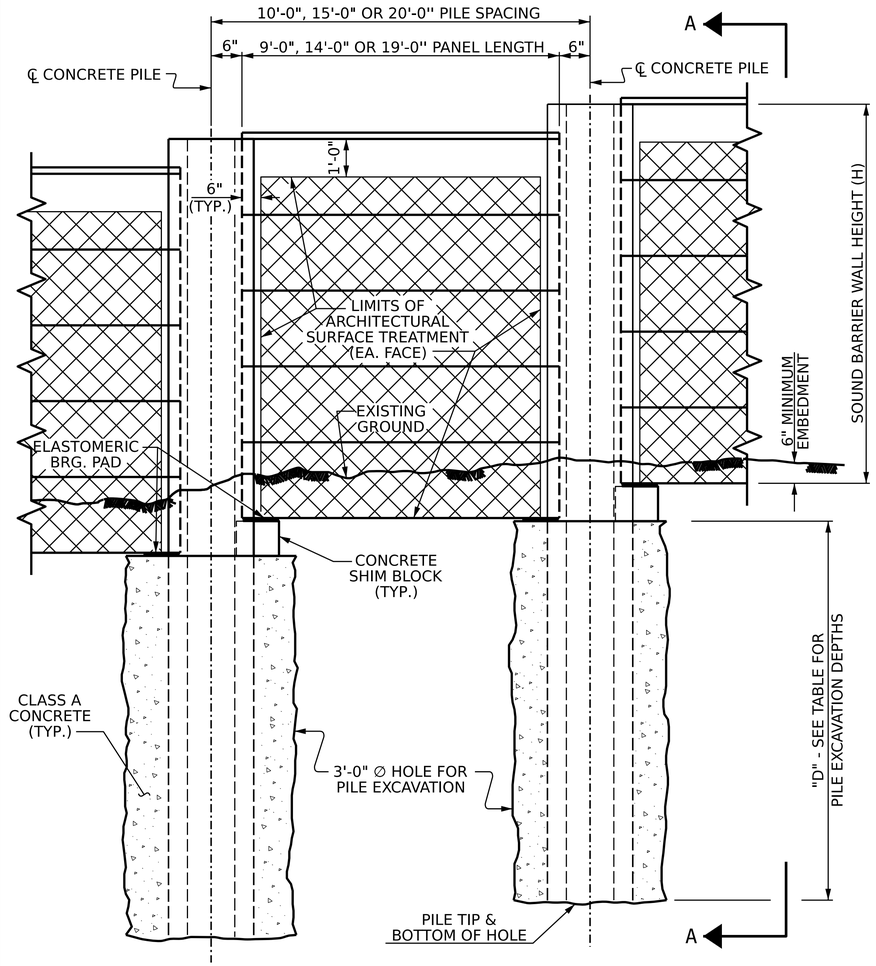
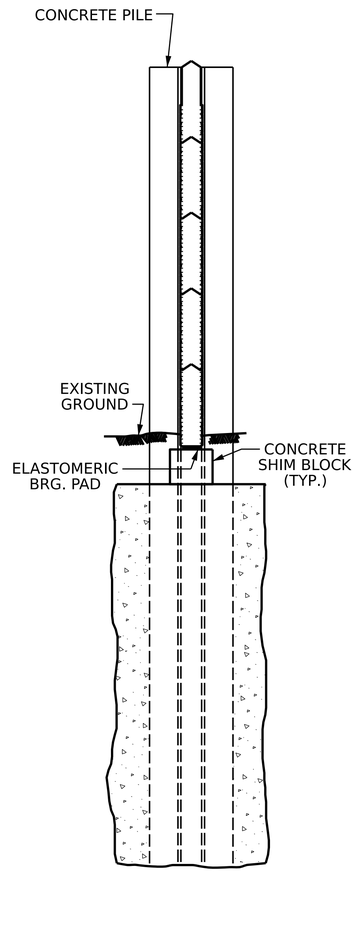
8/26/21



ELEVATION



SECTION A-A

PILE EXCAVATION DEPTHS "D"

WALL # FROM : STA. 55+70.73 -Y2-, 158.4' LT.
TO : STA. 61+95.56 -Y2-, 158.2' LT.

PILE SPACING 30" ∅ HOLE	TABLE 27-2 WALL HEIGHT (H)			
	H ≤ 15'	15' < H ≤ 20'	20' < H ≤ 25'	25' < H ≤ 30'
10'-0"	10'-0"	11'-0"	13'-0"	14'-0"
15'-0"	11'-0"	13'-0"	15'-0"	16'-0"
20'-0"	12'-0"	14'-0"	16'-0"	18'-0"

BILL OF MATERIAL

SOUND BARRIER WALL	6342 S.F.
ARCHITECTURAL SURFACE TREATMENT	10686 S.F.

QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.

ARCHITECTURAL SURFACE TREATMENT

TEXTURE OPTION:	ASHLAR STONE
STAIN OPTION:	GREY PALETTE COLOR #FS 36270

NOTES

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA CONCRETE FOR PANELS AND CLASS A CONCRETE FOR PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDER SHALL BE USED.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" ∅ BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

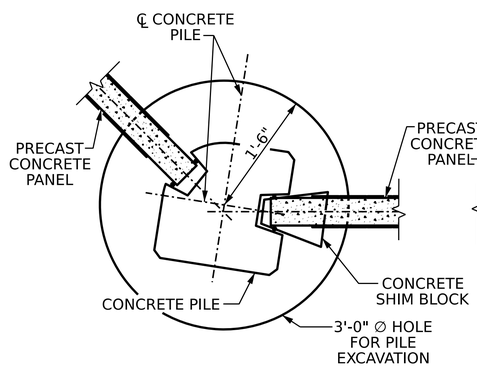
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR LAYOUT AND DETAILS OF #3 TIE BARS, SEE STD. SBW3.

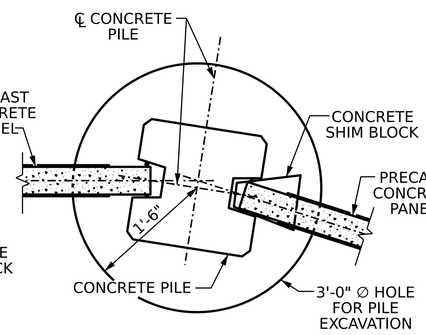
PILE REINFORCING STEEL

WIND EXPOSURE CATEGORY B, DESIGN WIND PRESSURE = 27 PSF

PILE SPACING	MAXIMUM WALL HEIGHT (H)	PILE TYPE I VERTICAL REINFORCING STEEL	PILE TYPE II VERTICAL REINFORCING STEEL	PILE TYPE III VERTICAL REINFORCING STEEL	PILE TYPE III ALT. VERTICAL REINFORCING STEEL
10'-0"	H ≤ 20'	4 - #5 EA. FACE	4 - #5 EA. FACE	3 - #5 SHORT FACE 4 - #5 LONG FACE	3 - #5 SHORT FACE 4 - #5 LONG FACE
	20' < H ≤ 25'	4 - #6 EA. FACE	4 - #5 EA. FACE	3 - #7 SHORT FACE 4 - #7 LONG FACE	3 - #7 SHORT FACE 4 - #7 LONG FACE
	25' < H ≤ 30'	4 - #7 EA. FACE	4 - #7 EA. FACE	3 - #8 SHORT FACE 4 - #8 LONG FACE	3 - #8 SHORT FACE 4 - #8 LONG FACE
15'-0"	H ≤ 20'	4 - #6 EA. FACE	4 - #5 EA. FACE	3 - #6 SHORT FACE 4 - #6 LONG FACE	3 - #6 SHORT FACE 4 - #6 LONG FACE
	20' < H ≤ 25'	4 - #7 EA. FACE	4 - #7 EA. FACE	3 - #8 SHORT FACE 4 - #8 LONG FACE	3 - #8 SHORT FACE 4 - #8 LONG FACE
	25' < H ≤ 30'	4 - #8 EA. FACE	4 - #8 EA. FACE	3 - #10 SHORT FACE 4 - #10 LONG FACE	3 - #10 SHORT FACE 4 - #10 LONG FACE
20'-0"	H ≤ 20'	4 - #6 EA. FACE	4 - #6 EA. FACE	3 - #7 SHORT FACE 4 - #7 LONG FACE	3 - #7 SHORT FACE 4 - #7 LONG FACE
	20' < H ≤ 25'	4 - #8 EA. FACE	4 - #8 EA. FACE	3 - #9 SHORT FACE 4 - #9 LONG FACE	3 - #9 SHORT FACE 4 - #9 LONG FACE
	25' < H ≤ 30'	4 - #10 EA. FACE	4 - #10 EA. FACE	3 - #11 SHORT FACE 4 - #11 LONG FACE	3 - #11 SHORT FACE 4 - #11 LONG FACE

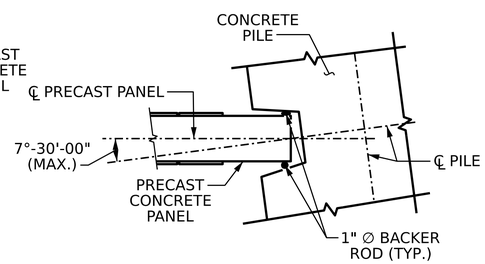


15° TO 45° TURNS
(PILE TYPE III)



0° TO 15° TURNS
(PILE TYPE I)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

PROJECT NO. U-6187
DAVIE COUNTY
STATION: 55+70.73 -Y2-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SOUND BARRIER WALL

(CONCRETE PILES)

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
DocuSigned by: Elizabeth Phelps A304598A0627455...
7/15/2025

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-1
1			3			TOTAL SHEETS
2			4			3

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DRAWN BY : C.P. MALAGON DATE : 04/2025
CHECKED BY : E.C. PHELPS DATE : 06/2025
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 07/2025

7/14/2025
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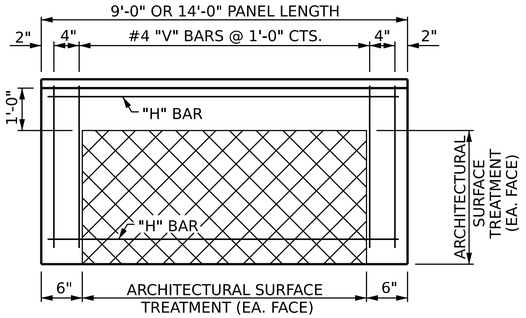
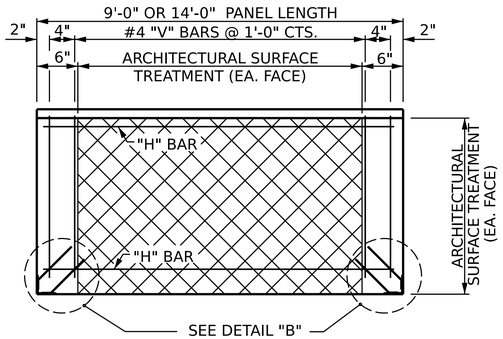
ephelps

STD. NO. SBW1 SHT. 1

8/26/21



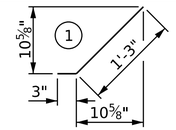


QUANTITIES FOR ONE PRECAST PANEL (FOR 10'-0" PILE SPACING)													
PANEL HEIGHT	CLASS AA CONCRETE	BAR TYPES											
		HORIZONTAL						VERTICAL					
	C.Y.	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
2'-0"	0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"	0.33	4	H2	#4	STR	8'-8"	23	11	V2	#4	STR	2'-8"	20
4'-0"	0.44	5	H3	#4	STR	8'-8"	29	11	V3	#4	STR	3'-8"	27

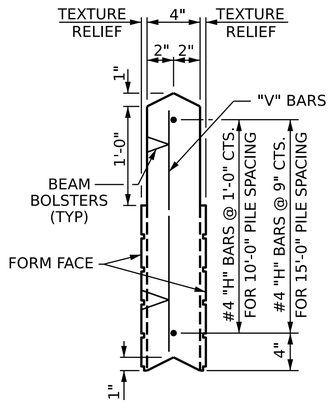
QUANTITIES FOR ONE PRECAST PANEL (FOR 15'-0" PILE SPACING)													
PANEL HEIGHT	CLASS AA CONCRETE	BAR TYPES											
		HORIZONTAL						VERTICAL					
	C.Y.	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
3'-0"	0.52	5	H1	#4	STR	13'-8"	46	16	V1	#4	STR	2'-8"	29
4'-0"	0.69	6	H2	#4	STR	13'-8"	55	16	V2	#4	STR	3'-8"	39
5'-0"	0.86	7	H3	#4	STR	13'-8"	64	16	V3	#4	STR	4'-8"	50
6'-0"	1.04	8	H4	#4	STR	13'-8"	73	16	V4	#4	STR	5'-8"	61

ADDITIONAL BARS FOR ONE BOTTOM PANEL					
NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
4	S1	#5	1	1'-6"	6

BAR TYPE

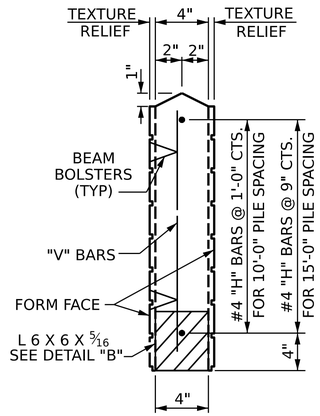


FRONT ELEVATION OF UPPER PRECAST PANEL

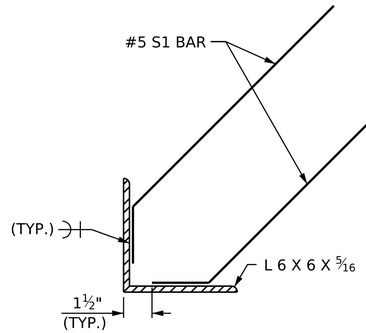


UPPER PANEL

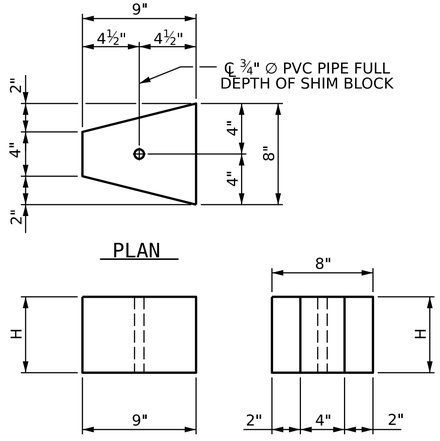
FRONT ELEVATION OF BOTTOM PRECAST PANEL



BOTTOM PANEL



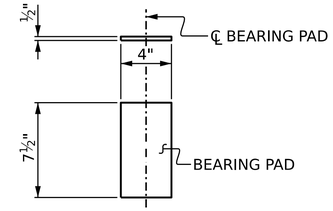
DETAIL "B"



ELEVATION END

CONCRETE SHIM BLOCK

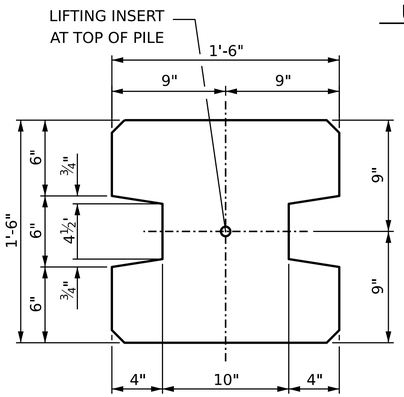
H = 3", 6" or 1'-0"



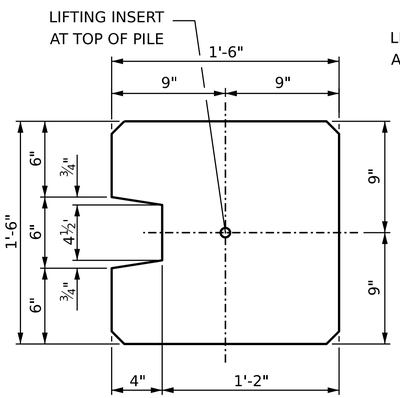
ELASTOMERIC BEARING DETAILS

ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.

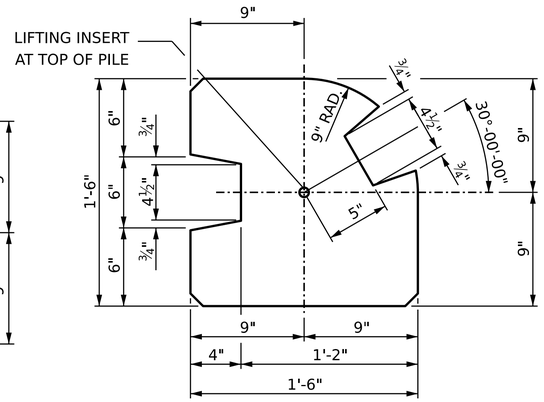
SECTION THROUGH PRECAST PANELS



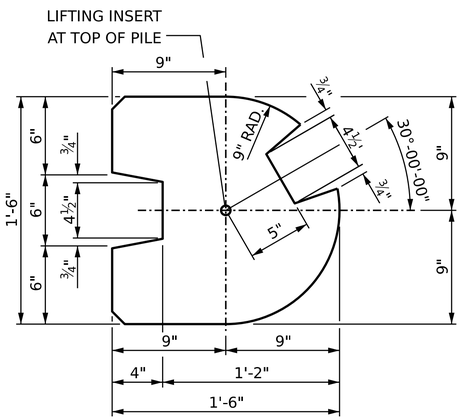
TYPE - I
(AREA = 1.9444 SQ. FT.)



TYPE - II
(AREA = 2.0903 SQ. FT.)



TYPE - III
(AREA = 1.8336 SQ. FT.)



TYPE - III (ALT.)
(AREA = 1.7163 SQ. FT.)

PILE DETAIL

(ALL CORNERS TO BE CHAMFERED 1")

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NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
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7/15/2025

PROJECT NO. U-6187
DAVIE COUNTY
STATION: 55+70.73 -Y2-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SOUND BARRIER WALL DETAILS

(CONCRETE PILES)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-2
1			3			TOTAL SHEETS
2			4			3

STD. NO. SBW2

DRAWN BY : C.P. MALAGON DATE : 04/2025
CHECKED BY : E.C. PHELPS DATE : 06/2025
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 07/2025

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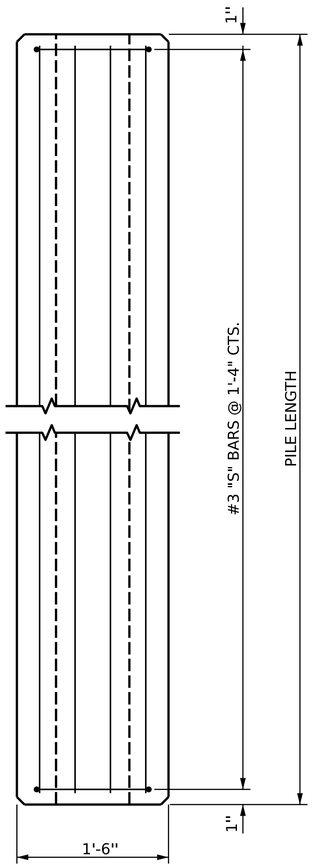
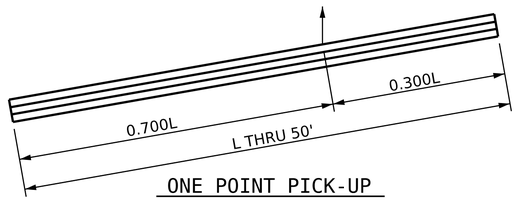
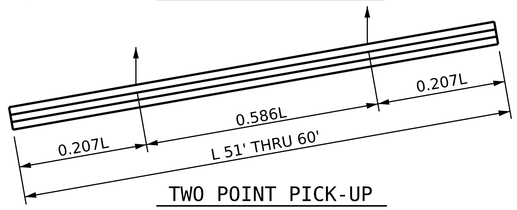


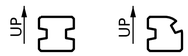
ELEVATION



ONE POINT PICK-UP



TWO POINT PICK-UP



PICK-UP POINTS

NOTES

CONCRETE DESIGN DATA : f' c = 5,000 PSI

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

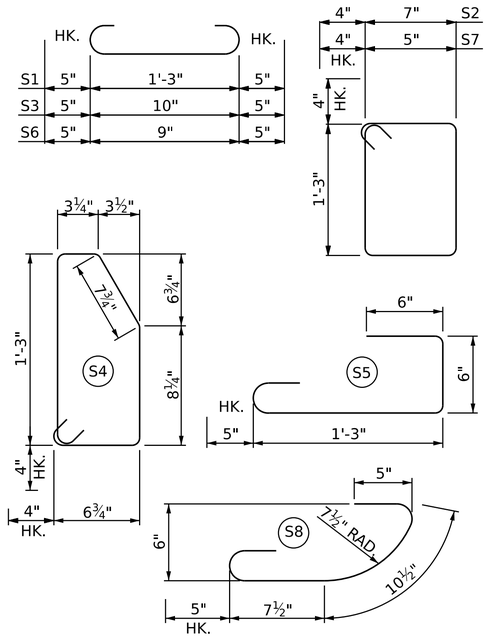
ALL CORNERS TO BE CHAMFERED 1".

#3 @ 1'-4" CTS. TIES TO BE USED WITH ALL PILE TYPES.

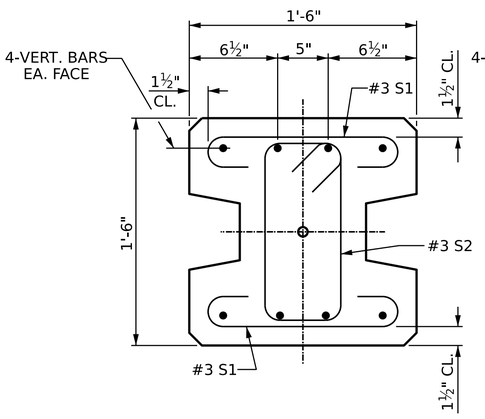
QUANTITIES FOR ONE PRECAST CONCRETE PILE

LENGTH	APPROX. PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINTS	
		0.300L	0.700L	0.207L	0.586L
10'-0"	1.56	3'-0"	7'-0"		
15'-0"	2.35	4'-6"	10'-6"		
20'-0"	3.14	6'-0"	14'-0"		
25'-0"	3.93	7'-6"	17'-6"		
30'-0"	4.70	9'-0"	21'-0"		
35'-0"	5.49	10'-6"	24'-6"		
40'-0"	6.28	12'-0"	28'-0"		
45'-0"	7.05	13'-6"	31'-6"		
50'-0"	7.84	15'-0"	35'-0"		
55'-0"	8.63			11'-4½"	32'-3"
60'-0"	9.42			12'-5"	35'-2"

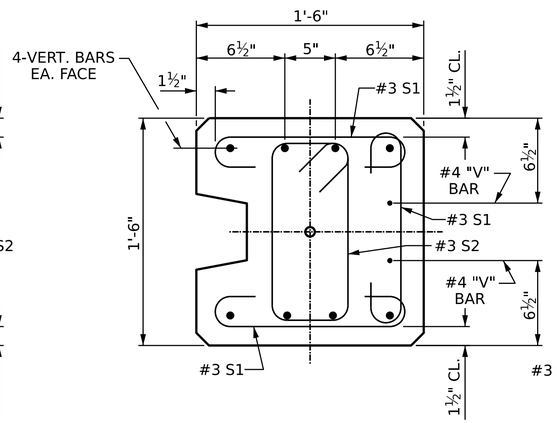
BAR TYPES



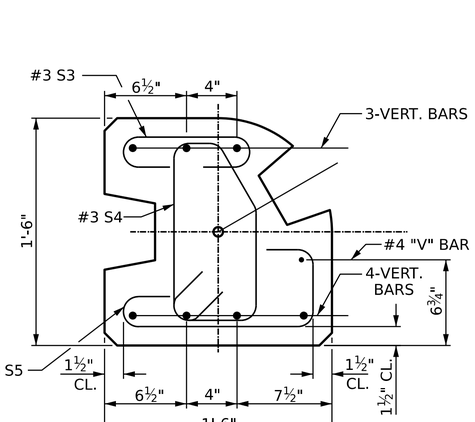
ALL BAR DIMENSIONS ARE OUT TO OUT.



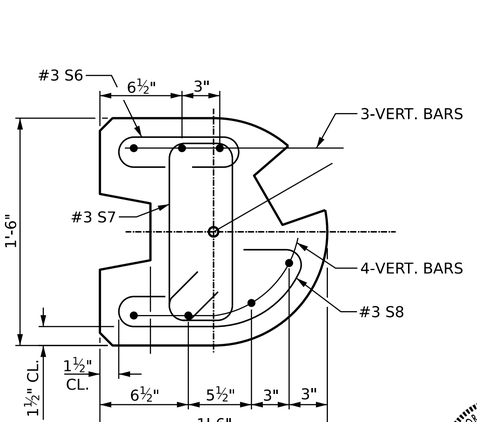
TYPE - I



TYPE - II



TYPE - III



TYPE - III (ALT.)

PILE DETAIL

FOR VERTICAL BAR PILE REINFORCING, SEE SHEET 1 OF 3

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ephelps

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PROJECT NO. U-6187
DAVIE COUNTY
STATION: 55+70.73 -Y2-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SOUND BARRIER WALL DETAILS
(CONCRETE PILES)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-3
1			3			TOTAL SHEETS
2			4			3

STD. NO. SBW3