MEMORANDUM

TO: University Facilities Planning Board: Nancy Cornwell - Chair, Walt Banziger - Vice Chair, Kurt Blunck, Allyson Brekke, Jeff Butler, ASMSU President, Michael Everts, Chris Fastnow, Greg Gilpin, Mandy Hansen, Jeff Jacobsen, Terry Leist, Tom McCoy, Martha Potvin, Fatih Rifki, Jim Rimpau, Tom Stump, Julie Tatarka, Jim Thull, Cara Thuringer – ASMSU, Brenda York

FROM: Victoria Drummond, Assoc. University Planner, Planning, Design & Construction

RE: **June 18, 2013,** meeting of the University Facilities Planning Board to be held in the **Facilities Meeting Quonset** at **3:30 pm**

ITEM No. 1 – APPROVAL OF NOTES
Approval of the draft notes from May 21, 2013.

ITEM No. 2 – EXECUTIVE COMMITTEE REPORT
Report on any current Executive Committee actions.

ITEM No. 3 – CONSENT AGENDA
No items.

ITEM No. 4 – INFORMATIONAL – Bobcat Stadium Distributed Antenna System Installation
Presenter – Pat Simmons

ITEM No. 5 – DISCUSSION – Gender Neutral Restrooms
Presenter – Victoria Drummond

ITEM No. 6 – DISCUSSION – Family Care/Lactation Rooms
Presenter – Victoria Drummond

HORIZON ITEMS

- **External Building Signage Policy**
- **Seminar Materials**
- **Master Planning Issues**
- **Revisit and Update Policies**
- **HBO5 Amendment for lab Facility**

VCD/lk
PC:

President Cruzado
Jayson O'Neill, President's Office
Maggie Hammett, President's Office
Allen Yarnell, President's Office
Lisa Duffey, Provost Office
Diane Heck, Provost Office
Victoria Drummond, Facilities PDC
ASMSU President
Heidi Gagnon, VP Admin & Finance
Jennifer Joyce, VP Student Success
Linda LaCrone, VP Research Office
Bonnie Ashley, Registrar
Robert Putzke, MSU Police
Becky McMillan, Auxiliaries Services
Julie Kipfer, Communications
Jody Barney, College of Agriculture
Susan Fraser, College of Agriculture
Robin Happel, College of Agriculture
JoDee Palin, College of Arts & Arch

UNIVERSITY FACILITIES PLANNING BOARD

June 18, 2013

INFORMATIONAL ITEM # 4	**Distributed Antenna System (DAS) Installation at Bobcat Stadium**

PRESENTERS:

Victoria Drummond, Sam Des Jardins, Pat Simmons and Crown Castle Representatives

PROJECT PHASE:	**PLANNING**		**SCHEMATIC**	**X**	**DESIGN DOCUMENTS**		**CONSTRUCTION DOCUMENTS**	

VICINITY MAP:

Map of the Bobcat Stadium showing antenna locations
Cut sheets for the two types of antennas to be installed

STAFF COMMENTS:

Earlier this year, MSU (Athletics, Sports Facilities, ITC, and University Services) entered into a contract with Crown Castle to provide a Distributed Antenna System (DAS) within Bobcat Stadium to expand the data and video bandwidth capacity for cell phone users. The DAS will provide capacity for the 27 thousand potential cell phone users in the stadium on game days, and generally provide additional service to the University Community.

The DAS requires replacing some current banner/flag poles that can accommodate a rectangle antenna approximately 3' wide. Smaller antennas the size and shape of a large smoke detector will be located within the clubhouse spaces and under some of the bleachers. A control hub will be located within a small facility under the east stands. This is all new construction and will require both power and telecommunications cables and conduit throughout the Stadium to connect the hub to the antennas.

Crown Castle will contract with cell providers to use the installed equipment and provide cell phone service. The first scheduled is Verizon Wireless. Future cell phone carriers can be added.

As an informational item, UFPB is asked to review the plan for the Bobcat Stadium and to express any concerns regarding the safety and aesthetics within public spaces.

COMPLIANCE:	**YES**	**NO**
MSU POLICIES	**X**	
COMMITTEE OR APPROPRIATE REVIEW	**X**	
MASTER PLAN	**X**	

BOARD ACTION REQUIRED:

No action required – Informational Item.

zinwave

Montana State University
Bobcat Stadium
700/800/850/1900/2100MHz Wideband DAS

1 Bobcat Circle Bozeman, MT 59717

The Wireless World Indoors

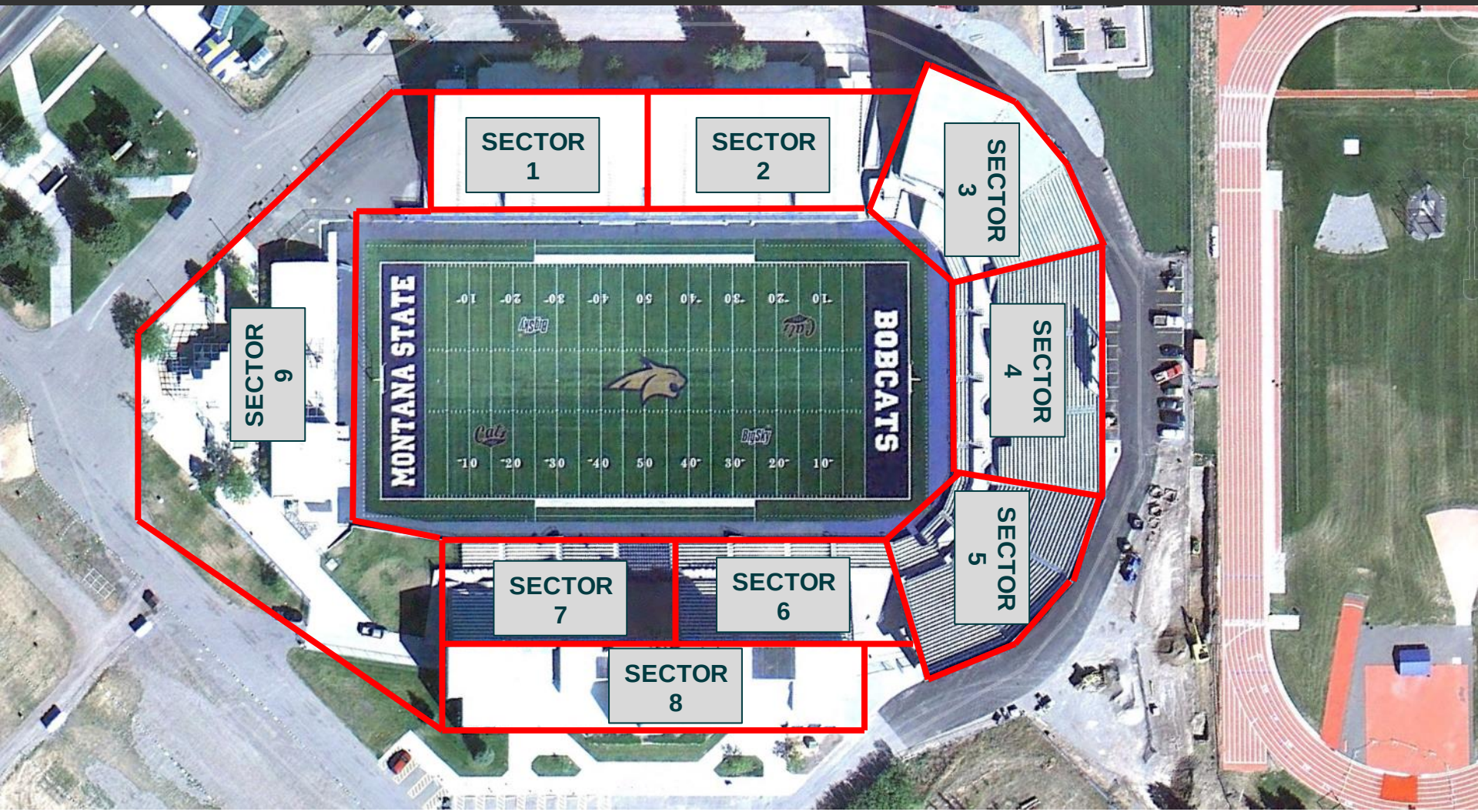
Overview

zinwave

Aerial Plan- Bobcat Stadium

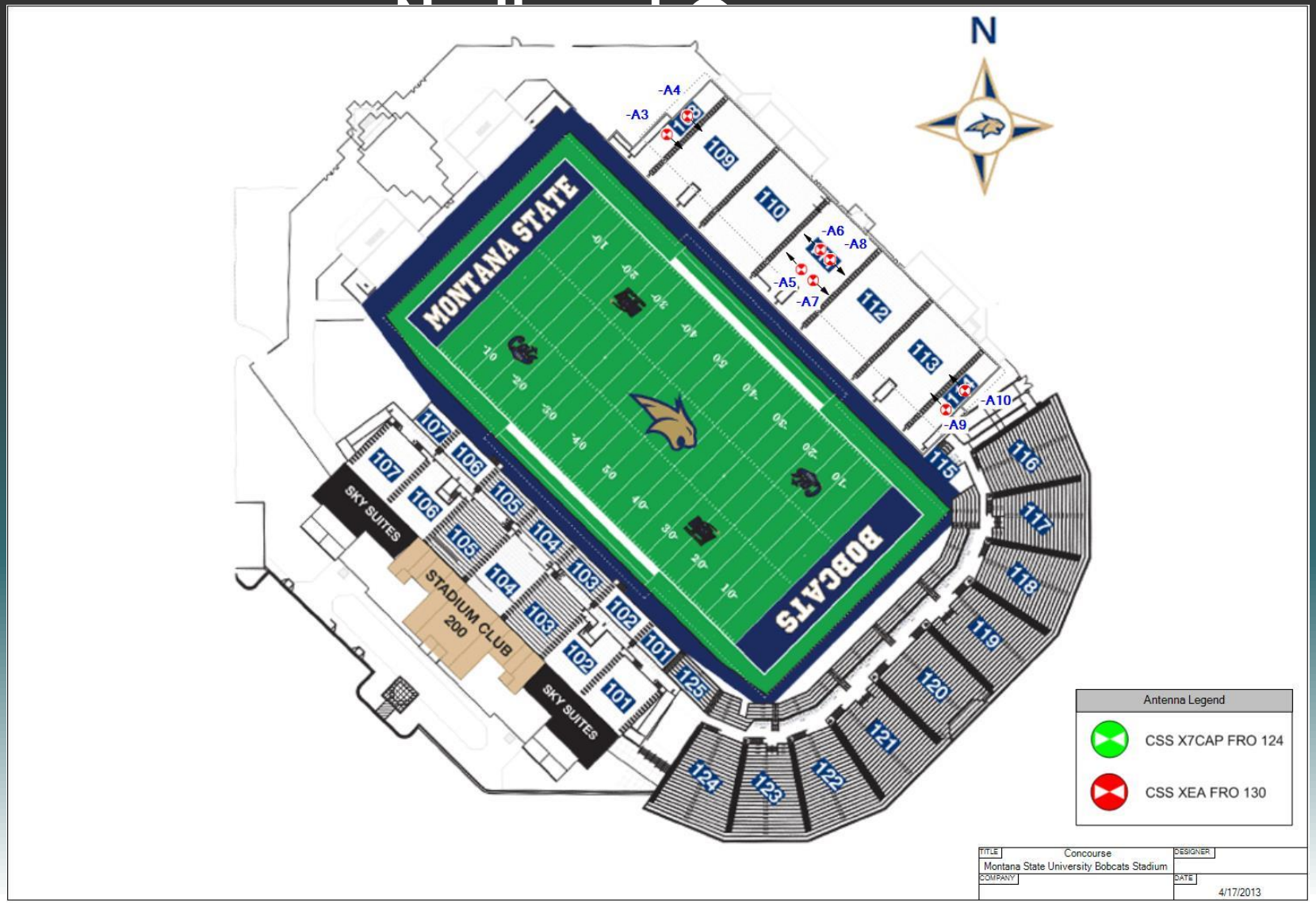
zinwave

Sector Plan

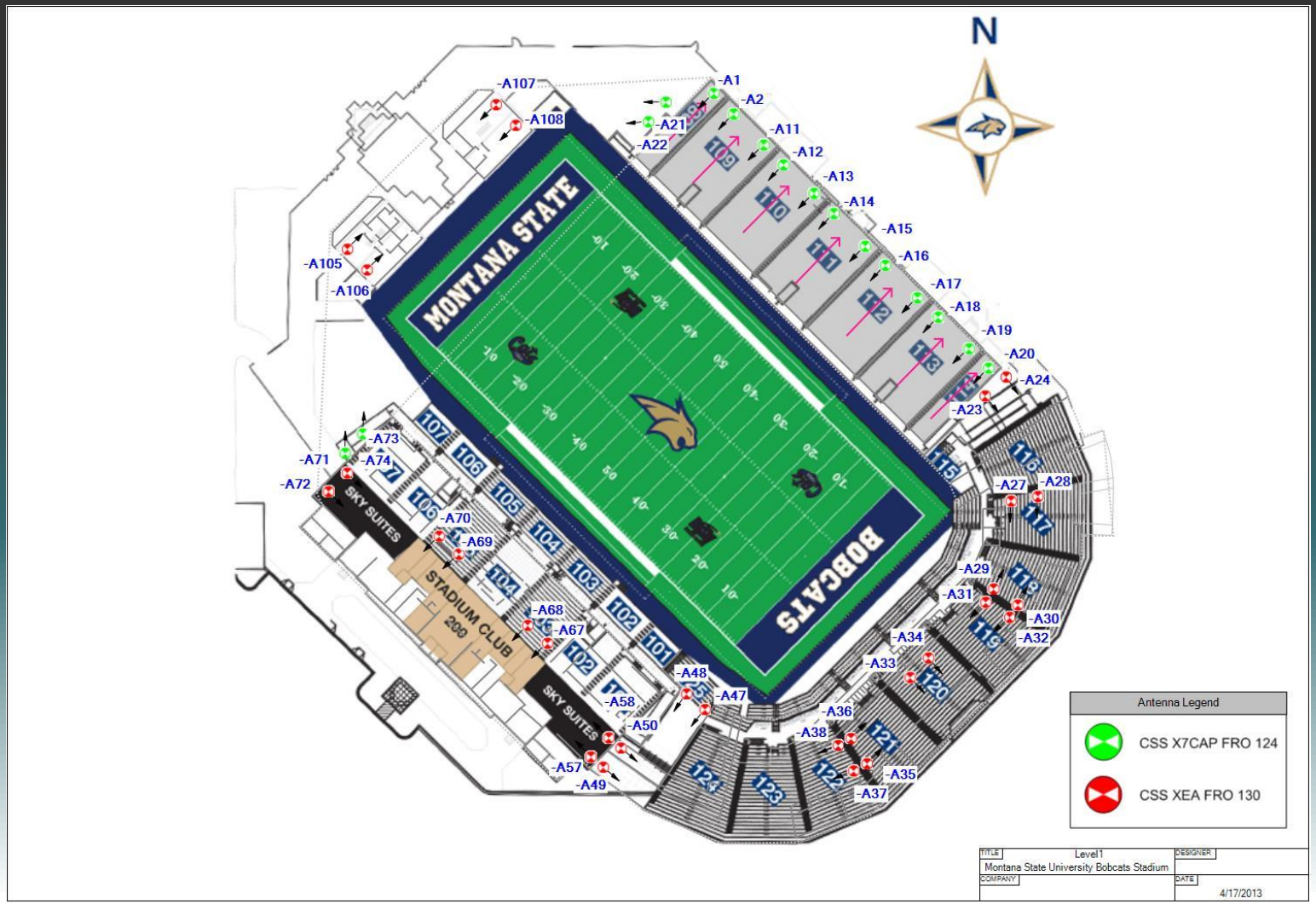


DAS Layout Plans

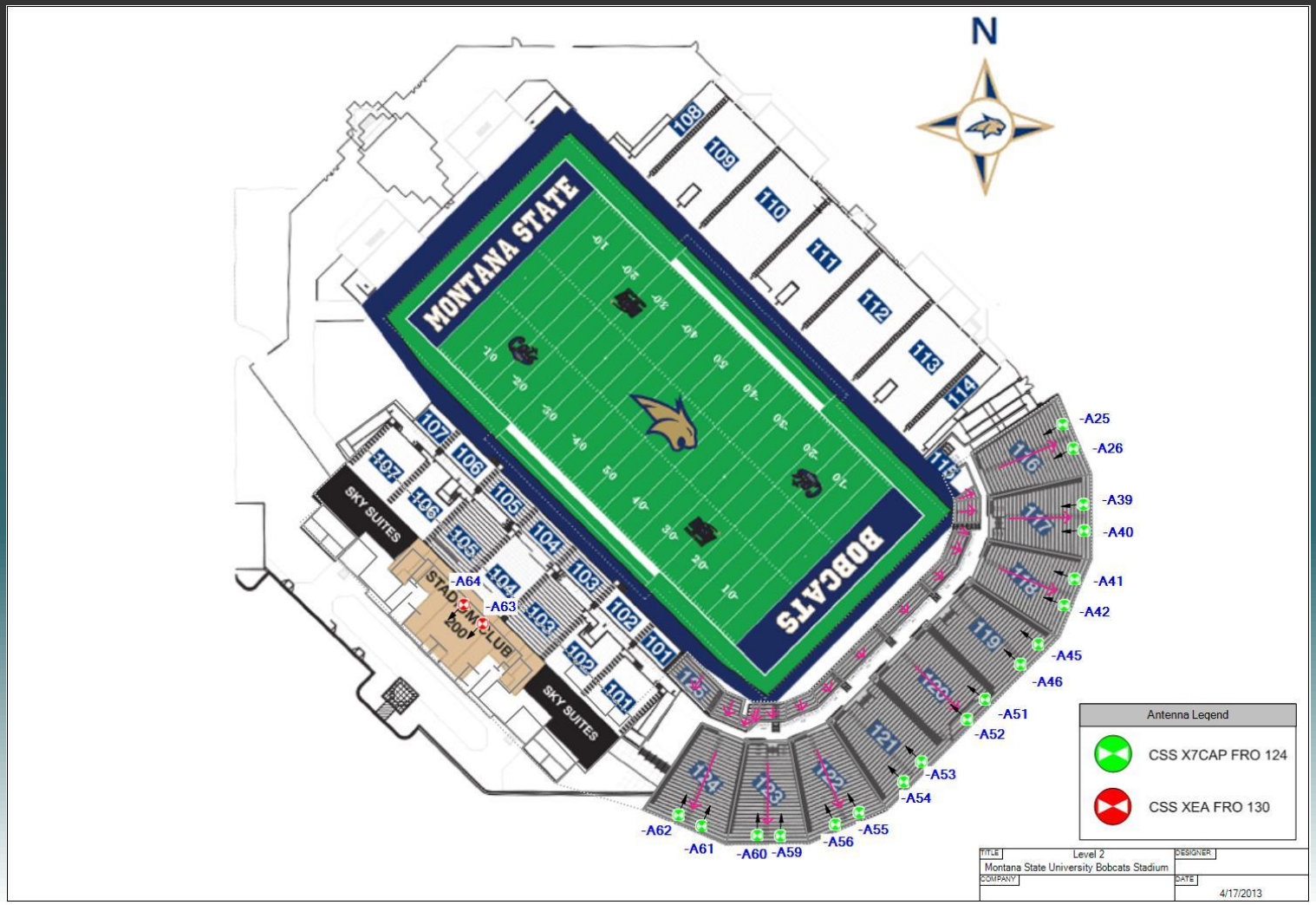
zinwave


N
-A4
-A3
-A6
-A8
-A5
-A7
-A10
-A9
MONTANA STATE
BOBCATS
SKY SUITES
STADIUM CLUB
200
SKY SUITES
107
106
105
104
103
102
101
109
110
112
113
115
116
117
118
119
120
121
122
123
124
125
Antenna Legend
CSS X7CAP FRO 124
CSS XEA FRO 130
TITLE
Concourse
Montana State University Bobcats Stadium
COMPANY
DESIGNER
DATE
4/17/2013

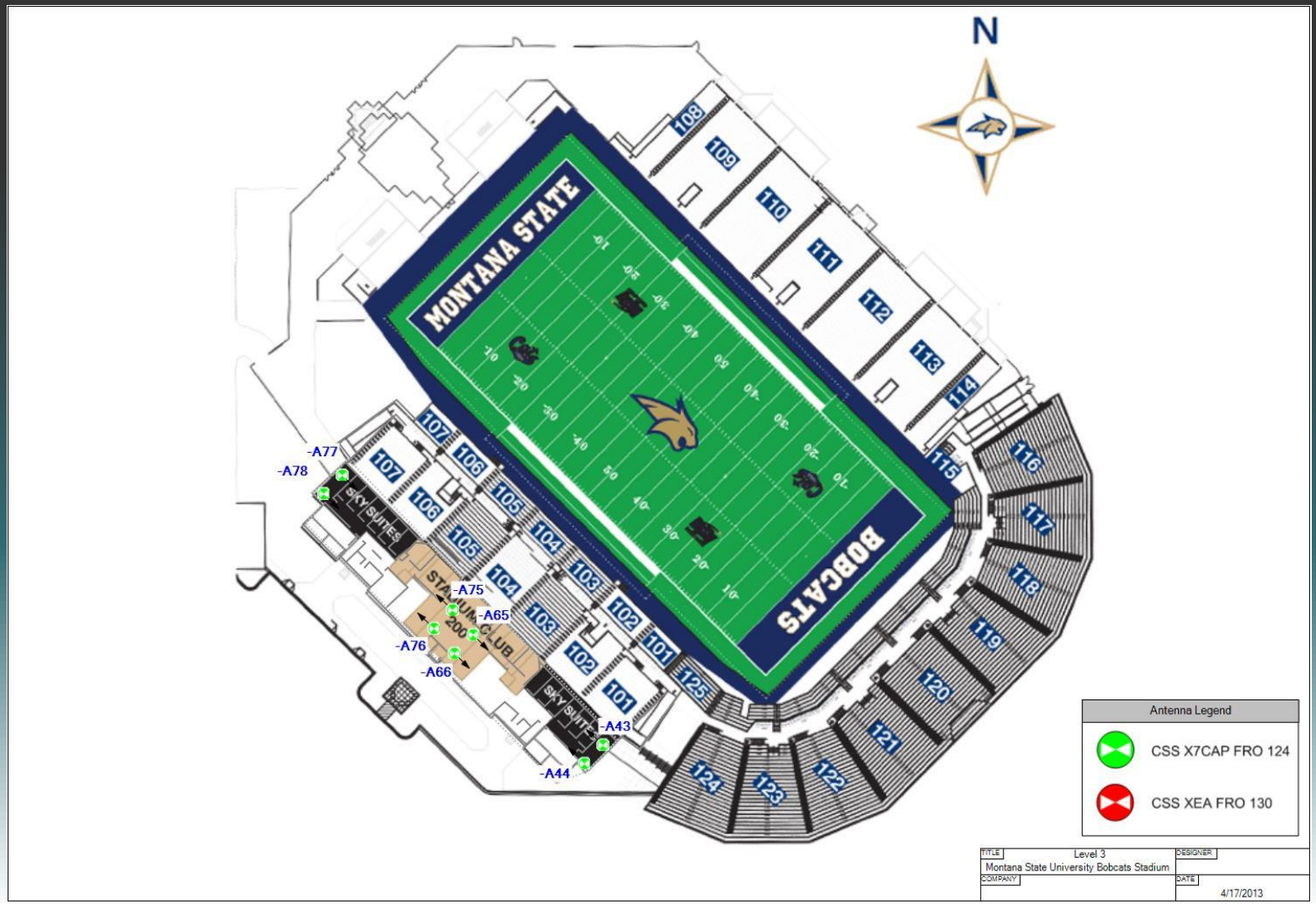
Level 1: NE Bleachers, SE and SW Concourse, NW Lockers



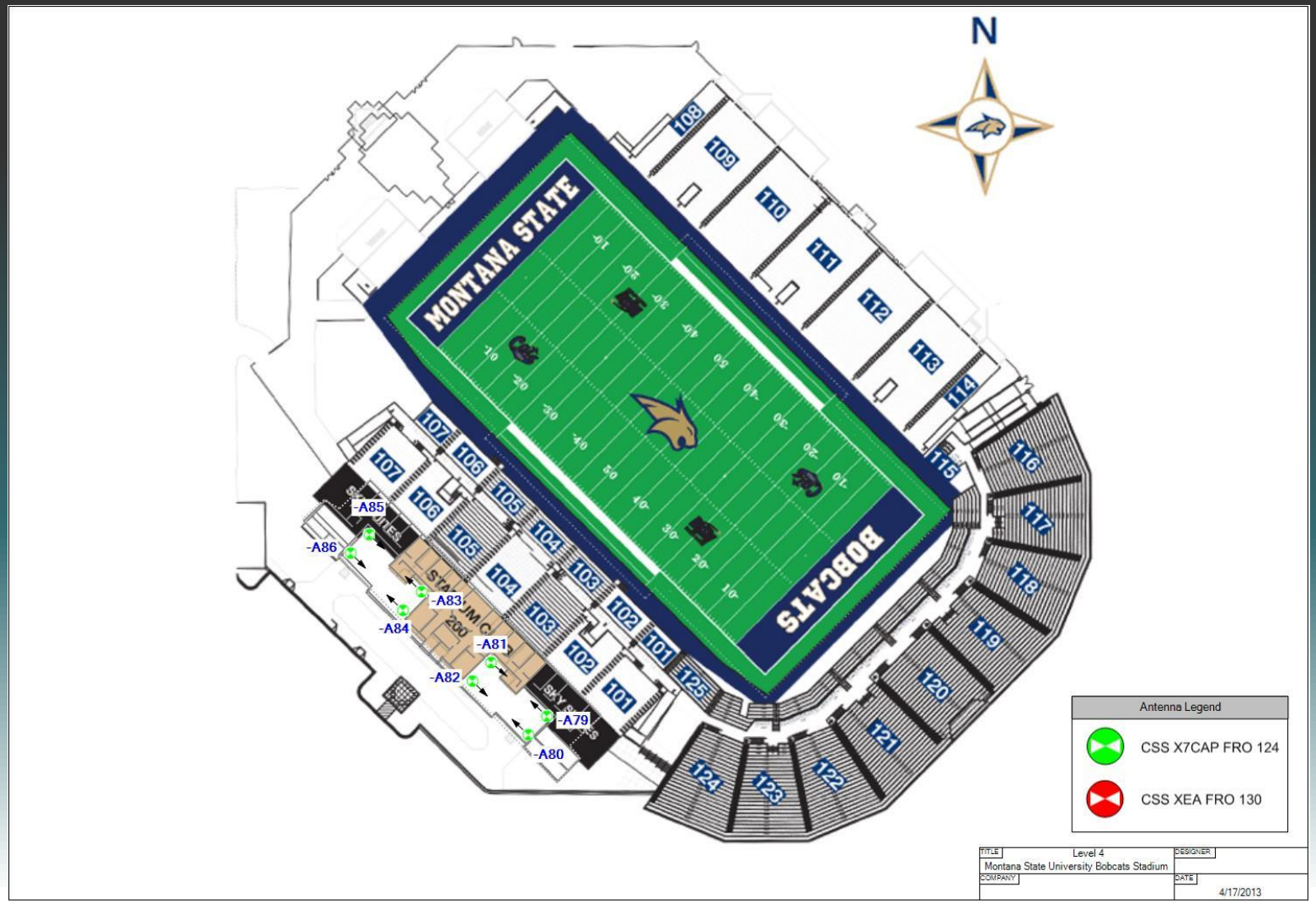
Level 2: SE Seating Bowl, Booster Club



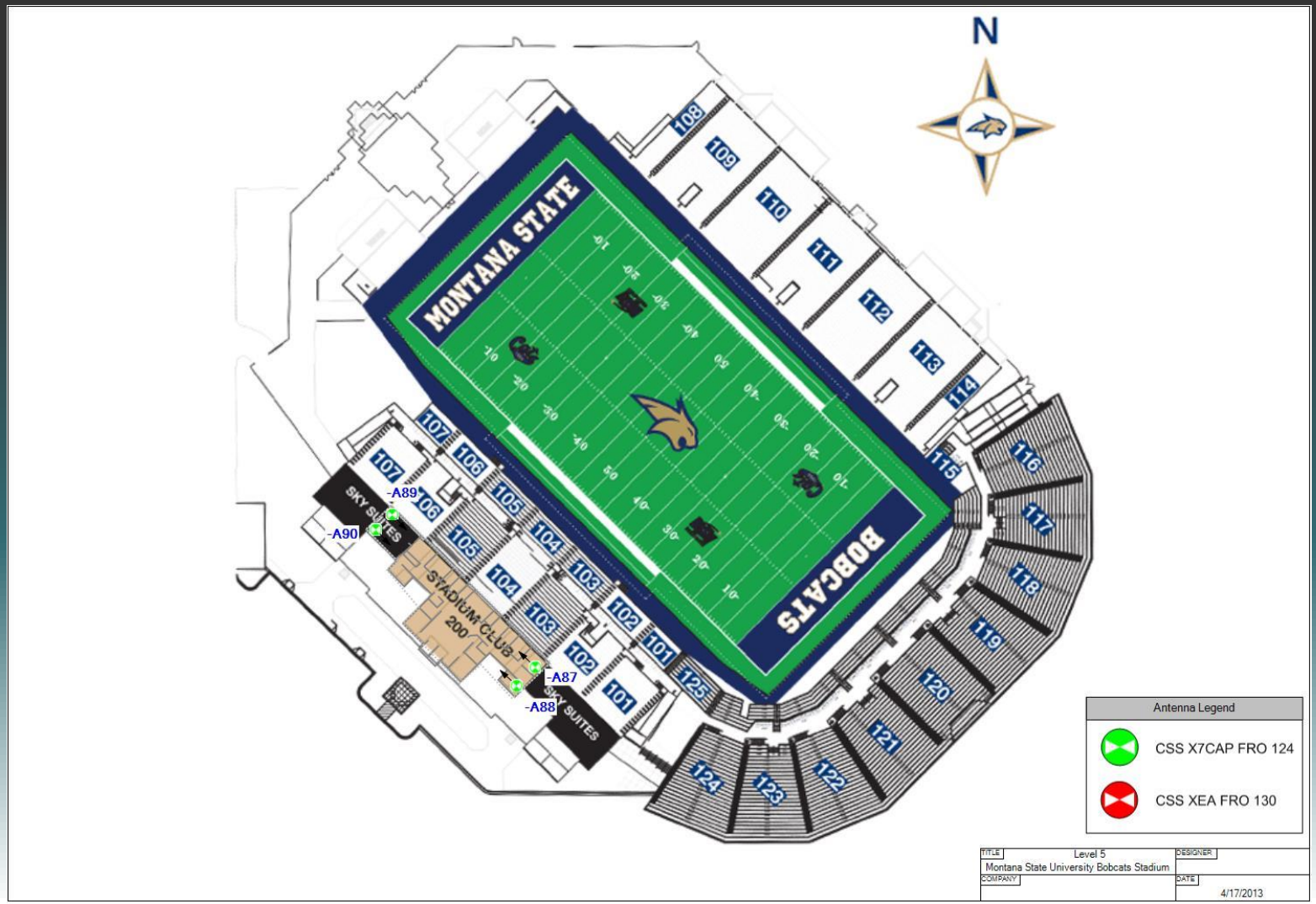
Level 3: Booster Club



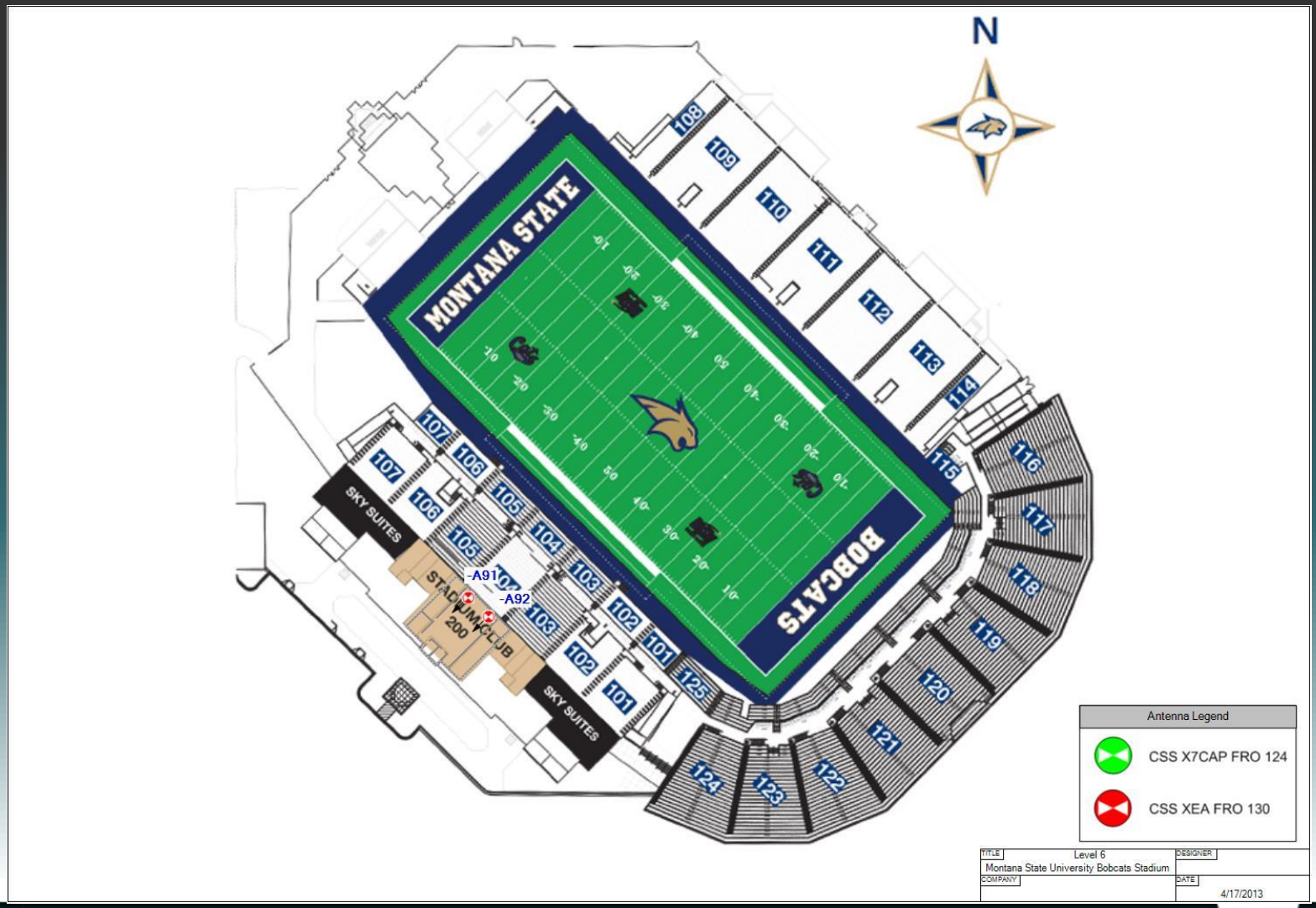
Level 4: Booster Club



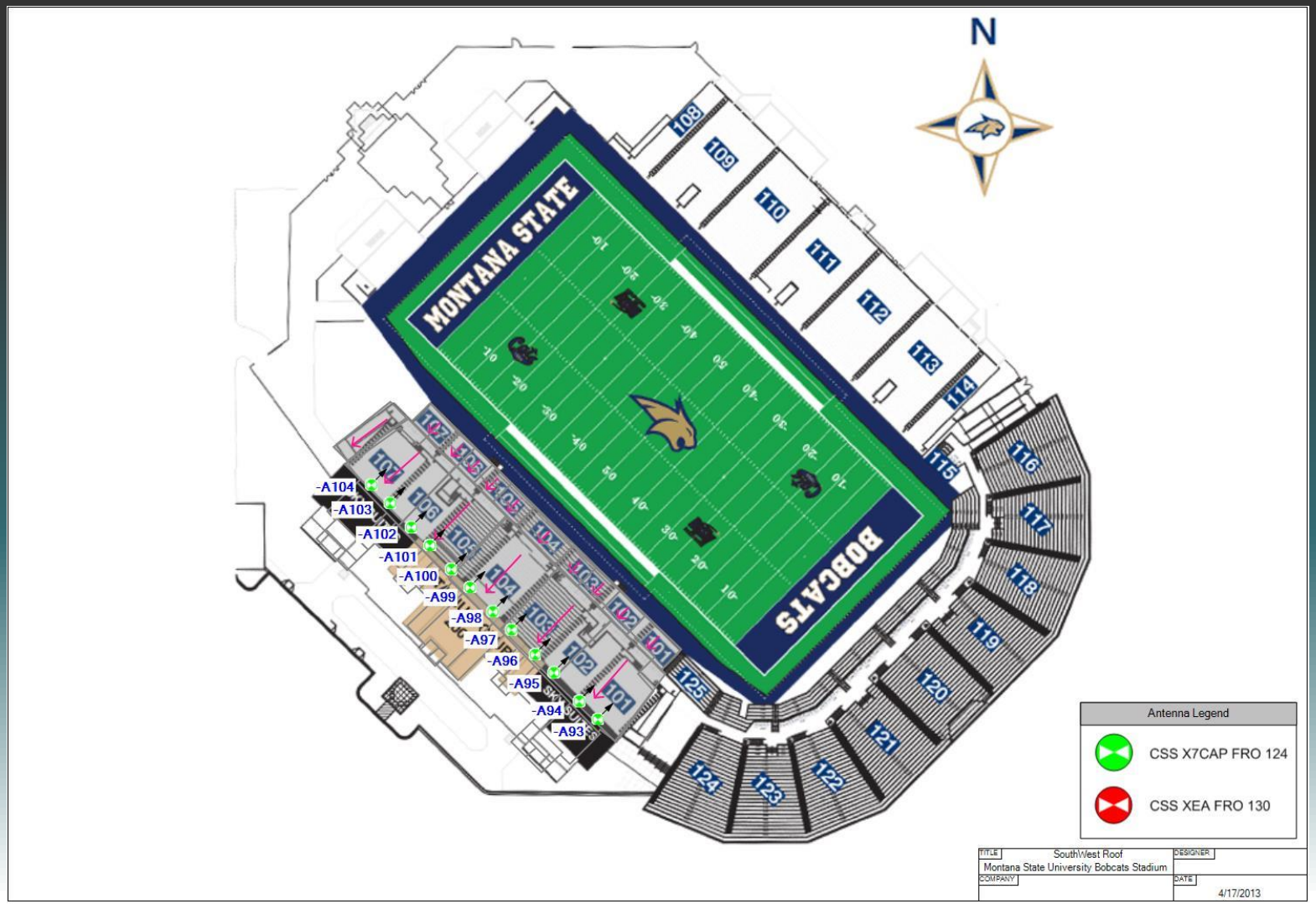
Level 5: Booster Club



Level 6: Booster Club



Southwest Façade/Rooftop



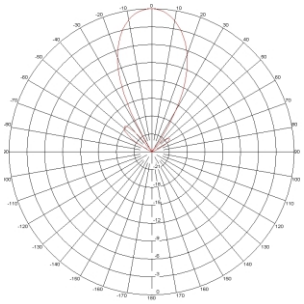
X7CAP-FRO-124

Dual Band Xpol, 24° H-Beams

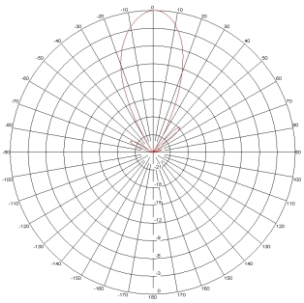
698-896 MHz
1710-2170 MHz

Frequency	698-824 MHz	824-896 MHz	1710-1850 MHz	1850-1910 MHz	1910-2170 MHz
Polarization	+/- 45°	+/- 45°	+/- 45°	+/- 45°	+/- 45°
Gain	12.2 dBi	12.5 dBi	12.5 dBi	12.6 dBi	13.0 dBi
Horizontal Beam (3dB pts)	27°	24°	27°	25°	23°
Vertical Beam (3dB pts)	70°	65°	65°	63°	58°
Front-to-Back (Copolar)	27 dB	27 dB	30 dB	30 dB	30 dB
Sidelobe Suppression for 1st lobe above main beam	16.0 dB	16.0 dB	18.0 dB	18.0 dB	16.0 dB
Electrical Downtilt	0°		0°		
VSWR / Return Loss	1.70:1 / 11.7 dB		1.70:1 / 11.7 dB		
Impedance	50 Ohms		50 Ohms		
Max. Power Per Connector	250 CW at 800 MHz		125 CW at 1900 MHz		
Isolation between ports	<-25 dB				
Intermodulation (2x20W)	<-150 dBc				

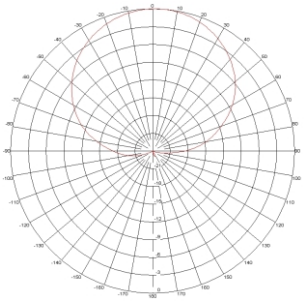
Input Connector (female)	Type N or 7/16 DIN	Wind Survival	120 mph
Dimensions (LxWxD)	13.9 x 36.0 x 6.2 in. (354 x 914 x 158mm)	Front Wind Load @100mph	83.8 lbf
*Antenna Weight	13.8 lbs	Equivalent Flat Plate @100mph	1.67 sq-ft. (c=2)
Bracket Weight	5.0 lbs	Mounting Brackets	Wall or Pole "Stadium",919050
		Adjustment Range	+/- 20° Lateral & +/- 55° Vertical
		Clamps/Bolts	Stainless Steel/Stainless Steel



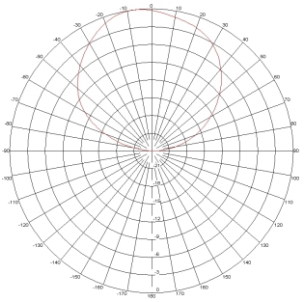
Low Band H-Beam



High Band H-Beam

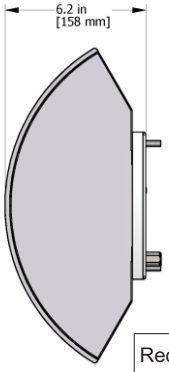


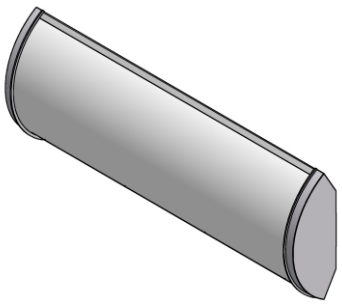
Low Band E-Beam



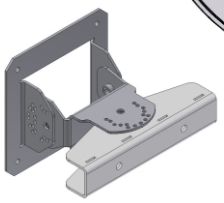
High Band E-Beam

Link to Mechanical Drawing



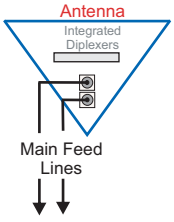


Recommended Connector Coupling Torque
Type N: 12-15 lbf-in (1.4-1.7 N-m)



"Stadium Bracket"
Azimuth & Mechanical
Tilt Adjustment

Available with Integrated Diplexers to reduce mainline cables and eliminate separate external devices



Ordering Information & Options

X7CAP-FRO-124-00	X-Pol dual band, fast roll off, 0 deg EDT both bands with four DIN connectors.
X7CAP-FRO-124-00-ip	X-Pol dual band, fast roll off, 0 deg EDT both bands with two DIN connectors and integrated diplexers.
X7CAP-FRO-124-00-N	X-Pol dual band, fast roll off, 0 deg EDT both bands with four N connectors.
X7CAP-FRO-124-00-ipN	X-Pol dual band, fast roll off, 0 deg EDT both bands with two N connectors and integrated diplexers.

*Antenna Weight may vary slightly with options.

Published 120512
Subject to alteration.

Made in USA

XEA-FRO-130

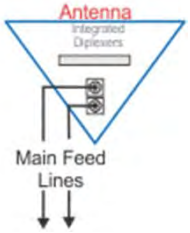
X-Pol, 698-945 MHz, 1710-2170MHz, 12", 30° Azimuth

- Most widely used stadium antenna
- Large box indoor coverage
- Includes flexible stadium bracket
- Broadband radiators
- Suitable for LTE/CDMA/UMTS/GSM

Available with Intergrated Diplexers

Reduces mainline cables

Eliminates external tower devices



Electrical Specifications

Frequency Band, MHz	698-824	824-945	1710-1880	1850-1910	1900-2170
Horizontal Beamwidth, 3dB points	32°	27°	30°	28°	27°
Gain, dBi	11.0	11.6	11.3	11.4	11.6
Vertical Beamwidth, 3dB points	72°	65°	68°	66°	65°
Front-to-Back at 180°, dB	21	25	21	21	21
Polarization	+/-45°		+/-45°		
Electrical Downtilt	0°		0°		
VSWR/Return Loss, dB, Maximum	1.7:1/-11.7		1.7:1/11.7		
Isolation Between Ports, dB, Mimimum	-25		-25		
Intermodulation (2x20w), IM3, dBc, Max	-150		-150		
Impedance, ohms	50		50		
Maximum Power Per Connector, CW	250 @ 800 MHz		125 @ 1990 MHz		
Lightning Protection	DC Ground		DC Ground		

XEA-FRO-130

X-Pol, 698-945 MHz, 1710-2170MHz, 12", 30° Azimuth

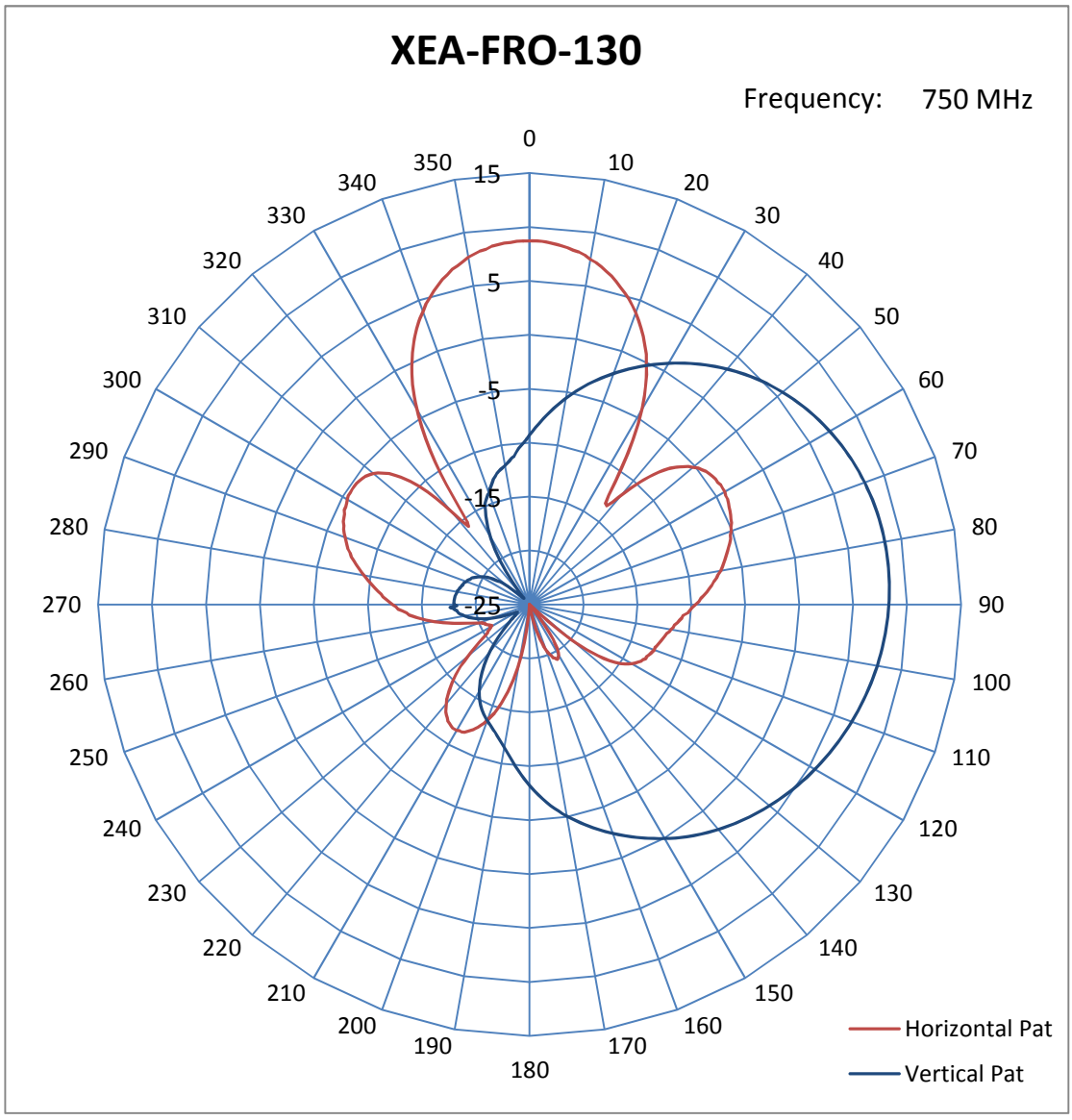
Mechanical Specifications

Dimensions, Length/Width/Depth	12.0/24.3/5.6 in (304.8/617.2/142.2 mm)
Connector (Quantity) Type	(2 or 4) 7-16 DIN Female or Type N
Connector Torque	220-265 lbf-in (23-30 N-m)
Connector Location	Back
Antenna Weight	13.2 lb (6.0 kg)
Bracket Weight	5.0 lb (2.3 kg)
Standard Bracket Kit	CSS P/N 919050
Mechanical Downtilt Range	+/- 35° Lateral & +/- 55° Vertical
Radome Material	High Strength Luran, UV Stabilized, ASTM D1925
Wind Survival	120 mph (193 km/h)
Front Wind Load	51.3 lbf (228.2 N) @100mph
Equivalent Flat Plate	1.2 sq-ft (c=2) @ 100mph

Order Information

Model	***Description***
XEA-FRO-130	X-Pol dual band, 0° electrical downtilt with four DIN connectors
XEA-FRO-130-IP	X-Pol dual band, 0° electrical downtilt with two DIN connectors and integrated diplexers.
XEA-FRO-130-N	X-Pol dual band, 0° electrical downtilt with four N connectors.
XEA-FRO-130-IP-N	X-Pol dual band, 0° electrical downtilt with two N connectors and integrated diplexers

Patterns Measured @ 750 MHz

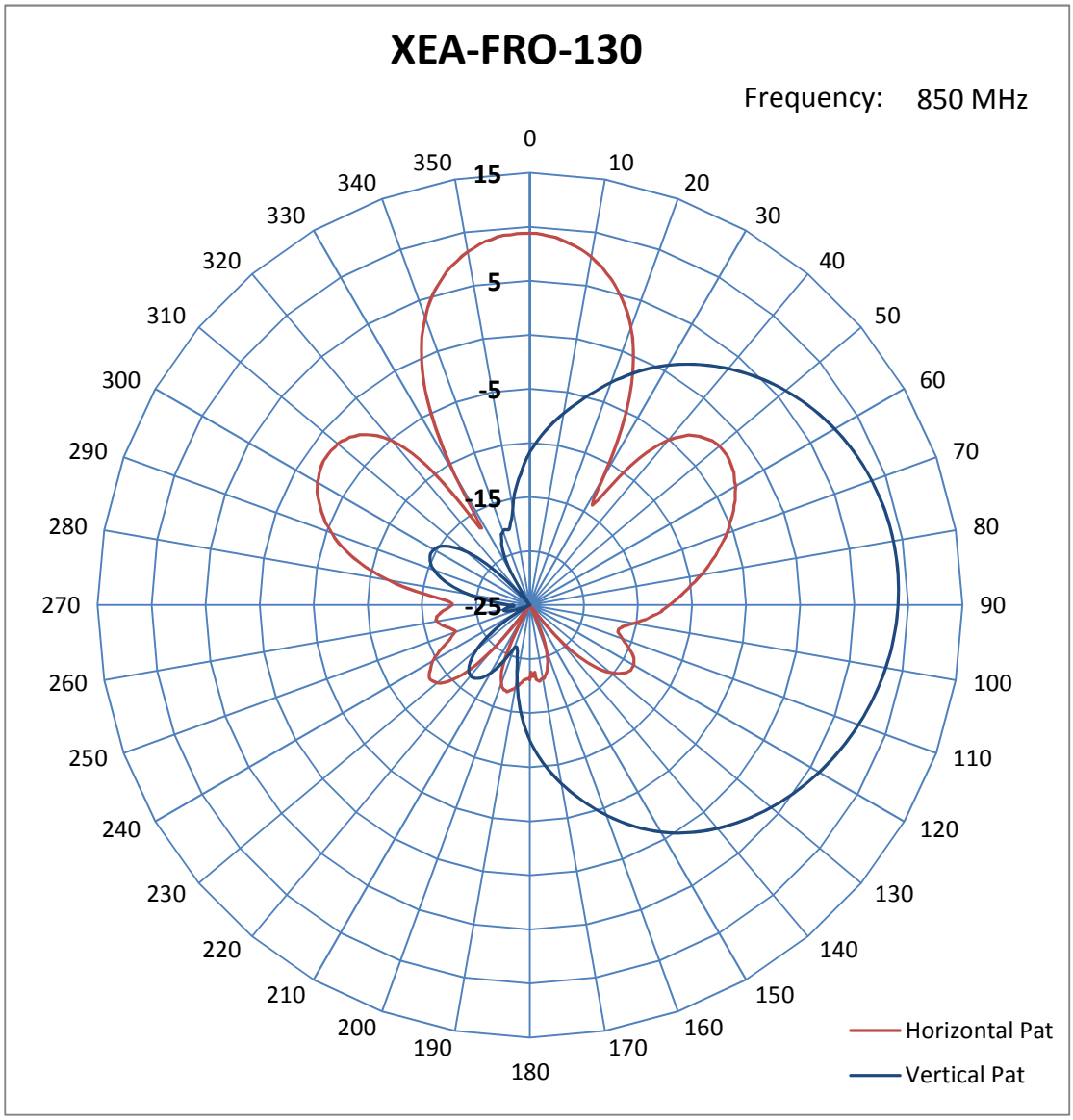


Center = -25dB, with 5 dB/radial division and 10° angular division

XEA-FRO-130

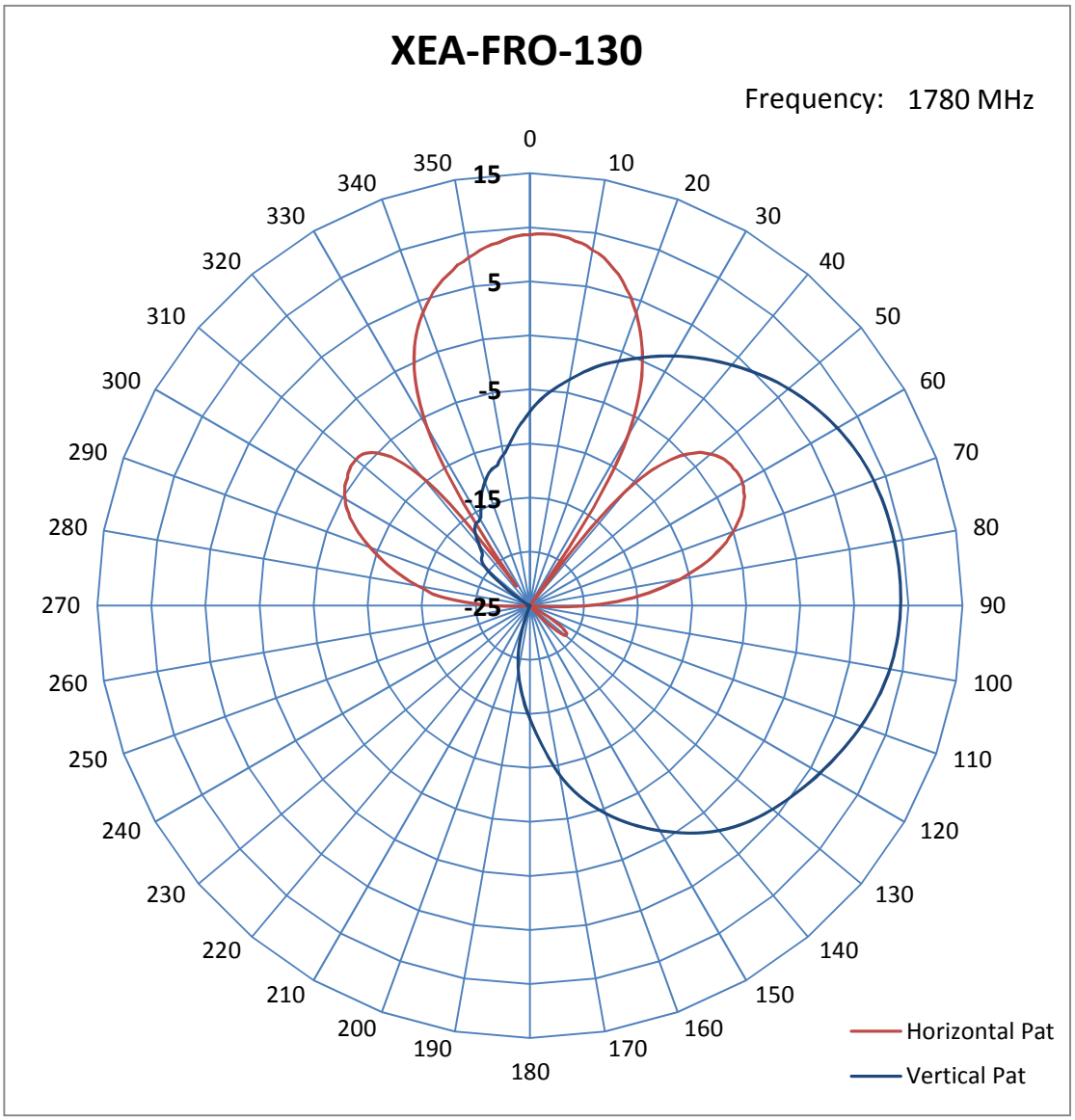
X-Pol, 698-945 MHz, 1710-2170MHz, 12", 30° Azimuth

Patterns Measured @ 850MHz



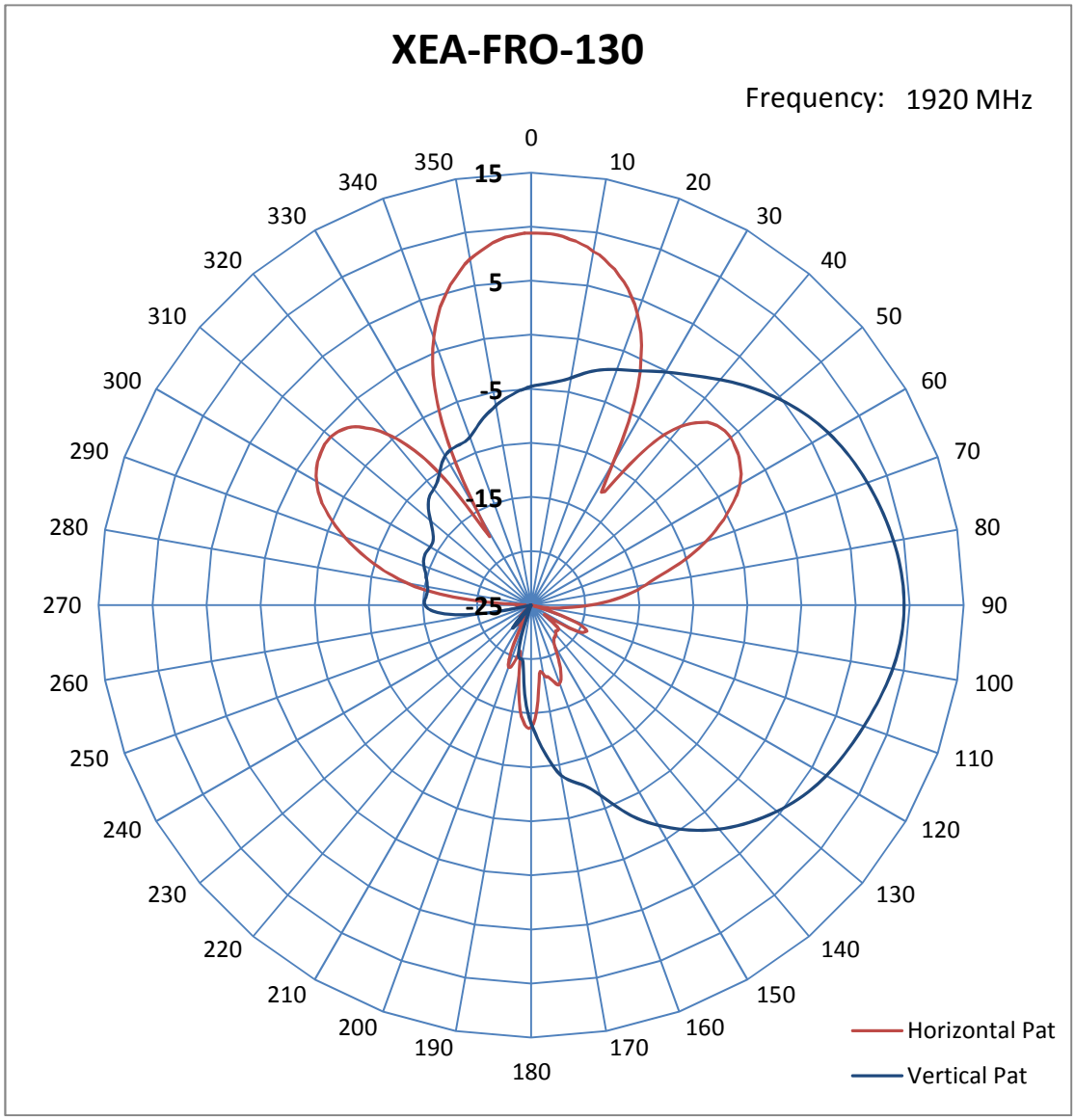
Center = -25dB, with 5 dB/radial division and 10° angular division

Patterns Measured @ 1780MHz



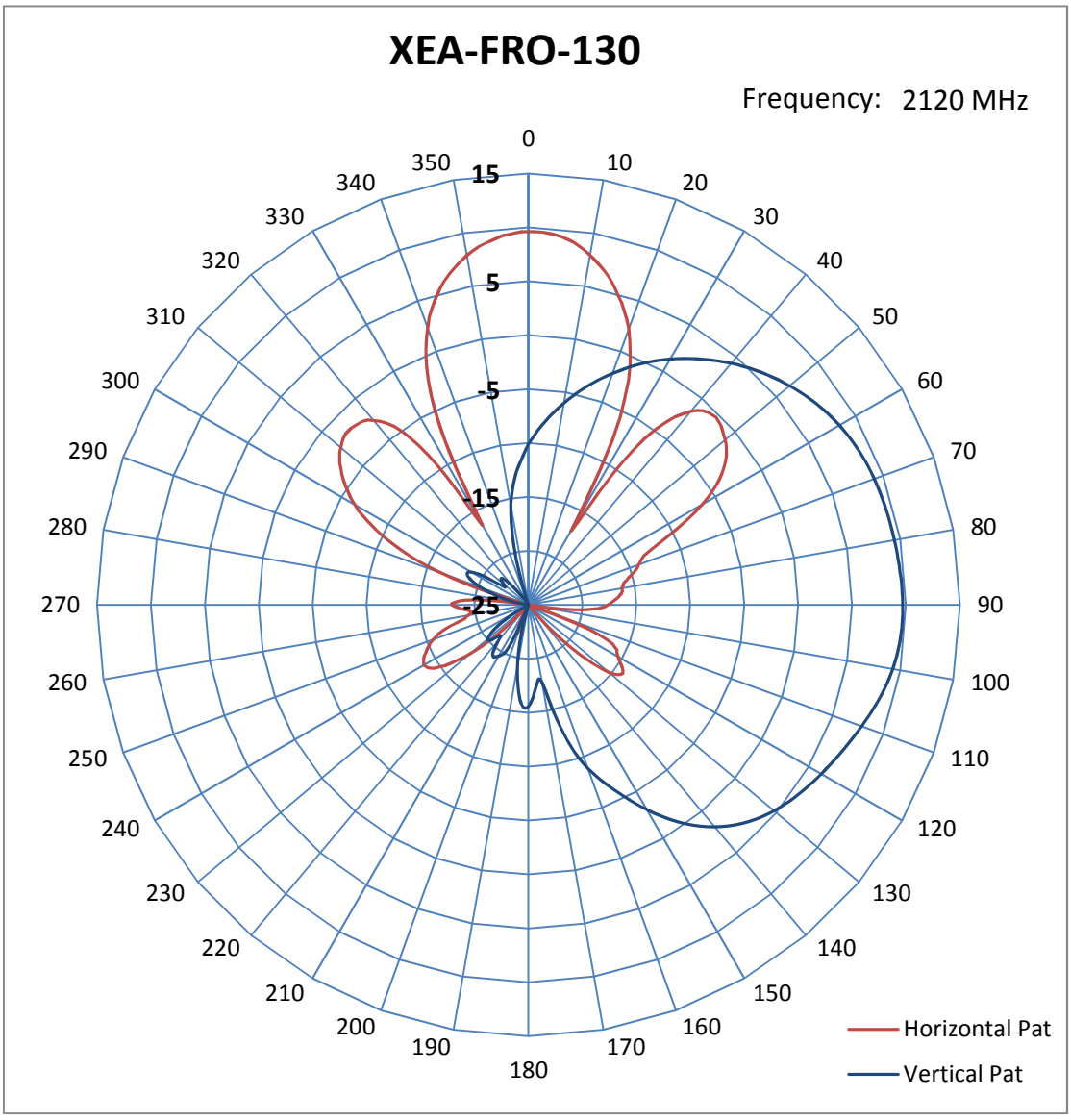
Center = -25dB, with 5 dB/radial division and 10° angular division

Patterns Measured @ 1920MHz



Center = -25dB, with 5 dB/radial division and 10° angular division

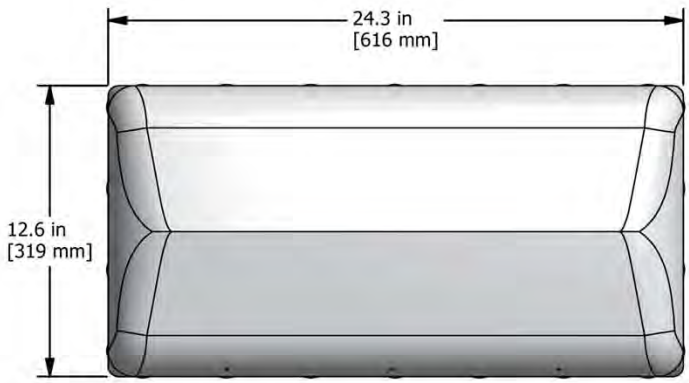
Patterns Measured @ 2120MHz



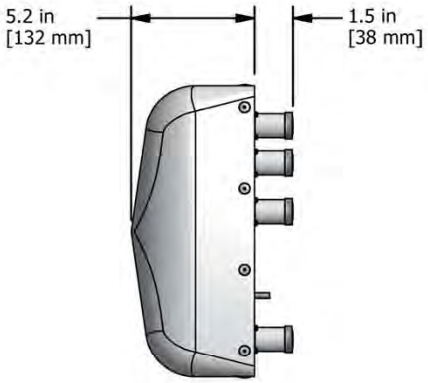
Center = -25dB, with 5 dB/radial division and 10° angular division

Mechanical Outline Drawing

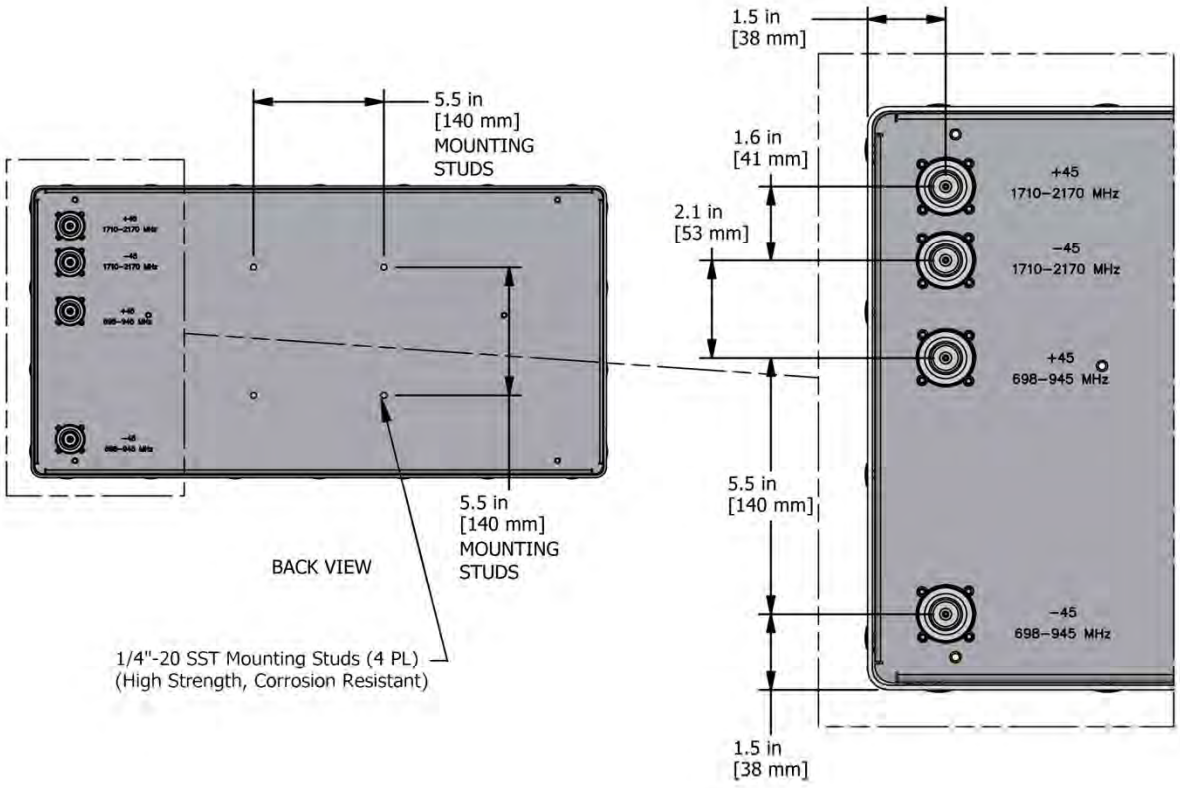
XEA-FRO-130



FRONT VIEW



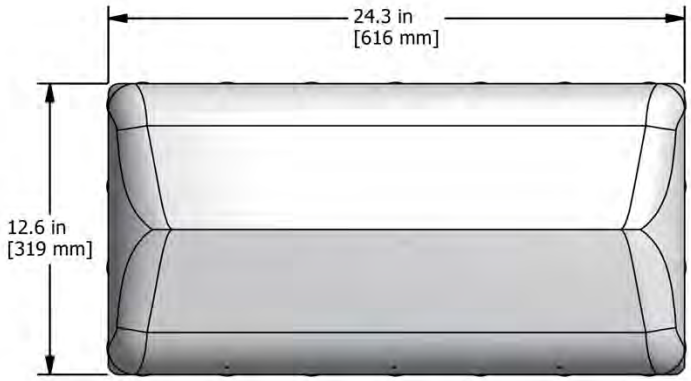
SIDE VIEW



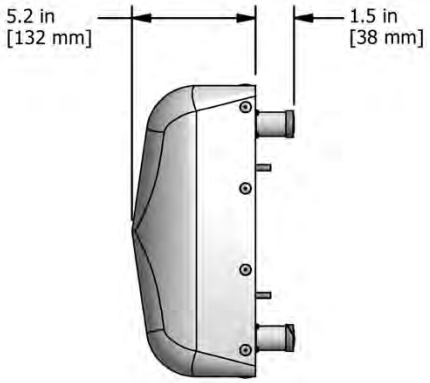
BACK VIEW

Mechanical Outline Drawing

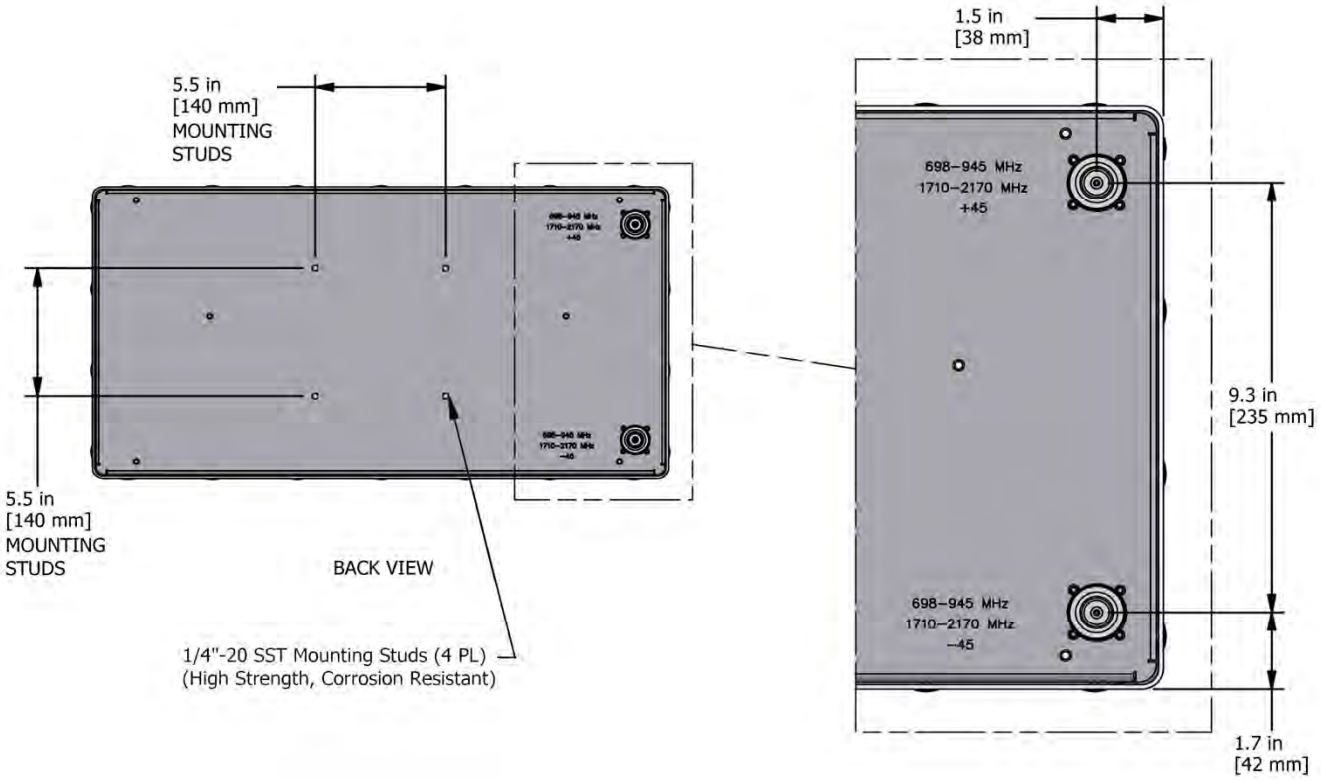
XEA-FRO-130-IP



FRONT VIEW



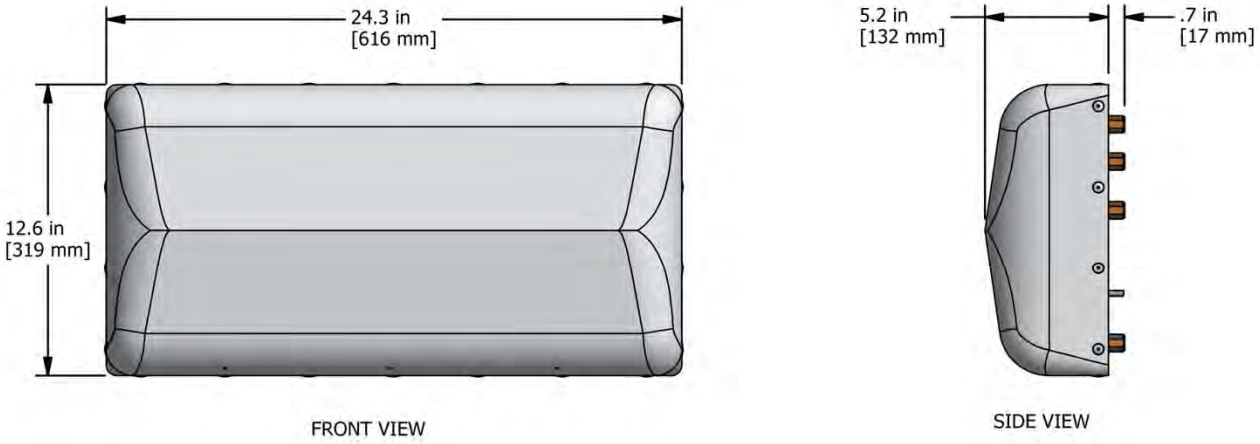
SIDE VIEW

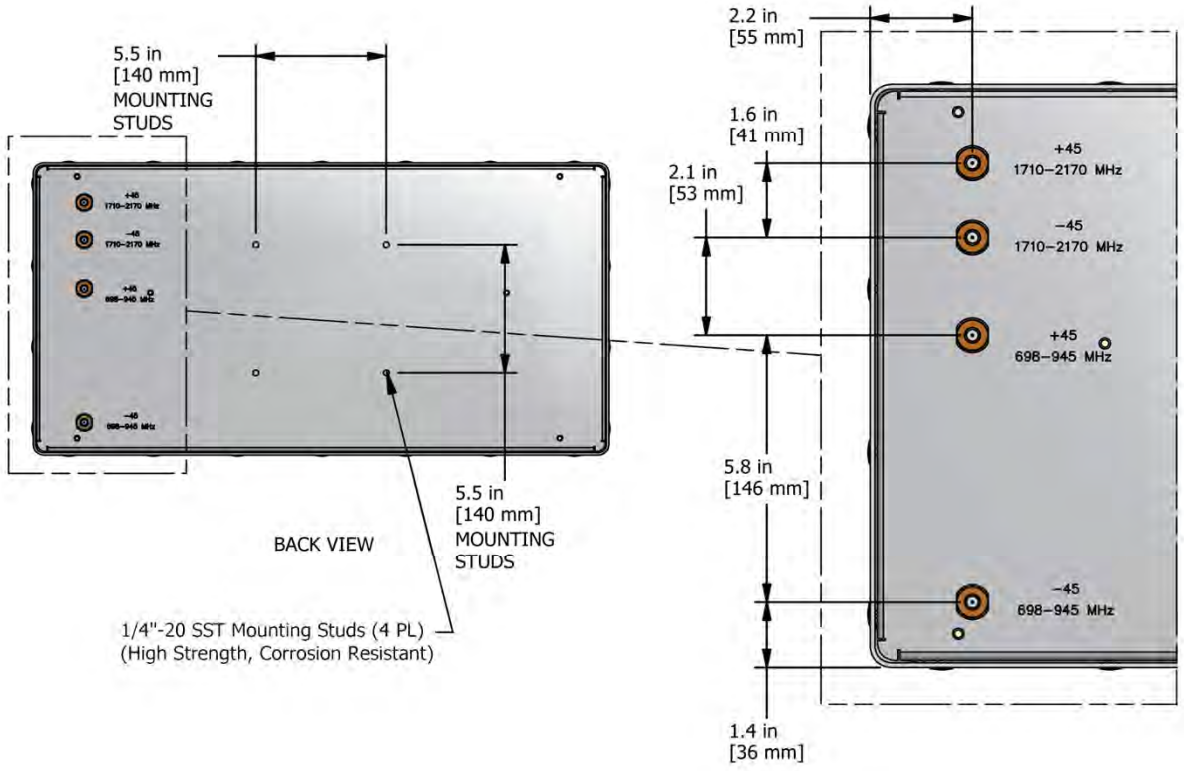


BACK VIEW

Mechanical Outline Drawing

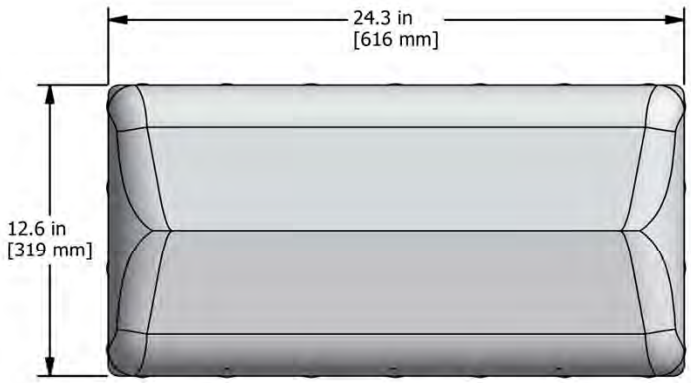
XEA-FRO-130-N



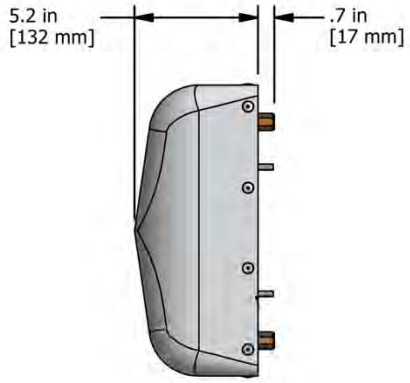


Mechanical Outline Drawing

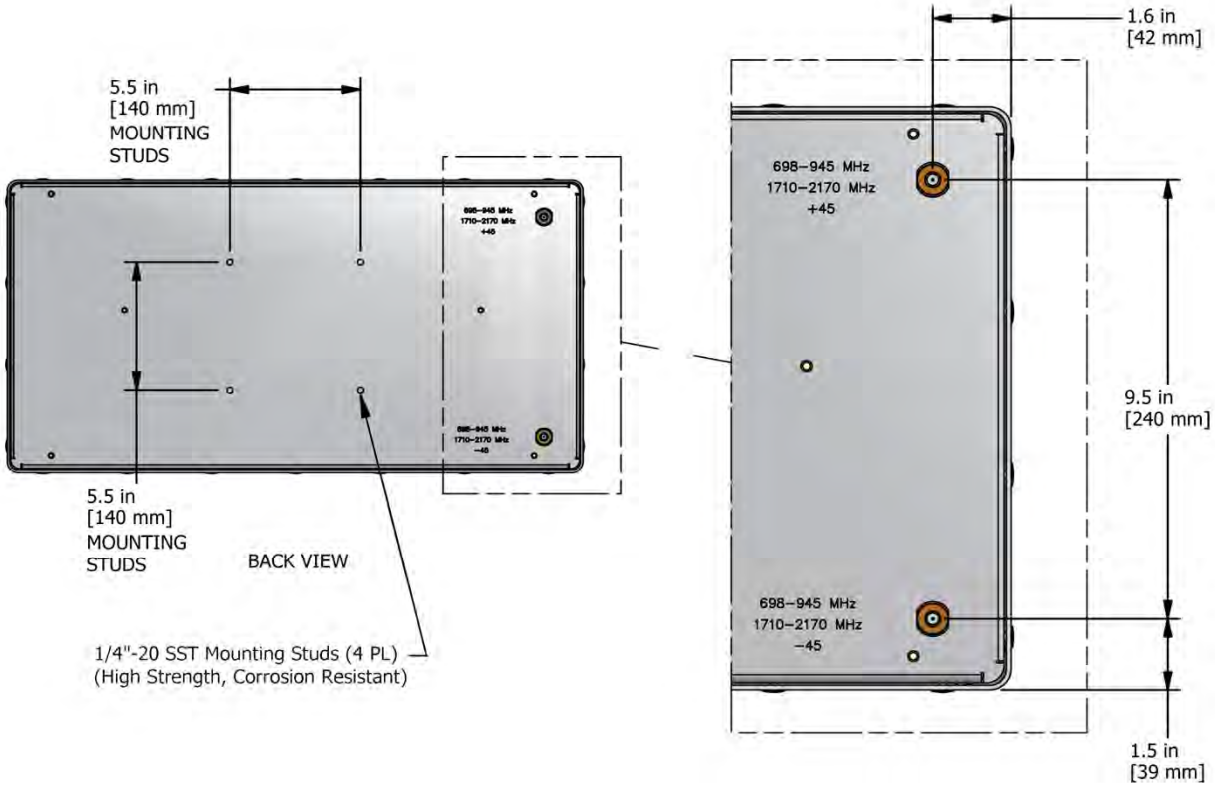
XEA-FRO-130-IP-N



FRONT VIEW



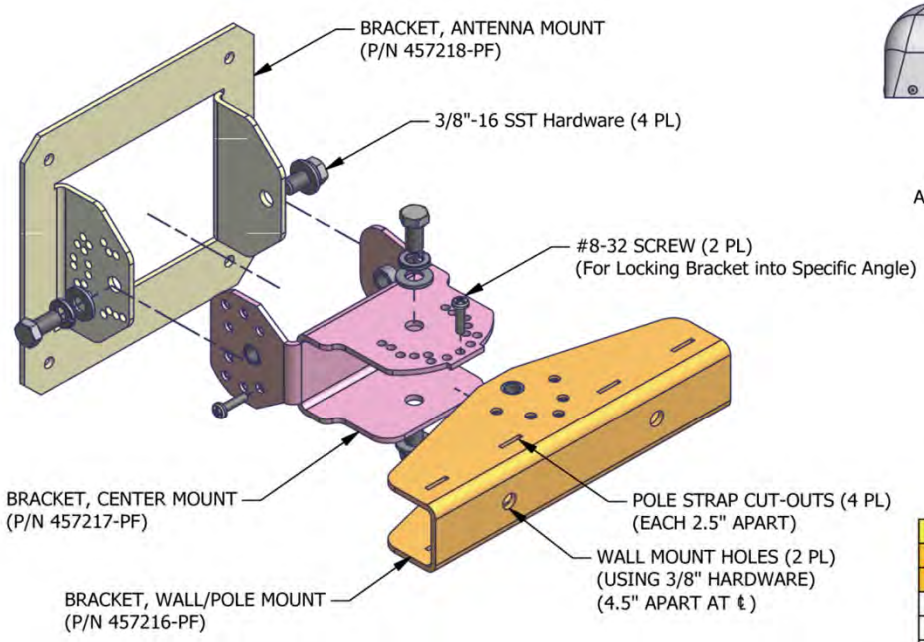
SIDE VIEW

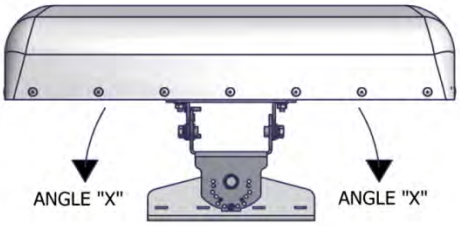


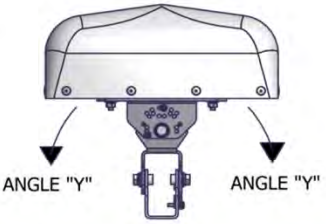
XEA-FRO-130

X-Pol, 698-945 MHz, 1710-2170MHz, 12", 30° Azimuth

Standard Bracket Kit

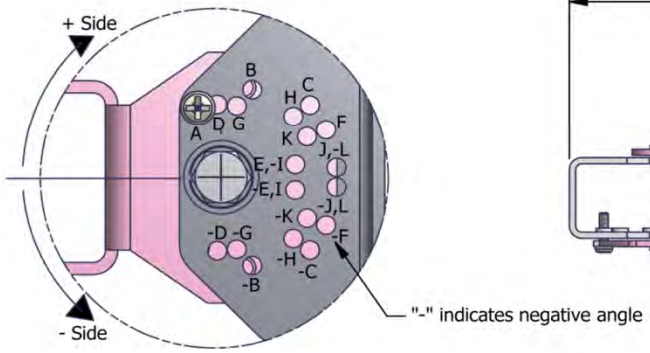


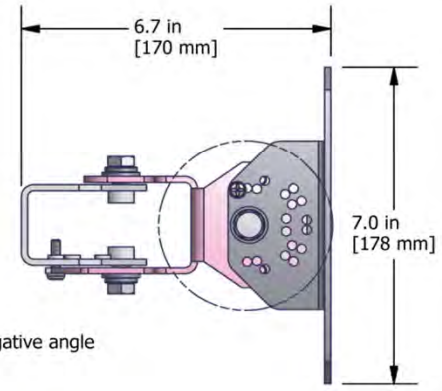




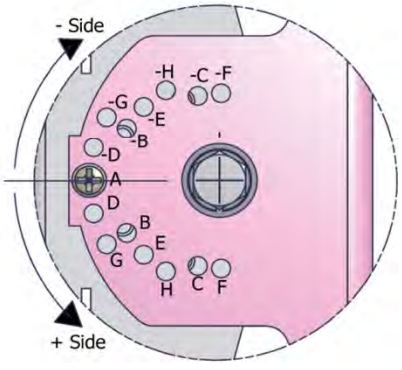
Maximum Angle				
	Pole Mount		Wall Mount	
Legend	X	Y	X	Y
1' Wide	35°	55°	35°	55°
2' Wide	25°	55°	25°	55°
3' Wide	20°	55°	20°	55°

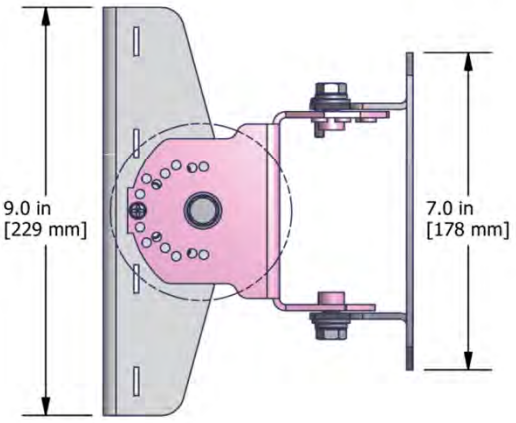
Mech. Downtilt Table	
Legend	Mech. Downtilt
A	0°
B	5°
C	10°
D	15°
E	20°
F	25°
G	30°
H	35°
I	40°
J	45°
K	50°
L	55°





Mech. Downtilt Table	
Legend	Azimuth Rotation
A	0°
B	5°
C	10°
D	15°
E	20°
F	25°
G	30°
H	35°





UNIVERSITY FACILITIES PLANNING BOARD

June 18, 2013

ITEM # 5	**Discussion of Non-Gender and Family Restrooms**

PRESENTERS:

Victoria Drummond, Associate University Planner

PROJECT PHASE:	**PLANNING**		**SCHEMATIC**	**X**	**DESIGN DOCUMENTS**		**CONSTRUCTION DOCUMENTS**	

VICINITY MAP:

A large map of the campus will be displayed at the meeting – identifying current and potential non-gender restrooms.

STAFF COMMENTS:

In 2012 – Facilities Planning provided the Diversity Awareness Office with a list of restrooms throughout the campus that are signed and designated as non-gender restrooms. The list was to identify private restrooms (minimal criteria of a toilet, sink, no urinal, and a locking door) that are designated male or female as well as those that are signed as non-gender – including signage as "Unisex" (older standard) or with male and female symbol and the wording "Restroom" (new standard).

These restrooms offer a private use option for males, females and transgenders.

If private restrooms also comply with the Americans with Disabilities Act (ADA), then these private, non-gender restrooms offer even more accessible choices to the campus community.

MSU also has Family Restrooms. These restrooms have signage that indicates the facility can accommodate males or females that are accompanied by small children or infants. The facilities include space for children and often a diaper changing station.

The map indicates restrooms that meet the minimal criteria of restrooms that may meet diverse needs. The minimal criteria were: an existing restroom, with a locating door, one toilet and does not include a separate urinal, and a sink. These restrooms may be able to be converted from being just designated as male or female – to non-gender – accommodating not only males, females but transgender. If these were ADA compliant – then they would also add to the inventory of ADA options throughout the campus.

COMPLIANCE:	**YES**	**NO**
MSU POLICIES	**X**	
COMMITTEE OR APPROPRIATE REVIEW	**X**	
MASTER PLAN	**X**	
BOARD ACTION REQUIRED:		

This is a Discussion Item. UFPB may require additional information for further discussion.

UNIVERSITY FACILITIES PLANNING BOARD
June 18, 2013

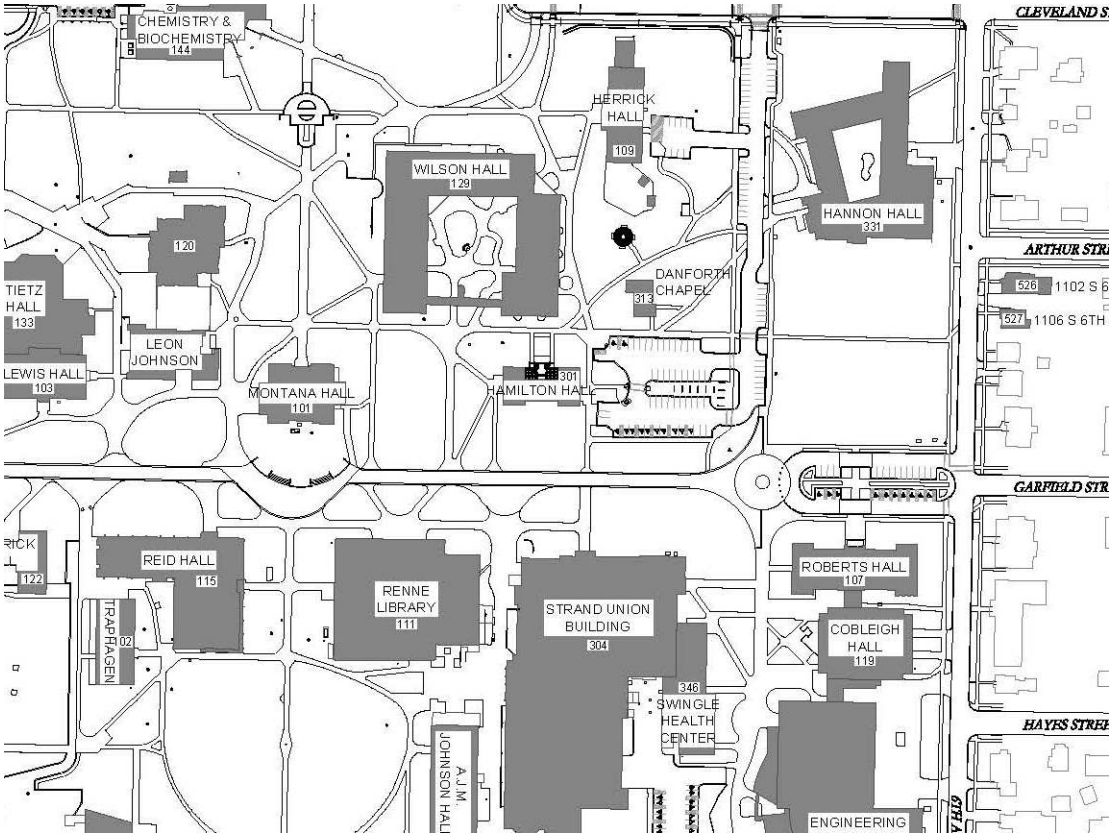
ITEM # 6	**Discussion of Family Care Facilities**

PRESENTERS:

Victoria Drummond, Associate University Planner

PROJECT PHASE:	PLANNING	X	SCHEMATIC		DESIGN DOCUMENTS		CONSTRUCTION DOCUMENTS	

VICINITY MAP:



STAFF COMMENTS:

MSU has a Breast Feeding Policy (May 1, 2008) in accordance with State statutes. It requires that time be afforded for faculty and staff for the purpose of breast feeding infants of expressing breast milk and has provided a private facility for this purpose.

Hamilton Hall Room 121 was designed for this purpose. The private room includes an upholstered

recliner chair, infant changing table, sink and cabinet. The room can be reserved and includes a temporary parking pass for the adjacent parking lot. The room is designated and signed as a “Family Care Room.

On June 7, 2013, the Space Management Committee heard a request to convert a portion of an existing Woman’s restroom on the third floor of Leon Johnson Hall into a Lactation Room. The space is an ante room to the restroom and may have been designed as a resting or smoking area. It is not a private space and it is within the restroom.

The request is so that there be more options than the Hamilton Hall Family Care room primarily because buildings are locked and faculty, staff, and students in Leon Johnson Hall in the evenings and weekends do not have access to Hamilton Hall if that is not the building they occupy.

The discussion is should the University look at additional spaces to accommodate the needs of women to privately breast feed and express breast milk?

If so, how will these spaces be distributed throughout the University campus?
How will the University identify space for these rooms? The space requires assignable space because non-assignable space, building service space including custodial, restroom, trash/recycling, as well as mechanical or circulation areas should not be reduced. Family Care rooms will require renovation of office, classroom or lab spaces.

COMPLIANCE:	**YES**	**NO**
MSU POLICIES	**X**	
COMMITTEE OR APPROPRIATE REVIEW		
MASTER PLAN		

BOARD ACTION REQUIRED:

No Action required as a Discussion Item; however, UFPB may proceed with a Recommendation from the discussion or request additional information.

MEETING NOTES OF THE
UNIVERSITY FACILITIES PLANNING BOARD
May 21, 2013

Members Present: Walt Banziger - Vice Chair, Kurt Blunck, Jeff Butler, Chris Fastnow, Bob Lashaway for Terry Leist, Ritchie Boyd for Martha Potvin, Jim Rimpau, Jim Thull

Proxy: Allyson Brekke and Greg Gilpin carried by Lindsey Klino

Members Absent: Nancy Cornwell - Chair, Michael Everts, Mandy Hansen, Jeff Jacobsen, Tom McCoy, Fatih Rifki, Tom Stump, Julie Tatarka, Cara Thuringer, Brenda York

Guests: Victoria Drummond, Dennis Raffensperger, Aaron Britton

The University Facilities Planning Board met beginning at 3:30 pm to discuss the following:

ITEM No. 1 – Approval of Meeting Notes
Butler moved to approve the meeting notes from May 21, 2013. Butler seconded the Motion. The meeting notes were approved unanimously.

ITEM No. 2 – Executive Committee Report
There was no action from the Executive Committee to report.

ITEM No. 3 – Consent Agenda

ITEM No. 4 – Recommendation – Campus Memorials
Aaron Britton presented an overview of the University Presidents' campus memorial design and several proposed areas. Over the next two years the President would like two memorials installed. The design is similar in concept to on the Mall, but distinctive, including brick. Raffensperger commented that the President suggested the first one for President Tietz, the second one for President Gamble and then more as funds allow. Blunck questioned where funding would come from and Raffensperger replied that it is an unfunded request. Blunck also questioned how much it would cost and Raffensperger replied he didn't get an estimate. Thull questioned if they would all be consistent and Raffensperger replied that they will be. The idea is to have a universal element that could be placed around the central campus. Thull questioned what they would say and Raffensperger replied that a committee for each individual memorial will decide what is written on them. Lashaway mentioned it would be similar to the process of the memorials of the Malone Centennial Mall. Thull suggested looking in the special collections of the archives as there is a lot on the Presidents. Rimpau questioned how the sites were decided and Raffensperger replied that he went around and chose reasonable locations. Lashaway explained that they didn't want them all on the Mall. Aaron commented that while on campus one could walk around and discover them. Blunck expressed that he didn't like the location between Reid Hall and Traphagen Hall. Drummond commented that Planning likes the idea of reserving sites, but stresses the need for flexibility of the general areas to coincide future development and that the Gaines Hall location is currently being considered by the Montana Arts Council. The site between Traphagen and Reid already includes a large sculpture for a narrow pathway. Fastnow commented that the one between Herrick Hall and Wilson Hall has a lot of bike parking and doesn't seem as nice. Raffensperger mentioned that there aren't any suggested locations on the perimeter of Romney Oval because of questions surrounding what will be done there. Thull moved to approve the concept and locations with some flexibility. Rimpau seconded the Motion.
The vote:

Yes:	10
No:	0

This meeting was adjourned at 3:45 p.m.

VCD:lk
PC:

President Cruzado	ASMSU President	Becky McMillan, Auxiliaries Services
Jayson O'Neill, President's Office	Heidi Gagnon, VP Admin & Finance	Julie Kipfer, Communications
Maggie Hammett, President's Office	Jennifer Joyce, VP Student Success	Jody Barney, College of Agriculture
Allen Yarnell, President's Office	Linda LaCrone, VP Research Office	Susan Fraser, College of Agriculture
Lisa Duffey, Provost Office	Bonnie Ashley, Registrar	Robin Happel, College of Agriculture

Diane Heck, Provost Office | Robert Putzke, MSU Police | JoDee Palin, College of Arts & Arch
Victoria Drummond, Facilities PDC