

CONTRACT COVERSHEET**NOTE: Shaded areas are for County Executive review.**

DEPARTMENT Public Safety Communications	CONTRACT/ADDENDUM #: <div style="font-size: 1.2em; font-family: cursive;">12666</div>																				
1. This contract, grant or addendum: <input checked="" type="checkbox"/> AWARDS <input type="checkbox"/> ACCEPTS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Contract</th> <th style="width: 50%;">Addendum</th> </tr> <tr> <td style="text-align: center;">↓</td> <td style="text-align: center;">↓</td> </tr> <tr> <td style="text-align: center;">If Addendum, please include original contract number</td> <td></td> </tr> <tr> <td><input type="checkbox"/> POS</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Co Lesse</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Co Lessor</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Intergovernmental</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Purchase of Property</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Property Sale</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Other:</td> <td><input type="checkbox"/></td> </tr> </table>	Contract	Addendum	↓	↓	If Addendum, please include original contract number		<input type="checkbox"/> POS	<input type="checkbox"/>	<input type="checkbox"/> Co Lesse	<input type="checkbox"/>	<input type="checkbox"/> Co Lessor	<input type="checkbox"/>	<input type="checkbox"/> Intergovernmental	<input type="checkbox"/>	<input type="checkbox"/> Purchase of Property	<input type="checkbox"/>	<input type="checkbox"/> Property Sale	<input type="checkbox"/>	<input type="checkbox"/> Other:	<input type="checkbox"/>
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<input type="checkbox"/> Property Sale	<input type="checkbox"/>																				
<input type="checkbox"/> Other:	<input type="checkbox"/>																				
2. This contract is discretionary <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO																					
3. Term of Contract or Addendum: From: <u>February 1, 2016</u> To: <u>January 31, 2021</u>																					
4. Amount of Contract or Addendum \$0																					
5. Purpose: Secure radio tower site for DaneCom interoperable voice communications system																					
6. Vendor or Funding Source: Wisconsin Department of Transportation - Division of State Patrol																					
7. MUNIS Vendor Code: 3839																					
8. Bid/RFP Number:																					
9. If grant: Funds Positions? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Will require on-going or matching funds? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO																					
10. Are funds included in the budget? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO																					
11. Account No. & Amount, Org. & Obj. _____ Amount \$ _____ Account No. & Amount, Org. & Obj. _____ Amount \$ _____ Account No. & Amount, Org. & Obj. _____ Amount \$ _____																					
12. Is a resolution needed: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If "YES," please attach a copy of the Resolution. If Resolution has already been approved by the County Board, Resolution No. & date of adoption <u>2015-RES-383</u>																					
13. Does Domestic Partner equal benefits requirement apply? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO																					
14. Director's Approval																					

CONTRACT REVIEW/APPROVALS

Initials	Fnt	Date In	Date Out
Received		<u>1-7-16</u>	
Controller			<u>1/7/16</u>
Corporation Counsel		<u>1/7/16</u>	<u>1/7/16</u>
Risk Management		<u>1/7/16</u>	<u>1/7/16</u>
ADA Coordinator			
Purchasing Agent			<u>1/7/16</u>
County Executive			

VENDOR

Vendor Name & Address	
Wisconsin Department of Transportation - Division of State Patrol	
Contact Person	
Anthony Taylor	
Phone No.	
608-266-7910	
E-mail Address	
Anthony.Taylor@dot.wi.gov	

Footnotes:

1. _____
2. _____

Return To:	Name/Title: <u>Rich McVicar, Technical Services Manager</u>	Dept.: <u>Public Safety Communications</u>
	Phone: <u>608-283-2911</u>	Mail Address: <u>210 MLK Rm 109</u>
	E-mail: <u>mcvicar@countyofdane.com</u>	<u>Madison, WI 53703-3342</u>

CERTIFICATION

The attached contract: *(Check as many as apply)*

- ☐ conforms to Dane County's standard Purchase of Services Agreement form in all respects
- ☐ conforms to Dane County's standard Purchase of Services Agreement form with modifications and is accompanied by a revision copy¹
- ☒ is a non-standard contract which has been reviewed or developed by corporation counsel which has not been changed since that review/development
- ☐ is a non-standard contract previously reviewed or developed by corporation counsel which has been changed since that review/development; it is accompanied by a revision copy¹
- ☐ is a non-standard contract not previously reviewed by corporation counsel; it is accompanied by a revision copy
- ☐ contains non-standard/indemnification language which has been reviewed or developed by risk management and which has not been changed since that review/development
- ☐ contains non-standard insurance/indemnification language which has been changed since review/development or which has not been previously seen by risk management; it is accompanied by a revision copy
- ☐ contains non-standard affirmative action/equal opportunity language which has been reviewed or developed by contract compliance and which has not been changed since that review/development
- ☐ contains non-standard affirmative action/equal opportunity language which has been changed since the earlier review/development by contract compliance or which has not been previously seen by contract compliance; it is accompanied by a revision copy¹

Date: 6 January 2016

Signed: _____

Telephone Number: 608-283-2911

Print Name: Rich McVicar

MAJOR CONTRACTS REVIEW (DCO Sect. 25.20) This review applies only to contracts which both exceed \$100,000 in disbursements or receipts and which require county board review and approval.

EXECUTIVE SUMMARY *(Attach additional pages, if needed).*

1. **Department Head** ☐ Contract is in the best interest of the County.
Describe any deviations from the standard contracting process and any changes to the standard Purchase of Services Form Agreement.

Date: _____ Signature: _____

2. **Director of Administration** ☐ Contract is in the best interest of the County.
Comments:

Date: _____ Signature: _____

3. **Corporation Counsel** ☐ Contract is in the best interest of the County.
Comments:

Date: _____ Signature: _____

¹A revision copy is a copy of the contract which shows the changes from the standard contract or previously revised/developed contract my means of overstrikes (indicating deletions from the standard language) and underlining (showing additions to the standard language).

12/1/12

TOWER SITE USE AGREEMENT

THIS AGREEMENT is made in duplicate and entered into by, and between, the STATE OF WISCONSIN, DEPARTMENT OF TRANSPORTATION, hereinafter "WisDOT", and the County of Dane hereinafter "the County", and collectively hereinafter "the Parties."

WITNESSETH

WHEREAS, WisDOT, for the operation and maintenance of a radio communication tower site, owns and occupies the following tower site on the following described land, hereinafter referred to as the "DeForest Tower Site":

The DeForest Tower Site is located at the following Coordinates: N 43-15-00.0 and W 089-22-09.0 in the Village of DeForest, County of Dane, State of Wisconsin. 911 W North Street, DeForest, WI 53532

WHEREAS, WisDOT owns and maintains a tower, hereinafter "DeForest Tower", and WisDOT owns and maintains the adjacent building, hereinafter "DeForest Post", located at the Tower Site; and

WHEREAS, the County requires a telecommunications system installation at the DeForest Tower Site, and desires to attach, install and transmit certain radio transmitting and/or receiving equipment and to operate, maintain and utilize the same for reasons associated with its business activities; and

WHEREAS, such occupancy of the DeForest Tower Site and DeForest Tower and DeForest Post by the County will be for telecommunications use only.

NOW, THEREFORE, BE IT AGREED that WisDOT hereby grants to the County the right to make and maintain attachments upon WisDOT's Tower and to install and operate radiotelephone equipment within DeForest Post at the DeForest Tower Site, for the term of five (5) years, with additional five year term extensions with the same terms available automatically, commencing on the effective date of this AGREEMENT, subject to the terms and conditions set forth herein.

TERMS AND CONDITIONS

1. This AGREEMENT entitles the County to increase the overall height of DeForest Tower to 239 feet, to make and maintain the attachments of radiotelephone equipment upon DeForest Tower and to install and operate the radiotelephone equipment within DeForest Post as specified in the drawings and notes attached hereto and incorporated herein by reference as "Exhibit A." This AGREEMENT also entitles the County to make structural, mechanical and electrical modifications to DeForest Post as specified in "Exhibit B." The Parties agree that all modifications to DeForest Tower and DeForest Post shall be done solely at the County's expense, and none of these modifications and improvements shall entitle the County to ownership of WisDOT's property.
2. This AGREEMENT shall be effective as of the day of execution by WisDOT. Either party shall have the right to terminate this AGREEMENT or any extension hereof by giving 180-days' written notice thereof to the other party. Said termination shall be effective one hundred eighty (180) days after notice thereof is given to the other party. Should WisDOT exercise its option to terminate within the initial five year term pursuant to this Paragraph, WisDOT shall reimburse the County for the actual costs of improvements to the tower and lighting.
3. Notwithstanding paragraph 2. above, WisDOT may, at its option and without liability to the County, terminate this AGREEMENT at any time by giving written notice thereof to the County, if WisDOT requires all suitable space on WisDOT's Tower or in WisDOT's DeForest Post for itself or for other state agencies, or if the County's equipment interferes in any way with the operation or performance of the equipment of WisDOT, other state agencies, or other third party tenants and the County is unable to remedy the interference, or if the County fails to comply with any of the terms or conditions of this AGREEMENT, or if the County fails to comply with any regulations of the FCC, or if WisDOT or the County removes its equipment and vacates the Tower Site and DeForest Post.
4. All attachments to DeForest Tower and installations in DeForest Post made by the County shall be in accordance with plans and specifications provided by WisDOT and with regulations of the Federal Communications Commission (FCC), and shall be maintained in a proper, safe and skillful manner so as not to

interfere with the physical space or operational performance of the attachments and equipment of WisDOT, other State agencies, or other third party tenants of WisDOT and so as not to endanger life and property.

5. The County shall pay all costs and be responsible for the installation, operation, maintenance, replacement, repair and removal of its own attachments and radiotelephone equipment. The County agrees, in its use of the leased premises, not to interfere with the radio\television\telephonic\electronic transmission or reception through equipment, or frequencies, owned and/or used by WisDOT and located upon the leased premises. If it is so notified of such interference, the County shall eliminate said interference with WisDOT or such third party use of radio\television\telephonic\electronic transmission signals as soon as possible within 24 hours of notification or it shall cease using the equipment which is causing the interference, the sole exception thereto being for the purpose of testing necessary to eliminate the cause of the interference. It shall be the County's sole responsibility to correct and finance improvements to eliminate said interference and/or it shall be the County's responsibility to cease and desist from using the equipment at the leased premises. To facilitate prompt action to any such interference, the County is expected to advise WisDOT of any such interference as soon as it is substantiated. WisDOT and third party tenants shall cooperate with the County in correcting any such interference. WisDOT reserves the right at any time, upon twenty-four (24) hours notice, to order the County to stop using its equipment on the leased premises should its use interfere with WisDOT, or a third party tenant whose equipment is located on the tower and in operation on the date of execution of this Agreement by the County. If the County cannot or refuses to correct such interference, this Agreement shall be subject to immediate termination by WisDOT, the above stated language on termination in Section 2 notwithstanding. In case of a shut down notice, the County contact is the Radio System Administrator. If the Radio System Administrator is not available the Technical Services Manager will be notified. If the County is required to cease and desist from the leased premises as provided herein, the County may terminate this Agreement immediately notwithstanding the language on termination at Section 2, above. If WisDOT technicians are dispatched after 24 hours notice to install, repair, replace or disconnect the County equipment, the County will be billed by WisDOT for such services on the basis of WisDOT's Division of State Patrol loaded labor rates plus the cost of any materials.
6. The County shall provide a copy of the valid FCC station authorizations for every transmit frequency specified in "Exhibit C" of this AGREEMENT and shall attach to its transmitters a copy of the valid FCC station authorization. In addition, the County shall post on the transmitters the names and telephone numbers of its responsible technician and the technician's supervisor. An associated frequency intermodulation study was performed by Harris Corporation and is attached hereto as "Exhibit D."
7. The County shall not allow access to the DeForest Tower Site or to DeForest Tower or into DeForest Post by any other than its authorized employees, its qualified radio maintenance contractor or the certified inspectors of the FCC; nor shall the County allow the use of DeForest Tower or DeForest Post by any other than its authorized employees.
8. The County shall maintain the area in DeForest Post occupied by its radiotelephone equipment in a neat and clean condition and shall instruct its employees, contractors and suppliers to refrain from depositing trash or litter in or upon the DeForest Tower Site.
9. Each party shall be responsible for the consequences of its own acts, errors or omissions and those of its employees, boards, commissions, agencies, officers, and representatives and shall be responsible for any losses, claims and liabilities which are attributable to such acts, errors or omissions, including providing its own defense. In situations of joint liability, each party shall be responsible for the consequences of its own acts, errors and omissions and those of its employees, agents, boards, commissions, agencies, officers and representatives. It is not the intent of the parties to impose liability beyond that imposed by state statutes.
10. The County will provide WisDOT a certificate of Liability Insurance, upon request.
11. WisDOT shall be responsible for the general maintenance of the DeForest Tower Site which includes the Tower, DeForest Post, Snow plowing and mowing/brushing of the site, as well as the maintenance of its own communications equipment. The County shall be responsible for maintenance of its own communications equipment.
12. WisDOT shall provide emergency power and ventilation for the County's radiotelephone equipment. However, with one hundred and twenty (120) days' written notice, WisDOT may remove the County from WisDOT's emergency power source when the equipment of WisDOT (or other State agencies) requires the entire emergency power capacity.

13. All radiotelephone equipment installed by the County shall remain the property of the County at all times and may be replaced or removed (but NOT expanded upon) by the County at any time during the term of this AGREEMENT.
14. The County shall not make any other use of the DeForest Tower or DeForest Post than is intended herein and customary for the operation of telecommunications; nor shall the County install any equipment other than of the type or frequency specified in "Exhibit C" of this AGREEMENT without separate and specific written permission from WisDOT.
15. Access to the DeForest Tower Site by the County personnel or representatives for the purpose of equipment installation, removal, maintenance and repair shall be coordinated through WisDOT, who shall clear all access, each time and prior to entrance to the DeForest Tower Site, through the Chief Engineer of WisDOT's Division of State Patrol, Bureau of Public Security and Communications or his/her designee. The County shall not occupy space or install equipment at the DeForest Tower Site without advance permission from WisDOT. Prior to installation, the County shall provide proof that the persons installing the antennas have the qualifications and insurance coverage necessary to perform such installations.
16. WisDOT shall have the right to use, occupy and enjoy the DeForest Tower Site and facilities located thereon, including DeForest Tower and DeForest Post, and WisDOT shall have the right to permit the use or occupancy thereof by others, for such purposes, in such manner and at such times as WisDOT shall desire, the same as if this instrument had not been executed by it. If any such use shall necessitate any change in the location or installation of the County's attachments or equipment or any part thereof, such change shall be made by the County at its own cost and expense, within 90 days after receipt of written notice thereof from WisDOT, and WisDOT shall not be liable to the County on account thereof, or on account of any damage growing out of any use which WisDOT may make or permit to be made of the DeForest Tower Site or facilities located thereon.
17. Upon termination of this AGREEMENT, the County shall, at its own expense, within a period of 90 days following the effective date of such termination remove its attachments and equipment from the Tower Site. In the event of the failure of the County so to do within said period of time, WisDOT shall have the right to so remove the attachments and equipment of the County, and the County will promptly reimburse WisDOT for the cost and expense of so doing upon presentation of a bill therefore by WisDOT.
18. The waiver of a breach of any of the terms or conditions hereof shall be limited to the act or acts constituting such breach and shall never be construed as being a continuing or permanent waiver of any such terms or conditions, all of which shall be and remain in full force and effect as to future acts or happenings, notwithstanding any such waiver.
19. In accepting this AGREEMENT, the County agrees to perform and be bound by all of the conditions hereof to be performed by the County, even though the performance thereof may not be required by the County until after the termination of this AGREEMENT.
20. The benefits of this AGREEMENT shall accrue to State of Wisconsin, Department of Transportation and their successors and assigns; however, this AGREEMENT is personal to the County, and is not assignable or transferable by the County.
21. It is expressly understood by the County that no title, interest, equity or property rights in the DeForest Tower Site, in DeForest Tower, or in DeForest Post are conveyed by this AGREEMENT or by the State of Wisconsin or WisDOT.
22. The parties hereto shall direct any notices, documents or other correspondence required by or related to this AGREEMENT to the following:

To WisDOT:

Engineering Section Chief
WI Department of Transportation/Division of State Patrol
Bureau of Public Security and Communications
P.O. Box 7912
Madison, WI 53707-7912

Phone: (608) 709-0059

Fax: (608) 267-4495

WisDOT Site Contact:

Communications Supervisor

WI Department of Transportation/Division of State Patrol

Bureau of Public Security and Communications

WI State Patrol DeForest Post

Phone: (608) 846-8526

To County of Dane:

Radio System Administrator

210 Martin Luther King Jr Blvd Rm109

Madison, WI 53703


Phone: (608) 283-2912

Fax: (608) 266-9861

Or to such other person or address as a party hereto may, upon similar notice, notify the other party.

IN WITNESS WHEREOF, the parties hereto have caused this LEASE AGREEMENT to be executed in duplicate and approved on the date written by their authorized officers or representatives.


**STATE OF WISCONSIN
COUNTY OF DANE**

 County of Dane: _____ Date: _____
<Dane County Executive>

**STATE OF WISCONSIN
COUNTY OF DANE**

Personally came before me this ____ day of _____, 2015, by _____, as Contracting Officer, on behalf of County of Dane, State of Wisconsin, who executed the foregoing instrument and acknowledge the same.

_____(SEAL)
NOTARY PUBLIC, STATE OF WISCONSIN
Print Name: _____
My Commission Expires: _____


 County of Dane: _____ Date: _____
<Dane County Clerk>

**STATE OF WISCONSIN
COUNTY OF DANE**

Personally came before me this ____ day of _____, 2015, by _____, as Contracting Officer, on behalf of County of Dane, State of Wisconsin, who executed the foregoing instrument and acknowledge the same.

_____(SEAL)
NOTARY PUBLIC, STATE OF WISCONSIN
Print Name: _____
My Commission Expires: _____

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

 By: _____
Stephen Fitzgerald Superintendent
Division of State Patrol

**STATE OF WISCONSIN
COUNTY OF DANE**

Personally came before me this ____ day of _____, 2015, by Stephen Fitzgerald, as Superintendent of the Division of State Patrol, on behalf of State of Wisconsin, Department of Transportation, who executed the foregoing instrument and acknowledge the same.

_____(SEAL)
NOTARY PUBLIC, STATE OF WISCONSIN
Print Name: _____
My Commission Expires: _____

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**



By: _____
Denise Solie, Administrator
Division of Business Management

STATE OF WISCONSIN
COUNTY OF DANE

Personally came before me this _____ day of _____, 2015, by Denise Solie, as Administrator of the Division of Business Management, on behalf of State of Wisconsin, Department of Transportation, who executed the foregoing instrument and acknowledge the same.

_____(SEAL)

NOTARY PUBLIC, STATE OF WISCONSIN

Print Name: _____

My Commission Expires: _____

Exhibit A

RADIOTELEPHONE EQUIPMENT

It is understood that the following described equipment, may be installed by the County at the DeForest Tower Site:

Equipment on Tower

- (2) dipole antennas, model Sinclair SD214-SF2P4SNM or equivalent, located at 239 ft. level (AGL)
- (2) Yagi antennas, model Sinclair SY250-SF2SNM or equivalent, located at 208 ft. level (AGL)
- (1) dipole antenna, model Sinclair SD214-SF2P4SNM or equivalent, located at 180 ft. level (AGL)
- (1) dipole antenna, model Sinclair SD214-SF2P4SNM or equivalent, located at 150 ft. level (AGL)
- (1) microwave dish, model RFS PAD6-59W or equivalent, located at 144 ft. level (AGL)
- (1) Yagi antenna, model Laird Y4505 or equivalent, located at 140 ft. level (AGL)
- 7/8" Coax cable will be used for VHF antenna installations
- EW90 waveguide will be used for the microwave dish installation

Equipment in Building

Eight (8) 19" Racks and one (1) Battery Rack

Exhibit B

STRUCTURAL, MECHANICAL AND ELECTRICAL MODIFICATIONS



WDOT DEFOREST STATE PATROL TOWER

DANE COUNTY

DEFOREST, WISCONSIN

CONSTRUCTION DRAWINGS

AUGUST 2015

PROJECT DIRECTORY:

ENGINEER:
EDGE CONSULTING ENGINEERS, INC.
824 WATER STREET
PRISM: DLS, WI 53578
CONTACT: ANLEN OSTRENG
PHONE: (608) 844-1448

OWNER:
DANE COUNTY PUBLIC SAFETY COMMUNICATIONS
215 MARTIN LUTHER KING JR. BLVD. RM 100
MADISON, WI 53703
CONTACT: RICH MCCABE
PHONE: (608) 283-2911

RADIO SYSTEM VENDOR:
HAYES CORPORATION
221 JEFFERSON RIDGE PARKWAY
LYNCHBURG, VA 24501
CONTACT: CRAIG STEINMANN
PHONE: (224) 238-3910

CONTRACTOR:
DANIELS CONSTRUCTION CO., INC.
919 APPLE GATE RD.
MADISON, WI 53713
CONTACT: ERV ALTENBERGER
PHONE: (608) 271-4000

PROJECT INFO:

SITE LOCATION:
811 W NORTH STREET
DEFOREST, WISCONSIN 53532

PROPERTY / TOWER OWNER:
WISCONSIN DEPT. OF TRANSPORTATION
DIVISION OF STATE PATROL
4802 SHELDYMAN AVE. RM 501
MADISON, WI 53707
CONTACT: ERIC ENGEL
PHONE: (608) 287-1373
TOWER ASR #: 1034914

1A INFORMATION (PER FCC REGISTRATION):
- TOWER BASE (H4283)
LAT: 43°15'40.8" N
LONG: 89°23'08.7" W
GROUND ELEVATION: 950.0'

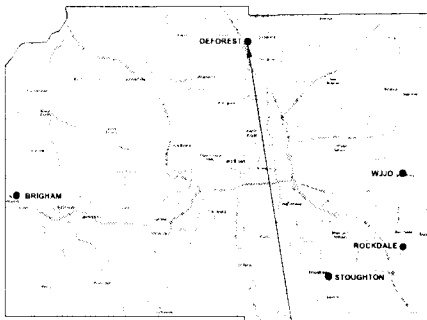
PLSS LOCATION:
NW 1/4 OF THE NE 1/4
SEC 24, T8N, R9E
VILLAGE OF DEFOREST
DANE COUNTY,
WISCONSIN

PARCEL ID: 1180909-241-0551-0

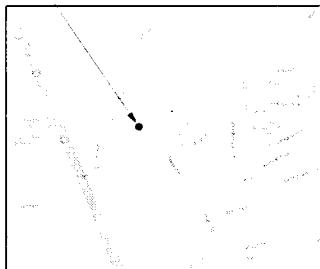
SHEET INDEX:

NO.: PAGE TITLE

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C-101	OVERALL SITE PLAN
C-102	ENLARGED SITE PLAN - WEST
C-103	ENLARGED SITE PLAN - EAST
T-201	TOWER LOADING/ELEVATION
T-501	TRANSMISSION LINE INSTALLATION DETAILS
T-502	ANTENNA INSTALLATION DETAILS
T-503	ICE BRIDGE DETAILS
E-101	OVERALL GROUNDING & ELECTRICAL PLAN
E-102	EQUIPMENT ROOM GROUNDING & ELECTRICAL PLAN
E-501	GROUNDING DETAILS
E-502	GROUNDING DETAILS
E-503	EQUIPMENT ROOM INTERIOR GROUNDING DETAILS
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A-102	EQUIPMENT ROOM REFLECTED CEILING PLAN
A-501	EQUIPMENT ROOM DETAILS



SITE LOCATION



SITE LOCATION MAP

SCALE: NTS



CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE

FAX A LOCATE: 1-800-336-3863
TOLL FREE

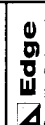
WIS. STATUTE 182.0175 (1974)
REQUIRES MIN. OF 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE

ENGINEER SEAL:

I HEREBY CERTIFY THAT THIS PLAN SET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WISCONSIN.

SIGNATURE:

DATE:



WDOT DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN

COVER SHEET

REVISIONS:

DATE: 08/26/2015
BY: JMM
REVISION:

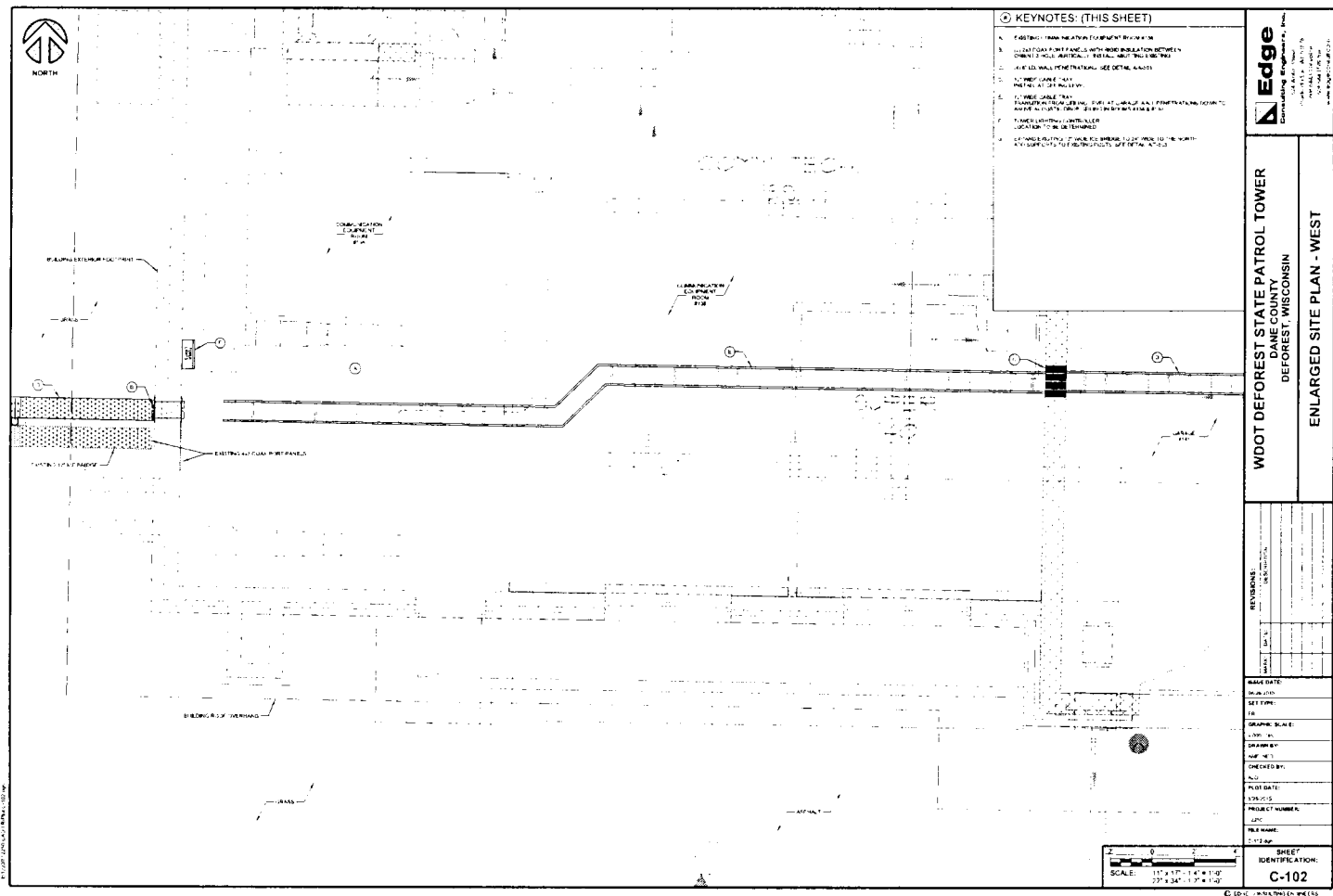
GRAPHIC SCALE:
1" = 100'

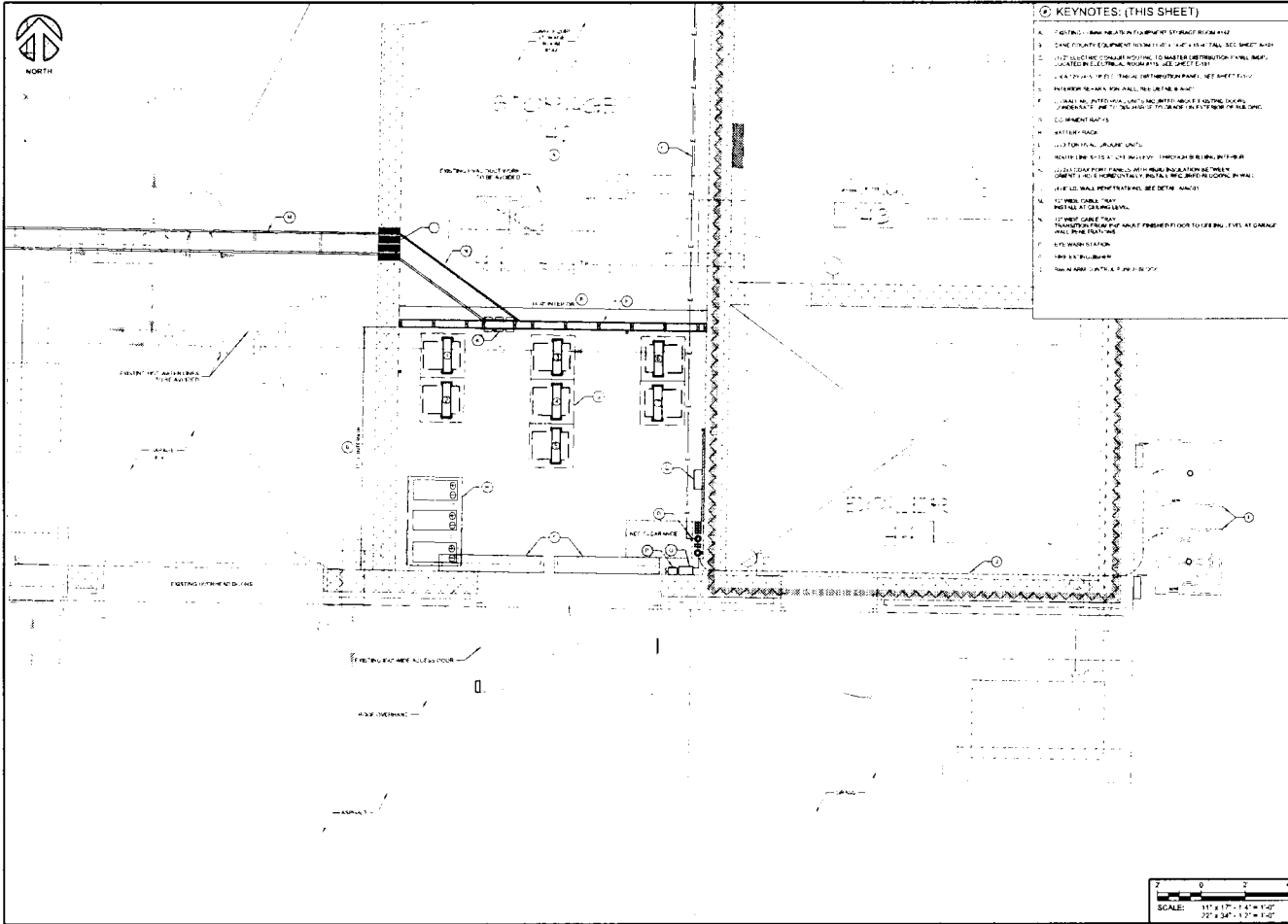
DATE: 8/19/2015

PROJECT NUMBER:
12507

FILE NAME:
12507.dwg

SHEET IDENTIFICATION:
G-001





- KEYNOTES: (THIS SHEET)**
1. EXISTING: 10' HIGH CONCRETE WALL WITH 10' TALL STEEL SHEET PILING.
 2. EXISTING: 10' HIGH CONCRETE WALL WITH 10' TALL STEEL SHEET PILING.
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 18. EXISTING: 10' HIGH CONCRETE WALL WITH 10' TALL STEEL SHEET PILING.
 19. EXISTING: 10' HIGH CONCRETE WALL WITH 10' TALL STEEL SHEET PILING.
 20. EXISTING: 10' HIGH CONCRETE WALL WITH 10' TALL STEEL SHEET PILING.

Edge
Engineering & Construction, Inc.

1000 W. KILBURN AVE. SUITE 200
MILWAUKEE, WI 53233
TEL: 414.224.1100
WWW.EDGE-ENGINEERING.COM

WOOT DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN

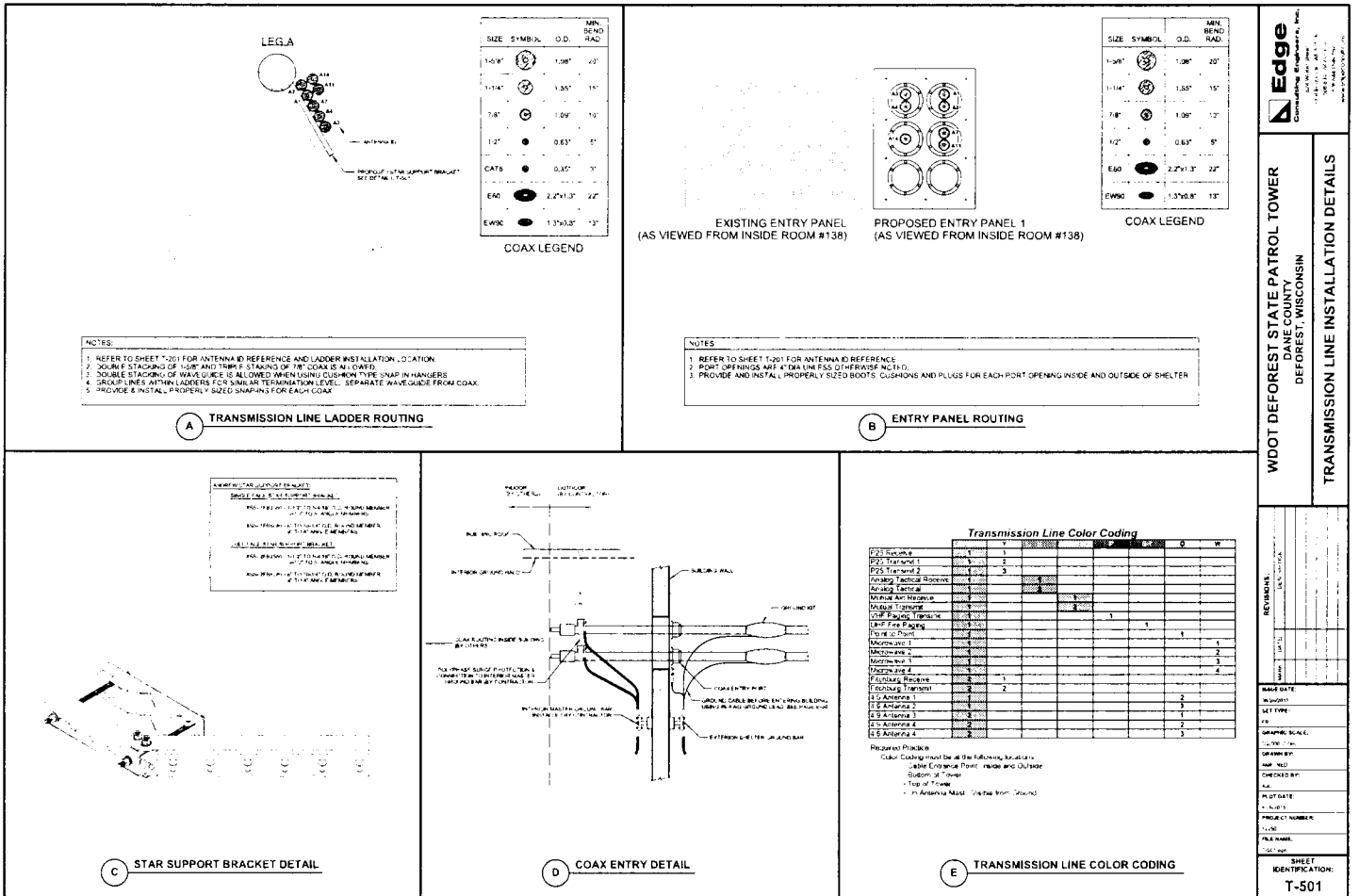
ENLARGED SITE PLAN - EAST

REVISIONS:	
NO.	DESCRIPTION
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2	ISSUED FOR PERMIT
3	ISSUED FOR PERMIT
4	ISSUED FOR PERMIT
5	ISSUED FOR PERMIT
6	ISSUED FOR PERMIT
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15	ISSUED FOR PERMIT
16	ISSUED FOR PERMIT
17	ISSUED FOR PERMIT
18	ISSUED FOR PERMIT
19	ISSUED FOR PERMIT
20	ISSUED FOR PERMIT

DATE: 01/11/11	SCALE: 1" = 10'
BY: J. H. H.	DESIGNED BY: J. H. H.
CHECKED BY: J. H. H.	APPROVED BY: J. H. H.
PROJECT NO: 111011	PROJECT NAME: WOOT DEFOREST STATE PATROL TOWER
FILE NAME: 111011.dwg	SHEET IDENTIFICATION: C-103

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① CODE 720518, TIME 14:30:00



WDOT DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN

TRANSMISSION LINE INSTALLATION DETAILS

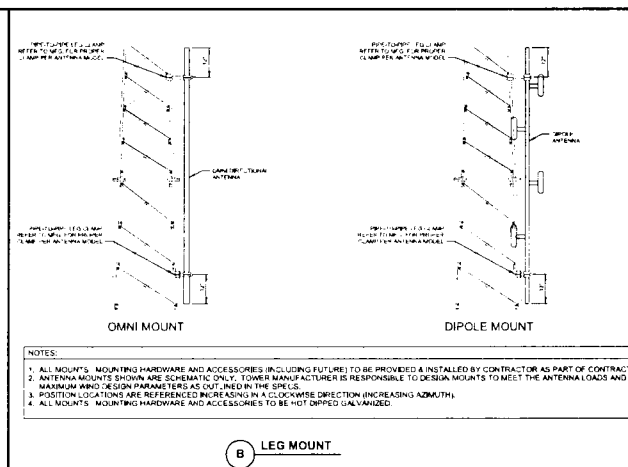
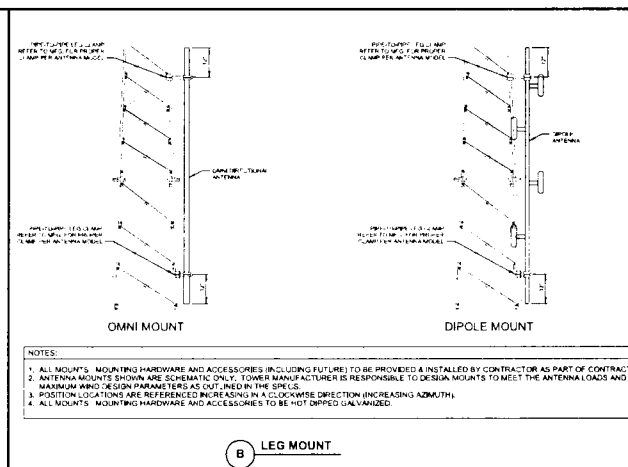
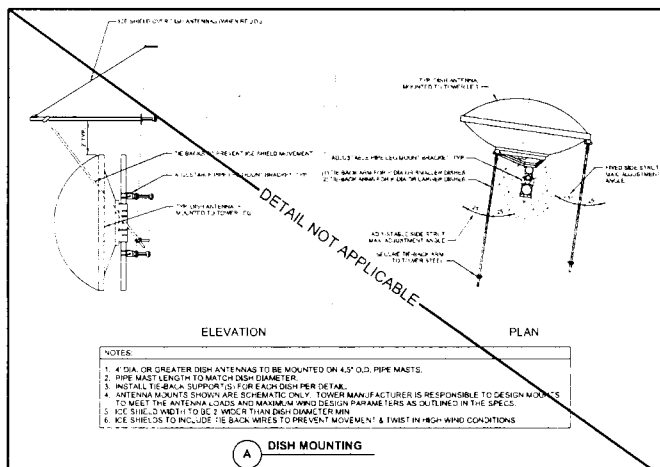
Edge
 Consulting Engineers, Inc.
 1111 W. Main St.
 DeForest, WI 53528
 (608) 785-1111
 www.edgeinc.com

REVISIONS:

NO.	DATE	DESCRIPTION
1	11/11/11	Initial Design

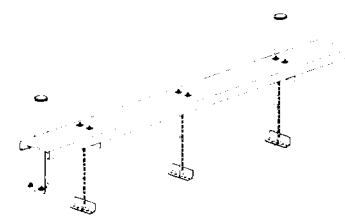
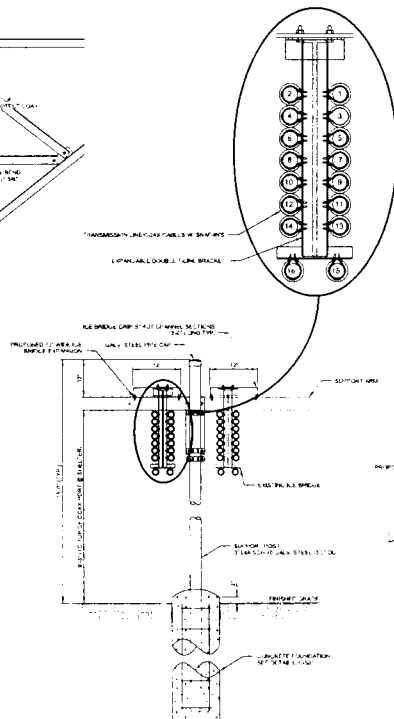
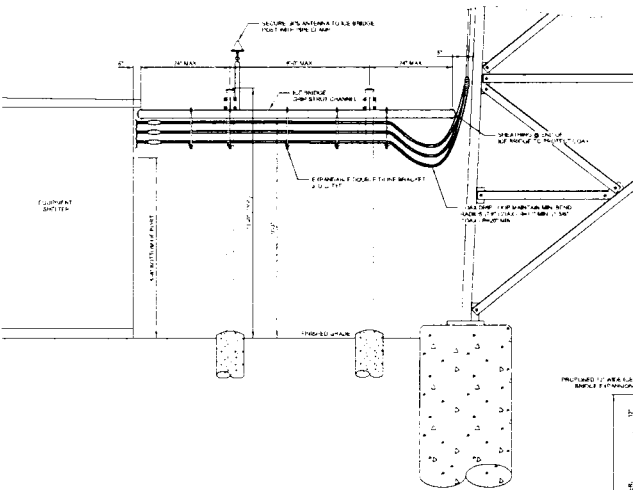
DATE: 11/11/11
DESIGNER: [Name]
CHECKED BY: [Name]
DATE: 11/11/11
PROJECT NUMBER: [Number]
FILE NAME: [Name]
SHEET IDENTIFICATION: T-501

SCALE: 1" = 10'

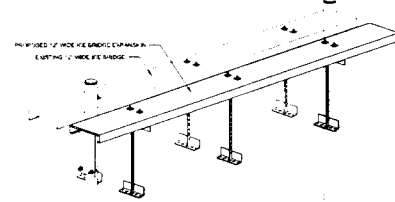


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EXISTING 12' WIDE GRIP STRUT ICE BRIDGE



PROPOSED 24' WIDE GRIP STRUT ICE BRIDGE

- ICE BRIDGE NOTES: (THIS SHEET)**
1. FOR COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS OR A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 6' FOR A 10' SECTION.
 2. SPLICES IN SECTIONS OF BRIDGE CHANNEL SHALL BE INSTALLED AT SUPPORTS, WHERE POSSIBLE, OR AT MOST 2' FROM A SUPPORT.
 3. FREE ENDS OF ICE BRIDGE CHANNELS SHALL NOT EXCEED A CANTILEVER DISTANCE OF 2' FROM A SUPPORT.
 4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH CO. D GALVANIZING SPRAY.
 5. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH MANUFACTURER'S AND ENGINEER'S APPROVAL.
 6. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS SHOWN ON SITE SPECIFIC DRAWINGS OR STANDARD DETAILS REQUIRE ENGINEERING APPROVAL.

ICE BRIDGE DETAILS

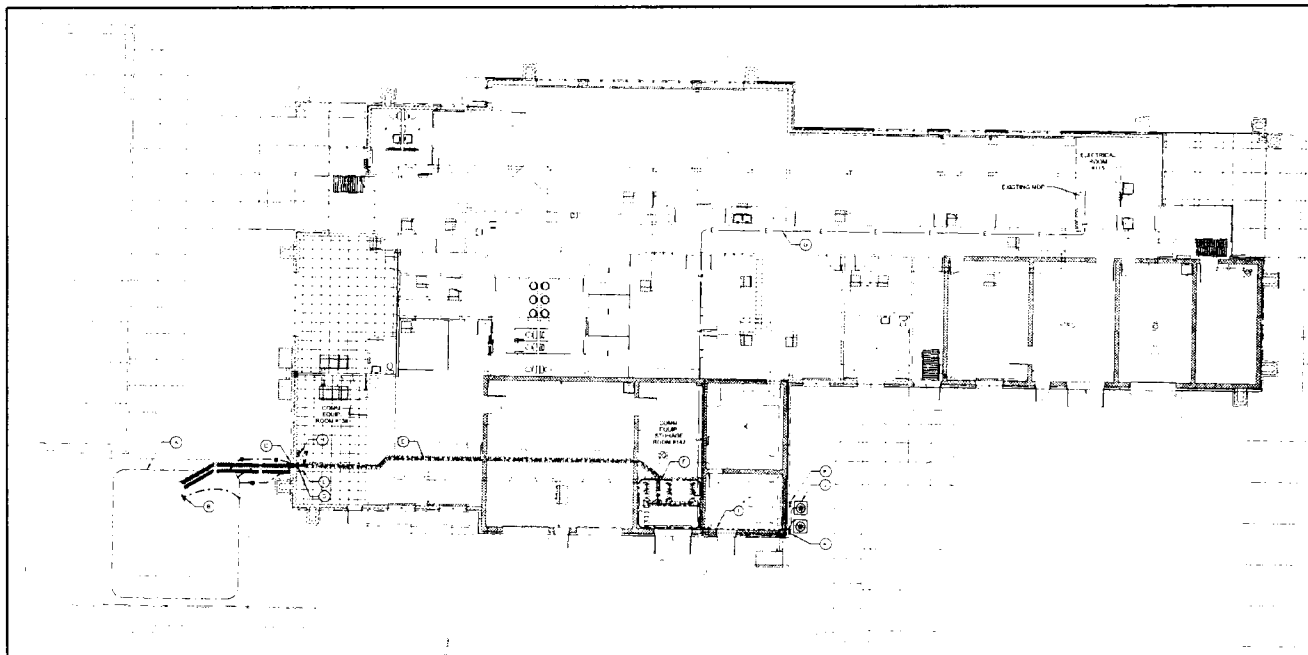
Edge
Consulting Engineers, Inc.
1000 N. Lincoln Ave.
Suite 200
DeForest, WI 53530
Phone: 608.785.1234
Fax: 608.785.1235
www.edge-engineers.com

WOOD DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN

ICE BRIDGE DETAILS

REVISION:	DATE:
1	01/15/2011
2	01/15/2011
3	01/15/2011
4	01/15/2011
5	01/15/2011
6	01/15/2011
7	01/15/2011
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95	01/15/2011
96	01/15/2011
97	01/15/2011
98	01/15/2011
99	01/15/2011
100	01/15/2011

SHEET IDENTIFICATION
T-503



Edge
Consulting Engineers, Inc.
574 Maple Street

REST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN

OVERALL SITE GROUNDING & ELECTRICAL PLAN

[illegible]

ISSUE DATE:
16 JUN 1975
ISS FROM:
CR
GRAPHIC SCALE:
1:50,000 / 1:1
DRAWN BY:
NAF NED
CHECKED BY:
ALO
PLOT DATE:
27 DEC 75
PROJECT NUMBER:
254
FILE NAME:
E-101.dgn

SHEET
IDENTIFICATION:
E-101

© KEYNOTES: (THIS SHEET)

- [illegible]








SITE ELECTRICAL NOTES: (THIS SHEET)

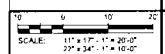
1. CONTROLLING SHAREHOLDERS SETTING EQUATIONS & LIMITS OF ALL FIXING UTILITY'S
2. ALL UTILITIES SHALL BE INSTALLED IN AN INDENT 1" STATE AND LOCAL PRESENTMENTS
3. ALL ELECTRICAL WORK SHALL CONFORM TO CURRENT STATE AND LOCAL CODES.
4. ALL UNDERGROUND TRENCHING SHALL BE COMPLETED IN A LOCATION TO BE COMPLETED PRIOR TO THE TRENCHING COMPLETION AND ADEQUATE PROTECTION.
5. ALL WORKMAN SHALL BE IN COMPLIANCE
6. ALL MATERIALS SHALL BE ALLOWED TO BE IDENTIFIED AND LABELED
7. NO NEW OR EXISTING MATERIALS SHALL BE USED

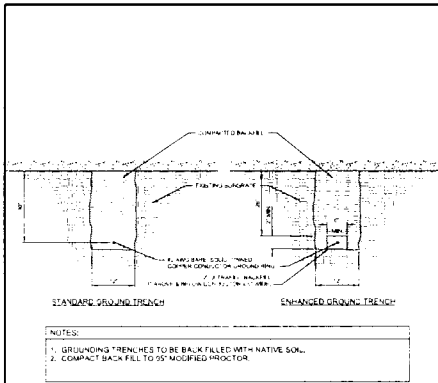
GROUNDING NOTES: (THIS SHEET)

- [illegible]

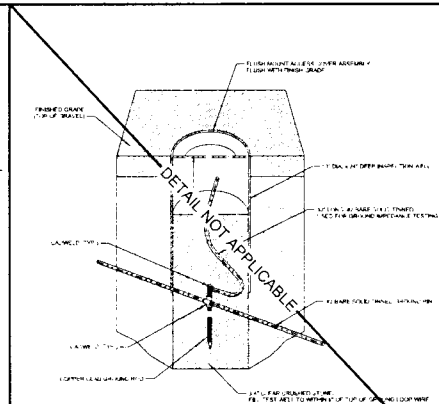
GROUNDING LEGEND: (THIS SHEET)

- 4.  GROUND INSPECTOR WILL RECORD DETAIL WEIGHT
 - 5.  COPPER LEAD GROUND ROD (SPEAR) 1' TO JUNCTION SPACE @ 17' O.C. MAX.
 - 6.  COPPER PLATE 1" X 1' X 1/2" THICK THIS SPACE @ 17' O.C. MAX.
 - 7.  EXISTING MANHOLE 1" RATED BOLT/FLANGE 1" FLANGE TOP 1" FLANGE BOTTOM (SEE MEASUREMENTS)
 - 8.  MANHOLE CONNECTION IN EXISTENCE OR APPROVED EQUIVALENT
9.  REBAR SHALL BE SET THINER (NUMBER OF REBAR IN EACH ANCHOR) AND THE MIN. SET OF EACH ANCHOR
10.  REBAR SHALL BE SET THINER (NUMBER OF REBAR IN EACH ANCHOR) AND THE MIN. SET OF EACH ANCHOR

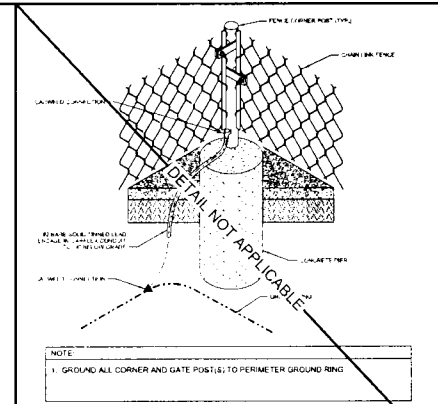




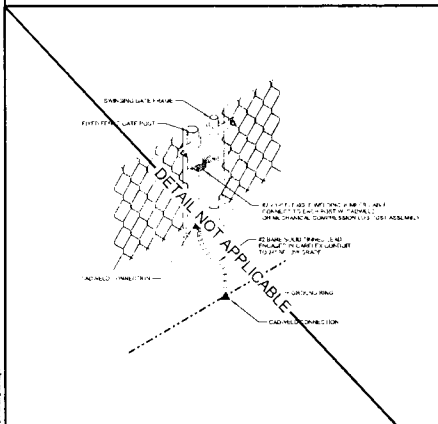
A GROUNDING TRENCH



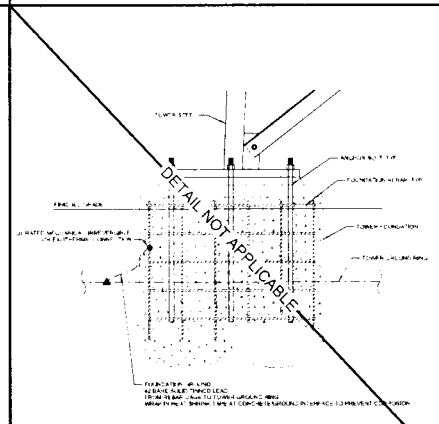
B INSPECTION WELL



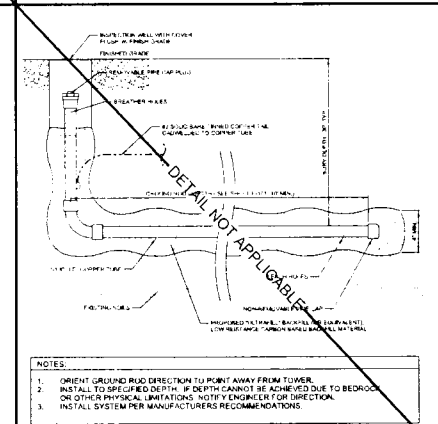
C FENCE POST GROUNDING



D FENCE GATE GROUNDING



E TOWER FOUNDATION GROUNDING



F HORIZONTAL L-SHAPED ENHANCED GROUND ROD

Edge
Consulting Engineers, Inc.

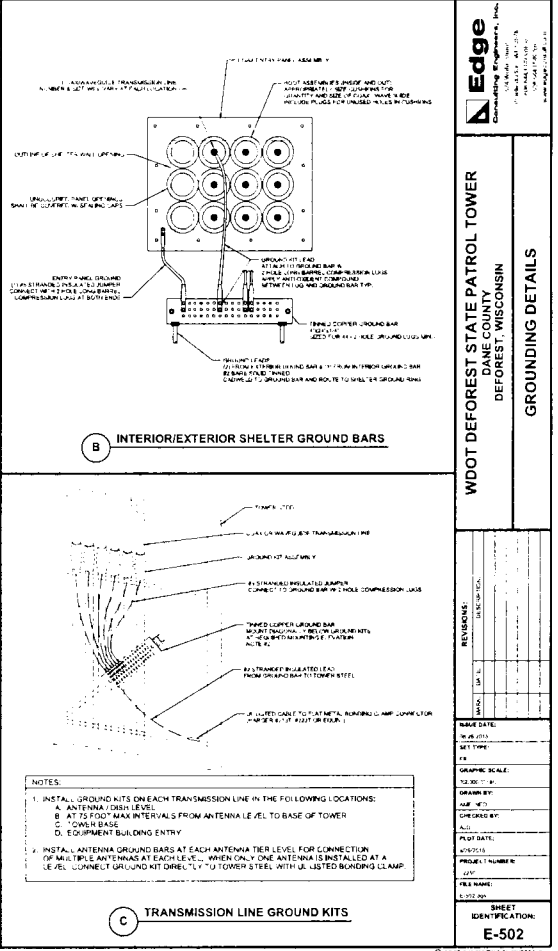
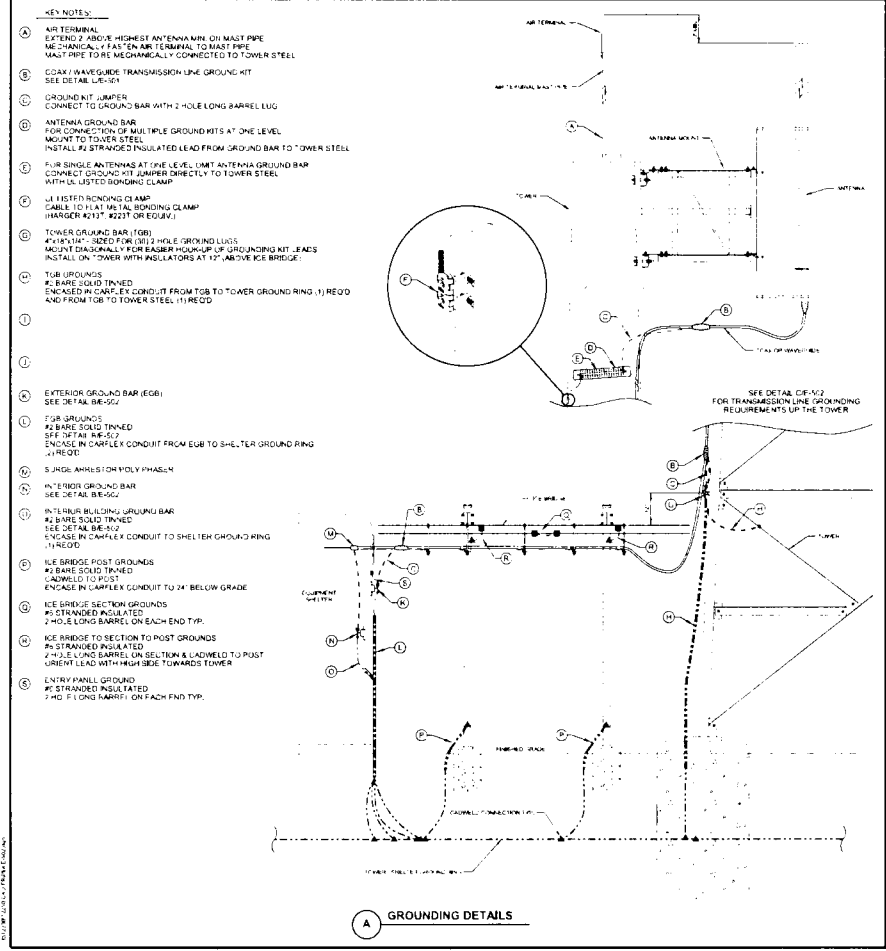
WOOD DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN

GROUNDING DETAILS

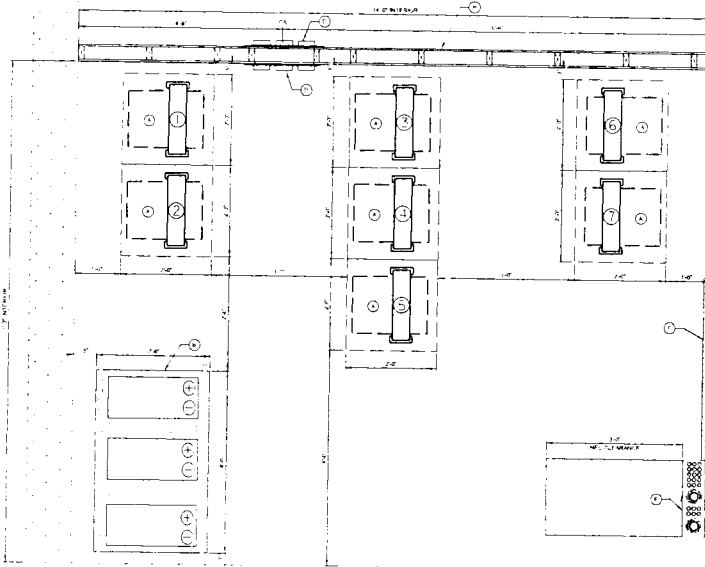
REVISIONS:

NO.	DATE	DESCRIPTION
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DATE: 7/26/2015
BY: [Signature]
CHECKED BY: [Signature]
PROJECT NUMBER: 15-001
FILE NAME: 15-001-001
SHEET IDENTIFICATION: E-501



01/10/10 E-502-1000-0000-0000



KEYNOTES: (THIS SHEET)

1. EQUIPMENT RACK, 1000 X 1000
2. EQUIPMENT RACK, 1000 X 1000
3. EQUIPMENT RACK, 1000 X 1000
4. EQUIPMENT RACK, 1000 X 1000
5. EQUIPMENT RACK, 1000 X 1000
6. EQUIPMENT RACK, 1000 X 1000
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11. EQUIPMENT RACK, 1000 X 1000

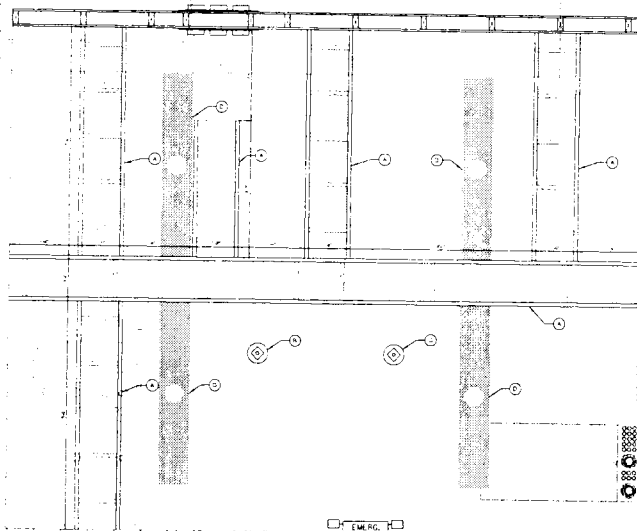
EQUIPMENT ROOM FLOOR PLAN



WDOT DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN
EQUIPMENT ROOM FLOOR PLAN

REVISIONS	
NO.	DESCRIPTION
1	ISSUED FOR PERMIT

DATE: 06/20/2018
BY: JRM
CHECKED BY: JRM
DATE: 06/20/2018
PROJECT NUMBER: 1801
SHEET IDENTIFICATION: A-101



KEYNOTES: (THIS SHEET)

- A. EMERGENCY LIGHTING
- B. MOTION PICTURE LIGHTING
- C. MOTION PICTURE LIGHTING
- D. EMERGENCY LIGHTING

A

EQUIPMENT ROOM REFLECTED CEILING PLAN



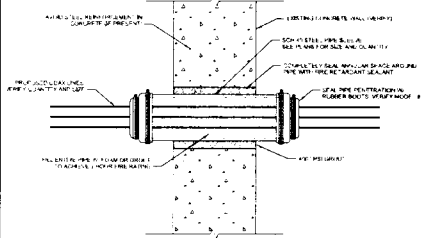
WDOT DEFOREST STATE PATROL TOWER
DANE COUNTY
DEFOREST, WISCONSIN
EQUIPMENT ROOM REFLECTED CEILING PLAN

REVISIONS:	DATE	BY	DESCRIPTION
1	10/15/10	AL	ISSUED FOR PERMIT

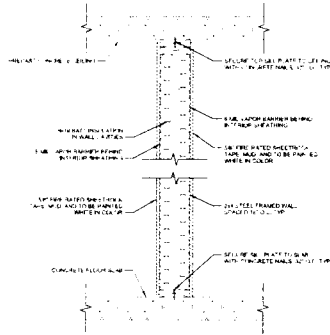
DATE:	10/15/10
BY:	AL
SCALE:	AS SHOWN
DRAWN BY:	AL
CHECKED BY:	AL
PROJECT NUMBER:	225C
FILE NAME:	A-102.dwg
SHEET IDENTIFICATION:	A-102

NOTES:
 1. FOR PROTECTED AREA, PROVIDE TO PROTECT
 2. FOR PROTECTED AREA, PROVIDE TO PROTECT
 3. FOR PROTECTED AREA, PROVIDE TO PROTECT

DETAIL:
 1. FOR PROTECTED AREA, PROVIDE TO PROTECT
 2. FOR PROTECTED AREA, PROVIDE TO PROTECT
 3. FOR PROTECTED AREA, PROVIDE TO PROTECT



A BLOCK WALL PENETRATION DETAIL



B INTERIOR PARTITION WALL DETAIL

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WDOT DEFORREST STATE PATROL TOWER
 DANE COUNTY
 DEFORREST, WISCONSIN

EQUIPMENT ROOM DETAILS

REVISIONS	DATE	BY	DESCRIPTION
1			
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DATE DATE
 PROJECT
 SHEET
 GRAPHIC SCALE
 DRAWING BY
 CHECKED BY
 PROJECT NUMBER
 SHEET IDENTIFICATION
A-501

Exhibit C

FCC STATION AUTHORIZATIONS

Authorizations will be included once granted by the Federal Communications Commission.

Exhibit D

FREQUENCY INTERMODULATION STUDY

-

Dane County VHF Radio System

P25 VHF IMD Study

For CDR-II July 2015



1. P25 & ANALOG TACTICAL & PAGING OVERVIEW

Below is a Table of VHF frequencies which were proposed and reviewed during Amendment 6 discussions of the DaneCom Radio System contract in early 2015 and, as subsequently modified, based on the potential for additional NTIA channel pool access. The Table includes the proposed NTIA frequency set for the dual Analog Tactical (AT) repeaters since they are intended to be selectively co-sited with many of the trunked P25 sites. Paging transmitters will also be selectively co-sited with P25 and AT.

In addition to the Table is an intermodulation (IMD) study which supports and validates the selected frequencies as being predictably free for both 3rd and 5th Order IMD products with the a noted and agreed to EXCEPTION involving the VHF Paging frequency. It is the vendor's as well as accepted industry practice that all IMD products for 3rd & 5th Order be avoided as a Best Practice. While every attempt to avoid this situation was attempted based on the limited frequency pool, no practical solution could be found.

In light of this issue, extensive on-site RF testing was performed in 2014 at the then-existing P25/Paging sites to quantify the amplitude and/or severity of the predicted IMD products. It was determined empirically across all sites at that time; that none of the predicted IMD products could be detected on the P25 receive frequencies. This fortunate event was determined to be the result of always maintaining the Paging transmitters on a dedicated antenna at all sites and if not multicoupled with other TX or RX systems, the IMD can be mitigated. The concept was further investigated by searching for similar 3rd & 5th Order IMD predicted products that would fall on non-P25 RX frequencies under the same site conditions yet with common antenna sharing and in those cases the predicted IMD products could be measured well above the RX System noise floor.



1.1 P25 & ANALOG TACTICAL FREQUENCY TABLE

Below is the latest (July 2015) P25& AT & Paging frequency pool which is intended to be used in the Dane Expansion, Amendment-6 of the original contract.

Service	TX	RX
P251	154.0925	158.7750
P252	154.1225	159.0450
P253	154.8225	159.2100
P254	154.9725	159.2775
P255	155.1825	159.3075
P256	155.2425	164.3125
P257	155.5275	164.3750
P258	171.3500	164.4250
P259	172.0750	164.5750
P2510	172.5500	165.0500
AT1	172.1000	166.0250
AT2	172.5875	166.2375
Paging	155.8425	

Color code:

Green – Existing DaneCom licensed FCC Part 90 frequencies

Yellow – Original (pre-CDR-I) NTIA requested frequencies

Blue – Additional (post CRD-I) NTIA requested frequencies

Orange – Paging transmit frequency

Further collaborative discussions both *co-* and *post-* Amendment and CDR-I meetings have raised availability questions and thus may require minor adjustments to the pairing and/or selection of individual channel(s) that are in the above Table. The frequencies in the Table also presume NTIA frequency access will be granted in conjunction with the WisCOM and DaneCom frequency pool MOU.

The vendor desires to collaboratively agree with Dane County and their consultant on any further changes or trade-offs in these frequency selections.

1.2 INTERMOD STUDY FOR P25 & AT & PAGING:

Below is an IMD study report for the frequencies called out in the above Table for P25 & AT & Paging.

Intermodulation Report v5.7.27

Date: July, 2015
Project: July 2015 P25 & AT IMD Study
Search Window: Service Bandwidth Dependent

Intermod Checks Performed:

Base Transmit to Base Receive

Services Checked:

	Service	Tower	Tx Freq	Rx Freq	Duplex	Bandwidth
001:	P25 1	Tower 1	154.092500 MHz	158.775000 MHz	Full	12.50 kHz
002:	P25 2	Tower 1	154.122500 MHz	159.045000 MHz	Full	12.50 kHz
003:	P25 3	Tower 1	154.822500 MHz	159.210000 MHz	Full	12.50 kHz
004:	P25 4	Tower 1	154.972500 MHz	159.277500 MHz	Full	12.50 kHz
005:	P25 5	Tower 1	155.182500 MHz	159.307500 MHz	Full	12.50 kHz
006:	P25 6	Tower 1	155.242500 MHz	164.312500 MHz	Full	12.50 kHz
007:	P25 7	Tower 1	155.527500 MHz	164.375000 MHz	Full	12.50 kHz
008:	P25 8	Tower 1	171.350000 MHz	164.425000 MHz	Full	12.50 kHz
009:	P25 9	Tower 1	172.075000 MHz	164.575000 MHz	Full	12.50 kHz
010:	P25 10	Tower 1	172.550000 MHz	165.050000 MHz	Full	12.50 kHz

Dane County Radio System

011:	AT-1	Tower 1	172.100000 MHz	166.025000 MHz	Full	12.50 kHz
012:	AT-2	Tower 1	172.587500 MHz	166.237500 MHz	Full	12.50 kHz
013:	Paging	Tower 1	155.842500 MHz	0.000000 MHz	Half	12.50 kHz

Mixes Checked:

2-Signals up to 5th Order
 3-Signals up to 5th Order
 4-Signals up to 5th Order
 5-Signals up to 5th Order
 6-Signals up to 6th Order

2-Signal 5th Order (3A±2B):

$3*155.842500(\text{Paging}) - 2*154.122500(\text{P25 2}) = 159.282500(5.0)(\text{P25 4})$
 $3*155.842500(\text{Paging}) - 2*154.122500(\text{P25 2}) = 159.282500(25.0)(\text{P25 5})$

3-Signal 5th Order (3A±B±C):

$3*155.842500(\text{Paging}) - 1*154.122500(\text{P25 2}) - 1*154.092500(\text{P25 1}) = 159.312500(5.0)(\text{P25 5})$

3-Signal 5th Order (2A±2B±C):

$2*155.842500(\text{Paging}) - 2*154.092500(\text{P25 1}) + 1*155.527500(\text{P25 7}) = 159.027500(17.5)(\text{P25 2})$

4-Signal 5th Order (2A±B±C±D):

$2*155.842500(\text{Paging}) + 1*172.550000(\text{P25 10}) - 1*154.092500(\text{P25 1}) - 1*171.350000(\text{P25 8}) = 158.792500(17.5)(\text{P25 1})$
 $2*155.842500(\text{Paging}) + 1*172.550000(\text{P25 10}) - 1*154.122500(\text{P25 2}) - 1*171.350000(\text{P25 8}) = 158.762500(12.5)(\text{P25 1})$

The above results (highlighted in RED) point to a “common contributor” being the Paging transmitter in all four of the predicted IMD products. Mitigation of these products shall be addressed via maintain Paging on its own isolated TX antenna as covered in the overview section above.

1.3 FREQUENCY CHANGES

Any modifications or agreed changes to the frequency Table which are only limited to exchanging one RX channel for another RX channel or exchanging one TX channel for another TX channel will result in no changes to the IMD study. Any exchange may have impacts to the RF combining systems and could be minor as retuning or as significant as requiring more rack space to be required at all P25 sites.



It is expected that mutual questions can be discussed, addressed, answered and agreed to at CDR-II.

2. INTERMOD STUDY FOR MA & AT & PAGING:

Below is the IMD summary report for Mutual Aid & AT & Paging systems and can be discussed and/or reviewed during CDR-II. This IMD report applies only to the Brigham and Deerfield sites since the systems are co-sited (albeit differently) at those two locations with limited antenna isolation values and limited antenna counts. The limited antenna count thus mandates that more transmitters must be combined into common transmit antennas and increases the risk of intra & inter system IMD products.

Intermodulation Report v5.7.27

Date: July, 2015
Project: July 2015 MA & AT & Paging IMD Study
Search Window: Service Bandwidth Dependent

Intermod Checks Performed:
Base Transmit to Base Receive

Services Checked:

	Service	Tower	Tx Freq	Rx Freq	Duplex	Bandwidth
001:	AT-1	Tower 1	172.100000 MHz	166.025000 MHz	Full	12.50 kHz
002:	AT-2	Tower 1	172.587500 MHz	166.237500 MHz	Full	12.50 kHz
003:	Paging	Tower 1	155.842500 MHz	0.000000 MHz	Half	12.50 kHz
004:	VTAC12	Tower 1	154.452500 MHz	154.452500 MHz	Half	12.50 kHz
005:	WisMARC 1	Tower 1	151.280000 MHz	153.845000 MHz	Full	12.50 kHz
006:	WisMARC 2	Tower 1	151.280000 MHz	151.280000 MHz	Half	12.50 kHz
007:	VCALL10	Tower 1	155.752500 MHz	155.752500 MHz	Half	12.50 kHz
008:	VLA31	Tower 1	155.475000 MHz	155.475000 MHz	Half	12.50 kHz



Dane County Radio System

009:	IFERN1	Tower 1	154.265000 MHz	154.265000 MHz	Half	12.50 kHz
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Mixes Checked:

- 2-Signals up to 5th Order
- 3-Signals up to 5th Order
- 4-Signals up to 5th Order
- 5-Signals up to 5th Order
- 6-Signals up to 6th Order

2-Signal 5th Order (3A±2B):

3*154.265000(IFERN1)-2*155.752500(VCALL10)=151.290000(10.0)(WisMARC 2)

3-Signal 5th Order (2A±2B±C):

2*151.280000(WisMARC 1)-2*154.452500(VTAC12)+1*172.587500(AT-2)=166.242500(5.0)(AT-2)
 2*151.280000(WisMARC 2)-2*154.452500(VTAC12)+1*172.587500(AT-2)=166.242500(5.0)(AT-2)
 2*155.752500(VCALL10)-2*155.842500(Paging)+1*154.452500(VTAC12)=154.272500(7.5)(IFERN1)
 2*154.265000(IFERN1)-2*154.452500(VTAC12)+1*155.842500(Paging)=155.467500(7.5)(VLAW31)
 2*154.265000(IFERN1)-2*155.842500(Paging)+1*154.452500(VTAC12)=151.297500(17.5)(WisMARC 2)
 2*155.842500(Paging)-2*154.265000(IFERN1)+1*151.280000(WisMARC 1)=154.435000(17.5)(VTAC12)
 2*155.842500(Paging)-2*155.752500(VCALL10)+1*154.265000(IFERN1)=154.445000(7.5)(VTAC12)
 2*155.842500(Paging)-2*154.265000(IFERN1)+1*151.280000(WisMARC 2)=154.435000(17.5)(VTAC12)

4-Signal 5th Order (2A±B±C±D):

-
 2*155.752500(VCALL10)+1*154.452500(VTAC12)+1*155.475000(VLAW31)+1*155.842500(Paging)=154.265000(0.0)(IFERN1)
 2*155.752500(VCALL10)+1*154.265000(IFERN1)-1*155.842500(Paging)-
 1*154.452500(VTAC12)=155.475000(0.0)(VLAW31)
 2*155.752500(VCALL10)+1*154.265000(IFERN1)-1*155.475000(VLAW31)-
 1*155.842500(Paging)=154.452500(0.0)(VTAC12)

5-Signal 5th Order (A±B±C±D±E):

1*172.100000(AT-1)+1*154.452500(VTAC12)+1*151.280000(WisMARC 1)-1*155.842500(Paging)-
 1*155.752500(VCALL10)=166.237500(0.0)(AT-2)
 1*172.100000(AT-1)+1*154.452500(VTAC12)+1*151.280000(WisMARC 2)-1*155.842500(Paging)-
 1*155.752500(VCALL10)=166.237500(0.0)(AT-2)

Of greatest concern in this IMD study are the potential 5-signal 5th-Order IMD products (highlighted in RED) resulting in AT2 impinging upon itself. While these potential IMD products require other multiple transmitters to simultaneously be active (the likelihood of which is inherently bounded) some risk must be accepted by Dane County. The other potential IMD products related only to intra-Mutual Aid and /or Mutual Aid with Paging have been

previously noted in this DaneCom project and cannot be fully mitigated. The risk from these potential IMD products must continue to be accepted since changes to the Mutual Aid frequency pool cannot be performed.

As with the P25 & AT section above, the Vendor desires to collaboratively agree with DaneCom and their consultant on any changes or trade-offs in frequency selections.

3. IMD RISK FOR DEFOREST SITE:

In reviewing the co-sited IMD potential between the existing legacy Wisconsin State Patrol (WSP) frequency set and DaneCom's frequency set at the deForest site, there is substantial risk for mutual inter-system interference. While the vendor has been advised by DaneCom that IMD between Dane's and WSP's systems should not be of concern given the legacy nature of the WSP frequency pool, the vendor shall not accept any liability, nor take responsibility, nor be required to mitigate any IMD products either passive or active at the deForest site.

This topic should be discussed between the vendor, DaneCom and their consultant at CRDII.

The IMD study below exemplifies the risk and is based on a list of existing WSP frequencies which are, as reported by WSP, to be left remaining at the deForest site after January 1, 2016.

Intermodulation Report v5.7.27

Date: July, 2015
 Project: deForest Site with WSP co-site
 Search Window: Service Bandwidth Dependent

Intermod Checks Performed:
 Base Transmit to Base Receive

Services Checked:

	Service	Tower	Tx Freq	Rx Freq	Duplex	Bandwidth
001:	P25 1	Tower 1	154.092500 MHz	158.775000 MHz	Full	12.50 kHz
002:	P25 2	Tower 1	154.122500 MHz	159.045000 MHz	Full	12.50 kHz
003:	P25 3	Tower 1	154.822500 MHz	159.210000 MHz	Full	12.50 kHz
004:	P25 4	Tower 1	154.972500 MHz	159.277500 MHz	Full	12.50 kHz
005:	P25 5	Tower 1	155.182500 MHz	159.307500 MHz	Full	12.50 kHz
006:	P25 6	Tower 1	155.242500 MHz	164.312500 MHz	Full	12.50 kHz
007:	P25 7	Tower 1	155.527500 MHz	164.375000 MHz	Full	12.50 kHz
008:	P25 8	Tower 1	171.350000 MHz	164.425000 MHz	Full	12.50 kHz
009:	P25 9	Tower 1	172.075000 MHz	164.575000 MHz	Full	12.50 kHz
010:	P25 10	Tower 1	172.550000 MHz	165.050000 MHz	Full	12.50 kHz
011:	AT-1	Tower 1	172.100000 MHz	166.025000 MHz	Full	12.50 kHz
012:	AT-2	Tower 1	172.587500 MHz	166.237500 MHz	Full	12.50 kHz
013:	Paging	Tower 1	155.842500 MHz	0.000000 MHz	Half	12.50 kHz
014:	SWR-deForest Main	Tower 1	154.680000 MHz	159.420000 MHz	Full	12.50 kHz
015:	VLAW31(WISPERN)	Tower 1	155.475000 MHz	155.475000 MHz	Half	12.50 kHz
016:	WSP Statewide	Tower 1	151.460000 MHz	151.460000 MHz	Half	12.50 kHz

Mixes Checked:

2-Signals up to 5th Order
 3-Signals up to 5th Order
 4-Signals up to 5th Order
 5-Signals up to 5th Order
 6-Signals up to 6th Order



2-Signal 5th Order (3A±2B):

3*155.842500(Paging)-2*154.122500(P25 2)=159.282500(5.0)(P25 4)
 3*155.842500(Paging)-2*154.122500(P25 2)=159.282500(25.0)(P25 5)

3-Signal 3rd Order (A±B±C):

1*154.822500(P25 3)+1*155.842500(Paging)-1*155.182500(P25 5)=155.482500(7.5)(VLAW31(WISPERN))
 1*154.822500(P25 3)+1*155.842500(Paging)-1*151.460000(WSP Statewide)=159.205000(5.0)(P25 3)
 1*154.972500(P25 4)+1*155.182500(P25 5)-1*154.680000(SWR-deForest Main)=155.475000(0.0)(VLAW31(WISPERN))
 1*154.972500(P25 4)+1*155.527500(P25 7)-1*151.460000(WSP Statewide)=159.040000(5.0)(P25 2)
 1*154.972500(P25 4)+1*172.587500(AT-2)-1*172.075000(P25 9)=155.485000(10.0)(VLAW31(WISPERN))
 1*155.182500(P25 5)+1*155.527500(P25 7)-1*155.242500(P25 6)=155.467500(7.5)(VLAW31(WISPERN))
 1*155.182500(P25 5)+1*155.475000(VLAW31(WISPERN))-1*151.460000(WSP Statewide)=159.197500(12.5)(P25 3)
 1*155.242500(P25 6)+1*155.527500(P25 7)-1*151.460000(WSP Statewide)=159.310000(2.5)(P25 5)

3-Signal 5th Order (3A±B±C):

3*155.842500(Paging)-1*154.122500(P25 2)-1*154.092500(P25 1)=159.312500(5.0)(P25 5)
 3*154.092500(P25 1)-1*154.972500(P25 4)-1*155.842500(Paging)=151.462500(2.5)(WSP Statewide)
 3*155.842500(Paging)-1*154.092500(P25 1)-1*154.680000(SWR-deForest Main)=158.755000(20.0)(P25 1)
 3*155.182500(P25 5)-1*154.822500(P25 3)-1*155.242500(P25 6)=155.482500(7.5)(VLAW31(WISPERN))
 3*155.182500(P25 5)-1*154.822500(P25 3)-1*151.460000(WSP Statewide)=159.265000(12.5)(P25 4)
 3*155.242500(P25 6)-1*154.822500(P25 3)-1*151.460000(WSP Statewide)=159.445000(25.0)(SWR-deForest Main)
 3*155.242500(P25 6)-1*154.972500(P25 4)-1*151.460000(WSP Statewide)=159.295000(17.5)(P25 4)
 3*155.242500(P25 6)-1*154.972500(P25 4)-1*151.460000(WSP Statewide)=159.295000(12.5)(P25 5)
 3*154.972500(P25 4)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=158.777500(2.5)(P25 1)
 3*155.182500(P25 5)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=159.407500(12.5)(SWR-deForest Main)
 3*155.527500(P25 7)-1*155.242500(P25 6)-1*155.842500(Paging)=155.497500(22.5)(VLAW31(WISPERN))
 3*155.242500(P25 6)-1*155.475000(VLAW31(WISPERN))-1*151.460000(WSP Statewide)=158.792500(17.5)(P25 1)
 3*155.527500(P25 7)-1*155.842500(Paging)-1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
 3*155.475000(VLAW31(WISPERN))-1*155.527500(P25 7)-1*151.460000(WSP Statewide)=159.437500(17.5)(SWR-deForest Main)

3-Signal 5th Order (2A±2B±C):

2*154.822500(P25 3)-2*154.122500(P25 2)+1*154.092500(P25 1)=155.492500(17.5)(VLAW31(WISPERN))
 2*154.092500(P25 1)-2*154.122500(P25 2)+1*155.527500(P25 7)=155.467500(7.5)(VLAW31(WISPERN))
 2*154.122500(P25 2)-2*151.460000(WSP Statewide)+1*154.092500(P25 1)=159.417500(2.5)(SWR-deForest Main)
 2*154.092500(P25 1)-2*155.842500(Paging)+1*154.972500(P25 4)=151.472500(12.5)(WSP Statewide)
 2*155.842500(Paging)-2*154.092500(P25 1)+1*155.527500(P25 7)=159.027500(17.5)(P25 2)
 2*151.460000(WSP Statewide)-2*154.122500(P25 2)+1*171.350000(P25 8)=166.025000(0.0)(AT-1)
 2*154.972500(P25 4)-2*154.822500(P25 3)+1*155.182500(P25 5)=155.482500(7.5)(VLAW31(WISPERN))
 2*154.822500(P25 3)-2*154.680000(SWR-deForest Main)+1*155.182500(P25 5)=155.467500(7.5)(VLAW31(WISPERN))
 2*151.460000(WSP Statewide)-2*154.972500(P25 4)+1*171.350000(P25 8)=164.325000(12.5)(P25 6)
 2*151.460000(WSP Statewide)-2*154.972500(P25 4)+1*172.075000(P25 9)=165.050000(0.0)(P25 10)
 2*172.075000(P25 9)-2*172.100000(AT-1)+1*155.527500(P25 7)=155.477500(2.5)(VLAW31(WISPERN))
 2*151.460000(WSP Statewide)-2*155.527500(P25 7)+1*172.550000(P25 10)=164.415000(10.0)(P25 8)



2*151.460000(WSP Statewide)-2*155.475000(VLAW31(WISPERN))+1*172.587500(AT-2)=164.557500(17.5)(P25 9)

4-Signal 5th Order (2A±B±C±D):

2*155.242500(P25 6)+1*154.092500(P25 1)-1*154.972500(P25 4)-1*154.122500(P25 2)=155.482500(7.5)(VLAW31(WISPERN))
2*155.242500(P25 6)+1*154.122500(P25 2)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.055000(10.0)(P25 2)
2*154.972500(P25 4)+1*154.822500(P25 3)-1*154.092500(P25 1)-1*155.182500(P25 5)=155.492500(17.5)(VLAW31(WISPERN))
2*154.972500(P25 4)+1*154.822500(P25 3)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.215000(5.0)(P25 3)
2*154.822500(P25 3)+1*155.182500(P25 5)-1*154.092500(P25 1)-1*155.242500(P25 6)=155.492500(17.5)(VLAW31(WISPERN))
-2*154.822500(P25 3)+1*155.182500(P25 5)+1*155.842500(Paging)+1*154.092500(P25 1)=155.472500(2.5)(VLAW31(WISPERN))
2*154.822500(P25 3)+1*155.182500(P25 5)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.275000(2.5)(P25 4)
2*155.475000(VLAW31(WISPERN))+1*154.092500(P25 1)-1*154.822500(P25 3)-1*151.460000(WSP Statewide)=158.760000(15.0)(P25 1)
2*154.822500(P25 3)+1*154.680000(SWR-deForest Main)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=158.772500(2.5)(P25 1)
2*154.680000(SWR-deForest Main)+1*155.182500(P25 5)-1*154.092500(P25 1)-1*154.972500(P25 4)=155.477500(2.5)(VLAW31(WISPERN))
2*154.680000(SWR-deForest Main)+1*154.972500(P25 4)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=158.780000(5.0)(P25 1)
2*151.460000(WSP Statewide)+1*172.587500(AT-2)-1*154.092500(P25 1)-1*155.182500(P25 5)=166.232500(5.0)(AT-2)
2*154.680000(SWR-deForest Main)+1*155.242500(P25 6)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.050000(5.0)(P25 2)
2*154.092500(P25 1)+1*171.350000(P25 8)-1*155.527500(P25 7)-1*172.550000(P25 10)=151.457500(2.5)(WSP Statewide)
2*155.842500(Paging)+1*154.092500(P25 1)-1*155.527500(P25 7)-1*151.460000(WSP Statewide)=158.790000(15.0)(P25 1)
2*155.842500(Paging)+1*172.550000(P25 10)-1*154.092500(P25 1)-1*171.350000(P25 8)=158.792500(17.5)(P25 1)
2*154.092500(P25 1)+1*171.350000(P25 8)-1*172.587500(AT-2)-1*155.475000(VLAW31(WISPERN))=151.472500(12.5)(WSP Statewide)
2*154.092500(P25 1)+1*171.350000(P25 8)-1*172.587500(AT-2)-1*151.460000(WSP Statewide)=155.487500(12.5)(VLAW31(WISPERN))
2*151.460000(WSP Statewide)+1*172.075000(P25 9)-1*155.842500(Paging)-1*154.092500(P25 1)=165.060000(10.0)(P25 10)
2*151.460000(WSP Statewide)+1*172.075000(P25 9)-1*154.680000(SWR-deForest Main)-1*154.092500(P25 1)=166.222500(15.0)(AT-2)
2*151.460000(WSP Statewide)+1*172.100000(AT-1)-1*154.680000(SWR-deForest Main)-1*154.092500(P25 1)=166.247500(10.0)(AT-2)
2*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.282500(5.0)(P25 4)
2*154.972500(P25 4)+1*154.822500(P25 3)-1*154.122500(P25 2)-1*155.182500(P25 5)=155.462500(12.5)(VLAW31(WISPERN))
2*154.822500(P25 3)+1*155.182500(P25 5)-1*154.122500(P25 2)-1*155.242500(P25 6)=155.462500(12.5)(VLAW31(WISPERN))
2*154.822500(P25 3)+1*154.972500(P25 4)-1*154.122500(P25 2)-1*151.460000(WSP



Statewide)=159.035000(10.0)(P25 2)
2*154.822500(P25 3)+1*155.242500(P25 6)-1*154.122500(P25 2)-1*151.460000(WSP
Statewide)=159.305000(2.5)(P25 5)
2*155.842500(Paging)+1*154.122500(P25 2)-1*155.527500(P25 7)-1*154.822500(P25
3)=155.457500(17.5)(VLAW31(WISPERN))
2*154.822500(P25 3)+1*172.550000(P25 10)-1*154.122500(P25 2)-1*172.587500(AT-
2)=155.485000(10.0)(VLAW31(WISPERN))
2*155.475000(VLAW31(WISPERN))+1*154.122500(P25 2)-1*154.822500(P25 3)-1*151.460000(WSP
Statewide)=158.790000(15.0)(P25 1)
2*154.972500(P25 4)+1*155.182500(P25 5)-1*154.122500(P25 2)-1*155.527500(P25
7)=155.477500(2.5)(VLAW31(WISPERN))
2*155.242500(P25 6)+1*154.972500(P25 4)-1*154.122500(P25 2)-
1*155.842500(Paging)=155.492500(17.5)(VLAW31(WISPERN))
2*154.972500(P25 4)+1*154.680000(SWR-deForest Main)-1*154.122500(P25 2)-1*151.460000(WSP
Statewide)=159.042500(2.5)(P25 2)
-2*154.680000(SWR-deForest Main)+1*155.182500(P25 5)+1*155.527500(P25 7)+1*154.122500(P25
2)=155.472500(2.5)(VLAW31(WISPERN))
2*155.182500(P25 5)+1*171.350000(P25 8)-1*154.122500(P25 2)-1*172.100000(AT-
1)=155.492500(17.5)(VLAW31(WISPERN))
2*154.680000(SWR-deForest Main)+1*155.527500(P25 7)-1*154.122500(P25 2)-1*151.460000(WSP
Statewide)=159.305000(2.5)(P25 5)
2*155.527500(P25 7)+1*154.122500(P25 2)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP
Statewide)=159.037500(7.5)(P25 2)
2*155.842500(Paging)+1*172.550000(P25 10)-1*154.122500(P25 2)-1*171.350000(P25
8)=158.762500(12.5)(P25 1)
2*151.460000(WSP Statewide)+1*171.350000(P25 8)-1*155.842500(Paging)-1*154.122500(P25
2)=164.305000(7.5)(P25 6)
2*151.460000(WSP Statewide)+1*172.100000(AT-1)-1*155.842500(Paging)-1*154.122500(P25
2)=165.055000(5.0)(P25 10)
2*154.972500(P25 4)+1*155.527500(P25 7)-1*155.182500(P25 5)-1*154.822500(P25
3)=155.467500(7.5)(VLAW31(WISPERN))
2*155.182500(P25 5)+1*154.972500(P25 4)-1*154.822500(P25 3)-1*151.460000(WSP
Statewide)=159.055000(10.0)(P25 2)
2*154.822500(P25 3)+1*155.842500(Paging)-1*154.972500(P25 4)-1*151.460000(WSP
Statewide)=159.055000(10.0)(P25 2)
-2*154.822500(P25 3)+1*155.242500(P25 6)+1*154.680000(SWR-deForest Main)+1*155.182500(P25
5)=155.460000(15.0)(VLAW31(WISPERN))
2*155.182500(P25 5)+1*155.242500(P25 6)-1*154.822500(P25 3)-1*151.460000(WSP
Statewide)=159.325000(17.5)(P25 5)
2*155.182500(P25 5)+1*154.822500(P25 3)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP
Statewide)=159.047500(2.5)(P25 2)
2*155.182500(P25 5)+1*154.680000(SWR-deForest Main)-1*154.822500(P25 3)-1*151.460000(WSP
Statewide)=158.762500(12.5)(P25 1)
2*154.822500(P25 3)+1*155.842500(Paging)-1*155.242500(P25 6)-1*151.460000(WSP
Statewide)=158.785000(10.0)(P25 1)
2*155.527500(P25 7)+1*171.350000(P25 8)-1*154.822500(P25 3)-1*172.100000(AT-
1)=155.482500(7.5)(VLAW31(WISPERN))
2*155.475000(VLAW31(WISPERN))+1*154.822500(P25 3)-1*155.527500(P25 7)-1*151.460000(WSP
Statewide)=158.785000(10.0)(P25 1)
2*154.822500(P25 3)+1*155.527500(P25 7)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP
Statewide)=159.032500(12.5)(P25 2)
2*154.822500(P25 3)+1*172.587500(AT-2)-1*171.350000(P25 8)-1*151.460000(WSP
Statewide)=159.422500(2.5)(SWR-deForest Main)



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2*154.822500(P25 3)+1*172.587500(AT-2)-1*172.075000(P25 9)-1*154.680000(SWR-deForest Main)=155.477500(2.5)(VLAW31(WISPERN))
 2*151.460000(WSP Statewide)+1*172.075000(P25 9)-1*155.842500(Paging)-1*154.822500(P25 3)=164.330000(17.5)(P25 6)
 2*154.972500(P25 4)+1*172.075000(P25 9)-1*171.350000(P25 8)-1*155.182500(P25 5)=155.487500(12.5)(VLAW31(WISPERN))
 2*155.182500(P25 5)+1*154.972500(P25 4)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=159.197500(12.5)(P25 3)
 2*155.475000(VLAW31(WISPERN))+1*154.972500(P25 4)-1*155.182500(P25 5)-1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
 2*155.182500(P25 5)+1*155.475000(VLAW31(WISPERN))-1*154.972500(P25 4)-1*151.460000(WSP Statewide)=159.407500(12.5)(SWR-deForest Main)
 2*154.972500(P25 4)+1*155.475000(VLAW31(WISPERN))-1*155.182500(P25 5)-1*151.460000(WSP Statewide)=158.777500(2.5)(P25 1)
 2*155.527500(P25 7)+1*155.242500(P25 6)-1*154.972500(P25 4)-1*155.842500(Paging)=155.482500(7.5)(VLAW31(WISPERN))
 2*155.527500(P25 7)+1*154.972500(P25 4)-1*155.242500(P25 6)-1*151.460000(WSP Statewide)=159.325000(17.5)(P25 5)
 2*154.972500(P25 4)+1*155.527500(P25 7)-1*155.242500(P25 6)-1*151.460000(WSP Statewide)=158.770000(5.0)(P25 1)
 2*155.242500(P25 6)+1*172.075000(P25 9)-1*154.972500(P25 4)-1*172.100000(AT-1)=155.487500(12.5)(VLAW31(WISPERN))
 2*155.242500(P25 6)+1*172.550000(P25 10)-1*154.972500(P25 4)-1*172.587500(AT-2)=155.475000(0.0)(VLAW31(WISPERN))
 2*155.242500(P25 6)+1*154.972500(P25 4)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=159.317500(10.0)(P25 5)
 2*155.475000(VLAW31(WISPERN))+1*154.972500(P25 4)-1*155.242500(P25 6)-1*151.460000(WSP Statewide)=159.220000(10.0)(P25 3)
 2*154.972500(P25 4)+1*155.242500(P25 6)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=159.047500(2.5)(P25 2)
 2*155.527500(P25 7)+1*154.680000(SWR-deForest Main)-1*154.972500(P25 4)-1*151.460000(WSP Statewide)=159.302500(5.0)(P25 5)
 2*154.972500(P25 4)+1*172.075000(P25 9)-1*171.350000(P25 8)-1*151.460000(WSP Statewide)=159.210000(0.0)(P25 3)
 2*155.842500(Paging)+1*171.350000(P25 8)-1*172.587500(AT-2)-1*154.972500(P25 4)=155.475000(0.0)(VLAW31(WISPERN))
 -2*172.075000(P25 9)+1*172.550000(P25 10)+1*172.100000(AT-1)+1*154.972500(P25 4)=155.472500(2.5)(VLAW31(WISPERN))
 2*151.460000(WSP Statewide)+1*172.100000(AT-1)-1*155.475000(VLAW31(WISPERN))-1*154.972500(P25 4)=164.572500(2.5)(P25 9)
 2*151.460000(WSP Statewide)+1*172.587500(AT-2)-1*155.475000(VLAW31(WISPERN))-1*154.972500(P25 4)=165.060000(10.0)(P25 10)
 2*154.680000(SWR-deForest Main)+1*155.842500(Paging)-1*154.972500(P25 4)-1*151.460000(WSP Statewide)=158.770000(5.0)(P25 1)
 2*155.475000(VLAW31(WISPERN))+1*154.680000(SWR-deForest Main)-1*154.972500(P25 4)-1*151.460000(WSP Statewide)=159.197500(12.5)(P25 3)
 2*154.972500(P25 4)+1*155.475000(VLAW31(WISPERN))-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
 2*155.242500(P25 6)+1*155.182500(P25 5)-1*155.527500(P25 7)-1*154.680000(SWR-deForest Main)=155.460000(15.0)(VLAW31(WISPERN))
 2*151.460000(WSP Statewide)+1*172.075000(P25 9)-1*155.182500(P25 5)-1*155.242500(P25 6)=164.570000(5.0)(P25 9)
 2*151.460000(WSP Statewide)+1*172.550000(P25 10)-1*155.182500(P25 5)-1*155.242500(P25



6)=165.045000(5.0)(P25 10)
2*155.475000(VLAW31(WISPERN))+1*155.182500(P25 5)-1*155.242500(P25 6)-1*151.460000(WSP
Statewide)=159.430000(10.0)(SWR-deForest Main)
2*155.242500(P25 6)+1*155.475000(VLAW31(WISPERN))-1*155.182500(P25 5)-1*151.460000(WSP
Statewide)=159.317500(10.0)(P25 5)
2*151.460000(WSP Statewide)+1*172.100000(AT-1)-1*155.182500(P25 5)-1*155.527500(P25
7)=164.310000(2.5)(P25 6)
2*155.182500(P25 5)+1*155.842500(Paging)-1*155.527500(P25 7)-1*151.460000(WSP
Statewide)=159.220000(10.0)(P25 3)
2*155.527500(P25 7)+1*155.182500(P25 5)-1*155.475000(VLAW31(WISPERN))-1*151.460000(WSP
Statewide)=159.302500(5.0)(P25 5)
2*172.100000(AT-1)+1*155.182500(P25 5)-1*172.550000(P25 10)-1*171.350000(P25
8)=155.482500(7.5)(VLAW31(WISPERN))
2*151.460000(WSP Statewide)+1*171.350000(P25 8)-1*154.680000(SWR-deForest Main)-1*155.182500(P25
5)=164.407500(17.5)(P25 8)
2*155.182500(P25 5)+1*172.587500(AT-2)-1*172.075000(P25 9)-1*151.460000(WSP
Statewide)=159.417500(2.5)(SWR-deForest Main)
2*151.460000(WSP Statewide)+1*172.100000(AT-1)-1*155.475000(VLAW31(WISPERN))-
1*155.182500(P25 5)=164.362500(12.5)(P25 7)
2*155.182500(P25 5)+1*155.842500(Paging)-1*155.475000(VLAW31(WISPERN))-1*151.460000(WSP
Statewide)=159.272500(5.0)(P25 4)
2*155.242500(P25 6)+1*172.587500(AT-2)-1*172.075000(P25 9)-1*155.527500(P25
7)=155.470000(5.0)(VLAW31(WISPERN))
2*155.242500(P25 6)+1*155.527500(P25 7)-1*155.842500(Paging)-1*154.680000(SWR-deForest
Main)=155.490000(15.0)(VLAW31(WISPERN))
2*155.527500(P25 7)+1*154.680000(SWR-deForest Main)-1*155.242500(P25 6)-1*151.460000(WSP
Statewide)=159.032500(12.5)(P25 2)
2*155.475000(VLAW31(WISPERN))+1*155.242500(P25 6)-1*155.527500(P25 7)-1*151.460000(WSP
Statewide)=159.205000(5.0)(P25 3)
2*172.075000(P25 9)+1*155.242500(P25 6)-1*171.350000(P25 8)-1*172.550000(P25
10)=155.492500(17.5)(VLAW31(WISPERN))
2*155.242500(P25 6)+1*172.100000(AT-1)-1*172.075000(P25 9)-1*151.460000(WSP
Statewide)=159.050000(5.0)(P25 2)
2*155.242500(P25 6)+1*172.587500(AT-2)-1*172.550000(P25 10)-1*151.460000(WSP
Statewide)=159.062500(17.5)(P25 2)
2*151.460000(WSP Statewide)+1*172.550000(P25 10)-1*155.842500(Paging)-1*155.242500(P25
6)=164.385000(10.0)(P25 7)
2*151.460000(WSP Statewide)+1*172.100000(AT-1)-1*155.475000(VLAW31(WISPERN))-
1*155.242500(P25 6)=164.302500(10.0)(P25 6)
2*151.460000(WSP Statewide)+1*172.587500(AT-2)-1*155.842500(Paging)-1*155.242500(P25
6)=164.422500(2.5)(P25 8)
2*155.527500(P25 7)+1*155.475000(VLAW31(WISPERN))-1*155.842500(Paging)-1*151.460000(WSP
Statewide)=159.227500(17.5)(P25 3)
2*171.350000(P25 8)+1*151.460000(WSP Statewide)-1*155.842500(Paging)-1*172.075000(P25
9)=166.242500(5.0)(AT-2)
2*155.475000(VLAW31(WISPERN))+1*171.350000(P25 8)-1*172.075000(P25 9)-1*151.460000(WSP
Statewide)=158.765000(10.0)(P25 1)
2*155.475000(VLAW31(WISPERN))+1*172.100000(AT-1)-1*172.550000(P25 10)-1*151.460000(WSP
Statewide)=159.040000(5.0)(P25 2)
2*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*155.475000(VLAW31(WISPERN))-
1*151.460000(WSP Statewide)=159.430000(10.0)(SWR-deForest Main)

5-Signal 5th Order (A±B±C±D±E):

1*154.122500(P25 2)+1*155.182500(P25 5)+1*155.242500(P25 6)-1*154.092500(P25 1)-1*154.972500(P25 4)=155.482500(7.5)(VLAW31(WISPERN))
 1*154.122500(P25 2)+1*154.972500(P25 4)+1*155.242500(P25 6)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=158.785000(10.0)(P25 1)
 1*154.122500(P25 2)+1*154.972500(P25 4)+1*172.550000(P25 10)-1*172.075000(P25 9)-1*154.092500(P25 1)=155.477500(2.5)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*155.182500(P25 5)+1*155.842500(Paging)-1*155.527500(P25 7)-1*154.122500(P25 2)=155.467500(7.5)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*155.182500(P25 5)+1*155.527500(P25 7)-1*154.122500(P25 2)-1*151.460000(WSP Statewide)=159.220000(10.0)(P25 3)
 1*154.122500(P25 2)+1*155.182500(P25 5)+1*155.527500(P25 7)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
 1*154.092500(P25 1)+1*155.242500(P25 6)+1*155.527500(P25 7)-1*154.122500(P25 2)-1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
 1*154.122500(P25 2)+1*155.242500(P25 6)+1*155.475000(VLAW31(WISPERN))-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.287500(10.0)(P25 4)
 1*154.092500(P25 1)+1*154.122500(P25 2)+1*171.350000(P25 8)-1*155.527500(P25 7)-1*172.587500(AT-2)=151.450000(10.0)(WSP Statewide)
 1*154.092500(P25 1)+1*155.527500(P25 7)+1*172.075000(P25 9)-1*154.122500(P25 2)-1*172.100000(AT-1)=155.472500(2.5)(VLAW31(WISPERN))
 1*154.122500(P25 2)+1*155.527500(P25 7)+1*154.680000(SWR-deForest Main)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=158.777500(2.5)(P25 1)
 1*154.092500(P25 1)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*154.122500(P25 2)-1*151.460000(WSP Statewide)=159.032500(12.5)(P25 2)
 1*154.822500(P25 3)+1*154.972500(P25 4)+1*155.182500(P25 5)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.425000(5.0)(SWR-deForest Main)
 1*154.092500(P25 1)+1*154.972500(P25 4)+1*172.587500(AT-2)-1*171.350000(P25 8)-1*154.822500(P25 3)=155.480000(5.0)(VLAW31(WISPERN))
 1*154.822500(P25 3)+1*155.242500(P25 6)+1*154.680000(SWR-deForest Main)-1*154.092500(P25 1)-1*155.182500(P25 5)=155.470000(5.0)(VLAW31(WISPERN))
 1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.100000(AT-1)-1*172.550000(P25 10)-1*154.092500(P25 1)=155.462500(12.5)(VLAW31(WISPERN))
 1*154.822500(P25 3)+1*155.242500(P25 6)+1*172.100000(AT-1)-1*154.092500(P25 1)-1*172.587500(AT-2)=155.485000(10.0)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*154.822500(P25 3)+1*172.587500(AT-2)-1*171.350000(P25 8)-1*154.680000(SWR-deForest Main)=155.472500(2.5)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*171.350000(P25 8)+1*151.460000(WSP Statewide)-1*155.842500(Paging)-1*154.822500(P25 3)=166.237500(0.0)(AT-2)
 1*154.822500(P25 3)+1*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.425000(5.0)(SWR-deForest Main)
 1*154.972500(P25 4)+1*155.182500(P25 5)+1*155.242500(P25 6)-1*154.092500(P25 1)-1*155.842500(Paging)=155.462500(12.5)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*155.182500(P25 5)+1*155.842500(Paging)-1*154.972500(P25 4)-1*154.680000(SWR-deForest Main)=155.465000(10.0)(VLAW31(WISPERN))
 1*154.972500(P25 4)+1*155.182500(P25 5)+1*154.680000(SWR-deForest Main)-1*154.092500(P25 1)-1*151.460000(WSP Statewide)=159.282500(5.0)(P25 4)
 1*154.972500(P25 4)+1*171.350000(P25 8)+1*155.842500(Paging)-1*172.587500(AT-2)-1*154.092500(P25 1)=155.485000(10.0)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*172.587500(AT-2)+1*155.842500(Paging)-1*154.972500(P25 4)-1*172.075000(P25 9)=155.475000(0.0)(VLAW31(WISPERN))
 1*154.092500(P25 1)+1*154.972500(P25 4)+1*155.842500(Paging)-1*154.680000(SWR-deForest Main)-1*151.460000(WSP Statewide)=158.767500(7.5)(P25 1)



1*155.182500(P25 5)+1*155.242500(P25 6)+1*154.680000(SWR-deForest Main)-1*155.527500(P25 7)-
1*154.092500(P25 1)=155.485000(10.0)(VLAW31(WISPERN))
1*154.092500(P25 1)+1*172.075000(P25 9)+1*155.842500(Paging)-1*155.182500(P25 5)-1*171.350000(P25
8)=155.477500(2.5)(VLAW31(WISPERN))
1*154.092500(P25 1)+1*155.182500(P25 5)+1*172.587500(AT-2)-1*171.350000(P25 8)-1*151.460000(WSP
Statewide)=159.052500(7.5)(P25 2)
1*154.092500(P25 1)+1*171.350000(P25 8)+1*151.460000(WSP Statewide)-
1*155.475000(VLAW31(WISPERN))-1*155.182500(P25 5)=166.245000(7.5)(AT-2)
1*154.092500(P25 1)+1*155.842500(Paging)+1*155.475000(VLAW31(WISPERN))-1*155.182500(P25 5)-
1*151.460000(WSP Statewide)=158.767500(7.5)(P25 1)
1*155.242500(P25 6)+1*155.527500(P25 7)+1*171.350000(P25 8)-1*154.092500(P25 1)-1*172.550000(P25
10)=155.477500(2.5)(VLAW31(WISPERN))
1*154.092500(P25 1)+1*155.242500(P25 6)+1*155.842500(Paging)-1*154.680000(SWR-deForest Main)-
1*151.460000(WSP Statewide)=159.037500(7.5)(P25 2)
1*154.092500(P25 1)+1*172.075000(P25 9)+1*155.842500(Paging)-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=159.200000(10.0)(P25 3)
1*154.092500(P25 1)+1*172.550000(P25 10)+1*155.475000(VLAW31(WISPERN))-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=159.307500(0.0)(P25 5)
1*154.092500(P25 1)+1*155.842500(Paging)+1*155.475000(VLAW31(WISPERN))-1*154.680000(SWR-
deForest Main)-1*151.460000(WSP Statewide)=159.270000(7.5)(P25 4)
1*154.122500(P25 2)+1*154.972500(P25 4)+1*172.550000(P25 10)-1*171.350000(P25 8)-1*154.822500(P25
3)=155.472500(2.5)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*155.527500(P25 7)+1*155.842500(Paging)-1*154.822500(P25 3)-1*155.182500(P25
5)=155.487500(12.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*155.242500(P25 6)+1*172.075000(P25 9)-1*154.122500(P25 2)-1*172.550000(P25
10)=155.467500(7.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*155.527500(P25 7)+1*171.350000(P25 8)-1*154.122500(P25 2)-1*172.100000(AT-
1)=155.477500(2.5)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*155.527500(P25 7)+1*155.842500(Paging)-1*154.822500(P25 3)-
1*151.460000(WSP Statewide)=159.210000(0.0)(P25 3)
1*154.122500(P25 2)+1*154.822500(P25 3)+1*172.550000(P25 10)-1*171.350000(P25 8)-
1*154.680000(SWR-deForest Main)=155.465000(10.0)(VLAW31(WISPERN))
1*154.972500(P25 4)+1*155.182500(P25 5)+1*154.680000(SWR-deForest Main)-1*155.242500(P25 6)-
1*154.122500(P25 2)=155.470000(5.0)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*155.242500(P25 6)+1*155.842500(Paging)-1*154.972500(P25 4)-
1*151.460000(WSP Statewide)=158.775000(0.0)(P25 1)
1*154.972500(P25 4)+1*155.242500(P25 6)+1*154.680000(SWR-deForest Main)-1*154.122500(P25 2)-
1*151.460000(WSP Statewide)=159.312500(5.0)(P25 5)
1*154.122500(P25 2)+1*172.550000(P25 10)+1*155.842500(Paging)-1*154.972500(P25 4)-
1*172.075000(P25 9)=155.467500(7.5)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*172.587500(AT-2)+1*155.842500(Paging)-1*154.972500(P25 4)-1*172.100000(AT-
1)=155.480000(5.0)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*155.182500(P25 5)+1*172.550000(P25 10)-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=159.045000(0.0)(P25 2)
1*155.242500(P25 6)+1*155.527500(P25 7)+1*154.680000(SWR-deForest Main)-1*155.842500(Paging)-
1*154.122500(P25 2)=155.485000(10.0)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*172.100000(AT-1)+1*155.842500(Paging)-1*155.242500(P25 6)-1*171.350000(P25
8)=155.472500(2.5)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*155.527500(P25 7)+1*172.587500(AT-2)-1*171.350000(P25 8)-1*151.460000(WSP
Statewide)=159.427500(7.5)(SWR-deForest Main)
1*154.122500(P25 2)+1*155.527500(P25 7)+1*172.587500(AT-2)-1*172.075000(P25 9)-
1*154.680000(SWR-deForest Main)=155.482500(7.5)(VLAW31(WISPERN))
1*154.122500(P25 2)+1*155.842500(Paging)+1*155.475000(VLAW31(WISPERN))-1*154.680000(SWR-

deForest Main)-1*151.460000(WSP Statewide)=159.300000(7.5)(P25 5)
1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.550000(P25 10)-1*154.972500(P25 4)-1*172.100000(AT-1)=155.482500(7.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*155.182500(P25 5)+1*155.842500(Paging)-1*154.972500(P25 4)-
1*151.460000(WSP Statewide)=159.415000(5.0)(SWR-deForest Main)
1*154.822500(P25 3)+1*155.182500(P25 5)+1*155.475000(VLAW31(WISPERN))-1*154.972500(P25 4)-
1*151.460000(WSP Statewide)=159.047500(2.5)(P25 2)
1*154.972500(P25 4)+1*155.242500(P25 6)+1*155.475000(VLAW31(WISPERN))-1*154.822500(P25 3)-
1*151.460000(WSP Statewide)=159.407500(12.5)(SWR-deForest Main)
1*154.822500(P25 3)+1*154.972500(P25 4)+1*172.550000(P25 10)-1*171.350000(P25 8)-1*155.527500(P25 7)=155.467500(7.5)(VLAW31(WISPERN))
1*154.972500(P25 4)+1*172.075000(P25 9)+1*155.842500(Paging)-1*172.587500(AT-2)-1*154.822500(P25 3)=155.480000(5.0)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*154.972500(P25 4)+1*172.550000(P25 10)-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=158.785000(10.0)(P25 1)
1*154.972500(P25 4)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*154.822500(P25 3)-
1*151.460000(WSP Statewide)=159.212500(2.5)(P25 3)
1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.075000(P25 9)-1*171.350000(P25 8)-1*155.242500(P25 6)=155.487500(12.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*155.182500(P25 5)+1*155.475000(VLAW31(WISPERN))-1*155.242500(P25 6)-
1*151.460000(WSP Statewide)=158.777500(2.5)(P25 1)
1*154.822500(P25 3)+1*155.242500(P25 6)+1*155.842500(Paging)-1*155.182500(P25 5)-
1*151.460000(WSP Statewide)=159.265000(12.5)(P25 4)
1*155.182500(P25 5)+1*171.350000(P25 8)+1*155.842500(Paging)-1*172.075000(P25 9)-1*154.822500(P25 3)=155.477500(2.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.075000(P25 9)-1*171.350000(P25 8)-1*151.460000(WSP Statewide)=159.270000(7.5)(P25 4)
1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.100000(AT-1)-1*171.350000(P25 8)-1*151.460000(WSP Statewide)=159.295000(12.5)(P25 5)
1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.587500(AT-2)-1*172.075000(P25 9)-1*151.460000(WSP Statewide)=159.057500(12.5)(P25 2)
1*154.822500(P25 3)+1*155.182500(P25 5)+1*172.587500(AT-2)-1*172.100000(AT-1)-1*151.460000(WSP Statewide)=159.032500(12.5)(P25 2)
1*155.182500(P25 5)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*154.822500(P25 3)-
1*151.460000(WSP Statewide)=159.422500(2.5)(SWR-deForest Main)
1*155.182500(P25 5)+1*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-
1*154.822500(P25 3)-1*151.460000(WSP Statewide)=159.055000(10.0)(P25 2)
1*155.242500(P25 6)+1*155.527500(P25 7)+1*172.075000(P25 9)-1*154.822500(P25 3)-1*172.550000(P25 10)=155.472500(2.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*155.242500(P25 6)+1*172.550000(P25 10)-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=159.055000(10.0)(P25 2)
1*154.822500(P25 3)+1*172.075000(P25 9)+1*154.680000(SWR-deForest Main)-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=158.767500(7.5)(P25 1)
1*154.822500(P25 3)+1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
1*154.822500(P25 3)+1*172.550000(P25 10)+1*155.475000(VLAW31(WISPERN))-1*172.075000(P25 9)-
1*151.460000(WSP Statewide)=159.312500(5.0)(P25 5)
1*154.822500(P25 3)+1*172.075000(P25 9)+1*155.842500(Paging)-1*172.587500(AT-2)-
1*154.680000(SWR-deForest Main)=155.472500(2.5)(VLAW31(WISPERN))
1*154.822500(P25 3)+1*172.550000(P25 10)+1*155.475000(VLAW31(WISPERN))-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=159.287500(10.0)(P25 4)
1*155.182500(P25 5)+1*155.242500(P25 6)+1*172.100000(AT-1)-1*172.075000(P25 9)-1*154.972500(P25 4)=155.477500(2.5)(VLAW31(WISPERN))

1*154.972500(P25 4)+1*155.242500(P25 6)+1*172.550000(P25 10)-1*155.182500(P25 5)-1*172.100000(AT-1)=155.482500(7.5)(VLAW31(WISPERN))
1*154.972500(P25 4)+1*155.182500(P25 5)+1*155.842500(Paging)-1*155.242500(P25 6)-
1*151.460000(WSP Statewide)=159.295000(12.5)(P25 5)
1*154.972500(P25 4)+1*155.242500(P25 6)+1*155.842500(Paging)-1*155.182500(P25 5)-
1*151.460000(WSP Statewide)=159.415000(5.0)(SWR-deForest Main)
1*154.972500(P25 4)+1*155.242500(P25 6)+1*155.475000(VLAW31(WISPERN))-1*155.182500(P25 5)-
1*151.460000(WSP Statewide)=159.047500(2.5)(P25 2)
1*154.972500(P25 4)+1*155.182500(P25 5)+1*172.075000(P25 9)-1*171.350000(P25 8)-1*151.460000(WSP Statewide)=159.420000(0.0)(SWR-deForest Main)
1*154.972500(P25 4)+1*155.182500(P25 5)+1*172.587500(AT-2)-1*172.075000(P25 9)-1*151.460000(WSP Statewide)=159.207500(2.5)(P25 3)
1*155.182500(P25 5)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*154.972500(P25 4)-
1*151.460000(WSP Statewide)=159.272500(5.0)(P25 4)
1*154.972500(P25 4)+1*155.527500(P25 7)+1*155.475000(VLAW31(WISPERN))-1*155.242500(P25 6)-
1*151.460000(WSP Statewide)=159.272500(5.0)(P25 4)
1*154.972500(P25 4)+1*155.242500(P25 6)+1*172.100000(AT-1)-1*172.075000(P25 9)-1*151.460000(WSP Statewide)=158.780000(5.0)(P25 1)
1*155.242500(P25 6)+1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)-1*154.972500(P25 4)-
1*172.075000(P25 9)=155.462500(12.5)(VLAW31(WISPERN))
1*154.972500(P25 4)+1*155.242500(P25 6)+1*172.587500(AT-2)-1*172.075000(P25 9)-1*151.460000(WSP Statewide)=159.267500(10.0)(P25 4)
1*154.972500(P25 4)+1*155.242500(P25 6)+1*172.550000(P25 10)-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=159.205000(5.0)(P25 3)
1*154.972500(P25 4)+1*155.527500(P25 7)+1*155.842500(Paging)-1*155.475000(VLAW31(WISPERN))-
1*151.460000(WSP Statewide)=159.407500(12.5)(SWR-deForest Main)
1*154.972500(P25 4)+1*155.842500(Paging)+1*155.475000(VLAW31(WISPERN))-1*155.527500(P25 7)-
1*151.460000(WSP Statewide)=159.302500(5.0)(P25 5)
1*154.972500(P25 4)+1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=159.430000(10.0)(SWR-deForest Main)
1*154.972500(P25 4)+1*172.550000(P25 10)+1*155.842500(Paging)-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.317500(10.0)(P25 5)
1*155.182500(P25 5)+1*155.242500(P25 6)+1*155.842500(Paging)-1*155.527500(P25 7)-
1*151.460000(WSP Statewide)=159.280000(2.5)(P25 4)
1*155.242500(P25 6)+1*172.075000(P25 9)+1*154.680000(SWR-deForest Main)-1*155.182500(P25 5)-
1*171.350000(P25 8)=155.465000(10.0)(VLAW31(WISPERN))
1*155.182500(P25 5)+1*155.242500(P25 6)+1*172.550000(P25 10)-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=159.415000(5.0)(SWR-deForest Main)
1*155.527500(P25 7)+1*171.350000(P25 8)+1*155.842500(Paging)-1*172.075000(P25 9)-1*155.182500(P25 5)=155.462500(12.5)(VLAW31(WISPERN))
1*155.182500(P25 5)+1*155.527500(P25 7)+1*172.075000(P25 9)-1*172.550000(P25 10)-
1*151.460000(WSP Statewide)=158.775000(0.0)(P25 1)
1*155.182500(P25 5)+1*172.075000(P25 9)+1*155.842500(Paging)-1*172.100000(AT-1)-1*155.527500(P25 7)=155.472500(2.5)(VLAW31(WISPERN))
1*155.182500(P25 5)+1*155.527500(P25 7)+1*172.100000(AT-1)-1*172.075000(P25 9)-1*151.460000(WSP Statewide)=159.275000(2.5)(P25 4)
1*155.527500(P25 7)+1*172.550000(P25 10)+1*154.680000(SWR-deForest Main)-1*172.100000(AT-1)-
1*155.182500(P25 5)=155.475000(0.0)(VLAW31(WISPERN))
1*155.182500(P25 5)+1*155.527500(P25 7)+1*172.550000(P25 10)-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.212500(2.5)(P25 3)
1*155.182500(P25 5)+1*155.527500(P25 7)+1*172.587500(AT-2)-1*172.550000(P25 10)-
1*151.460000(WSP Statewide)=159.287500(10.0)(P25 4)
1*155.182500(P25 5)+1*155.527500(P25 7)+1*172.100000(AT-1)-1*172.587500(AT-2)-1*151.460000(WSP



Statewide)=158.762500(12.5)(P25 1)
1*155.527500(P25 7)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*155.182500(P25 5)-
1*151.460000(WSP Statewide)=159.407500(12.5)(SWR-deForest Main)
1*155.527500(P25 7)+1*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-
1*155.182500(P25 5)-1*151.460000(WSP Statewide)=159.040000(5.0)(P25 2)
1*155.182500(P25 5)+1*172.100000(AT-1)+1*155.475000(VLAW31(WISPERN))-1*172.075000(P25 9)-
1*151.460000(WSP Statewide)=159.222500(12.5)(P25 3)
1*155.182500(P25 5)+1*172.075000(P25 9)+1*155.842500(Paging)-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.052500(7.5)(P25 2)
1*155.182500(P25 5)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-
1*155.475000(VLAW31(WISPERN))-1*151.460000(WSP Statewide)=158.770000(5.0)(P25 1)
1*155.242500(P25 6)+1*155.527500(P25 7)+1*172.075000(P25 9)-1*172.100000(AT-1)-1*151.460000(WSP
Statewide)=159.285000(7.5)(P25 4)
1*155.527500(P25 7)+1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)-1*155.242500(P25 6)-
1*172.075000(P25 9)=155.477500(2.5)(VLAW31(WISPERN))
1*155.242500(P25 6)+1*155.527500(P25 7)+1*172.550000(P25 10)-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.272500(5.0)(P25 4)
1*155.242500(P25 6)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*155.527500(P25 7)-
1*151.460000(WSP Statewide)=158.777500(2.5)(P25 1)
1*155.242500(P25 6)+1*172.075000(P25 9)+1*172.100000(AT-1)-1*171.350000(P25 8)-1*172.587500(AT-
2)=155.480000(5.0)(VLAW31(WISPERN))
1*155.242500(P25 6)+1*172.100000(AT-1)+1*154.680000(SWR-deForest Main)-1*171.350000(P25 8)-
1*151.460000(WSP Statewide)=159.212500(2.5)(P25 3)
1*155.242500(P25 6)+1*172.075000(P25 9)+1*155.475000(VLAW31(WISPERN))-1*172.550000(P25 10)-
1*151.460000(WSP Statewide)=158.782500(7.5)(P25 1)
1*155.242500(P25 6)+1*172.100000(AT-1)+1*155.475000(VLAW31(WISPERN))-1*172.075000(P25 9)-
1*151.460000(WSP Statewide)=159.282500(5.0)(P25 4)
1*155.242500(P25 6)+1*172.550000(P25 10)+1*155.475000(VLAW31(WISPERN))-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.220000(10.0)(P25 3)
1*155.242500(P25 6)+1*172.587500(AT-2)+1*155.475000(VLAW31(WISPERN))-1*172.550000(P25 10)-
1*151.460000(WSP Statewide)=159.295000(12.5)(P25 5)
1*155.242500(P25 6)+1*172.100000(AT-1)+1*155.475000(VLAW31(WISPERN))-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=158.770000(5.0)(P25 1)
1*155.842500(Paging)+1*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-
1*155.242500(P25 6)-1*151.460000(WSP Statewide)=159.295000(12.5)(P25 5)
1*155.527500(P25 7)+1*172.075000(P25 9)+1*172.550000(P25 10)-1*172.100000(AT-1)-1*172.587500(AT-
2)=155.465000(10.0)(VLAW31(WISPERN))
1*172.550000(P25 10)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*172.075000(P25 9)-
1*155.527500(P25 7)=155.470000(5.0)(VLAW31(WISPERN))
1*155.527500(P25 7)+1*172.550000(P25 10)+1*154.680000(SWR-deForest Main)-1*172.075000(P25 9)-
1*151.460000(WSP Statewide)=159.222500(12.5)(P25 3)
1*155.527500(P25 7)+1*172.100000(AT-1)+1*154.680000(SWR-deForest Main)-1*172.075000(P25 9)-
1*151.460000(WSP Statewide)=158.772500(2.5)(P25 1)
1*155.527500(P25 7)+1*172.550000(P25 10)+1*154.680000(SWR-deForest Main)-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=159.197500(12.5)(P25 3)
1*155.527500(P25 7)+1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)-1*172.550000(P25 10)-
1*151.460000(WSP Statewide)=158.785000(10.0)(P25 1)
1*155.527500(P25 7)+1*172.100000(AT-1)+1*155.842500(Paging)-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.422500(2.5)(SWR-deForest Main)
1*172.587500(AT-2)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*172.100000(AT-1)-
1*155.527500(P25 7)=155.482500(7.5)(VLAW31(WISPERN))
1*155.527500(P25 7)+1*172.100000(AT-1)+1*155.475000(VLAW31(WISPERN))-1*172.587500(AT-2)-
1*151.460000(WSP Statewide)=159.055000(10.0)(P25 2)



1*172.100000(AT-1)+1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)-1*172.550000(P25 10)-
1*171.350000(P25 8)=155.467500(7.5)(VLAW31(WISPERN))
1*172.075000(P25 9)+1*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-
1*171.350000(P25 8)-1*151.460000(WSP Statewide)=159.420000(0.0)(SWR-deForest Main)
1*172.075000(P25 9)+1*155.842500(Paging)+1*154.680000(SWR-deForest Main)-1*172.100000(AT-1)-
1*151.460000(WSP Statewide)=159.037500(7.5)(P25 2)
1*172.587500(AT-2)+1*154.680000(SWR-deForest Main)+1*155.475000(VLAW31(WISPERN))-
1*172.075000(P25 9)-1*151.460000(WSP Statewide)=159.207500(2.5)(P25 3)
1*172.100000(AT-1)+1*155.842500(Paging)+1*155.475000(VLAW31(WISPERN))-1*172.550000(P25 10)-
1*151.460000(WSP Statewide)=159.407500(12.5)(SWR-deForest Main)

Within the plethora of IMD products listed above, are the six aforementioned products (highlighted in **RED**) which are a result of only the DaneCom P25 & Paging systems. These products will be mitigated with the use of multiple and well isolated antennas. The significant remainder of products all involve WSP frequencies as either a contributor to, or victim from, predicted IMD. The sheer number of products carries significant risk which the vendor has no control over. It is for this reason that DaneCom and WSP must mutually assume all risk for any IMD interference at the deForest site.

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