GENERAL NOTES

DESIGN

DESIGN IS IN ACCORDANCE WITH THE FOLLOWING:
- ASCE 7, MINIMUM DESIGN LOADS FOR BUILDING & OTHER STRUCTURES - 2010 EDITION
- INTERNATIONAL CODE COUNCIL (ICC)'S INTERNATIONAL BUILDING CODE (2012)
- ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY

DESIGN DEAD LOADS INCLUDE SELF-WEIGHT OF MATERIALS AS SHOWN IN THE PLANS. NO SUPERIMPOSED DEAD LOADINGS.

DESIGN LIVE LOADS: UNIFORM LOAD OF 50 PSF
LIVE LOAD SURCHARGE

WIND:
- BASIC WIND SPEED = 200 MPH
- EXPOSURE CATEGORY = D
- TOPOGRAPHIC FACTOR = FLAT OPEN COUNTRY Kzt = 1.0
- VELOCITY PRESSURE qh = 89.7 PSF

FOUNDATION BEARING PRESSURES:
THERE IS NO SUBSURFACE EXPLORATION REPORT PRESENT. A PRESUMPTIVE LOAD-BEARING CAPACITY OF 1500 PSF FOR THE VERTICAL BEARING PRESSURE IS USED FOR THIS DESIGN. (PER TABLE 1806.2 OF THE INTERNATIONAL BUILDING CODE (2012))

ALL LOADS AND CAPACITY INDICATED ARE SERVICE (UNFACTORED) LOADS.

THE FOLLOWING ARE NOT A PART OF THIS DESIGN
1. ALL ELECTRICAL ITEMS TO BE DESIGNED BY OTHERS
2. ALL SIGN CONNECTIONS AND SIGNS TO BE DESIGNED BY OTHERS.

FOUNDATIONS

THE CONTRACTOR SHALL SAFEGUARD AND PROTECT All EXCAVATIONS, AND ALL EXCAVATIONS SHALL BE KEPT FREE OF WATER.

THE CONTRACTOR SHALL REFER TO THE CIVIL AND ELECTRICAL DRAWINGS FOR All LOCATIONS OF TRENCHES, PITS, CONDUITS, ETC. NOT SHOWN ON THE STRUCTURAL DRAWINGS.

CONCRETE

All CONCRETE SHALL BE NORMAL WEIGHT CONCRETE UNLESS NOTED OTHERWISE AND HAVE A DESIGN COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI.

NO CONCRETE SHALL BE PLACED IN WATER.

NO CONCRETE SHALL BE PLACED UNTIL CONCRETE DESIGN MIXES HAVE BEEN SUBMITTED FOR EACH CLASS OF CONCRETE NOTED ABOVE AND HAVE BEEN APPROVED BY THE ENGINEER.

CONCRETE REINFORCEMENT STEEL

REINFORCING STEEL SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE NEW BILLET STEEL CONFORMING TO CURRENT REQUIREMENTS OF ASTM A-615, GRADE 60. All HOOKS SHALL BE STANDARD HOOKS, UNLESS OTHERWISE NOTED.

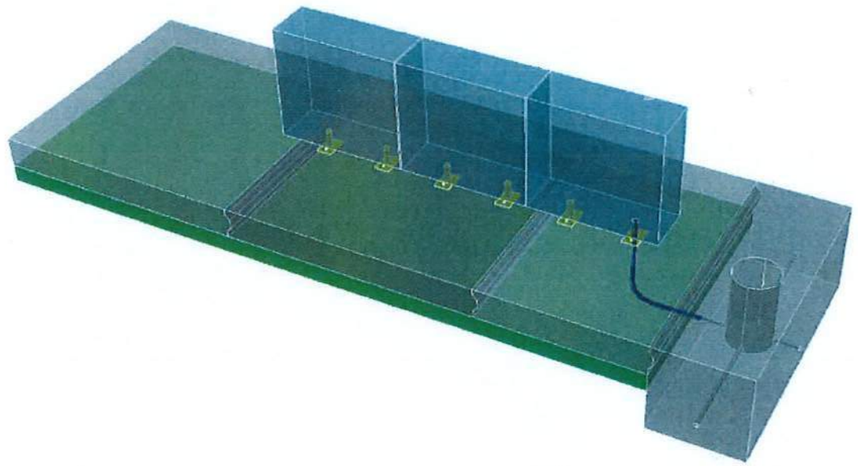
THE MINIMUM CONCRETE COVER FOR MLD TOP REINFORCEMENT WORK SHALL BE 3" FOR CONCRETE SUBJECT TO OUTDOOR ENVIRONMENT. THIS SHALL INCLUDE 2" FOR FORMED CONCRETE EXPOSED TO EARTH AND 3" FOR CONCRETE CAST DIRECTLY AGAINST EARTH.

POST-TENSIONING BARS

POST TENSIONING THREAD BARS SHALL BE 0.75 INCH DIAMETER, 80 KSI STEEL. STEEL THREAD BARS SHALL BE DESIGNED TO ALLOW THE USE OF HEAVY HEX NUTS AND COUPLERS THAT THREAD ONTO THE END OF THE DEFORMATIONS. HEAVY HEX NUTS AND COUPLERS SHALL BE OF A DESIGN AND MATERIAL RECOMMENDED BY THE BAR MANUFACTURER.

MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

STRUCTURAL PLANS
OF
FOUNDATION UNITS FOR
MEM AIRFIELD SIGNAGE REPLACEMENT



INDEX TO SHEETS

E.L. ROBINSON ENGINEERING
5088 WEST WASHINGTON STREET
CHARLESTON, WV 25313
(304)776-7473
www. elrobinsonengineering.com

DACO CONSTRUCTION CO., INC.

FAHEEM AHMAD
REGISTERED ENGINEER
DEPT. OF AGRICULTURE
COMMERCE
No. 123568
STATE OF TENNESSEE

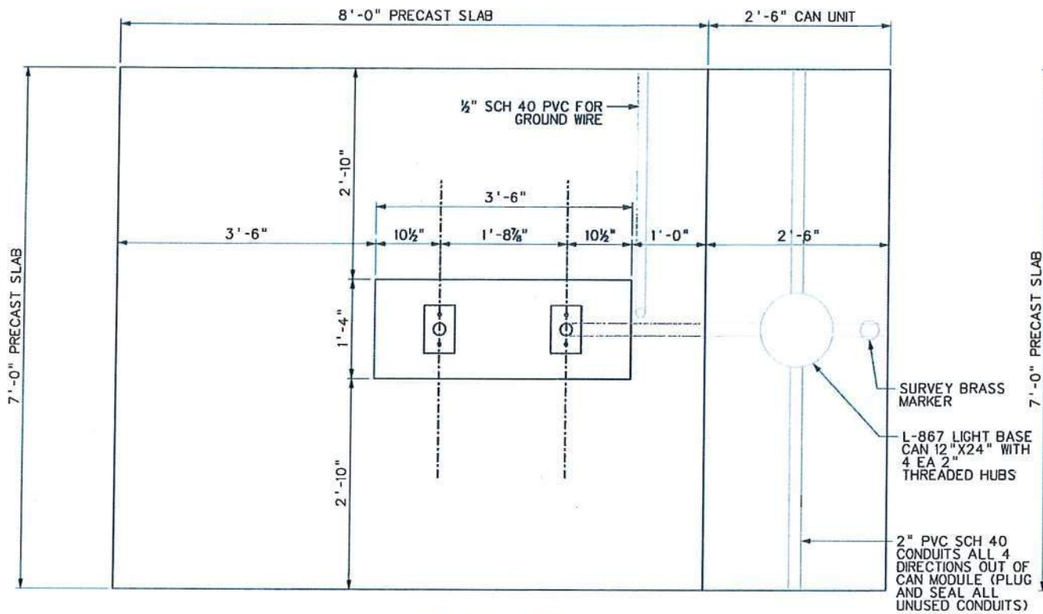
11-15-2021

FAHEEM AHMAD
P.E. NO. 123568

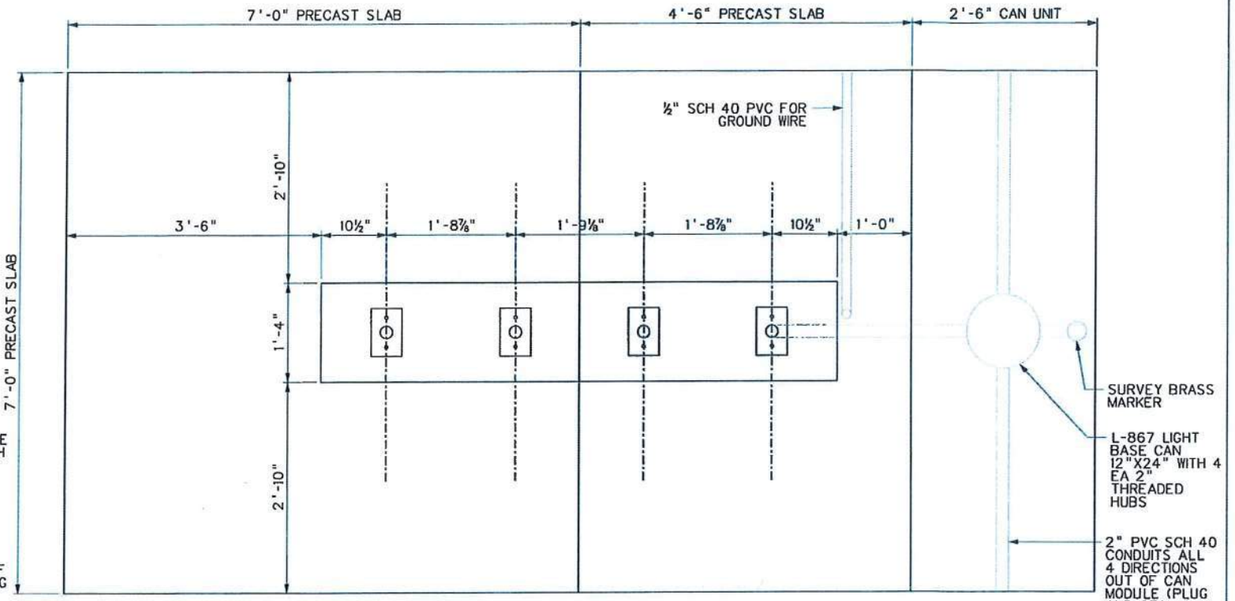
DATE: 15 NOV 2021

PROVIDED AS SUPPLEMENTAL INFORMATION ONLY

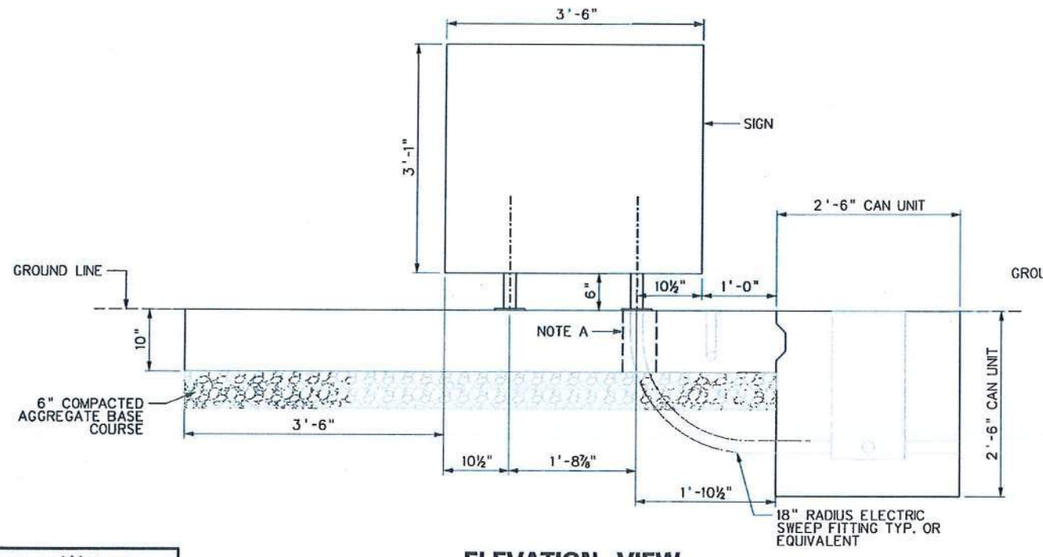
DRAWING NO.
B-0



PLAN VIEW



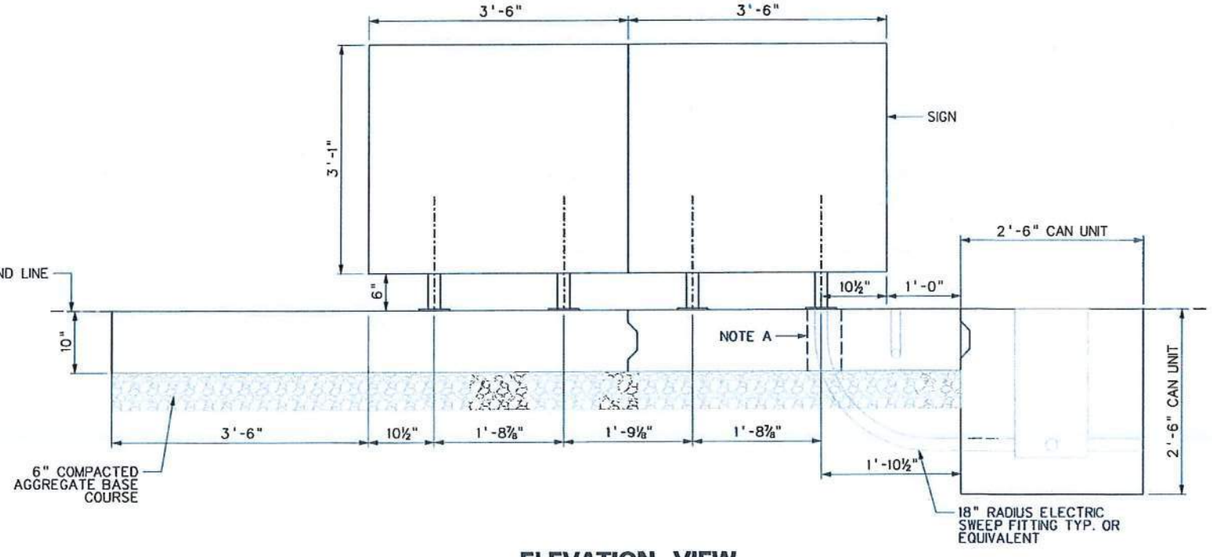
PLAN VIEW



ELEVATION VIEW

NOTE A: STARTER SLAB WITH KNOCK OUT FOR CONDUITS.

SIZE 3, 1 MOD LOADING DETAILS



ELEVATION VIEW

NOTE A: STARTER SLAB WITH KNOCK OUT FOR CONDUITS.

SIZE 3, 2 MOD LOADING DETAILS

FAHEEM AHMAD
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 123568
STATE OF TENNESSEE
11-15-2021

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

DACO CONSTRUCTION CO., INC.

E.L. ROBINSON ENGINEERING
6688 Washington Street West
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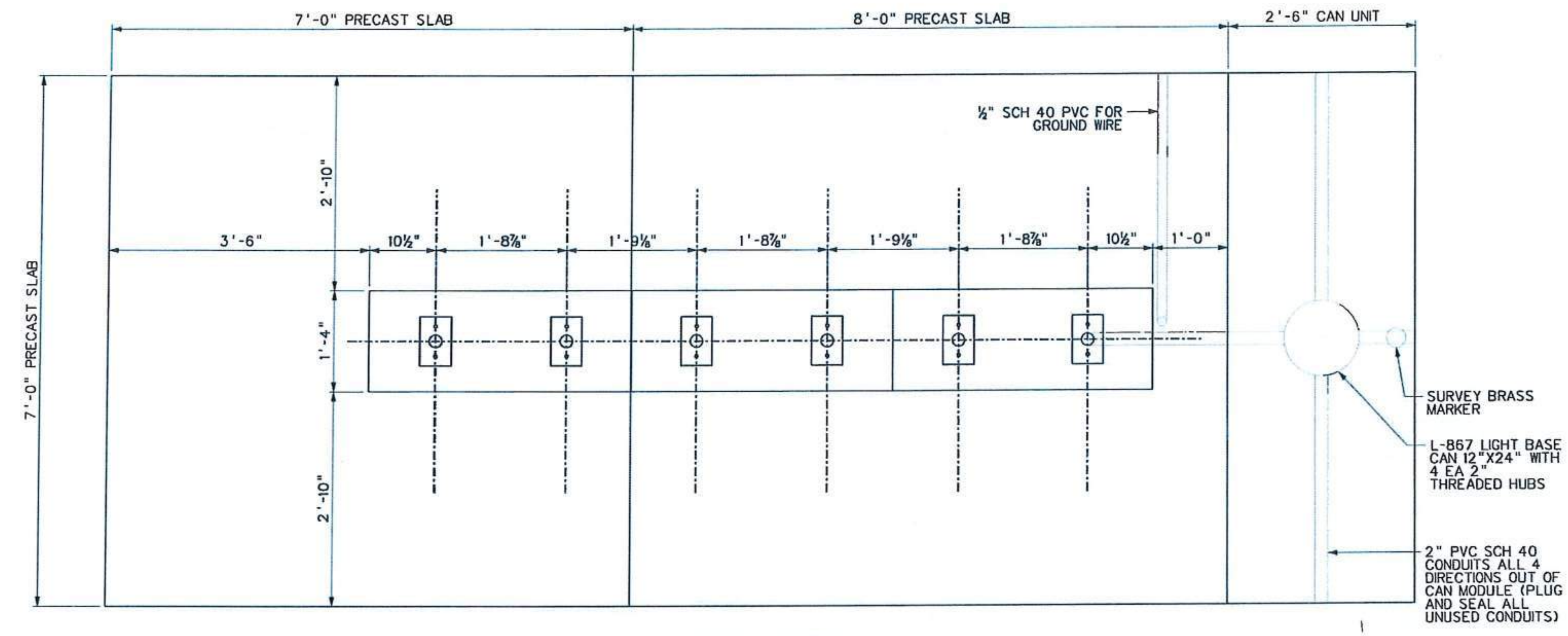
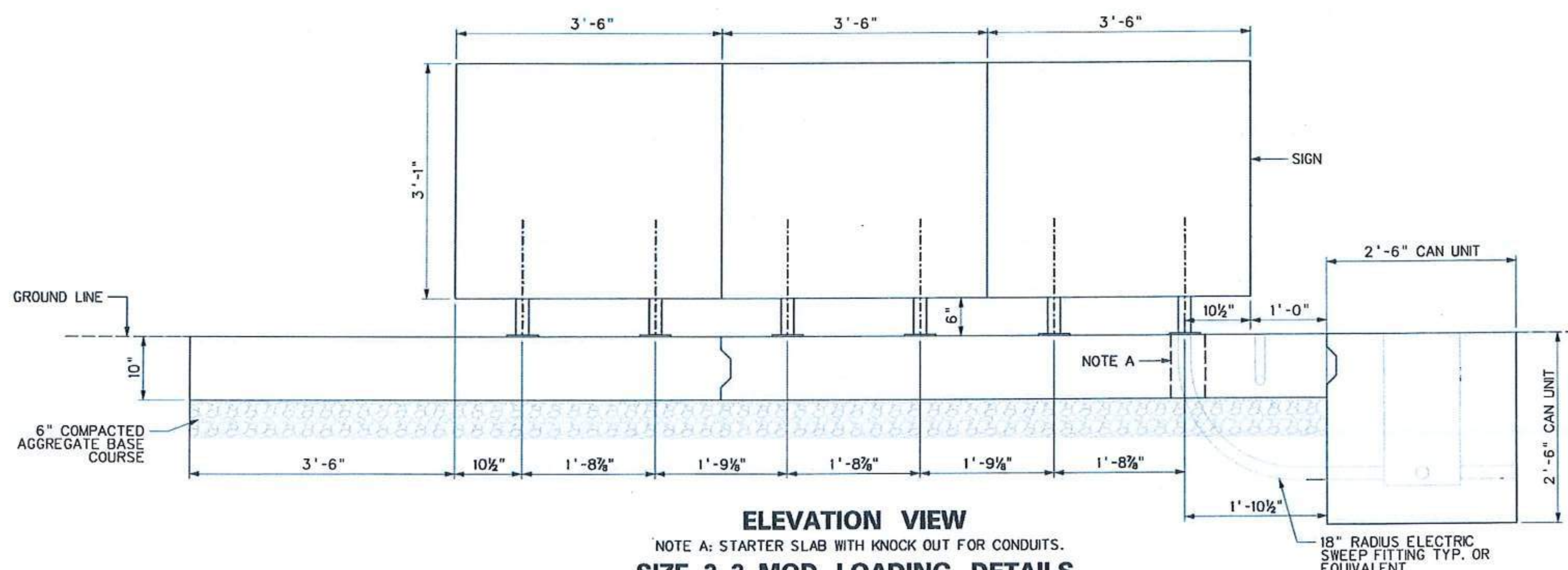
DESIGNED BY: KMD DRAWN BY: KMD
CHECKED BY: FA CHECKED BY: FA
DATE: 15 NOV 2021 SHEET NO. **B-1**

MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MEM AIRFIELD SIGNAGE REPLACEMENT
SIGN LAYOUT 1 OF 4



PLAN VIEW



ELEVATION VIEW

NOTE A: STARTER SLAB WITH KNOCK OUT FOR CONDUITS.

SIZE 3, 3 MOD LOADING DETAILS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

DACO CONSTRUCTION CO., INC.

E.L. ROBINSON ENGINEERING

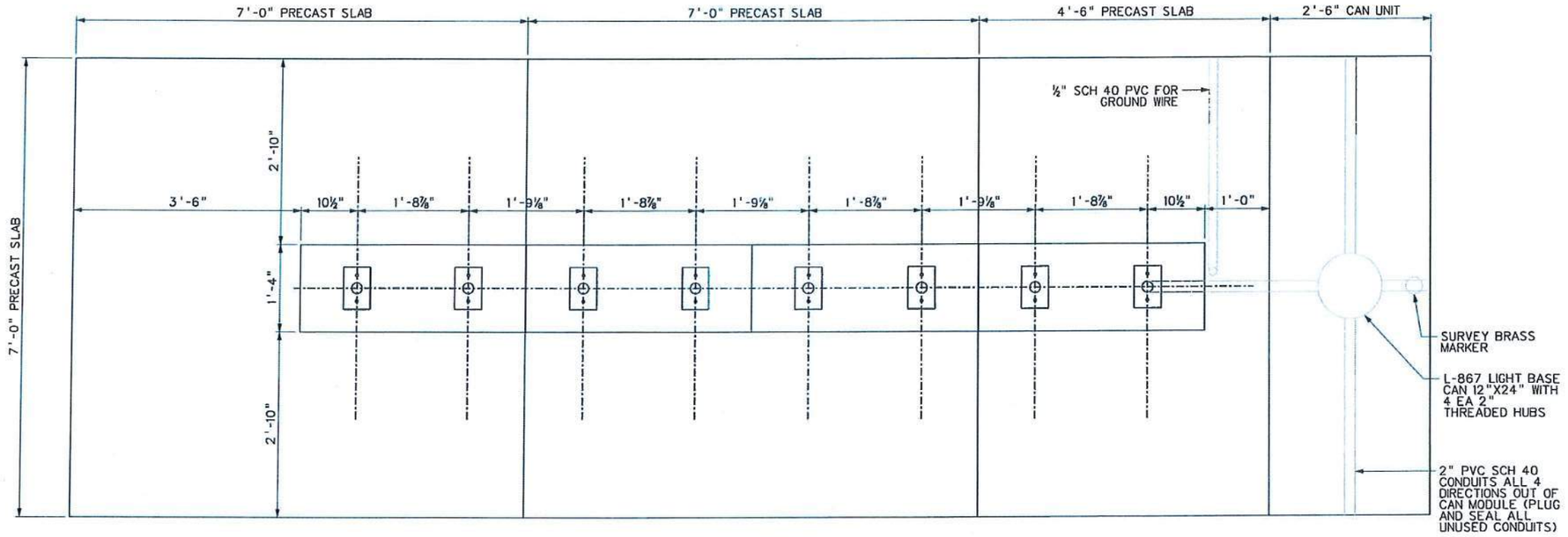
DESIGNED BY: KMD
CHECKED BY: FA
DATE: 15 NOV 2021

DRAWN BY: KMD
CHECKED BY: FA
SHEET NO. **B-2**

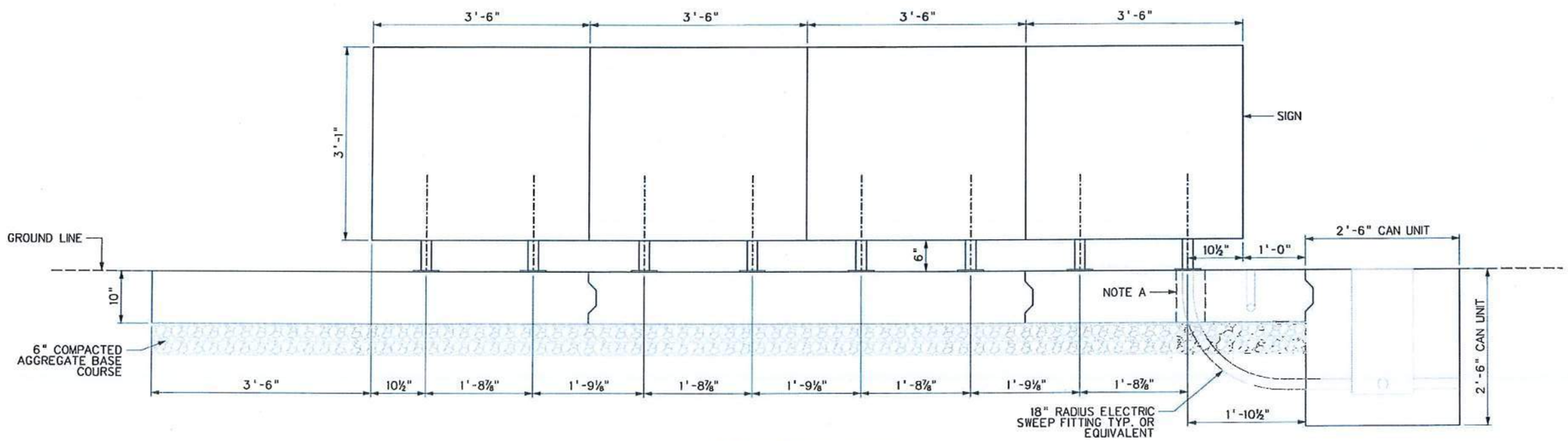
MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MEM AIRFIELD SIGNAGE REPLACEMENT

SIGN LAYOUT 2 OF 4



PLAN VIEW



ELEVATION VIEW

NOTE A: STARTER SLAB WITH KNOCK OUT FOR CONDUITS.

SIZE 3, 4 MOD LOADING DETAILS

FAHEEM AHMAD
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11/15/2021

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

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CHECKED BY: FA CHECKED BY: FA
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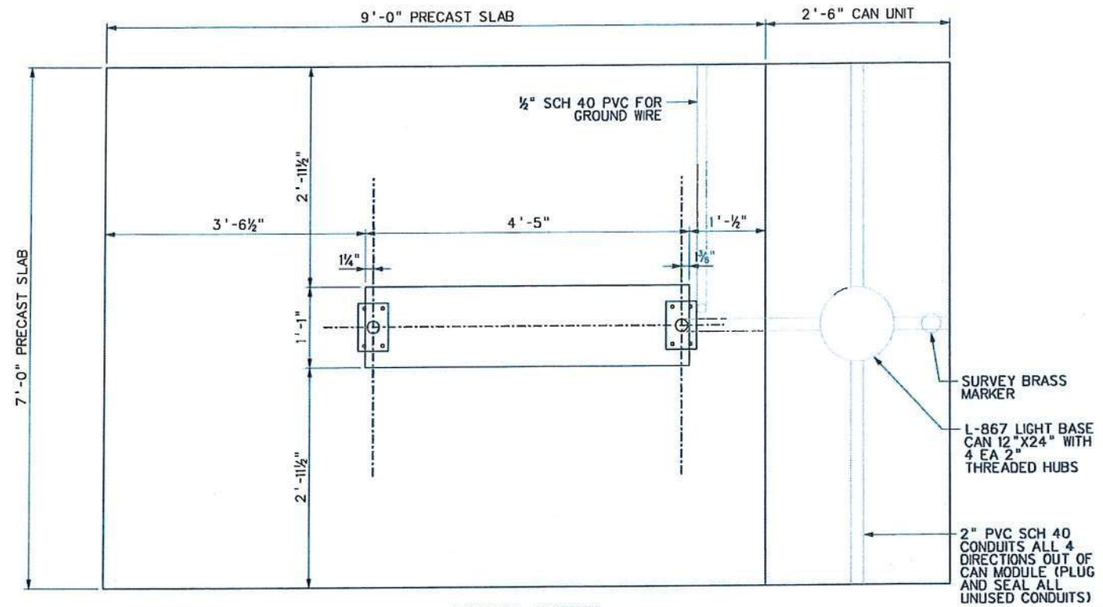
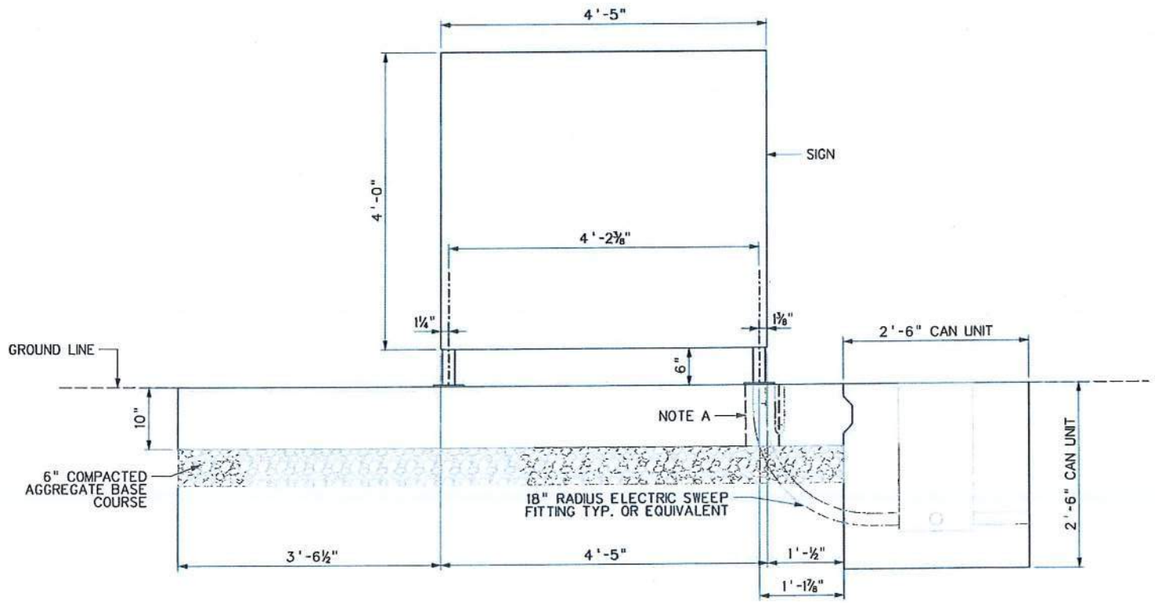
MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MEM AIRFIELD SIGNAGE REPLACEMENT
SIGN LAYOUT 3 OF 4



PLAN VIEW



ELEVATION VIEW

NOTE A: STARTER SLAB WITH KNOCK OUT FOR CONDUITS.

SIZE 4, 1 MOD LOADING DETAILS

FAHEEM AHMAD
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11/15/2021

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

DACO CONSTRUCTION CO., INC.

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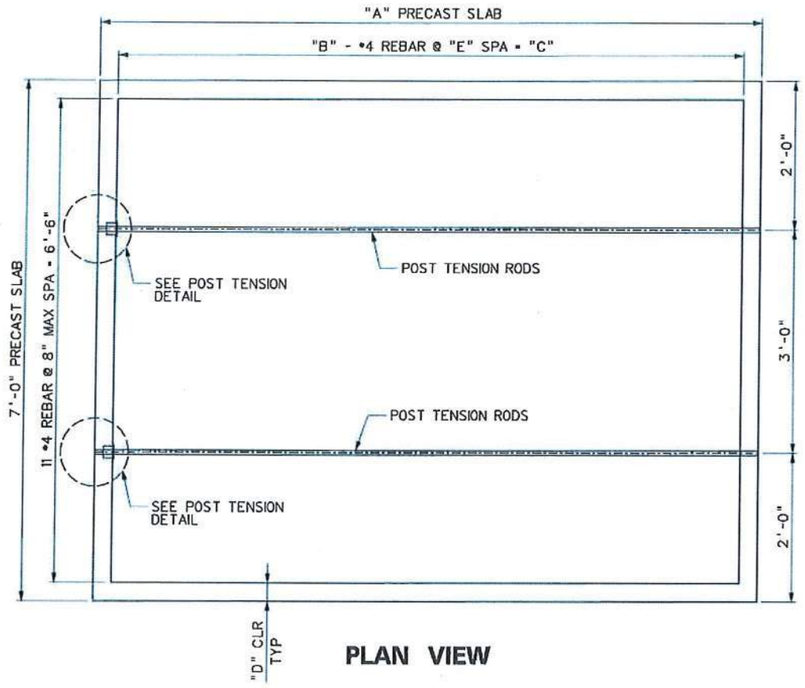
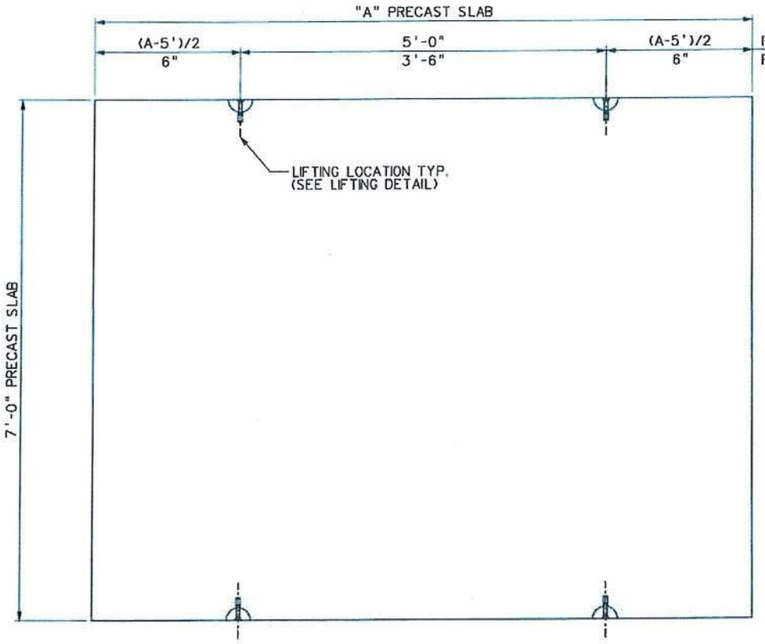
DATE: 15 NOV 2021 SHEET NO. B-4

MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

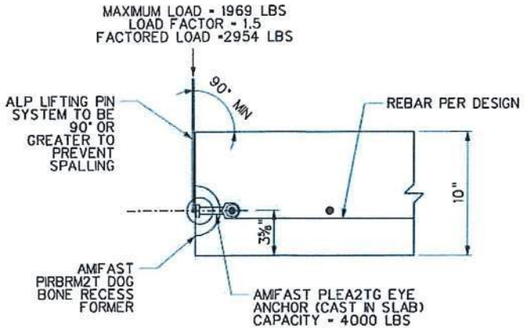
MEM AIRFIELD SIGNAGE REPLACEMENT
SIGN LAYOUT 4 OF 4



PLAN VIEW



LIFTING LOCATION

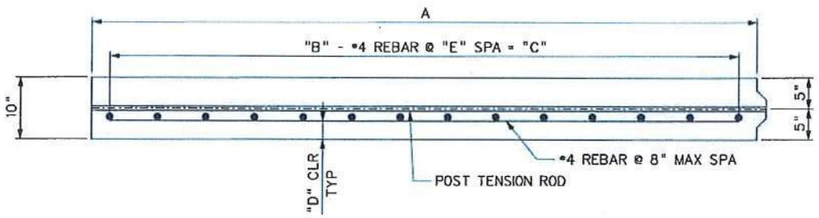


LIFTING DETAIL

PRECAST SLAB WEIGHTS						
SLAB	LENGTH (FT)	WIDTH (FT)	THICKNESS (IN)	UNIT WEIGHT (LBS/FT)	WEIGHT (LBS)	WEIGHT PER ANCHOR
1	4.5	7	10	150	3938	984
2	7	7	10	150	6125	1531
3	8	7	10	150	7000	1750
4	9	7	10	150	7875	1969

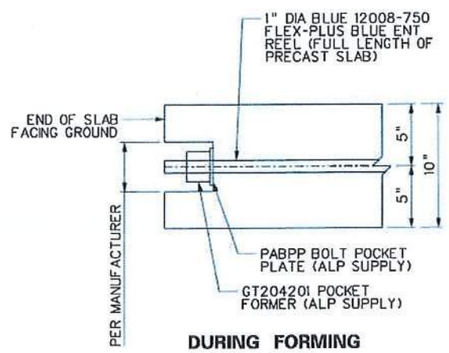
NOTES

1) ALL ASSEMBLY ITEMS SHOWN ON THIS SHEET MAY BE SUBSTITUTED BY EQUIVALENT.
2) POST TENSIONING PER MANUFACTURERS RECOMMENDATION.

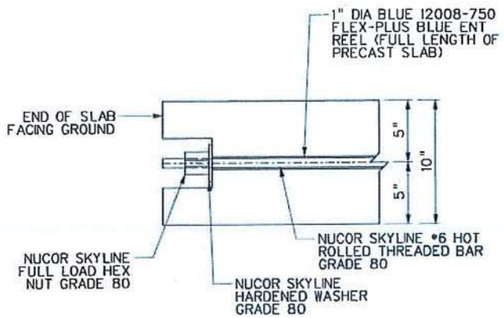


ELEVATION VIEW

A (FT)	B	C (FT)	D (IN)	E (IN)
4.5	7	4	3	8.000
7	10	6.5	3	8.667
8	12	7.5	3	8.182
9	13	8.5	3	8.500



DURING FORMING



AFTER FORMING

POST TENSION DETAILS

11/15/2021

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

DACO CONSTRUCTION CO., INC.

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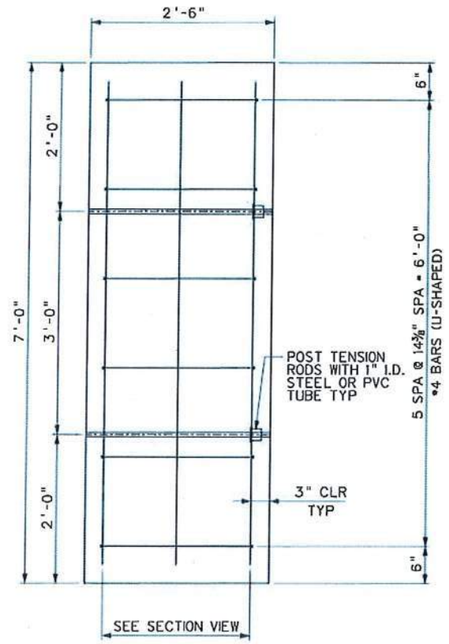
DATE: 15 NOV 2021 SHEET NO. B-5

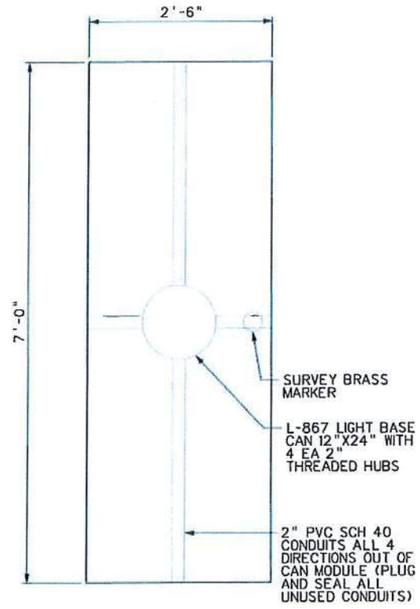
MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MEM AIRFIELD SIGNAGE REPLACEMENT

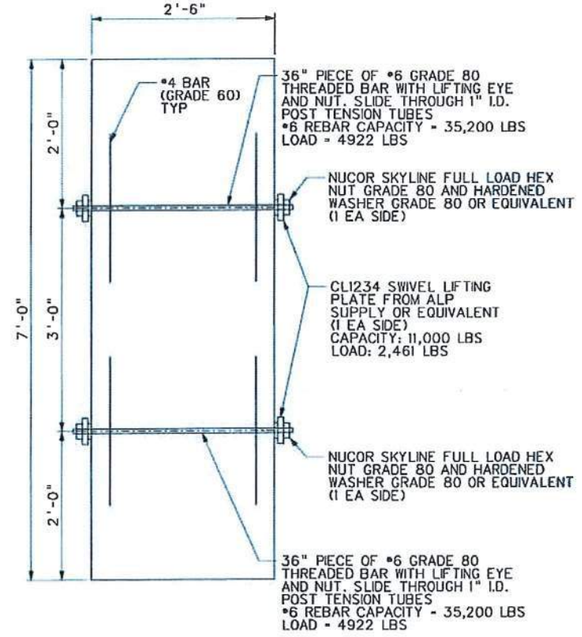
PRECAST SLAB MODULE DETAILS



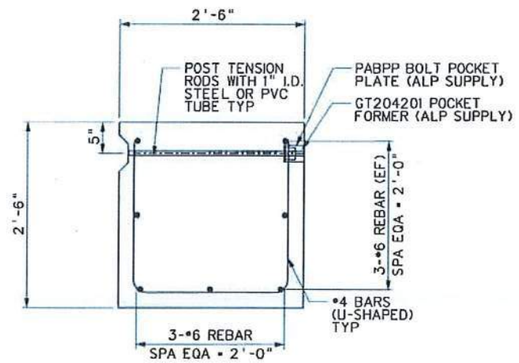
PLAN VIEW



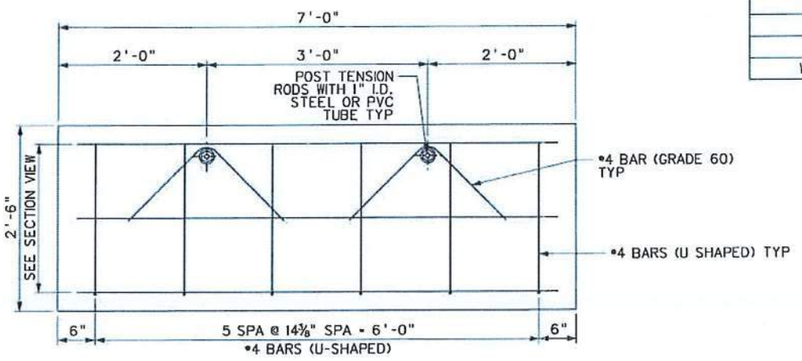
MISCALLENOUS DETAILS



LIFTING LOCATIONS



ELEVATION VIEW



SECTION VIEW

PRECAST SLAB WEIGHTS						
SLAB	LENGTH (FT)	WIDTH (FT)	THICKNESS (IN)	UNIT WEIGHT	WEIGHT (LBS)	
CAN	2.5	7	30	150	6563	
LOAD FACTOR					1.5	
FACTORED WEIGHT					9844	LBS
NUMBER OF #6 GRADE 80 REBAR					2	EA
WEIGHT PER #6 GRADE 80 REBAR					4922	LBS
NO OF CL1234 SWIVEL LIFTING PLATE					4	EA
WEIGHT PER CL1234 SWIVEL LIFTING PLATE					2461	LBS

LIFTING NOTES

1) A 36" PIECE OF #4 GRADE 60 REBAR OVER THE POST TENSION TUBE. TOP REBAR TO LAY TIGHT ON POST TENSION TUBE.
2) POST TENSION CONDUITS SHALL BE 1" INTERNAL DIAMETER, STEEL OR PVC.
3) BRASS SURVEY MARKER SHALL BE PLACED ON THE CAN UNIT. ALL REQUIREMENTS FOR THE SURVEY MARKER SHALL BE IN ACCORDANCE WITH THE CONTRACT PLANS.

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AGRICULTURE
COMMERCE
No. 123568
STATE OF TENNESSEE

11/15/2021

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

DACO CONSTRUCTION CO., INC.

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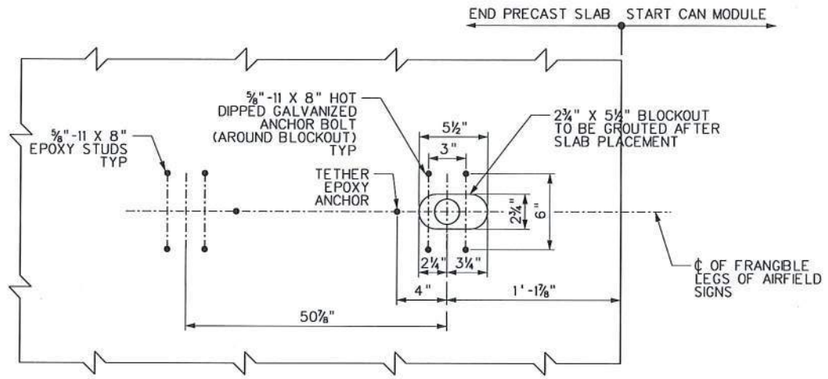
DATE: 15 NOV 2021 SHEET NO. B-6

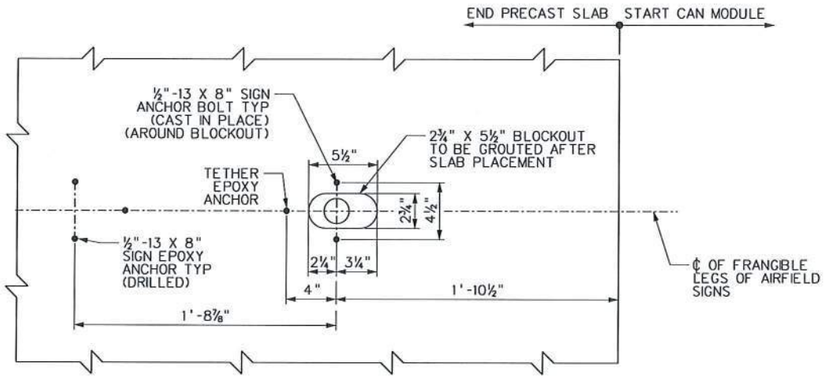
MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MEM AIRFIELD SIGNAGE REPLACEMENT
PRECAST CAN MODULE DETAILS



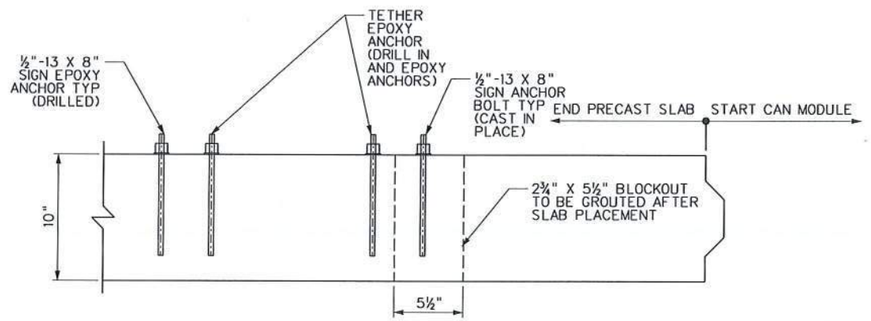
PLAN VIEW

SIZE 4 SIGNS – MOD 1



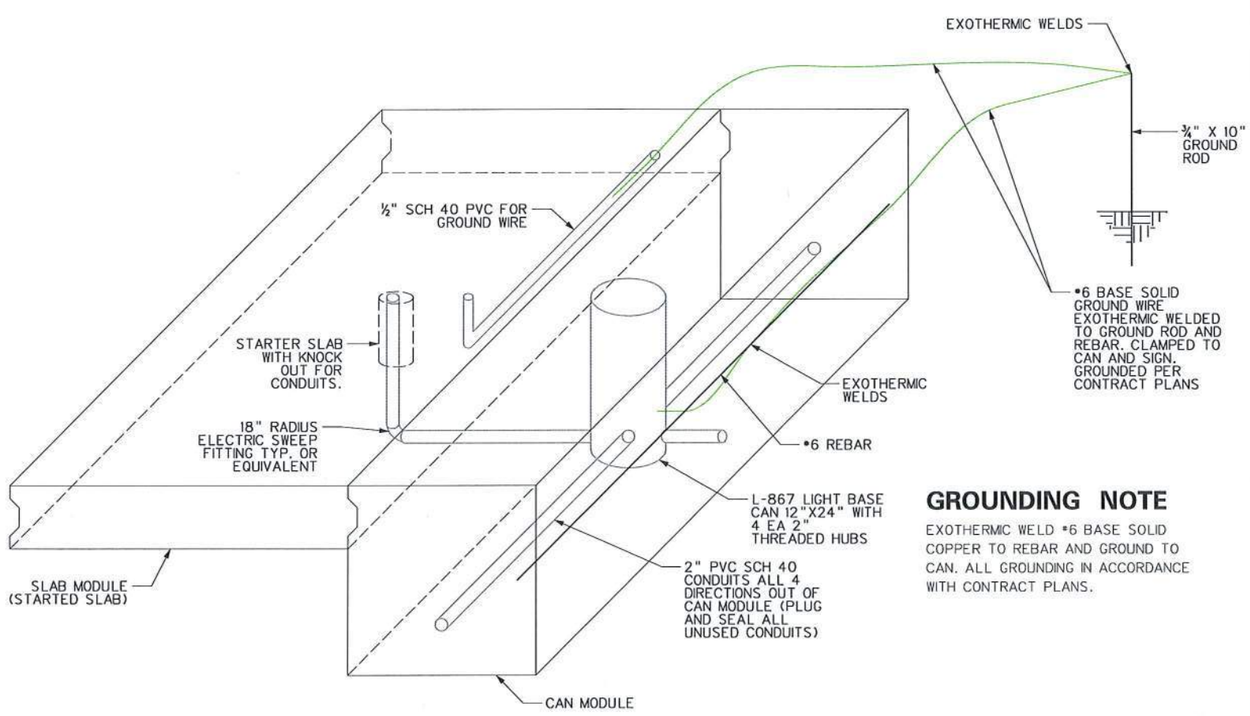
PLAN VIEW

SIZE 3 SIGNS – ALL MODS



ELEVATION VIEW

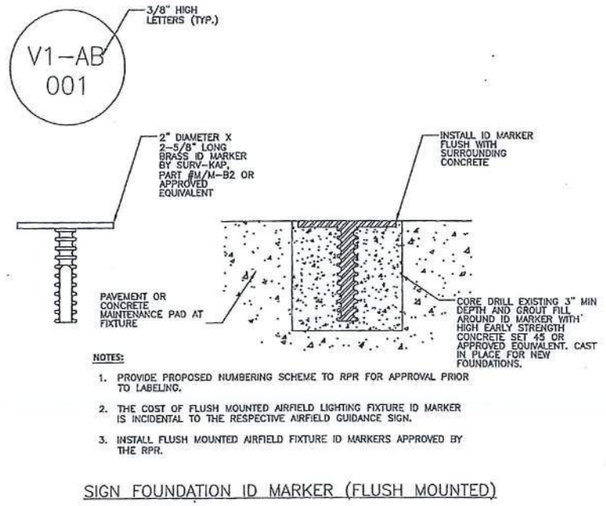
SIZE 3 MOD SHOWN, SIZE 4 SIMILAR



GROUNDING DETAILS

GROUNDING NOTE

EXOTHERMIC WELD •6 BASE SOLID COPPER TO REBAR AND GROUND TO CAN. ALL GROUNDING IN ACCORDANCE WITH CONTRACT PLANS.



SIGN FOUNDATION ID MARKER (FLUSH MOUNTED)

ALL DETAILS SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

DACO CONSTRUCTION CO., INC.

DATE: 15 NOV 2021 SHEET NO. **B-7**

MEMPHIS INTERNATIONAL AIRPORT
MEMPHIS, TENNESSEE

MEM AIRFIELD SIGNAGE REPLACEMENT
MISCALLENOUS DETAILS

Flex-Plus® Blue™ ENT

UL LISTED E73317

is a nonmetallic flexible raceway for use in walls, floors, and non-plenum ceilings. It's lightweight, hand bendable, and free from sharp edges, which reduces installation time and saves money.

See pages 31–32 for technical information.

Options:

- Sizes 1/2" through 2"
- Colors:
  - Yellow color for communication circuits and signaling cable
  - Red color for fire alarm circuits
  - Blue color for power circuits
- Packaging: Coils or Reels

Standard Stock – Reels

	Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Reel Size (F x W)	Reel Type (W=Wood)	Reel Length	Reel Wt. (lbs.)	Wt. per 100 ft. (lbs.)
1/2"	Blue	12005AK-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
	Yellow	1205AKY-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
	Red	1205AKR-001	.56	.84	Empty	6"	36" x 24"	W	1500	40	10
3/4"	Blue	12007AA-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
	Yellow	1207AAY-001	.76	1.05	Empty.	6"	36" x 24"	W	1000	40	14
	Red	1207AAR-001	.76	1.05	Empty	6"	36" x 24"	W	1000	40	14
1"	Blue	12008-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
	Yellow	12008Y-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
	Red	12008R-750	1.00	1.315	Empty	6"	36" x 24"	W	750	40	20
1 1/4"	Blue	12009-750	1.402	1.66	Empty	7"	48" x 32"	W	750	90	19
1 1/2"	Blue	12010-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
	Yellow	12010Y-750	1.554	1.90	Empty	8 1/4"	48" x 32"	W	750	90	39
2"	Blue	12011-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
	Red	12011R-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32
	Yellow	12011Y-500	2.030	2.375	Empty	9 1/2"	48" x 32"	W	500	90	32

Example only - Any Plastic tube will work

*1-1/4" - 2" available in yellow & red, made to order; consult factory.

Standard Stock – Coils

	Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Min. Bend Radius	Coil Length (ft.)	Wt. per 100 ft. (lbs.)
1/2"	Blue	12005-200	.56	.84	Empty	6"	200	10
	Yellow	12005Y-200	.56	.84	Empty	6"	200	10
	Red	12005R-200	.56	.84	Empty	6"	200	10
3/4"	Blue	12007-100	.76	1.05	Empty	6"	100	14
	Yellow	12007Y-100	.76	1.05	Empty	6"	100	14
	Red	12007R-100	.76	1.05	Empty	6"	100	14
1"	Blue	12008-100	1.00	1.315	Empty	6"	100	22
	Yellow	12008Y-100	1.00	1.315	Empty	6"	100	22
	Red	12008R-100	1.00	1.315	Empty	6"	100	22

10 ft. Lengths

	Color	Part No.	Nom. I.D.	Nom. O.D.	Std. Ctn. Qty.	Std. Ctn. Wt. (lbs.)
1/2"	Blue	12005-UPC	.56	.84	10 ft.	1.02
3/4"	Blue	12007-UPC	.76	1.05	10 ft.	1.46
1"	Blue	12008-010	1.00	1.315	10 ft.	2.93

NOTE: The solid blue color of ENT conduit is a registered trademark of Carlon.

ENT may show color deterioration in direct sunlight over an extended period of time. It is suggested that all ENT products not be stored outside. Since this product is not intended for use outdoors, it should not be exposed to extended periods of direct sunlight.

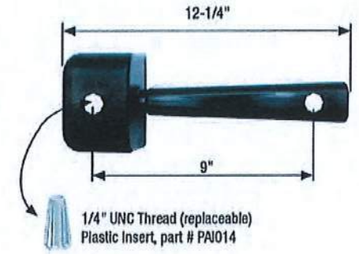
DOVETAIL ANCHOR SLOT - FOAM FILLED

Dovetail Anchor Slots come in standard 26 gauge, mill galvanized finish in 10' lengths. Custom gauges and finishes available upon request.

Part Number	Gauge	Finish	Length	Feet / Bundle
MCDAS26	26	Mill Galvanized	10'	250'

PA INSERT® BOLT POCKET FORMER SYSTEM

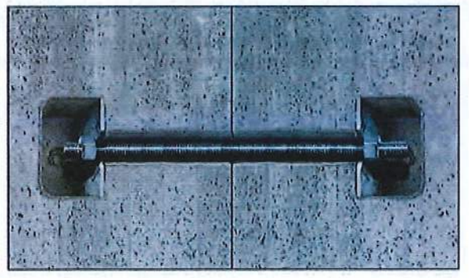
The PA Insert® Bolt Pocket Former System is used primarily for box culverts to bolt two culverts together. This reusable former creates a void which provides a cast-in space for the bolt connection. The former lasts over 50 pours and utilizes a steel plate to eliminate spalling of the concrete. Threaded Insert Locators can be used to hold it in place. The Steel Plates and Bolts are installed with it and remain with the precast element after the Former is removed. Magnetic version is available. See www.alpsupply.com for more information.



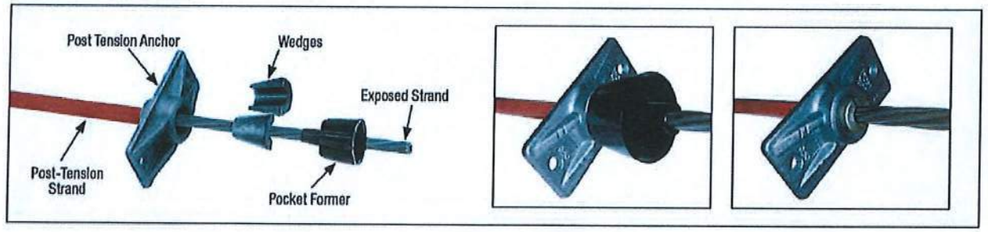
Part Number	Description	Weight (lbs)
PABPF	Bolt Pocket Former	1.15
PABPFM	Bolt Pocket Former - Magnetic	1.55
PABPP	Bolt Pocket Plate, HDG	0.95
PABPIK	Installation Kit, Plated	4.90

EACH CONNECTION REQUIRES:

2 X BOLT POCKET FORMERS (Reusable) + 2 X BOLT POCKET PLATES + 1 X INSTALLATION KIT



POST-TENSIONING COMPONENTS



GENERAL TECHNOLOGIES, INC.®

POST TENSION ANCHOR

Part Number	Strand Size
GT201751	1/4", 3/8", 7/16", 1/2", 1/2" Special
GT201201	1/2" Jumbo, 0.6", 0.6" Special

GENERAL TECHNOLOGIES, INC.®

2-PART WEDGE

Part Number	Strand Size
GT201115	1/2", 1/2" Special
GT201602	0.6", 0.6" Special

GENERAL TECHNOLOGIES, INC.®

POCKET FORMER

Part Number	Strand Size	Weight
GT204751	1/2"	1.0 oz.
GT204201	0.6"	2.1 oz.

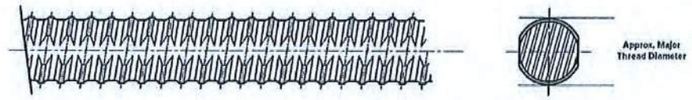
GENERAL TECHNOLOGIES, INC.®

HAND WEDGE SETTER TOOL

Part Number	Weight
SL 400580	2.45 lbs

Reinforcing Steel Grade Fully Threaded Bar

Hot Rolled Threaded Bar and Accessories†



Grade 80 ksi Yield Strength / 100 ksi Ultimate Strength							
Bar Designation	Grade	Nominal Diameter in mm	Min. Net Area Thru Threads in² mm²	Min. Ultimate Strength kips	Min. Yield Strength kips	Thread Orientation	Max. Length ft m
#6	80	¾ 20	0.44 284	44 196	35.2 157	Left Hand	60 18.3
#7	80	⅞ 22	0.60 387	60 267	48.0 214	Left Hand	60 18.3
#8	80	1 25	0.79 510	79 351	63.2 281	Left Hand	60 18.3
#9	80	1 ⅛ 28	1.00 645	100 445	80.0 356	Left Hand	60 18.3
#10	80	1 ¼ 32	1.27 819	127 565	101.6 452	Left Hand	60 18.3
#11	80	1 ⅜ 35	1.56 1006	156 670	124.8 555	Left Hand	60 18.3
#14	80	1 ¾ 45	2.25 1452	225 1001	180.0 801	Right Hand	60 18.3
#18	80	2 ¼ 55	4.00 2581	400 1779	320.0 1423	Right Hand	60 18.3
#20	80	2 ½ 64	4.91 3168	491 2184	392.8 1747	Right Hand	60 18.3

Hot rolled threaded bars conform to the physical and chemical requirements of ASTM A615 Grade 80 ksi "Standard Specification for Deformed Carbon Steel Bars for Concrete Reinforcement".

Grade 100 ksi Yield Strength / 115 ksi Ultimate Strength							
Bar Designation	Grade	Nominal Diameter in mm	Min. Net Area Thru Threads in² mm²	Min. Ultimate Strength kips	Min. Yield Strength kips	Thread Orientation	Max. Length ft m
#11	100	1 ⅜ 35	1.56 1006	179.4 798	156.0 670	Left Hand	60 18.3
#14	100	1 ¾ 45	2.25 1452	258.6 1150	225.0 1001	Right Hand	60 18.3
#18	100	2 ¼ 55	4.00 2581	460.0 2046	400.0 1779	Right Hand	60 18.3
#20	100	2 ½ 64	4.91 3168	564.7 2512	491.0 2184	Left Hand	60 18.3

Hot rolled threaded bars conform to the physical and chemical requirements of ASTM A615 Grade 100 ksi "Standard Specification for Deformed Carbon Steel Bars for Concrete Reinforcement".

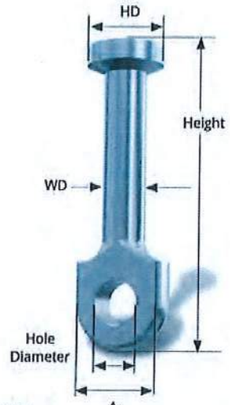
Please note: As we continuously improve the design of our products, product details are subject to change.

AMIFAST

Eye Anchor

The Eye Anchor is an economical and high strength insert for the lifting and handling of precast elements. It is similar to the Dog Bone Anchor.

The Eye Anchor has an eye at the foot where tension bars can be looped through the insert. It is most beneficial when lifting thin slabs of lightweight concrete or elements requiring lifting at low compressive strengths (<2000 psi). The Eye Anchor provides maximum capacity when utilizing a tension bar and cast at the center of the panel.



PLEA4TG

Item #	Size (T)	Height	A	HD	WD	Hole Diameter	Weight (lbs)	Lifting Eye	Recess Former	SWL	Safety Factor	UML/T
						Eye Anchor						
PLEA1TG	1T	2 9/16	7/8	3/4	3/8	3/8	.14	PLLE1T	PLDBRM1T	2000	4:1	8000
PLEA2TG	2T	3 9/16	1 1/4	1	9/16	4/8	.35	PLLE2T	PLDBRM2T	4000	4:1	16000
PLEA4TG	4T	5 1/2	1 3/4	1 7/16	3/4	6/8	.90	PLLE4T	PLDBRM4T	8000	4:1	32000
PLEA8TG	8T	7 1/16	2 5/16	1 13/16	1 1/8	1 1/8	1.1	PLLE8T	PLDBRM8T	16000	4:1	64000
PLEA20TG	20T	9 13/16	3 1/4	2 13/16	1 9/16	1 4/8	6.9	PLLE20T	PLDBRM20T	40000	4:1	160000

Material High Strength Steel
Finish HDG

SWL Safe Working Load
UML/T Ultimate Mechanical Load in Tension (lbs)

Dog Bone Recess Former

Recess Former for use with PROLIFT Dog Bone Anchors.

Item #	Size (T)	Material	Weight (lbs)	Color
		PROLIFT Dogbone Recess Former		
PLDBRM1T	1T	Rubber	.14	Blue
PLDBRM2T	2T	Rubber	.26	Yellow
PLDBRM4T	4T	Rubber	.55	Orange
PLDBRM8T	8T	Rubber	1.1	Green
PLDBRM20T	20T	Rubber	2.22	Black

PLDBRM4T

PROLIFT

Lifting Eye

PLLE4T

Item #	Size (T)	Weight (lbs)	SLL	Safety Factor	UML/T
			Lifting Eye		
PLLE1T	1T	2.11	2600	5:1	13000
PLLE2T	2T	3.76	5000	5:1	25000
PLLE4T	4T	8.34	10000	5:1	50000
PLLE8T	8T	20.53	20000	5:1	100000
PLLE20T	20T	41.18	40000	5:1	200000

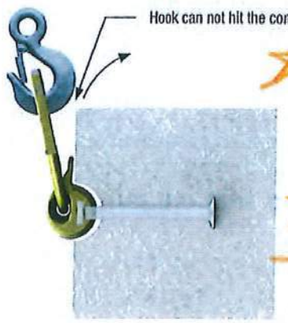
SLL Safe Lifting Load
UML/T Ultimate Mechanical Load in Tension (lbs)

The Lifting Eye is a high strength steel lifting accessory for use with Dog Bone anchors. The Lifting Eye consists of a lifting body and a high strength bail which connects to the Dog Bone anchor. A key feature is the quick connect bail that can rotate freely through 180° degrees under load. Additionally, the spherical head, or lifting eye, has the ability to rotate 360° degrees while under load.

Inspection and maintenance of the Lifting Eye is recommended before each use. The Lifting Eye may experience excessive wear, unexpected damage, bending, twisting, misuse, or overloading during its usable lifetime which can reduce the lifting eye's rating load. Any evidence of wear that exceeds the degree of wear based on its age and typical use suggests that the lifting eye be replaced. Lifting eyes should be used with anchors from the same manufacturer.

EDGE LIFTING OF SLABS AND WALL PANELS

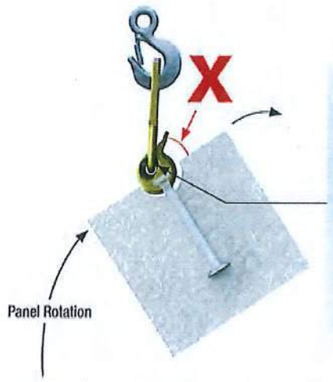
1



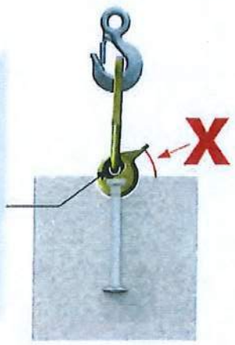
10" should Qualify as thicker panel.

The Lifting Pin System is **not typically recommended** for lifting in the edge of thin wall panels or slabs due to the system's low shear capacity in that application. For thin panels, the ALP Supply® QUIKLIFT® System should be used. In thicker panels and slabs, the ALP Supply® Lifting Pin System can be used to rotate slabs or panels, but users should monitor the orientation of the lifting head in relation to the direction of load. Without proper lubrication of the lifting head, it can start to disengage from the lifting anchor as the panel is rotated up. This is due to the friction of the lifting head and the bail.

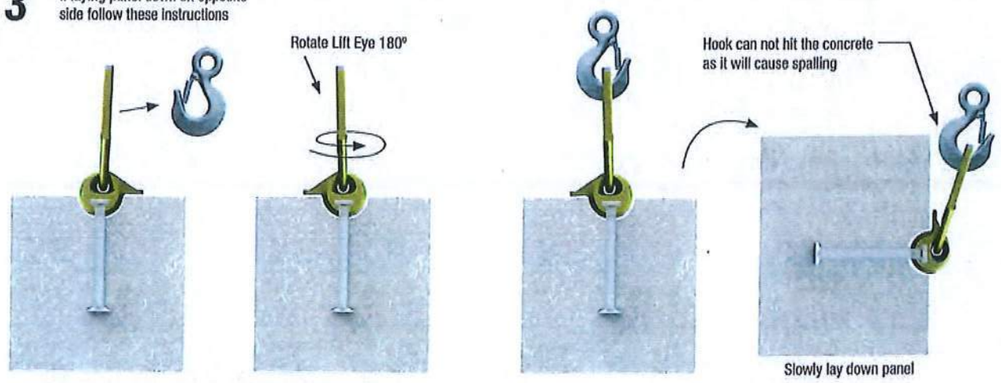
2



Without lubrication between the lifting bail and the lifting head, the lifting head has a tendency to rotate and open up during the rotation of the panel.

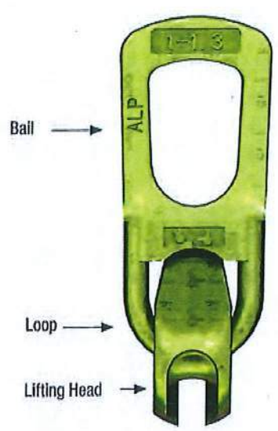


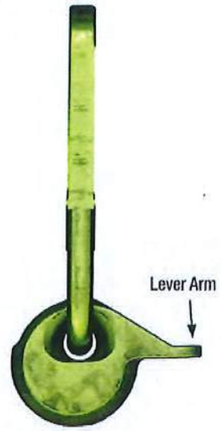
3 If laying panel down on opposite side follow these instructions



It may be necessary to disengage the lifting eye from the hook

ALP® LIFTING EYE TERMINOLOGY AND INSPECTION





INSPECT ALL LIFT EYES FOR THE FOLLOWING:

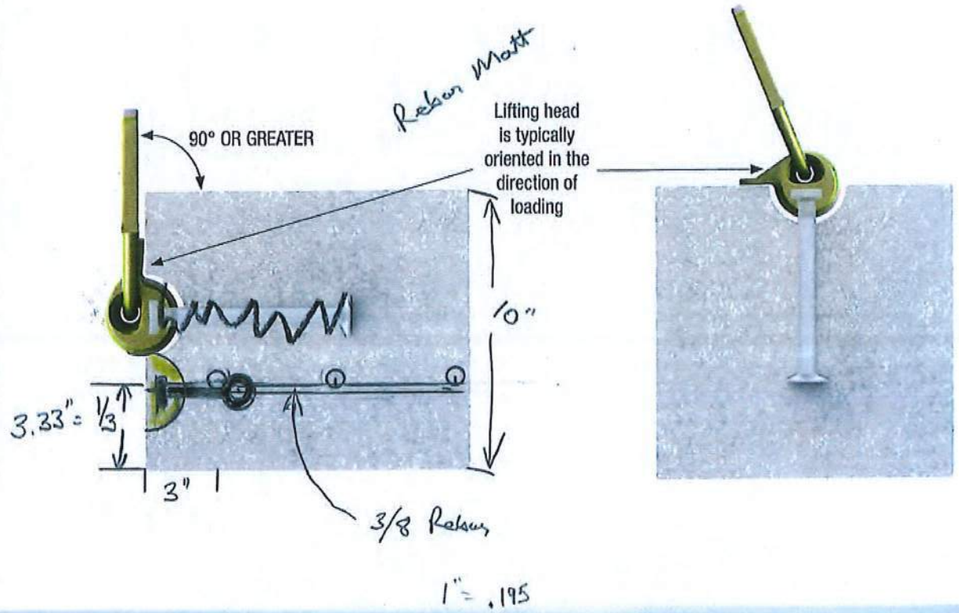
- Inspect the Bail and Lifting Head for cracks.
- Inspect the Bail and Loop for any bends.
- Inspect and remove from service if there are signs that excessive external heat was applied to any parts.

WHEN TO REMOVE LIFT EYES FROM SERVICE:

- If the Bail has been bent.
- If a weld has been fractured.

See ALP Supply® website for Inspection and Maintenance Guidelines for routine inspection of lifting hardware.

ALP® LIFTING EYE GENERAL USE



1" = .195

Bolt Depot®
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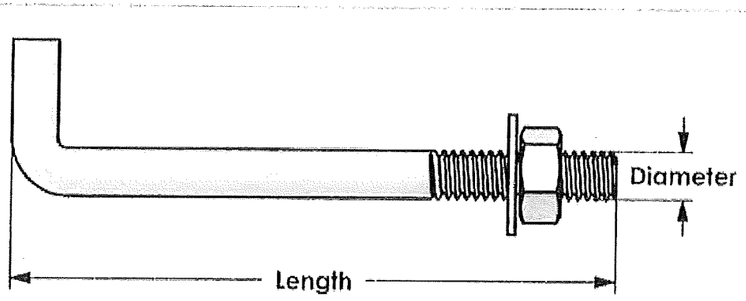
Anchor bolts w/ nuts and washers, Hot dipped galvanized steel, 1/2"-13 x 8"

Prod. #	Length	Each price	Bag price	Bulk price	Buy
10900	8"	$2.30 / ea	$40.35 / 25	$367.00 / 250	

Cost of all entered products: **$0.00**

Product Images



Product details

Bolt Depot Product #:	10900
Units:	US
Category:	Anchoring products
Subcategory:	Anchor bolts

Material:	Steel
Plating:	Hot dipped galvanized
Thread direction:	Right hand
Thread density:	Coarse
Diameter:	1/2"
Thread count:	13
Length:	8"
Comes with washers:	Yes
Comes with nuts:	Yes
Plating specification:	A153

See also

Safety glasses

Bolt Depot branded apparel and safety gear.

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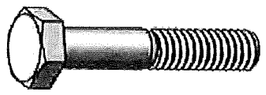
Product catalog » Hex bolts » Hex bolts » Hot dipped galvanized steel » Coarse (standard) thread » 1/2"-13



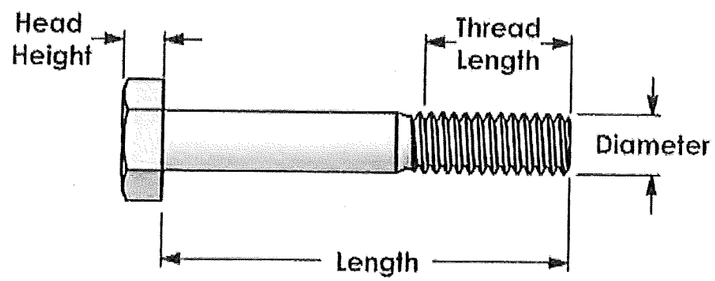
Hex bolts, Hot dipped galvanized steel, 1/2"-13 x 8"

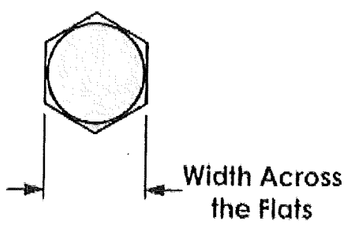
Important Note: Due to the plating thickness, only hot dipped galvanized nuts should be used on hot dipped galvanized hex bolts.

Prod. #	Length	Each price	Bag price	Bulk price	Buy
80	8"	$1.68 / ea	$33.39 / 25	$283.00 / 250	

Cost of all entered products: **$0.00**

Product Images





Product details

Bolt Depot Product #:	80
Units:	US
Category:	Hex bolts
Subcategory:	Hex bolts
Material:	Steel
Plating:	Hot dipped galvanized
Thread direction:	Right hand
Thread density:	Coarse
Diameter:	1/2"
Thread count:	13
Length:	8"
Length tolerance:	+0.12" / -0.16"
Head style:	Hex
Drive type:	External hex
Plating specification:	ASTM A153
Head height Min:	0.302"
Head height Max:	0.323"
Width across the flats:	3/4"
Fully threaded:	No
Thread length Min:	1-1/2"
Dimensional standard:	ASME B18.2.1

Additional information

US bolt thread length table

US Hex bolt sizes

Head/Wrench size table

US hex bolt recommended torque

Matching Products

Prod. #	Description	Buy
2617	 **Hex nuts, Hot dipped galvanized steel, 1/2"-13** A standard six sided nut.	$0.27 / ea $8.68 / 50 $73.60 / 500
15969	 **Top lock nuts, Hot dipped galvanized steel, 1/2"-13** A style of prevailing torque lock nut. Also called tri-loc. This style of lock nut deforms the threads of the mated fastener.	$0.30 / ea $10.78 / 50 $94.90 / 500
2990	 **USS flat washers, Hot dipped galvanized steel, 1/2"** USS pattern is the most common type of flat washer.	$0.21 / ea $16.76 / 100 $148.00 / 1000
2984	 **Lock washers, Hot dipped galvanized steel, 1/2"** Split lock washers place tension against a nut after tightening, to help prevent loosening.	$0.16 / ea $10.23 / 100 $91.80 / 1000

See also

Metric hex bolts

A bolt with a six sided head. 

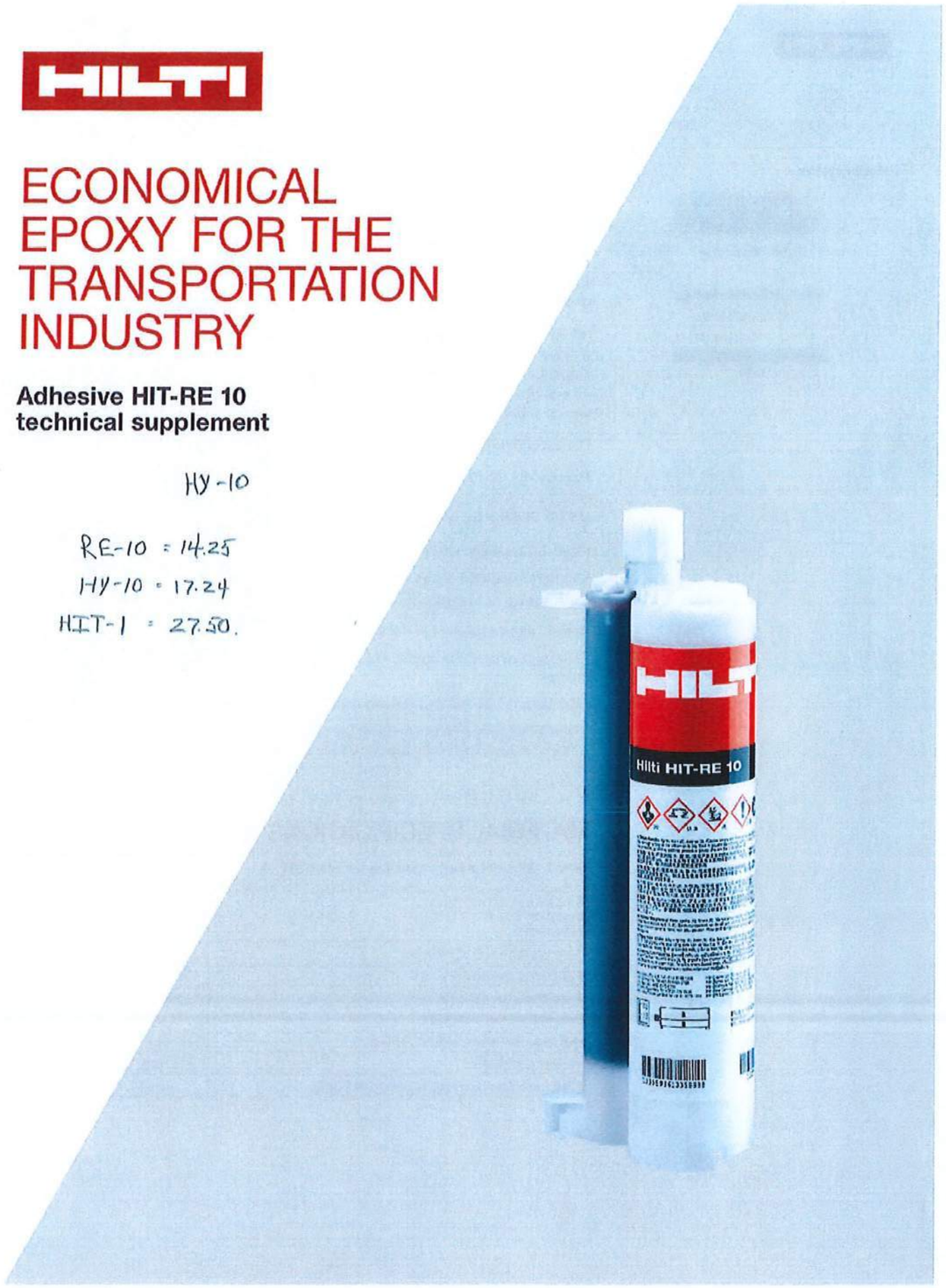
HILTI

ECONOMICAL EPOXY FOR THE TRANSPORTATION INDUSTRY

Adhesive HIT-RE 10 technical supplement

HY-10

RE-10 = 14.25
HY-10 = 17.24
HIT-1 = 27.50.



Mortar system

HIT-RE 10 cartridge

HAS threaded rods

Rebar

PRODUCT DESCRIPTION

HIT-RE 10 is the newest addition to Hilti's best in class chemical anchor portfolio. This adhesive is engineered to satisfy demanding jobsite conditions for transportation doweling and anchoring at an economical price. HIT-RE 10 is ideal for roadways, bridges, railways and runway projects.

The Hilti HIT-RE 10 Adhesive Anchoring System is an injectable two-component epoxy adhesive. The two components are kept separate by means of a dual-cylinder hard plastic cartridge with an attached manifold.

HIT-RE 10 comes packaged in a new 19.6 oz. hard cartridge that integrates seamlessly with the HDM 500 manual dispenser and HDE 500 A-22 battery-powered dispenser. The automatic dosing feature provides productivity and easy installation on the jobsite. As with every Hilti anchoring product, HIT-RE 10 comes with the sales and technical service support you have come to expect from Hilti.

Product features

The Hilti HIT-RE 10 Adhesive Anchoring System may be used with fully threaded rod or deformed reinforcing bar installed in uncracked concrete. The primary features of the HIT-RE 10 Adhesive Anchoring System are:

- Suitable for post-installed rebar and threaded rod anchoring applications
- Long working time allows flexible installation
- Suitable for un-cracked concrete
- Meets requirements of ASTM C881, Type I, II, IV and V, Grade 3, Class A, B, and C
- Mixing tube provides proper mixing, helps eliminate measuring errors and minimizes waste
- Contains no styrene and virtually odorless
- Installation base material temperature range from 41°F to 104°F. For curing time based on base material temperature see the Instructions For Use

MATERIAL SPECIFICATIONS

Table 1 - Material properties of fully cured HIT-RE 10

Bond Strength ASTM C882 2 day cure 14 day cure	21.2 Mpa 23.1 Mpa	3,070 psi 3,350 psi
Compressive Strength ASTM D6951	88.1 Mpa	12,780 psi
Compressive Modulus ASTM D6951	5,380 Mpa	0.78 x 10^6 psi
Tensile Strength 7 day ADTM D638	53.2 Mpa	7,720 psi
Elongation at break ASTM D638	1.30%	1.30%
Heat Deflection Temperature ASTM D648	58°C	137°F
Absorption ASTM D570	0.06%	0.06%
Linear Coefficient of Shrinkage on Cure ASTM D2566	0.0007	0.0007

Hilti HIT-RE 10 Adhesive with Hilti HAS threaded rod

Figure 3 – HAS threaded rod installation conditions

Permissable base materials	Permissable concrete conditions		Permissable drilling method
			
Uncracked concrete	Dry concrete	Water saturated concrete	Hammer drilling with carbide tipped drill bit

Table 14 - Hilti HAS Threaded Rod Installation Specifications when installed with HIT-RE 10 adhesive system

Setting information		Symbol	Units	Nominal rod diameter, (in.)						
				3/8	1/2	5/8	3/4	7/8	1	1-1/4
Nominal bit diameter		d_o	in.	7/16	9/16	3/4	7/8	1	1-1/8	1-3/8
Effective minimum embedment		$h_{ef,min}$	in. (mm)	2-3/8 (60)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)	3-1/2 (89)	4 (102)	5 (127)
Effective maximum embedment		$h_{ef,max}$	in. (mm)	7-1/2 (190)	10 (250)	12-1/2 (310)	15 (380)	17-1/2 (440)	20 (500)	20 (500)
Minimum diameter of fixture hole	through-set		in.	1/2	5/8	13/16[1]	15/16[1]	1-1/8[1]	1-1/4[1]	1-1/2[1]
	preset		in.	7/16	9/16	11/16	13/16	15/16	1-1/8	1-3/8
Installation Torque		T_{inst}	ft-lb. (N-m)	15 (20)	30 (41)	60 (81)	100 (136)	125 (169)	150 (203)	200 (271)
Minimum concrete thickness		h_{min}	in. (mm)	h_{ef} + 1-1/4 > 4 (h_{ef} + 30 > 100)		$h_{ef} + 2d_o$				
Minimum edge distance[2]		c_{min}	in. (mm)	1-7/8 (48)	2-1/2 (64)	3-1/8 (79)	3-3/4 (95)	4-3/8 (111)	5 (127)	5-5/8 (143)
Minimum anchor spacing		s_{min}	in. (mm)	1-7/8 (48)	2-1/2 (64)	3-1/8 (79)	3-3/4 (95)	4-3/8 (111)	5 (127)	5-5/8 (143)

[1] Install using (2) washers. See Figure 5.
[2] Edge distance of 1-3/4-inch (44mm) is permitted provided the installation torque is reduced to 0.30 T_{inst} for 5d<s<16 in. and to 0.5T_{inst} for s>16-in.

Figure 4 - Hilti HAS threaded rods

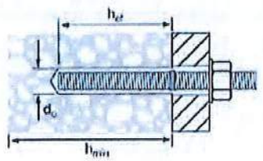


Figure 5 - Illustration with (2) washers

Table 15 - Hilti HIT-RE 10 design information with HAS threaded rods per ACI 318-14 Ch. 17 [1]

Design parameter		Symbol	Units	Nominal rod diameter (in.)						
				3/8	1/2	5/8	3/4	7/8	1	1-1/4
Nominal anchor diameter		d_a	in. (mm)	3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)	7/8 (22.2)	1 (25.4)	1-1/4 (31.8)
Effective minimum embedment[2]		$h_{ef,min}$	in. (mm)	2-3/8 (60)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)	3-1/2 (89)	4 (102)	5 (127)
Effective maximum embedment[2]		$h_{ef,max}$	in. (mm)	7-1/2 (190)	10 (254)	12-1/2 (318)	15 (381)	17-1/2 (445)	20 (508)	20 (508)
Minimum concrete thickness[2]		h_{min}	in. (mm)	h_{ef}+1-1/4>4 (h_{ef}+30≥100)		$h_{ef} + 2d_o$[6]				
Critical edge distance		c_{ac}	in.	$c_{ac} = h_{ef} * \left(\frac{\tau_{k,uncr}}{1160}\right)^{0.4} * \left[3.1 - 0.7 * \frac{h}{h_{ef}}\right]$; $\left(\frac{h}{h_{ef}}\right)$ need not be larger than 2.4 $\tau_{k,uncr}$ need not be taken as greater than: $\tau_{k,uncr} = \frac{k_{uncr}\sqrt{h_{ref} * f'_c}}{\pi * d_a}$						
			mm.	$c_{ac} = h_{ef} * \left(\frac{\tau_{k,uncr}}{8}\right)^{0.4} * \left[3.1 - 0.7 * \frac{h}{h_{ef}}\right]$; $\left(\frac{h}{h_{ef}}\right)$ need not be larger than 2.4 $\tau_{k,uncr}$ need not be taken as greater than: $\tau_{k,uncr} = \frac{k_{uncr}\sqrt{h_{ref} * f'_c}}{\pi * d_a}$						
Minimum edge distance[3]		c_{min}	in. (mm)	1-7/8 (48)	2-1/2 (64)	3-1/8 (79)	3-3/4 (95)	4-3/8 (111)	5 (127)	5-5/8 (143)
Minimum anchor spacing		s_{min}	in. (mm)	1-7/8 (48)	2-1/2 (64)	3-1/8 (79)	3-3/4 (95)	4-3/8 (111)	5 (127)	5-5/8 (143)
Effectiveness factor for uncracked concrete		$k_{c,uncr}$[4]	-	24						
Strength reduction factor for tension, concrete failure modes		$\Phi_{c,N}$	-	0.65						
Strength reduction factor for shear, concrete failure modes		$\Phi_{c,V}$	-	0.70						
Characteristic bond stress in uncracked concrete[5]		$\tau_{k,uncr}$	psi (N/mm²)	1,246 (8.6)	1,191 (8.2)	1,136 (7.8)	1,082 (7.5)	1,029 (7.1)	974 (6.7)	864 (6.0)
Permissable installation conditions	Strength reduction factor for tension, bond failure modes, dry concrete	Anchor category	-	2	2	3	3	3	3	3
		$\Phi_{bd/d}$	-	0.55	0.55	0.45	0.45	0.45	0.45	0.45
	Strength reduction factor for tension, bond failure modes, water saturated concrete	Anchor category	-	2	2	3	3	3	3	3
		$\Phi_{bd/ws}$	-	0.55	0.55	0.45	0.45	0.45	0.45	0.45

[1] Design information in this table is based on testing in accordance with ACI 355.4.
[2] Edge distance of 1-3/4-inch (44mm) is permitted provided the rebar remains un-torqued.
[3] For all design cases, $\psi_{c,N}$ = 1.0. The appropriate coefficient for breakout resistance for uncracked concrete ($k_{c,uncr}$) must be used.
[4] Values provided for post-installed anchors under Condition B without supplementary reinforcement as defined in ACI 318-14 17.3.3. For cases where the presence of supplementary reinforcement can be verified, the reduction factors associated with Condition A may be used. Temperature range B: Maximum short term temperature = 130°F(55°C), maximum long term temperature = 110°F(43°C). Short term elevated concrete temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling. Long term concrete temperatures are roughly constant over significant periods of time.
[5] Bond strength values corresponding to concrete compressive strength f'_c = 2500 Psi. For concrete compressive strength, f'_c, between 2500 Psi and 8000 Psi, the tabulated characteristic bond strength may be increased by a factor of $(f'_c/2500)^{0.15}$
[6] d_o = drilled hole diameter, see figure 4.
[7] See Figure 4.

Table 16 - Hilti RE 10 adhesive design strength with concrete / bond failure for threaded rod in uncracked concrete [1,2,3,4,5,6,7,8]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension - ΦN_n				Shear - ΦV_n			
		f'_c=2500 psi (17.2 Mpa) lb (kN)	f'_c=3000 psi (20.7 Mpa) lb (kN)	f'_c=4000 psi (17.2 Mpa) lb (kN)	f'_c=6000 psi (41.4 Mpa) lb (kN)	f'_c=2500 psi (17.2 Mpa) lb (kN)	f'_c=3000 psi (20.7 Mpa) lb (kN)	f'_c=4000 psi (17.2 Mpa) lb (kN)	f'_c=6000 psi (41.4 Mpa) lb (kN)
3/8	2-3/8 (60)	1,915 (8.5)	1,955 (8.7)	2,010 (8.9)	2,095 (9.3)	2,440 (10.9)	2,485 (11.1)	2,560 (11.4)	2,665 (11.9)
	3-3/8 (86)	2,725 (12.1)	2,775 (12.3)	2,855 (12.7)	2,975 (13.2)	6,935 (30.8)	7,065 (31.4)	7,270 (32.3)	7,570 (33.7)
	4-1/2 (114)	3,635 (16.2)	3,700 (16.5)	3,810 (16.9)	3,965 (17.6)	9,250 (41.1)	9,420 (41.9)	9,695 (43.1)	10,095 (44.9)
	7-1/2 (190)	6,055 (26.9)	6,165 (27.4)	6,345 (28.2)	6,610 (29.4)	15,415 (68.6)	15,695 (69.8)	16,155 (71.9)	16,825 (74.8)
1/2	2-3/4 (70)	2,830 (12.6)	2,880 (12.8)	2,965 (13.2)	3,090 (13.7)	7,205 (32.0)	7,335 (32.6)	7,550 (33.6)	7,860 (35.0)
	4-1/2 (114)	4,630 (20.6)	4,715 (21.0)	4,855 (21.6)	5,055 (22.5)	11,785 (52.4)	12,005 (53.4)	12,355 (55.0)	12,865 (57.2)
	6 (152)	6,175 (27.5)	6,285 (28.0)	6,470 (28.8)	6,740 (30.0)	15,715 (69.9)	16,005 (71.2)	16,470 (73.3)	17,155 (76.3)
	10 (254)	10,290 (45.8)	10,480 (46.6)	10,785 (48.0)	11,230 (50.0)	26,190 (116.5)	26,675 (118.7)	27,450 (122.1)	28,590 (127.2)
5/8	3-1/8 (79)	3,135 (13.9)	3,195 (14.2)	3,290 (14.6)	3,425 (15.2)	9,280 (41.3)	9,940 (44.2)	10,230 (45.5)	10,650 (47.4)
	5-5/8 (143)	5,645 (25.1)	5,750 (25.6)	5,920 (26.3)	6,165 (27.4)	17,565 (78.1)	17,890 (79.6)	18,410 (81.9)	19,175 (85.3)
	7-1/2 (191)	7,530 (33.5)	7,665 (34.1)	7,890 (35.1)	8,215 (36.5)	23,420 (104.2)	23,850 (106.1)	24,550 (109.2)	25,565 (113.7)
	12-1/2 (318)	12,545 (55.8)	12,780 (56.8)	13,150 (58.5)	13,695 (60.9)	39,035 (173.6)	39,750 (176.8)	40,915 (182.0)	42,605 (189.5)
3/4	3-1/2 (89)	4,015 (17.9)	4,090 (18.2)	4,210 (18.7)	4,385 (19.5)	11,000 (48.9)	12,050 (53.6)	13,095 (58.2)	13,635 (60.7)
	6-3/4 (171)	7,745 (34.5)	7,960 (35.4)	8,310 (37.0)	8,830 (39.3)	24,090 (107.2)	24,760 (110.1)	25,850 (115.0)	27,475 (122.2)
	9 (229)	10,325 (45.9)	10,610 (47.2)	11,080 (49.3)	11,775 (52.4)	32,120 (142.9)	33,015 (146.9)	34,470 (153.3)	36,630 (162.9)
	15 (381)	17,210 (76.6)	17,685 (78.7)	18,465 (82.1)	19,625 (87.3)	53,535 (238.1)	55,020 (244.7)	57,450 (255.5)	61,050 (271.6)
7/8	3-1/2 (89)	4,455 (19.8)	4,580 (20.4)	4,780 (21.3)	5,080 (22.6)	11,000 (48.9)	12,050 (53.6)	13,915 (61.9)	15,805 (70.3)
	7-7/8 (200)	10,025 (44.6)	10,300 (45.8)	10,755 (47.8)	11,430 (50.8)	31,185 (138.7)	32,050 (142.6)	33,465 (148.9)	35,560 (158.2)
	10-1/2 (267)	13,365 (59.5)	13,735 (61.1)	14,340 (63.8)	15,240 (67.8)	41,580 (185.0)	42,735 (190.1)	44,620 (198.5)	47,415 (210.9)
	17-1/2 (445)	22,275 (99.1)	22,895 (101.8)	23,900 (106.3)	25,400 (113.0)	69,300 (308.3)	71,220 (316.8)	74,365 (330.8)	79,025 (351.5)
1	4 (102)	5,510 (24.5)	5,660 (25.2)	5,910 (26.3)	6,280 (27.9)	13,440 (59.8)	14,725 (65.5)	17,000 (75.6)	19,540 (86.9)
	9 (229)	12,395 (55.1)	12,735 (56.6)	13,300 (59.2)	14,130 (62.9)	38,555 (171.5)	39,625 (176.3)	41,370 (184.0)	43,965 (195.6)
	12 (305)	16,525 (73.5)	16,980 (75.5)	17,730 (78.9)	18,840 (83.8)	51,405 (228.7)	52,830 (235.0)	55,160 (245.4)	58,620 (260.8)
	20 (508)	27,540 (122.5)	28,305 (125.9)	29,550 (131.4)	31,405 (139.7)	85,680 (381.1)	88,055 (391.7)	91,935 (408.9)	97,700 Tqable 16
1-1/4	5 (127)	7,635 (34.0)	7,845 (34.9)	8,190 (36.4)	8,705 (38.7)	18,785 (83.6)	20,575 (91.5)	23,760 (105.7)	27,085 (120.5)
	11-1/4 (286)	17,175 (76.4)	17,655 (78.5)	18,430 (82.0)	19,585 (87.1)	53,440 (237.7)	54,920 (244.3)	57,340 (255.1)	60,940 (271.1)
	15 (381)	22,900 (101.9)	23,535 (104.7)	24,575 (109.3)	26,115 (116.2)	71,250 (316.9)	73,225 (325.7)	76,455 (340.1)	81,250 (361.4)
	20 (508)	30,535 (135.8)	31,385 (139.6)	32,765 (145.7)	34,820 (154.9)	95,000 (422.6)	97,635 (434.3)	101,940 (453.4)	108,335 (481.9)

[1] See Section 3.1.6 of Hilti Product Technical Guide 17 Volume 2 for explanation on development of load values.
[2] See Section 3.1.6.8 of Hilti Product Technical Guide 17 Volume 2 to convert design strength value to ASD value.
[3] Linear interpolation between embedment depths and concrete compressive strengths is not permitted.
[4] Apply spacing, edge distance, and concrete thickness factors in tables 18-23 as necessary. Compare to the steel values in table 17. The lesser of the values is to be used for the design.
[5] Data is for maximum short term temperature = 130°F (55°C), maximum long term temperature = 110°F (43°C). Short term elevated concrete temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling. Long term concrete temperatures are roughly constant over significant periods of time.
[6] Tabular values are for dry concrete or water-saturated concrete conditions.
[7] Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.1.6.8 of Hilti Product Technical Guide 17 Volume 2.
[8] Tabular values are for normal weight concrete only. For lightweight concrete multiply design strength by λ_a as follows: For sand-lightweight, λ_a = 0.51. For all-lightweight, λ_a = 0.45.

Table 18 - Load adjustment factors for 3/8-in. diameter threaded rods in uncracked concrete [1,2,3]

3/8-in. uncracked concrete		Spacing factor in tension f_{AN}				Edge distance factor in tension f_{RN}				Spacing factor in shear [4] f_{AV}				Edge distance in shear ⊥ Toward edge f_{RV}				Edge distance in shear ∥ To edge f_{RV}				Concrete thickness factor in shear [5] f_{HV}			
Embedment in h_{ef} (mm)		2-3/8 (60)	3-3/8 (86)	4-1/2 (114)	7-1/2 (191)	2-3/8 (60)	3-3/8 (86)	4-1/2 (114)	7-1/2 (191)	2-3/8 (60)	3-3/8 (86)	4-1/2 (114)	7-1/2 (191)	2-3/8 (60)	3-3/8 (86)	4-1/2 (114)	7-1/2 (191)	2-3/8 (60)	3-3/8 (86)	4-1/2 (114)	7-1/2 (191)	2-3/8 (60)	3-3/8 (86)	4-1/2 (114)	7-1/2 (191)
Spacing (s) / edge distance (ca) / concrete thickness (h), - in (mm)	1-3/4 (44)	n/a	n/a	n/a	n/a	0.43	0.32	0.23	0.13	n/a	n/a	n/a	n/a	0.29	0.11	0.08	0.05	0.43	0.21	0.16	0.10	n/a	n/a	n/a	n/a
	1-7/8 (48)	0.61	0.59	0.57	0.54	0.45	0.33	0.24	0.14	0.58	0.54	0.53	0.52	0.32	0.12	0.09	0.05	0.45	0.24	0.18	0.11	n/a	n/a	n/a	n/a
	2 (51)	0.62	0.60	0.57	0.54	0.46	0.34	0.24	0.14	0.58	0.54	0.54	0.53	0.35	0.13	0.10	0.06	0.46	0.26	0.19	0.12	n/a	n/a	n/a	n/a
	3 (76)	0.68	0.65	0.61	0.57	0.60	0.42	0.31	0.18	0.62	0.56	0.55	0.54	0.65	0.24	0.18	0.11	0.60	0.42	0.31	0.18	n/a	n/a	n/a	n/a
	3-5/8 (92)	0.71	0.68	0.63	0.58	0.69	0.48	0.35	0.20	0.65	0.58	0.56	0.55	0.86	0.32	0.24	0.14	0.69	0.48	0.35	0.20	0.78	n/a	n/a	n/a
	4 (102)	0.73	0.70	0.65	0.59	0.76	0.52	0.38	0.22	0.67	0.59	0.57	0.55	1.00	0.37	0.28	0.17	0.76	0.52	0.38	0.22	0.82	n/a	n/a	n/a
	4-5/8 (117)	0.77	0.73	0.67	0.60	0.88	0.59	0.43	0.25	0.69	0.60	0.58	0.56		0.46	0.34	0.21	0.88	0.59	0.43	0.25	0.88	0.63	n/a	n/a
	5 (127)	0.79	0.75	0.69	0.61	0.96	0.64	0.46	0.27	0.71	0.61	0.59	0.56		0.51	0.38	0.23	0.96	0.64	0.46	0.27	0.91	0.65	n/a	n/a
	5-3/4 (146)	0.84	0.78	0.71	0.63	1.00	0.73	0.53	0.31	0.74	0.62	0.60	0.57		0.63	0.47	0.28	1.00	0.73	0.53	0.31	0.96	0.70	0.64	n/a
	6 (152)	0.85	0.80	0.72	0.63		0.77	0.56	0.32	0.75	0.63	0.61	0.58		0.67	0.51	0.30		0.77	0.56	0.32	1.00	0.72	0.65	n/a
	7 (178)	0.91	0.85	0.76	0.66		0.89	0.65	0.38	0.79	0.65	0.62	0.59		0.85	0.64	0.38		0.89	0.65	0.38		0.77	0.70	n/a
	8 (203)	0.97	0.90	0.80	0.68		1.00	0.74	0.43	0.83	0.67	0.64	0.60		1.00	0.78	0.47		1.00	0.74	0.43		0.83	0.75	n/a
	8-3/4 (222)	1.00	0.93	0.82	0.69			0.81	0.47	0.86	0.69	0.65	0.61			0.89	0.53			0.81	0.47		0.86	0.79	0.66
	10 (254)		0.99	0.87	0.72			0.93	0.54	0.92	0.71	0.68	0.63			1.00	0.65			0.93	0.54		0.92	0.84	0.71
	12 (305)		1.00	0.94	0.77			1.00	0.65	1.00	0.76	0.71	0.65				0.86			1.00	0.65		1.00	0.92	0.78
	14 (356)			1.00	0.81				0.75		0.80	0.75	0.68				1.00				0.75			0.99	0.84
	16 (406)				0.86				0.86		0.84	0.78	0.70								0.86			1.00	0.90
	18 (457)				0.90				0.97		0.88	0.82	0.73								0.97				0.95
	24 (610)				1.00				1.00		1.00	0.92	0.80								1.00				1.00
	30 (762)											1.00	0.88												
	> 48 (1219)												1.00												

[1] Linear interpolation not permitted
[2] Shaded area with reduced edge distance is permitted provided the installation torque is reduced to 0.30 T_{inst} for $5d < s < 16$-in. and to 0.5 T_{inst} for $s > 16$-in.
[3] When combining multiple load adjustment factors (e.g. for a four-anchor pattern in a corner with thin concrete member) the design can become very conservative. To optimize the design, perform anchor calculation using design equations from ACI 318 Chapter 17.
[4] Spacing factor reduction in shear applicable when $c < 3^1h_{ef}$. f_{AV} is applicable when edge distance, $c < 3^1h_{ef}$. If $c \geq 3^1h_{ef}$ then $f_{AV} = f_{AN}$.
[5] Concrete thickness reduction factor in shear, f_{HV}, is applicable when edge distance, $c < 3^1h_{ef}$. If $c \geq 3^1h_{ef}$, then $f_{HV} = 1.0$.

Table 19 - Load adjustment factors for 1/2-in. diameter threaded rods in uncracked concrete [1,2,3]

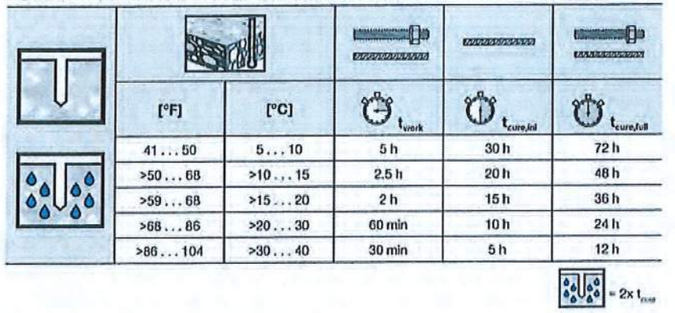
1/2-in. uncracked concrete		Spacing factor in tension f_{AN}				Edge distance factor in tension f_{RN}				Spacing factor in shear [4] f_{AV}				Edge distance in shear ⊥ Toward edge f_{RV}				Edge distance in shear ∥ To edge f_{RV}				Concrete thickness factor in shear [5] f_{HV}			
Embedment in h_{ef} (mm)		2-3/4 (70)	4-1/2 (114)	6 (152)	10 (254)	2-3/4 (70)	4-1/2 (114)	6 (152)	10 (254)	2-3/4 (70)	4-1/2 (114)	6 (152)	10 (254)	2-3/4 (70)	4-1/2 (114)	6 (152)	10 (254)	2-3/4 (70)	4-1/2 (114)	6 (152)	10 (254)	2-3/4 (70)	4-1/2 (114)	6 (152)	10 (254)
Spacing (s) / edge distance (ca) / concrete thickness (h), - in (mm)	1-3/4 (44)	n/a	n/a	n/a	n/a	0.40	0.27	0.20	0.12	n/a	n/a	n/a	n/a	0.11	0.07	0.05	0.03	0.22	0.14	0.11	0.06	n/a	n/a	n/a	n/a
	2-1/2 (64)	0.61	0.59	0.57	0.54	0.48	0.32	0.23	0.14	0.55	0.54	0.53	0.52	0.19	0.12	0.09	0.06	0.37	0.25	0.18	0.11	n/a	n/a	n/a	n/a
	3 (76)	0.64	0.61	0.58	0.55	0.54	0.35	0.26	0.15	0.57	0.55	0.54	0.53	0.25	0.16	0.12	0.07	0.49	0.32	0.24	0.15	n/a	n/a	n/a	n/a
	4 (102)	0.68	0.65	0.61	0.57	0.66	0.41	0.30	0.18	0.59	0.57	0.55	0.54	0.38	0.25	0.19	0.11	0.66	0.41	0.30	0.18	0.59	n/a	n/a	n/a
	5 (127)	0.73	0.69	0.64	0.58	0.82	0.48	0.36	0.21	0.61	0.59	0.57	0.55	0.53	0.35	0.26	0.16	0.82	0.48	0.36	0.21	0.66	n/a	n/a	n/a
	6 (152)	0.77	0.72	0.67	0.60	0.98	0.57	0.42	0.24	0.63	0.60	0.58	0.56	0.70	0.46	0.34	0.21	0.98	0.57	0.42	0.24	0.72	0.63	n/a	n/a
	7 (178)	0.82	0.76	0.69	0.62	1.00	0.66	0.49	0.28	0.65	0.62	0.60	0.57	0.89	0.58	0.43	0.26	1.00	0.66	0.49	0.28	0.78	0.68	n/a	n/a
	8 (203)	0.86	0.80	0.72	0.63		0.76	0.56	0.32	0.67	0.63	0.61	0.58	1.00	0.71	0.53	0.32		0.76	0.56	0.32	0.84	0.73	0.66	n/a
	10 (254)	0.95	0.87	0.78	0.67		0.95	0.69	0.41	0.72	0.67	0.64	0.60		0.99	0.74	0.44		0.95	0.69	0.41	0.93	0.81	0.74	n/a
	11-1/4(286)	1.00	0.92	0.81	0.69		1.00	0.78	0.46	0.75	0.69	0.65	0.61		1.00	0.88	0.53		1.00	0.78	0.46	0.99	0.86	0.78	0.661
	12 (305)		0.94	0.83	0.70			0.83	0.49	0.76	0.70	0.66	0.62			0.97	0.58			0.83	0.49	1.00	0.89	0.81	0.682
	14 (356)		1.00	0.89	0.73			0.97	0.57	0.81	0.73	0.69	0.64			1.00	0.74			0.97	0.57		0.96	0.87	0.737
	16 (406)			0.94	0.77			1.00	0.65	0.85	0.76	0.72	0.66				0.90			1.00	0.65		1.00	0.93	0.788
	18 (457)			1.00	0.80				0.73	0.89	0.80	0.75	0.67				1.00				0.73			0.99	0.836
	20 (508)				0.83				0.81	0.94	0.83	0.77	0.69								0.81			1.00	0.881
	22 (559)				0.87				0.89	0.98	0.86	0.80	0.71								0.89				0.924
	24 (610)				0.90				0.97	1.00	0.90	0.83	0.73								0.97				0.965
	30 (762)				1.00				1.00		1.00	0.91	0.79								1.00				1.000
	36 (914)											0.99	0.85												
	> 48 (1219)											1.00	0.97												

[1] Linear interpolation not permitted
[2] Shaded area with reduced edge distance is permitted provided the installation torque is reduced to 0.30 T_{inst} for $5d < s < 16$-in. and to 0.5 T_{inst} for $s > 16$-in.
[3] When combining multiple load adjustment factors (e.g. for a four-anchor pattern in a corner with thin concrete member) the design can become very conservative. To optimize the design, perform anchor calculation using design equations from ACI 318 Chapter 17.
[4] Spacing factor reduction in shear applicable when $c < 3^1h_{ef}$. f_{AV} is applicable when edge distance, $c < 3^1h_{ef}$. If $c \geq 3^1h_{ef}$, then $f_{AV} = f_{AN}$.
[5] Concrete thickness reduction factor in shear, f_{HV}, is applicable when edge distance, $c < 3^1h_{ef}$. If $c \geq 3^1h_{ef}$, then $f_{HV} = 1.0$.

INSTALLATION INSTRUCTIONS

Installation Instructions For Use (IFU) are included with each product package. They can also be viewed or downloaded online at www.hilti.com (US) and www.hilti.ca (Canada). Because of the possibility of changes, always verify that downloaded IFU are current when used. Proper installation is critical to achieve full performance. Training is available on request. Contact Hilti Technical Services for applications and conditions not addressed in the IFU.

Figure 6 – HIT-RE 10 adhesive cure and working time (approx.)



[°F]	[°C]	t_{work}	$t_{cure,ld}$	$t_{cure,full}$
41 . . . 50	5 . . . 10	5 h	30 h	72 h
>50 . . . 68	>10 . . . 15	2.5 h	20 h	48 h
>59 . . . 68	>15 . . . 20	2 h	15 h	36 h
>68 . . . 86	>20 . . . 30	60 min	10 h	24 h
>86 . . . 104	>30 . . . 40	30 min	5 h	12 h

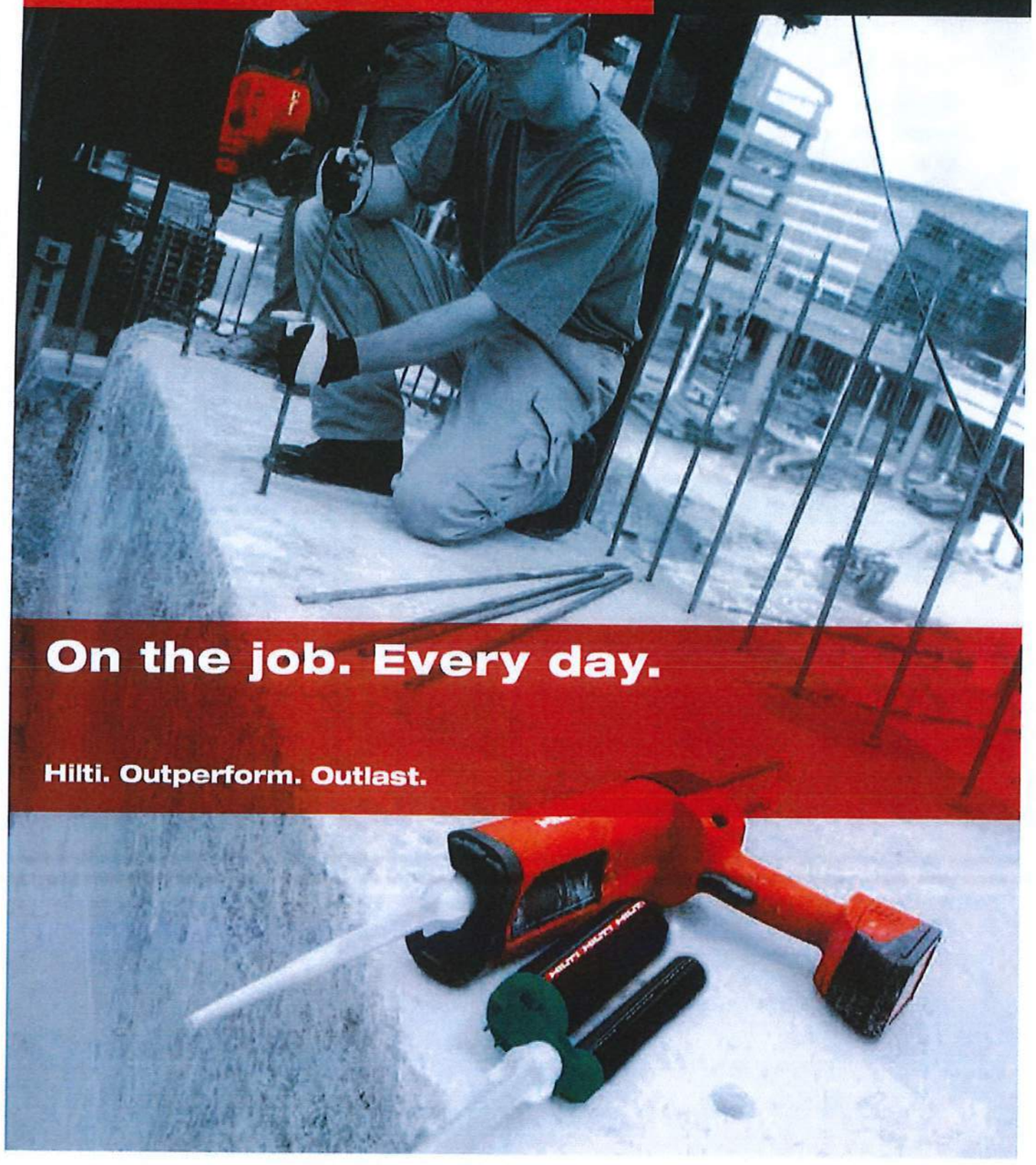
= 2x t_{cure}

ORDERING INFORMATION

Description	Package contents
HIT-RE 10 (19.6 fl. oz./580 ml)	Includes (1) cartridge with (1) mixer and filler tube
HIT-RE 10 (19.6 fl. oz./580 ml) MC	Includes (1) Master Carton with (12) cartridges with mixers and filler tube
HIT-RE 10 (19.6 fl. oz./580 ml) 18MC	Includes (18) Master Cartons with (12) cartridges each and mixers and filler tube
HIT-RE 10 (19.6 fl. oz./580 ml) (9MC) + HDM 500	Includes (9) master cartons with (12) cartridges each with (1) mixer and filler tube and (1) HDM 500 Manual dispenser
HIT-RE 10 (19.6 fl. oz./580 ml) (18MC) + HDM 500	Includes (18) master cartons with (12) cartridges each with mixers and filler tube and (1) HDM 500 Manual dispenser
HIT-RE 10 (19.6 fl. oz./580 ml) (18MC) + HDE 500	Includes (18) master cartons with (12) cartridges each with mixers and filler tube and (1) HDM 500 Battery dispenser

HILTI

HIT-HY 10 PLUS
Adhesive Anchor



On the job. Every day.

Hilti. Outperform. Outlast.

An economical solution for multiple base materials.

HIT-HY 10 PLUS Adhesive Anchoring System

Hilti has you covered with the latest addition to the anchoring portfolio: The new Hilti HIT-HY 10 PLUS Adhesive Anchor System. This new adhesive can be used in a variety of base materials including concrete, grouted CMU, hollow brick and CMU*. HIT-HY 10 PLUS is an economical solution when an ICC Evaluation Report is not required and the versatility makes it great for many jobsite conditions. It is a high-value, everyday adhesive that is easy to dispense with the same dispensers as the rest of the Hilti adhesive portfolio (MD 2500 manual dispenser and ED 3500-A battery dispenser).

Applications

- Slab extension through doweling
- Sign, fence or awning attachment to masonry or concrete
- Scaffolding, pipe or fixture attachment to masonry or concrete
- Small hole filling where anchors have been removed

Outperform and Outlast

- Works in a variety of base materials acting as a universal anchor adhesive
- Cures in approximately 45 minutes at 70°F providing quick installation times to finish the job earlier
- Achieve various embedment depths by combining mesh sleeves to customize lengths in hollow base materials
- Rebar and threaded rod tested in a wide variety of depths and diameter sizes to solve the application needs on a jobsite

Technical Data	HIT-HY 10 PLUS
Product	Hybrid Urethane Methacrylate
Base material temperature	32° F to 104° F (0° C to 40° C)
Diameter range	3/8" to 3/4"

Package volume
- Volume of HIT-HY 10 PLUS 11.1 fl oz/330 ml foil pack is 20.1 in³
- Volume of HIT-HY 10 PLUS 16.9 fl oz/500 ml foil pack is 30.5 in³

Order Information

Description	Package Contents	Qty of Foil Packs	Item No.
HIT-HY 10 PLUS (11.1 fl oz/330 ml)	Includes 1 foil pack with 1 mixer and 3/8" filler tube per pack	1	00422710
HIT-HY 10 PLUS (16.9 fl oz/330 ml)	Includes 20 foil packs with 1 mixer and 3/8" filler tube per pack	20	00422711

Composite Mesh Sleeves for Hollow Masonry and Brick Material

Description	For use with:	Qty	Item No.
Mesh Sleeve HIT-SC 12x50	1/4" dia. rods	20	00375979
Mesh Sleeve HIT-SC 12x85	1/4" dia. rods	20	00375980
Mesh Sleeve HIT-SC 16x50	5/16", 3/8" dia. rods and 5/16" HIT-IC rods	20	00375981
Mesh Sleeve HIT-SC 16x85	5/16", 3/8" dia. rods and 5/16" HIT-IC rods	20	00375982
Mesh Sleeve HIT-SC 18x50	1/2" dia. rods	20	00360485
Mesh Sleeve HIT-SC 18x85	1/2" dia. rods	20	00360486

*For hollow brick and CMU, composite sleeves are required. See catalog for full ordering information.

HIT-HY 10 PLUS Adhesive Anchor System

1.1 Product Description

Hilti HIT-HY 10 PLUS is a new hybrid adhesive mortar combining resin, hardener, cement and water. It's formulated for fast curing and easy installation in a wide range of solid and hollow concrete and masonry base material with temperatures during installation from 32°F (0°C) up to 104°F (40°C). HIT-HY 10 PLUS is styrene free and virtually odorless.

HIT-HY 10 PLUS Adhesive Anchor System is easy to use in a wide variety of applications. The system consists of a side-by-side self opening adhesive cartridge which fits all Hilti MD and ED dispensers, a mixing nozzle which comes with every cartridge, and either a threaded rod or rebar (purchased separately).

HIT-HY 10 PLUS is designed for fastenings into solid base materials, such as concrete, and is also suitable for fastening into base materials containing voids and holes such as hollow block and clay brick with holes when used with a screen tube.

Features	Benefits
For virtually all base materials	Good performance from one product for many applications
Reusable	Open cartridges may be stored for up to 20 days by leaving the mixer attached
Easy to use	Low dispensing forces
Suitable for dry and saturated base materials	Application versatility
Suitable for in-service temperatures up to 122°F (long term) and 176°F (short term)	Flexibility for use in demanding environments

1.2 Material Specifications

Material Specifications	Mechanical Properties			
	f_y ksi (MPa)		min. f_u ksi (MPa)	
Standard threaded rod, ASTM A 36, 9SMNPB36K and/or 9SMN36K conforming to DIN 1651.	36	(248)	58	(400)
HAS-E Rod material meets the requirements of ISO 898 Class 5.8	58	(400)	72.5	(500)
HAS-H Rod material meet the requirements of ASTM A 193 Grade B7	105	(724)	125	(862)
Stainless HAS rod material meets the requirements of ASTM F 593 (AISI 304) Condition CW 3/8"-5/8"	65	(448)	100	(689)
Stainless HAS rod material meets the requirements of ASTM F 593 (AISI 304) Condition CW 3/4"	45	(310)	85	(586)
HAS-E Standard Nut Material meets the requirements of SAE J995 Grade 5				
HAS Stainless Steel Nut material meets the requirements of ASTM F 594				
HAS-E Carbon Steel and Stainless Steel Washers meet dimensional requirements of ANSI B18.22.1 Type A Plain				
HAS Stainless Steel Washers meet the requirements of AISI 304 or AISI 316 conforming to ASTM A 240				
HAS-E Standard Washers meet the requirements of ASTM F 884, HV				
All HAS-H and HAS-E rods, nuts & washers are zinc plated to ASTM B 633 SC 1				

1.3 Technical Data

HIT-HY 10 PLUS Allowable Bond/Concrete Capacity and Steel Strength for HAS / Threaded Rods in Normal Weight Concrete [1,2,3,4]

Anchor Diameter in. (mm)	Enbedment Depth in. (mm)	HIT-HY 10 PLUS Allowable Bond/Concrete Capacity $f'_c \geq 2500$ psi (≥17 MPa)		Allowable Bolt Strength[4]			
				HAS-E Standard Carbon Steel		HAS-SS AISI (304/316) Stainless Steel	
		Tensile lb (kN)	Shear lb (kN)	Tensile lb (kN)	Shear lb (kN)	Tensile lb (kN)	Shear lb (kN)
3/8 (9.5)	2-1/4 (57)	750 (3.3)	1325 (5.9)	2640 (11.7)	1360 (6.0)	3645 (16.2)	1880 (8.4)
	3-3/8 (86)	1985 (8.8)	3135 (13.9)				
	4-1/2 (114)	2140 (9.5)	4820 (21.4)				
1/2 (12.7)	3 (76)	1405 (6.2)	2730 (12.1)	4700 (20.9)	2420 (10.8)	6480 (28.8)	3340 (14.9)
	4-1/2 (114)	3530 (15.7)	5570 (24.8)				
	6 (152)	4295 (19.1)	8575 (38.1)				
5/8 (15.9)	3-3/4 (95)	1925 (8.6)	4065 (18.1)	7340 (32.6)	3780 (16.8)	10125 (45.0)	5215 (23.2)
	5-5/8 (143)	4290 (19.1)	8580 (38.2)				
	7-1/2 (191)	5715 (25.4)	11430 (50.8)				
3/4 (19.1)	4-1/2 (114)	2740 (12.2)	6065 (27.0)	10570 (47.0)	5445 (24.2)	12390 (55.1)	6385 (28.4)
	7-1/2 (191)	5880 (26.2)	11760 (52.3)				
	9 (229)	7055 (31.4)	14110 (62.8)				

1 Concrete/bond values above to be compared to the steel value. The lesser of the values is to be used for the design.
2 Allowable concrete tension and shear capacity based on the Strength Design method.
3 All values based on holes drilled with the specified carbide bit.
4 Steel strength as defined in AISC Manual of Steel Construction (ASD):
Tensile - 0.33 x F_u x Nominal Area
Shear - 0.17 x F_u x Nominal Area

HIT-HY 10 PLUS Anchor Spacing and Edge Distance Guideliness for Normal Weight Concrete [1]

Spacing	Edge Distance
Tension and Shear	Tension and Shear
$s_{min} = 3.0\ h_{ef}$	$c_{min} = 2.0\ h_{ef}$

1 Minimum anchor spacing and edge distance necessary to have no reduction in anchor capacity, where h_{ef} is the effective embedment of the anchor.

TIGERSUPPLIES

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AdirPro 791-02 2" Flat Brass Survey Marker

ADIRpro AUTHORIZED DEALER

By AdirPro | MFR#: 791-02 | TIGER#: TS68362

1 Review Write a Review Ask a Question

12 +

Highlights

- Stem length of 2"
- Head thickness: 1/8"
- Ribbed shank to prevent loosening
- Shank area: 0.4 sq. in
- Non-glare finish for easy visibility
- Allows hand stamping in the field
- Solid brass construction

More Product Details What's Included

Propose Survey Marker

List Price: ~~$47.95~~

$7.26

You Save: $10.69 - 60%

Select Head Diameter & Style

- ○ 1-3/8" Flat
- ○ 2" Domed
- ◉ 2" Flat
- ○ 2" Flat (6-Pack)
- ○ 3" Flat (DISCONTINUED)
- ○ 3" Flat (6-Pack) (DISCONTINUED)

1 Add to cart

IN STOCK
Free Shipping (USA)
Ships Out Within: 24 - 48 Hours
Shipping Date By: 11/10/2021

⚠ **California Proposition 65 Warning.** This product can expose you to chemicals including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Overview Features In The Box Specifications Warranty/Return Customer Reviews

Overview for the 791-02 2" Flat Brass Survey Marker

The AdirPro Brass Survey Marker is a durable marker that can be installed in freshly poured concrete or inserted into a drilled hole to be held in by epoxy. Made of solid brass material, it is tough and long-lasting. Its non-glare, yellow gold finish ensures easy visibility making it ideal for construction and surveying applications.

This survey marker by AdirPro features a flat or domed head with 1/8-inch thickness. It is available in 1-3/8-inch, two-inch, or three-inch head diameter and is equipped with a two inches long stem. It has a shank area of 0.4 square inches. To prevent unnecessary turning or loosening, it features a ribbed shank.

The AdirPro Brass Survey Marker can be hand-stamped in the field. It also includes a one-year manufacturer's warranty for guaranteed reliable service.

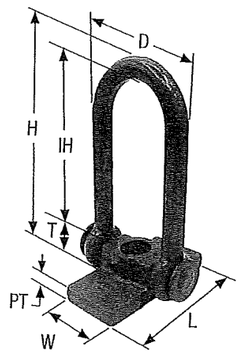
Configuration Options

The AdirPro Brass Survey Marker comes in three head sizes and two style options to suit most surveying and construction needs. Please select your preference from the menu above.

- **791-01: 1-3/8" Flat Head**
- **791-04: 2" Domed Head**
- **791-02: 2" Flat Head**
- **791-02-6: 2" Flat Head (6-Pack)**
- **791-03: 3" Flat Head**
- **791-03-6: 3" Flat Head (6-Pack)**

4.7 ★★★★★
Google
Customer Reviews

CL-12 SINGLE SWIVEL LIFT PLATE

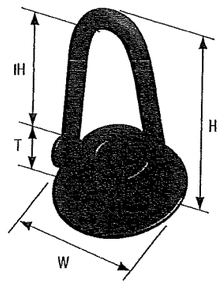


Manufactured from forged steel and designed for use with single lifting inserts for either face lifting or edge lifting applications. The SWL is achieved provided that it has full bearing on smooth, flat concrete, and a washer installed underneath the bolt head. Note that this Swivel Lifting Plate is designed for use only with 3/4" or 1" bolt diameters.

SINGLE SWIVEL LIFT PLATE DIMENSIONS AND LOAD CHART

Part Number	Bolt Diameter	H Overall Height	IH Inside Height	L Length	W Width	D	T Thickness	PT - Plate Thickness	Minimum Bolt Length	5:1 SWL (lbs)	Weight (lbs)
CL1234	3/4"	8-1/8"	5-7/8"	5"	2-1/2"	4-1/4"	1-1/2"	9/16"	4"	11,000	5.68
CL1201	1"	8-1/8"	5-7/8"	5"	2-1/2"	4-1/4"	1-1/2"	9/16"	5"	11,000	5.53

CL-26 DOUBLE SWIVEL LIFT PLATE



Lifting Plate will permit rotation of the ball in the direction of the applied load. The bail portion will rotate a full 360° in a horizontal plane and will swivel 180° in a vertical place. Designed for use only with 1", 1-1/4" and 1-1/2" coil bolts.

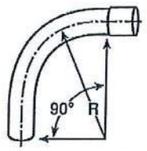
DOUBLE SWIVEL LIFT PLATE DIMENSIONS AND LOAD CHART

Part Number	Bolt Diameter	H Overall Height	IH Inside Height	W Width	T Thickness	5:1 SWL (lbs)	Weight (lbs)
CL261	1"	8-1/2"	5-1/2"	5"	1-29/32"	10,000	8.63
CL26114	1-1/4"	9"	5-1/2"	7"	2-3/8"	15,000	16.94
CL26112	1-1/2"	9"	5-1/2"	7"	2-3-8"	15,000*	16.79

* Higher capacity swivel lift plate available upon request.

Prime Conduit, Inc.

Schedule 40 PVC Elbows – 90° Special Radius



Part Number	Trade Size	Type	Radius"B"	EACH UPC
UA9CF	1"	PLAIN END	18"	670648067101
UA9CFB	1"	BELL END	18"	670648227239
UA9DF	1"	PLAIN END	24"	670648067415
UA9DFB	1"	BELL END	24"	670648227314
UA9EF	1"	PLAIN END	30"	670648067255
UA9EFB	1"	BELL END	30"	670648079470
UA9FF	1"	PLAIN END	36"	670648067323
UA9HF	1"	PLAIN END	48"	670648067453
UA9CG	1-1/4"	PLAIN END	18"	670648227253
UA9CGB	1-1/4"	BELL END	18"	670648196504
UA9DG	1-1/4"	PLAIN END	24"	670648068061
UA9DGB	1-1/4"	BELL END	24"	670648196559
UA9EG	1-1/4"	PLAIN END	30"	670648067309
UA9EGB	1-1/4"	BELL END	30"	670648055009
UA9FG	1-1/4"	PLAIN END	36"	670648067507
UA9FGB	1-1/4"	BELL END	36"	670648196702
UA9HG	1-1/4"	PLAIN END	48"	670648067460
UA9BHB	1-1/2"	BELL END	12"	670648967296
UA9CH	1-1/2"	PLAIN END	18"	670648067125
UA9CHB	1-1/2"	BELL END	18"	670648196511
UA9DH	1-1/2"	PLAIN END	24"	670648067118
UA9DHB	1-1/2"	BELL END	24"	670648196566
UA9EH	1-1/2"	PLAIN END	30"	670648067316
UA9EHB	1-1/2"	BELL END	30"	670648055184
UA9FH	1-1/2"	PLAIN END	36"	670648068139
UA9FHB	1-1/2"	BELL END	36"	670648196719
UA9HH	1-1/2"	PLAIN END	48"	670648067477
UA9CJ	2"	PLAIN END	18"	670648067408
UA9CJB	2"	BELL END	18"	670648196528
UA9DJ	2"	PLAIN END	24"	670648967166
UA9DJB	2"	BELL END	24"	670648196573
UA9EJ	2"	PLAIN END	30"	670648067170
UA9EJB	2"	BELL END	30"	670648196641
UA9FJ	2"	PLAIN END	36"	670648067187
UA9FJB	2"	BELL END	36"	670648196726
UA9HJ	2"	PLAIN END	48"	670648067194
UA9HJB	2"	BELL END	48"	670648196818
UA9JJ	2"	PLAIN END	72"	670648227741
UA9CK	2-1/2"	PLAIN END	18"	670648067149
UA9CKB	2-1/2"	BELL END	18"	670648196535
UA9DK	2-1/2"	PLAIN END	24"	670648167214
UA9DKB	2-1/2"	BELL END	24"	670648196580
UA9EK	2-1/2"	PLAIN END	30"	670648067224
UA9EKB	2-1/2"	BELL END	30"	670648196658
UA9FK	2-1/2"	PLAIN END	36"	670648067231
UA9FKB	2-1/2"	BELL END	36"	670648196733
UA9HK	2-1/2"	PLAIN END	48"	670648067248
UA9HKB	2-1/2"	BELL END	48"	670648196825
UA9CL	3"	PLAIN END	18"	670648067156
UA9CLB	3"	BELL END	18"	670648196542
UA9DL	3"	PLAIN END	24"	670648227383
UA9DLB	3"	BELL END	24"	670648196597
UA9EL	3"	PLAIN END	30"	670648227420
UA9ELB	3"	BELL END	30"	670648196665
UA9FL	3"	PLAIN END	36"	670648067286

Part Number	Trade Size	Type	Radius"B"	EACH UPC
UA9FLB	3"	BELL END	36"	670648196740
UA9HL	3"	PLAIN END	48"	670648067293
UA9HLB	3"	BELL END	48"	670648196832
UA9IL	3"	PLAIN END	60"	670648183269
UA9DM	3-1/2"	PLAIN END	24"	670648067200
UA9DMB	3-1/2"	BELL END	24"	670648196603
UA9EM	3-1/2"	PLAIN END	30"	670648067354
UA9EMB	3-1/2"	BELL END	30"	670648055191
UA9FM	3-1/2"	PLAIN END	36"	670648067330
UA9FMB	3-1/2"	BELL END	36"	670648196757
UA9HM	3-1/2"	PLAIN END	48"	670648067347
UA9HMB	3-1/2"	BELL END	48"	670648196849
UA9CNB	4"	BELL END	18"	670648186970
UA9DN	4"	PLAIN END	24"	670648067361
UA9DNB	4"	BELL END	24"	670648196610
UA9EN	4"	PLAIN END	30"	670648067378
UA9ENB	4"	BELL END	30"	670648196689
UA9FN	4"	PLAIN END	36"	670648067385
UA9FNB	4"	BELL END	36"	670648196764
UA9HN	4"	PLAIN END	48"	670648067392
UA9HNB	4"	BELL END	48"	670648196856
UA9IN	4"	PLAIN END	60"	670648227666
UA9INB	4"	BELL END	60"	670648227673
UA9JN	4"	PLAIN END	72"	670648227789
UA9MN	4"	PLAIN END	108"	670648967319
UA9RN	4"	PLAIN END	144"	670648142761
UA9SNB	4"	BELL END	150"	670648967333
UA9VN	4"	PLAIN END	300"	670648142778
UA9EP	5"	PLAIN END	30"	670648067422
UA9EPB	5"	BELL END	30"	670648196696
UA9FP	5"	PLAIN END	36"	670648067439
UA9FPB	5"	BELL END	36"	670648196771
UA9HP	5"	PLAIN END	48"	670648067446
UA9HPB	5"	BELL END	48"	670648196863
UA9IP	5"	PLAIN END	60"	670648227680
UA9IPB	5"	BELL END	60"	670648227697
UA9JP	5"	PLAIN END	72"	670648142754
UA9TP	5"	PLAIN END	180"	670648193817
UA9VP	5"	PLAIN END	300"	670648142785
UA9FR	6"	PLAIN END	36"	670648067484
UA9FRB	6"	BELL END	36"	670648196788
UA9HR	6"	PLAIN END	48"	670648067491
UA9HRB	6"	BELL END	48"	670648196870
UA9IR	6"	PLAIN END	60"	670648227703
UA9IRB	6"	BELL END	60"	670648227710
UA9JRB	6"	BELL END	72"	670648145199
UA9LRB	6"	BELL END	96"	670648967302
UA9MR	6"	PLAIN END	108"	670648967326
UA9RRB	6"	BELL END	144"	670648356236
UA9SR	6"	PLAIN END	150"	670648126334
UA9TRB	6"	BELL END	180"	670648120134
UA9VR	6"	PLAIN END	300"	670648967340

Carton Quantity = 1