City of Portland, Maine – Building or Use Permit Application 389 Congress Street, 04101, Tel: (207) 874-8703, FAX: 874-8716

Location of Construction:	Owner:	Phone:	Permit No: 950285
261 Yellowbird Rd.	Cargex	207-773-5383	
Owner Address:	**Lessee/Buyer's Name:**	**Phone:**	**BusinessName:**
same			
Contractor Name:	**Address:**	**Phone:**	
Communications Link	R 770 Water St. Framingham, MA 01701	508-788-0909	
Past Use:	**Proposed Use:**	**COST OF WORK:** $ 2,000.00	**PERMIT FEE:** $ 30.00
Federal Express Bld. NEW		**FIRE DEPT.** ☑ Approved ☐ Denied Signature:	**INSPECTION:** Use Group: 4 Type: B0C493 Signature:

PERMIT ISSUED
Permit Issued: MAR 15 1995
CITY OF PORTLAND

Zone: AB | CBL: 199-A-1

Zoning Approval: OK 3/14/95

Special Zone or Reviews:
- ☐ Shoreland
- ☐ Wetland
- ☐ Flood Zone
- ☐ Subdivision
- ☐ Site Plan maj ☐ minor ☐ mm ☐

Proposed Project Description:
To erect sattalite dish as per plans

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
Action: Approved ☐ Approved with Conditions: ☐ Denied ☐
Signature: Date:

Permit Taken By:	Date Applied For:
Latini	3/13/95

1. This permit application doesn't preclude the Applicant(s) from meeting applicable State and Federal rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Appeal
- ☐ Variance
- ☐ Miscellaneous
- ☐ Conditional Use
- ☐ Interpretation
- ☐ Approved
- ☐ Denied

Historic Preservation
- ☑ Not in District or Landmark
- ☐ Does Not Require Review
- ☐ Requires Review

Action:
- ☐ Appoved
- ☐ Approved with Conditions
- ☐ Denied

Date: 3/14/95

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provisions of the code(s) applicable to such permit

3/13/95

SIGNATURE OF APPLICANT | ADDRESS: | DATE: | PHONE:

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | PHONE:

CEO DISTRICT 4

White–Permit Desk Green–Assessor's Canary–D.P.W. Pink–Public File Ivory Card–Inspector

3490 Piedmont Road
Atlanta, GA 30305-1743
Telephone: 404/262-1555
800/877-7802 (On-site call-ins only)

CONVERGENT

EARTHSTATION SITE SURVEY REPORT

A. Site Information

Customer: FEDERAL EXPRESS Survey Date: 1-31-95
Address: 261 YELLOW BIRD RD City/State: PORTLAND, ME
Site Contact: CHARLES MELTON Phone #: (207) 775-7129
JOHN ATTANAS

B. Landlord Information

Is building customer owned? ☐ Y ☒ N If no, advise the following:
Landlord Company Name: CARGEX CO Contact Name: ANDY ALA
Address 49 ATLANTIC PLACE City/State: S. PORTLAND, ME
Landlord Phone # (207) 773-5383
Name/Ph.# of Landlord contact present during survey? JOHN ATTANAS - FEDEX
Does landlord approve of all suggested antenna locations? ☒ Y ☐ N. If no, advise specific objections?
IT IS IN LEASE TO PUT DISH ON ROOF

C. Building Information

Describe building age/construction material: BRAND NEW/STEEL FRAME, CORUGATED ROOF, WALLS
Building height from ground level 23 4 3/4 Ft. Number of floors 1
Building type: ☐ Office building ☐ Shopping mall ☒ Industrial park ☐ Other
☒ Obtain building plans and applicable structural drawings during survey for antenna location(s). If unavailable, name/phone number for person who can provide drawings: _____

D. Network Satellite Information

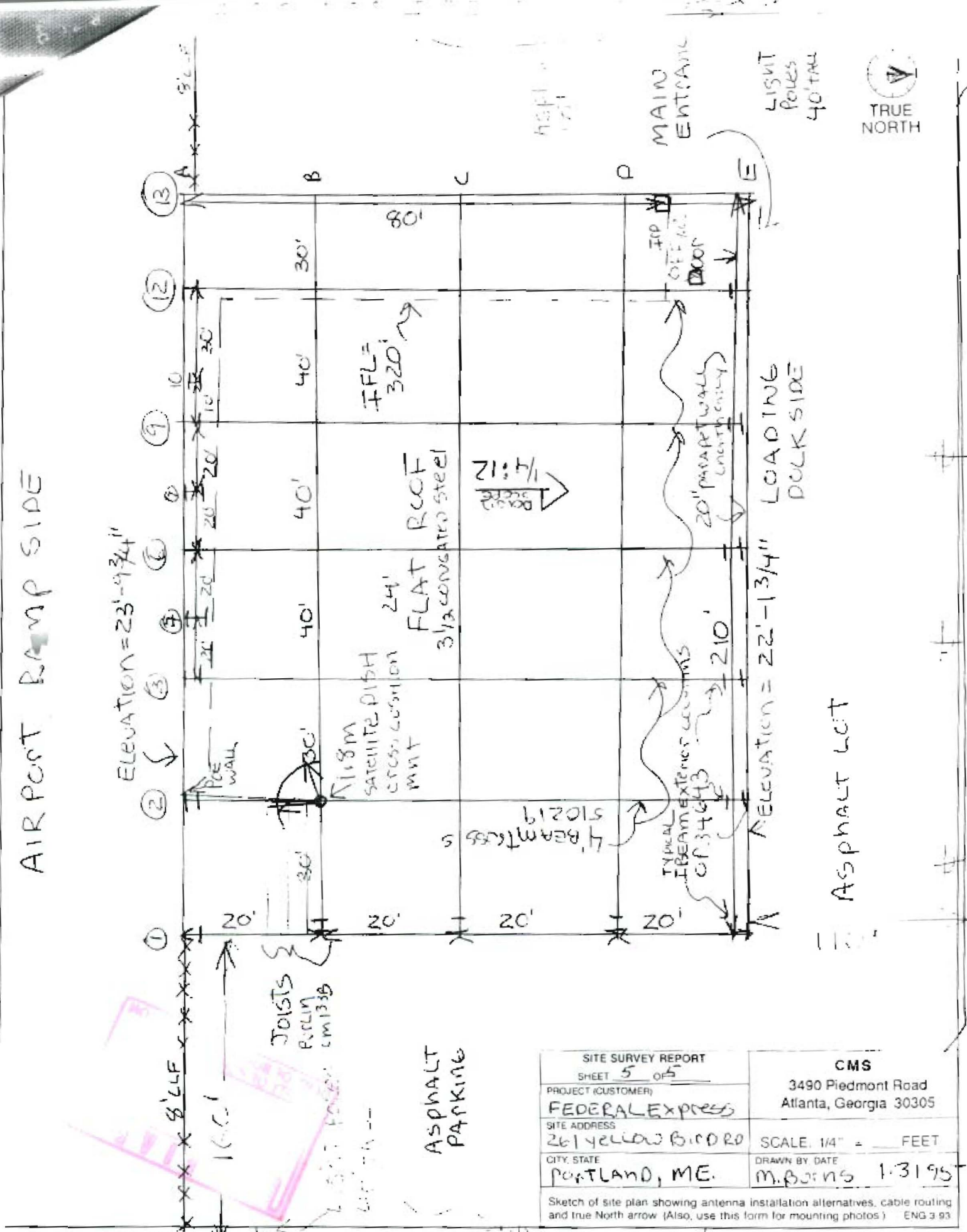
Network Satellite: _____ ☐ Single Pole or ☐ Dual Pole.

E. Antenna Mount Alternatives

☒ NPR MOUNT Rank landlord preference for mount & location? ☒ 1 ☐ 2 ☐ 3 ☐ 4
Height of roof from ground level? 24' Ft. — ACTUAL IS 23' 4 3/4"
Roof construction? ☐ Membrane ☐ Built-up (tar/gravel) ☐ Concrete slab

☒ Other, describe CORRUGATED STEEL ROOF, 3 1/2" DEEP - MUST USE SLEEPERS
Support structure under roof mount location? ☐ Wood frame
☐ Steel I-beam ☒ Steel joist construction ☐ Other, describe STEEL TRUSS 4' TALL (PURLIN 510219)
Is Bonded Roofer required? ☐ Y ☒ N. If yes, name/ph. # of building's Bonded Roofer? PUT POE IN SOUTH WALL UNDER EVE

Will antenna/mount fit through all entry doorways to roof? ☐ Y ☒ N. Describe access and method of getting equipment to roof: USE CRANE



SITE SURVEY REPORT	CMS
SHEET 5 OF 5	3490 Piedmont Road Atlanta, Georgia 30305
PROJECT (CUSTOMER) FEDERAL Express	
SITE ADDRESS 261 YELLOW BIRD RD	SCALE: 1/4" = ___ FEET
CITY, STATE PORTLAND, ME.	DRAWN BY DATE M. BURNS 1-31-95

Sketch of site plan showing antenna installation alternatives, cable routing and true North arrow (Also, use this form for mounting photos.) ENG 3-93

WHITE — CMS YELLOW — Site Survey Engineer

FORM CMS30-1010

BENNETT & PLESS
INCORPORATED

Consulting Structural Engineers

1900 Century Place
Suite 300
Atlanta, GA 30345
404 325-2000
FAX 404 325-2716

830 McCallie Ave
Suite 100
Chattanooga, TN 37403
615 756-7943

February 28, 1995

Mr. Chris Elder
Convergent Media Systems
3490 Piedmont Road
Atlanta, Georgia 30305

RE: 1.8 M Antenna & Column Mount
Federal Express
261 Yellow Bird Road
Portland, Maine
B&P Job No. 95021.18

Dear Chris:

Bennett & Pless, Inc. has evaluated the structure and the offset column mount for the above referenced project. The antenna can be mounted to an exterior column as shown on the enclosed drawings while providing an adequate factor of safety against overturning for a wind speed of 85 miles per hour at a height of 25 feet above ground per the 1993 BOCA National Building Code. If you have any questions or if we can be of further assistance, please contact us.

Sincerely,
BENNETT & PLESS, INC.

R. T. Pless, P.E.
President

1.8 M ANTENNA AND COLUMN MOUNT

Location: Portland, Maine
Building Code: 1993 BOCA
Exposure: C

Height = 25'
A_{ANT} = 29.6 ft²
V = 85 mph
P_V = 18.5 psf
I = 1.1
K_z = 0.93
G_h = 1.27
C_f = 1.2

$F = P_V I K_z G_h C_f A_{ANT}$

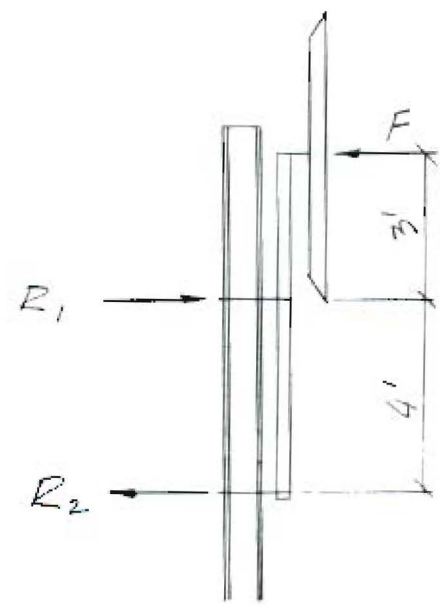
= (18.5 psf)(1.1)(0.93)(1.27)(1.2)(29.6 ft²) = 854 lb.

$R_1 = \frac{7'(854\ lb.)}{4'}$

= 1495 lb.

$R_2 = \frac{3'(854\ lb.)}{4'}$

= 641 lb.



BENNETT & PLESS
INCORPORATED

job name FED EX - PORTLAND, MAINE

job # 95021.18
date 2-28-95
by DGP
chk'd.

sheet # 1
of

Check Mast

$$S_{REQ} = \frac{M}{F_B} = \frac{36"(654\ lb.)}{1.33(.66)(36{,}000\ psi)} = 0.97\ in^3$$

USE 3½" (O.D. = 4.000") SCHED 40 PIPE

$S = 2.39\ in^3 > 0.97\ in^3$ O.K.

Check U-Bolts

USE ½" U-BOLTS

$A = 2(0.196\ in^2) = 0.392\ in^2$

$F_V = 1.33(10\ ksi) = 13.3\ ksi$

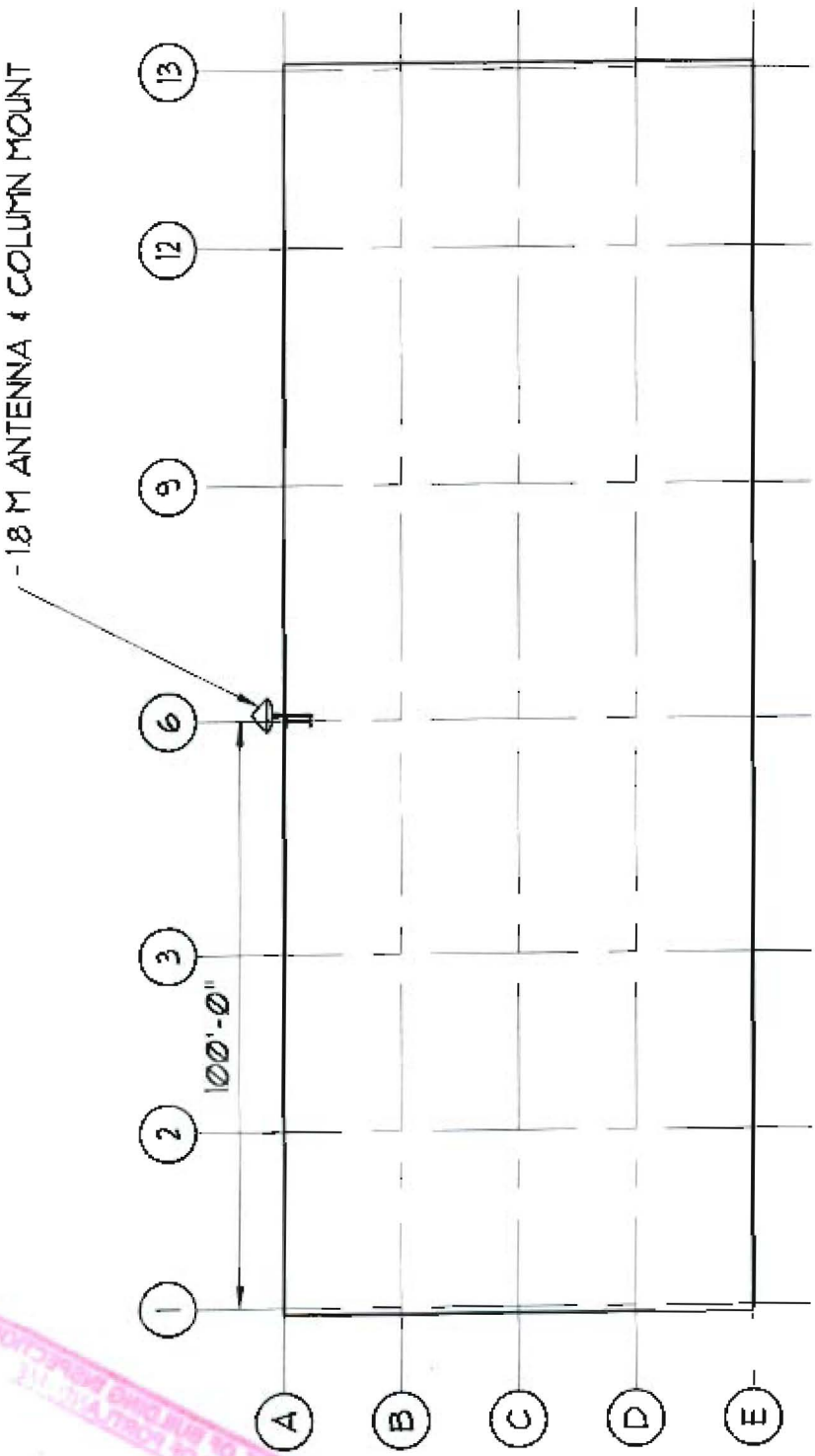
$V_{ALLOW} = A \cdot F_V = (0.392\ in^2)(13.3\ ksi) = 5.2k > 1.5k$ O.K.

BENNETT & PLESS
INCORPORATED

job name FED EX - PORTLAND MAINE

job # 95021.18
date 2-28-95
by DGP
chk'd.

sheet # 2
of 2



ROOF PLAN

BENNETT & PLESS, INC.
Consulting Structural Engineers

1900 Century Place
Suite 300
Atlanta, GA 30345
404 325-2000 FAX 404 325-2716

JOB LOCATION:

FEDERAL EXPRESS
261 YELLOW BIRD ROAD
PORTLAND, MAINE

JOB DESCRIPTION:

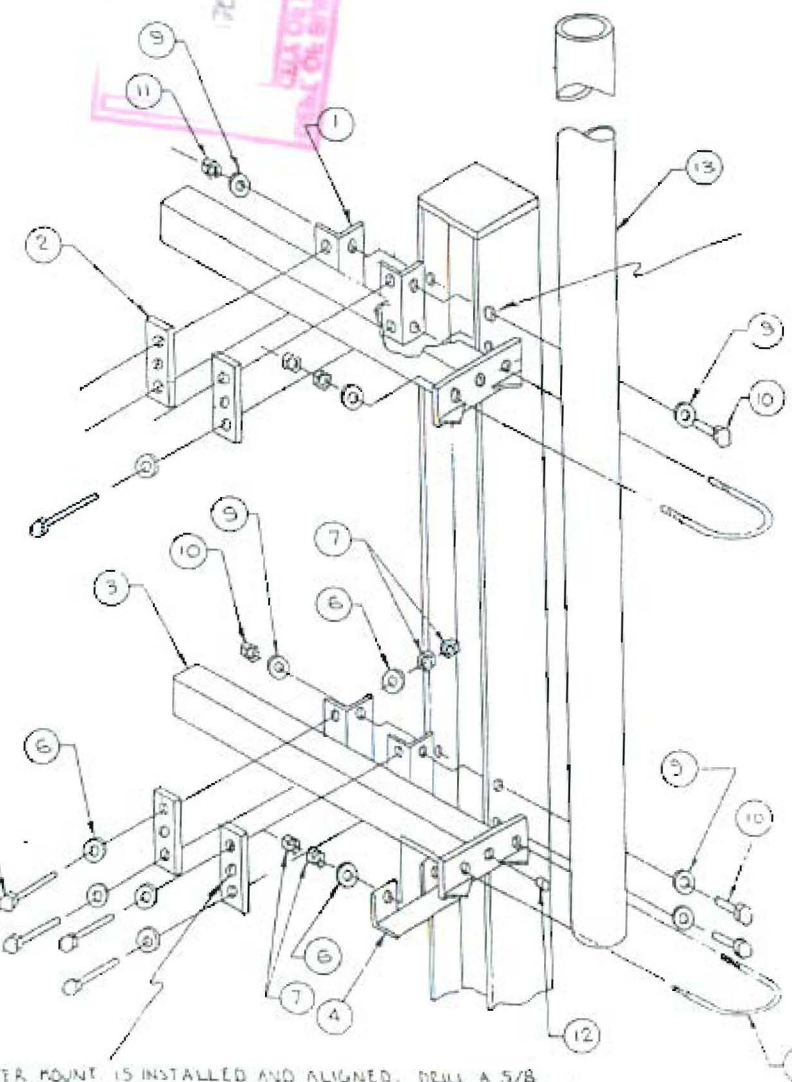
1.8 M ANTENNA AND
COLUMN MOUNT

JOB NO.: 9502118

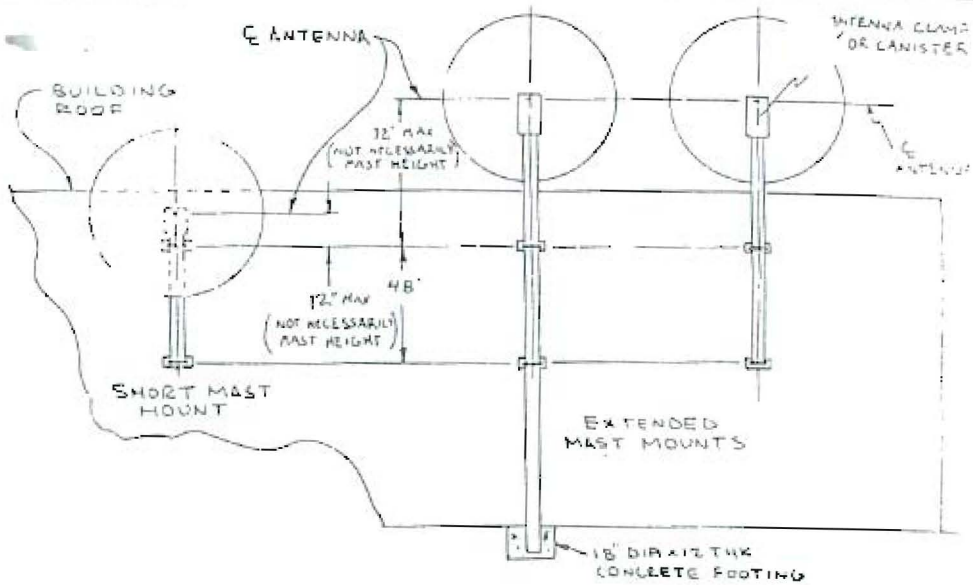
DATE: 2-28-95

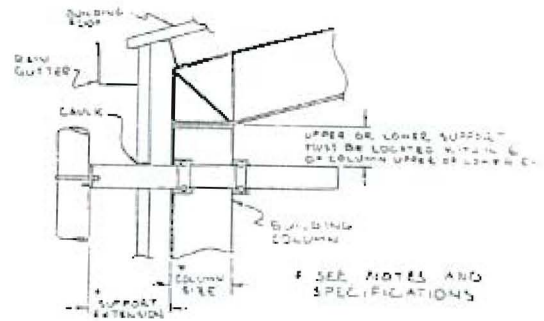
SHEET NO.: 1 / 1

1. It is the purchaser's responsibility to verify that his installation and building structure are able to withstand all loads imposed by his mount.
2. Local Zoning and/or Building Codes may require an architect's or structural engineer's approval prior to installation.
3. All antenna installations should be electrically grounded to meet all applicable codes.
4. The maximum length from the top support to the centerline of the dish is 72 inches.
5. All fasteners and threaded rods must be zinc plated.
6. Cut 2" x 4" hole thru metal siding for supports. After installing supports fill crack around rectangular tube with silicone caulking (20 year rated life sealant).
7. All components must be finished (including interior) by hot dip galvanizing or zinc rich organic paint (applied per manufacturers directions).



ER MOUNT IS INSTALLED AND ALIGNED, DRILL A 5/8
HOLE THRU THE CLAMP BAR CENTER HOLE. SUPPORT COLUMN
D ANGLE CLIP. INSTALL 4 1/2-13 x 5" HEX BOLT WASHERS
D NUT IN ONE PLACE FOR EACH SUPPORT.





SPECIFICATIONS

SHORT MAST

SURVIVAL WIND PRESSURE: (each 40 or Sch 80 Pipe)

Support Extension (in.)	Column Size (in.)	Wind Pressure (PSF)
35	4	32
35	8	32

AZIMUTH TRAVEL:

When the distance from the outside skin of the building to the end of the support is 20 inches (max):

Reflector Elevation Angle (degrees)	Maximum Azimuth Travel (degrees)*
0	+/- 57
10	+/- 57
20	+/- 56
30	+/- 55
42	+/- 53

* Degrees from perpendicular to wall

EXTENDED MAST

DISH HEIGHT:

The maximum length from the top support to the centerline of dish is 72 inches.

SURVIVAL WIND PRESSURE:

Support Extension (in.)	Column Size (in.)	Sch 40 Pipe Wind Pressure (PSF)	Sch 80 Pipe Wind Pressure (PSF)
5	4	28	36
5	5	28	35
5	10	28	28
5	4	26	33
5	8	26	33
5	13	26	31
11	4	24	31
11	8	24	28
11	12	24	26

DESIGNED TO BUILDING CODE STANDARDS:
American National Standards Institute (ANSI A58.1-1982)
American Institute of Steel Construction (Eighth Edition)

CORROSION PROTECTION:
Hot dip galvanized parts
Zinc plated hardware

BILL OF MATERIAL

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	4	A-0009	Angle, Clip
2	4	A-0010	Bar, Clamp
3	2	A-0046	Support
4	1	A-0047	Angle, Mast Support
5	2	A-0033	U-Bolt 1/2-13x3.5" Hex
6	24		1/2 Dia Flat Washer
7	26		1/2-13 Hex Nut
8	10		1/2-13 x 4" Hex Bolt
9	16		5/8 Dia Flat Washer
10	8		5/8-11 x 2" Hex Bolt
11	8		5/8-11 Hex Nut
12	2		Cap Plug
13	1		3.5" Pipe (To Be Supplied By Owner)

B&P Job No. 95021.18

Design & Manufacturing Services, Inc
3069 McCall Drive, Suite 4
Atlanta, GA 30340

DATE 7/26/96 APPROVED BY RMF DRAWN BY [illegible] REVISED

Column Mount, Extended & Short
1.8M Offset Antenna, 3 1/2" Pipe

Sht 2 of 2

B-0099

SERIES 1181 KU-BAND 1.8M ANTENNA SYSTEM
RECEIVE ONLY-UPGRADEABLE TO RECEIVE/TRANSMIT

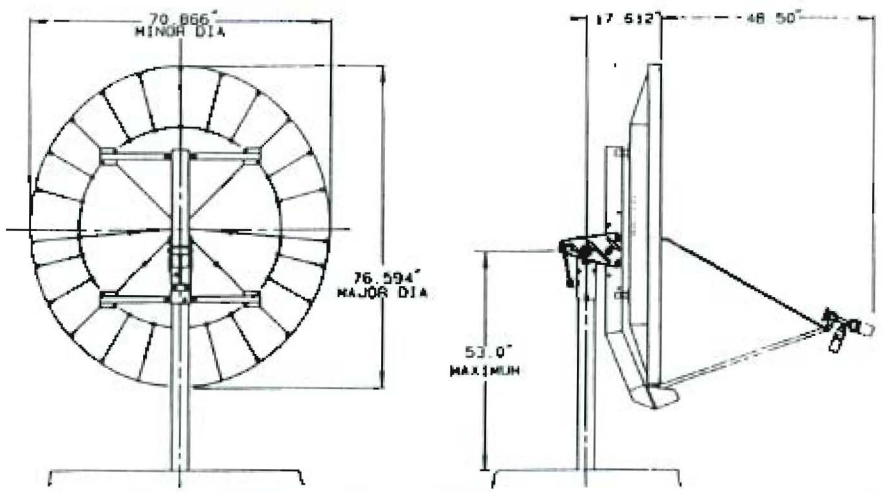
SPECIFICATIONS

ELECTRICAL

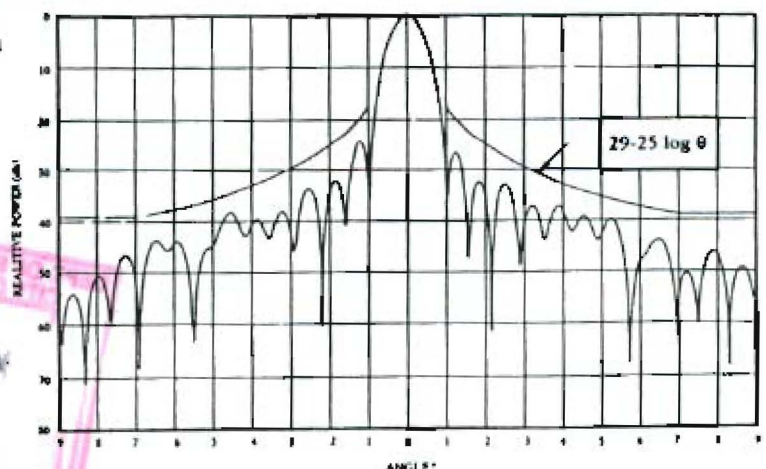
Effective Aperture	1.8M Dia. (70.866 inch dia.)
Operating Frequency, Rx	11.7 - 12.2 GHz
Tx	14.0 - 14.5 GHz
Midband Gain, Rx	45.0 dBi at 11.95 GHz, Min.
Tx	46.5 dBi at 14.25 GHz, Min.
Polarization	Linear, Single or Dual
Isolation Rx	> 30 dB
Sidelobe Envelope, Co-Pol (dBi)	
Mainbeam < θ < 7°	29-25 Log θ
7° < θ < 9.2°	+8
9.2° < θ < 48°	32-25 Log θ
48° < θ < 180°	-10
Cross-Pol Envelope (dBi)	
0° < θ < (1.593/f)°	15.0 + 20 Log (f/11.95)
(1.593/f)° < θ < (14.340/f)°	24.5 + 20 Log (f/11.95)
(14.340/f)° < θ < 7°	19-25 Log θ
First Sidelobe Level	- 25 dB (typical)
VSWR	1.3:1 Max.
Antenna Noise Temperature	
at 10° elevation	40.4°K
at 20° elevation	27.3°K
at 30° elevation	22.8°K

MECHANICAL

Reflector Material	Glass Fiber Reinforced Polyester SMC	
Antenna Optics	Prime Focus, Offset Feed	
Mount Type	Elevation over Azimuth	
Elevation Adjustment Range	10° to 70°, continuous fine adjustment	
Azimuth Adjustment Range	360° Continuous	
Environmental Performance	Operational	Survival
Wind Loading	45 mi/h (With .2° pointing error)	125 mi/h
Temperature	- 20°F to 120°F	- 50°F to 160°F
Rain	½ inch/h	2 inch/h
Ice	·	½ inch radial
Atmospheric Conditions	Salt, Pollutants and Contaminants as encountered in coastal and industrial areas.	
Solar Radiation (Incident)	360 BTU/h/ft²	



Typical Radiation Pattern
at 14.25 GHz



Prodelin

B&P Job No. 95021.18

9/96
Specifications subject to change
5002 067

BENNETT & PLESS
INCORPORATED
Consulting Structural Engineers

1900 Century Place
Suite 300
Atlanta, GA 30345
404 325-2000
FAX 404 325-2716

930 McCallie Ave
Suite 100
Chattanooga, TN 37403
615 756-7943

February 28, 1995

Mr. Chris Elder
Convergent Media Systems
3490 Piedmont Road
Atlanta, Georgia 30305

RE: 1.8 M Antenna & Column Mount
Federal Express
261 Yellow Bird Road
Portland, Maine
B&P Job No. 95021.18

Dear Chris:

Bennett & Pless, Inc. has evaluated the structure and the offset column mount for the above referenced project. The antenna can be mounted to an exterior column as shown on the enclosed drawings while providing an adequate factor of safety against overturning for a wind speed of 85 miles per hour at a height of 25 feet above ground per the 1993 BOCA National Building Code. If you have any questions or if we can be of further assistance, please contact us.

Sincerely,
BENNETT & PLESS, INC.

R. T. Pless, P.E.
President

1.8 M ANTENNA AND COLUMN MOUNT

Location: Portland, Maine
Building Code: 1993 BOCA
Exposure: C

Height = 25' $A_{ANT} = 29.6\ ft^2$
$V = 85$ mph
$P_V = 18.5$ psf
$I = 1.1$
$K_z = 0.93$
$G_h = 1.27$
$C_f = 1.2$

$F = P_V I K_z G_h C_f A_{ANT}$

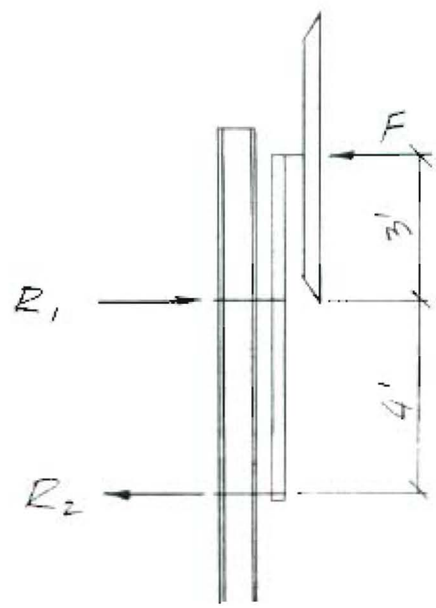
$= (18.5\ psf)(1.1)(0.93)(1.27)(1.2)(29.6\ ft^2) = \underline{854\ lb.}$

$R_1 = \dfrac{7'(854\ lb.)}{4'}$

$= \underline{1495\ lb.}$

$R_2 = \dfrac{3'(854\ lb.)}{4'}$

$= \underline{641\ lb.}$



BENNETT & PLESS
INCORPORATED

job name FED EX - PORTLAND, MAINE

job # 95021.18
date 2-28-95
by DOP
chk'd.

sheet # 1
of 2

Check Mast

$$S_{REQ} = \frac{M}{F_B} = \frac{36"(654\ lb.)}{1.33(.66)(36{,}000\ psi)} = 0.97\ in^3$$

USE 3½" (O.D. = 4.000") SCHED 40 PIPE

$S = 2.39\ in^3 > 0.97\ in^3$ O.K.

Check U-Bolts

USE ½" U-BOLTS

$A = 2(0.196\ in^2) = 0.392\ in^2$

$F_V = 1.33(10\ ksi) = 13.3\ ksi$

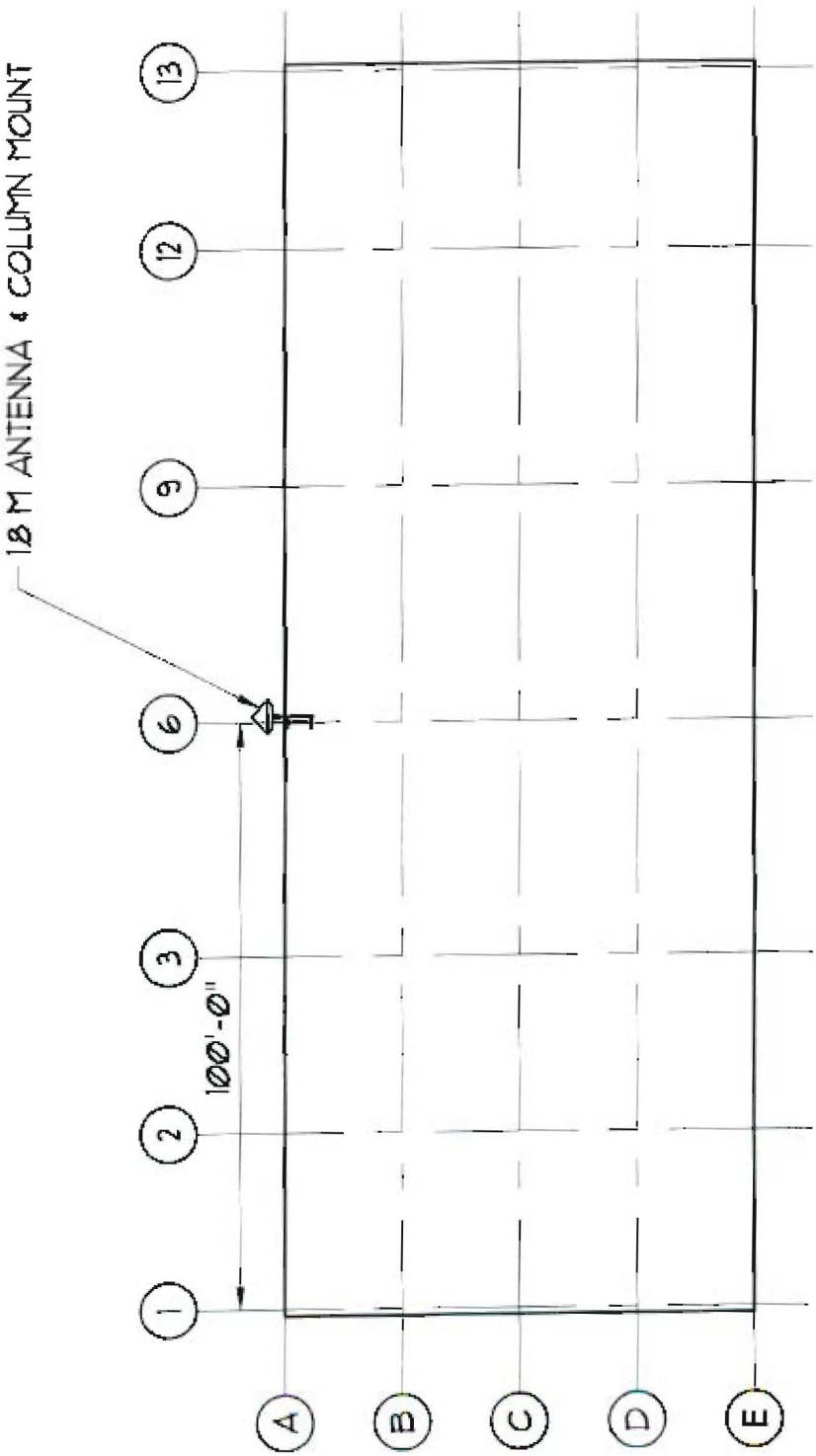
$V_{ALLOW} = A\ F_V = (0.392\ in^2)(13.3\ ksi) = 5.2k > 1.5k$ O.K.

BENNETT & PLESS
INCORPORATED

job name FED EX - PORTLAND MAINE

job # 95021.18
date 2-28-95
by DGP
chk'd

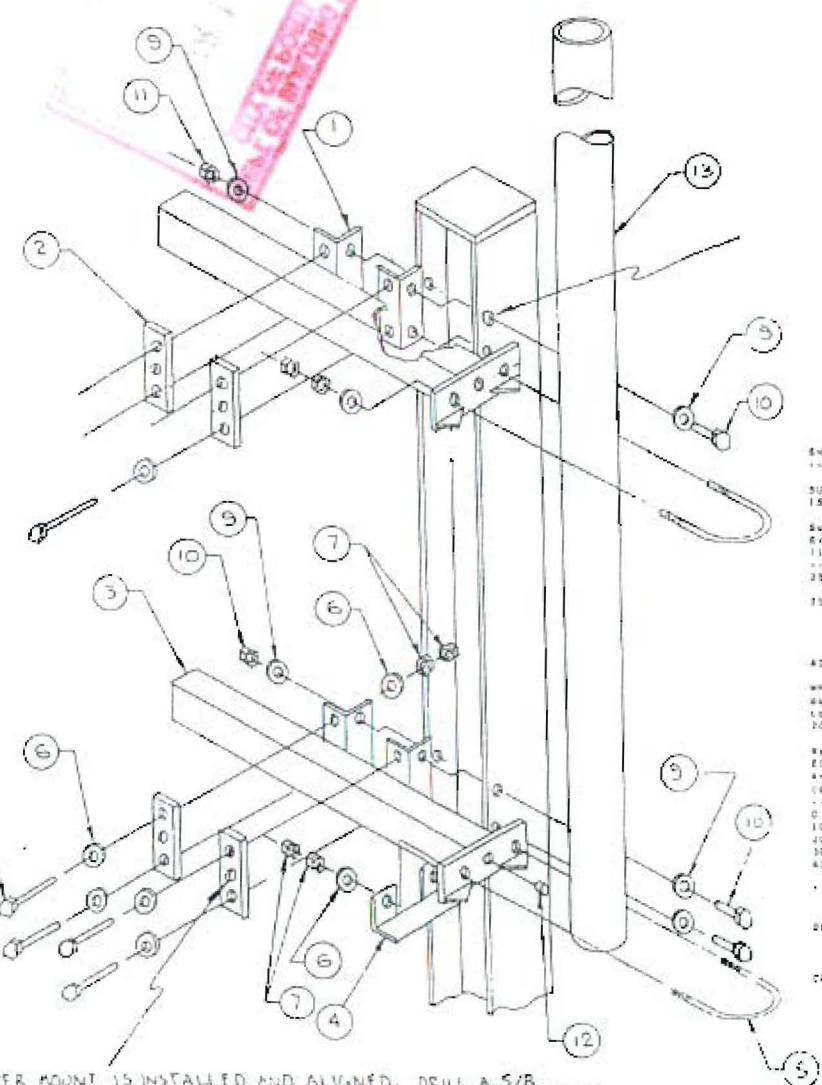
sheet # 2
of 2

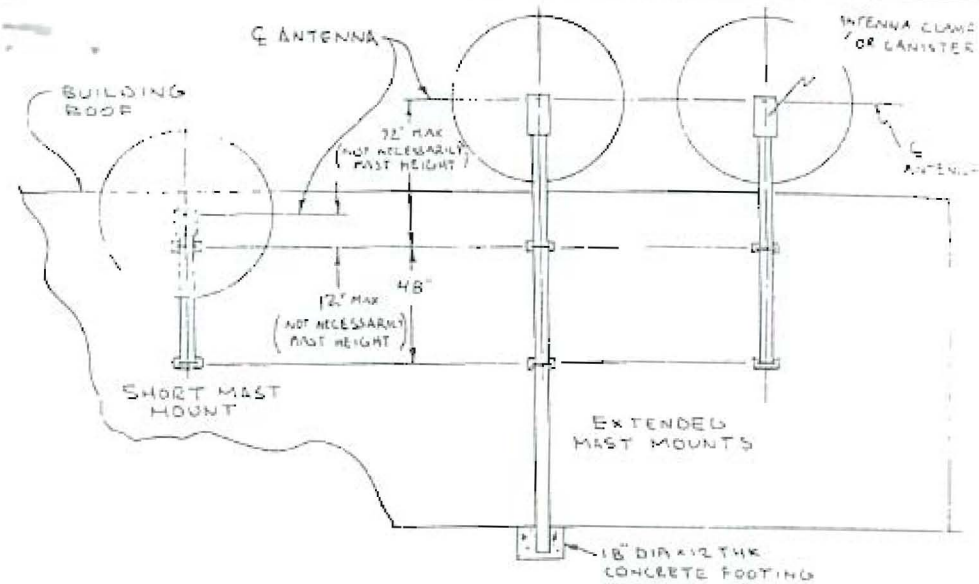


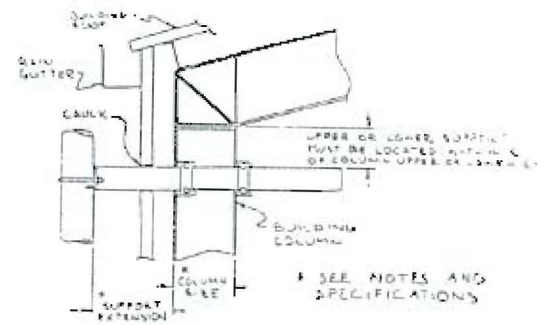
ROOF PLAN

BENNETT & PLESS, INC. Consulting Structural Engineers 1900 Century Place Suite 300 Atlanta, GA 30345 404 325-2000 FAX 404 325-2716	JOB LOCATION: FEDERAL EXPRESS 261 YELLOW BIRD ROAD PORTLAND, MAINE	JOB DESCRIPTION: 1.8 M ANTENNA AND COLUMN MOUNT	JOB NO.: 9502L.18 DATE: 2-28-95 SHEET NO.: 1/1

1. It is the purchaser's responsibility to verify that his installation and building structure are able to withstand all loads imposed by his mount.
2. Local zoning and/or Building Codes may require an architect's or structural engineer's approval prior to installation.
3. All antenna installations should be electrically grounded to meet all applicable codes.
4. The maximum length from the top support to the centerline of the dish is 72 inches.
5. All fasteners and threaded rods must be zinc plated.
6. Cut 2" x 4" hole thru metal siding for supports. After installing supports fill crack around rectangular tube with silicone caulking (20 year rated life sealant).
7. All components must be finished (including interior) by hot dip galvanizing or zinc rich organic paint (applied per manufacturers directions).







SPECIFICATIONS

SHORT MAST

SURVIVAL WIND PRESSURE: (Sch 40 or Sch 80 Pipe)

Support Extension (in.)	Column Size (in.)	Wind Pressure (PSF)
25	4	33
31	4	32

AZIMUTH TRAVEL:

When the distance from the outside skin of the building to the end of the support is 30 inches then

Reflector Elevation Angle (degrees)	Maximum Azimuth Travel (degrees)*
0	+/- 57
10	+/- 57
20	+/- 55
30	+/- 53
40	+/- 51

* Degrees from perpendicular to wall

EXTENDED MAST

DISH HEIGHT:

The maximum length from the top support to the centerline of your dish is 72 inches

SURVIVAL WIND PRESSURE:

Support Extension (in.)	Column Size (in.)	Sch 40 Pipe Wind Pressure (PSF)	Sch 80 Pipe Wind Pressure (PSF)
5	5	38	38
7	8	38	38
9	11	34	38
5	5	29	29
7	8	28	35
9	11	29	35
13	4	33	37
11	5	34	38
13	10	29	38

DESIGNED TO BUILDING CODE STANDARDS
American National Standards Institute ANSI A58.1-1982
American Institute of Steel Construction Eighth Edition

CORROSION PROTECTION:
Hot dip galvanized parts
Zinc plated hardware

BILL OF MATERIAL

ITEM NO.	Qty	PART NUMBER	DESCRIPTION
1	4	A-0009	Angle, Clip
2	6	A-0010	Bar, Clamp
3	2	A-0046	Support
4	1	A-0047	Angle, Mast Support
5	2	A-0033	U-Bolt 1/2-13x3.5" Dia
6	24		1/2 Dia Flat Washer
7	26		1/2-13 Hex Nut
8	10		1/2-13 x 4" Hex Bolt
9	16		5/8 Dia Flat Washer
10	8		5/8-11 x 2" Hex Bolt
11	8		5/8-11 Hex Nut
12	2		Cap Plug
13	1		3.5" Pipe (To Be Supplied By Others

ER MOUNT IS INSTALLED AND ALIGNED, DRILL A 5/8
HOLE THRU THE CLAMP BAR CENTER HOLE, SUPPORT COLUMN
D ANGLE CLIP. INSTALL A 1/2-13 x 5" HEX BOLT WASHERS
D NUT IN ONE PLACE FOR EACH SUPPORT.

B&P Job No. 95021.18

Design & Manufacturing Services, Inc
3069 McCall Drive, Suite 4
Atlanta, GA 30340

DATE 7/26/96 | APPROVED BY RMF | DRAWN BY

Column Mount, Extended & Short
1.8M Offset Antenna, 3 1/2" Pipe.

Sht 2 of 7 | B-0096

SERIES 1181 KU-BAND 1.8M ANTENNA SYSTEM
RECEIVE ONLY-UPGRADEABLE TO RECEIVE/TRANSMIT

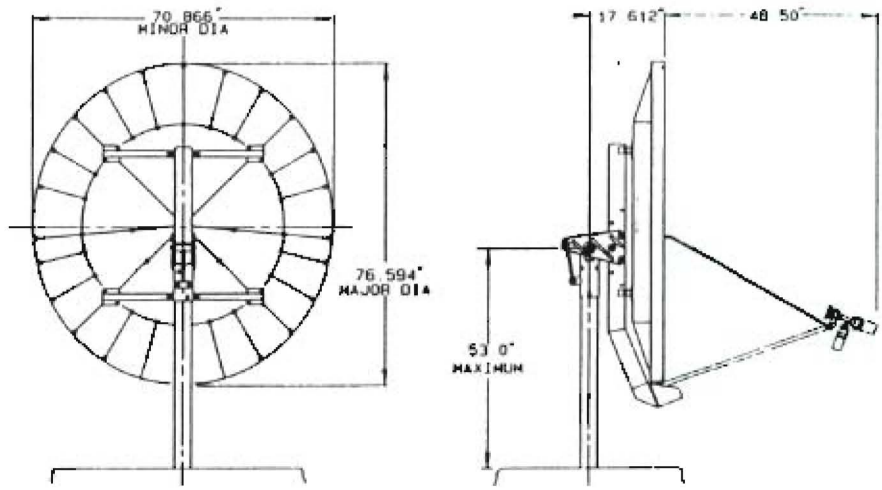
SPECIFICATIONS

ELECTRICAL

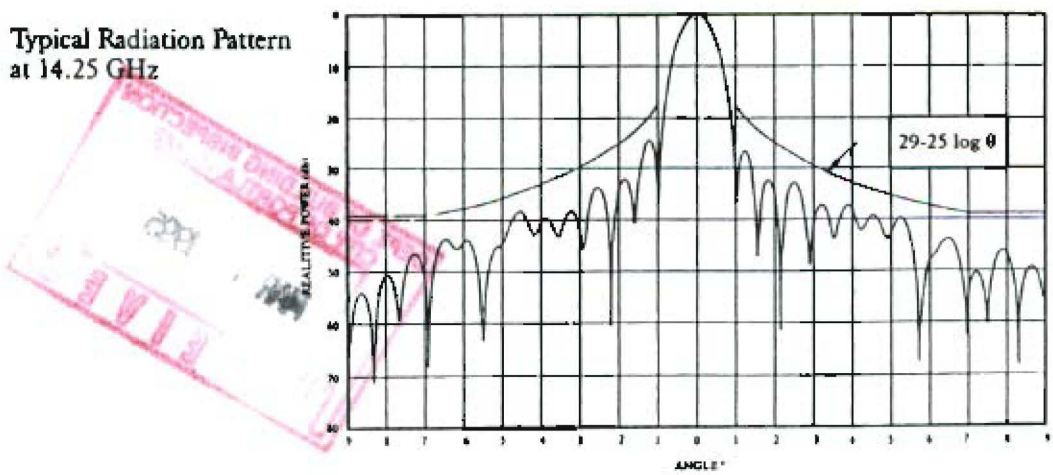
Effective Aperture	1.8M Dia. (70.866 inch dia.)
Operating Frequency, Rx	11.7 - 12.2 GHz
Tx	14.0 - 14.5 GHz
Midband Gain, Rx	45.0 dBi at 11.95 GHz, Min.
Tx	46.5 dBi at 14.25 GHz, Min.
Polarization	Linear, Single or Dual
Isolation Rx	> 30 dB
Sidelobe Envelope, Co-Pol (dBi)	
Mainbeam < θ < 7°	29-25 Log θ
7° < θ < 9.2°	+8
9.2° < θ < 48°	32-25 Log θ
48° < θ < 180°	−10
Cross-Pol Envelope (dBi)	
0° < θ < (1.593/f)°	15.0 + 20 Log (f/11.95)
(1.593/f)° < θ < (14.340/f)°	24.5 + 20 Log (f/11.95)
(14.340/f)° < θ < 7°	19-25 Log θ
First Sidelobe Level	−25 dB (typical)
VSWR	1.3:1 Max.
Antenna Noise Temperature	
at 10° elevation	40.4°K
at 20° elevation	27.3°K
at 30° elevation	22.8°K

MECHANICAL

Reflector Material	Glass Fiber Reinforced Polyester SMC	
Antenna Optics	Prime Focus, Offset Feed	
Mount Type	Elevation over Azimuth	
Elevation Adjustment Range	10° to 70°, continuous fine adjustment	
Azimuth Adjustment Range	360° Continuous	
Environmental Performance	Operational	Survival
Wind Loading	45 mi/h (With .2° pointing error)	125 mi/h
Temperature	−20°F to 120°F	−50°F to 160°F
Rain	½ inch/h	2 inch/h
Ice	·	½ inch radial
Atmospheric Conditions	Salt, Pollutants and Contaminants as encountered in coastal and industrial areas.	
Solar Radiation (Incident)	360 BTU/h/ft²	



Typical Radiation Pattern
at 14.25 GHz



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B&P Job No. 95021.18

9/96
Specifications subject to change
50021-067