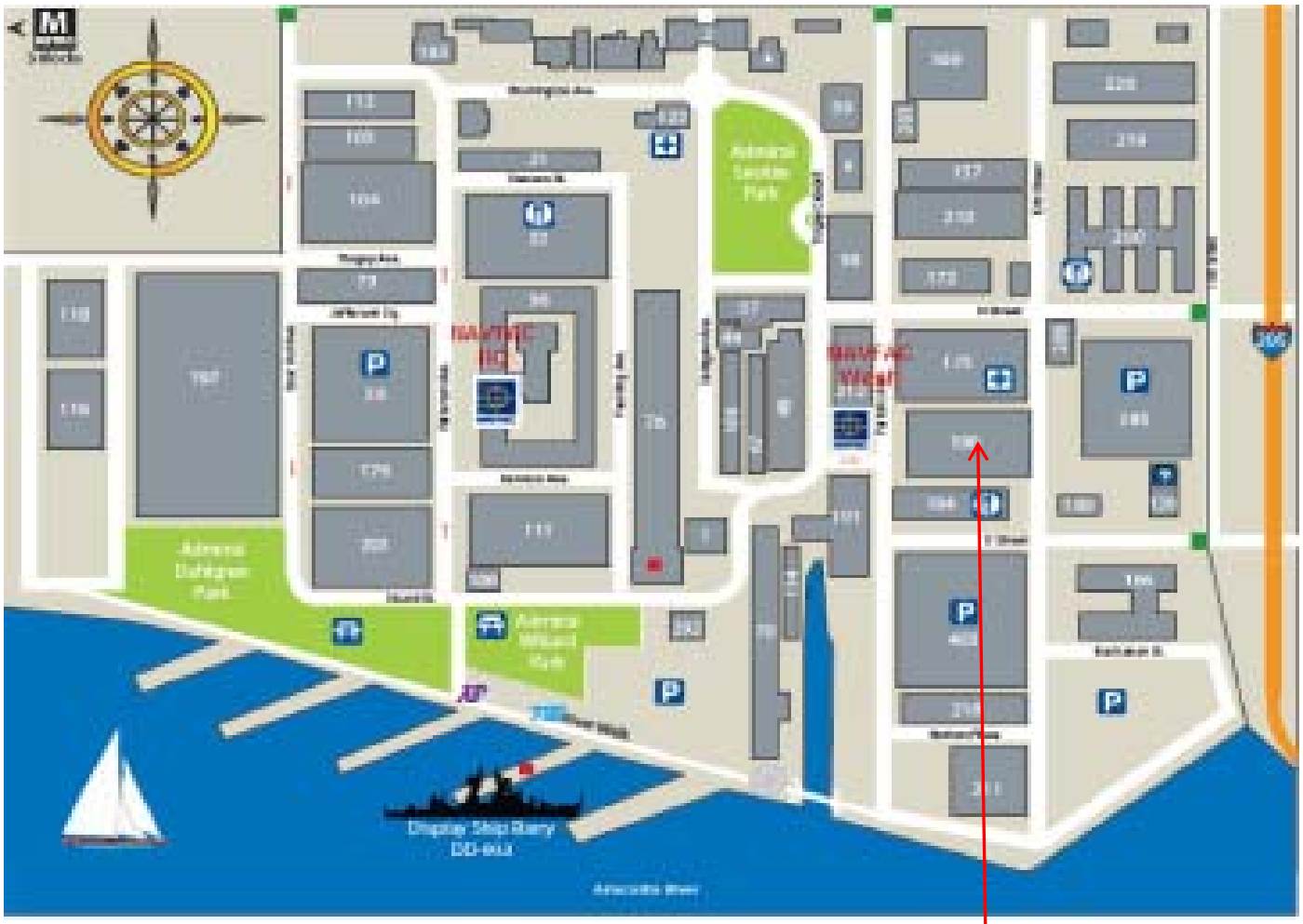
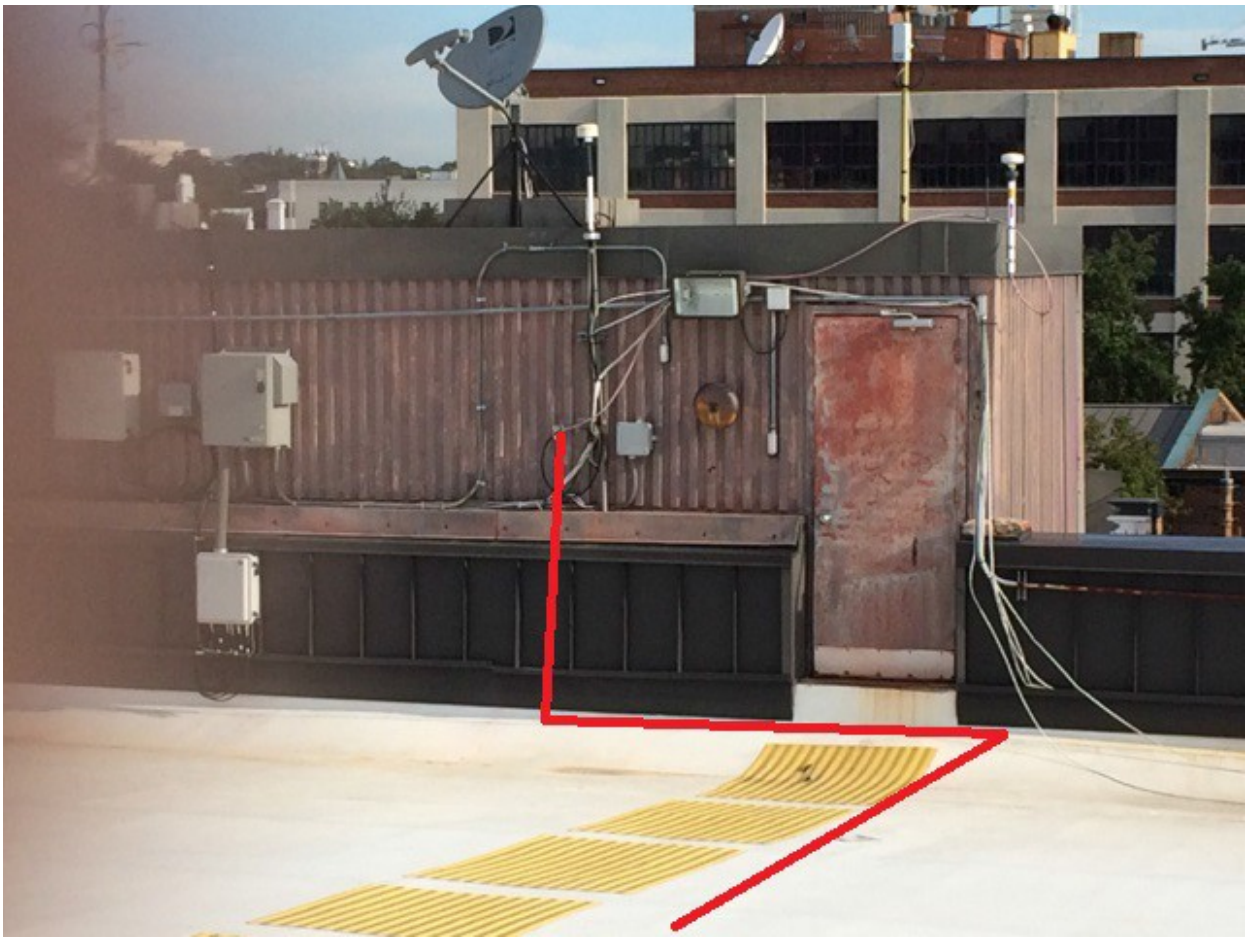


Building 196



Looking east, red line indicates conduit route.

Satellite location – Option 1

Satellite location – option 2

Proposed antenna and mount type

Bldg 196 from 10th Street

Looking up from 10th Street

From 10th Street

GENERAL DYNAMICS
SATCOM Technologies

4096-349
March 27, 2012
REVISION J

ASSEMBLY MANUAL

6-1/2 FT. x 6-1/2 FT. NON-PENETRATING MAST MOUNT

General Dynamics
SATCOM Technologies
1500 PRODELIN DRIVE
NEWTON, NC 28658

6-1/2' x 6-1/2' NPMM
INSTALLATION INSTRUCTIONS

REV.	DESCRIPTION	DATE	APPROVED
J	Revised tool list, added metric dims (figure 2).	03/27/12	R.F.
I	Revised Company Name, Logo, and Part Tables	7/14/09	RAH
H	Revise Angles to 0225-693,695, & 696	7/12/05	RAH
G	Del 0225-543 add 0225-694	5/9/05	A.Hahn
F	Revised Address	4/8/02	A. Hahn
E	Added Metric Tables	9/26/97	PGW
D	Updated	5-31-97	PGW
C	Revised rubber pads & figures	8-23-96	R Frye
B	Revised Hardware size (item 9 Pg. 6)	07-17-95	R Frye
A	Revised qty & placement of rubber pads per ECN #1678	08/24/94	R Frye
-	ORIGINAL RELEASE	03/09/94	R FRYE

ASSEMBLY MANUAL

NON-PENETRATING MAST MOUNT

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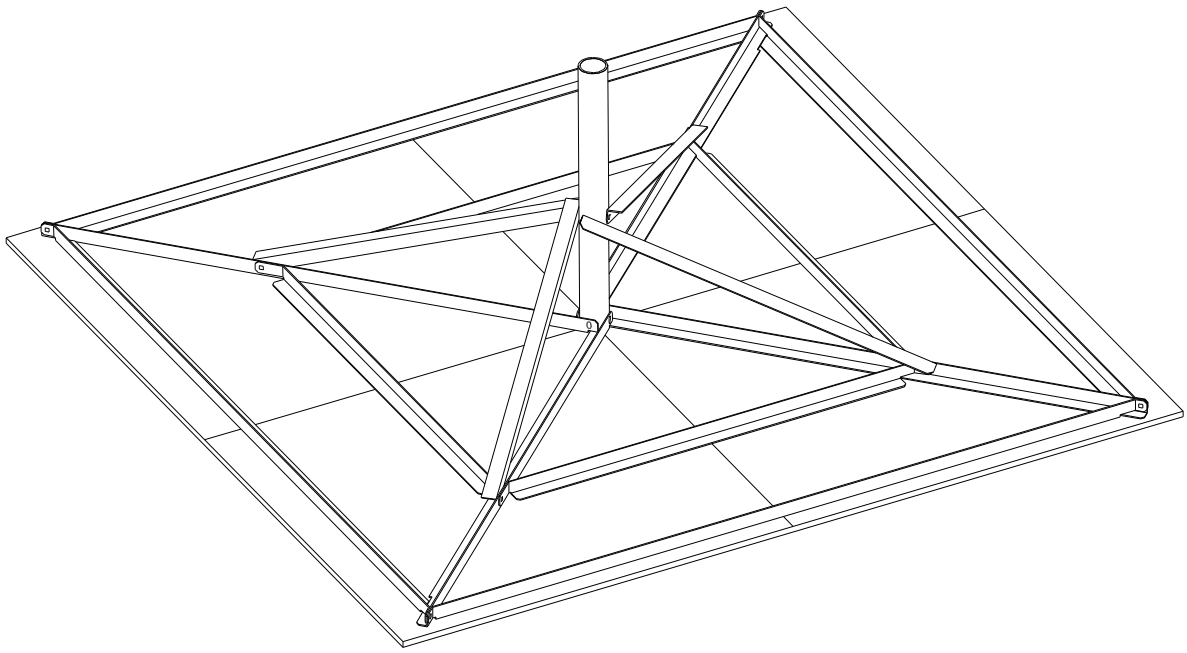


Figure 1

SECTION I

1.0 GENERAL INFORMATION

1. Prior to installation, verify that the installation site roof material and supporting structure have been investigated and found capable of withstanding all loads imposed by the proposed antenna system. Confirm that the supporting surfaces, anchors, and/or safety cables, if required, have been found to be adequate to resist the reactions from the antenna system and that the installation will be in accordance with all applicable local, state, and federal requirements.

2. All antenna installations should be grounded to meet all applicable codes.

3. Rubber pads are provided to protect the roof surface.

4. All necessary hardware is provided.

5. For assistance in determining ballast requirements refer to chart in section 3.

6. All metal parts are of galvanized construction to help prevent corrosion.

1.1 UNPACKING & INSPECTION

1. UNPACKING & INSPECTING
   The mount should be unpacked and inspected at the earliest date to ensure that all material has been received and is in good condition. A complete packing list for each major component is supplied.

2. FREIGHT DAMAGE
   Any damage to materials while in transit should be immediately directed to the freight carrier. He will instruct you on the matters regarding any freight damage claims.

3. MATERIAL - MISSING OR DAMAGED
   Any questions regarding missing or damaged materials that is not due to freight carrier should be directed to General Dynamics' Customer Service Department at:

General Dynamics SATCOM Technologies
1500 Prodelin Drive
Newton, NC 28658
USA

(828) 464-4141

1.2 SUGGESTED TOOL LIST

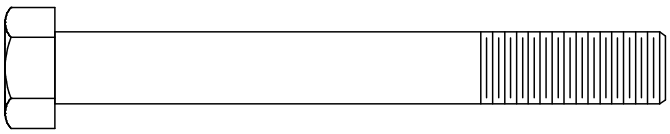
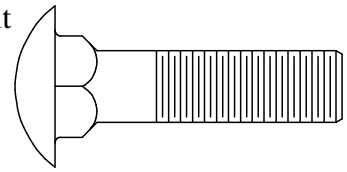
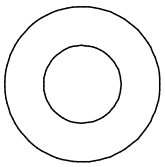
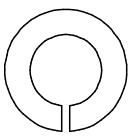
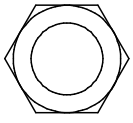
1. SITE PREPARATION TOOLS
   The following tools are suggested for site preparation.

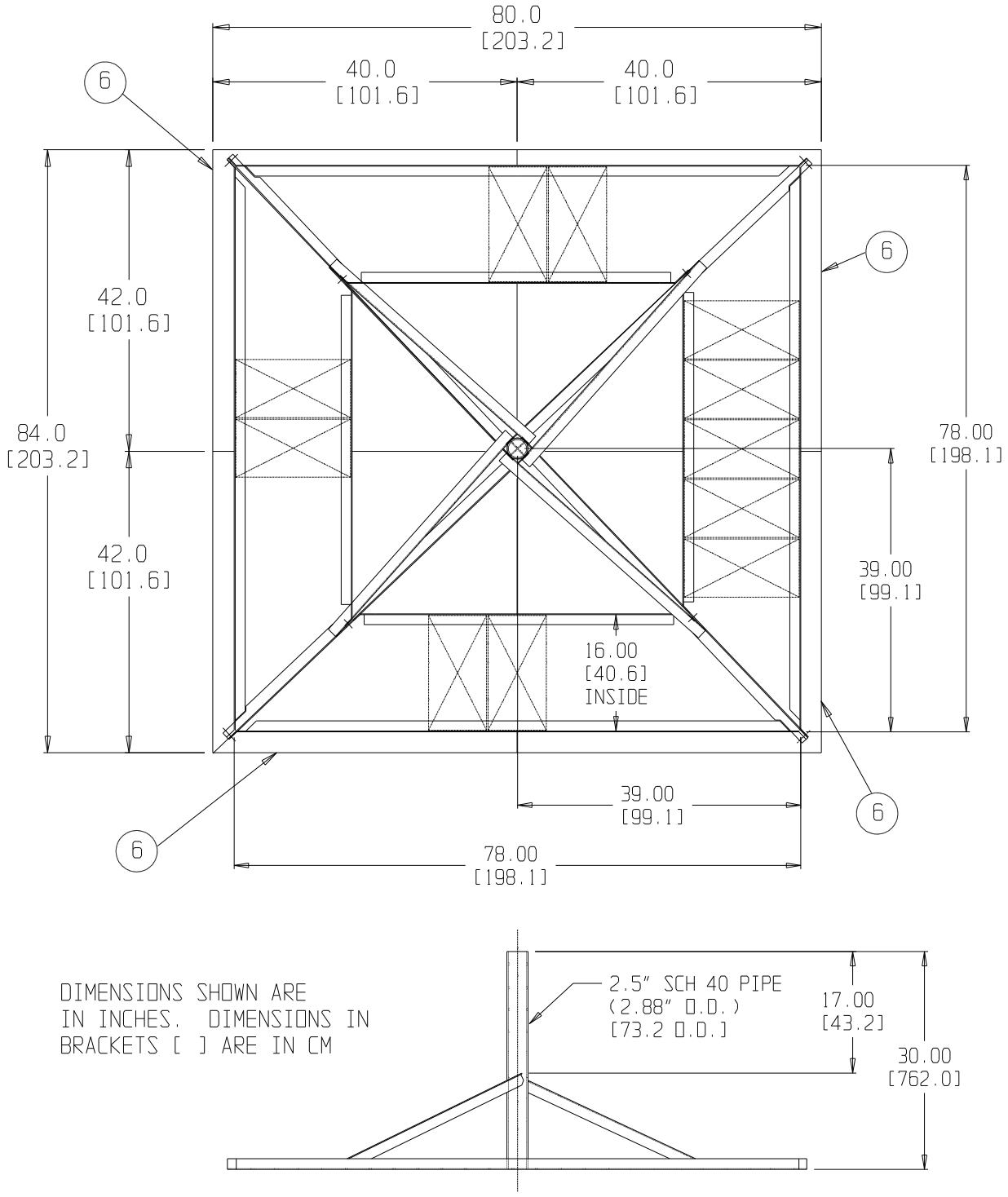
   1. Shovel (for ground installation)
   2. Broom

2. SUGGESTED TOOL LIST
   The following tools are suggested for the NPMM installation.

   1. Ratchet
   2. Deep Well Socket, 9/16"
   3. Wrench, combination 9/16"
   4. Tape measure

1.3 PARTS LIST

PARTS LIST - 6 ½' x 6 ½' NPMM			
ITEM NO.	**PART NO.**	**DESCRIPTION**	**QTY**
1	0184-179	Mast Pipe	1
2	0225-693	Outer Base Angle	4
3	0225-695	Inner Base Angle	4
4	0225-696	Diagonal Base Angle	4
5	0225-694	Mast Brace Angle	4
6	5003-036	0.45" x 27"x 42" Pad	6
7	8032-032	3 / 8" x 4.00" Bolt	2
8	8032-036	3 / 8" x 4.50" Bolt 	2
9	8039-012	3 / 8" x 1.50" Carriage Bolt 	8
10	8201-042	3 / 8" Flat Washer 	16
11	8202-042	3 / 8" Lock Washer 	12
12	8102-007	3 / 8" Hex Nut 	12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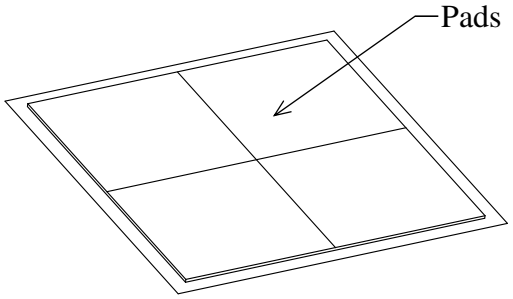
[198.1]
39.00
[99.1]
16.00
[40.6]
INSIDE
39.00
[99.1]
78.00
[198.1]
DIMENSIONS SHOWN ARE
IN INCHES. DIMENSIONS IN
BRACKETS [ ] ARE IN CM
2.5" SCH 40 PIPE
(2.88" O.D.)
[73.2 O.D.]
17.00
[43.2]
30.00
[762.0]

Figure 2

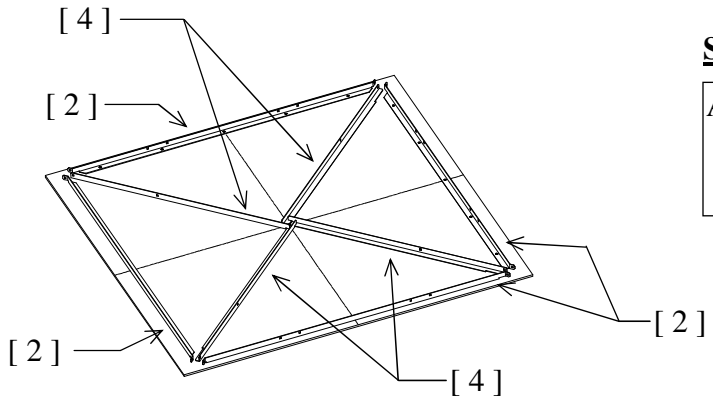
SECTION II ASSEMBLY INSTRUCTIONS



STEP 1:

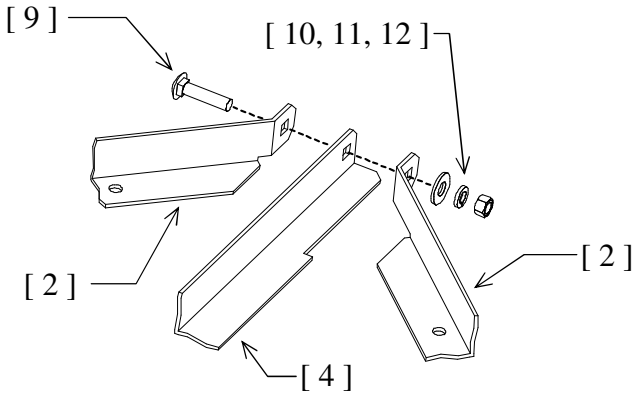
A). Locate site of installation and clear an area of 7 x 7 square feet of all debris.

B). Place rubber pads (item 6) within the cleared area to form a square.
(See Figure 2)



STEP 2:

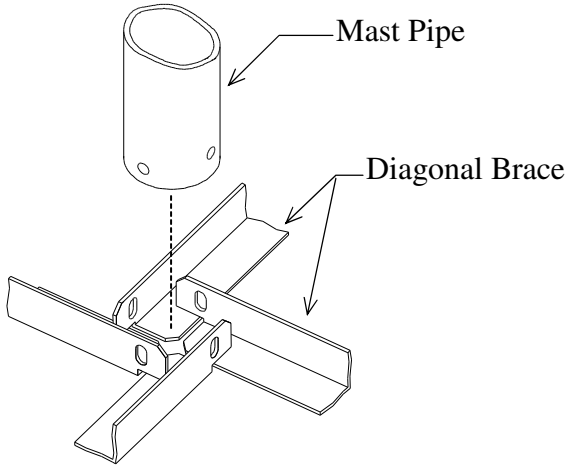
A). On the rubber pad, layout the (4) outer base angles (item 2) and the (4) diagonal base angles (item 4).



STEP 3:

A). Attach the four outer corners as shown using 3 / 8" hardware (items 9, 10, 11 & 12) Snug only.

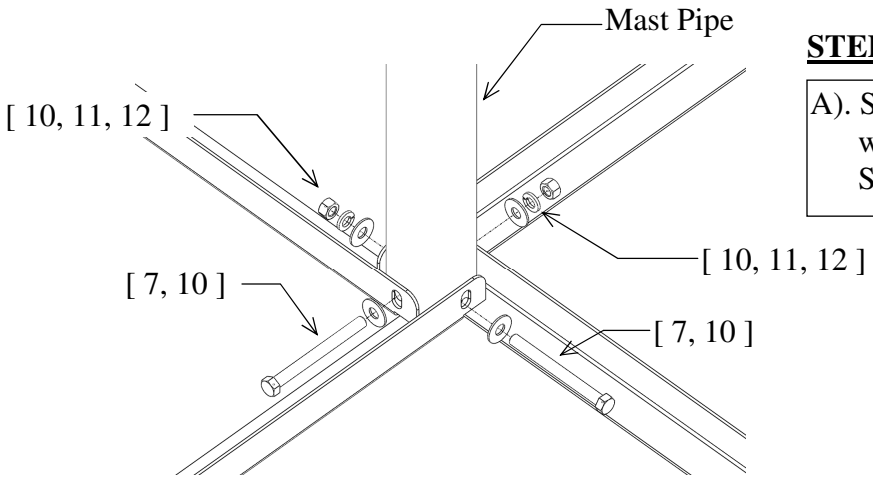
(Note the orientation of the angles)



STEP 4:

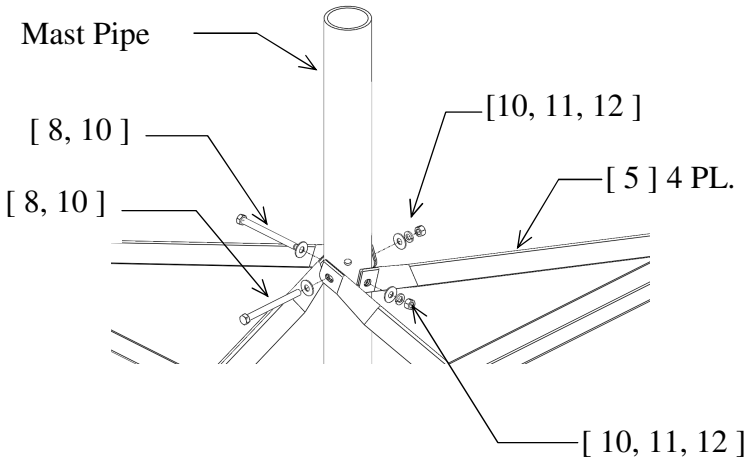
A). Place the mast pipe (item 1) at the center of the diagonal braces and align holes.

(Note the orientation of diagonal braces)



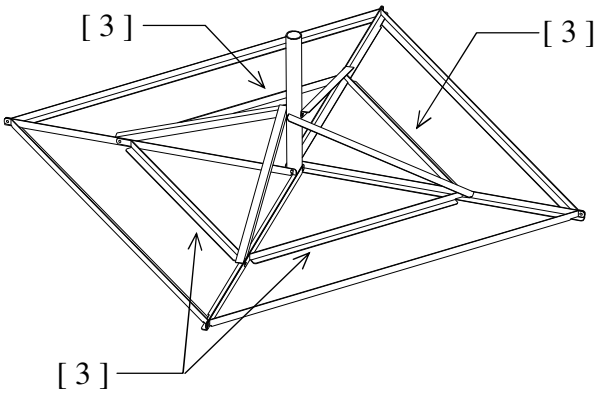
STEP 5:

A). Secure the mast pipe to the diagonal angles with 3 / 8" hardware (items 7, 10, 11, & 12). Snug only.



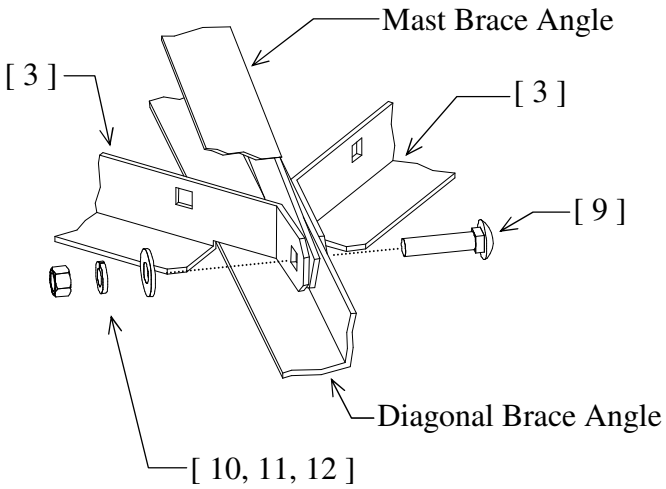
STEP 6:

A). Attach the (4) mast brace angles (item 5) to the mast pipe with 3 / 8" hardware (items 8, 10, 11 & 12). Each brace must attach to the side of the mast pipe opposite its corresponding diagonal brace. Refer figures 1 and 2. Snug only.



STEP 7:

A). Position the (4) inner brace angles (item 3) as shown. Use Step 8 below for reference to the angle orientation.



STEP 8:

A). Attach the inner brace angle (item 3) to the mast brace angle and diagonal base angle with 3 / 8" hardware (items 9, 10 , 11& 12). Note the orientation of the angles.

B). Tighten all hardware. The suggested torque is 20 ft-lbs dry or 15 ft-lbs lubricated.

C). Add ballast and then install antenna system. See section 3 for the ballast requirements.

SECTION III

3.0 BALLAST REQUIREMENTS

EXPOSURE:

1. Exposure B is urban or suburban areas, wooded areas, or other terrain with numerous, closely spaced obstructions having the size of single family dwellings or larger. Obstructions must extend 1500 feet in all directions from the antenna.

2. Exposure C is open terrain with widely scattered obstructions having heights generally less than 30 feet. Includes flat open country and grass lands.

BALLAST:

1. Ballast tables are based on an overturning design with a 1.5 safety factor. Values shown provide sliding resistance to the wind speed shown with a 1.0 safety factor when used with a rubber friction pad (coefficient of friction = .64).

2. Recommended ballast material is concrete cap block, nominal dimensions of 4 x 8 x 16 inches. These blocks will weigh between 25 and 30 lbs each, depending on local variation. Average weight of blocks should be determined for correct ballast amount.

3. Place ballast equally on all frames beginning at opposite corners of each side and working inward. If more than 20 blocks are needed, begin a second layer on top of the first.

TABLE 3.0-1 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 30 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	235	285	385	460	560	710
STATIC ROOF LOAD (LB./FT.2)	6	7	9	11	13	17
ANTENNA & NPMM WT. (LBS.)	160	160	160	160	160	160
NET BALLAST REQUIRED (LBS.)	75	125	225	300	400	550

TABLE 3.0-2 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 50 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	260	335	410	535	610	785
STATIC ROOF LOAD (LB./FT.2)	6	8	10	12	14	19
ANTENNA & NPMM WT. (LBS.)	160	160	160	160	160	160
NET BALLAST REQUIRED (LBS.)	100	175	250	375	450	625

TABLE 3.0-3 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 30 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	335	435	560	685	885	1060
STATIC ROOF LOAD (LB./FT.2)	8	10	13	16	21	25
ANTENNA & NPMM WT. (LBS.)	160	160	160	160	160	160
NET BALLAST REQUIRED (LBS.)	175	275	400	525	725	900

TABLE 3.0-4 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 50 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	410	510	635	810	935	1210
STATIC ROOF LOAD (LB./FT.2)	10	12	15	19	22	29
ANTENNA & NPMM WT. (LBS.)	160	160	160	160	160	160
NET BALLAST REQUIRED (LBS.)	250	350	475	650	775	1050

TABLE 3.0-5 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 30 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	365	465	615	715	890	1140
STATIC ROOF LOAD (LB./FT.2)	9	11	15	17	21	27
ANTENNA & NPMM WT. (LBS.)	165	165	165	165	165	165
NET BALLAST REQUIRED (LBS.)	200	300	450	550	725	975

TABLE 3.0-6 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 50 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	415	540	690	840	1015	1290
STATIC ROOF LOAD (LB./FT.2)	10	13	16	20	24	31
ANTENNA & NPMM WT. (LBS.)	165	165	165	165	165	165
NET BALLAST REQUIRED (LBS.)	250	375	525	675	850	1125

TABLE 3.0-7 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 30 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	540	740	890	1115	1315	1690
STATIC ROOF LOAD (LB./FT.2)	13	18	21	26	31	40
ANTENNA & NPMM WT. (LBS.)	165	165	165	165	165	165
NET BALLAST REQUIRED (LBS.)	375	575	725	950	1150	1525

TABLE 3.0-8 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 50 FT. ABOVE GROUND

WIND SPEED (M.P.H.)	70	80	90	100	110	125
TOTAL BALLAST (LBS.)	640	840	1065	1290	1515	1990
STATIC ROOF LOAD (LB./FT.2)	15	20	25	31	36	47
ANTENNA & NPMM WT. (LBS.)	165	165	165	165	165	165
NET BALLAST REQUIRED (LBS.)	475	675	900	1125	1350	1825

TABLE 3.0-9 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 9M ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	107	129	175	209	254	322
STATIC ROOF LOAD (KG./M^2)	29	34	44	54	63	83
ANTENNA & NPMM WT. (KG.)	73	73	73	73	73	73
NET BALLAST REQUIRED (KG.)	34	57	102	136	181	249

TABLE 3.0-10 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 15M. ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	118	152	186	243	277	356
STATIC ROOF LOAD (KG./M^2)	29	39	49	58	68	93
ANTENNA & NPMM WT. (KG.)	73	73	73	73	73	73
NET BALLAST REQUIRED (KG.)	45	79	113	170	204	284

TABLE 3.0-11 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 9M. ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	152	197	254	311	401	481
STATIC ROOF LOAD (KG./M^2)	39	49	63	78	102	122
ANTENNA & NPMM WT. (KG)	73	73	73	73	73	73
NET BALLAST REQUIRED (KG)	79	125	181	238	329	408

TABLE 3.0-12 - 1.0M OR SMALLER SHAPED VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 15M ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG)	186	231	288	367	424	549
STATIC ROOF LOAD (KG./M^2)	49	58	73	93	107	141
ANTENNA & NPMM WT. (KG)	73	73	73	73	73	73
NET BALLAST REQUIRED (KG)	113	159	215	295	352	478

TABLE 3.0-13 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 9M ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	166	211	279	324	404	517
STATIC ROOF LOAD (KG./M^2)	44	54	73	83	102	132
ANTENNA & NPMM WT. (KG.)	75	75	75	75	75	75
NET BALLAST REQUIRED (KG.)	91	136	204	249	329	442

TABLE 3.0-14 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE B - 15M ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	188	245	313	381	460	585
STATIC ROOF LOAD (KG./M^2)	49	63	78	97	117	151
ANTENNA & NPMM WT. (KG.)	75	75	75	75	75	75
NET BALLAST REQUIRED (KG.)	113	170	238	306	386	510

TABLE 3.0-15 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 9M ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	245	336	404	506	596	767
STATIC ROOF LOAD (KG./M^2)	63	88	102	127	151	195
ANTENNA & NPMM WT. (KG.)	75	75	75	75	75	75
NET BALLAST REQUIRED (KG.)	170	261	329	431	522	692

TABLE 3.0-16 - 1.2M CIRCULAR VSAT ANTENNA
BALLAST REQUIREMENTS - EXPOSURE C - 15M ABOVE GROUND

WIND SPEED (K.P.H.)	113	129	145	161	177	201
TOTAL BALLAST (KG.)	290	381	483	585	687	903
STATIC ROOF LOAD (KG./M^2)	73	97	122	151	175	229
ANTENNA & NPMM WT. (KG.)	75	75	75	75	75	75
NET BALLAST REQUIRED (KG.)	215	306	408	510	612	828

3.1 BALLAST REQUIREMENT INFORMATION

3.1-1. Ballast requirements are provided to assist in determining the applicability of the NPMM for an antenna installation. The ballast data should not be relied upon without competent local professional examination and verification of its accuracy and suitability for a specific site or application.

3.1-2. Specific antenna types may require more strength and ballast requirements and must be investigated for each installation. The load carrying requirements of the supporting surface, the mast, the antenna and the antenna's connection to the mast must also be investigated for each installation.

3.1-3. Roof pads are recommended to prevent damage to roof membranes. Pads should be placed under all ballast and under the mast pipe. When roof pads are utilized, the minimum coefficient of friction between the ballast pans and roof pad or between the roof pads and the supporting surface must be used to calculate the wind speeds resulting in sliding.

3.1-4. When adhesive, sealant or pads are utilized, they must be compatible with the supporting surface. They must also be durable and have adequate strength. Precautions should also be taken to insure that damage to the supporting surface will not occur upon wind loading. Adhesives and sealants must be capable of resisting shear; otherwise, they may act as a lubricant and decrease the effective coefficient of friction between the ballast and the supporting structure.

3.1-5. The installation, roof materials and supporting structure must be capable of withstanding all loads imposed by the antenna system. Supporting structure, anchors and/or safety cables must be sufficient to resist the reactions from the antenna system. The installation must meet all applicable, local, state and federal requirements. ***Due to the many variables involved, General Dynamics does not accept responsibility for verifying the applicability of the NPMM for specific installation.***

GENERAL DYNAMICS
SATCOM Technologies

4096-630
May 29, 2007

ASSEMBLY MANUAL
Revision H

1.2M Ku-BAND Rx/Tx SERIES 1132 ANTENNA SYSTEM

General Dynamics Satcom Technologies
1500 Prodelin Drive
Newton NC 28658USA
Phone 828-464-4141
www.gdsatcom.com

1.2M Ku-BAND Rx/Tx
SERIES 1132 ANTENNA SYSTEM

REV.	DESCRIPTION	DATE	APPROVED
H	General Revision	5-29-07	RAH
G	Revised for removal of indicator and scale	5/19/05	RF
F	Del 0185-492 add 0185-491	12/16/04	RAH
E	Revised Az/El to 0185-492	10/12/04	RAH
D	Revised for new reflector	9/3/2003	CLT
C	Revised text on page 14	8/26/02	CLT
B	Revised Diagrams and Text	1/25/02	CLT
A	Revised Address	1/9/02	RAH
-	ORIGINAL RELEASE	3/14/01	CLT

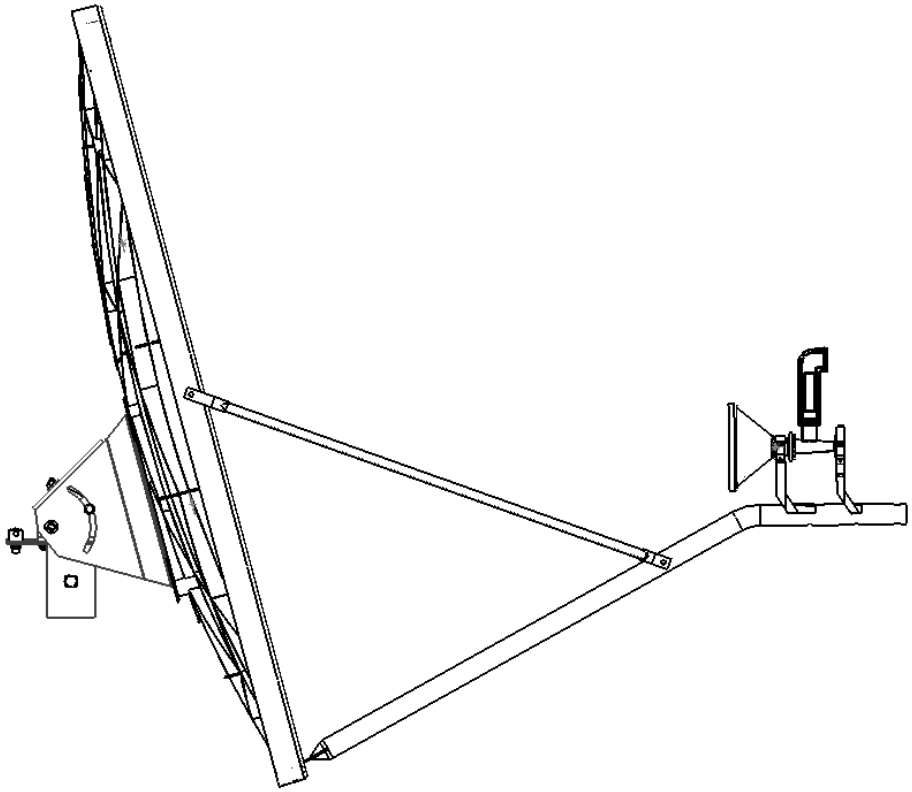


TABLE OF CONTENTS

SECTION I INTRODUCTION

1.0 GENERAL INFORMATION

This manual describes the assembly and installation of General Dynamics's 1.2 meter antenna system. The General Dynamics 1.2 meter is a rugged and reliable mount which will operate in the Ku-Band frequency with high efficiency and at the same time successfully withstand the effects of the environment. The General Dynamics 1.2 meter has an f/d ratio of .8 and an offset angle of 17.30°. This system is commonly used with a General Dynamics 39° feed horn.

These instructions are listed by sections that cover all areas of assembly and installation. Additional sections are included in the manual to provide information on antenna alignment to the satellite and maintenance.

1.1 UNPACKING AND INSPECTION

The system containers should be unpacked and inspected at the earliest date to insure that all material has been received and is in good condition. A complete packing list for each major component is supplied.

1.2 FREIGHT DAMAGE

Any damage to materials while in transit should be immediately directed to the freight carrier. He will instruct you on matters regarding any freight damage claims.

1.3 MATERIAL – MISSING OR DAMAGED

Any questions regarding missing or damaged materials that are not due to the freight carrier should be directed to General Dynamics's Customer Service Department at:

General Dynamics Satcom Technologies
1500 Prodelin Drive
Newton NC 28658
USA
(828) 464-4141

1.4 MECHANICAL INSTALLATION TOOLS

The hardware supplied with this antenna system is U.S. SAE standard size. However, the sizes have been chosen to allow use with compatibly sized metric wrenches as shown in the table below**.**

HARDWARE SIZE	SAE WRENCH SIZE	METRIC WRENCH SIZE	MAXIMUM REC. TORQUE
5/16” Bolt	1/2”	13 mm	12 ft-lbs (16.27 n-m)
1/4” Bolt	7/16”	11 mm	6 ft-lbs (8.14 n-m)
3/8” Bolt	9/16”	15 mm	22 ft-lbs (29.83 n-m)
1/2” Bolt	3/4”	19 mm	45 ft-lbs (61.02 n-m)
Hi-Lo Screw	7/16”	11 mm	10 ft-lbs (13.56 n-m)

Also recommended for installation:

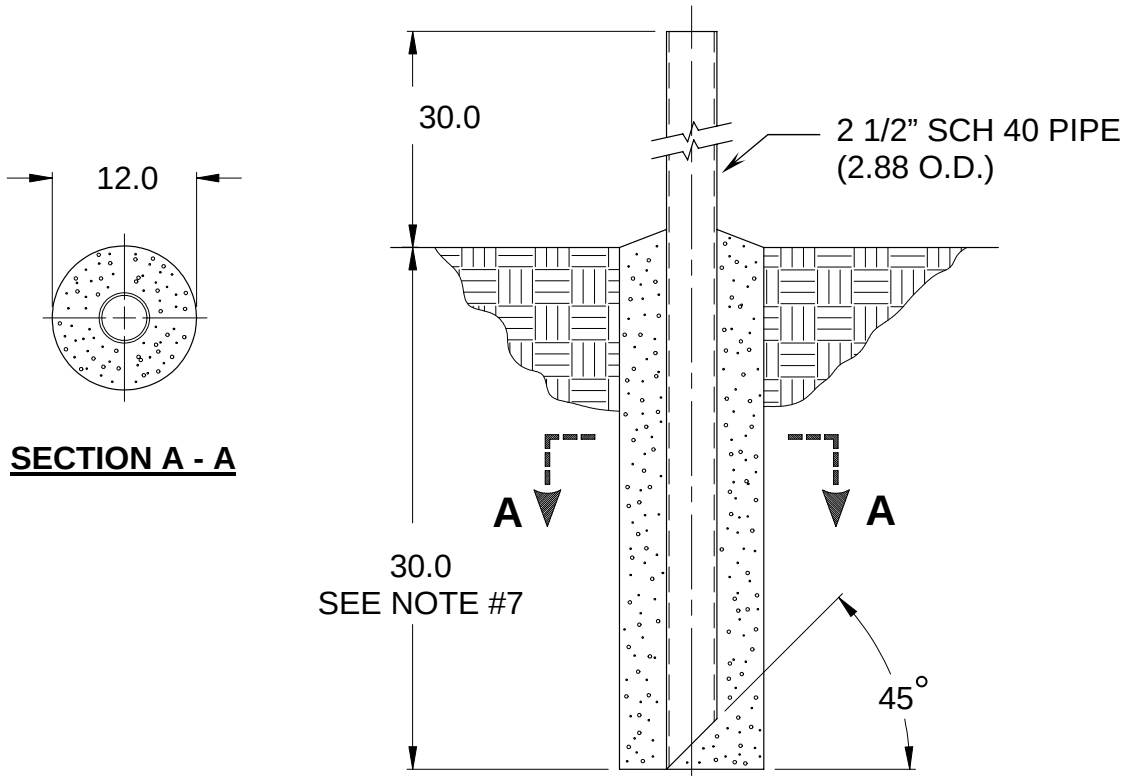
Compass - graduated to .5°
Adjustable Wrench

1.5 FOUNDATION INTERFACE

The required interface from the foundation to the mount is 2-1/2" schedule 40 pipe (2.88" O.D.). A suggested in-ground foundation is shown in Figure 1.

Also available from General Dynamics, as options, are a kingpost pedestal mount and a non penetrating mast mount.

SUGGESTED IN-GROUND FOUNDATION



SECTION A - A

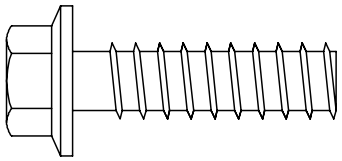
FIGURE 1.

NOTES:

1. **2 1/2" schedule 40 pipe should conform to ASTM A53.**
2. **All concrete should conform to building code standards and have a minimum compressive strength of 3000 PSI at 28 days. (Per ACI-318-77)**
3. **Soil bearing capacity should be no less than 2000 PSF.**
4. **Concrete should be poured against undisturbed soil.**
5. **Allow concrete 24 hours set time before installation of antenna.**
6. **The antenna should be properly grounded to meet applicable local codes.**
7. **Minimum depth as shown or extend to local frost line.**
8. **Foundation meets the design requirements as set forth by the uniform building code. (1982 edition)**

(GENERAL DYNAMICS DOES NOT REPRESENT OR WARRANT THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY LOCALITY OR EARTH STATION INSTALLATION.)

SECTION II REFLECTOR AND SUPPORT ASSEMBLY

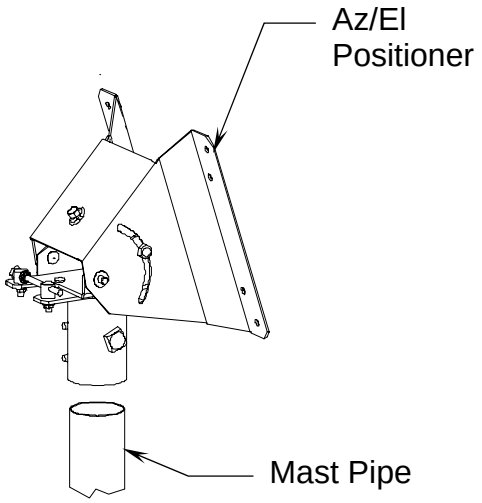
REFLECTOR AND SUPPORT ASSEMBLY PART LIST- TABLE 2.0			
ITEM	**PART NO.**	**DESCRIPTION**	**QTY**
1	VARIES	1.2M Reflector	1
2	0185-491	Az/El Positioner Assembly	1
3	8319-006	Hi - Lo Screw 	4

2.1 ANTENNA ASSEMBLY

CAUTION: During the assembly procedure, the sequence of instructions must be followed. ***Do Not Tighten Any Hardware Until Instructed***.
Refer to the parts list table and the referenced steps**.**

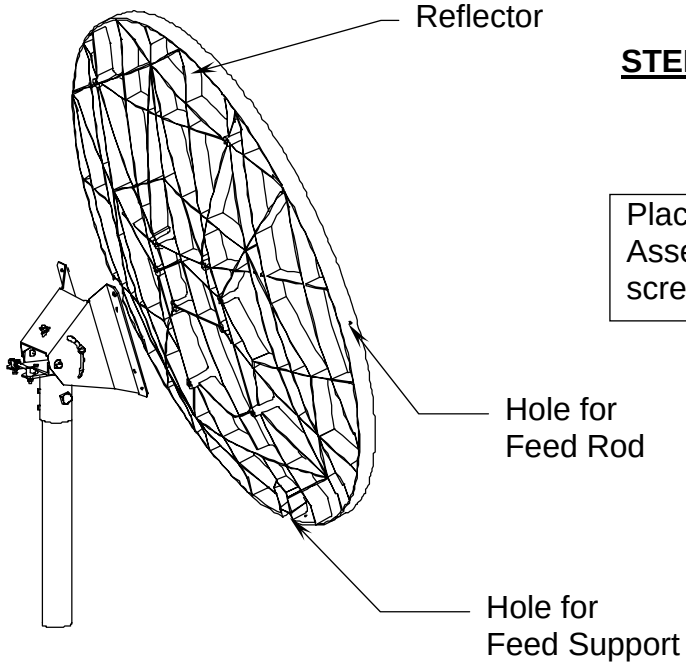
STEP 1.

Slip the Az/El Positioner (item 2) onto the mast pipe as shown.



STEP 2.

Place reflector onto Az\El Positioner Assembly and secure using the Hi-lo screws provided.

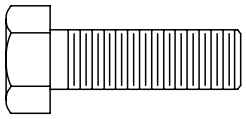
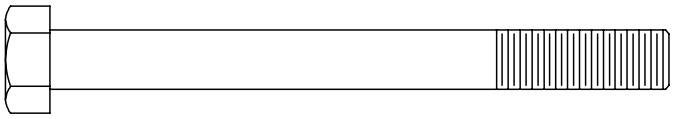
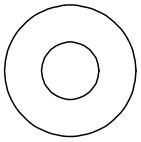
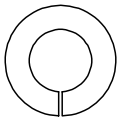
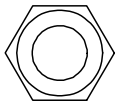


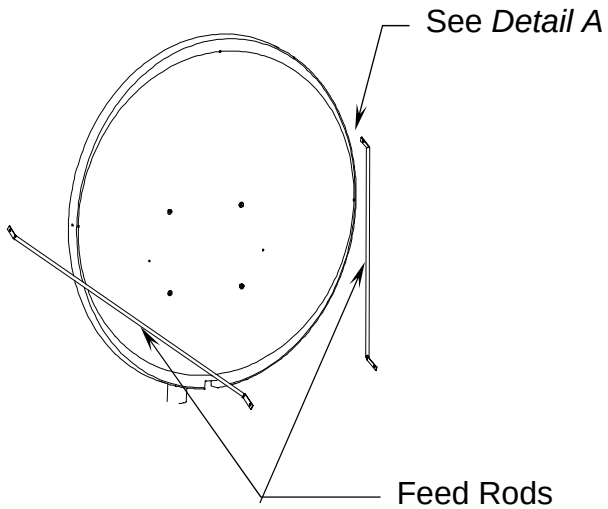
2.2 FEED SUPPORT ASSEMBLY

NOTE: These instructions are intended as a general reference for feed support assembly. If your antenna system has specific feed support installation instructions, then refer to them at this time.

CAUTION: During the assembly procedure, the sequence of instructions must be followed. DO NOT TIGHTEN ANY HARDWARE UNTIL INSTRUCTED. Refer to the feed support parts list and steps.

FEED SUPPORT PARTS LIST - TABLE 2.2

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	VARIES	Feed Rod	2
2	VARIES	Feed Support Tube	1
3	8031-008	5 / 16” x 1.00” Bolt 	3
4	8031-026	5 / 16” x 3.25” Bolt 	1
5	8201-041	5 / 16” Flatwasher 	8
6	8202-041	5 / 16” Lock Washer 	4
7	8101-009	5 / 16” Hex Nut 	4



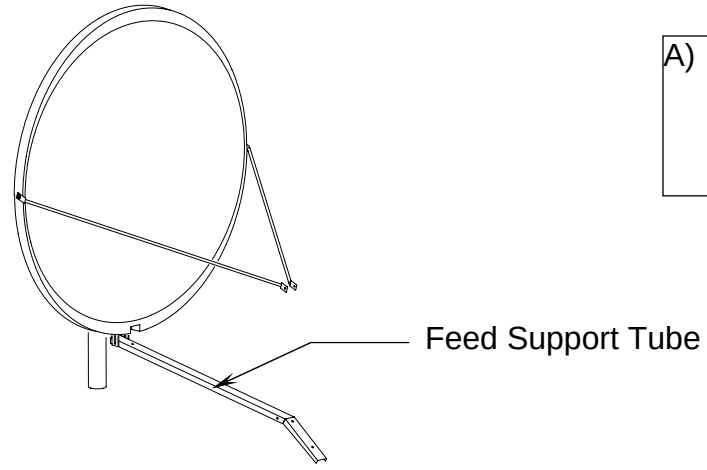
STEP 1.

A) Attach feed rods to reflector with (items: 3, 6, 7 and with [2] of (item 5).

NOTE: The 2.00" flat end of the feed rod mounts to the outside rim of the reflector

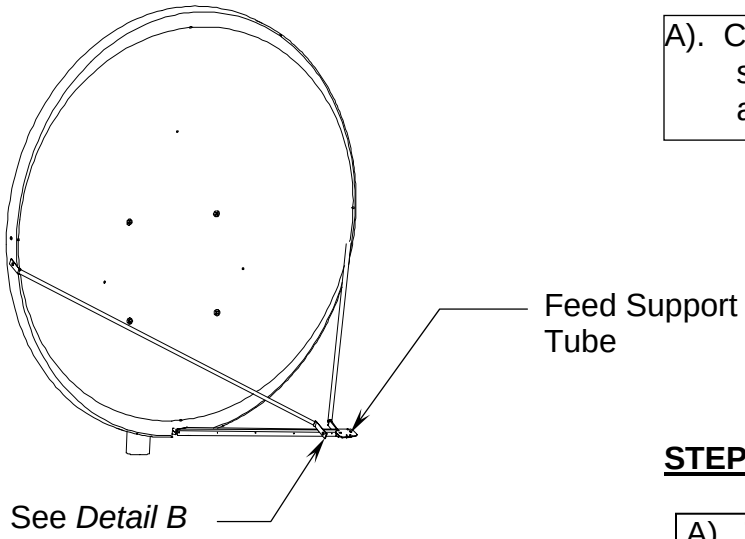
STEP 2.

A) Attach feed support tube to the reflector with (items: 3, 6, 7) and with [2] of (item 5).



STEP 3.

A). Connect the feed rods to the feed support tube with (items: 4, 6, 7) and with [2] of (item 5).



STEP 4.

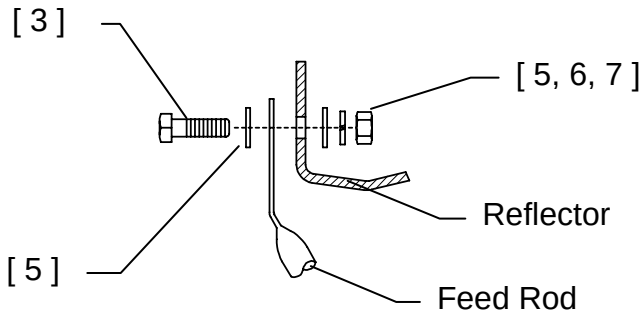
A). Tighten the hardware at the reflector rim snugly (Detail A).

B). Tighten the hardware connecting the feed rods to the feed support tube (Detail B).

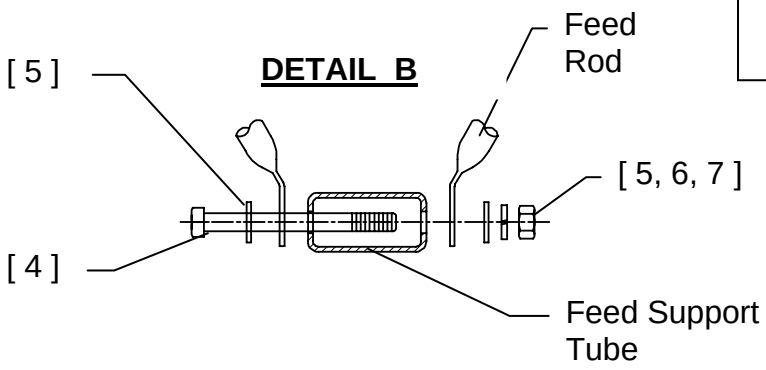
C). Tighten the hardware connecting the feed support tube to the reflector.

D). Refer to separate instructions for the specific feed/ODU assembly to feed support.

DETAIL A



DETAIL B



SECTION III ANTENNA POINTING

3.0 ANTENNA POINTING

The 1.2 meter reflector contains a 17.3° elevation offset look angle. Therefore, when the reflector aperture is perpendicular to the ground, the antenna is actually looking 17.3° in elevation. Refer to Figure 2.

Note: The following alignment procedure is intended only as a general reference guide for this antenna. For proper antenna performance, accurate alignment is critical. Therefore, it is recommended that your own detailed procedure be used or contact General Dynamics Technical Support Department for additional recommendations.

STEP 1: **BEFORE ADJUSTING ELEVATION LOOSEN THE HARDWARE ON BOTH SIDES OF THE POSITIONER, REFER TO FIGURE 2 FOR LOCATION.** Adjust the reflector up or down in elevation by turning the 5/16" Bolt at the az/el positioner until the desired elevation is read on the side of the positioner. This scale is used for nominal readings and is accurate to ±2 degrees. ***Note: Elevation rod is for adjustment only, it is not intended to be part of the structural integrity of the assembly, tightening the elevation rod is not necessary.*** Snug the hardware at the side of the positioner.

STEP 2: Azimuth Adjustment: With the electronics set to acquire the satellite, rotate the antenna in azimuth until the satellite is found. Tighten the canister hardware at this time.

STEP 3: Fine azimuth adjustment is achieved by **loosening the three hex nuts inside the Az/el positioner** and turning the single hex bolt at the back of the positioner in either direction. ***Note: Azimuth rod is for adjustment only, it is not intended to be part of the structural integrity of the assembly, tightening the azimuth rod is not necessary.***

STEP 4: Peak the antenna signal by fine adjustments made in both azimuth and elevation until the optimum signal is achieved.

STEP 5: Tighten all hardware used for adjustment.

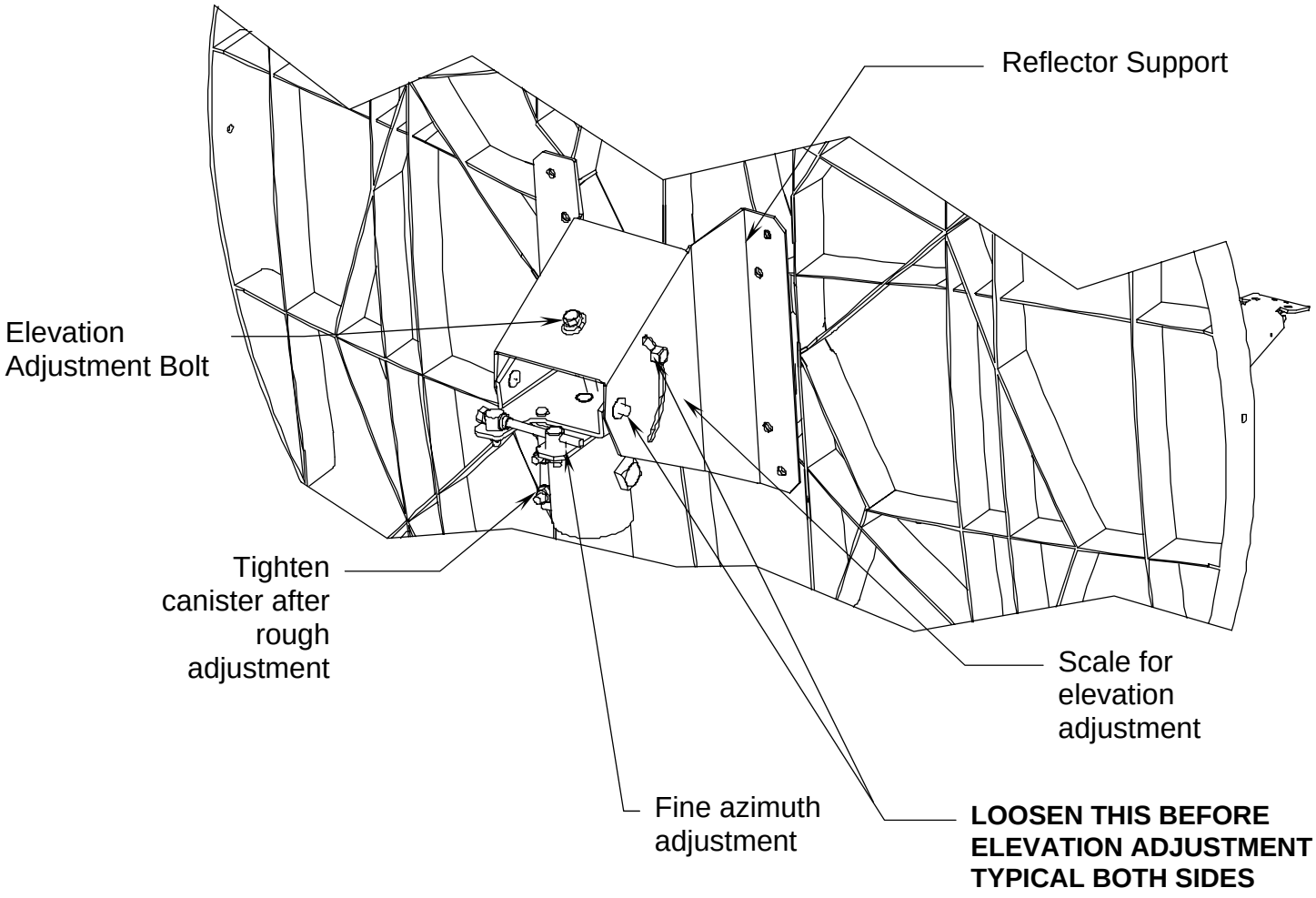

Reflector Support
Elevation Adjustment Bolt
Tighten canister after rough adjustment
Scale for elevation adjustment
Fine azimuth adjustment
LOOSEN THIS BEFORE ELEVATION ADJUSTMENT TYPICAL BOTH SIDES

FIGURE 2.

SECTION IV MAINTENANCE

4.0 MAINTENANCE OVERVIEW

After installation, the antenna requires only periodic inspection. It is anticipated that maintenance, if required, will be minimal and easily handled by a local or in-house maintenance staff.

4.1 REFLECTOR

General Dynamics reflector does not require any maintenance. The composite construction of the reflector is virtually impervious to any damages that could be caused by weather or atmospheric conditions. It is only necessary to inspect for any physical damage done by vandalism or very severe weather conditions.

Should any damage be detected to a portion of the reflector, contact the Customer Service Department at General Dynamics for recommendations involving reflector repair**.**

4.2 MOUNT AND REFLECTOR SUPPORT STRUCTURE

The mount and reflector support structure supplied with this antenna is of steel construction and has a galvanized finish.
If there are any signs of structural failure, the mount members that are damaged should be repaired or replaced.

4.3 FEED AND FEED SUPPORT

The feed support and feed rods should be inspected to insure that all hardware is secure. The feed/radio mounting bolts should be tight.

The feed horn window should be inspected to insure that it is intact so that no moisture can collect inside the feed horn.

Site Survey Card

The purpose of this MPD Site Survey form is to ensure that there is good coordination between Comlabs who will install the system and the customer. The more known and controllable the installation environment is, the fewer opportunities there are for unwelcome and potentially serious difficulties to arise.

General Information

Date when this survey was conducted 8/2/16 @ 8am

This site survey was conducted by:

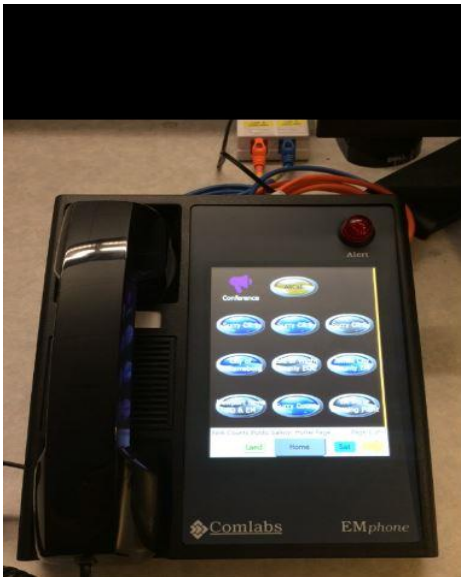
Name: Trevor Clayton (Comlabs), Donna Eugene (MPD), and Keith Peterson (MPD)

Customer Contact Details

Site Name: **Washington Navy Yard**
POC Name: **Oba Young**
Email: **oba.young@navy.mil**
Phone# **(202) 433-1020**

Satellite to be installed:

- 1.2M Receive/Transmit Prodelin Antenna Series 1135
- Wgt 65lbs.
- Operating Frequency (GHz) – Receive 10.95 - 12.75 GHz and Transmit 13.75 - 14.50 GHz



Phone to be installed:

- VOIP telephone with a touch screen
- powered from 12VDC wall wart or Powered Over Ethernet (POE)
- It has two Ethernet ports for redundant access with the left A port used for landline and the right B port used for Satellite backup
- RJ11 accessory port on the back which can send out a contact closure to trigger an external alarm when the phone rings.
- rear panel also has a USB port for Program and config updating using a thumb drive

Address of site to install equipment (Satellite and EMphone).	1325 10th Street SE, Washington, D.C. 20374 Site POC: Oba Young (202) 433-1020
Any special requirements for access to building/site:	☒Yes ☐No sites will be providing escorts, special parking instructions, any other specifics
Proposed Satellite mount:	☒ **Non-penetrating ground mount (NPGM)** ☐ **Ground level pole mount set in concrete** ☐ **Ground level pole mount bolted to wall** ☐ **Other** The site has 2 options for dish location
Location where Satellite will be installed (i.e. Building name/location).	Building 196 Roof top on top of storage room. The site has 2 options for dish location. 1 - On electrical room roof or 2 - on roof floor (See picture of location on bottom of document).
Grounding for each of the following BUC and Lightning Protectors	**BUC** = On Roof **Lightning Protectors** = Network cabinet
Where is the entry for the cable into the building **How far is the cable run from the dish to the modem**	Top of stairs 210’
Is sufficient roof / floor space available:	☒Yes ☐No ☐N/A 6.5’ x 6.5’ space required for satellite.
Specify any special security/safety procedures/tools for completing installation	Small ladder required
Roof Access:	Elevator to long staircase to door that then leads to roof top
Approval obtained for placing Satellite:	☐Yes ☒No Customer needs to get approval from commanding officer for installing satellite.
Cable/Wiring required for Satellite	Need to have fiber cable run from point of satellite installation to where modem is to be placed. Two RG11 cables will be required to be run from satellite to modem by Comlabs. Ideally length of cables should be within 250 feet

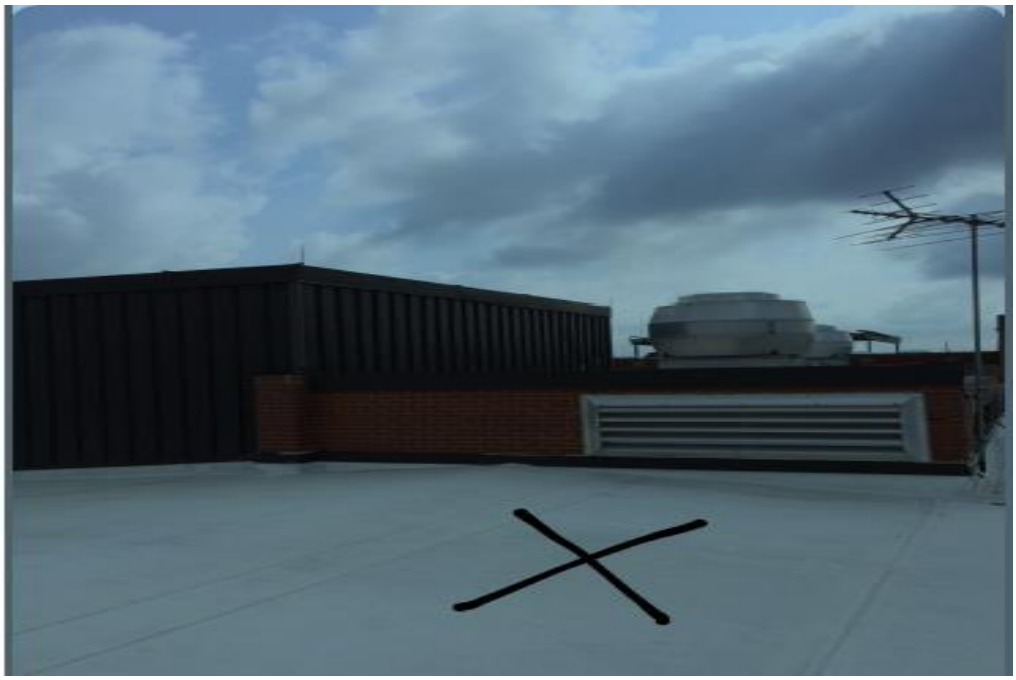
Location to install modem	There are two proposed options for modem location 1st. option - Radio Rack room, building 196 1st. floor from roof top. Approx. 220' from dish 2nd. option – Storage room where satellite is being installed. In electrical room below mount. 50 ft. line run. The site will be running the network to the modem location.
Do wall and floor penetrations have to be made:	☒Yes ☐No Floor penetration will be required from storage room to entry where cables are to be run.
Power available at location in which Satellite is to be installed:	☐Yes ☒No
If no power is available at location in which Satellite is to be installed will customer provide electrical cords to access power	☒Yes ☐No
Building electrical grounding available at the Satellite position:	☒Yes ☐No
Will the Satellite be safe from unauthorized access:	☒Yes ☐No
Method of transporting Satellite:	☒ **By hands** ☐ **Elevator** ☐ **Crane** All equipment will be hand carried by Comlabs
Sight towards the satellite *(As seen from the position of the Satellite)***:**	☐ **Restricted** ☒ **Free**
Interference by high voltage lines, power and telephone cables:	☐Yes ☒No
Installation voltage: (will be used at the site):	☐ **110-115 V, 60Hz** ☐ **220-240 V, 50 Hz** ☐ **Other**
Frequency:	AMC 21 103.0w AMC 21 103.0w
How will Satellite be installed:	Refer to VSAT Installation Procedures document
What are the dimensions and loading capacity for the satellite?	Refer to Prodelin 1.2 Dish.pdf document

Will the Satellite be equipped with a de-ice system:	☐Yes ☒No Not required
Indoor Unit (IDU) Location (Building, Floor, Room#) where EMphone will be installed?	Site is receiving two phones. 1st. phone to be installed – Building 196/room 118 2nd. phone to be installed – building 196/room 101 Site will need to provide a switch or purchase one from Comlabs
Is the IDU location safe from unauthorized access:	☒Yes ☐No
Specify the general details of the Phone to be installed	Refer to EMphone Manual_V2.pdf
Is standard AC power available for the phone equipment:	☒Yes ☐No
Is an (existing) UPS (Uninterruptible Power Supply) available:	☐Yes ☐No
Give a brief description of the environmental conditions of the IDU location:	☒ **Normal temperature** ☒ **Properly ventilated** ☒ **Air conditioned**
Customer applied for and obtained all necessary permissions to conduct installation?	☐Yes ☒No
Please confirm method of transport from Port of entry to operating site	All equipment and tools will be hand carried
Please describe any hallways, stairs, doorways, steps, ramps, and foreseen problems that will obstruct the movement of the satellite.	N/A
Will the use of any special lifting equipment (e.g. stair-climber, crane) be required for installing the satellite?	☒Yes ☐No Small ladder required
Have tile cutouts been provided for power and all data cables for the equipment?	☐Yes ☒No
Is there any possibility of future construction work in the vicinity, which may result in the obstruction of the Satellite beam	☐Yes ☒No
Other:	• Running of RG11 cables from satellite to modem should be within 250' • Site requiring a RFS study before obtaining approval for installation

Remarks

- Location where Satellite will be installed (i.e. Building name/location). Building 196 Non pen on roof top. To be installed on top of storage room pictured below
    - **Option 1**

    - **Option 2**



- Proposed mount type

- Comlabs to run RG11 cables from satellite to Modem
- Navy customer to run fiber cable from modem to phone
- Other POCs at Washington Navy Yard: Robin Hubert and John Usher

Action Item	Owner
Customer needs to get approval for installation of satellite	
Site need to provide a switch or purchase one from Comlabs	
Site needs to run network wiring to modem location	
Comlabs will provide RF study	Trevor Clayton
Customer needs to select either Option 1 or Option 2 for location to install satellite	
Customer needs to select either Option 1 or Option 2 for location to install modem	
Customer must select vendor to run network cable from modem to phone	
If available, customer provide a few resources for hauling concrete cement blocks (20 blocks) from van to roof top where satellite is to be installed	

REQUEST FOR ENVIRONMENTAL ANALYSIS

Ref: (a) SECNAVINST 5090.6A, Policies and Responsibilities for Implementation of the National Environmental Policy Act within the Department of Navy, dated 26 April 2004
(b) OPNAVINST 5090.1D, Environmental Readiness Program Manual, dated 10 Jan 2014

Instructions: Section I to be completed by Proponent; Section II to be completed by Environmental.

SECTION I – PROPONENT INFORMATION	
1. FROM (*Proponent Name and organization*) Crystal Thompson and NAVFAC Washington	2. TELEPHONE NO. (202) 433-3179
3. TITLE OF PROPOSED ACTION AND SITE LOCATION OF INSTALLATION Washington Navy Yard – Building 196 Antenna Installation for Ring-Down Project	
4. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES The project installs an approximately 6'x 6' satellite on the building 196 roof, either by penetration mount, or, by sled which will be secured by cinderblocks to protect against movement and loss during heavy winds and storms. The rooftop satellite supports the Ring-Down project to facilitate swift emergency response.	

SECTION II – PRELIMINARY ENVIRONMENTAL REVIEW	+	0	-	U
5. AIR QUALITY (*Emission, attainment status, state implementation plan, permits, etc.*)		X		
6. WATER RESOURCES (*Quality, quantity, source, stormwater, drinking water, wastewater, permits, etc.*)		X		
7. HAZARDOUS MATERIALS/WASTE (*Use/storage/generation, solid waste, etc.*)		X		
8. NATURAL RESOURCES (*Wetlands, floodplains, threatened or endangered species, etc.*)		X		
9. CULTURAL RESOURCES (*Native American burial sites, archaeological sites, historical buildings, structures, districts, landscapes, etc.*)		X		
10. GEOLOGY AND SOILS (*Installation restoration, topography, minerals, etc.*)		X		
11. ABOVE GROUND / UNDERGROUND STORAGE TANKS (*Fuel, oil, permits, etc.*)		X		
12. OTHER (*Potential Impacts not addressed above*) Note: EMS Awareness Training is required for all contractors, and military and civilian personnel.				X

13. REMARKS: After full consideration, this project has been found not to have, individually or cumulatively, a significant effect on the quality of the human environment under normal circumstances. **Consultation with DC HPO for WNY-196 INSTALLATION OF A ROOFTOP ANTENNA was completed in NOVEMBER 2016 and a "no adverse effect" concurrence from the DC HPO dated 17 NOV 2016 was received. Concurrence for this work was received based on the fact that "antenna is relatively small and will not be visible and it will be mounted in a manner that does not harm any historic fabric." The contractor and/or their subcontractor completing the work at this building will need to demonstrate previous experience working on National Register of Historic Places and/or National Historic Landmarks that was completed in accordance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (National Park Service 1995)." All work MUST be performed in accordance with the Secretary of the Interior Guidelines previously referenced. Contractors performing the installation of the antenna and associated equipment shall complete EMS Awareness training in ECATTS. Contractors should contact the EMS Coordinator (202-433-6560) to obtain access to ECATTS to complete required training prior to the commencement of work. The contractor shall coordinate with the hazardous waste personnel and contractors at Washington Navy Yard to remove and dispose of any hazardous waste generated or encountered in during the course of the project. Hazardous waste shall be packaged appropriately for storage and shipping according to DOT, District of Columbia and Navy regulations where applicable.**

14. **SECTION III – ENVIRONMENTAL ANALYSIS DETERMINATION**

☒ PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) #36. The proposed action has been reviewed and it has been determined that it meets the criteria for Categorical Exclusion mentioned in reference (b), section 10-3.14, Table 10-6, and can be excluded from further documentation under NEPA.

☐ PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ANALYSIS IS REQUIRED.

15. ENVIRONMENTAL REVIEWER: (*NAME*)	15a. DATE (*mm/dd/yyyy*)
Durant A. Graves	12/1/2016

Per reference (a) subject action has been reviewed under Navy procedures for implementing the National Environmental Policy Act (NEPA). Per reference (b), a determination that the proposed action may be Categorically Excluded from additional NEPA review and documentation has been made based on the evaluation of the effect of the proposed action on the human environment.

NSA Washington Installation Media Managers:
NEPA/Installation Restoration/EMS – Rhonda Ford 202-433-6560; Hazardous Materials/Hazardous Waste– Tawana Spencer 202-685-8007; Stormwater - Eric Ruffer (202)433- 7182; Natural/Cultural Resources – Jennifer Pipe 301-227-4850; Drinking Water/Wastewater – Dane Bowker 202-433-4191; Spills/Air/Tanks – Erica Belton 202-433-2003; Air (Washington Navy Yard) – Subroto Mitro (202) 433-0102; Multi-media – Kyrtise Williams 202-433-6984

This document does not relieve the proponent of compliance with applicable federal and state laws and regulations. If the scope of work is modified, the Project Engineer/Planner must inform PWD Environmental to have the Categorical Exclusion reviewed for accuracy.

DEPARTMENT OF THE NAVY
NAVAL SUPPORT ACTIVITY WASHINGTON
1411 PARSONS AVENUE ST, SUITE 340
WASHINGTON NAVY YARD DC 20374-5034

5090
Ser N4/505
October 13, 2016

Mr. David Maloney
D.C. State Historic Preservation Office
Office of Planning
1100 4TH Street, SW
Suite E650
Washington, DC 20024
Attn: Mr Andrew Lewis

Dear Mr. Lewis:

SUBJECT: PROPOSED INSTALLATION OF SATELLITE ANTENNA ON ROOFTOP OF BUILDING 196, WASHINGTON NAVY YARD, WASHINGTON, DC

Naval Support Activity (NSA) Washington is proposing to install a 1.2 meter diameter satellite antenna on the roof of Building 196 at the Washington Navy Yard (Enclosure 1).

The proposed project will install a 1.2 diameter satellite antenna with a non-penetrating 6.5 feet by 6.5 feet mast mount. The project is in conjunction with the District of Columbia Metropolitan Police Department (MPD) to improve communications. After the September 2013 shooting incident at the Washington Navy Yard (WNY) an agreement was made between the MPD and WNY to improve communications in emergency situations, such as an active shooter. The installation of the proposed antenna will allow for the communication system to be put in place. Given the proposed location on the roof and the height of the building and parapet, the antenna will not be seen from street level (Enclosure 2).

All work will be performed in accordance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (National Park Service 1995)". NSA Washington believes that this undertaking will have no adverse effect. In accordance with Section 106 of the National Historic Preservation Act of 1966 as amended, we request your review of and concurrence with this project.

5090
Ser N4/505
October 13, 2016

If you need additional information or would like to visit the installation, please call Ms. Jennifer Pipe at 301-227-4850 or email: jennifer.l.pipe@navy.mil. Thank you for your continuing cooperation and assistance.

Sincerely,

Durant S. Graves
Installation Environmental Program Director
By direction of the Commanding Officer

Enclosures: 1. WNY Map
2. Photographs

GOVERNMENT OF THE DISTRICT OF COLUMBIA
STATE HISTORIC PRESERVATION OFFICE

DC STATE HISTORIC PRESERVATION OFFICE
FEDERAL AGENCY SECTION 106 REVIEW FORM

TO: Ms. Jennifer Pipe, NAVFAC

ADDRESS: Via email to: jennifer.l.pipe@navy.mil

PROJECT NAME/DESCRIPTION: Installation of a Rooftop Antenna

PROJECT ADDRESS/LOCATION DESCRIPTION: Building 196, Washington Navy Yard

DC SHPO PROJECT NUMBER: 17-0085

The DC State Historic Preservation Office (DC SHPO) has reviewed the above-referenced federal undertaking(s) in accordance with Section 106 of the National Historic Preservation Act and has determined:

☐	This project will have **no effect** on historic properties. No further DC SHPO review or comment will be necessary.
☐	There are **no historic properties** that will be affected by this project. No further DC SHPO review or comment will be necessary.
☒	This project will have **no adverse effect** on historic properties. No further DC SHPO review or comment will be necessary.
☐	This project will have **no adverse effect** on historic properties **conditioned upon** fulfillment of the measures stipulated below.
☐	Other Comments / Additional Comments (see below):

Based upon our review of the project submittal and photographs, we concur with the Navy's determination that the proposed antenna installation will have "no adverse effect" on historic properties because the antenna is relatively small and will not be visible and because it will be mounted in a manner that does not harm any historic fabric.

BY: _____ **DATE**: November 17, 2016

C. Andrew Lewis
Senior Historic Preservation Specialist
DC State Historic Preservation Office

ANTENNA LOCATION AND NEAREST ORDNANCE OPERATION AREA

ANTENNA LOCATION AND NEAREST ORDNANCE OPERATION AREA

Building Number	Latitude	Longitude	Antenna Height Above Ground (feet)	HERO Zone of Antenna	Nearest Ordnance Operation Area	HERO Zone of Ordnance Operation Area	Distance to Nearest Ordnance Operation Area (feet/meters)
196	38.873879	-76.993062	66	1	Building 386	1	210/64

SYSTEM SPECIFICATIONS AND HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE SAFE SEPARATION DISTANCES

SYSTEM SPECIFICATIONS AND HERO SAFE SEPARATION DISTANCES

Antenna Location	Antenna Nomenclature	Antenna Type	Antenna Gain (dBi)	Transmitter Frequency (MHz)	Transmitter Max. Avg. Power (watts)	Transmitter Type	Separation Distances HERO UNSAFE ORDNANCE (feet/meters)	Separation Distances HERO SUSCEPTIBLE ORDNANCE (feet/meters)
BUILDING 196	GENERAL DYNAMICS SERIES 1135	PARABOLIC	43.0	13750-14500	103.0	GENERAL DYNAMICS SERIES 1135 SATCOM	300/91	75/23

SYSTEM SPECIFICATIONS AND HAZARDS OF ELECTROMAGNETIC RADIATION TO PERSONNEL AND FUEL SAFE SEPARATION DISTANCES

SYSTEM SPECIFICATIONS AND HERP/HERF SAFE SEPARATION DISTANCES

							Separation Distances	
Antenna Location	Antenna Nomenclature	Antenna Type	Antenna Gain (dBi)	Transmitter Frequency (MHz)	Transmitter Max. Avg. Power (watts)	Transmitter Type	HERP Controlled Environment (feet/meters)	HERF (feet/meters)
BUILDING 196	GENERAL DYNAMICS SERIES 1135	PARABOLIC	43.0	13750-14500	103.0	GENERAL DYNAMICS SERIES 1135 SATCOM	131/40	10/3

RADIATION HAZARD CONTROL MEASURE

RADHAZ CONTROL MEASURE

Item	Location	Source	Control Measure	Qty	Installation Method
196-1	BUILDING 196	GENERAL DYNAMICS SERIES 1135 (PARABOLIC) - GENERAL DYNAMICS SERIES 1135 SATCOM	TYPE 2 SIGN	A/R	POST WARNING SIGNS AT ROOF ACCESS POINTS.

A/R = As Required

U/L Freq. (MHz)	D/L Freq. (MHz)
14342.3895	12042.3895
14353.1545	12053.1545
14354.5365	12054.5365
14355.6885	12055.6885
14356.6105	12056.6105
14357.5325	12057.5325