2' OFFSET FOR CLARITY)

TEMPORARY BOLLARD STORAGE AREA

NUTT STREET

PROGRAM ROOMS

PLAY

ALT. NO. 10 - PLAY EQUIPMENT

FUTURE DEVELOPMENT SITE

EAST GARDENS

CFPUA PUMP STATION

30' CFPUA UTILITY EASEMENT

STAGE BUILDING PACKAGE #3

LOADING DOCK

STAGE

GREAT LAWN

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE

(PEDESTRIAN / EMERGENCY ACCESS)

LOWER LAWN

ARCING PATH

WEST GARDENS

ALLEE

CENTRAL PLAZA

RIVERFRONT LAWN

COASTAL LANDSCAPE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

RIVERWALK CONNECTION 1

RIVERWALK CONNECTION 2

EXISTING RIVERWALK

NORTHEAST CAPE FEAR RIVER

SEE ENLARGEMENT L434-P1

SEE ENLARGEMENT L431-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEETS L-040-P1 AND L-041-P1 FOR LIGHTING, SIGNAGE & FURNITURE SCHEDULES.
3. SEE SHEETS L-431-P1 TO L-434-P1 FOR ENLARGEMENT PLANS
4. SEE SHEET L-545-P1 FOR PLAY AREA EQUIPMENT LAYOUT

LEGEND

LIMIT OF WORK (2' OFFSET)

FURNITURE

BN-1A	BENCH - TYPE 1A	01 L-541
BN-1B	BENCH - TYPE 1B	03 L-541
BN-1C	BENCH - TYPE 1C	02 L-541
BN-2	BENCH - TYPE 2	01 L-540
BN-3	BENCH - TYPE 3	01 L-542
BO-1	BOLLARD - TYPE 1	05 L-544
BR-1	BICYCLE RACK - TYPE 1	05 L-544
DF-1	DRINKING FOUNTAIN - TYPE 1	01 L-543
TR-1	TRASH/ RECYCLING RECEPTACLE -TYPE 1	02 L-544

RAILS AND FENCES

FN-1	FENCE - TYPE 1	01 L-502
GT-1	GATE - TYPE 1	
HR-1	HANDRAIL - TYPE 1	01 L-501
HR-2	HANDRAIL - TYPE 2	02 L-501
GR-1	GUARDRAIL - TYPE 1	
GR-2	GUARDRAIL - TYPE 2	01 L-500

LIGHTING (SEE ELECTRICAL DRAWINGS)

TA	CITY STANDARD STREET POLE	01 L-555
TB	PEDESTRIAN POLE	02 L-555
TC	MULTI-HEAD POLE	03 L-555
TD	PEDESTRIAN BOLLARD	04 L-555
TF	IN-GRADE LUMINAIRE	05 L-555
WG	CITY STANDARD RIVERFRONT POLE	

SIGNAGE

ID-1, ID-2, ID-3	SIGNAGE - IDENTIFICATION	01 L-580
INT-1A, INT-1B	SIGNAGE - INTERPRETIVE	
REG-1A, REG-1B	SIGNAGE - REGULATORY 1 PARK RULES	02 L-580

SITE UTILITIES

HB-1	HOSE BIB - BLDG MOUNTED, *SEE PLUMBING DWGS*
HB-2	HOSE BIB - FLUSH IN GRADE *SEE CIVIL DWGS*
SC-1	SECURITY CAMERA *SEE ELECTRICAL DWGS*
P-1	POWER - POINTS OF SALE *SEE ELECTRICAL DWGS*
P-2	POWER - PORTABLE TOILET *SEE ELECTRICAL DWGS*

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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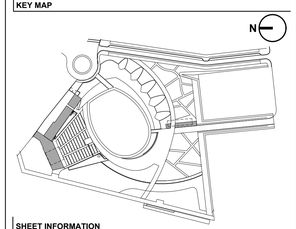

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Checked By: ML / CM
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0 5 10 15 30

SHEET TITLE

LANDSCAPE FURNITURE LIGHTING & SIGNAGE PLAN

SHEET NO.

L-141-P1

IRN016

NOTE: CITY OF WILMINGTON STREET TREE REQUIREMENTS

NUTT ST (EAST SIDE):
LENGTH: 602'
TREES REQUIRED (1 PER 30'): 20
TREES PROVIDED: 22

NUTT ST (WEST SIDE):
LENGTH: 602'
TREES REQUIRED (1 PER 30'): 20
TREES PROVIDED: 21

COWAN STREET:
LENGTH: 141'
TREES REQUIRED (1 PER 30'): 5
TREES PROVIDED: 0; ENTIRETY OF COWAN ST. FRONTAGE IS WITHIN THE 30', CFPUA UTILITY EASEMENT WITH RESTRICTIONS ON TREE PLANTING.

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-060-P1 FOR TREE PLANTING SCHEDULE
3. SEE SHEETS L-461-P1 AND L-462-P1 FOR PLANTING ENLARGEMENTS.
4. ALL TREES TO BE STAKED FOR REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO PLANTING.
5. UNDERGROUND UTILITIES SHOWN FOR REFERENCE ONLY, SEE CIVIL DRAWINGS

LEGEND

- LIMIT OF WORK (2' OFFSET)
- EXISTING TREE
- Xx PROPOSED TREE

TREE LAYOUT POINTS		
LP00	NORTHING	EASTING
PP01	182740.59	2317037.03
PP02	182726.73	2317040.01
PP03	182693.46	2317034.57
PP04	182696.75	2317019.73
PP05	182723.94	2316998.08
PP06	182752.05	2316993.27
PP07	182739.47	2316979.38
PP08	182707.06	2316994.37
PP09	182690.54	2316976.74
PP10	182696.19	2316945.68
PP11	182754.17	2316949.51
PP12	182741.80	2316944.41
PP13	182733.16	2316924.52
PP14	182679.79	2316925.44
PP15	182713.03	2316918.89
PP16	182744.47	2316893.75
PP17	182721.38	2316839.17
PP18	182701.24	2316832.29
PP19	182709.66	2316816.95
PP20	182698.36	2316801.63
PP21	182738.72	2316810.12
PP22	182753.77	2316823.12
PP23	182791.51	2316831.02
PP24	182859.69	2316884.91
PP25	182880.59	2316890.42
PP26	182852.43	2316906.86
PP27	182836.09	2316917.51
PP28	182839.63	2316930.51
PP29	182799.96	2317139.91
PP30	182820.18	2317130.58
PP31	182810.94	2317149.70
PP32	182825.89	2317181.65
PP33	182858.36	2317183.56
PP34	182847.11	2317201.39
PP35	182861.15	2317233.60
PP36	182889.79	2317226.98
PP37	182885.98	2317251.41
PP38	182900.21	2317281.85
PP39	182933.65	2317276.13
PP40	182926.45	2317297.22
PP41	182971.67	2317305.33
PP42	183019.31	2317307.75
PP43	183029.17	2317301.49
PP44	182982.92	2317215.89
PP45	182965.43	2317220.73
PP46	182928.81	2317186.27
PP47	182916.07	2317182.15
PP48	182842.02	2317083.35
PP49	182845.95	2317038.10
PP50	182879.14	2317086.69
PP51	182892.98	2317098.20
PP52	182910.68	2317136.88
PP53	182923.52	2317148.91
PP54	182964.52	2317174.02
PP55	183004.74	2317181.11
PP56	183019.87	2317174.00
PP57	183037.04	2317209.59
PP58	183047.60	2317223.17
PP59	183048.35	2317196.38
PP60	183096.63	2317194.71
PP61	183090.38	2317219.81
PP62	183098.01	2317210.84
PP63	183109.44	2317197.34
PP64	183099.90	2317178.92
PP65	183277.53	2317016.20
PP66	183286.36	2316995.96
PP67	183271.88	2316994.92
PP68	183261.00	2317006.68
PP69	183245.18	2316998.84
PP70	183242.35	2316981.83
PP71	183260.37	2316985.85
PP72	183277.50	2316978.48
PP73	183140.77	2316893.96
PP74	183119.92	2316901.64
PP75	183105.69	2316890.84
PP76	183097.10	2316909.57
PP77	183084.07	2316906.93
PP78	183067.41	2316913.57
PP79	183055.18	2316909.18
PP80	183039.11	2316921.59
PP81	183035.95	2316895.62
PP82	183029.04	2316912.66
PP83	183014.37	2316919.57
PP84	183005.74	2316943.47
PP85	182999.51	2316930.09
PP86	182994.73	2316906.69

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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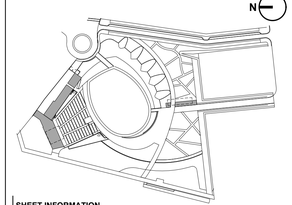

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
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Date: 10/25/2019
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SHEET TITLE

LANDSCAPE TREE PLANTING PLAN

SHEET NO.

L-161-P1

IRN016

IRN016

FUTURE DEVELOPMENT SITE

NO ENLARGEMENT AREA 3

SEE ENLARGEMENT L462-P1

NUTT STREET

COWAN STREET

HARNETT STREET

FUTURE DEVELOPMENT SITE

LIMIT OF WORK (2' OFFSET FOR CLARITY)

PLANT COMMUNITY 2B - UPLAND SLOPE - LOW (03 / L-570)

PLANT COMMUNITY 2A - UPLAND SLOPE - HIGH (02 / L-570)

PLANT COMMUNITY 1 - FIBER-REINFORCED LAWN (01 / L-570)

PLANT COMMUNITY 3A - URBAN GARDENS (04 / L-570)

PLANT COMMUNITY 5 - SEEDED 3:1 SLOPE (03 / L-571)

ALT. NO. 11 - EAST GARDENS

INFILTRATING LAWN, SEE CIVIL DWGS

CFPUA PUMP STATION

30' CFPUA EASEMENT TO BE ABANDONED SANITARY SEWER RE-ROUTE SEE PACKAGE #2

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

STAGE BUILDING PACKAGE #3

LOADING DOCK

STAGE

INFILTRATION SYSTEM, SEE CIVIL DWGS

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

PLANT COMMUNITY 4A - COASTAL MEADOW (05 / L-570)

PLANT COMMUNITY 4B - RIVER LEDGE (02 / L-571)

PLANT COMMUNITY 4C - RIVER BANK (01 / L-571)

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

PLANT COMMUNITY 3B - BIORETENTION ZONE (04 / L-570)

EROSION CONTROL MAT

RIVER LEDGE (01 / L-571)

INTERTIDAL ZONE (02 / L-571)

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

SEE ENLARGEMENT L464-P1

SEE ENLARGEMENT L461-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-070-P1 FOR PLANTING SCHEDULE.
3. SEE SHEETS L-461-P1 AND L-462-P1 FOR PLANTING ENLARGEMENTS
4. PLANTING SOILS PROFILES & CONTAMINATED SOILS CONTAINMENT TO BE CONFIRMED PENDING FORTHCOMING GEOTECHNICAL REPORT & GROUNDWATER REPORT.

LEGEND

- LIMIT OF WORK (2' OFFSET)
- **PLANT COMMUNITY - TYPE 1** FIBER-REINFORCED EVENT LAWN
- **PLANT COMMUNITY - TYPE 2A** UPLAND SLOPE - HIGH
- **PLANT COMMUNITY - TYPE 2B** UPLAND SLOPE - LOW
- **PLANT COMMUNITY - TYPE 3A** URBAN GARDENS
- **PLANT COMMUNITY - TYPE 3B** BIORETENTION ZONE
- **PLANT COMMUNITY - TYPE 4A** COASTAL MEADOW
- **PLANT COMMUNITY - TYPE 4B** RIVER LEDGE
- **PLANT COMMUNITY - TYPE 4C** RIVER BANK
- **PLANT COMMUNITY - TYPE 4D** INTERTIDAL ZONE
- **PLANT COMMUNITY - TYPE 5** SEEDED 3:1 SLOPE
- **404 WETLAND** (SEE NOTE ON G-003-P1)

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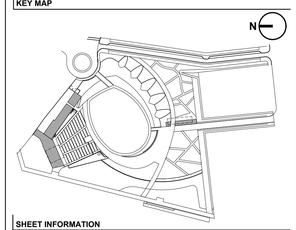

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SHEET TITLE

LANDSCAPE PLANTING PLAN

SHEET NO.

L-171-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

HARNETT STREET

LIMIT OF WORK
(2' OFFSET FOR CLARITY)

NUTT STREET

FUTURE DEVELOPMENT SITE

CFPUA PUMP STATION

ENLARGEMENT - AREA 3

L-413-P1 GRADING
L-433-P1 MATERIALS / FURNITURE
NO PLANTING ENLARGEMENT

ENLARGEMENT - AREA 2

L-412-P1 GRADING
L-432-P1 MATERIALS / FURNITURE
L-462-P1 PLANTING

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

STAGE BUILDING PACKAGE #3

LOADING DOCK

STAGE

ENLARGEMENT - AREA 4

L-414-P1 GRADING
L-434-P1 MATERIALS / FURNITURE
L-464-P1 PLANTING

ENLARGEMENT - AREA 1

L-411-P1 GRADING
L-431-P1 MATERIALS / FURNITURE
L-461-P1 PLANTING

FUTURE DEVELOPMENT SITE

30' BUILDING SETBACK
NORMAL HIGH WATER LINE
404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4
MEAN HIGH WATER LINE 1.83
MEAN LOW WATER LINE -2.54

NORTHEAST CAPE FEAR RIVER

EXISTING RIVERWALK

N M L K J I H G F E D C B A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

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www.sageandcoombe.com

Acoustic/Theater/AV = AT
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www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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Marine Structural Engineering = SM
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40 Worth Street, Room 703, New York NY 10013
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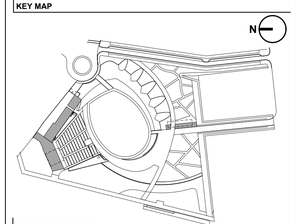
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
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IRN016

SHEET TITLE

LANDSCAPE ENLARGEMENTS KEY PLAN

SHEET NO.

L-400-P1

MATCHLINE, SEE SHEET L-412

MATCHLINE, SEE SHEET L-414

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENT PLANS

00 PROPOSED CONTOUR (MAJOR)

00 PROPOSED CONTOUR (MINOR)

BREAK LINE

LANDSCAPE / CIVIL COORDINATE LANDSCAPE DWGS WITH CIVIL DWGS

(XXX.XX) EXISTING SPOT GRADE

XXX.XX PROPOSED SPOT GRADE

X.XX% SLOPE

TD TRENCH DRAIN, SEE CIVIL DWGS & WF DWGS — 01-02 / L-511

AD AREA DRAIN, SEE CIVIL DWGS — 04 / L-511

MH MANHOLE COVER SEE CIVIL DWGS — 05 / L-511

PROJECT INFORMATION

NORTH WATERFRONT PARK

IRN016

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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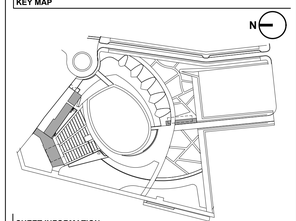

SHEET INFORMATION

Project No.: NWP 1701
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Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=10'-0
6 2 5 10

SHEET TITLE

LANDSCAPE GRADING ENLARGEMENT 1

SHEET NO.

L-411-P1

SHEET NOTES IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENT PLANS

00 PROPOSED CONTOUR (MAJOR)

00 PROPOSED CONTOUR (MINOR)

BREAK LINE

LANDSCAPE / CIVIL COORDINATE LANDSCAPE DWGS WITH CIVIL DWGS

(XXX.XX) + EXISTING SPOT GRADE

XXX.XX + PROPOSED SPOT GRADE

X.XX% SLOPE

TD TRENCH DRAIN, SEE CIVIL DWGS & WF DWGS — 01-02 / L-511

AD AREA DRAIN, SEE CIVIL DWGS — 04 / L-511

MH MANHOLE COVER SEE CIVIL DWGS — 05 / L-511

EARTHWORK LAYOUT POINTS		
GP##	NORTHING	EASTING
GP01	182977.3443	2317242.5917
GP02	182964.4319	2317271.3385
GP03	182939.2111	2317308.8536
GP04	182924.0082	2317233.9967
GP05	182883.5537	2317276.1832
GP06	182889.2425	2317191.9996
GP07	182837.9244	2317229.7088
GP08	182860.4725	2317145.7470
GP09	182803.8361	2317175.9166
GP10	182839.4762	2317099.4363
GP11	182785.2405	2317117.0801
GP12	182845.4869	2317079.5274

PARK SUPPORT BUILDING, FFE 13 PACKAGE #4

FFE 13

MATCHLINE, SEE SHEET L-413

MATCHLINE, SEE SHEET L-411

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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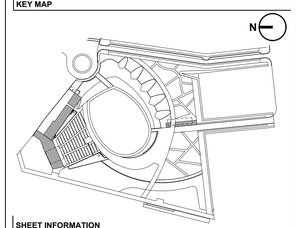
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=10'-0 (0 2 5 10)

SHEET TITLE

LANDSCAPE GRADING ENLARGEMENT 2

SHEET NO.

L-412-P1

SHEET NOTES IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENT PLANS

00 PROPOSED CONTOUR (MAJOR)

00 PROPOSED CONTOUR (MINOR)

BREAK LINE

LANDSCAPE / CIVIL COORDINATE LANDSCAPE DWGS WITH CIVIL DWGS

(XXX.XX) EXISTING SPOT GRADE

XXX.XX PROPOSED SPOT GRADE

X.XX% SLOPE

TD TRENCH DRAIN, SEE CIVIL DWGS & WF DWGS (01-02 / L-511)

AD AREA DRAIN, SEE CIVIL DWGS (04 / L-511)

MH MANHOLE COVER SEE CIVIL DWGS (05 / L-511)

EARTHWORK LAYOUT POINTS		
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GP10	182839.4762	2317099.4363
GP11	182785.2405	2317117.0801
GP12	182845.4869	2317079.5274

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SEAL/SIGNATURE

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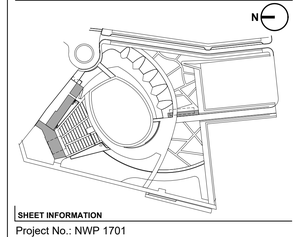
ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=10'-0
0 2 5 10

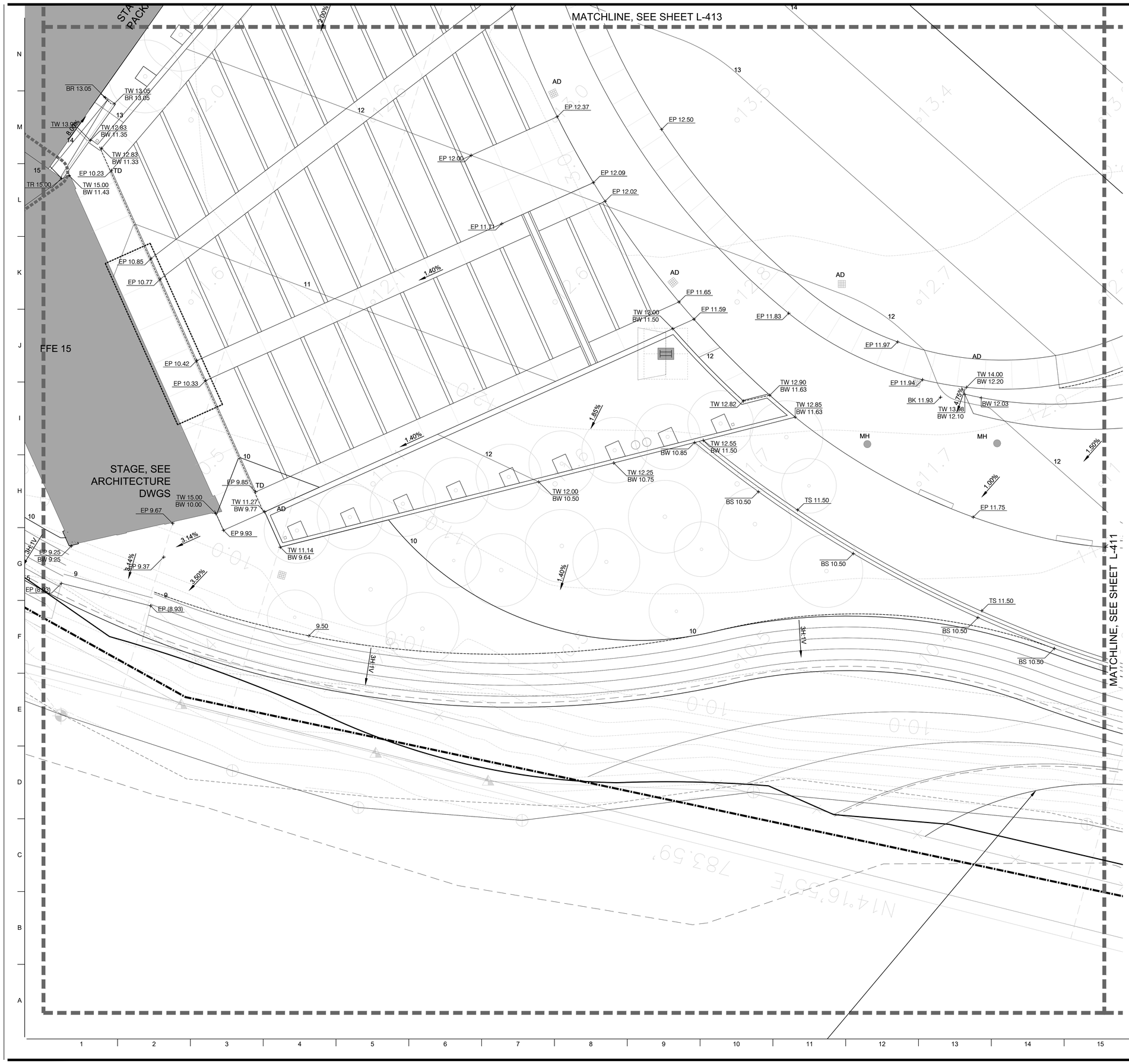
SHEET TITLE

LANDSCAPE GRADING ENLARGEMENT 3

SHEET NO.

L-413-P1

IRN016



SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENT PLANS

00	PROPOSED CONTOUR (MAJOR)
00	PROPOSED CONTOUR (MINOR)
----------	BREAK LINE
LANDSCAPE / CIVIL	COORDINATE LANDSCAPE DWGS WITH CIVIL DWGS
(XXX.XX)	EXISTING SPOT GRADE
XXX.XX	PROPOSED SPOT GRADE
X.XX%	SLOPE
TD	TRENCH DRAIN, SEE CIVIL DWGS & WF DWGS (01-02 / L-511)
AD	AREA DRAIN, SEE CIVIL DWGS (04 / L-511)
MH	MANHOLE COVER SEE CIVIL DWGS (05 / L-511)

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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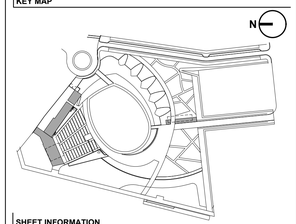

SHEET INFORMATION

Project No.: NWP 1701
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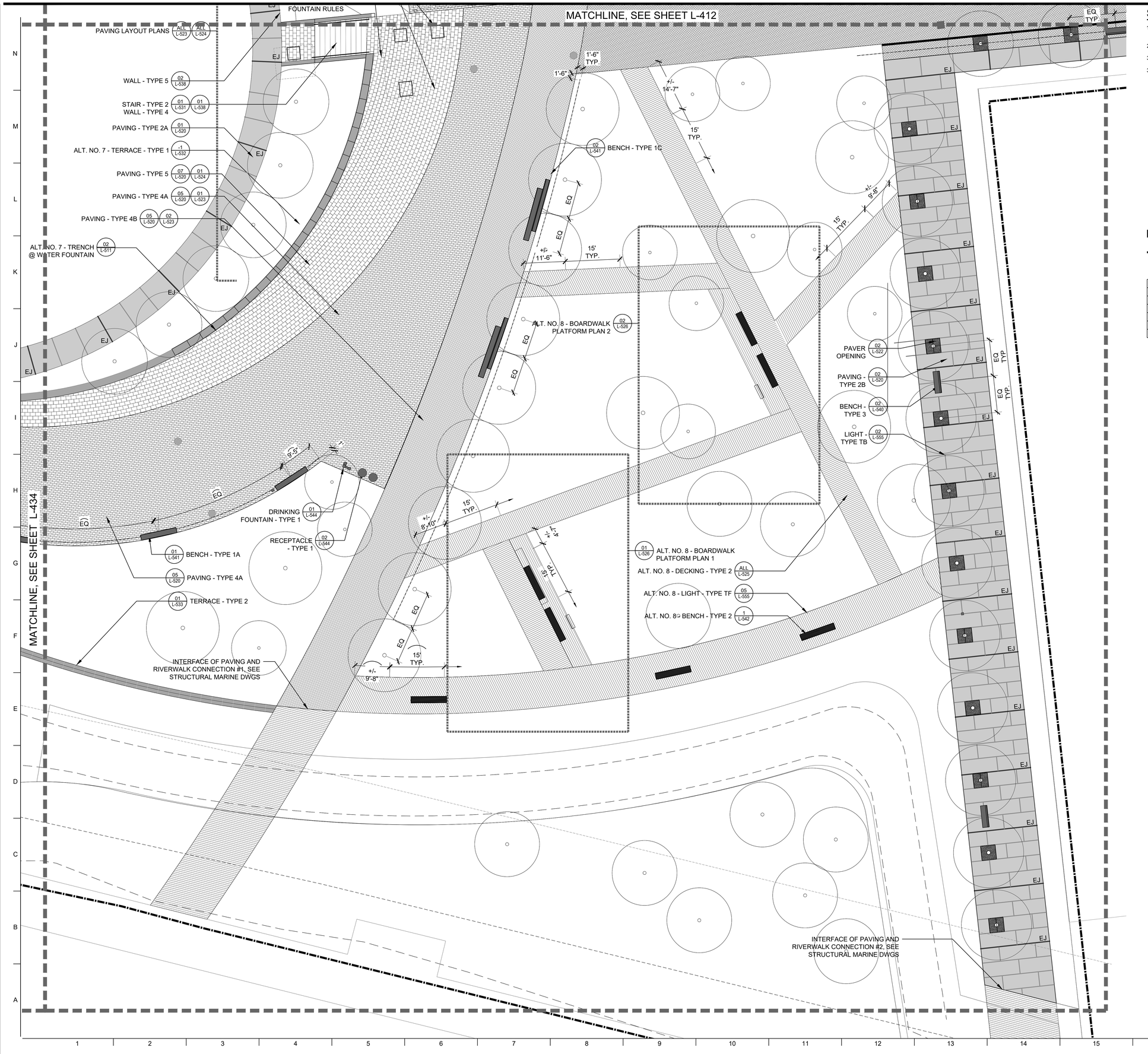
0 2 5 10

SHEET TITLE

LANDSCAPE GRADING ENLARGEMENT 4

SHEET NO.

L-414-P1



SHEET NOTES IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 & L-031-P1 FOR MATERIALS SCHEDULE.
3. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENTS.
3. SEE L-431-P1 TO L-434-P1 FOR MATERIALS ENLARGEMENTS.

LEGEND

LIMIT OF WORK (2' OFFSET)

HIGH MAST LAYOUT POINTS		
EP00	NORTHING	EASTING
EP01	182871.35	2317120.05
EP02	183066.14	2317169.29
EP03	183168.34	2317061.25
EP04	183107.92	2316937.33
EP05	182927.66	2316957.09

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No. 1980

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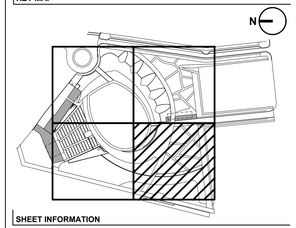

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0 2 5 10

SHEET TITLE

LANDSCAPE ENLARGEMENT AREA 1

SHEET NO.

L-431-P1

SHEET NOTES IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 & L-031-P1 FOR MATERIALS SCHEDULE.
3. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENTS.
3. SEE L-431-P1 TO L-434-P1 FOR MATERIALS ENLARGEMENTS.

LEGEND

LIMIT OF WORK (2' OFFSET)

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EP01	182871.35	2317120.05
EP02	183066.14	2317169.29
EP03	183168.34	2317061.25
EP04	183107.92	2316937.33
EP05	182927.66	2316957.09

ALT. NO 9 - SYNTHETIC SURFACE - TYPE 1 (02 L-521)
ALT. NO. 9 - SYNTHETIC SURFACE - TYPE 2 (03 L-521)
BENCH - TYPE 1A (01 L-541)
PAVING - TYPE 4B (05 L-520)
ALT. NO. 9 & ALT. NO. 10 PLAY LAYOUT (01 L-545)
REGULATORY SIGN PLAY RULES (02 L-580)
BIKE RACK -TYPE 1 (03 L-544)
PAVING - TYPE 2B (02 L-520)
XX L-5XX LIGHT - TYPE TB
02 L-544 RECEPTACLE - TYPE 1
PAVING - TYPE 6 (06 L-520)
BENCH - TYPE 1B (03 L-541)
BENCH - TYPE 3 (02 L-540)
LIGHT - TYPE TB (02 L-555)
PAVING - TYPE 2B (02 L-520)
PAVER OPENING (02 L-522)
LIGHT - TYPE TD (04 L-555)
INTERPRETIVE SIGN EAST GARDENS (02 L-580)
BENCH - TYPE 2 (01 L-540)
WALL - TYPE 7 DONOR WALL (04 L-538)
CURB - TYPE 2 (05 L-522)
LIGHT - TYPE TC (03 L-555)
PARK SUPPORT BUILDING CANOPY
PAVING - TYPE 4A (05 L-520)
PARK SUPPORT BUILDING, PACKAGE #4
PAVING - TYPE 2A (01 L-520)
ALT. NO. 6 - WALL - TYPE 5 (02 L-538)
ALT. NO. 7- HATCH IN PAVING (01 L-524)
REGULATORY SIGN - WATER FOUNTAIN RULES (02 L-580)
PAVING LAYOUT PLANS (ALL L-523, ALL L-524)
MATCHLINE, SEE SHEET L-433
MATCHLINE, SEE SHEET L-431

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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www.hargreavesjonesla.com
NC License #C-513

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Environmental Engineering = EE
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Lighting Design = EL
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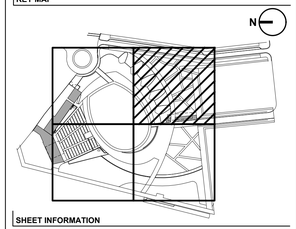
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

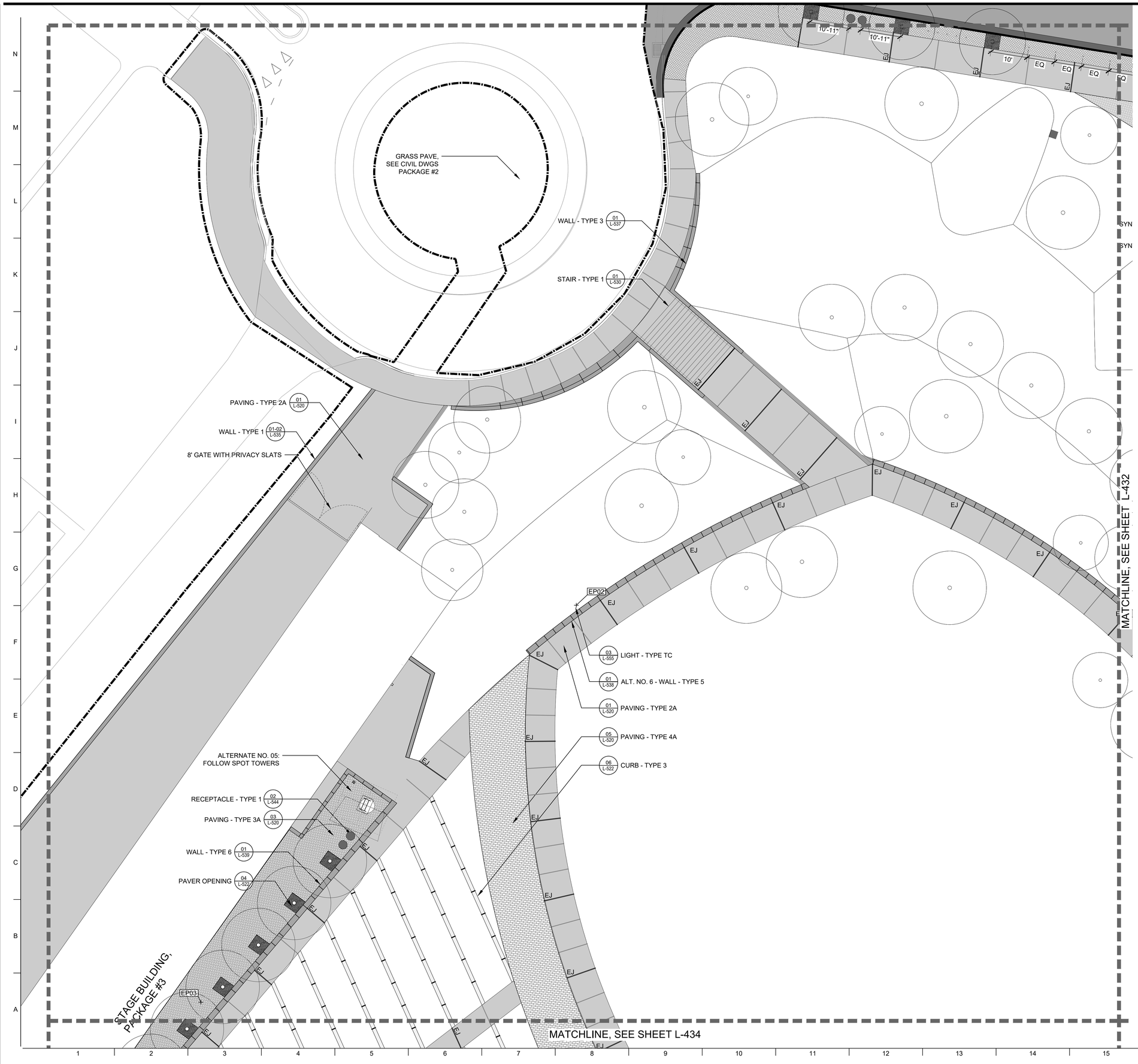
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=10'-0
0 2 5 10

SHEET TITLE

LANDSCAPE ENLARGEMENT AREA 2

SHEET NO.

L-432-P1



SHEET NOTES IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 & L-031-P1 FOR MATERIALS SCHEDULE.
3. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENTS.
3. SEE L-431-P1 TO L-434-P1 FOR MATERIALS ENLARGEMENTS.

LEGEND

LIMIT OF WORK (2' OFFSET)

HIGH MAST LAYOUT POINTS		
EP00	NORTHING	EASTING
EP01	182871.35	2317120.05
EP02	183066.14	2317169.29
EP03	183168.34	2317061.25
EP04	183107.92	2316937.33
EP05	182927.66	2316957.09

IRN016

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT MARY MARGARET JONES No. 1980

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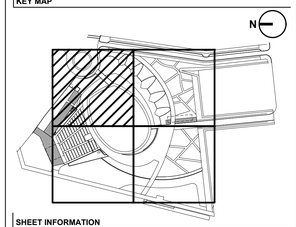

SHEET INFORMATION

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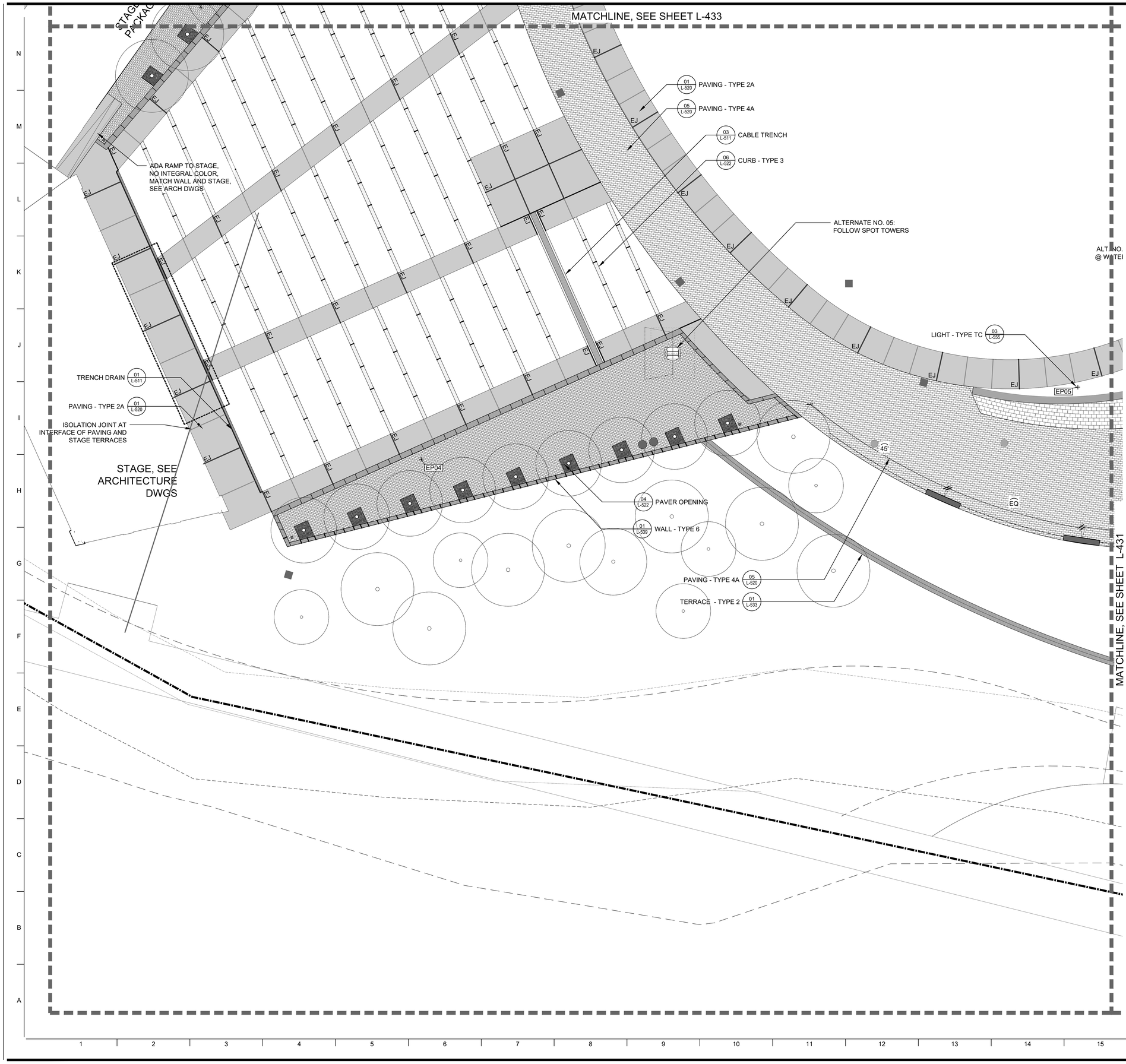
SHEET TITLE

LANDSCAPE ENLARGEMENT AREA 3

SHEET NO.

L-433-P1



SHEET NOTES IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 & L-031-P1 FOR MATERIALS SCHEDULE.
3. SEE L-411-P1 TO L-414-P1 FOR GRADING ENLARGEMENTS.
3. SEE L-431-P1 TO L-434-P1 FOR MATERIALS ENLARGEMENTS.

LEGEND

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EP02	183066.14	2317169.29
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No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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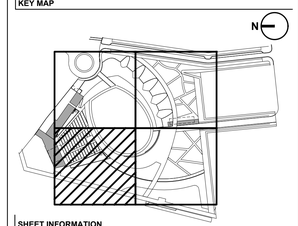
KEY MAP



SHEET INFORMATION

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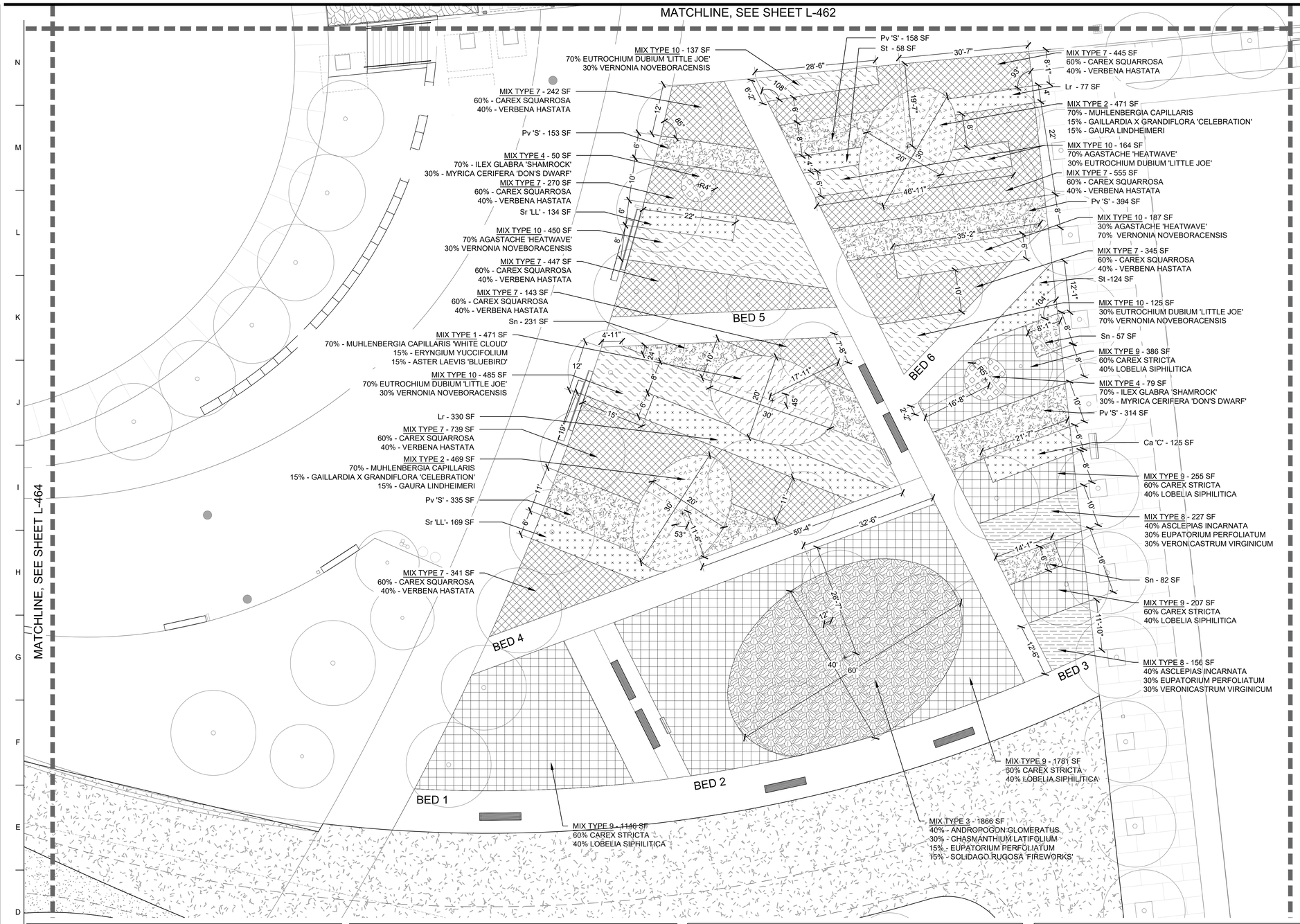
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=10'-0
0 2 5 10

SHEET TITLE

LANDSCAPE ENLARGEMENT AREA 4

SHEET NO.

L-434-P1

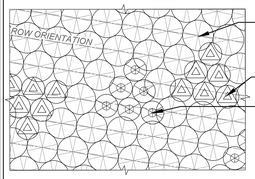


SHEET NOTES IRN016

1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-070 FOR PLANTING SCHEDULE.
3. SEE SHEET L-171-P1 FOR OVERALL PLANTING PLAN.
4. PLANTING SOILS PROFILES & CONTAMINATED SOILS CONTAINMENT TO BE CONFIRMED PENDING FORTHCOMING GEOTECHNICAL

MIX TYPE 1 ENLARGEMENT

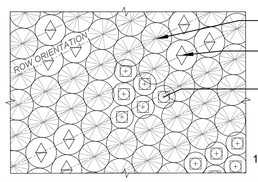
- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF ADJACENT PLANTING BEDS
- GROUP ERYNGIUM YUCCIFOLIUM IN CLUSTERS OF THREE
- GROUP ASTER LAEVIS 'BLUEBIRD' IN CLUSTERS OF FIVE
- CLUSTERS OF E. YUCCIFOLIUM AND A. LAEVIS SHALL NOT TOUCH
- REMAINING AREA IS FILLED WITH MUHLENBERGIA CAPILLARIS 'WHITE CLOUD'



1/4"=1'-0"

MIX TYPE 2 ENLARGEMENT

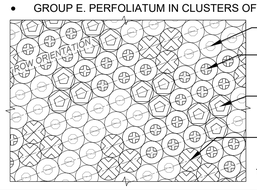
- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF ADJACENT PLANTING BEDS
- GROUP GAURA LINDHEIMERI IN CLUSTERS OF THREE
- GROUP GAILLARDIA X GRANDIFLORA IN CLUSTERS OF FIVE
- CLUSTERS OF G. LINDHEIMERI AND G. GRANDIFLORA SHALL NOT TOUCH
- REMAINING AREA IS FILLED WITH MUHLENBERGIA CAPILLARIS



1/4"=1'-0"

MIX TYPE 3 ENLARGEMENT

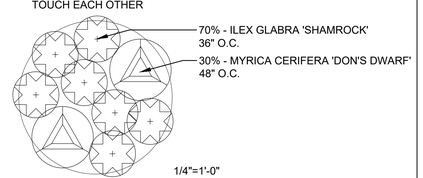
- ORIENTATION OF ROWS TO ALIGN WITH EDGE OF BOARDWALK TO THE EAST
- GROUP A. GLOMERATUS IN TWO ROWS OF FOUR
- GROUP C. LATIFOLIUM IN TWO ROWS OF THREE
- GROUP S. RUGOSA IN CLUSTERS OF THREE
- GROUP E. PERFOLIATUM IN CLUSTERS OF THREE



1/4"=1'-0"

MIX TYPE 4 ENLARGEMENT

- INDIVIDUAL MYRICA CERIFERA 'DON'S DWARF' PLANTS DO NOT TOUCH EACH OTHER



1/4"=1'-0"

MIX TYPE 7 LAYOUT

- SEEDED WITH TYPE 4A COASTAL MEADOW MIX
- CONTAINERS AT 10' O.C. (GROUPED IN CLUSTERS OF 3-7)
- CONTAINERS AT PROPORTION SHOWN
- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF PLANTING BED
- 40% VERBENA HASTATA - GROUP IN CLUSTERS OF THREE TO FOUR
- 60% CAREX SQUARROSA - EVERYWHERE ELSE

MIX TYPE 8 LAYOUT

- SEEDED WITH TYPE 4A COASTAL MEADOW MIX
- CONTAINERS AT 10' O.C. (GROUPED IN CLUSTERS OF 3-7)
- CONTAINERS AT PROPORTION SHOWN
- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF PLANTING BED
- 40% ASCLEPIAS INCARNATA - GROUP IN CLUSTERS OF THREE
- 30% EUPATORIUM PERFOLIATUM - GROUP IN CLUSTERS OF TWO
- 30% VERONICASTRUM VIRGINICUM - GROUP IN CLUSTERS OF TWO

MIX TYPE 9 LAYOUT

- SEEDED WITH TYPE 4A COASTAL MEADOW MIX
- CONTAINERS AT 10' O.C. (GROUPED IN CLUSTERS OF 3-7)
- CONTAINERS AT PROPORTION SHOWN
- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF PLANTING BED
- 40% LOBELIA SIPHILITICA - GROUP IN CLUSTERS OF THREE TO FOUR
- 60% CAREX STRICTA - EVERYWHERE ELSE

MIX TYPE 10 LAYOUT

- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF PLANTING BED
- VARIES 70% / 30% (SEE PLAN):
  - **AGASTACHE 'HEATWAVE'**
  - **EUTROCHIUM DUBIUM 'LITTLE JOE'**
  - **VERNONIA NOVEBORACENSIS**
- GROUP THE '30%' PLANT IN CLUSTERS OF THREE; THE '70%' PLANT IS EVERYWHERE ELSE

IRN016

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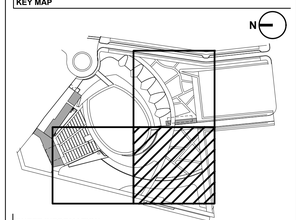

SHEET INFORMATION

Project No.: NWP 1701
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Date: 10/25/2019
Scale: 1"=10'-0
0 2 5 10

SHEET TITLE

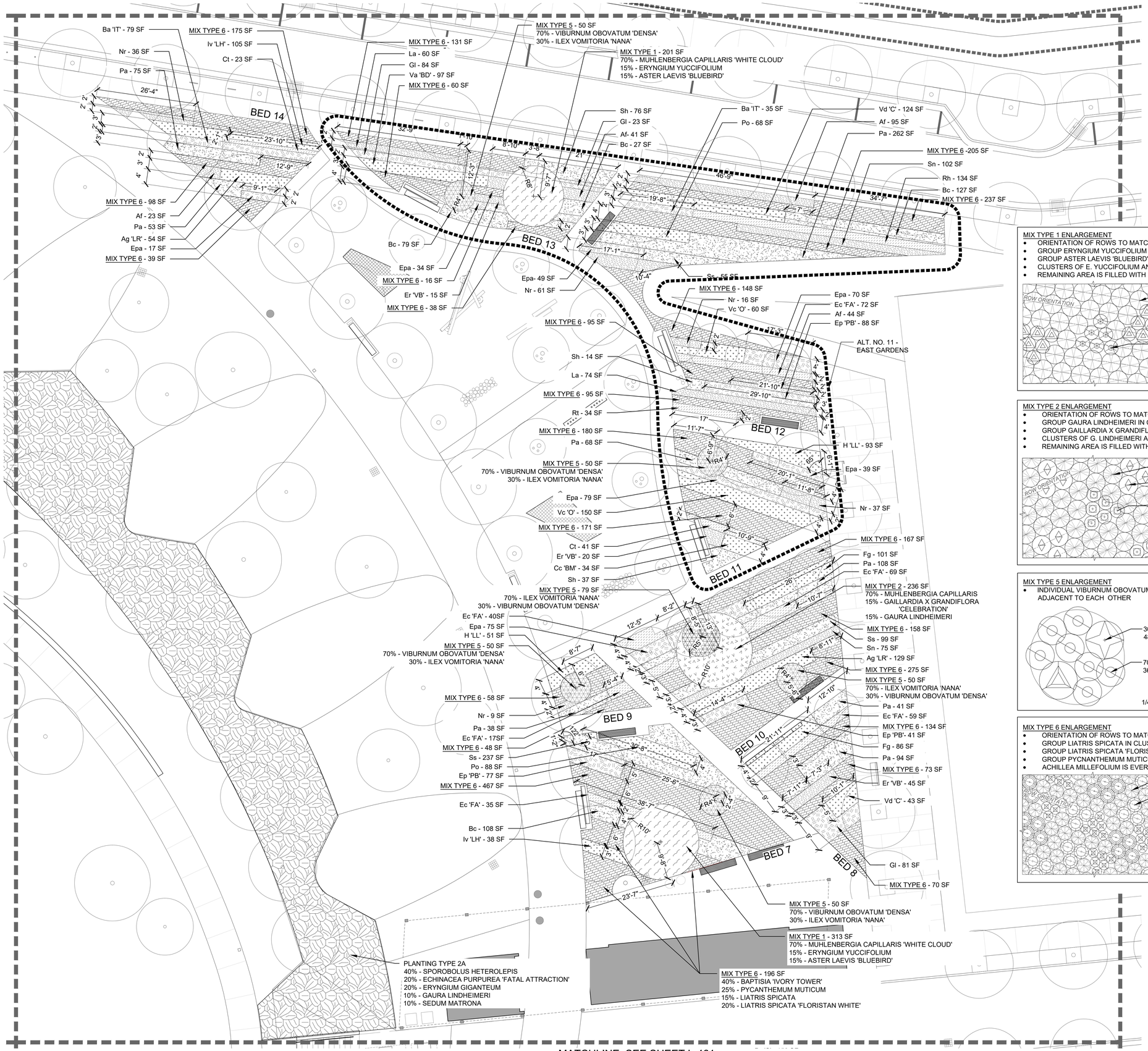
LANDSCAPE PLANTING ENLARGEMENT AREA 1

SHEET NO.

L-461-P1

SHEET NOTES IRN016

1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-070 FOR PLANTING SCHEDULE.
3. SEE SHEET L-171-P1 FOR OVERALL PLANTING PLAN.
4. PLANTING SOILS PROFILES & CONTAMINATED SOILS CONTAINMENT TO BE CONFIRMED PENDING FORTHCOMING GEOTECHNICAL REPORT & GROUNDWATER REPORT.



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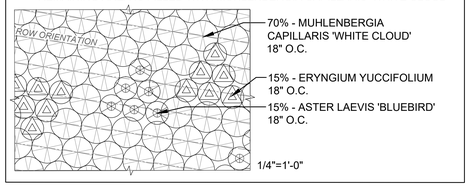

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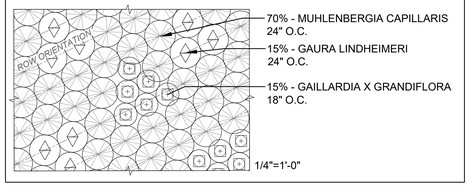
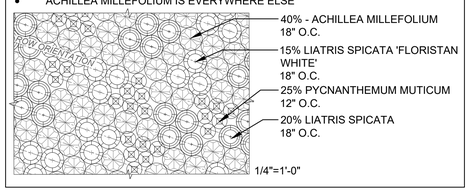


MIX TYPE 5 ENLARGEMENT

- INDIVIDUAL VIBURNUM OBOVATUM 'DENSA' ARE NEVER DIRECTLY ADJACENT TO EACH OTHER

MIX TYPE 6 ENLARGEMENT

- ORIENTATION OF ROWS TO MATCH ALIGNMENT OF PLANTING BED
- GROUP LIATRIS SPICATA IN CLUSTERS OF FOUR
- GROUP LIATRIS SPICATA 'FLORISTAN WHITE' IN CLUSTERS OF THREE
- GROUP PYCNANTHEMUM MUTICUM IN CLUSTERS OF 5
- ACHILLEA MILLEFOLIUM IS EVERYWHERE ELSE



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EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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Water Fountain Design = WF
DELTA FOUNTAINS
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

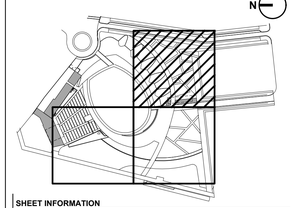
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=10'-0, UNLESS OTHERWISE NOTED
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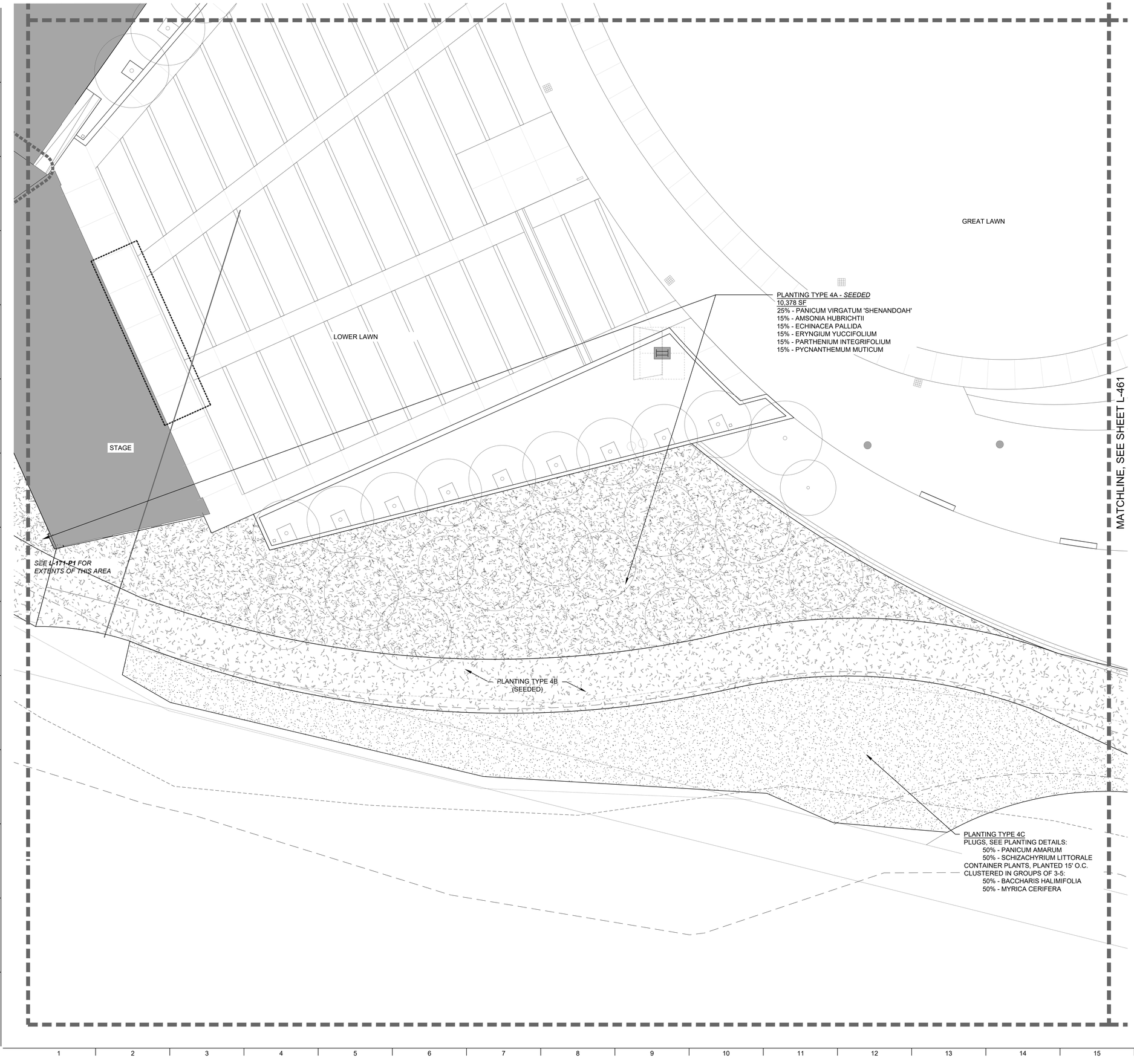
SHEET TITLE

LANDSCAPE PLANTING ENLARGEMENT AREA 2

SHEET NO.

L-462-P1



SHEET NOTES IRN016

1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-070 FOR PLANTING SCHEDULE.
3. SEE SHEET L-171-P1 FOR OVERALL PLANTING PLAN.
4. PLANTING SOILS PROFILES & CONTAMINATED SOILS CONTAINMENT TO BE CONFIRMED PENDING FORTHCOMING GEOTECHNICAL REPORT & GROUNDWATER REPORT.

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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No. 1980
MARY MARGARET JONES

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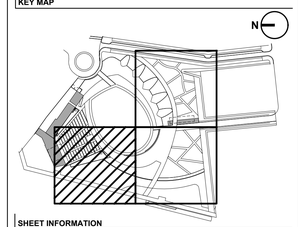

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Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
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Scale: 1"=10'-0, UNLESS OTHERWISE NOTED
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SHEET TITLE

LANDSCAPE PLANTING ENLARGEMENT AREA 4

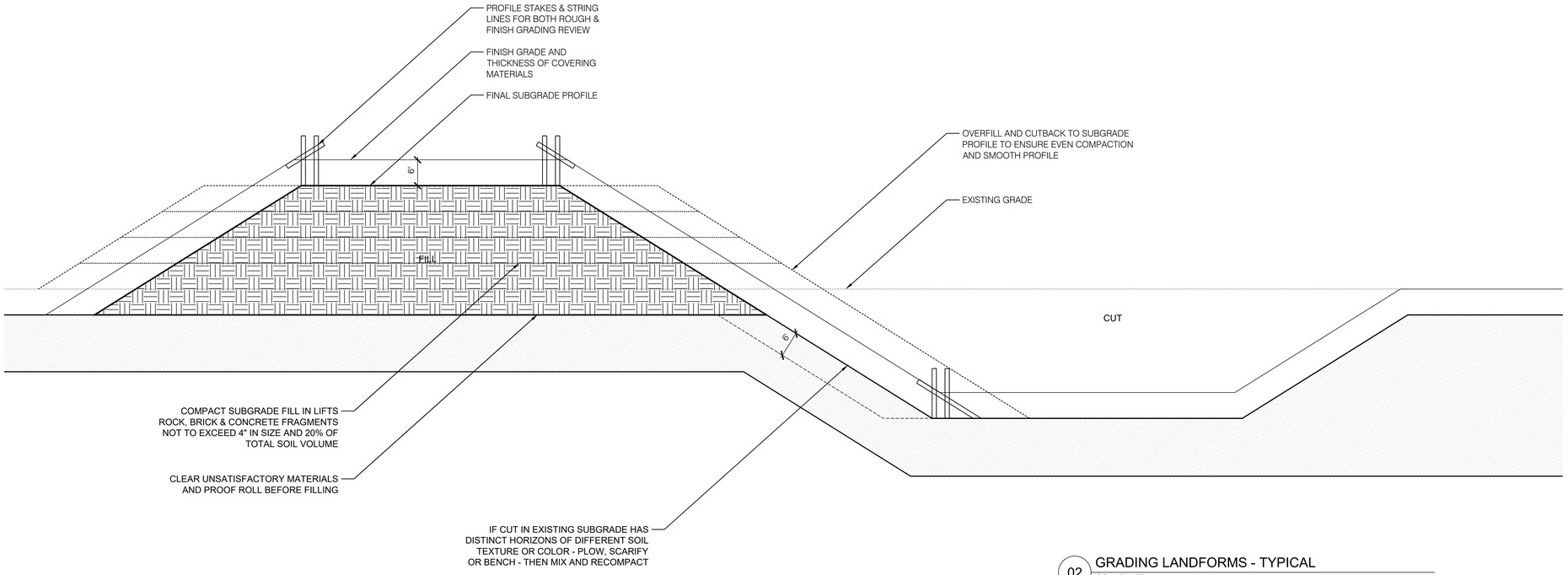
SHEET NO.

L-464-P1

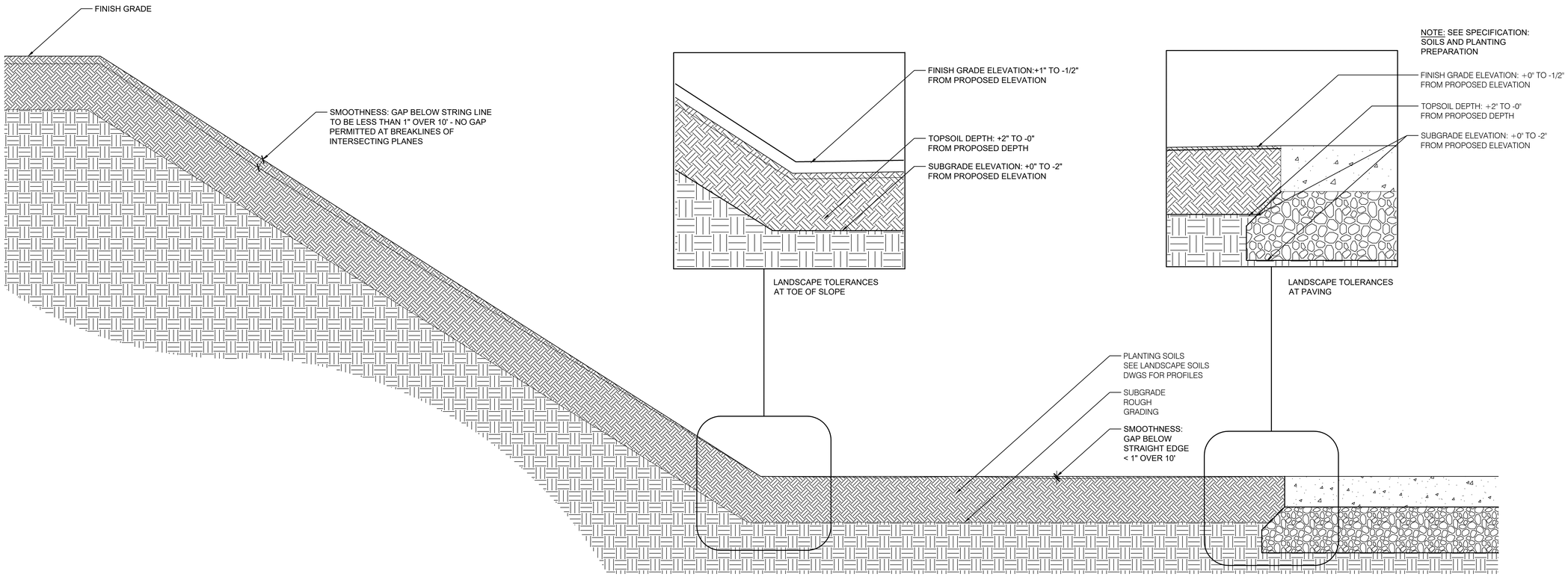
IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-111-P1 FOR GRADING PLAN.
3. CONSTRUCT AND COMPLETE ALL WORK ON SLOPE PRIOR TO PREPARING FLATTER AREAS. FILL SLOPES FROM BOTTOM UP.



02 GRADING LANDFORMS - TYPICAL
SCALE: NTS



01 GRADING TOLERANCES - TYPICAL
SCALE: NTS

IRN016

PROJECT INFORMATION

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WILMINGTON, NORTH CAROLINA

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ISSUE/REVISIONS

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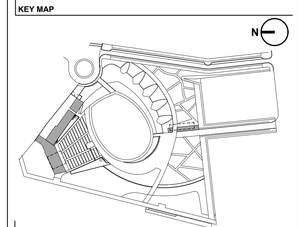
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - GRADING

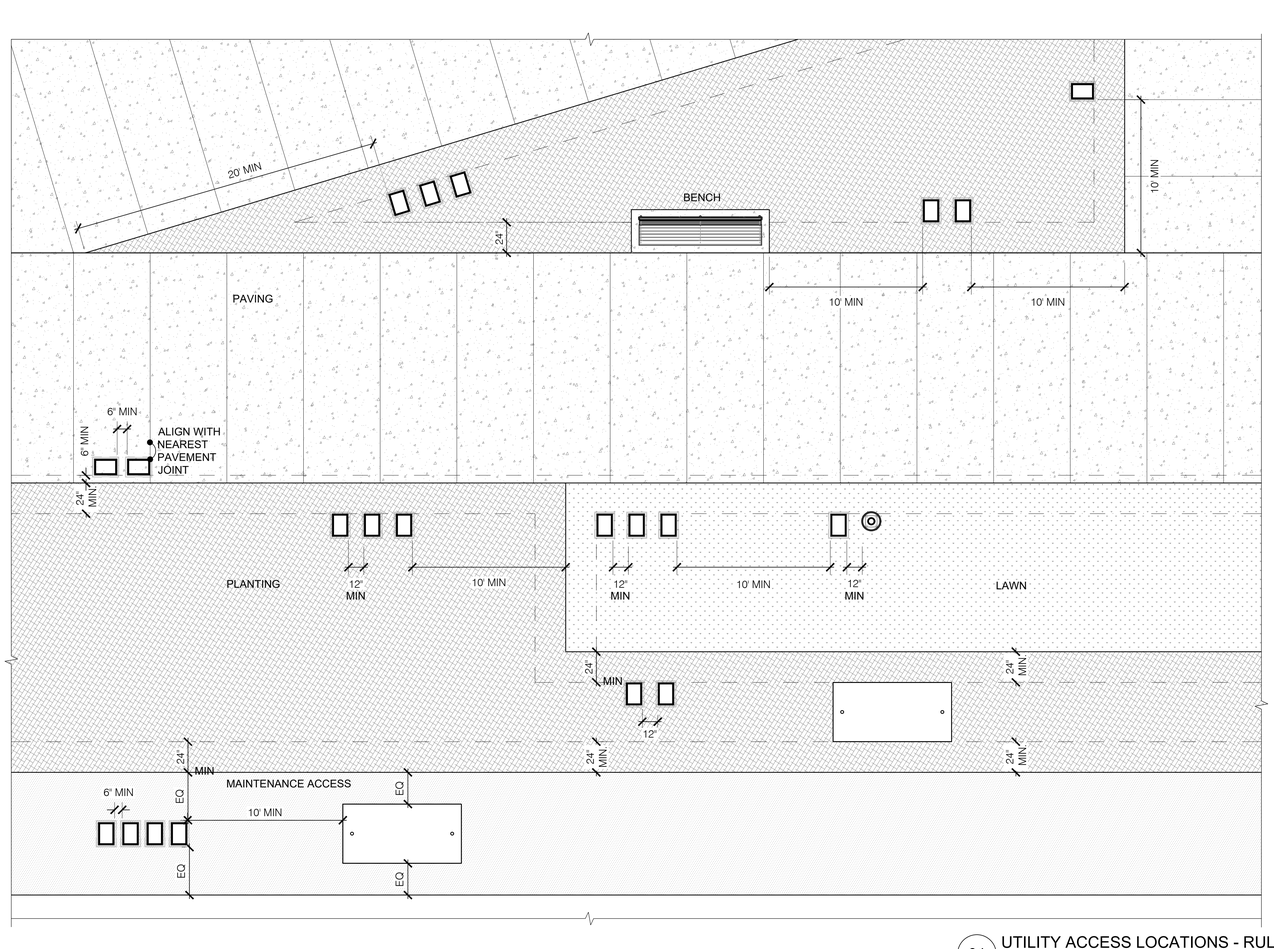
SHEET NO.

L-505-P1

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET LANDSCAPE PLANS, CIVIL DWGS, IRRIGATION DWGS, AND ELECTRICAL DWGS FOR ADDITIONAL INFORMATION.



UTILITY ACCESS BOXES LAYOUT RULES

IN PAVING
-PLACE 6" MIN FROM EDGE OF PAVING
-PLACE WITH 6" MIN BETWEEN ADJACENT UNITS OR LIGHT POSTS
-ALIGN WITH EXPANSION JOINTS OR CONTROL JOINTS
-MINIMIZE BREAK IN PAVING PATTERN

IN PLANTING/ LAWN
-PLACE 24" MIN FROM EDGE OF PAVING OR OTHER PLANTING/ LAWN AREAS
-PLACE 12" MIN FROM ADJACENT UNITS OR LIGHT POSTS

IN PLANTING/LAWN NEAR INTERSECTIONS
-WHEN PLACING NEAR AN ANGLED INTERSECTION PLACE A MINIMUM OF 20' FROM INTERSECTING EDGES
-WHEN PLACING NEAR A PERPENDICULAR INTERSECTION IN PAVING, PLACE A MINIMUM OF 10' FROM INTERSECTING EDGES

IN MAINTENANCE ACCESS
-PLACE 6" MIN FROM ADJACENT UNITS
-PLACE WITH AN EQUAL DISTANCE FROM EDGE OF MAINTENANCE BORDER

IRN016

01 UTILITY ACCESS LOCATIONS - RULES TO LAYOUT
SCALE: 1/4" = 1' - 0" 0 2' 4' 8'

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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City of Wilmington Project Code 3CPRK1860

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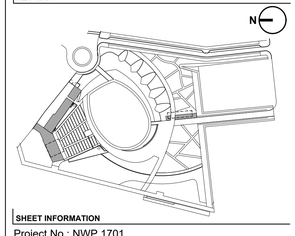


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - UTILITIES

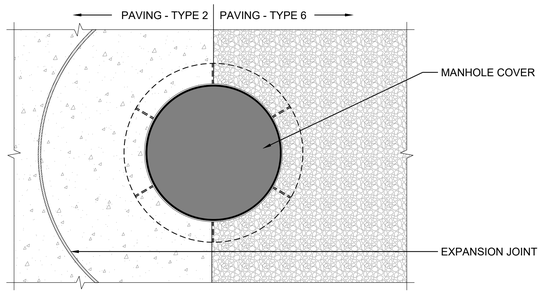
SHEET NO.

L-510-P1

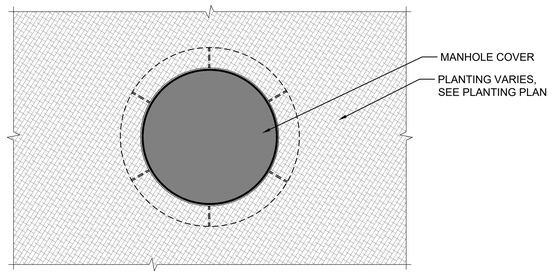
SHEET NOTES

IRN016

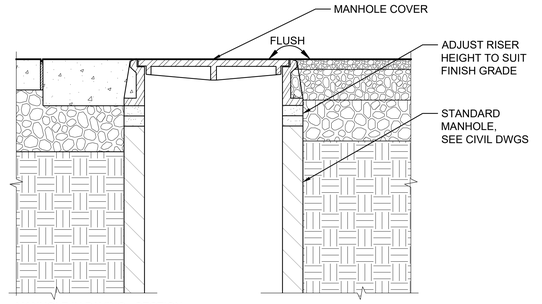
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-111-P1 FOR GRADING PLAN.
3. CONSTRUCT AND COMPLETE ALL WORK ON SLOPE PRIOR TO PREPARING FLATTER AREAS. FILL SLOPES FROM BOTTOM UP.



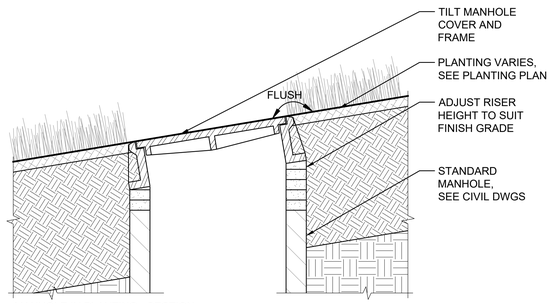
MANHOLE IN PAVING - PLAN



MANHOLE IN PLANTING - PLAN

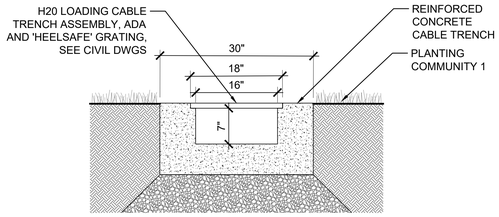


MANHOLE IN PAVING - SECTION



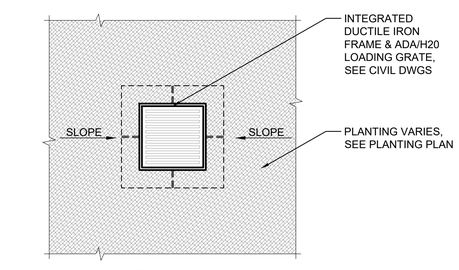
MANHOLE IN PLANTING - SECTION

05 MANHOLE COVERS
SCALE: 1" = 1' - 0"

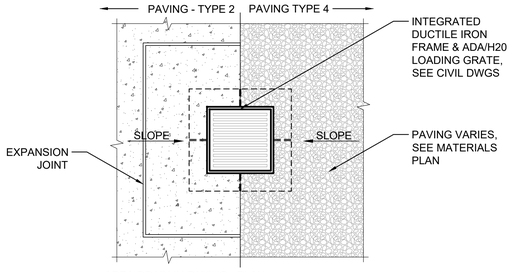


03 CABLE TRENCH @ EVENT LAWN
SCALE: 1" = 1' - 0"

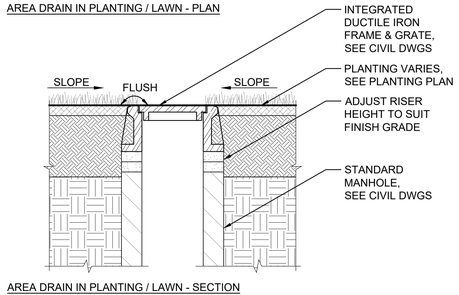
02 NOT USED



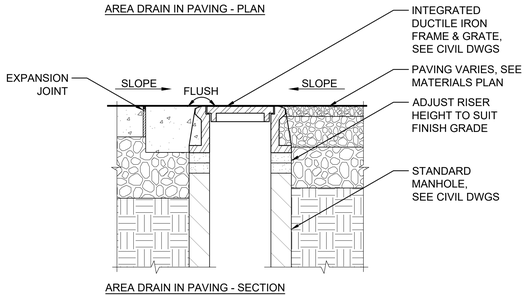
AREA DRAIN IN PLANTING / LAWN - PLAN



AREA DRAIN IN PAVING - PLAN

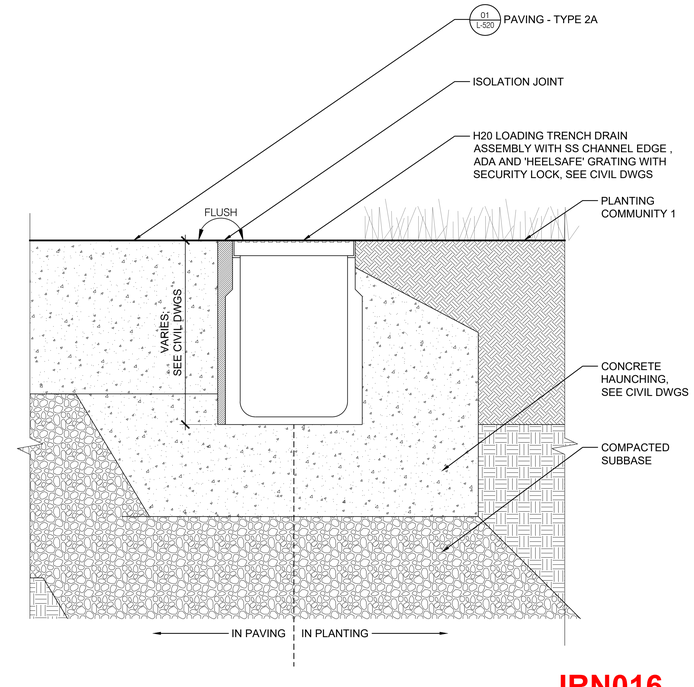


AREA DRAIN IN PLANTING / LAWN - SECTION



AREA DRAIN IN PAVING - SECTION

04 AREA DRAIN
SCALE: 1" = 1' - 0"



01 TRENCH DRAIN - STRAIGHT
SCALE: 3" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

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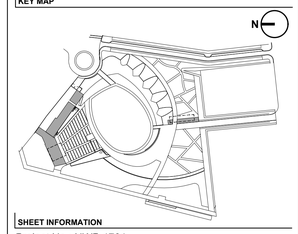

SHEET INFORMATION

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SHEET TITLE

LANDSCAPE DETAILS - UTILITIES

SHEET NO.

L-511-P1

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
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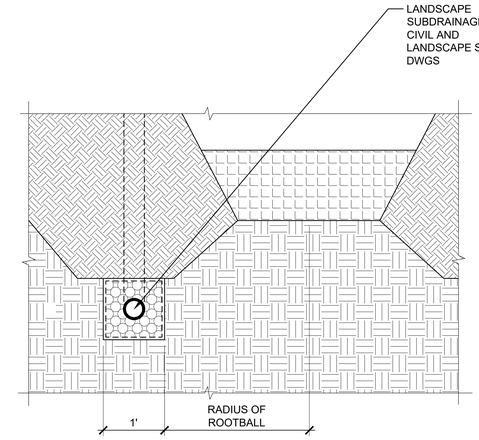
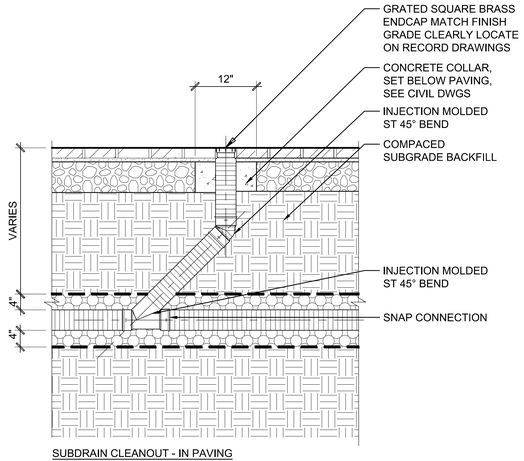
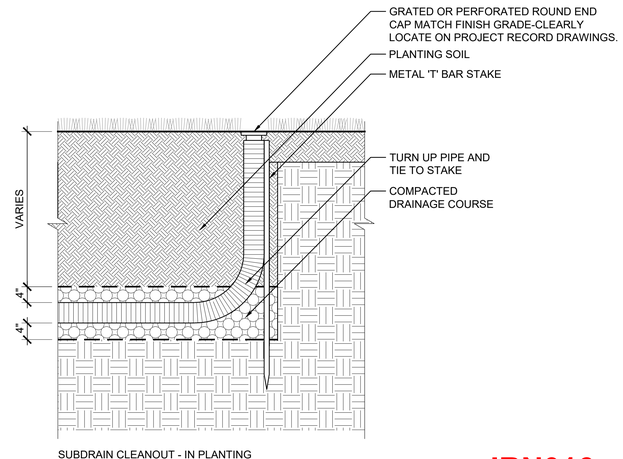


02 LANDSCAPE SUBDRAIN @ TREE TRENCHES
SCALE: 1" = 1' - 0"
0 1' 2'



SUBDRAIN CLEANOUT - IN PAVING



SUBDRAIN CLEANOUT - IN PLANTING

IRN016

01 SUBDRAIN CLEANOUT
SCALE: 1" = 1' - 0"
0 1' 2'

PROJECT INFORMATION

NORTH WATERFRONT PARK

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Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

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SEAL/SIGNATURE

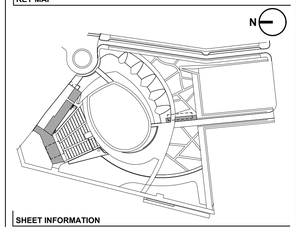
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

RECORD SET

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - SUBDRAINAGE

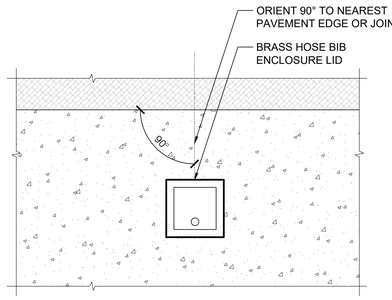
SHEET NO.

L-512-P1

IRN016

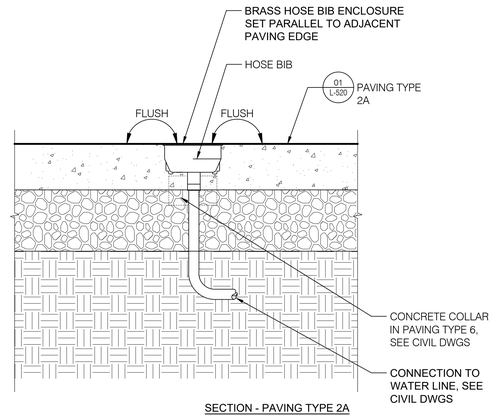
SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET LANDSCAPE PLANS, CIVIL DWGS, IRRIGATION DWGS, AND ELECTRICAL DWGS FOR ADDITIONAL INFORMATION.



PLAN - PAVING TYPE 6

PLAN - PAVING TYPE 2

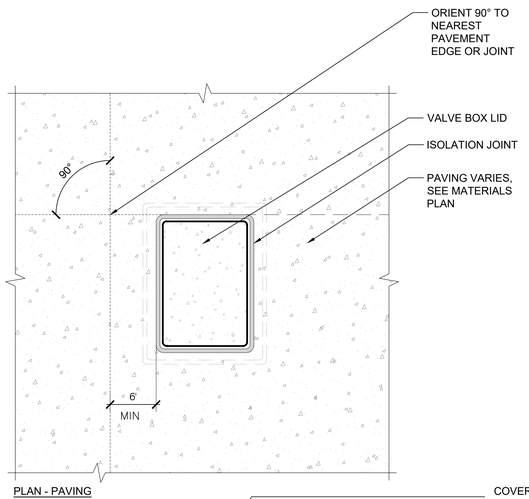


SECTION - PAVING TYPE 2A

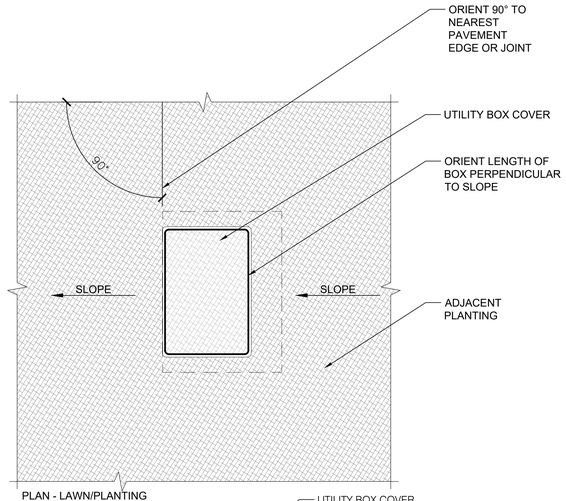
02 HOSE BIB ENCLOSURE

SCALE: 1-1/2" = 1' - 0"

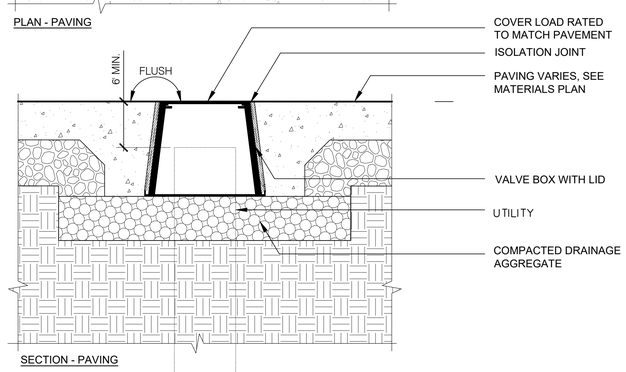
0 1/2' 1' 2'



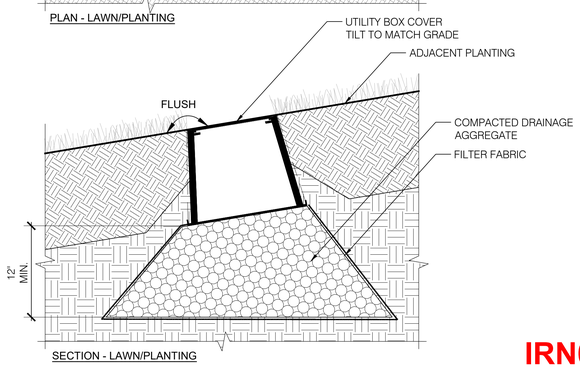
PLAN - PAVING



PLAN - LAWN/PLANTING



SECTION - PAVING



SECTION - LAWN/PLANTING

01 UTILITY HANDHOLE / VALVE ACCESS

SCALE: 1-1/2" = 1' - 0"

0 1/2' 1' 2'

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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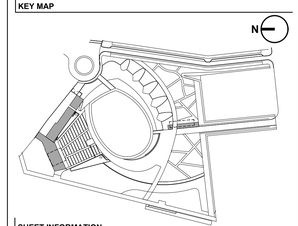
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - UTILITIES

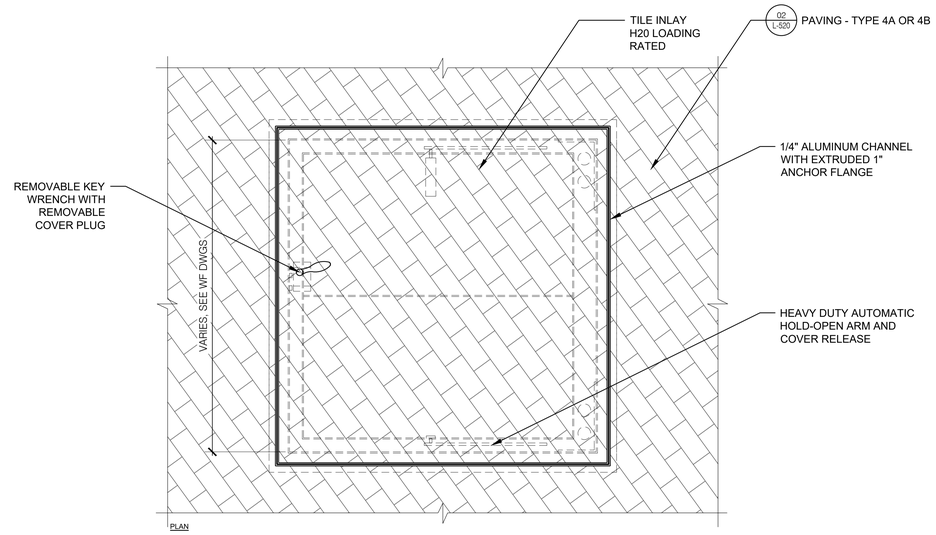
SHEET NO.

L-513-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN THE PROJECT STATE. SEE SPECIFICATION.
5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.



01 ALTERNATE 7A - ACCESS HATCH WITH PAVING INFILL
SCALE: 1" = 1' - 0"
0 1' 2'

IRN016

PROJECT INFORMATION

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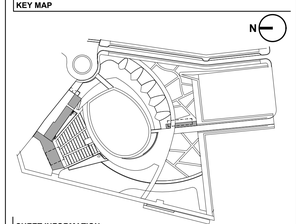
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - HATCHES

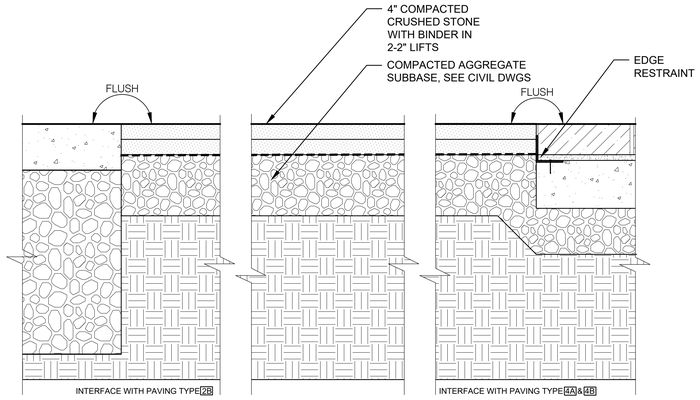
SHEET NO.

L-514-P1

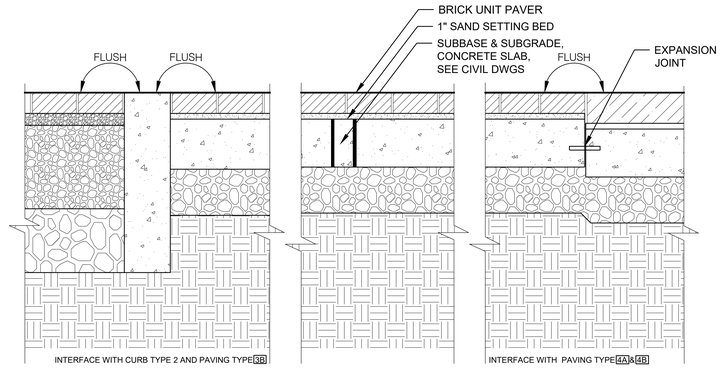
SHEET NOTES

IRN016

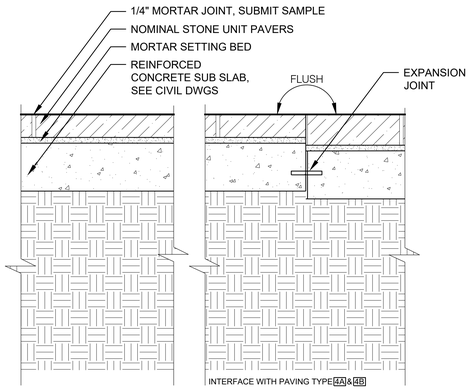
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



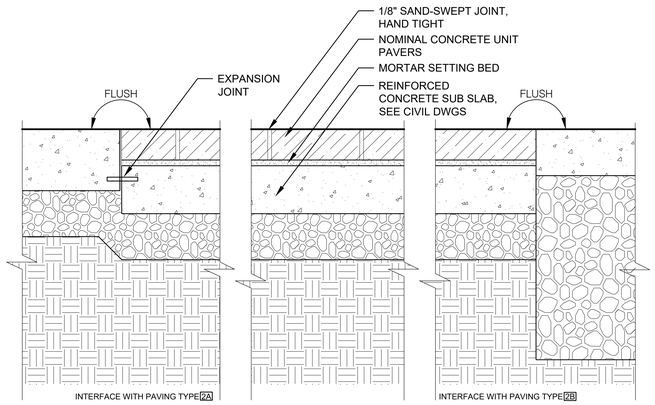
06 PAVING - TYPE 6 - STABILIZED CRUSHED STONE
SCALE: 1 1/2" = 1' - 0"



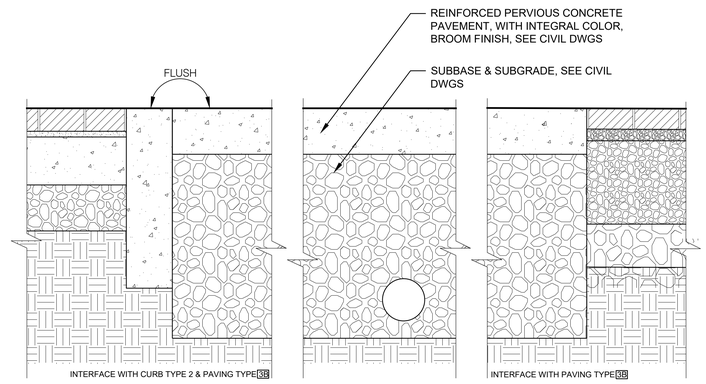
03 PAVING - TYPE 3A - BRICK UNIT PAVER - IMPERMEABLE
SCALE: 1 1/2" = 1' - 0"



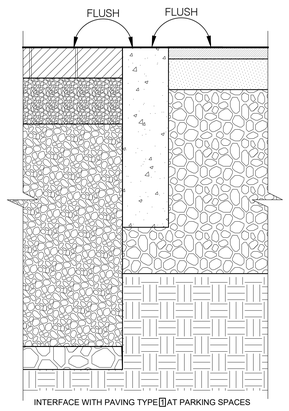
07 PAVING - TYPE 5 - STONE UNIT PAVER - IMPERMEABLE
SCALE: 1 1/2" = 1' - 0"



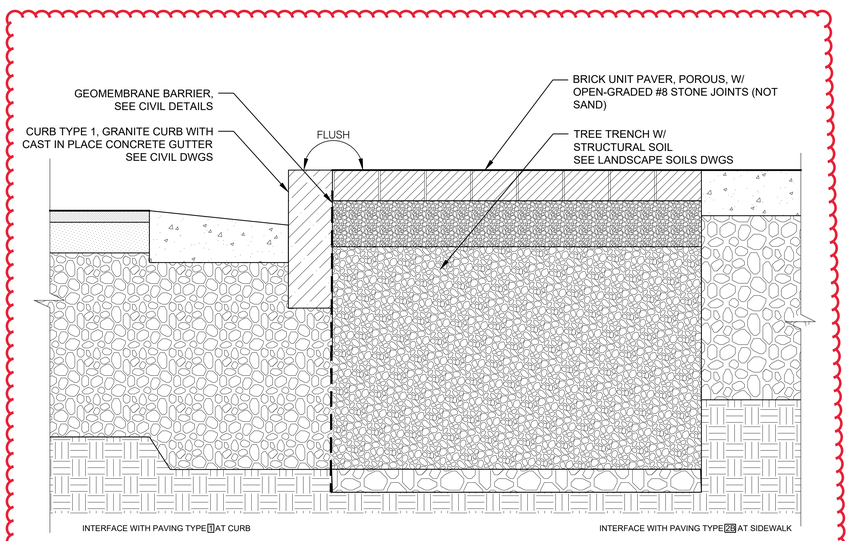
05 PAVING - TYPE 4A & 4B - CONCRETE UNIT PAVER - IMPERMEABLE
SCALE: 1 1/2" = 1' - 0"



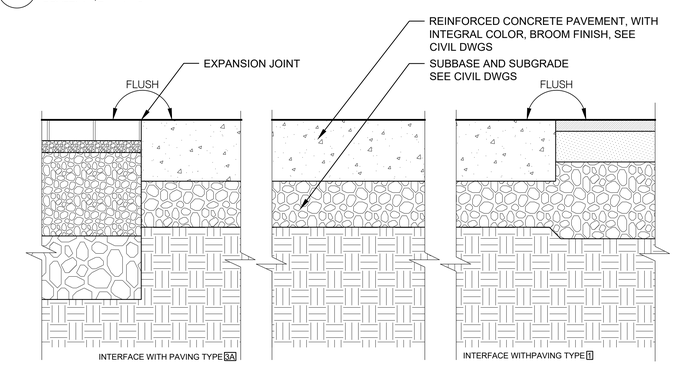
02 PAVING - TYPE 2B - CIP CONCRETE - PERVIOUS
SCALE: 1 1/2" = 1' - 0"



04 PAVING - TYPE 3B - AT PARKING CURB
SCALE: 1 1/2" = 1' - 0"



04 PAVING - TYPE 3B - BRICK UNIT PAVER - PERMEABLE - AT TREE TRENCH
SCALE: 1 1/2" = 1' - 0"



01 PAVING - TYPE 2A - CIP CONCRETE - IMPERVIOUS
SCALE: 1 1/2" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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ISSUE/REVISIONS

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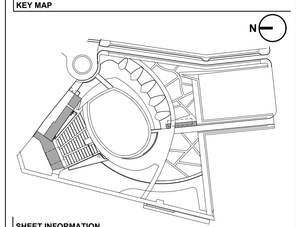
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
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SHEET TITLE

LANDSCAPE DETAILS - PAVING

SHEET NO.

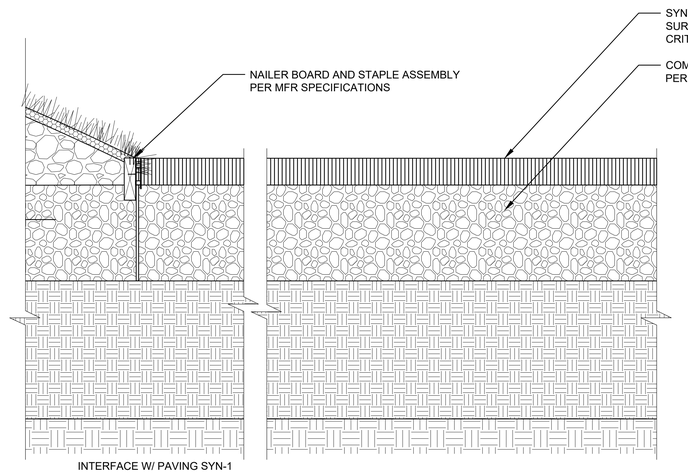
L-520-P1

IRN016

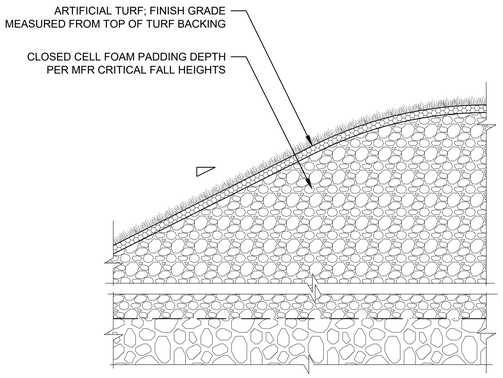
IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.

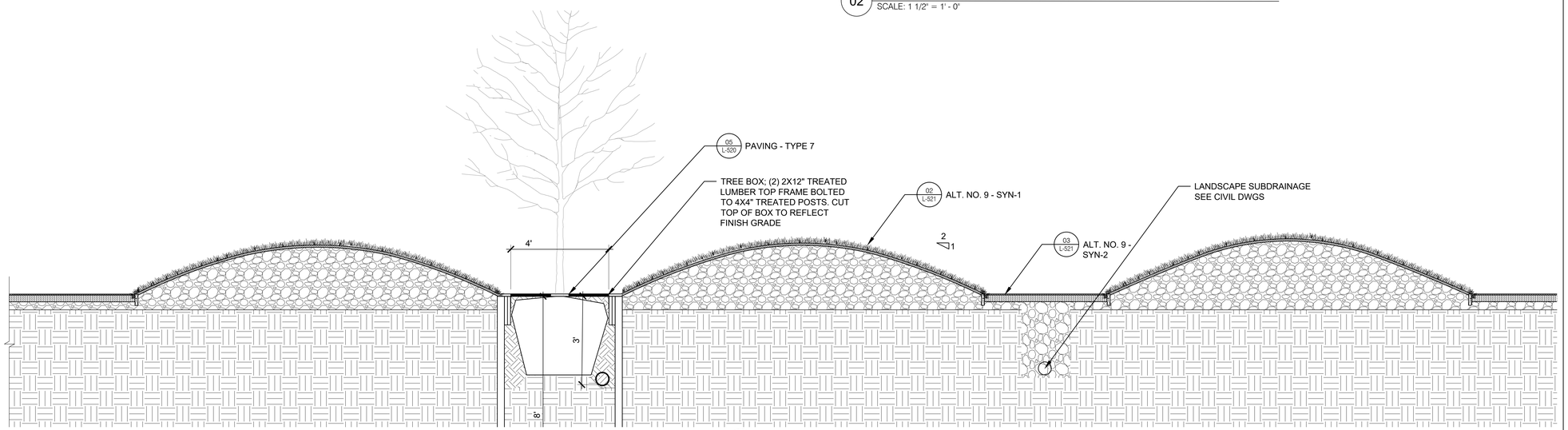


03 ALT. NO. 9 - SYNTHETIC SURFACE - TYPE 2 - DUAL DENSITY RUBBER
SCALE: 1 1/2" = 1' - 0"



DETAIL SECTION 1 - SLOPE & RIDGE - 1 1/2" = 1'

02 ALT. NO. 9 - SYNTHETIC SURFACE - TYPE 1 - ARTIFICIAL TURF
SCALE: 1 1/2" = 1' - 0"



01 PLAY AREA SECTION
SCALE: 1/2" = 1' - 0"

IRN016

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11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

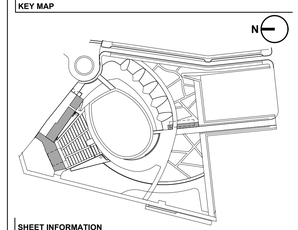
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PLAY SURFACE

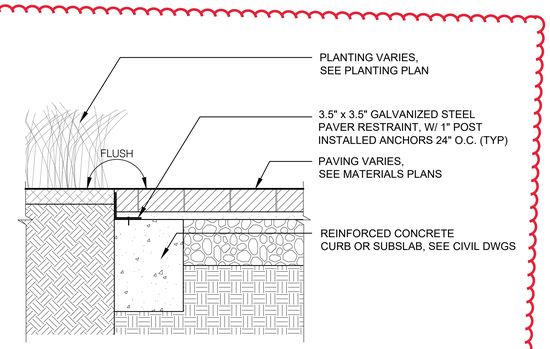
SHEET NO.

L-521-P1

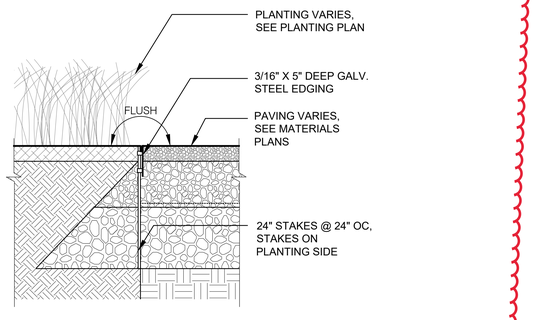
SHEET NOTES

IRN016

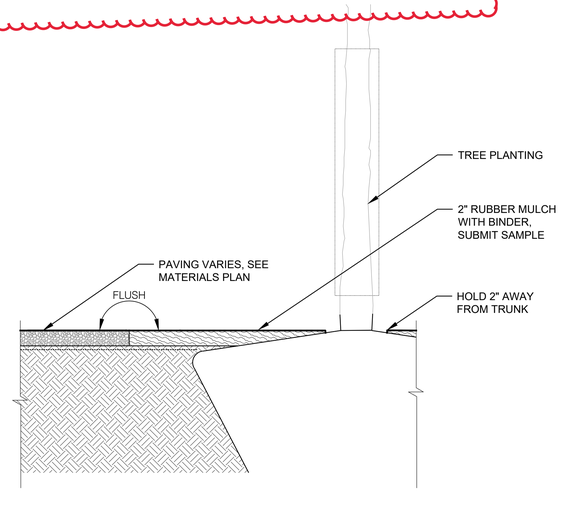
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



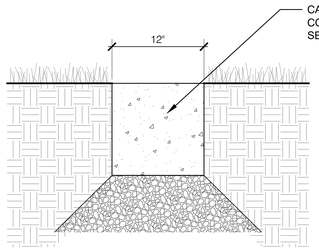
09 EDGING - TYPE 2 - PAVER RESTRAINT
SCALE: 1 1/2" = 1' - 0"



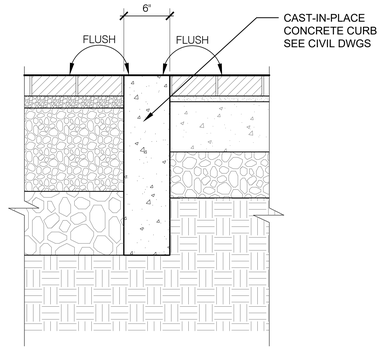
08 EDGING - TYPE 1 - STEEL EDGE IN PLANTING BED
SCALE: 1 1/2" = 1' - 0"



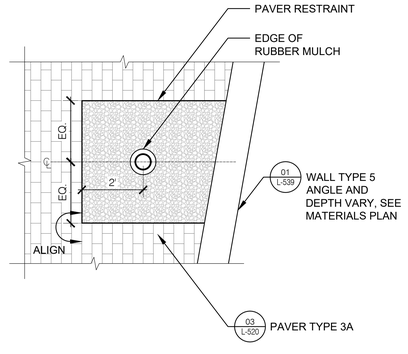
07 PAVING - TYPE 7 - BOUND CRUSHED STONE & RUBBER PAVING
SCALE: 1 1/2" = 1' - 0"



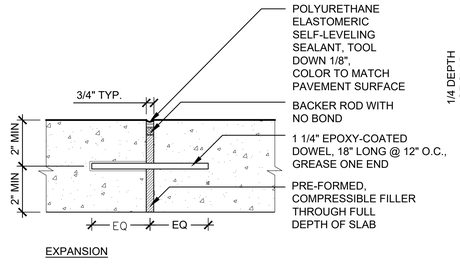
06 CURB - TYPE 3 - LOWER LAWN FLUSH CONCRETE
SCALE: 1/2" = 1' - 0"

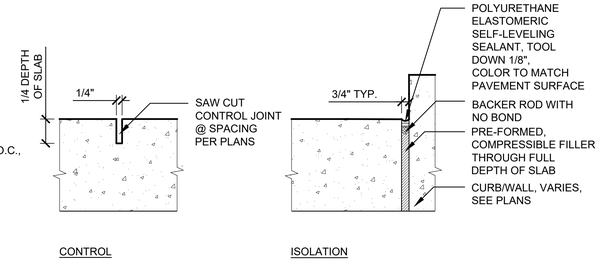


05 CURB - TYPE 2 @ NUTT STREET PROMENADE
SCALE: 1 1/2" = 1' - 0"

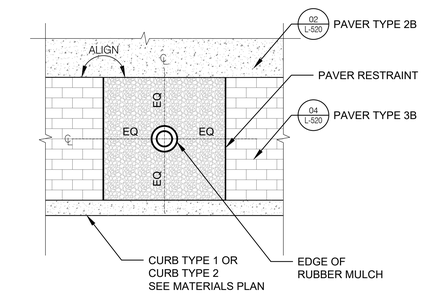


04 PAVER OPENING @ PLINTH
SCALE: 1/2" = 1' - 0"

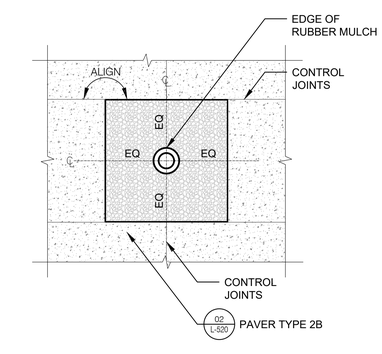




01 CONCRETE PAVEMENT JOINTS
SCALE: 3" = 1' - 0"



3 PAVER OPENING @ FURNISHING STRIP
SCALE: 1/2" = 1' - 0"



02 PAVER OPENING @ PERVIOUS CONCRETE
SCALE: 1/2" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
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www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

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Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
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SEAL/SIGNATURE



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NO.	DESCRIPTION	DATE
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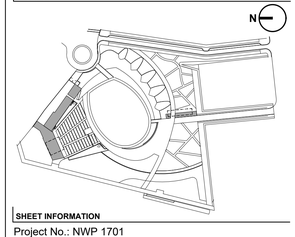
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PAVING

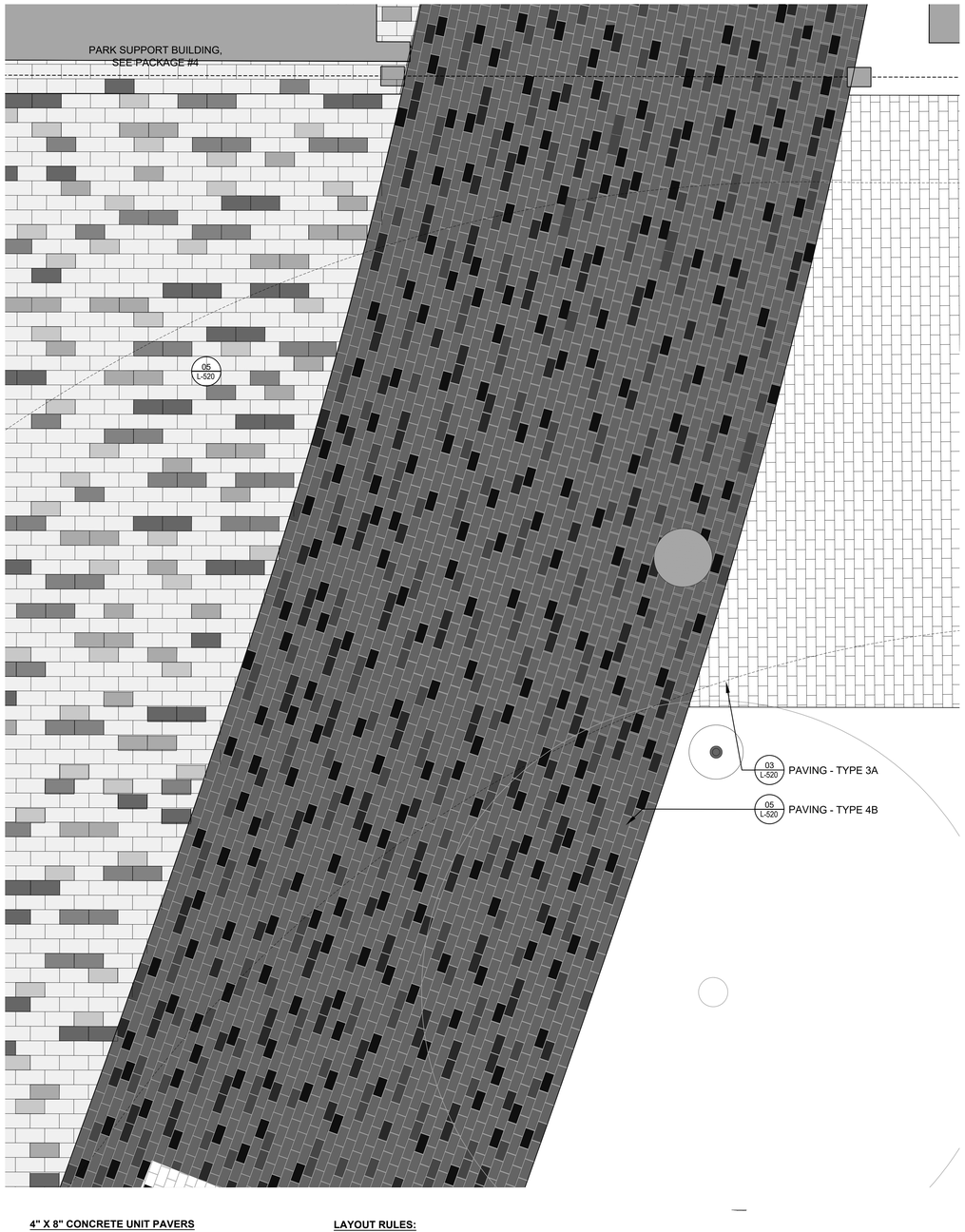
SHEET NO.

L-522-P1

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



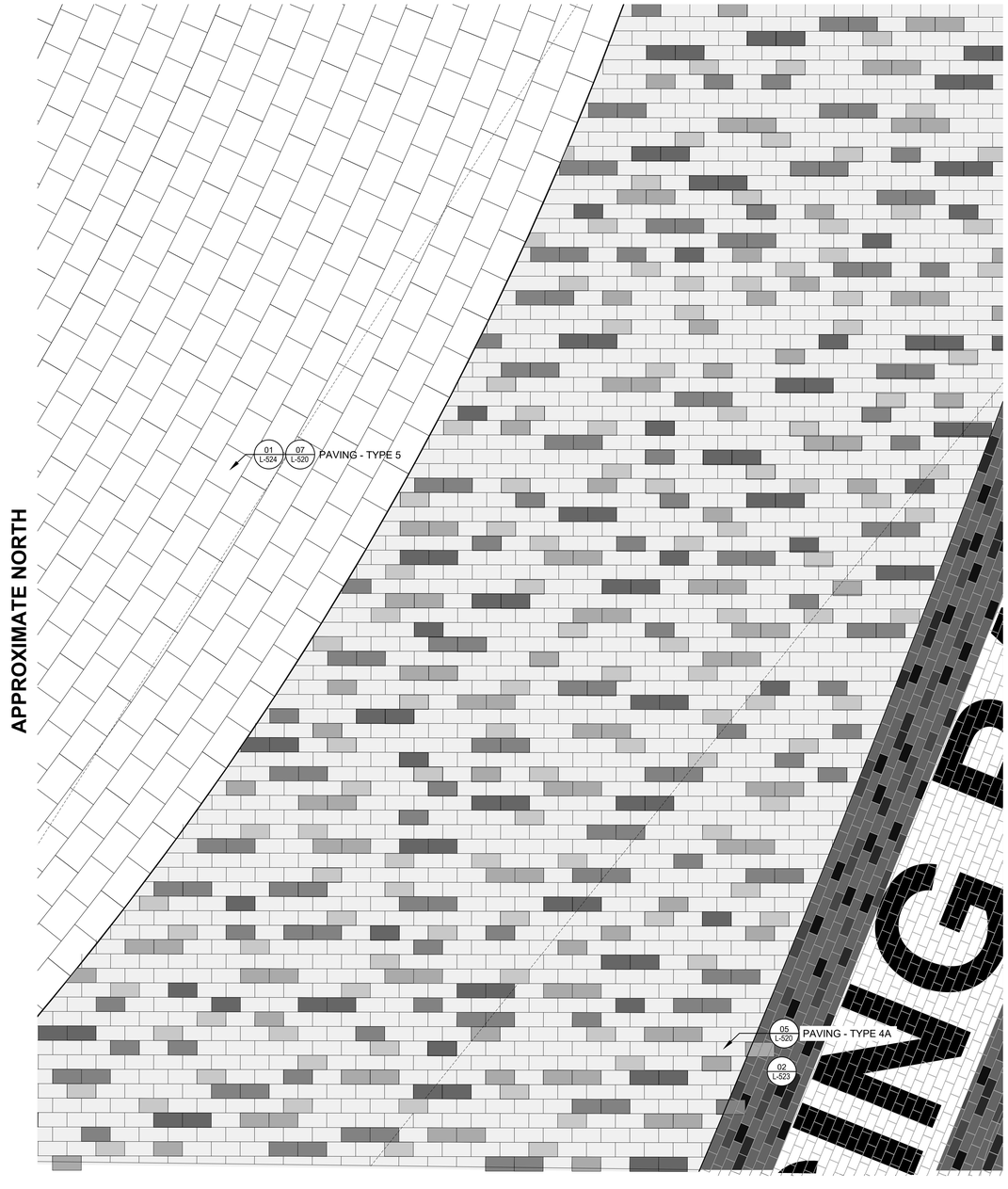
4" X 8" CONCRETE UNIT PAVERS

- 40% PAVER F (COLOR: SLATE / FINISH: GRANITIZED)
- 20% PAVER G (COLOR: SOLAR / FINISH: GRANITIZED)
- 30% PAVER H (COLOR: FOUNDRY / FINISH: GRANITIZED)
- 10% PAVER I (COLOR: LINEN / FINISH: GRANITIZED)

LAYOUT RULES:

1. PAVER G AND PAVER H ARRANGED IN EAST TO WEST "LINES" OF ONE OR TWO PAVERS.
2. PAVER "LINES" MAY NEVER TOUCH OTHER PAVER "LINES".
3. PAVER I NEVER TOUCHES ANOTHER PAVER I. PAVER I MAY ONLY TOUCH PAVER "LINES" ALONG NORTH AND SOUTH EDGES (MAY NEVER TOUCH ON EAST AND WEST EDGES).
4. PAVER F IS EVERYWHERE ELSE.

02 PAVING - TYPE 4A - LAYOUT TYP.
SCALE: 1/2" = 1' - 0"



6" X 12" CONCRETE UNIT PAVERS

30% PAVER A (COLOR: LINEN / FINISH: GRANITIZED)

- 10% PAVER B (COLOR: FOUNDRY / FINISH: GRANITIZED)
- 20% PAVER C (COLOR: DESERT / FINISH: GRANITIZED)
- 20% PAVER D (COLOR: SUEDE / FINISH: GRANITIZED)
- 20% PAVER E (COLOR: ALMOND / FINISH: GRANITIZED)

LAYOUT RULES:

1. PAVER C, PAVER D, AND PAVER E ARRANGED IN NORTH TO SOUTH "LINES" OF ONE OR TWO
2. PAVER "LINES" MAY NEVER TOUCH OTHER PAVER "LINES".
3. PAVER B NEVER TOUCHES ANOTHER PAVER B. PAVER B MAY ONLY TOUCH PAVER "LINES" A EAST AND WEST EDGES (MAY NEVER TOUCH ON NORTH AND SOUTH EDGES).
4. PAVER A IS EVERYWHERE ELSE.

01 PAVING - TYPE 4B - LAYOUT, TYP.
SCALE: 1/2" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
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Acoustic/Theater/AV = AT
OAP.P.C.
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

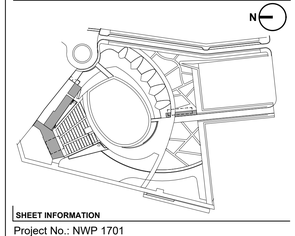
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PAVING

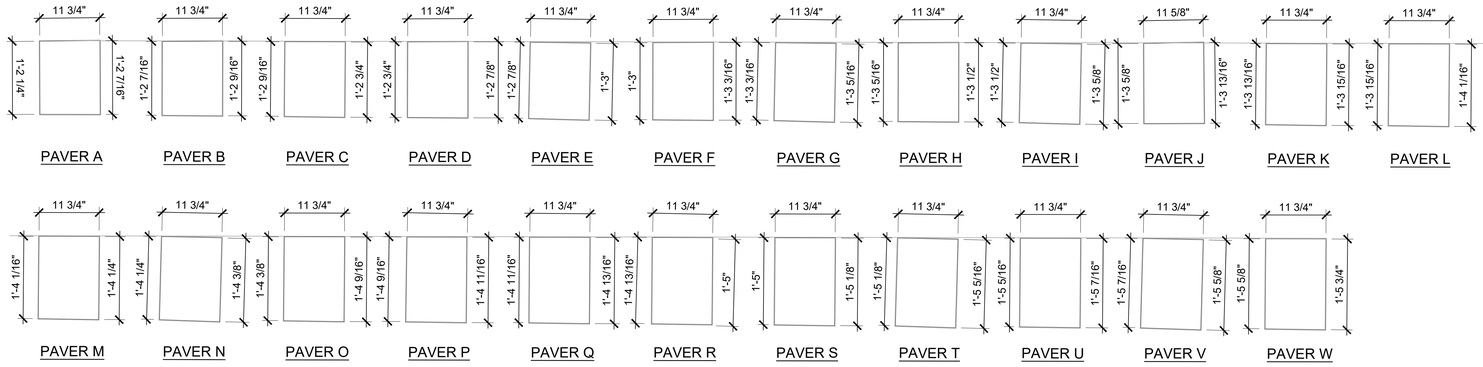
SHEET NO.

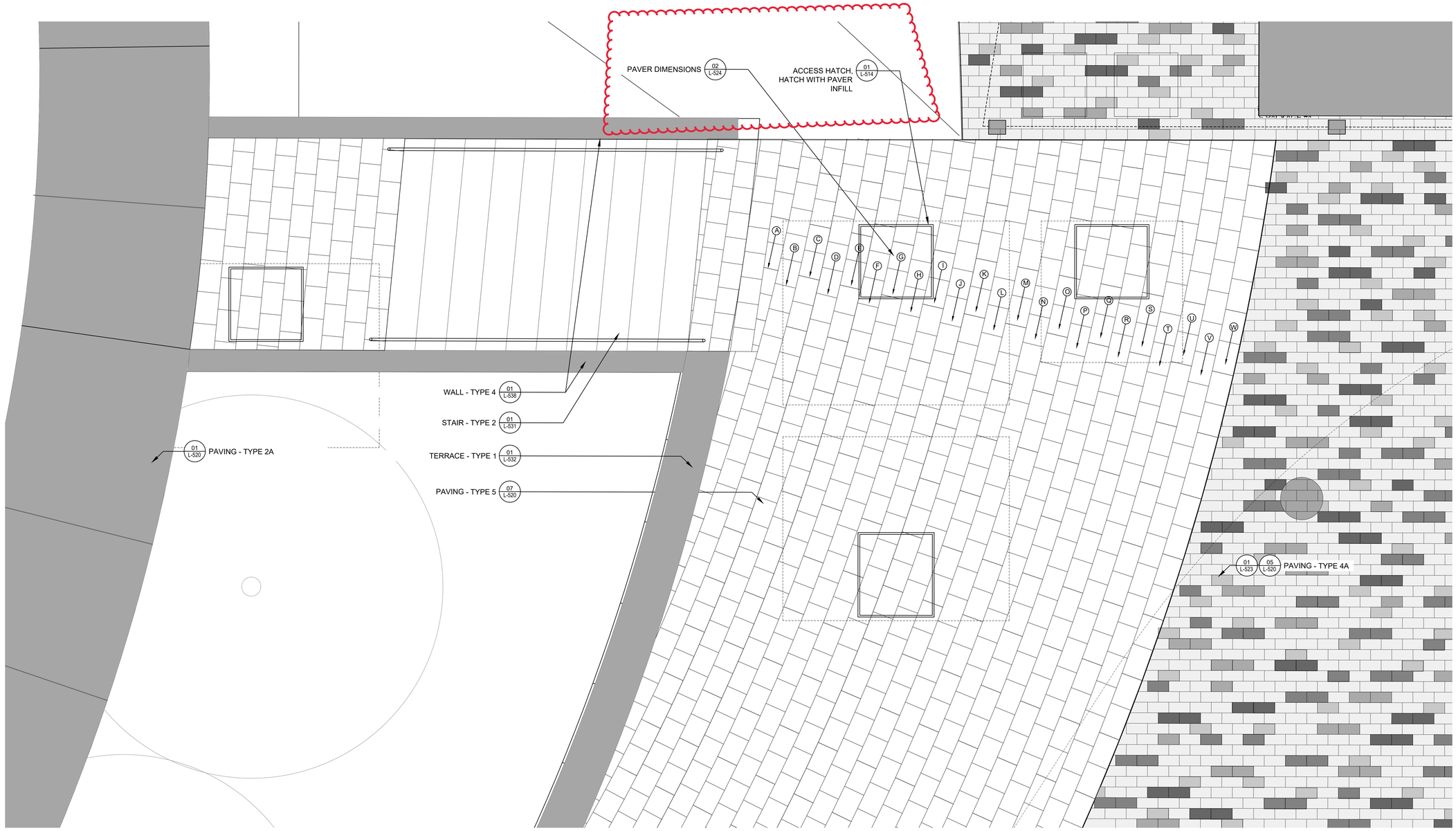
L-523-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.





01 PAVING - TYPE 5 - LAYOUT, TYP.
SCALE: 1/2" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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NC License #C-513

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Irrigation= I
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Landscape Soil = LS
LANDIS, PLLC
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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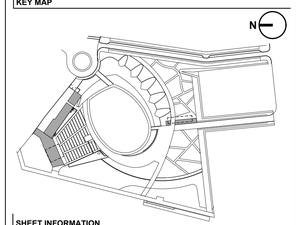
SEAL/SIGNATURE

NORTH CAROLINA LANDSCAPE ARCHITECT
No. 1980
REGISTERED
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

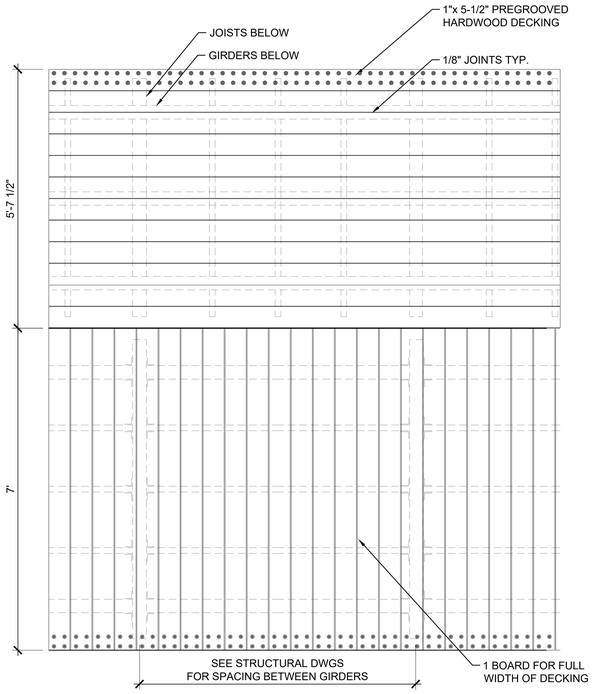
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

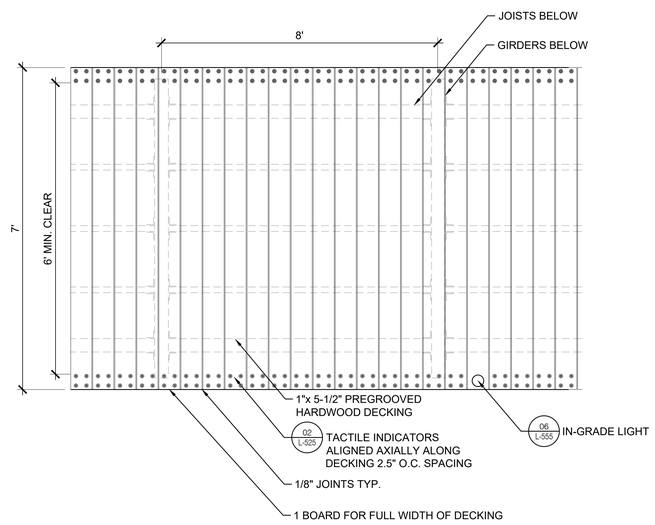
LANDSCAPE DETAILS - PAVING LAYOUT

SHEET NO.

L-524-P1



07 ALT. NO. 8 - BOARDWALK DECKING PLAN AT PLATFORM
SCALE: 3/4" = 1' - 0"

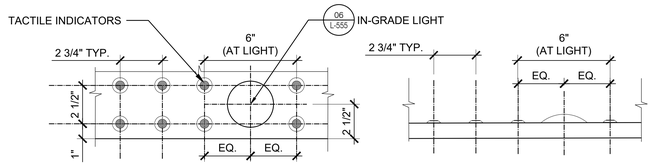


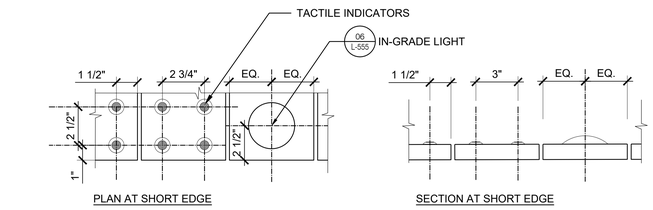
05 ALT. NO. 8 - BOARDWALK DECKING PLAN, TYPICAL
SCALE: 3/4" = 1' - 0"

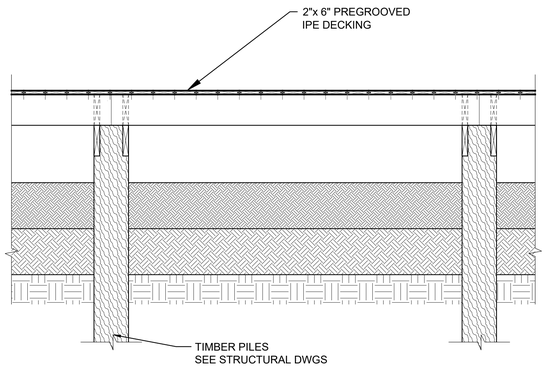
SHEET NOTES

IRN016

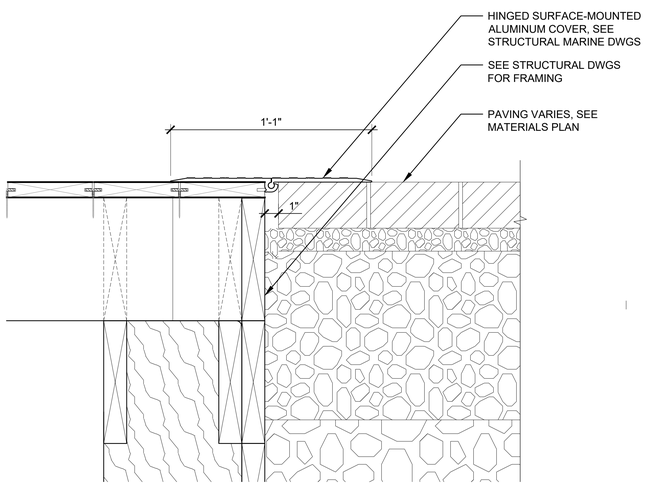
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN THE PROJECT STATE. SEE SPECIFICATION.
5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.



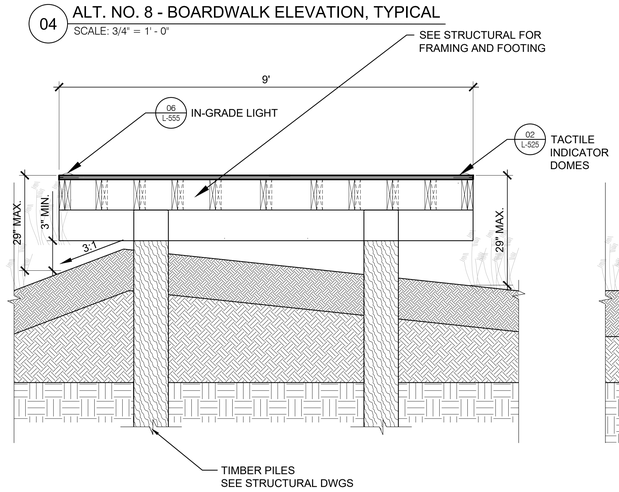




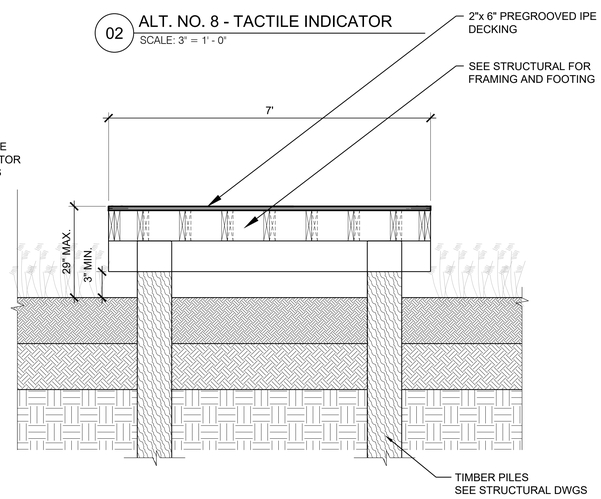
04 ALT. NO. 8 - BOARDWALK ELEVATION, TYPICAL
SCALE: 3/4" = 1' - 0"



06 ALT. NO. 8 - DECKING/PAVING CONNECTION
SCALE: 3" = 1' - 0"



03 ALT. NO. 8 - BOARDWALK SECTION AT COASTAL EDGE
SCALE: 3/4" = 1' - 0"



02 ALT. NO. 8 - TACTILE INDICATOR
SCALE: 3" = 1' - 0"

01 ALT. NO. 8 - BOARDWALK SECTION, TYPICAL
SCALE: 3/4" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
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www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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www.sandec.com
EAGLE RESOURCES
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
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Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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NC License #C-1073

Marine Structural Engineering = SM
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Water Fountain Design = WF
DELTA FOUNTAINS
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Lighting Design = EL
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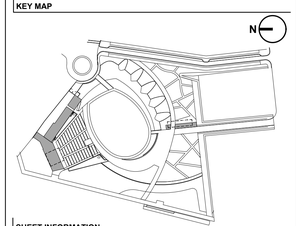
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - DECKING

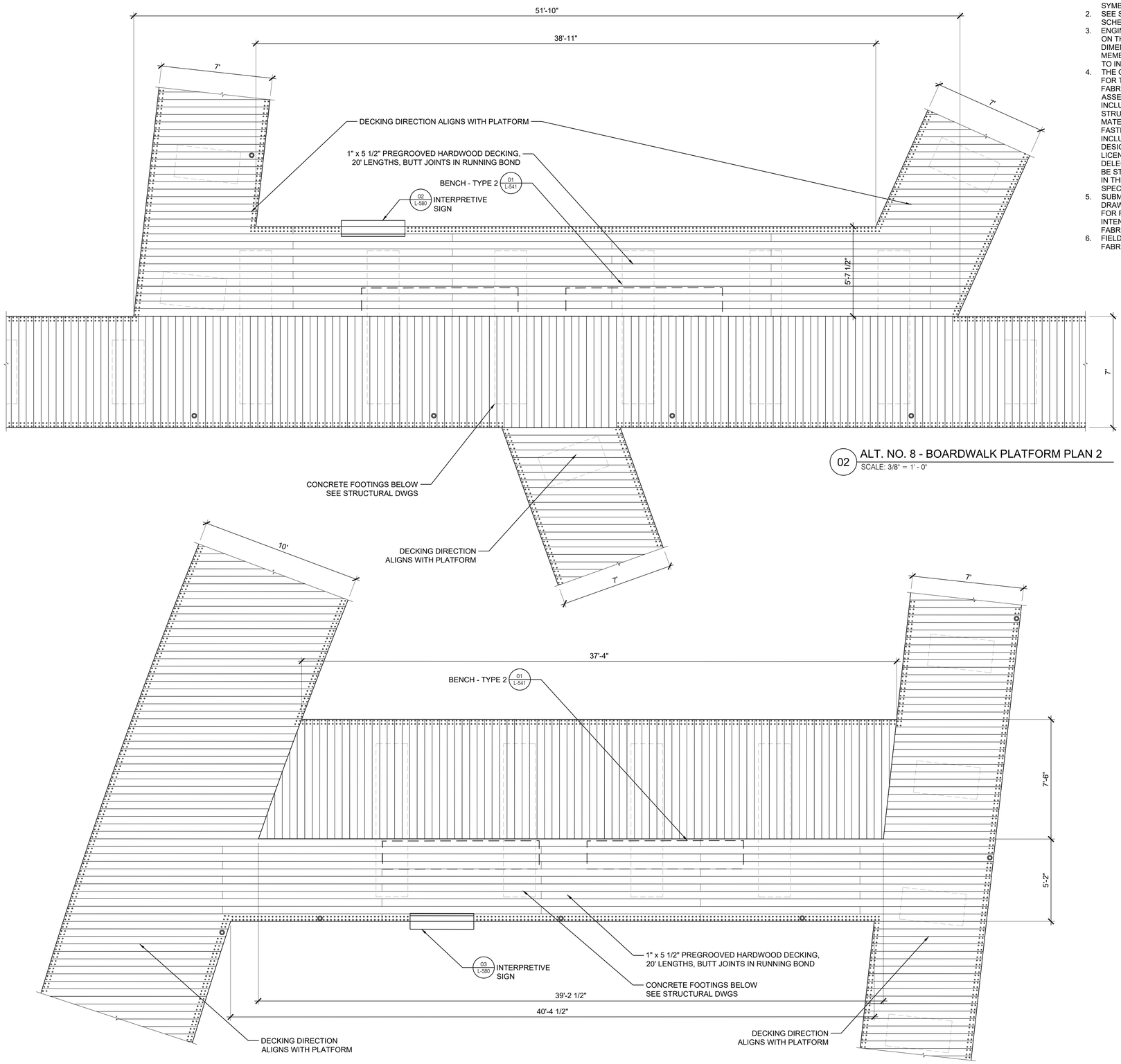
SHEET NO.

L-525-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN THE PROJECT STATE. SEE SPECIFICATION.
5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.



02 ALT. NO. 8 - BOARDWALK PLATFORM PLAN 2
SCALE: 3/8" = 1' - 0"

01 ALT. NO. 8 - BOARDWALK PLATFORM PLAN 1
SCALE: 3/8" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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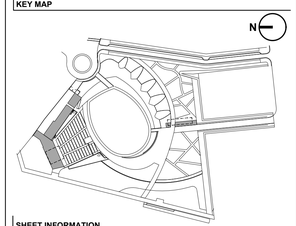
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - DECKING

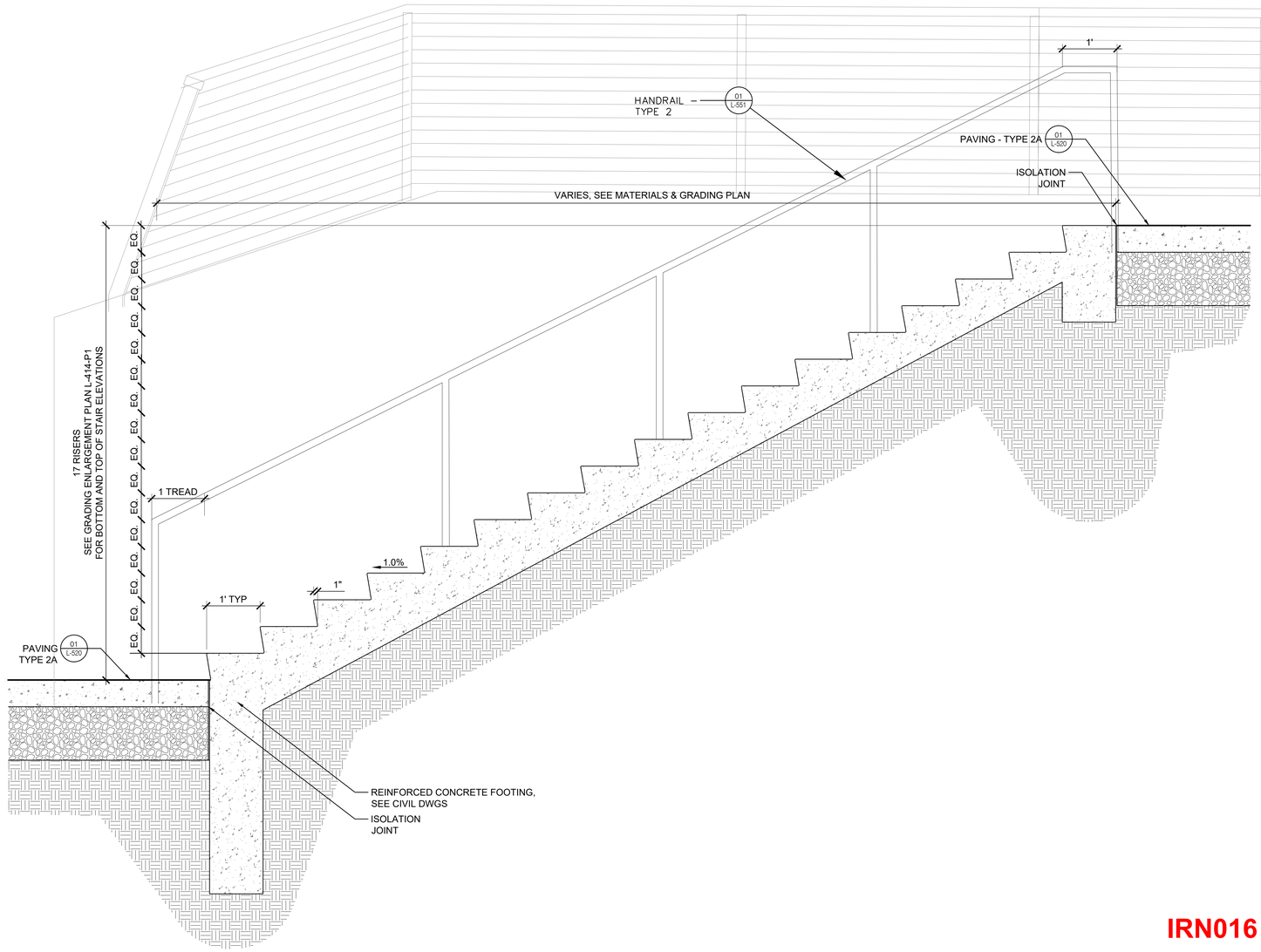
SHEET NO.

L-526-P1

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



IRN016

01 STAIR - TYPE 1 - REINFORCED CONCRETE STAIR AT COWAN ST. ENTRY
SCALE: 1" = 1' - 0"
0 1' 2'

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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PO Box 1810, Wilmington, North Carolina 28402
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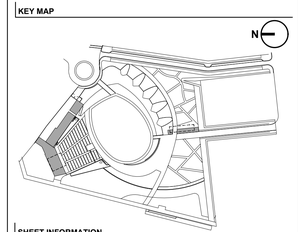


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - STAIRS

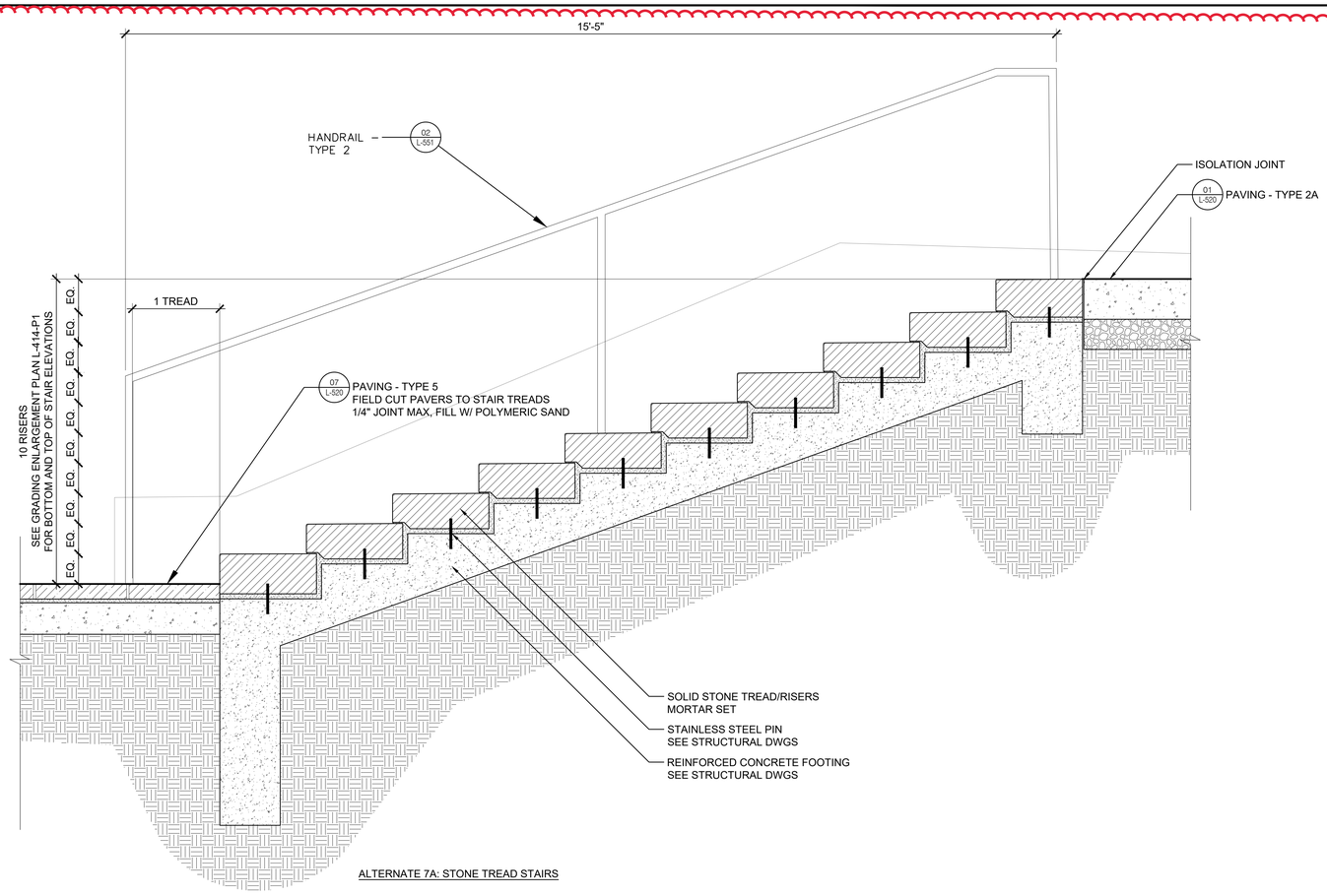
SHEET NO.

L-530-P1

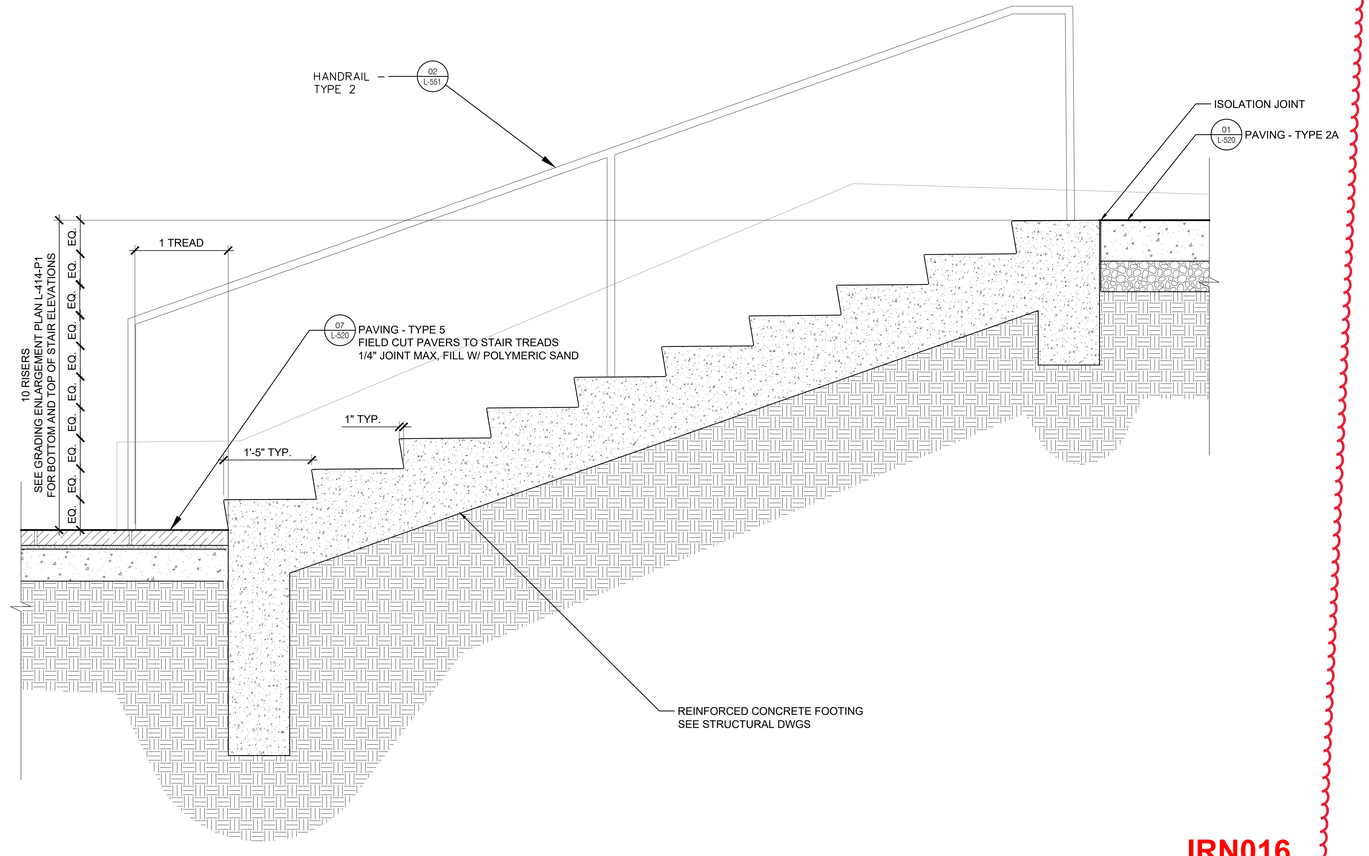
IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



ALTERNATE 7A: STONE TREAD STAIRS



01 STAIR TYPE 2 - STONE STAIR AT CENTRAL PLAZA
SCALE: 1" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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Environmental Engineering = EE
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Landscape Soil = LS
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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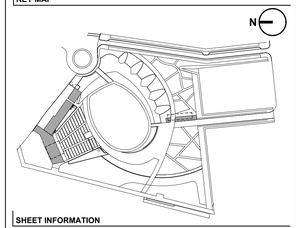
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - STAIRS

SHEET NO.

L-531-P1

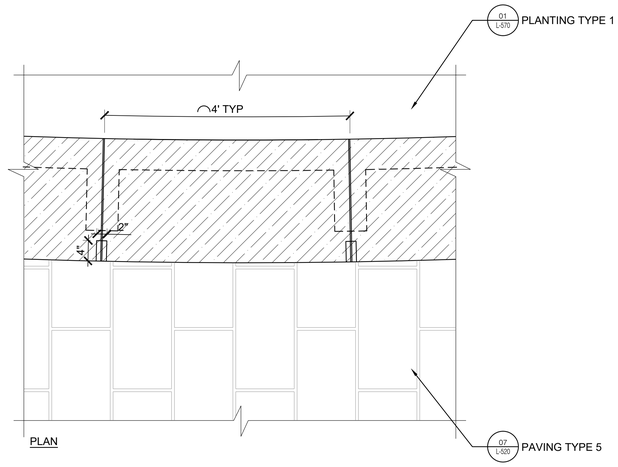
SHEET NOTES

IRN016

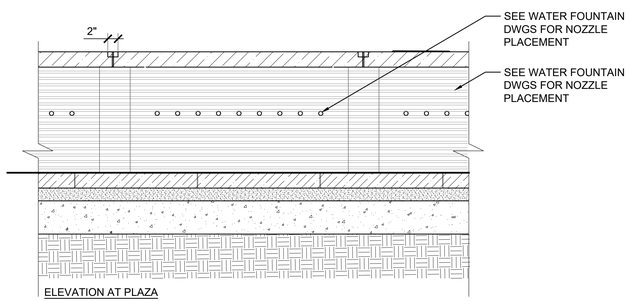
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



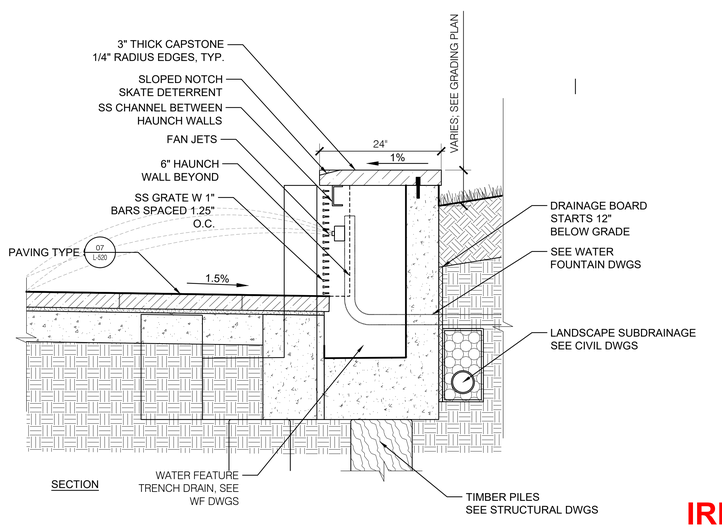
ELEVATION AT PLAZA
SCALE: 1/8" = 1'-0"



PLAN



ELEVATION AT PLAZA



SECTION

IRN016

01 ALT NO. 7 - TERRACE - TYPE 1 @ WATER FOUNTAIN
SCALE: 1" = 1' - 0"
0 1' 2'

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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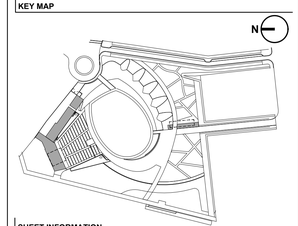
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
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Checked By: ML / CM
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Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - TERRACES

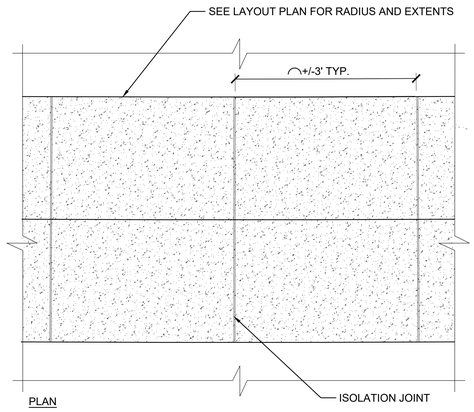
SHEET NO.

L-532-P1

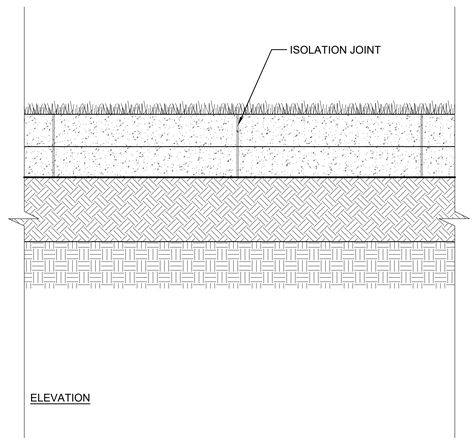
SHEET NOTES

IRN016

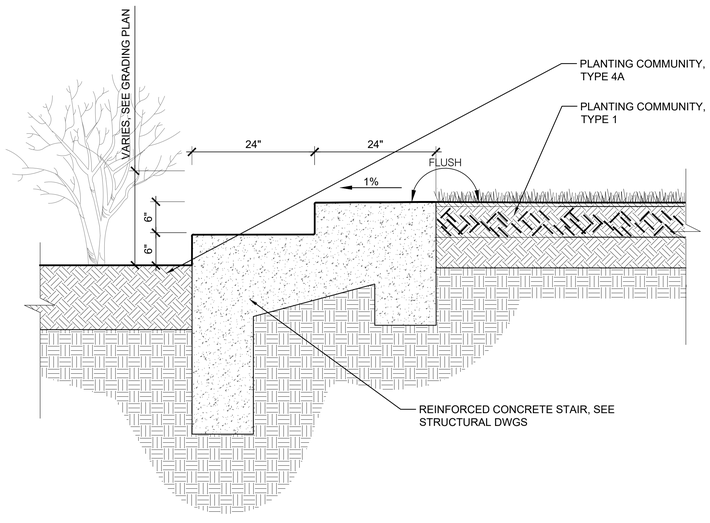
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.



PLAN



ELEVATION



02 TERRACE - TYPE 2 @ RIVERFRONT LAWN
SCALE: 1" = 1' - 0"
0 1' 2'

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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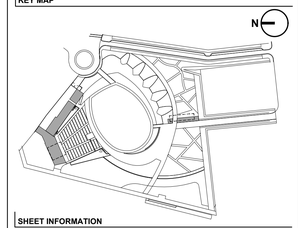

SHEET INFORMATION

Project No.: NWP 1701
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SHEET TITLE

LANDSCAPE DETAILS - TERRACES

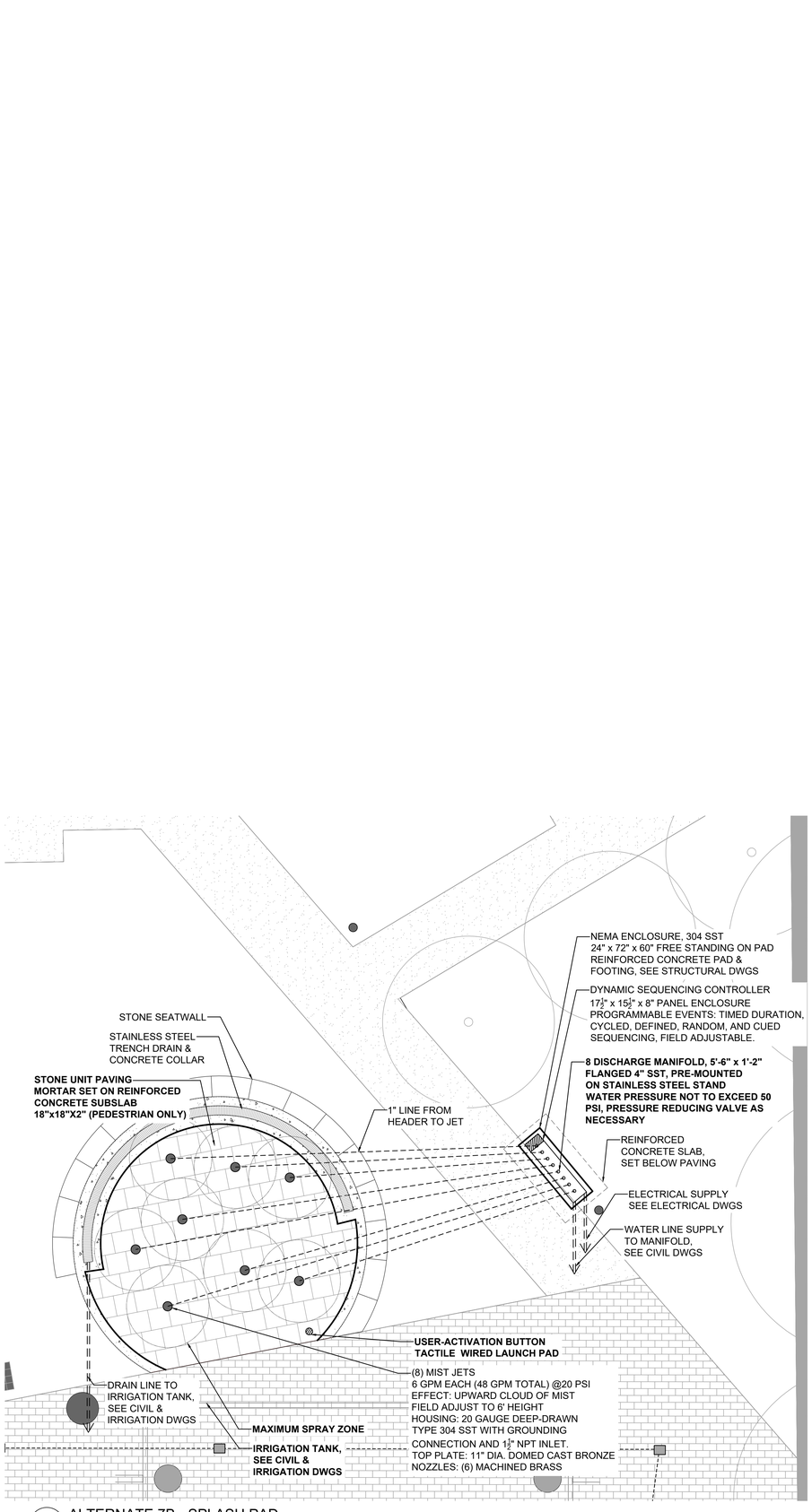
SHEET NO.

L-533-P1

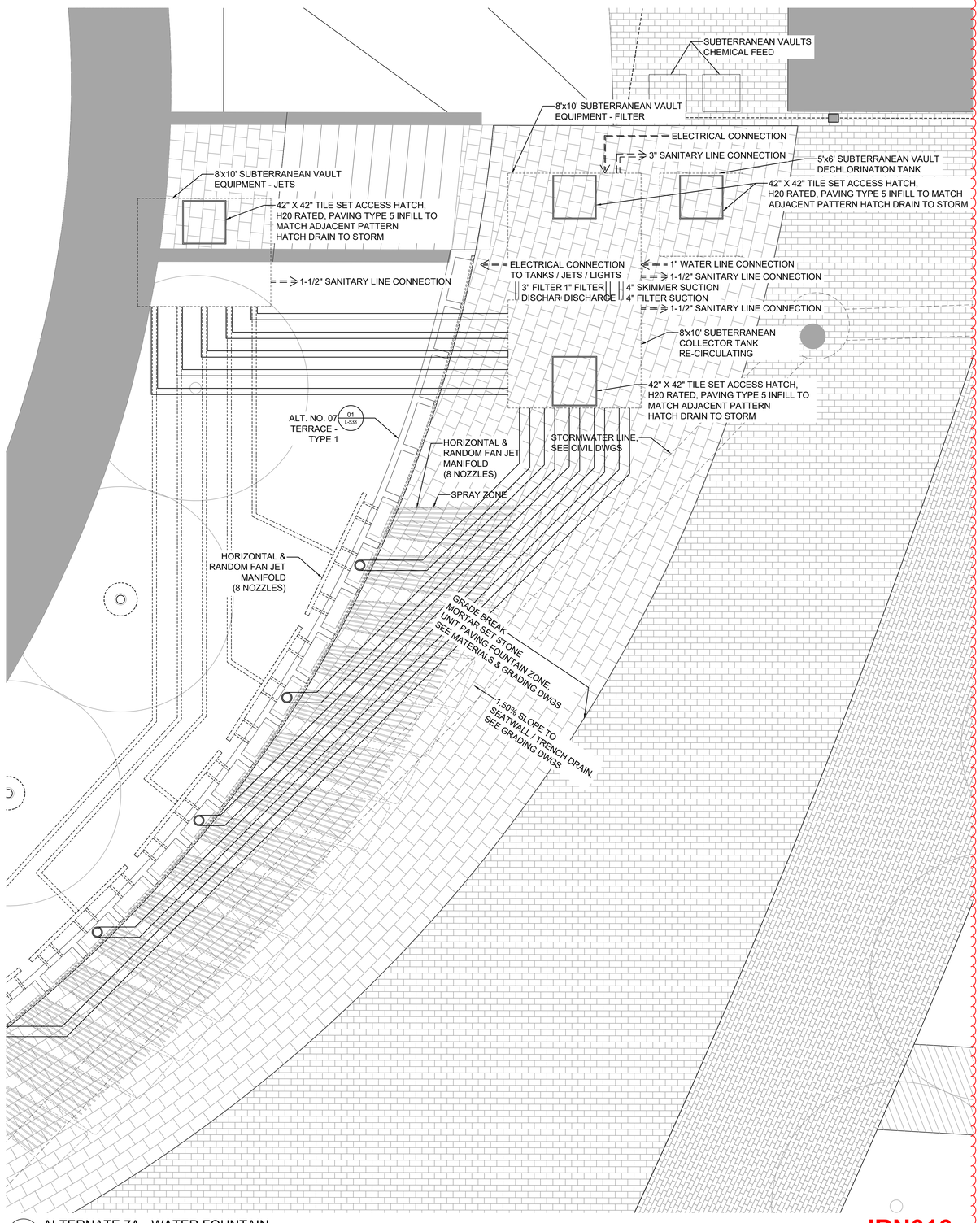
SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.
3. DELEGATED DESIGN - DESIGN WATER FOUNTAIN PLUMBING AND ELECTRICAL BY A DESIGN ENGINEER PROFESSIONAL LICENSED IN NORTH CAROLINA.
4. SHOP DRAWINGS - SUBMIT PRIOR TO FABRICATION.



01 ALTERNATE 7B - SPLASH PAD
SCALE: 1/4" = 1' - 0"
0 4' 8'



01 ALTERNATE 7A - WATER FOUNTAIN
SCALE: 1/4" = 1' - 0"
0 4' 8'

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

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Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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Water Fountain Design = WF
DELTA FOUNTAINS
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www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

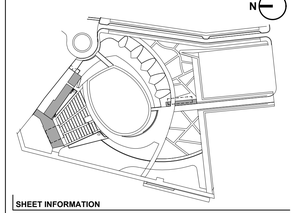
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - WATER FEATURE

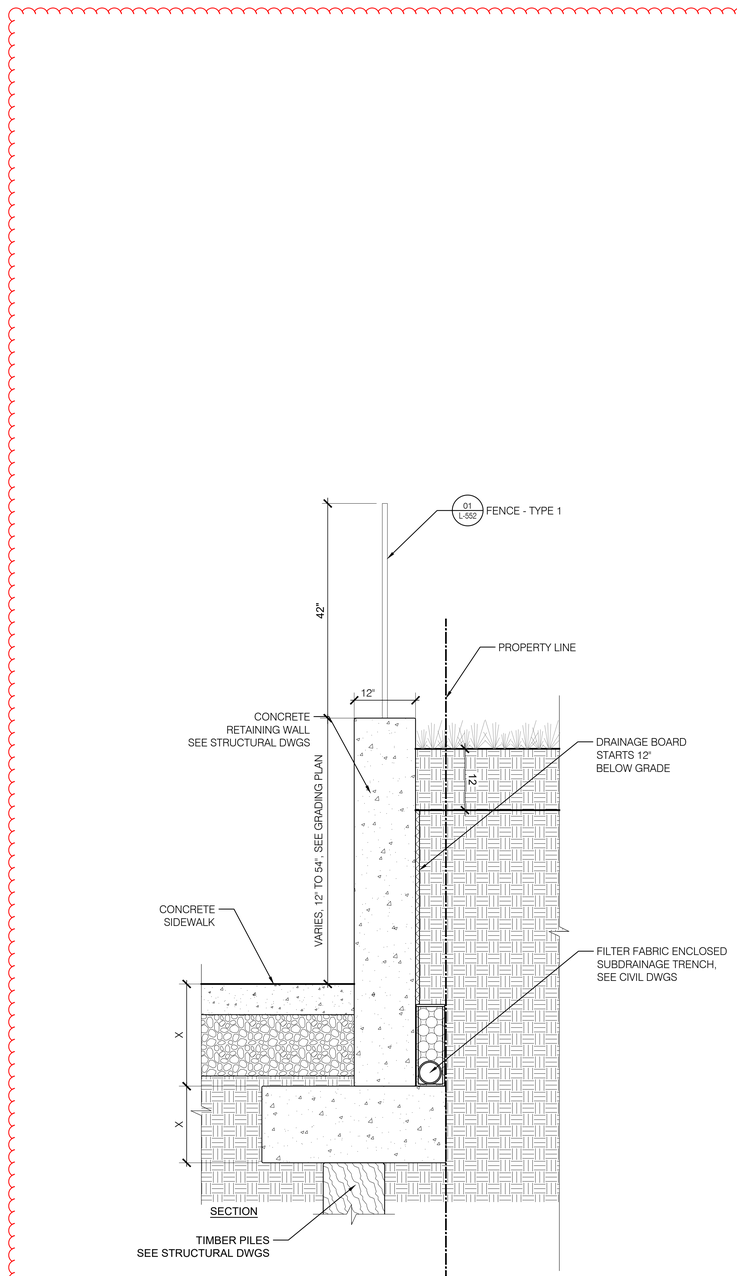
SHEET NO.

L-534-P1

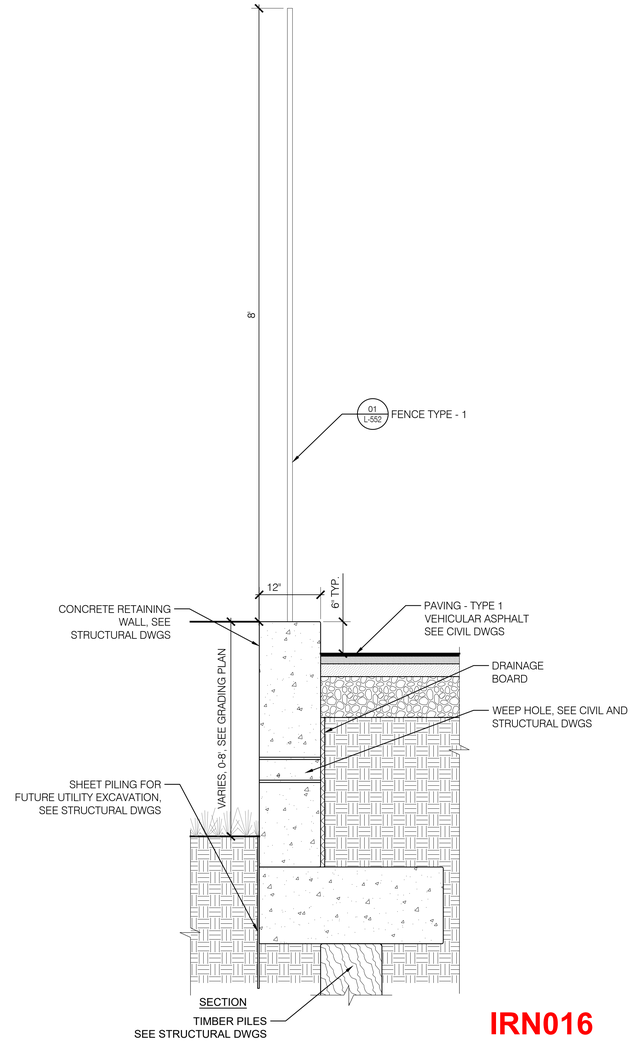
SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND L-131-P1 FOR MATERIALS PLAN



03 ALT NO. 13 - WALL - TYPE 1 - REINFORCED CONCRETE RETAINING WALL @ NUTT STREET
SCALE: 1" = 1' - 0"



IRN016

01 WALL - TYPE 1 - REINFORCED CONCRETE RETAINING WALL @ LOADING DRIVE
SCALE: 1" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK1860

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Lighting Design = EL
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www.tillotsondesign.com

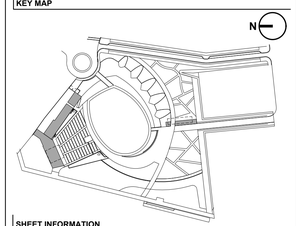
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - WALLS

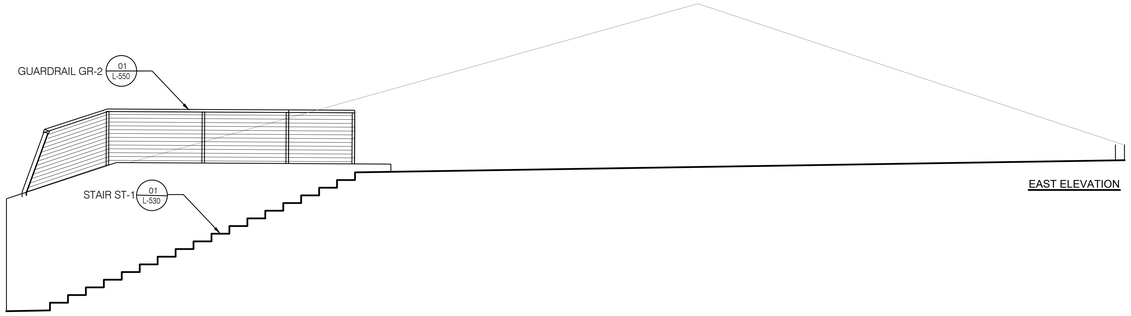
SHEET NO.

L-535-P1

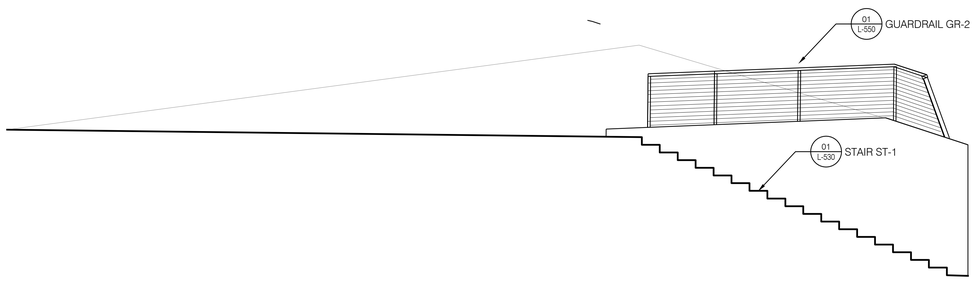
IRN016

SHEET NOTES

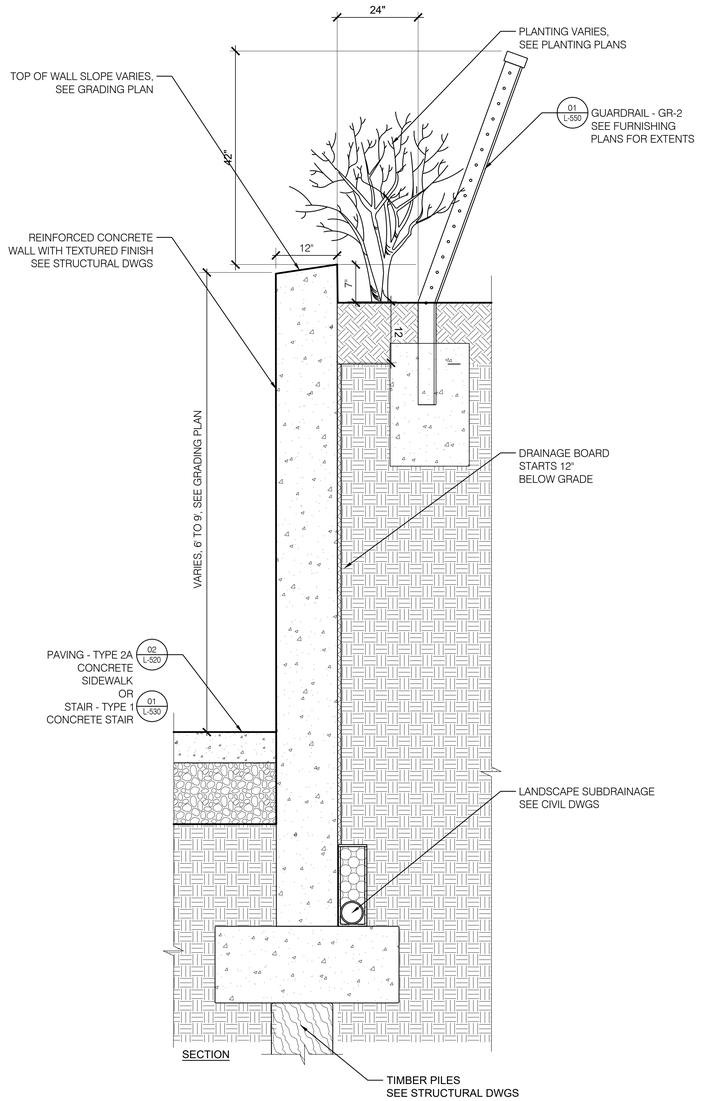
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND L-131-P1 FOR MATERIALS PLAN



EAST ELEVATION



WEST ELEVATION



SECTION

IRN016

01 WALL - TYPE 2 - TYPICAL RETAINING WALL SECTION @ COWAN STREET
SCALE: 1" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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HARGREAVES JONES
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www.hargreavesjonesla.com
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Structural Engineering= S
Geotechnical Engineering = G
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Environmental Engineering = EE
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Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

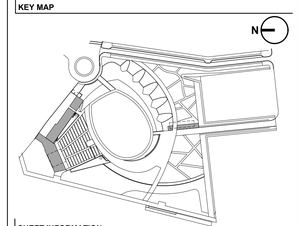
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - WALLS

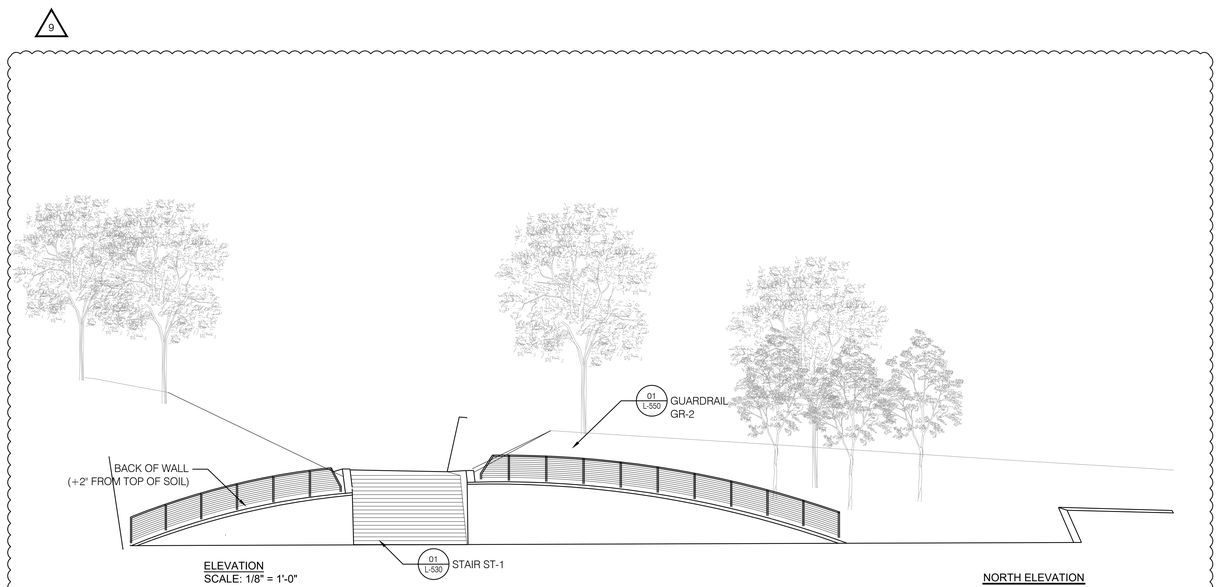
SHEET NO.

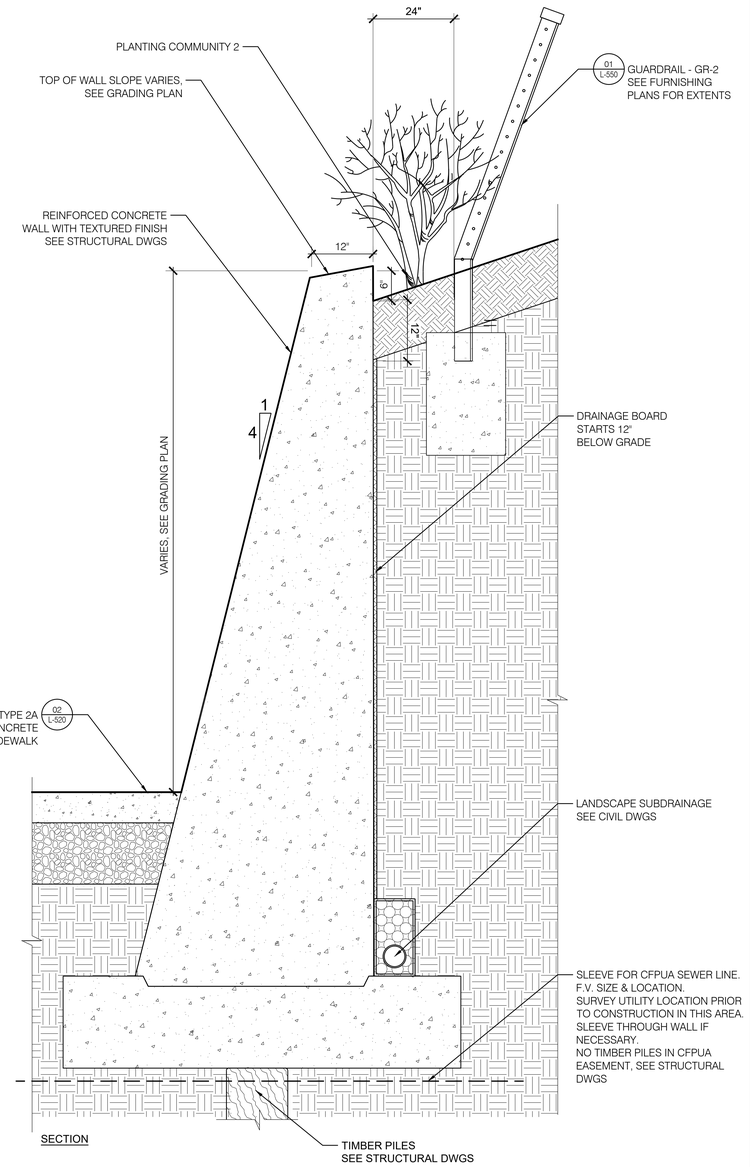
L-536-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND L-131-P1 FOR MATERIALS PLAN





NORTH ELEVATION

01 WALL - TYPE 3 - BATTERED CONCRETE RETAINING WALL @ COWAN ST. ROUNDABOUT
SCALE: 1" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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HARGREAVES JONES
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Acoustic/Theater/AV = AT
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Structural Engineering= S
Geotechnical Engineering = G
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Plumbing Engineering = P
Fire Protection = FP
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Lighting Design = EL
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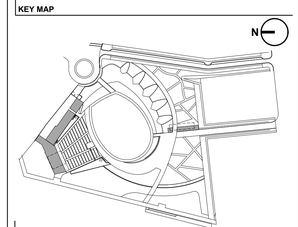
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - WALLS

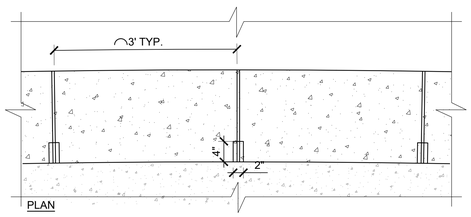
SHEET NO.

L-537-P1

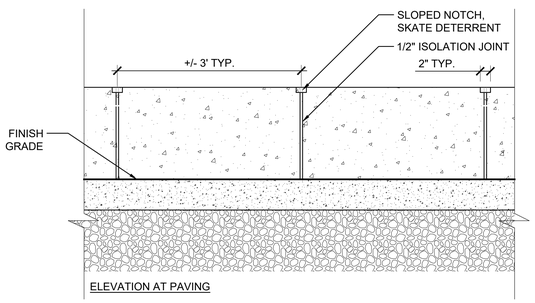
IRN016

SHEET NOTES

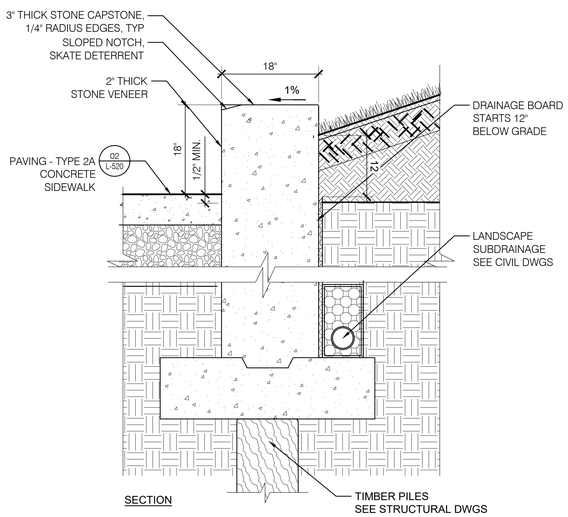
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND L-131-P1 FOR MATERIALS PLAN



PLAN

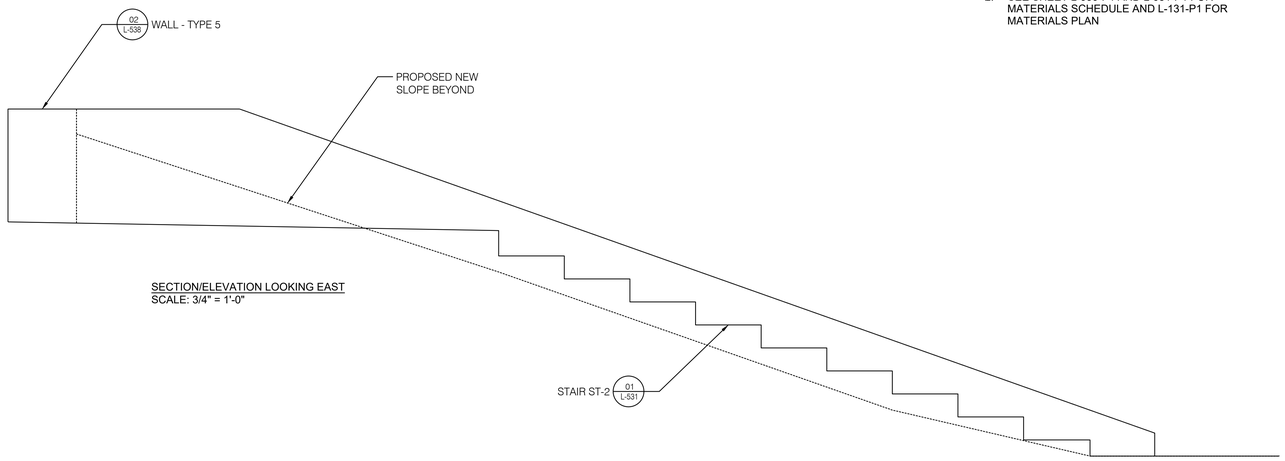


ELEVATION AT PAVING

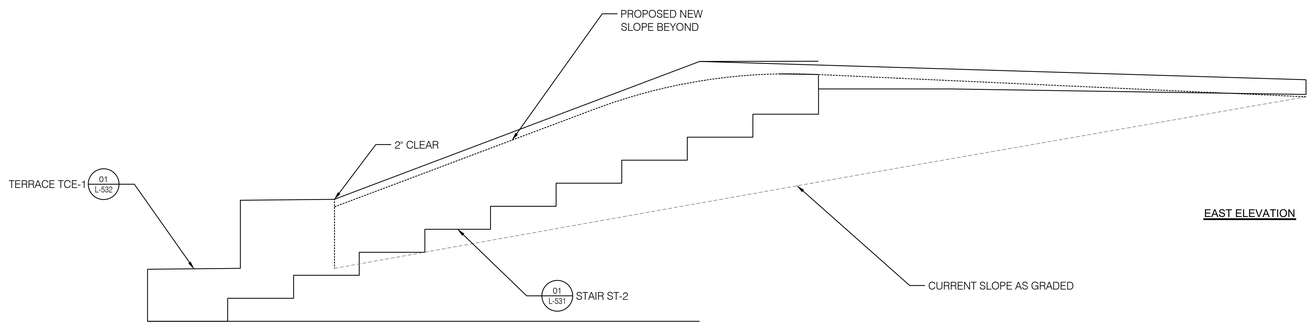


SECTION

02 ALT NO. 6 - WALL - TYPE 5 - CURVED STONE VENEER SEAT WALL @ GREAT LAWN
SCALE: 1" = 1' - 0"

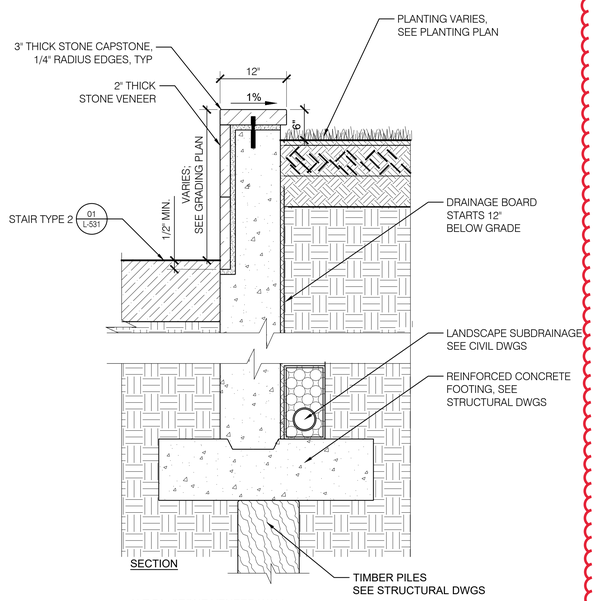


SECTION/ELEVATION LOOKING EAST
SCALE: 3/4" = 1'-0"



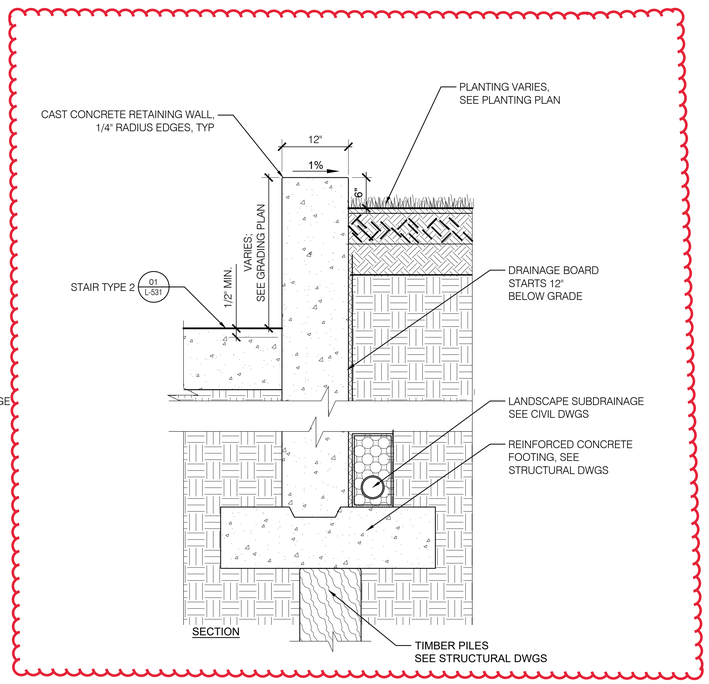
EAST ELEVATION

SECTION/ELEVATION LOOKING WEST
SCALE: 3/4" = 1'-0"



SECTION

ALT 7A: STONE VENEER WALL



SECTION

IRN016

01 WALL - TYPE 4 - STONE VENEER RETAINING WALL @ PLAZA STAIR
SCALE: 1" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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City of Wilmington Project Code 3CPRK1860

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Irrigation= I
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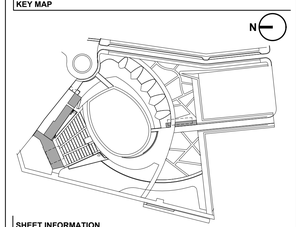
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - WALLS

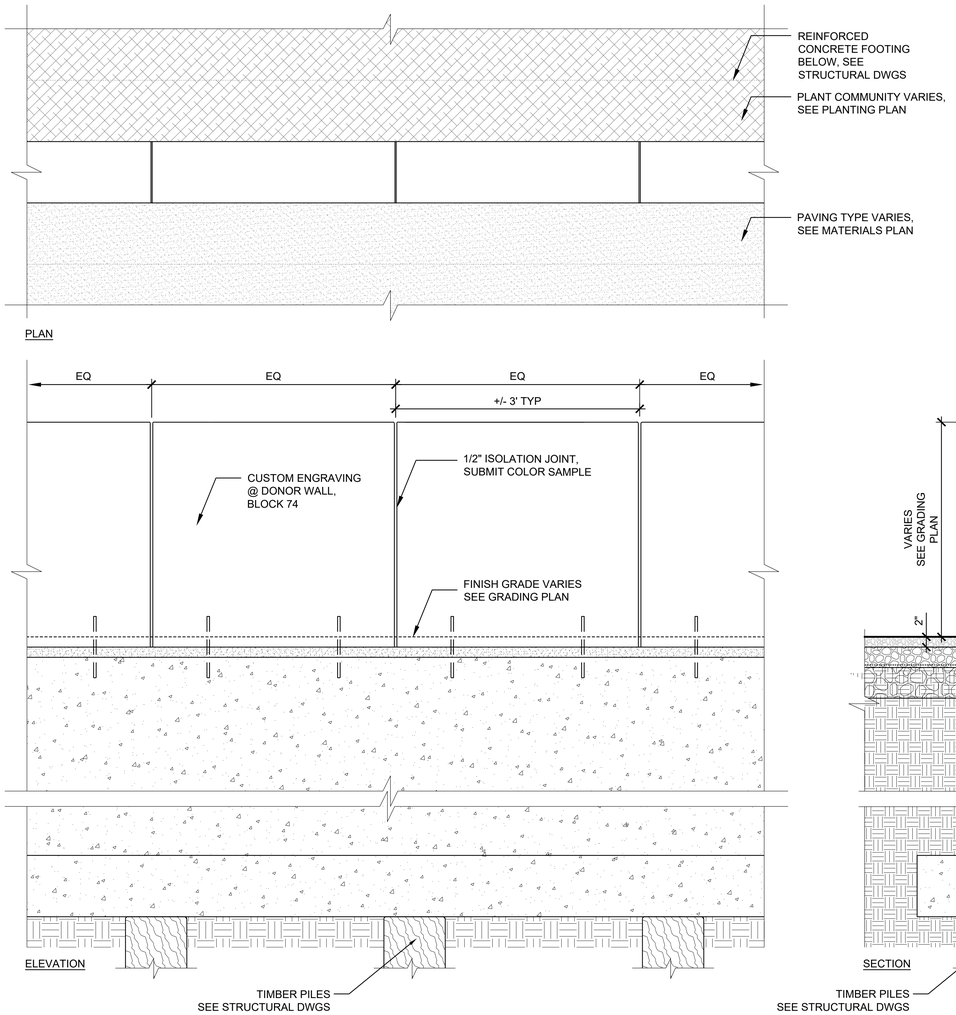
SHEET NO.

L-538-P1

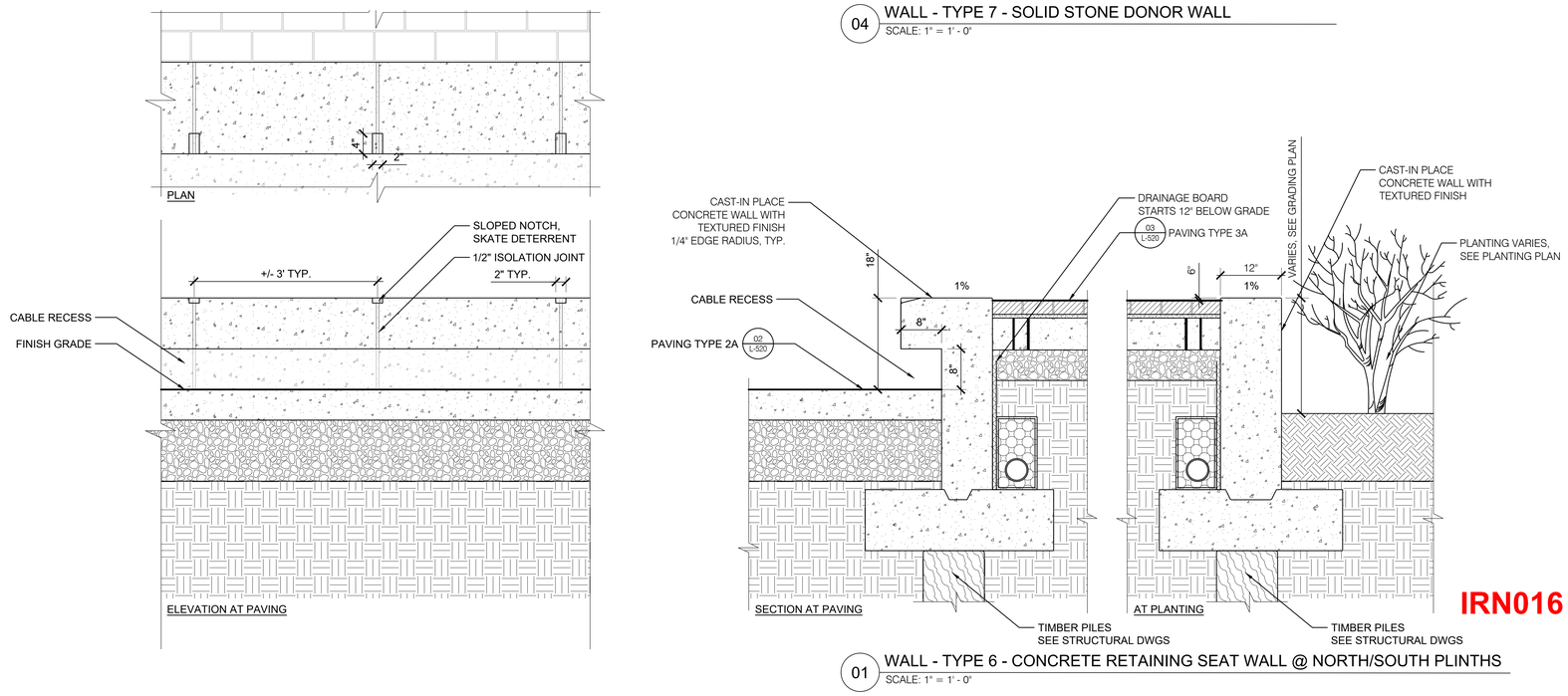
IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND L-131-P1 FOR MATERIALS PLAN



04 WALL - TYPE 7 - SOLID STONE DONOR WALL
SCALE: 1" = 1' - 0"



01 WALL - TYPE 6 - CONCRETE RETAINING SEAT WALL @ NORTH/SOUTH PLINTHS
SCALE: 1" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
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NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
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www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
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Lighting Design = EL
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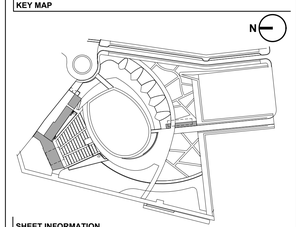
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

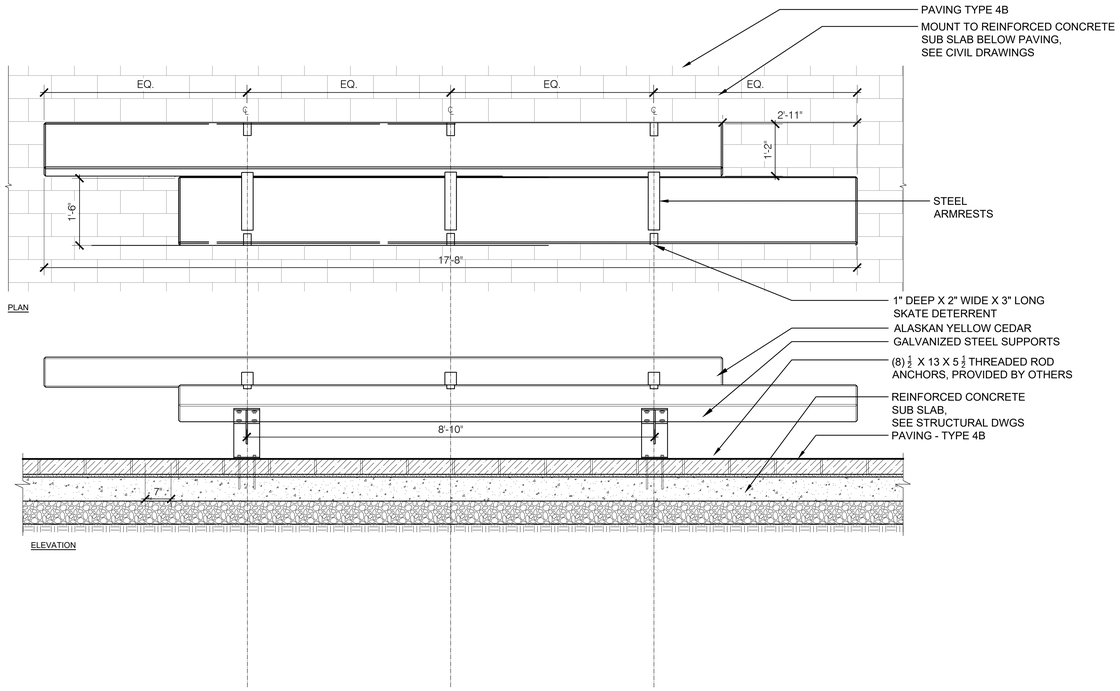
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

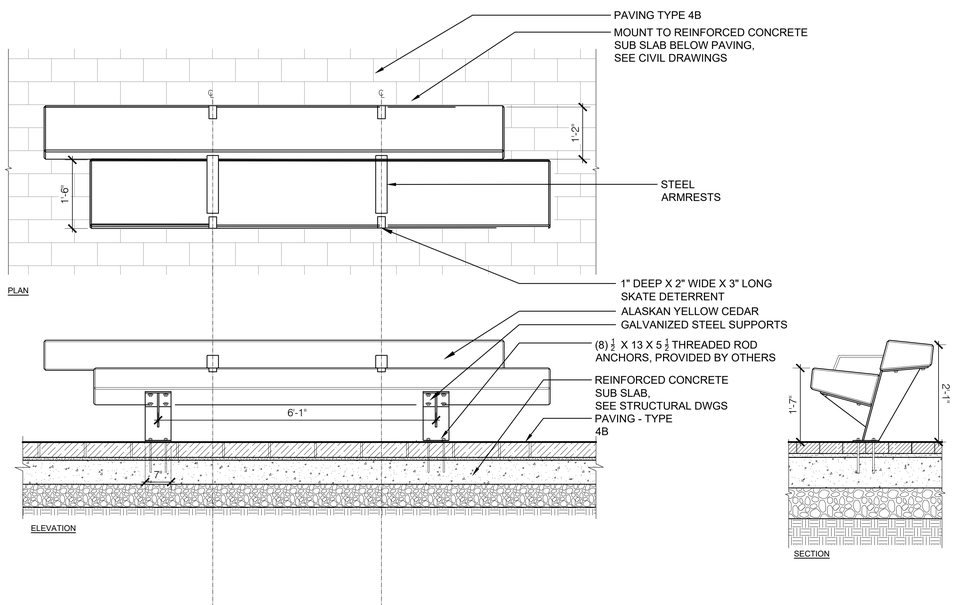
LANDSCAPE DETAILS - WALLS

SHEET NO.

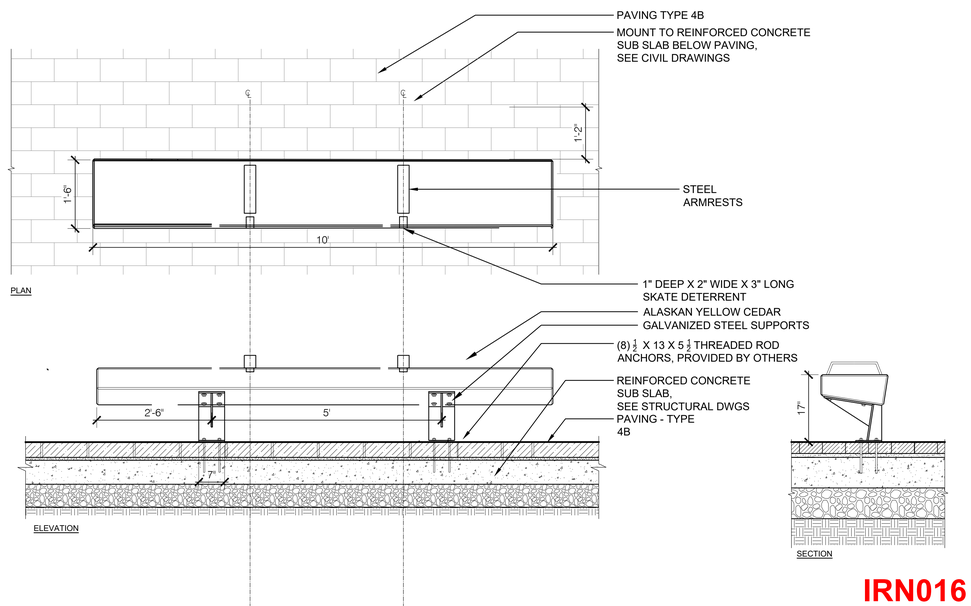
L-539-P1



03 BENCH TYPE 1C - 210" TRAPECIO BENCH WITH BACK
SCALE: 3/4" = 1' - 0"



02 BENCH - TYPE 1B - 120" TRAPECIO BENCH WITH BACK
SCALE: 3/4" = 1' - 0"



01 BENCH - TYPE 1A - TRAPECIO BENCH WITHOUT BACK
SCALE: 3/4" = 1' - 0"

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-040-P1 L-041-P1 FOR FURNITURE SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN THE PROJECT STATE. SEE SPECIFICATION.
5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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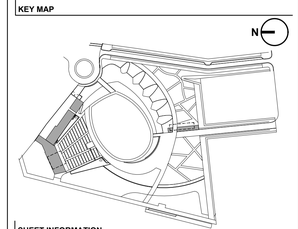
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT MARY MARGARET JONES No. 1980

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - FURNITURE

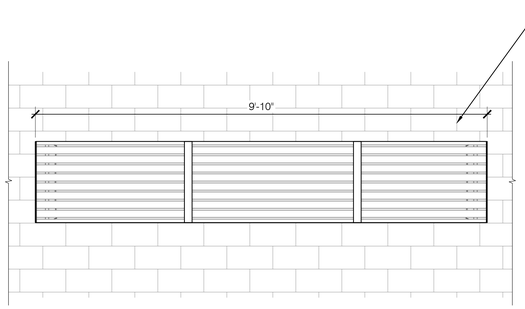
SHEET NO.

L-540-P1

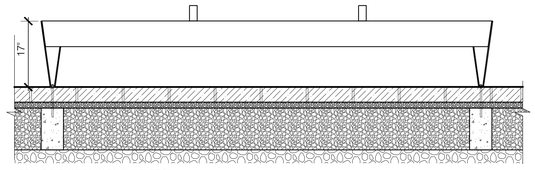
SHEET NOTES

IRN016

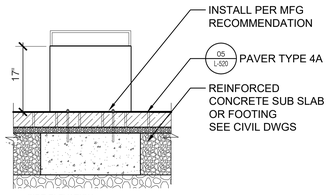
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-040-P1 L-041-P1 FOR FURNITURE SCHEDULE.



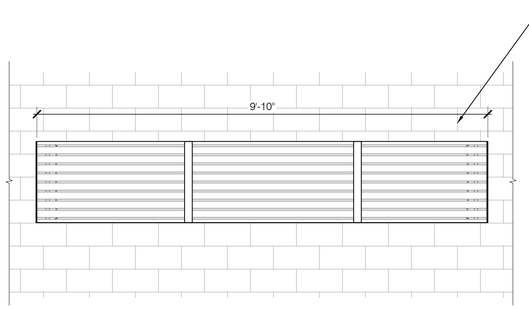
PLAN



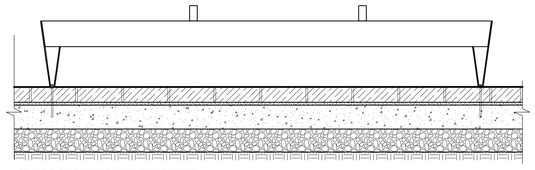
FRONT ELEVATION IN PAVING TYPE 3B



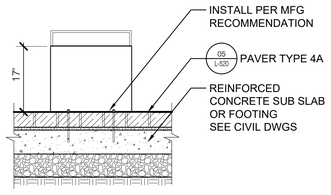
SIDE ELEVATION



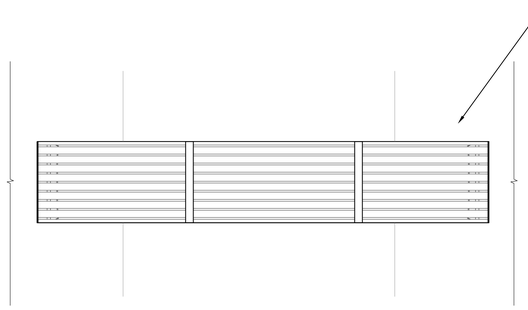
PLAN



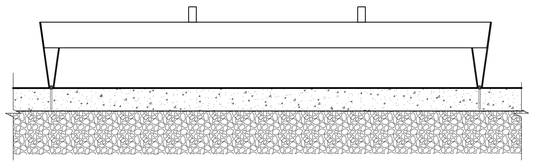
FRONT ELEVATION IN PAVING TYPE 3A/4A/4B



SIDE ELEVATION



PLAN



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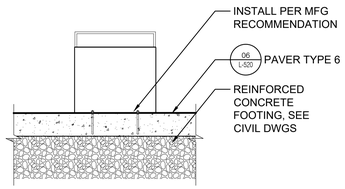
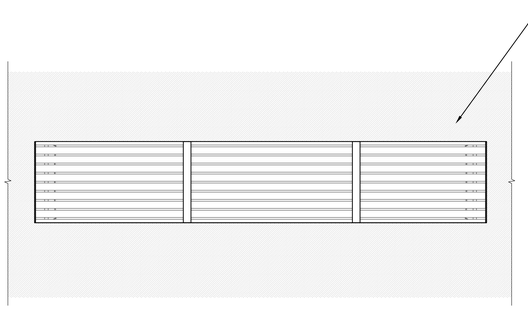
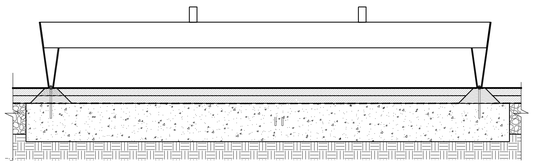


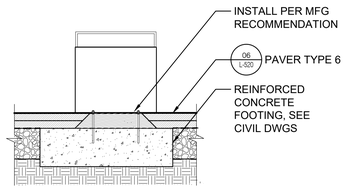
SIDE ELEVATION



PLAN



FRONT ELEVATION IN PAVING TYPE 6



SIDE ELEVATION

01 BENCH - TYPE 2 - BLOCQ BENCH WITH BACK
SCALE: 3/4" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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Lighting Design = EL
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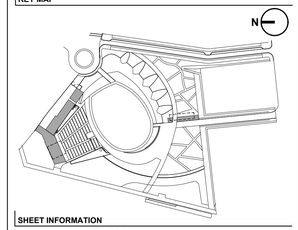
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

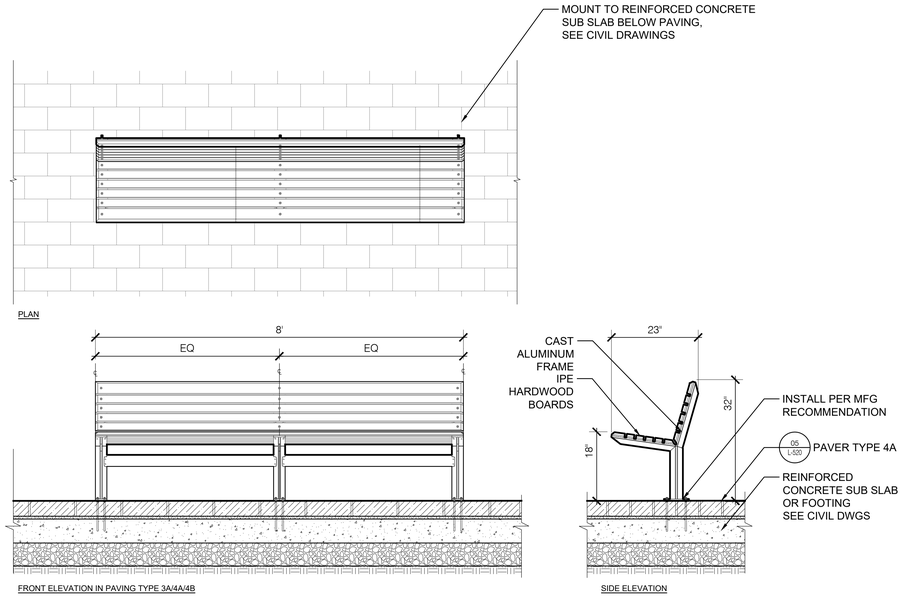
SHEET TITLE

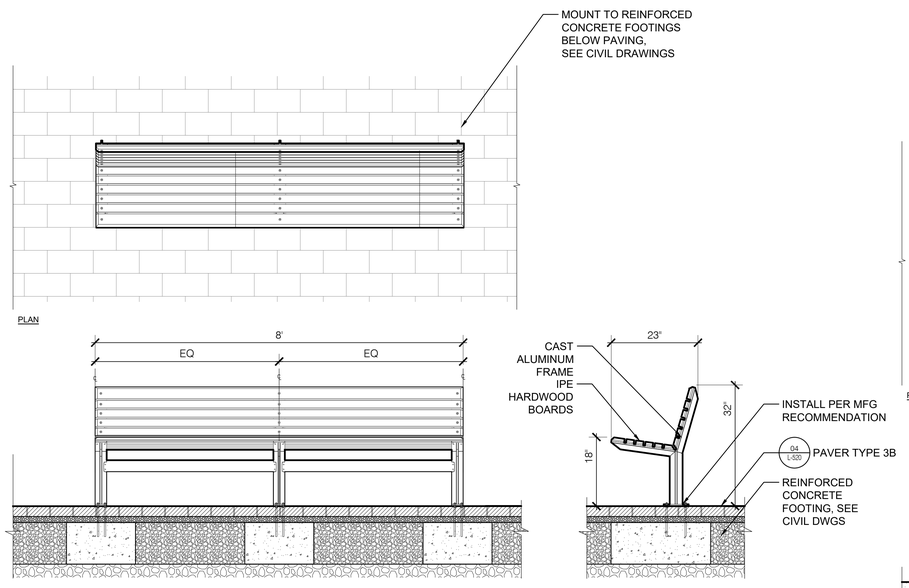
LANDSCAPE DETAILS - FURNITURE

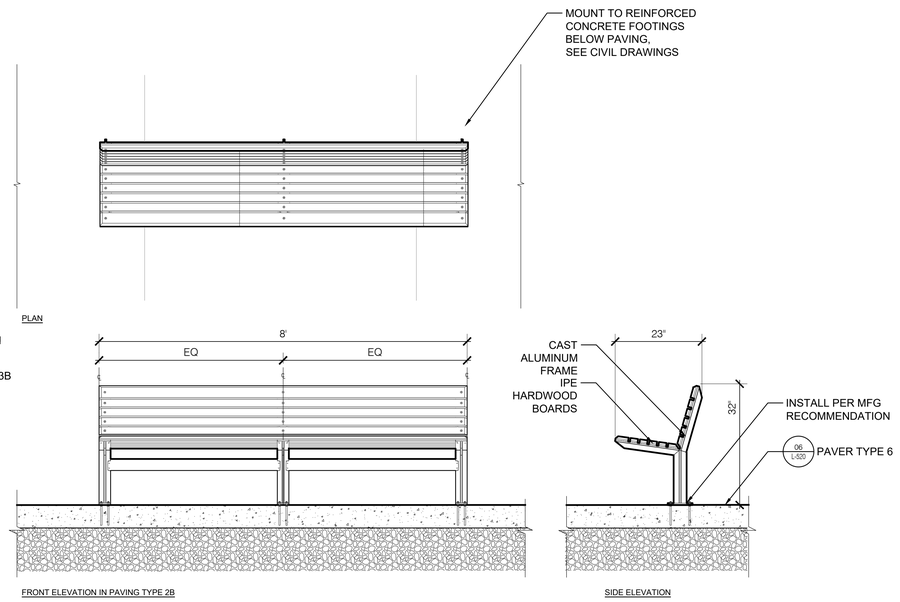
SHEET NO.

L-541-P1

IRN016







01 BENCH - TYPE 3 - KNIGHT BENCH
SCALE: 3/4" = 1' - 0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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WILMINGTON, NORTH CAROLINA

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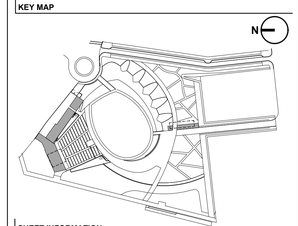
KEY MAP



SHEET INFORMATION

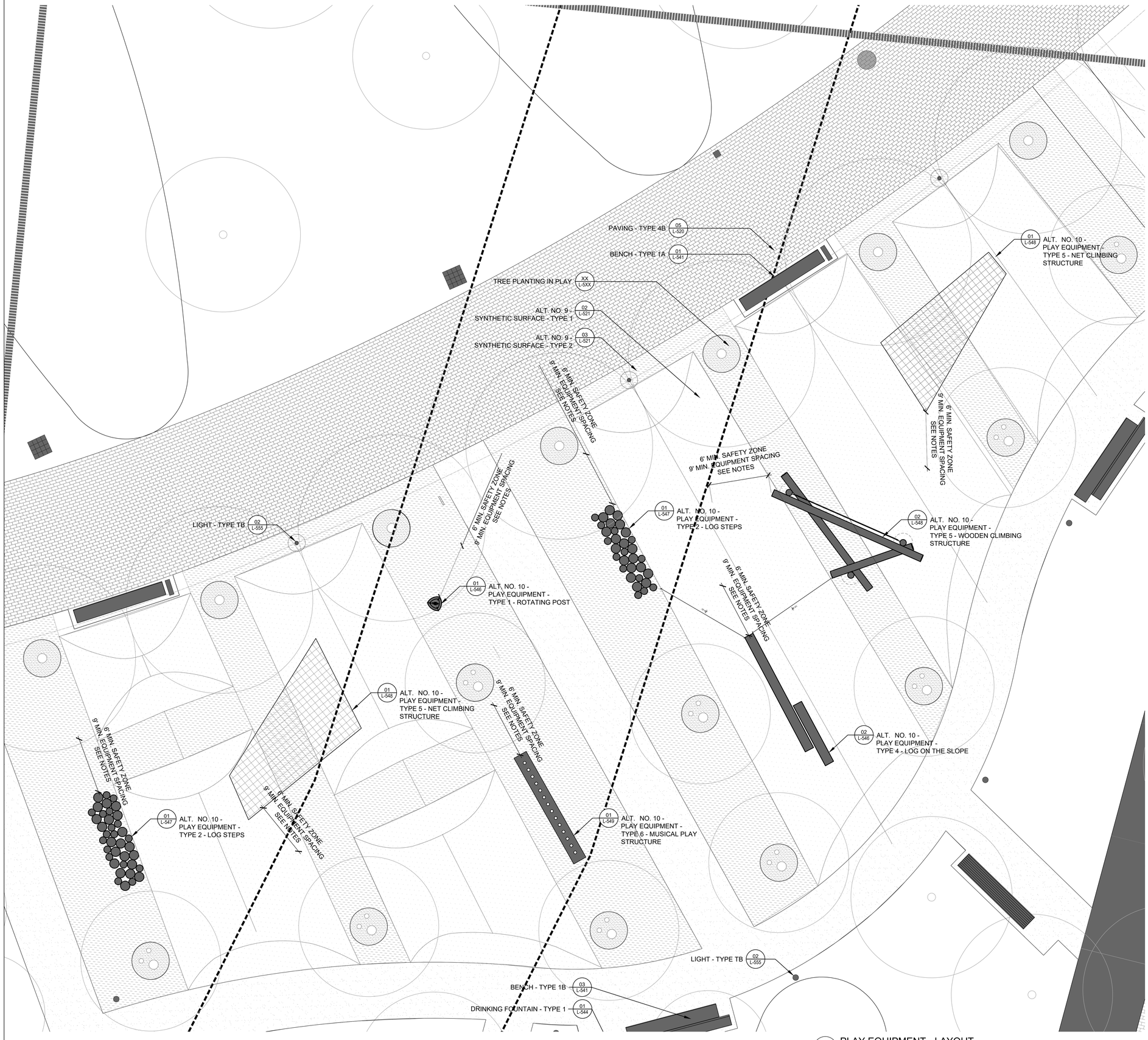
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - FURNITURE

SHEET NO.

L-542-P1



01 PLAY EQUIPMENT - LAYOUT
SCALE: 1/4" = 1' - 0"

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEETS L-131-P1 FOR MATERIALS PLAN.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
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5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
7. 6' MINIMUM SAFETY ZONE: NO OTHER ELEMENTS, INCLUDING BUT NOT LIMITED TO PLAY EQUIPMENT, SITE FURNITURE OR TREES.
8. SAFETY SURFACE: SYNTHETIC PAVING TYPE 1 & TYPE 2.
9. 9' MINIMUM EQUIPMENT SPACING: BETWEEN PROXIMATE PLAY ELEMENTS.
10. CRITICAL FALL HEIGHT & SAFETY SURFACE PER MANUFACTURER RECOMMENDATION.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
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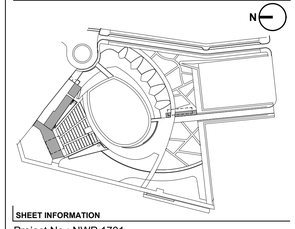
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT MARY MARGARET JONES
No. 1980

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

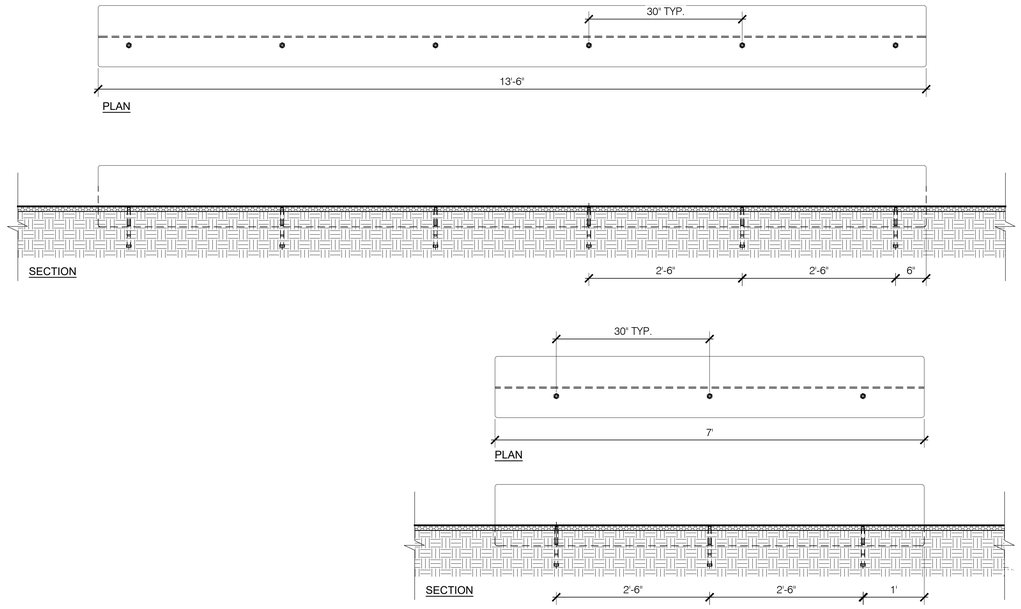
SHEET TITLE

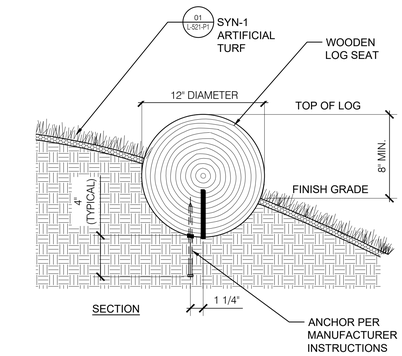
LANDSCAPE DETAILS - PLAY LAYOUT

SHEET NO.

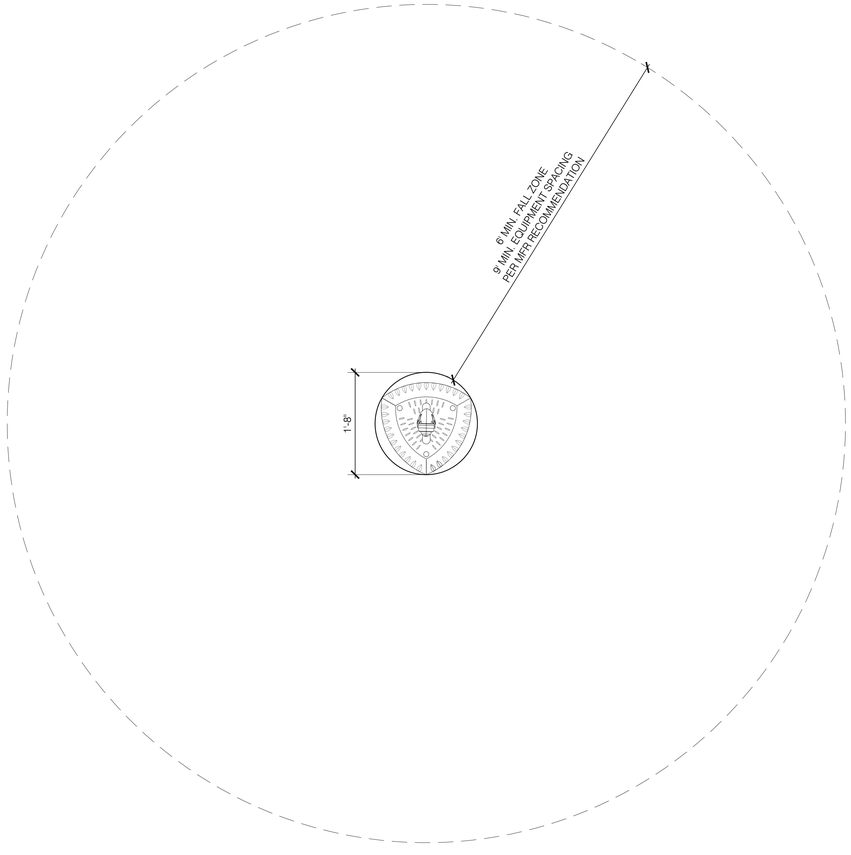
L-545-P1

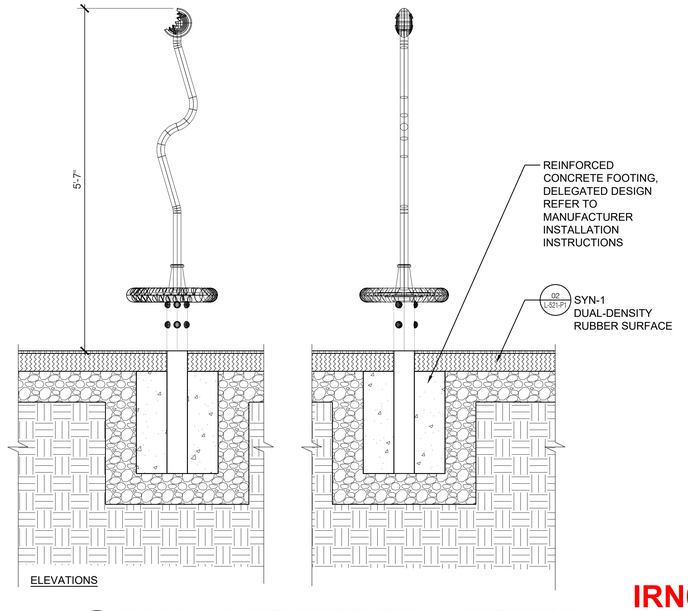
IRN016





02 ALT. NO. 10 - PLAY EQUIPMENT - TYPE 4 - LOG ON THE SLOPE
SCALE: 1" = 1' - 0"





01 ALT. NO. 10 - PLAY EQUIPMENT - TYPE 1 - ROTATING POST
SCALE: 1" = 1' - 0"

IRN016

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
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5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

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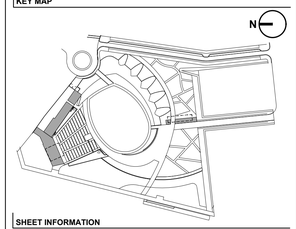
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PLAY

SHEET NO.

L-546-P1

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
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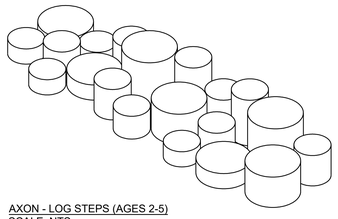
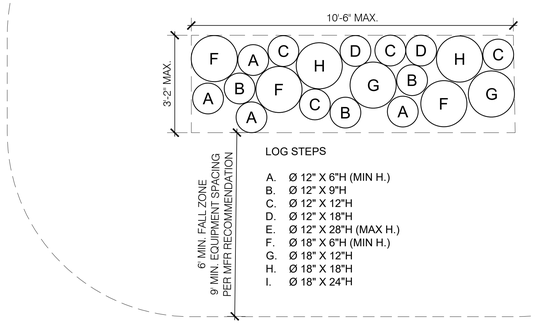


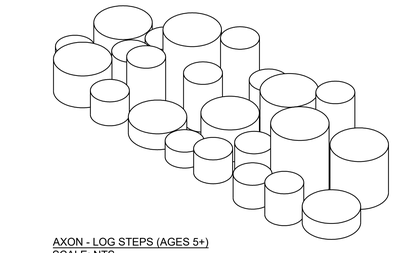
AXON - LOG STEPS (AGES 2-5)
SCALE: NTS



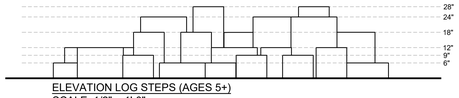
ELEVATION LOG STEPS (AGES 2-5)
SCALE: 1/2" = 1'-0"



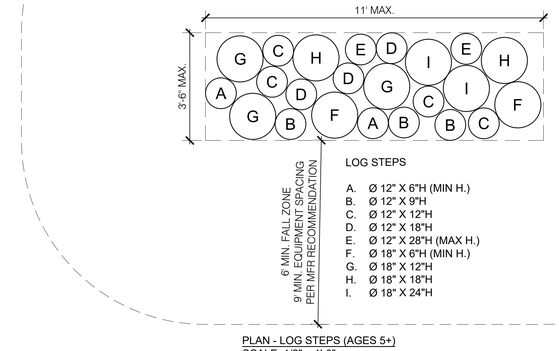
PLAN - LOG STEPS (AGES 2-5)
SCALE: 1/2" = 1'-0"



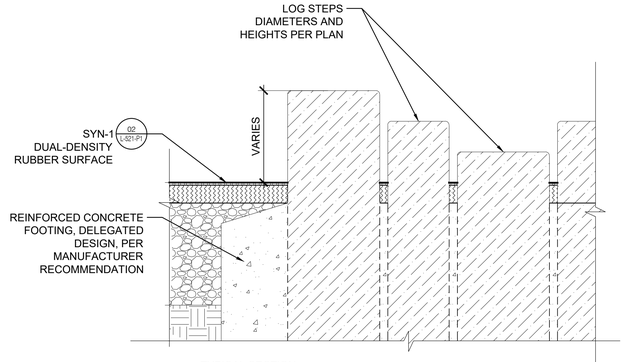
AXON - LOG STEPS (AGES 5+)
SCALE: NTS



ELEVATION LOG STEPS (AGES 5+)
SCALE: 1/2" = 1'-0"



PLAN - LOG STEPS (AGES 5+)
SCALE: 1/2" = 1'-0"



TYPICAL SECTION
SCALE 1" = 1'-0"

01 ALT. NO. 10 - PLAY EQUIPMENT - TYPE 2 - LOG STEPS
SCALE: AS SHOWN

IRN016

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WILMINGTON, NORTH CAROLINA

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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

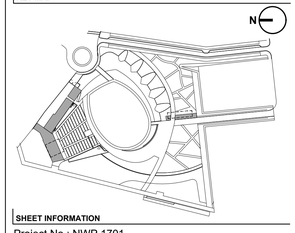
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PLAY

SHEET NO.

L-547-P1

SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
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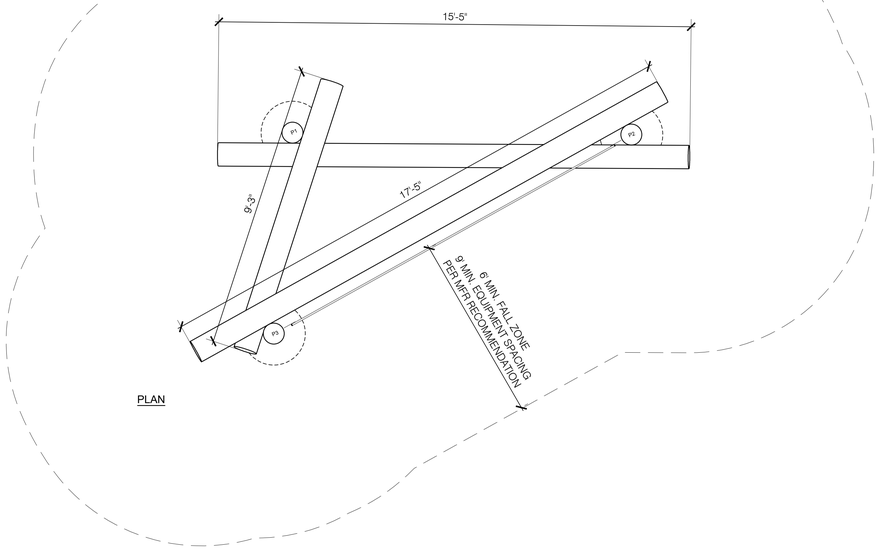

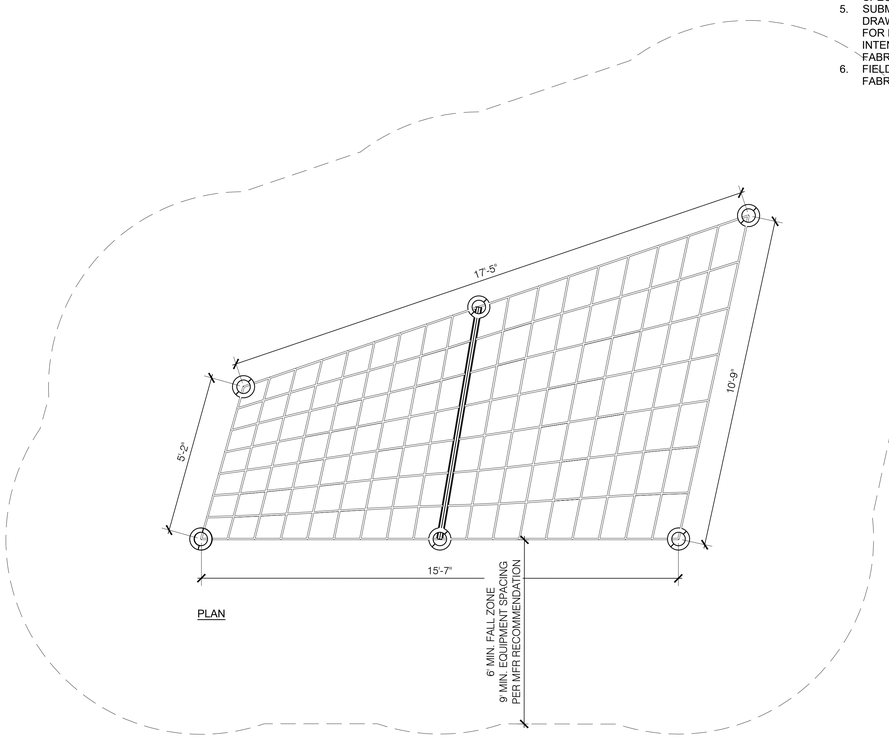

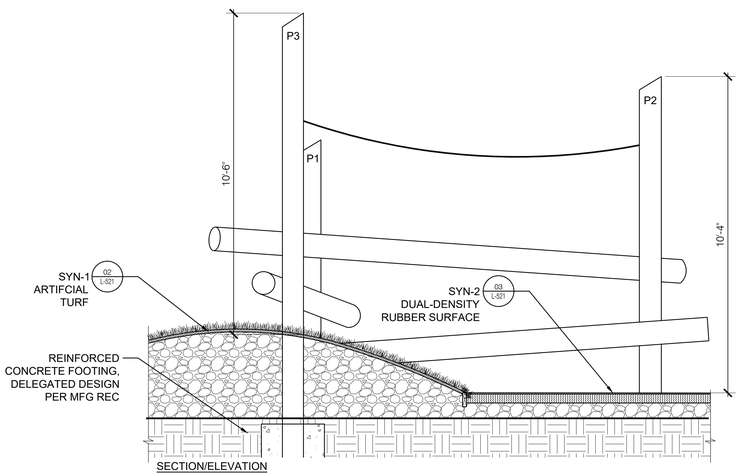

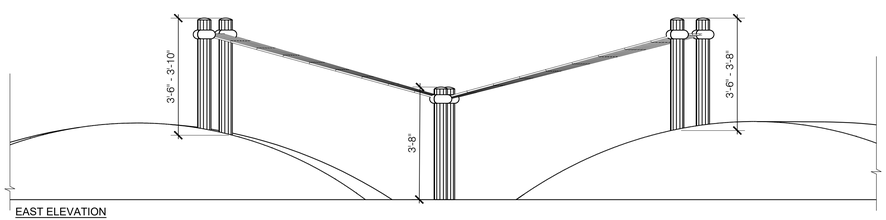

02 ALT. NO. 10 - PLAY EQUIPMENT - TYPE 5 - WOODEN CLIMBING STRUCTURE
SCALE: 1/2" = 1' - 0"

01 ALT. NO. 10 - PLAY EQUIPMENT - TYPE 5 - NET CLIMBING STRUCTURE
SCALE: 1/2" = 1' - 0"

IRN016

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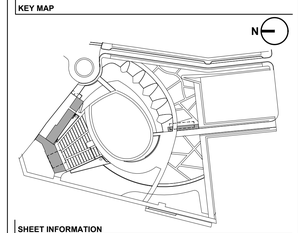
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PLAY

SHEET NO.

L-548-P1

IRN016

SHEET NOTES

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
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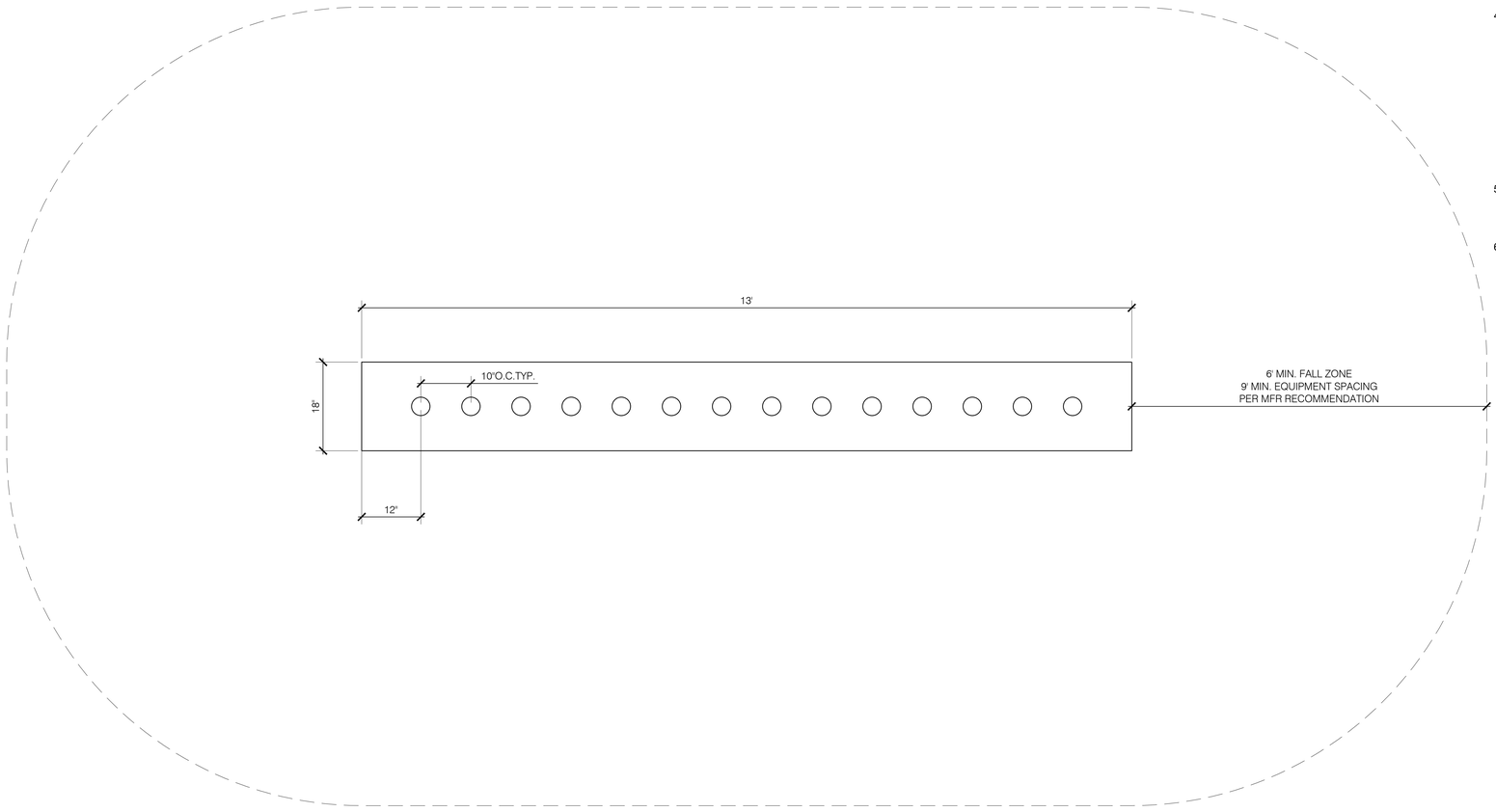
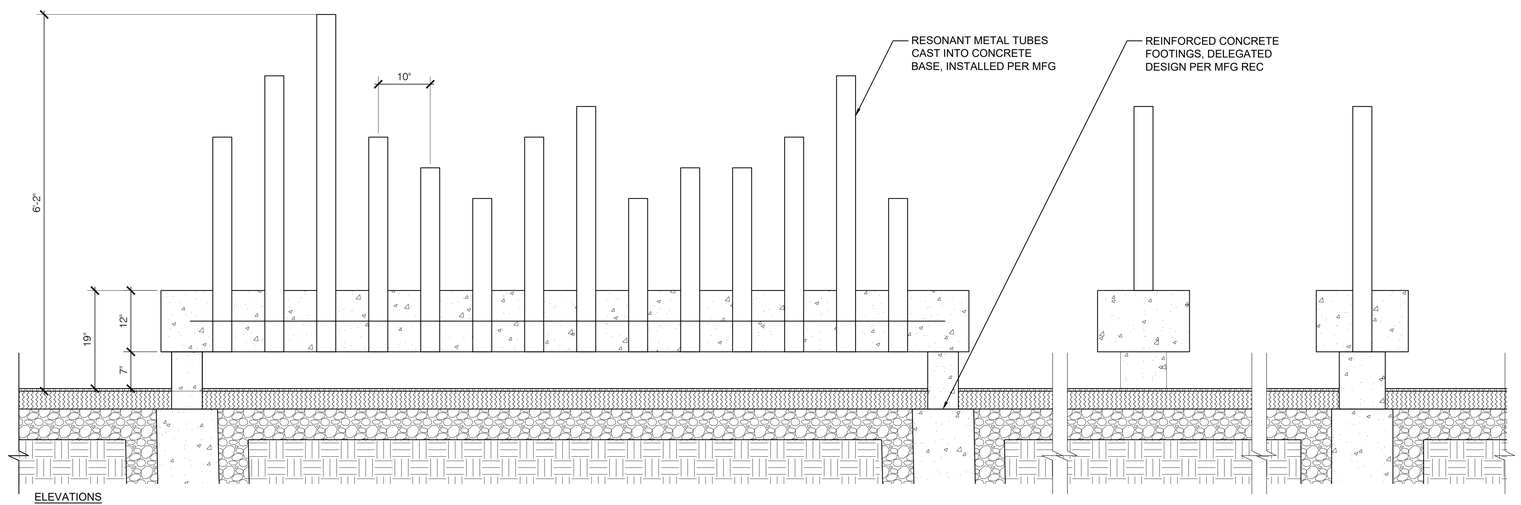


PLAN



ELEVATIONS

01 ALT. NO. 10 - PLAY EQUIPMENT - TYPE 6 - MUSICAL PLAY STRUCTURE
SCALE: 1" = 1' - 0"

IRN016

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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
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223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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NC License #C-1073

Marine Structural Engineering = SM
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Water Fountain Design = WF
DELTA FOUNTAINS
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www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

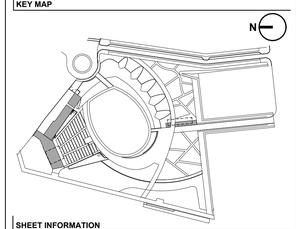
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PLAY

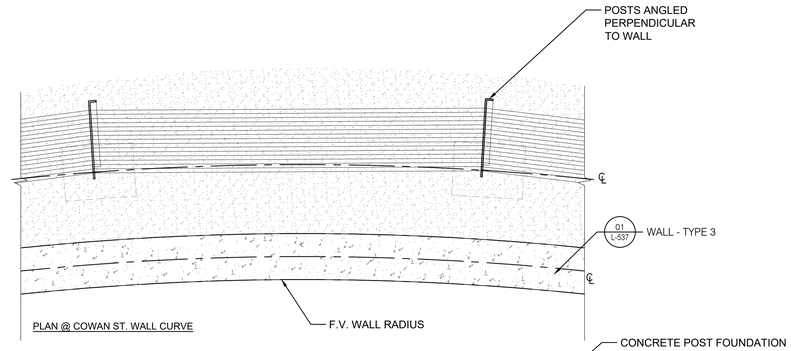
SHEET NO.

L-549-P1

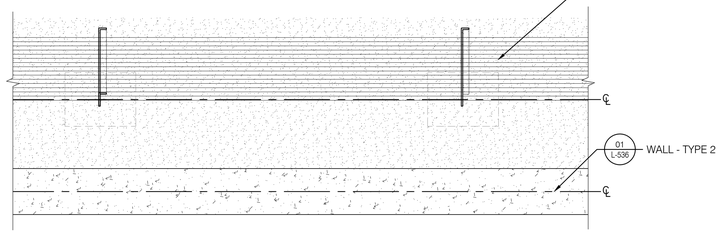
SHEET NOTES

IRN016

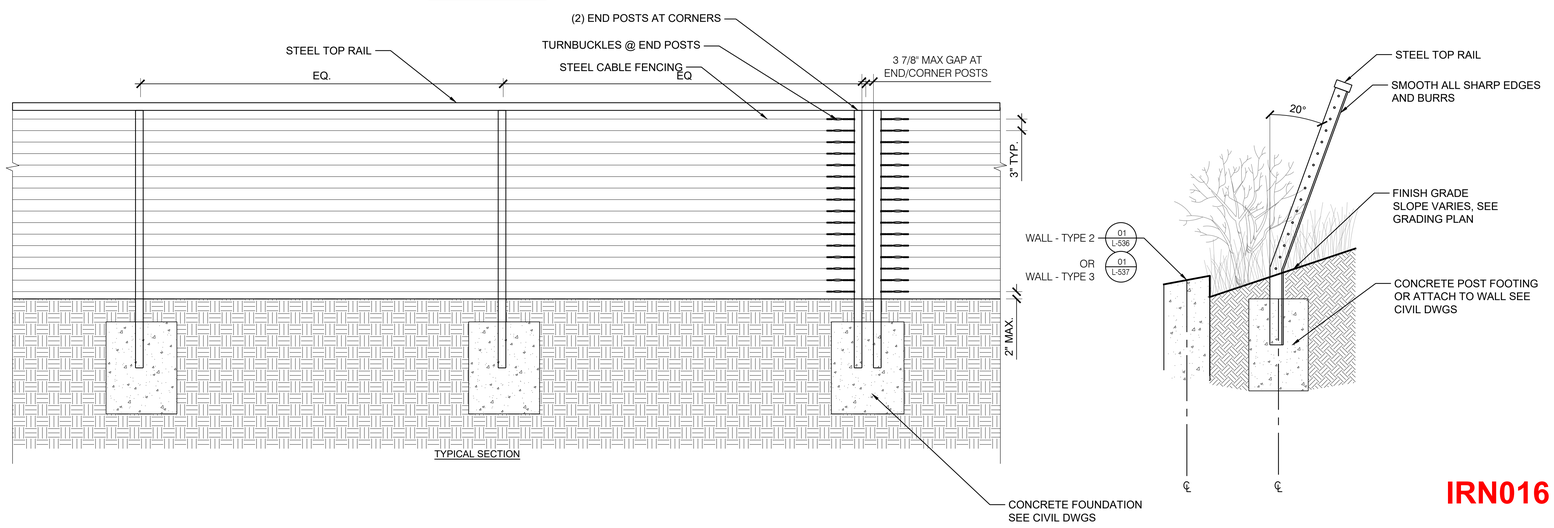
1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030 FOR MATERIALS SCHEDULE.
3. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN THE PROJECT STATE. SEE SPECIFICATION.
5. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
6. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.



PLAN @ COWAN ST. WALL CURVE



PLAN @ STRAIGHT WALL



TYPICAL SECTION

IRN016

01 GUARDRAIL - TYPE 2 @ COWAN STREET ENTRY
SCALE: 3/4" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
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www.hargreavesjonesla.com
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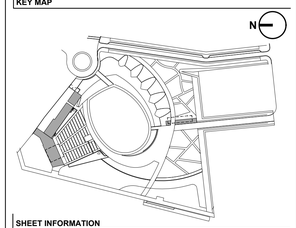
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
No. 1980
MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - GUARDRAIL

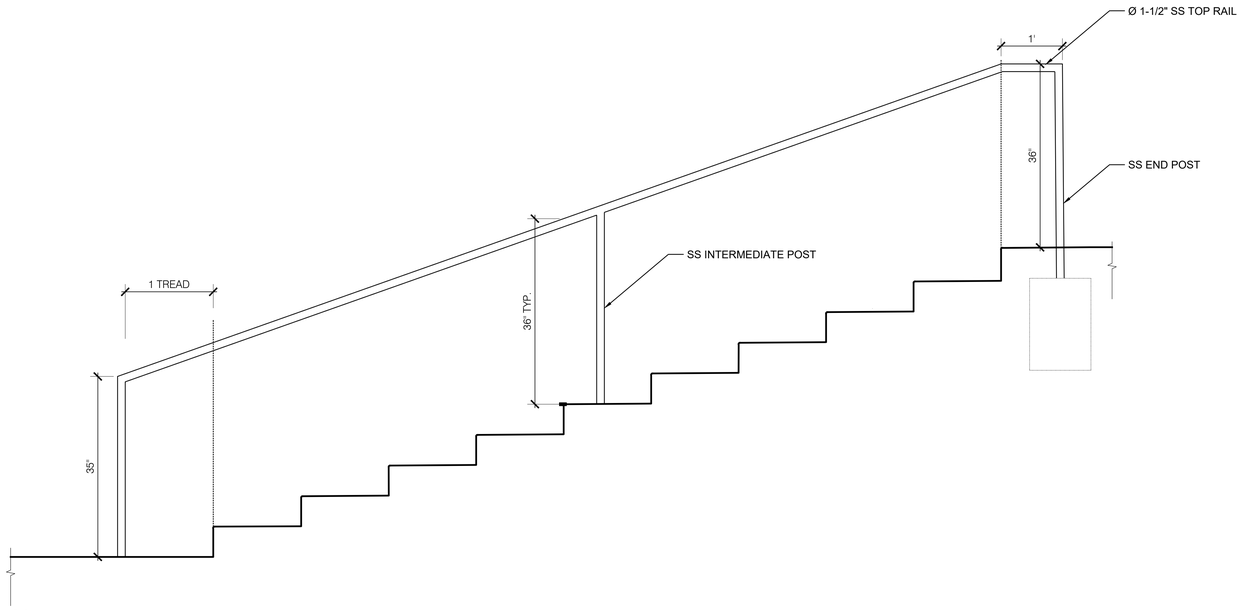
SHEET NO.

L-550-P1

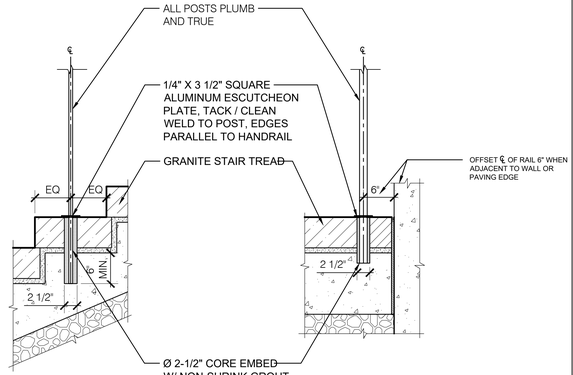
SHEET NOTES

IRN016

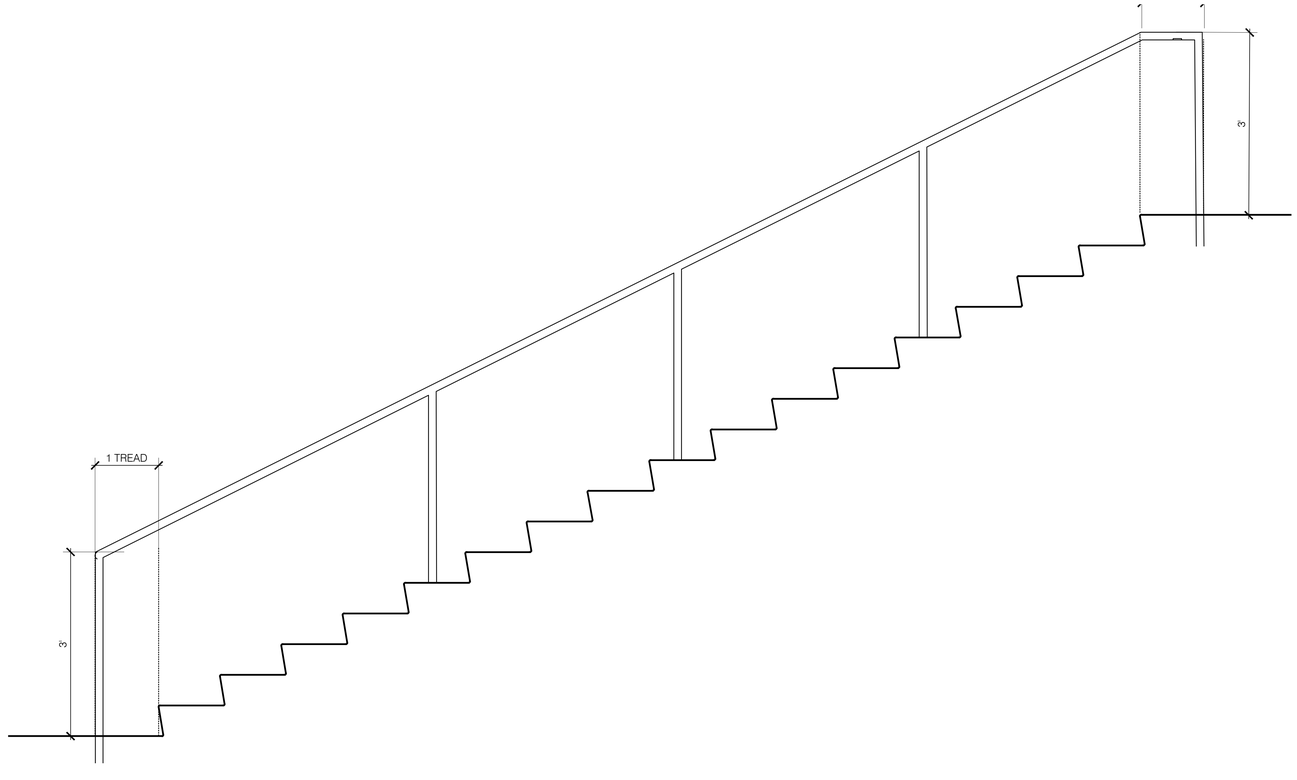
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEET L-131-P1 FOR MATERIALS PLAN.



@GREAT LAWN



DETAIL SECTION 1 DETAIL SECTION 2



@COWAN STREET

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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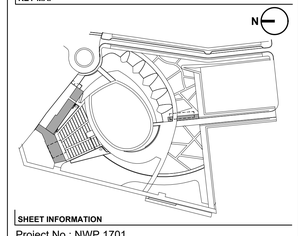
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - HANDRAILS

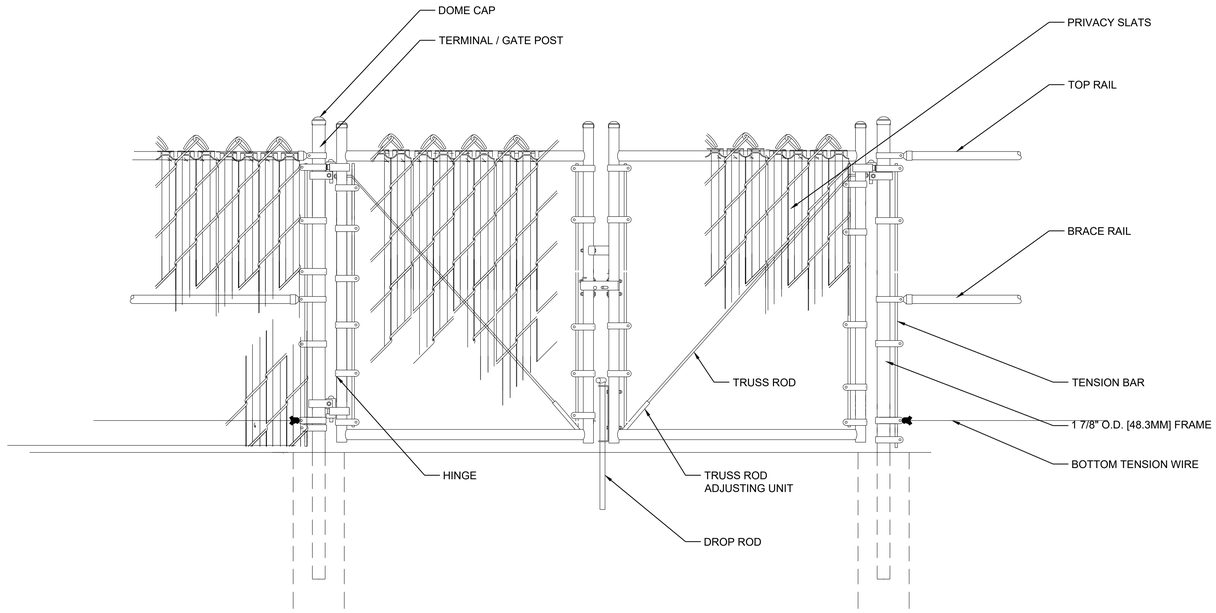
SHEET NO.

L-551-P1

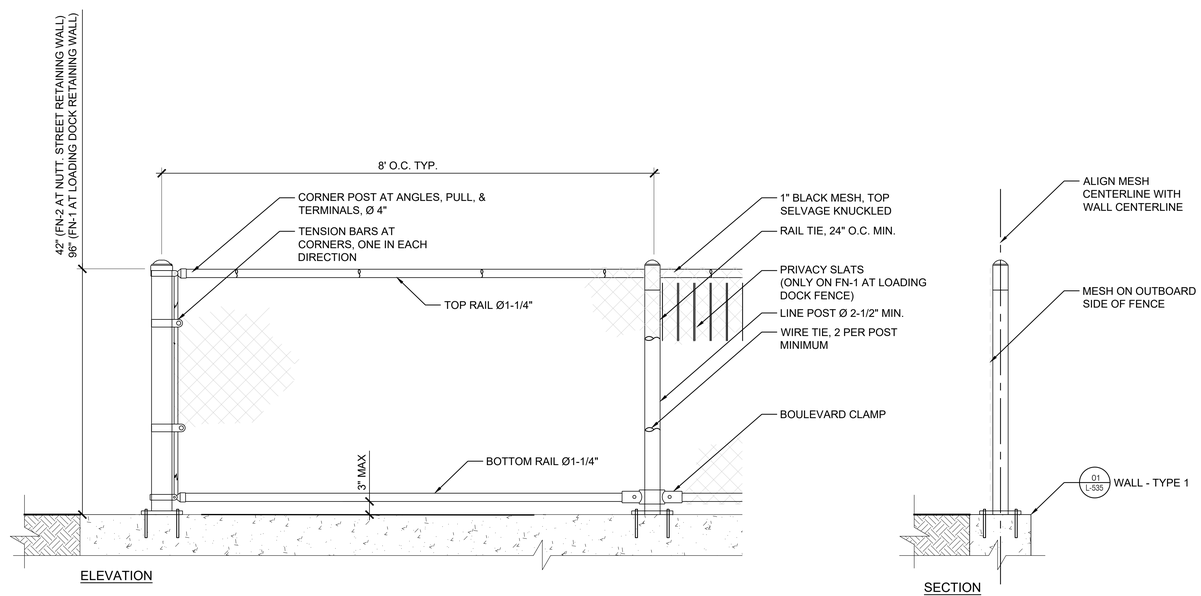
SHEET NOTES

IRN016

1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-030-P1 AND L-031-P1 FOR MATERIALS SCHEDULE AND SHEET L-131-P1 FOR MATERIALS PLAN.



01 GATE - GT-1 @ LOADING DOCK ENTRY
SCALE: 1" = 1' - 0"



IRN016

01 FENCE- TYPE 1 @ NUTT STREET / LOADING DOCK RETAINING WALL
SCALE: 1" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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Landscape Soil = LS
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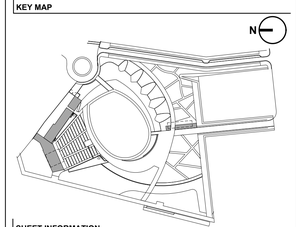
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT MARY MARGARET JONES No. 1980

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - FENCE

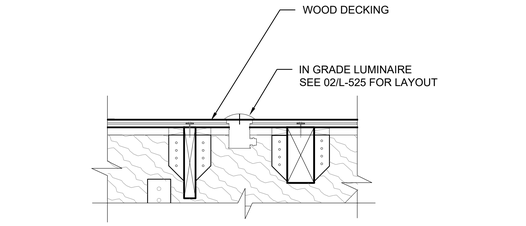
SHEET NO.

L-552-P1

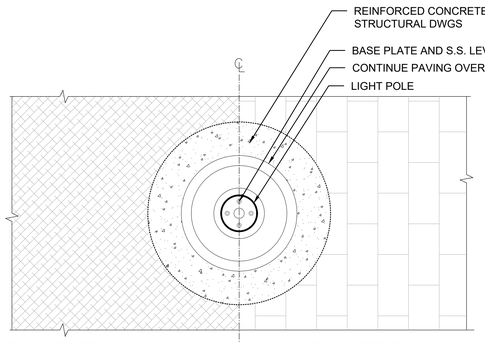
SHEET NOTES

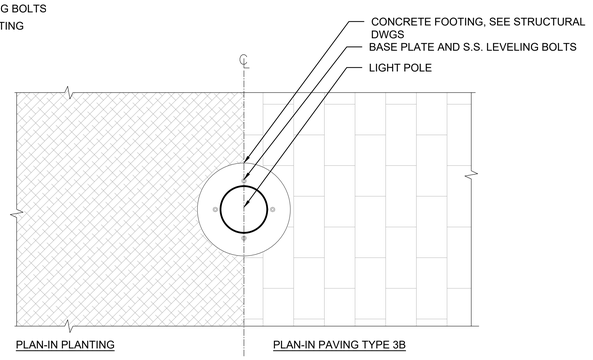
IRN016

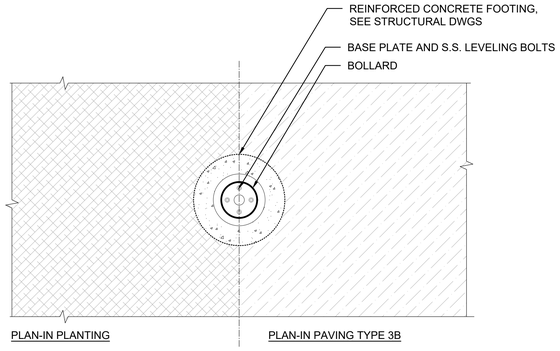
1. SEE SHEET L-001-P1 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE L-040-P1 AND L-041-P1 FOR FURNISHING, LIGHTING AND SIGNAGE SCHEDULES, AND L-141-P1 FOR FURNISHING, LIGHTING AND SIGNAGE PLANS

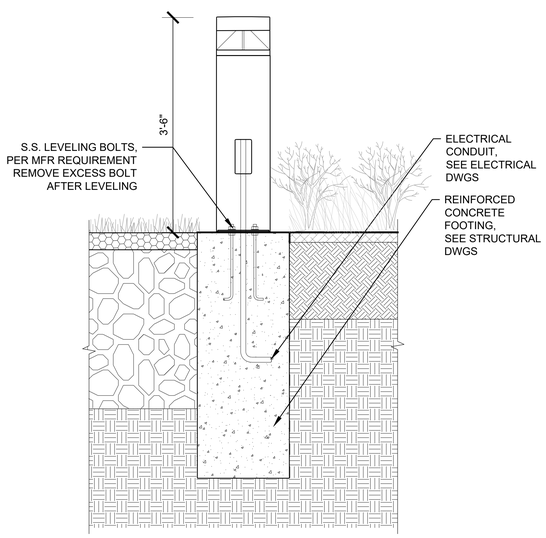


05 ALT. NO. 8 - LIGHT - TYPE TF - IN GRADE LUMINAIRE
SCALE: 1 1/2" = 1' - 0" 0 1/2" 1' 2'

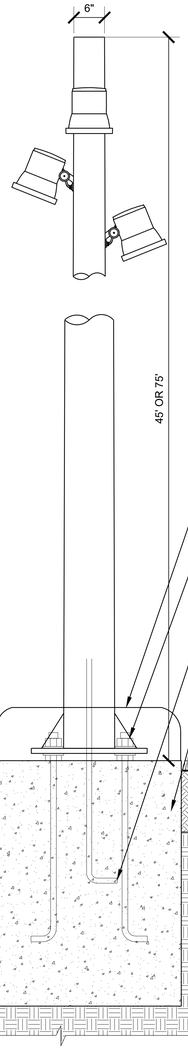




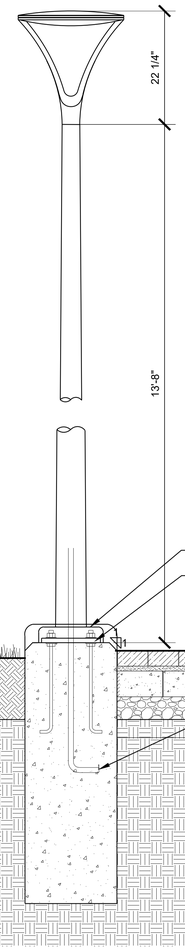




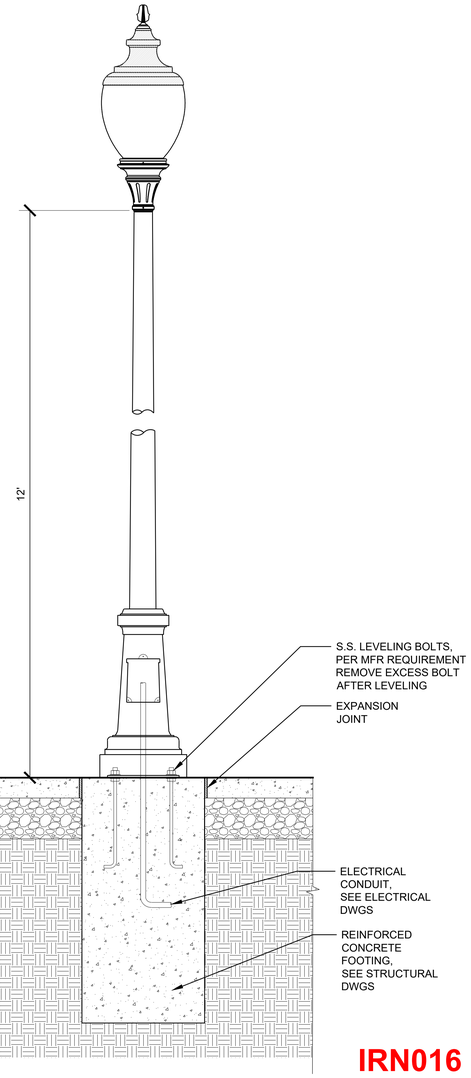
04 LIGHT - TYPE TD - 36" PEDESTRIAN BOLLARD
SCALE: 1" = 1' - 0" 0 1/2" 1' 2'



03 LIGHT - TYPE TC - 40'/75' HIGH MAST POLE
SCALE: 1" = 1' - 0" 0 1/2" 1' 2'



02 LIGHT - TYPE TB - 16' PEDESTRIAN LIGHT
SCALE: 1" = 1' - 0" 0 1/2" 1' 2'



01 LIGHT - TYPE TA - 12' POLE-MOUNTED STREET LIGHT
SCALE: 1" = 1' - 0" 0 1/2" 1' 2'

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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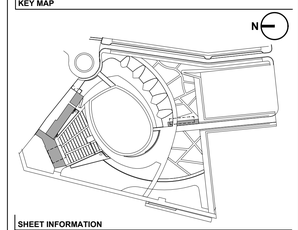
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - LIGHTING

IRN016

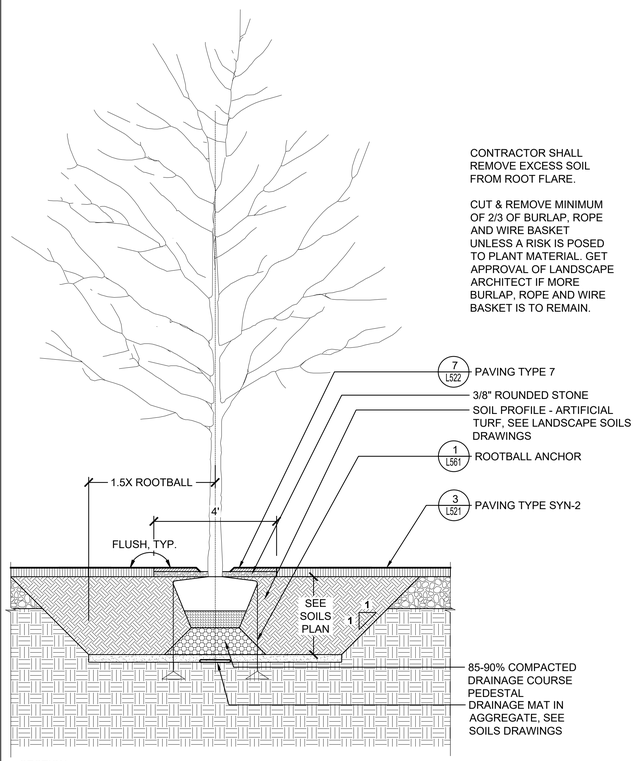
SHEET NO.

L-555-P1

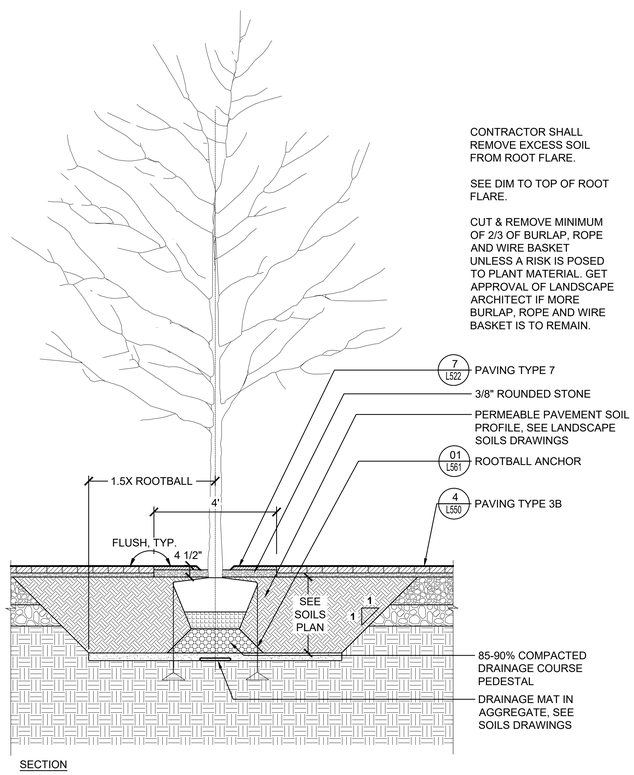
SHEET NOTES

IRN016

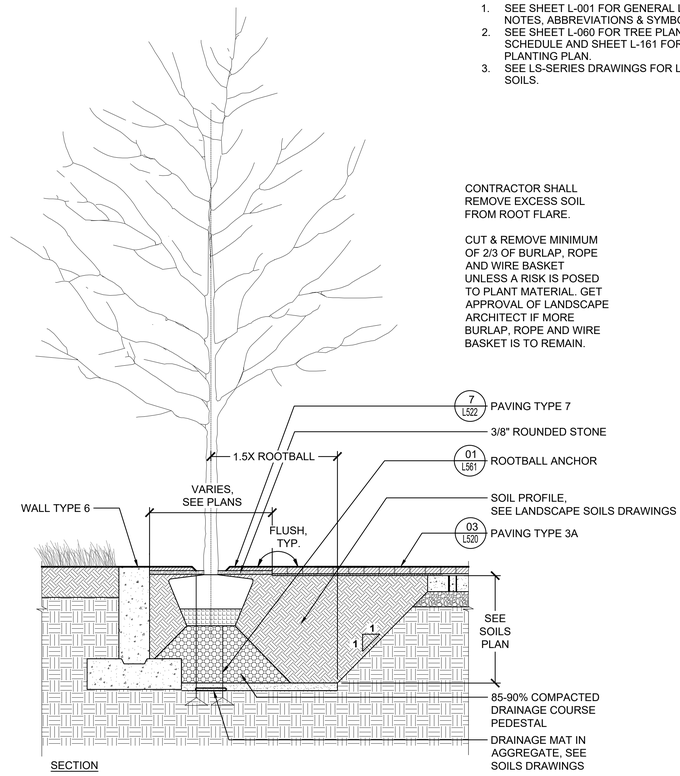
1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-060 FOR TREE PLANTING SCHEDULE AND SHEET L-161 FOR TREE PLANTING PLAN.
3. SEE LS-SERIES DRAWINGS FOR LANDSCAPE SOILS.



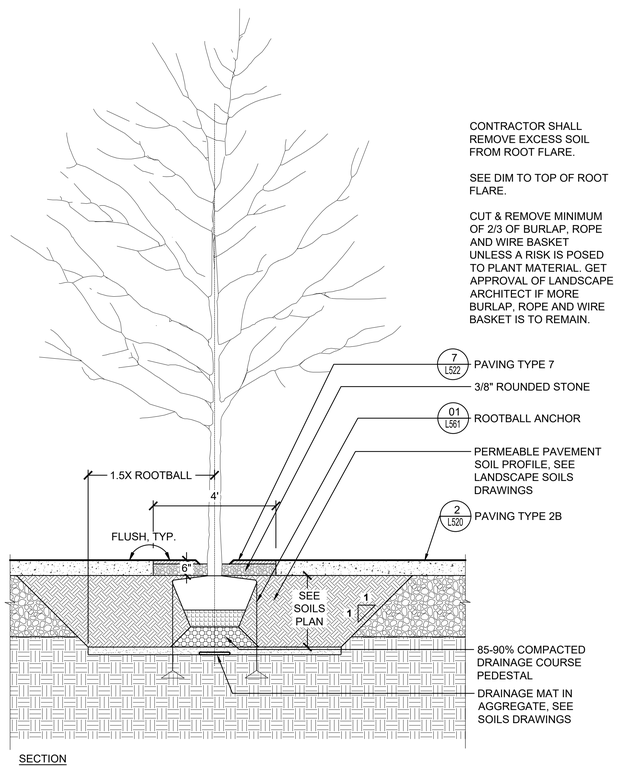
6 TREE PLANTING IN PAVING TYPE SYN-2
SCALE: 1/2" = 1' - 0"



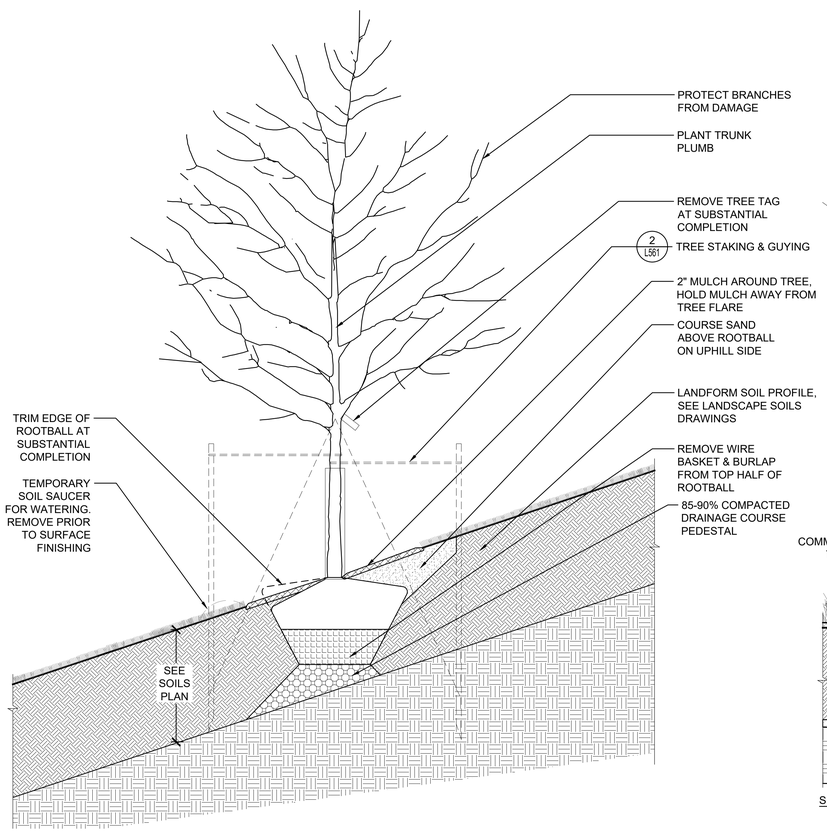
4 TREE PLANTING IN PAVING TYPE 3B
SCALE: 1/2" = 1' - 0"



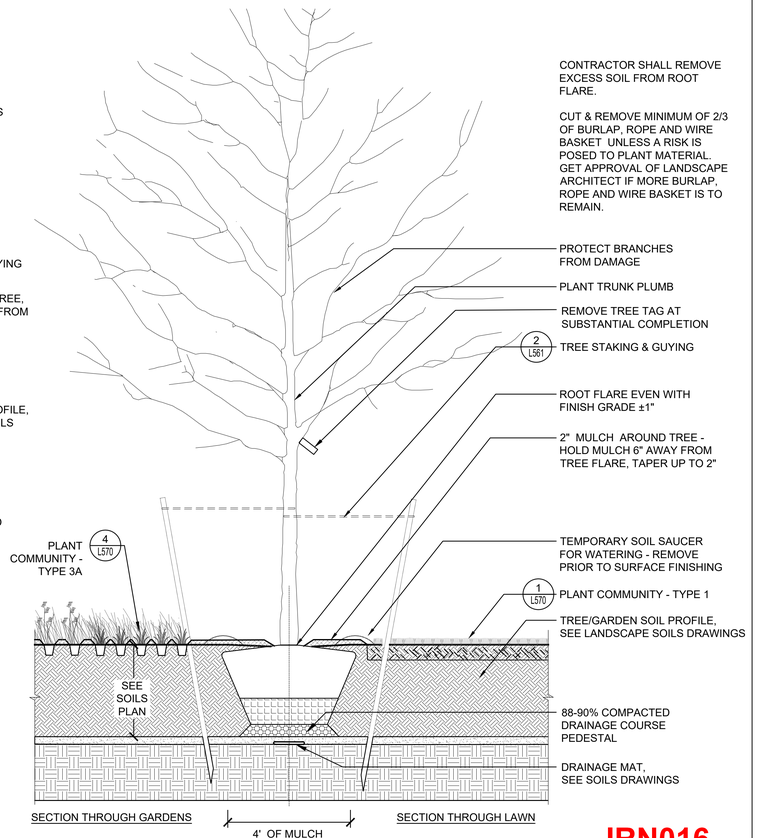
2 TREE PLANTING IN PAVING TYPE 3A
SCALE: 1/2" = 1' - 0"



5 TREE PLANTING IN PAVING TYPE 2B
SCALE: 1/2" = 1' - 0"



3 TYPICAL TREE PLANTING - IN SLOPE
SCALE: 1/2" = 1' - 0"



IRN016

1 TYPICAL TREE PLANTING - IN SOFTSCAPE
SCALE: 1/2" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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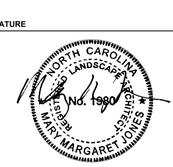
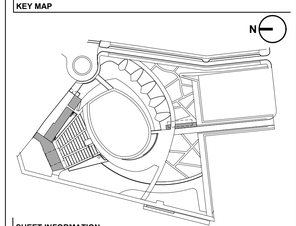
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - TREE PLANTING

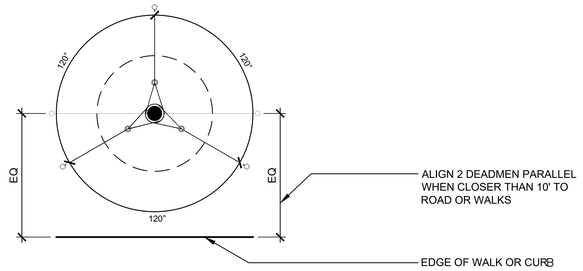
SHEET NO.

L-560-P1

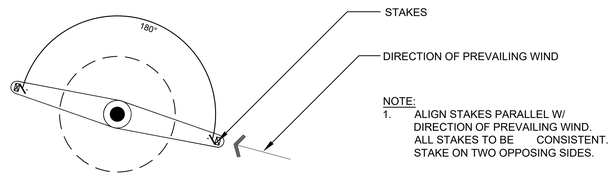
SHEET NOTES

IRN016

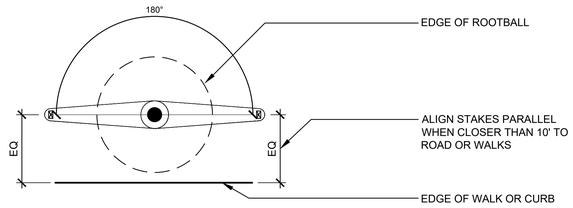
1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-060 FOR TREE PLANTING SCHEDULE AND SHEET L-161 FOR TREE PLANTING PLAN.
3. SEE LS-SERIES DRAWINGS FOR LANDSCAPE SOILS.



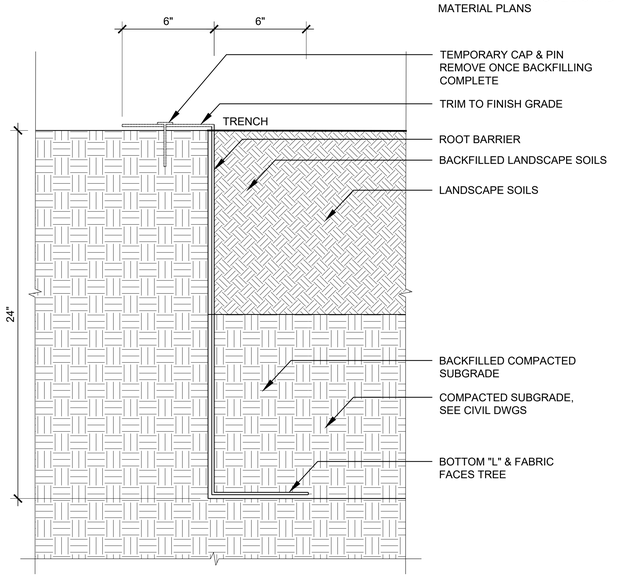
PLAN: TREE GUYING



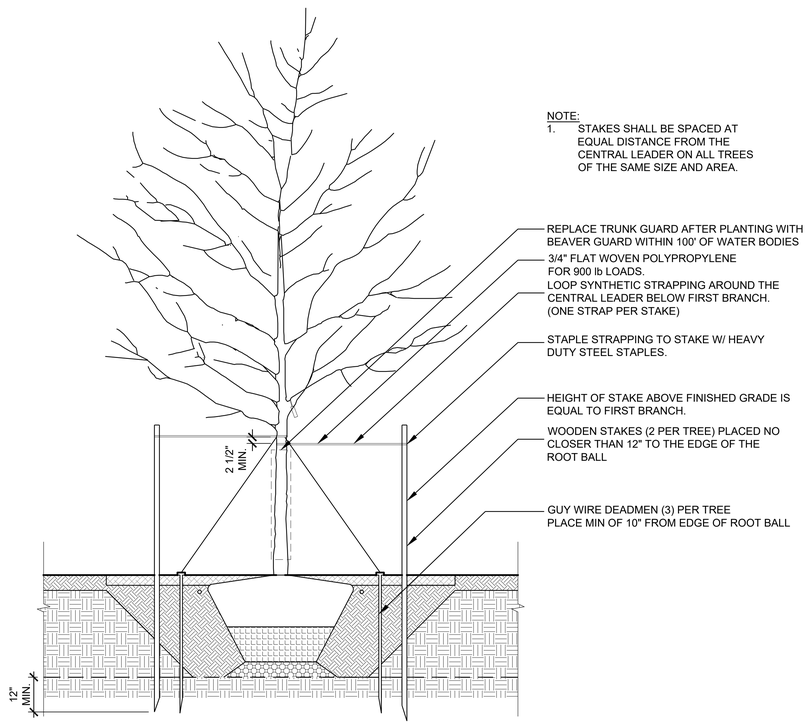
PLAN: TREE STAKING IN OPEN SPACES



PLAN: TREE STAKING ALONG ROADS OR WALKS

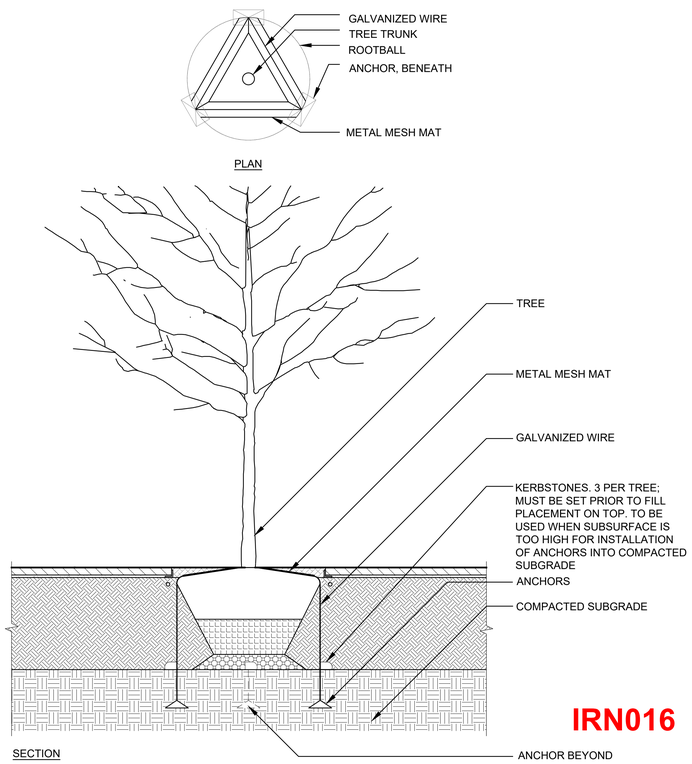


3 ROOT BARRIER
SCALE: 3" = 1' - 0"



SECTION

2 TYPICAL TREE STAKING & GUYING
SCALE: 1/2" = 1' - 0"



SECTION

IRN016

1 TYPICAL TREE ROOTBALL ANCHOR
SCALE: 1/2" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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City of Wilmington Project Code 3CPRK1860

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Lighting Design = EL
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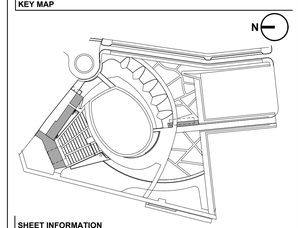
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - TREE PLANTING

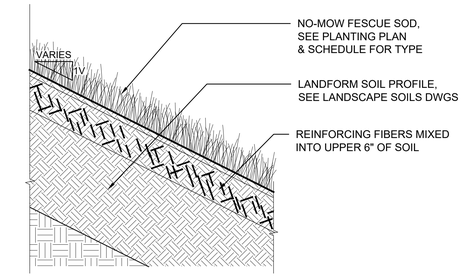
SHEET NO.

L-561-P1

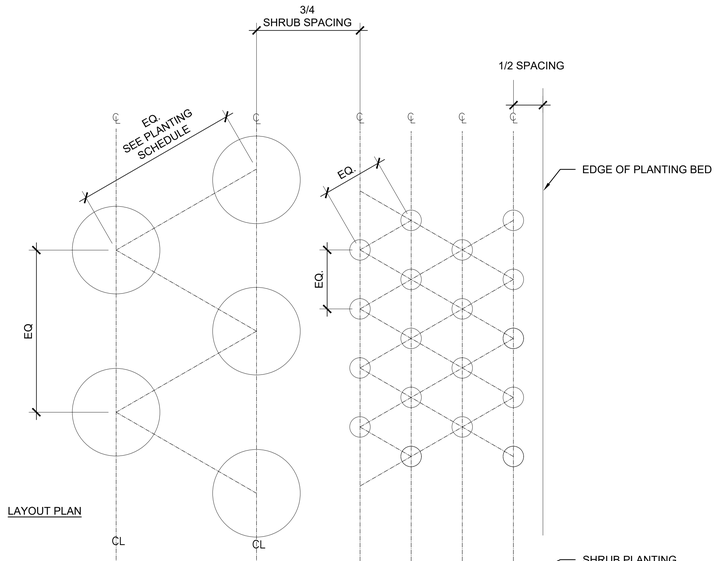
SHEET NOTES

IRN016

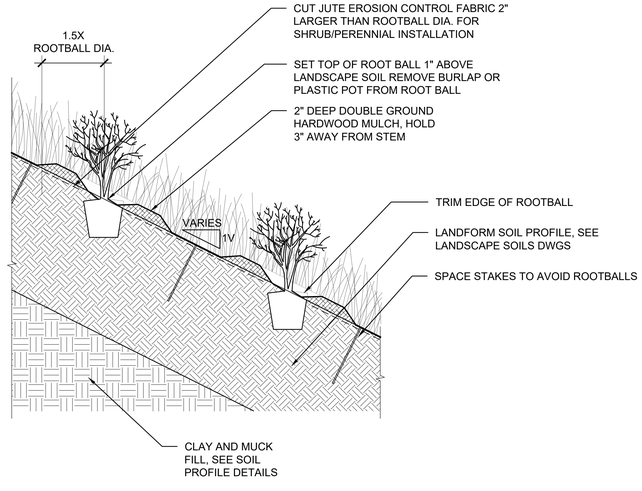
1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-070 FOR PLANTING SCHEDULE AND SHEET L-171 FOR OVERALL PLANTING PLAN.
3. SEE SHEETS L-461, L-462 AND L-464 FOR PLANTING ENLARGEMENT PLANS.



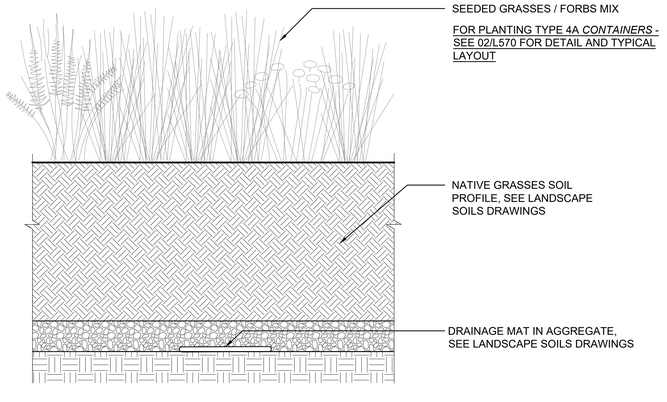
3 PLANT COMMUNITY - TYPE 2B - UPLAND SLOPE - HIGH
SCALE: 1" = 1' - 0"



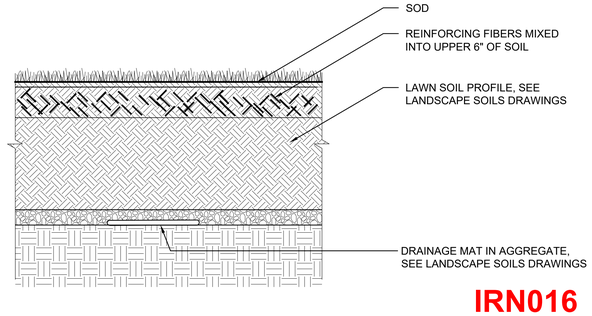
4 PLANT COMMUNITY - TYPES 3A / 3B - URBAN GARDENS / BIO-RETENTION ZONE
SCALE: 1" = 1' - 0"



2 PLANT COMMUNITY - TYPE 2A - UPLAND SLOPE - HIGH
SCALE: 1" = 1' - 0"



5 PLANT COMMUNITY - TYPE 4A SEEDED - COASTAL MEADOW
SCALE: 1" = 1' - 0"



IRN016

1 PLANT COMMUNITY - TYPE 1 - FIBER-REINFORCED EVENT LAWN
SCALE: 1" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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HARGREAVES JONES
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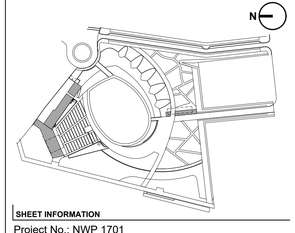
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - PLANTING

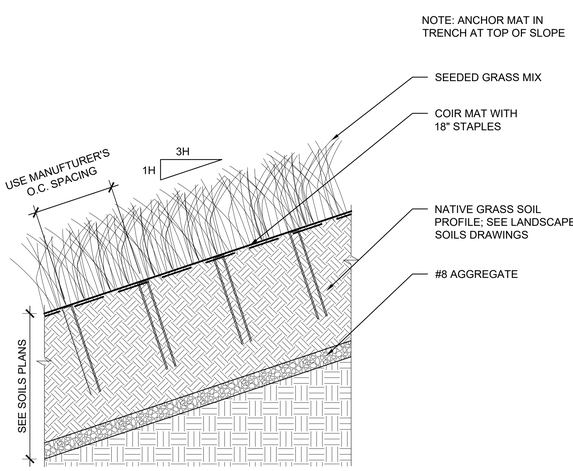
SHEET NO.

L-570-P1

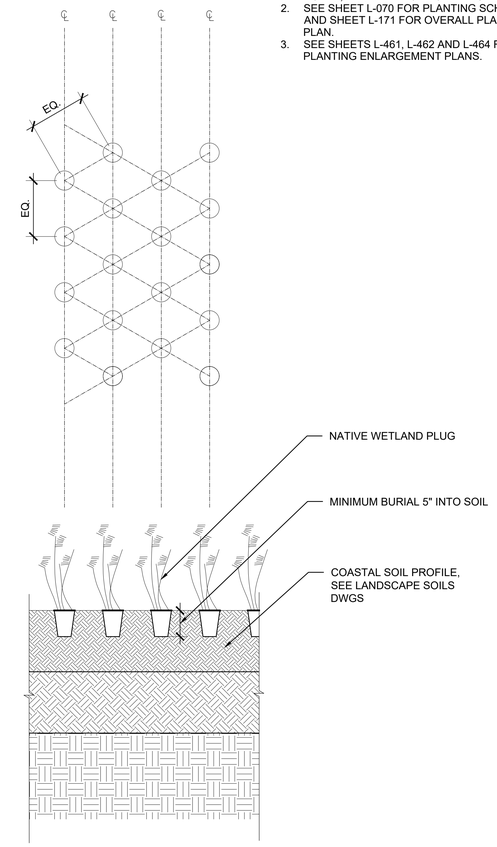
SHEET NOTES

IRN016

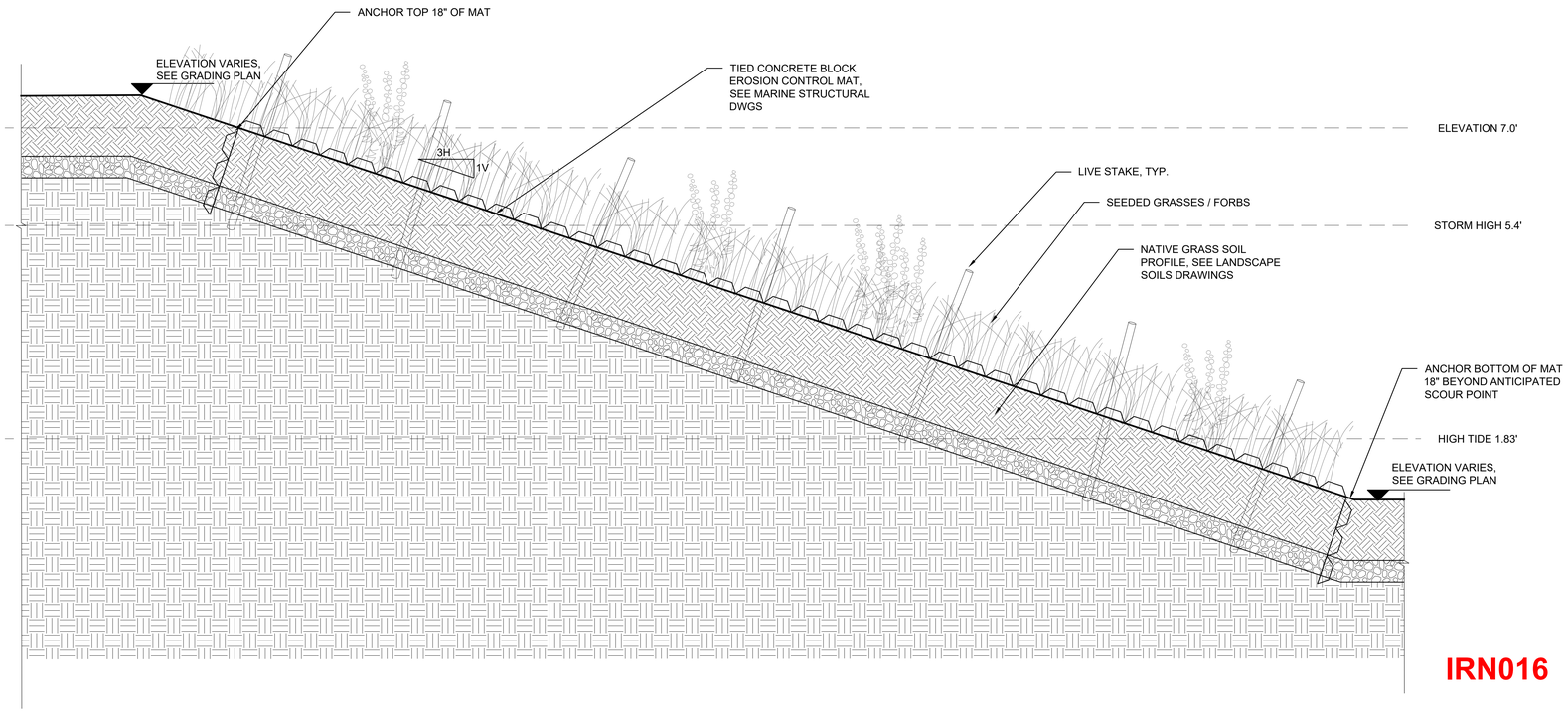
1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
2. SEE SHEET L-070 FOR PLANTING SCHEDULE AND SHEET L-171 FOR OVERALL PLANTING PLAN.
3. SEE SHEETS L-461, L-462 AND L-464 FOR PLANTING ENLARGEMENT PLANS.



3 PLANT COMMUNITY - TYPE 5 - SEEDED BACKSLOPE
SCALE: 1" = 1' - 0"



2 PLANT COMMUNITY - TYPE 4C/4D - TIDAL FLATS
SCALE: 1" = 1' - 0"



IRN016

1 PLANT COMMUNITY - TYPE 4B - RIVER BANK
SCALE: 1" = 1' - 0"

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City of Wilmington Project Code 3CPRK1860

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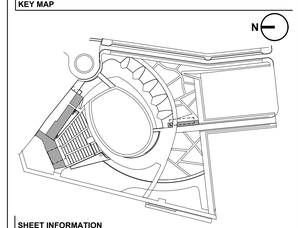
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT MARY MARGARET JONES No. 1980

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

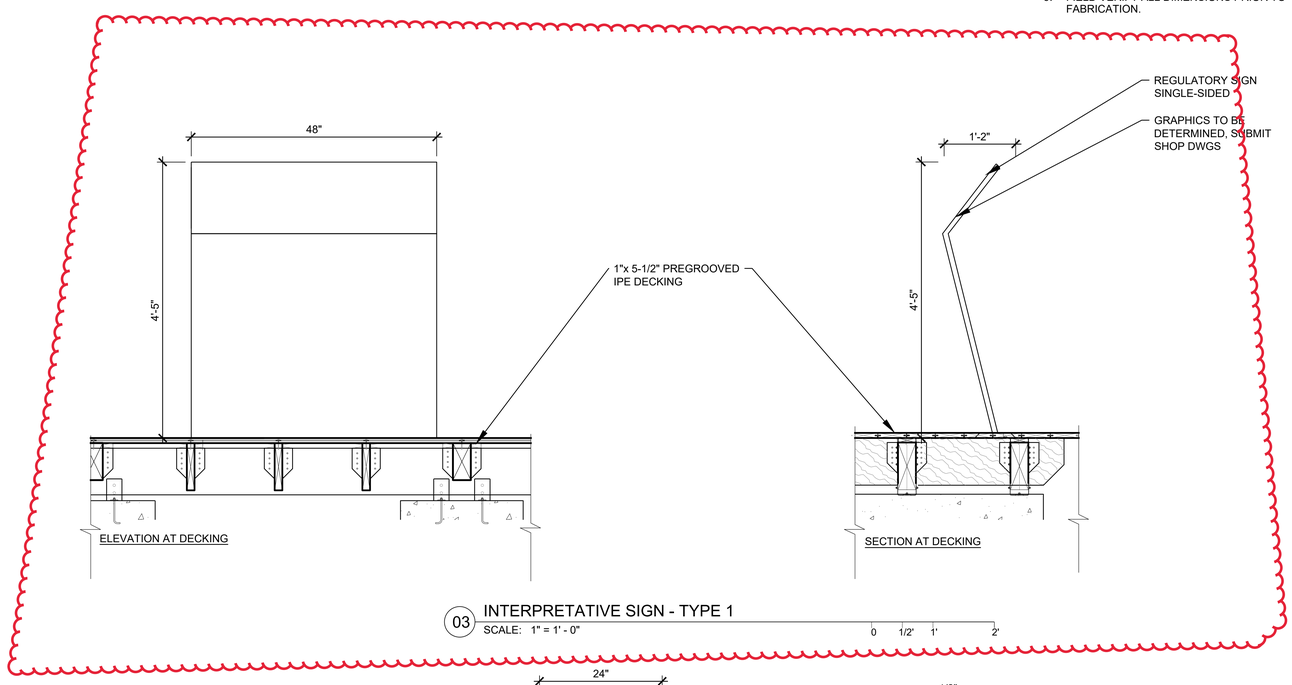
LANDSCAPE DETAILS - PLANTING

SHEET NO.

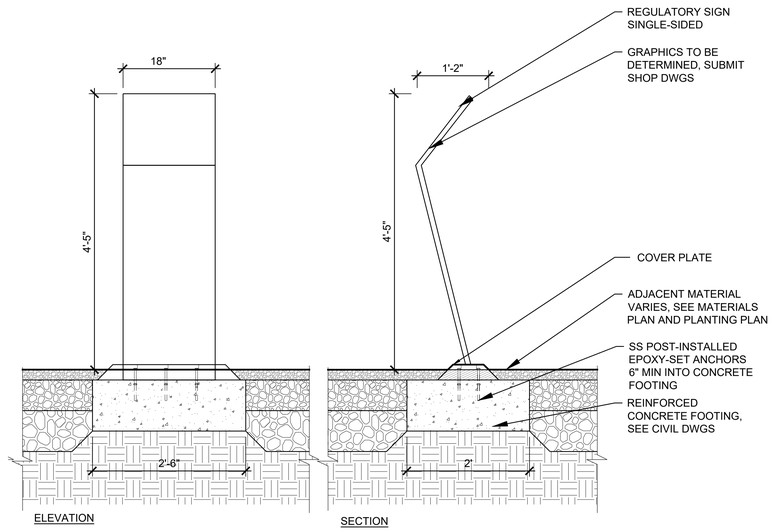
L-571-P1

SHEET NOTES

1. SEE SHEET L-001 FOR GENERAL LANDSCAPE NOTES, ABBREVIATIONS & SYMBOLS.
4. SEE SHEET L-030-P1 FOR MATERIALS SCHEDULE.
5. SEE SHEET L-040 FOR FURNITURE, LIGHTING, AND SIGNAGE SCHEDULE AND SHEET L-141 FOR FURNITURE, LIGHTING, & SIGNAGE PLANS
6. ENGINEERING OF AN ELEMENT/ELEMENTS ON THIS SHEET ARE DELEGATED DESIGN. DIMENSIONS SHOWING STRUCTURAL SPANS, MEMBERS AND ATTACHMENT SYSTEMS ARE TO INDICATE DESIGN INTENT ONLY.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND FABRICATION OF DELEGATED DESIGN ASSEMBLIES. DELEGATED DESIGN SHALL INCLUDE, BUT IS NOT LIMITED TO, STRUCTURAL FRAMING, SPAN, THICKNESS, MATERIALS, ATTACHMENT, FIXING, FASTENING, AND CODE COMPLIANCE, INCLUDING AN ENGINEERING ANALYSIS BY A DESIGN PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. DELEGATED DESIGN SHOP DRAWINGS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER IN THE PROJECT STATE. SEE SPECIFICATION.
8. SUBMIT ENGINEERED AND STAMPED SHOP DRAWINGS FOR ALL DELEGATED DESIGN FOR REVIEW AND APPROVAL FOR DESIGN INTENT PRIOR TO MOCK UP AND/OR FABRICATION. SEE SPECIFICATION.
9. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.



03 INTERPRETATIVE SIGN - TYPE 1
SCALE: 1" = 1' - 0"



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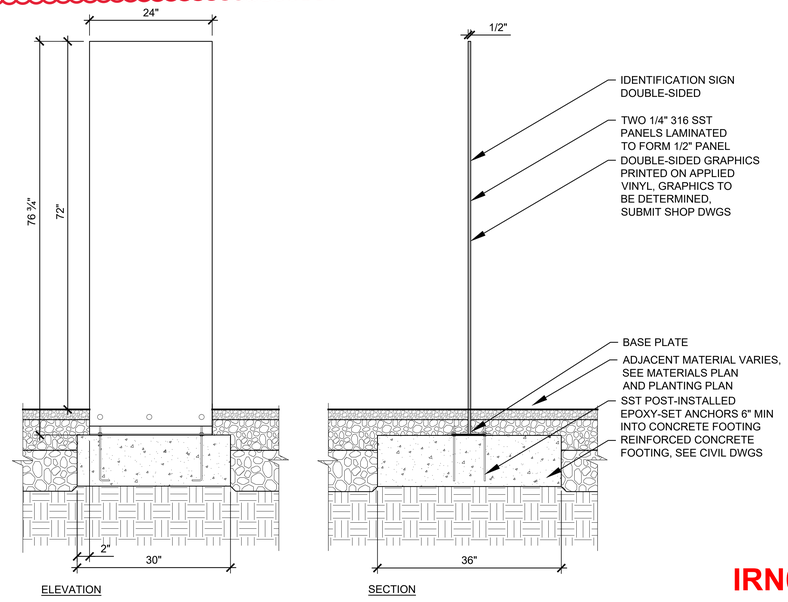

IRN016

01 IDENTIFICATION SIGN - TYPE 3
SCALE: 1" = 1' - 0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

IRN016

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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Water Fountain Design = WF
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www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

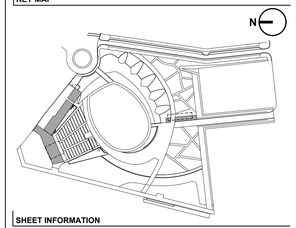
SEAL/SIGNATURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT No. 1980 MARY MARGARET JONES

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: AS SHOWN

SHEET TITLE

LANDSCAPE DETAILS - SIGNAGE

SHEET NO.

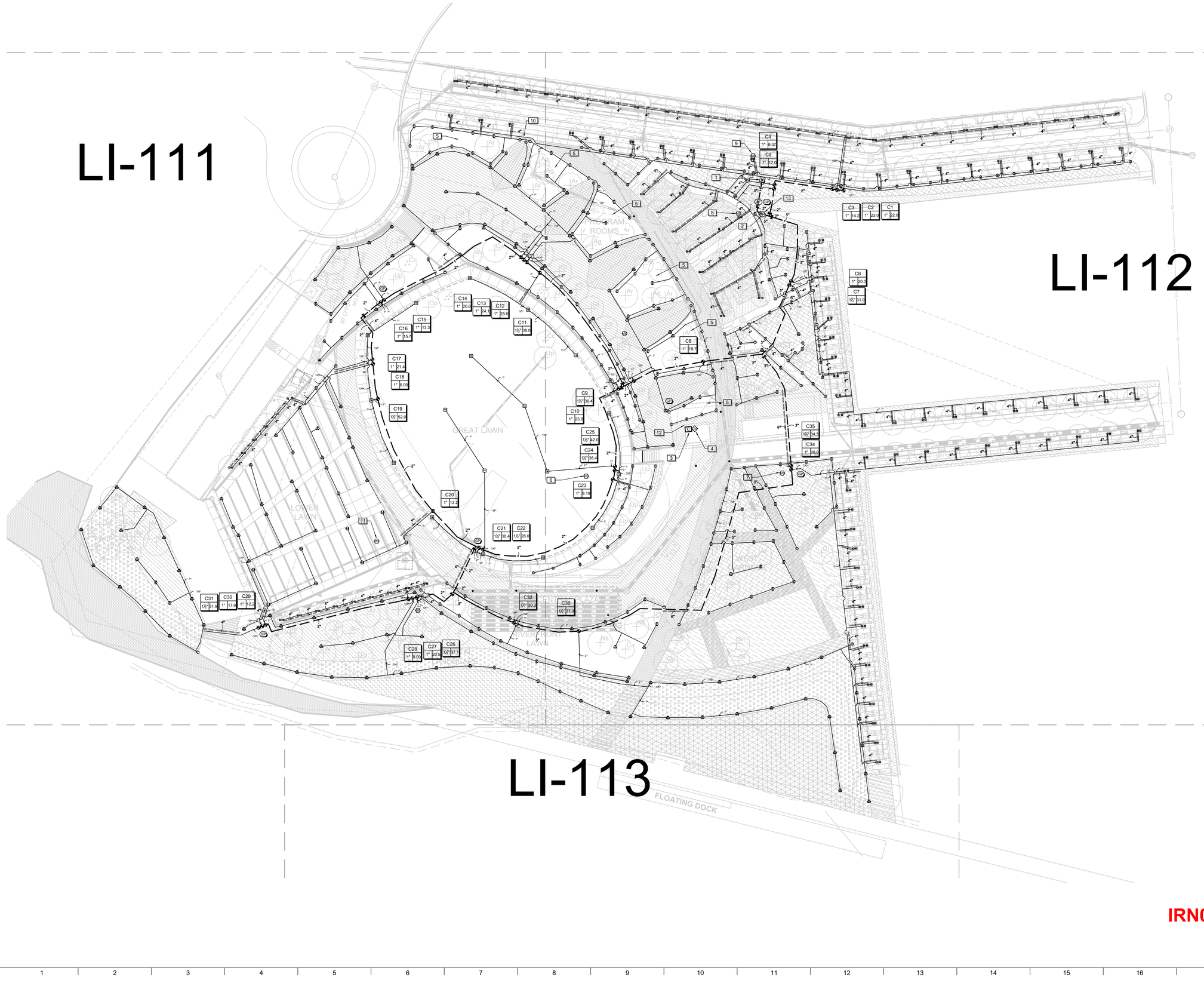
L-580-P1

IRN016

LI-111

LI-112

LI-113



IRN016

PROJECT INFORMATION

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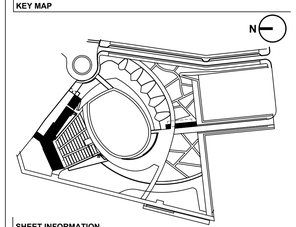
SEAL/SIGNATURE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=30'-0
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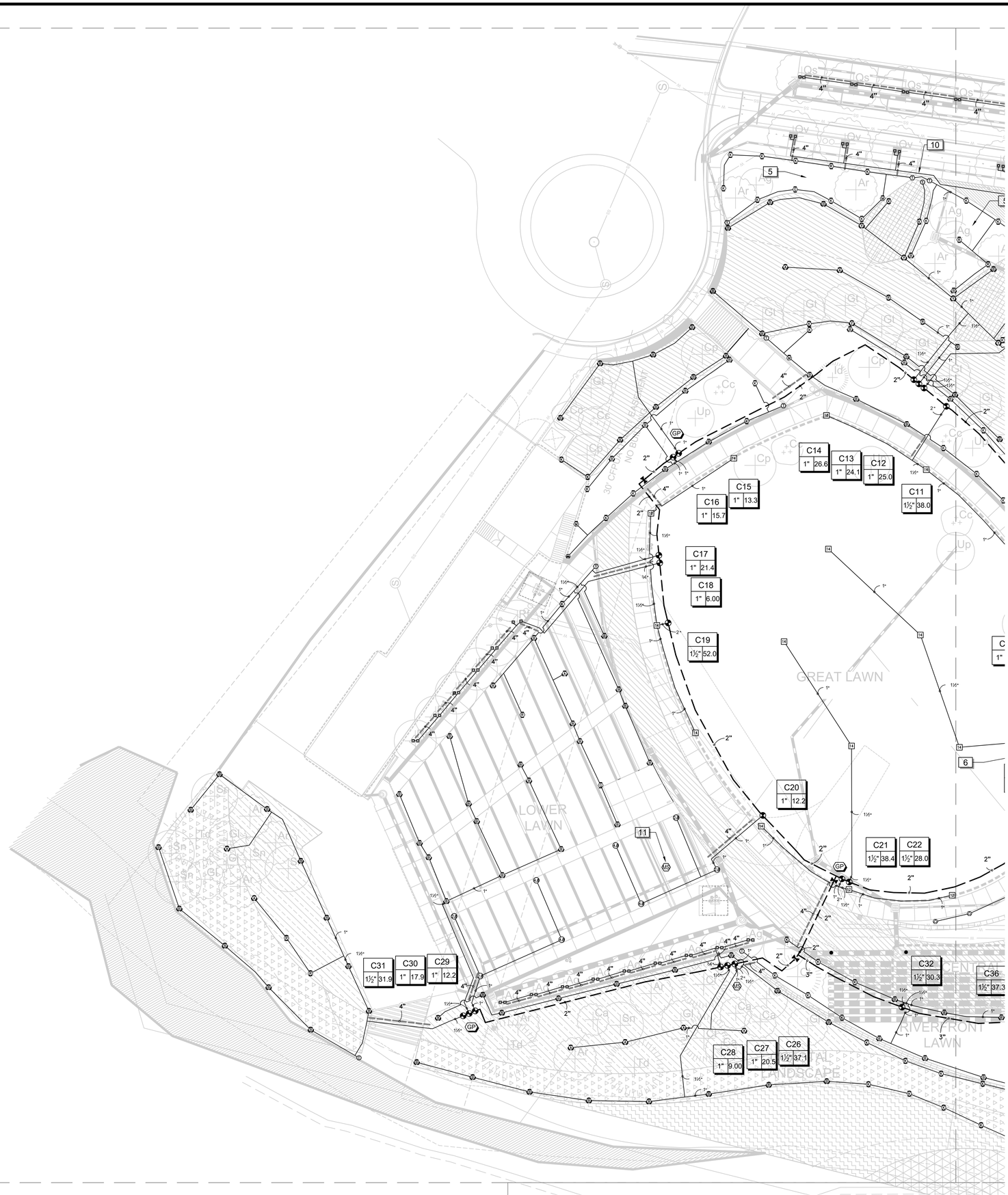
SHEET TITLE

IRRIGATION SHEET LAYOUT

SHEET NO.

LI-100-P1

IRN016



IRN016

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
T	Rain Bird 1806-SAM-P45 with Hunter MP Corner Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. T=Turquoise adj arc 45-105.
LST RST SST	Rain Bird 1806-SAM-P45 with Hunter MP Strip Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. LST=Ivory left strip, SST=Brown side strip, RST=Copper right strip.
M L O	Rain Bird 1806-SAM-P45 with Hunter MP1000 Turf Rotator, 6" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. M=Maroon adj arc 90 to 210, L=Light Blue 210 to 270 arc, O=Olive 360 arc.
K G R	Rain Bird 1806-SAM-P45 with Hunter MP2000 Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. K=Black adj arc 90-210, G=Green adj arc 210-270, R=Red 360 arc.
B Y A	Rain Bird 1806-SAM-P45 with Hunter MP3000 Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. B=Blue adj arc 90-210, Y=Yellow adj arc 210-270, A=Gray 360 arc.
T	Rain Bird 1812-SAM-P45 with Hunter MP Corner Shrub Rotator, 12" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. T=Turquoise adj arc 45-105.
M L O	Rain Bird 1812-SAM-P45 with Hunter MP1000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. M=Maroon adj arc 90 to 210, L=Light Blue 210 to 270 arc, O=Olive 360 arc.
K G R	Rain Bird 1812-SAM-P45 with Hunter MP2000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. K=Black adj arc 90-210, G=Green adj arc 210-270, R=Red 360 arc.
B Y A	Rain Bird 1812-SAM-P45 with Hunter MP3000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP rotary nozzle. B=Blue adj arc 90-210, Y=Yellow adj arc 210-270, A=Gray 360 arc.
1401 1402 1404 1408	Rain Bird RWS-B-C-SOCK Root Watering System with 4.0" diameter x 36.0" long with locking grate, semi-rigid mesh tube. Check Valve and Sand Sock. Rain Bird bubbler option as indicated: 1401 0.25 gpm, 1402 0.5 gpm, 1404 1.0 gpm, 1408 2.0 gpm.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
2.0	Rain Bird 5006-PL-PC, FC-R-SS Turf Rotor, 6.0" Pop-Up with Stainless Steel Riser. Adjustable and Full Circle. Standard Angle Nozzle, In-Stem Pressure Regulator, and Flow Shut-Off Device.
4.0	Rain Bird 5006-PL-PC, FC-R-SS Turf Rotor, 6.0" Pop-Up with Stainless Steel Riser. Adjustable and Full Circle. Standard Angle Nozzle, In-Stem Pressure Regulator, and Flow Shut-Off Device.
18	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.
12	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.
14	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird PEB 1", 1-1/2", 2" Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration.
	Hunter HQ-44LRC-AW Quick coupler valve, yellow rubber locking cover, red brass and stainless steel, with 1" NPT inlet, 2-piece body. Acme Key with Anti-Rotation Wings.
	Nibco T-113 Class 125 bronze gate shut off valve with wheel handle, same size as mainline pipe diameter at valve location. Size Range - 1/4" - 3"
BF	Febco 825Y 2" Reduced Pressure Backflow Preventer
C	Baseline BL-3200X Two-wire controller in 16-gauge stainless-steel wall mount enclosure, expandable up to 200 stations.
MS	Baseline BL-5315 biSensor Soil Moisture Sensor
CM	Baseline BL-CM-P Cell module for BL-1000 and BL-3200 controllers in stainless-steel pedestal enclosure, with one year data service included.
BP	Booster Pump Watertronics Model # WMBV-5000Q-2-5-230-1-80-50 or Approved Equal.
GP	2-Wire Grounding Point Install as per plan details.
M	Water Meter 2"

Irrigation Lateral Line: PVC Class 200 SDR 21

Irrigation Mainline: PVC Class 200 SDR 21

Pipe Sleeve: PVC Schedule 40

Valve Callout

= Valve Number

#" = Valve Flow

Valve Size

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
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Environmental Engineering = EE
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
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Landscape Soil = LS
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Electrical Engineering = E
Plumbing Engineering = P
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

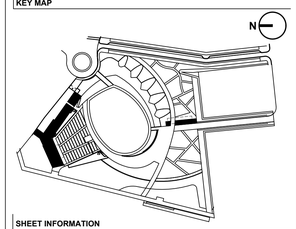
SEAL/SIGNATURE

MICHAEL LEE CLARK
NC 1401
COMMERCIAL

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

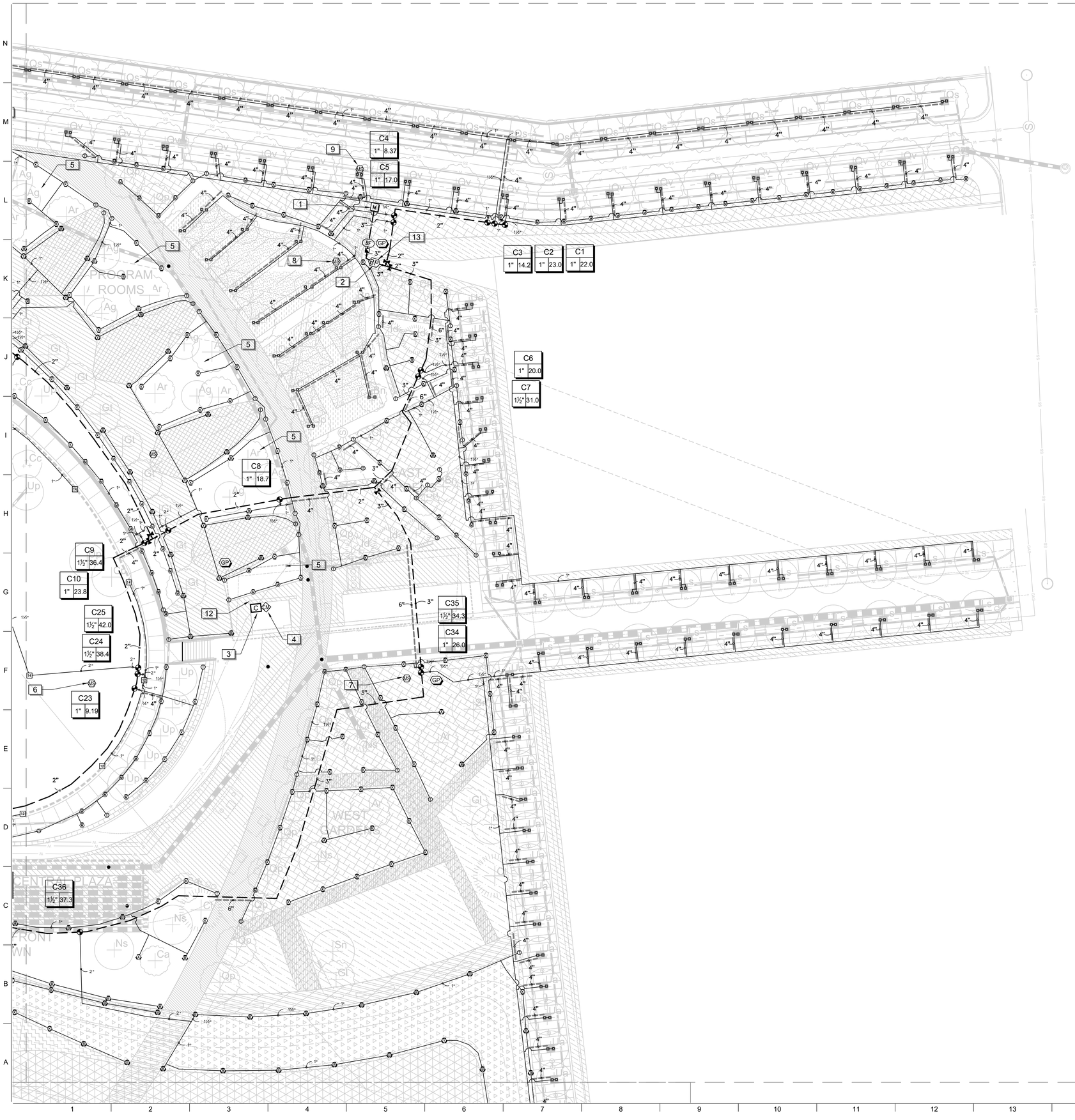
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=20'-0
0 5 10 20

SHEET TITLE

IRRIGATION PLAN - NORTH

SHEET NO.

LI-111-P1



IRN016

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
T	Rain Bird 1806-SAM-P45 with Hunter MP Corner Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. T=Turquoise adj arc 45-105.
LST RST SST	Rain Bird 1806-SAM-P45 with Hunter MP Strip Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. LST=Ivory left strip, SST=Brown side strip, RST=Copper right strip.
M L O	Rain Bird 1806-SAM-P45 with Hunter MP1000 Turf Rotator, 6" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. M=Maroon adj arc 90 to 210, L=Light Blue 210 to 270 arc, O=Olive 360 arc.
K Q R	Rain Bird 1806-SAM-P45 with Hunter MP2000 Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. K=Black adj arc 90-210, G=Green adj arc 210-270, R=Red 360 arc.
B Y A	Rain Bird 1806-SAM-P45 with Hunter MP3000 Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. B=Blue adj arc 90-210, Y=Yellow adj arc 210-270, A=Gray 360 arc.
T	Rain Bird 1812-SAM-P45 with Hunter MP Corner Shrub Rotator, 12" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. T=Turquoise adj arc 45-105.
M L O	Rain Bird 1812-SAM-P45 with Hunter MP1000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. M=Maroon adj arc 90 to 210, L=Light Blue 210 to 270 arc, O=Olive 360 arc.
K Q R	Rain Bird 1812-SAM-P45 with Hunter MP2000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. K=Black adj arc 90-210, G=Green adj arc 210-270, R=Red 360 arc.
B Y A	Rain Bird 1812-SAM-P45 with Hunter MP3000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP rotary nozzle. B=Blue adj arc 90-210, Y=Yellow adj arc 210-270, A=Gray 360 arc.
1401 1402 1404 1408	Rain Bird RWS-B-C-SOCK Root Watering System with 4.0" diameter x 36.0" long with locking grate, semi-rigid mesh tube. Check Valve and Sand Sock, Rain Bird bubbler option as indicated: 1401 0.25 gpm, 1402 0.5 gpm, 1404 1.0 gpm, 1408 2.0 gpm.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
2.0	Rain Bird 5006-PL-PC, FC-R-SS Turf Rotor, 6.0" Pop-Up with Stainless Steel Riser. Adjustable and Full Circle. Standard Angle Nozzle, In-Stem Pressure Regulator, and Flow Shut-Off Device.
4.0	Rain Bird 5006-PL-PC, FC-R-SS Turf Rotor, 6.0" Pop-Up with Stainless Steel Riser. Adjustable and Full Circle. Standard Angle Nozzle, In-Stem Pressure Regulator, and Flow Shut-Off Device.
10	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.
12	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.
14	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.

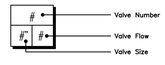
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird PEB 1", 1-1/2", 2" Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration.
	Hunter HQ-44LRC-AW Quick coupler valve, yellow rubber locking cover, red brass and stainless steel, with 1" NPT inlet, 2-piece body. Acme Key with Anti-Rotation Wings.
	Nibco T-113 Class 125 bronze gate shut off valve with wheel handle, same size as mainline pipe diameter at valve location. Size Range - 1/4" - 3"
BF	Febco 825Y 2" Reduced Pressure Backflow Preventer
C	Baseline BL-3200X Two-wire controller in 16-gauge stainless-steel wall mount enclosure, expandable up to 200 stations.
MS	Baseline BL-5315 biSensor Soil Moisture Sensor
CM	Baseline BL-CM-P Cell module for BL-1000 and BL-3200 controllers in stainless-steel pedestal enclosure, with one year data service included.
BP	Booster Pump Watertronics Model # WMBV-5000Q-2-5-230-1-80-50 or Approved Equal.
GP	2-Wire Grounding Point Install as per plan details.
M	Water Meter 2"

Irrigation Lateral Line: PVC Class 200 SDR 21

Irrigation Mainline: PVC Class 200 SDR 21

Pipe Sleeve: PVC Schedule 40

Valve Callout



IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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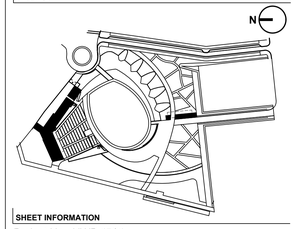
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

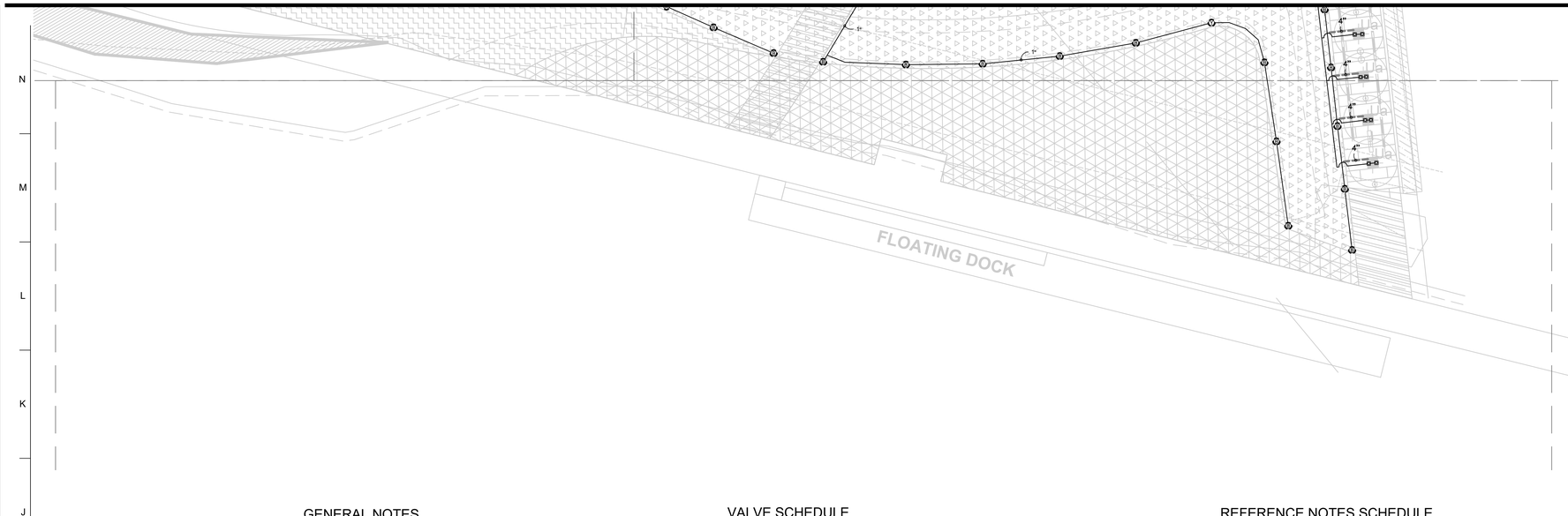
Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=20'-0 (0 5 10 20)

SHEET TITLE

IRRIGATION PLAN - SOUTH

SHEET NO.

LI-112-P1



IRN016

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
(T)	Rain Bird 1806-SAM-P45 with Hunter MP Corner Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. T=Turquoise adj arc 45-105.
LST RST SST	Rain Bird 1806-SAM-P45 with Hunter MP Strip Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. LST=Ivory left strip, SST=Brown side strip, RST=Copper right strip.
(M) (L) (O)	Rain Bird 1806-SAM-P45 with Hunter MP1000 Turf Rotator, 6" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. M=Maroon adj arc 90 to 210, L=Light Blue 210 to 270 arc, O=Olive 360 arc.
(K) (G) (R)	Rain Bird 1806-SAM-P45 with Hunter MP2000 Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. K=Black adj arc 90-210, G=Green adj arc 210-270, R=Red 360 arc.
(B) (Y) (A)	Rain Bird 1806-SAM-P45 with Hunter MP3000 Turf Rotator, 6" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. B=Blue adj arc 90-210, Y=Yellow adj arc 210-270, A=Gray 360 arc.
(T)	Rain Bird 1812-SAM-P45 with Hunter MP Corner Shrub Rotator, 12" pop-up with factory installed check valve, pressure regulated to 45 psi, MP Rotator nozzle. T=Turquoise adj arc 45-105.
(M) (L) (O)	Rain Bird 1812-SAM-P45 with Hunter MP1000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. M=Maroon adj arc 90 to 210, L=Light Blue 210 to 270 arc, O=Olive 360 arc.
(K) (G) (R)	Rain Bird 1812-SAM-P45 with Hunter MP2000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP Rotator nozzle. K=Black adj arc 90-210, G=Green adj arc 210-270, R=Red 360 arc.
(B) (Y) (A)	Rain Bird 1812-SAM-P45 with Hunter MP3000 Shrub Rotator, 12" pop-up with check valve, pressure regulated to 45 psi, MP rotary nozzle. B=Blue adj arc 90-210, Y=Yellow adj arc 210-270, A=Gray 360 arc.
1401 1402 1404 1406	Rain Bird RWS-B-C-SOCK Root Watering System with 4.0" diameter x 36.0" long with locking grate, semi-rigid mesh tube. Check Valve and Sand Sock. Rain Bird bubbler option as indicated: 1401 0.25 gpm, 1402 0.5 gpm, 1404 1.0 gpm, 1408 2.0 gpm.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
2	Rain Bird 5006-PL-PC, FC-R-SS Turf Rotor, 6.0" Pop-Up with Stainless Steel Riser. Adjustable and Full Circle. Standard Angle Nozzle, In-Stem Pressure Regulator, and Flow Shut-Off Device.
4	Rain Bird 5006-PL-PC, FC-R-SS Turf Rotor, 6.0" Pop-Up with Stainless Steel Riser. Adjustable and Full Circle. Standard Angle Nozzle, In-Stem Pressure Regulator, and Flow Shut-Off Device.
18	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.
12	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.
14	Rain Bird F4-PC, FC-SS Turf Rotor, 4.0" Pop-Up, Stainless Steel Riser, Adjustable and Full Circle. With Removable Seal-A-Matic Check Valve, 1" Female Threaded Inlet.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird PEB 1", 1-1/2", 2" Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration.
	Hunter HQ-44LRC-AW Quick coupler valve, yellow rubber locking cover, red brass and stainless steel, with 1" NPT inlet, 2-piece body. Acme Key with Anti-Rotation Wings.
	Nibco T-113 Class 125 bronze gate shut off valve with wheel handle, same size as mainline pipe diameter at valve location. Size Range - 1/4" - 3"
BF	Febco 825Y 2" Reduced Pressure Backflow Preventer
C	Baseline BL-3200X Two-wire controller in 16-gauge stainless-steel wall mount enclosure, expandable up to 200 stations.
MS	Baseline BL-5315 biSensor Soil Moisture Sensor
CM	Baseline BL-CM-P Cell module for BL-1000 and BL-3200 controllers in stainless-steel pedestal enclosure, with one year data service included.
BP	Booster Pump Watertronics Model # WMBV-5000Q-2-5-230-1-80-50 or Approved Equal.
GP	2-Wire Grounding Point Install as per plan details.
M	Water Meter 2"

Irrigation Lateral Line: PVC Class 200 SDR 21

Irrigation Mainline: PVC Class 200 SDR 21

Pipe Sleeve: PVC Schedule 40

Valve Callout

Valve Number

#" # Valve Flow

Valve Size

GENERAL NOTES

1. ALL TRENCHING TO BE OUTSIDE OF TREE DRIP LINE
2. MAINLINE TO HAVE MINIMUM OF 18" OF COVER AND A MINIMUM OF 18" OFF OF THE HARDSCAPE
3. LATERALS TO HAVE MINIMUM OF 12" OF COVER AND A MINIMUM OF 12" OFF OF THE HARDSCAPE
4. ALL ROCKS, BOULDERS OR SHARP OBJECTS TO BE IN TRENCH BACKFILL
5. ALL PIPE TO BE INSTALLED AS PER MANUFACTURES SPECIFICATIONS
6. SPRINKLERS AND RELATED EQUIPMENT TO BE INSTALLED AS PER DETAILS
7. TWO WIRE CONTROL WIRE TO BE 14 GA UL 2 CONDUCTOR, JACKETED AND APPROVED BY 2-WIRE CONTROLLER MANUFACTURER, INSTALLED IN 1" PVC SCH 40 ELECTRICAL CONDUIT
9. WIRE SPLICES TO BE DONE AS PER DETAILS
10. ALL WIRE SPLICES OUTSIDE OF CONTROL VALVE BOX TO BE IN 10" VALVE BOX
11. TWO WIRE CONDUCTORS TO BE COLOR CODED
12. CONTRACTOR SHALL INSTALL MANUFACTURES GROUNDING EQUIPMENT ON BOTH THE POWER AND OUTPUT SIDES OF CONTROLLER, ALL GROUNDING POINTS TO BE INSTALLED AS PER PLANS AND DETAILS
13. AT EACH VALVE AND CHANGE IN MAINLINE DIRECTION CONTRACTOR TO INSTALL A 36" LOOP OF EXTRA WIRE
14. SPRINKLERS ARE TO BE ADJUSTED TO AVOID OVER-SPRAY INTO NON-IRRIGATED AREAS
15. ELECTRIC CONTROL VALVES ARE TO BE INSTALLED IN VALVE BOXES AS FOLLOWS
    14" RECTANGULAR MINIMUM FOR EACH ELECTRIC CONTROL VALVE
16. SPRINKLERS TO BE INSTALLED 12" FROM FOUNDATIONS AND 2" FROM HARDSCAPE
17. CONTRACTOR TO ADD RISER EXTENSIONS TO SPRINKLERS IF REQUIRED TO MAINTAIN PROPER COVERAGE
18. ALL PIPING TO BE FLUSHED PRIOR TO INSTALLATION OF SPRINKLERS
19. ALL VALVES, QUICK COUPLER VALVES, WIRE SPLICES TO BE IN LANDSCAPED BEDS WHEREVER POSSIBLE
20. CONTRACTOR IS RESPONSIBLE FOR OBTAINING PROPER COVERAGE OF AREA TO BE IRRIGATED, MAKE ADJUSTMENTS AS NECESSARY
21. CONTRACTOR SHALL EXERCISE CARE NOT TO DAMAGE EXISTING UTILITIES REPAIRING ANY DAMAGES AT HIS OWN COST
22. PLAN IS DIAGRAMMATIC TO IMPROVE CLARITY ALL IRRIGATION EQUIPMENT TO BE INSTALLED WITHIN PROPERTY LINES AND LANDSCAPED AREAS
23. ANY DISCREPANCIES BETWEEN THE PLAN AND THE SITE TO BE REFERRED TO THE OWNERS REPRESENTATIVE PRIOR TO CONSTRUCTION
24. CONTRACTOR TO PROVIDE 1 YEAR WARRANTEE OF ALL PRODUCTS AND WORKMANSHIP TO INCLUDE WINTERIZATION AND SPRING START-UP
25. CONTRACTOR TO PROVIDE OWNER AND OR LANDSCAPE ARCHITECT RECORD DRAWING AS PER SPECIFICATIONS PRIOR TO SUBSTANTIAL COMPLETION.
26. INSTALLATION OF IRRIGATION SLEEVES IS THE IRRIGATION CONTRACTORS RESPONSIBILITY IRRIGATION CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR SLEEVE INSTALLATION PRIOR TO PAVEMENT INSTALLATION
27. CLEANUP AND DISPOSE OF ALL DEBRIS, WASTE AND EXCESS CONSTRUCTION MATERIALS LEAVE AREA NEAT, CLEAN AND READY FOR OWNERS USE PROVIDE CLEAN PAVEMENT SURFACES INCLUDING AREAS OF PUBLIC R.O.W.

CONTROLLER INSTALLATION NOTES

1. IRRIGATION CONTRACTOR TO COORDINATE EXACT LOCATION OF CONTROLLER WITH OWNER'S REPRESENTATIVE.
2. PROVIDE 120VAC 10 AMP POWER TO JUNCTION BOX AT CONTROLLER LOCATION FROM THE PUMP STATION .
3. IRRIGATION CONTRACTOR TO HARD WIRE CONTROLLER TO POWER SUPPLY AS PER PREVAILING CODE.
4. CONTROLLER TO BE SECURELY ATTACHED TO THE CONCRETE BASE USING METALLIC FASTENERS MADE FOR CONCRETE.
5. ALL IRRIGATION CONTROL WIRE ABOVE GRADE TO BE ENCASED IN PVC ELECTRICAL CONDUIT.
6. IRRIGATION CONTRACTOR IS RESPONSIBLE FOR SEALING ALL PENETRATIONS AND OPEN CONDUITS
7. CONTROLLER TO BE GROUNDED AS PER MANUFACTURERS RECOMMENDATIONS AND OR PLAN DETAILS.

IRRIGATION SYSTEM MANAGEMENT NOTES

1. MAXIMUM VELOCITY IN THE PIPING SYSTEM NOT TO EXCEED 5 FEET PER SECOND.
2. IRRIGATION CONTRACTOR TO PROGRAM CONTROLLER FOR PLANT MATERIAL GROW IN AS PER LANDSCAPE REQUIREMENTS. ADJUSTMENTS TO BE MADE TO IRRIGATION SCHEDULE EVERY TWO WEEKS UNTIL SET FOR MOISTURE SENSOR MANAGEMENT.
3. AFTER GROW IN OPERATE THE IRRIGATION SYSTEM VIA LOWER MOISTURE THRESHOLD PARAMETERS. ADJUST LOWER MOISTURE THRESHOLD TO ENSURE PLANT MATERIAL REMAIN HEALTHY WHILE USING AS LITTLE WATER AS POSSIBLE.
4. CONTRACTOR TO MAKE A MINIMUM OF 3 VISITS TO THE SITE AFTER CONTROL SYSTEM IS SET TO MOISTURE SENSOR MANAGEMENT TO REVIEW SOIL MOISTURE LEVELS THROUGHOUT THE SITE AND ADJUST THE CONTROL SYSTEM ACCORDINGLY TO MAINTAIN THE LANDSCAPE WHILE REDUCING WATER USE. CONTRACTOR TO SUBMIT IN WRITING THE OUTCOME OF EACH VISIT TO THE OWNER OR OWNERS REPRESENTATIVE, LANDSCAPE ARCHITECT AND OR IRRIGATION CONSULTANT.

BASEMANAGER REMOTE ACCESS NOTES

1. PROVIDE 3 YEAR SUBSCRIPTION, FOR THE OWNER, TO THE BASELINE BASEMANAGER REMOTE ACCESS CLOUD BASED SYSTEM AND THE CELL DATA SERVICE.
2. FULLY SET UP BASEMANAGER TO ACCESS THE CONTROLLER AND ALLOW FOR ALL CONTROL SYSTEM ALERTS, CONTROLLER PROGRAMING, FLOW MANAGMENT, MOISTURE SENSOR SET UP, AND PROGRAM SET UP.
3. DEVELOP THE MAPPING PORTION OF THE CONTROL SYSTEM TO SHOW A SITE MAP WITH ALL CONTROL VALVE, WATER METER, MOISTURE SENSOR LOCATIONS GEO-LOCATED ON THE MAP.
4. PROVIDE A MINIMUM OF 4 HOURS OF BASELINE REPRESENTATIVE TRAINING FOR THE OWNERS REPRESENTATIVES.

VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	PSI	PSI @ POC	PRECIP
C1	Rain Bird PEB	1"	Bubbler	22.00	39.11	57.31	2.35 in/h
C2	Rain Bird PEB	1"	Bubbler	23.00	39.61	57.75	2.40 in/h
C3	Rain Bird PEB	1"	Shrub Rotary	14.23	50.02	68.13	0.25 in/h
C4	Rain Bird PEB	1"	Shrub Rotary	8.37	48.80	66.50	0.40 in/h
C5	Rain Bird PEB	1"	Bubbler	20.00	34.63	52.30	2.29 in/h
C6	Rain Bird PEB	1"	Bubbler	20.00	38.25	56.14	2.26 in/h
C7	Rain Bird PEB	1-1/2"	Shrub Rotary	31.00	51.71	69.62	0.43 in/h
C8	Rain Bird PEB	1"	Turf Rotary	18.66	50.23	69.79	0.41 in/h
C9	Rain Bird PEB	1-1/2"	Shrub Rotary	36.40	50.75	71.56	0.47 in/h
C10	Rain Bird PEB	1"	Turf Rotary	23.80	53.65	74.70	0.48 in/h
C11	Rain Bird PEB	1-1/2"	Turf Rotor	38.00	66.03	88.81	0.99 in/h
C12	Rain Bird PEB	1"	Turf Rotary	25.00	53.35	76.26	0.44 in/h
C13	Rain Bird PEB	1"	Shrub Rotary	24.14	51.59	74.53	0.29 in/h
C14	Rain Bird PEB	1"	Shrub Rotary	26.64	52.64	75.60	0.32 in/h
C15	Rain Bird PEB	1"	Shrub Rotary	13.29	48.25	71.85	0.48 in/h
C16	Rain Bird PEB	1"	Turf Rotary	15.65	48.38	71.98	0.51 in/h
C17	Rain Bird PEB	1"	Turf Rotary	21.42	51.35	74.92	0.37 in/h
C18	Rain Bird PEB	1"	Bubbler	6.00	33.67	57.23	2.35 in/h
C19	Rain Bird PEB	1-1/2"	Turf Rotor	52.00	65.82	89.30	1.09 in/h
C20	Rain Bird PEB	1"	Turf Rotor	12.16	49.57	73.12	0.72 in/h
C21	Rain Bird PEB	1-1/2"	Turf Rotor	38.40	64.82	87.84	1.08 in/h
C22	Rain Bird PEB	1-1/2"	Turf Rotor	28.00	66.29	89.30	0.40 in/h
C23	Rain Bird PEB	1"	Turf Rotary	9.19	47.89	70.13	0.47 in/h
C24	Rain Bird PEB	1-1/2"	Turf Rotor	38.40	64.85	87.01	1.06 in/h
C25	Rain Bird PEB	1-1/2"	Turf Rotor	42.00	66.67	88.80	0.38 in/h
C26	Rain Bird PEB	1-1/2"	Shrub Rotary	36.12	52.17	73.55	0.31 in/h
C27	Rain Bird PEB	1"	Shrub Rotary	19.32	51.09	72.48	0.24 in/h
C28	Rain Bird PEB	1"	Bubbler	9.00	33.20	54.62	2.34 in/h
C29	Rain Bird PEB	1"	Turf Rotor	12.16	49.04	71.48	0.71 in/h
C30	Rain Bird PEB	1"	Turf Rotary	17.85	49.70	72.17	0.29 in/h
C31	Rain Bird PEB	1-1/2"	Shrub Rotary	31.88	53.07	75.56	0.45 in/h
C32	Rain Bird PEB	1-1/2"	Turf Rotary	30.32	51.76	72.52	0.45 in/h
C33	Rain Bird PEB	1-1/2"	Shrub Rotary	28.25	50.40	70.04	0.34 in/h
C34	Rain Bird PEB	1"	Bubbler	26.00	39.97	58.84	2.26 in/h
C35	Rain Bird PEB	1-1/2"	Shrub Rotary	27.84	52.10	70.94	0.44 in/h

EXAMPLE SUMMER WATERING SCHEDULE

NUMBER	MODEL	TYPE	PRECIP	IN./WEEK	MIN./WEEK	GAL./WEEK	GAL./DAY
C1	Rain Bird PEB	Bubbler	2.35 in/h	0.50	13	286	
C2	Rain Bird PEB	Bubbler	2.40 in/h	0.50	13	299	
C3	Rain Bird PEB	Shrub Rotary	0.25 in/h	0.70	166	2,362	
C4	Rain Bird PEB	Shrub Rotary	0.40 in/h	0.70	104	870.9	
C5	Rain Bird PEB	Bubbler	2.29 in/h	0.50	14	280	
C6	Rain Bird PEB	Bubbler	2.26 in/h	0.50	14	280	
C7	Rain Bird PEB	Shrub Rotary	0.43 in/h	0.70	99	3,069	
C8	Rain Bird PEB	Turf Rotary	0.41 in/h	1	148	2,761	
C9	Rain Bird PEB	Shrub Rotary	0.47 in/h	0.70	89	3,170	
C10	Rain Bird PEB	Turf Rotary	0.48 in/h	1	126	3,185	
C11	Rain Bird PEB	Turf Rotor	0.99 in/h	1	61	2,318	
C12	Rain Bird PEB	Turf Rotary	0.44 in/h	1	138	3,451	
C13	Rain Bird PEB	Shrub Rotary	0.29 in/h	0.70	146	3,524	
C14	Rain Bird PEB	Shrub Rotary	0.32 in/h	0.70	133	3,543	
C15	Rain Bird PEB	Shrub Rotary	0.48 in/h	0.70	89	1,183	
C16	Rain Bird PEB	Turf Rotary	0.51 in/h	1	119	1,862	
C17	Rain Bird PEB	Turf Rotary	0.37 in/h	1	163	3,492	
C18	Rain Bird PEB	Bubbler	2.35 in/h	0.50	13	78	
C19	Rain Bird PEB	Turf Rotor	1.09 in/h	1	56	2,912	
C20	Rain Bird PEB	Turf Rotor	0.72 in/h	1	84	1,021	
C21	Rain Bird PEB	Turf Rotor	1.08 in/h	1	56	2,150	
C22	Rain Bird PEB	Turf Rotor	0.40 in/h	1	151	4,228	
C23	Rain Bird PEB	Turf Rotary	0.47 in/h	1	129	1,186	
C24	Rain Bird PEB	Turf Rotor	1.06 in/h	1	57	2,189	
C25	Rain Bird PEB	Turf Rotor	0.38 in/h	1	157	6,594	
C26	Rain Bird PEB	Shrub Rotary	0.31 in/h	0.70	136	4,912	
C27	Rain Bird PEB	Shrub Rotary	0.24 in/h	0.70	173	3,343	
C28	Rain Bird PEB	Bubbler	2.34 in/h	0.50	13	117	
C29	Rain Bird PEB	Turf Rotor	0.71 in/h	1	85	1,034	
C30	Rain Bird PEB	Turf Rotary	0.29 in/h	1	208	3,713	
C31	Rain Bird PEB	Shrub Rotary	0.45 in/h	0.70	93	2,964	
C32	Rain Bird PEB	Turf Rotary	0.45 in/h	1	134	4,062	
C33	Rain Bird PEB	Shrub Rotary	0.38 in/h	0.70	110	4,237	
C34	Rain Bird PEB	Bubbler	2.26 in/h	0.50	14	364	
C35	Rain Bird PEB	Shrub Rotary	0.44 in/h	0.70	96	3,707	
		TOTALS:			3,400	84,747	

CONTROLLER AND PUMP STATION INTERFACE NOTES

1. CONNECT THE 2-WIRE PATH TO THE PUMP STATION FLOW BI-CODER. PROGRAM CONTROLLER TO READ FLOW FROM THE PUMP STATION. PROGRAM CONTROLLER FOR MULTI-ZONE FLOW NOT TO EXCEED 80 GPM.
2. PROGRAM CONTROLLER FOR ZONE OVER-FLOW SHUT DOWN AND REPORT THE ISSUE.
3. START PUMP STATION VIA THE CONTROLLER PUMP/MV CIRCUIT.
4. IF THERE IS MAINLINE OVER-FLOW PROGRAM THE CONTROLLER TO TURN OFF THE PUMP STATION AND REPORT THE ISSUE.

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	Irrigation system water source to be a 3" service line from the water main to a 2" water meter and a 3" line to a 2" RPZ backflow preventer. See Civil Plans.
2	Install Booster Pump as per plan details and specifications. Pumping system to provide 80 gpm at a discharge pressure of 92 psi. Verify flow and pressure prior to irrigation system construction.
3	Coordinate exact location of the irrigation controller with the owners representative. Provide 120v 10 amp power to the controller from a dedicated circuit. Provide incoming 120v surge protection as per manufacturers recommendations.
4	Install and set up cell data modem as per manufacturers instructions. Provide 3 years of cell data service and 3 years of Baseline BaseManager cloud based remote controller access.
5	All piping within this turf area to be installed a minimum of 18" below FG to prevent future damage to the piping with tent stakes.
6	Moisture Sensor for the turf zone program.
7	Moisture Sensor for mixed landscape zones program.
8	Moisture Sensor for the trees in stone paving zone program.
9	Moisture Sensor for trees in sidewalk planting zones program.
10	Pipe location is diagrammatic. Install all pipe as per plan notes, details and specifications.
11	Moisture Sensor for turf zones in the seating area program.
12	All 2-wire cable to be installed within 1-1/4" SCH 40 PVC conduit. See plan details for conduit into a valve box detail.
13	Install pump station on a concrete slab as per pump station detail.

CRITICAL ANALYSIS

Generated: 2019-01-03 15:56

P.O.C. NUMBER: 01
Water Source Information:

FLOW AVAILABLE
Water Meter Size: 2"
Flow Available: 120.00 gpm

PRESSURE AVAILABLE
Static Pressure at POC: 45.00 psi
Elevation Change: 5.00 ft
Service Line Size: 3"
Length of Service Line: 20.00 ft
Booster Pump pressure provided: 46.00 psi
Pressure Available: 88.00 psi

DESIGN ANALYSIS
Maximum Multi-valve Flow: 80.00 gpm
Flow Available at POC: 120.00 gpm
Residual Flow Available: 40.00 gpm

Critical Station: C25
Design Pressure: 60.00 psi
Friction Loss: 2.87 psi
Fittings Loss: 0.29 psi
Elevation Loss: 0.00 psi
Loss through Valve: 3.52 psi
Pressure Req. at Critical Station: 66.68 psi
Loss for Fittings: 0.23 psi
Loss for Main Line: 2.30 psi
Loss for POC to Valve Elevation: 0.00 psi
Loss for Backflow: 12.37 psi
Loss for Water Meter: 4.90 psi
Critical Station Pressure at POC: 86.48 psi
Pressure Available: 88.00 psi
Residual Pressure Available: 1.52 psi

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

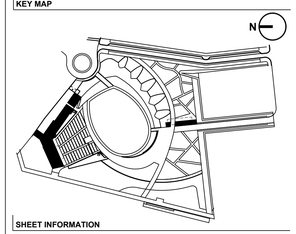
Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: 1"=20'-0
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SHEET TITLE

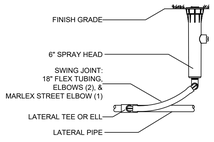
IRRIGATION PLAN - WEST AND NOTES

IRN016

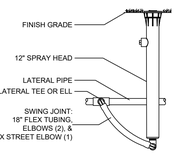
SHEET NO.

LI-113-P1

IRN016



1 6" SPRAY BODY
NTS



2 12" SPRAY BODY
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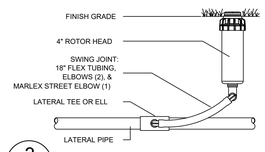
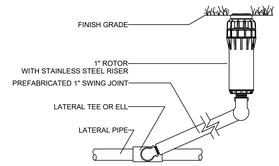
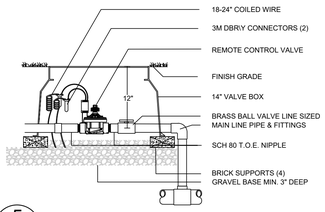


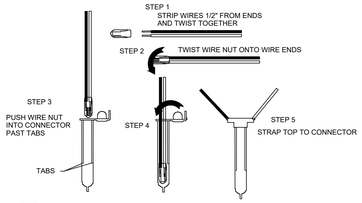
3 3/4" INLET ROTOR
NTS



4 1" INLET ROTOR
NTS



5 ELECTRIC CONTROL VALVE
NTS



6 WIRE CONNECTION 3M-DBR6-Y
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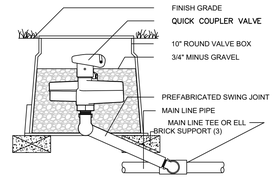

7 QUICK COUPLER VALVE
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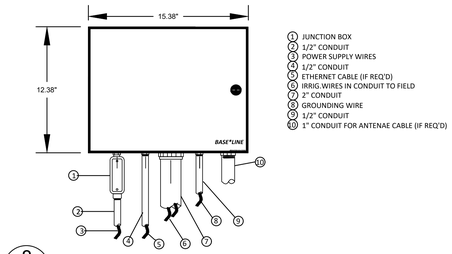

8 BASELINE 3200-X WALL MOUNT CONTROLLER
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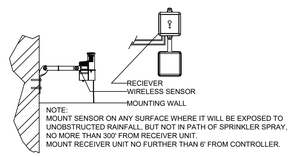

9 WIRELESS RAIN SENSOR
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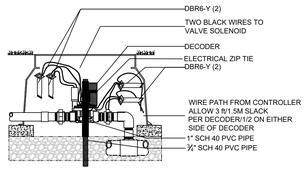
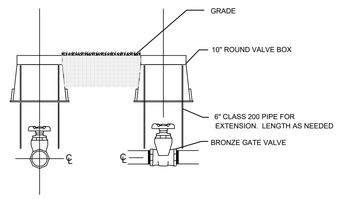
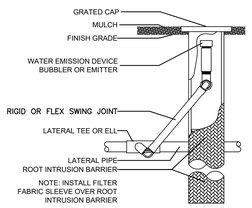


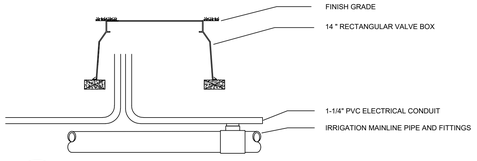
10 DECODER VALVE BOX INSTALLATION
NTS



11 ISOLATION VALVE DETAIL
NTS



12 TREE ROOT ZONE WATERING SYSTEM
NTS



13 CONTROL WIRE CONDUIT INTO VALVE BOX
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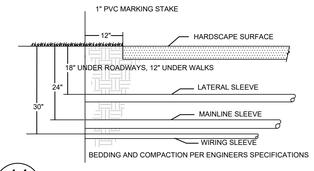
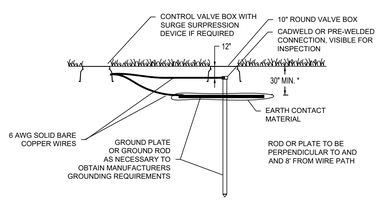


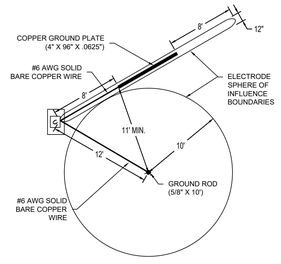
14 SLEEVING
NTS

SIDE VIEW

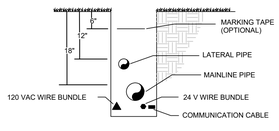


15 TWO WIRE GROUNDING POINT DETAIL
NTS

TOP VIEW



DO NOT INSTALL ANY OTHER WIRES OR CABLE
WITHIN THE SPHERE OF INFLUENCE



16 TRENCH, PIPE AND WIRE
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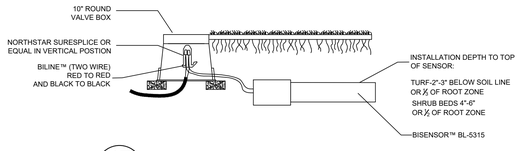

17 MOISTURE SENSOR PLACEMENT
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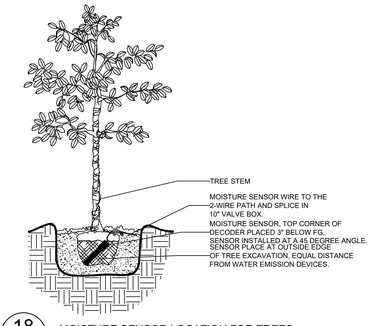
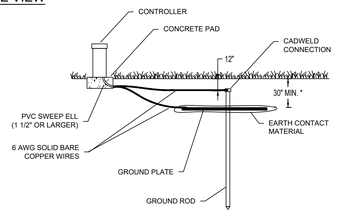


18 MOISTURE SENSOR LOCATION FOR TREES
NTS

SIDE VIEW



19 CONTROLLER GROUNDING DETAIL
NTS

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP,P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West Street, Suite 1100, Raleigh, NC 27603
www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.deltafountains.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

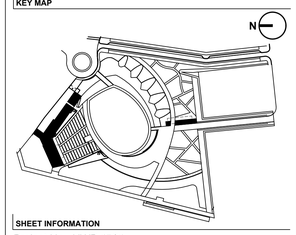
SEAL/SIGNATURE



ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NO SCALE

SHEET TITLE

IRRIGATION DETAILS

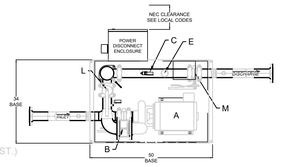
SHEET NO.

LI-501-P1

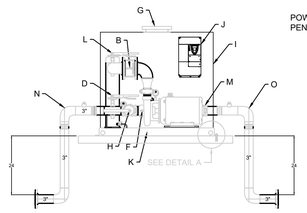
PUMP STATION SPECIFICATIONS:
NAME: NORTH WATERFRONT PARK
STATION MODEL: WMBV-5000Q-2-5-230-1-80-75
STATION TOTAL PERFORMANCE: 80 GPM @ 75 PSI
DYNAMIC INLET PRESSURE: 25 PSI
BOOST PRESSURE: 50 PSI
REGULATED DISCHARGE PRESSURE: 75 PSI
PUMP HORSEPOWER:
PUMP NO.1: 5HP (3600RPM)
CHECK VALVE SIZES:
PUMP NO.1 3"
ISOLATION VALVE SIZES:
DISCHARGE ISOLATION VALVE SIZE: 3"
DISCHARGE MANIFOLD SIZE: 3"

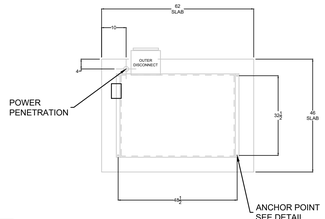
POWER REQUIREMENTS: 230V, 60 HZ, 1PHZ, 32FLA (EST.)
EXHAUST FAN REQUIREMENTS: 240CFM

STATION COMPONENTS:
A PUMP AND MOTOR
B CHECK VALVE
C PRESSURE TRANSDUCER WITH GAUGE
D BYPASS VALVE
E FLOW SENSOR
F TEMP SENSOR
G STATION FAN HOOD MOUNTED
H PUMP INTAKE ISOLATION VALVE
I PAINTED STEEL ENCLOSURE (GREEN)
J VFD WITH PUMP CONTROLLER
K PAINTED STEEL BASE (GREEN)
L PUMP DISCHARGE ISOLATION VALVE
M STATION DISCHARGE ISOLATION VALVE
N INTAKE DROP PIPE W/ 3" FLG. CONNECTION
O DISCHARGE DROP PIPE W/ 3" FLG. CONNECTION

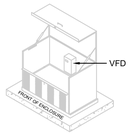



DETAIL "A"
CONCRETE ANCHOR
TYPICAL (4) LOCATIONS

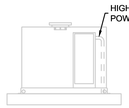




BASE & SLAB DETAIL



ENCLOSURE
ISOMETRIC VIEW



BACK OF ENCLOSURE

NO.	DATE	BY	DESCRIPTION
7			
6			
5			
4			
3			
2			
1			

☐ APPROVED AS SUBMITTED
☐ APPROVED AS NOTED
☐ REVISE AND RESUBMIT
SIGNATURE: _____
NAME: _____
DATE: _____

DRAWN BY: PJB DATE: 01/03/2019
CHECKED BY: DATE:

THIS DRAWING AND DESIGN, IS THE PROPERTY OF WATERTRONICS AND IS NOT TO BE REPRODUCED IN WHOLE OR PART, NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY WATERTRONICS.
THIS DRAWING LOANED AND SUBJECT TO RETURN ON DEMAND

TITLE: NORTH WATERFRONT PARK
IRRIGATION PUMP STATION

WATERTRONICS

SCALE: NTS SHEET 1 OF 1 SHEETS
JOB NO.: DRAWING NO: PRST13691

19 PUMP STATION
NTS

WATERMAX-5000Q

VARIABLE FREQUENCY DRIVE PUMP STATION
GENERAL SPECIFICATION

Project Name: North Waterfront Park
Project Location: NC

SCOPE OF WORK

It is the intention of this specification to describe a self-enclosed automatic pump station for a turf irrigation system. This shall be accomplished by using a completely prefabricated pump station conforming to the following specifications. Supply shall be either flooded, suction lift, or city water booster.

The pumping station shall be **WaterMax Model Number WMBV-5000Q-2-5-230-1-80-75** as manufactured by WATERTRONICS, INC. 525 Industrial Drive, P.O. Box 530, Hartland, Wisconsin 53029-0530, www.watertronics.com.

SECTION 1: GENERAL

1.1 The station shall be completely wired, piped, dynamically flow and pressure tested prior to shipment.

1.2 Operational sequence: The pump shall activate automatically upon detecting a drop in pressure in the irrigation main line, or a remote start signal. Operation shall be maintained at an adjustable minimum demand. The pump shall be automatically retired when the demand falls below the minimum adjustable set point for an adjustable time delay.

1.3 Construction: Construction shall be of modular form utilizing a base structurally adequate to support pumps, piping, and electrical equipment as a single integral assembly. All nuts, bolts washers, and fasteners shall be stainless steel, zinc or cadmium plated for corrosion resistance.

SECTION 2: PUMP AND MOTOR

2.1 PUMP

Pump shall be electric motor driven, horizontal centrifugal with mechanical shaft seal, volute case and impeller. The shaft seal shall be a self-adjusting mechanical type to prevent leakage and eliminate the need for a drain piping. The volute case shall be precision machined from gray cast iron and engineered to modern hydraulic standards. It shall be possible to rotate the discharge connection to any of four positions. A heavy cast iron bracket shall maintain alignment between the motor and volute case. The impeller shall be an enclosed type and balanced to provide smooth operation. The impeller shall be keyed to the shaft and locked with a special cap screw and washer. The motor shaft is to be manufactured from high grade steel and of reduced length to increase shaft rigidity, extend bearing life, and reduce the overall length of the pump and motor assembly. The pump shaft shall be protected with a replaceable stainless steel sleeve. The pump, motor and impeller shall be removable from the back of volute case for service without disturbing the plumbing.

2.2 MOTOR

PAGE 1

Pump motor shall be a squirrel cage induction horizontal solid shaft type. The pump impeller shall be direct mounted and keyed to the motor shaft with a stainless steel protective sleeve. The temperature rise of the motor shall be to NEMA Standard for class B or Class F insulation. Radial and thrust bearings of ample capacity to accommodate the hydraulic thrust of the pump shall be incorporated into the motor.

SECTION 3: PIPING MANIFOLD, VALVES, GAUGES AND OTHER MECHANICAL EQUIPMENT

3.1 FABRICATED PIPING

All fabricated piping shall conform to ASTM specifications A53 for Grade B welded or seamless schedule 40 pipe. All welded flanges shall be forged steel, slip-on or weld neck type. All welded fittings shall be seamless, ASTM Specification A234, with pressure rating not less than 150 PSI.

3.1a BY-PASS PIPING SYSTEM

A fabricated full flow bypass shall be constructed of ASTM specification A53 Grade B welded or seamless schedule 40 pipe. All welded flanges shall be forged steel, slip-on or weld neck type. All welded fitting shall be seamless, ASTM Specification A234, with pressure rating not less than 150 PSI. Full flow bypass shall be complete with 3 butterfly isolation valves to allow for complete isolation and bypass of the pump. All valves shall be installed inside the enclosure for vandal resistance.

3.2 CHECK VALVE

On flooded suction and booster stations the pump check valve shall be cast iron bodied with a spring loaded single disc. Check valves shall be sized according to the maximum discharge flow of the pump. Pressure drop across the check valve shall not exceed 2.5 PSI at full flow. On suction lift stations the check valve will be removed and a pressure rated foot valve will be supplied to attach on the end of the suction pipe.

3.3 STATION DISCHARGE ISOLATION VALVE

Pump shall be isolated by means of a butterfly valve after the check valve and before the piping exits the station enclosure. Isolation valves shall be butterfly type with ten position lever, rated for 200 PSI WOG working pressure. Trim shall include stainless steel stem, bronze or nickel coated iron streamlined disk with full faced resilient seat design to eliminate need for flange gaskets.

3.4 DRAIN VALVES

Drains shall be provided from all low points in the system and shall consist of 1/4" petcocks or ball valves.

3.5 PRESSURE GAUGES

Pressure gauges shall be located upstream and downstream of the pump for easy reading of the intake and discharge pressure. Pressure gauges shall be 304 stainless steel case and bezel construction. Gauges shall be 2-1/2" diameter, liquid filled. Pressure sensing connection shall be 1/4" NPT lower gauge connection.

SECTION 4: ELECTRICAL CONTROLS
All control panels must meet or exceed the Federal Communications Commission (FCC) Standard #15 for emitted and conducted noise

PAGE 2

4.1 DEAD-FRONT MAIN STATION DISCONNECT

A three-pole, service rated main station disconnect shall be mounted in a separate NEMA 4 enclosure outside the pump station enclosure to completely isolate the pump station electrical system from incoming power.

The incoming high voltage disconnect shall be supplied as a Dead Front style.

4.2 PUMP THERMAL SWITCH

The temperature of the pump shall be sensed by a thermal switch. The thermal switch shall be located on the pump volute. Externally mounted snap disc type thermal switches will not be accepted. The thermal switch shall activate upon a temperature rise above 120 degrees Fahrenheit.

4.3 FLOW SENSOR

The pump station discharge manifold shall incorporate an insertion type, pulse frequency output flow sensor for continuous output to pump station controls. The flow sensor output pulse shall be conditioned and fed directly to the processor for conversion and display in Gallons per Minute and totalize. Flow sensor accuracy shall be no less than 2% for flow velocities ranging from 1 - 30 feet per second.

4.4 PRESSURE TRANSDUCER

A solid state pressure transducer shall provide a noise free, linear output proportional to discharge pressure. Transducer shall be solid state, strain gauge type with integral voltage regulating and output accuracy not less than 0.5%. Transducer shall be constructed of stainless steel and rated for the maximum pump station discharge pressure.

4.5 VARIABLE FREQUENCY DRIVE (VFD)

The variable frequency drive shall be IGBT based with selectable carrier frequency up to 15 KHZ. The VFD shall include terminals for incoming power, motor output power and control terminals. The VFD shall generate a sine-coded, variable voltage/frequency, three-phase output for optimum speed control. The VFD shall incorporate power loss ride-through. VFD protective features shall include current limit, short circuit protection, electronic motor overload protection and ground fault protection. The VFD shall have push button programming display for easy access to operation parameters. VFD must be designed for operation in 50 degree C temperature condition.

4.6 NATIONAL ELECTRICAL CODE STANDARDS

Electrical controls shall conform to National Electrical Code Standards.

CONTROL ALARMS:

4.7 LOW SYSTEM PRESSURE SAFETY SHUTDOWN

When the station discharge pressure remains below an adjustable set point for the time called out in the Technical Specifications, the pumps will be de-energized and remain so until the alarm is manually reset. The Low Pressure alarm will be indicated on the processor display.

4.8 HIGH SYSTEM PRESSURE SAFETY SHUTDOWN

PAGE 3

When the station discharge pressure remains above an adjustable set point for the time called out in the Technical Specifications, the pumps will be de-energized and remain so until the alarm is manually reset. The High Pressure alarm will be indicated on the processor display.

4.9 HIGH PUMP VOLUTE TEMPERATURE SHUTDOWN

If the pump volute case temperature rises above 120 degrees F. for the pre-programmed time, the pump will be de-energized and remain so until the alarm is manually reset. The High Temperature alarm will be indicated on the processor display.

4.10 MOTOR OVERLOAD SHUTDOWN

If the over current condition lasts longer than the pre-programmed limit the motor will be de-energized and remain so until the alarm is manually reset. The overload alarm will be indicated on the processor display.

4.11 VFD FAULT SHUTDOWN

The VFD shall sense additional internal faults that will cause the VFD to shutdown for system protection. These faults will be indicated on the processor display.

4.13 LIGHTNING ARRESTOR

The main power supply to the pump station shall be equipped with a secondary lighting arrestor having a breakdown current rating of not less than 60,000 Amps at 14,000 Volts discharge. Power supplies 300 Volts and less shall use a 300 Volt arrestor with an 800 Volt spark-over Voltage. Power supplies up to 600 Volts shall use a 600 Volt rated arrestor with a 1,000 Volt spark-over Voltage.

4.14 CORROSION INHIBITING MODULES

Corrosion inhibiting modules shall be installed in the main electrical control enclosure in accordance with the manufacture's recommendations.

SECTION 5: MOUNTING BASE AND ENCLOSURE

5.1 MOUNTING BASE

Construction shall include a fabricated base assembly to support all components during shipping and to serve as the installed mounting base. Pump station base shall be formed from a single sheet of 1/4" plate resulting in a seamless, one-piece base with rounded edges and corners. Height is to be 3-1/2" inches. The base shall be strategically reinforced beneath as required to provide additional support and strength. The base shall be drilled and tapped allowing the pump to be secured to the base. The base shall be shot blasted to bare metal prior to painting process.

5.2 ENCLOSURE

Construction shall include a weather resistant, 14 gauge or equivalent, all metal enclosure. The front side of the enclosure shall have oversized cooling vents. The enclosure is to be supplied with a two internally mounted gas struts that shall extend to keep the access door open. All components are to be accessible from top and front sides with the door completely open. Enclosure is to be suitable for

PAGE 4

mounting to the pump station base and shall include openings for suction and discharge piping.

5.3 EXHAUST FAN

For the purpose of cooling the pump motor, switchgear and control logic, an exhaust fan shall be located inside the pump enclosure, mounted to the enclosure lid. The exhaust fan shall be activated upon pump start and shall run until the pump stops. The fan shall be black die-cast aluminum construction with UL94V-0 rated polycarbonate propeller and rated for not less than 240 CFM. Fan motor shall be permanent split capacitor type with stainless steel ball bearings, class B insulation and automatic thermal protection.

SECTION 6: PAINTING

Painting of the entire pump station shall consist of a multi-step coating system which includes metal preparation, rust inhibitive baked epoxy prime coat, and a two part ultraviolet light insensitive baked polyurethane finish having total dry film thickness of not less than 5 mils. Prime coat and finish coat shall be baked at 165 degrees for not less than 30 minutes to achieve a high gloss, corrosion resistant finish. Exterior pump station components shall be painted Green.

SECTION 7: ADDITIONAL EQUIPMENT INCLUDED

7.1 REMOTE START SIGNAL

The pump station control system will be activated by incoming 24v remote start signal.

7.2 OPTOCOUPLER

An Optocoupler shall be provided to share flow sensor signal.

7.3 DROP PIPES

The inlet and discharge piping system will be attached to dual 90 degree drop pipes to provide below grade connection to a suction pipe or city water supply pipe or below grade connection to a discharge main line. Drop pipe sizes, connection fitting style and depth of bury will be shown on the project drawings.

SECTION 8: TESTING

The pump station and all its component parts shall undergo a complete hydraulic and electrical test prior to shipment from the factory. Testing shall be dynamic and include operation over the entire flow range of the pump station under specified suction and net discharge pressure conditions. A plot containing actual flow, pressure, KW consumption and motor RPM shall be furnished as part of the owner's manual.

SECTION 9: OWNERS MANUAL

Complete start up instructions shall be provided by the manufacturer in the form of an owner's manual.

SECTION 10: WARRANTY

The manufacturer shall warrant the pump station to be free of defects for one year from date of start up or fifteen months after shipment, whichever occurs first. Failures caused by lightning strikes, power surges, vandalism, operator abuse, or acts of God are excluded from warranty coverage.

PAGE 5

SECTION 11: MANUFACTURER

The pump station shall be manufactured by **Watertronics, Inc.,** Hartland, Wisconsin.

To be considered as "equal" the following information must be furnished by the contractor or manufacturer's representative at least 10 days prior to the date of the bid opening:

1. A complete specification and submittal of all major components for the proposed pump station with individual pump performance verification.
2. A detailed pumping station proposal drawing complete with component location, sizes and dimensions specific to the installation.
3. A complete electrical schematic for all high and low voltage circuits showing all circuit breakers, fuses and wire sizes. All wire numbering and colors must also be designated.
4. Pump station manufacturer's U.L. file number for the electrical controls and pump station.
5. A copy of the manufacturer's certificate of insurance.
6. Product support technicians shall be capable of accessing all information pertaining to the pumping equipment, e.g. electrical schematics, pump curves, program data, bill of materials, etc. The manufacturer shall have no less than two technicians on call seven days a week.
7. The pump station manufacturer shall provide factory authorized or factory direct service personnel for the set, start-up, preventative maintenance and general service of the pump system. A factory authorized or factory direct service technician must be located within one-hundred (100) mile radius of the project site. The pump systems technician must have a minimum of 5 years' experience. The pump station manufacturer shall provide technical phone support twenty-four hours a day seven days a week.

[END OF SPECIFICATION]

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IRN016

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

Landscape Architecture = L
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
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www.sandec.com
EAGLE RESOURCES
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www.eagleresources.com

Irrigation= I
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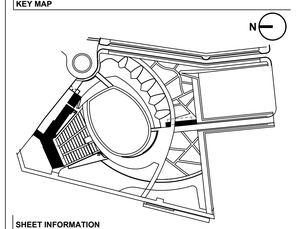
ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: MP / SW / AL
Checked By: ML / CM
Date: 10/25/2019
Scale: NO SCALE

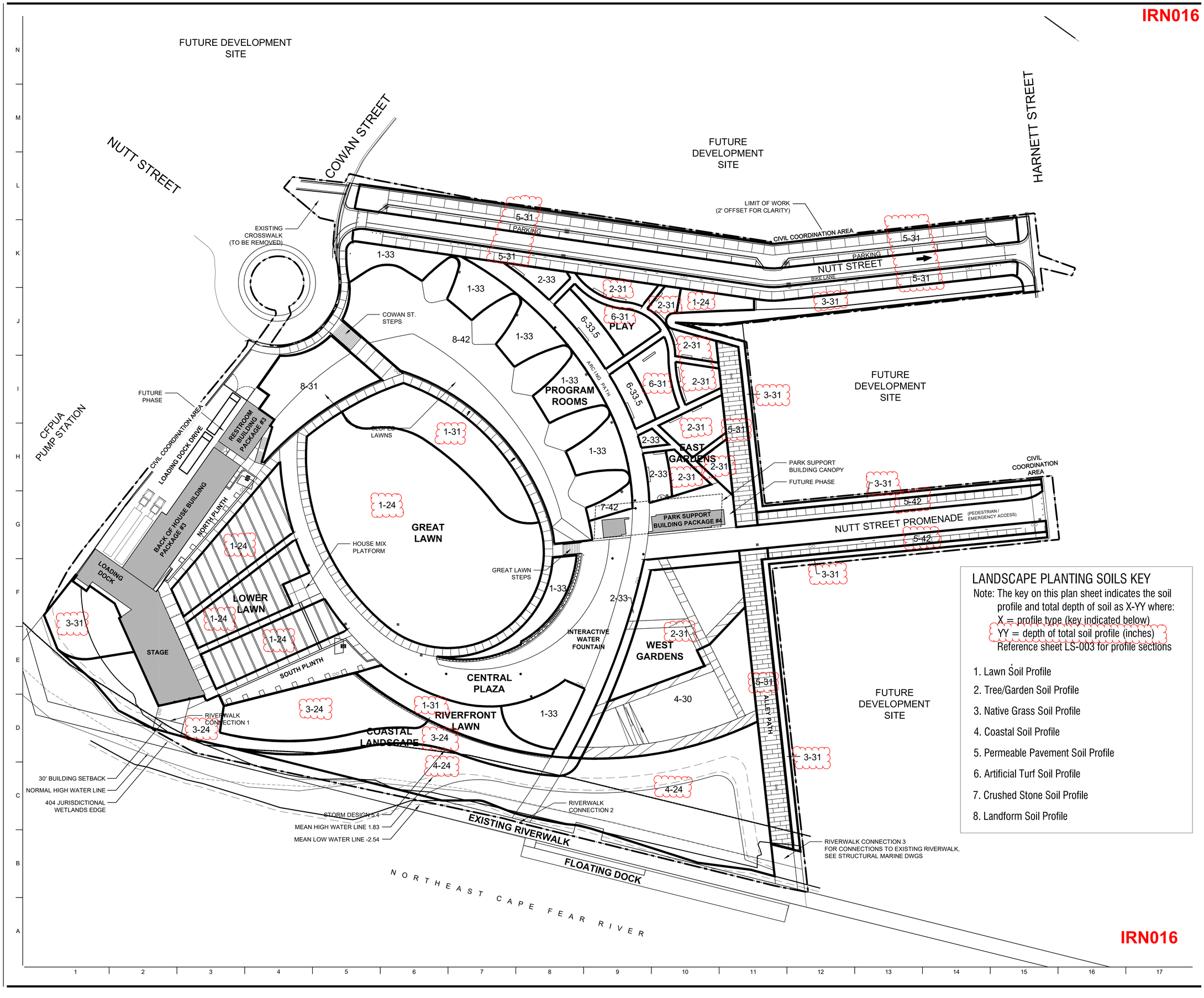
SHEET TITLE

IRRIGATION DETAILS

SHEET NO.

LI-502-P1

IRN016



LANDSCAPE PLANTING SOILS KEY

Note: The key on this plan sheet indicates the soil profile and total depth of soil as X-YY where:
X = profile type (key indicated below)
YY = depth of total soil profile (inches)
Reference sheet LS-003 for profile sections

1. Lawn Soil Profile
2. Tree/Garden Soil Profile
3. Native Grass Soil Profile
4. Coastal Soil Profile
5. Permeable Pavement Soil Profile
6. Artificial Turf Soil Profile
7. Crushed Stone Soil Profile
8. Landform Soil Profile

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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SEAL/SIGNATURE

LICENSED SOIL SCIENTIST BARRETT L. KAYS 1005 STATE OF NORTH CAROLINA 10/25/19

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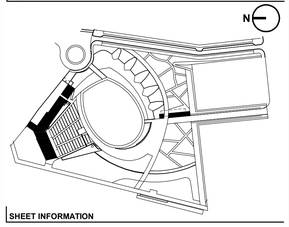

SHEET INFORMATION
Project No.: NWP 1701
Drawn By: AF
Checked By: BK
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

SHEET TITLE

LANDSCAPE SOILS SITE PLAN

SHEET NO.

LS-001-P1

IRN016

FUTURE DEVELOPMENT SITE

NUTT STREET

COWAN STREET

FUTURE DEVELOPMENT SITE

HARNETT STREET

LIMIT OF WORK (2' OFFSET FOR CLARITY)

CIVIL COORDINATION AREA

EXISTING CROSSWALK (TO BE REMOVED)

PARKING

NUTT STREET

BIKE LANE

COWAN ST. STEPS

PLAY

20' (TYP)

ARGYLE PATH

PROGRAM ROOMS

FUTURE DEVELOPMENT SITE

FUTURE PHASE

CFPUA PUMP STATION

CIVIL COORDINATION AREA

LOADING DOCK DRIVE

RESTROOM BUILDING PACKAGE #3

SLOPED LAWNS

EAST GARDENS

PARK SUPPORT BUILDING CANOPY

FUTURE PHASE

CIVIL COORDINATION AREA

BACK OF HOUSE BUILDING PACKAGE #3

NORTH PLINTH

GREAT LAWN

PARK SUPPORT BUILDING PACKAGE #4

NUTT STREET PROMENADE (PEDESTRIAN / EMERGENCY ACCESS)

HOUSE MIX PLATFORM

GREAT LAWN STEPS

LOADING DOCK

LOWER LAWN

STAGE

SOUTH PLINTH

INTERACTIVE WATER FOUNDATION

WEST GARDENS

CENTRAL PLAZA

RIVERWALK CONNECTION 1

RIVERFRONT LAWN

ALLEY PATH

FUTURE DEVELOPMENT SITE

COASTAL LANDSCAPE

30' BUILDING SETBACK

NORMAL HIGH WATER LINE

404 JURISDICTIONAL WETLANDS EDGE

STORM DESIGN 5.4

MEAN HIGH WATER LINE 1.83

MEAN LOW WATER LINE -2.54

RIVERWALK CONNECTION 2

EXISTING RIVERWALK

FLOATING DOCK

RIVERWALK CONNECTION 3
FOR CONNECTIONS TO EXISTING RIVERWALK,
SEE STRUCTURAL MARINE DWGS

NORTHEAST CAPE FEAR RIVER

LANDSCAPE DRAINAGE LEGEND

12" Hancor AdvanEDGE Flat Pipe

Select proposed storm structures for tie (Reference Civil Drawings)

Select proposed Storm Pipes for tie (Reference Civil Drawings)

Note: Drain lines shown here are for reference only
All installation shall conform to Civil sheet C-131

IRN016

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LICENSED SOIL SCIENTIST
GARRETT L. KOCH
1006
STATE OF NORTH CAROLINA

10/25/19

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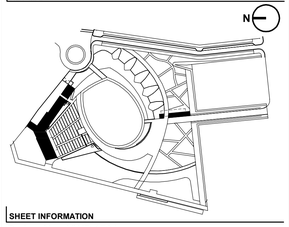


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: AF
Checked By: BK
Date: 10/25/2019
Scale: 1"=30'-0
0 5 10 15 30

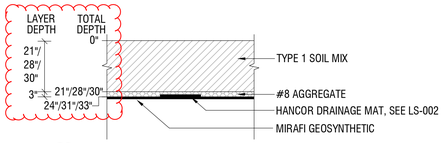
SHEET TITLE

LANDSCAPE SOILS SUBSURFACE LANDSCAPE DRAINAGE PLAN

SHEET NO.

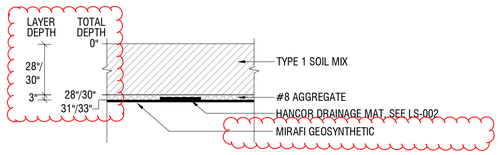
LS-002-P1

IRN016



1 Lawn Soil Profile
1"=3'-0"

See Civil Plans for Infiltration System where noted
21-Inch or 28-Inch or 30-Inch Depth Type 1 Soil Mix across lawn**
80% Site Sand & 20% Compost
3-Inch Depth #8 Aggregate***
Hancor Drainage Mat,*** see LS-002
Mirafi RSi-Series Geosynthetic
**Note: see locations on sheet LS-001 for profile total depth
***#8 Aggregate must cover Drainage Mat by 1' on either side

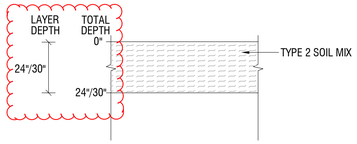


2 Tree/Garden Soil Profile
1"=3'-0"

28-Inch or 30-Inch Depth Type 1 Soil Mix**
80% Site Sand & 20% Compost
3-Inch Depth #8 Aggregate***
Hancor Drainage Mat,*** see LS-002
Mirafi RSi-Series Geosynthetic
**Note: see locations on sheet LS-001 for profile total depth
***#8 Aggregate must cover Drainage Mat by 1' on either side

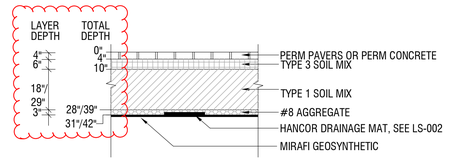
3 Native Grass Soil Profile
1"=3'-0"

Flexamat (only up to elev. 7)
21-Inch or 28-Inch Depth Type 1 Soil Mix**
80% Site Sand & 20% Compost
3-Inch Depth #8 Aggregate
Mirafi RSi-Series Geosynthetic
**Note: see locations on sheet LS-001 for profile total depth



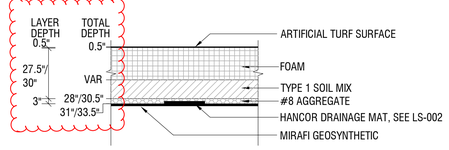
4 Coastal Soil Profile
1"=3'-0"

24-Inch or 30-Inch Depth Type 2 Soil Mix**
50% Organic Muck & 50% Site Sand
**Note: see locations on sheet LS-001 for profile total depth



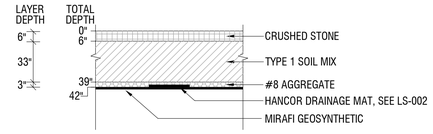
5 Permeable Pavement Soil Profile
1"=3'-0"

See Civil Plans for Soil Profile under Permeable Cover Types
4-Inch Permeable Pavers and/or Permeable Concrete
6-Inch Depth Type 3 Soil Mix
70% #8 Aggregate & 30% Site Sand
18-Inch or 29-Inch Depth Type 1 Soil Mix**
85% Site Sand & 15% Compost
3-Inch Depth #8 Aggregate***
Hancor Drainage Mat,*** see LS-002
Mirafi RSi-Series Geosynthetic
**Note: see locations on sheet LS-001 for profile total depth
***#8 Aggregate must cover Drainage Mat by 1' on either side



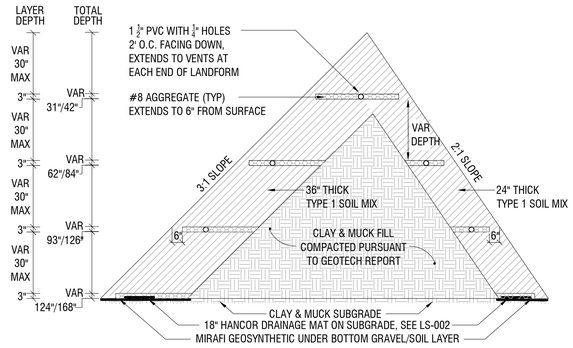
6 Artificial Turf Soil Profile
1"=3'-0"

0.5"-Inch Artificial Turf
Variable Depth Foam*
Variable Depth Type 1 Soil Mix** } Combined Depth of 27.5-Inches or 30-Inches
85% Site Sand & 15% Compost
3-Inch Depth #8 Aggregate***
Hancor Drainage Mat,*** see LS-002
Mirafi RSi-Series Geosynthetic
* Note: see locations on grading sheets for foam depth
**Note: see locations on sheet LS-001 for profile total depth
***#8 Aggregate must cover Drainage Mat by 1' on either side



7 Crushed Stone Soil Profile
1"=3'-0"

6-Inch Depth Crushed Stone
33-Inch Depth Type 1 Soil Mix
85% Site Sand & 15% Compost
3-Inch Depth #8 Aggregate***
Hancor Drainage Mat***
Mirafi RSi-Series Geosynthetic
***#8 Aggregate must cover Drainage Mat by 1' on either side



8 Landform Soil Profile
1"=3'-0"

30-Inch Maximum Depth Type 1 Soil Mix**
80% Site Sand & 20% Compost
3-Inch Depth #8 Aggregate***
with 1 ½" PVC perforated pipe centered in layer
and 6" slope setback occuring at all gravel layers
< repeat the layers above as necessary >
18-Inch wide Hancor Drainage Mat,*** see LS-002
Mirafi RSi-Series Geosynthetic
**Note: see locations on sheet LS-001 for profile total depth
***#8 Aggregate must cover Drainage Mat by 1' on either side

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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CITY OF WILMINGTON
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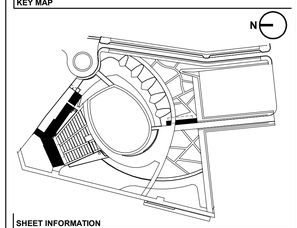


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: AF
Checked By: BK
Date: 10/25/2019
Scale: VARIES

SHEET TITLE

LANDSCAPE SOILS PROFILE DETAILS

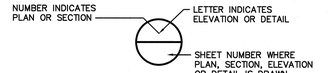
SHEET NO.

LS-003-P1

IRN016

LEGEND

GW — GW — GW — GW	GREASE WASTE PIPING BELOW FINISHED FLOOR
W	WASTE PIPING
V	VENT PIPING
C — C — C — C — C — C — C — C — C	CONDENSATE DRAINAGE PIPING
CW	COLD WATER PIPING
HW	HOT WATER PIPING
HWR	HOT WATER RETURN PIPING
G — G — G — G	NATURAL GAS PIPING
RDL	ROOF DRAIN LEADER
ORDL — R — R — R	OVERFLOW ROOF DRAIN LEADER
	BALL/BUTTERFLY VALVE
	BALL/BUTTERFLY VALVE IN VALVE BOX FLUSH WITH GRADE
	BALANCING VALVE
	GAS VALVE
	CHECK VALVE
	SOLENOID VALVE
	VALVE IN RISE
	PIPE ELBOW TURNED DOWN
	PIPE ELBOW TURNED UP
	PIPE TEE TURNED DOWN
	PIPE TEE TURNED UP
	UNION
	STRAINER
	DOUBLE CHECK VALVE BACKFLOW PREVENTER
	REDUCED PRESSURE BACKFLOW PREVENTER
'A'	DRAINAGE INSTITUTE STANDARD SIZE SHOCK ARRESTER, 'A' INDICATES PLUMBING
	ASME PRESSURE TEMPERATURE RELIEF VALVE
VTR	VENT THRU ROOF
CO	CLEANOUT
ECO	EXTERIOR CLEANOUT
WCO	WALL CLEANOUT
FCO	FLOOR CLEANOUT
AFF	ABOVE FINISHED FLOOR
BFF	BELOW FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BFG	BELOW FINISHED GRADE
INV	INVERT ELEVATION



TOTAL CONNECTED LOAD
COLD WATER DEMAND (FLOATING DOCK) = 21.5 GPM

THIS DRAWING HAS BEEN PREPARED FOR RELEASE OF AN EARLY SITE CONSTRUCTION PACKAGE. ALL EQUIPMENT AND COMPONENTS ARE NOT INCLUDED IN THIS SITE PACKAGE FOR SYSTEMS TO BE FULLY FUNCTIONAL. THE INTENT IS FOR FOLLOW-UP BUILDING PACKAGES TO INCLUDE APPLICABLE EQUIPMENT, COMPONENTS, AND REQUIREMENTS FOR FUNCTIONAL SYSTEMS.

IRN016

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NORTH WATERFRONT PARK IRN016

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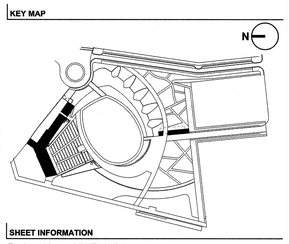
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: CG, SL
Checked By: CG
Date: 10/25/2019
Scale: AS NOTED

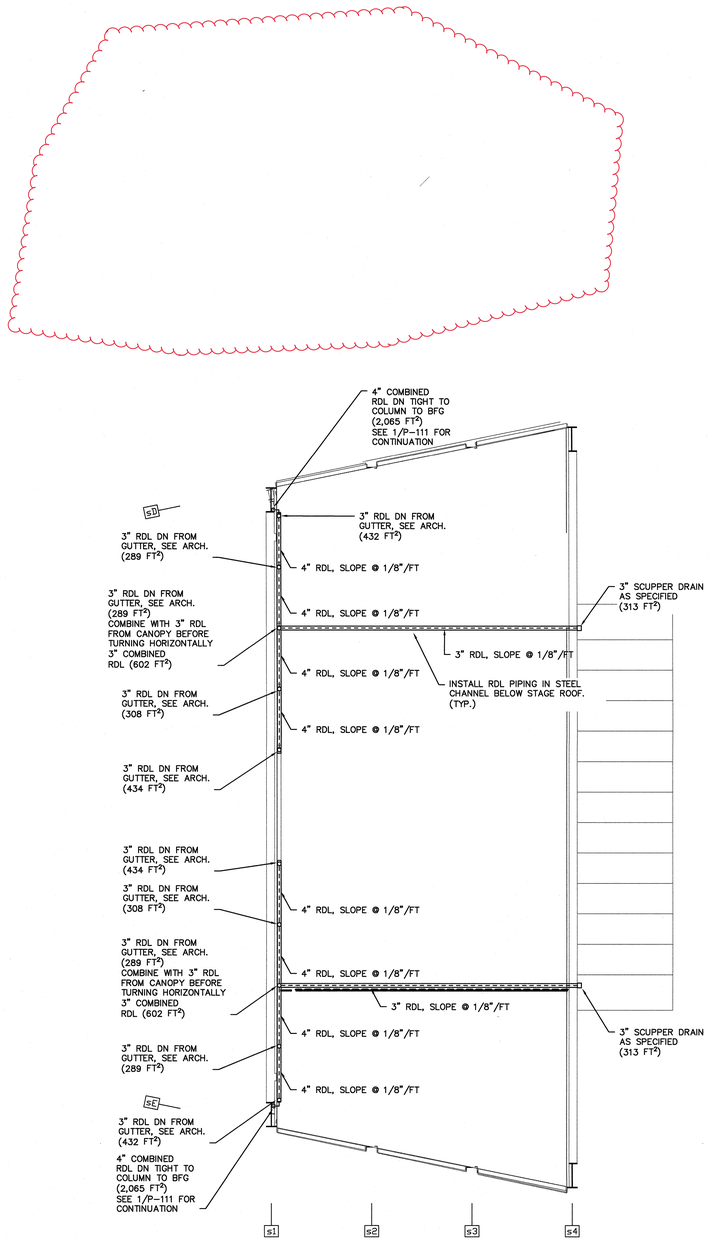
SHEET TITLE

PLUMBING LEGEND, SCHEDULES, AND DETAILS

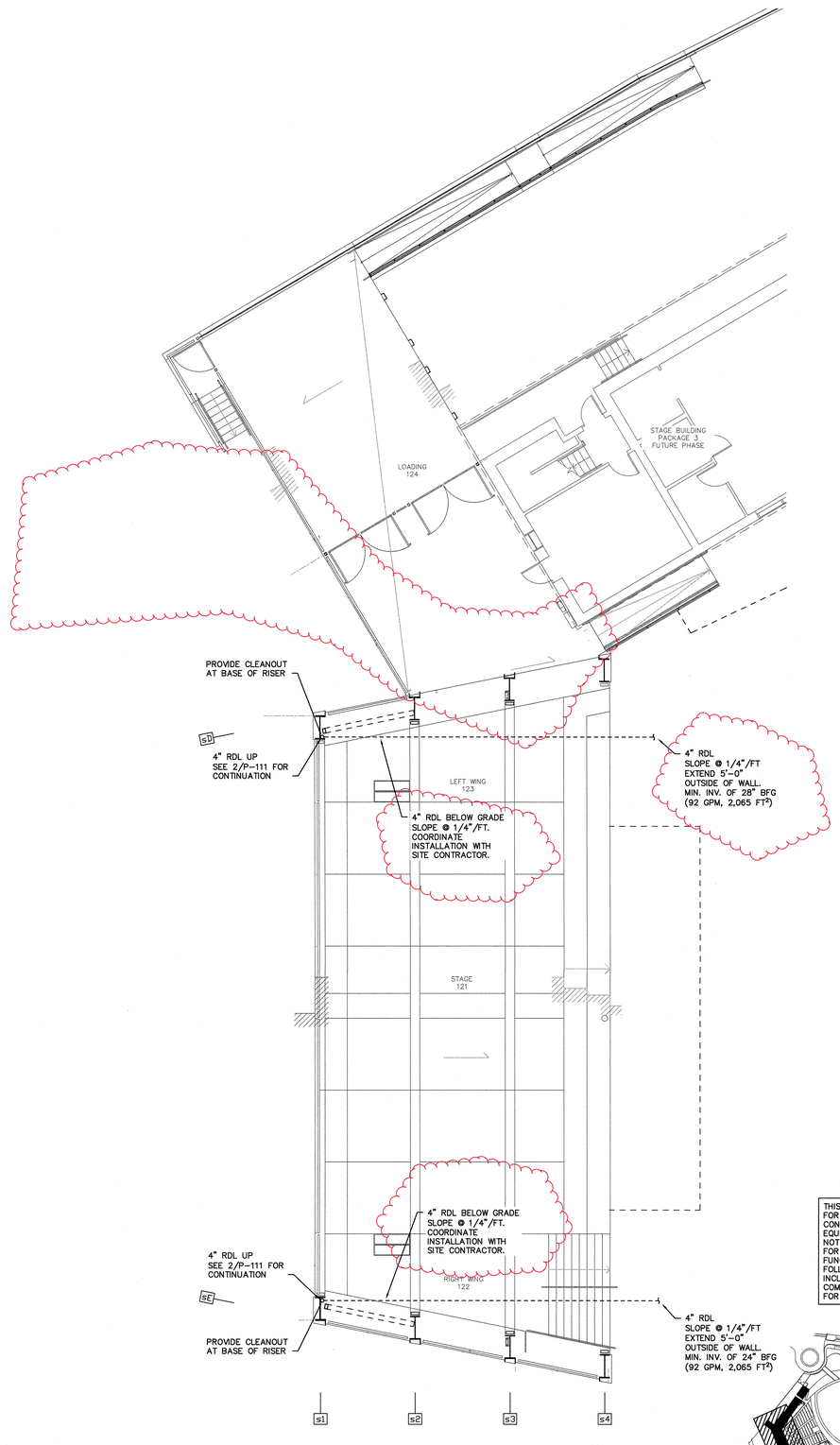
SHEET NO.

P-001-P1

IRN016



1 P-111-P1 PLUMBING ROOF PLAN – STAGE
SCALE: 1/8" = 1'-0"
GRAPHIC SCALE: 1"=1'-0" (0 2 4 8 16) TRUE NORTH



2 P-111-P1 PLUMBING FLOOR PLAN – STAGE
SCALE: 1/8" = 1'-0"
GRAPHIC SCALE: 1"=1'-0" (0 2 4 8 16) TRUE NORTH

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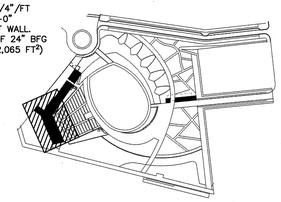

KEY PLAN TRUE NORTH

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK1860

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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 043164 ENGINEER CASEY D. GILMAN
10/25/19

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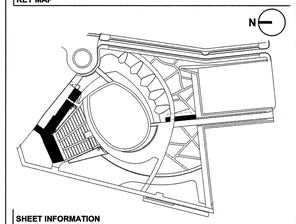
KEY MAP



SHEET INFORMATION

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SHEET TITLE

PLUMBING PLANS - STAGE

SHEET NO.

P-111-P1

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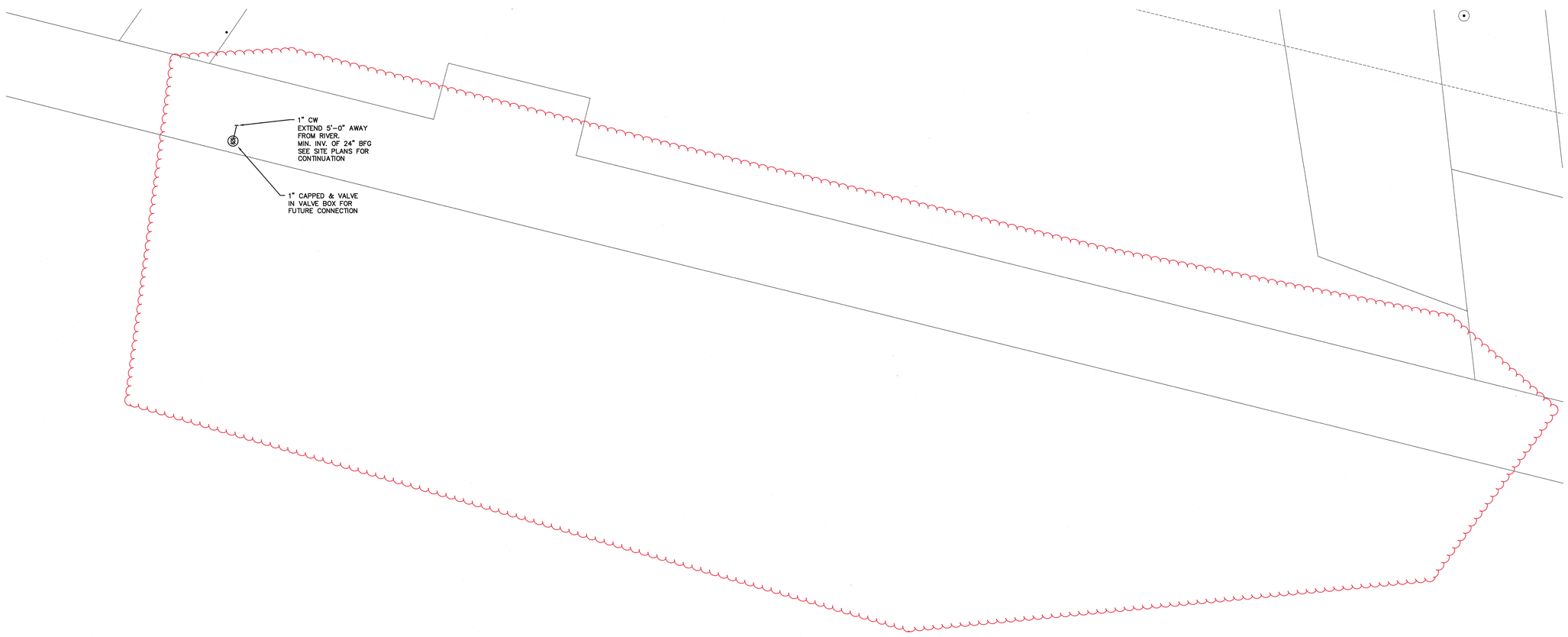

1 P-112-P1 PLUMBING PLAN – FLOATING DOCK
SCALE: 1/8" = 1'-0"

GRAPHIC SCALE: 1/8"=1'-0"
0 2 4 8 16
TRUE NORTH

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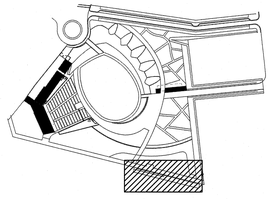

KEY PLAN TRUE NORTH

IRN016

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NORTH CAROLINA PROFESSIONAL SEAL 043164 ENGINEER CASEY D. GRAY
10/25/19

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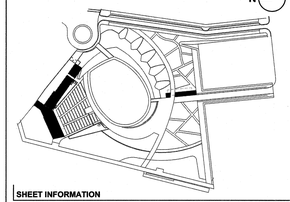

SHEET INFORMATION

Project No.: NWP 1701
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Scale: AS NOTED

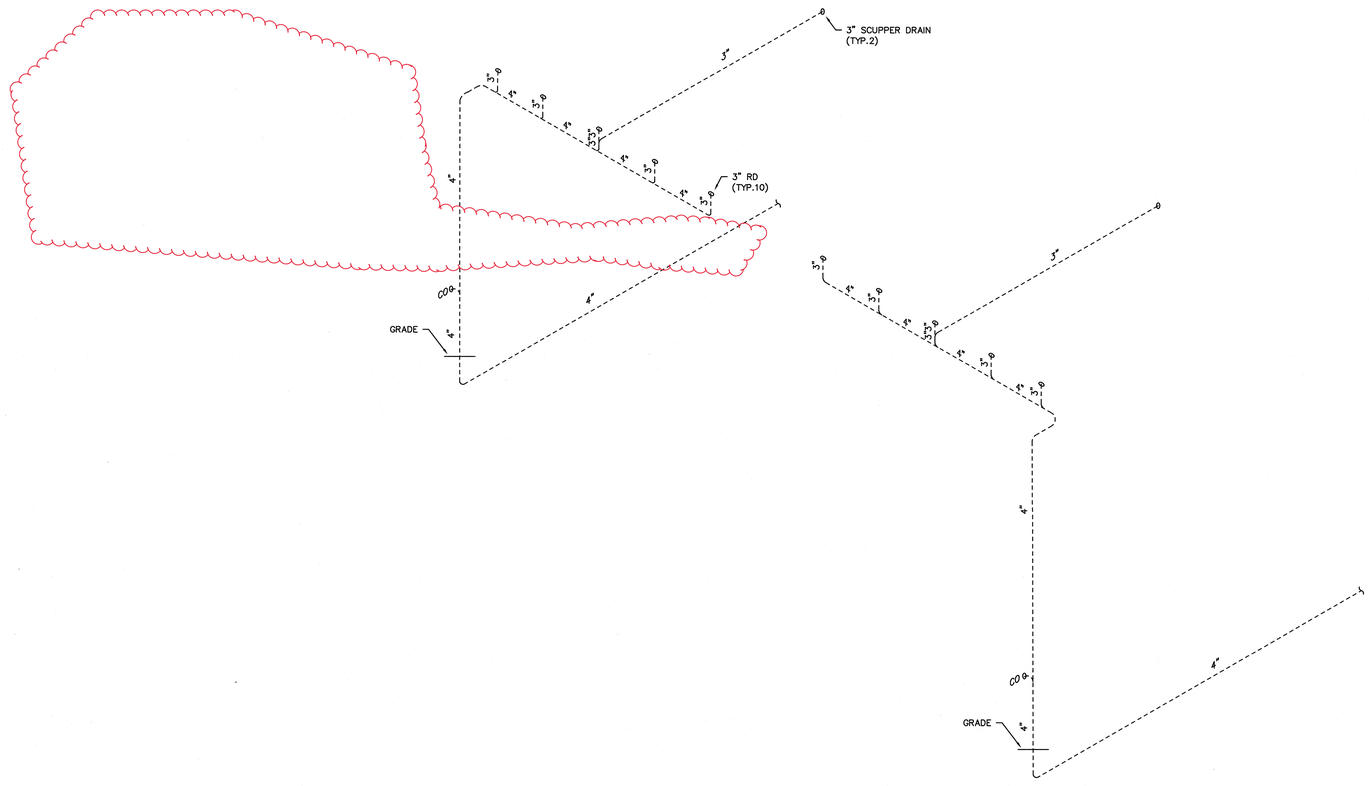
SHEET TITLE

PLUMBING PLAN - FLOATING DOCK

SHEET NO.

P-112-P1

IRN016



A
P-501-P1

STAGE ROOF DRAIN LEADER RISER DIAGRAM
NO SCALE

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IRN016

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10/25/19

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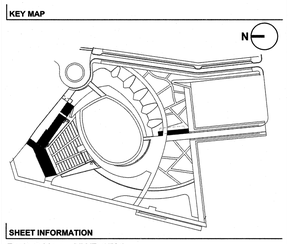

SHEET INFORMATION

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SHEET TITLE

PLUMBING RISER DIAGRAMS

SHEET NO.

P-501-P1

GENERAL

1. THESE GENERAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO GENERAL NOTES.
2. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE. ALL APPLICABLE SAFETY REGULATIONS TO BE FOLLOWED STRICTLY.
3. THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE. APPLICATIONS OF CONSTRUCTION LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE. DURING ERECTION AND UNTIL ALL PERMANENT CONNECTIONS ARE MADE, THE CONTRACTOR MUST PROVIDE TEMPORARY BRACING FOR THE STRUCTURE IN ALL DIRECTIONS.
4. THE GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND GRADE CONDITIONS (BOTH NEW AND EXISTING), REPORTING ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH ANY PHASE OF THE WORK.
5. THE CONTRACTOR SHALL COMPARE STRUCTURAL SECTIONS WITH ARCHITECTURAL SECTIONS AND REPORT ANY DISCREPANCY TO THE ARCHITECT PRIOR TO FABRICATION OR INSTALLATION OF STRUCTURAL MEMBERS.
6. DO NOT SCALE DIMENSIONS FROM DRAWINGS. THE CONTRACTOR SHALL REQUEST, FROM THE ARCHITECT, NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS.
7. IF ANY BIDDER IS IN DOUBT AS TO THE INTENT OF THE PLANS OR SPECIFICATIONS, THEY SHALL REQUEST AN INTERPRETATION FROM THE ARCHITECT IN WRITING AT LEAST TEN (10) DAYS PRIOR TO THE SCHEDULED BID DATE.
8. PRINCIPAL OPENINGS IN THE STRUCTURE ARE SHOWN ON THESE DRAWINGS. THE GENERAL CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR REQUIRED OPENINGS AS THEY SHALL BE PROVIDED FOR WHETHER SHOWN ON THESE DRAWINGS OR NOT. GENERAL CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ALL SUB-CONTRACTORS PRIOR TO CONSTRUCTION.
9. SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS, FLOOR SLOPES, AND THE LOCATION OF DEPRESSED FLOOR AREAS.
10. WHERE A CONFLICT BETWEEN DRAWINGS AND SPECIFICATIONS OCCURS THE MORE STRINGENT REQUIREMENT SHALL APPLY.
11. WHERE A DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS EVEN THOUGH NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.
12. THIS PROJECT REQUIRES SPECIAL INSPECTIONS AS DESCRIBED IN SECTION 1704 OF THE NORTH CAROLINA STATE BUILDING CODE. SEE STATEMENT OF SPECIAL INSPECTIONS FOR REQUIRED INSPECTIONS. CONTRACTOR SHALL COORDINATE WITH SPECIAL INSPECTOR ALL WORK REQUIRING SPECIAL INSPECTIONS AND TESTING.

DESIGN CRITERIA

1. APPLICABLE CODES:
   - A. 2018 NORTH CAROLINA STATE BUILDING CODE (2015 INTERNATIONAL BUILDING CODE WITH REVISIONS)
   - B. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE/SEI 7-10)
   - C. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14)
   - D. BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530/530.1-13)
   - E. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360-10)
   - F. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (ANSI/AWC NDS-2015)
2. LIVE LOADS

	UNIFORM (PSF)	CONCENTRATED (LB)
RIGGING FOR STAGE	TBD	TBD
ASSEMBLY AREAS	100	NA
MECHANICAL	150	NA
PUBLIC AREAS, LOBBIES	100	2,000
ROOF	20	300
STAGE FLOOR	150	NA
STAIRS	100	300
STORAGE	125	NA

3. RISK CATEGORY III
4. SNOW LOAD:
   GROUND SNOW LOAD Pg = 10 PSF
   IMPORTANCE FACTOR Is = 1.1
   SNOW EXPOSURE FACTOR Ce = 0.9
   THERMAL FACTOR Ct = 1.2
   FLAT ROOF SNOW ROOF LOAD Pf = 12 PSF (PLUS 5 PSF RAIN-ON-SNOW SURCHARGE)
5. WIND LOAD:
   BASIC DESIGN WIND VELOCITY V = 154 MPH
   EXPOSURE CATEGORY C

	STAGE BUILDING (PHASE 1)	FOLLOW SPOTS (PHASE 1)	PARK SUPPORT (PHASE 2)	STAGE BUILDING (PHASE 3)
BASE SHEAR	Vx = 182k Vy = 129k	Vx = 7.5k Vy = 7.7k	Vx = _k Vy = _k	Vx = _k Vy = _k
INTERNAL PRESSURE COEFFICIENTS	± 0.55	± 0.55	± 0.18	± 0.18

   COMPONENTS and CLADDING -
   ALL BUILDING COMPONENTS and CLADDING ENGINEERED BY THE COMPONENT MANUFACTURER ARE TO BE DESIGNED BY THE MANUFACTURER'S ENGINEER FOR WIND LOADS DETERMINED PER THE NORTH CAROLINA STATE BUILDING CODE FOR THE BASIC DESIGN WIND VELOCITY, IMPORTANCE FACTOR, AND EXPOSURE LISTED ABOVE.
6. SEISMIC LOAD (2008 USGS SEISMIC DESIGN MAPS):
   DESIGN METHOD - EQUIVALENT LATERAL FORCE PROCEDURE
   Ss 22.0 %g
   S1 9.2 %g
   Sds 23.5 %g
   Sd1 14.8 %g
   IMPORTANCE FACTOR Ie = 1.25
   SITE CLASS D
   SEISMIC DESIGN CATEGORY C
   SEISMIC FORCE-RESISTING SYSTEM -
   STAGE - STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE, PER ASCE 7-10 TABLE 12.2.1
   FOLLOW SPOTS - STEEL ORDINARY CANTILEVER COLUMN SYSTEMS, PER ASCE 7-10 TABLE 12.2-1

	STAGE BUILDING (PHASE 1)	FOLLOW SPOTS (PHASE 1)	PARK SUPPORT (PHASE 2)	STAGE BUILDING (PHASE 3)
RESPONSE MODIFICATION COEFFICIENT	Rx = Ry = 3	Rx = Ry = 1.25	Rx = Ry = _	Rx = Ry = _
DEFLECTION AMPLIFICATION FACTOR	Cdx = Cdy = 3	Cdx = Cdy = 1.25	Cdx = Cdy = _	Cdx = Cdy = _
SEISMIC RESPONSE COEFFICIENT	Csx = 0.098, Csy = 0.048	Csx = Csy = 0.098	Csx = Csy = _	Csx = Csy = _
BASE SHEAR	Vx = 51k, Vy = 25k	Vx = Vy = 5k	Vx = Vy = _k	Vx = Vy = _k

   NONSTRUCTURAL COMPONENT ANCHORAGE -
   ALL ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND PLUMBING COMPONENTS ARE TO BE ATTACHED AS REQUIRED BY ASCE 7 CHAPTER 13, "SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS". EACH INDIVIDUAL CONTRACTOR RESPONSIBLE FOR THE COMPONENT MUST PROVIDE PROJECT SPECIFIC DESIGN AND DOCUMENTATION PREPARED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. CHAPTER 13 DEFINES THE FORCE REQUIRED TO SUPPORT THE COMPONENT FOR THE ANCHORAGE AND BRACING. THE COST OF PREPARING THIS INFORMATION AND DESIGN SHALL BE INCLUDED IN EACH CONTRACTOR'S BID THAT IS PROVIDING THE COMPONENT
7. FUTURE LOADS:
   UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOORS, ROOFS, OR OTHER LOADS.

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT BY STEWART DATED 06/04/2018 (STEWART PROJECT #C17135.00) AS WELL AS GEOTECHNICAL ADDENDUM #3 DATED 09/07/2018 (TIMBER PILE FOUNDATIONS) AND ADDENDUM #4 DATED 10/31/2018 (CIP RETAINING WALL FOUNDATIONS).
2. THE STAGE, LOADING DOCK, AND FOLLOWSPOTS ARE TO BE BUILT ON TIMBER PILES PER GEOTECHNICAL RECOMMENDATIONS. THE STAGE HAS HELICAL PILES BATTERED TO AVOID THE FORCE MAIN. THE LOADING AND LOCATION OF THE HELICAL PILES ARE PROVIDED. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE PILES TO AVOID DAMAGE TO THE FORCE MAIN.
3. CAST IN PLACE RETAINING WALLS ARE TO BE PLACED ON TIMBER PILES WHERE SHOWN PER GEOTECHNICAL RECOMMENDATIONS AND SHORTER WALLS TO BE BEARING ON SOIL (1,500PSF BEARING PRESSURE) WHERE SHOWN ON PLAN PER GEOTECHNICAL RECOMMENDATIONS.
4. THE SUBGRADE AND UNDERFLOOR FILL SHALL BE PREPARED TO A POINT THAT EXTENDS 3'-0" MINIMUM BEYOND THE LIMITS OF THE FOUNDATION.
5. MINIMUM SUBGRADE PREPARATION REQUIREMENTS ARE AS FOLLOWS: COMPACT ALL FILL UNDER BUILDING TO 95% MAXIMUM DENSITY AS DETERMINED BY ASTM D698. PLACE IN LAYERS OF 8" MAXIMUM LOOSE THICKNESS. VERIFY FIELD DENSITY, ASTM D1556, WITH AT LEAST ONE TEST PER 2,000 SQUARE FEET PER LAYER. SEE SPECIFICATIONS FOR OTHER TESTING REQUIREMENTS.
6. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER. CONTRACTOR SHALL SUBMIT DETAILED DRAWINGS OF ALL SUCH CONDITIONS PRIOR TO CONSTRUCTION.
7. SUBSURFACE CONTRACTOR TO DESIGN AND INSTALL SHEET PILE SHORING SYSTEM ON NORTH SIDE OF WALL TO ALLOW FOR MAINTENANCE EXCAVATION OF CFPUA's GRAVITY SEWER INSIDE PUMP STATION.

CONCRETE / REINFORCING STEEL

1. CONCRETE COMPRESSIVE STRENGTH IN 28 DAYS:
   COLUMNS, BASEMENT WALLS, SITE WALLS 4,500 PSI, NORMAL WEIGHT
   SLAB ON GRADE 4,500 PSI, NORMAL WEIGHT
   MATS/PILECAPS, GRADE BEAMS 4,500 PSI, NORMAL WEIGHT
2. REINFORCING:
   TYPICAL - ASTM A615, GRADE 60
   REINFORCING TO BE WELDED - ASTM A706
   DEFORMED BAR ANCHORS - ASTM A 496
   WELDED WIRE FABRIC - ASTM A1064 (FLAT SHEETS ONLY)
3. GROUT UNDER BASE PLATES TO BE HIGH STRENGTH (5,000 PSI), NON-SHRINK.
4. REFER TO THE DRAWINGS FOR REINFORCING LAP REQUIREMENTS. WHERE LAP SPLICES ARE NOT SHOWN, LAP PER ACI 318 OR CRSI STANDARDS.
5. LAP WELDED WIRE FABRIC SHEETS 8" MINIMUM.
6. CLEAR COVER FROM FACE OF CONCRETE:
   CAST IN PLACE CONCRETE (MEASURE TO OUTERMOST REINFORCING) -
   CONCRETE CAST AGAINST AND EXPOSED TO EARTH 3"
   CONCRETE EXPOSED TO EARTH/WEATHER 2" FOR #6 BARS AND LARGER
   1 1/2" ELSE
   CONCRETE NOT EXPOSED TO EARTH/WEATHER 3/4" FOR SLABS AND WALLS
   1 1/2" FOR BEAMS AND COLUMNS (TO TIES)
7. WHERE SCHEDULED BARS ARE NOT PRESENT, PROVIDE CONTINUOUS #5 TOP AND BOTTOM BARS TO SUPPORT STIRRUPS AS REQUIRED FOR THE LENGTH OF THE STIRRUP SPACING IN ALL BEAMS.
8. WALL FOOTING REINFORCING SHALL BE CONTINUOUS THROUGH ADJACENT COLUMN FOOTINGS.
9. PROVIDE VERTICAL DOVETAIL SLOTS AT 24"OC WITH TIES AT 16"OC VERTICALLY IN ALL CONCRETE WALLS BACKING-UP MASONRY VENEER.
10. BAR SUPPORTS FOR CONCRETE EXPOSED TO VIEW SHALL HAVE PLASTIC COATED LEGS OR BE HOT DIP GALVANIZED AFTER FABRICATION.
11. MECHANICAL AND ELECTRICAL CONDUIT IN SLABS ON GRADE AND ELEVATED SLABS SHALL RUN UNDER TOP LAYER OF SLAB REINFORCING. PROVIDE A MINIMUM OF 1-1/2" CLEAR BETWEEN CONDUITS AND BETWEEN REINFORCING AND ADJACENT CONDUITS PARALLEL TO REINFORCING. IF MAXIMUM SIZE OF CONDUIT EXCEEDS ONE THIRD OF THE SLAB DEPTH, ADDITIONAL FRAMING OR REINFORCING MAY BE NECESSARY AT ENGINEER'S DISCRETION.
12. MECHANICAL AND ELECTRICAL CONDUIT IN ELEVATED SLABS ON METAL DECK IS NOT ALLOWED UNLESS SPECIFICALLY REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO PLACEMENT.
13. HEADED CONCRETE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A108, GRADES 1010, 1015, 1017, OR 1020. STUDS SHALL BE AUTOMATICALLY END WELDED IN THE SHOP OR FIELD IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
14. EMBED PLATES MUST BE SET IN THE FORM BEFORE POURING CONCRETE, NOT PLACED INTO TOP OF WET CONCRETE. THE CONTRACTOR SHALL CONTACT THE ARCHITECT FOR CORRECTIVE DETAILS FOR ANY EMBED PLATES LEFT OUT OF CONCRETE POURS.
15. FOR SLABS ON GRADE, SLAB AND FOOTING REINFORCING SHALL BE HELD IN PLACE BY BAR SUPPORTS WITH SAND PLATES, OR PRECAST CONCRETE BAR SUPPORTS AS DESCRIBED IN CHAPTER 3 OF THE CRSI MANUAL OF STANDARD PRACTICE. BAR SUPPORTS SHALL BE SPACED AT A MAXIMUM OF 4'-0"OC BOTH WAYS. ROCKS, CMU, OR CLAY BRICK WILL NOT BE USED AS SUPPORTS.
16. THE CONTRACTOR SHALL ASSUME CONCRETE OVERAGES IN ELEVATED DECK POURS DUE TO MEMBER AND DECK DEFLECTIONS. UNLESS SHOWN ON PLANS, BEAMS ARE NOT CAMBERED. CONCRETE OVERAGES MAY BE CALCULATED BY THE CONTRACTOR FOR BEAM DEFLECTIONS EQUALING L/300 INCLUDING ADDITIONAL DEFLECTIONS DUE TO PONDING AND DECK DEFLECTIONS PER SDI.
17. REBAR SHALL NOT BE HEATED WITH A TORCH IN THE FIELD.
18. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER FAR ENOUGH IN ADVANCE (48 HOURS) OF EACH CONCRETE POUR TO ALLOW AMPLE TIME TO CHECK THE LAYOUT OF THE STEEL BEFORE THE BEGINNING OF THE ACTUAL POUR, BUT NOT PRIOR TO 90% OF THE STEEL HAVING BEEN PLACED.

STRUCTURAL STEEL

1. STRUCTURAL STEEL:
   WIDE FLANGE SHAPES (W SECTIONS) - ASTM A992, GRADE 50 (FY=50 KSI)
   CHANNELS, ANGLES, RODS, AND BARS - A36 (FY=36 KSI)
   PLATES - ASTM A572, GRADE 50 (FY=50 KSI)
   SQUARE AND RECTANGULAR TUBES - ASTM A500, GRADE B (FY=46 KSI)
   PIPES - ASTM A53, GRADE B (FY=35 KSI)
2. ANCHOR BOLTS AND THREADED RODS SHALL CONFORM TO ASTM F1554, GRADE 36.
3. DESIGN, FABRICATION AND ERECTION SHALL BE AS PER SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360-05).
4. BEAM SIMPLE SHEAR AND BRACED FRAME CONNECTIONS NOT DETAILED ON STRUCTURAL DRAWINGS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE STEEL SUPPLIER AND REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED. THE CONNECTIONS FOR NON-COMPOSITE BEAMS SHALL BE DESIGNED FOR REACTIONS SHOWN ON DRAWINGS OR FOR REACTIONS DETERMINED BY USING THE ALLOWABLE UNIFORM LOAD AS TABULATED IN PART 3 OF THE AISC STEEL CONSTRUCTION MANUAL FOR THE SECTION, SPAN AND STRENGTH OF STEEL SPECIFIED. CONNECTIONS SHALL BE MADE WITH ASTM A325 3/4"Ø BOLTS (MINIMUM), TIGHTENED TO A SNUG-TIGHT CONDITION PER AISC REQUIREMENTS.
5. THE CONNECTIONS FOR COMPOSITE BEAMS SHALL BE DESIGNED FOR REACTIONS SHOWN ON THE DRAWINGS. ALL LOADS ARE ENVELOPE ALLOWABLE COMBINATIONS. SUBMIT RFI FOR ALL LOADS NOT SHOWN ON DRAWINGS
6. REACTIONS MAY BE OMITTED ON PLANS FOR CLARITY. REACTIONS CAN BE PROVIDED ONCE A CONTRACT IS AWARDED. NOTIFY ENGINEER OF REQUEST.
7. THE CONNECTION ENGINEER SHALL SUBMIT A SIGNED AND SEALED LETTER STATING THEY HAVE REVIEWED THE STEEL SHOP DRAWINGS AND THE CONNECTIONS ARE CONSISTENT WITH THEIR CALCULATIONS AND INTENT.
8. WHERE STEEL MEMBERS ARE WELDED AND NO SIZE IS SPECIFIED, PROVIDE FULL LENGTH FILLET WELDS BOTH SIDES OF MEMBER. WELD SIZES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

MEMBER THICKNESS	WELD SIZE
3/16"	3/16"
1/4"	3/16"
5/16"	3/16"
3/8"	1/4"
7/16"	1/4"
1/2"	5/16"
9/16"	3/8"
5/8"	7/16"

9. SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.
10. ALL WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE. USE E70 SERIES ELECTRODES FOR ALL STRUCTURAL STEEL WELDS.
11. SEE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL ITEMS REQUIRED TO BE HOT-DIP GALVANIZED AFTER FABRICATION.
12. STRUCTURAL STEEL SHALL BE PUNCHED FOR WOOD BLOCKING, NAILERS, CLIPS AND TIES IN ACCORDANCE WITH ARCHITECTURAL/STRUCTURAL DETAILS.
13. ULTRASONIC INSPECTION BY THE TESTING LABORATORY SHALL BE PROVIDED FOR ALL WELDS CALLED FOR ON THE STRUCTURAL DRAWINGS OR SHOP DRAWINGS AS FULL PENETRATION WELDS.
14. ALL STEEL EXPOSED TO VIEW SHALL BE CLASSIFIED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) AS DEFINED BY THE AISC CODE OF STANDARD PRACTICE AND SHALL BE TREATED AS SUCH.
15. PRIOR TO COMMENCEMENT OF SHOP DRAWING DEVELOPMENT, CONTRACTOR SHALL CONDUCT MEETING WITH ARCHITECT, ENGINEER, AND FABRICATOR TO DISCUSS CONNECTION DETAILS AND AESS REQUIREMENTS.
16. ALL STEEL FOR THIS PROJECT SHALL BE AESS AND PAINTED. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

CONCRETE CONSTRUCTION JOINTS

1. CONTRACTOR SHALL PROVIDE NECESSARY CONSTRUCTION JOINTS IN MONOLITHIC CONCRETE POURS SO THAT THE QUALITY OF PLACEMENT AND FINISH MEETS THE REQUIREMENTS OF PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT A PLAN SHOWING THE LOCATION OF ALL CONSTRUCTION JOINTS TO THE STRUCTURAL ENGINEER FOR APPROVAL.
2. THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS. ALL VERTICAL CONSTRUCTION JOINTS IN SLABS AND BEAMS SHALL BE MADE WITH BULKHEADS. ADDITIONAL REINFORCING AT CONSTRUCTION JOINTS SHALL BE AS SPECIFIED BY THE STRUCTURAL ENGINEER. SEE TYPICAL CONSTRUCTION JOINT DETAILS.

SHEATHING

1. ALL SHEATHING SHALL BE PLYWOOD OR OSB. ALL PLYWOOD SHEATHING, DIAPHRAGMS, AND SHEAR WALL PANELS SHALL CONFORM TO U.S. PRODUCT STANDARD PS-1-07 WITH EXTERIOR GLUE. ALL OSB SHEATHING, DIAPHRAGMS, AND SHEAR WALL PANELS SHALL CONFORM TO U.S. PRODUCT STANDARD PS-2-04.
2. SHEATHING SHEETS SHALL BE LAID WITH LONG DIMENSION PERPENDICULAR TO THE SUPPORTING FRAMING.
3. WALL SHEATHING SHALL BE 7/16" EXTERIOR GRADE (SPAN RATING 24/16), UNO IN SHEAR WALL SCHEDULE. ALL WALL SHEATHING EXCEPT AT SHEAR WALLS SHALL BE FASTENED WITH 8d NAILS @6"OC AT ALL EDGES AND 8d NAILS @12"OC IN PANEL FIELD. PROVIDE 2x4 BLOCKING AT ALL PANEL EDGES IN SHEAR WALL. SHEAR WALL NAILING PATTERNS SHALL BE AS INDICATED IN SHEAR WALL SCHEDULE.
4. WOOD ROOF SHEATHING SHALL BE ON ARCHITECTURAL AND STRUCTURAL DRAWINGS PER DETAILS.

WOOD DECKING

1. DECKING SHALL BE 2x6 TONGUE AND GROOVE LAMINATED WOOD DECK AS MANUFACTURED BY "LOCK-DECK" OR EQUAL. INSTALL IN CONTINUOUS LENGTH RANDOM LAYUP.
2. DECKING SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:
   Fb 1,610 PSI
   Fv 150 PSI
   E 1,300 KSI
   MOISTURE CONTENT - 10% TO 12% AVERAGE (15% MAXIMUM)
   ADHESIVE - 100% EXTERIOR WATERPROOF TYPE MEETING ASTM D2559.
3. FASTEN DECKING TO SUPPORTS WITH (2)16d NAILS PER COURSE AND 6d NAILS @30"OC ALONG COURSES.
4. DECKING SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM 190.1 AND CERTIFIED BY AN INDEPENDENT INSPECTION AGENCY (APA-EWS).
5. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR DECKING SPECIES, GRADE, AND FINISH.
6. SUBMIT SHOP DRAWINGS ON DECKING FROM MANUFACTURER SHOWING LOAD CAPACITY AND DEFLECTION CRITERIA.

NON-LOAD BEARING COLD ROLLED STEEL (METAL STUDS)

1. ALL METAL STUDS, HEADERS, AND ACCESSORIES SHALL BE MADE OF THE MINIMUM TYPE, SIZE, GAUGE, AND SPACING SHOWN ON DRAWINGS.
2. ALL STRUCTURAL MEMBERS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE AMERICAN IRON AND STEEL INSTITUTE, "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" (S100-07 & S200-07).
3. ALL THE COLD FORMED MEMBERS SHALL COME FROM A SINGLE MANUFACTURER; ONLY MANUFACTURERS WHO ARE MEMBERS OF THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) OR THE STEEL FRAMING INDUSTRY ASSOCIATION (SFIA) WILL BE ACCEPTED. THE INSTALLATION SHALL COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. MINIMUM YIELD STRENGTH (FY) FOR STUDS IS 33 KSI FOR 18 GA (43 MILS) AND 20 GA (33 MILS) MATERIALS, AND 50 KSI FOR 12 GA (97 MILS), 14 GA (68 MILS), AND 16 GA (54 MILS) MATERIALS.
5. SUBMIT SHOP DRAWINGS FOR ALL LOAD BEARING COLD FORMED METAL FRAMING. SHOP DRAWINGS SHALL INDICATE PLACING OF ALL FRAMING MEMBERS SHOWING TYPE, SIZE, GAUGE, NUMBER, LOCATION AND SPACING. THEY SHALL ALSO INDICATE SUPPLEMENTAL STRAPPING, BRACING, SPLICES, BRIDGING, ACCESSORIES AND DETAILS REQUIRED FOR PROPER INSTALLATION.
6. SHOP DRAWINGS SHALL SHOW SIZE AND LENGTH OF WELDS FOR ALL WELDED CONNECTIONS AND TYPE, SIZE AND NUMBER OF SCREWS FOR ALL SCREWED CONNECTIONS. SUBMIT MANUFACTURER'S DATA GIVING STRENGTH VALUES FOR SCREWS USED.
7. ALL STUDS, TRACK, BRIDGING AND ACCESSORIES SHALL BE FORMED FROM STEEL HAVING A G-60 GALVANIZED COATING MEETING THE REQUIREMENTS OF ASTM A653 AND C955. ALL ACCESSORIES SHALL BE FORMED FROM STRUCTURAL QUALITY STEEL WITH MINIMUM YIELD STRENGTH OF 50 KSI.
8. A MINIMUM LENGTH OF 10" OF UNPUNCHED STEEL IS REQUIRED AT BOTH ENDS OF STUDS. NO PUNCHING HOLES OF ANY SIZE IS PERMITTED IN THESE 10". NO CUTTING OF THE STUD FLANGE IS PERMITTED.
9. BOTH STUD FLANGES SHALL BE ATTACHED TO THE TOP AND BOTTOM TRACK WITH (2)#10 SCREWS EACH SIDE.
10. SPLICES IN STUDS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS.
11. MULTIPLE STUD "COLUMNS" SHALL BE WELDED TOGETHER IN GROUPS OF AT LEAST TWO STUDS WITH 2" WELD TOP AND BOTTOM AND 1" WELD AT 24"OC BOTH SIDES IN BETWEEN.
12. TRACK SPLICES WITHIN A PANEL/WALL MUST BE SECURELY ANCHORED TO A COMMON ELEMENT (IE. STUD OR HEADER), OR BUTT-WELDED TOGETHER, OR SPLICED WITH STUD MATERIAL SECURELY FASTENED TO TRACK ON BOTH SIDES OF SPLICE.
13. LATERAL BRIDGING SHALL BE USED TO RESIST TORSIONAL FORCES IN THE LOAD-BEARING STUDS. BRIDGING SHALL BE 2 1/2"-18 GA (43 MILS) FLAT STRAPS, SCREW ATTACHED TO BOTH FLANGES OF EACH STUD WITH SOLID BLOCKING REQUIRED AT 8'-0"OC (MAX) AND ADJACENT TO EACH OPENING. BLOCKING MAY BE MADE FROM MATCHING GAUGE STUDS ATTACHED WITH 16 GA (54 MILS) CLIP ANGLES WITH (2)#10 SCREWS INTO EACH FLANGE.
14. ACCEPTABLE BRIDGING ALTERNATE IS COLD ROLLED CHANNELS 1 1/2" CRC CHANNEL IN 3 5/8" OR 4" STUDS AND 2 1/2" CRC IN 6" STUDS WELDED TO THE OUTER EDGE OF PUNCHOUTS WITH 1/4" MINIMUM WELD.
15. BRIDGING IS TO BE PLACED AT NO MORE THAN 4'-0"OC VERTICALLY.
16. INSTALL DOUBLE STUDS AT EVERY INTERRUPTION (IE. PLUMBING CHASES).
17. MINIMUM TRACK FASTENINGS SHALL BE 0.177" DIAMETER POWDER ACTUATED FASTENERS (PAFS) SPACED 16"OC FOR WALLS (UNO), WITH 1 1/2" MINIMUM PENETRATION INTO CONCRETE.
18. VOIDS BENEATH TRACK SHALL NOT BE PERMITTED. CONTRACTOR SHALL PROVIDE A LEVEL SLAB (WITHIN ACI 117 TOLERANCES, REFERENCE CONCRETE NOTES), WHERE UNEVENNESS OF SUPPORTING FLOOR PREVENTS CONTINUOUS SOLID BEARING, PANEL OR TRACK SHALL BE LEVELED BY PLACING MORTAR OR GROUT BENEATH TRACK.
19. VERTICAL DEFLECTION CLIPS ARE REQUIRED TO BE CAPABLE OF ACCOMMODATING UPWARD AND DOWNWARD VERTICAL DISPLACEMENT OF THE STRUCTURE THROUGH POSITIVE MECHANICAL ATTACHMENT TO STUD WEB. MECHANICAL ATTACHMENT TO STRUCTURE AND SCREW ATTACHMENT TO STUD WEB USING STEP-BUSHINGS TO PERMIT FRICTIONLESS VERTICAL MOVEMENT. CONNECTORS TO BE TESTED IN ACCORDANCE TO ICC AC621 CRITERIA AND HOLD A VALID ICC-ES EVALUATION SERVICE REPORT TO BE ACCEPTABLE.
20. HEADERS SHALL BE CONSTRUCTED OF UNPUNCHED STUDS. SHEAR SHALL BE TRANSFERRED BY FULL BEARING ON JACK STUDS OR BY SHEAR PLATES. SHEAR PLATES SHALL BE 16 GA (54 MILS) MINIMUM.
21. REFER TO ARCHITECTURAL PLANS FOR NON-LOAD BEARING WALLS.

ADHESIVE AND MECHANICAL POST-INSTALLED ANCHORS

1. ANCHOR BOLTS, REINFORCING STEEL, THREADED RODS, STAIR HANDRAILS, AND OTHER EMBEDDED STEEL ITEMS SHALL BE SET INTO HARDENED CONCRETE WITH ADHESIVE OR MECHANICAL POST-INSTALLED ANCHOR ONLY WHERE DETAILED ON THE DRAWINGS OR WHERE APPROVED BY THE ENGINEER.
2. PRE-APPROVED MANUFACTURERS ARE HILTI, SIMPSON STRONG-TIE, AND DEWALT. WHERE DETAILS INDICATE SPECIFIC ADHESIVE OR MECHANICAL POST-INSTALLED ANCHORS, IT IS ACCEPTABLE AT THE CONTRACTOR'S OPTION TO SUBMIT AN ALTERNATE SIMILAR PRODUCT PROVIDED BY A DIFFERENT MANUFACTURER AS LONG AS THE MANUFACTURER'S DATA PROVIDES EQUIVALENT LOAD CAPACITY TO THE ANCHOR SPECIFIED.
3. MANUFACTURER'S DATA FOR ALL ADHESIVE AND MECHANICAL POST-INSTALLED ANCHORS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. SUBMITTALS FOR ADHESIVE ANCHOR PRODUCTS SHALL INCLUDE ICC-ES EVALUATION REPORTS. STRICTLY FOLLOW THE MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS. HEED ALL LABEL WARNINGS. INSTALL IN ACCORDANCE WITH APPLICABLE SAFETY LAWS.
4. ALL HOLES SHALL BE DRILLED WITH A DIAMETER NO LARGER THAN 1/8" GREATER THAN THE DIAMETER OF THE STEEL MEMBER BEING INSTALLED.
5. ALL HOLES SHALL BE CLEANED WITH COMPRESSED AIR AND SHALL BE DRY PRIOR TO INSTALLATION OF ADHESIVE. HOLES SHALL BE FREE OF ALL DELETERIOUS MATERIAL SUCH AS LAITANCE, DUST, DIRT, AND OIL.
6. CONTRACTOR PERFORMING ADHESIVE WORK SHALL BE AN APPROVED CONTRACTOR BY THE MANUFACTURER FURNISHING THE ADHESIVE MATERIALS, AND SHALL HAVE NO LESS THAN FIVE YEARS EXPERIENCE IN THE VARIOUS TYPES OF ADHESIVE RELATED WORK REQUIRED IN THIS PROJECT. A CERTIFICATION FROM THE MANUFACTURER ATTESTING TO THE TRAINING SHALL BE SUBMITTED TO THE ENGINEER/ARCHITECT ALONG WITH THE PROPOSAL TO DO THE WORK.

REPRODUCTION

1. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREIN AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HERE ON.

LUMBER

1. ALL LUMBER AND ITS FASTENINGS SHALL CONFORM TO THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION, LATEST EDITION, BY THE AMERICAN FOREST AND PAPER ASSOCIATION.
2. ALL L

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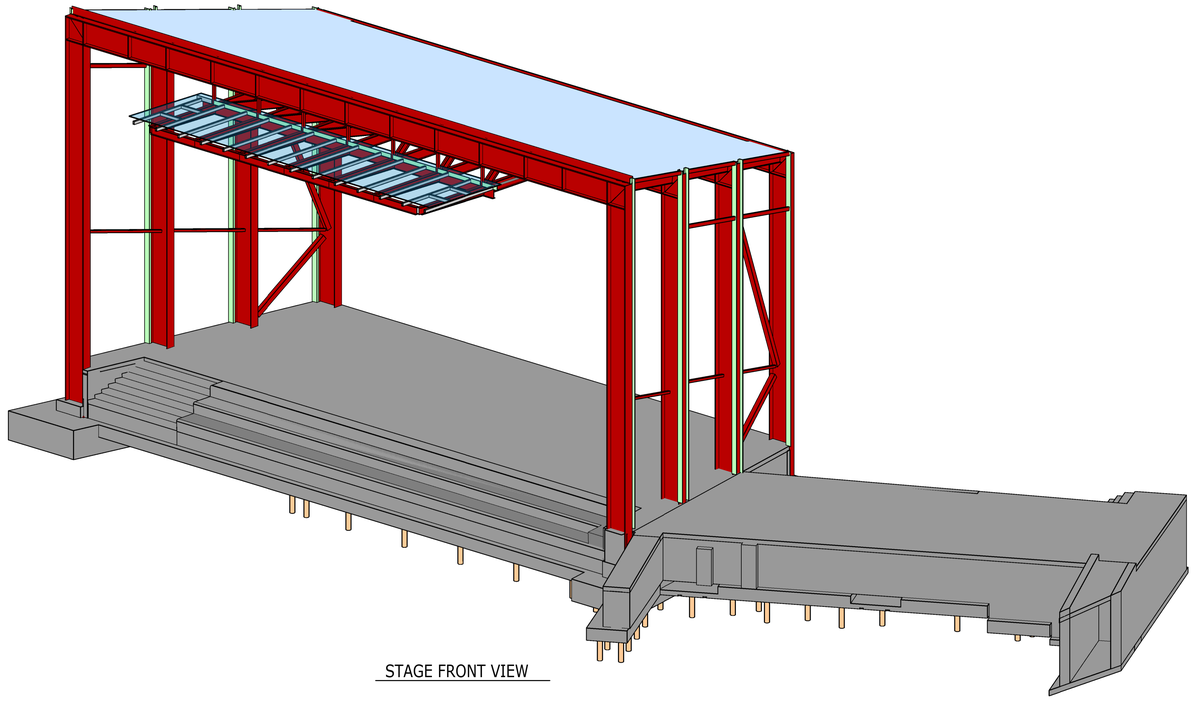
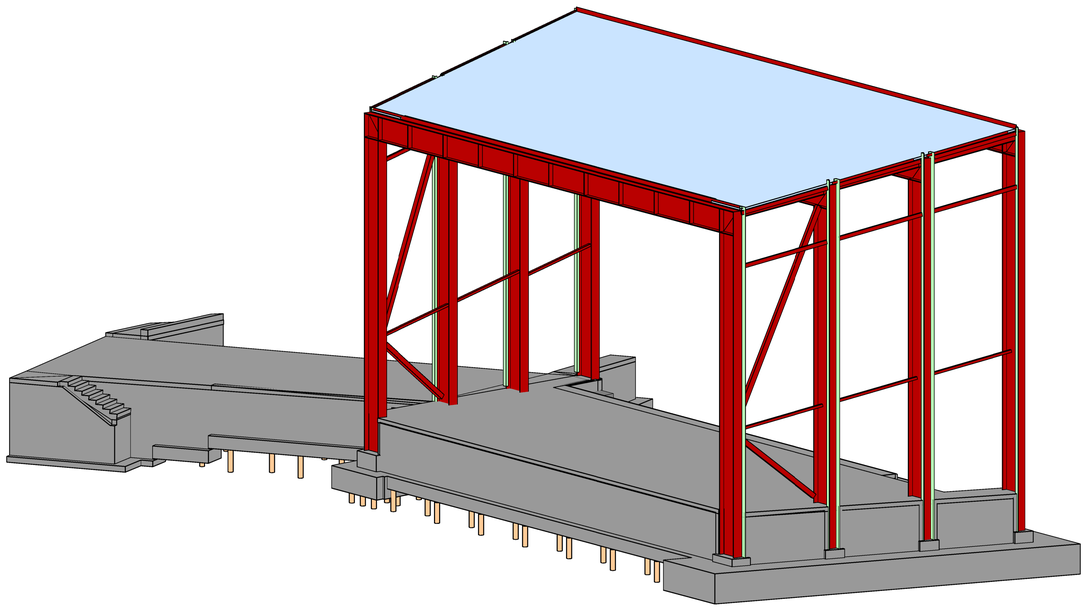


STAGE FRONT VIEW



STAGE BACK VIEW

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PROJECT INFORMATION

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Structural Engineering= S
Geotechnical Engineering = G
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Plumbing Engineering = P
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Water Fountain Design = WF
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Lighting Design = EL
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SEAL/SIGNATURE

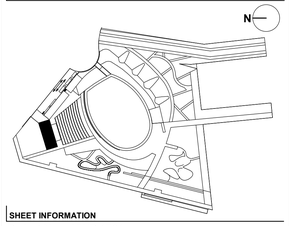
NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale:

SHEET TITLE

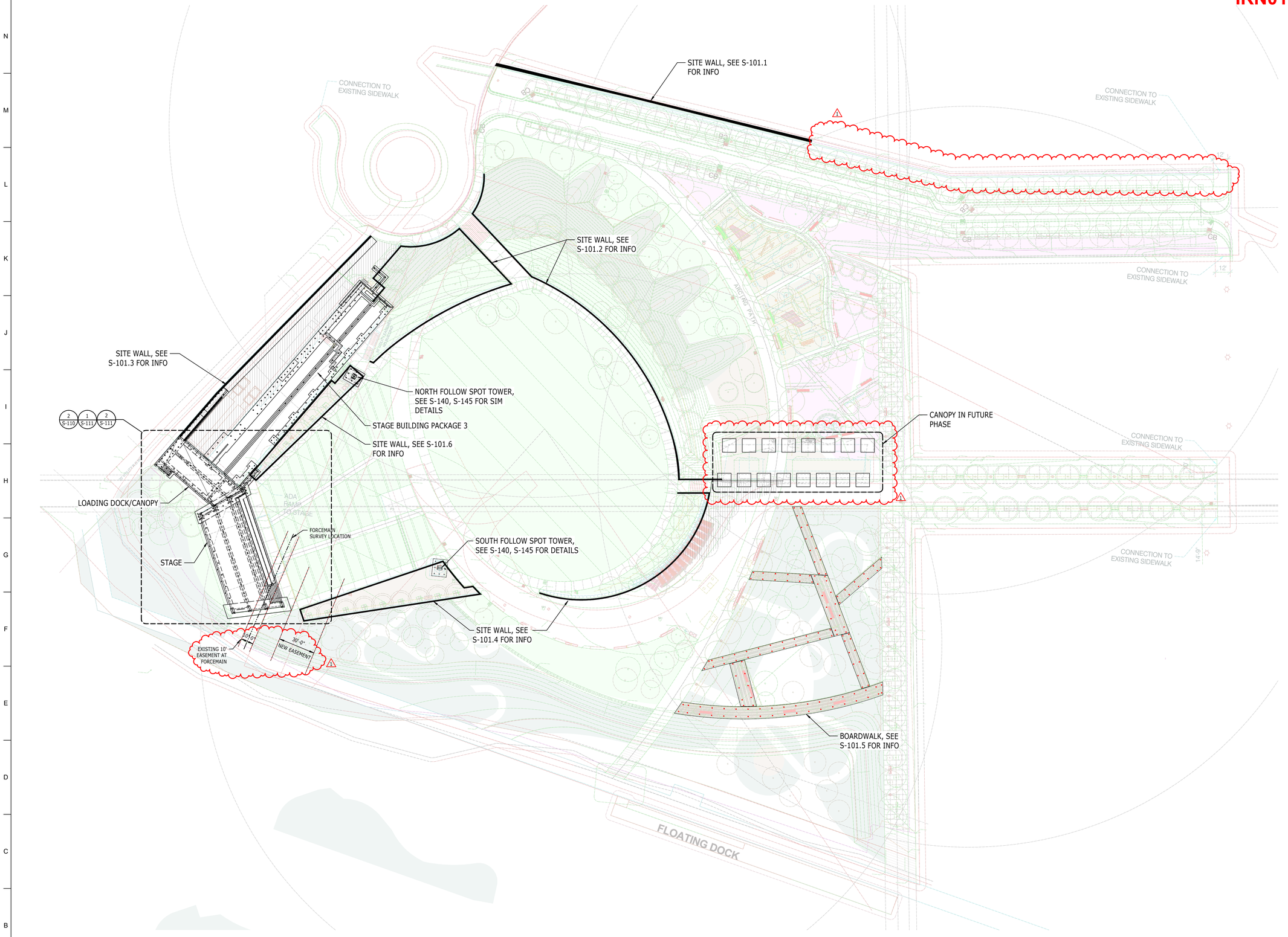
STAGE 3D VIEWS

SHEET NO.

STRUCTURAL

S-002 - P1

IRN016



1 S-101 OVERALL SITE PLAN

1" = 30'-0"

NOTES:
1. FOR GENERAL NOTES AND ABBREVIATIONS, SEE S-001.
2. SEE CIVIL AND LA DRAWINGS FOR ALL SITE WALL DIMENSIONS AND ELEVATIONS.

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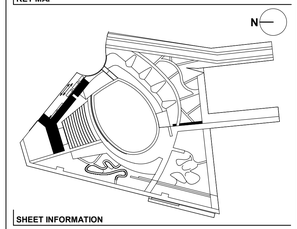
NORTH CAROLINA PROFESSIONAL SEAL 024115 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

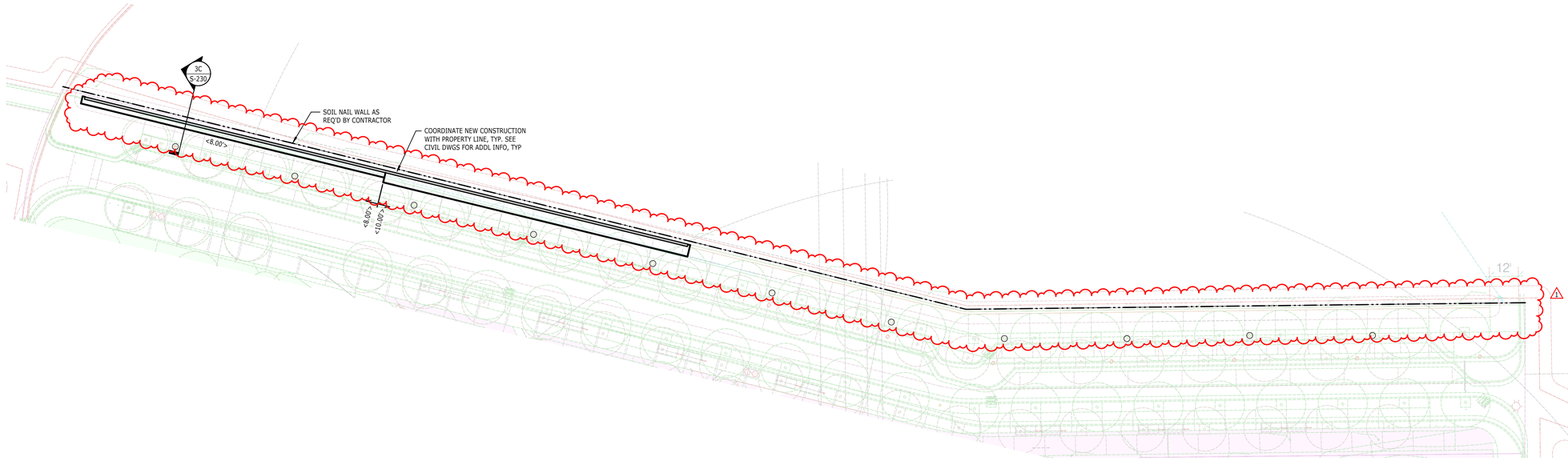
OVERALL SITE PLAN

SHEET NO.

STRUCTURAL

S-101 - P1

IRN016



1 S-101.1 PARTIAL SITE WALL FOUNDATION PLAN

1" = 20'-0"

NOTES:

1. SEE CIVIL AND L'ARCH DWGS FOR TOW ELEVATIONS AND LOCATION OF WALL.

IRN016

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www.sandec.com
EAGLE RESOURCES
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www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
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www.clarkirrigationdesign.com

Soil Design = LS
LANDIS, PLLC
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www.landisplic.com

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Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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Water Fountain Design = WF
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www.fountaindesigns.com

Lighting Design = EL
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SEAL/SIGNATURE

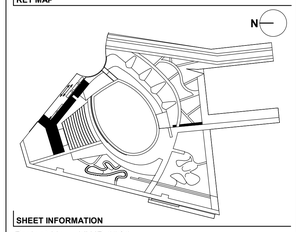
NORTH CAROLINA PROFESSIONAL SEAL 022417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1" = 20'-0"

SHEET TITLE

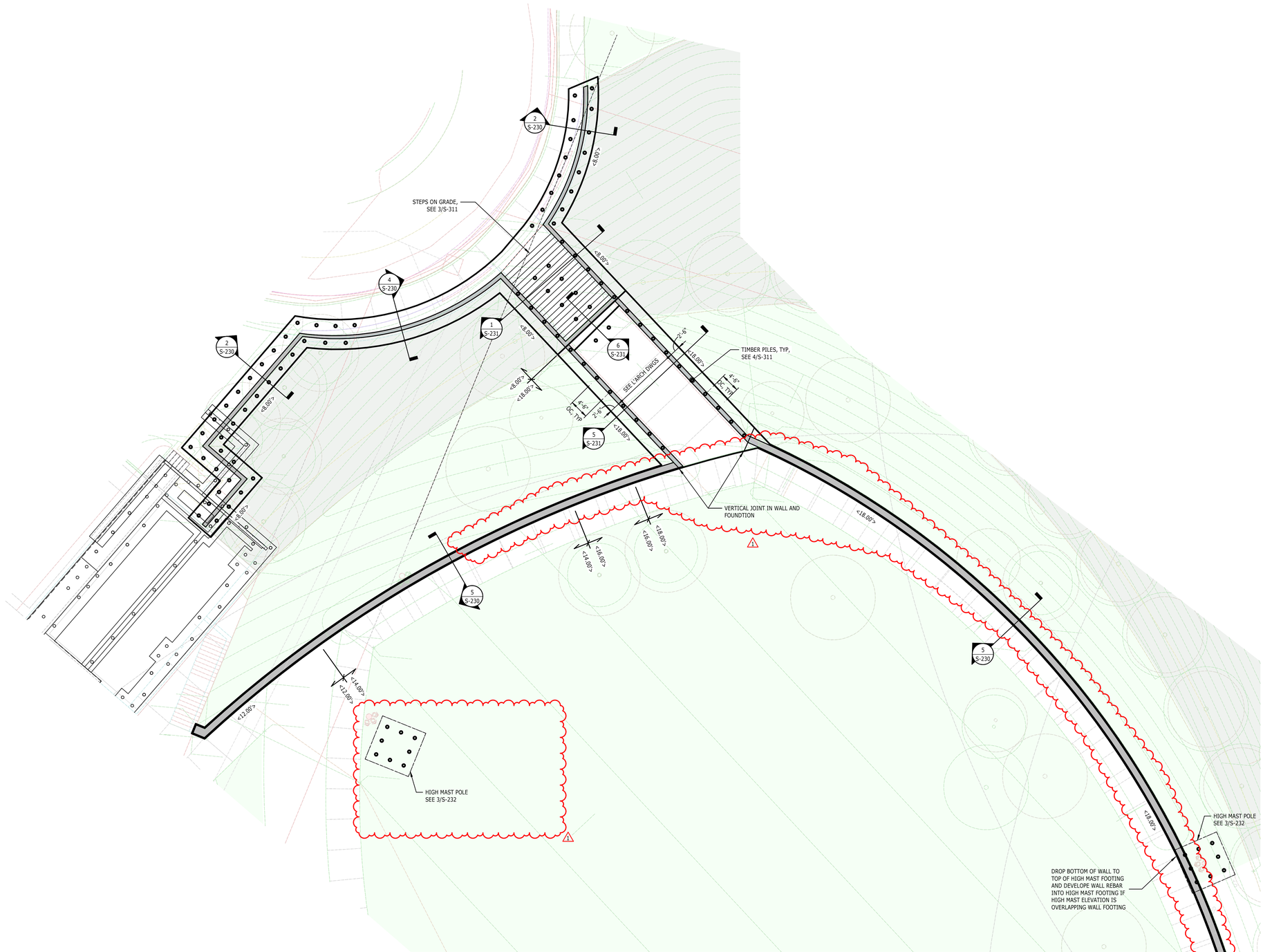
PARTIAL SITE WALL FOUNDATION PLAN

STRUCTURAL

SHEET NO.

S-101.1 - P1

IRN016



1 S-101.2 PARTIAL SITE WALL FOUNDATION PLAN

1" = 10'-0"

NOTES:
1. SEE CIVIL AND L'ARCH DWGS FOR TOW ELEVATIONS AND LOCATION OF WALL.

IRN016

PROJECT INFORMATION

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NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

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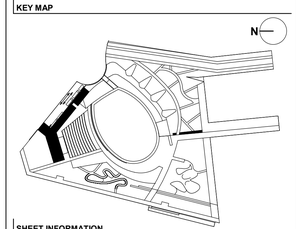


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1" = 10'-0"

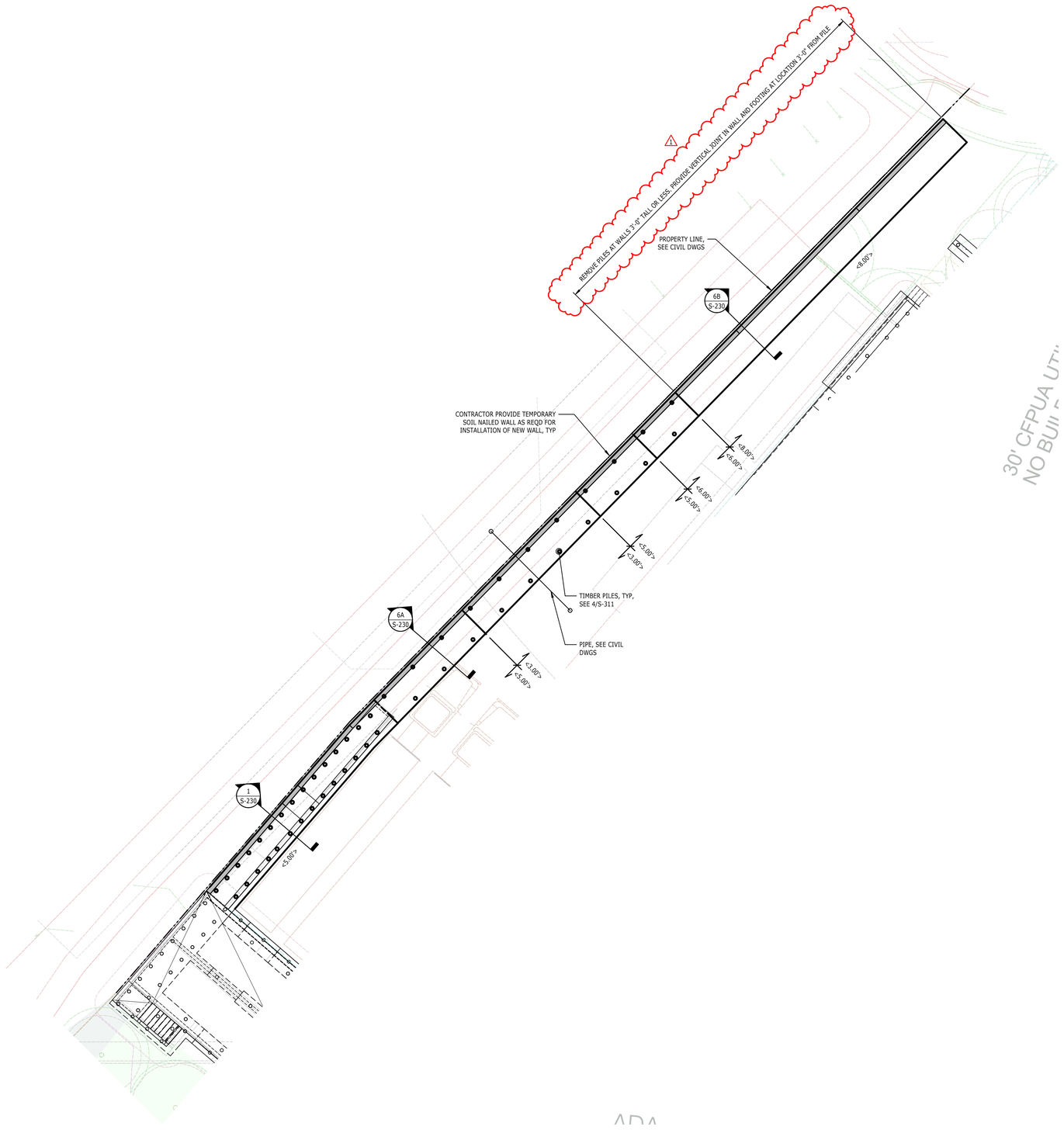
SHEET TITLE

PARTIAL SITE WALL FOUNDATION PLAN

SHEET NO.

STRUCTURAL

S-101.2 - P1



1 S-101.3 PARTIAL SITE WALL FOUNDATION PLAN

1" = 10'-0"

NOTES:

1. SEE CIVIL AND L'ARCH DWGS FOR TOW ELEVATIONS AND LOCATION OF WALL.

IRN016

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NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

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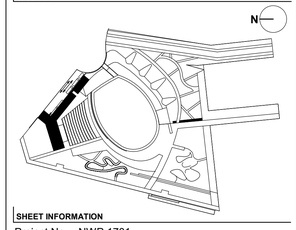
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1" = 10'-0"

SHEET TITLE

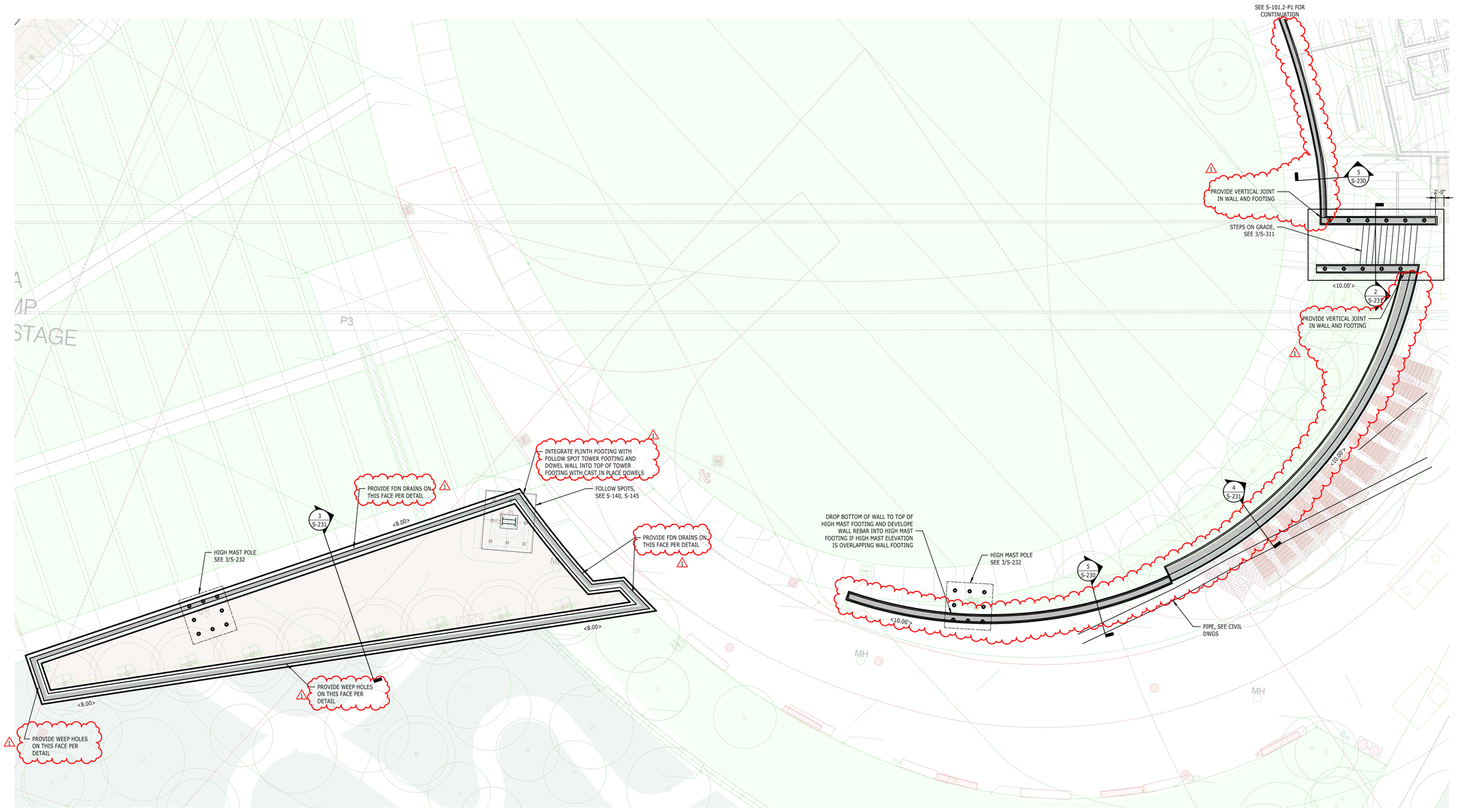
PARTIAL SITE WALL FOUNDATION PLAN

STRUCTURAL

SHEET NO.

S-101.3 - P1

IRN016



1 S-101.4 PARTIAL SITE WALL FOUNDATION PLAN

1" = 10'-0"

NOTES:
1. SEE CIVIL AND L'ARCH DWGS FOR TOW ELEVATIONS AND LOCATION OF WALL.

IRN016

PROJECT INFORMATION

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Lighting Design = EL
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NORTH CAROLINA PROFESSIONAL SEAL 022417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

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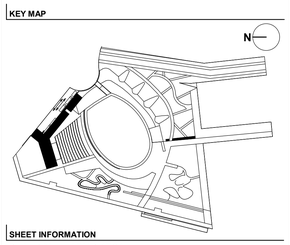
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1" = 10'-0"

SHEET TITLE

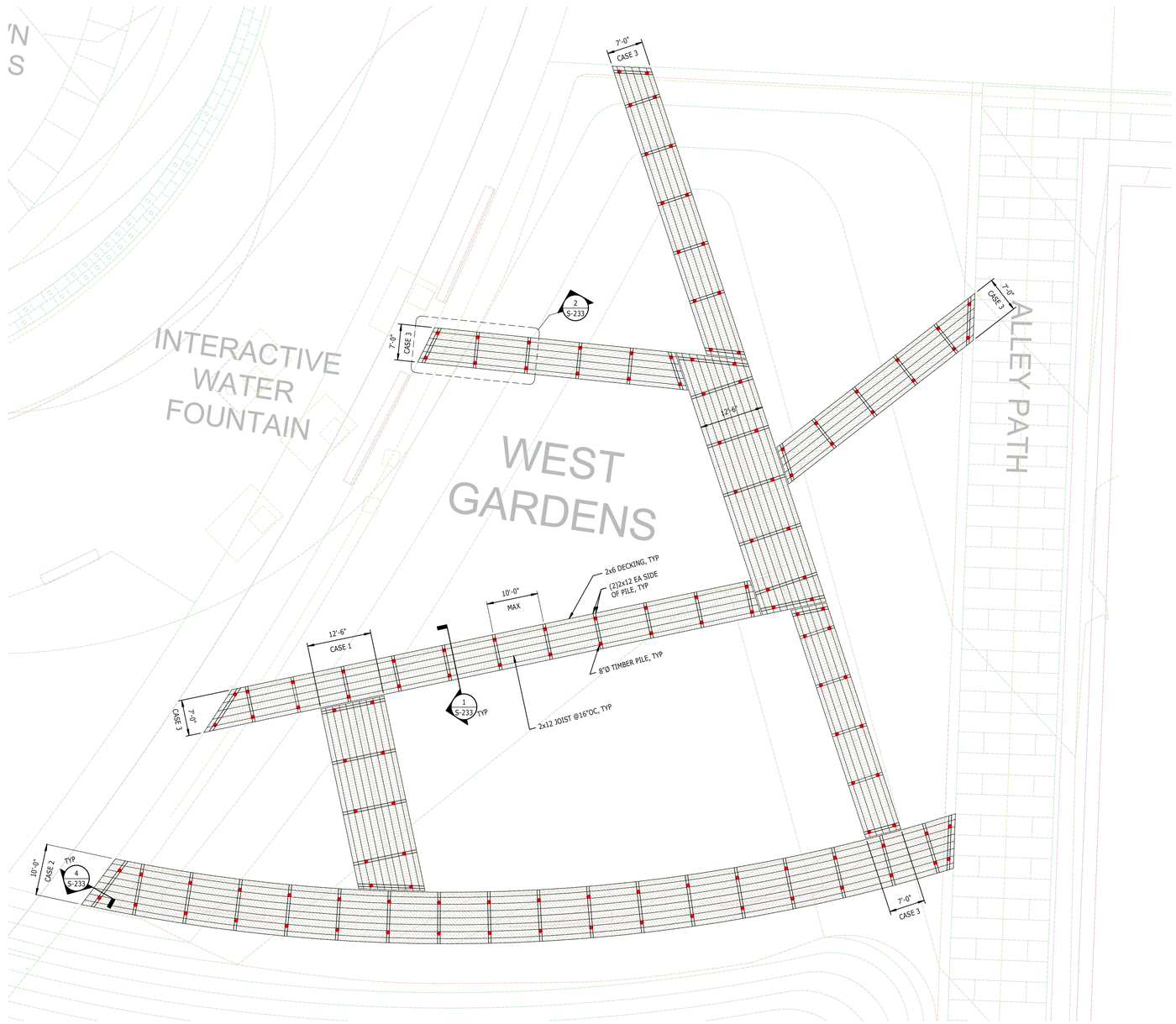
PARTIAL SITE WALL FOUNDATION PLAN

SHEET NO.

STRUCTURAL

S-101.4 - P1

IRN016



1 S-101.5 BOARDWALK FRAMING PLAN

1" = 10'-0"

NOTES:
1. ALL WOOD FRAMING SHALL BE SOUTHERN YELLOW PINE, SELECT STRUCTURAL.
2. T.O. DECK VARIES/SLOPES. SEE L'ARCH DWGS FOR ALL ELEVATIONS.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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NORTH CAROLINA PROFESSIONAL SEAL 022417 ENGINEER JOHN CRAIG FISHER

10/25/2019

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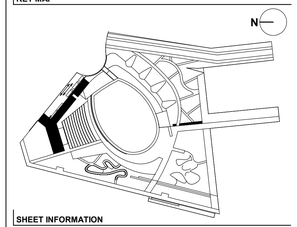
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1" = 10'-0"

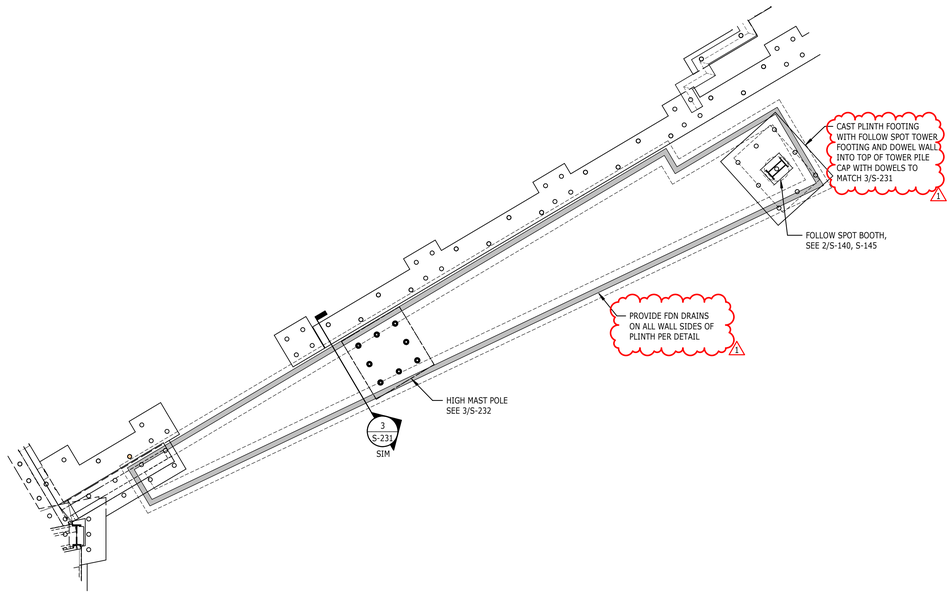
SHEET TITLE

BOARDWALK FRAMING PLAN

SHEET NO.

STRUCTURAL

S-101.5 - P1



1 S-101.6 PARTIAL SITE WALL FOUNDATION PLAN
1" = 10'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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NORTH CAROLINA PROFESSIONAL SEAL 029415 ENGINEER JOHN CRAIG FISHER

10/25/2019

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NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

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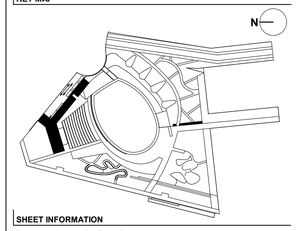


SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1" = 10'-0"

SHEET TITLE

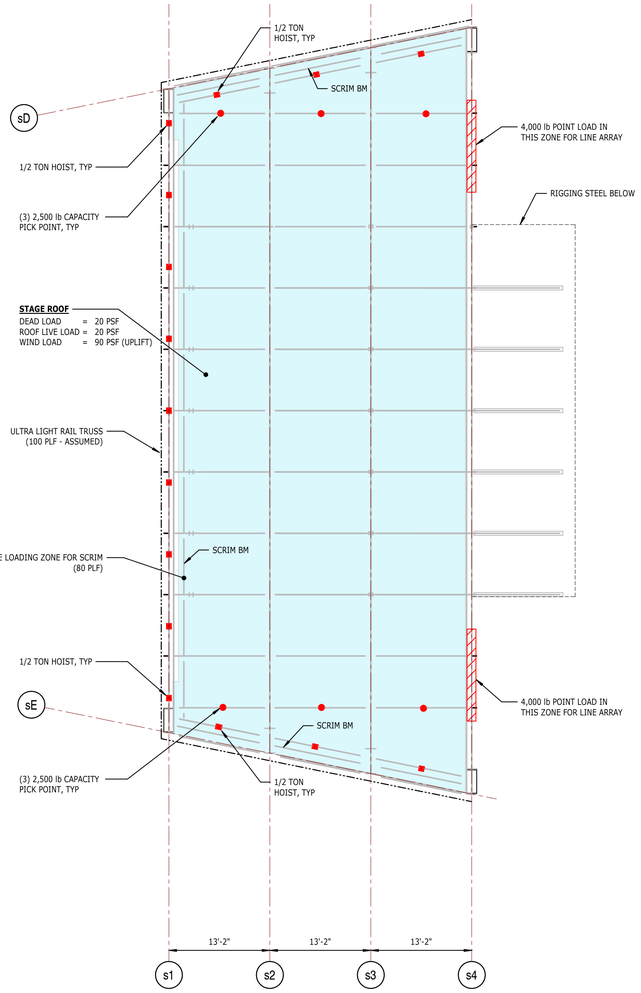
PARTIAL SITE WALL FOUNDATION PLAN

SHEET NO.

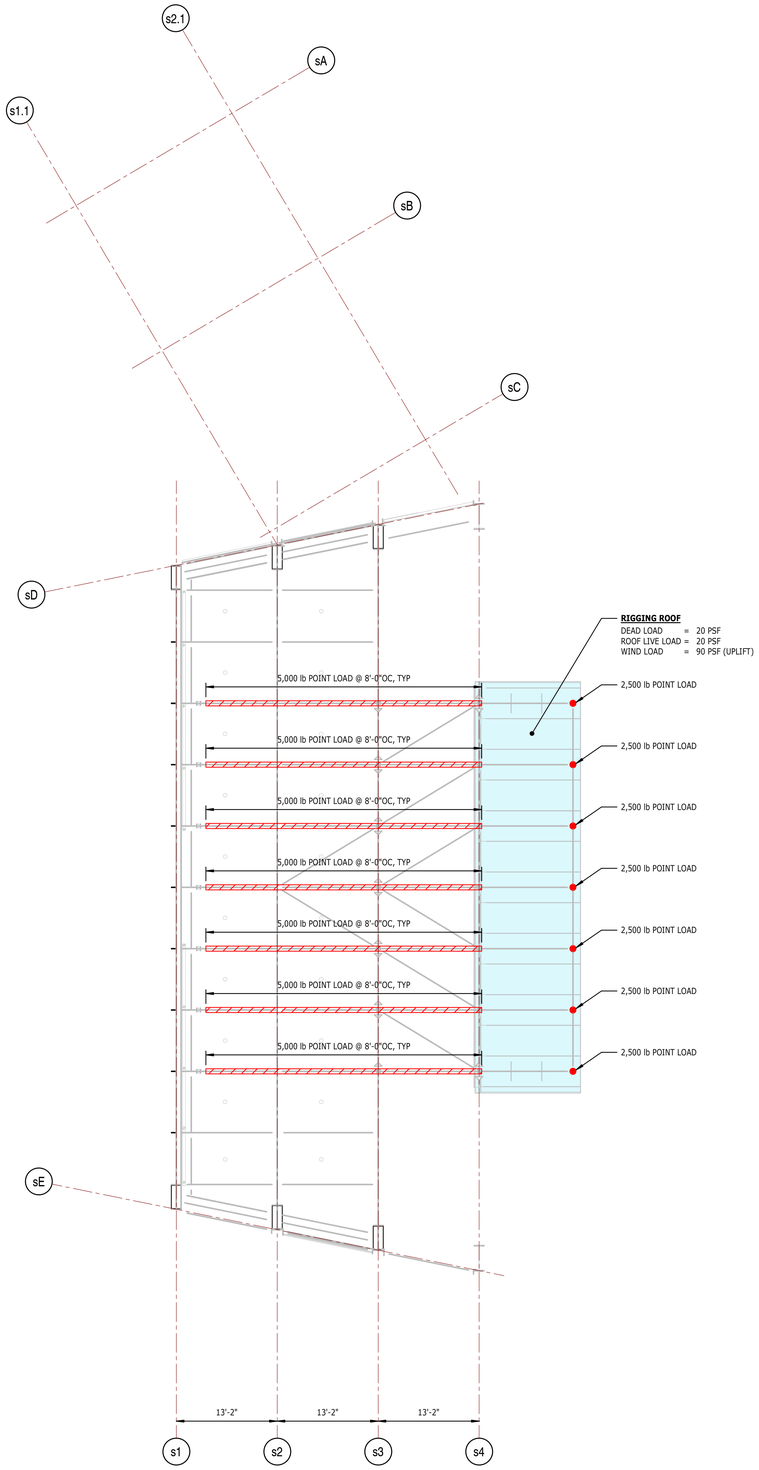
STRUCTURAL

S-101.6 - P1

IRN016



2 S-105 STAGE ROOF LOADING PLAN
1/8" = 1'-0"



MAX STAGE LOADING 120,000lb COMBINED

1 S-105 RIGGING FRAMING AND CANOPY LOADING PLAN
1/8" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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10/25/2019

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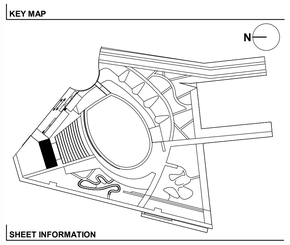
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1/8" = 1'-0"

SHEET TITLE

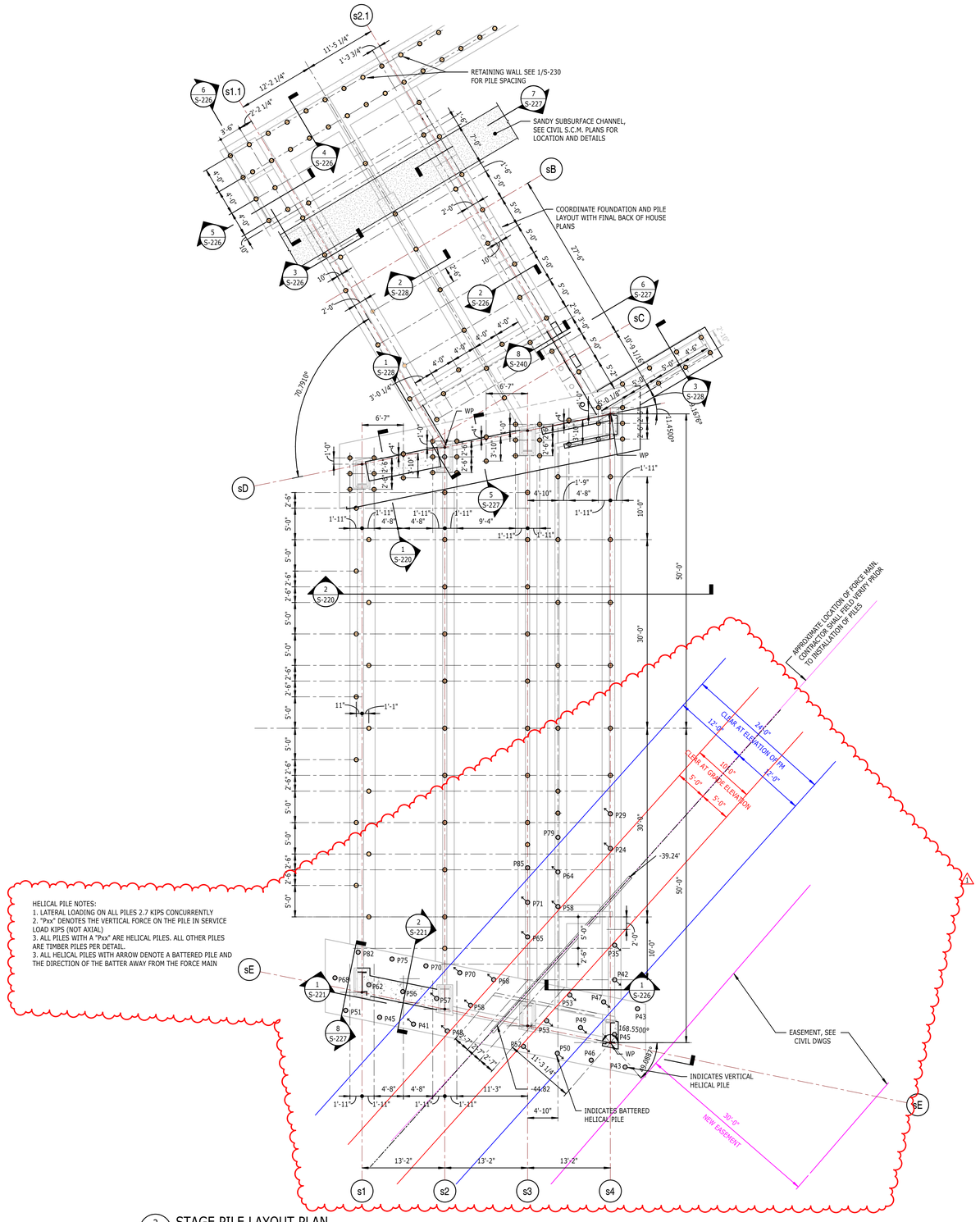
STAGE LOADING PLANS

SHEET NO.

STRUCTURAL

S-105 - P1

IRN016



HELICAL PILE NOTES:
1. LATERAL LOADING ON ALL PILES 2.7 KIPS CONCURRENTLY
2. "Pxx" DENOTES THE VERTICAL FORCE ON THE PILE IN SERVICE LOAD KIPS (NOT AXIAL)
3. ALL PILES WITH A "Pxx" ARE HELICAL PILES. ALL OTHER PILES ARE TIMBER PILES PER DETAIL.
3. ALL HELICAL PILES WITH ARROW DENOTE A BATTERED PILE AND THE DIRECTION OF THE BATTER AWAY FROM THE FORCE MAIN

2 / S-110 STAGE PILE LAYOUT PLAN
1/8" = 1'-0"

NOTES:
1. SEE S-001 AND S-111 FOR SHEET NOTES.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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Acoustic/Theater/AV = AT
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www.eagleresources.com

Irrigation= I
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Soil Design = LS
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www.andrewengineers.com

Water Fountain Design = WF
COMMERCIAL AQUATIC ENGINEERING
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
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SEAL/SIGNATURE

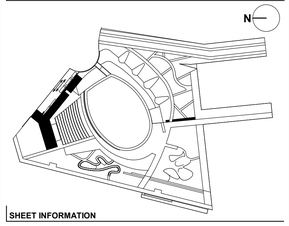
NORTH CAROLINA PROFESSIONAL SEAL 027417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS — Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1/8" = 1'-0"

SHEET TITLE

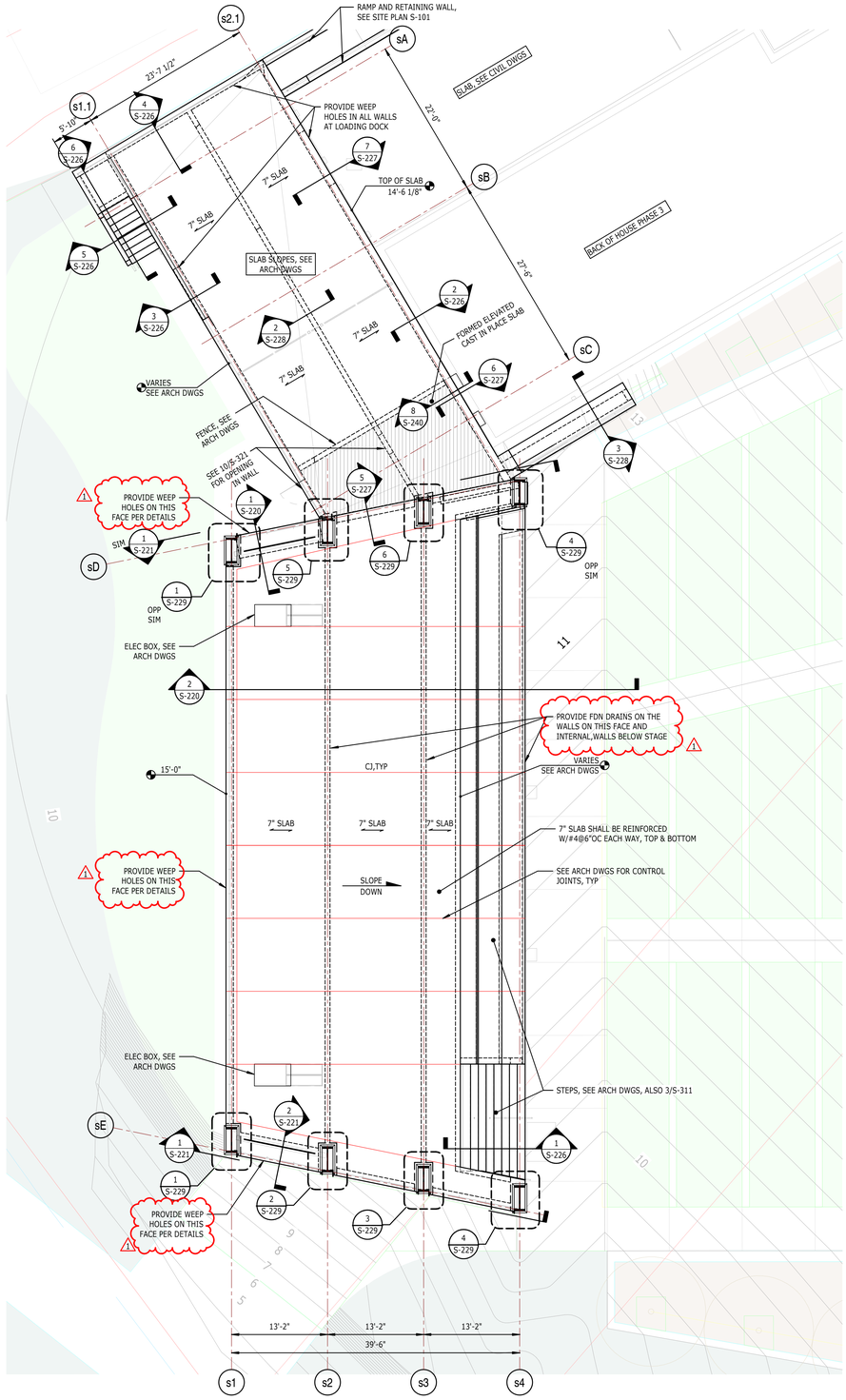
STAGE AND LOADING DOCK PILE LAYOUT PLAN

STRUCTURAL

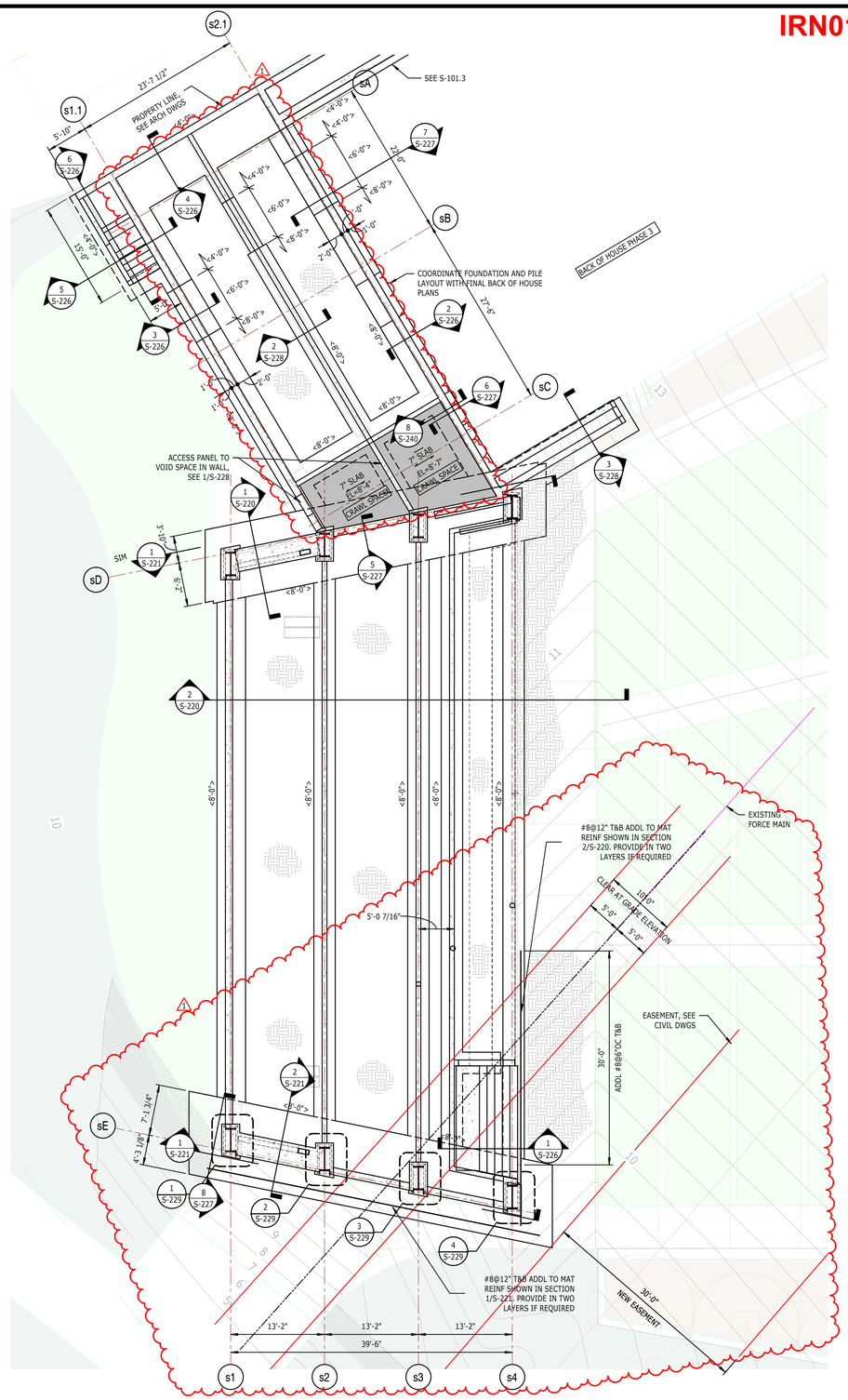
SHEET NO.

S-110 - P1

IRN016



2 S-111 STAGE FLOOR PLAN
1/8" = 1'-0"
NOTES:
1. SEE 1/S-111 FOR PLAN NOTES.



1 S-111 STAGE FOUNDATION PLAN
1/8" = 1'-0"
NOTES:
1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS, SEE S-001.

IRN016

PROJECT INFORMATION

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SEAL/SIGNATURE

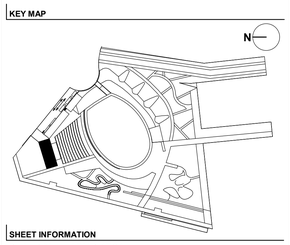
NORTH CAROLINA PROFESSIONAL SEAL 024115 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

STAGE AND LOADING DOCK FOUNDATION AND FLOOR PLANS

STRUCTURAL

SHEET NO.

S-111 - P1

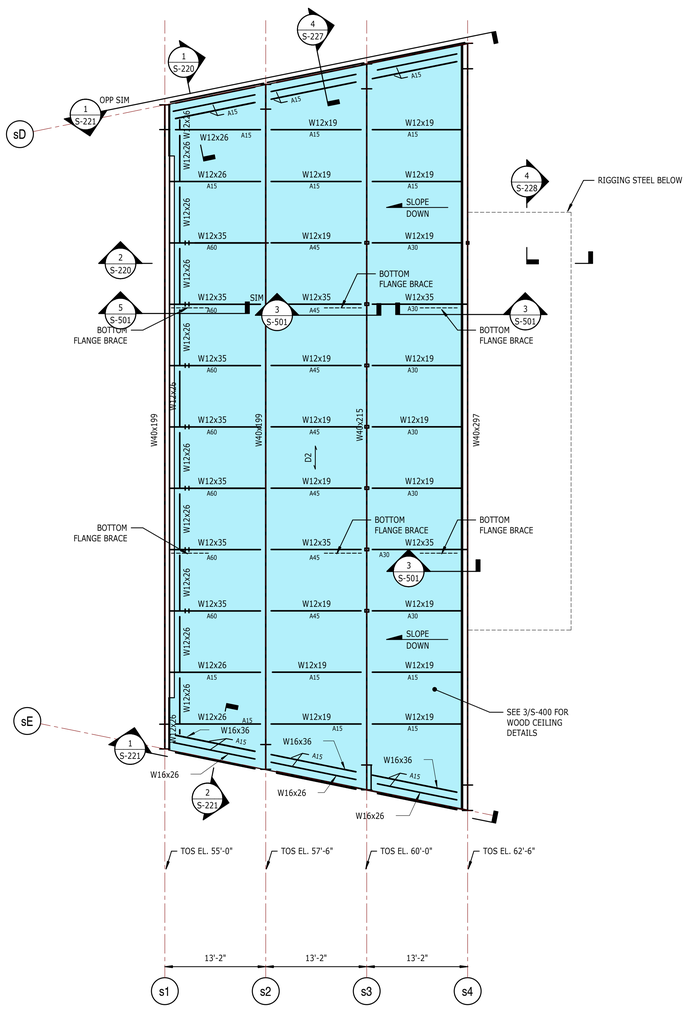
FABRICATOR TO DESIGN CONNECTIONS FOR THE FOLLOWING MIN FORCES AND MOMENTS

	W12x19	W12x26	W12x35	W16x26	W16x36	W16x40	HSS6x6x1/2
MAXIMUM SHEAR	20.0 K	20.0 K	20.0 K	20.0 K	40.0 K	40.0 K	20.0 K

NOTE: STEWART WILL PROVIDE LOADS FOR MEMBERS. SUBMIT RFI FOR ADDITIONAL INFORMATION

INDICATES MOMENT CONNECTION

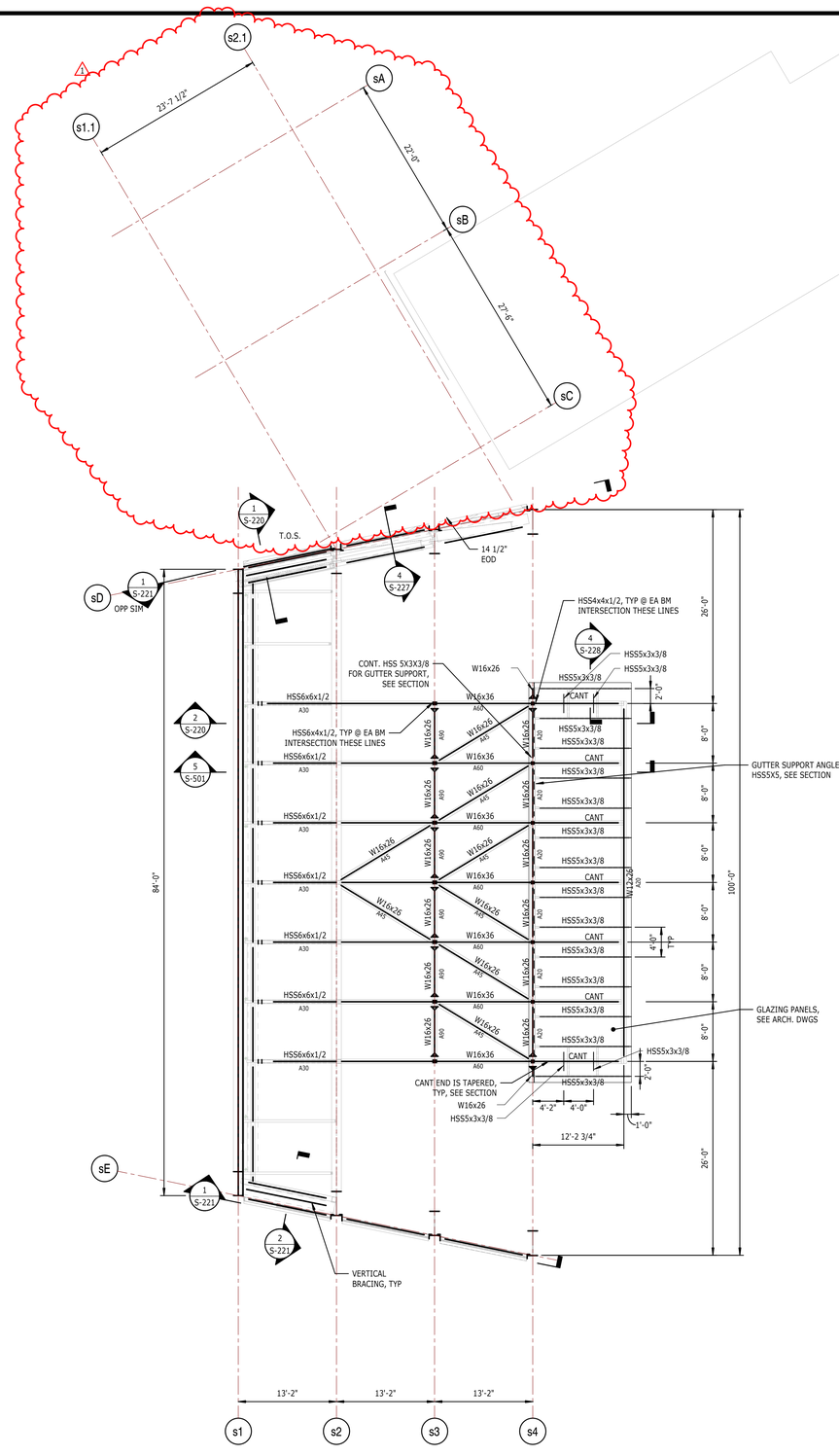
	W12x19	W12x26	W12x35	W16x26	W16x36	W16x40	HSS6x6x1/2
MAXIMUM MOMENT	N/A	N/A	N/A	100.0 K-FT	N/A	100.0 K-FT	N/A



2/S-112 STAGE ROOF FRAMING PLAN

1/8" = 1'-0"

NOTES:
1. SEE 1/S-112 FOR PLAN NOTES.



1/S-112 RIGGING AND LOADING DOCK FRAMING PLAN

1/8" = 1'-0"

NOTES:
1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS, SEE S-020

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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SEAL/SIGNATURE

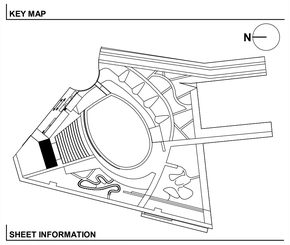
NORTH CAROLINA PROFESSIONAL SEAL 028417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

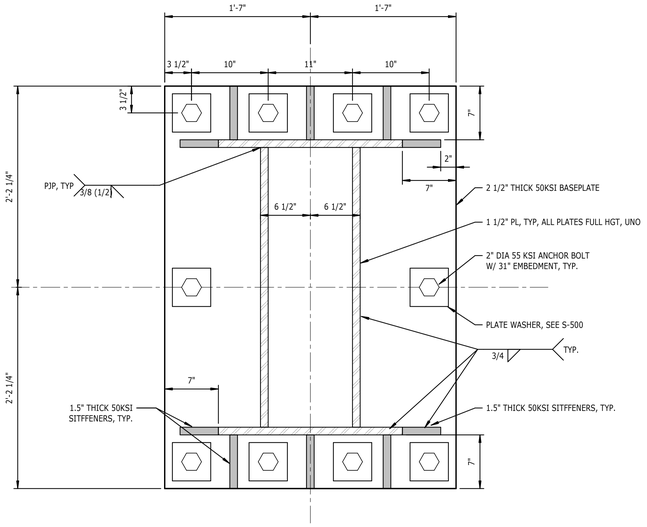
STAGE AND LOADING DOCK ROOF FRAMING PLANS

STRUCTURAL

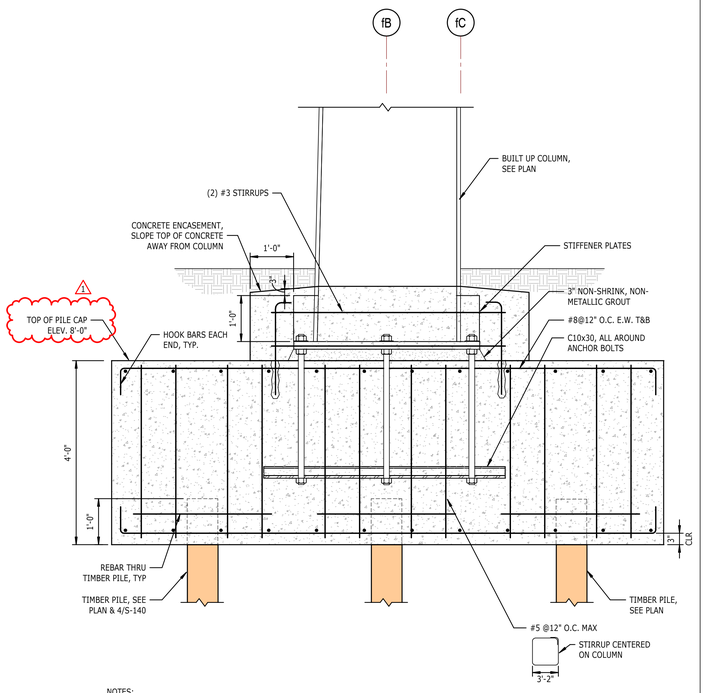
SHEET NO.

S-112 - P1

IRN016

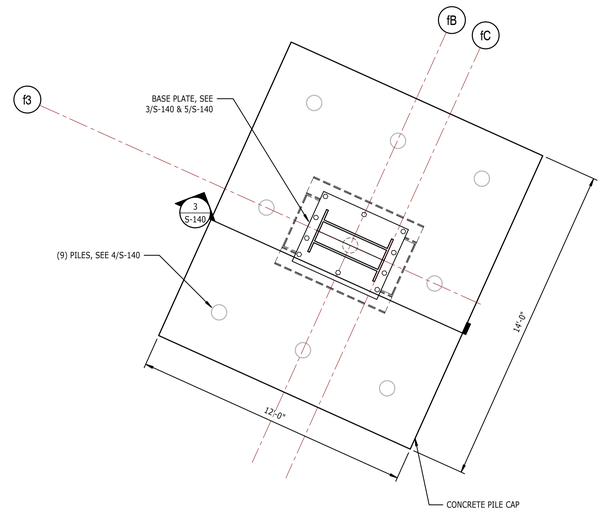


5 S-140 DETAIL
FOLLOW SPOT BASEPLATE DETAIL
1 1/2" = 1'-0"



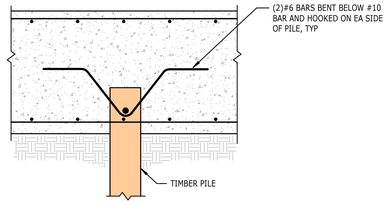
NOTES:
1. COAT BASE PLATE AND ANCHOR BOLTS WITH AN APPROVED ASPHALT PAINT.

3 S-140 SECTION
SECTION THROUGH FOLLOW SPOT PILE CAP
3/4" = 1'-0"

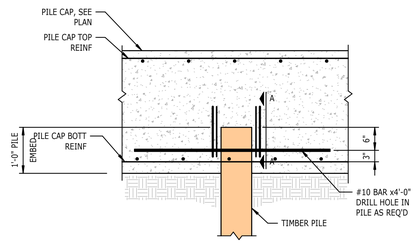


NOTE:
1. SEE ARCH DWGS FOR LOCATION.

1 S-140 FOLLOW SPOT FOUNDATION PLAN
3/8" = 1'-0"

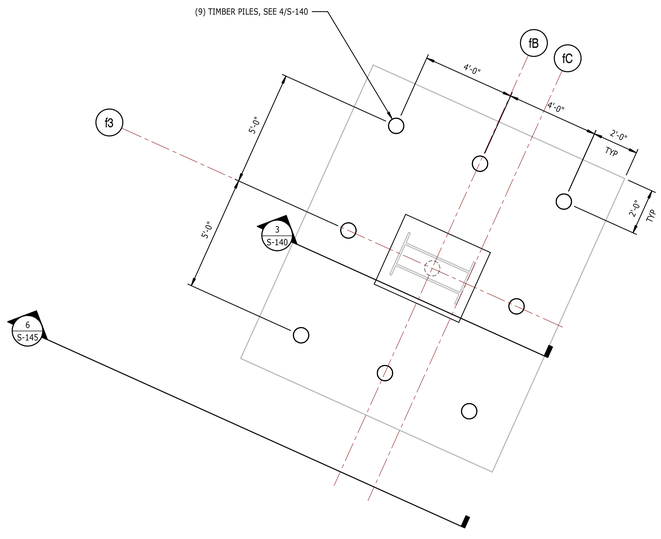


SECTION "AA"



PILES:	8" DIAMETER TIMBER PILE DRIVEN DOWN TO REFUSAL DEPTH AT EMBEDMENT OF 45± FT, MEASURED FROM BOTTOM OF PILE CAP
CAPACITIES:	ALLOWABLE AXIAL CAPACITY (COMP): 50k/PILE ALLOWABLE AXIAL CAPACITY (TENSION): 20k/PILE LATERAL CAPACITY AT 1" DEFLECTION : 3.5k/PILE

4 S-140 UPLIFT PILE AT FOLLOW SPOT
3/4" = 1'-0"



IRN016

2 S-140 FOLLOW SPOT PILE LAYOUT PLAN
3/8" = 1'-0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
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SEAL/SIGNATURE



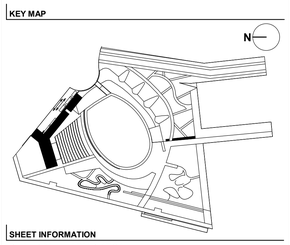
10/25/2019

Firm License #C-1051

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

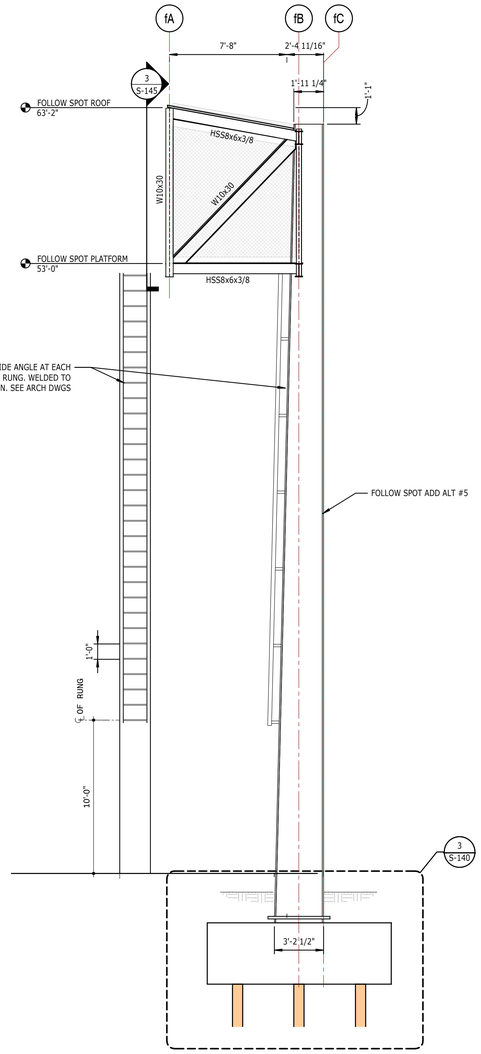
SHEET TITLE

FOLLOW SPOT FOUNDATION PLANS AND DETAILS - ALTERNATE #5 STRUCTURAL

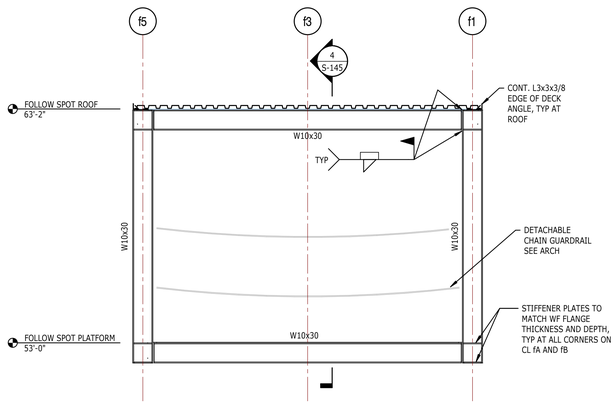
SHEET NO.

S-140 - P1

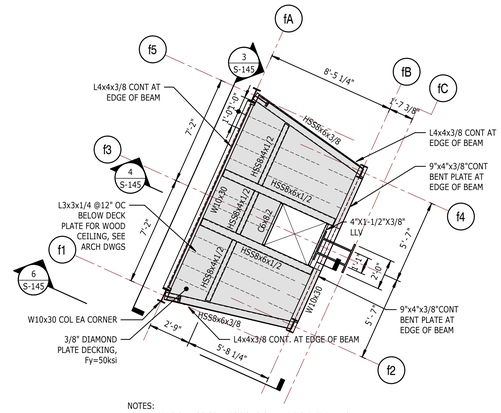
IRN016



6 S-145 FOLLOW SPOT ELEVATION
1/4" = 1'-0"

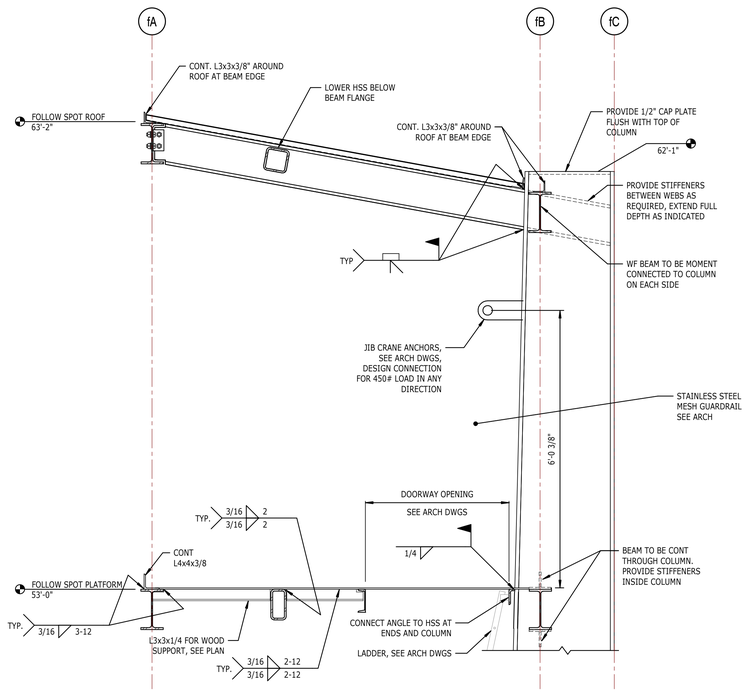


3 S-145 FOLLOW SPOT FRONT ELEVATION
3/8" = 1'-0"



NOTES:
1. ALL WIDE FLANGE CONNECTIONS SHALL BE CJP, TYP, UNO

1 S-145 FOLLOW SPOT PLATFORM FRAMING PLAN
1/4" = 1'-0"



4 S-145 FOLLOW SPOT FRONT SECTION
3/4" = 1'-0"

NOTES:
1. ALL WIDE FLANGE CONNECTIONS SHALL BE CJP, TYP, UNO

2 S-145 FOLLOW SPOT ROOF FRAMING PLAN
1/4" = 1'-0"

CONTRACTOR TO PROVIDE PRICING FOR THE (3) COLUMN TRUSS OPTION BASED ON DESIGN CORRESPONDENCE AND V/E ALTERNATE ITEM #3. IF THIS OPTION IS SELECTED BY OWNER NEW SHEETS SHALL BE ISSUED FOR PERMIT AND CONSTRUCTION

IRN016

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SEAL/SIGNATURE

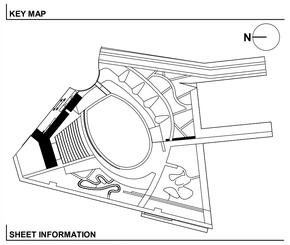
NORTH CAROLINA PROFESSIONAL SEAL 022417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS — Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

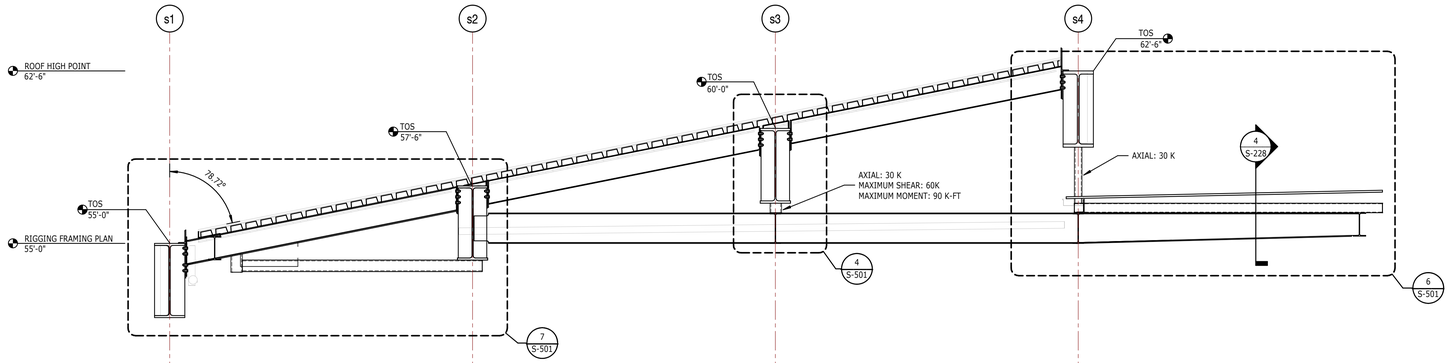
FOLLOW SPOT FRAMING PLANS AND DETAILS - ALTERNATE #5

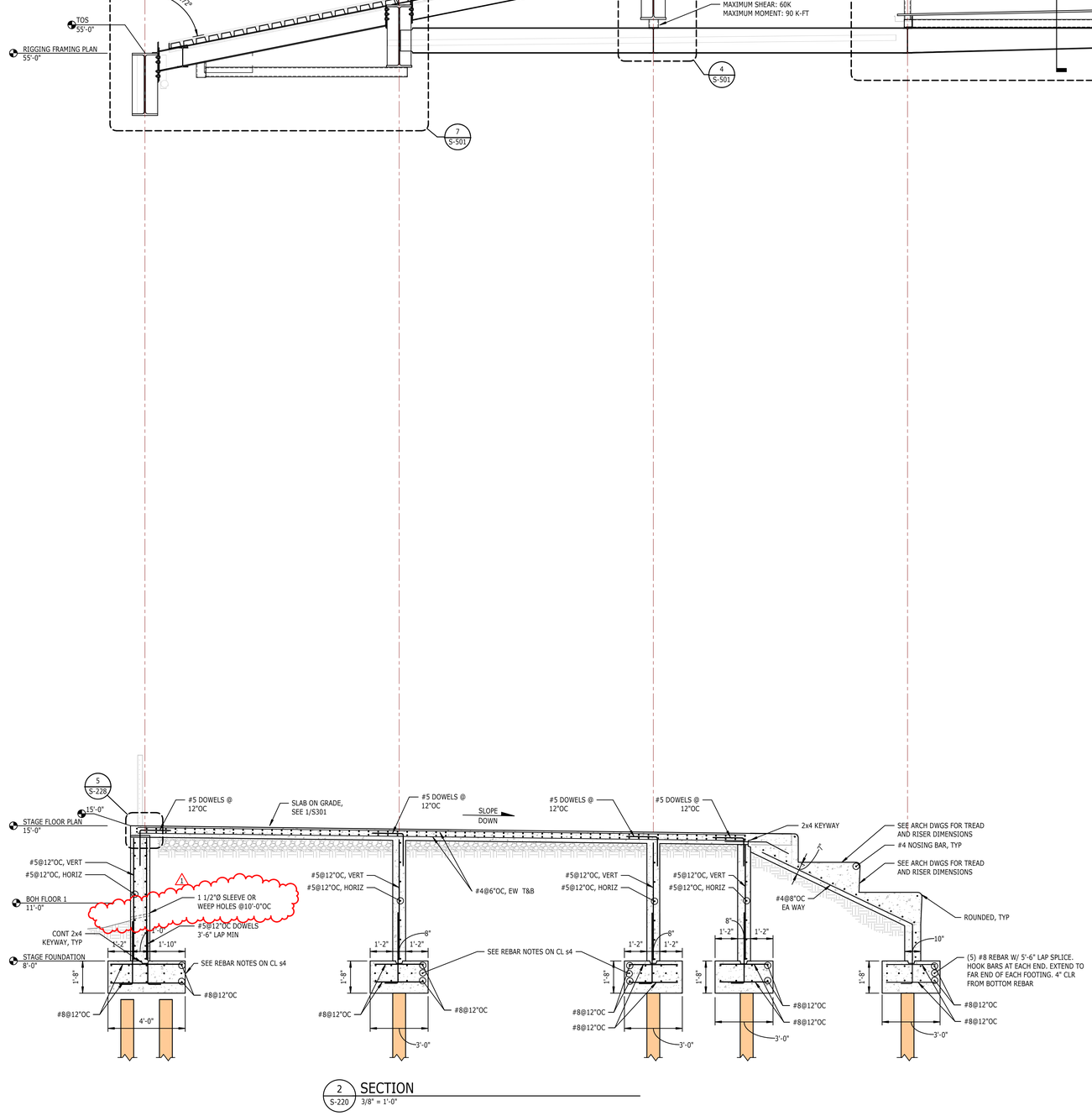
STRUCTURAL

SHEET NO.

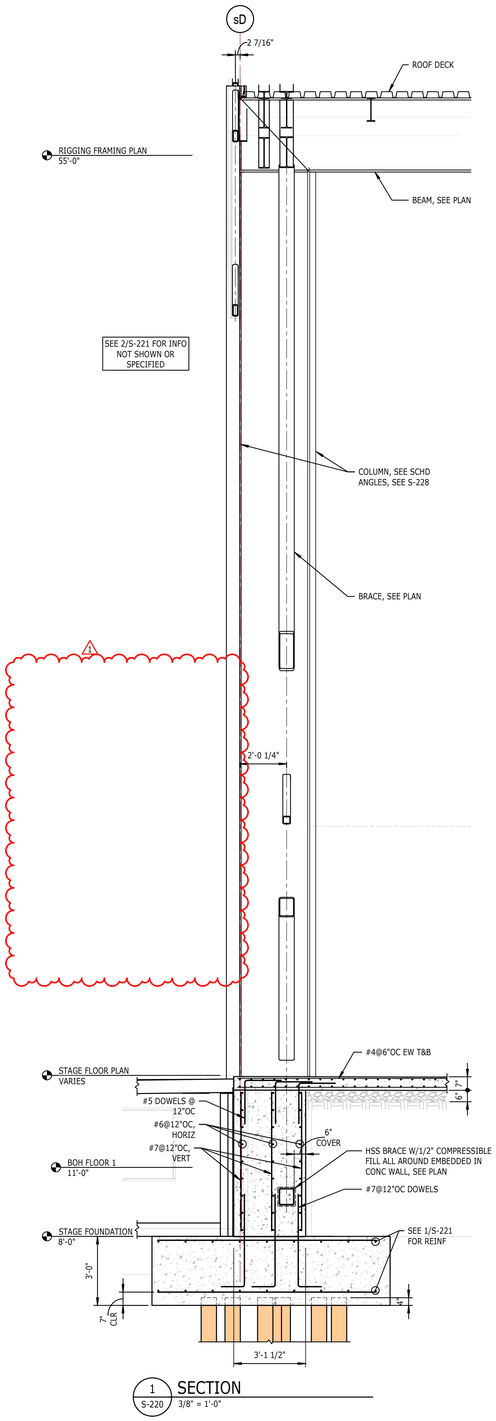
S-145 - P1

IRN016





2 S-220 SECTION
3/8" = 1'-0"



1 S-220 SECTION
3/8" = 1'-0"

IRN016

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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West St., Suite 1100, Raleigh, NC 27603
www.stewartinc.com

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
PO Box 11189, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
PO Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Soil Design = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
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www.cheathampa.com

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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www.andrewengineers.com

Water Fountain Design = WF
COMMERCIAL AQUATIC ENGINEERING
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 036415 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/8" = 1'-0"

SHEET TITLE

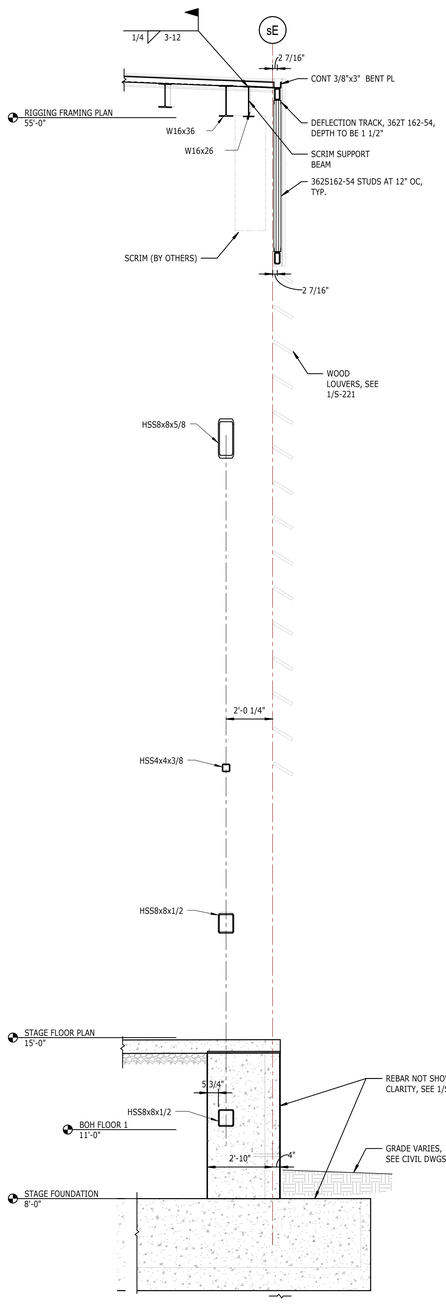
STAGE SECTIONS AND DETAILS

SHEET NO.

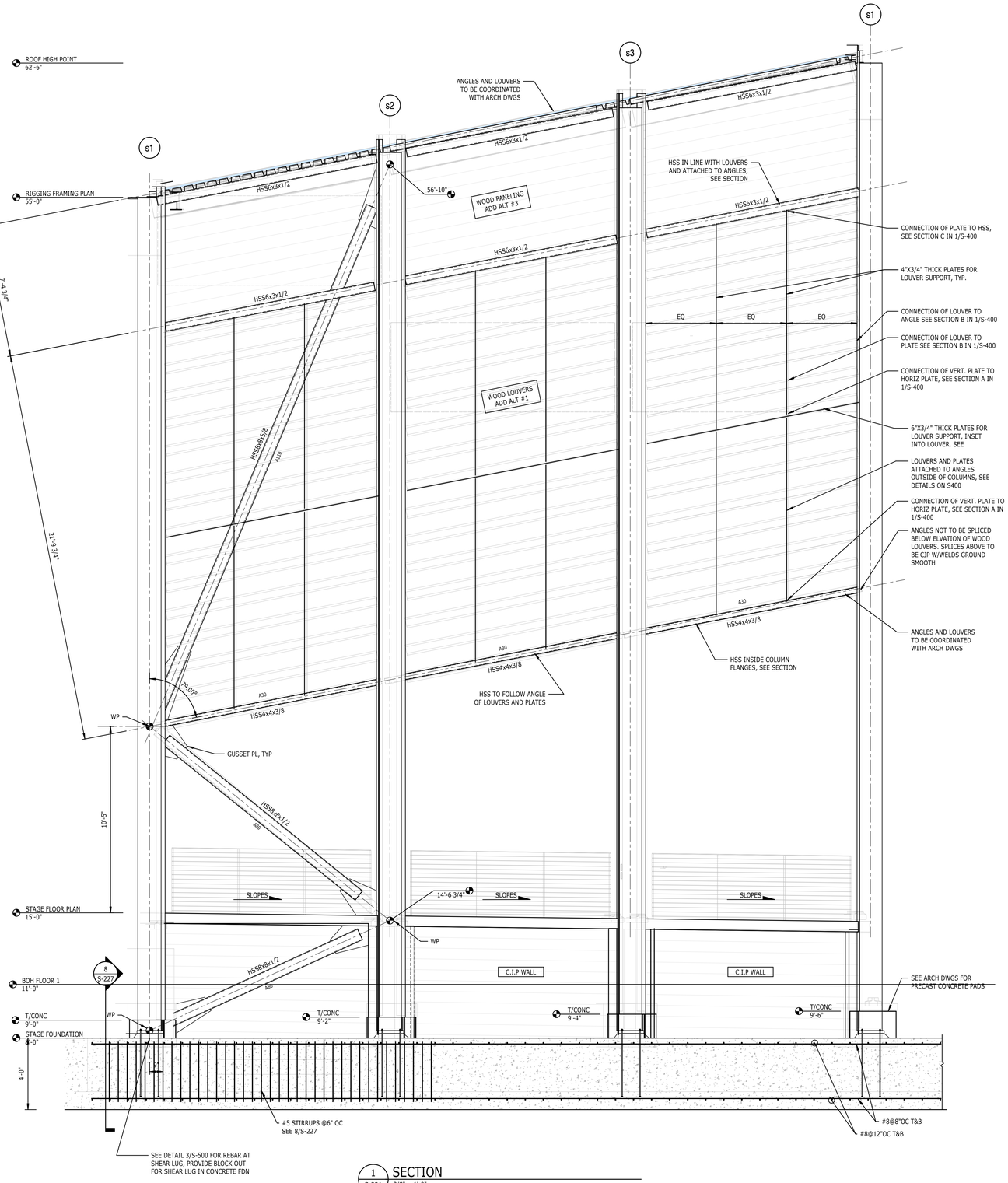
STRUCTURAL

S-220 - P1

IRN016



2 S-221 SECTION
3/8" = 1'-0"



1 S-221 SECTION
3/8" = 1'-0"

NOTES:
1. ELEVATION TYPICAL ALONG GRID LINE sF AND sE.

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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Community Services Department
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HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com

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SAGE & COOMBE ARCHITECTS
12-16 Vestry St, 5th Floor, New York, NY 10013
www.sageandcoombe.com

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NORTH CAROLINA PROFESSIONAL SEAL 028417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/8" = 1'-0"

SHEET TITLE

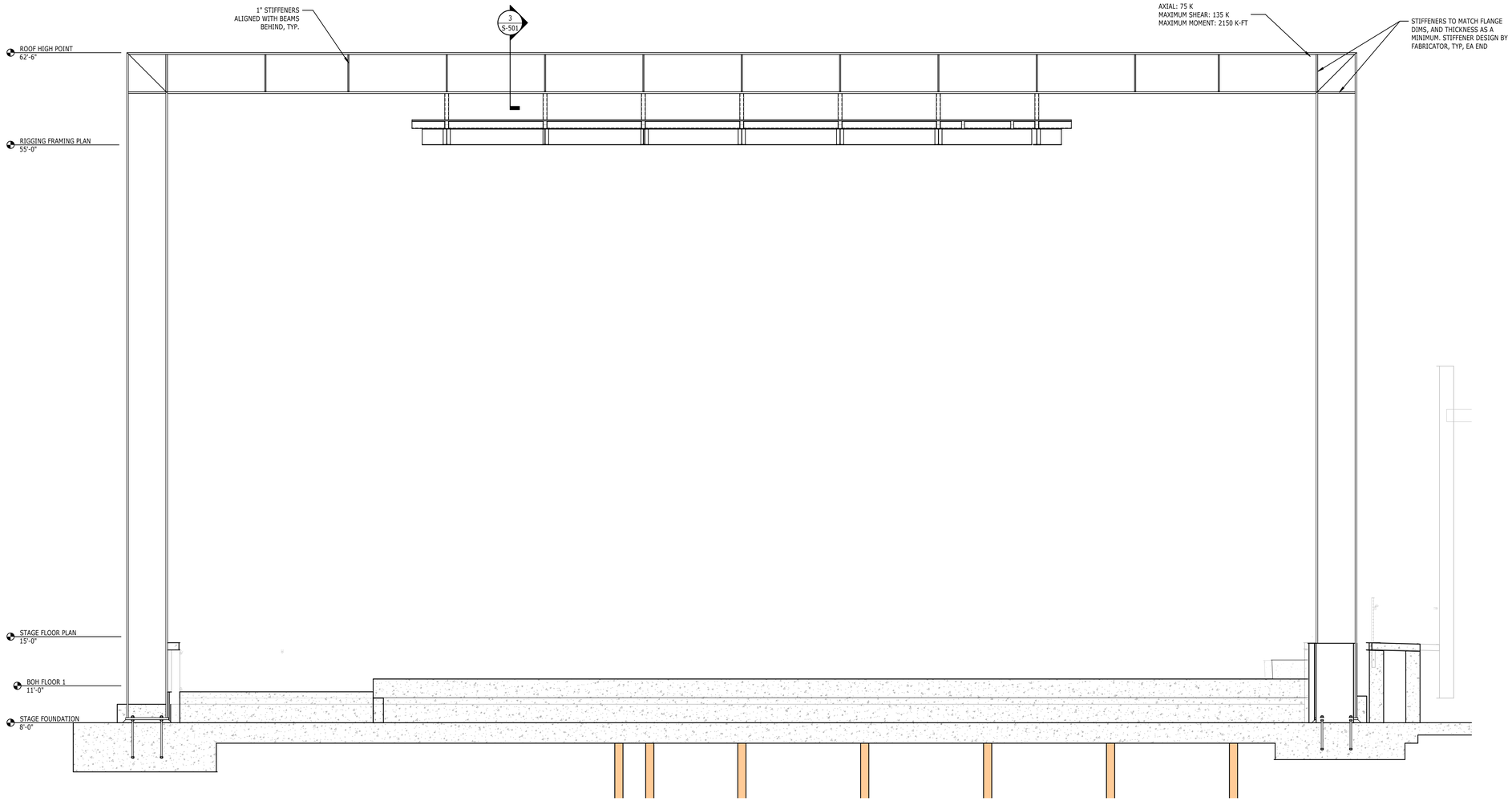
STAGE SECTIONS AND DETAILS

SHEET NO.

STRUCTURAL

S-221 - P1

IRN016



1 S-222 ELEVATION ON GRID s4
1/4" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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Lighting Design = EL
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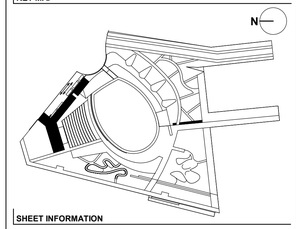
NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS — Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1/4" = 1'-0"

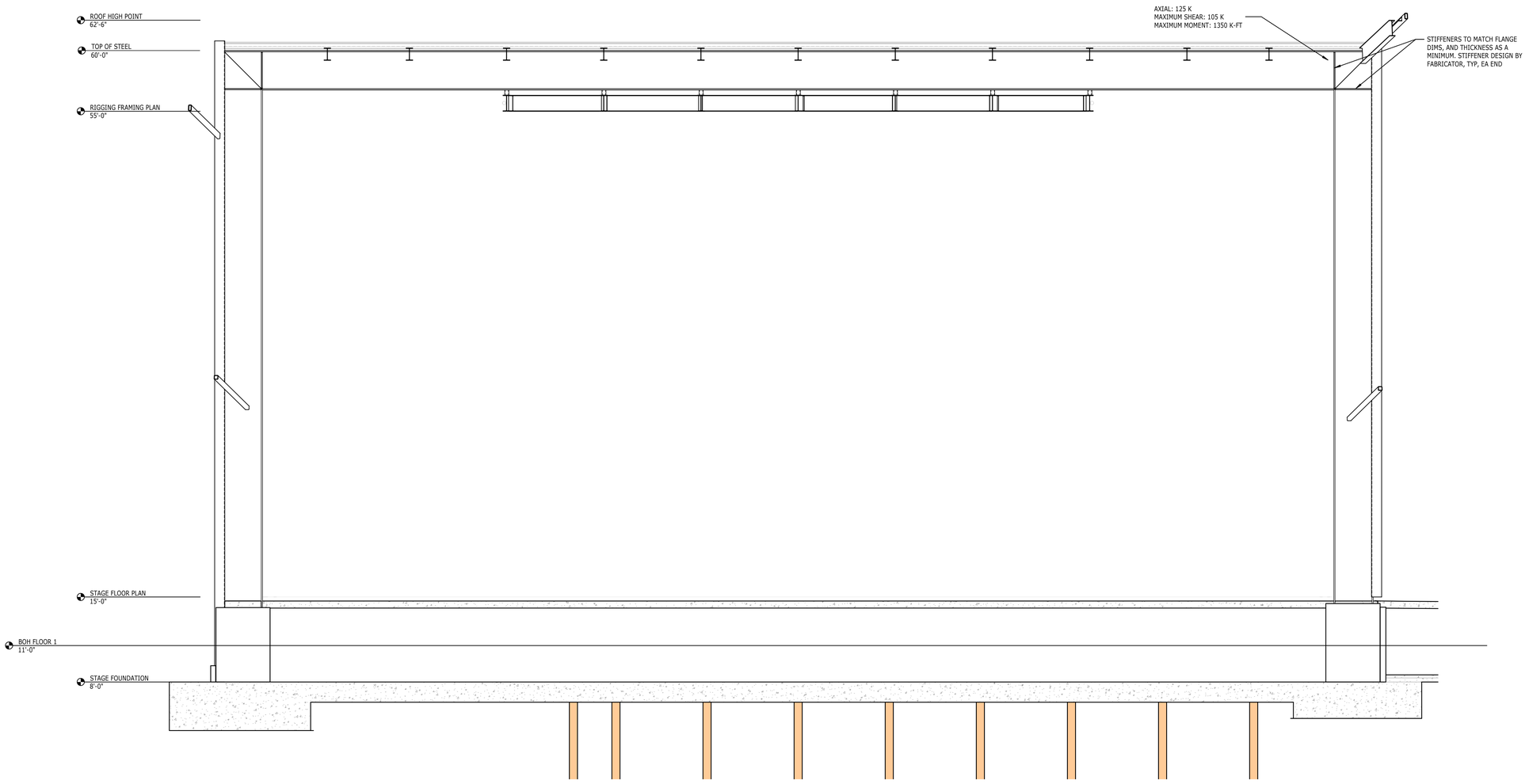
SHEET TITLE

STAGE GRID ELEVATION (s4)

SHEET NO.

STRUCTURAL

S-222 - P1



1 / S-223 ELEVATION ON GRID s3
1/4" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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Structural Engineering= S
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EAGLE RESOURCES
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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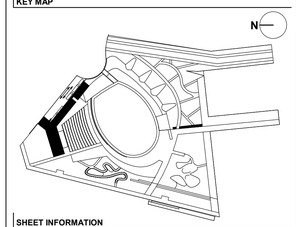
NORTH CAROLINA PROFESSIONAL SEAL 026417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1/4" = 1'-0"

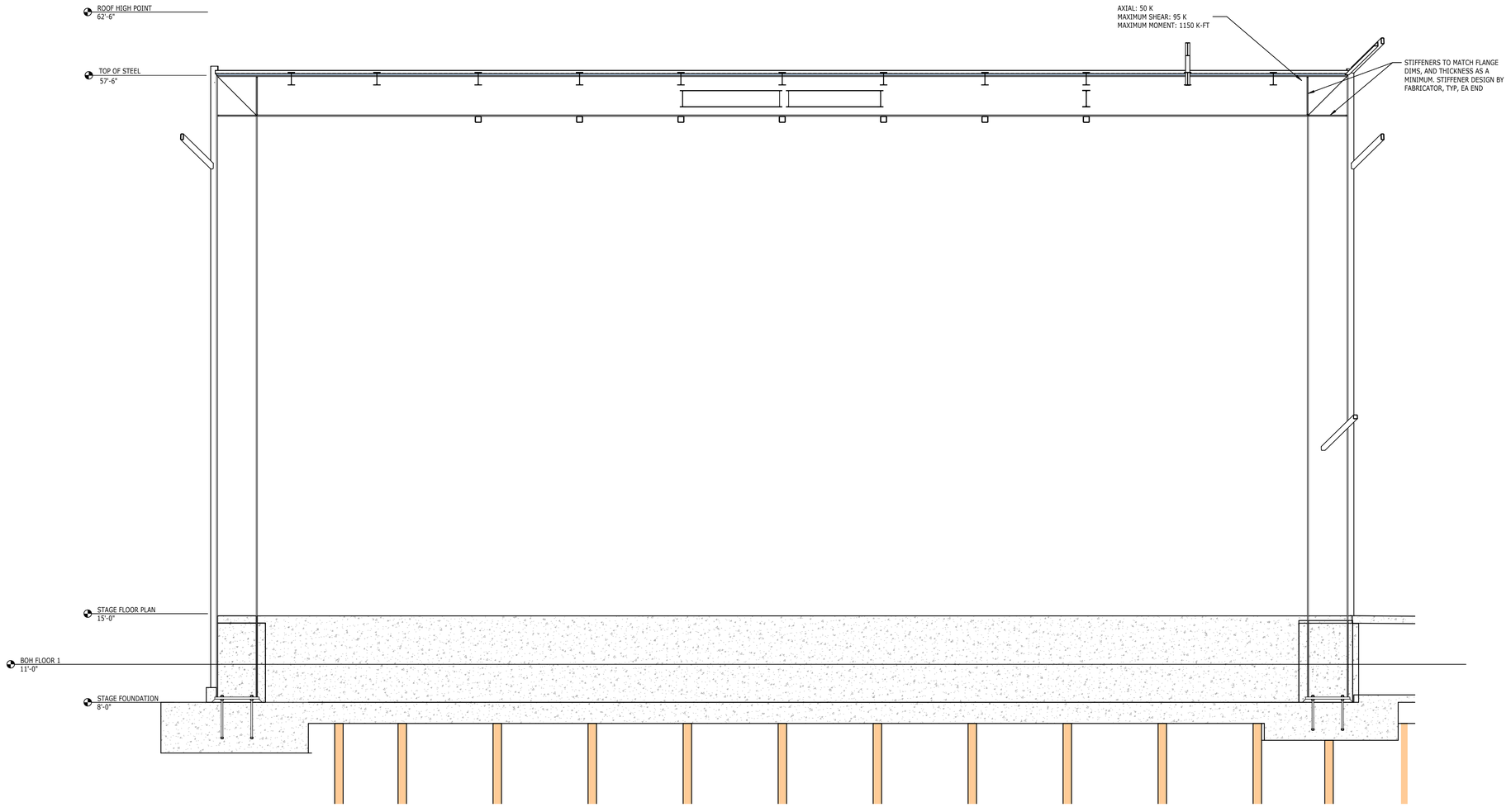
SHEET TITLE

STAGE GRID ELEVATION (s3)

SHEET NO. STRUCTURAL

S-223 - P1

IRN016



1 S-224 ELEVATION ON GRID s2
1/4" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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Landscape Architecture = L
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Architecture = A
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Acoustic/Theater/AV = AT
OAP.P.C.
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Geotechnical Engineering = G
STEWART
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
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Soil Design = LS
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Plumbing Engineering = P
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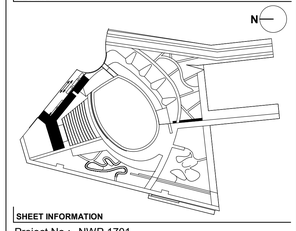
NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1/4" = 1'-0"

SHEET TITLE

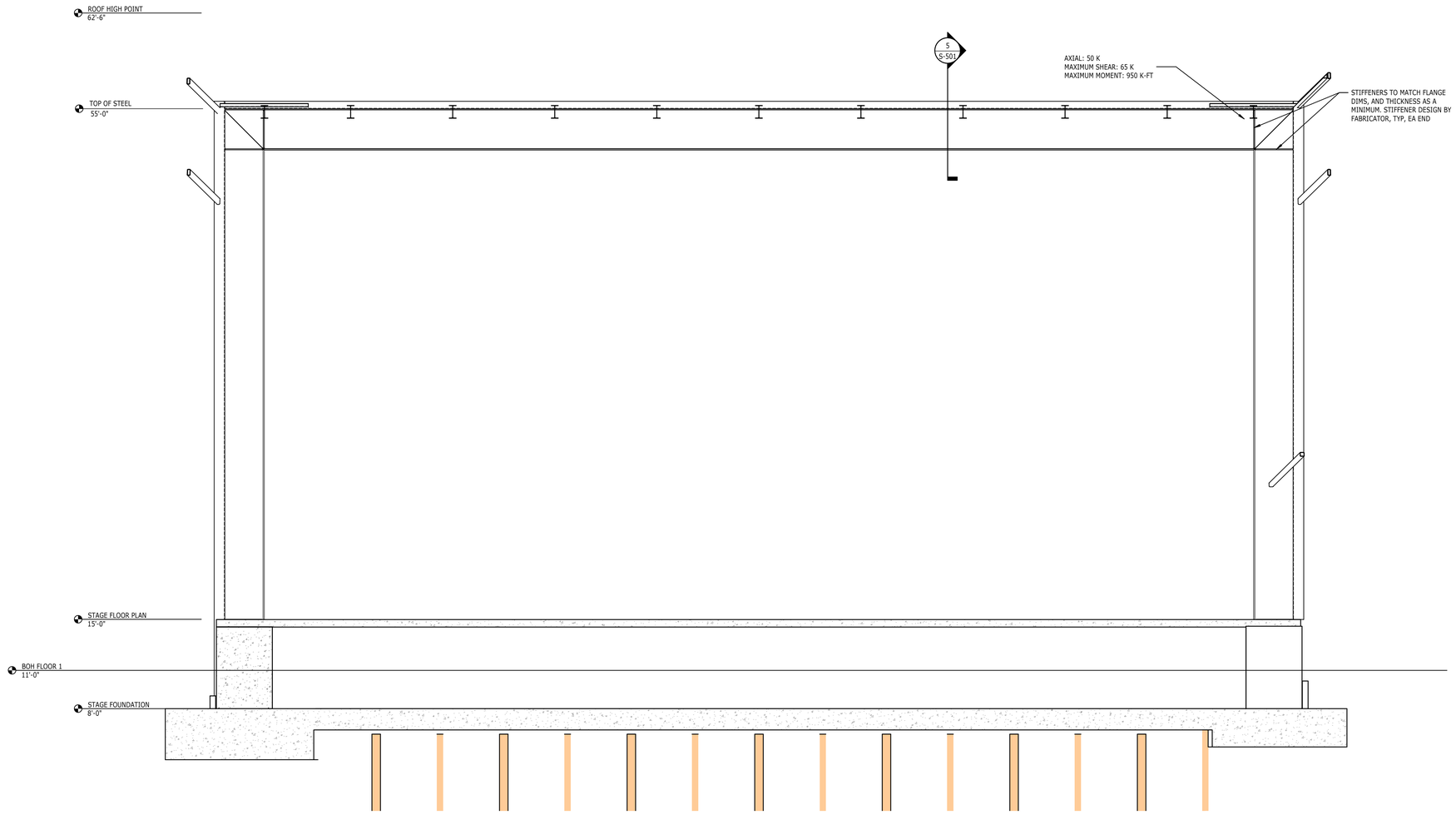
STAGE GRID ELEVATION (s2)

SHEET NO.

STRUCTURAL

S-224 - P1

IRN016



1 / S-225 ELEVATION ON GRID s1
1/4" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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Fire Protection = FP
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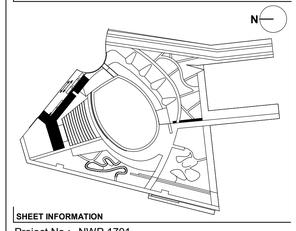
10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 1/4" = 1'-0"

SHEET TITLE

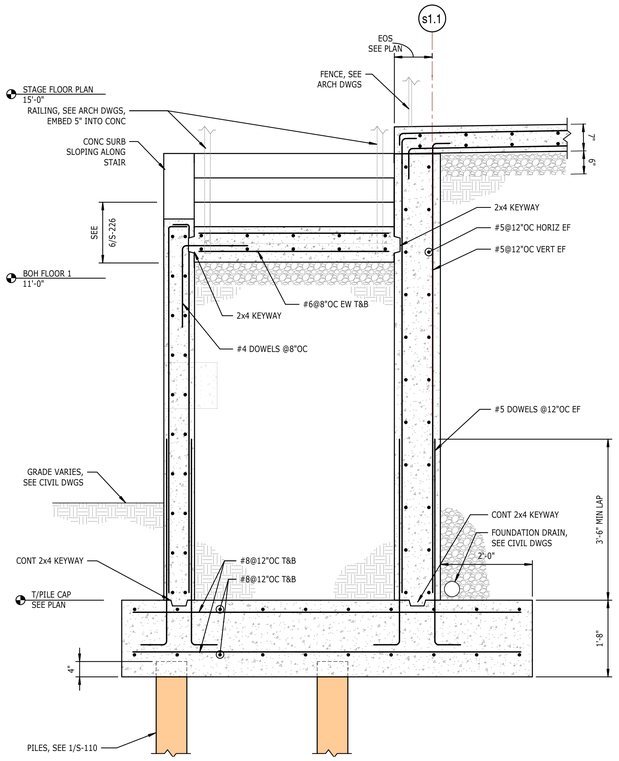
STAGE GRID ELEVATION (s1)

SHEET NO.

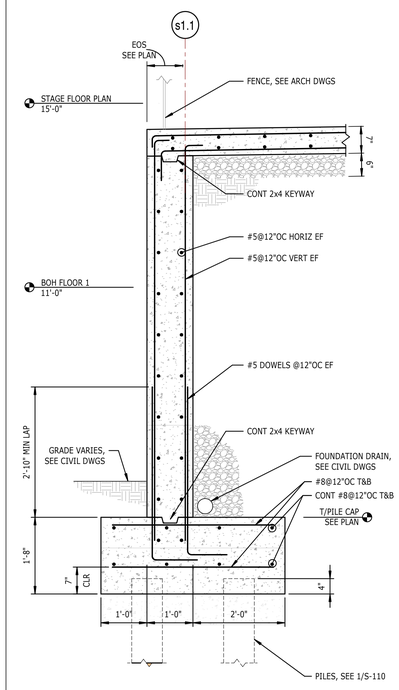
STRUCTURAL

S-225 - P1

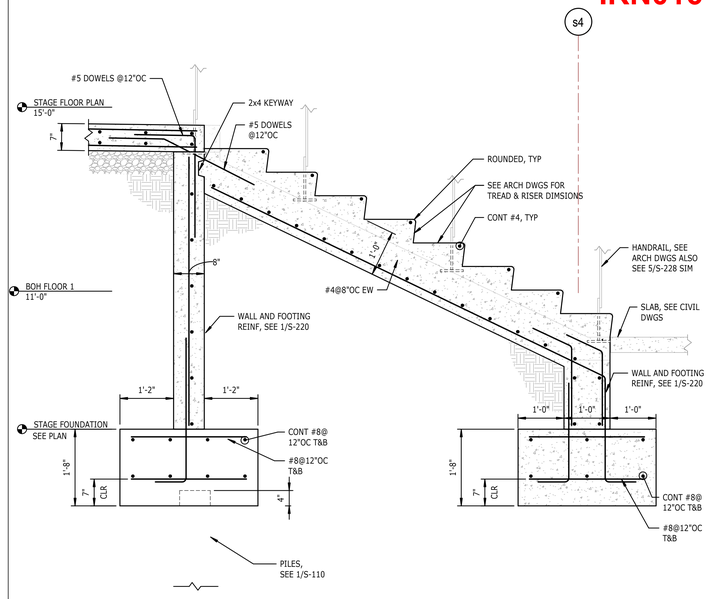
IRN016



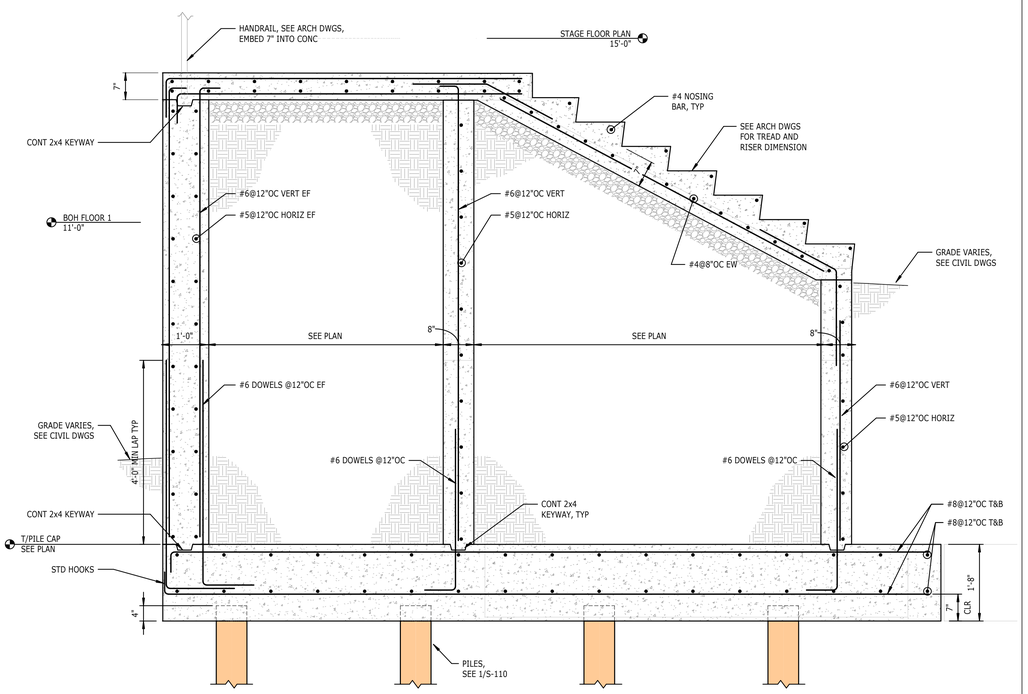
5 S-226 SECTION
STAIRS AT LOADING DOCK
3/4" = 1'-0"



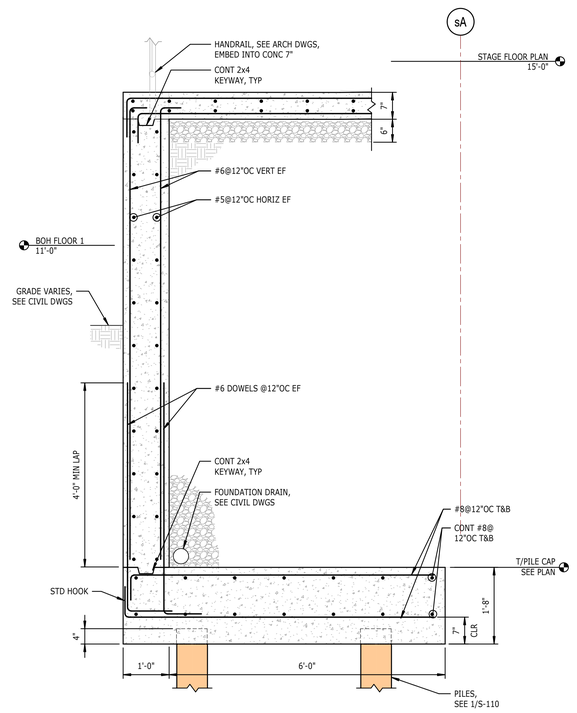
3 S-226 SECTION
AT LOADING DOCK
3/4" = 1'-0"



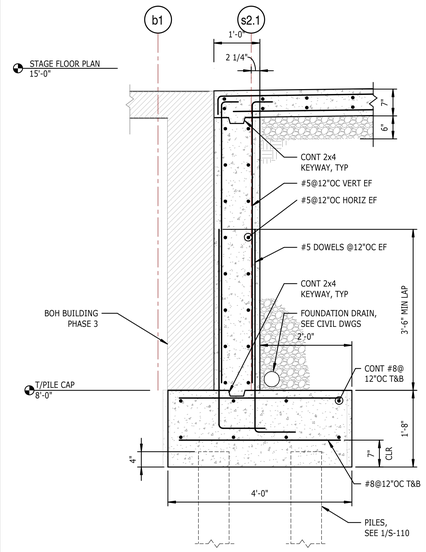
1 S-226 SECTION
STAIRS AT STAGE
3/4" = 1'-0"



6 S-226 SECTION
STAIRS AT LOADING DOCK
3/4" = 1'-0"



4 S-226 SECTION
AT LOADING DOCK
3/4" = 1'-0"



2 S-226 SECTION
AT LOADING DOCK
3/4" = 1'-0"

IRN016

G F E D C B A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

PROJECT INFORMATION

NORTH WATERFRONT PARK

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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024417 JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 07/10/18

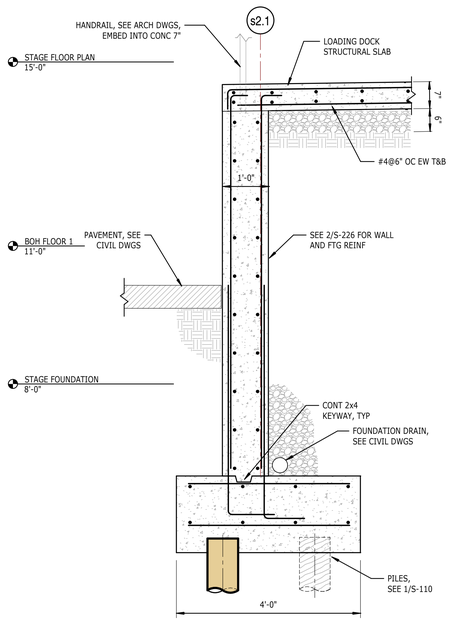
SHEET TITLE

STAGE AND LOADING DOCK SECTIONS AND DETAILS

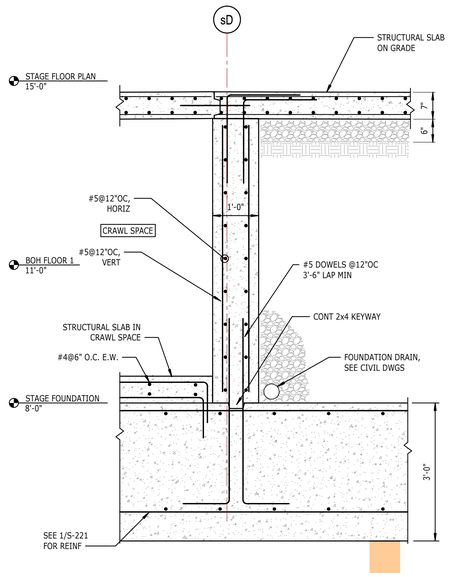
STRUCTURAL

SHEET NO.

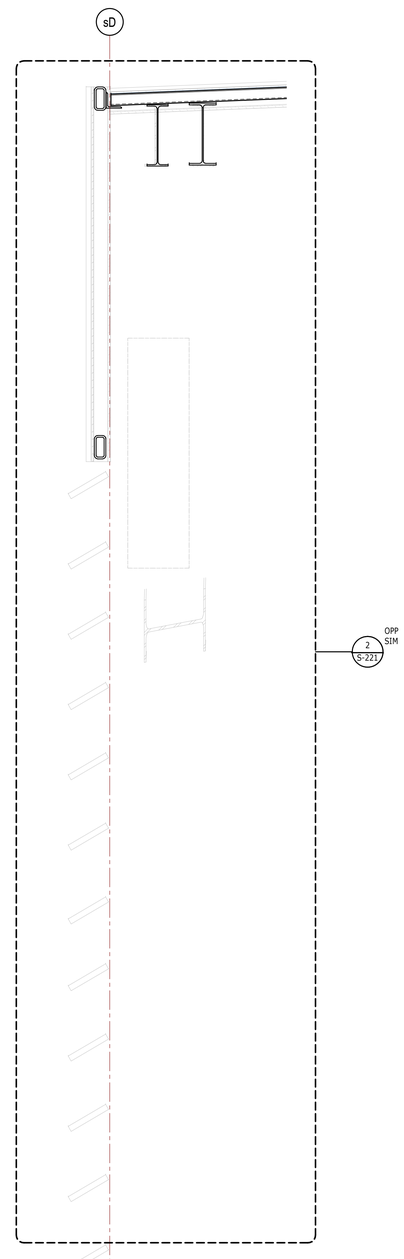
S-226 - P1

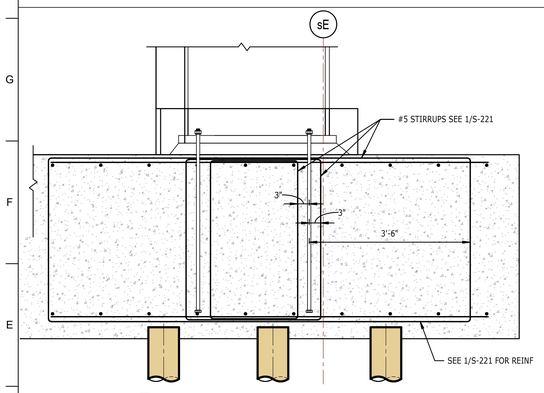


7 S-227 **SECTION**
AT LOADING DOCK
3/4" = 1'-0"

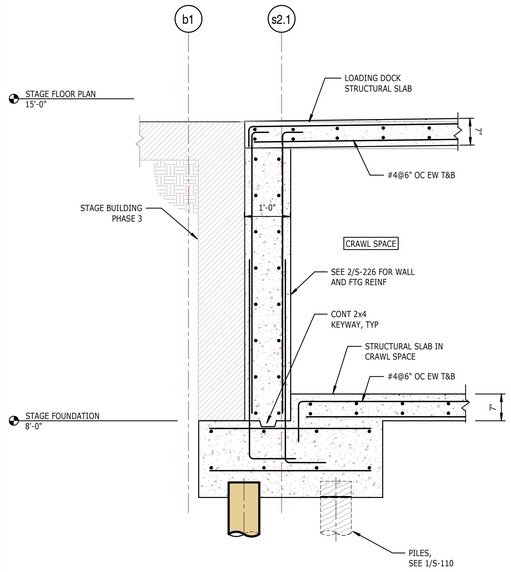


5 S-227 **SECTION**
AT STAGE / LOADING DOCK
3/4" = 1'-0"

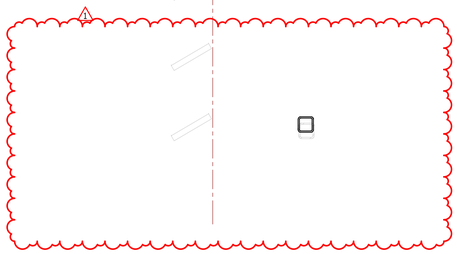




8 S-227 **SECTION**
FOUNDATION AT STAGE FRAME
3/4" = 1'-0"



6 S-227 **SECTION**
AT LOADING DOCK
3/4" = 1'-0"



4 S-227 **SECTION**
3/4" = 1'-0"

NOT USED

NOT USED

NOT USED

PROJECT INFORMATION

NORTH WATERFRONT PARK IRN016

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, NC 28402

Landscape Architecture = L
HARGREAVES JONES
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OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

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Structural Engineering= S
Geotechnical Engineering = G
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www.stewartinc.com

Environmental Engineering = EE
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8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
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www.eagleresources.com

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CLARK IRRIGATION DESIGN & CONSULTING, INC
PO Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

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LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

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Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
COMMERCIAL AQUATIC ENGINEERING
6500 Carlson Drive, Eden Prairie, MN 55346
www.fountaindesigns.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE

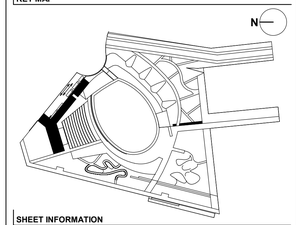
NORTH CAROLINA PROFESSIONAL SEAL 022417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS — Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/4" = 1'-0"

IRN016

SHEET TITLE

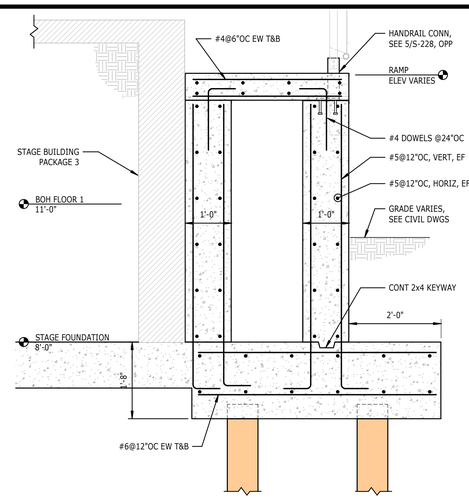
STAGE AND LOADING DOCK SECTIONS AND DETAILS

STRUCTURAL

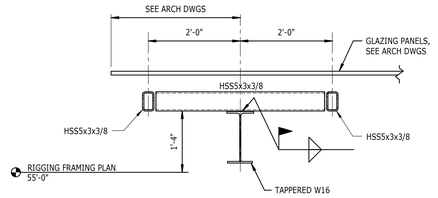
SHEET NO.

S-227 - P1

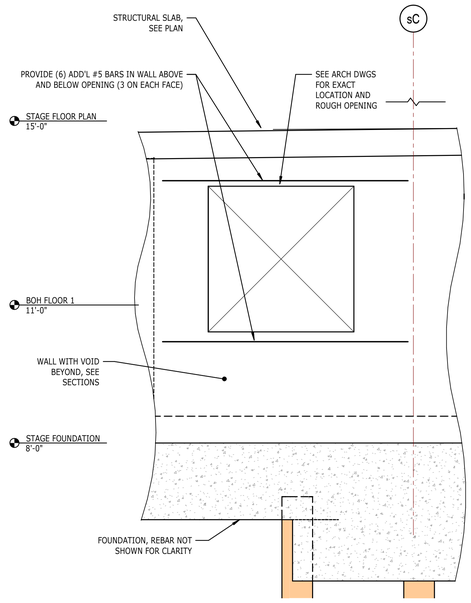
IRN016



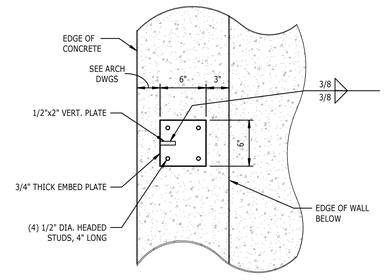
3 S-228 SECTION 3/4" = 1'-0"



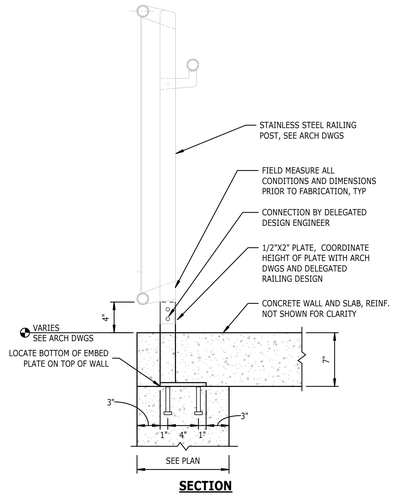
4 S-228 SECTION 3/4" = 1'-0"



1 S-228 ELEVATION AT DOOR OPENING IN WALL 3/4" = 1'-0"

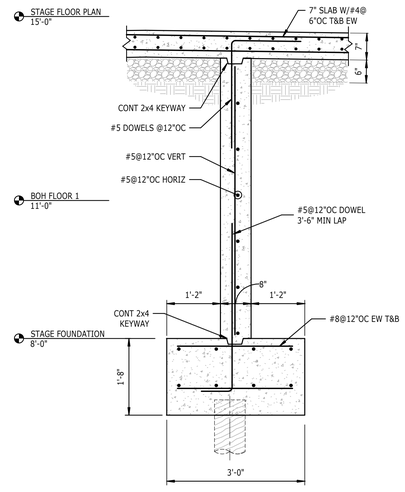


PARTIAL PLAN



SECTION

5 S-228 SECTION HANDRAIL CONNECTION AT STAGE 1 1/2" = 1'-0"



IRN016

2 S-228 SECTION 3/4" = 1'-0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
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PO Box 1810, Wilmington, NC 28402

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Geotechnical Engineering = G
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SEAL/SIGNATURE

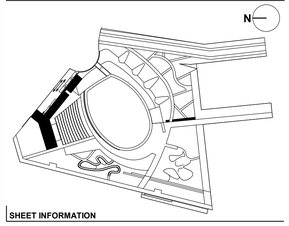
NORTH CAROLINA PROFESSIONAL SEAL 028417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

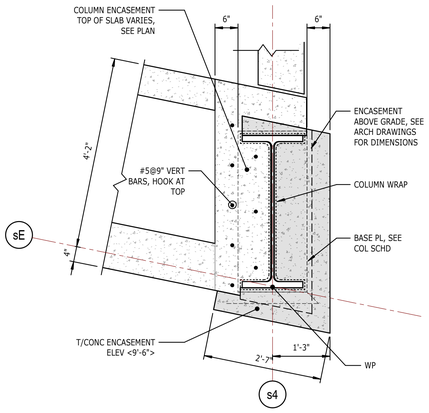
SHEET TITLE

STAGE AND LOADING DOCK SECTIONS AND DETAILS

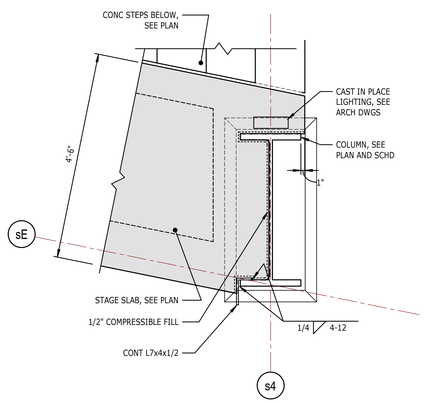
STRUCTURAL

SHEET NO.

S-228 - P1

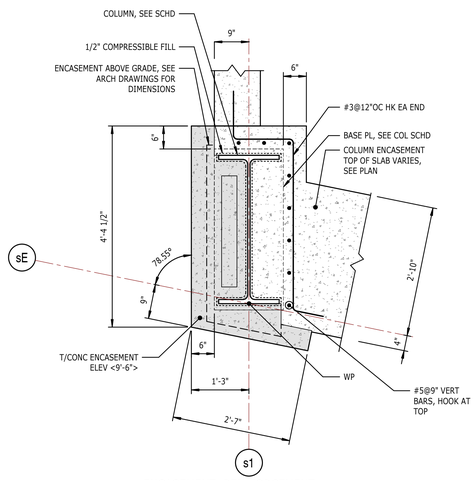


ENCASEMENT REINFORCEMENT

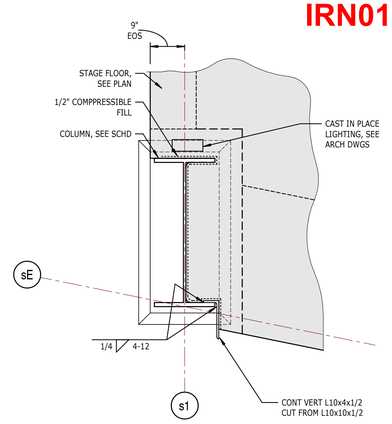


STAGE FLOOR DETAIL

4 S-229 sE-s4 COLUMN GRID DETAILS 3/4" = 1'-0"

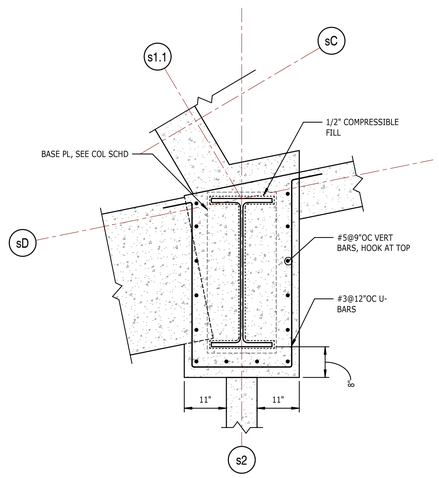


ENCASEMENT REINFORCEMENT

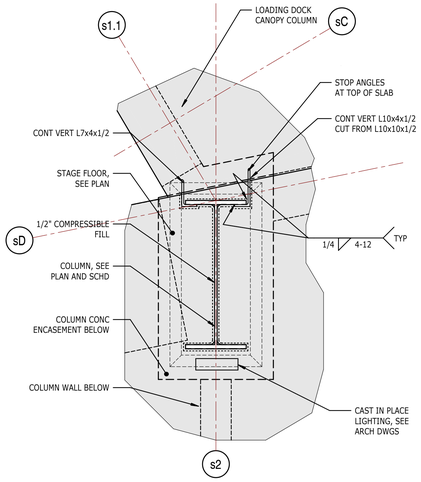


STAGE FLOOR DETAIL

1 S-229 sE-s1 COLUMN GRID DETAILS 3/4" = 1'-0"

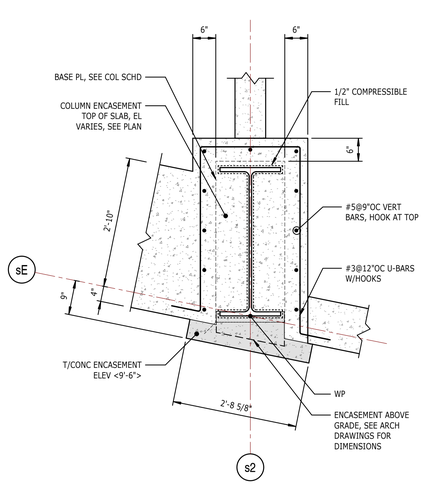


ENCASEMENT REINFORCEMENT

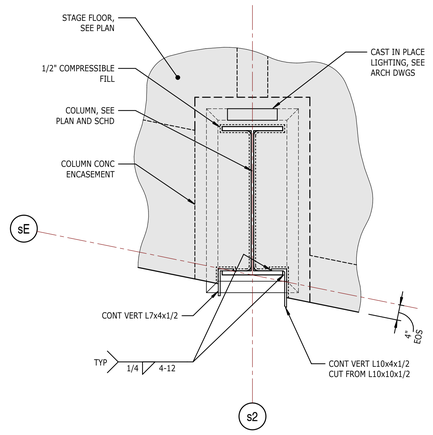


STAGE FLOOR DETAIL

5 S-229 sD-s3 COLUMN GRID DETAILS 3/4" = 1'-0"

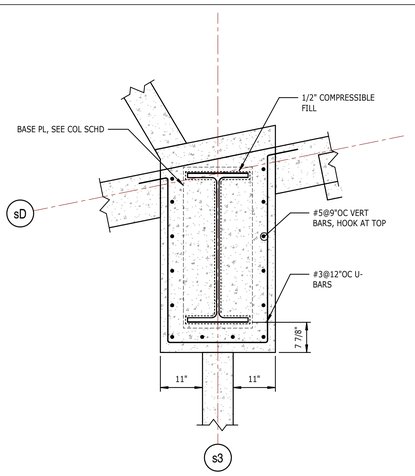


ENCASEMENT REINFORCEMENT

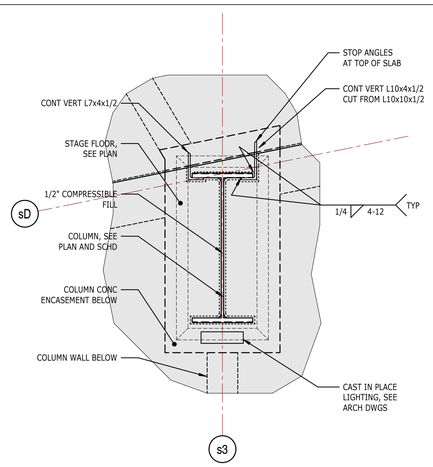


STAGE FLOOR DETAIL

2 S-229 sE-s2 COLUMN GRID DETAILS 3/4" = 1'-0"

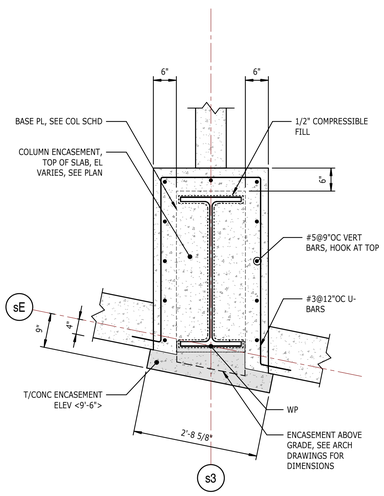


ENCASEMENT REINFORCEMENT



STAGE FLOOR DETAIL

6 S-229 sD-s3 COLUMN GRID DETAILS 3/4" = 1'-0"



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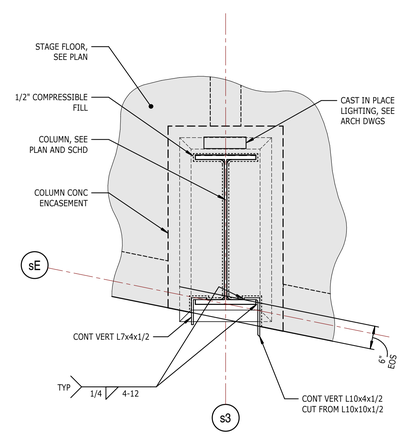

STAGE FLOOR DETAIL

3 S-229 sE-s3 COLUMN GRID DETAILS 3/4" = 1'-0"

IRN016

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

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Lighting Design = EL
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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 023417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 02/26/19

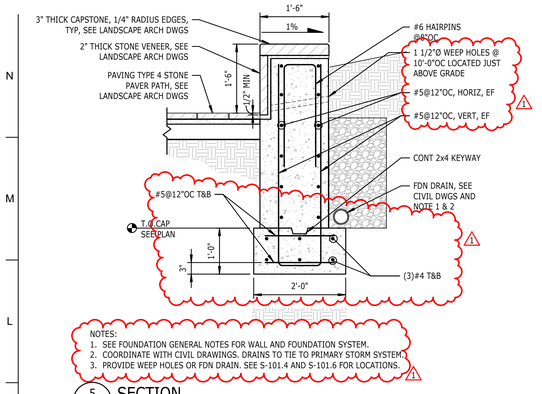
SHEET TITLE

STAGE COLUMN DETAILS

SHEET NO.

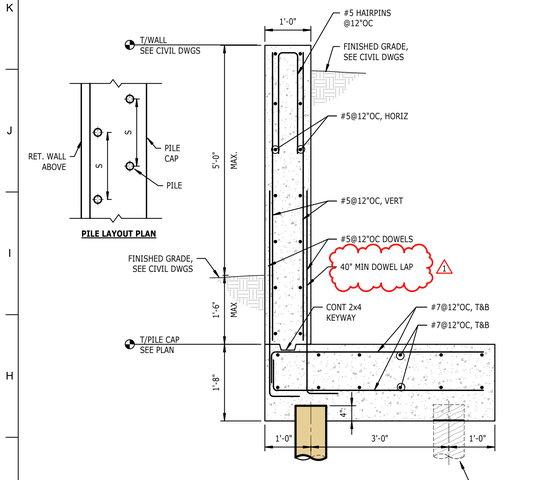
STRUCTURAL

S-229 - P1



NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM.
3. PROVIDE WEEP HOLES OR FDN DRAIN. SEE S-101.4 AND S-101.6 FOR LOCATIONS.

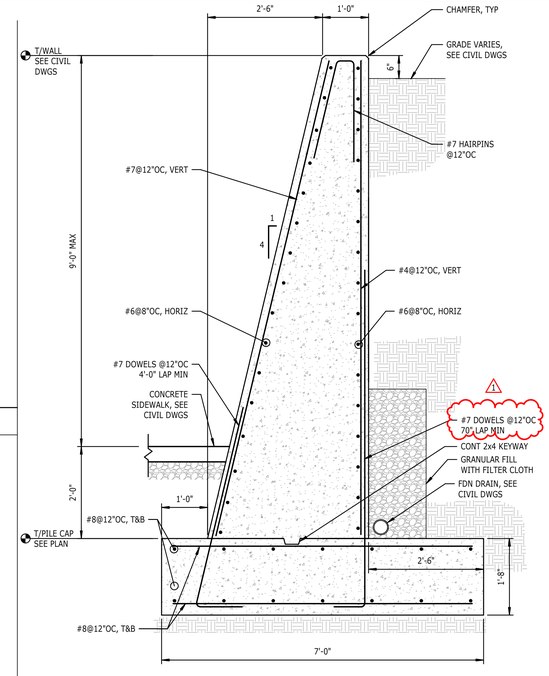
5 / S-230 **SECTION**
STONE VENEER SEAT WALL AT GREAT LAWN
3/4" = 1'-0"



PILE LAYOUT PLAN

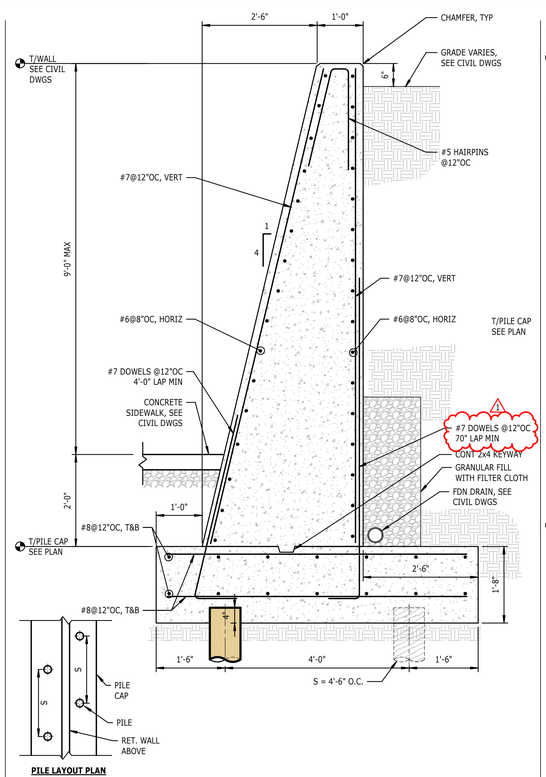
NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

6A / S-230 **CONCRETE RETAINING WALL AT LOADING DRIVE - 5FT MAX**
3/4" = 1'-0"



NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

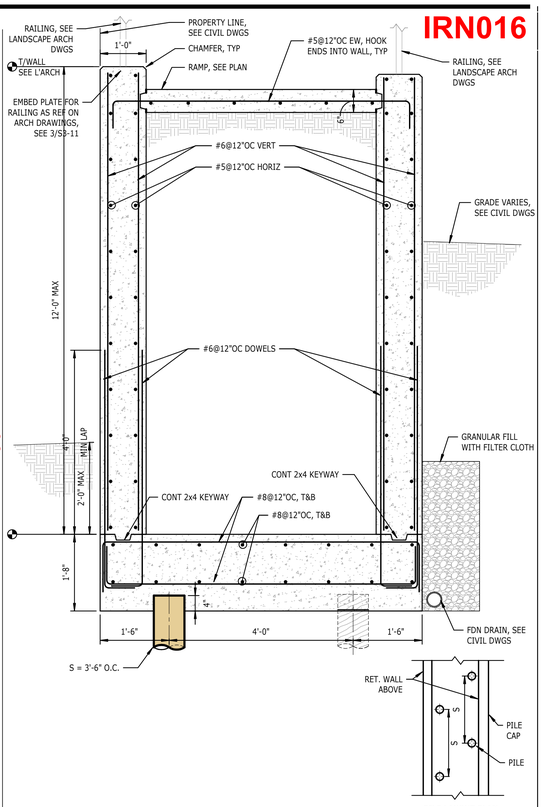
4 / S-230 **SECTION**
CONCRETE RETAINING WALL AT COWAN ST. ROUNDABOUT
3/4" = 1'-0"



PILE LAYOUT PLAN

NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

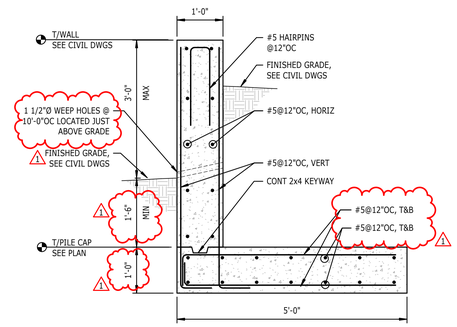
2 / S-230 **SECTION**
CONCRETE RETAINING WALL AT COWAN ST. ROUNDABOUT
3/4" = 1'-0"



PILE LAYOUT PLAN

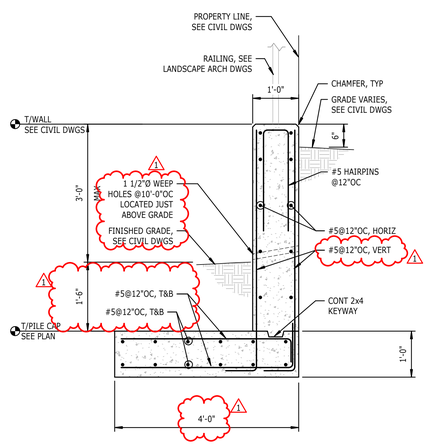
NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

1 / S-230 **SECTION**
CONCRETE RETAINING WALL AT LOADING RAMP
3/4" = 1'-0"



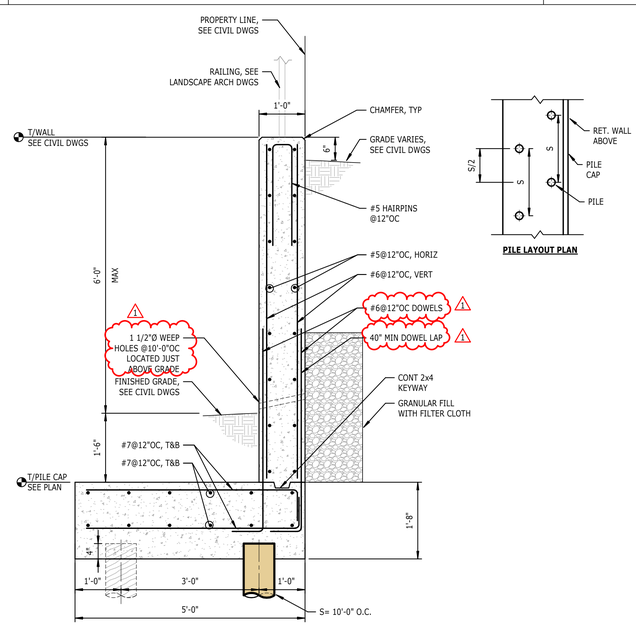
NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM
3. PROVIDE VERTICAL JOINT IN WALL AND FOOTING FOR SETTLEMENT BETWEEN WALLS WITH AND WITHOUT PILES.

6B / S-230 **SECTION**
CONCRETE RETAINING WALL AT LOADING DRIVE - 5FT MAX
3/4" = 1'-0"



NOTES:
1. PROVIDE VERTICAL JOINT IN WALL AND FOOTING FOR SETTLEMENT BETWEEN WALLS WITH AND WITHOUT PILES.

3C / S-230 **SECTION**
CONCRETE RETAINING WALL - NO PILES
3/4" = 1'-0"



PILE LAYOUT PLAN

3B / S-230 **SECTION**
CONCRETE RETAINING WALL AT PILES
3/4" = 1'-0"

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, NC 28402

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry St, 5th Floor, New York, NY 10013
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Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
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www.stewartinc.com

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
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Soil Design = LS
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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/4" = 1'-0"

SHEET TITLE

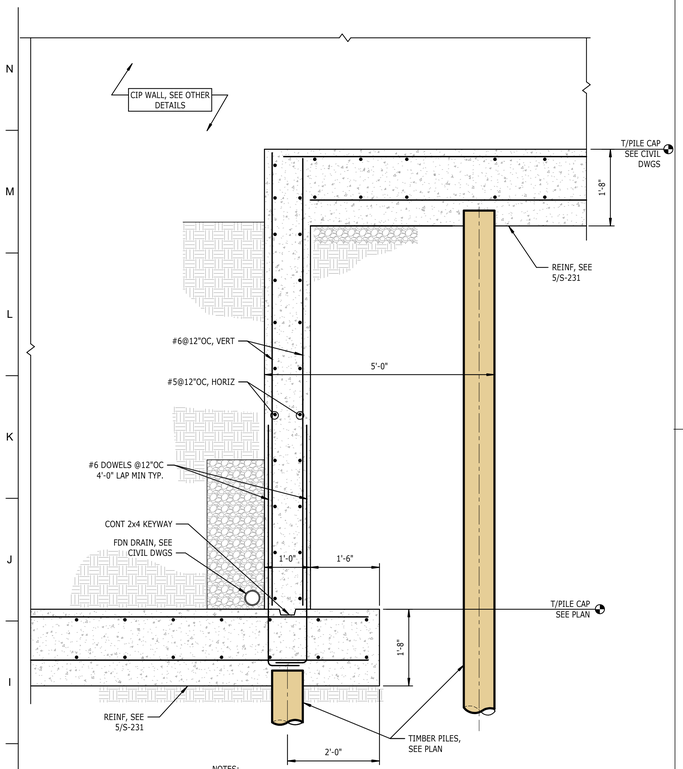
SITE WALL SECTIONS

SHEET NO. STRUCTURAL

S-230 - P1

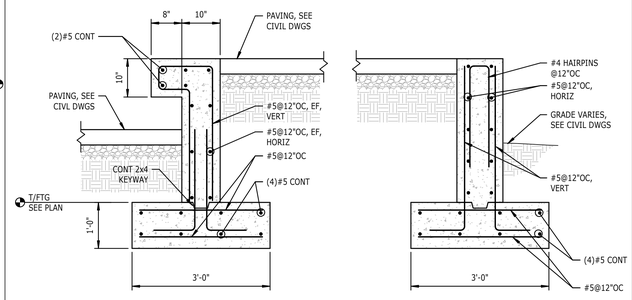
IRN016

IRN016

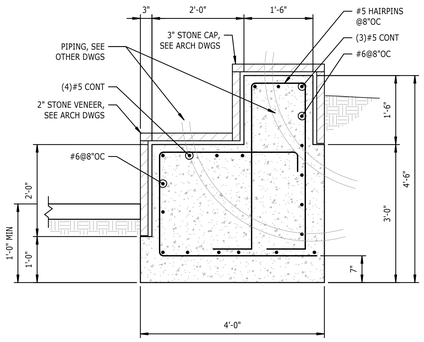


NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

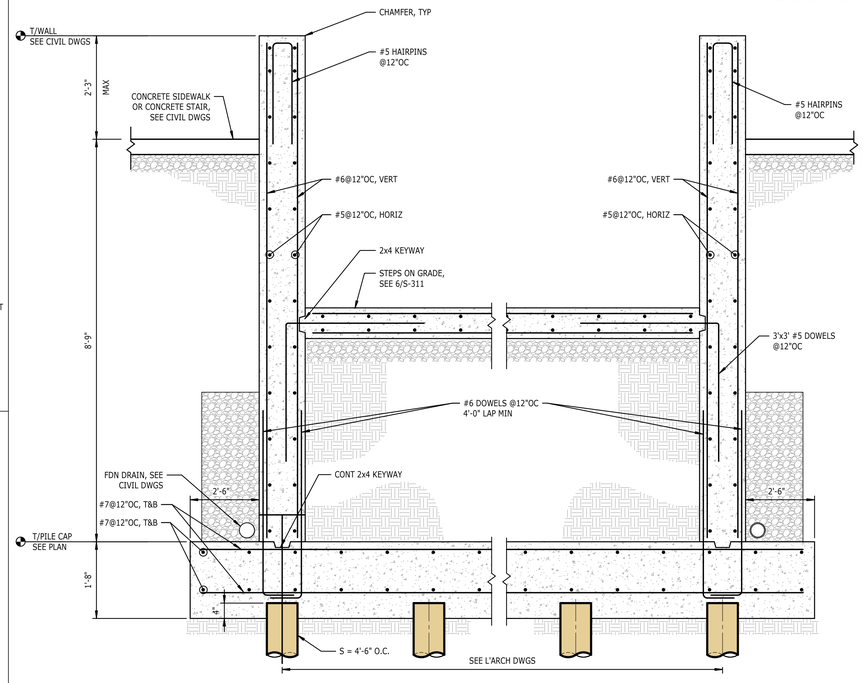
6 S-231 SECTION
CONCRETE WALL
3/4" = 1'-0"



3 S-231 SECTION
SEAT WALL AT ADA/VIP PLINTHS
3/4" = 1'-0"

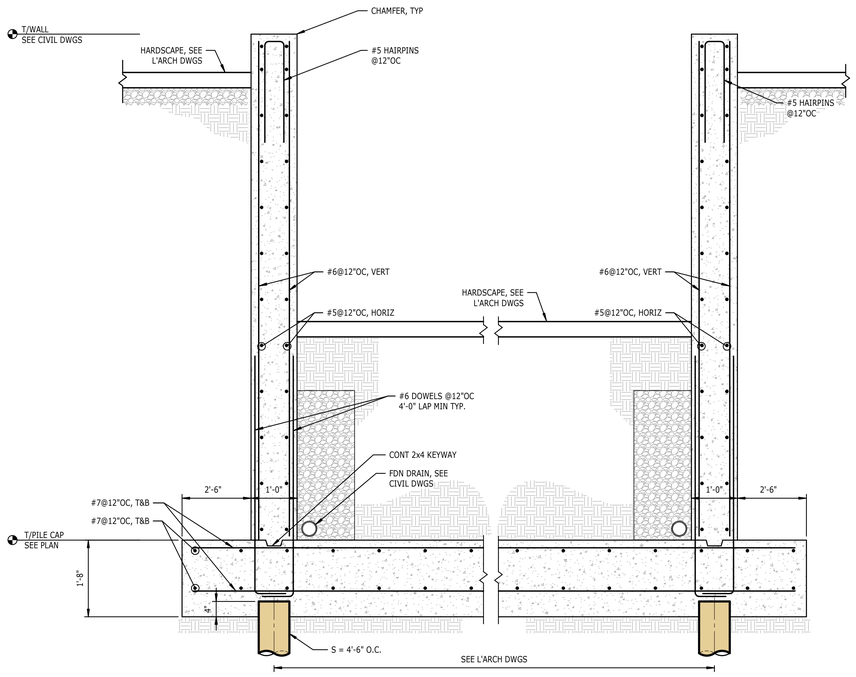


4 S-231 SECTION
AT WATER FOUNTAIN
3/4" = 1'-0"



NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

1 S-231 SECTION
CONCRETE WALL AT COWAN ST. STAIR
3/4" = 1'-0"



NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
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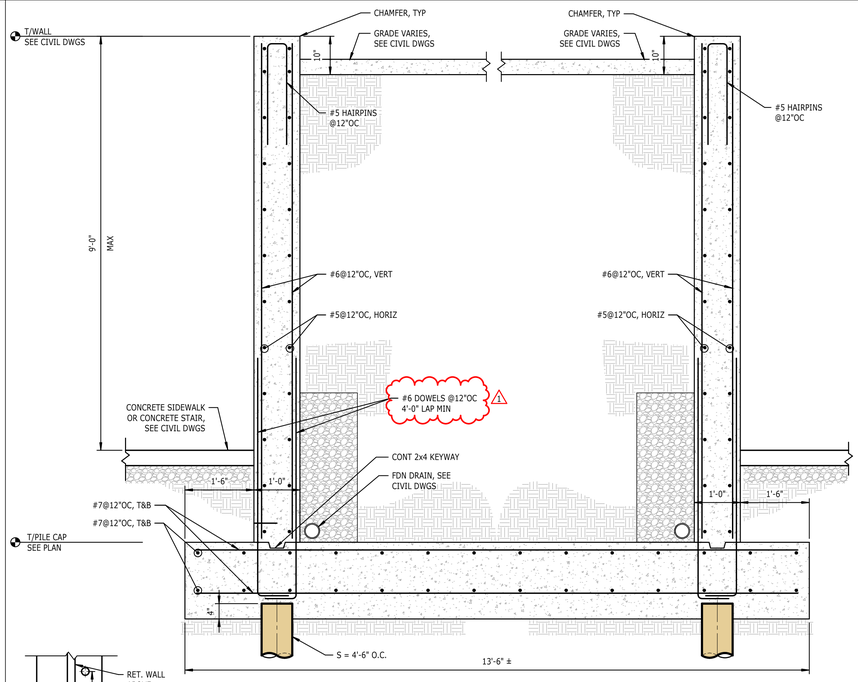
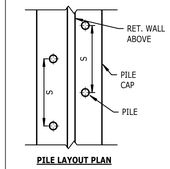
5 S-231 SECTION
CONCRETE WALL AT COWAN ST. STAIR
3/4" = 1'-0"





PILE LAYOUT PLAN

NOTES:
1. SEE FOUNDATION GENERAL NOTES FOR WALL AND FOUNDATION SYSTEM.
2. COORDINATE WITH CIVIL DRAWINGS. DRAINS TO TIE TO PRIMARY STORM SYSTEM

2 S-231 SECTION
CONCRETE WALL AT COWAN ST. STAIR
3/4" = 1'-0"

IRN016

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SEAL/SIGNATURE

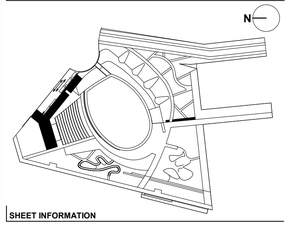
NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

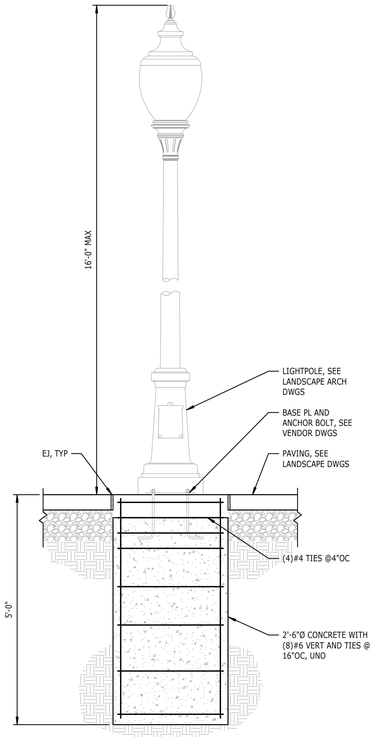
Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/4" = 1'-0"

SHEET TITLE

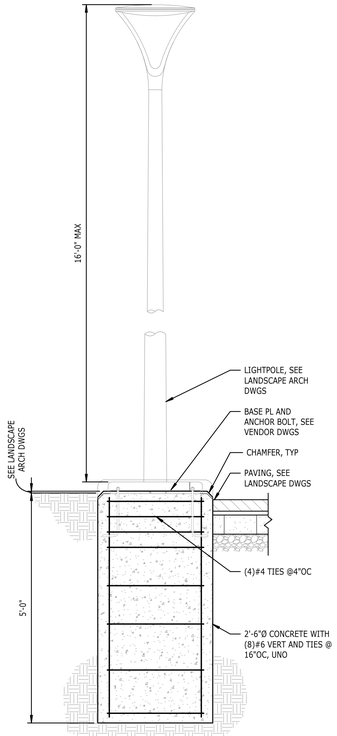
SITE WALL SECTIONS

SHEET NO. STRUCTURAL

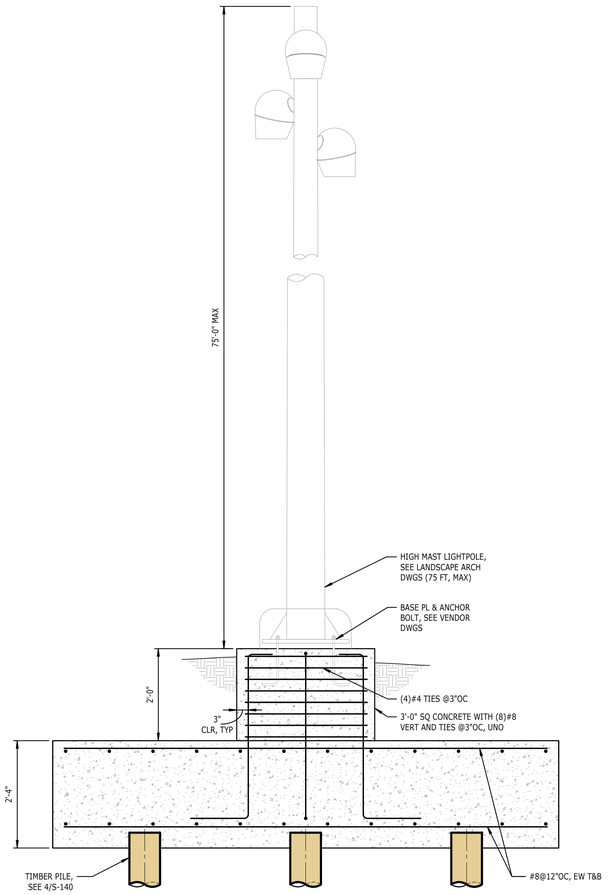
S-231 - P1



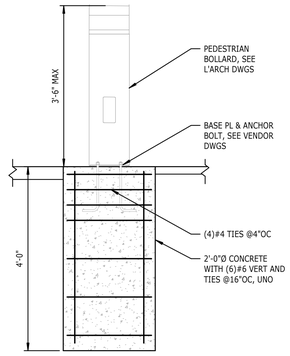
FOUNDATION FOR LIGHT POLE - TA



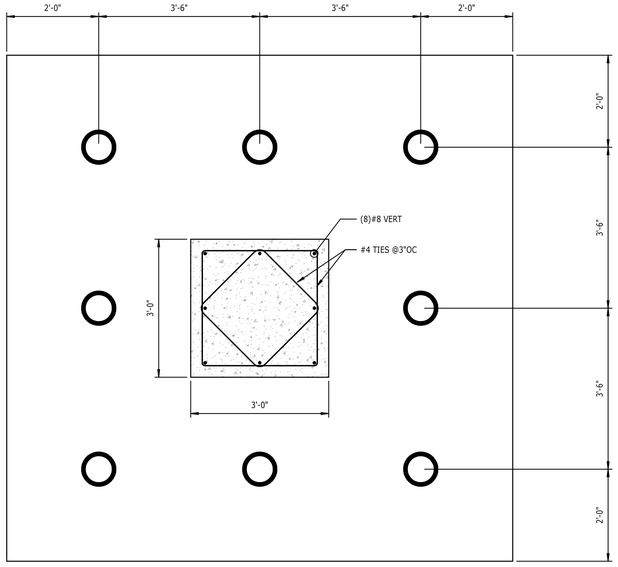
FOUNDATION FOR LIGHT POLE - TB



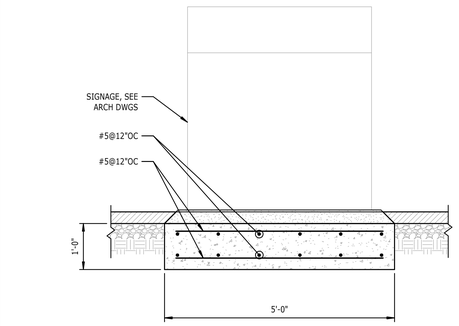
FOUNDATION FOR HIGH MAST POLE - TC

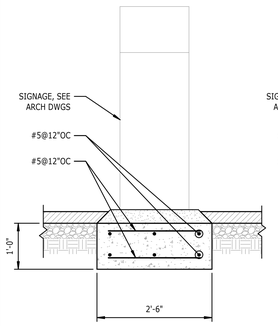


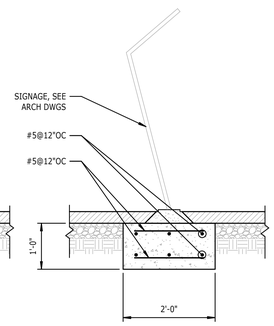
FOUNDATION FOR PEDESTRAIN BOLLARD



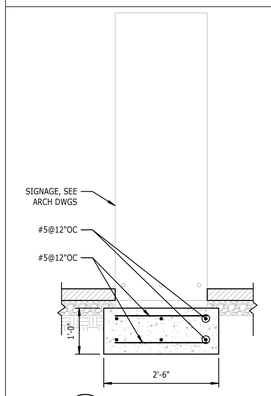
3 S-232 DETAIL FOR LIGHT POLES
3/4" = 1'-0"

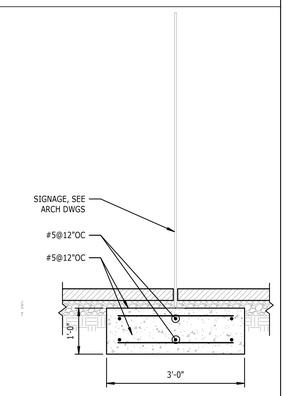






1 S-232 DETAIL
AT REGULATORY SIGN
3/4" = 1'-0"





2 S-232 DETAIL
AT REGULATORY SIGN - TYPE 3
NTS

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
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Landscape Architecture = L
HARGREAVES JONES
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SEAL/SIGNATURE

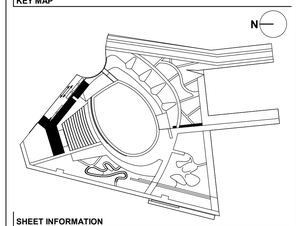
NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/4" = 1'-0"

IRN016

SHEET TITLE

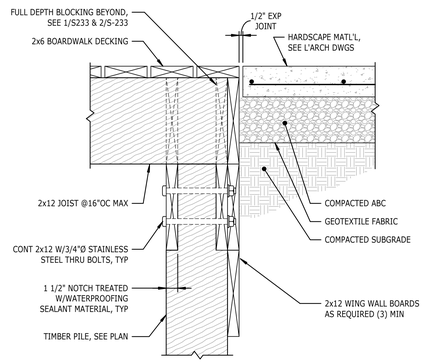
SITE WALL SECTIONS

SHEET NO.

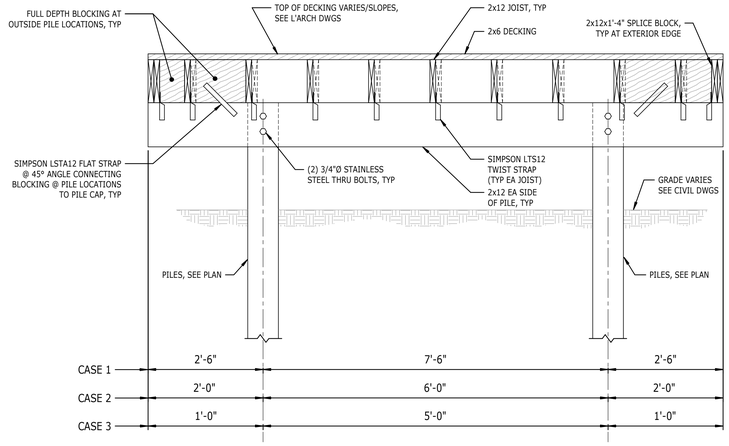
STRUCTURAL

S-232 - P1

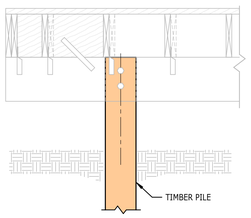
IRN016



4 S-233 CONCRETE/BOARDWALK CONNECTION
1 1/2" = 1'-0"



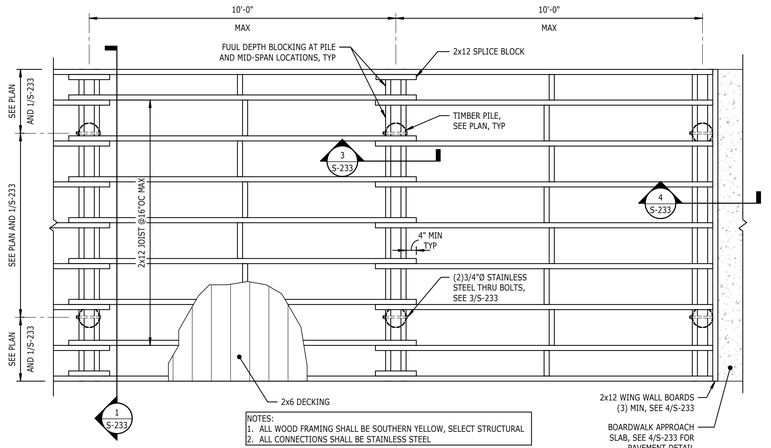
1 S-233 DETAIL
3/4" = 1'-0"



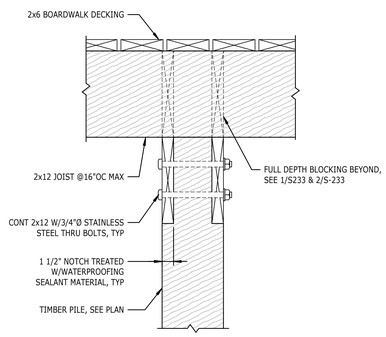
PILES: 8" DIAMETER TIMBER PILE DRIVEN DOWN TO REFUSAL DEPTH AT EMBEDMENT OF 30 TO 35± FT, MEASURED FROM TOP OF EXIST GRADE
CAPACITIES: ALLOWABLE AXIAL CAPACITY (COMP): 8-10 TON/PILE

BASED ON GEOTECHNICAL REPORT BY ANDREW CONSULTING ENGINEERS DATED MAY 21, 2018; PROJECT # 1716-18

5 S-233 DETAIL
PILE DETAIL AT GARDEN BOARDWALK
NTS



2 S-233 PLAN VIEW - BOARDWALK
1/2" = 1'-0"



IRN016

3 S-233 BEAM CONNECTION TO TIMBER PILE
1 1/2" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 024117 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
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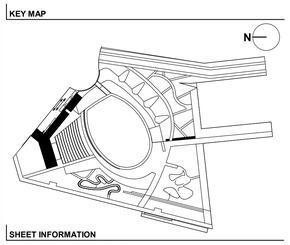
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

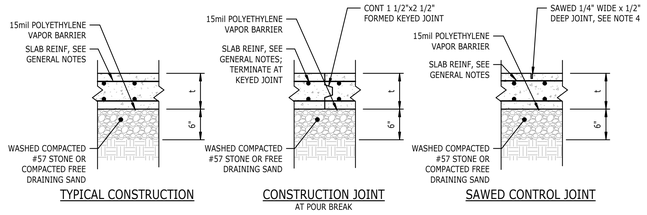
BOARDWALK DETAILS

SHEET NO.

STRUCTURAL

S-233 - P1

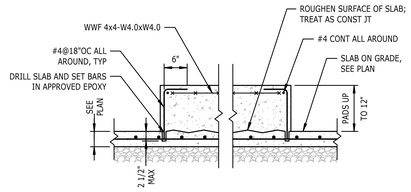
IRN016



1 / S-301 **DETAIL**

TYPICAL SLAB ON GRADE
NTS

NOTES:
1. 't' DENOTES SLAB THICKNESS, SEE PLANS.
2. JOINT LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
3. SEE ARCH DWGS FOR LOCATION OF CONTROL JOINTS. WHERE NOT SHOWN ON PLAN, CONTACT THE ENGINEER ARCHITECT.
4. SAW CUT CONTROL JOINTS WITHIN 8 HOURS OF SLAB POUR.
5. FREE DRAINING SAND SHALL CONTAIN LESS THAN 5% FINES.



NOTES:
1. THE EXACT SIZE, SHAPE, AND LOCATION OF EQUIPMENT (HOUSEKEEPING) PAD(S) SHALL BE DETERMINED BY THE CONTRACTOR AFTER APPROVAL OF EQUIPMENT SHOP DRAWINGS. ANCHOR BOLTS WHERE REQUIRED SHALL BE SIZED AND LOCATED ACCORDING TO MANUFACTURER'S REQUIREMENTS.

2 / S-301 **DETAIL**

CONCRETE EQUIPMENT PAD
NTS

IRN016

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, NC 28402

Landscape Architecture = L
HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry St, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West St., Suite 1100, Raleigh, NC 27603
www.stewartinc.com

Environmental Engineering = EE
SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
PO Box 11189, Southport, NC 28461
www.eagleresources.com

Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
PO Box 603, Lavonia, GA 30553
www.clarkirrigationdesign.com

Soil Design = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com

Water Fountain Design = WF
COMMERCIAL AQUATIC ENGINEERING
6500 Carlson Drive, Eden Prairie, MN 55346
www.fountaindesigns.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

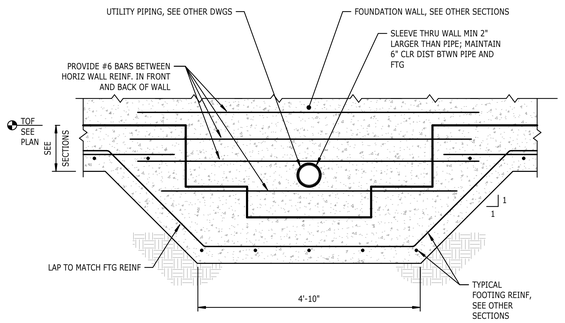
SLAB ON GRADE DETAILS

STRUCTURAL

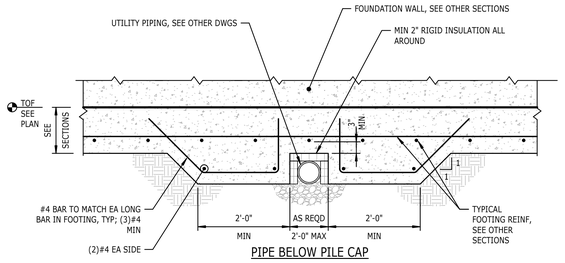
SHEET NO.

S-301 - P1

IRN016

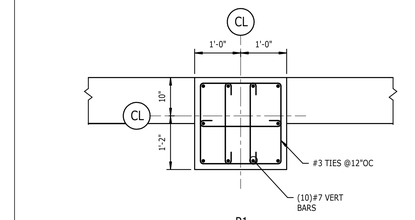


PIPE THRU PILE CAP



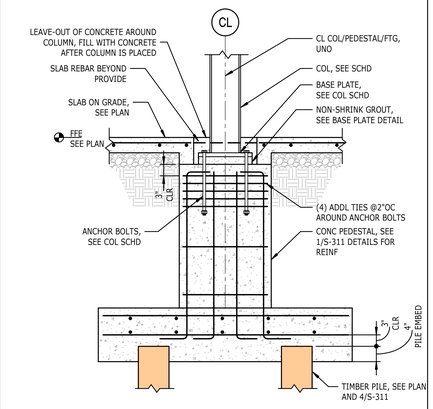
PIPE BELOW PILE CAP

5 S-311 **DETAIL**
TYPICAL UTILITY BELOW FOOTING
NTS



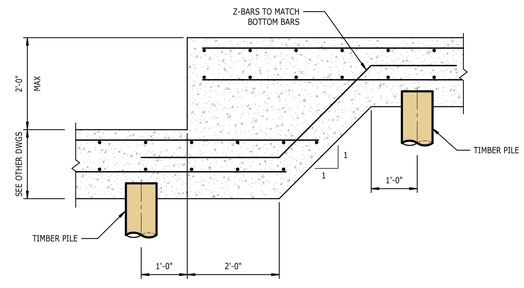
P1

1 S-311 **SCHEDULE**
PEDESTAL SCHEDULE
NTS

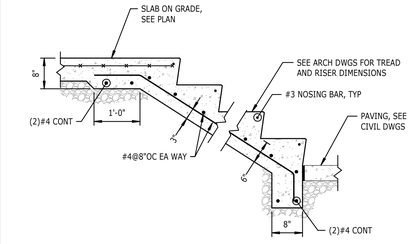


NOTES:
1. COAT BASE PLATE, ANCHOR BOLTS, AND COLUMN BELOW SLAB ON GRADE WITH AN APPROVED ASPHALT PAINT.
2. PROVIDE STANDARD ACI 90° HOOK AT BOTTOM AND TOP END OF ALL VERTICAL BARS IN PEDESTAL.

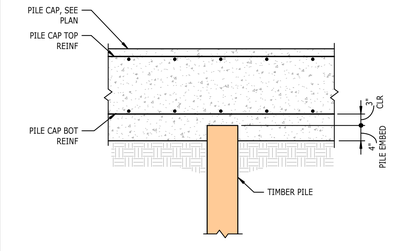
2 S-311 **DETAIL**
TYPICAL SPREAD FOOTING AT STEEL COLUMN WITH PEDESTAL AT LOADING DOCK
NTS



6 S-311 **DETAIL**
TYPICAL STEP DETAIL IN MAT
NTS



3 S-311 **SECTION**
TYPICAL STEPS ON GRADE WITH CONCRETE WALLS
NTS



PILES:	8" DIAMETER TIMBER PILE DRIVEN DOWN TO REFRUSAL DEPTH AT EMBEDMENT OF 45± FT, MEASURED FROM BOTTOM OF PILE CAP
CAPACITIES:	ALLOWABLE AXIAL CAPACITY (COMP): 50k/PILE
	ALLOWABLE AXIAL CAPACITY (TENSION): 20k/PILE
	LATERAL CAPACITY AT 1" DEFLECTION : 3.5k/PILE

4 S-311 **DETAIL**
TYP TIMBER PILE IN FTG DETAL AT STAGE, LOADING DOCK, AND SITE WALLS
NTS

PROJECT INFORMATION

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NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

IRN016

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/4" = 1'-0"

SHEET TITLE

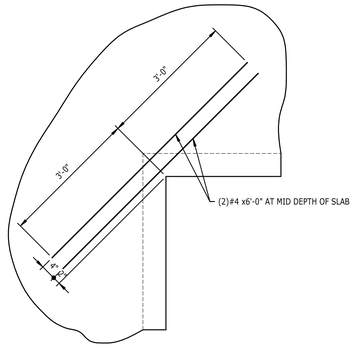
FOUNDATION DETAILS

SHEET NO.

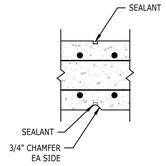
STRUCTURAL

S-311 - P1

IRN016



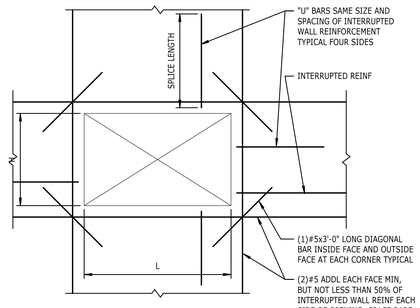
13 S-321 **DETAIL**
TYPICAL REINFORCING AT INSIDE CORNERS
NTS
NOTES:
1. DETAILS APPLIES AT ALL SLAB RE-ENTRANT CORNERS.



CONTROL JOINT (CJ)

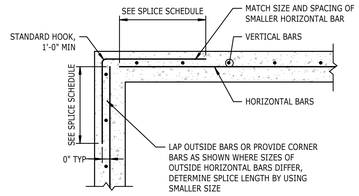
SEE ARCH DWGS FOR CJ LOCATIONS

9 S-321 **DETAIL**
TYPICAL JOINTS IN CONCRETE WALLS
NTS
NOTES:
1. FOAM JOINT FILLER TO BE CLOSED CELL NEOPRENE FOAM.
2. SEALANT TO BE "TREMCO DYMERIC" OR EQUAL.
3. SUBMIT SAMPLES OF JOINT FILLER & SEALANT FOR APPROVAL.
4. ALL CHAMFERS TO BE ON EXPOSED FACE OF WALL.

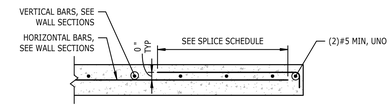


NOTES:
1. WALL OPENINGS SHALL BE COORDINATED AND DETAILED ON THE REINFORCEMENT SHOP DRAWINGS.
2. OPENINGS NOT TO EXCEED 3'-0" IN EITHER DIRECTION.
3. MAXIMUM CORED OPENING WITHOUT SLEEVE SHALL BE 6" DIA MINIMUM CENTER TO CENTER SPACING OF CORED OPENINGS TO BE 1'-6".

10 S-321 **DETAIL**
TYPICAL REINFORCING AT OPENINGS IN CONCRETE WALLS
NTS



AT CORNERS



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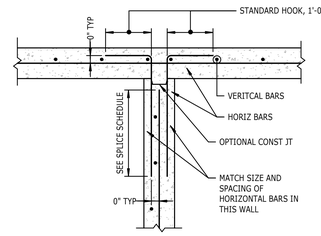


AT INTERSECTIONS

5 S-321 **DETAIL**
TYPICAL HORIZONTAL WALL REINFORCING, SINGLE LAYER
NTS

MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE

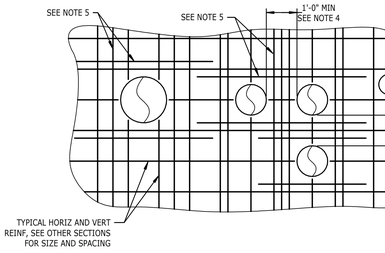
TENSION SPLICE BASED ON ACI 12.2.2, Fy = 60,000 PSI

BAR SIZE	f'c = 3000 PSI (NORMAL WT)				f'c = 4000 PSI (NORMAL WT)				f'c = 5000 PSI (NORMAL WT)			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	CASE		CASE		CASE		CASE		CASE		CASE	
	I	II	I	II	I	II	I	II	I	II	I	II
#3	28"	42"	22"	32"	24"	36"	19"	28"	22"	33"	17"	25"
#4	37"	56"	29"	43"	32"	48"	25"	37"	29"	43"	22"	33"
#5	47"	70"	36"	54"	40"	60"	31"	47"	36"	54"	28"	42"
#6	56"	84"	43"	64"	48"	72"	37"	56"	43"	65"	33"	50"
#7	81"	122"	63"	94"	70"	106"	54"	81"	63"	94"	49"	73"
#8	93"	139"	72"	107"	80"	121"	62"	93"	72"	108"	55"	83"
#9	105"	157"	81"	121"	91"	136"	70"	105"	81"	122"	63"	94"
#10	118"	177"	91"	136"	102"	153"	79"	118"	91"	137"	70"	105"
#11	131"	196"	101"	151"	113"	170"	87"	131"	101"	152"	78"	117"

NOTES:
1. AVOID SPLICES IN REGIONS OF MAXIMUM MOMENT. IF THIS IS NOT POSSIBLE STAGGER SPLICES SO THAT NOT MORE THAN 50% OF THE BARS ARE SPLICED WITHIN A REQUIRED SPLICE LENGTH, OTHERWISE INCREASE SPLICE LENGTH BY 30%.
2. TOP BARS = HORIZONTAL BARS PLACED WITH MORE THAN 12" OF CONCRETE IN THE MEMBER BELOW THE SPLICE.
s = C-C SPACING OF BARS BEING DEVELOPED OR SPLICED
clr = CLEAR COVER OF BARS

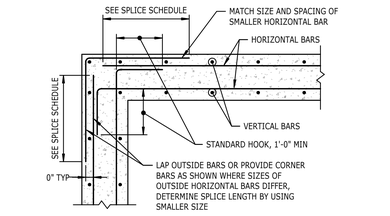
CATEGORY	CASE I	CASE II
BEAMS AND COLUMNS	$s \geq 2d_b$, clr $\geq d_b$, AND STIRRUPS PROVIDED THROUGHOUT l_d	$s < 2d_b$, AND clr $< d_b$
OTHER MEMBERS	clr $> d_b$ AND $s \geq 3d_b$	clr$< d_b$ OR $s < 3d_b$

1 S-321 **SCHEDULE**
TYPICAL MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE
NTS

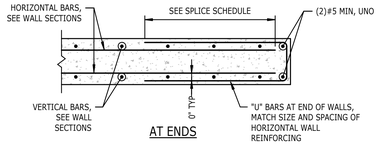


NOTES:
1. WALL OPENINGS SHALL BE COORDINATED AND DETAILED ON THE REINFORCEMENT SHOP DRAWINGS.
2. PROVIDE SLEEVES FOR ALL OPENINGS EXCEEDING 6" IN DIAMETER.
3. NO ADDITIONAL REINFORCING IS REQUIRED FOR OPENINGS NOT EXCEEDING 6" IN DIAMETER, PROVIDED NO TYPICAL REINFORCING IS INTERRUPTED.
4. PROVIDE 1'-0" MINIMUM SPACING BETWEEN EDGES OF OPENINGS, TYPICAL IN ALL DIRECTIONS FOR OPENINGS NOT EXCEEDING 18" IN DIAMETER. FOR OPENINGS BETWEEN 18" AND 30" IN DIAMETER, PROVIDE 2'-0" MINIMUM SPACING BETWEEN EDGES OF OPENINGS.
5. FOR OPENINGS EXCEEDING 6" IN DIAMETER AND FOR OPENINGS THAT INTERRUPT TYPICAL REINFORCING, PROVIDE ADDITIONAL VERTICAL REINFORCING BAR EACH SIDE OF OPENING. BAR SIZE TO MATCH TYPICAL VERTICAL REINFORCING. SPACING BETWEEN BARS SHALL BE 3". PROVIDE (2)#5 HORIZONTAL BARS EACH SIDE OF OPENING. MAINTAIN 3" SPACING BETWEEN BARS. BAR LENGTH SHALL BE TWO TIMES THE OPENING SIZE PLUS TWO TIMES THE BAR SPLICE LENGTH.
6. ALL PENETRATIONS TO BE CORE DRILLED SHALL BE SUBMITTED FOR APPROVAL PRIOR TO PROCEEDING WITH THE WORK.

11 S-321 **DETAIL**
TYP PENETRATIONS IN CONCRETE WALLS
NTS



AT CORNERS



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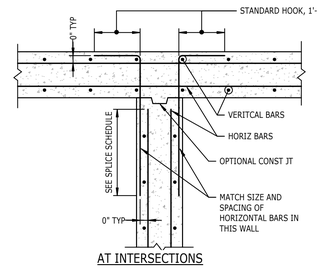
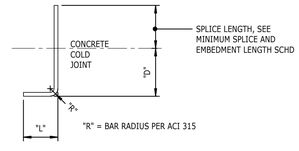


AT INTERSECTIONS

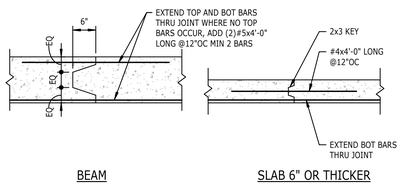
7 S-321 **DETAIL**
TYPICAL HORIZONTAL WALL REINFORCING, TWO LAYERS
NTS

CONCRETE REINFORCING DOWEL EMBEDMENT

BAR SIZE	LEG DIM, "L"	EMBEDMENT, "D"		
		f'c = 3,000 PSI	f'c = 4,000 PSI	f'c = 5,000 PSI
#3	6"	6"	6"	6"
#4	8"	8"	7"	6"
#5	10"	10"	9"	8"
#6	1'-0"	1'-0"	10"	9"
#7	1'-2"	1'-2"	1'-0"	11"
#8	1'-4"	1'-4"	1'-2"	1'-0"
#9	1'-7"	1'-6"	1'-3"	1'-2"
#10	1'-10"	1'-8"	1'-5"	1'-3"
#11	2'-0"	1'-10"	1'-7"	1'-5"

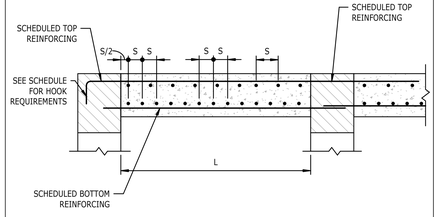


3 S-321 **SCHEDULE**
NTS
NOTES:
1. SIDE COVER ON BARS MUST BE GREATER THAN 2 1/2". END COVER ON 90° HOOKED BARS MUST BE GREATER THAN 2".
2. VALUES SHOWN ARE FOR NORMAL WEIGHT CONCRETE. FOR LIGHT WEIGHT CONCRETE, INCREASE THE "D" VALUES BY 30%.
3. FOR EPOXY-COATED BARS, INCREASE THE "D" VALUES BY 20%.



BEAM SLAB 6" OR THICKER

16 S-321 **DETAIL**
TYPICAL CONSTRUCTION JOINTS IN FRAMED CONCRETE MEMBERS
NTS
NOTES:
1. ALL KEYS ARE AT MID-DEPTH OF MEMBERS. LOCATE ALL JOINTS AT POINTS OF MINIMUM SHEAR. APPROVAL OF LOCATION BY THE ARCHITECT IS REQUIRED.



12 S-321 **DETAIL**
TYPICAL ONE WAY SLAB REINFORCEMENT
NTS
NOTES:
1. TEMPERATURE REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO SCHEDULED REINFORCING STEEL, ABOVE BOTTOM SCHEDULED REINFORCEMENT. SEE DETAIL.
2. REFER TO SLAB SCHEDULE FOR ALL PRIMARY REINFORCING SIZES, LENGTHS, AND SPACINGS.
3. LAP ALL TEMPERATURE REINFORCEMENT AND SUPPORT BARS 30 BAR DIAMETERS, BUT NOT LESS THAN 12".
4. "S" DENOTES TEMPERATURE REINFORCEMENT SPACING. SEE PLAN AND SECTIONS.

IRN016

PROJECT INFORMATION

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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 029417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

CONCRETE DETAILS

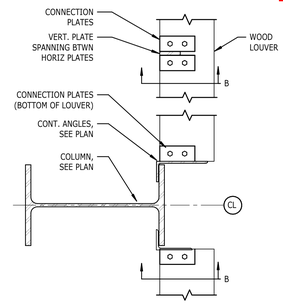
IRN016

SHEET NO.

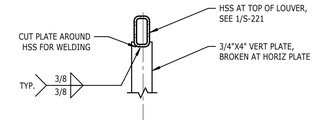
STRUCTURAL

S-321 - P1

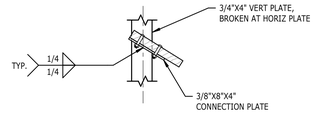
IRN016



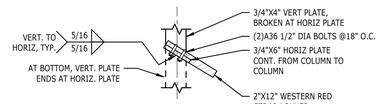
PARTIAL PLAN AT COLUMN



SECTION C
AT TOP OF LOUVER

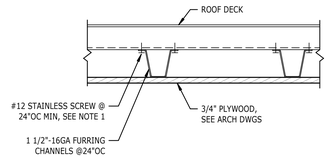


SECTION B
AT TYPICAL LOUVER



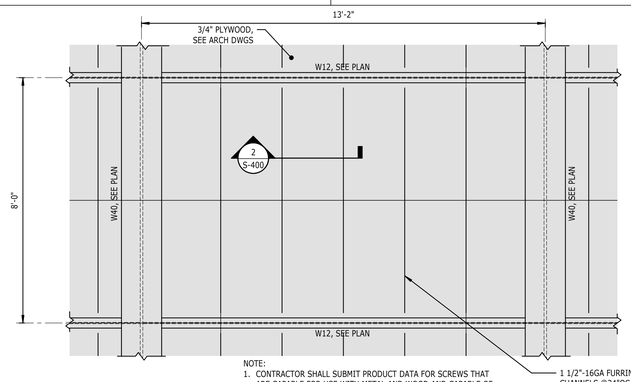
SECTION A
AT BOTTOM AND MIDDLE LOUVERS

1 / S-400 **DETAIL**
WOOD LOUVER DETAILS
NTS



NOTE:
1. CONTRACTOR SHALL SUBMIT PRODUCT DATA FOR SCREWS THAT ARE CAPABLE FOR USE WITH METAL AND WOOD AND CAPABLE OF SUPPORTING A TENSION LOAD OF 100 lbs.

2 / S-400 **DETAIL**
PLYWOOD SUPPORT BELOW STAGE ROOF
NTS



NOTE:
1. CONTRACTOR SHALL SUBMIT PRODUCT DATA FOR SCREWS THAT ARE CAPABLE FOR USE WITH METAL AND WOOD AND CAPABLE OF SUPPORTING A TENSION LOAD OF 100 lbs.

3 / S-400 **DETAIL**
TYP ROOF BAY FOR PLYWOOD CEILING SUPPORT AT STAGE ROOF
1/2" = 1'-0"

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, NC 28402

Landscape Architecture = L
HARGREAVES JONES
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www.hargreavesjonesla.com

Architecture = A
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Geotechnical Engineering = G
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223 S. West St., Suite 1100, Raleigh, NC 27603
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SOIL & ENVIRONMENTAL CONSULTANTS, PA
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www.clarkirrigationdesign.com

Soil Design = LS
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3908 Bentley Brook Dr. Raleigh, NC 2761**2**
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TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 028413 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

IRN016

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

WOOD DETAILS

SHEET NO.

STRUCTURAL

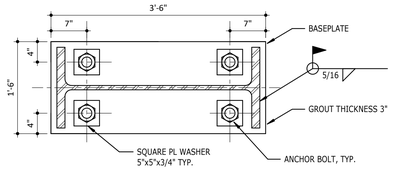
S-400 - P1

IRN016

STAGE AREA STEEL COLUMN SCHEDULE

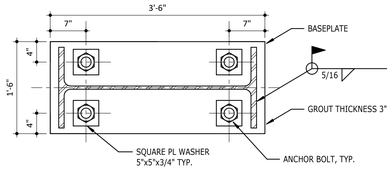
ROOF HIGH POINT																ROOF HIGH POINT
62'-6" RIGGING FRAMING PLAN																62'-6" RIGGING FRAMING PLAN
55'-0" CATERING ROOF	BUILT UP COLUMN FOLLOW SPOT, SEE S-145	BUILT UP COLUMN FOLLOW SPOT, SEE S-145	W40x199	W40x199	W40x199				W40x199				W40x215	W40x215	W40x297	W40x297	55'-0" CATERING ROOF
23'-5 3/16" STAGE FLOOR PLAN																	23'-5 3/16" STAGE FLOOR PLAN
15'-0" STAGE FOUNDATION																	15'-0" STAGE FOUNDATION
8'-0"																	8'-0"
Column Locations	b6.3(2"-3 1/16")-bD(-15"-2 3/16")	f3-fB	s1-sD	s1-sE	s1.1-s2	s1.1-sA	s1.1-sB	s1.1-sC	s2-sE	s2.1-sA	s2.1-sB	s2.1-sC	s3-sD	s3-sE	s4-sD	s4-sE	
CAP PLATE SIZE	SEE S-145	SEE S-145															
BASE PLATE SIZE	SEE S-140	SEE S-140	2"x18"x42"	2"x18"x42"	2"x18"x42"				2"x18"x42"				2"x18"x42"	2"x18"x42"	2"x18"x42"	2"x18"x42"	
BASE PLATE TYPE	TYPE 2	TYPE 2	TYPE s1	TYPE s1	TYPE s2				TYPE s2				TYPE s3	TYPE s3	TYPE s4	TYPE s4	
ANCHOR BOLTS	SEE S-140	SEE S-140	(4)2"Ø	(4)2"Ø	(4)2"Ø				(4)2"Ø				(4)2"Ø	(4)2"Ø	(4)2"Ø	(4)2"Ø	
EMBEDMENT LENGTH	SEE S-140	SEE S-140	26"	38"	26"				38"				26"	38"	26"	38"	
ANCHOR BOLT GRADE	SEE S-140	SEE S-140	55 KSI	55 KSI	55 KSI				55 KSI				55 KSI	55 KSI	55 KSI	55 KSI	

1



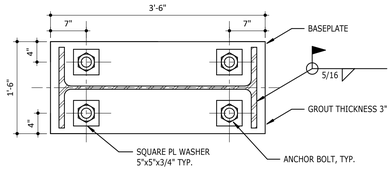
BASE PLATE:
STEEL GRADE (Fy) = 50 KSI

TYPE S4



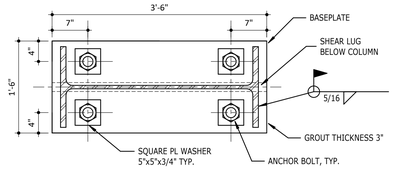
BASE PLATE:
STEEL GRADE (Fy) = 50 KSI

TYPE S3



BASE PLATE:
STEEL GRADE (Fy) = 50 KSI

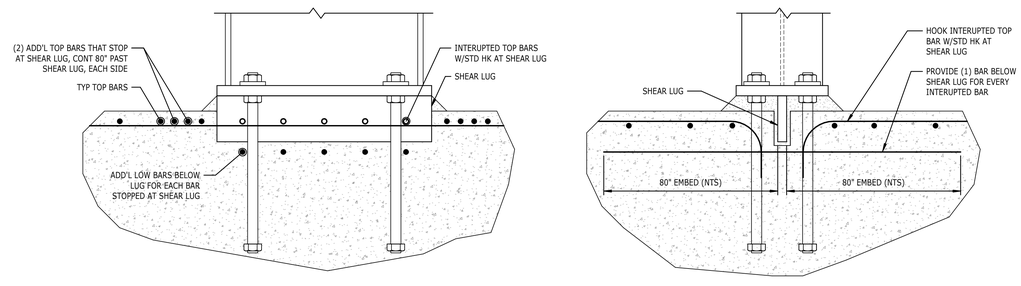
TYPE S2



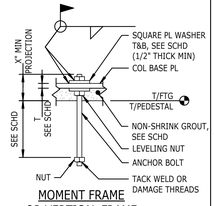
BASE PLATE:
STEEL GRADE (Fy) = 50 KSI

SHEAR LUG:
THICKNESS = 1 3/4"
DEPTH = 9"
WIDTH = 42"
WELD = 1" FILLET BOTH SIDES
STEEL GRADE (Fy) = 50 KSI

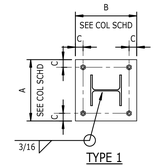
TYPE S1



3 / S-500 STAGE BASE PLATES AND REBAR DETAILS AT SHEAR LUG
1" = 1'-0"



MOMENT FRAME OR VERTICAL FRAME ANCHOR BOLT



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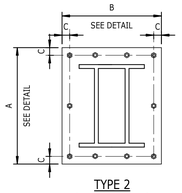
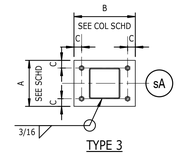


TYPE 2
(SEE 5/S-140)



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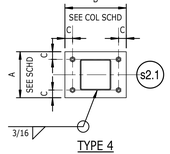
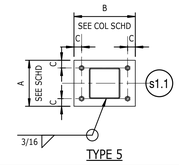


TYPE 4



TYPE 5

BOLT SIZE	3/4"Ø	1"Ø	1 1/4"Ø	1 1/2"Ø	1 3/4"Ø	2"Ø
DIMENSION "C"	1 1/2"	2"	2"	2 1/4"	2 1/2"	3 1/2"*
SQUARE PL WASHER SIZE	1/4"x2"	3/8"x3"	1/2"x3"	1/2"x3 1/2"	5/8"x4"	3/4"x5"
GROUT THICKNESS	2"	2"	2"	3"	3"	3"

IRN016

1 / S-500 DETAIL
STEEL COLUMN BASE PLATES
NTS

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, NC 28402

Landscape Architecture = L
HARGREAVES JONES
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www.hargreavesjonesla.com

Architecture = A
SAGE & COOMBE ARCHITECTS
12-16 Vestry St, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP.P.C.
77 Water Street, New York NY 10015
www.arup.com

Civil Engineering = C
Structural Engineering= S
Geotechnical Engineering = G
STEWART
223 S. West St., Suite 1100, Raleigh, NC 27603
www.stewartinc.com

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SOIL & ENVIRONMENTAL CONSULTANTS, PA
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
PO Box 11189, Southport, NC 28461
www.eagleresources.com

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CLARK IRRIGATION DESIGN & CONSULTING, INC
PO Box 653, Lavonia, GA 30553
www.clarkirrigationdesign.com

Soil Design = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 2761**2**
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
www.cheathampa.com

Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
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Water Fountain Design = WF
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6500 Carlson Drive, Eden Prairie, MN 55346
www.fountaindesigns.com

Lighting Design = EL
TILLOTSON DSGN ASSOCIATES
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SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 032417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS — Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: As indicated

SHEET TITLE

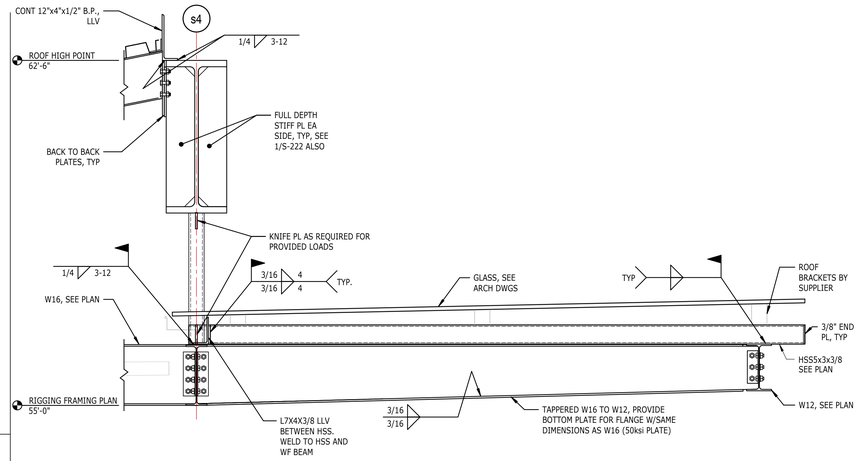
STAGE STEEL COLUMN SCHEDULE AND DETAILS

STRUCTURAL

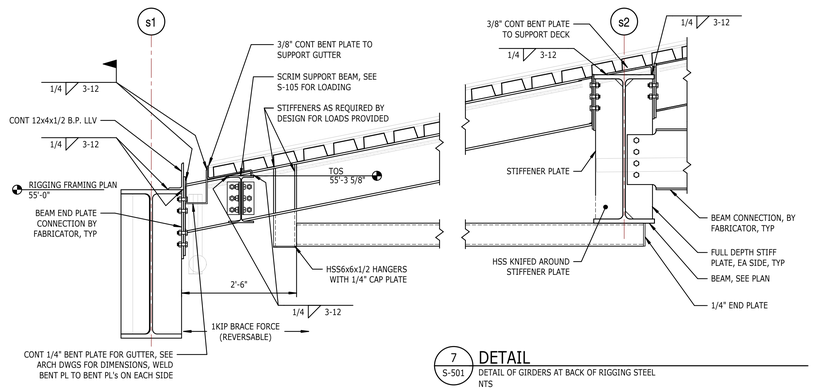
SHEET NO.

S-500 - P1

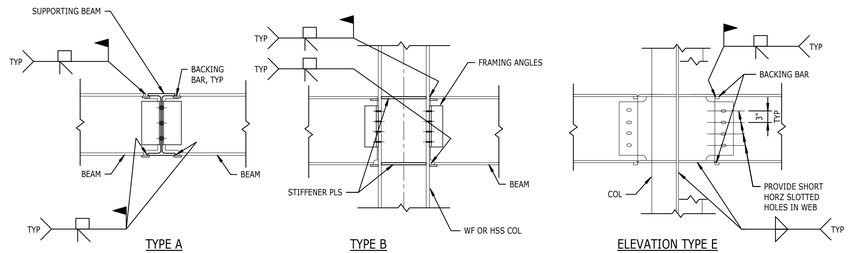
IRN016



6 S-501 **DETAIL**
DETAIL AT STAGE RIGGING CANOPY
NTS



7 S-501 **DETAIL**
DETAIL OF GIRDERS AT BACK OF RIGGING STEEL
NTS

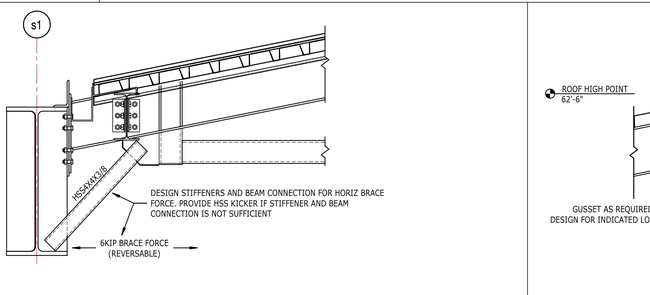


TYPE A TYPE B ELEVATION TYPE E

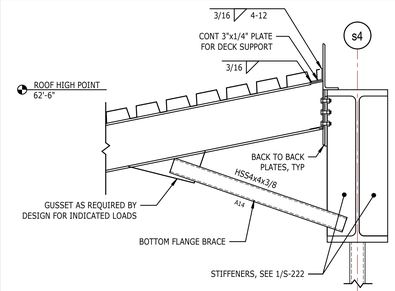
NOTES
1. PROVIDE ULTRASONIC TESTING AT FULL PENETRATION WELDS.

1 S-501 **SCHEDULE**
MOMENT CONNECTION SCHEDULE AND DETAILS
NTS

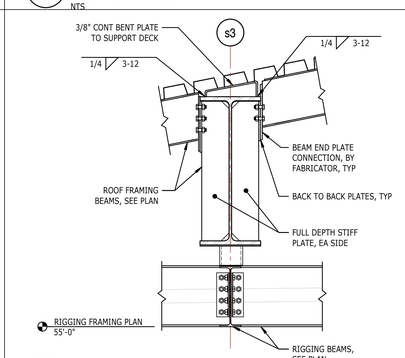
NOT USED



5 S-501 **DETAIL**
DETAIL AT BACK OF RIGGING STEEL FLANGE BRACE
NTS



3 S-501 **DETAIL**
DETAIL AT BOTTOM FLANGE BRACE
NTS



4 S-501 **DETAIL**
DETAIL AT STAGE RIGGING CANOPY
NTS

PROJECT INFORMATION

NORTH WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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Lighting Design = EL
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www.tillotsondesign.com

SEAL/SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 022417 ENGINEER JOHN CRAIG FISHER

10/25/2019

ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP

IRN016

SHEET INFORMATION

Project No.: NWP 1701
Drawn By: DJ, TM
Checked By: JF
Date: 10/25/2019
Scale: 3/4" = 1'-0"

SHEET TITLE

STEEL DETAILS

SHEET NO.

STRUCTURAL

S-501 - P1

STATEMENT OF SPECIAL INSPECTIONS

PROJECT: NORTH WATERFRONT PARK

LOCATION: WILMINGTON, NC

OWNER: CITY OF WILMINGTON

DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE: EB PANNKUK, PE.

THIS STATEMENT OF SPECIAL INSPECTIONS IS SUBMITTED AS A CONDITION FOR PERMIT ISSUANCE IN ACCORDANCE WITH THE SPECIAL INSPECTION AND STRUCTURAL TESTING REQUIREMENTS OF THE BUILDING CODE. IT INCLUDES A SCHEDULE OF SPECIAL INSPECTION SERVICES APPLICABLE TO THIS PROJECT AS WELL AS THE NAME OF THE SPECIAL INSPECTION COORDINATOR AND THE IDENTITY OF OTHER APPROVED AGENCIES TO BE RETAINED FOR CONDUCTION OF THESE INSPECTIONS AND TESTS. THIS STATEMENT OF SPECIAL INSPECTIONS ENCOMPASS THE FOLLOWING DISCIPLINES:

☒ STRUCTURAL MARINE ☐ MECHANICAL/ELECTRICAL/PLUMBING

☐ ARCHITECTURAL ☐ OTHER: _____

THE SPECIAL INSPECTION COORDINATOR SHALL KEEP RECORDS OF ALL INSPECTIONS AND SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. DISCOVERED DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF SUCH DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. THE SPECIAL INSPECTION PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF HIS OR HER RESPONSIBILITIES.

INTERIM REPORTS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

A FINAL REPORT OF SPECIAL INSPECTIONS DOCUMENTING COMPLETION OF ALL REQUIRED SPECIAL INSPECTIONS, TESTING AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED PRIOR TO ISSUANCE OF A CERTIFICATE OF USE AND OCCUPANCY.

JOB SITE SAFETY AND MEANS AND METHODS OF CONSTRUCTION ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

INTERIM REPORT FREQUENCY: PRIOR TO PROJECT MONTHLY MEETINGS.

PREPARED BY:

EB PANNKUK, PE
(type or print name)

Signature Date

NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER NEAL W. ANDREW

OWNERS AUTHORIZATION:

Signature Date

BUILDING OFFICIAL'S ACCEPTANCE:

Signature Date

SCHEDULE OF INSPECTION AND TESTING AGENCIES

THIS STATEMENT OF SPECIAL INSPECTIONS / QUALITY ASSURANCE PLAN INCLUDES THE FOLLOWING BUILDING SYSTEMS:

- ☒ SOILS AND FOUNDATIONS
- ☐ CAST-IN-PLACE CONCRETE
- ☐ PRECAST CONCRETE
- ☐ MASONRY
- ☒ STRUCTURAL STEEL
- ☐ COLD-FORMED STEEL FRAMING
- ☐ SPRAY FIRE RESISTANT MATERIAL
- ☒ WOOD CONSTRUCTION
- ☐ EXTERIOR INSULATION AND FINISH SYSTEM
- ☐ MECHANICAL & ELECTRICAL SYSTEMS
- ☐ ARCHITECTURAL SYSTEMS
- ☐ SPECIAL CASES

SPECIAL INSPECTION AGENCIES	FIRM	ADDRESS, TELEPHONE, E-MAIL
1. SPECIAL INSPECTION COORDINATOR - MARINE STRUCTURES	ANDREW CONSULTING ENGINEERS, P.C.	3811 PEACHTREE AVE., SUITE 300 WILMINGTON, NC 28403
2. INSPECTOR	TBD	
3. INSPECTOR		
4. TESTING AGENCY	TBD	
5. TESTING AGENCY		
6. OTHER		

NOTE: THE INSPECTORS AND TESTING AGENCIES SHALL BE ENGAGED BY THE OWNER OR THE OWNER'S AGENT, AND NOT BY THE CONTRACTOR OR SUBCONTRACTOR WHOSE WORK IS TO BE INSPECTED OR TESTED. ANY CONFLICT OF INTEREST MUST BE DISCLOSED TO THE BUILDING OFFICIAL, PRIOR TO COMMENCING WORK.

QUALITY ASSURANCE PLAN

QUALITY ASSURANCE FOR SEISMIC AND WIND RESISTANCE

SEISMIC DESIGN CATEGORY: N/A

QUALITY ASSURANCE PLAN REQUIRED (Y/N): NO

STRUCTURAL OBSERVATIONS TO BE PERFORMED:

1. CONTINUOUS OBSERVATION OF PILES & INDICATOR PILE TESTS.

2. PERIODIC OBSERVATION OF TIMBER FRAMING.

REQUIRED FREQUENCY AND DISTRIBUTION OF STRUCTURAL OBSERVATION REPORTS:

1. ACE, PC RECOMMENDS PERIODIC CONSTRUCTION OBSERVATION REPORTS TO BE PREPARED BY THE CONSTRUCTION MATERIAL TESTING COMPANY AT THE COMPLETION OF CONSTRUCTION OBSERVATIONS AND FORWARDED TO GENERAL CONTRACTOR, OWNER, AND STRUCTURAL ENGINEER OF RECORD IN A TIMELY MANNER.

STATEMENT OF RESPONSIBILITY:

1. EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF PILES SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND TO THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. (CONTRACTOR TO SEE APPLICABLE CODE FOR ADDITIONAL INFORMATION.)

QUALIFICATIONS OF INSPECTORS AND TESTING TECHNICIANS

THE QUALIFICATIONS OF ALL PERSONNEL PERFORMING SPECIAL INSPECTION AND TESTING ACTIVITIES ARE SUBJECT TO THE APPROVAL OF THE BUILDING OFFICIAL. THE CREDENTIALS OF ALL INSPECTORS AND TESTING TECHNICIANS SHALL BE PROVIDED IF REQUESTED.

KEY FOR MINIMUM QUALIFICATIONS OF INSPECTION AGENTS:

WHEN THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE DEEMS IT APPROPRIATE THAT THE INDIVIDUAL PERFORMING A STIPULATED TEST OR INSPECTION HAVE A SPECIFIC CERTIFICATION OR LICENSE AS INDICATED BELOW, SUCH DESIGNATION SHALL APPEAR BELOW THE AGENCY NUMBER ON THE SCHEDULE.

PE/SE STRUCTURAL ENGINEER - A LICENSED SE OR PE SPECIALIZING IN THE DESIGN OF BUILDING STRUCTURES

PE/GE GEOTECHNICAL ENGINEER - A LICENSED PE SPECIALIZING IN SOIL MECHANICS AND FOUNDATIONS

EIT ENGINEER-IN-TRAINING - A GRADUATE ENGINEER WHO HAS PASSED THE FUNDAMENTALS OF ENGINEERING EXAMINATION

AMERICAN CONCRETE INSTITUTE (ACI) CERTIFICATION

ACI-CFTT CONCRETE FIELD TESTING TECHNICIAN - GRADE 1

ACI-CCI CONCRETE CONSTRUCTION INSPECTOR

ACI-LTT LABORATORY TESTING TECHNICIAN - GRADE 1&2

ACI-STT STRENGTH TESTING TECHNICIAN

AMERICAN WELDING SOCIETY (AWS) CERTIFICATION

AWS-CWI CERTIFIED WELDING INSPECTOR

AWS/AISC-SSI CERTIFIED STRUCTURAL STEEL INSPECTOR

AMERICAN SOCIETY OF NON-DESTRUCTIVE TESTING (ASNT) CERTIFICATION

ASNT NON-DESTRUCTIVE TESTING TECHNICIAN - LEVEL II OR III.

INTERNATIONAL CODE COUNCIL (ICC) CERTIFICATION

ICC-SMSI STRUCTURAL MASONRY SPECIAL INSPECTOR

ICC-SWSI STRUCTURAL STEEL AND WELDING SPECIAL INSPECTOR

ICC-SFSI SPRAY-APPLIED FIREPROOFING SPECIAL INSPECTOR

ICC-PCSI PRESTRESSED CONCRETE SPECIAL INSPECTOR

ICC-RCSI REINFORCED CONCRETE SPECIAL INSPECTOR

NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET)

NICET-CT CONCRETE TECHNICIAN - LEVELS I, II, III, & IV

NICET-ST SOILS TECHNICIAN - LEVELS I, II, III, & IV

NICET-GET GEOTECHNICAL ENGINEERING TECHNICIAN - LEVELS I, II, III, & IV

EXTERIOR DESIGN INSTITUTE (EDI) CERTIFICATION

EDI-EIFS EIFS THIRD PARTY INSPECTOR

OTHER

QUALITY ASSURANCE PLAN

OWNER: CITY OF WILMINGTON

LOCATION: WILMINGTON, NC

PREPARED BY: ANDREW CONSULTING ENGINEERS, P.C. (ACE, PC)

NORTH CAROLINA BUILDING CODE 2018 EDITION

SPECIAL INSPECTION & STRUCTURAL OBSERVATION REQUIREMENTS

CODE	ITEM	PE	AGENCY OR TESTING LAB		ACTION	ATTACHED
			CONTINUOUS	PERIODIC		
1704	SPECIAL INSPECTION REQUIREMENTS	X				ATTACHED
1704-8	VERIFY ELEMENT MATERIALS, SIZES AND LENGTHS COMPLY WITH THE REQUIREMENTS.			X	REQUIRED	
	DETERMINE CAPACITIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL LOAD TESTS, AS REQUIRED.		X		REQUIRED	
	OBSERVE DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.		X		REQUIRED	
	VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM TYPE AND SIZE OF HAMMER, RECORD NUMBER OF BLOWS PER FOOT OF PENETRATION, DETERMINE REQUIRED PENETRATIONS TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENT ANY DAMAGE TO FOUNDATION ELEMENT.		X		REQUIRED	

SOILS AND FOUNDATIONS

ITEM	AGENCY # (QUALIF.)	SCOPE
1. SHALLOW FOUNDATIONS	N/A	N/A
2. CONTROLLED STRUCTURAL FILL	N/A	N/A
3. DEEP FOUNDATIONS - PILES	PE/NICET-GET	IDENTIFY FINAL PILE TIP ELEVATION, CUT OFF ELEVATION, AND BLOW COUNT TEST RESULTS CONTINUOUS OBSERVATION OF PILE INSTALLATION CONTINUOUS OBSERVATION OF INDICATOR PILES CONTINUOUS OBSERVATION OF PILE BLOW COUNTS
4. LOAD TESTING	N/A	N/A
5. OTHER	N/A	N/A

WOOD CONSTRUCTION

ITEM	AGENCY # (QUALIF.)	SCOPE
1. FABRICATOR CERTIFICATION/ QUALITY CONTROL PROCEDURES ☒ FABRICATOR EXEMPT	N/A	N/A
2. MATERIAL GRADING	EIT	INSPECT FOR CORRECT SPECIES AND MATERIAL GRADE.
3. CONNECTIONS	EIT	N/A
4. FRAMING AND DETAILS	EIT	INSPECT FOR CORRECT LUMBER SIZES AND CONFIGURATION.
5. DIAPHRAGMS AND SHEARWALLS	N/A	N/A
6. PREFABRICATED WOOD TRUSSES	N/A	N/A
7. PERMANENT TRUSS BRACING	N/A	N/A
8. OTHER:	N/A	N/A

STRUCTURAL STEEL

ITEM	AGENCY # (QUALIF.)	SCOPE
1. FABRICATOR CERTIFICATION/ QUALITY CONTROL PROCEDURES ☐ FABRICATOR EXEMPT	N/A	N/A
2. MATERIAL CERTIFICATION	AWS/AISC-SSI/ ICC-SWSI	REVIEW CERTIFIED MILL TEST REPORTS AND IDENTIFICATION MARKINGS ON WIDE-FLANGE SHAPES, HIGH-STRENGTH BOLTS, NUTS, AND WELDING ELECTRODES.
3. OPEN WEB STEEL JOISTS	N/A	N/A
4. BOLTING	AWS/AISC-SSI/ ICC-SWSI	INSPECT INSTALLATION AND TIGHTENING OF HIGH-STRENGTH BOLTS. VERIFY THAT SPLINES HAVE SEPARATED FROM TENSION CONTROL BOLTS. VERIFY PROPER TIGHTENING SEQUENCE.
5. WELDING	N/A	N/A
6. SHEAR CONNECTORS	N/A	N/A
7. STRUCTURAL DETAILS	ICC-SWSI	N/A
8. METAL DECK	N/A	N/A
8. OTHER:	N/A	N/A

GENERAL STRUCTURAL NOTES

1. THESE STRUCTURAL NOTES ARE AN INTEGRAL PART OF THE STRUCTURAL DRAWINGS AND ARE TO BE USED IN CONJUNCTION WITH THE JOB SPECIFICATIONS. WHEN THERE ARE NO SPECIFICATIONS IN ADDITION TO THESE NOTES THE NOTES SHALL GOVERN. WHEN THERE IS A SPECIFICATION IN ADDITION TO THE NOTES THE MORE STRINGENT OF THE TWO SHALL GOVERN.
2. BUILDING CODE: 2018 NC BUILDING CODE
3. CONTRACTOR VERIFY ALL DIMENSIONS AND DETAILS AT THE JOB SITE.
4. U.N.O. MEANS "UNLESS NOTED OTHERWISE"
5. ALL SPECIFICATIONS REFER TO LATEST EDITION.
6. ALL WORK TO COMPLY WITH NC STATE BUILDING CODE LATEST EDITION.
7. THIS BUILDING WAS DESIGNED USING WIND PRESSURE COEFFICIENTS FOR AN OPEN STRUCTURE.

MISCELLANEOUS:

1. THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING, SHORING AND GUYING OF FRAMING AND WALLS AGAINST WIND, CONSTRUCTION LOADS AND OTHER TEMPORARY FORCES UNTIL SUCH PROTECTION IS NO LONGER REQUIRED FOR THE SAFE SUPPORT OF THE FRAMING.
2. DIMENSIONS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE DIMENSIONS OF THE STRUCTURAL DRAWINGS AND ADVISING THE ENGINEER OF ANY DIFFERENCES IN DIMENSIONS BETWEEN THE PLANS AND SECTIONS, PRIOR TO COMMENCING CONSTRUCTION.
3. CONSTRUCTION SAFETY: THESE STRUCTURAL DRAWINGS DO NOT CONTAIN NECESSARY COMPONENTS FOR SAFETY DURING CONSTRUCTION.

ENVIRONMENTAL CONSIDERATIONS:

1. DURING CONSTRUCTION, THE CONTRACTOR SHALL CONDUCT ITS OPERATIONS IN SUCH A MANNER TO PREVENT OR REDUCE TO A MINIMUM ANY DAMAGE TO THE RIVER FROM POLLUTION BY DEBRIS, SEDIMENT OR OTHER FOREIGN MATERIAL; OR FROM THE MANIPULATION OF EQUIPMENT AND/OR MATERIALS IN OR NEAR THE RIVER. THE CONTRACTOR SHALL NOT RETURN DIRECTLY TO THE RIVER ANY WATER WHICH CAUSE THE RIVER TO BECOME POLLUTED WITH SILT, CEMENT, OIL, OR OTHER IMPURITIES.
2. DURING REMOVAL OPERATIONS, THE CONTRACTOR SHALL NOT BE ALLOWED TO DROP WASTE CONCRETE, DEBRIS AND OTHER MATERIAL INTO PROJECT AREA. NETS, SCREENS OR OTHER PROTECTIVE DEVICES SHALL BE USED TO CATCH THE MATERIAL IF THE DESIGN TEAM OR OWNER DETERMINES THAT ADEQUATE PROTECTIVE DEVICES ARE NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
3. CONTRACTOR TO INSTALL SEDIMENT CURTAIN AS SPECIFIED ON CIVIL DRAWINGS.

FLOOD PLAIN INVOLVEMENT:

1. DEVELOPMENT WHICH WILL TAKE PLACE WITHIN THE LIMITS OF THE 100-YEAR FLOOD PLAIN AT ELEVATION 9.0' NAVD88 IS DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF EXECUTIVE ORDER 123, UNIFORM FLOOD PLAIN MANAGEMENT POLICY.

GEOTECHNICAL INVESTIGATION FOR MARINE STRUCTURES:

1. THE RESULTS CAN BE FOUND IN THIS REPORT: RFTS PROJECT #1716-18 DATED MAY 5, 2018.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL
   A. BOLTS: H.D. GALVANIZED ASTM A307
   B. NUTS: H.D. GALVANIZED AND LUBRICATED HEAVY HEX ASTM A563
   C. WASHERS: H.D. GALVANIZED OGEE WASHERS OR H.D. GALVANIZED PLATE WASHERS ASTM F436
   D. MISCELLANEOUS: H.D. GALVANIZED A36
2. WELDING ELECTRODES - E-70 SERIES
3. ALL STRUCTURAL STEEL AND ACCESSORIES TO BE H.D. GALVANIZED TO MEET ASTM A153 AND A123.
4. ALL OTHER STRUCTURAL STEEL, BOLTS AND FITTINGS TO BE H.D. GALVANIZED AFTER FABRICATION PER ASTM A153. SOME FITTINGS ARE STAINLESS STEEL. SEE SPECS AND PLANS.

TIMBER PILING:

1. TIMBER PILES SHALL MEET REQUIREMENTS OF ASTM D25 AND THE NORTH CAROLINA BUILDING CODE 2018 EDITION FOR SOUTHERN YELLOW PINE CLASS B OR APPROVED EQUAL.
2. DRIVE/JET/SPUD/PRE-DRILL PILES AS NECESSARY TO A MINIMUM EMBEDMENT OF 30'-0" TO BE DETERMINED UPON INDICATOR PILE TESTS AND AS NECESSARY TO OBTAIN A DESIGN CAPACITY OF 3.5 TONS (BEARING) AND 2.0 TONS (UPLIFT). IF PILE REACHES REJECTION BEFORE THE MINIMUM ELEVATION, THE CONTRACTOR IS TO NOTIFY THE ENGINEER IN WRITING.
3. PILES ARE TO BE PLACED PER THE NORTH CAROLINA STATE BUILDING CODE 2018 EDITION USING AN ENGINEER APPROVED RATED HAMMER.
4. THE OWNER IS RESPONSIBLE FOR RETAINING THE GEOTECHNICAL COMPANY OF RECORD TO LOG AND INSPECT THE INSTALLATION OF ALL PILING AND UPON COMPLETION OF THE PILE DRIVING OPERATION TO ISSUE A CERTIFICATION BY THE GEOTECHNICAL ENGINEER OF RECORD FOR MARINE STRUCTURES THAT PILING HAS BEEN INSTALLED IN ACCORDANCE WITH THE DESIGN AS REQUIRED BY THE BUILDING CODE.
5. CONTRACTOR SHALL COORDINATE TESTING OF PILES WITH GEOTECHNICAL ENGINEER OF RECORD PRIOR TO ORDERING AND INSTALLING PRODUCTION PILES. LOCATIONS OF INDICATOR PILES WILL BE DETERMINED BY DESIGN TEAM. THERE WILL BE 5 INDICATOR PILES IN BASE BID - COORDINATE PILE LOCATIONS WITH ENGINEER.
6. BASE BID ON 40'-0" LONG PILES.

TIMBER AND MISCELLANEOUS:

1. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED (ASTM 153) UNLESS NOTED OTHERWISE.
2. PROVIDE TREATMENT CERTIFICATES ON ALL LUMBER BY AN INDEPENDENT 3RD PARTY INSPECTOR AWPB OR SPIB APPROVED AND SUBJECT TO APPROVAL BY ENGINEER.
3. ALL WOOD MATERIALS SHALL HAVE FIELD CUTS TREATED WITH KOPPERS #50.
4. COUNTER SINK BOLT HEADS WHERE EXPOSED ON OUTBOARD FACE OF WALKWAY.
5. USE OGEE WASHER OR 1/4" HEAVY PLATE WASHERS UNDER ALL BOLTS AND NUTS UNLESS NOTED OTHERWISE.
6. SCREW DECK TO STRINGERS WITH 316 STAINLESS STEEL WOOD SCREWS. MINIMUM SCREW DIAMETER = 10 GA. MINIMUM SCREW LENGTH = 3".

METAL GUARDRAIL:

1. MATERIALS AND FINISH:
   A. RAILINGS: HEAVY DUTY, SCHEDULE 40, PRE-ENGINEERED ALUMINUM PIPE RAILINGS AS INDICATED.
   B. FINISH: BLACK ANODIZED ENAMEL FINISH. CONTRACTOR TO SUPPLY THE OWNER WITH 2 CANS OF TOUCH-UP PAINT FROM HANDRAIL MANUFACTURER AT COMPLETION OF INSTALL.
   C. FASTENERS: STAINLESS STEEL HARDWARE; SUPPLY COMPONENTS REQUIRED FOR ANCHORAGE OF FABRICATIONS. PAINT ALL EXPOSED HARDWARE TO MATCH RAILINGS.
2. SUBMITTALS:
   A. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR GUARDRAIL AND GATE CONSTRUCTION INDICATING SPACING AND ALL SIZES OF CONNECTIONS AND MEMBERS, PROFILES, ANCHORAGE AND FINISHES OF ALL MEMBERS AND OTHER INFORMATION REQUIRED FOR CONSTRUCTION.
3. MOCK-UPS:
   A. PROVIDE FIELD SAMPLE OF METAL GUARDRAIL SECTION, 7.5 FEET LONG, INCLUDING END CONDITIONS, ILLUSTRATING SELECTED COLOR AND FINISH FOR APPROVAL.
4. FABRICATION:
   A. STRUCTURAL REQUIREMENTS: FABRICATE GUARDRAIL COMPONENTS TO MEET CURRENT ICC, OSHA AND ADA REQUIREMENTS.
   B. FABRICATE COMPONENTS WITH JOINTS TIGHTLY FITTED AND SECURED.
   C. EXPOSED FASTENINGS: FASTENINGS SHALL BE UNOBSTRUCTED LOCATED AWAY FROM VIEW WHENEVER POSSIBLE.
   D. CLEAN AND STRIP PRIMED AREAS BARE TO METAL WHERE FIELD CUTTING IS REQUIRED.
5. INSTALLATION:
   A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S SHOP DRAWINGS.
   B. PROVIDE ANCHORS, ANGLES AND OTHER FASTENERS REQUIRED.
   C. INSTALL COMPONENTS PLUMB AND LEVEL, ACCURATELY FITTED, FREE FROM DISTORTION OR DEFECTS.
   D. CONCEAL BOLTS AND SCREWS WHENEVER POSSIBLE.
   E. PROTECT RAILING FROM DAMAGE UNTIL FINAL ACCEPTANCE BY OWNER.

WOOD MATERIAL SCHEDULE

MATERIAL	SIZE*	S.Y. PINE GRADE	SURFACE	MOISTURE CONTENT	USE CATEGORY AND CCA RETENTION
PILING	12"Ø	CLASS B PILES			UC5B
GIRDERS	6x12	PT #1 DENSE	ROUGH	S-DRY 19	UC5B
STRINGERS	2x12	PT #1	S4S	S-DRY 19	UC5B
FLOOR DECKING	2x6	PT #1 PRIME	S4S	ADAT/KDAT19	UC4B
BOLLARDS	8x8	PT #1	S4S	ADAT/KDAT19	UC5B
KNEE BRACE	8x8	PT #1	ROUGH	S-DRY 19	UC5B

* UNLESS OTHERWISE NOTED
** 'PT' INDICATES PRESSURE TREATED LUMBER

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PROJECT INFORMATION

NORTH IRN016 WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON
Community Services Department
PO Box 1810, Wilmington, North Carolina 28402
City of Wilmington Project Code 3CPRK 1860

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HARGREAVES JONES
180 Varick Street, Suite 204, New York, NY 10014
www.hargreavesjonesla.com
NC License #C-513

Architecture = A
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12-16 Vestry Street, 5th Floor, New York, NY 10013
www.sageandcoombe.com

Acoustic/Theater/AV = AT
OAP, P.C.
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Structural Engineering= S
Geotechnical Engineering = G
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www.stewartinc.com
NC License #C-1051

Environmental Engineering = EE
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8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615
www.sandec.com
EAGLE RESOURCES
215 West Moore Street, Southport, NC 28461
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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landispllc.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
CHEATHAM & ASSOCIATES, PA
3412 Enterprise Drive, Wilmington NC 28405
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Marine Structural Engineering = SM
ANDREW CONSULTING ENGINEERS
3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403
www.andrewengineers.com
NC License #C-2461

Water Fountain Design = WF
DELTA FOUNTAINS
11494 Columbia Park Dr. W., Suite 4, Jacksonville, FL32258
www.fountaindesigns.com

Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
40 Worth Street, Room 703, New York NY 10013
www.tillotsondesign.com

SEAL SIGNATURE

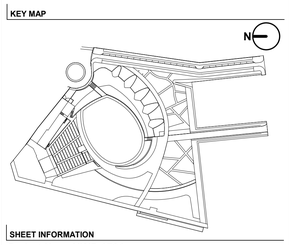
NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER NEAL W. ANDREW

ACE PROJECT NO: 17053

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

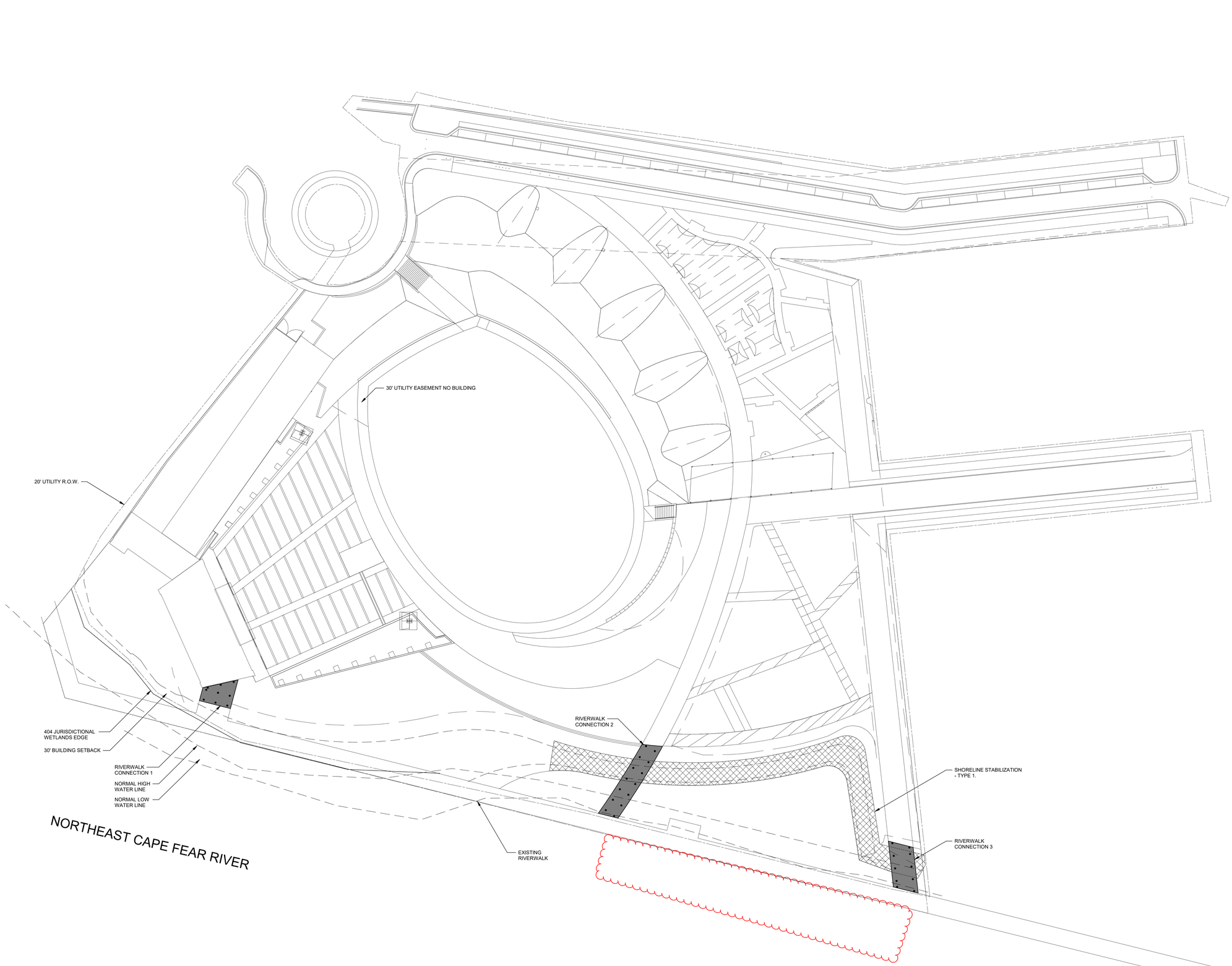
Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

STRUCTURAL MARINE NOTES

SHEET NO.

SM-001-P1



A1 OVERALL PLAN

SCALE 1" = 30'-0"

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SEAL SIGNATURE

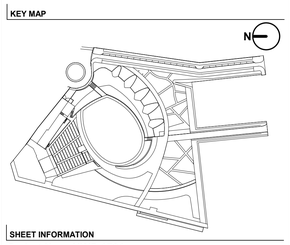
NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER EVERETT B. PANNKUK

ACE PROJECT NO: 17053

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

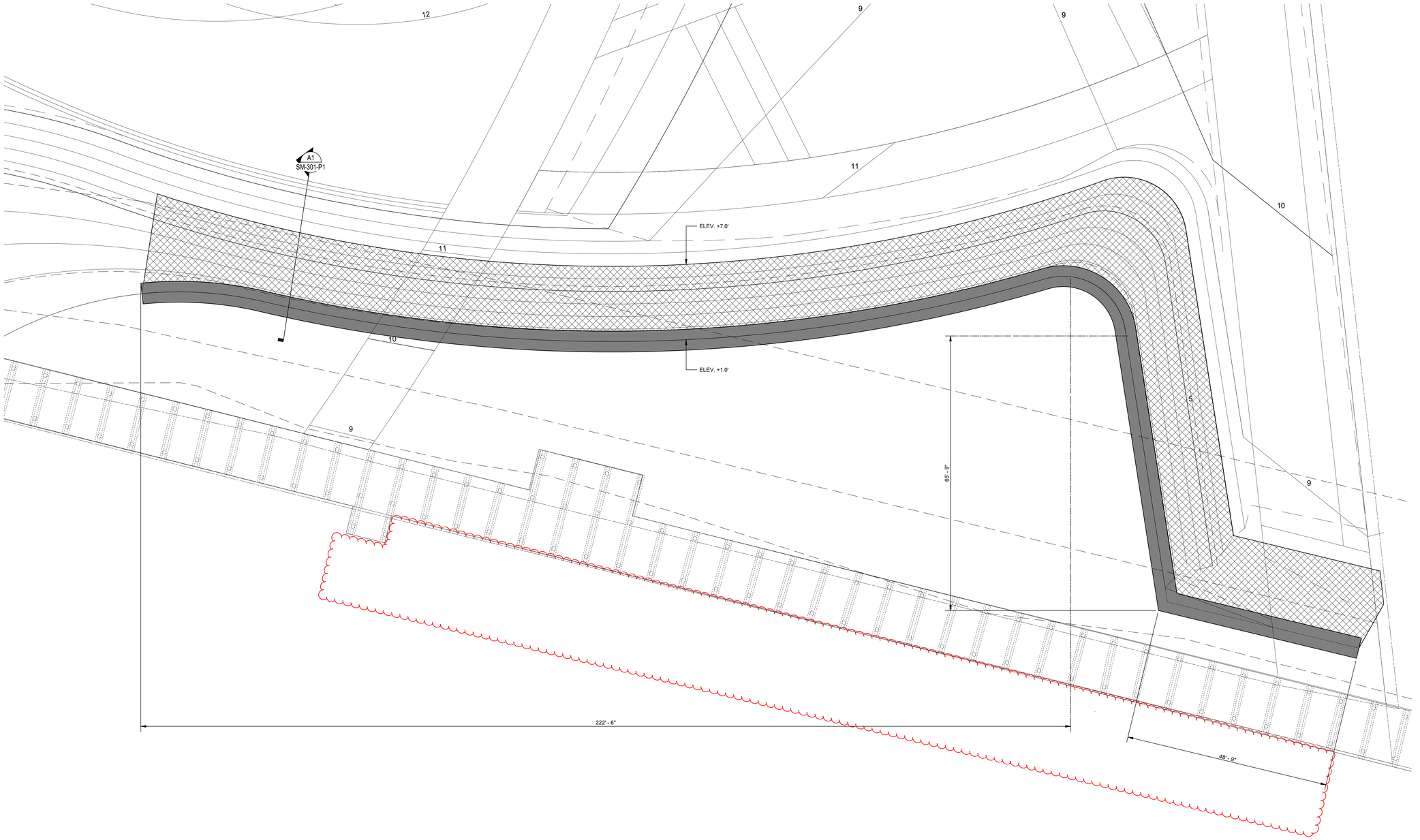
STRUCTURAL MARINE OVERALL PLAN

SHEET NO.

SM-101-P1

GENERAL STRUCTURAL NOTES

1. ▨ - INDICATES FLEXAMAT. SEE SHEET SM-702-P1 FOR ADDITIONAL INFORMATION.
2. ■ - INDICATES TRITON MARINE MATRESS. SEE SHEET SM-701-P1 FOR ADDITIONAL INFORMATION.



IRN016

A1 SHORELINE STABILIZATION PLAN
SCALE 1" = 10'-0"

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Irrigation= I
CLARK IRRIGATION DESIGN & CONSULTING, INC
P.O. Box 693, Lavonia, GA 30553
www.clarkirrigationdesign.com

Landscape Soil = LS
LANDIS, PLLC
3908 Bentley Brook Dr. Raleigh, NC 27612
www.landisplic.com

Mechanical Engineering = M
Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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www.cheathampa.com
NC License #C-1073

Marine Structural Engineering = SM
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Lighting Design = EL
TILLOTSON DESIGN ASSOCIATES
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www.tillotsondesign.com

SEAL SIGNATURE

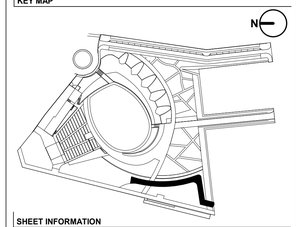
NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER NEAL W. ANDREW

ACE PROJECT NO: 17053

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

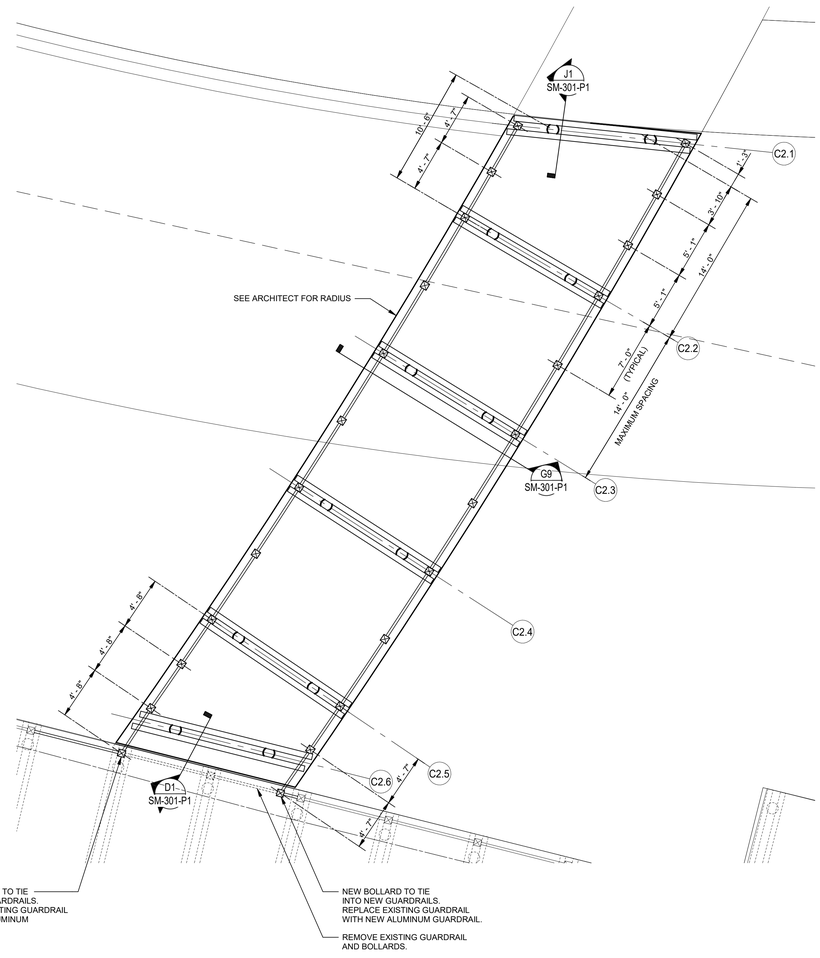
STRUCTURAL MARINE SHORELINE STABILIZATION PLAN

SHEET NO.

SM-102-P1

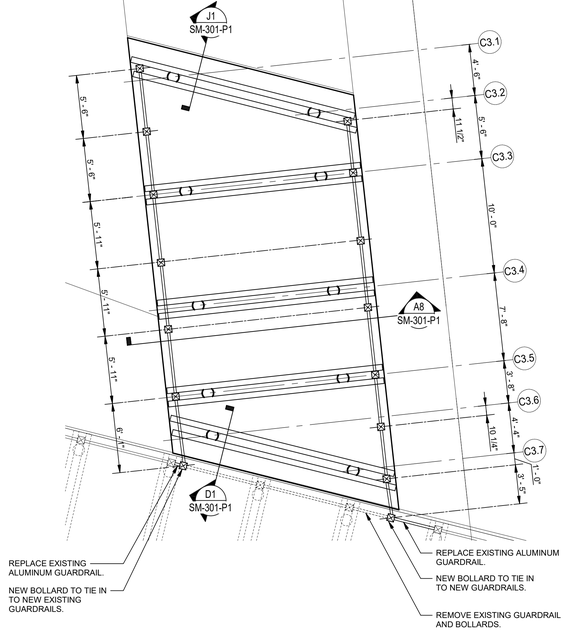
GENERAL STRUCTURAL NOTES

1. SEE ARCHITECTURAL DRAWINGS FOR WALKWAY ELEVATIONS.



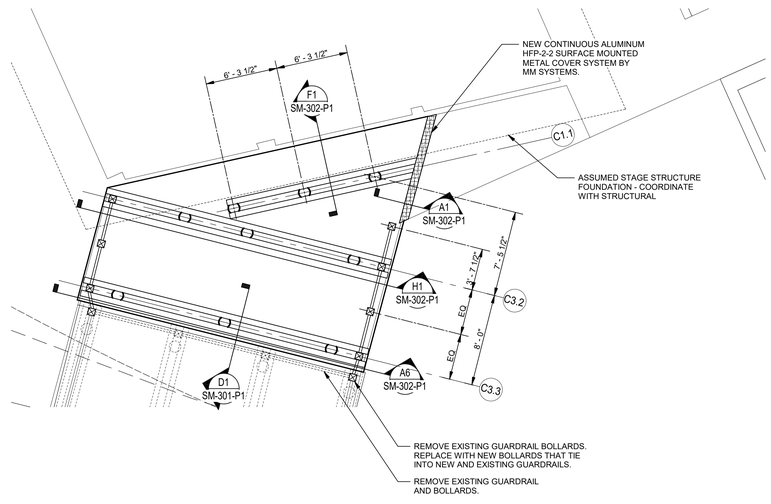
F10 RIVERWALK CONNECTION 2 PILE LAYOUT PLAN

SCALE 3/16" = 1'-0"



A5 RIVERWALK CONNECTION 3 PILE LAYOUT PLAN

SCALE 3/16" = 1'-0"



A10 RIVERWALK CONNECTION 1 PILE LAYOUT PLAN

SCALE 3/16" = 1'-0"

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NORTH IRN016 WATERFRONT PARK

10 COWAN STREET
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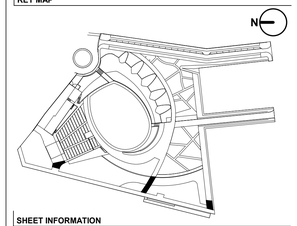


SHEET INFORMATION

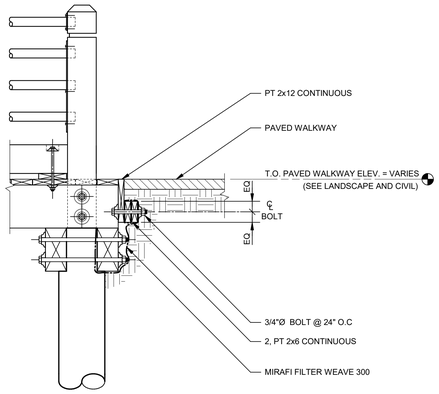
Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

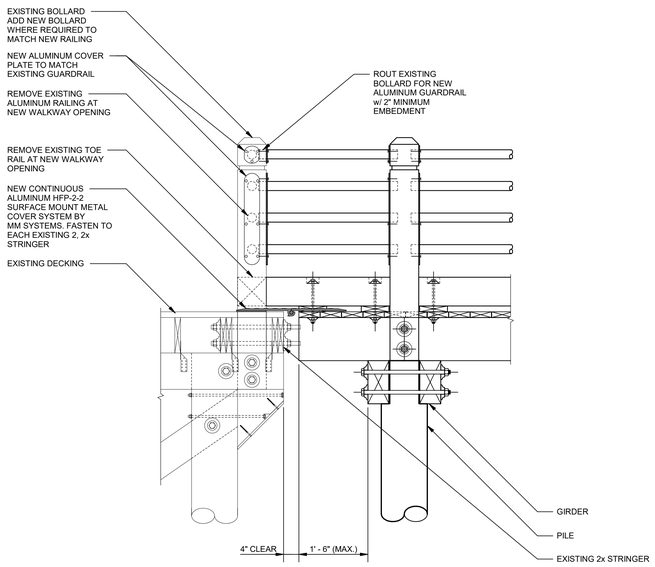
STRUCTURAL MARINE RIVERWALK CONNECTIONS

SHEET NO.

SM-103-P1



J1 **SECTION**
SCALE 3/4" = 1'-0"



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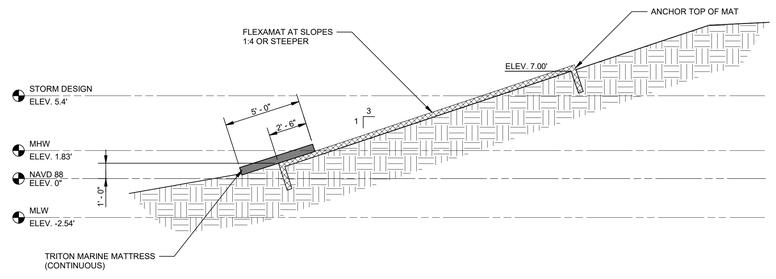
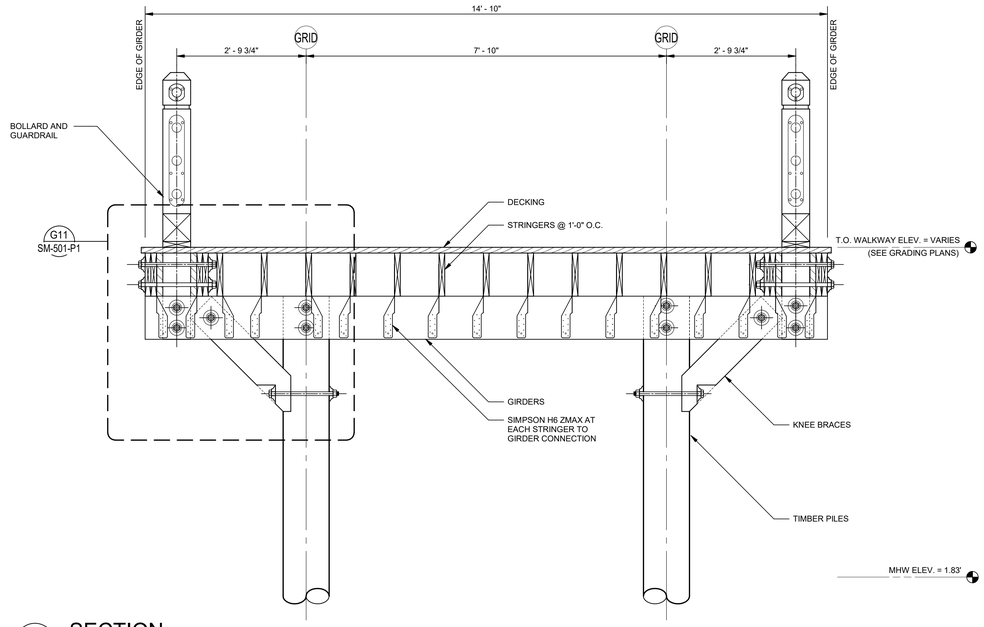


A1 **SECTION**
SCALE 1/4" = 1'-0"

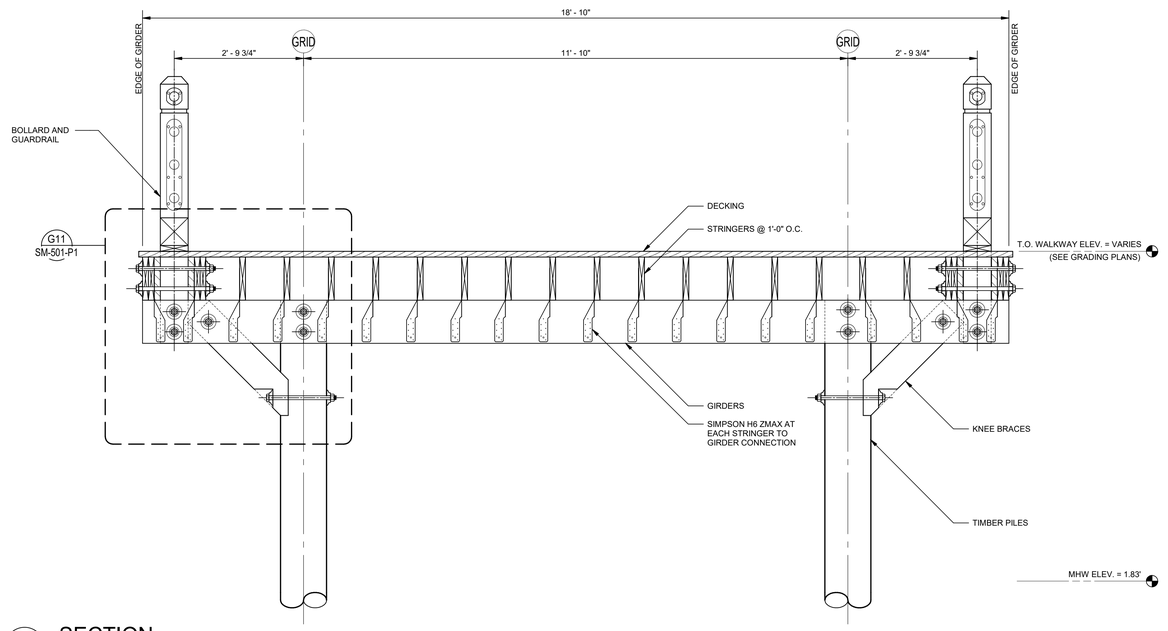
WOOD MATERIAL SCHEDULE

MATERIAL	SIZE*	S.Y. PINE GRADE	SURFACE	MOISTURE CONTENT	USE CATEGORY AND CCA RETENTION
PILING	12"Ø	CLASS B PILES			UC5B
GIRDERS	6x12	PT #1 DENSE	ROUGH	S-DRY 19	UC5B
STRINGERS	2x12	PT #1	S4S	S-DRY 19	UC5B
FLOOR DECKING	2x6	PT #1 PRIME	S4S	ADAT/KDAT19	UC4B
BOLLARDS	8x8	PT #1	S4S	ADAT/KDAT19	UC5B
KNEE BRACE	8x8	PT #1	ROUGH	S-DRY 19	UC5B

* UNLESS OTHERWISE NOTED
** "PT" INDICATES PRESSURE TREATED LUMBER



G9 **SECTION**
SCALE 3/4" = 1'-0"



A8 **SECTION**
SCALE 3/4" = 1'-0"

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NORTH **IRN016** WATERFRONT PARK

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City of Wilmington Project Code 3CPRK 1860

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NC License #C-1051

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SEAL SIGNATURE

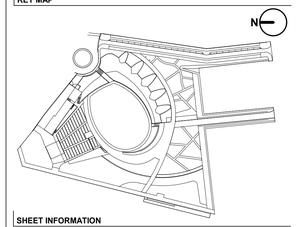


ACE PROJECT NO: 17053

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

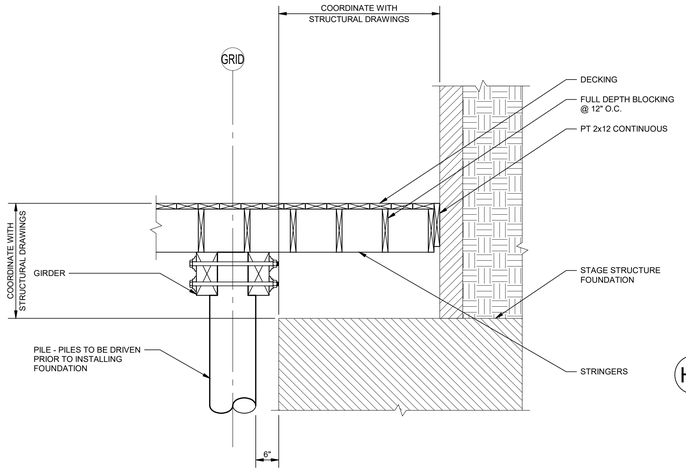
Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

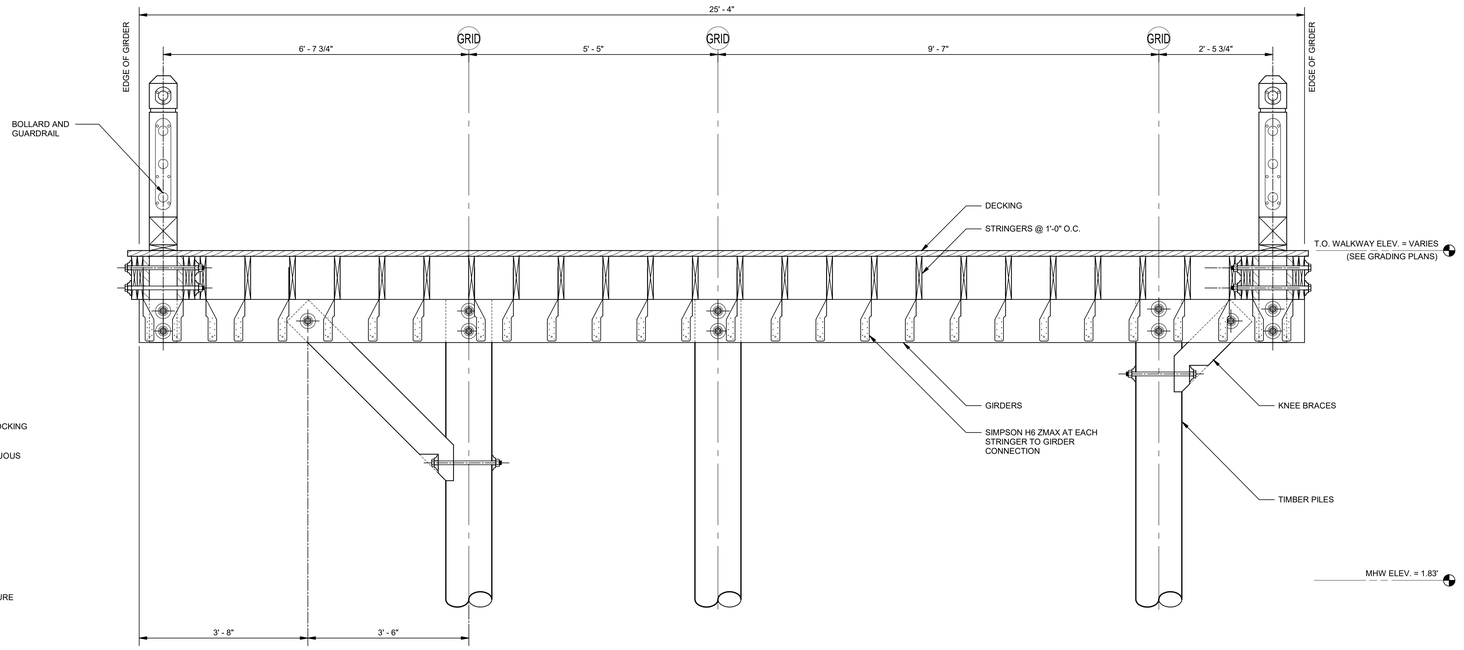
STRUCTURAL MARINE SECTIONS

SHEET NO.

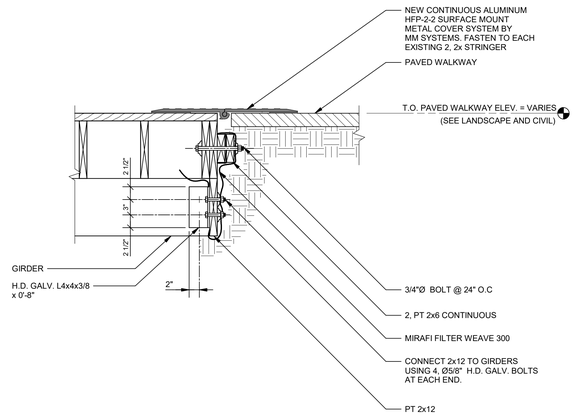
SM-301-P1



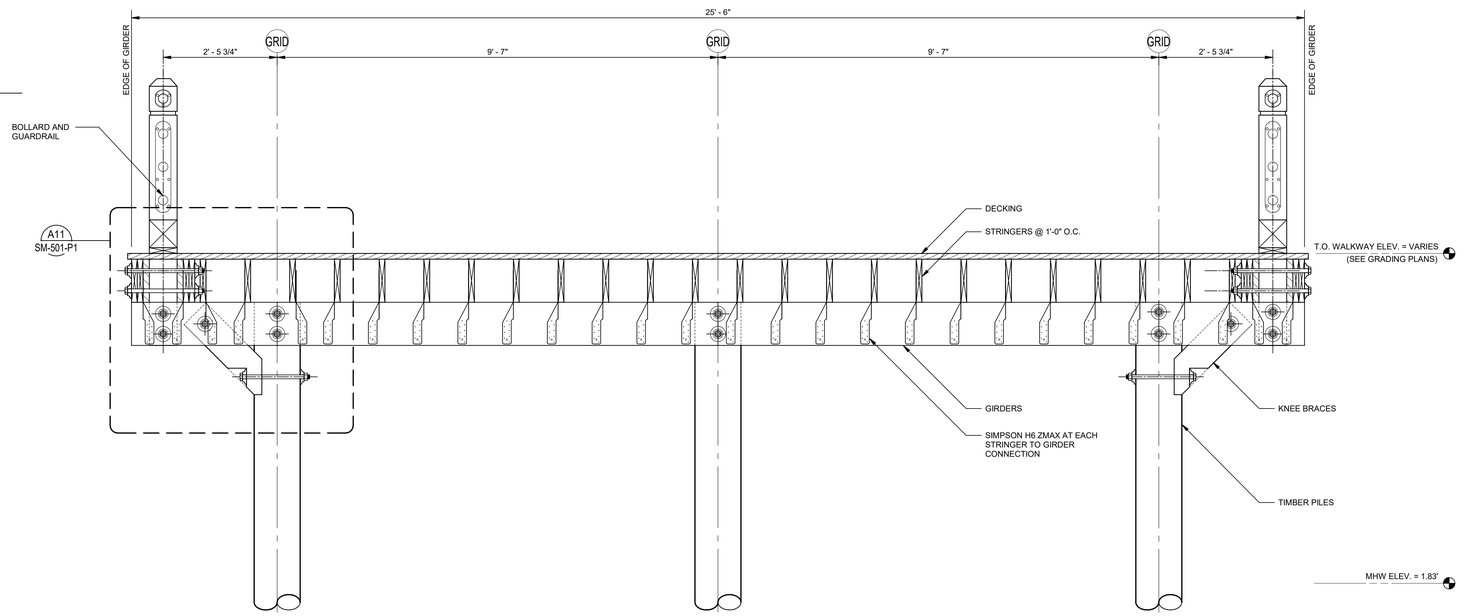
F1 SECTION
SCALE 3/4" = 1'-0"



H1 SECTION
SCALE 3/4" = 1'-0"



A1 SECTION
SCALE 1" = 1'-0"



A6 SECTION
SCALE 3/4" = 1'-0"

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PROJECT INFORMATION

NORTH IRN016 WATERFRONT PARK

10 COWAN STREET
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CITY OF WILMINGTON
Community Services Department
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City of Wilmington Project Code 3CPRK 1860

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SEAL SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER JEFF W. ANDREW

ACE PROJECT NO: 17053

ISSUE/REVISIONS

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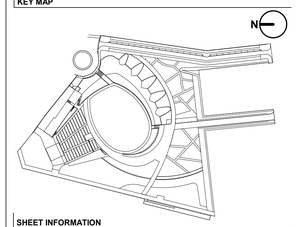
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

STRUCTURAL MARINE SECTIONS

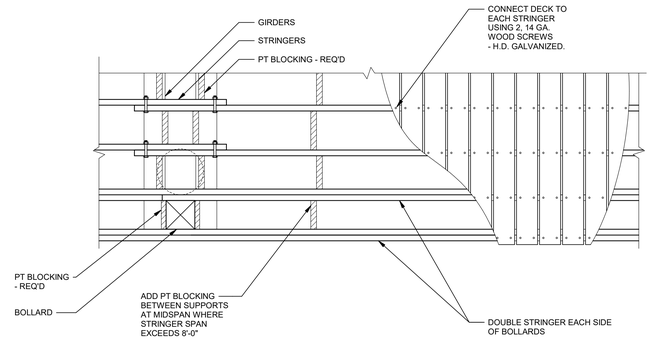
SHEET NO.

SM-302-P1

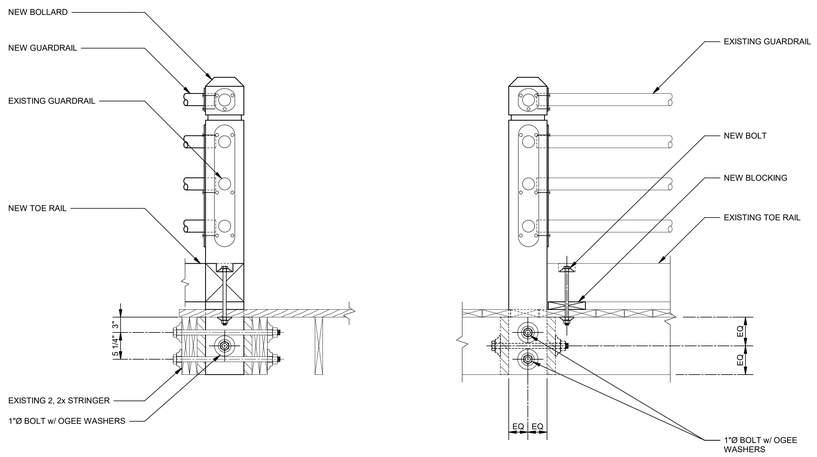
WOOD MATERIAL SCHEDULE

MATERIAL	SIZE*	S.Y. PINE GRADE	SURFACE	MOISTURE CONTENT	USE CATEGORY AND CCA RETENTION
PILING	12"Ø	CLASS B PILES			UC5B
GIRDERS	6x12	PT #1 DENSE	ROUGH	S-DRY 19	UC5B
STRINGERS	2x12	PT #1	S4S	S-DRY 19	UC5B
FLOOR DECKING	2x6	PT #1 PRIME	S4S	ADAT/KDAT19	UC4B
BOLLARDS	8x8	PT #1	S4S	ADAT/KDAT19	UC5B
KNEE BRACE	8x8	PT #1	ROUGH	S-DRY 19	UC5B

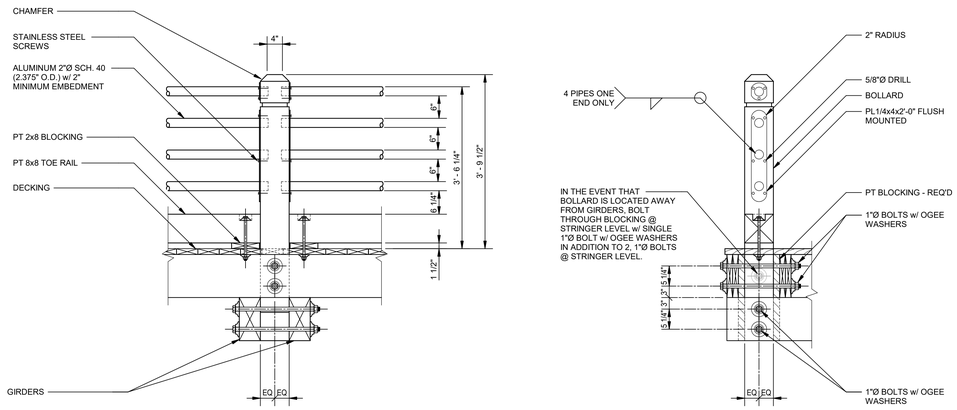
* UNLESS OTHERWISE NOTED
** 'PT' INDICATES PRESSURE TREATED LUMBER



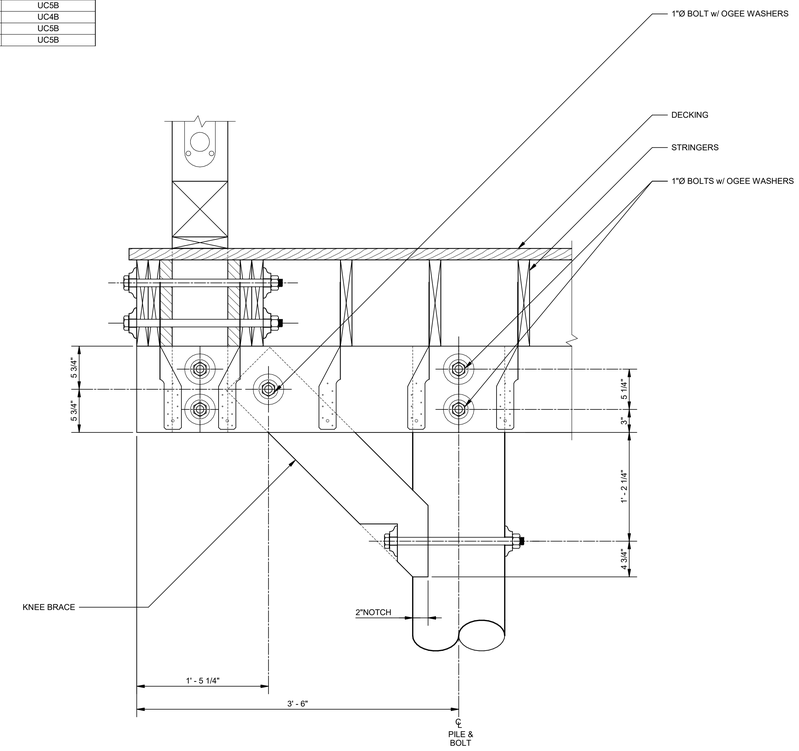
K2 RIVERWALK WALKWAY FRAMING PLAN
SCALE 3/4" = 1'-0"



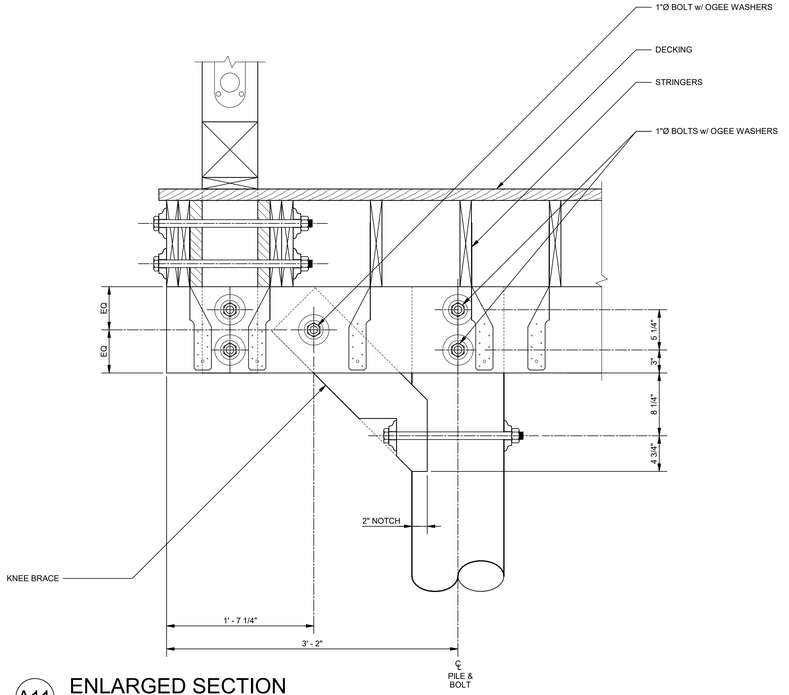
F2 BOLLARD CONNECTION AT EXISTING FRAMING MIDSPAN DETAIL
SCALE 1" = 1'-0"



A2 BOLLARD AND GUARDRAIL DETAIL
SCALE 3/4" = 1'-0"



G11 ENLARGED SECTION
SCALE 1 1/2" = 1'-0"



A11 ENLARGED SECTION
SCALE 1 1/2" = 1'-0"

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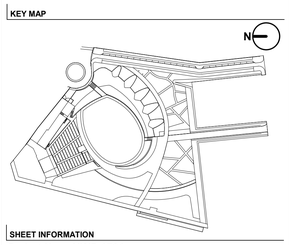


SHEET INFORMATION

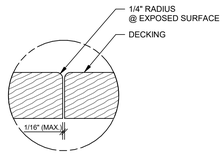
Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

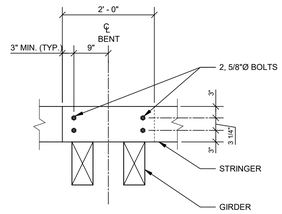
STRUCTURAL MARINE FRAMING DETAILS

SHEET NO.

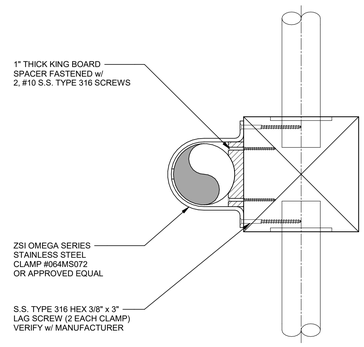
SM-501-P1



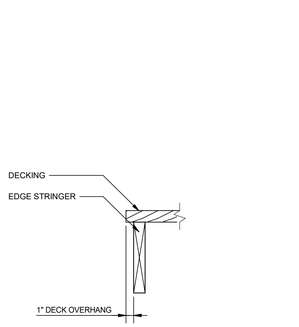
J4 DECK SPACING DETAIL
SCALE 6" = 1'-0"



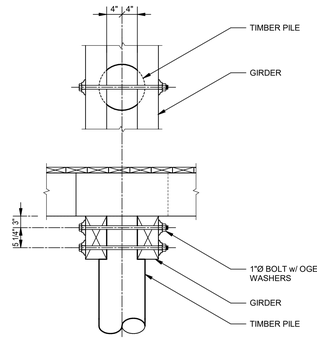
J8 STRINGER LAP SPLICE DETAIL
SCALE 3/4" = 1'-0"



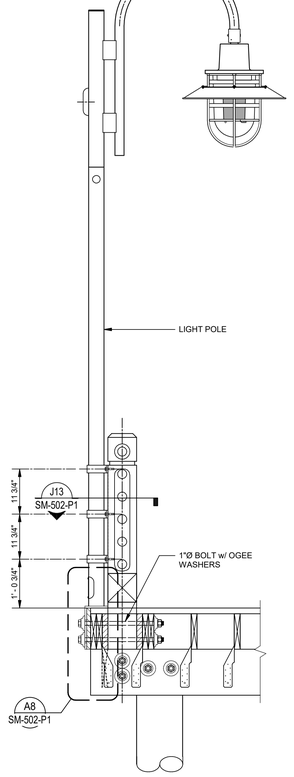
J13 LIGHT POLE CONNECTION DETAIL
SCALE 3" = 1'-0"



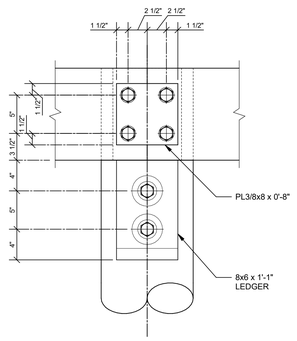
E4 DECK OVERHANG DETAIL
SCALE 1 1/2" = 1'-0"

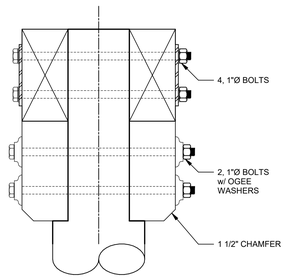


E8 GIRDER TO TIMBER PILE CONNECTION DETAIL
SCALE 3/4" = 1'-0"

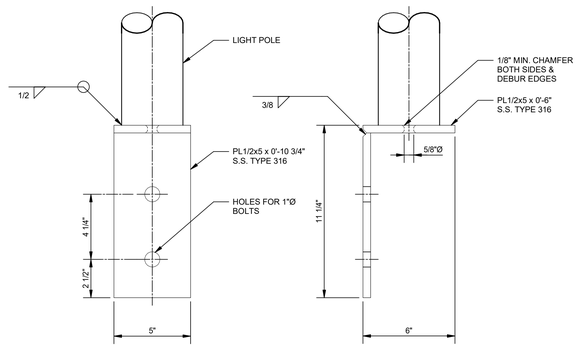


A13 LIGHT POLE ELEVATION
SCALE 3/4" = 1'-0"





A1 GIRDER SPLICE DETAIL
SCALE 1 1/2" = 1'-0"



A8 LIGHT POLE BOTTOM PLATE MOUNTING DETAIL
SCALE 3" = 1'-0"

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PROJECT INFORMATION

NORTH IRN016 WATERFRONT PARK

10 COWAN STREET
WILMINGTON, NORTH CAROLINA

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City of Wilmington Project Code 3CPRK 1860

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180 Varick Street, Suite 204, New York, NY 10014
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Structural Engineering= S
Geotechnical Engineering = G
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SEAL SIGNATURE

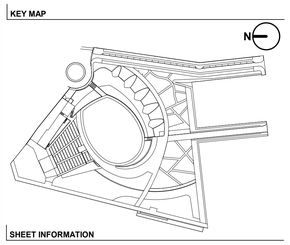
NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER NEAL W. ANDREW

ACE PROJECT NO: 17053

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
1	CONFORMED SET	10/25/2019

KEY MAP



SHEET INFORMATION

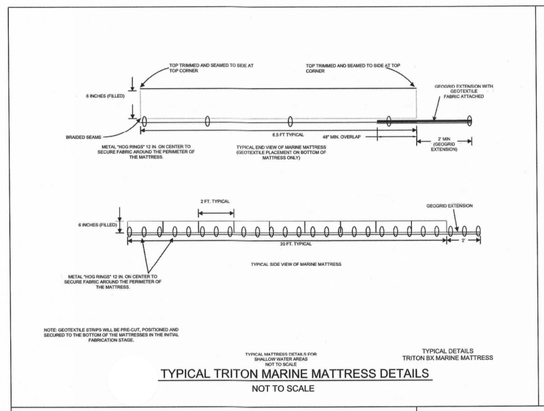
Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

STRUCTURAL MARINE FRAMING DETAILS

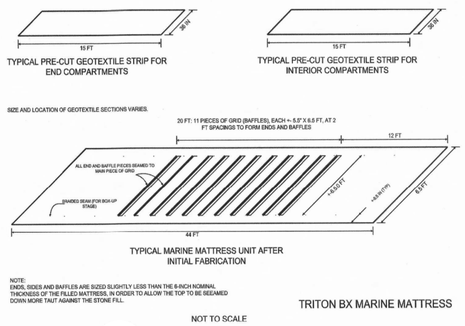
SHEET NO.

SM-502-P1



TYPICAL TRITON MARINE MATTRESS DETAILS

NOT TO SCALE



TRITON MARINE MATTRESS DETAIL

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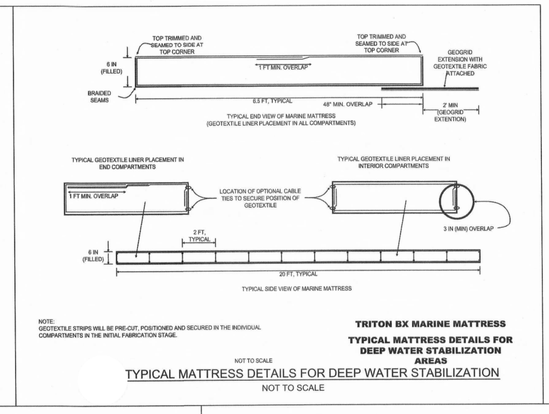
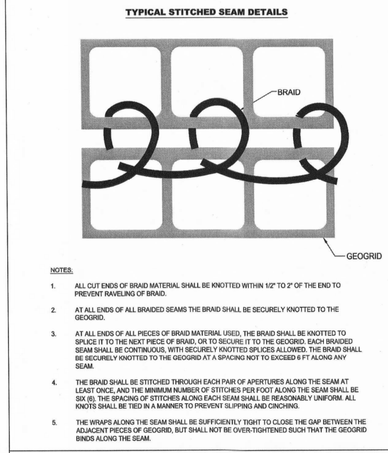
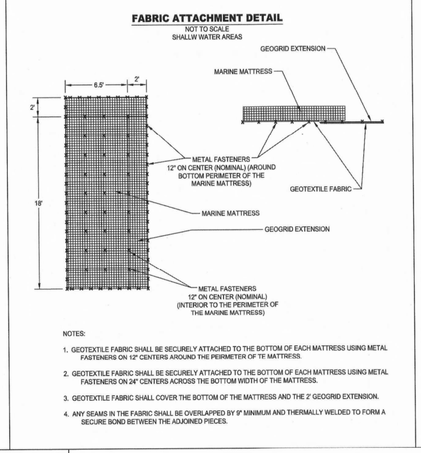
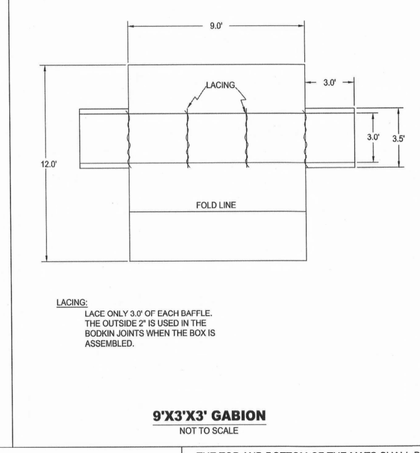


TYPICAL MATTRESS DETAILS FOR DEEP WATER STABILIZATION

NOT TO SCALE

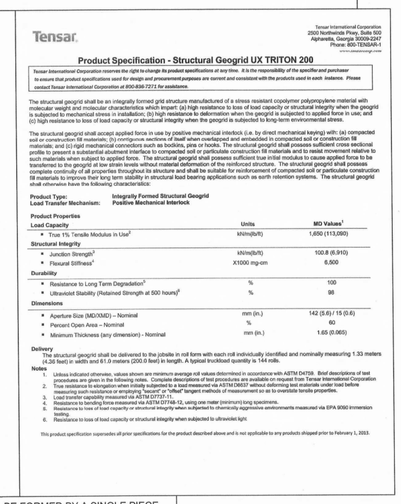


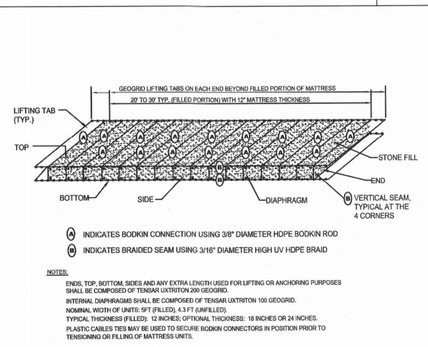




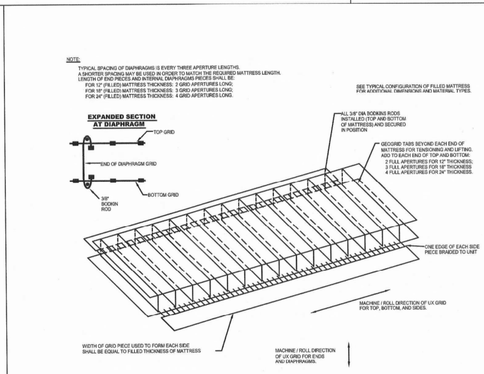
9'X3'X3' GABION

NOT TO SCALE





TYPICAL CONFIGURATION OF FILLED MATTRESS UNITS



TYPICAL CONFIGURATION OF FABRICATED MATTRESS

THE TOP AND BOTTOM OF THE MATS SHALL BE FORMED BY A SINGLE PIECE OF GRID SPLICED AT THE TOP MIDPOINT OF THE MAT BY ONE OF THE SEAMING METHODS SHOWN IN "CORNERS AND SEAMS FOR TRITON SYSTEMS MADE WITH TENSAR BIAXIAL GRID."

FILLED UNITS MUST BE LIFED SUCH THAT THE GEOGRID IS LOADED UNIFORMLY. REFER TO THE FABRICATION, FILLING AND LIFTING GUIDELINES FOR MORE INFORMATION.

BID ALTERNATE: CONTRACTOR MAY SUBSTITUTE CRUSHED CONCRETE FILL FOR USE IN THE MARINE MATTRESS. FILL SHALL CONFORM TO NCDOT STANDARD SPECIFICATIONS DIVISION 10, SECTION 1043 - AGGREGATE FROM CRUSHED CONCRETE.

DETAILS AND INFORMATION PROVIDED BY MANUFACTURER.

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Environmental Engineering = EE
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www.sandec.com
EAGLE RESOURCES
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www.landispllc.com

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Electrical Engineering = E
Plumbing Engineering = P
Fire Protection = FP
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SEAL SIGNATURE

NORTH CAROLINA PROFESSIONAL SEAL 23591 ENGINEER NEAL W. ANDREW

ACE PROJECT NO: 17053

ISSUE/REVISIONS

NO.	DESCRIPTION	DATE
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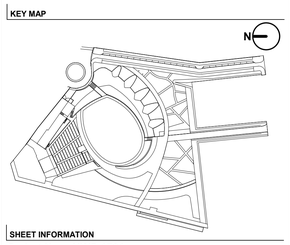
KEY MAP



SHEET INFORMATION

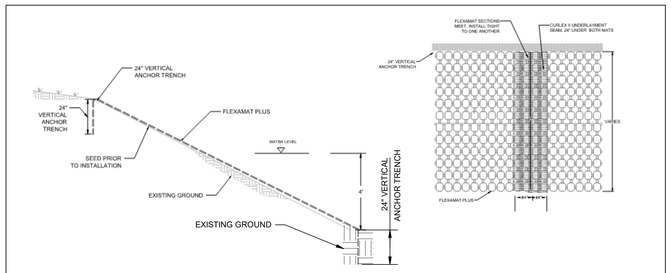
Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

STRUCTURAL MARINE MATTRESS DETAILS

SHEET NO.

SM-701-P1

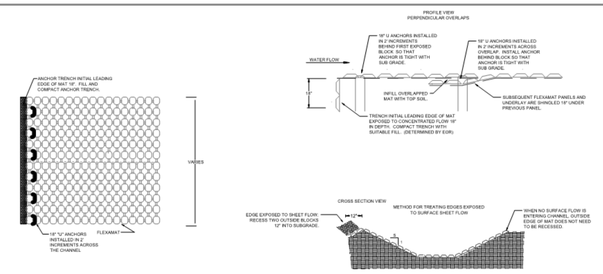


FLEXAMAT INFORMATION

Manufacturer: Motz Enterprises, Inc.
Product Name: Flexamat®
Address: 3153 Madison Road
Cincinnati, Ohio 45209
Telephone: 513-772-6689
Fax: 513-772-6690
Contact: Matt Motz
Matt@Flexamat.com
Website: www.Flexamat.com

CONSTRUCTION NOTES:

1. GRADE A UNIFORM SUBGRADE. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND. THE PREPARED SURFACE SHALL PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS WITH NO SHARP OR ABRUPT BREAKS IN THE GRADE. TOP OF MAT SHALL BE BURIED IN A 24" ANCHOR TRENCH.
2. APPLY SEED DIRECTLY TO THE PREPARED SOIL PRIOR TO INSTALLATION OF MATS. USE SEED AND /OR TOPSOIL PER PROJECT SPECIFICATIONS.
3. INSTALL FLEXAMAT PLUS TO THE LINE AND GRADE SHOWN ON THE PLANS. ROLL WIDTHS ARE 8', 10', 12', & 16' OF VARIOUS LENGTHS. MATS SHALL BE INSTALLED SO THAT THE FLEXAMAT EXTENDS 4-0" BELOW ANTICIPATED LOW WATER ELEVATION.
4. AT ANY SEAMS IN THE MAT, THE FLEXAMAT SHALL BE MANUALLY FLIPPED BACK 3' THE LENGTH OF THE SEAM ON BOTH ADJACENT MATS. 4' SECTION OF THE CURLEX II UNDERLAYMENT SHALL BE INSTALLED UNDER THE SEAM, WITH 2' OF THE UNDERLAYMENT UNDER EITHER SIDE OF THE SEAM. MAT SHALL THEN BE MANUALLY FLIPPED BACK INTO PLACE SO THAT THE FLEXAMAT SECTIONS FIT TIGHTLY.
5. A CONCRETE SAW MAY BE NECESSARY TO CUT MAT TO FIT TIGHTLY TO ADJACENT SECTION OF MAT.



FLEXAMAT INFORMATION

Manufacturer: Motz Enterprises, Inc.
Product Name: Flexamat®
Address: 3153 Madison Road
Cincinnati, Ohio 45209
Telephone: 513-772-MOTZ (6689)
Fax: 513-772-6690
Contact: Matt Motz
Email: Matt@Flexamat.com
Website: www.Flexamat.com

CONSTRUCTION NOTES:

1. GRADE CHANNEL SO THAT WATER WILL FLOW DOWN THE CENTER OF THE CHANNEL AND BE CONTAINED TO THE CHANNEL. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND. THE PREPARED SURFACE SHALL PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS.
2. APPLY SEED DIRECTLY TO THE PREPARED SOIL PRIOR TO FLEXAMAT INSTALLATION. USE SEED PER PROJECT SPECIFICATIONS.
3. INSTALL FLEXAMAT ROLLS. AVAILABLE WIDTHS ARE 4', 5.5', 8', 10', 12', & 16' AVAILABLE IN CUSTOM LENGTHS. FOR WIDER WIDTHS, INSTALL MATS ADJACENT TO EACH OTHER. (CONTACT MANUFACTURER FOR DETAIL ADDRESSING LONGITUDINAL SEAMS.)
4. AT THE TOP OF THE CHANNEL, THE INITIAL LEADING EDGE OF FLEXAMAT EXPOSED TO CONCENTRATED FLOWS SHALL BE EMBEDDED 18" VERTICALLY INTO THE SUB GRADE TO SERVE AS AN ANCHOR TRENCH. THE TRENCH SHALL BE FILLED AND COMPACTED WITH SUITABLE FILL OR OTHER (AS SPECIFIED BY EOR).
5. FOR ADDITIONAL SECTIONS OF MAT, OVERLAP THE DOWNSTREAM SECTION 1'6" WITH UPSTREAM SECTION OF MAT. PRIOR TO INSTALLING OVERLAP, FLIP UPSTREAM MAT BACK 24". EXCAVATE 2.25' OF SOIL 18" FROM END OF UPSTREAM MAT. DOWNSTREAM SECTION IS LAID IN THE SHALLOW TRENCH. LIGHTLY SPREAD TOPSOIL OVER INITIAL EDGE. FLIP END OF UPSTREAM MAT OVER THE SOIL COVERED INITIAL LEADING EDGE OF DOWNSTREAM MAT.
6. INSTALL 18" "U" ANCHORS IN 2' INCREMENTS ACROSS THE OVERLAP. INSTALL ANCHORS DIRECTLY BEHIND BLOCKS. "U" ANCHORS CONSIST OF #3 REBAR "U" ANCHOR WITH 11" TAILS.
7. AT THE END OF THE ARMORED CHANNEL, EMBED THE MAT 18" IN A TERMINATION TRENCH. FILL AND COMPACT TERMINATION TRENCH WITH SUITABLE FILL. (DETERMINED BY EOR)

FLEXAMAT® CHANNEL DETAIL

DETAILS AND INFORMATION PROVIDED BY MANUFACTURER.

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A11 FLEXAMAT DETAILS
SCALE 12" = 1'-0"

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ACE PROJECT NO: 17053

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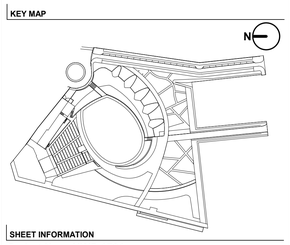
KEY MAP



SHEET INFORMATION

Project No.: NWP 1701
Drawn By: RTW, JSL
Checked By: EBP, NWA
Date: 10/25/2019
Scale:

SHEET TITLE

STRUCTURAL MARINE FLEXAMAT DETAILS

SHEET NO.

SM-702-P1