

October 13, 2006

Mr. Gene Knisley, Operations Director
Charleston Naval Complex Redevelopment Authority
1360 Truxton Avenue, Suite 300
North Charleston, 29405-2005

Dear Mr. Knisley:

Subject: Charleston Caretaker Site Office Excavation Permit
Charleston Naval Base Container Terminal

The South Carolina State Ports Authority is proceeding with the construction of a container terminal at the south end of the former Charleston Naval Complex. Please find attached a Charleston Caretaker Site Office Excavation Permit application for the associated work. Attachments to the application include a detailed project description; drawings of the conceptual layout and construction details; and information regarding the pile and vertical wick materials and installation equipment.

Given the history of the site and the nature of the construction, there are expected to be areas that will require additional evaluation before a permit can be granted. Therefore, we request a partial permit be issued for those areas where there are no outstanding issues or concerns. This will serve to identify the outstanding problem areas and focus efforts towards addressing any construction limitations and/or land use restrictions.

We are continuing with permitting and design of the terminal, therefore, we appreciate your efforts in facilitating the approval process. If you have any questions or require any additional information, please do not hesitate to contact me at (843) 856-7049.

Sincerely,

A handwritten signature in blue ink, appearing to read "David N. Smith".

David N. Smith, P.E.
Senior Project Engineer

cc (via email): Joe Bryant, Philip Lawrence – SCSPA
Dudley Patrick, David Criswell, Steve Beverly – U.S. Navy
David Scaturo, Jerry Stamps, Stacy French - SCDHEC
Tommy Lavender, Joan Hartley – Nexsen Pruet
Chuck Black, Andrew Wertz – S&ME

CHARLESTON CARETAKER SITE OFFICE EXCAVATION PERMIT

Requester: Fill out top portion, Sign and date.

Location: Former Charleston Naval Complex	Contractor: Owner: SCSPA / Contractor: TBD	Date of Request: October 13, 2006
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Has the proposed work been staked out? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Facility/ Work involved (Please check below)		
Excavation <input checked="" type="checkbox"/> Pavements <input checked="" type="checkbox"/> Overhead Lines : Underground Lines : Method of Excavation:	Drainage Ditches <input checked="" type="checkbox"/> Other: <u>see attached</u> <input checked="" type="checkbox"/> Utilities <input checked="" type="checkbox"/> Utilities <input checked="" type="checkbox"/> Hand <input checked="" type="checkbox"/> Ditcher <input checked="" type="checkbox"/>	Railroad Tracks <input type="checkbox"/> Communications <input checked="" type="checkbox"/> Communications <input checked="" type="checkbox"/> Power Shovel <input checked="" type="checkbox"/> Auger <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Other: <u>see attached</u>		

Scope Of Work: (Depth, width, length, location & sketch as applicable, road closure, service interruption, etc.)

The scope of work includes the complete construction of a marine container terminal as described in the attached documents.

Excavator(s) must establish locations and depths of utilities in work area prior to digging. Locations of utilities as shown on drawing(s), are approximate and must be field verified by hand digging, cable/pipe locators or other approved methods

Date Permit Required: November 30, 2006	Termination Date of Permit: NA
Signature of Requesting Official: 	Date: October 13, 2006 Phone Number: (843) 884-5114

Caretaker Site Office Review

Points of Contact: CPW : Robert Sagasser (work) 529-0653 (page) 570-0390 SCE&G: R.W. Smith (work) 745-6381 RDA: Gene Kniesley Sewer POC: (work) 747-0010	<ol style="list-style-type: none"> 1. Who is the current Land Owner/ Leasee? _____ 2. Is the Area inside the CIA? <input type="checkbox"/> Yes <input type="checkbox"/> No 3. Are any SWMU(s) impacted? If yes, list. <input type="checkbox"/> Yes <input type="checkbox"/> No (_____) 4. Are any AOC(s) impacted? If yes, list. <input type="checkbox"/> Yes <input type="checkbox"/> No (_____) 5. Has DHEC been notified? <input type="checkbox"/> Yes <input type="checkbox"/> No 6. Will soil need to be temporarily stockpiled? <input type="checkbox"/> Yes <input type="checkbox"/> No 7. What constituents will soil be tested for? _____ 8. Soil Test results above residential background? <input type="checkbox"/> Yes <input type="checkbox"/> No 9. Soil Test results above industrial background? <input type="checkbox"/> Yes <input type="checkbox"/> No 10. Area where soil is to be stockpiled? <u>(See Attached Map)</u> 11. What is the serial # of forwarding letter to RDA? _____
Permit Approved? <input type="checkbox"/> Yes <input type="checkbox"/> No	

CSO Authorizing Signature: _____	Date out: _____
CH2MHILL/J.A. Jones Signature: _____	
BEC Signature: _____	Serial Number: _____
CSO Officer Signature: _____	



DIG PERMIT PROJECT DESCRIPTION

1.0 PROJECT OVERVIEW AND LOCATION

The South Carolina State Ports Authority (SCSPA) proposes to construct and operate a new marine container terminal in North Charleston, South Carolina. The proposed site for building the terminal is the former Charleston Naval Complex (CNC) South site, along Shipyard Creek and the west bank of the Cooper River. The project site is bordered by Tidewater Road on the south, Bainbridge Avenue on the north, Holland Street to the west and the existing shoreline on the east (see attached Figures 1 and 2). The CNC-South site is mostly undeveloped. There are some existing buildings, roads and facilities within the site which are part of the existing Federal Law Enforcement Training Center. Current access to the site is from Bainbridge Avenue.

The neighboring properties can be seen in Figure 1. Approximately 206 acres of the existing site are uplands and approximately 15 acres are wetlands. Filling open waters (or tidelands) and constructing a 3,510-ft long wharf structure will create the remaining area.

A portion of the uplands area is an inactive dredge material disposal basin with elevations varying from about 21 ft Charleston Low Water (CLW) at the northern end of the basin to 12 ft CLW near the southern end of the basin. The southern part of the dredge spoil basin is surrounded by a dike that has crest elevations varying from about 15 ft CLW to 18 ft CLW. The dike is wooded with small to medium sized trees, and the central portion of the spoil basin is covered by thick brush. The northern portion of the site is developed and generally covered by buildings, pavement, and grass fields. The elevations across the developed portions of the site range from about 8 ft CLW to 16 ft CLW.

2.0 EXCAVATIONS AND UNDERGROUND ITEM DESCRIPTIONS

Figure 1 shows the conceptual container terminal layout and the various terminal features with the areas of concern (AOC) overlaid on the layout. Figure 2 shows the project site with the AOC's and the areas where there will be pile installations, wick drain installations, utility and storm drain system installations, and site excavations. Figure 3 shows a typical cross section of the container terminal with the items described in Figure 2 shown in the section along with some wick drain and surcharge details. Figure 4 shows a detail of the proposed wharf and fill containment structures and the associated piling and excavation. Figure 5 shows a detail of the side fill containment structure and piling.

2.1 PILE SUPPORTED STRUCTURES

Pile supported structures could be located any where on the proposed terminal footprint. Based on similar projects in the area and the preliminary designs, the deep foundations and retaining walls anticipated on this project will consist of steel pipe and HP-section piles, steel sheet piles, and square pre-stressed concrete (PSC) piles. Sheet pile retaining walls are typically constructed with "Z" sections. However, for this project, some walls may include "king" piles to



resist both axial and lateral loads. Depending on the size of the PSC pile, HP-section “stingers” may be spliced to the bottoms. Timber piles are also an option for small building applications. Specifications for various pile types are included.

Lightly loaded landside structures may be supported on 7-in. (minimum) tip diameter timber piles, while more moderately loaded structures will require 10 to 14-in. square PSC or HP10 to HP12 section steel piles. Axial compressive structural loads transmitted to the piles are typically up to 30 tons for timber piles and up to 100 tons for the concrete or steel piles. These piles are installed into the underlying Cooper Marl bearing strata with impact hammers having maximum rated energies in the range of 15 to 40 ft-kips. The marl depth varies across the site from about 40 to 80 ft. Dynamic forces at the pile head from pile driving may reach as high as 500 kips. This impact force travels down the pile and dissipates within the soil as skin friction and end bearing components are developed. Track mounted crawler cranes capable of lifting 35 to 65 tons are typically used for pile installation. Attached are specifications for a typical air (Conmaco 65), hydraulic (ICE 75), and diesel (APE/Delmag D19-42) hammers used for this application. Cranes are typically required to carry 35 to 65 ton loads. Specifications for a 50-ton Link Belt crane are also included.

The wharf and crane rails are typically supported on 20-in. to 30-in. square PSC piles, which extend from the Cooper Marl bearing strata to the structural connection at the pile top. Steel HP sections are spliced to the PSC sections and penetrate into the Cooper Marl to obtain the axial capacity. These piles are designed to support axial compressive loads of about 100 to 250 tons and hammers having rated energies in the range of about 40 to 100 ft-kips are required to install the piles and mobilize the required capacity. Steel pipe piles (30-in. diameter) may also be used to support the crane rail as well as act as “king piles” in the retaining wall which will contain the upland fill from the berthing area. Dynamic impact forces generated by pile driving may reach as high as 1700 kips near the pile top. However, these forces dissipate within the soil as the wave travels down the pile. The cranes used in these applications are typically in the range of 100 to 200 tons. Sample specifications for 150- and 200-ton Link Belt cranes are attached, as are specifications for an APE D36-32 and a Berminghammer B-5505 diesel hammer (also please refer to the Conmaco 200E5 hammer specification as a potential air hammer for this application).

It is anticipated that vibratory driver/extractors will also be used during construction. Typically, these pieces of equipment are used to install steel HP, pipe, or sheet sections, which may be incorporated into permanent structures or used for temporary templates, guides, or shoring applications. These vibratory driver/extractors are also useful in removing temporary piles, or existing piles which may hinder new construction. Specifications of several vibratory driver/extractors are included.

Pile and Equipment Specification Attachments:

Spiral Weld Steel Pipe Pile Specifications

Rolled & Welded Steel Pipe Pile Specifications



Steel HP-section Pile Specifications
AASHTO/PCI Standard Pile Products and Specifications
AZ Hot Rolled Steel Sheet Piling Specifications
Pipe / AZ (PA) Combined Wall System Specifications
Southern Pine Foundation Piling Specifications
Conmaco Air Hammer Specifications
ICE Model 75 Hydraulic Hammer Specifications
APE/Delmag D19-42 Diesel Hammer Specifications
Link-Belt 50, 150, and 200-ton Lattice Boom Crawler Crane Specifications
APE/Delmag D36-32 Diesel Hammer Specifications
Berminghammer B-5505 Diesel Hammer Specifications
MKT V-20B/HP-325B Vibratory Driver/Extractor Specifications
HPSI Vibratory Hammer Specifications
ICE Model 216 and 44-30 Hydraulic Vibratory Driver/Extractor Specifications

2.2 WICK DRAIN INSTALLATION AND SITE CONSOLIDATION

In order to develop the existing site into the proposed container terminal, portions of the site will be raised with fill to final subgrade elevations of about 14 ft to 16 ft Charleston Low Water (CLW). Much of the upland portion of the site is filled marshland and existing ground surface elevations range from about 8 to 20 ft CLW. In general, the existing subsurface conditions consist of a cohesive “crust” or sand underlain by soft soil deposits. The soft soil varies in thickness from approximately 30 to 75 feet and is underlain by relatively incompressible sands, clays, and marl. In addition to the weight of the new fill, surface pressures from pavements, containers, and equipment are expected to be 500 to 850 psf. To limit post construction settlement to ≤ 6 in. of primary settlement, a surcharge program with wick drains has been proposed.

As part of the site consolidation program, prefabricated vertical drains, commonly called wick drains, are planned for the entire footprint of the container terminal, except in the area of the storm water management pond and the wharf. The following paragraphs discuss the spacing and layout of the wick drains, the drain materials, and the construction equipment and installation methods.

Wick Drain Spacing and Layout

Wick drains are planned at 5-ft center to center spacing across the site. See Figure 2 and 3 for details. Wick drains will be installed to depths of approximately 45 ft to 80 ft to fully penetrate the soft soils near the surface and terminate in stiff incompressible soil deposits.



Materials

Wick drains consist of the prefabricated drain material and an anchor. The drain material is a stiff plastic core wrapped with a filter fabric, and is designed to allow water infiltration to the drain and then flow along the drain. A photograph of a typical wick drain is attached. The anchor is generally a thin steel plate or a small steel bar.

Construction Equipment and Methods

Wick drains are installed by specialized installation rigs. A schematic of a typical wick drain rig is attached. Installation rigs are typically crawler-mounted or crane mounted and photographs of each type are attached. Considering the depths of the wick drains, crawler-mounted rigs will likely be used. Ground pressures of 5 to 10 psi are typical for the tracks on a wick drain rig. Wick drains are then threaded into a steel mandrel and installed by pressing the mandrel into the ground. The steel mandrel is rhombic-shaped and typically has a cross-sectional area of about 10 square inches or less. Installation proceeds rapidly with the mandrel being inserted into the ground at velocities of up to about 2½ feet per second. Anchors are secured to the bottom of a wick prior to installation to help prevent soil from entering the mandrel and to provide an anchor to hold the wick drain in place while the mandrel is withdrawn. Wick drain rigs typically can produce a downward force of up to 20 tons to press the mandrel into the ground. When the existing surface soils are relatively dense, loosening by pre-drilling may be necessary. Alternatively, vibratory attachments are available to aid in penetration of the mandrel. The use of pre-drilling and vibration is generally not expected to be necessary for this project.

Surcharge and Site Settlement

The surcharge will be required over the majority of the proposed terminal area, except in the area of the storm water management pond and the wharf. The surcharge heights are proposed to range from 20 ft CLW to 30 ft CLW. The anticipated settlement of the existing ground in the project site ranges from 1 ft to 10 ft.

Wick drain and Equipment Specification Attachments:

Schematic of Wick Drain Installation

Photograph of Typical Wick Drain

Photograph of Excavator-Mounted Wick Drain Rig

Photograph of Crane-Mounted Wick Drain Rig

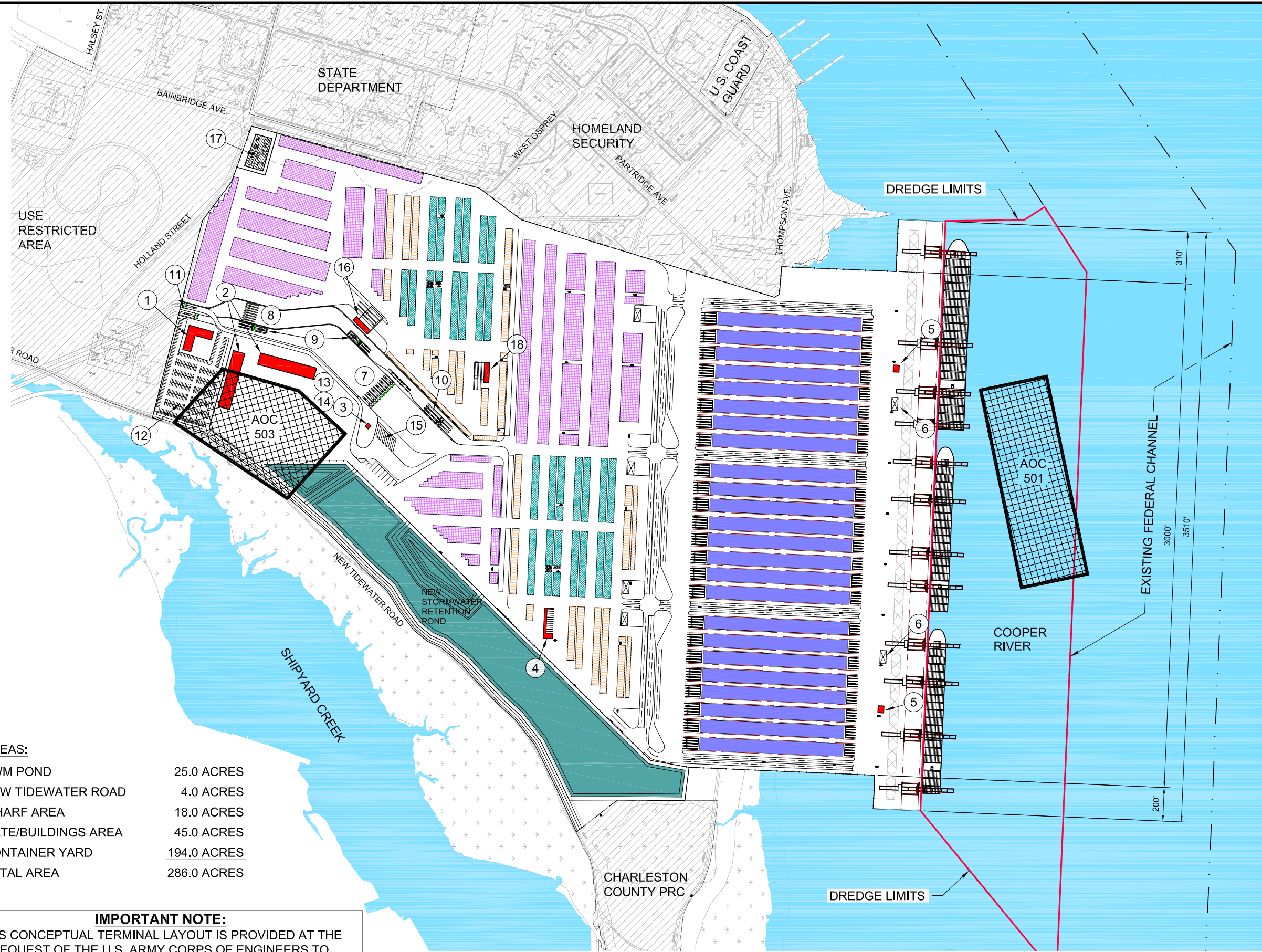
2.3 UNDERGROUND SITE UTILITIES AND STORM DRAIN SYSTEM

After the project site soil consolidation program is complete, the construction of the proposed terminal infrastructure will begin. (See Figures 1, 2 and 3) Underground utilities for the terminal shall include electrical conduits and distribution systems, data and communication systems and



conduits, water lines, gas lines and sanitary sewer lines. These types of utilities would be installed approximately 3 ft to 10 ft below finished grades through out the terminal. These utilities would be installed by conventional methods such as a trenching with a back hoe or trenching machine.

The storm water drainage system is proposed to consist of 24" to 108" diameter reinforced concrete pipe and manholes. The maximum trench depth for the storm drain pipe is anticipated to be approximately -3 ft CLW. The storm drain pipes will outfall into the storm water management detention pond located on the project site. The maximum depth anticipated for the detention pond is -5 CLW.




- LEGEND**
- STORM WATER MANAGEMENT POND
 - NEW BUILDINGS
 - R.M.G. STORAGE
 - EMPTY STORAGE
 - WHEELED STORAGE
 - REEFER STORAGE

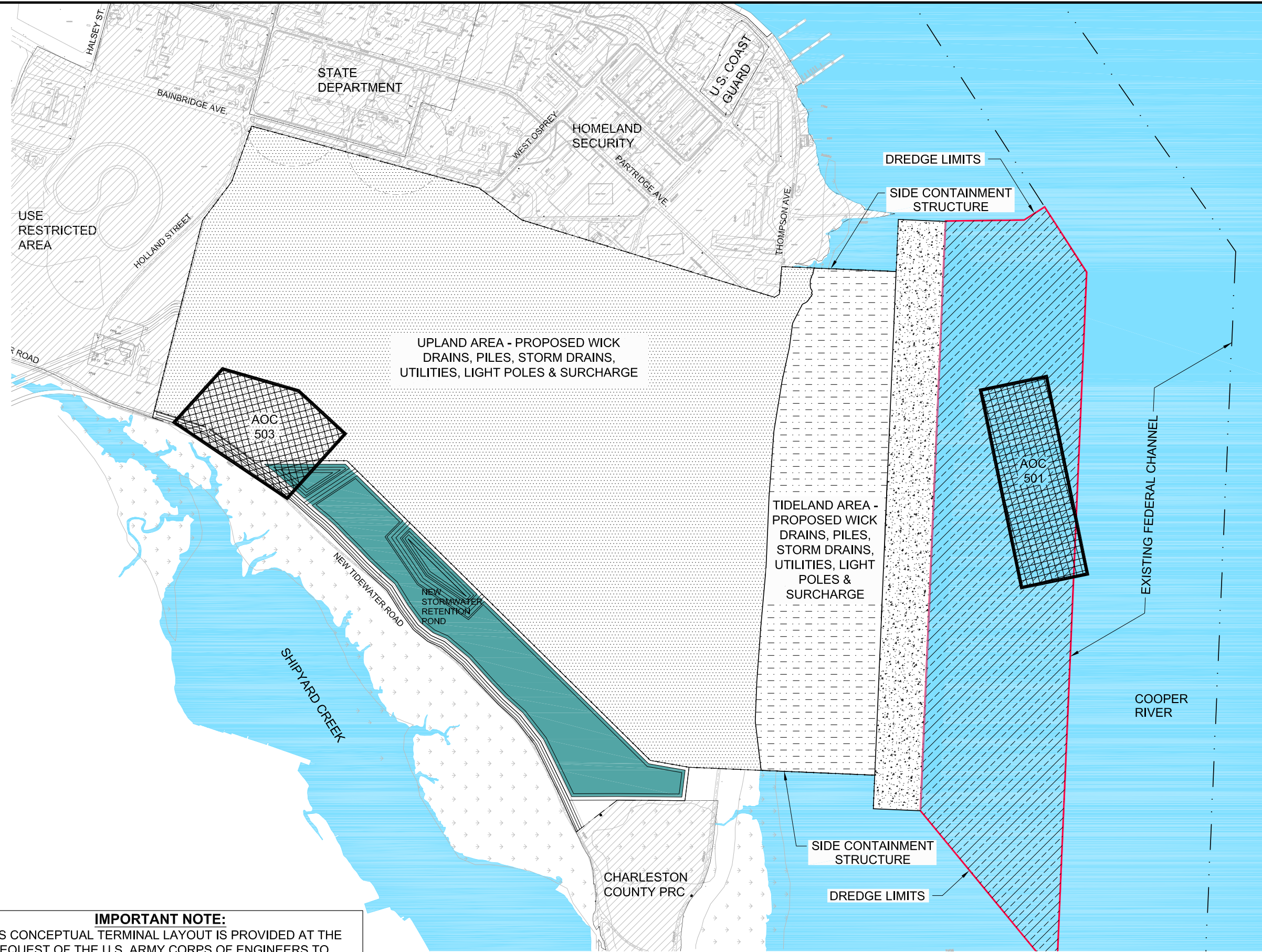
- KEY NOTES:**
- 1 ADMINISTRATION BUILDING
 - 2 M & R BUILDING / CRANE MAINTENANCE
 - 3 DRIVER RESOLUTION BUILDING
 - 4 REEFER WASH
 - 5 MARINE BUILDING / LONGSHORE FACILITIES
 - 6 CRANE POWER
 - 7 RECEIVING GATE
 - 8 DELIVERY GATE
 - 9 O.C.R. PORTAL
 - 10 R.P.M. PORTAL
 - 11 SECURITY
 - 12 POV PARKING
 - 13 ILA PARKING
 - 14 EQUIPMENT PARKING
 - 15 TROUBLE PARKING
 - 16 ROADABILITY FACILITY
 - 17 MAIN ELECTRICAL SUBSTATION UTILITY HOOKUPS
 - 18 GEN-SET OPERATION

AREAS:

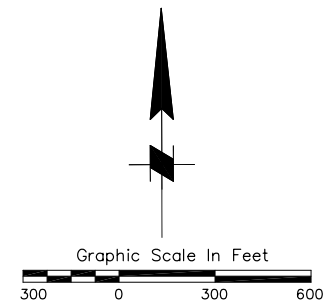
SWM POND	25.0 ACRES
NEW TIDEWATER ROAD	4.0 ACRES
WHARF AREA	18.0 ACRES
GATE/BUILDINGS AREA	45.0 ACRES
CONTAINER YARD	194.0 ACRES
TOTAL AREA	286.0 ACRES

IMPORTANT NOTE:
THIS CONCEPTUAL TERMINAL LAYOUT IS PROVIDED AT THE REQUEST OF THE U.S. ARMY CORPS OF ENGINEERS TO ILLUSTRATE THE TYPES OF FACILITIES THAT MAY BE EXPECTED AT THE PROPOSED CONTAINER TERMINAL. THE ACTUAL TERMINAL LAYOUT WILL BE BASED ON SPECIFIC OPERATING AND CLIENT REQUIREMENTS AND MAY CHANGE OVER THE LIFE OF THE FACILITY. IT IS NOT INTENDED THAT THIS LAYOUT WILL BE USED TO LIMIT THE EFFICIENT USE OF THE FACILITY.

								 MOFFATT & NICHOL ENGINEERS			




- LEGEND**
- STORM WATER MANAGEMENT POND TO DEPTH OF -5' CLW
 - WICK DRAINS & PILES - UPLAND AREA
 - WICK DRAINS & PILES - TIDELAND AREA
 - PILES - WHARF STRUCTURE
 - BERTHING AREA & TURNING BASIN DREDGING TO DEPTH -49' CLW



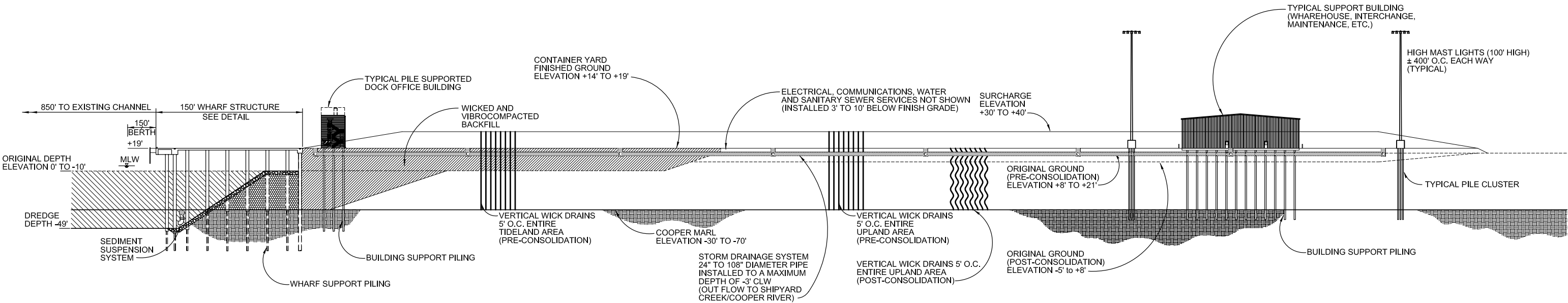
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				 MOFFATT & NICHOL ENGINEERS	
				DESIGNED BY —	CHECKED BY AJ
				DRAWN BY —	IN CHARGE LWN
NO.	REVISION	BY	DATE	DWG. FILE: P:\5640 SCSPA-Charleston Naval Base Container Terminal\CADD\Phase1-Design\Dig-Permit\564000-0_FIG2.dwg	

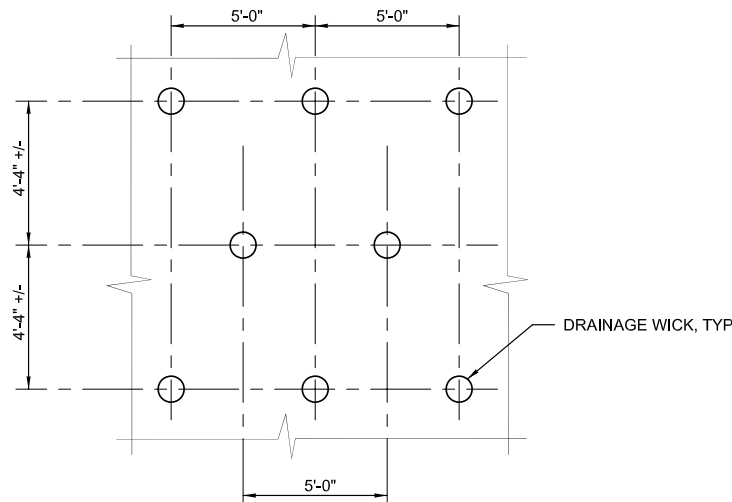
SOUTH CAROLINA STATE PORTS AUTHORITY
CHARLESTON NAVAL BASE CONTAINER TERMINAL
CONCEPTUAL TERMINAL LAYOUT
SOUTH GATE ALTERNATIVE

SCALE	DATE
1"=300	5/06
JOB NO.	5640
SHEET	—
FIGURE 2	



TYPICAL SECTION

NOT TO SCALE
(ELEVATIONS BASED ON CLW)



WICK DRAIN SPACING DETAIL

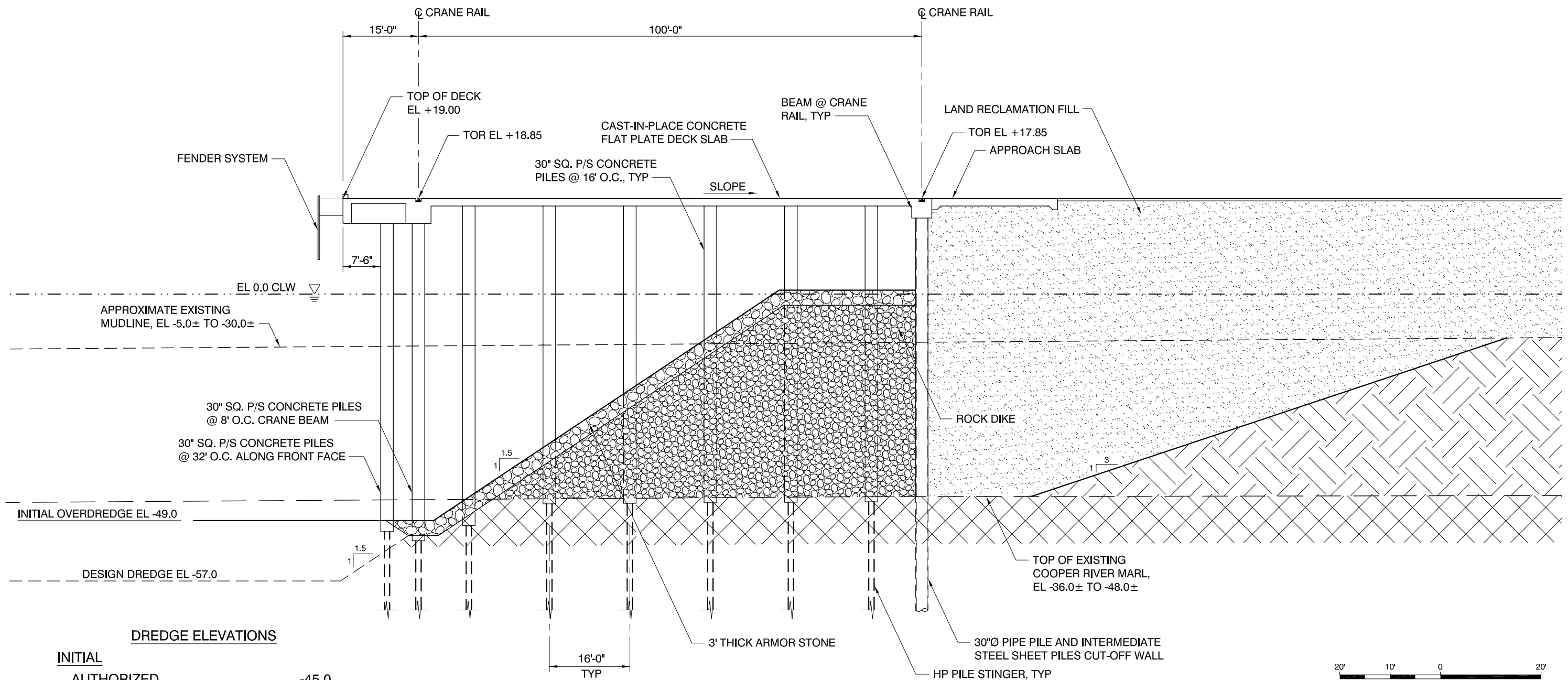
NOT TO SCALE

IMPORTANT NOTE:

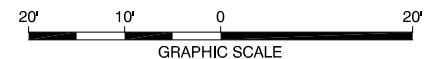
THIS CONCEPTUAL TERMINAL LAYOUT IS PROVIDED AT THE REQUEST OF THE U.S. ARMY CORPS OF ENGINEERS TO ILLUSTRATE THE TYPES OF FACILITIES THAT MAY BE EXPECTED AT THE PROPOSED CONTAINER TERMINAL. THE ACTUAL TERMINAL LAYOUT WILL BE BASED ON SPECIFIC OPERATING AND CLIENT REQUIREMENTS AND MAY CHANGE OVER THE LIFE OF THE FACILITY. IT IS NOT INTENDED THAT THIS LAYOUT WILL BE USED TO LIMIT THE EFFICIENT USE OF THE FACILITY.

						SOUTH CAROLINA STATE PORTS AUTHORITY		SCALE 1"=300	DATE 5/06
						CHARLESTON NAVAL BASE CONTAINER TERMINAL		JOB NO. 5640	
						CONCEPTUAL TERMINAL LAYOUT		SHEET —	
						TYPICAL CROSS SECTION		FIGURE 3	
NO.	REVISION	BY	DATE	DESIGNED BY — DRAWN BY —		CHECKED BY AJ IN CHARGE LWN		DWG. FILE P:\5640 SCSPA-Charleston Naval Base Container Terminal\CADD\Phase1-Design\Dig-Permit\564000-0_FIG3.dwg	

DWG NO: 564000-D-FIG4.DWG, OCT 11, 2006 - 03:58 PM, DKOONS, (C) MOFFATT AND NICHOL

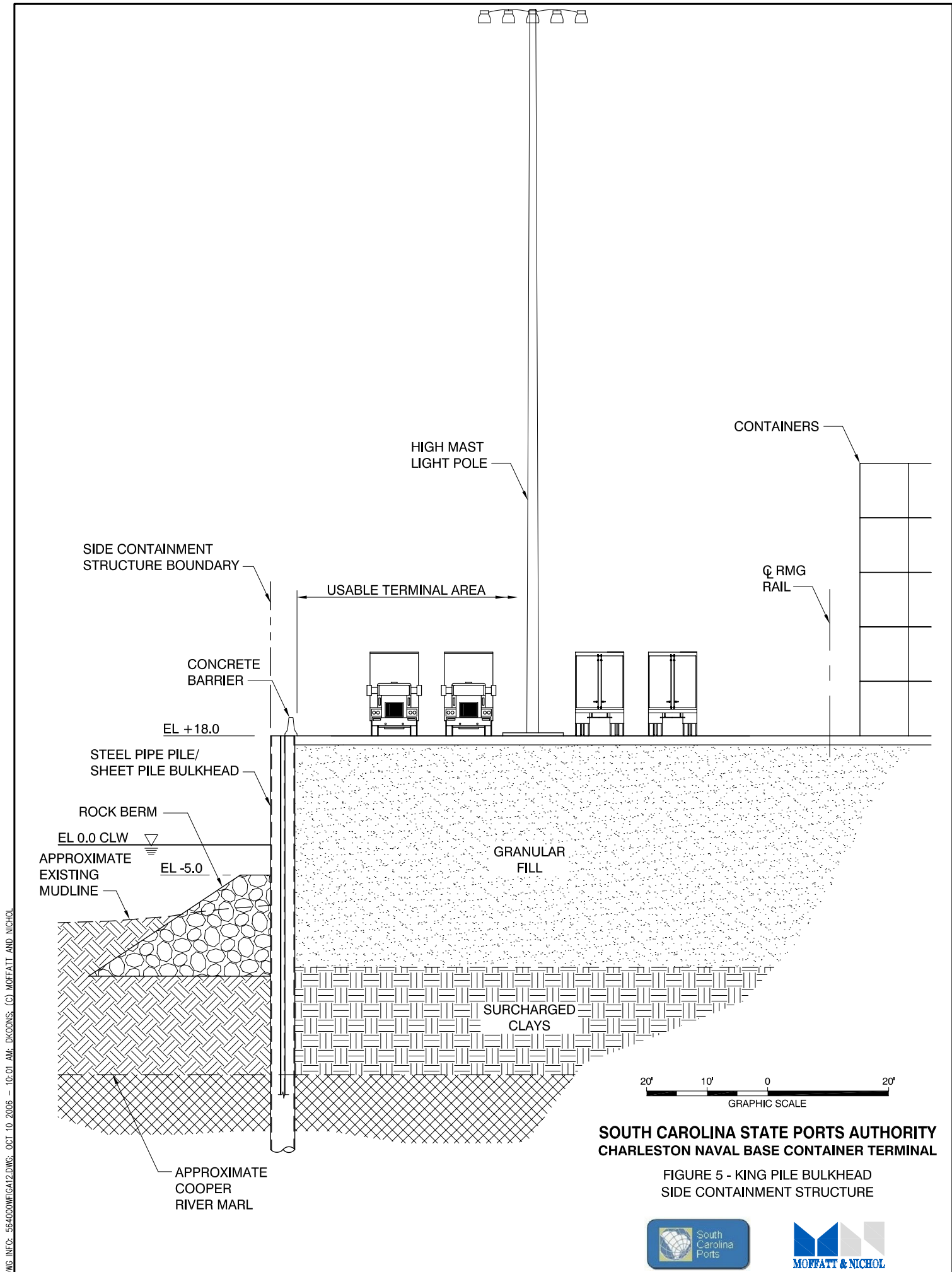


DREDGE ELEVATIONS	
INITIAL	
AUTHORIZED	-45.0
ADVANCED MAINTENANCE	-47.0
OVERDREDGE	-49.0
MAXIMUM	
AUTHORIZED	-52.0
ADVANCED MAINTENANCE	-55.0
OVERDREDGE	-57.0
DESIGN	-57.0



SOUTH CAROLINA STATE PORTS AUTHORITY
CHARLESTON NAVAL BASE CONTAINER TERMINAL
FIGURE 4 - WHARF DETAIL
OPEN-TYPE MARGINAL WHARF WITH PILE WALL AND DIKE SECTION



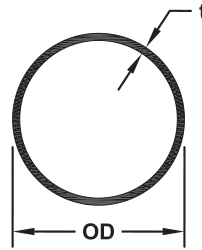


DWG INFO: 564000MFGA12.DWG; OCT 10, 2006 -- 10:01 AM; DKOONS; (C) MOFFATT AND NICHOL



8 Woodhollow Road, Parsippany, NJ 07054
 Phone: 973-428-6100 Fax: 973-428-7399
 engineering@skylinesteel.com
 www.skylinesteel.com

Technical Hotline: 1-866-8Skyline (1-866-875-9546)



Spiralweld Pipe

Pipe Weights lbs/ft (kg/m)

Outside Diameter (OD) in (mm)	WALL THICKNESS (t) in (mm)										
	0.179 4.55	0.188 4.78	0.203 5.16	0.219 5.56	0.250 6.35	0.312 7.92	0.375 9.53	0.500 12.70	0.625 15.88	0.750 19.05	1.000 25.40
8.625 219.1	16.16 24.05	16.96 25.23	18.28 27.20	19.68 29.29	22.38 33.31	27.73 41.26	33.07 49.22	43.43 64.63	53.45 79.54		
10 254.0	18.79 27.97	19.72 29.35	21.26 31.64	22.90 34.08	26.06 38.78	32.31 48.09	38.58 57.42	50.78 75.57	62.64 93.21		
10.75 273.1	20.23 30.10	21.23 31.59	22.89 34.06	24.65 36.69	28.06 41.76	34.81 51.81	40.52 (0.365) 60.30	54.79 81.53	67.65 100.67	Non-Spiralweld Sizes	
12 304.8	22.62 33.66	23.74 35.33	25.60 38.10	27.58 41.04	31.40 46.73	38.98 58.01	46.60 69.35	61.47 91.47	76.00 113.10		
12.75 323.9	24.05 35.80	25.25 37.57	27.23 40.52	29.34 43.66	33.41 49.71	41.48 61.74	49.61 73.83	65.48 97.44	81.01 120.56		
14 355.6	26.45 39.36	27.76 41.31	29.94 44.56	32.26 48.01	36.75 54.69	45.65 67.94	54.62 81.28	72.16 107.38	89.36 132.99		
16 406.4	30.27 45.05	31.78 47.29	34.28 51.02	36.95 54.98	42.09 62.64	52.32 77.87	62.64 93.21	82.85 123.29	102.72 152.87	122.27 181.95	
18 457.2	34.10 50.75	35.80 53.27	38.62 57.47	41.63 61.95	47.44 70.59	58.99 87.79	70.65 105.15	93.54 139.20	116.09 172.76	138.30 205.82	
20 508.0	37.93 56.44	39.82 59.25	42.96 63.93	46.31 68.92	52.78 78.55	65.66 97.72	78.67 117.08	104.23 155.11	129.45 192.64	154.34 229.68	
24 609.6	45.58 67.83	47.86 71.22	51.64 76.85	55.67 82.85	63.47 94.46	79.01 117.57	94.71 140.94	125.61 186.92	156.17 232.41	186.41 277.40	245.87 365.90
30 762.0					79.51 118.32	99.02 147.36	118.76 176.73	157.68 234.65	196.26 292.07	234.51 348.99	310.01 461.35
36 914.4					95.54 142.18	119.03 177.14	142.81 212.53	189.75 282.38	236.35 351.73	282.62 420.58	374.15 556.80
42 1067					111.58 166.05	139.04 206.92	166.86 248.32	221.82 330.10	276.44 411.38	330.72 492.17	438.29 652.25
48 1219					127.61 189.91	159.05 236.70	190.92 284.12	253.89 377.83	316.52 471.04	378.83 563.76	502.43 747.70
54 1372	<div>Please inquire about other diameters and thicknesses.</div> <div>APPROXIMATE VALUES Pipe Weight (lbs/ft) = 10.69*t*(d-t) d (in) - outside diameter t (in) - thickness of pipe Pipe Weight (kg/m) = 0.0247*t*(d-t) d (mm) - outside diameter t (mm) - thickness of pipe</div>						214.97 319.91	285.96 425.55	356.61 530.70	426.93 635.35	566.57 843.15
60 1524							239.02 355.70	318.03 473.28	396.70 590.35	475.04 706.93	630.71 938.60
72 1829							287.13 427.29	382.17 568.73	476.87 709.67	571.25 850.11	758.99 1129.50
84 2134							335.23 498.88	446.31 664.18	557.05 828.98	667.46 993.29	887.27 1320.41
96 2438								510.45 759.63	637.22 948.30	763.67 1136.46	1015.55 1511.31
108 2743								574.59 855.08	717.40 1067.61	859.88 1279.64	1143.83 1702.21
120 3048								638.73 950.53	797.57 1186.92	956.09 1422.82	1272.11 1893.11

ARCELOR RPS

Available Steel Grades

ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)		(ksi)	(MPa)
A 139 Grade A	30	205	A 252 Grade 1	30	205	A 588	50	345
A 139 Grade B	35	240	A 252 Grade 2	35	240	A 609		
A 139 Grade C	42	290	A 252 Grade 3	45	310			
A 139 Grade D	46	315	A 252 Grade 3 (Mod)*	50-80	345-555	Abrasion Resistant	Brinell Hardness-190	
A 139 Grade E	52	360	* Availability is dependent on pipe diameter and thickness.					

Cutting Shoes, Points and Splicer

Open-End Cutting Shoes



Outside Flange



Inside Flange

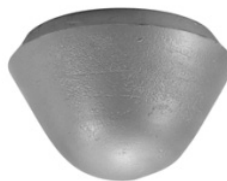
Drive-On Pipe Pile Splicer



Conical Points



Inside Flange



Inside Flange

Drive-Tite Boot



Delivery Conditions & Tolerances

ASTM

Pipe Piles:

Outside Diameter: . ±1%
 Weight/Thickness: . -5%
 Length: ±1 inch

Rolled and Welded Pipe: . . .

Outside Diameter: . ±1%
 Weight/Thickness: . -5%
 Length: ±1 inch

Maximum Rolled Lengths*

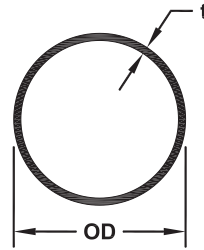
Spiralweld: 100 feet (30.5 m)
 Rolled and Welded: . . 100 feet (30.5 m)

* Longer lengths may be possible upon request.



8 Woodhollow Road, Parsippany, NJ 07054
Phone: 973-428-6100 Fax: 973-428-7399
engineering@skylinesteel.com
www.skylinesteel.com

Technical Hotline: 1-866-8Skyline (1-866-875-9546)



Rolled & Welded Pipe

Pipe Weights lbs/ft (kg/m)

Outside Diameter (OD) in (mm)	WALL THICKNESS (t) in (mm)											
	0.250 6.35	0.500 12.70	0.750 19.05	1.000 25.40	1.250 31.75	1.500 38.10	1.750 44.45	2.000 50.80	2.250 57.15	2.500 63.50	2.750 69.85	3.000 76.20
24 609.6	63.47 94.46	125.61 186.93	186.41 277.41	245.87 365.90					<div>APPROXIMATE VALUES Pipe Weight (lbs/ft) = 10.69*t*(d-t) d (in) - outside diameter t (in) - thickness of pipe Pipe Weight (kg/m) = 0.0247*t*(d-t) d (mm) - outside diameter t (mm) - thickness of pipe</div>			
30 762.0	79.51 118.32	157.68 234.65	234.51 349.00	310.01 461.35	384.18 571.72							
36 914.4	95.54 142.18	189.75 282.38	282.62 420.59	374.15 556.81	464.35 691.03	553.21 823.28	640.74 953.53	726.93 1081.79				
42 1067	111.58 166.05	221.82 330.11	330.73 492.18	438.30 652.26	544.53 810.35	649.43 966.45	752.99 1120.57	855.21 1272.70				
48 1219	127.61 189.91	253.89 377.83	378.83 563.77	502.44 747.71	624.71 929.67	745.64 1109.63	865.23 1287.61	983.49 1463.60				
54 1372	143.65 213.77	285.96 425.56	426.94 635.35	566.58 843.16	704.88 1048.98	841.85 1252.81	977.48 1454.65	1111.77 1654.51	1244.73 1852.37			
60 1524	159.68 237.64	318.03 473.28	475.04 706.94	630.72 938.61	785.06 1168.30	938.06 1395.99	1089.73 1621.69	1240.06 1845.41	1389.05 2067.14	1536.71 2286.88		
66 1676	175.72 261.50	350.10 521.01	523.15 778.53	694.86 1034.07	865.23 1287.61	1034.27 1539.17	1201.97 1788.74	1368.34 2036.32	1533.37 2281.91	1697.06 2525.51	1859.42 2767.12	2020.44 3006.75
72 1829	191.75 285.36	382.17 568.74	571.25 850.12	759.00 1129.52	945.41 1406.93	1130.48 1682.35	1314.22 1955.78	1496.62 2227.22	1677.68 2496.67	1857.41 2764.14	2035.80 3029.62	2212.86 3293.10
78 1981	207.79 309.23	414.24 616.46	619.36 921.71	823.14 1224.97	1025.59 1526.24	1226.69 1825.53	1426.47 2122.82	1624.90 2418.12	1822.00 2711.44	2017.76 3002.77	2212.19 3292.11	2405.28 3579.46
84 2134	223.82 333.09	446.31 664.19	667.47 993.30	887.28 1320.42	1105.76 1645.56	1322.91 1968.70	1538.71 2289.86	1753.18 2609.03	1966.32 2926.21	2178.12 3241.40	2388.58 3554.60	2597.70 3865.82
90 2286	239.86 356.95	478.38 711.92	715.57 1064.89	951.42 1415.88	1185.94 1764.87	1419.12 2111.88	1650.96 2456.90	1881.46 2799.93	2110.63 3140.98	2338.47 3480.03	2564.97 3817.10	2790.13 4152.17
96 2438	255.90 380.81	510.45 759.64	763.68 1136.48	1015.56 1511.33	1266.11 1884.19	1515.33 2255.06	1763.21 2623.94	2009.75 2990.84	2254.95 3355.74	2498.82 3718.66	2741.35 4079.59	2982.55 4438.53
108 2743	287.97 428.54	574.60 855.09	859.89 1279.66	1143.85 1702.23	1426.47 2122.82	1707.75 2541.42	1987.70 2958.03	2266.31 3372.65	2543.59 3785.28	2819.52 4195.92	3094.13 4604.58	3367.39 5011.25
120 3048		638.74 950.55	956.10 1422.84	1272.13 1893.14	1586.82 2361.45	1900.17 2827.77	2212.19 3292.11	2522.87 3754.46	2832.22 4214.82	3140.23 4673.19	3446.90 5129.57	3752.24 5583.96
132 3353		702.88 1046.00	1052.31 1566.01	1400.41 2084.04	1747.17 2600.08	2092.60 3114.13	2436.68 3626.19	2779.44 4136.27	3120.85 4644.35	3460.93 5150.45	3799.68 5654.55	4137.08 6156.67
144 3657.6		767.02 1141.45	1148.52 1709.19	1528.69 2274.95	1907.52 2838.71	2285.02 3400.49	2661.18 3960.28	3036.00 4518.08	3409.49 5073.89	3781.64 5627.71	4152.45 6179.54	4521.93 6729.39
156 3962		831.16 1236.90	1244.73 1852.37	1656.97 2465.85	2067.87 3077.34	2477.44 3686.84	2885.67 4294.36	3292.56 4899.88	3698.12 5503.42	4102.34 6104.97	4505.23 6704.53	4906.78 7302.10
168 4267		895.30 1332.35	1340.94 1995.55	1785.25 2656.76	2228.23 3315.97	2669.86 3973.20	3110.16 4628.44	3549.13 5281.69	3986.75 5932.96	4423.05 6582.23	4858.00 7229.52	5291.62 7874.81
180 4572		959.44 1427.81	1437.16 2138.73	1913.54 2847.66	2388.58 3554.60	2862.29 4259.56	3334.66 4962.53	3805.69 5663.50	4275.39 6362.49	4743.75 7059.49	5210.78 7754.50	5676.47 8447.53
192 4877		1023.58 1523.26	1533.37 2281.91	2041.82 3038.56	2548.93 3793.23	3054.71 4545.92	3559.15 5296.61	4062.25 6045.31	4564.02 6792.03	5064.45 7536.75	5563.55 8279.49	6061.31 9020.24

ARCELOR RPS

Available Steel Grades

ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)		(ksi)	(MPa)
A 36	36	250	A 252 Grade 1	30	205	A 516 Grade 70	38	260
A 139 Grade A	30	205	A 252 Grade 2	35	240	A 572 Grade 42	42	290
A 139 Grade B	35	240	A 252 Grade 3	45	310	A 572 Grade 50	50	345
A 139 Grade C	42	290	A 252 Grade 3 (Mod)	50	345	A 572 Grade 55	55	380
A 139 Grade D	46	315	A 516 Grade 55	30	205	A 572 Grade 60	60	415
A 139 Grade E	52	360	A 516 Grade 60	32	220	A 572 Grade 65	65	450
Other Grades Available on Request			A 516 Grade 65	35	240	A 588	50	345

Other Capabilities

Installation of:

Bands, Cutting Shoes, End Plates, Carbide Teeth, Rolled Channel and Angle Iron, Twisting Slots, Picking Eyes, Lifting Lugs, etc.

Fabrication of Segmented Fittings:

Elbows, Wye's, Laterals, Tee's, Concentric and Eccentric Reducers.

Manufacturer's of concentric tapered pipe from .250" to 2" wall thickness.

Pipe manufactured to American Welding Society, Structural welding code AWS D1.1 or D1.5 is also available.

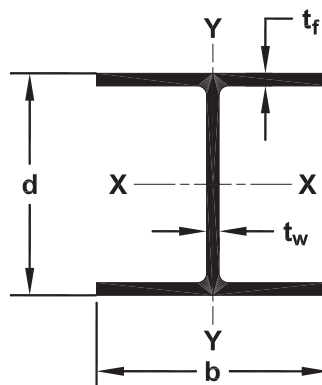
Delivery Conditions & Tolerances

	ASTM
Outside Diameter:	±1%
Weight/Thickness:	Per Specification
Length:	±1 inch

Maximum Rolled Lengths*

Rolled and Welded Pipe: . . . 120 feet (36.6 m)

* Longer lengths may be possible upon request.



Steel H-Piles

SECTION	Weight lb/ft <i>(kg/m)</i>	Area in ² <i>(cm²)</i>	Depth d in <i>(mm)</i>	Flange Width b in <i>(mm)</i>	THICKNESS		Coating Area ft ² /ft <i>(m²/m)</i>	ELASTIC PROPERTIES					
					Flange t _f in <i>(mm)</i>	Web t _w in <i>(mm)</i>		Axis X-X			Axis Y-Y		
								I in ⁴ <i>(cm⁴)</i>	S in ³ <i>(cm³)</i>	r in <i>(cm)</i>	I in ⁴ <i>(cm⁴)</i>	S in ³ <i>(cm³)</i>	r in <i>(cm)</i>
HP 8 HP 200	36	10.6	8.02	8.155	0.445	0.445	3.92	119	29.8	3.4	40.3	9.88	1.95
	54	68.4	204	207	11.3	11.3	1.19	4950	487	8.53	1680	162	4.60
HP 10 HP 250	42	12.4	9.7	10.075	0.420	0.415	4.83	210	43.4	4.13	71.7	14.2	2.41
	63	80.0	246	256	10.7	10.5	1.47	8740	711	10.5	2980	233	6.12
	57	16.8	9.99	10.225	0.565	0.565	4.91	294	58.8	4.18	101	19.7	2.45
	85	108	254	260	14.4	14.4	1.50	12200	969	10.6	4200	323	6.22
HP 12 HP 310	53	15.5	11.78	12.045	0.435	0.435	5.82	393	66.8	5.03	127	21.1	2.86
	79	100	299	306	11.0	11.0	1.77	16400	1080	12.08	5290	346	7.26
	63	18.4	11.94	12.125	0.515	0.515	5.86	472	79.1	5.06	153	25.3	2.88
	94	119	303	308	13.1	13.1	1.79	19600	1290	12.9	6370	415	7.32
	74	21.8	12.13	12.215	0.610	0.605	5.91	569	93.8	5.11	186	30.4	2.92
	110	141	308	310	15.5	15.4	1.80	23700	1530	13.0	7740	498	7.42
	84	24.6	12.28	12.295	0.685	0.685	5.97	650	106	5.14	213	34.6	2.94
	125	159	312	312	17.4	17.4	1.82	27100	1730	13.1	8870	567	7.47
HP 14 HP 360	73	21.4	13.61	14.585	0.505	0.505	6.96	729	107	5.84	261	35.8	3.49
	109	138	346	370	12.8	12.8	2.12	30300	1770	14.8	10900	587	8.86
	89	26.1	13.83	14.695	0.615	0.615	7.02	904	131	5.88	326	44.3	3.53
	132	168	351	373	15.6	15.6	2.14	37600	2150	14.9	13600	726	8.97
	102	30	14.01	14.785	0.705	0.705	7.06	1050	150	5.92	380	51.4	3.56
	152	194	356	376	17.9	17.9	2.15	43700	2480	15.0	15800	842	9.04
	117	34.4	14.21	14.885	0.805	0.805	7.11	1220	172	5.96	443	59.5	3.59
	174	222	361	378	20.4	20.4	2.17	50800	2830	15.1	18400	975	9.12

Available Steel Grades

AMERICAN			CANADIAN			EUROPEAN**		
ASTM	YIELD STRENGTH		CSA G40.21	YIELD STRENGTH		EN 10034	YIELD STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)		(ksi)	(MPa)
A 36	36	250	Grade 300 W	44	300	HISTAR 355	51	355
A 572 Grade 50*	50	345	Grade 350 W	50	350	HISTAR 420	61	420
A 588	50	345				HISTAR 460	67	460
A 690	50	345						

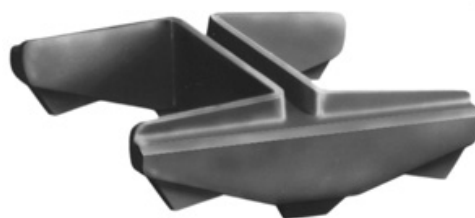
*Standard grade for H-Piles

**HISTAR only available in some sizes

Splicer and Cutting Shoe



Splicer



Cutting Shoe

Delivery Conditions & Tolerances

Mass:
Length

30 Feet and Under:
Over 30 Feet:

Depth:

Flange Width:

Flanges out of Square

HP 8 x 42 - HP 12 x 84:

HP 14 x 73 - HP 14 x 117:

Web off Center:

Greatest Depth over Theoretical:

Camber and Sweep*

45 Feet and Under:

Over 45 Feet:

ASTM A 6

± 2.5%

± 0.375 inches

+ (0.375 inches + (length - 30)/80) - 0.375 inches

± 0.125 inches - 0.1875 inches

+ 0.25 inches

≤ 0.25 inches

≤ 0.3125 inches

≤ 0.1875 inches

≤ 0.25 inches

(0.125 in.)(Length in Feet/10) but not over 0.375 in.

(0.375 in.) + (0.125 in. (Length in Feet - 45)/10)

*For the HP 10 x 42, 12 x 53, 12 x 63, 14 x 72, and 14 x 89 tolerances are subject to negotiation with manufacturer.

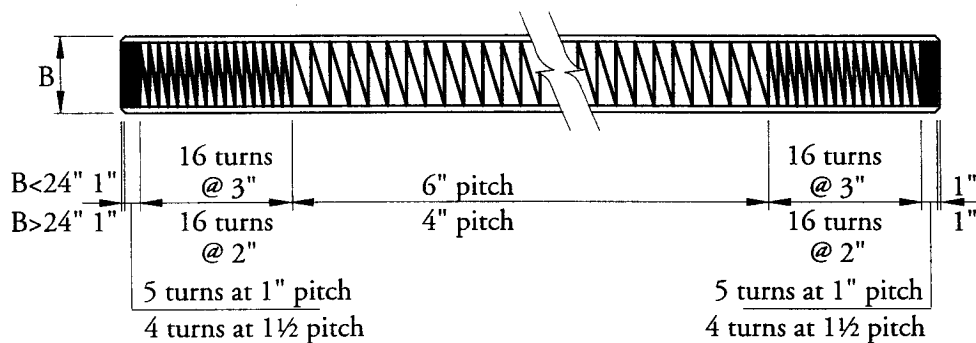
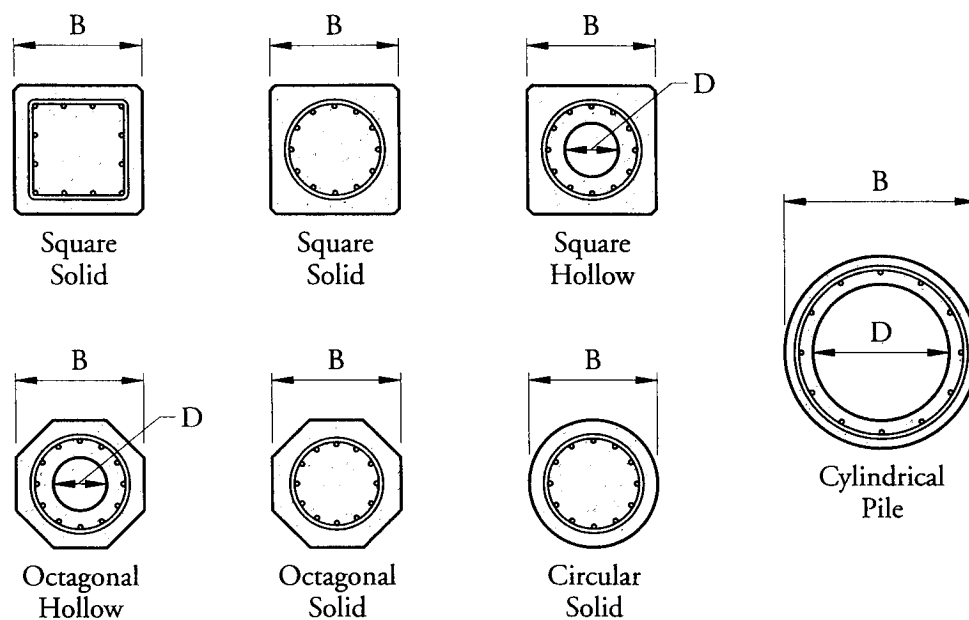
Maximum Rolled Lengths*

HP's: 100 feet

* Longer lengths may be possible upon request.

AASHTO/PCI STANDARD PRODUCTS

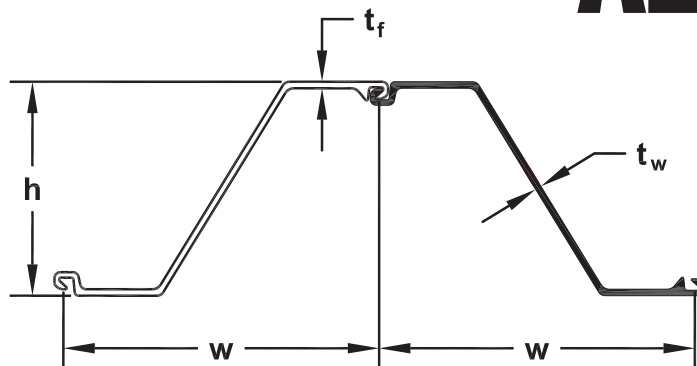
Piles



AASHTO/PCI STANDARD PRODUCTS

Piles

$f_{pc} = 700 \text{ psi}$												
Nominal Size	Core Diameter	Area A_g	Weight	Moment of Inertia	Section Modulus	Radius of Gyration	Perimeter	$P_a = A_g(0.33f'_c - 0.27f_{pc})/2,000 \text{ (Tons)}$				
								$f'_c \text{ (psi)}$				
B (in.)	D (in.)	(in. ²)	(plf)	(in. ⁴)	(in. ³)	(in.)	(ft)	5,000	6,000	7,000	8,000	10,000
Square Piles												
10	Solid	100	104	833	167	2.89	3.33	73	90	106	123	156
12	Solid	144	150	1,728	288	3.46	4.00	105	129	153	176	224
14	Solid	196	204	3,201	457	4.04	4.67	143	176	208	240	305
16	Solid	256	267	5,461	683	4.62	5.33	187	229	271	314	398
18	Solid	324	338	8,748	972	5.20	6.00	237	290	344	397	504
20	Solid	400	417	13,333	1,333	5.77	6.67	292	358	424	490	622
20	11	305	318	12,615	1,262	6.43	6.67	223	273	323	374	474
24	Solid	576	600	27,648	2,304	6.93	8.00	421	516	611	706	896
24	12	463	482	26,630	2,219	7.58	8.00	338	415	491	567	720
24	13	443	462	25,762	2,147	7.81	8.00	324	397	470	543	690
24	14	422	440	25,163	2,097	7.94	8.00	308	378	448	517	657
30	Solid	900	938	67,500	4,500	8.66	10.00	657	806	954	1,103	1,400
30	18	646	672	62,347	4,157	9.82	10.00	472	578	685	791	1,004
36	18	1,042	1,085	134,815	7,490	11.38	12.00	761	933	1,105	1,276	1,620
Octagonal Piles												
10	Solid	83	85	555	111	2.59	2.76	61	74	88	102	129
12	Solid	119	125	1,134	189	3.09	3.31	87	107	126	146	185
14	Solid	162	169	2,105	301	3.60	3.87	118	145	172	199	252
16	Solid	212	220	3,592	449	4.12	4.42	155	190	225	260	330
18	Solid	268	280	5,705	639	4.61	4.97	196	240	284	328	417
20	Solid	331	345	8,770	877	5.15	5.52	242	296	351	406	515
20	11	236	245	8,050	805	5.84	5.52	172	211	250	289	367
22	Solid	401	420	12,837	1,167	5.66	6.08	293	359	425	491	624
22	13	268	280	11,440	1,040	6.53	6.08	196	240	284	328	417
24	Solid	477	495	18,180	1,515	6.17	6.63	348	427	506	585	742
24	15	300	315	15,696	1,308	7.23	6.63	219	269	318	368	467
Cylinder Piles												
36	22	638	664	70,949	3,942	10.55	9.42	466	571	677	782	992
36	24	565	589	66,162	3,676	10.82	9.42	413	506	599	692	879
36	26	487	507	60,016	3,334	11.10	9.42	356	436	516	597	758
48	34	902	939	194,979	8,124	14.71	12.57	659	808	957	1,105	1,403
48	36	792	825	178,128	7,422	15.00	12.57	579	709	840	971	1,232
48	38	675	704	158,222	6,593	15.31	12.57	493	604	716	827	1,050
54	40	1,034	1,077	191,729	10,805	16.80	14.14	755	926	1,097	1,267	1,608
54	42	905	942	264,648	9,802	17.10	14.14	661	810	960	1,109	1,408
54	44	770	802	233,409	8,645	17.41	14.14	562	690	817	944	1,198
60	46	1,166	1,214	416,386	13,880	18.90	15.71	852	1,044	1,237	1,429	1,814
60	48	1,018	1,060	375,596	12,520	19.21	15.71	744	912	1,080	1,248	1,583
60	50	864	900	329,376	10,979	19.53	15.71	631	774	916	1,059	1,344
66	52	1,297	1,352	572,512	17,349	21.01	17.28	947	1,161	1,375	1,589	2,017
66	54	1,131	1,178	514,027	15,577	21.32	17.28	826	1,013	1,199	1,386	1,759
66	56	958	998	448,670	13,596	21.64	17.28	700	858	1,016	1,174	1,490



AZ Hot Rolled Steel Sheet Piling

SECTION	Width (w) in (mm)	Height (h) in (mm)	THICKNESS		Cross Sectional Area in ² /ft (cm ² /m)	WEIGHT		Section Modulus in ³ /ft (cm ³ /m)	Moment of Inertia in ⁴ /ft (cm ⁴ /m)	COATING AREA	
			Flange (t _f) in (mm)	Web (t _w) in (mm)		Pile lb/ft (kg/m)	Wall lb/ft ² (kg/m ²)			Both Sides ft ² /ft of single (m ² /m)	Wall Surface ft ² /ft ² (m ² /m ²)
AZ 12	26.38 670	11.89 302.0	0.335 8.50	0.335 8.50	5.94 125.7	44.42 66.10	20.22 98.70	22.3 1200	132.8 18140	5.45 1.66	1.23 1.23
AZ 13	26.38 670	11.93 303.0	0.375 9.50	0.375 9.50	6.47 136.9	48.38 72.00	22.02 107.5	24.2 1300	144.3 19700	5.45 1.66	1.23 1.23
AZ 14	26.38 670	11.97 304.0	0.413 10.50	0.413 10.50	7.03 148.9	52.62 78.30	23.94 116.90	26.0 1400	156.0 21300	5.45 1.66	1.23 1.23
AZ 17	24.80 630	14.92 379.0	0.335 8.50	0.335 8.50	6.53 138.3	45.96 68.40	22.24 108.60	31.0 1665	231.3 31580	5.64 1.72	1.35 1.35
AZ 18	24.80 630	14.96 380.0	0.375 9.50	0.375 9.50	7.11 150.4	49.99 74.40	24.19 118.10	33.5 1800	250.4 34200	5.64 1.72	1.35 1.35
AZ 19	24.80 630	15.00 381.0	0.413 10.50	0.413 10.50	7.74 163.8	54.43 81.00	26.34 128.60	36.1 1940	270.8 36980	5.64 1.72	1.35 1.35
AZ 25	24.80 630	16.77 426.0	0.472 12.00	0.441 11.20	8.74 185.0	61.49 91.50	29.74 145.20	45.7 2455	382.6 52250	5.91 1.80	1.41 1.41
AZ 26	24.80 630	16.81 427.0	0.512 13.00	0.480 12.20	9.35 198.0	65.72 97.80	31.79 155.20	48.4 2600	406.5 55510	5.91 1.80	1.41 1.41
AZ 28	24.80 630	16.85 428.0	0.551 14.00	0.520 13.20	9.97 211.1	70.15 104.40	33.94 165.70	51.2 2755	431.6 58940	5.91 1.80	1.41 1.41
AZ 34	24.80 630	18.07 459.0	0.669 17.00	0.512 13.00	11.03 233.5	77.61 115.50	37.54 183.30	63.8 3430	576.3 78700	6.10 1.86	1.47 1.47
AZ 36	24.80 630	18.11 460.0	0.709 18.00	0.551 14.00	11.67 247.1	82.11 122.20	39.73 194.00	67.0 3600	606.3 82800	6.10 1.86	1.47 1.47
AZ 38	24.80 630	18.15 461.0	0.748 19.00	0.591 15.00	12.33 261.0	86.75 129.10	41.97 204.90	70.3 3780	637.7 87080	6.10 1.86	1.47 1.47
AZ 36-700	27.56 700	19.65 499.0	0.669 17.00	0.441 11.20	10.19 215.7	79.63 118.50	34.68 169.30	67.0 3600	657.2 89740	6.76 2.06	1.46 1.46
AZ 38-700	27.56 700	19.69 500.0	0.709 18.00	0.480 12.20	10.85 229.7	84.80 126.20	36.93 180.30	70.7 3800	694.5 94840	6.76 2.06	1.46 1.46
AZ 40-700	27.56 700	19.72 501.0	0.748 19.00	0.520 13.20	11.50 243.5	89.91 133.80	39.14 191.10	74.4 4000	731.8 99930	6.76 2.06	1.46 1.46
AZ 46	22.83 580	18.94 481.0	0.709 18.00	0.551 14.00	13.76 291.2	89.10 132.60	46.82 228.60	85.5 4595	808.8 110450	6.23 1.90	1.63 1.63
AZ 48	22.83 580	18.98 482.0	0.748 19.00	0.591 15.00	14.48 306.5	93.81 139.60	49.28 240.60	89.3 4800	847.1 115670	6.23 1.90	1.63 1.63
AZ 50	22.83 580	19.02 483.0	0.787 20.00	0.630 16.00	15.22 322.2	98.58 146.70	51.80 252.90	93.3 5015	886.5 121060	6.23 1.90	1.63 1.63

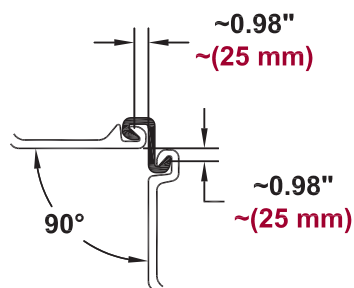
Available Steel Grades

AMERICAN			CANADIAN			EUROPEAN		
ASTM	YIELD STRENGTH		CSA G40.21	YIELD STRENGTH		EN 10248	YIELD STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)		(ksi)	(MPa)
A 328	39	270	Grade 260 W	38	260	S 240 GP	35	240
A 572 Grade 42	42	290	Grade 300 W	43	300	S 270 GP	39	270
A 572 Grade 50	50	345	Grade 355 W	51	355	S 320 GP	46	320
A 572 Grade 55	55	380	Grade 400 W	58	400	S 355 GP	51	355
A 572 Grade 60	60	415				S 390 GP	57	390
A 572 Grade 65	65	450				S 430 GP	62	430
A 690	50	345				S 460 AP**	67	460
A 690*	57	390						

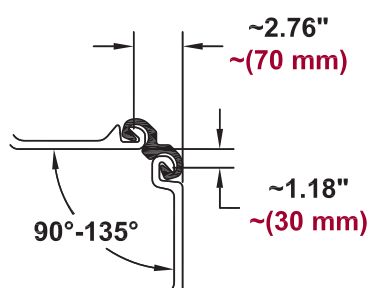
*Inquire for availability of AZ 25 - 28, not available for AZ 34 and larger.

**Not available for AZ 34 and larger.

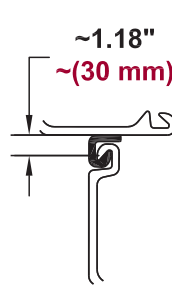
Corner Piles



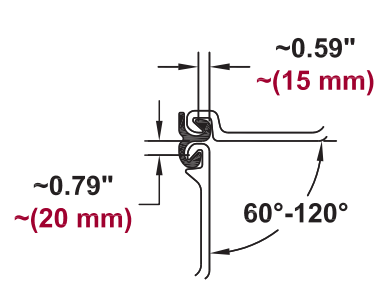
C 14
Weight: 9.68 lbs/ft
(14.4 kg/m)



Omega 18
Weight: 12.10 lbs/ft
(18.0 kg/m)



C 9
Weight: 6.25 lbs/ft
(9.3 kg/m)



Delta 13
Weight: 8.73 lbs/ft
(13.0 kg/m)

Delivery Conditions & Tolerances

ASTM A 6

Mass: ± 2.5%
Length: + 5 inches – 0 inches
Height:
Thickness:

Width:
Double Pile Width: . .
Straightness:
Ends out of Square: .

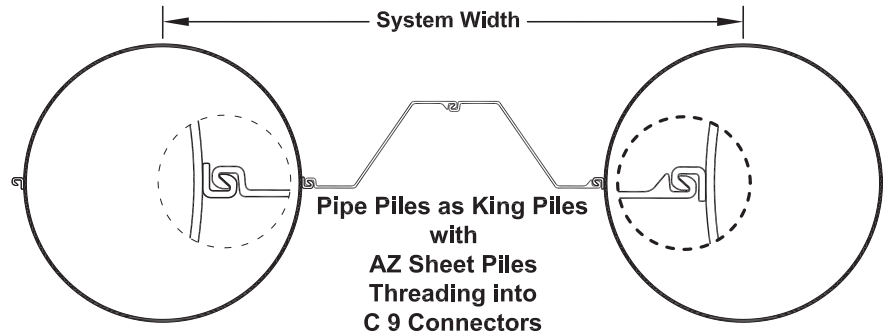
EN 10248

± 5%
± 200 mm
± 7 mm
≤ 8.5 mm ± 0.5 mm
> 8.5 mm ± 6%
± 2%
± 3%
0.2% of the length
2% of the width

Maximum Rolled Lengths*

AZ: 102 feet (31.0 m)
C 9: 59 feet (18.0 m)
C 14: 59 feet (18.0 m)
Delta 13: 59 feet (18.0 m)
Omega 18: 52 feet (16.0 m)

* Longer lengths may be possible upon request.



Pipe / AZ Combined Wall System

Pipe AZ System (Diameter / AZ Section)	PROPERTIES OF PIPE PILE			PROPERTIES OF COMBINED WALL						
	Outside Diameter	Wall Thickness	Pipe Weight	System Width	System Inertia	Section Modulus	WEIGHT (AZ Length / Pipe Length)			Cross Sectional Area
	in (mm)	in (mm)	lb/ft (kg/m)	in (mm)	in ⁴ /ft (cm ⁴ /m)	in ³ /ft (cm ³ /m)	100% lb/ft ² (kg/m ²)	80% lb/ft ² (kg/m ²)	60% lb/ft ² (kg/m ²)	in ² /ft (cm ² /m)
PA 30 / 13	30 762.0	0.313 7.938	98.93 147.2	85.3 2165.5	541 73914	36.1 1940.0	29.3 143.3	26.6 130.0	23.9 116.7	8.1 171.5
PA 36 / 13	36 914.4	0.375 9.525	142.7 212.4	91.3 2317.9	959 130965	53.3 2864.5	33.1 161.9	30.6 149.4	28.1 137.0	9.3 195.9
PA 42 / 13	42 1066.8	0.438 11.113	194.4 289.3	97.3 2470.3	1600 218549	76.2 4097.3	37.5 182.9	35.1 171.3	32.7 159.6	10.6 223.4
PA 48 / 18	48 1219.2	0.500 12.700	253.7 377.5	100.1 2542.7	2647 361455	110.3 5929.4	43.9 214.4	41.5 202.7	39.1 191.0	12.5 263.9
PA 54 / 18	54 1371.6	0.563 14.288	321.3 478.3	106.1 2695.1	3929 536619	145.5 7824.7	49.1 239.6	46.8 228.5	44.5 217.5	14.0 296.4
PA 60 / 18	60 1524.0	0.625 15.875	396.3 589.8	112.1 2847.5	5610 766185	187.0 10054.9	54.5 266.1	52.4 255.7	50.2 245.2	15.6 330.7
PA 66 / 26	66 1676.4	0.688 16.463	480.0 714.4	118.1 2999.9	7814 1067068	236.8 12730.5	63.4 309.6	60.7 296.5	58.1 283.5	18.3 386.4
PA 72 / 26	72 1828.8	0.750 19.050	570.7 849.3	124.1 3152.3	10464 1428984	290.7 15627.6	69.2 337.7	66.6 325.3	64.1 312.8	20.0 422.6
PA 78 / 26	78 1981.2	0.813 20.638	670.4 997.8	130.1 3304.7	13690 1869476	351.0 18872.2	75.1 366.8	72.7 354.9	70.3 343.1	21.7 460.0

The above systems are samples; diameter, wall thickness, and intermediary sheet piles can be varied to suit the project needs.

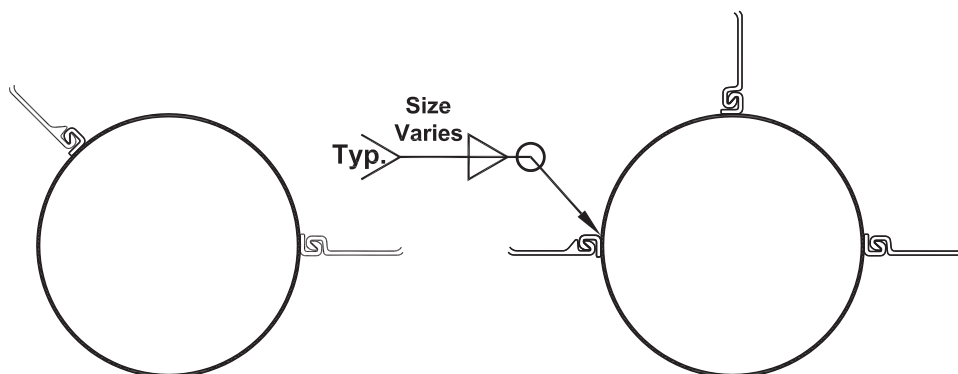
Available Steel Grades

SPIRALWELD PIPE			AZ SHEET PILES			C 9 CONNECTORS		
ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)		(ksi)	(MPa)
A 252 Grade 1	30	205	A 328	39	270	A 572 Grade 50	50	345
A 252 Grade 2	35	240	A 572 Grade 42	42	290			
A 252 Grade 3	45	310	A 572 Grade 50	50	345			
A 252 Grade 3 (Mod)*	50-80	345	A 572 Grade 55	55	380			
			A 572 Grade 60	60	415			
			A 572 Grade 65	65	450			
			A 690	50	345			
			A 690**	57	390			

*Availability is dependent on pipe diameter and thickness.

**Inquire for availability of AZ 25 - 28, not available for AZ 34 and larger.

Corner Piles



Delivery Conditions & Tolerances

ASTM

Pipe Piles:

Outside Diameter: . ± 1%
 Weight/Thickness: . - 5%
 Length: ± 1 inch

AZ Sheet Piles:

Mass: ± 2.5%
 Length: + 5 inches - 0 inches
 Height:
 Thickness:

Width:
 Double Pile Width:
 Straightness:
 Ends out of Square:

EN 10248

± 5%
 ± 200 mm
 ± 7 mm
 ≤ 8.5 mm ± 0.5 mm
 > 8.5 mm ± 6%
 ± 2%
 ± 3%
 0.2% of the length
 2% of the width

Maximum Rolled Lengths*

AZ: 102 feet (31.0 m)
 Pipe: 100 feet (30.5 m)
 C 9: 59 feet (18.0 m)

(Length does not restrict wall height)

* Longer lengths may be possible upon request.

Table 3-3 provides specified butt circumferences with corresponding minimum tips sizes for Southern pine. Table 3-4 provide specified tip circumferences with corresponding minimum butt circumferences for Southern Pine. The corresponding tables for Douglas fir and other western species are in Tables 3-5 and 3-6.

Table 3-2
Allowable Pile Capacity in Compression (kips)

Timber Species	Allowable Pile Capacity in Compression (kips)					
	Pile Tip Diameter (inches)					
	7	8	9	10	11	12
Southern Pine	46	60	76	94	114	136
Douglas Fir	48	63	80	98	119	141

Table 3-3 Southern Pine Foundation Piling – Specified Butt Circumferences with Corresponding Minimum Tip Circumferences^{A,B,C,D,E} (from ASTM D25 - Table X1.3)
[Approximate Diameters in Brackets]

Required Minimum Circumference, in. 3 ft from Butts	22 [7]	25 [8]	28 [9]	31 [10]	35 [11]	38 [12]	41 [13]	44 [14]	47 [15]	50 [16]	57 [18]
Length (ft)	Minimum Tip Circumferences, in.										
20	16 [5.1]	16 [5.1]	18 [5.7]	21 [6.7]	25 [8.0]	28 [8.9]	31 [9.9]	34 [10.8]	37 [11.8]	40 [12.7]	47 [15.0]
25	16 [5.1]	16 [5.1]	17 [5.4]	20 [6.4]	24 [7.6]	27 [8.6]	30 [9.5]	33 [10.5]	36 [11.4]	39 [12.4]	46 [14.6]
30	16 [5.1]	16 [5.1]	16 [5.1]	19 [6.0]	23 [7.3]	26 [8.3]	29 [9.2]	32 [10.2]	35 [11.1]	38 [12.1]	45 [14.3]
35				18 [5.7]	22 [7.0]	25 [8.0]	28 [8.9]	31 [9.9]	34 [10.8]	37 [11.8]	44 [14.0]
40				17 [5.4]	21 [6.7]	24 [7.6]	27 [8.6]	30 [9.5]	33 [10.5]	36 [11.4]	43 [13.7]
45					20 [6.4]	23 [7.3]	26 [8.3]	29 [9.2]	32 [10.2]	35 [11.1]	42 [13.4]
50					19 [6.0]	22 [7.0]	25 [8.0]	28 [8.9]	31 [9.9]	34 [10.8]	41 [13.0]
55						21 [6.7]	24 [7.6]	27 [8.6]	30 [9.5]	33 [10.5]	40 [12.7]
60						20 [6.4]	23 [7.3]	26 [8.3]	29 [9.2]	32 [10.2]	39 [12.4]
65						19 [6.0]	22 [7.0]	25 [8.0]	28 [8.9]	31 [9.9]	38 [12.1]
70						18 [5.7]	21 [6.7]	24 [7.6]	27 [8.6]	30 [9.5]	37 [11.8]
75							20 [6.4]	23 [7.3]	26 [8.3]	29 [9.2]	36 [11.4]
80							19 [6.0]	22 [7.0]	25 [8.0]	28 [8.9]	35 [11.1]
85							18 [5.7]	21 [6.7]	24 [7.6]	27 [8.6]	34 [10.8]

^A Where the taper applied to the butt circumferences calculate to a circumference at the tip of less than 16 in., the individual values have been increased to 16 in. to ensure a minimum of 5-in. tip for purposes of driving.

^B To convert to metric dimensions, 1 in. = 25.4 mm.

^C Class A piles are all those listed with a specified required minimum circumference of 44 in. at 3 ft from butt.

^D Class B piles are those listed with a specified required minimum circumference at 3 ft from butt of 35 in. and lengths of 20 to 25 ft minimum circumference at 3 ft from butt of 38 in. and lengths of 20 to 50 ft, and minimum circumference at 3 ft from butt of 41 in. and lengths of 55 to 80 ft.

^E Southern Yellow Pine piles are generally available in lengths shorter than 70 ft or girth of less than 50 in. at 3 ft from butt. The purchaser should inquire as to availability of sizes below the lines.

CONMACO								
CABLE CONNECTED PILE HAMMER								
SPECIFICATIONS								
MODEL	50E5	65E5	80E5	100E5	115E5	125E5	200E5	300E5
Rated Striking Energy - Maximum - Ft. Lbs.	25,000	32,500	40,000	50,000	57,500	62,500	100,000	150,000
Weight of Striking Parts - Nominal - Lbs.	5,000	6,500	8,000	10,000	11,500	12,500	20,000	30,000
Stroke Length - Maximum - Inches	60	60	60	60	60	60	60	60
Blows/Minute at Refusal (Maximum Stroke) {a}	48	50	47	47	42	41	46	40
Steam Consumption @ 212° F(at hammer) - PSI {c}	1,918	2,584	2,623	3,155	2,863	3,229	6451	7523
Operating Pressure (at Hammer) - PSI	70	95	80	100	100	100	110	150
Air Consumption (Adiabatic - at hammer) SCFM {b}	560	700	740	850	770	875	1700	1900
Inlet Connection - Dia. In Inches (NPT)	2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	4	4
Distance between Jaws - Inches	20	20	26	26	26	26	56	56
Jaw Width - Inches {d}	8-1/4	8-1/4	9-1/4	9-1/4	9-1/4	9-1/4	11-1/4	11-1/4
Length of Hammer (without helmet)	16'10"	16'10"	17'9"	17'9"	17'9"	18'0"	19'1"	20'10"
Width of Hammer - Inches	31-1/4	31-1/4	35-3/16	35-3/16	35-3/16	35-3/16	61-1/4	61-1/4

Depth of Hammer - Inches	39	47-3/4	42-1/8	49-7/16	53	53	53	53
Weight of Hammer - Lbs.	11,000	12,500	17,500	19,500	21,000	22,000	47,170	58,400
Size of Hoisting Line - Dia. In Inches	3/4	3/4	7/8	7/8	7/8	7/8	--	--
MODEL	50	65	80	100	115			
Rated Striking Energy - Maximum - Ft. Lbs.	15,000	19,500	26,000	32,500	37,375			
Blows per Minute - Normal Stroke & No Set {a}	60	60	50	50	50			
Inlet Pressure at Hammer - PSI	80	100	85	100	120			
Normal Stroke - Inches	36	36	39	39	39			
Volume of Free Air - CFM - adiabatic {b}	565	625	850	950	1060			
Steam Consumption @ 212° F(at hammer) - PSI {c}	1,925	2,300	3,000	3,425	3,980			
Inlet Connection - Dia. In Inches	2	2	2-1/2	2-1/2	2-1/2			
Head Sheave Groove Diameter	3/4	3/4	7/8	7/8	7/8			
Distance between Jaws - Inches	20	20	26	26	26			
Jaw Width - Inches {d}	8-1/4	8-1/4	9-1/4	9-1/4	9-1/4			
Length of Hammer (without helmet)	13'0"	13'0"	15'0"	15'0"	15'0"			
Weight of Striking Parts - Lbs.	5,000	6,500	8,000	10,000	11,500			
Weight of Hammer - Lbs.	9,700	11,200	16,700	18,700	20,250			

{a} Hammer operating speed is a function of many variables, including penetration resistance, cushion material, pressure, stroke, etc. Observed blow-count will vary depending on driving conditions. Energy is not a function of speed.

{b} Compressor output must exceed air required at hammer due to line and efficiency losses. It is advisable that the adiabatic consumption figure be increased by approximately 30% in the determination of the of the required compressor size.

{c} Steam consumption is based on feedwater and steam temperature of 212° F.

{d} Standard Female Jaw dimensions are shown. Male Jaws are available on special order.

BACK

HOME

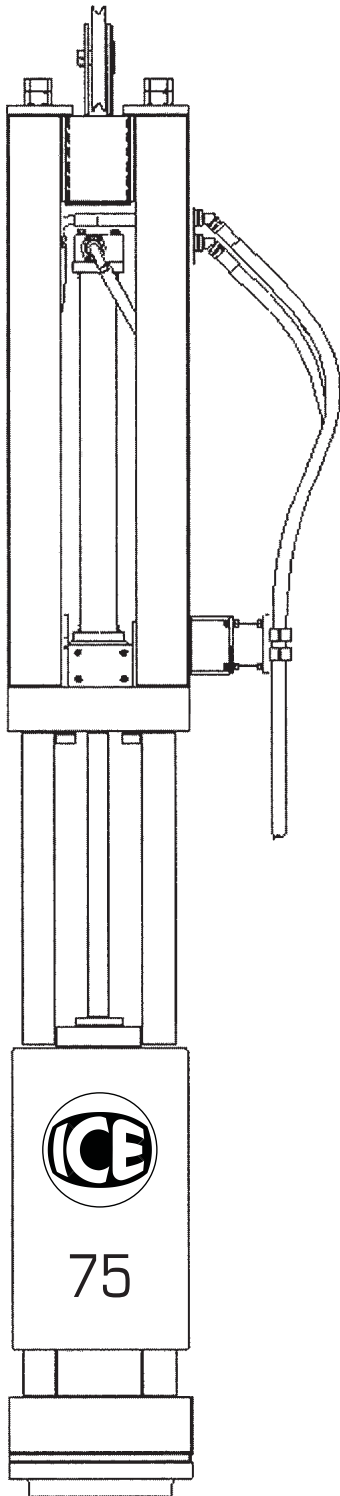


E-mail: sales@conmacco.com

**1602 Engineers Road
Belle Chasse, LA 70037
Phone: 504.394.7330
Fax: 504.393.8715**

Model 75

Hydraulic Impact Hammer



Impact Hammer:

	Model 75	
Ram weight	7500 lbs	3401 kg
Maximum stroke	4.0 ft	1219 mm
Rated energy	30000 ft-lbs	41 kJ
Blow rate @ max energy	48 bpm	48.00 bpm
Minimum stroke	1.5 ft	457 mm
Hammer weight (bare)	13840 lbs	6276 kg
Typical operating weight	16660 lbs	7555 kg
Hammer length (bare)	18.6 ft	5663 mm
Typical operating length	20.8 ft	6325 mm
Width	26.0 in	660 mm
Depth	36.0 in	914.4 mm
Hydraulic hose length	100 ft	30 m
Hydraulic hose weight	850 lbs	385 kg

Power Unit:

Model 200

Engine	Caterpillar 3116TA	
Power	200 HP	149 kW
Operating speed	2400 rpm	2400 rpm
Max drive pressure	2500 psi	172 bar
Drive flow	103 gpm	390 lpm
Stroke control pressure	2500 psi	172 bar
Stroke control flow	11.4 gpm	43 lpm
Weight (w/ full fluid & fuel)	9310 lbs	4222 kg
Length	126 in	3200 mm
Width	60 in	1524 mm
Height	79 in	2007 mm
Hydraulic reservoir	275 gal	1041 liters
Fuel capacity	122 gal	462 liters

75HIH-50119



**INTERNATIONAL
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301 Warehouse Drive, Matthews, NC 28104

Tele: (704) 821-8200 or (888) ICEUSA1

Fax: (704) 821-8201

www.iceusa.com E-mail: sales@iceusa.com

Model D19-42 Diesel Hammer

No picture available

Maximum obtainable energy	51,770 ft-lbs
Maximum obtainable stroke	148.3 inches
Pump setting 1: (minimum)	20,540 ft-lbs
Pump setting 2:	
Pump setting 3:	
Pump setting 4: (maximum)	42,598 ft-lbs
**Optional variable throttle gives infinite stroke control.	
Stroke at rated energy	10 ft 2 in
Energy at rated stroke	47,300 ft-lbs
Speed	37-53 bpm
Ram	4,190 lbs
Anvil	754 lbs
Hammer weight (includes trip device)	9,259 lbs
Typical operating (weight with drive cap)	11,344 lbs
Weight	900 lbs
Diameter	22.5 inches
Thickness	6 inches
Type	Monocast MC 901
Diameter	22.5 inches
Thickness	2 inches
Elastic-modulus	285 kips per square inch
Coeff. of restrituion	0.8
Weight (fits 8 by 26 inch leads)	1,350 lbs
Square box inserts size 10" through 20"	aprox. 1,400 lbs
Pipe inserts for pipe size 12" to 24" diameter	Consult factory
Fuel tank (runs on diesel or bio -diesel)	8.5 gal
Oil tank	2.4 gal
Diesel or Bio-diesel fuel	1.5 gal/hr
Lubrication	.26 gal/hr
**Grease once per 45 minutes of driving time	
Length overall	186.2 inches
Length over cylinder extension	219.3 inches
Impact block diameter	17.3 inches
Hammer width overall	19 inches
Minimum clearance for leads	14.2 inches
Standard lead size	8 X 26 inch
Hammer guiding for FEC ST-75 & ST-100 available	Consult factory

Link-Belt 108 HYLAB 5

50-ton (50 mt) Lattice Boom Crawler Crane



READ MORE ABOUT IT!

- 40' – 140' (12.19 – 42.67 m) angle boom
- Maximum boom & jib combination:
110' + 50' (33.53 + 15.24 m)
- 163' (49.68 m) maximum tip height
- 140' (42.67 m) maximum 360° working radius
- 16,800 lbs (7 620 kg) maximum clamshell / dragline / duty cycle capacity
- 70' (21.34 m) maximum duty cycle boom
- Isuzu BB-6BG1TRB-09 170 hp (127 kW) engine
- 32,323 lbs (14 662 kg) maximum winch line pull
- Maximum line speed: 432 fpm (131.7 m/min) eighth layer
264 fpm (80.5 m/min) first layer
- 11' 2" (3.40 m) track gauge, 17' 8" (5.38 m) track length
- 96,830 lbs (43 921 kg) operating weight

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Link-Belt

238 HYLAB 5

150-ton (136.08 mt)
Lattice Boom Crawler
Crane



READ MORE ABOUT IT!

New features:

- New roomier operator's cab
- New Mitsubishi 6D24-TLA2H (Tier 2) 263 hp (196 kw) diesel engine
- New counterweight removal system - sets counterweight all the way to the ground
- New counterweight design: slab base with 6 wing weights - up to 92,000 lbs (41 730 kg) of upper counterweight
- New remote mount oil cooler
- New boom design - includes bar-type pendants. Pendants and boom connecting pins store on each extension for ease of transport
- Greater capacities

Attachment:

- 50' to 260' (15.24 to 79.25 m) conventional boom
- 30' to 75' (9.14 to 22.86 m) fixed jib - new design can be installed as fixed jib on conventional boom or as fixed jib on the luffing jib
- 80' to 150' (24.38 to 45.72 m) luffing jib and 85' to 165' (25.91 to 50.29 m) luffing boom

General dimensions:

- Track width: 44" (1.12 m)
- Track gauge: 15' 6" (4.72 m)
- Crawler length: 25' (7.64 m)
- Max tail swing: 18.19' (5.54 m)
- Upper width: 10.96' (3.34 m)
- Main unit transportation weight: 70,065 lbs (31 781 kg)

| **PRINT THIS PAGE** |

Link-Belt 248 HYLAB 5

200-ton (181.44
mt)
Lattice Boom
Crawler Crane

**READ MORE ABOUT
IT**



NEW FEATURES:

- New roomier operator's cab
- New Mitsubishi 6D24-TLA2H (Tier 2) 263 hp (196 kw) diesel engine
- New counterweight removal system sets counterweight all the way to the ground
- New counterweight design: slab base with 8 wing weights - up to 118,000 lbs of upper counterweight
- New remote mount oil cooler
- New boom design includes bar-type pendants. Pendants and boom connecting pins store on each extension for ease of transport
- Greater capacities

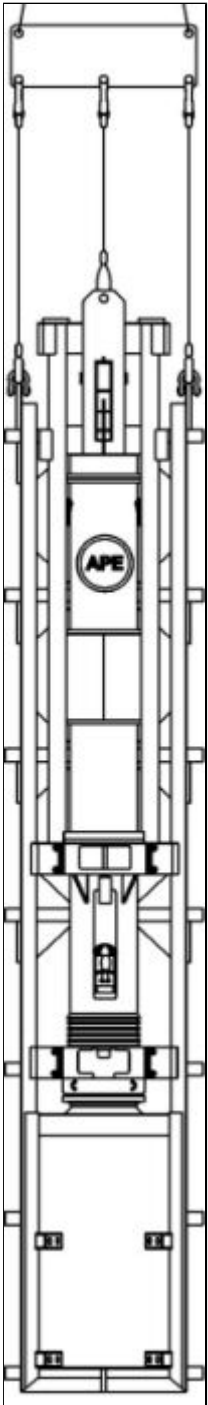
ATTACHMENT:

- 50' to 280' (15.24 – 85.34 m) conventional boom
- 30' to 100' fixed jib - new design can be installed as fixed jib on conventional boom or as fixed jib on the luffing jib
- 80' to 160' luffing jib and 85' to 190' luffing boom

GENERAL DIMENSIONS:

- Track width: 44"
- Track gauge: 18' 8"
- Crawler length: 28' 6"
- Max tail swing: 19' 8"
- Upper width: 10' 11.5"
- Main unit transportation weight: 76,000 lbs (estimate)

Model D36-32 Diesel Hammer



Maximum rated energy	109,306 ft-lbs
Maximum obtainable stroke	165 inches
Pump setting 1: (minimum)	40,898 ft-lbs
Pump setting 2:	55,358 ft-lbs
Pump setting 3:	69,617 ft-lbs
Pump setting 4: (maximum)	83,875 ft-lbs
Stroke at rated energy	126 inches
Energy at rated stroke	90,500 ft-lbe
Speed (blows per minute)	36-53
Ram	7,938 lbs
Anvil	2,271 lbs
Hammer weight (includes trip device)	21,655 lbs
Typical operating (weight with drive cap)	25,127 lbs
Fuel tank (runs on diesel or bio-diesel)	23.51 gal
Oil tank	4.49 gal
Weight	1100 lbs
Diameter	25 inches
Thickness	8 inches
Type	Aluminum/Micarta
Diameter	25 inches
Thickness	2 inches
Elastic-modulus	285 kips per square inch
Coeff. of restitution	0.8
Weight (fits 8 by 26 inch leads)	1,350 lbs
Diesel or Bio-diesel fuel	3.04 gal/hr
Lubrication oil	0.61 gal/hr
**Grease twice per day	
Length overall	208.1 inches
Length over cylinder extension	247.4 inches
Impact block diameter	27.2 inches
Hammer width overall	28.3 inches
Minimum clearance for leads	19.7 inches

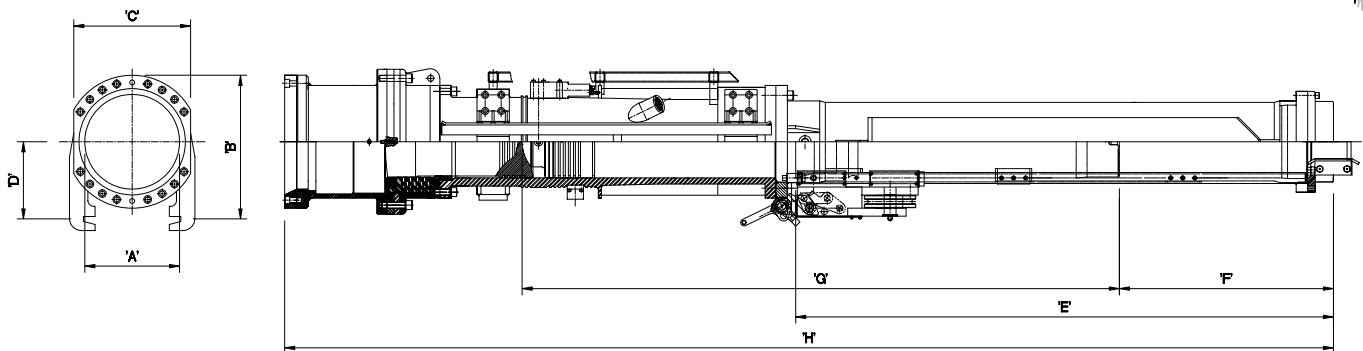
B-5505 General Specifications

Performance		
Ram Weight X Max. Stroke	105,900 ft•lb	146 kN•m
Impact energy	66,000 ft•lb	89 kN•m
Ram weight/mass	9,200 lb	4,182 kg
Maximum ram stroke	11.5 ft	3.5 m
Impact block weight/mass	2,392 lbs	1,085 kg
Blows per minute	36-60	36-60
Operating Weight		
Total operating weight/mass	23,600 lb	10,727 kg
Weight of tool box	150 lb	68 kg
Total shipping weight/mass	23,750 lb	10,795 kg
Capacity		
Fuel tank capacity	37 gal (U.S)	140 liters
Fuel consumption	2.2 gal/hour	8.3 liters/hr.
Oil tank capacity	8.7gal (U.S)	33 liters
Oil consumption	0.36 gal/hr	1.35 liters/hr.



Impact Hammers B-5505

Dimensional Specifications



Dimensions	Model-5505							
Units	A	B	C	D	E	F	G	H
Imperial	24.5 in	42 in	28 in	20 in	133.4 in	53.1 in	148.2 in	260 in
Metric	622 mm	1067 mm	711 mm	508 mm	3388 mm	1349 mm	3764 mm	6604 mm

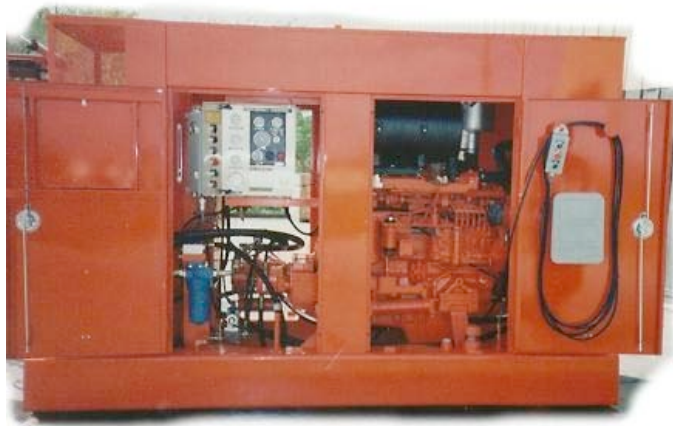
V-20B/HP-325B VIBRATORY DRIVER/EXTRACTOR



HAMMER

DRIVING FORCE	98.5 tons	877 kN
FREQUENCY	1,700 CPM	
ECCENTRIC MOMENT	2,400 in-lbs.	2,770 kg-cm
AMPLITUDE	.75 in.	19 mm
CLAMPING FORCE	75 tons	667 kN
MAX. LINE PULL	60 tons	534 kN
HEIGHT	120 in.	3,048 mm
THROAT WIDTH	13 in.	330 mm
SHIPPING WIDTH	102 in.	2,591 mm
WEIGHT W/ CLAMP	10,750 lbs.	4,891 kg
HOSE BUNDLE LENGTH	150 ft.	46 m

V-20B



POWER UNIT

ENGINE HP	325 HP	242kW
OPERATING SPEED	2,100 RPM	
HYD. FLOW	94 GPM	356 lpm
HYD. PRESSURE	5,000 psi	345 bar
LENGTH	132 in.	3,353 mm
WIDTH	48 in.	1,219 mm
HEIGHT	84 in.	2,134 mm
WEIGHT	9,500 lbs.	4,322 kg

HP-325B



MANUFACTURING, INC.

1198 Pershall Road
St. Louis, MO 63137

(314) 388-2254

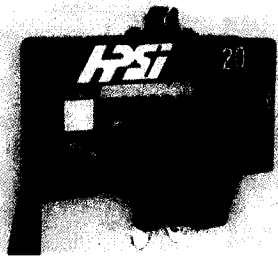
www.mktpileman.com

Email: info@mktpileman.com

MKT Manufacturing, Inc. reserves the right to amend these specifications at any time without notice. The only warranty is our standard written warranty. We make no other warranty, expressed or implied.



Vibratory Hammer Specifications



Model 20 Exciter



Model 150 Exciter

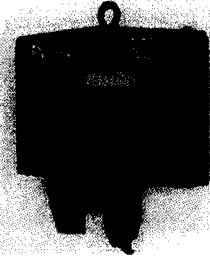
Exciter	Model 100		Model 150L		Model 150		Model 200		Model 250		Model 280	
	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
Eccentric Moment (in lbs. kgm)	1,000	11.5	1,500	17.3	1,500	17.3	2,000	23.0	2,500	28.7	2,800	30.0
Dynamic Force (tons, tonnes)	36	32	55	50	55	50	73	66	91	82	95	86
Frequency (VPM)	1,800	1800	1,800	1800	1,800	1800	1,800	1800	1,800	1800	1,800	1800
Amplitude (in. mm)	1.0	25.4	1.0	25.4	.875	22.22	.875	22.22	1.0	25.4	.80	20.32
Pile Clamp Force (tons, KN)	50	445	50	445	50	445	150	1335	150	1335	150	1335
Maximum Crane Pull (tons, KN)	25	222	30	267	30	267	45	400	45	400	60	534
Suspended Weight (lbs, kg)	4,700	2136	4,250	1931	7,050	3204	8,800	3910	8,800	3910	10,750	4886
Length (in. mm)	60	1524	63	2108	87	2210	95	2413	95	2413	95	2413
Width @ Throat (in. mm)	12	304	14	356	14	356	14	356	14	356	14	356
Height (in. mm)	64	1626	63	1600	78	1981	85	2159	85	2159	96	2438
Power Unit												
	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
Engine	Cummins		3126 Cat		3126 Cat		3126 Cat		3406 Cat		3406 Cat	
Power (HP, KW)	110	82	215	161	215	161	300	224	335	250	335	250
Speed (RPM)	2,500	2500	2,400	2400	2,400	2400	2,100	2100	2,100	2100	2,100	2100
Operating Pressure (PSI, BAR)	2,500	170	2,500	170	2,500	170	5,000	345	5,000	345	5,000	345
Flow (GPM, LPM)	60	227	120	454	120	454	70	265	96	363	96	363
Weight (lbs, kg)	5,250	2366	7,800	3538	7,800	3538	11,000	4990	11,500	5216	11,500	5216
Length (in. mm)	98	2489	108	2743	108	2743	144	3658	144	3658	144	3658
Width (in. mm)	42	1066	48	1219	48	1219	60	1524	60	1524	60	1524
Height (in. mm)	75	1905	78	1981	78	1981	95	2413	95	2413	95	2413



Vibratory Hammer Specifications



Model 260 Exciter

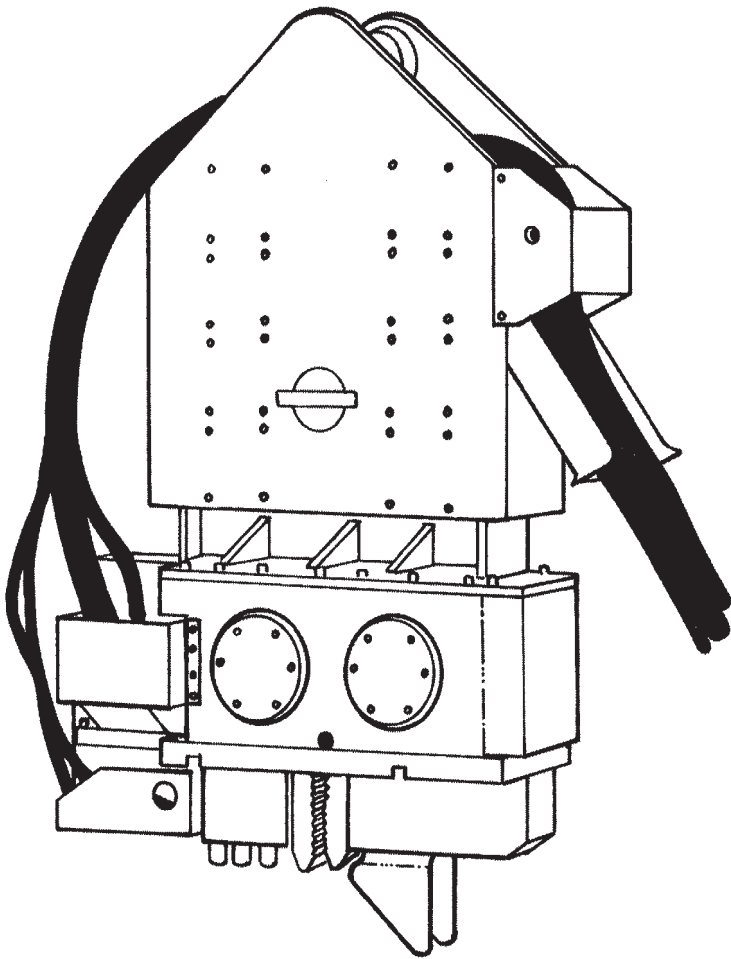


Model 500-Exciter

Model 300		Model 400		Model 450		Model 500		Model 1200		Model 1600		Model 2000	
(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
3,000	35.0	4,000	46.0	4500	52.0	5,000	58.0	12,000	138	16,000	184	20,000	230
109	99	145	132	164	149	182	165	334	304	445	405	480	436
1,800	1800	1,800	1800	1800	1800	1,800	1800	1,400	1400	1,400	1400	1,300	1300
.875	22.22	1.12	28.5	1.0	25.4	1.12	28.5	.75	19.0	1.0	25.4	1.0	25.4
200	1780	200	1780	200	1780	200	1780	800	5340	800	5340	800	5340
60	534	75	667	75	667	75	667	150	1335	150	1335	150	1335
10,750	4886	13,800	6182	19,000	8636	19,000	8636	44,340	20155	52,500	23660	54,000	24545
95	2413	102	2590	102	2590	102	2590	132	3353	132	3353	144	3658
14	356	14	356	14	356	14	356	36	914	40	1016	40	1016
96	2438	102	2590	102	2590	102	2590	103	2616	103	2616	128	3251
(US) (METRIC)		(US) (METRIC)		(US) (METRIC)		(US) (METRIC)		(US) (METRIC)		(US) (METRIC)		(US) (METRIC)	
3406 Cat		C-15 Cat		C-16 Cat		3412 Cat		Cummins		Cummins		Cummins	
400	300	525	394	600	448	700	522	1200	897	1,600	1196	1,600	1196
2,100	2100	2,100	2100	2,100	2100	2,100	2100	2,100	2100	2,100	2100	2,100	2100
5,000	345	5,000	345	5,000	345	5,000	345	5,000	345	5,000	345	5,000	345
115	435	140	530	192	727	202	764	280	1060	400	1514	400	1514
11,500	5216	15,000	6804	19,000	8636	19,000	8636	37,120	16638	48,000	21818	48,000	21818
144	3658	164	4166	184	4674	184	4674	276	7010	276	7010	276	7010
60	1524	66	1676	66	1676	66	1676	96	2438	96	2438	96	2438
95	2413	102	2590	103	2616	103	2616	120	3048	120	3048	120	3048

Model 216

Hydraulic Vibratory Driver/Extractor



Vibrator:

	Model 216	
Eccentric moment	1100 in-lbs	13 kg-m
Max frequency	1600 vpm	27 Hz
Centrifugal force	40 tons	356 kN
Amplitude (free hanging)	0.94 in	24 mm
Max line pull for extracting	40 tons	356 kN
Weight (no clamp or hoses)	4230 lbs	1918 kg
Non-vibrating weight	1900 lbs	862 kg
Height (without clamp)	61 in	1549 mm
Length	50 in	1270 mm
Width	16 in	406 mm
Throat width	12.8 in	324 mm
Hydraulic hose length	100 ft	30 m
Hydraulic hose weight	850 lbs	385 kg

Power Unit:

	Model 200	
Engine	Caterpillar 3116TA	
Power	200 HP	149 kW
Operating speed	2400 rpm	2400 rpm
Max drive pressure	2500 psi	172 bar
Drive flow	103 gpm	390 lpm
Clamp pressure	2500 psi	172 bar
Clamp flow	11.4 gpm	43 lpm
Weight (w/ full fluid & fuel)	9310 lbs	4222 kg
Length	126 in	3200 mm
Width	60 in	1524 mm
Height	79 in	2007 mm
Hydraulic reservoir	275 gal	1041 liters
Fuel capacity	122 gal	462 liters

216-50102

Hydraulic Clamps:

Clamp force
Weight
Width
Height

Model 216 Universal Clamp

50 tons (445 kN)
850 lbs (385 kg)
12.75 in (324 mm)
18 in (445 mm)

Model 80B Casing Clamps w/ 3' Beam

160 tons (1423 kN)
2706 lbs (1227 kg)
13.75 in (349 mm)
29 in (730 mm)

Model 40 Combination Clamp

40 tons (356 kN)
3220 lbs (1460 kg)
24 in (610 mm)
64 in (1626 mm)



**INTERNATIONAL
CONSTRUCTION
EQUIPMENT, INC.**

Corporate offices:

301 Warehouse Drive, Matthews, NC 28104

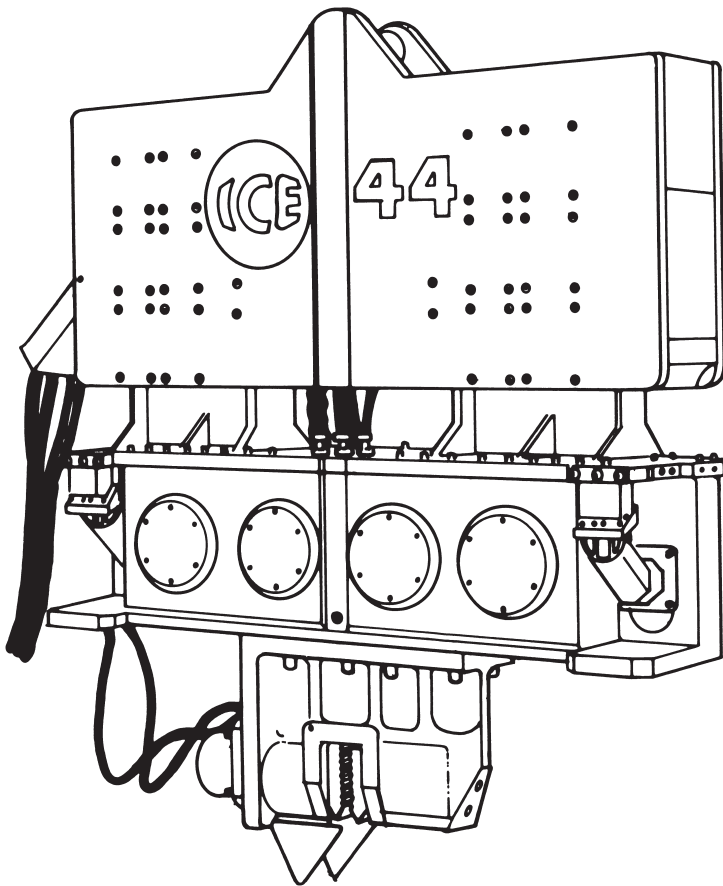
Tele: (704) 821-8200 or (888) ICEUSA1

Fax: (704) 821-8201

www.iceusa.com E-mail: sales@iceusa.com

Model 44-30V

Hydraulic Vibratory Driver/Extractor



Vibrator:

Model 44-30V		
Eccentric moment	4400 in-lbs	51 kg-m
Max frequency	1560 vpm	26 Hz
Centrifugal force	152 tons	1353 kN
Amplitude (free hanging)	1.17 in	30 mm
Max line pull for extracting	80 tons	712 kN
Weight (no clamp or hoses)	12100 lbs	5487 kg
Non-vibrating weight	4550 lbs	2063 kg
Height (without clamp)	84 in	2134 mm
Length	97 in	2464 mm
Width	21 in	523 mm
Throat width	14.3 in	362 mm
Hydraulic hose length	150 ft	46 m
Hydraulic hose weight	1425 lbs	646 kg

Power Unit:

Model 335EV		
Engine	Caterpillar C9	
Power	335 HP	250 kW
Operating speed	2200 rpm	2200 rpm
Max drive pressure	5500 psi	379 bar
Drive flow	116 gpm	439 lpm
Clamp pressure	4800 psi	331 bar
Clamp flow	6.3 gpm	24 lpm
Weight (w/ full fluid & fuel)	10455 lbs	4741 kg
Length	127 in	3226 mm
Width	64 in	1626 mm
Height	69 in	1753 mm
Hydraulic reservoir	275 gal	1041 liters
Fuel capacity	118 gal	447 liters

44-30V-60223

Hydraulic Clamps:	Model 126C Universal Clamp	Model 127B Z-Pile Clamp	Model 80B Casing Clamps w/ 6'6" Beam	Model 80B Casing Clamps w/ 11' Beam	Model 85 Timber, Concrete & Pipe Clamp
Clamp force	125 tons (1112 kN)	125 tons (1112 kN)	160 tons (1423 kN)	160 tons (1423 kN)	80 tons (712 kN)
Weight	2185 lbs (991 kg)	3190 lbs (1447 kg)	2998 lbs (1360 kg)	6416 lbs (2910 kg)	6570 lbs (2979 kg)
Width	12 in (305 mm)	18 in (457 mm)	13.75 in (349 mm)	16.88 in (429 mm)	34 in (864 mm)
Height	38 in (959 mm)	41 in (1048 mm)	26 in (654 mm)	35 in (895 mm)	79 in (2007 mm)



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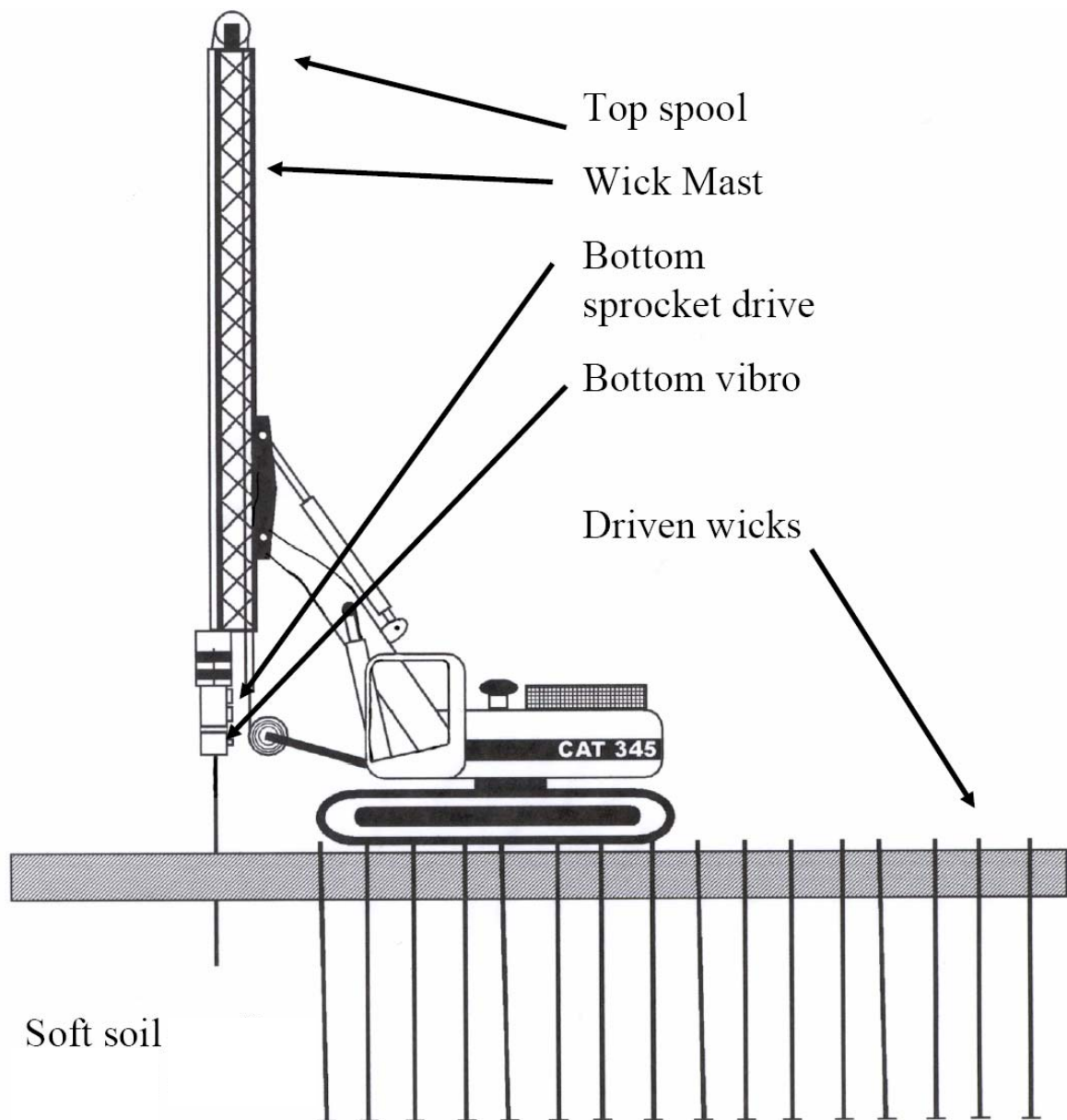
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Photograph of Typical Wick Drain.



Schematic of Wick Drain Installation.



Photograph of Excavator-Mounted Wick Drain Rig.



Photograph of Crane-Mounted Wick Drain Rig.