



## *Memorandum*

**To:** *Grant Planning Commission Meeting November 19, 2012  
Grant City Council Meeting December 4, 2012*

**From:** *Breanne Rothstein, City Planner  
WSB & Associates*

**Date:** *November 9, 2012*

**Re:** *Application from Signal Acquisition, LLC for a Conditional Use Permit (CUP) to  
Modify and Upgrade Antennas and Associated Equipment on an Existing Cell  
Tower-WSB Project # 1936-26*

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### **Request:**

On September 4, 2012, the City received an application from Signal Acquisition, LLC for a conditional use permit to allow for modifications and upgrades of Sprint's antennas and cabinets on the existing cell tower.

### **Site Characteristics:**

The subject property is located at 11900 Manning Trail. The site is characterized as a small farmstead. There are several other buildings on the site including a home, five other detached buildings, and four silos. The site itself is owned by Craig and Marcia DeWolf and American Tower Corporation owns the tower. The site is surrounded by farm land to the east and west and low density housing to the north and south.

### **Overview:**

Sprint was originally granted approval to install their antennas and cabinets at the existing tower site in 2000. In 2006, Sprint received an amendment to their conditional use permit for modifications and upgrades to their equipment at the site. Documentation of the previously issued CUP and amendment could not be found for review. Therefore, staff proposes issuance of a new conditional use permit for the proposed modifications.

As shown on the submitted plans, Sprint currently has a total of three antenna sectors, with three antennas per sector for a total of nine antennas. As part of this project, Sprint proposes to add an additional 3 antennas (1 per sector) for a total of 12 antennas. The new antenna configuration will be tested by Sprint for a period of approximately 6-12 months. Following this test period, Sprint will remove three old antennas (one per sector), at which point Sprint will return to having a total of 9 antennas.

Other equipment to be added to the tower includes:

- 6 RRHs (Remote Radio Heads)

- 3 Filters
- 3 Hybrid Fiber Cables
- 1 Micro-Wave dish with 1 ODU and 1 LMR400 cable

All equipment associated with the antennas to be removed will also be removed including cables and RRH units. The micro-wave dish is something new and will be permanent.

On the ground, Sprint will also add two equipment cabinets within their self-contained shelter inside their leased area. These will be permanent and are not replacing cabinets to be removed. The new cabinets will be located entirely within the enclosed shelter inside Sprints leased area. A GPS antenna will also be added on the ground, most likely on a protective cover used for their coaxial cable coming out of the shelter at the base of the tower. The GPS antenna will be no taller than 15 feet off the ground.

In the review of the application, the property owner had not signed the application, and staff has requested that information.

**Grant City Code Requirements:**

Section 32-446, (a) of the Grant City Code states that a conditional use permit is required before any antenna or antenna support structure is installed or constructed for all cases that do not qualify for an administrative permit. While no individual upgrade requires a conditional use permit amendment, staff interpreted the total of all proposed changes (temporary antenna upgrades, the addition of a satellite dish, addition of cables, filters, new cabinets, and other appurtenances) to require a conditional use permit.

City code specifies standards for approving all conditional use permits, which are listed below:

- The use conforms with the City's Comprehensive Plan
- The use will not be detrimental to or endanger the public health, safety or general welfare of the city, its residents, or the existing neighborhood
- The use is compatible with the existing neighborhood
- The use meets condition or standards adopted by the city through other ordinances
- The use will not create additional requirements for facilities and services at public cost beyond normal uses
- The use will not involve use or activities that will be detrimental to people, property, or the general welfare because of production of traffic, noise, smoke, fumes, glare, odors or any other nuisances
- The use will not result in the destruction, loss or damage of natural, scenic, or historic features of importance
- The use will not increase flood potential or create additional water runoff onto surrounding properties

**Analysis:**

As technology improves, staff recognizes that such modifications are necessary to provide improved telecommunications service within the City of Grant. The use of antennas on the site is a permitted use and is consistent with the comprehensive plan. There are no elements of the proposal that will be detrimental to or endanger the public health, safety or general welfare of the

city, its residents, or the existing neighborhood. The use is compatible with the existing neighborhood. The use meets all conditions and standards adopted by the city. The use and proposed modifications by Sprint will not create additional requirements for facilities and services at public cost beyond normal uses. The use will not involve activities that will be detrimental to people, property, or the general welfare and will not produce any traffic, noise, smoke, fumes, glare, odors or any other nuisances. The use will not result in the destruction, loss or damage of natural, scenic, or historic features of importance. Also, the use will not increase flood potential or create additional water runoff onto surrounding properties.

**Recommendation:**

The proposed modifications by Sprint are consistent with all provisions of the code and all standards for approving conditional use permits.

Staff recommends approval of the requested conditional use permit, subject to the following conditions:

- 1) Consent by property owner in the form of a signed application or letter stating such;
- 2) Payment of all land use fees associated with the application.

**Requested Motion:**

Motion recommend that the City Council approve the application for a conditional use permit to allow for the addition of equipment to the tower located at 11900 Manning Trail, subject to the conditions, and direct staff to prepare a resolution declaring terms of the same.

**Attachments**

- 1) Location Map
- 2) Application Materials



Exhibit A

Location Map  
11900 Manning Trail

0 375 750  
Feet



City of Grant  
 P.O. Box 577  
 Willemie, MN 55090



Phone: 651.426.3383  
 Fax: 651.429.1998  
 Email: clerk@cityofgrant.com

Application Date:	
Fee: \$400	Escrow: \$3,000

### CONDITIONAL USE PERMIT

Certain uses, while generally not suitable in a particular Zoning District, may, under certain circumstances be acceptable. When such circumstances exist, a Conditional Use Permit may be granted. Conditions may be applied to the issuance of the Permit and/or periodic review may be required. The Permit shall be granted for a particular use and not for a particular person or firm.

<b>PARCEL IDENTIFICATION NO (PIN):</b> 0103021210001 <b>LEGAL DESCRIPTION:</b> SEC 01, TWP 030, RNG 021		<b>ZONING DISTRICT &amp; COMP PLAN LAND USE:</b> A-1, AG, Large Scale <b>LOT SIZE:</b>
<b>PROJECT ADDRESS:</b> 11900 Manning Trl Grant, MN 55082	<b>OWNER: (Tower only)</b> Name: American Tower Corp Address: 1101 Schaumburg, IL City, State: Phone: Email:	<b>APPLICANT (IF DIFFERENT THAN OWNER):</b> SIGNAL ACC, LLC c/o JOHN KNAPEK 18205 Imagery Lane Lakeville, MN 55044 612-986-1993
<b>BRIEF DESCRIPTION OF REQUEST:</b> MODIFICATION/UPGRADE OF SPRINT TELECOM ANTENNAS & CABINETS ON THIS EXISTING CELL TOWER.		
<b>EXISTING SITE CONDITIONS:</b>		
<b>APPLICABLE ZONING CODE SECTION(S):</b> Please review the referenced code section for a detailed description of required submittal documents, and subsequent process. 1. Division 5. Conditional Use Permits 32-141 through 157		

#### Submittal Materials

The following materials must be submitted with your application in order to be considered complete. If you have any questions or concerns regarding the necessary materials please contact the City Planner.

AP - Applicant check list, CS - City Staff check list

AP	CS	MATERIALS
<input type="checkbox"/>	<input type="checkbox"/>	<b>Site Plan:</b> All full scale plans shall be at a scale not smaller than 1" = 100' and include a north arrow <ul style="list-style-type: none"> <li>▪ Property dimensions</li> <li>▪ Area in acres and square feet</li> <li>▪ Setbacks</li> <li>▪ Location of existing and proposed buildings (including footprint, and dimensions to lot lines)</li> <li>▪ Location of utilities</li> <li>▪ Location of well and septic systems on adjacent properties</li> <li>▪ Location of current and proposed curb cuts, driveways and access roads</li> <li>▪ Existing and proposed parking (if applicable)</li> <li>▪ Off-street loading areas (if applicable)</li> <li>▪ Existing and proposed sidewalks and trails</li> <li>▪ Sanitary sewer and water utility plans</li> </ul>
		COPIES: 4 plans at 22"x34", 20 plans at 11"x17"

Application for: **CONDITIONAL USE PERMIT**  
City of Grant

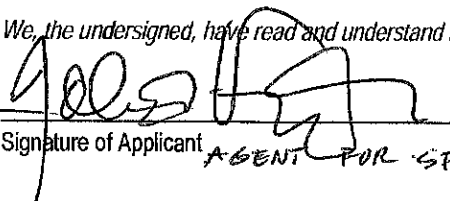
<input type="checkbox"/>	<input type="checkbox"/>	<p><b><u>Grading/Landscape Plan:</u></b> All full scale plans shall be at a scale not smaller than 1" = 100' and include a north arrow</p> <ul style="list-style-type: none"> <li>▪ Grading Plan</li> <li>▪ Vegetation, landscaping, and screening plans including species and size of trees and shrubs</li> <li>▪ Wetland Delineation</li> <li>▪ Buildable area</li> <li>▪ Topographic contours at 2-foot intervals, bluff line (if applicable)</li> <li>▪ Waterbodies, Ordinary High Water Level and 100 year flood elevation</li> <li>▪ Finished grading and drainage plan sufficient to drain and dispose of all surface water accumulated</li> </ul> <p>COPIES: 4 plan sets 22"x34", 20 plan sets 11"x17"</p>
<input type="checkbox"/>	<input type="checkbox"/>	<p><b><u>Architectural/Building Plan (if Applicable):</u></b> All full scale plans shall be at a scale not smaller than 1" = 100' and include a north arrow</p> <ul style="list-style-type: none"> <li>▪ Location of proposed buildings and their size including dimensions and total square footage</li> <li>▪ Proposed floor plans</li> <li>▪ Proposed elevations</li> <li>▪ Description of building use</li> </ul> <p>COPIES: 4 plan sets 22"x34", 20 plan sets 11"x17"</p>
<input type="checkbox"/>	<input type="checkbox"/>	<p><b><u>Written Narrative Describing your request:</u></b> A written description of your request for the Conditional Use will be required to be submitted as a part of your application. The description must include the following:</p> <ul style="list-style-type: none"> <li>▪ Description of operation or use</li> <li>▪ Number of employees (if applicable, if not state why)</li> <li>▪ Sewer and water flow/user rates (if applicable, if not state why)</li> <li>▪ Any soil limitations for the intended use, and plan indicating conservation/BMP's</li> <li>▪ Hours of operation, including days and times (if applicable)</li> <li>▪ Describe how you believe the requested conditional use fits the City's comprehensive plan</li> </ul> <p>COPIES: 20</p>
<input type="checkbox"/>	<input type="checkbox"/>	Statement acknowledging that you have contacted the other governmental agencies such as Watershed Districts, County departments, State agencies, or others that may have authority over your property for approvals and necessary permits.
<input type="checkbox"/>	<input type="checkbox"/>	Mailing labels with names and address of property owners within ¼ mile (1,320 feet).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Paid Application Fee: \$400
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Escrow Paid: \$3,000

**MATERIALS THAT MAY BE REQUIRED UPON THE REQUEST OF THE CITY PLANNER**

<input type="checkbox"/>	<input type="checkbox"/>	<p><b><u>Survey of the property:</u></b> An official survey, by a licensed surveyor, must be submitted with the application. The survey shall be scalable and in an 11" x 17" or 8 ½" x 11" format.</p>
<input type="checkbox"/>	<input type="checkbox"/>	Electronic copy of all submittal documents

This application must be signed by ALL owners of the subject property or an explanation given why this not the case.

We, the undersigned, have read and understand the above.

  
 Signature of Applicant AGENT FOR SPRINT Date 9-4-2012  
 Signature of Owner (if different than applicant) \_\_\_\_\_ Date \_\_\_\_\_

# **Signal Acquisition, LLC**

**Wireless/ Telecom Consultant**

**18285 Imagery Lane Lakeville, MN 55044**

office: 952.236.8845

mobile: 612.986.1993



September 4, 2012

**RE: Memo to the Sprint Zoning Permit File – Letter / Narrative to City of Grant regarding proposed improvements**

**Re: CUP Amendment for SPRINT tower site situated:  
11900 Manning Trail, Grant, MN 55082  
PID 0103021210001 -- “DeWolf” property / MS72XC330**

City of Grant, MN  
City of Grant Plan review  
P.O. Box 577,  
Willernie, MN  
55090

City of Grant:

This narrative serves to demonstrate the necessity for Sprint PCS to request an amendment to their CUP for the above referenced telecom tower site.

Sprint and Nextel ( nka: Sprint PCS ) was approved back in 2000 and in 2006 to install their antennas and cabinets on this existing tower, owned by American Tower Corporation through the City of Grant, MN.

For this CUP Amendment, Sprint proposes to:

Add (3) antennas more to their current antenna count.  
One antenna to each of their antenna sector configurations.

Currently, Sprint has 3 antennas per sector, with a TOTAL antenna count of 9.  
After installing (1) antenna per sector -- Sprint shall have a TOTAL antenna count of 12 antennas affixed on the tower.

For an interim period (6 months) -- Sprint will test their new upgraded system configuration.  
After 6 months -- Sprint will remove one of their old ‘legacy’ antennas per sector.  
The one antenna per sector to be removed will be a "CDMA" ( old technology or “legacy” ) from remaining equipment.

Sprint will then have a final antenna TOTAL of 9 antennas.

Additionally, Sprint plans to add:  
(6) RRHs, {Remote Radio Heads},  
(3) Filters,  
(3) Hybrid Fiber Cables,  
1 Micro-Wave dish with 1 ODU and 1 LMR400 cable.

Sprint will also add (2) equipment cabinets to its existing configuration within their self-contained shelter inside their leased area.

(1) GPS Antenna will be added on the ground, most likely on a protective cover used for their coaxial cable coming out of their shelter at the base of the tower.  
The GPS antenna will be no taller than 15 feet off the ground.

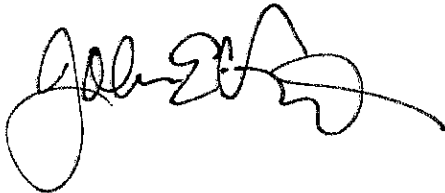
The existing Sprint antennas & associated equipment, will be "REMOVED" after a "TEST PERIOD" of (6) Six Months to (1) One Year.

With these noted changes – the City of Grant has been provided a set of the proposed changes referenced in the "Construction Drawings".

Also provided is a Structural Analysis report -- indicating the tower structure being capable of supporting the increased loading.

Let me know if there are any questions to this narrative.

Respectfully,



John Knappek

Agent for Sprint PCS  
**Signal Acquisition, LLC**  
18285 Imagery Lane  
Lakeville, MN 55044  
[jeknappek@yahoo.com](mailto:jeknappek@yahoo.com)



# Sprint



**SITE NAME:** F1 / MN0330-WITHROP  
**ATC SITE NAME:** DEWOLF  
**SITE NUMBER:** MS72XC330-A  
**ATC SITE NUMBER:** 50336  
**SITE ADDRESS:** 19900 MANNING TRAIL N  
 STILLWATER, MN. 55082  
 WASHINGTON COUNTY  
**SITE TYPE:** EXISTING 195' MONOPOLE



**PROJECT NO:** 172862  
**DRAWN BY:** SAF  
**CHECKED BY:** SEW

REV	DATE	DESCRIPTION
1	10/17/12	100% ISSUED FOR CONSTRUCTION
0	10/03/12	100% ISSUED FOR CONSTRUCTION
B	10/01/12	90% ISSUED FOR PERMITTING
A	07/23/12	90% ISSUED FOR REVIEW



**PROFESSIONAL ENGINEER**  
 I hereby certify that this plan, specification, or report 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 Minnesota.

**MS72XC330-A**  
**F1/MN0330-WITHROP**  
**19900 MANNING TRAIL N**  
**STILLWATER, MN 55082**

**SHEET TITLE**  
 TITLE SHEET & PROJECT DATA

**SHEET NUMBER**  
 T-1

**SITE INFORMATION**

**SITE ADDRESS:**  
 19900 MANNING TRAIL N  
 STILLWATER, MN 55082  
**PROPERTY OWNER:**  
 AMERICAN TOWER  
 10 PRESIDENTIAL WAY  
 WOBURN, MA 01801  
**ATC SITE#:** 50336  
**EQUIPMENT SUPPLIER:**  
 SAMSUNG TELECOMMUNICATIONS AMERICA (STA)  
 1301 EAST LOOKOUT DRIVE  
 RICHARDSON, TX 75082-4124  
 (972) 761-7000  
**FIBER PROVIDER:**  
 AAV - N/A  
 DONOR - N/A  
**POWER COMPANY:**  
 XCEL ENERGY  
**TELCO COMPANY:**  
 QWEST  
**COUNTY:**  
 WASHINGTON  
**ZONING JURISDICTION:**  
 WASHINGTON COUNTY  
**ZONING DISTRICT:**  
 AGRICULTURAL/RESIDENTIAL  
**LATITUDE (NAD83):**  
 45° 7' 19.599" N  
 45.12211111°  
**LONGITUDE (NAD83):**  
 92° 52' 36.199" W  
 -92.87672222°  
**CONTACT ENGINEER:**  
 TIMOTHY M. MARTIN, P.E.  
 (512) 320-0988  
 tmartin@letsvolver.com



**AREA MAP**



**LOCATION MAP**



**APPLICABLE CODES**

ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:  
 IBC 2006 (2007 MINNESOTA STATE BUILDING CODE)  
 2009 MINNESOTA PLUMBING CODE  
 IMC 2006 WITH AMENDMENTS  
 NEC 2008 ELECTRICAL CODE  
 IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL

**PROJECT DESCRIPTION**

- REMOVE EXISTING CABINETS AND ANTENNAS
- INSTALL (1) MMBS-BBU CABINET IN EXISTING LEASE SPACE
- INSTALL (1) MMBS-BATTERY CABINET IN EXISTING LEASE SPACE
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (18) JUMPERS
- INSTALL (1) GROUND MOUNTED GPS ANTENNA
- INSTALL (1) MICROWAVE DISH
- INSTALL (3) HYBRID CABLES

**DRAWING INDEX**

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET & PROJECT DATA
GN-1	GENERAL NOTES 1
GN-2	GENERAL NOTES 2
A-1	OVERALL SITE PLAN
A-2	EQUIPMENT LAYOUTS
A-3	TOWER ELEVATION & COAX DETAILS
A-4	ANTENNA/MICROWAVE SCHEDULES & LAYOUTS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
A-7	EQUIPMENT DETAILS
A-8	EQUIPMENT DETAILS
A-9	EQUIPMENT DETAILS
RF-1	ANTENNA & CABLE COLOR CODING DETAILS
RF-2	ANTENNA/RRU JUMPER SCHEMATIC
E-1	SINGLE LINE DIAGRAM & POWER PANEL SCHEDULE
E-2	DC POWER ONE-LINE & DETAILS
E-3	POWER & TELCO DETAILS
E-4	POST-MIGRATION PANEL SCHEDULE
G-1	GROUNDING PLAN & NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
G-4	GROUNDING DETAILS
S-1	STRUCTURAL DETAILS
S-2	STRUCTURAL DETAILS

**ENGINEER OF RECORD**

TIMOTHY M. MARTIN, P.E.  
 PE #50086  
 IRISH TOWER, LLC

**DRIVING DIRECTIONS FROM NEAREST MAJOR AIRPORT**

DEPART MINNEAPOLIS ST. PAUL INTERNATIONAL AIRPORT. START OUT GOING NORTHWEST ON GLUMACK DR, TURN SLIGHT LEFT TOWARD PARKING. STAY STRAIGHT TO GO ONTO GLUMACK DR. MERGE ONTO MN-5E TOWARD MN-55/ST PAUL/MINNEAPOLIS. TAKE THE MN-55W/MN-55E EXIT TOWARD MINNEAPOLIS/FORT SNELLING/HASTINGS. MERGE ONTO MN-55E TOWARD MENDOTA BE. TAKE MN-110E TOWARD MN-13N. TAKE THE I-494E/US-52 RAMP. MERGE ONTO I-494E VIA THE RAMP ON THE LEFT. MERGE ONTO I-694N. MERGE ONTO MN-36E VIA EXIT 52B TOWARD STILLWATER. TURN LEFT ONTO MANNING AVE N. MANNING AVE N BECOMES MANNING TRAIL N. ARRIVE AT SITE.

## GENERAL CONSTRUCTION NOTES

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST EDITION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
- CONTRACTOR SHALL CONSTRUCT SITE IN ACCORDANCE WITH THESE DRAWINGS AND SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES (LATEST REVISION). THE SPECIFICATION IS THE RULING DOCUMENT AND ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THESE DRAWINGS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OF FIELD CONDITIONS.
- PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM AUTHORIZED REPRESENTATIVE OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
- DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
- CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
- CONTRACTOR SHALL COORDINATE HIS WORK WITH THE SUPERINTENDENT OF BUILDINGS & GROUNDS AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
- INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
- MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING ETC. AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
- IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC., MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES (UNLESS NOTED OTHERWISE). LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT.
- REPAIR ALL EXISTING WALL SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACES.
- SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS.
- KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
- MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE ENGINEER.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION SHALL BE IN CONFORMANCE WITH JURISDICTIONAL OR STATE AND LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL AND COORDINATED WITH LOCAL REGULATORY AUTHORITIES.
- LIGHT SHADED LINES AND NOTES REPRESENT WORK PREVIOUSLY DONE. DARK SHADED LINES AND NOTES REPRESENT THE SCOPE OF WORK FOR THIS PROJECT. CONTRACTOR SHALL VERIFY IF EXISTING CONSTRUCTION IS COMPLETE. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
- CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND/OR WIRING CERTIFICATES REQUIRED FOR THE ELECTRICAL SERVICE UPGRADE. IN ADDITION, CONTRACTOR SHALL PROVIDE ALL NECESSARY COORDINATION AND SCHEDULING WITH THE SERVING ELECTRICAL UTILITY AND LOCAL INSPECTION AUTHORITIES.

## ELECTRICAL NOTES

- ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ANY/ALL ELECTRICAL WORK INDICATED. ANY/ALL CONSTRUCTION SHALL BE IN ACCORDANCE W/DRAWINGS AND ANY/ALL APPLICABLE SPECIFICATIONS. IF ANY PROBLEMS ARE ENCOUNTERED BY COMPLYING WITH THESE REQUIREMENTS, CONTRACTOR SHALL NOTIFY 'CONSTRUCTION MANAGER' AS SOON AS POSSIBLE, AFTER THE DISCOVERY OF THE PROBLEMS, AND SHALL NOT PROCEED WITH THAT PORTION OF WORK, UNTIL THE 'CONSTRUCTION MANAGER' HAS DIRECTED THE CORRECTIVE ACTIONS TO BE TAKEN.
- ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ANY/ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATION INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. ALL EXISTING CONDITIONS OF ELECTRICAL EQUIP., LIGHT FIXTURES, ETC., THAT ARE PART OF THE FINAL SYSTEM, SHALL BE VERIFIED BY THE CONTRACTOR, PRIOR TO THE SUBMITTAL OF HIS BID. FAILURE TO COMPLY WITH THIS PARAGRAPH WILL IN NO WAY RELIEVE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND ALL CODES AND LOCAL ORDINANCES OF THE LOCAL POWER & TELEPHONE COMPANIES HAVING JURISDICTION AND SHALL INCLUDE BUT NOT BE LIMITED TO:
  - UL - UNDERWRITERS LABORATORIES
  - NEC - NATIONAL ELECTRICAL CODE
  - NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
  - OSHA - OCCUPATIONAL SAFETY AND HEALTH ACT
  - SBC - STANDARD BUILDING CODE
  - NFPA - NATIONAL FIRE CODES
- DO NOT SCALE ELECTRICAL DRAWINGS, REFER TO SITE PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, AND CONFIRM WITH 'CONSTRUCTION MANAGER' ANY SIZES AND LOCATIONS WHEN NEEDED.
- EXISTING SERVICES: CONTRACTOR SHALL NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE OWNER.
- CONTRACTOR SHALL PAY FOR ANY/ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR IS TO OBTAIN PERMITS AND APPROVED SUBMITTALS PRIOR TO THE WORK BEGINNING OR ORDERING EQUIPMENT.
- THE TERM "PROVIDE" USED IN CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, INDICATES THAT THE CONTRACTOR SHALL FURNISH AND INSTALL.
- CONTRACTOR SHALL CONFIRM WITH LOCAL UTILITY COMPANY ANY/ALL REQUIREMENTS SUCH AS THE: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, SIZE OF TRANSFORMERS, SCHEDULED DOWNTIME FOR THE OWNERS' CONFIRMATION, ETC. ANY/ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER, PRIOR TO BEGINNING ANY WORK.
- MINIMUM WIRE SIZE SHALL BE #12 AWG, NOT INCLUDING CONTROL WIRING, UNLESS NOTED OTHERWISE. ALL CONDUCTORS SHALL BE COPPER WITH THWN INSULATION.
- OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET/DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
- IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF THE CONSTRUCTION. CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
- ELECTRICAL SYSTEM SHALL BE AS COMPLETELY AND EFFECTIVELY GROUNDED, AS REQUIRED BY SPECIFICATIONS, SET FORTH BY SPRINT.
- ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS, WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND SUBJECT TO REGULATORY INSPECTION AND APPROVAL BY CONSTRUCTION MANAGER.
- ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
- CONTRACTOR SHALL GUARANTEE ANY/ALL MATERIALS AND WORK FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.
- THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OR THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN.
- ADEQUATE AND REQUIRED LIABILITY INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LOSS AND ANY/ALL PROPERTY DAMAGE FOR THE DURATION OF WORK.
- PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES AND DEVICES FOR ALL OUTLETS AS INDICATED.
- DITCHING AND BACK FILL: CONTRACTOR SHALL PROVIDE FOR ALL UNDERGROUND INSTALLED CONDUIT AND/OR CABLES INCLUDING EXCAVATION AND BACKFILLING AND COMPACTION. REFER TO NOTES AND REQUIREMENTS 'EXCAVATION, AND BACKFILLING.
- MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SHALL APPEAR ON THE LIST OF U.L. APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NEC, NEMA AND IEEE.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR MANUFACTURERS CATALOG INFORMATION OF ANY/ALL LIGHTING FIXTURES, SWITCHES AND ALL OTHER ELECTRICAL ITEMS FOR APPROVAL BY THE CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
- ANY CUTTING OR PATCHING DEEMED NECESSARY FOR ELECTRICAL WORK IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY AND SHALL BE INCLUDED IN THE COST FOR WORK AND PERFORMED TO THE SATISFACTION OF THE 'CONSTRUCTION MANAGER' UPON FINAL ACCEPTANCE.
- THE ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS WITH ONLY TYPEWRITTEN DIRECTORIES. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
- DISCONNECT SWITCHES SHALL BE H.P. RATED HEAVY-DUTY, QUICK-MAKE AND QUICK-BREAK ENCLOSURES, AS REQUIRED BY EXPOSURE TYPE.
- ALL CONNECTIONS SHALL BE MADE WITH A PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO-OXIDE A" BY DEARBORNE CHEMICAL CO. COAT ALL WIRE SURFACES BEFORE CONNECTING. EXPOSED COPPER SURFACES, INCLUDING GROUND BARS, SHALL BE TREATED - NO SUBSTITUTIONS.
- ALL EXTERIOR ABOVE GROUND CONDUIT SHALL BE RIGID UNLESS OTHERWISE SPECIFIED. ALL BURIED CONDUITS SHALL BE SCH 40 PVC UNLESS OTHERWISE SPECIFIED. ALL INTERIOR CONDUITS SHALL BE EMT UNLESS OTHERWISE SPECIFIED.
- RACEWAYS: CONDUIT SHALL BE SCHEDULE 40 PVC MEETING OR EXCEEDING NEMA TC2 - 1990. CONTRACTOR SHALL PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS - 200 LBS TEST POLYETHYLENE CORD. ALL CONDUIT BENDS SHALL BE A MINIMUM OF 2 FT. RADIUS. RGS CONDUITS WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIGID CONDUIT. COAT ALL THREADS WITH 'BRITZ ZINC' OR 'GOLD GALV'.

- SUPPORT OF ALL ELECTRICAL WORK SHALL BE AS REQUIRED BY NEC.
- CONDUCTORS: CONTRACTOR SHALL USE 98% CONDUCTIVITY COPPER WITH TYPE THWN/THHN INSULATION, 600 VOLT, COLOR CODED. UNLESS SPECIFIED DIFFERENT ON DRAWINGS.
- CONNECTORS FOR POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER.
- SERVICE: 240/120V, SINGLE PHASE, 3 WIRE CONNECTION AVAILABLE FROM UTILITY COMPANY. OWNER OR OWNERS AGENT WILL APPLY FOR POWER.
- TELEPHONE SERVICE: CONTRACTOR SHALL PROVIDE EMPTY CONDUITS WITH PULL STRINGS AS INDICATED ON DRAWINGS.
- ELECTRICAL AND TELCO RACEWAYS TO BE BURIED A MINIMUM OF 2' DEPTH.
- CONTRACTOR SHALL PLACE TWO LENGTHS OF WARNING TAPE AT A DEPTH OF 12" BELOW GROUND AND DIRECTLY ABOVE ELECTRICAL AND TELCO SERVICE CONDUITS. CAUTIONS TAPE TO READ "CAUTION BURIED ELECTRIC" OR "BURIED TELECOM".
- WHEN DIRECTIONAL BORING IS REQUIRED, CONTRACTOR SHALL INSTALL A LOOSE TONING WIRE WITHIN INSTALLED CONDUIT TO ALLOW FOR IDENTIFICATION OF UNDERGROUND CONDUITS.
- ALL BOLTS SHALL BE STAINLESS STEEL.

## ANTENNA & COAX NOTES

- VERIFY EACH COAXIAL CABLE LENGTH, DIAMETER, ROUTING, COLOR CODING AND ALL APPURTENANCES WITH SAMSUNG.
- THE MAXIMUM COAXIAL CABLE LENGTH AND CORRESPONDING COAXIAL CABLE DIAMETER HAS BEEN ESTIMATED ON SHEET A-4. THIS CABLE LENGTH IS APPROXIMATE, AND IS NOT TO BE USED FOR FABRICATION OR CONSTRUCTION. ACTUAL ANTENNA CABLE LENGTH(S) MAY VARY FROM ESTIMATED MAXIMUM LENGTH AND MUST BE VERIFIED. COAXIAL CABLE SHALL BE PROVIDED BY SAMSUNG.
- ALL MAIN CABLES SHALL UTILIZE GROUND KITS, GROUNDED AS FOLLOWS:
  - NEAR ANTENNA RAD CENTER ELEVATION.
  - MIDDLE OF TOWER (MID-HEIGHT OF ANTENNA), IF CABLE RUN IS OVER 200'.
  - BOTTOM OF TOWER.
  - AT MASTER GROUND BAR 3'-0" FROM MBMS-BBU CABINET.
- ALL TOP JUMPERS SHALL BE LENGTHS AS SHOWN, SUPPLIED BY SAMSUNG, AND INSTALLED BY CONTRACTOR.
- ALL MAIN CABLES SHALL BE COLOR CODED AS SHOWN ON SHEET RF-1 AND IN ACCORDANCE WITH SPRINT SPECIFICATIONS.
- BANDING SHALL BE IN ACCORDANCE WITH SHEET RF-1 AND AS FOLLOWS:
  - MAIN LINE COLOR BANDS SHALL BE 2" WIDE. MAINTAIN 1" SPACING BETWEEN COLORS.
  - FREQUENCY COLOR BANDS SHALL BE 2" WIDE WITH NO SPACE BETWEEN COLORS.
  - JUMPER COLOR BANDS SHALL BE 1" WIDE WITH 1" SPACE.
  - START COLOR BANDS 2" BEYOND WEATHERPROOFING.
  - START SELECTOR COLOR NEXT TO END CONNECTORS.
- FINAL COAXIAL ANTENNA CABLE SIZES SHALL BE DETERMINED BY SAMSUNG RF ENGINEER. SEE ANTENNA SCHEDULE SHEET A-4.
- SEE CONSTRUCTION MANAGER FOR ANTENNA SUPPORT ASSEMBLY TYPE.
- ALL COAXIAL CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 3' OR THE CABLE MANUFACTURERS SPECIFICATIONS WHICHEVER IS LESS, WITH HARDWARE SPECIFIED IN THE COAXIAL CABLE ROUTING DETAILS OF THE SUPPLIED STRUCTURAL REPORT.
- PROVIDE AT LEAST 6" OF SLACK IN THE MAIN COAXIAL CABLES AT THE ANTENNA MOUNTING ELEVATION TO PROVIDE FOR FUTURE CONNECTOR REPLACEMENT.



**BLACK & VEATCH**



**IRISH TOWER, LLC**

**PROJECT NO: 172862**

**DRAWN BY: SAF**

**CHECKED BY: SEW**

REV	DATE	DESCRIPTION
1	10/17/12	100% ISSUED FOR CONSTRUCTION
0	10/03/12	100% ISSUED FOR CONSTRUCTION
B	10/01/12	90% ISSUED FOR PERMITTING
A	07/23/12	90% ISSUED FOR REVIEW



**PROFESSIONAL ENGINEER**  
I hereby certify that this plan, specification, or report 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 Minnesota.

**MS72XC330-A  
F1/MN0330-WITHROP  
1990 MANNING TRAIL N  
STILLWATER, MN 55082**

**SHEET TITLE  
GENERAL NOTES 1**

**SHEET NUMBER  
GN-1**

**SITE WORK NOTES**

- DO NOT EXCAVATE OR DISTURB BEYOND THE PROPERTY LINES OR LEASE LINES, UNLESS OTHERWISE NOTED.
- DO NOT SCALE BUILDING DIMENSIONS FROM DRAWING.
- SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILT DRAWINGS BY GENERAL CONTRACTOR AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.
- ALL EXISTING UTILITIES, FACILITIES, CONDITIONS AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.
- CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS/HER OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL LOCAL DIGGER HOT LINE FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF CONSTRUCTION.
- ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK.
- GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.
- ALL TEMPORARY EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
- STRUCTURAL FILLS SUPPORTING PAVEMENTS SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY.
- NEW GRADES NOT IN BUILDING AND DRIVEWAY IMPROVEMENT AREA TO BE ACHIEVED BY FILLING WITH APPROVED CLEAN FILL AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.
- ALL FILL SHALL BE PLACED IN UNIFORM LIFTS. THE LIFTS THICKNESS SHOULD NOT EXCEED THAT WHICH CAN BE PROPERLY COMPACTED THROUGHOUT ITS ENTIRE DEPTH WITH THE EQUIPMENT AVAILABLE.
- ANY FILLS PLACED ON EXISTING SLOPES THAT ARE STEEPER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE AS DIRECTED BY A GEOTECHNICAL ENGINEER.
- CONTRACTOR SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO PAPERS, TRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE GENERAL CONTRACTOR.
- ALL TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH THE IMPROVEMENTS SHALL BE PROTECTED BY THE GENERAL CONTRACTOR.
- ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

**ENVIRONMENTAL NOTES**

- ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH ISSUED PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF FINES AND PROPER CLEAN UP FOR AREAS IN VIOLATION.
- CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS AND SHALL BE MAINTAINED IN PLACE THROUGH FINAL JURISDICTIONAL INSPECTION & RELEASE OF SITE.
- CONTRACTOR SHALL INSTALL/CONSTRUCT ALL NECESSARY SEDIMENT/SILT CONTROL FENCING AND PROTECTIVE MEASURES WITHIN THE LIMITS OF SITE DISTURBANCE PRIOR TO CONSTRUCTION.
- NO SEDIMENT SHALL BE ALLOWED TO EXIT THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ADEQUATE MEASURES FOR CONTROLLING EROSION. ADDITIONAL SEDIMENT CONTROL FENCING MAY BE REQUIRED IN ANY AREAS SUBJECT TO EROSION.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES WITH SILT AND EROSION CONTROL MEASURES MAINTAINED ON THE DOWNSTREAM SIDE OF SITE DRAINAGE. ANY DAMAGE TO ADJACENT PROPERTY AS A RESULT OF EROSION WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS AND ANY REPAIRS OF ALL SEDIMENT CONTROL MEASURES INCLUDING SEDIMENT REMOVAL AS NECESSARY.
- CLEARING OF VEGETATION AND TREE REMOVAL SHALL BE ONLY AS PERMITTED AND BE HELD TO A MINIMUM. ONLY TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED.
- SEEDING AND MULCHING AND/OR SODDING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE PROJECT FACILITIES AFFECTING LAND DISTURBANCE.
- CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS, AND CHECK DAMS.
- RIP RAP OF SIZES INDICATED SHALL CONSIST OF CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY STONE FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI, OR OTHER DELETERIOUS SUBSTANCES.

**FOUNDATION, EXCAVATION AND BACKFILL NOTES**

- ALL FINAL GRADED SLOPES SHALL BE A MAXIMUM OF 3 HORIZONTAL TO 1 VERTICAL.
- ALL EXCAVATIONS PREPARED FOR PLACEMENT OF CONCRETE SHALL BE OF UNDISTURBED SOILS, SUBSTANTIALLY HORIZONTAL AND FREE FROM ANY LOOSE, UNSUITABLE MATERIAL OR FROZEN SOILS, AND WITHOUT THE PRESENCE OF POUNDING WATER. DEWATERING FOR EXCESS GROUND WATER SHALL BE PROVIDED WHEN REQUIRED. COMPACTION OF SOILS UNDER CONCRETE PAD FOUNDATIONS SHALL NOT BE LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR THE SOIL IN ACCORDANCE WITH ASTM D1557.
- CONCRETE FOUNDATIONS SHALL NOT BE PLACED ON ORGANIC OR UNSUITABLE MATERIAL. IF INADEQUATE BEARING CAPACITY IS REACHED AT THE DESIGNED EXCAVATION DEPTH, THE UNSATISFACTORY SOIL SHALL BE EXCAVATED TO ITS FULL DEPTH AND EITHER BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION SHALL BE FILLED WITH CONCRETE OF THE SAME TYPE SPECIFIED FOR THE FOUNDATION. CRUSHED STONE MAY BE USED TO STABILIZE THE BOTTOM OF THE EXCAVATION. ANY STONE SUB BASE MATERIAL, IF USED, SHALL NOT SUBSTITUTE FOR REQUIRED THICKNESS OF CONCRETE.
- ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIAL SUCH AS VEGETATION, TRASH, DEBRIS, AND SO FORTH PRIOR TO BACK FILLING. BACK FILL SHALL CONSIST OF APPROVED MATERIALS SUCH AS EARTH, LOAM, SANDY CLAY, SAND AND GRAVEL, OR SOFT SHALE, FREE FROM CLODS OR LARGE STONES OVER 2 1/2" MAX DIMENSIONS. ALL BACK FILL SHALL BE PLACED IN COMPACTED LAYERS.
- ALL FILL MATERIALS AND FOUNDATION BACK FILL SHALL BE PLACED IN MAXIMUM 6" THICK LIFTS BEFORE COMPACTION. EACH LIFT SHALL BE WETTED IF REQUIRED AND COMPACTED TO NOT LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY FOR SOIL IN ACCORDANCE WITH ASTM D1557.
- NEWLY PLACED CONCRETE FOUNDATIONS SHALL CURE A MINIMUM OF 72 HRS PRIOR TO BACK FILLING.
- FINISHED GRADING SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE AND PREVENT STANDING WATER. THE FINAL (FINISH) ELEVATION OF SLAB FOUNDATIONS SHALL SLOPE AWAY IN ALL DIRECTIONS FROM THE CENTER. FINISH GRADE OF CONCRETE PADS SHALL BE A MAXIMUM OF 4" ABOVE FINAL FINISH GRADE ELEVATIONS. PROVIDE SURFACE FILL GRAVEL TO ESTABLISH SPECIFIED ELEVATIONS WHERE REQUIRED.
- NEWLY GRADED SURFACE AREAS TO RECEIVE GRAVEL SHALL BE COVERED WITH GEOTEXTILE FABRIC TYPE: TYPAR-3401 AS MANUFACTURED BY "CONSTRUCTION MATERIAL 1-800-239-3841" OR AN APPROVED EQUIVALENT, SHOWN ON PLANS. THE GEOTEXTILE FABRIC SHALL BE BLACK IN COLOR TO CONTROL THE RECURRENCE OF VEGETATIVE GROWTH AND EXTEND TO WITHIN 1 FOOT OUTSIDE THE SITE FENCING OR ELECTRICAL GROUNDING SYSTEM PERIMETER WHICH EVER IS GREATER. ALL FABRIC SHALL BE COVERED WITH A MINIMUM OF 4" DEEP COMPACTED STONE OR GRAVEL AS SPECIFIED. I.E. FDOT TYPE No. 57 FOR FENCED COMPOUND; FDOT TYPE No. 67 FOR ACCESS DRIVE AREA.
- IN ALL AREAS TO RECEIVE FILL, REMOVE ALL VEGETATION, TOPSOIL, DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND DELETERIOUS MATERIALS FROM GROUND SURFACE. PLOW STRIP OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SUCH THAT FILL MATERIAL WILL BIND WITH EXISTING/PREPARED SOIL SURFACE.
- WHEN SUB GRADE OR PREPARED GROUND SURFACE HAS A DENSITY LESS THAN THAT REQUIRED FOR THE FILL MATERIAL, SCARIFY THE GROUND SURFACE TO DEPTH REQUIRED, PULVERIZE, MOISTURE-CONDITION AND/OR AERATE THE SOILS AND RECOMPACT TO THE REQUIRED DENSITY PRIOR TO PLACEMENT OF FILLS.
- IN AREAS WHICH EXISTING GRAVEL SURFACING IS REMOVED OR DISTURBED DURING CONSTRUCTION OPERATIONS, REPLACE GRAVEL SURFACING TO MATCH ADJACENT GRAVEL SURFACING AND RESTORED TO THE SAME THICKNESS AND COMPACTION AS SPECIFIED. ALL RESTORED GRAVEL SURFACING SHALL BE FREE FROM CORRUGATIONS AND WAVES.
- EXISTING GRAVEL SURFACING MAY BE EXCAVATED SEPARATELY AND REUSED WITH THE CONDITION THAT ANY UNFAVORABLE AMOUNTS OF ORGANIC MATTER, OR OTHER DELETERIOUS MATERIALS ARE REMOVED PRIOR TO REUSE. FURNISH ANY ADDITIONAL GRAVEL RESURFACING MATERIAL AS NEEDED TO PROVIDE A FULL DEPTH COMPACTED SURFACE THROUGHOUT SITE.
- GRAVEL SUB SURFACE SHALL BE PREPARED TO REQUIRED COMPACTION AND SUB GRADE ELEVATIONS BEFORE GRAVEL SURFACING IS PLACED AND/OR RESTORED. ANY LOOSE OR DISTURBED MATERIALS SHALL BE THOROUGHLY COMPACTED AND ANY DEPRESSIONS IN THE SUB GRADE SHALL BE FILLED AND COMPACTED WITH APPROVED SELECTED MATERIAL. GRAVEL SURFACING MATERIAL SHALL NOT BE USED FOR FILLING DEPRESSIONS IN THE SUB GRADE.
- PROTECT EXISTING GRAVEL SURFACING AND SUB GRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE. USE PLANKING "MATTS" OR OTHER SUITABLE PROTECTION DESIGNED TO SPREAD EQUIPMENT LOADS AS MAY BE NECESSARY. REPAIR ANY DAMAGE TO EXISTING GRAVEL SURFACING OR SUB GRADE WHERE SUCH DAMAGE IS DUE TO THE CONTRACTORS OPERATIONS.
- DAMAGE TO EXISTING STRUCTURES AND/OR UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED AND/OR REPLACED TO THE OWNERS SATISFACTION AT NO ADDITIONAL COST TO THE CONTRACT.
- ALL SUITABLE BORROW MATERIAL FOR BACK FILL OF THE SITE SHALL BE INCLUDED IN THE BID. EXCESS TOPSOIL AND UNSUITABLE MATERIAL SHALL BE DISPOSED OF OFF SITE AT LOCATIONS APPROVED BY GOVERNING AGENCIES AT NO ADDITIONAL COST TO THE CONTRACT.

**STRUCTURAL STEEL NOTES**

- ALL STEEL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION. STEEL SECTIONS SHALL BE IN ACCORDANCE WITH ASTM AS INDICATED BELOW:  
W-SHAPES: ASTM A992, 50 KSI  
ANGLES, BARS CHANNELS: ASTM A36, 36 KSI  
HSS SECTIONS: ASTM 500, 46 KSI  
PIPE SECTIONS: ASTM A53-E, 35 KSI
- ALL EXTERIOR EXPOSED STEEL AND HARDWARE SHALL BE HOT DIPPED GALVANIZED.
- ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
- BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
- NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
- FIELD MODIFICATIONS ARE TO BE COATED WITH ZINC ENRICHED PAINT.

**CONCRETE MASONRY NOTES**

- CONCRETE MASONRY UNITS SHALL BE MEDIUM WEIGHT UNITS CONFORMING TO ASTM C90, GRADE N-1, (F'M=1,500 PS). MEDIUM WEIGHT (115 PCF).
- MORTAR SHALL BE TYPE "S" (MINIMUM 1,800 PSI AT 28 DAYS).
- GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
- ALL CELLS CONTAINING REINFORCING STEEL OR EMBEDDED ITEMS AND ALL CELLS IN RETAINING WALLS AND WALLS BELOW GRADE SHALL BE SOLID GROUTED.
- ALL HORIZONTAL REINFORCEMENT SHALL BE PLACED IN BOND BEAM OR LINTEL BEAM UNITS.
- WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE GROUT POUR 1-1/2" BELOW TOP OF THE UPPERMOST UNIT.
- ALL BOND BEAM BLOCK SHALL BE "DEEP CUT" UNITS.
- PROVIDE INSPECTION AND CLEAN-OUT HOLES AT BASE OF VERTICAL CELLS HAVING GROUT LIFTS IN EXCESS OF 4'-0" OF HEIGHT.
- ALL GROUT SHALL BE CONSOLIDATED WITH A MECHANICAL VIBRATOR.
- CEMENT SHALL BE AS SPECIFIED FOR CONCRETE.
- REINFORCING BARS – SEE NOTES UNDER "STRUCTURAL CONCRETE NOTES" FOR REQUIREMENTS.
- PROVIDE ONE BAR DIAMETER (A MINIMUM OF 1/2") GROUT BETWEEN MAIN REINFORCING AND MASONRY UNITS.
- LOW LIFT CONSTRUCTION, MAXIMUM GROUT POUR HEIGHT IS 4 FEET.
- HIGH LIFT GROUTED CONSTRUCTION MAY BE USED IN CONFORMANCE WITH PROJECT SPECIFICATIONS AND SECTION 2104.6.1. OF U.B.C.
- ALL CELLS IN CONCRETE BLOCKS SHALL BE FILLED SOLID WITH GROUT, EXCEPT AS NOTED IN THE DRAWINGS OR SPECIFICATIONS.
- CELLS SHALL BE IN VERTICAL ALIGNMENT, DOWELS IN FOOTINGS SHALL BE SET TO ALIGN WITH CORES CONTAINING REINFORCING STEEL.
- REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE AND HEIGHT OF UNITS, LAYING PATTERN AND JOINT TYPE.
- SAND SHALL BE CLEAN, SHARP AND WELL GRADED, FREE FROM INJURIOUS AMOUNTS OF DUST, LUMPS, SHALE, ALKAU OR ORGANIC MATERIAL.
- BRICK SHALL CONFORM TO ASTM C-62 AND SHALL BE GRADE MW OR BETTER.

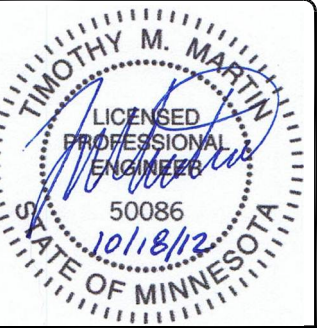
**STRUCTURAL CONCRETE NOTES**

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301-05, ACI 318-05 AND THE SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH f'c=3,000 PSI AT 28 DAYS UNLESS NOTED OTHERWISE.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES CLASS "B" AND ALL HOOKS SHALL BE STANDARD UNLESS NOTED OTHERWISE.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  
CONCRETE CAST AGAINST EARTH.....3 IN.  
CONCRETE EXPOSED TO EARTH OR WEATHER:  
#6 AND LARGER.....2 IN.  
#5 AND SMALLER & WWF .....1-1/2 IN.  
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:  
SLAB AND WALL .....3/4 IN.  
BEAMS AND COLUMNS.....1-1/2 IN.
- A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE U.N.O. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- HOLES TO RECEIVE EXPANSION/WEDGE ANCHORS SHALL BE 1/8" LARGER IN DIAMETER THAN THE ANCHOR BOLT, DOWEL OR ROD AND SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. LOCATE AND AVOID CUTTING EXISTING REBAR WHEN DRILLING HOLES IN ELEVATED CONCRETE SLABS.
- USE AND INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER ICBO & MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURES.



<b>PROJECT NO:</b>	<b>172862</b>
<b>DRAWN BY:</b>	SAF
<b>CHECKED BY:</b>	SEW

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0	10/03/12	100% ISSUED FOR CONSTRUCTION
B	10/01/12	90% ISSUED FOR PERMITTING
A	07/23/12	90% ISSUED FOR REVIEW



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**MS72XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
**GENERAL NOTES 2**

SHEET NUMBER  
**GN-2**



OVERALL SITE PLAN



SCALE: N.T.S.

**Sprint**  
 6580 SPRINT PARKWAY  
 OVERLAND PARK, KANSAS 66251



**BLACK & VEATCH**

**IRISH TOWER, LLC**

PROJECT NO:	172862
DRAWN BY:	SAF
CHECKED BY:	SEW

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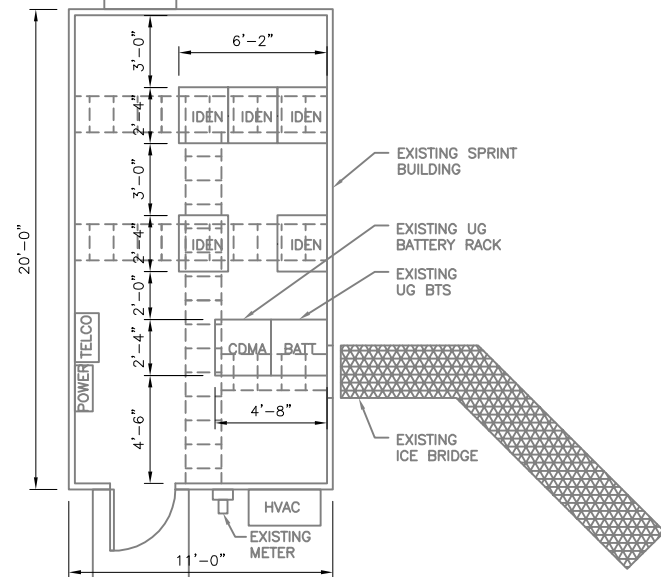


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**MS72XC330-A  
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 STILLWATER, MN 55082**

SHEET TITLE  
**OVERALL SITE PLAN**

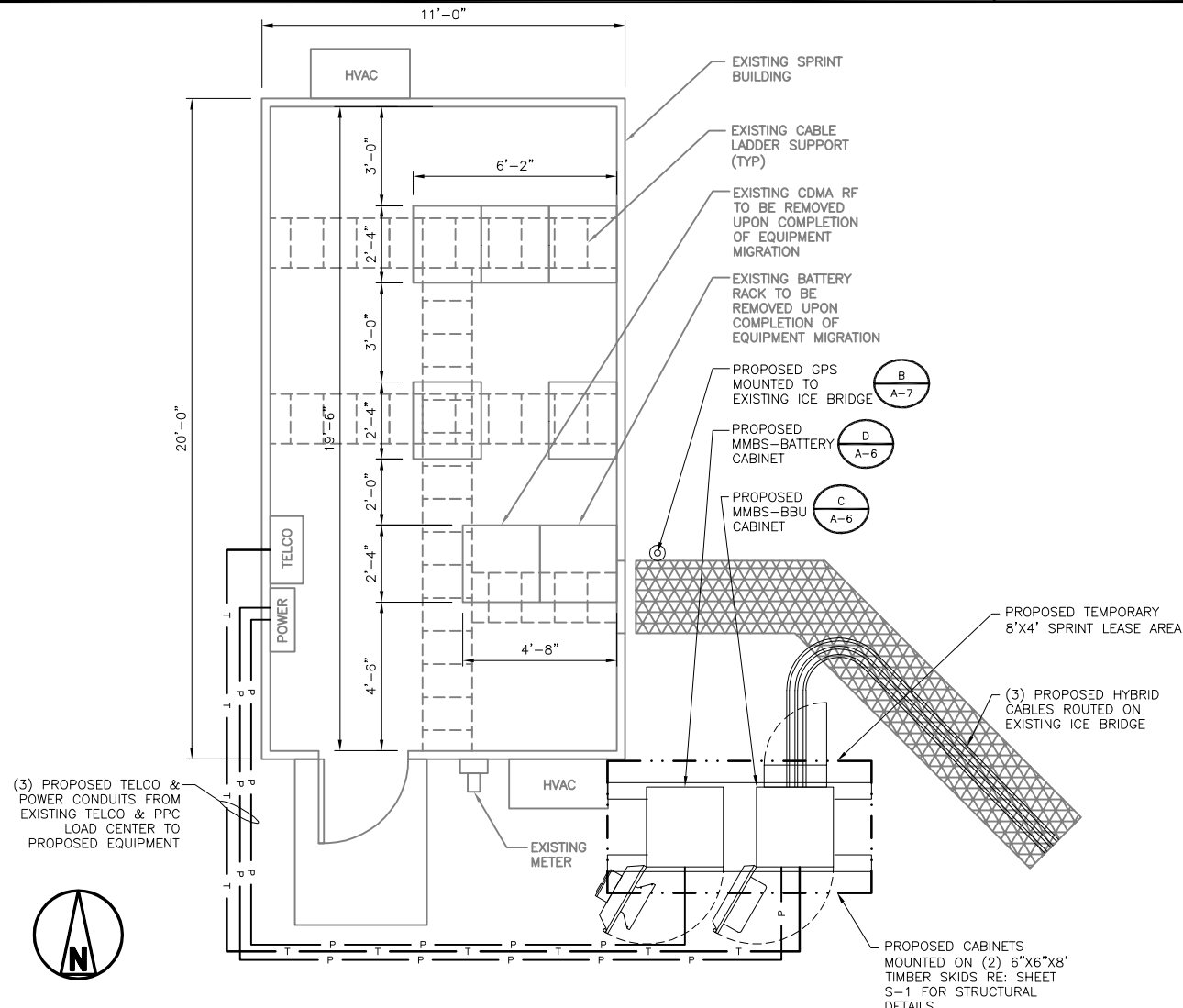
SHEET NUMBER  
**A-1**



EXISTING EQUIPMENT LAYOUT

SCALE: 1/4"=1'-0"

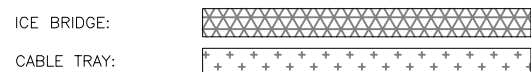
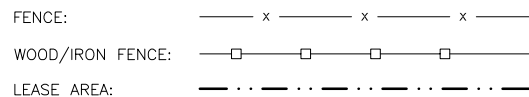
A



INTERIM EQUIPMENT LAYOUT

SCALE: 3/8"=1'-0"

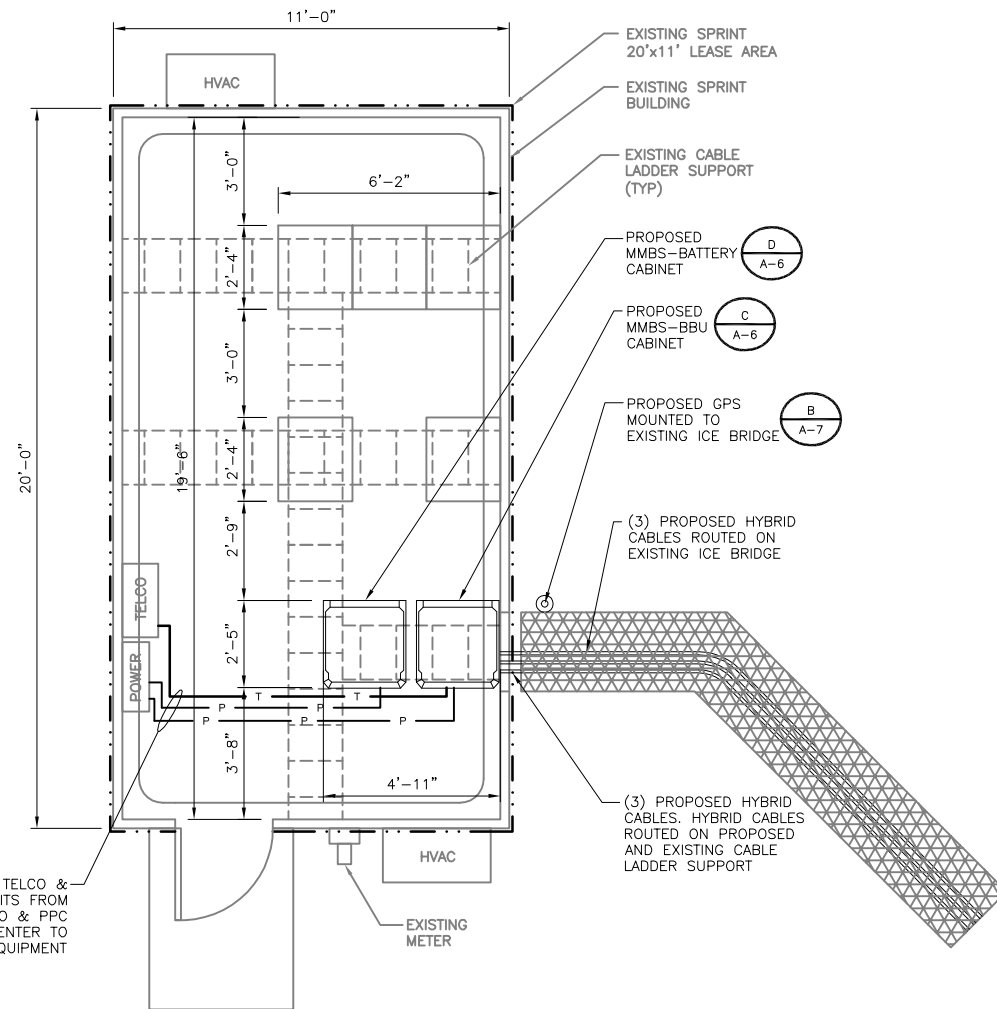
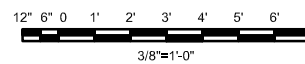
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GRAPHICS LEGEND

NOTES

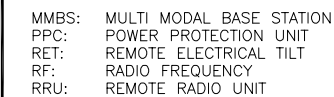
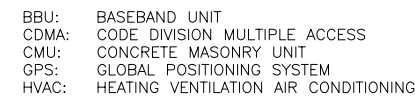
1. CONDUIT ROUTING IS DIAGRAMMATICALLY SHOWN ON PLANS AND ARE ONLY APPROXIMATIONS. THE EXACT LOCATION AND ROUTING SHALL BE FIELD VERIFIED.
2. ALL ELECTRICAL EQUIPMENT AND CONTROLLING DEVICES SHALL BE PROVIDED WITH LAMICOID NAMEPLATES, INDICATING THE CIRCUITS ORIGINATION AND ALL EQUIPMENT TERMINATIONS.
3. CONTRACTOR SHALL SUPPLY BREAKERS, CONDUITS AND CIRCUIT CONDUCTORS, AS REQUIRED FOR A COMPLETED SYSTEM AND SHALL BE IN COMPLIANCE WITH MANUFACTURER SPECIFICATIONS.
4. EXISTING SPRINT LEASE AREA SHOWN IS APPROXIMATE. CONTRACTOR TO VERIFY LEASE AREA WITH LAND SURVEY.



FINAL EQUIPMENT LAYOUT

SCALE: AS NOTED

C



ACRONYM LEGEND



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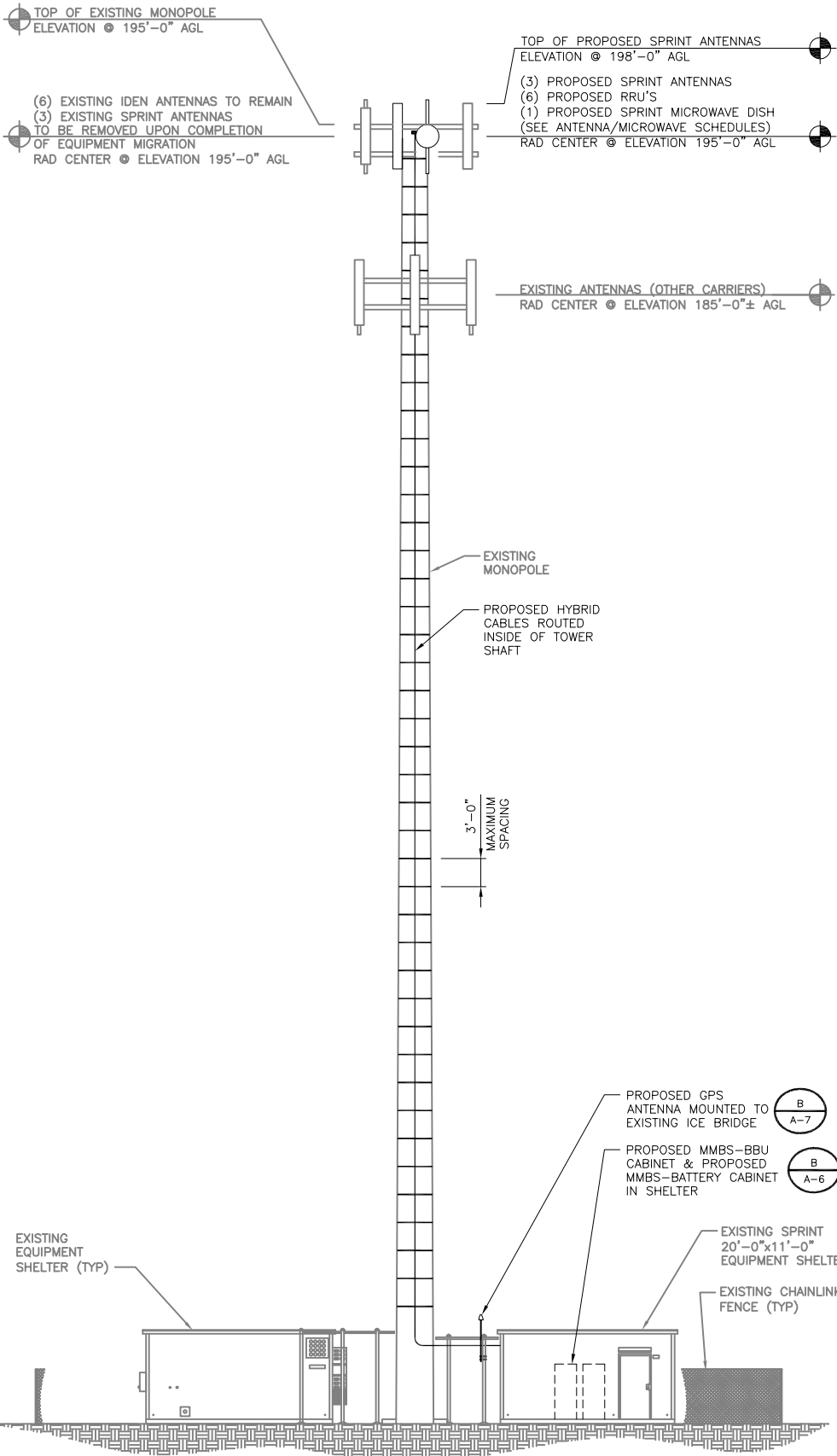


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MS72XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082

SHEET TITLE  
EQUIPMENT LAYOUTS

SHEET NUMBER  
A-2



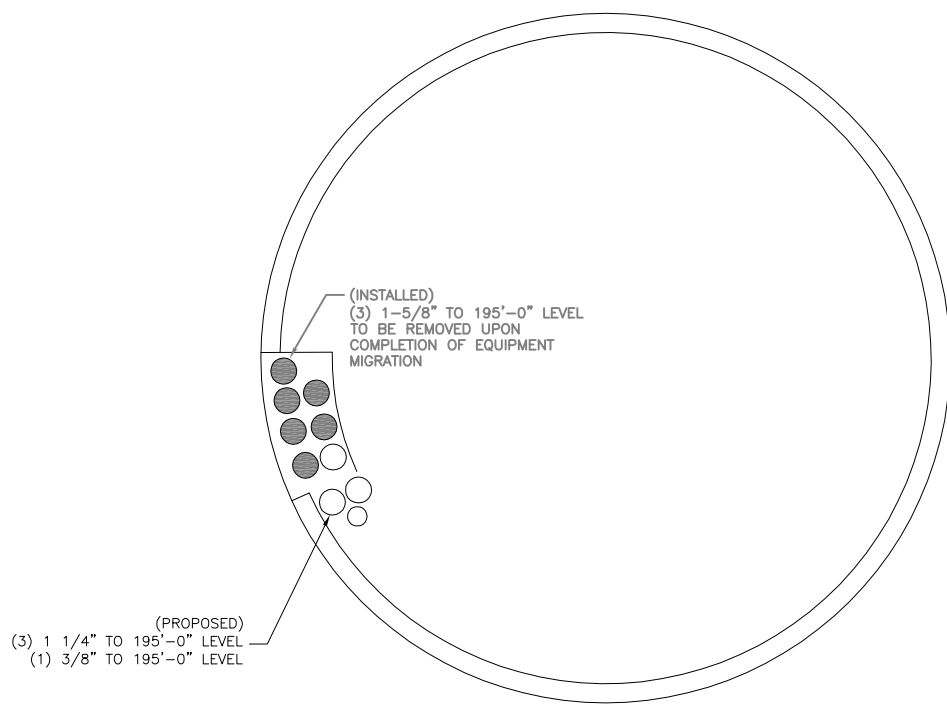
SITE ELEVATION

NO SCALE

A

NOTES

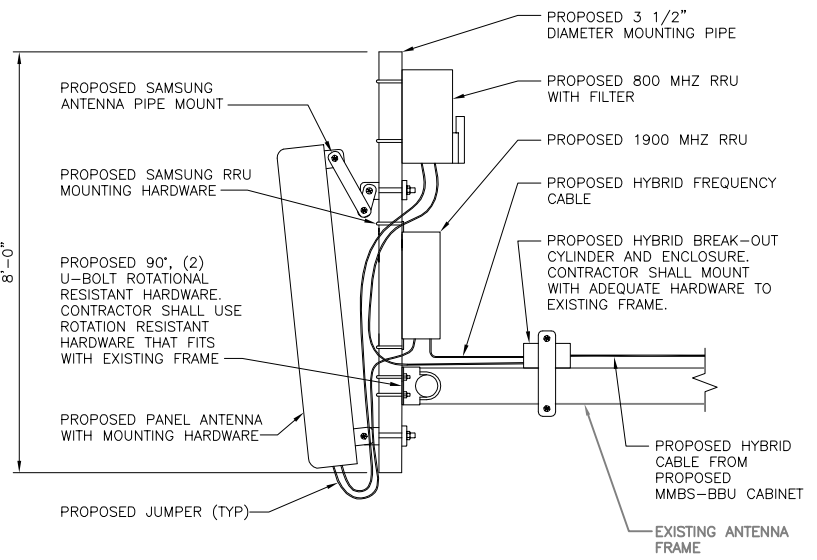
1. TOWER STRUCTURE ANALYSIS IS BEING PERFORMED BY OTHERS. SPRINT NETWORK VISION INSTALLATION SHALL NOT START UNTIL ENGINEER RECEIVES COPY OF APPROVED STRUCTURAL ANALYSIS OR ASSESSMENT.
2. CONTRACTOR RESPONSIBLE FOR PROVIDING TOWER RIGGING PLANS, SUBJECT TO OWNER APPROVAL.
3. REFER TO STRUCTURAL ANALYSIS FOR APPROVED COAX, HYBRID CABLE PLACEMENT.



CABLE ROUTING DETAIL

NO SCALE

B



800/1900 MHz ANTENNA MOUNTING/COAX ROUTING DETAIL

NO SCALE

C

DETAIL NOT USED

NO SCALE

D



PROJECT NO:	172862
DRAWN BY:	SAF
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F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
TOWER ELEVATION &  
COAX DETAILS

SHEET NUMBER  
**A-3**



**BLACK & VEATCH**



**IRISH TOWER, LLC**

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DRAWN BY:	SAF
CHECKED BY:	SEW

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**MS72XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

**SHEET TITLE  
ANTENNA / MICROWAVE  
SCHEDULE & LAYOUTS**

**SHEET NUMBER  
A-4**

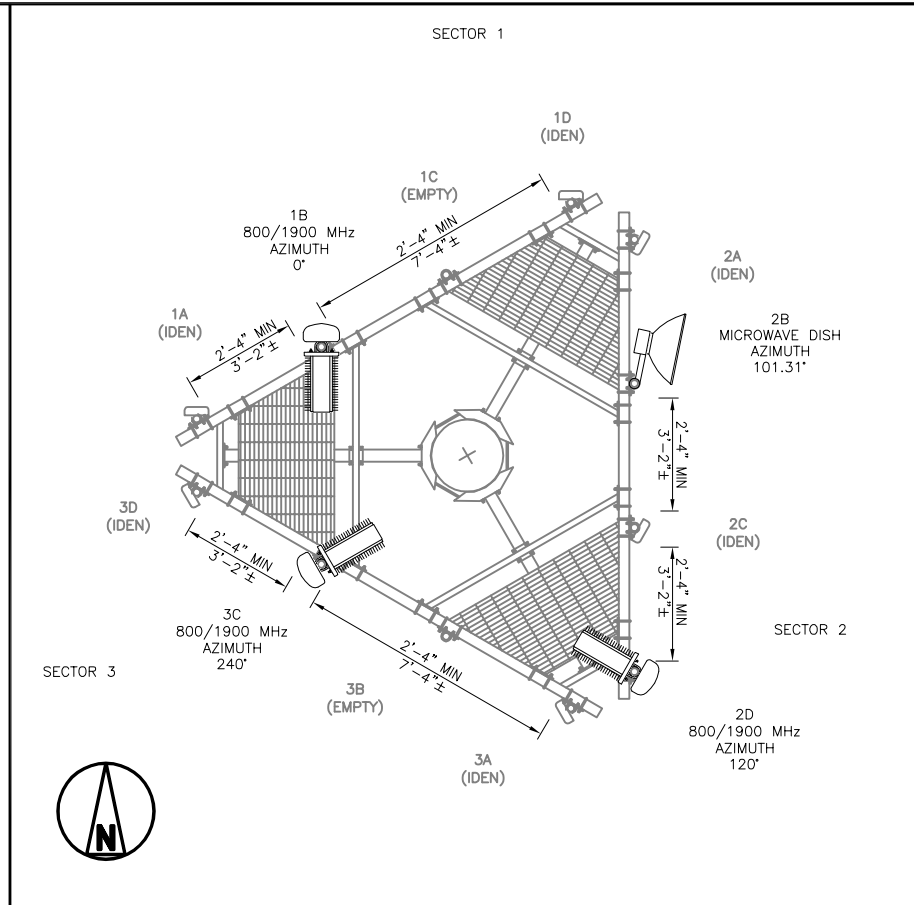
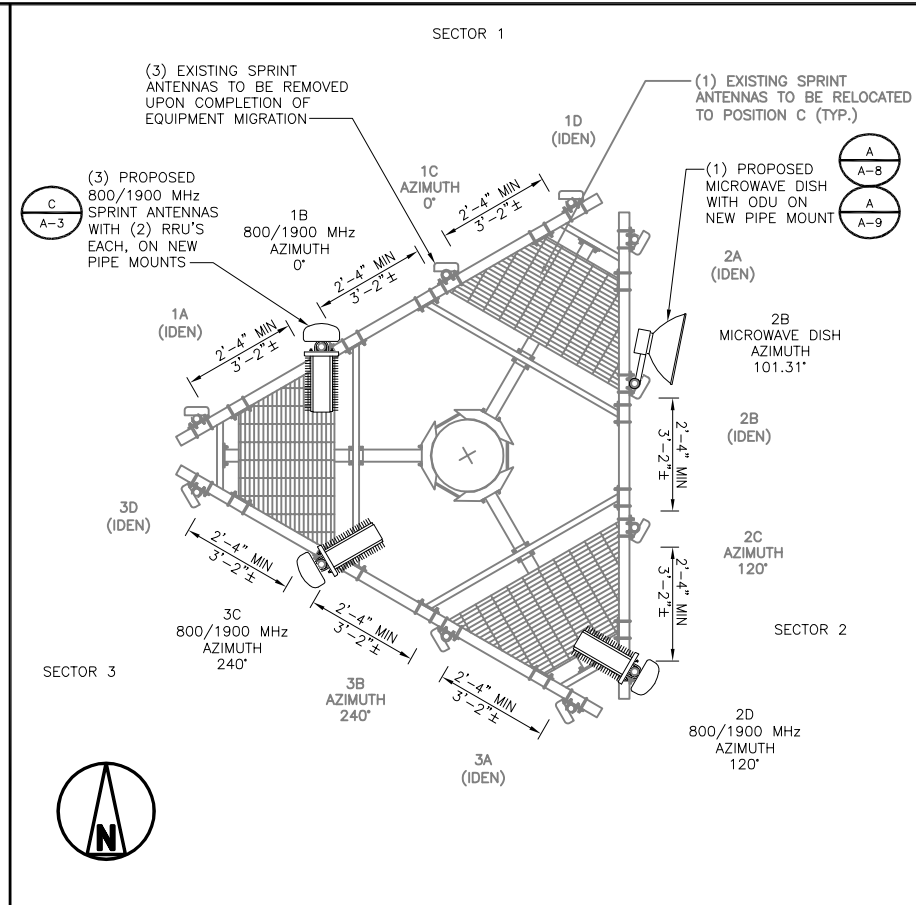
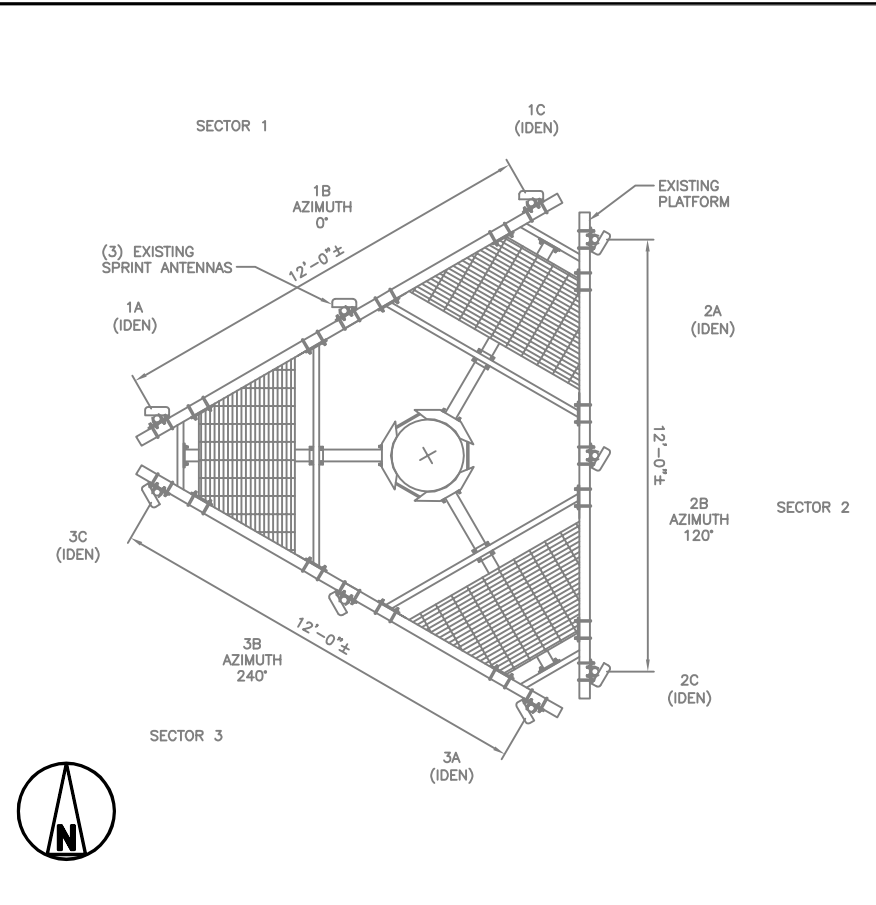
PROPOSED ANTENNA SCHEDULE																		
SECTOR	ANTENNA NUMBER	ANTENNA MANUFACTURER	ANTENNA MODEL	NUMBER OF HYBRID CABLES	AZIMUTH	RAD CENTER	ANTENNA GAIN	ELECT D-TILT	MECH TILT	EFF D-TILT	RRU MODEL	RRU FILTER	HYBRID CABLE LENGTH	JUMPER SIZE	JUMPER LENGTH	RET LENGTH	RET CABLE MANUFACTURER	RET CABLE MODEL NUMBER
1C	800/1900 MHz	POWERWAVE	P90-15-XLPP-RR	SAMSUNG HFC 1 (PER SECTOR)	0°	195'	14.5/16.8	3/1	0/0	3/1	RRH-C2A & RRH-P4	(1) 800 MHz FILTER	270'	1/2"	6'	9.8'	COMMSCOPE	ATCB-B01-003
2D	800/1900 MHz	POWERWAVE	P90-15-XLPP-RR	SAMSUNG HFC 1 (PER SECTOR)	120°	195'	14.5/16.8	2/6	0/0	2/6	RRH-C2A & RRH-P4	(1) 800 MHz FILTER	270'	1/2"	6'	9.8'	COMMSCOPE	ATCB-B01-003
3C	800/1900 MHz	POWERWAVE	P90-15-XLPP-RR	SAMSUNG HFC 1 (PER SECTOR)	240°	195'	14.5/16.8	7/5	0/0	7/5	RRH-C2A & RRH-P4	(1) 800 MHz FILTER	270'	1/2"	6'	9.8'	COMMSCOPE	ATCB-B01-003
-	GPS	PCTEL	GPS-TMG-HR-26NCM	1	-	-	-	-	-	-	-	-	-	1/2" (PCTEL LMR-400)	10'	-	-	-

**NOTES**

- EXISTING ANTENNAS ARE CDMA UNLESS NOTED OTHERWISE.
- DIMENSIONS OF EXISTING ANTENNAS SPACING OR PLATFORMS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY PRIOR TO START OF CONSTRUCTION (SEE GENERAL NOTES, SHEETS GN-1 AND GN-2).
- PROPOSED SPRINT ANTENNAS INCLUDE RESPECTIVE RRU'S WHICH SHALL BE MOUNTED ON THE PIPE BEHIND THE ANTENNA SIMILAR TO THAT SHOWN ON DETAIL C, SHEET A-3.
- FIELD TO VERIFY EXISTING AZIMUTH BEFORE RELOCATING THE ANTENNA, IF REQUIRED. PRIOR APPROVAL FROM SPRINT TO BE GRANTED BEFORE RELOCATION OF ANTENNAS.
- FOR HYBRID CABLE DIAMETER REFER TO HYBRID CABLE TYPE DETAIL ON SHEET E-2, DETAIL C. SIZE WILL VARY BASED ON LENGTH OF RUN.
- EFFECTIVE TILT = MECHANICAL TILT + ELECTRICAL TILT.

PROPOSED MICROWAVE DISH SCHEDULE													
SECTOR	DISH NUMBER	PATH NUMBER	MICROWAVE MODEL	(GHz)	ODU		AZIMUTH	RAD CENTER	DIAMETER	COAX			PIPE MOUNT O.D.
					QUANTITY	MODEL				NUMBER	SIZE	LENGTH	
2B	MICROWAVE (1)	MS72XC286	VHLP2-11W (TR)	11	1	QUANTUM	101.31°	195'	2'-0"	1	LMR 400 3/8"	270'	3.5"

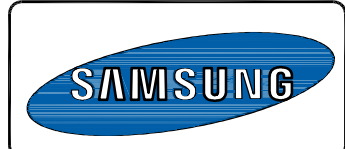
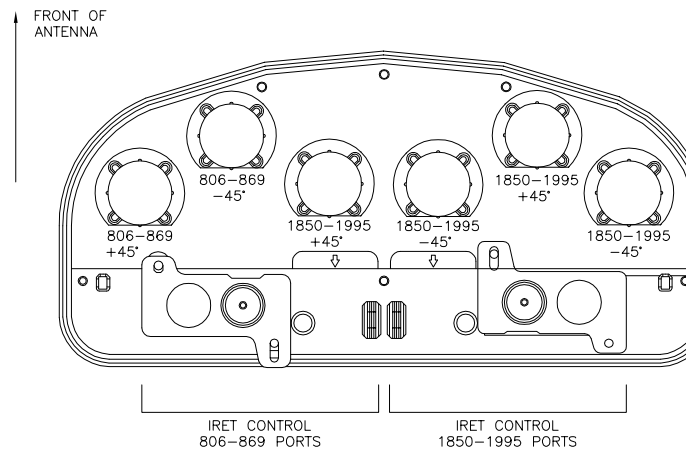
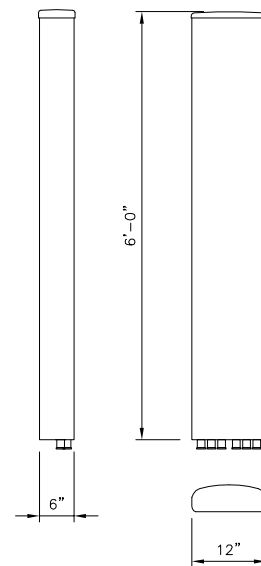
**ANTENNA/MICROWAVE SCHEDULES**



EXISTING ANTENNA LAYOUT	NO SCALE	A	INTERIM ANTENNA LAYOUT	NO SCALE	B	FINAL ANTENNA LAYOUT	NO SCALE	C
-------------------------	----------	---	------------------------	----------	---	----------------------	----------	---

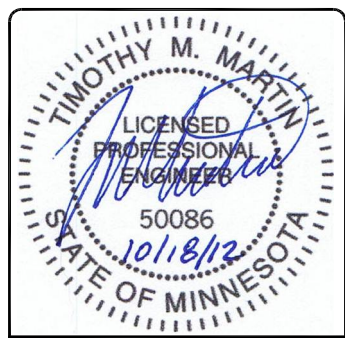
**POWERWAVE ANTENNA P90-15-XLPP-RR**

DIMENSIONS, HxWxD: 1828x305x152mm (72"x12"x6")  
 WEIGHT, WITH PRE-MOUNTED BRACKETS: 50 lbs  
 CONNECTOR: (6) 7/16 DIN FEMALE



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 F1/MN0330-WITHROP  
 19900 MANNING TRAIL N  
 STILLWATER, MN 55082**

SHEET TITLE  
**EQUIPMENT DETAILS**

SHEET NUMBER  
**A-5**

DETAIL NOT USED

NO SCALE

A

PROPOSED ANTENNA SPECIFICATIONS

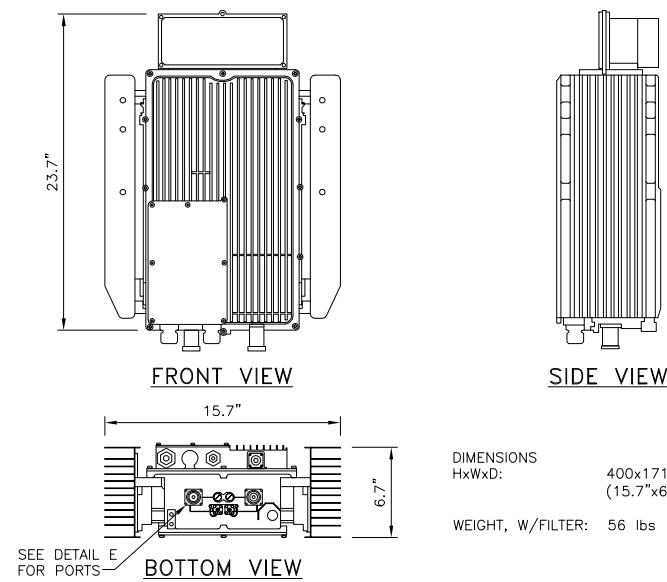
NO SCALE

B

800/1900 MHz ANTENNA PORT CONFIGURATION

NO SCALE

C



800 MHz RRU MECHANICAL SPECIFICATIONS

NO SCALE

D

800 MHz RRU BOTTOM VIEW

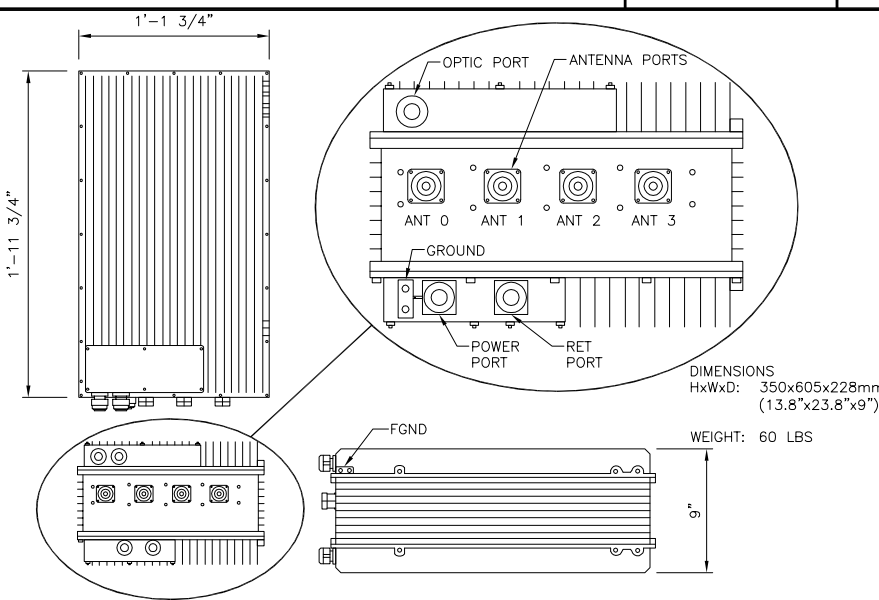
NO SCALE

E

800 MHz RRU WALL MOUNT INSTALLATION DETAIL

NO SCALE

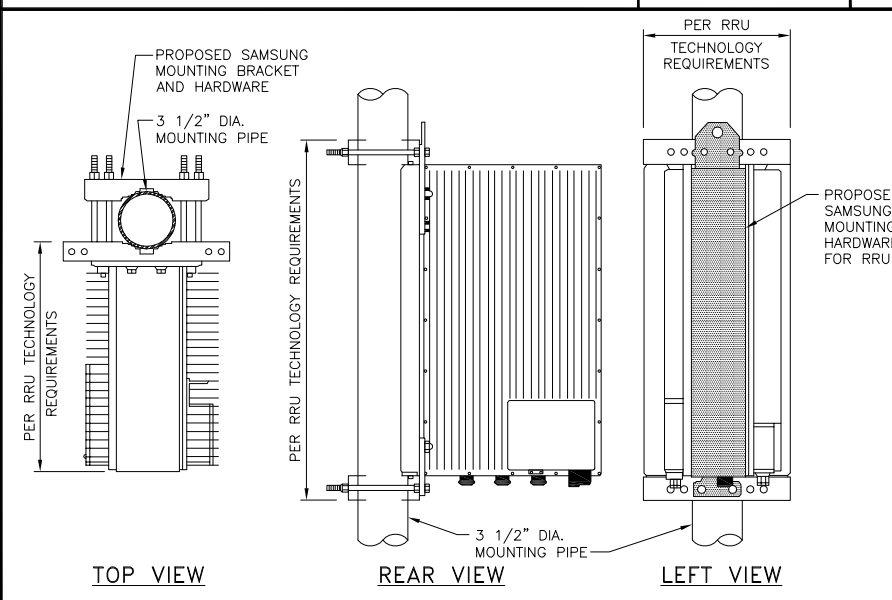
F



1900 MHz RRU MECHANICAL SPECIFICATIONS

NO SCALE

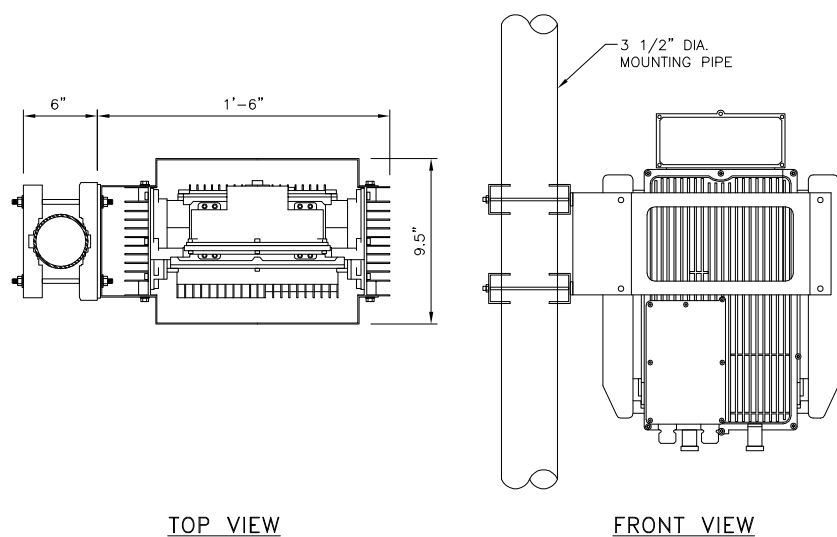
H



800 MHz RRU POLE MOUNT INSTALLATION DETAIL

NO SCALE

I

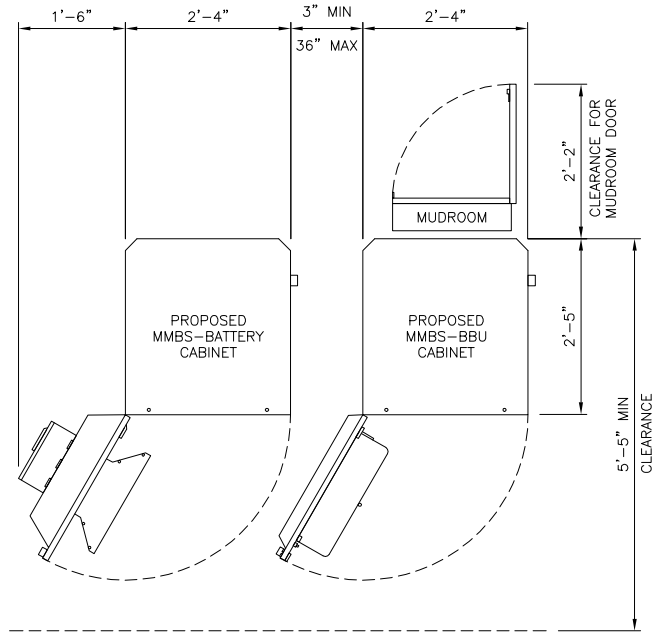


800 MHz RRU POLE MOUNT INSTALLATION DETAIL

NO SCALE

G

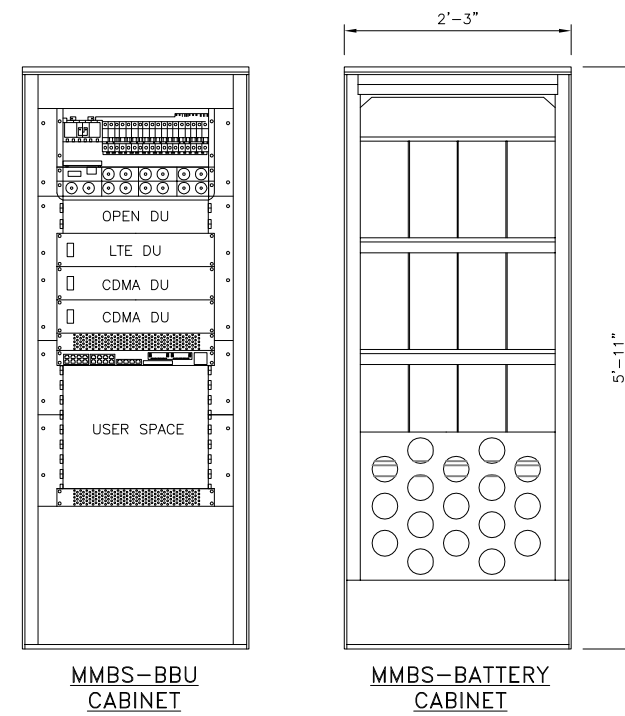




INTERIM MMBS TYPICAL FLOOR PLAN

NO SCALE

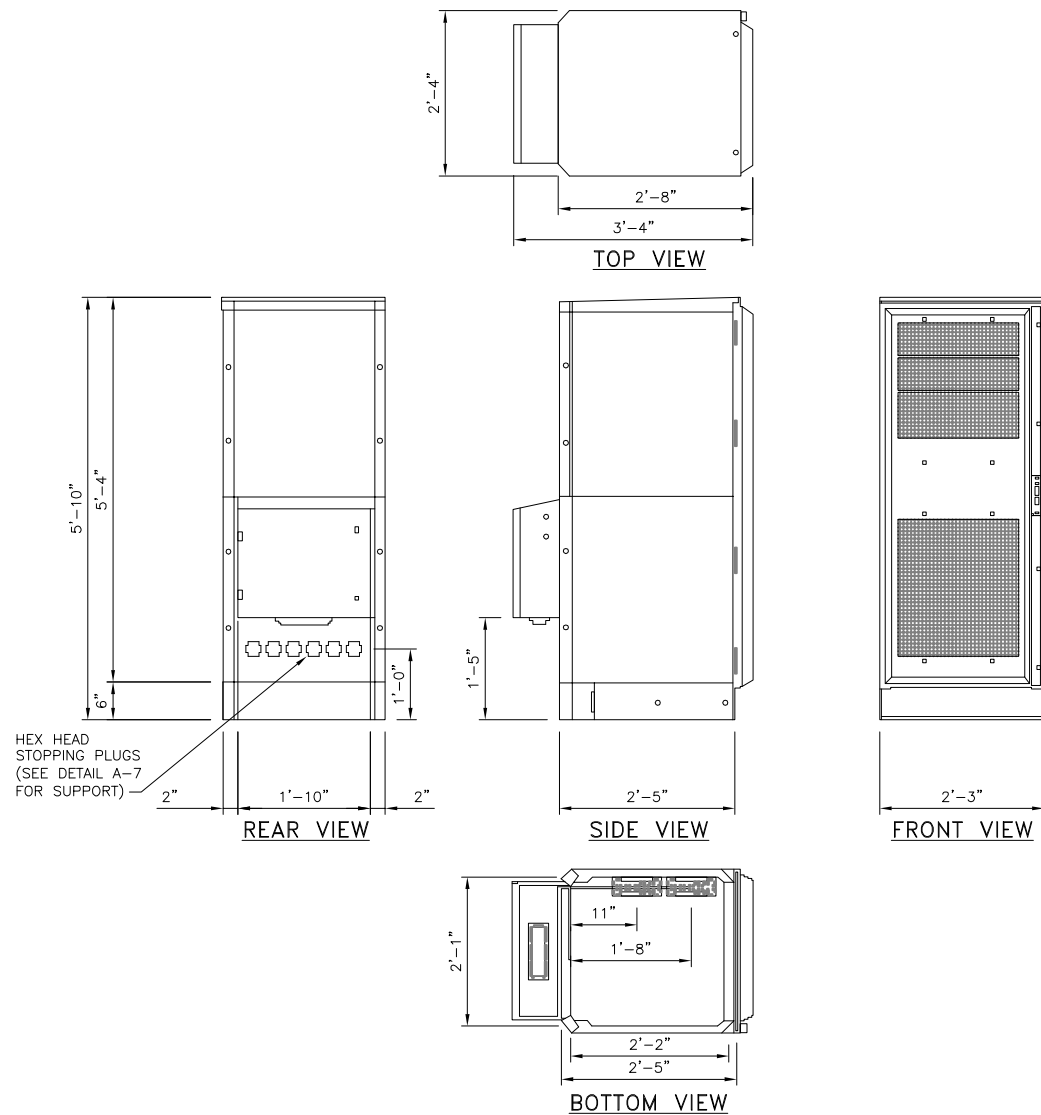
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FINAL INDOOR MMBS-BBU AND BATTERY CABINETS

NO SCALE

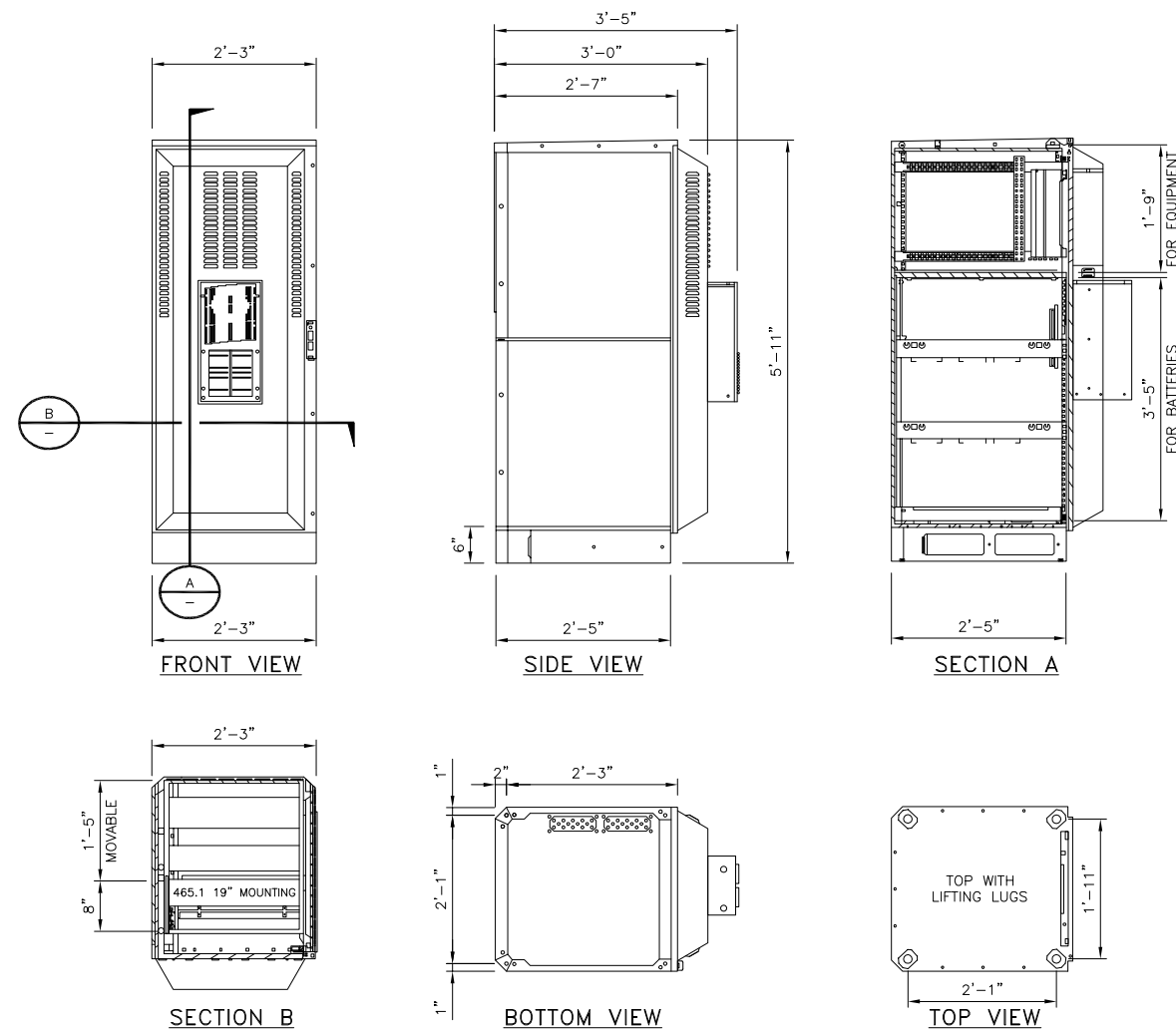
B



INTERIM MMBS-BBU MECHANICAL SPECIFICATIONS

NO SCALE

C



INTERIM MMBS-BATTERY CABINET

NO SCALE

D



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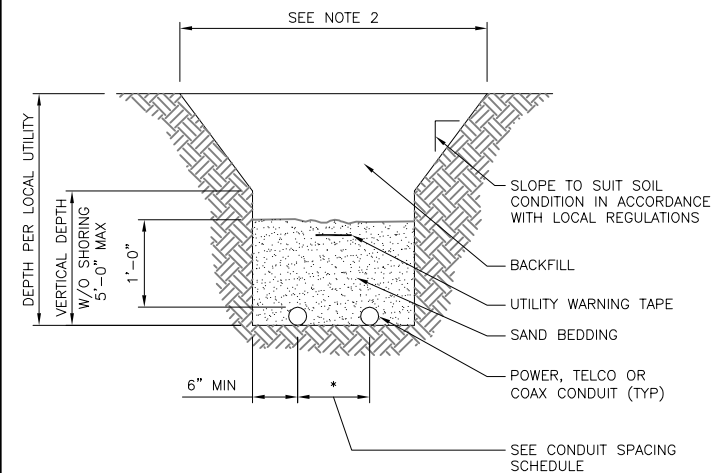
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-6**

CONDUIT SPACING SCHEDULE		
CONDUIT #1	MINIMUM CONDUIT SEPARATION	CONDUIT #2
POWER	* = 6 INCHES	POWER
POWER	* = 12 INCHES	TELCO, COMMUNICATIONS & CONTROL CIRCUITS
TELCO, COMMUNICATIONS & CONTROL CIRCUITS	* = 6 INCHES	TELCO, COMMUNICATIONS & CONTROL CIRCUITS

**NOTES**

- MULTIPLE CONDUITS CAN BE PLACED IN THE SAME TRENCH AS LONG AS A MINIMUM SEPARATION PER THE LOCAL UTILITY COMPANIES IS MAINTAINED.
- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.

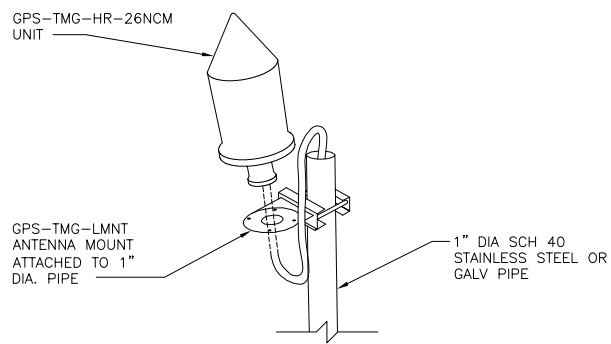


"ONE CALL" SERVICE SHALL BE CALLED PRIOR TO EXCAVATION

TYPICAL UTILITY TRENCH DETAIL

NO SCALE

A



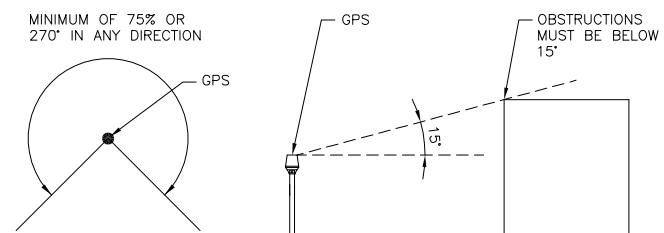
**NOTES**

- THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES, 8'-0" IF MOUNTING TO PROPOSED MMBS-BBU) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED.
- IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
- DO NOT SWEEP TEST GPS ANTENNA.
- ATTACH GPS MOUNTING PIPE TO PROPOSED MMBS-BBU USING (4) 8MMx15MM SS BOLTS AND (4) 1" PIPE STRAPS. GPS TO BE MOUNTED A MINIMUM OF 2'-0" ABOVE PROPOSED MMBS-BBU CABINET.

GPS UNIT PIPE MOUNT

NO SCALE

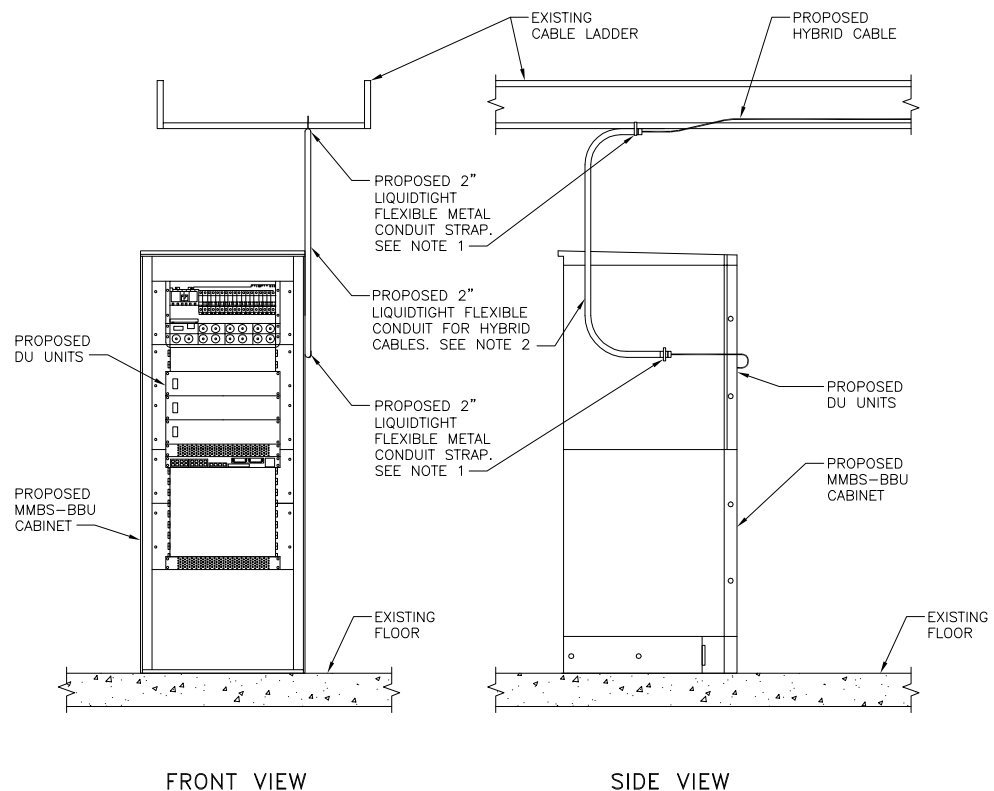
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GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

C



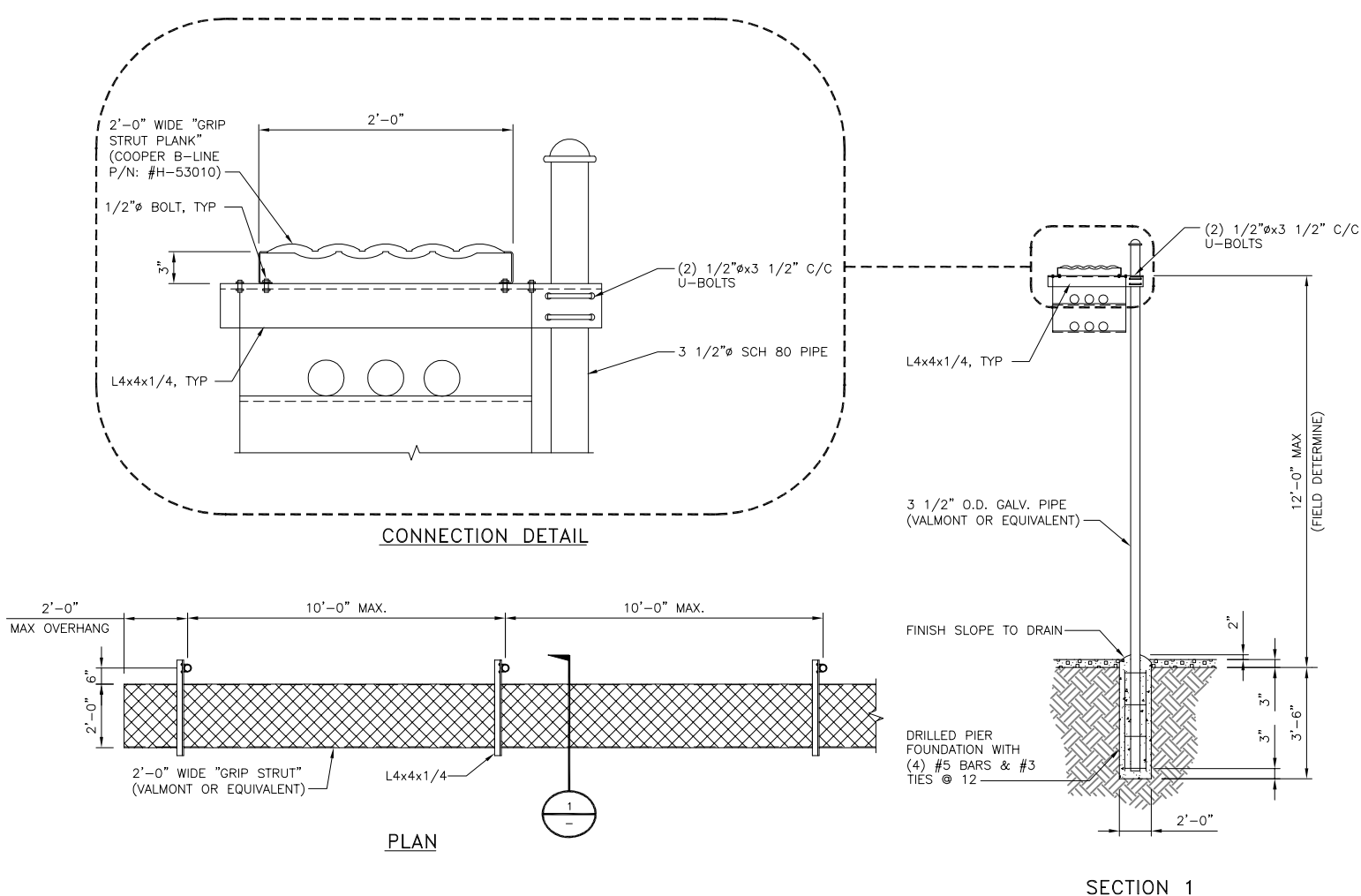
**NOTES**

- PROPOSED LIQUIDTIGHT FLEXIBLE METAL CONDUIT FROM CABLE LADDER TO CABINET SUPPORT SHALL BE STRAPPED AT TOP AND BOTTOM AT INTERVALS NOT EXCEEDING 3'-0".
- LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE ROUTED FROM CABLE TRAY TO EQUIPMENT CABINET TO SUPPORT HYBRID CABLES.

HYBRID AND TELCO LINE SUPPORT DETAIL

NO SCALE

D



ICE BRIDGE LAYOUT

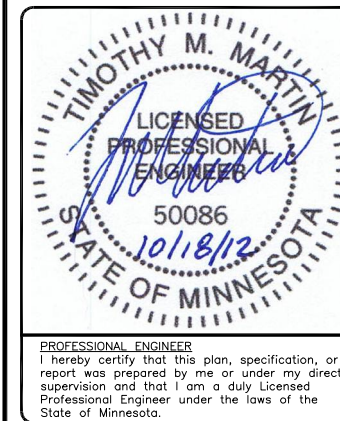
NO SCALE

E



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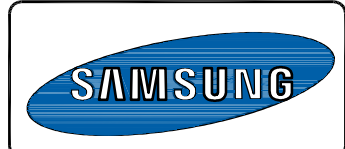
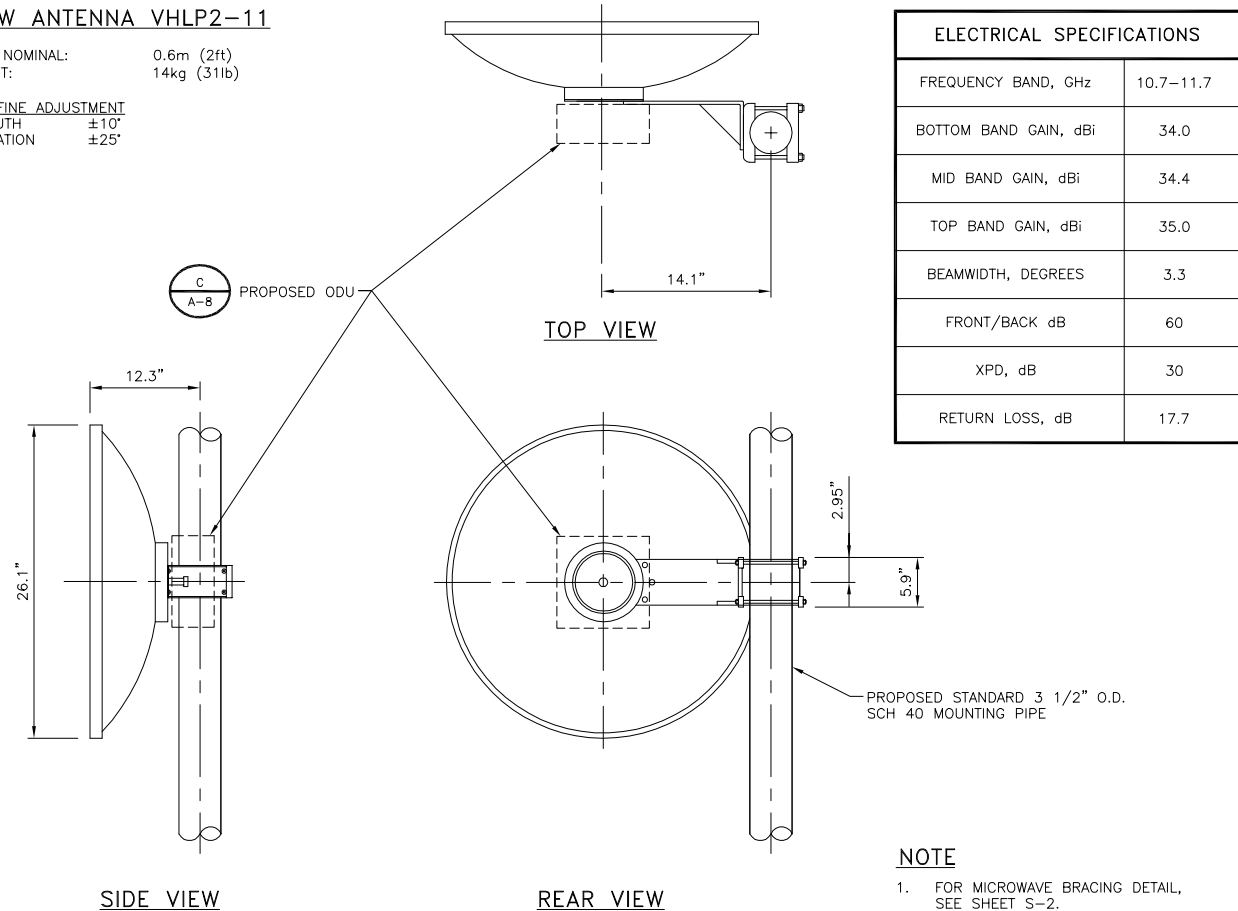
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-7

**ANDREW ANTENNA VHL2-11**

DIAMETER, NOMINAL: 0.6m (2ft)  
 NET WEIGHT: 14kg (31lb)

ANTENNA FINE ADJUSTMENT  
 FINE AZIMUTH ±10°  
 FINE ELEVATION ±25°



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SHEET TITLE  
 EQUIPMENT DETAILS

SHEET NUMBER  
**A-8**

PROPOSED 2'-0" MICROWAVE SPECIFICATIONS

NO SCALE A

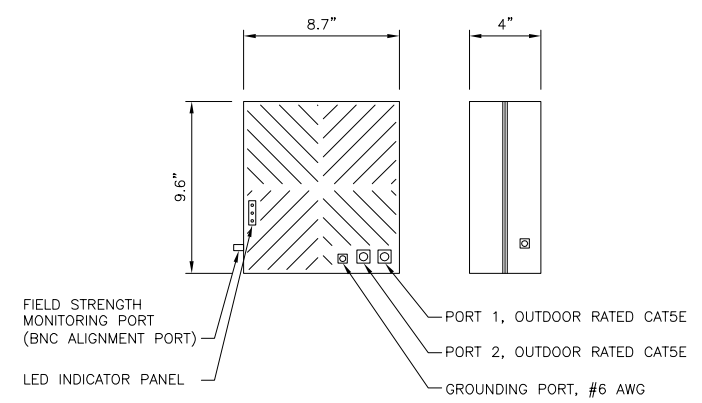
DETAIL NOT USED

NO SCALE B

**HORIZON COMPACT PLUS, OUTDOOR RADIO UNIT**

RADIO DIMENSIONS: 10.2cm x 24.3cm x 22.1cm (4"x9.6"x8.7")  
 RADIO NET WEIGHT: 3.4kg (7.5lbs)

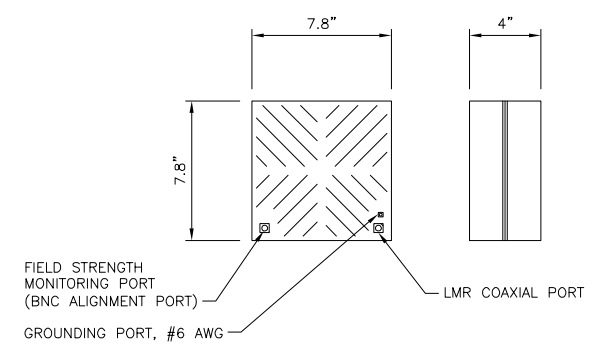
ANTENNA FINE ADJUSTMENT  
 FINE AZIMUTH ±45°  
 FINE ELEVATION ±22°  
 CABLING: SHIELDED, OUTDOOR RATED CAT5E CABLE



**HORIZON QUANTUM, OUTDOOR RADIO UNIT**

RADIO DIMENSIONS: 20cm x 20cm x 9cm (7.8"x7.8"x3.6")  
 RADIO NET WEIGHT: 3.2kg (7lbs)

ANTENNA FINE ADJUSTMENT  
 FINE AZIMUTH ±45°  
 FINE ELEVATION ±22°  
 CABLING: LMR, COAXIAL CABLE

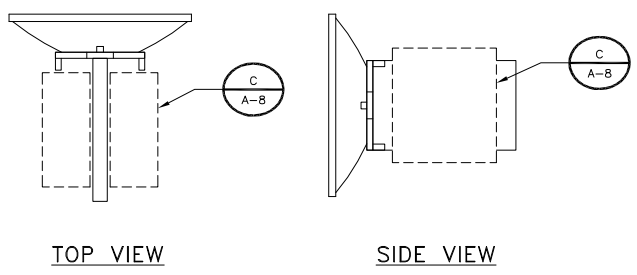


ODU SPECIFICATIONS

NO SCALE C

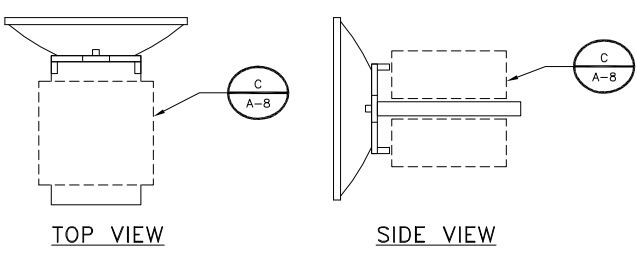
**DPRM (DUAL POLE RADIO MOUNT)**

DIMENSIONS: 7.5"x7.5"x12"  
 NET WEIGHT: 4kg (9lbs)



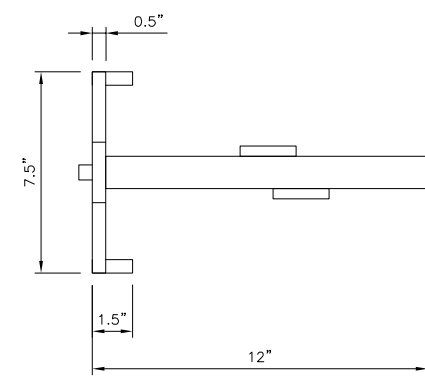
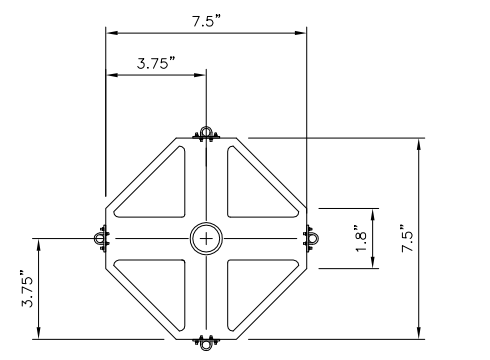
**PSRM (POLE SPLIT RADIO MOUNT)**

DIMENSIONS: 7.5"x7.5"x12"  
 NET WEIGHT: 4kg (9lbs)



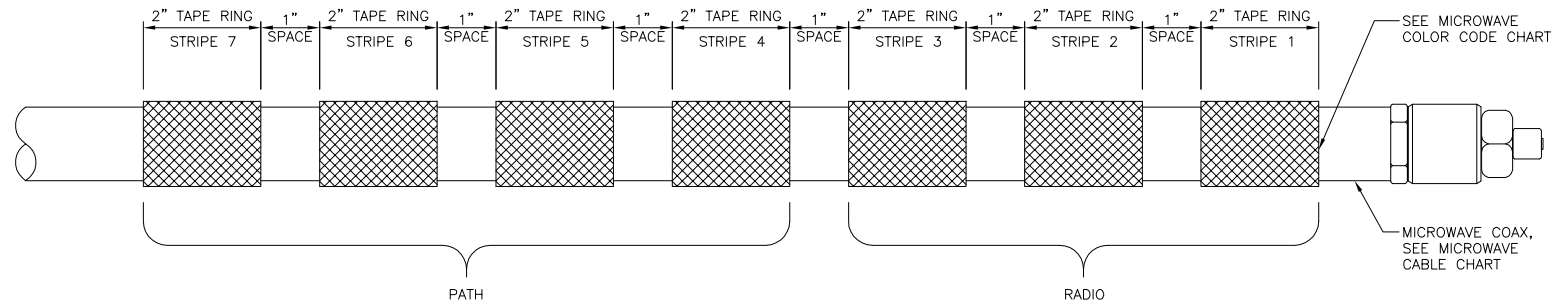
ODU MOUNTING SPECIFICATIONS

NO SCALE D

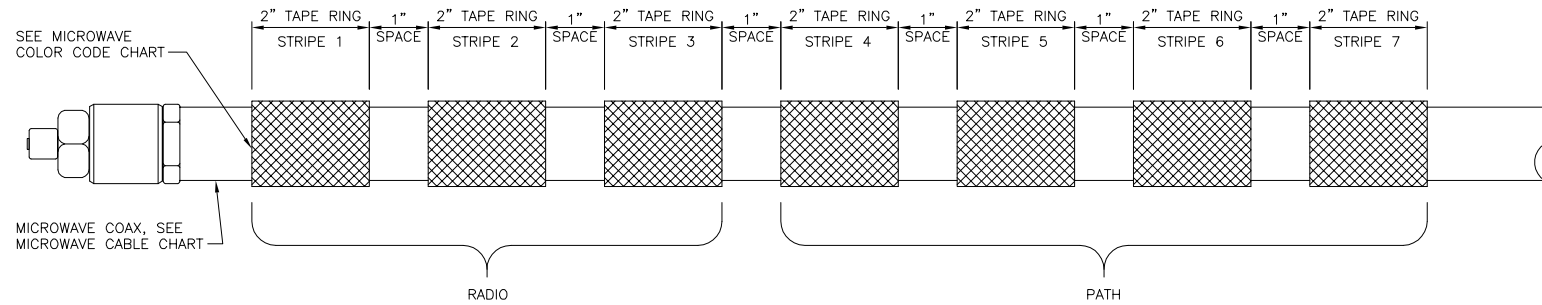


MICROWAVE CABLE CHART			
CABLE TYPE (TIMES MICROWAVE)	OUTER DIAMETER	DUAL MODEM, SINGLE IF (20dB) (WITH COMBINER)	DUAL MODEM, DUAL IF (24dB) (NO COMBINER)
LMR-400	3/8"	301'	367'
LMR-600	9/16"	462'	564'
LMR-900	7/8"	683'	835'

MICROWAVE COLOR CODE CHART										
DISH NUMBER	PATH NUMBER	RADIO NUMBER	PATH				RADIO			
			STRIPE 7 MSB	STRIPE 6	STRIPE 5	STRIPE 4	STRIPE 3	STRIPE 2	STRIPE 1 LSB	
1	MS72XC286		PURPLE	PURPLE	PURPLE	PURPLE	PURPLE	PURPLE	PURPLE	PURPLE



MICROWAVE COAX CONNECTION AT MICROWAVE



MICROWAVE COAX CONNECTION AT MMBS CABINET

**NOTES**

1. ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE OR STENCIL TAG. COLOR TAPE SHALL BE OBTAINED FROM GRAYBAR ELECTRIC.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM AN END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER, WITH 1" SPACE BETWEEN EACH RING.
3. THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE CABLE AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.

MICROWAVE COAX HORIZON QUANTUM DUAL BAND RADIO COLOR SCHEME DETAIL

NO SCALE

A

DETAIL NOT USED

NO SCALE

B



PROJECT NO:	172862
DRAWN BY:	SAF
CHECKED BY:	SEW

REV	DATE	DESCRIPTION
1	10/17/12	100% ISSUED FOR CONSTRUCTION
0	10/03/12	100% ISSUED FOR CONSTRUCTION
B	10/01/12	90% ISSUED FOR PERMITTING
A	07/23/12	90% ISSUED FOR REVIEW



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**MS72XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
EQUIPMENT DETAILS

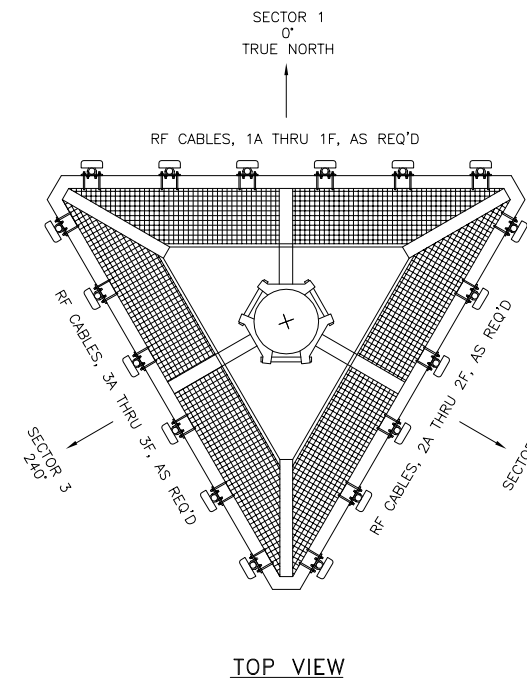
SHEET NUMBER  
**A-9**

FREQUENCY COLOR CODE FOR PAIRS AND FIBER CABLES OF HYBRID CABLE		
FREQUENCY COLOR CODE	FIRST RING	SECOND RING
800 MHz	YELLOW	GREEN
1900 MHz	YELLOW	RED
1900 MHz	YELLOW	BROWN

TYPICAL HYBRID CABLE 1 COLOR CODE			
SECTOR	FIRST RING	SECOND RING	THIRD RING
1	GREEN	NO TAPE	NO TAPE
2	GREEN	GREEN	NO TAPE
3	GREEN	GREEN	GREEN

TYPICAL HYBRID CABLE 2 COLOR CODE			
SECTOR	FIRST RING	SECOND RING	THIRD RING
1	BLUE	NO TAPE	NO TAPE
2	BLUE	BLUE	NO TAPE
3	BLUE	BLUE	BLUE

TYPICAL JUMPER CABLE COLOR CODE						
FREQUENCY	ANTENNA PORT	RRU PORT	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4
800 MHz	RET	RET	PURPLE	PURPLE/PURPLE	PURPLE/PURPLE/PURPLE	PURPLE/PURPLE/PURPLE/PURPLE
	800 MHz +45°	ANT 1	WHITE	WHITE/WHITE	WHITE/WHITE/WHITE	WHITE/WHITE/WHITE/WHITE
	800 MHz -45°	ANT 0	BLUE	BLUE/BLUE	BLUE/BLUE/BLUE	BLUE/BLUE/BLUE/BLUE
1900 MHz	PCS1 -45°	ANT 0	BLUE	BLUE/BLUE	BLUE/BLUE/BLUE	BLUE/BLUE/BLUE/BLUE
	PCS1 +45°	ANT 1	WHITE	WHITE/WHITE	WHITE/WHITE/WHITE	WHITE/WHITE/WHITE/WHITE
	PCS2 -45°	ANT 2	GREEN	GREEN/GREEN	GREEN/GREEN/GREEN	GREEN/GREEN/GREEN/GREEN
	PCS2 +45°	ANT 3	BROWN	BROWN/BROWN	BROWN/BROWN/BROWN	BROWN/BROWN/BROWN/BROWN
	RET	RET	ORANGE	ORANGE/ORANGE	ORANGE/ORANGE/ORANGE	ORANGE/ORANGE/ORANGE/ORANGE



HYBRID AND JUMPER CABLES COLOR CODING

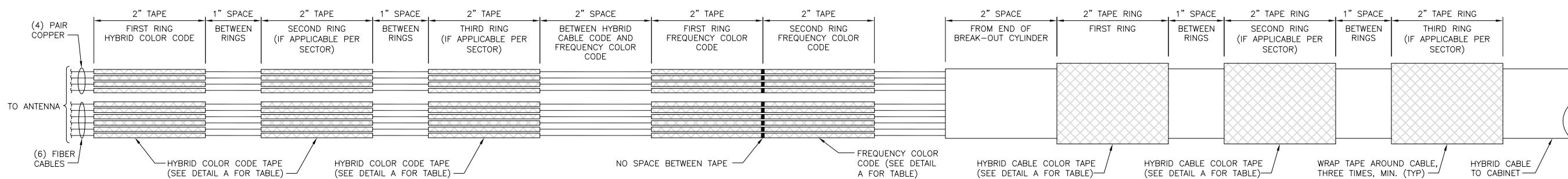
NO SCALE

A

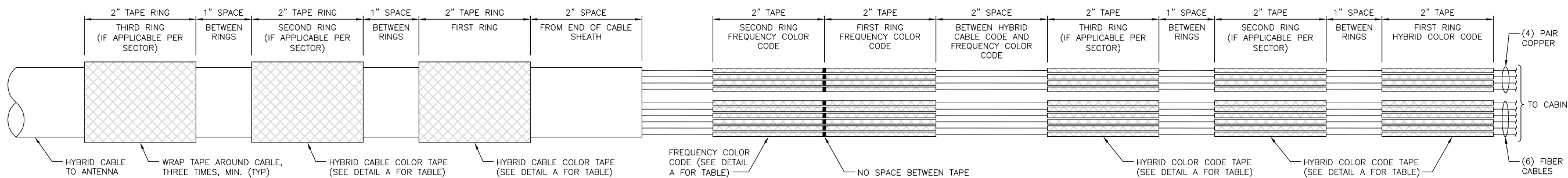
ANTENNA SECTOR AND CABLE COLOR DEFINITION DETAIL

NO SCALE

B



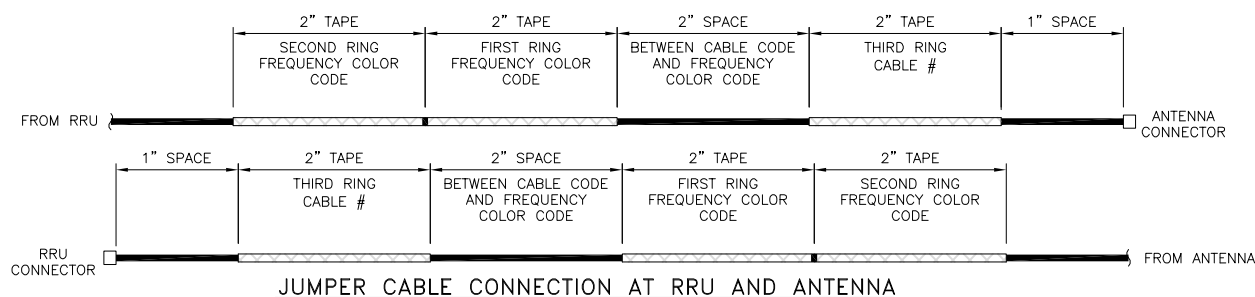
HYBRID CABLE CONNECTION AT ANTENNA



HYBRID CABLE CONNECTION AT CABINET

NOTES

- ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE OR STENCIL TAG. COLOR TAPE SHALL BE OBTAINED FROM GRAYBAR ELECTRIC.
- THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM AN END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER, WITH 1" SPACE BETWEEN EACH RING.
- THE HYBRID CABLE COLOR SHALL BE APPLIED IN ACCORDANCE WITH THE "TYPICAL HYBRID CABLE COLOR CODE" TABLE ABOVE FOR THE RESPECTIVE SECTOR.
- INDIVIDUAL POWER PAIRS AND FIBER CABLES SHALL BE LABELED WITH BOTH THE HYBRID CABLE COLOR FOR THE RESPECTIVE SECTOR AND A FREQUENCY COLOR CODE IN ACCORDANCE WITH THE "FREQUENCY COLOR CODE FOR PAIRS AND FIBER CABLES OF HYBRID CABLE" TABLE ABOVE.
- A 2" GAP SHALL SEPARATE THE HYBRID CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE.
- THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
- THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE HYBRID CABLE OR INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
- COLOR BAND ON JUMPERS SHALL BE 1" WIDE WITH A 1" SPACE.



JUMPER CABLE CONNECTION AT RRU AND ANTENNA

HYBRID CABLE COLOR SCHEME DETAIL

NO SCALE

C

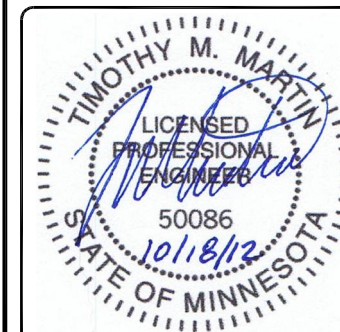


PROJECT NO: 172862

DRAWN BY: SAF

CHECKED BY: SEW

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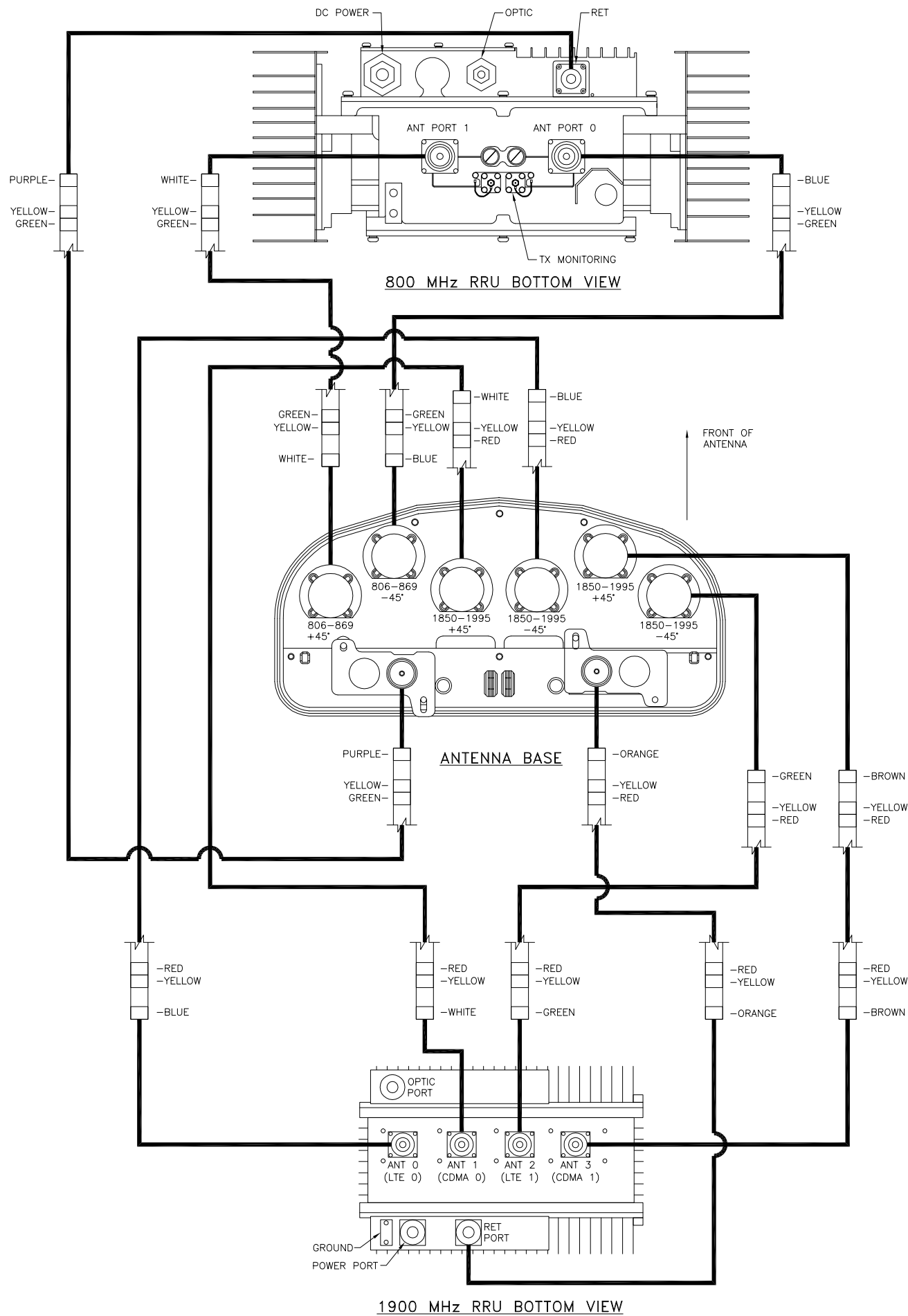


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**MS72XC330-A  
F1/MN0330-WITHROP  
1990 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
**ANTENNA & CABLE COLOR CODING DETAILS**

SHEET NUMBER  
**RF-1**



SECTOR 1 - POWERWAVE ANTENNA/RRU JUMPER SCHEMATIC

NO SCALE

A



PROJECT NO:	172862
DRAWN BY:	SAF
CHECKED BY:	SEW

REV	DATE	DESCRIPTION
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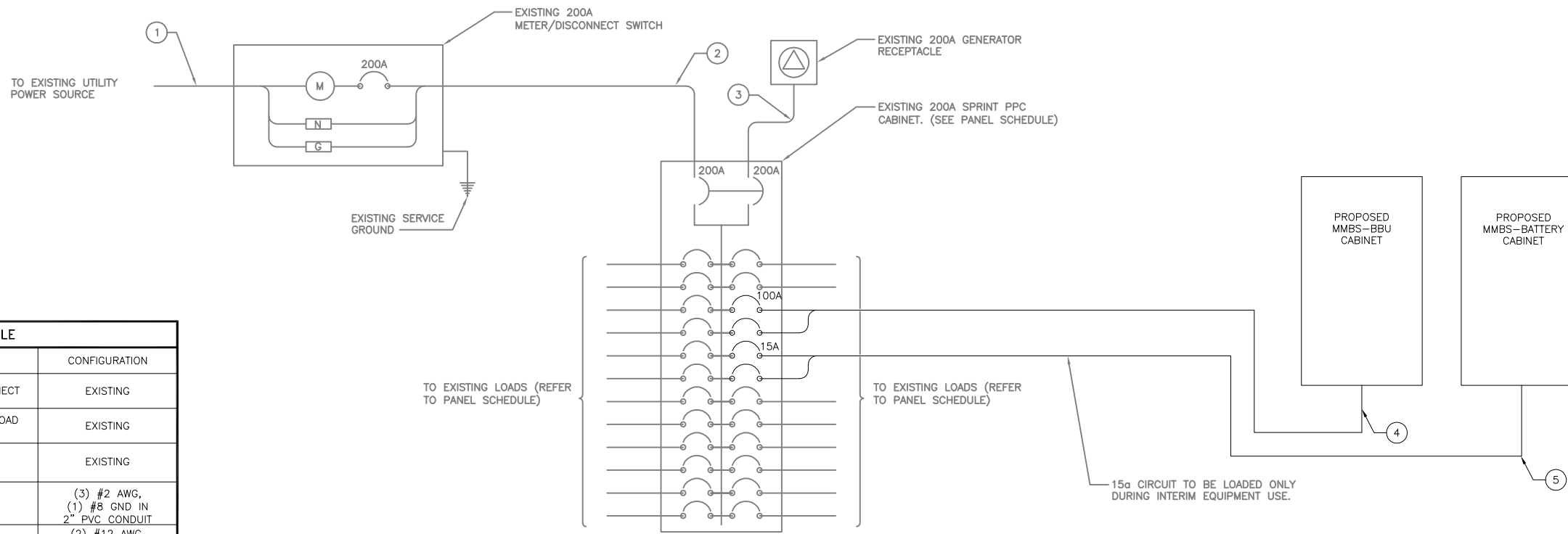


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**MS72XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
ANTENNA/RRU JUMPER SCHEMATIC

SHEET NUMBER  
**RF-2**



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	PROPOSED MMBS-BBU CABINET	(3) #2 AWG, (1) #8 GND IN 2" PVC CONDUIT
5	TRANSFER & LOAD CENTER	PROPOSED MMBS-BATTERY CABINET	(2) #12 AWG, (1) #12 GND IN 3/4" CONDUIT

ELECTRICAL ONE-LINE DIAGRAM

NO SCALE

A

ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL LOCAL AND STATE CODE, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
- CONTRACTOR SHALL COORDINATE WITH LOCAL POWER COMPANY FOR REQUIREMENTS OF POWER SERVICE LINE TO THE METER BASE. POWER SERVICE REQUIREMENT IS COMMERCIAL AC NOMINAL 120/208 VOLT OR 120/240 VOLT, SINGLE PHASE WITH 200 AMP RATING.
- CONTRACTOR SHALL COORDINATE WITH LOCAL TELEPHONE COMPANY FOR REQUIREMENTS OF "T1" SERVICE LINE TO TERMINATE AT THE PPC CABINET.
- UNDERGROUND POWER AND TELCO SERVICE LINES SHALL BE ROUTED IN A COMMON TRENCH. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 AND CONDUIT EXPOSED ABOVE GROUND SHALL BE RIGID GALVANIZED STEEL UNLESS OTHERWISE INDICATED.
- ALL TELCO CONDUIT LINES SHALL BE 4" SCH. 40 PVC CONDUIT UNLESS OTHERWISE INDICATED. THE TELCO CONDUIT FROM THE PPC SHALL BE ROUTED AND TERMINATED AT DESIGNATED TELCO DEMARICATION OR 2- FEET OUTSIDE FENCED AREA, NEAR UTILITY POLE (IN FENCED AREA), OR END CAP OFF AND PROVIDE MARKER STAKE PAINTED BRIGHT ORANGE WITH DESIGNATION FOR TELCO SERVICE.
- CONDUITS INSTALLED AT PCS EQUIPMENT ENDS PRIOR TO THE EQUIPMENT INSTALLATION SHALL BE STUBBED AND CAPPED AT 6" ABOVE GRADE OR PLATFORM. IF SERVICE LINES CAN'T BE INSTALLED INITIALLY, PROVIDE NYLON PULL CORD IN CONDUITS.
- THE SPRINT CABINET, INCLUDING 200 AMP LOAD PANEL AND TELCO PANEL, SHALL BE PROVIDED BY OWNER AND INSTALLED BY THE CONTRACTOR. CONTRACTOR IS TO INSTALL BREAKER(S) NOT PROVIDED BY MANUFACTURER. SEE PANEL SCHEDULE ON THIS SHEET FOR BREAKER REQUIREMENTS.
- LOCATION OF ELECTRIC METER AND DISCONNECT SWITCH TO BE COORDINATED BY ELECTRICAL CONTRACTOR AND FIELD CONSTRUCTION MANAGER.
- #2 WIRE TO BE UTILIZED IN ELECTRIC SERVICE RUNS EXCEEDING 100'.
- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROUGH-IN.

ELECTRICAL NOTES (CON'T)

- THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
- PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
- ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH NEC TABLE 346-10. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
- ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
- ALL WIRE SHALL BE TYPE THWN, SOLID, ANNEALED COPPER UP TO SIZE #10 AWG (#8 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C, (167 DEGREES F), 98% CONDUCTIVITY, MINIMUM #12.
- ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES, J-BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY, OR APPROVED EQUAL.
- ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION TO CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
- ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN NOT HAND WRITTEN.
- INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.
- THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS, DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
- ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS.)
- ALL ELECTRICAL DEVICES AND INSTALLATIONS OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
- PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTION MANAGERS APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.
- ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT (THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS).
- LOCATION OF ALL OUTLET, BOXES, ETC., AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.
- SPLIT BREAKERS SHALL BE USED ON 120V LOADS IN THE EVENT THAT ADDITIONAL CIRCUIT SPACE IS REQUIRED FOR PROPOSED EQUIPMENT.
- PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENT ON E-1 REFLECTS MIGRATION PERIOD CIRCUMSTANCES. REFER TO E-4 FOR POST-MIGRATION PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENT IN WHICH EXISTING LEGACY EQUIPMENT HAS BEEN REMOVED.

SHEET NUMBER:		M572XC330		MODEL NUMBER:		TBD		WIRE:		3						
VOLTAGE:		240V/120		PHASE:		1		AIC:		TBD						
MAIN BREAKER:		200 AMP		BUS RATING:		200 AMPS		GROUND BAR:		TBD						
MOUNT:		SURFACE		NEUTRAL BAR:		YES		GROUND BAR:		TBD						
ENCLOSURE TYPE:		NEMA 3R		INTERNAL TVSS:		TBD										
PANEL STATUS:		EXISTING														
CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER AMPS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	RET #1	30	2	ON	7000	1.25	8750		1.00	0	ON	2	30		RET #2	2
3		30	2	ON	7000	1.25	8750		1.00	0	ON	2	30			4
5	RET #3	30	2	ON	0	0.00	400		1.00	400	ON	2	30		RET #4	6
7		30	2	ON	0	0.00	400		1.00	400	ON	2	30			8
9	RET #5	30	2	ON	960	1.00	1140		1.00	180	ON	2	30		RET #6	10
11		30	2	ON	200	1.00	700		1.00	500	ON	2	30			12
13	RET #7	30	2	ON	7000	1.25	8750		1.00	0	ON	2	30		RET #8	14
15		30	2	ON	7000	1.25	8750		1.00	0	ON	2	30			16
17	CDMA	30	2	ON	0	0.00	400		1.00	400	ON	2	30		CDMA	18
19		30	2	ON	0	0.00	400		1.00	400	ON	2	30			20
21	HVAC #1	60	2	ON	960	1.00	1140		1.00	180	ON	2	35		HVAC #2	22
23		60	2	ON	200	1.00	700		1.00	500	ON	2	35			24
25	HVAC #3	35	2	ON	960	1.00	1140		1.00	180	ON	2	60		SURGE ARRESTOR	26
27		35	2	ON	200	1.00	700		1.00	500	ON	2	60			28
29	GENERATOR	20	2	ON	0	0.00	400		1.00	400	ON	1	20		LIGHTING	30
31		20	2	ON	0	0.00	400		1.00	400	ON	1	20		SMOKE DETECTOR	32
33	RECEPTACLE	20	1	ON	960	1.00	7960		1.00	7000	ON	2	100		SAMSUNG MMBU CABINET	34
35	RECEPTACLE	20	1	ON	200	1.00	7200		1.00	7000	ON	2	100			36
37	RECEPTACLE	20	2	ON	960	1.00	1140		1.00	180	ON	2	15		SAMSUNG BATT FAN	38
39	RECEPTACLE	20	2	ON	200	1.00	700		1.00	500	ON	2	20		RECEPTACLE	40
POST-MIGRATION PERIOD LOADING																
					10290	9850	VA					TOTAL KVA	20.14			
												AMPS	83.92			



PROJECT NO:	172862
DRAWN BY:	SAF
CHECKED BY:	SEW

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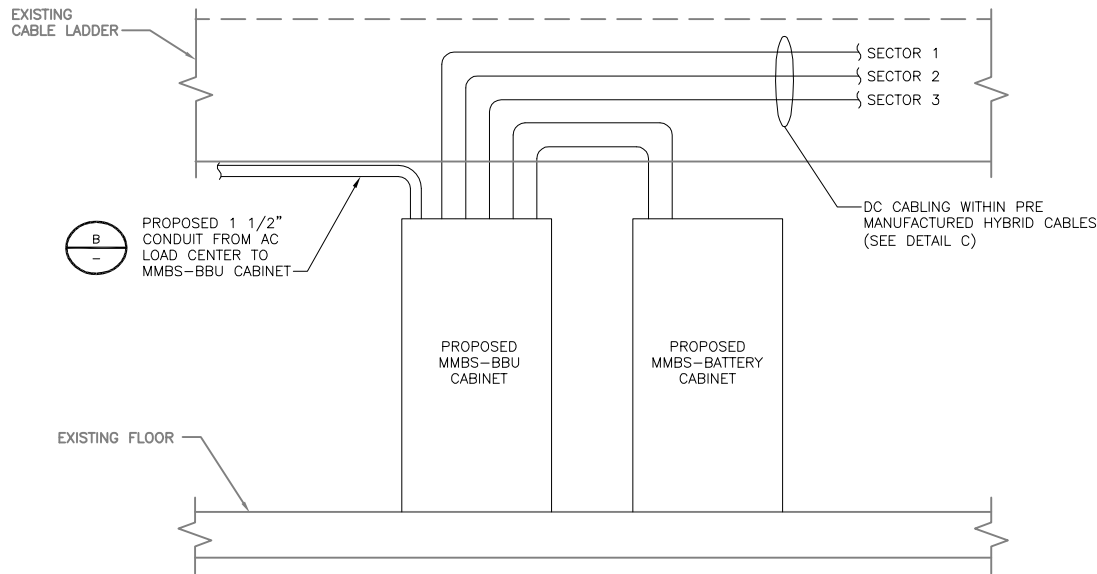


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**M572XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
**SINGLE LINE DIAGRAM &  
POWER PANEL SCHEDULE**

SHEET NUMBER  
**E-1**



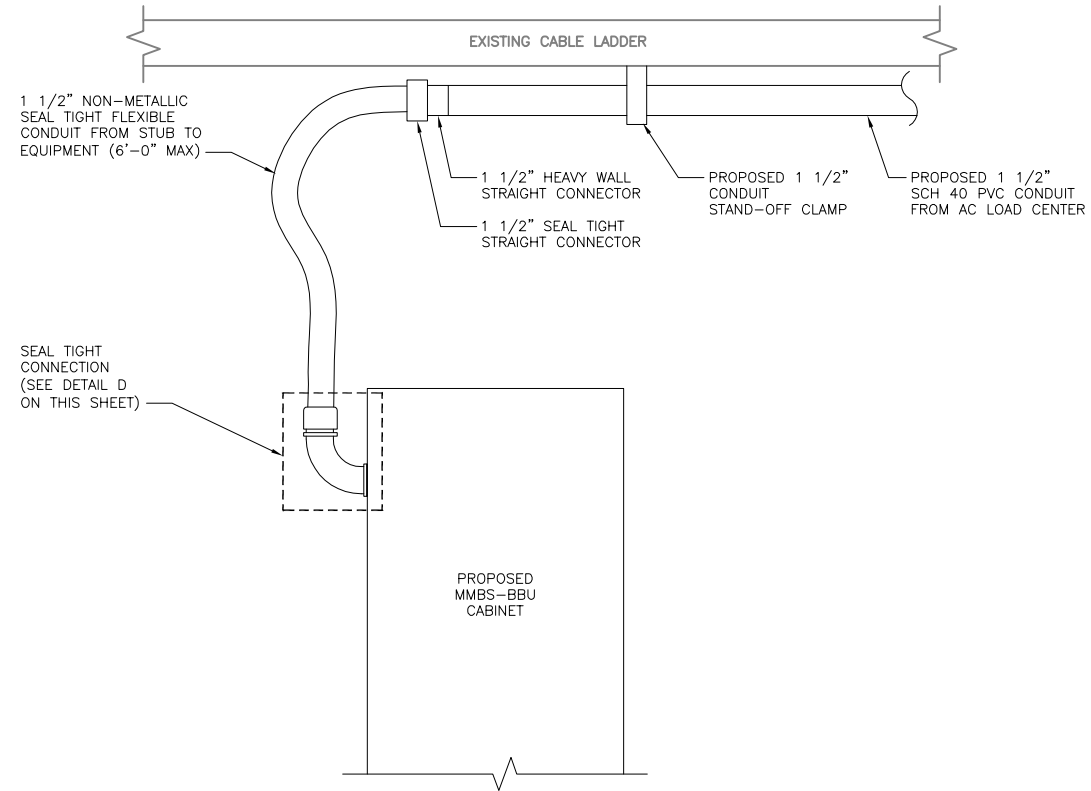
**DC POWER ELECTRICAL NOTES**

1. MINIMUM CABLE LENGTH BETWEEN THE DU AND BATTERY IS 70MM (2.75 in).
2. MAXIMUM CABLE LENGTH DISTANCE IS 900mm (35.43 in).
3. ROUTE DC CONDUCTORS IN CONDUITS TO PROPOSED MMBS-BBU CABINET 48VDC POWER DISTRIBUTION PANEL TO AND FROM PROPOSED MMBS-BATTERY CABINET.
4. -48 VDC CABLES BETWEEN PROPOSED MMBS-BBU CABINET & RRU'S ARE FACTORY ASSEMBLED AND EQUIPPED WITH ONE PRE-TERMINATED END.
5. ALL FIELD INSTALLED DC CABLING SHALL BE TYPE RHH/RHW AND SHALL BE UL THERMOSET INSULATED.

DC POWER DIAGRAM

NO SCALE

A



EQUIPMENT POWER CONDUIT CONNECTIONS

NO SCALE

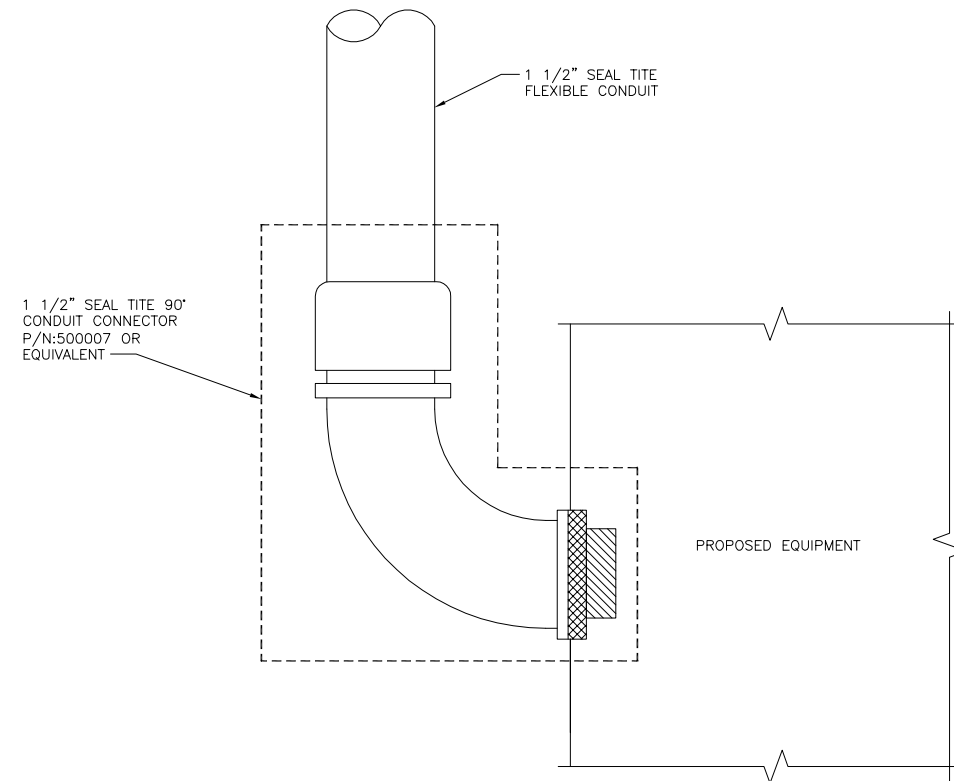
B

	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
TOTAL LENGTH	~ 40m (~152')	~ 60m (~197')	~ 75m (~246')	~ 90m (~295')	~110m (~361')
HYBRID POWER CABLE CONFIGURATION	AWG 10, 1 PAIR AWG 12, 3 PAIR	AWG 8, 1 PAIR AWG 10, 3 PAIR	AWG 6, 1 PAIR AWG 8, 1 PAIR AWG 10, 2 PAIR	AWG 6, 1 PAIR AWG 8, 3 PAIR	AWG 4, 1 PAIR AWG 6, 3 PAIR
CABLE DIAMETER	25mm (0.98")	27mm (1.06")	30mm (1.18")	30/32mm (1.26")	32mm (1.26")
BENDING RADIUS	300mm (11.81")	330mm (12.99")	390mm (15.35")	450mm (17.72")	450mm (17.72")
OPTIC CABLE	LC/PC-TO-LC/PC, SINGLE MODE				
MMBS-BBU CABINET (POWER CABLE TERMINAL MAX SIZE AWG 4)	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE				
RRU POWER CABLE SPEC	AWG 8, 15.7mm (0.62") AWG 10, 12.2mm (0.48")				
NON USE POWER AND OPTIC CABLE PROTECTION	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE	2 PAIR POWER AND OPTIC CABLE WITH PE PIPE	

HYBRID CABLE TYPE

NO SCALE

C



SEAL TITE POWER CONDUIT CONNECTION TO PROPOSED EQUIPMENT DETAIL

NO SCALE

D



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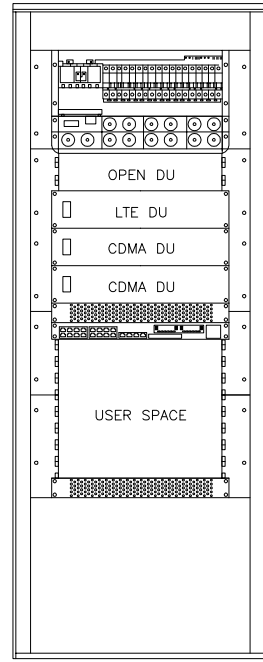
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19900 MANNING TRAIL N  
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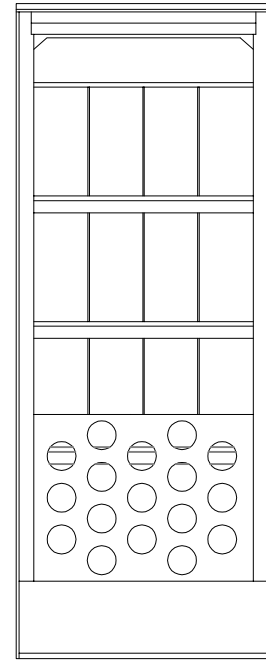
SHEET TITLE  
DC POWER ONE-LINE  
& DETAILS

SHEET NUMBER  
**E-2**





MMBS-BBU  
CABINET



MMBS-BATTERY  
CABINET

ITEM	SPECIFICATION
OPERATING TEMPERATURE	0 ~ 40°C (NATURAL CONVECTION)
RATINGS	<ul style="list-style-type: none"> <li>SEISMIC ZONE 4</li> <li>FCC PART 15 CLASS A</li> </ul>
AC POWER	SINGLE PHASE 208~240 VAC
DC POWER	14 KW @ -48 VAC (7 RECTIFIERS, 96% EFFICIENCY)
CABINET SIZE (W x D x H)	600mm x 600mm x 2,000mm 23.62" x 23.62" x 78.74" FRONT DOOR W/O SENSOR
CABINET WEIGHT	<ul style="list-style-type: none"> <li>POWER CABINET : T.B.D. W/O EQUIPMENT</li> <li>BATTERY CABINET : T.B.D. W/O EQUIPMENT</li> </ul>
CABINET USER SPACE	<ul style="list-style-type: none"> <li>8 RU FOR BS DU</li> <li>8 RU FOR AUX</li> <li>2 RU FOR RESERVED</li> <li>8 RU FOR BATTERY 1 STRING (FOR SINGLE)</li> </ul>
BATTERY CABINET	<ul style="list-style-type: none"> <li>4* 8U SEISMIC BATTERY SHELF</li> <li>4 x BATTERY BREAKERS AND MONITORS</li> </ul>



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SHEET TITLE  
**POWER & TELCO DETAILS**

SHEET NUMBER  
**E-3**

INDOOR MAIN WITH RECTIFIERS AND BATTERY CABINET

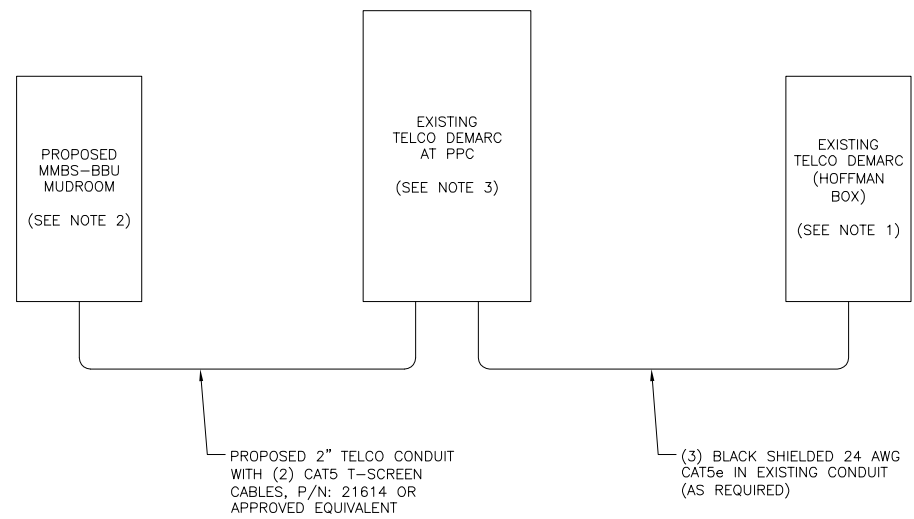
NO SCALE

A

DETAIL NOT USED

NO SCALE

B



**NOTES**

- CONTRACTOR TO INSTALL NEW 66 BLOCK IN EXISTING HOFFMAN BOX AT SITES MAIN TELCO DEMARC.
- CONTRACTOR SHALL INSTALL RJ-45 ENDS ON ALL RUNS OF CAT5e INTO MMBS-BBU MUDROOM.
- CONTRACTOR TO INSTALL NEW 66 BLOCK IN EXISTING TELCO BOX NEXT TO EXISTING PPC CABINET.

DETAIL NOT USED

NO SCALE

C

TELCO RISER DETAIL

NO SCALE

D



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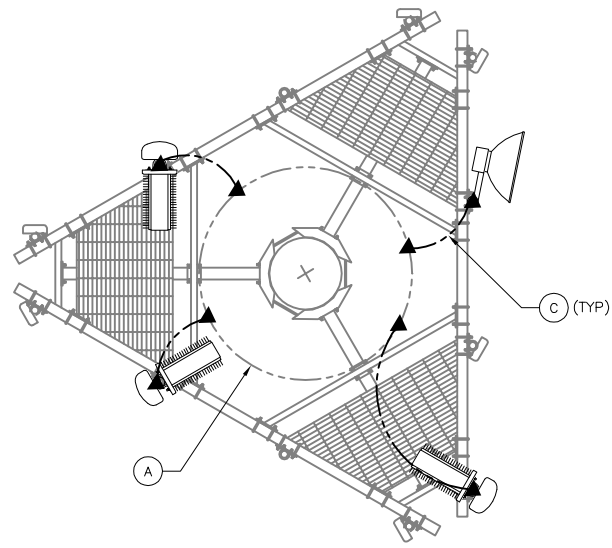
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SHEET TITLE  
 POST - MIGRATION  
 PANEL SCHEDULE

SHEET NUMBER  
**E-4**

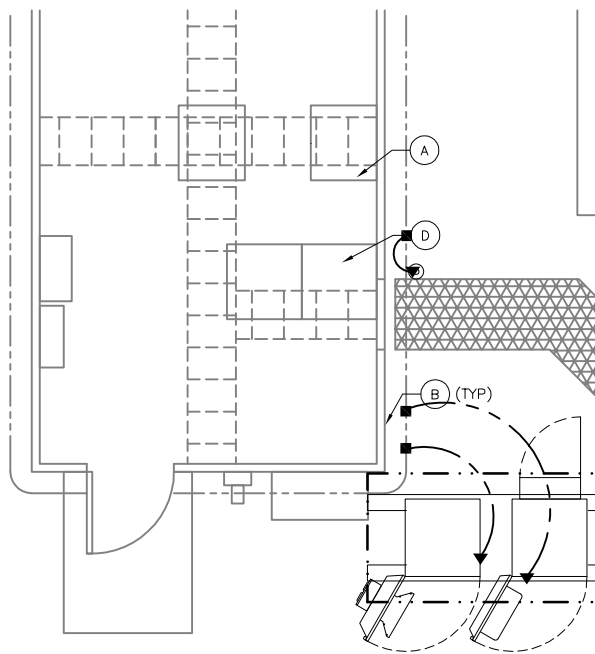
CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	RET #1	30	2	ON	7000	1.25	8750		1.00	0	ON	2	30	RET #2	2
3		30	---	ON	7000	1.25		8750	1.00	0	ON	---	30		4
5	RET #3	30	2	ON	0	0.00	400		1.00	400	ON	2	30	RET #4	6
7		30	---	ON	0	0.00		400	1.00	400	ON	---	30		8
9	RET #5	30	2	ON	960	1.00	1140		1.00	180	ON	2	30	RET #6	10
11		30	---	ON	200	1.00		700	1.00	500	ON	---	30		12
13	RET #7	30	2	ON	7000	1.25	8750		1.00	0	ON	2	30	RET #8	14
15		30	---	ON	7000	1.25		8750	1.00	0	ON	---	30		16
17	SPARE	30	2	OFF	0	0.00	0		1.00	0	OFF	2	30	SPARE	18
19		30	---	OFF	0	0.00		0	1.00	0	OFF	---	30		20
21	HVAC #1	60	2	ON	960	1.00	1140		1.00	180	ON	2	35	HVAC #2	22
23		60	---	ON	200	1.00		700	1.00	500	ON	---	35		24
25	HVAC #3	35	2	ON	960	1.00	1140		1.00	180	ON	2	60	SURGE ARRESTOR	26
27		35	---	ON	200	1.00		700	1.00	500	ON	---	60		28
29	GENERATOR	20	2	ON	0	0.00	400		1.00	400	ON	1	20	LIGHTING	30
31		20	---	ON	0	0.00		400	1.00	400	ON	1	20	SMOKE DETECTOR	32
33	RECEPTACLE	20	1	ON	960	1.00	7960		1.00	7000	ON	2	100	SAMSUNG MMBU CABINET	34
35	RECEPTACLE	20	1	ON	200	1.00		7200	1.00	7000	ON	---	100		36
37	RECEPTACLE	20	2	ON	960	1.00	1140		1.00	180	ON	2	15	SAMSUNG BATT FAN	38
39	RECEPTACLE	20	---	ON	200	1.00		700	1.00	500	ON	---	20	RECEPTACLE	40
									10290	9850	VA		TOTAL KVA	20.14	
POST-MIGRATION PERIOD LOADING													AMPS	83.92	



ANTENNA GROUNDING PLAN

SCALE: 3/8"=1'-0"

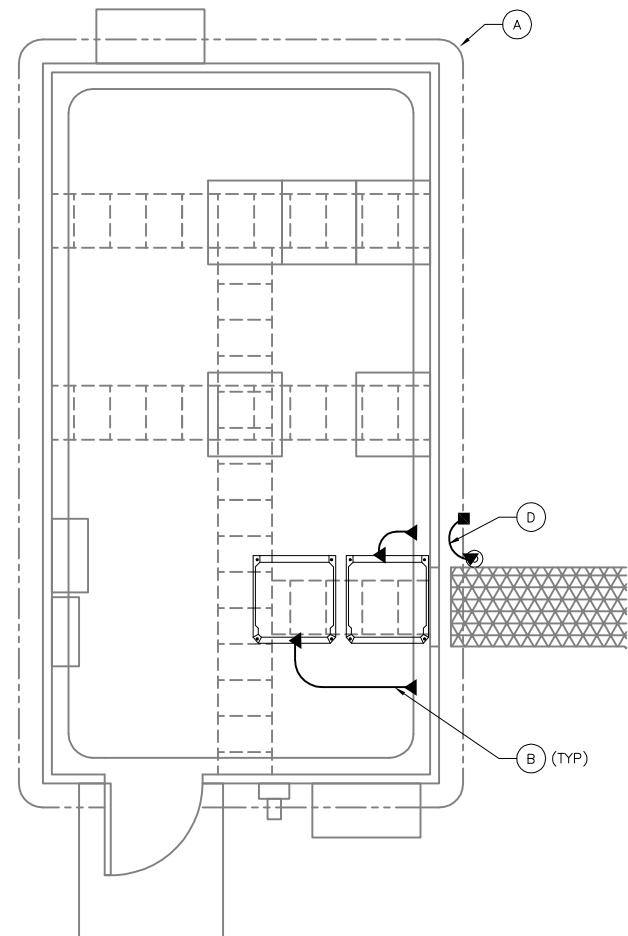
A



INTERIM GROUNDING PLAN

SCALE: 3/8"=1'-0"

B



FINAL GROUNDING PLAN

SCALE: 3/8"=1'-0"

C

**GROUNDING NOTES**

1. ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER SPECIFICATION.
2. IF THE AC PANEL IN THE POWER CABINET IS WIRED AS SERVICE ENTRANCE, THE AC SERVICE GROUND CONDUCTOR SHALL BE CONNECTED TO GROUND ELECTRODE SYSTEM. WHEN THE AC PANEL IN THE POWER CABINET IS CONSIDERED A SUB-PANEL, THE GROUND WIRE SHALL BE INSTALLED IN THE AC POWER CONDUIT. THE INSTALLATION SHALL BE PER LOCAL AND NATIONAL ELECTRIC CODE (NFPA-70).
3. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL. OTHERWISE, THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP CLAMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH ANTIOXIDANT (COPPER SHIELD) BEFORE MAKING THE CONNECTIONS. THE MANUFACTURER'S TORQUING RECOMMENDATIONS ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS SHALL BE FOLLOWED.
4. THE ANTENNA CABLES SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN FOR LIGHTING PROTECTION. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER GROUND BUSS AT THE LOWER MOST POINT OF A VERTICAL RUN JUST BEFORE IT BEGINS TO BEND TOWARD THE HORIZONTAL PLANE. WIRE RUNS TO GROUND SHALL BE KEPT AS STRAIGHT AND SHORT AS POSSIBLE. ANTENNA CABLE SHIELD SHALL BE GROUNDED JUST BEFORE ENTERING THE CELL CABINET. ANY ANTENNA CABLES OVER 200 FEET IN LENGTH SHALL ALSO BE EQUIPPED WITH ADDITIONAL GROUNDING AT MID-POINT.
5. ALL GROUNDING CONDUCTORS INSIDE THE BUILDING SHALL BE RUN IN CONDUIT RACEWAY SYSTEM, AND SHALL BE INSTALLED AS STRAIGHT AS PRACTICAL WITH MINOR BENDS TO AVOID OBSTRUCTIONS. THE BENDING RADIUS OF ANY #2 GROUNDING CONDUCTOR IS 8". PVC RACEWAY MAY BE FLEXIBLE OR RIGID PER THE FIELD CONDITIONS. GROUNDING CONDUCTORS SHALL NOT MAKE CONTACT WITH ANY METALLIC CONDUITS, SURFACES OR EQUIPMENT.
6. PROVIDE PVC SLEEVES WHERE GROUNDING CONDUCTORS PASS THROUGH THE BUILDING WALLS AND /OR CEILINGS.
7. INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUSS IN THE PANEL BOARD.
8. GROUND ANTENNA BASES, FRAMES, CABLE CABINETS AND OTHER METALLIC COMPONENTS WITH #2 GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
9. ALL PROPOSED GROUNDING CONDUCTORS SHALL BE ROUTED AND CONNECTED TO THE MAIN GROUND BAR OR EXISTING GROUND HALO THROUGH EXISTING OR PROPOSED CABLE LADDER SUPPORT.

**GROUNDING LEGEND**

- (A) EXISTING GROUND RING OR EXISTING HALO GROUNDING. FIELD DETERMINE EXACT LOCATION.
- (B) SPRINT EQUIPMENT CABINET GROUNDING, TYP OF 2, SEE DETAIL C / SHEET G-3
- (C) ANTENNA GROUNDING, SEE DETAIL E / SHEET G-3
- (D) GPS GROUNDING, SEE DETAIL D / SHEET G-3
- (E) CABLE LADDER SUPPORT GROUNDING
- (F) PROPOSED GROUND RING, FIELD DETERMINE EXACT LOCATION

- EXISTING GROUND RING
- PROPOSED GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD

CADWELD CONNECTIONS OR APPROVED EQUAL		BURNDY CONNECTIONS OR APPROVED EQUAL	
 PARALLEL HORIZONTAL CONDUCTORS PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES TYPE PT	 HORIZONTAL STEEL SURFACE TO FLAT STEEL SURFACE OR HORIZONTAL PIPE TYPE HS	 BOND JUMPER FIELD FABRICATED GREEN STRANDED INSULATED TYPE 2-YA-2	
 THROUGH CABLE TO GROUND ROD THROUGH CABLE TO TOP OF GROUND ROD TYPE GT	 VERTICAL STEEL SURFACE CABLE DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE TYPE VS	 COPPER LUGS TWO HOLE - LONG BARREL LENGTH TYPE YA-2	
 VERTICAL PIPE CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES TYPE VS			

TYPICAL CADWELD TYPE CONNECTIONS



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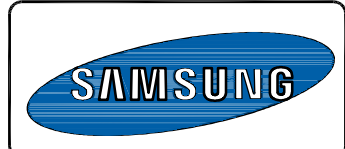
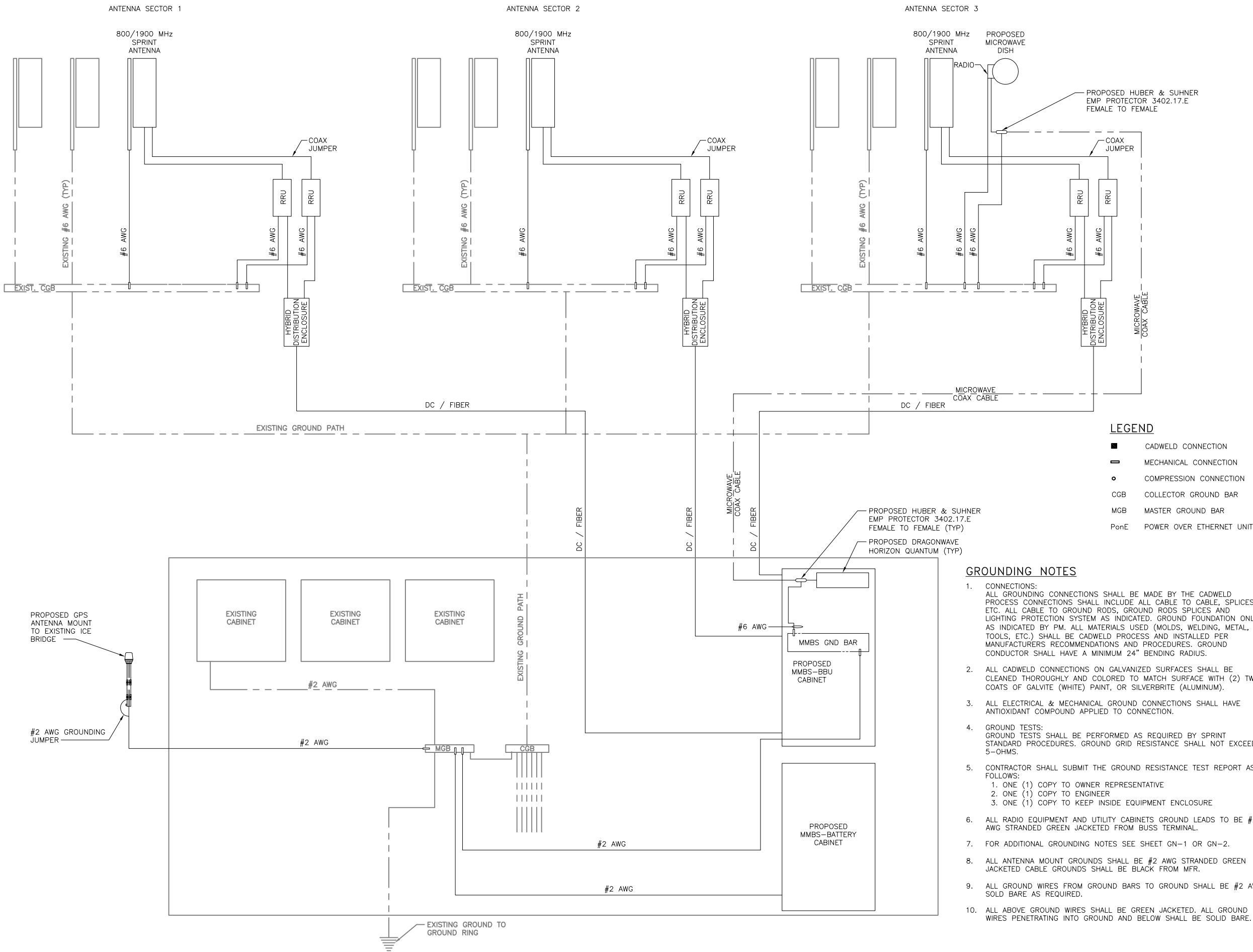


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SHEET TITLE  
GROUNDING PLAN & NOTES

SHEET NUMBER  
**G-1**



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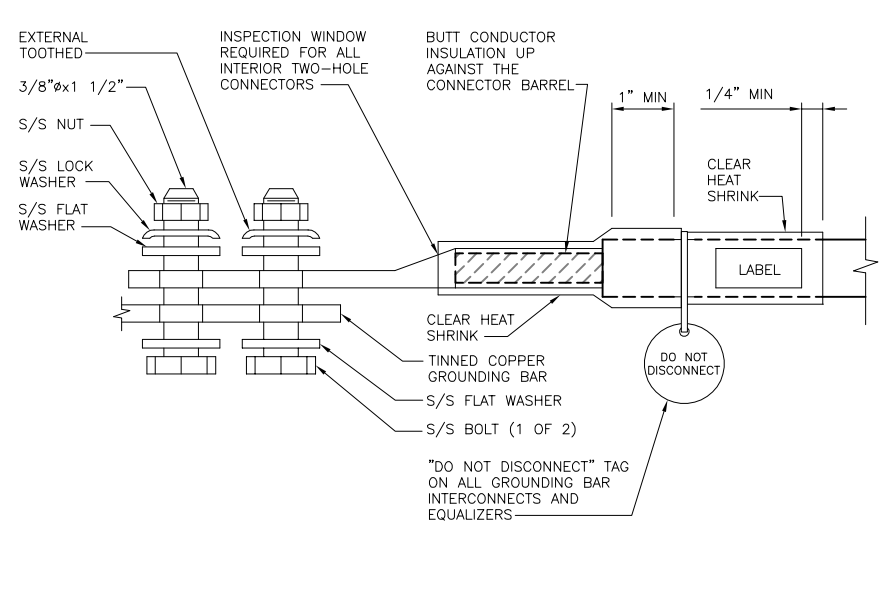
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**GROUNDING DETAILS**

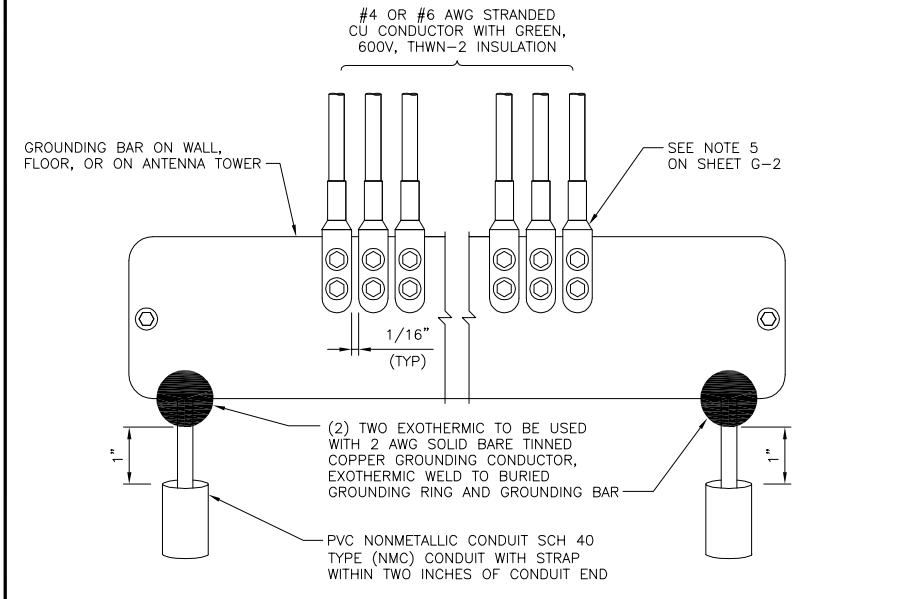
SHEET NUMBER  
**G-2**

**GROUNDING NOTES**

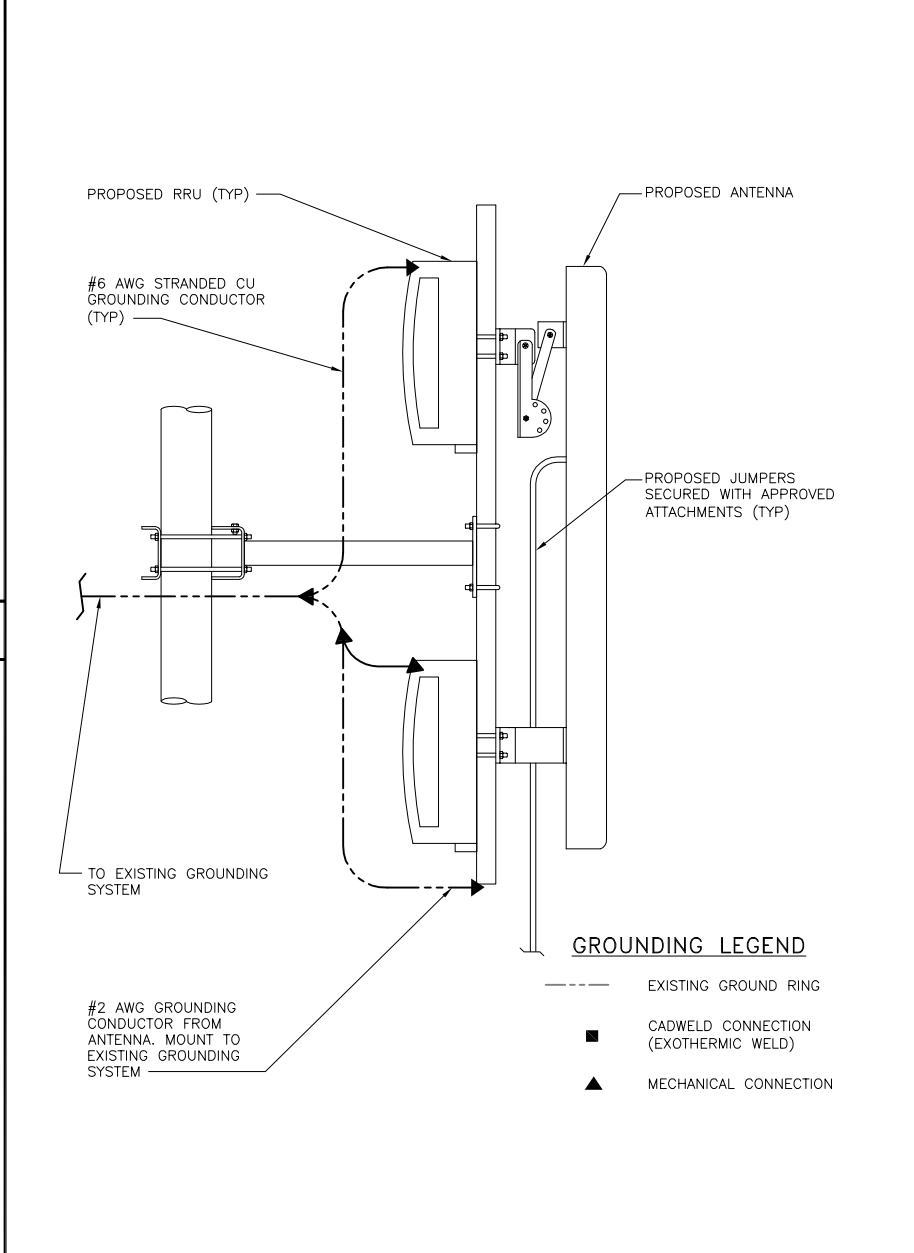
- CONNECTIONS:  
ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE CADWELD PROCESS CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE, SPLICES, ETC. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTING PROTECTION SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED (MOLDS, WELDING, METAL, TOOLS, ETC.) SHALL BE CADWELD PROCESS AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND PROCEDURES. GROUND CONDUCTOR SHALL HAVE A MINIMUM 24" BENDING RADIUS.
- ALL CADWELD CONNECTIONS ON GALVANIZED SURFACES SHALL BE CLEANED THOROUGHLY AND COLORED TO MATCH SURFACE WITH (2) TWO COATS OF GALVITE (WHITE), OR SILVERBRITE (ALUMINUM).
- ALL ELECTRICAL & MECHANICAL GROUND CONNECTIONS SHALL HAVE ANTIOXIDANT COMPOUND APPLIED TO CONNECTION.
- GROUND TESTS:  
GROUND TESTS SHALL BE PERFORMED AS REQUIRED BY SPRINT STANDARD PROCEDURES. GROUND GRID RESISTANCE SHALL NOT EXCEED 5-OHMS.
- CONTRACTOR SHALL SUBMIT THE GROUND RESISTANCE TEST REPORT AS FOLLOWS:  
1. ONE (1) COPY TO OWNER REPRESENTATIVE  
2. ONE (1) COPY TO ENGINEER  
3. ONE (1) COPY TO KEEP INSIDE EQUIPMENT ENCLOSURE
- ALL RADIO EQUIPMENT AND UTILITY CABINETS GROUND LEADS TO BE #2 AWG STRANDED GREEN JACKETED FROM BUSS TERMINAL.
- FOR ADDITIONAL GROUNDING NOTES SEE SHEET GN-1 OR GN-2.
- ALL ANTENNA MOUNT GROUNDS SHALL BE #2 AWG STRANDED GREEN JACKETED CABLE GROUNDS SHALL BE BLACK FROM MFR.
- ALL GROUND WIRES FROM GROUND BARS TO GROUND SHALL BE #2 AWG SOLD BARE AS REQUIRED.
- ALL ABOVE GROUND WIRES SHALL BE GREEN JACKETED. ALL GROUND WIRES PENETRATING INTO GROUND AND BELOW SHALL BE SOLID BARE.



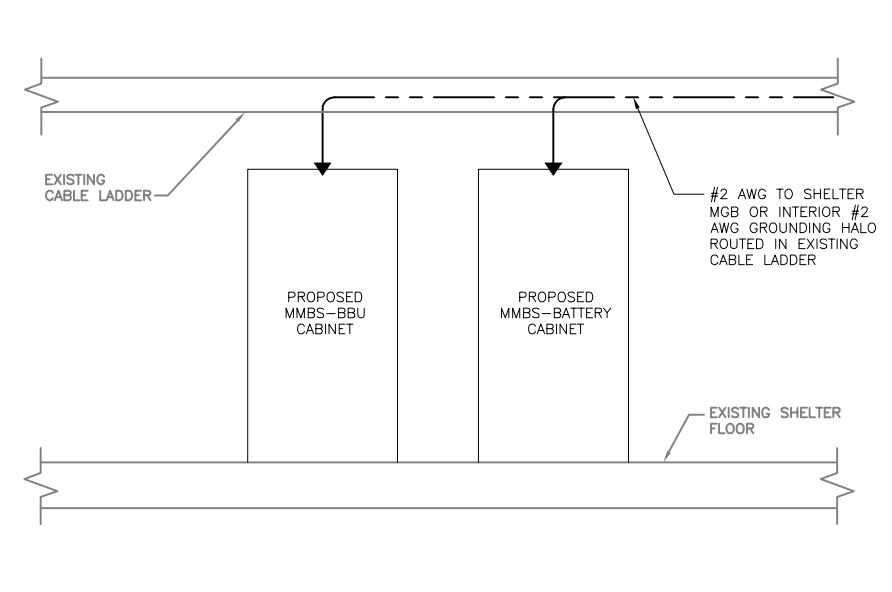
TWO HOLE LUG NO SCALE A



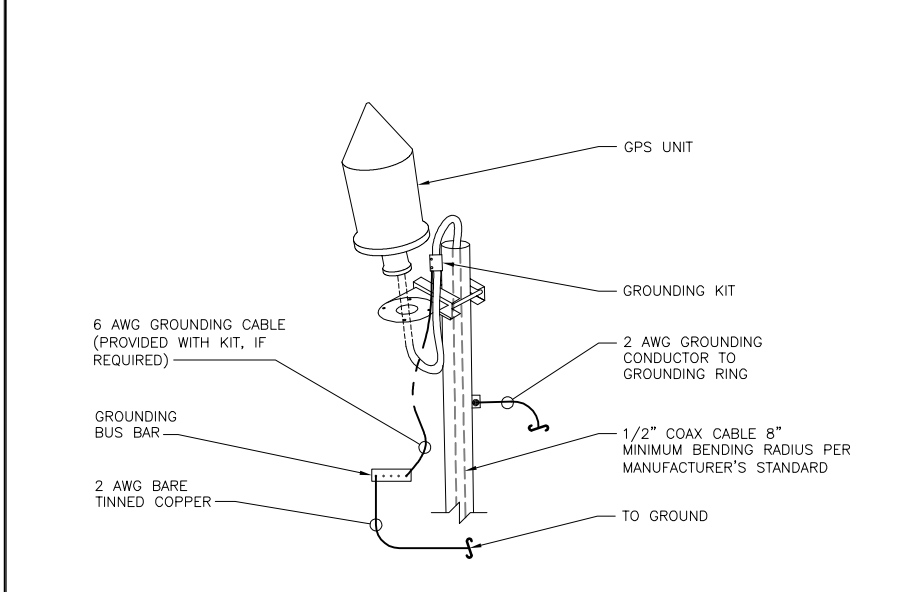
INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR NO SCALE B



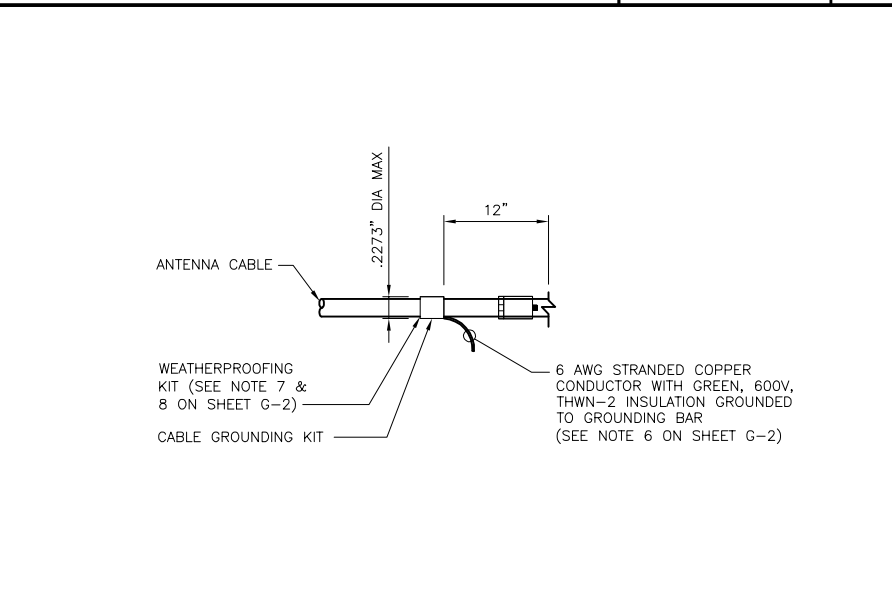
ANTENNA GROUNDING NO SCALE E



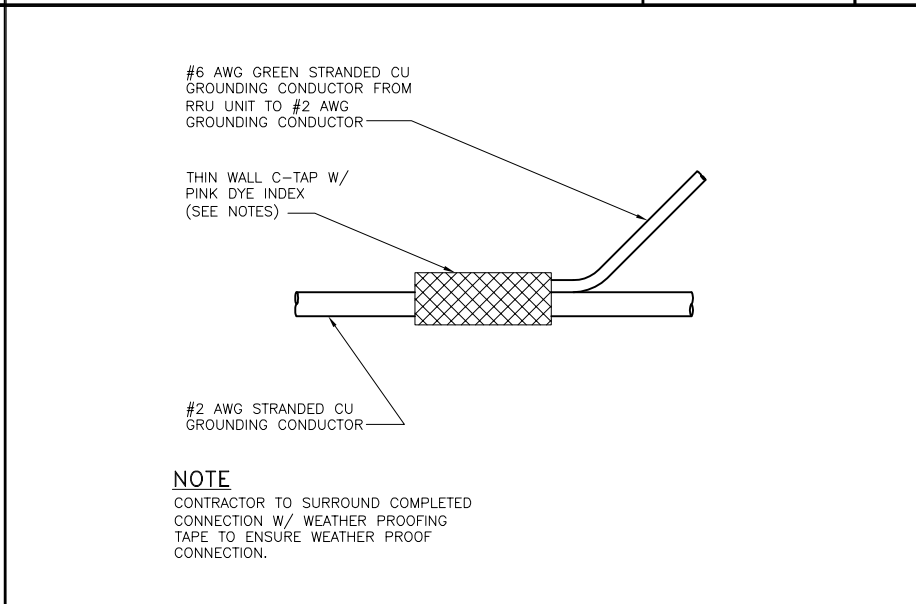
CABINET GROUNDING SCHEMATIC NO SCALE C



GPS GROUNDING NO SCALE D



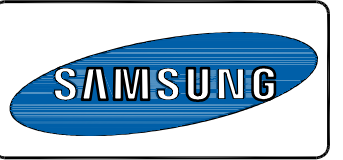
CONNECTION OF CABLE GROUNDING KIT TO ANTENNA CABLE NO SCALE F



C-TAP CONNECTION NO SCALE G

- GROUNDING NOTES**
- COMPRESSION CONNECTIONS (2), 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
  - EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.
  - ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.
  - FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
  - NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION, ON ALL GROUNDING TERMINATIONS. THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
  - NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
  - GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
  - WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
  - SUPPLIED AND INSTALLED BY CONTRACTOR.
  - WHEN THE SCOPE OF WORK REQUIRES THE ADDITION OF A GROUNDING BAR TO AN EXISTING TOWER, THE SUBCONTRACTOR SHALL OBTAIN APPROVAL FROM THE TOWER OWNER PRIOR TO MOUNTING THE GROUNDING BAR TO THE TOWER.
  - EXTEND TWO (2) 2 AWG TINNED CU CONDUCTOR FROM BURIED GROUNDING RING AND CONNECT TO THE PROPOSED TOWER. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR GROUNDING CONNECTIONS TO THE TOWER. (APPLICABLE TO NEW TOWERS ONLY.)
  - NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUNDING BARS AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.

GROUNDING NOTES NO SCALE H



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SHEET NUMBER  
**G-3**



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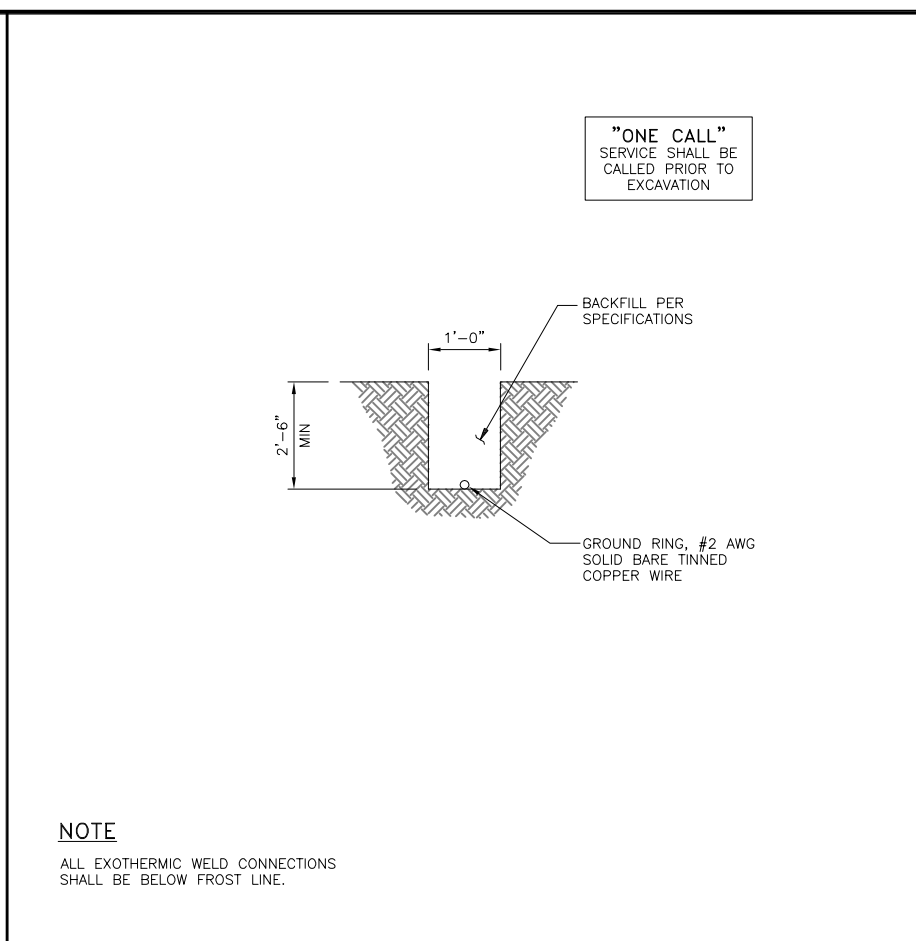
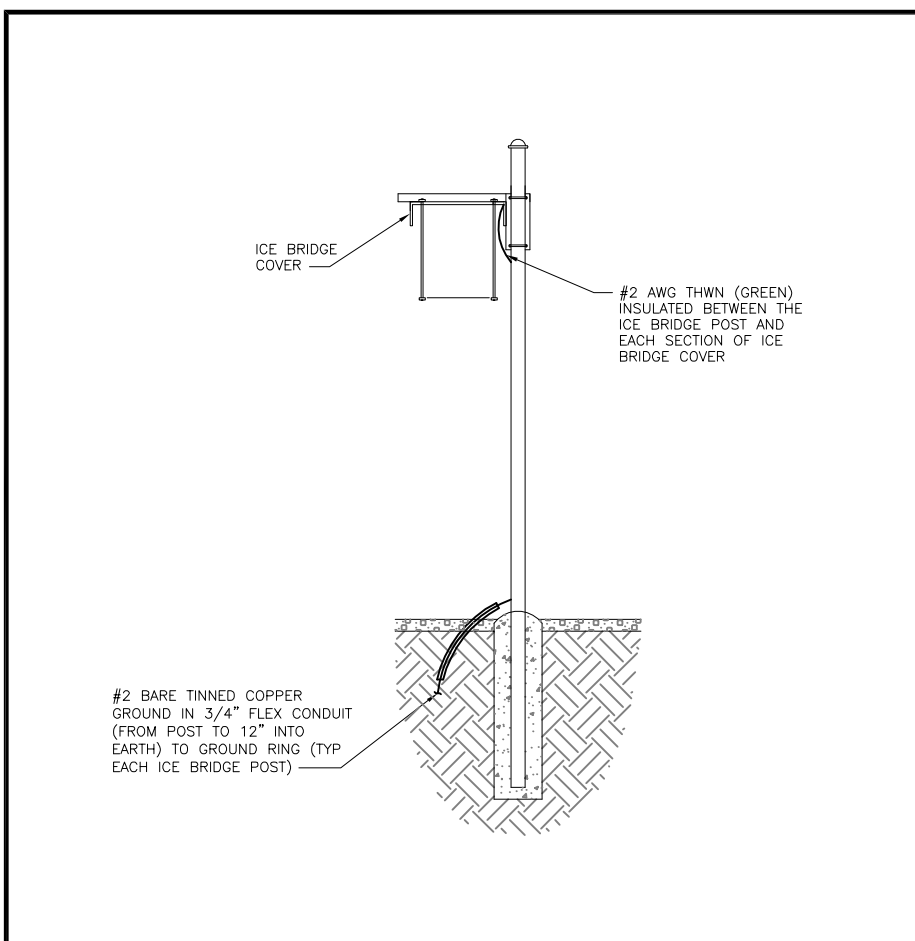


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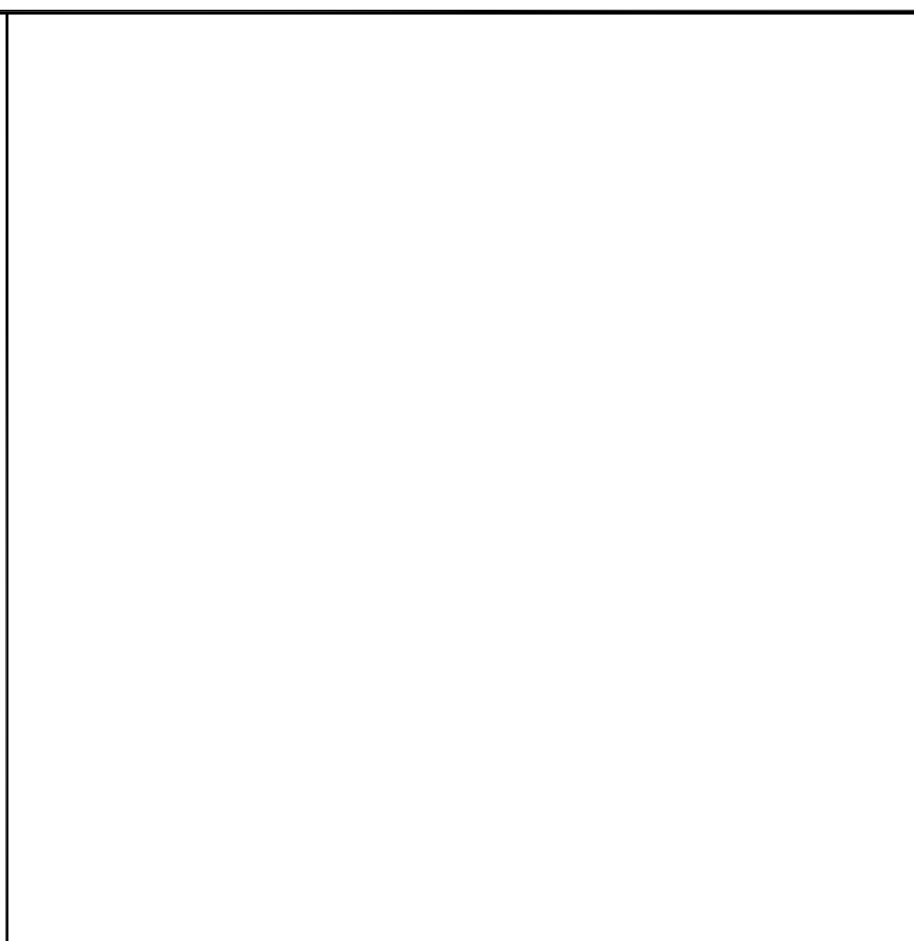
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SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G-4**



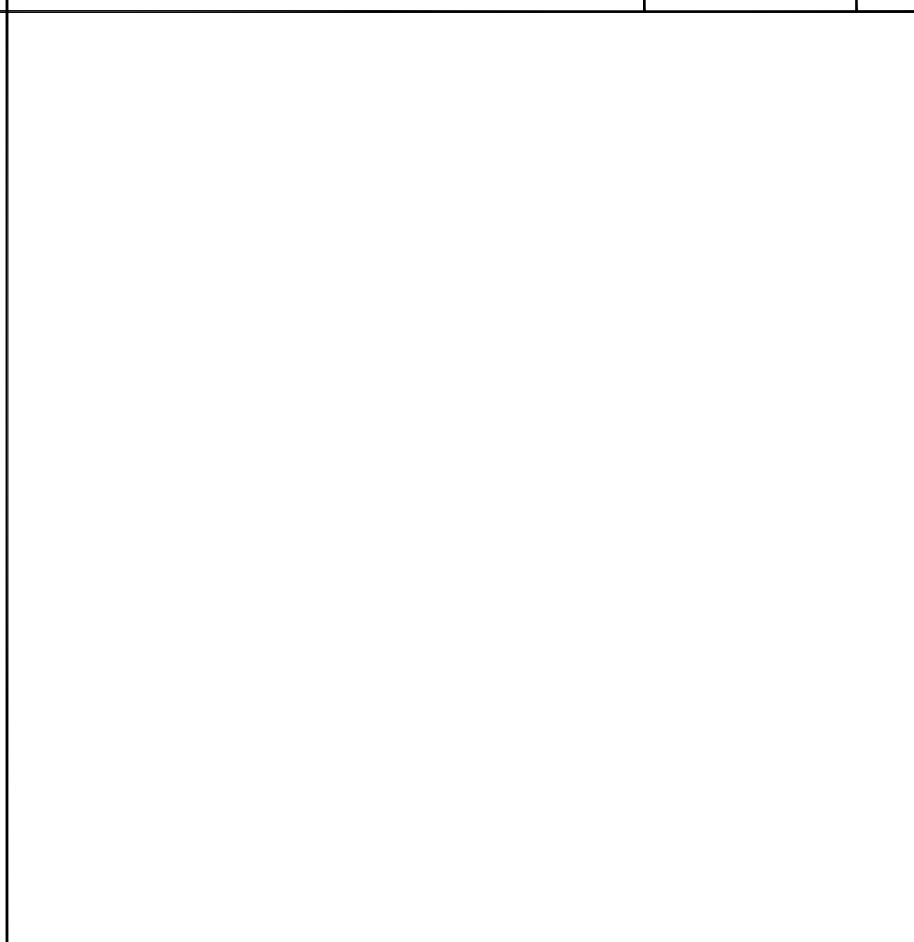
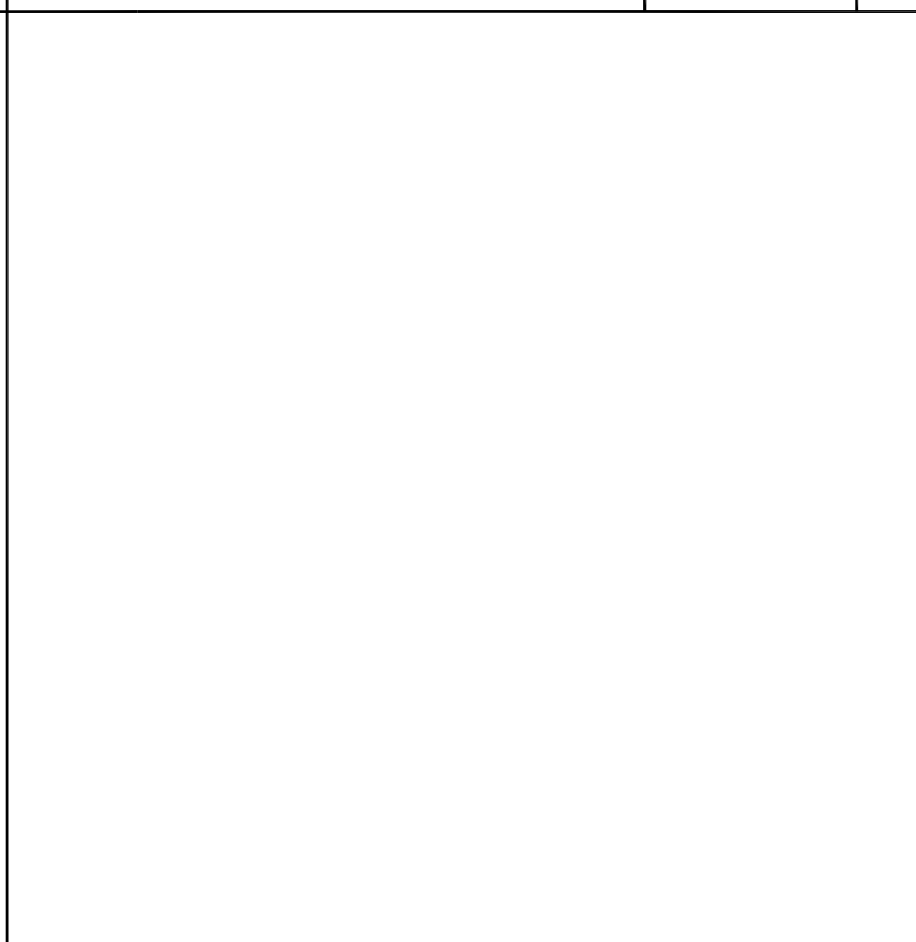
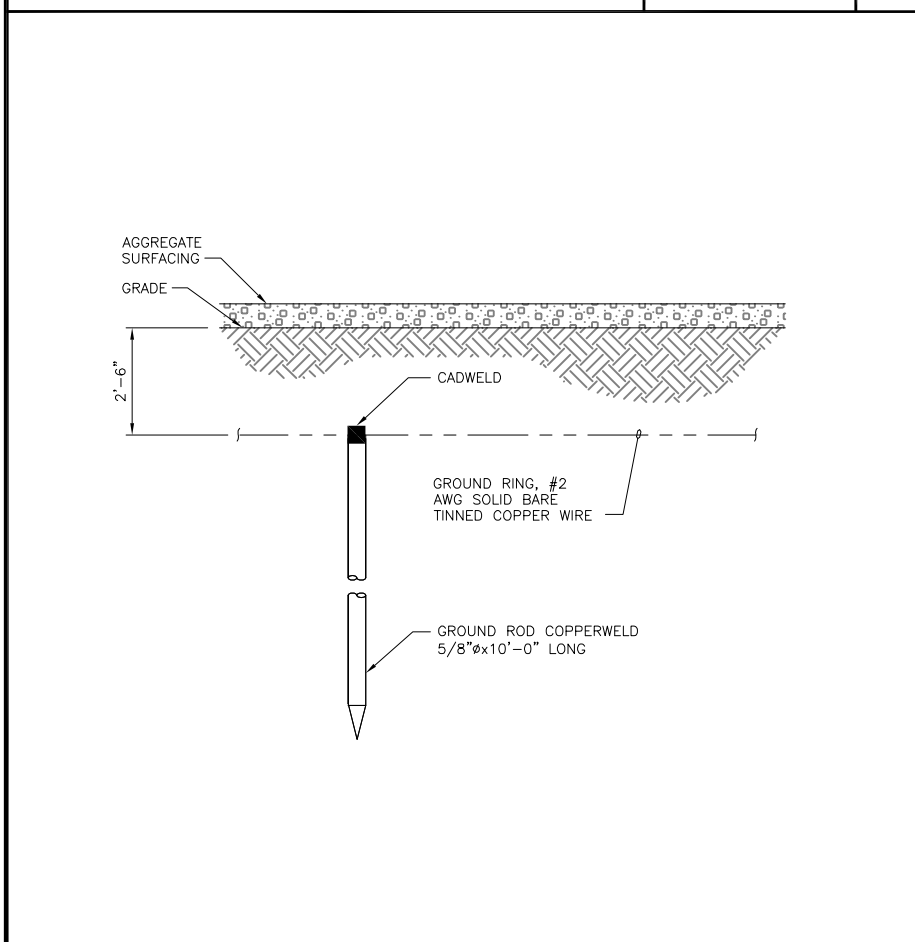
**NOTE**  
ALL EXOTHERMIC WELD CONNECTIONS SHALL BE BELOW FROST LINE.



ICE BRIDGE GROUNDING NO SCALE A

GROUND RING TRENCH NO SCALE B

DETAIL NOT USED NO SCALE C



GROUND ROD NO SCALE D

DETAIL NOT USED NO SCALE E

DETAIL NOT USED NO SCALE F



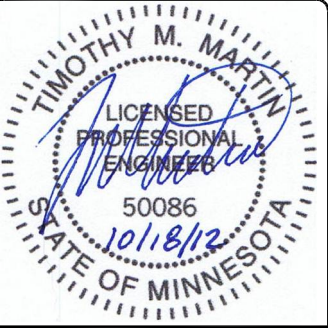
**BLACK & VEATCH**



**IRISH TOWER, LLC**

PROJECT NO:	172862
DRAWN BY:	SAF
CHECKED BY:	SEW

REV	DATE	DESCRIPTION
1	10/17/12	100% ISSUED FOR CONSTRUCTION
0	10/03/12	100% ISSUED FOR CONSTRUCTION
B	10/01/12	90% ISSUED FOR PERMITTING
A	07/23/12	90% ISSUED FOR REVIEW

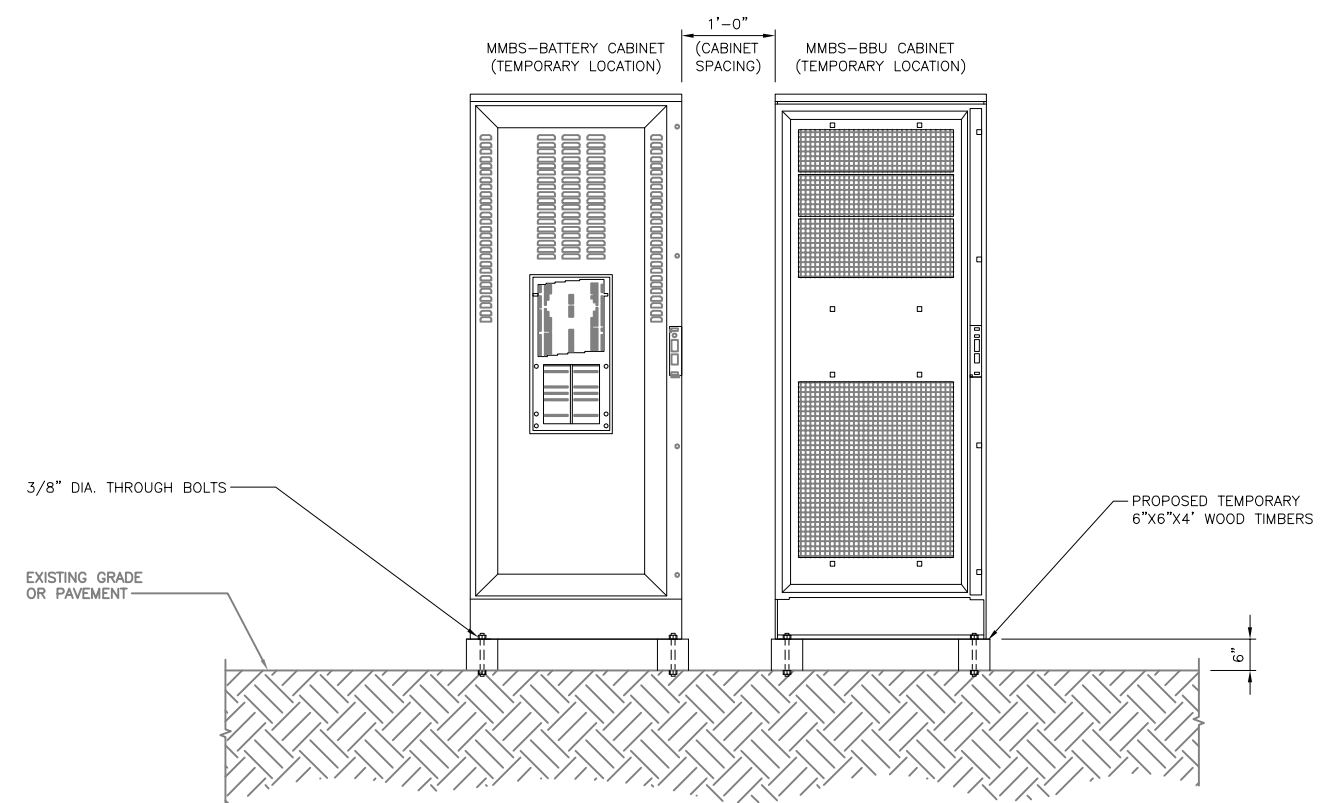


PROFESSIONAL ENGINEER  
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

**MS72XC330-A  
F1/MN0330-WITHROP  
19900 MANNING TRAIL N  
STILLWATER, MN 55082**

SHEET TITLE  
**STRUCTURAL DETAILS**

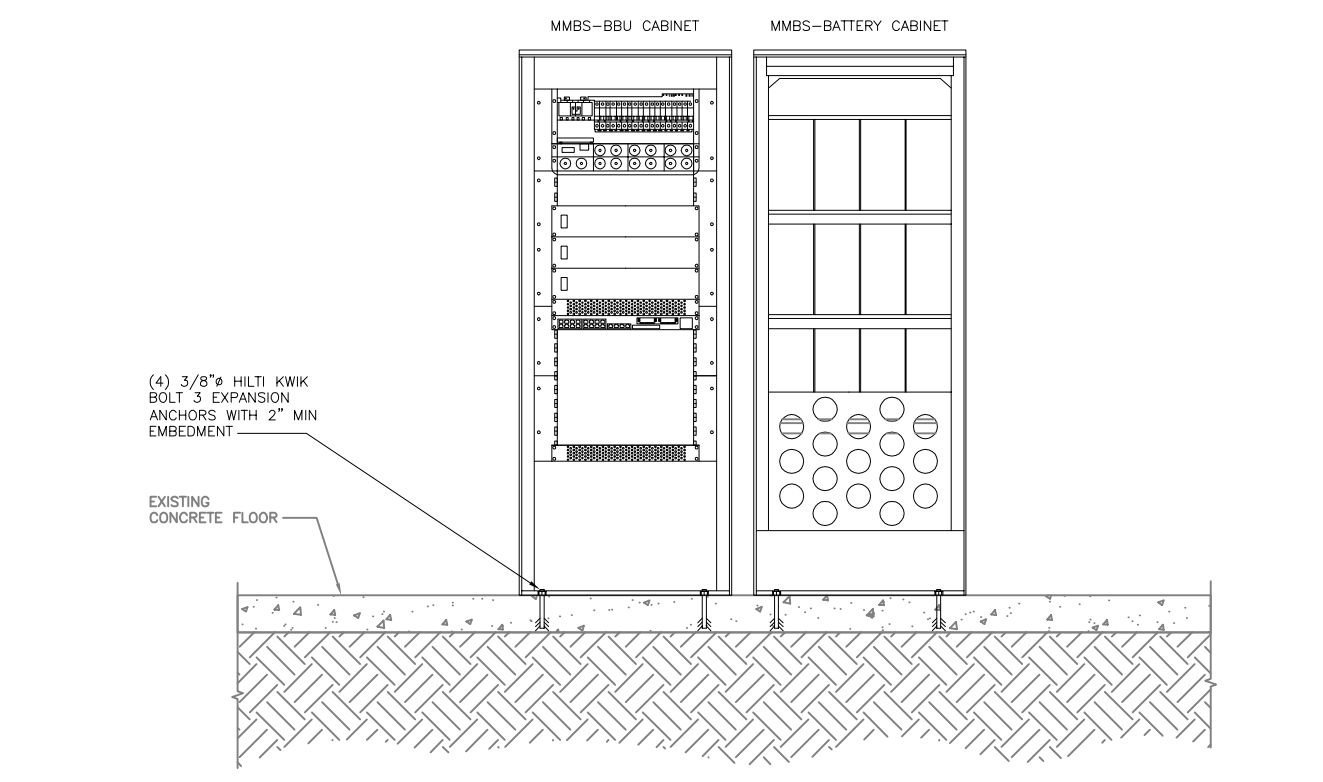
SHEET NUMBER  
**S-1**



NO SCALE A

**INTERIM ELEVATION FIBERGLASS PAD**

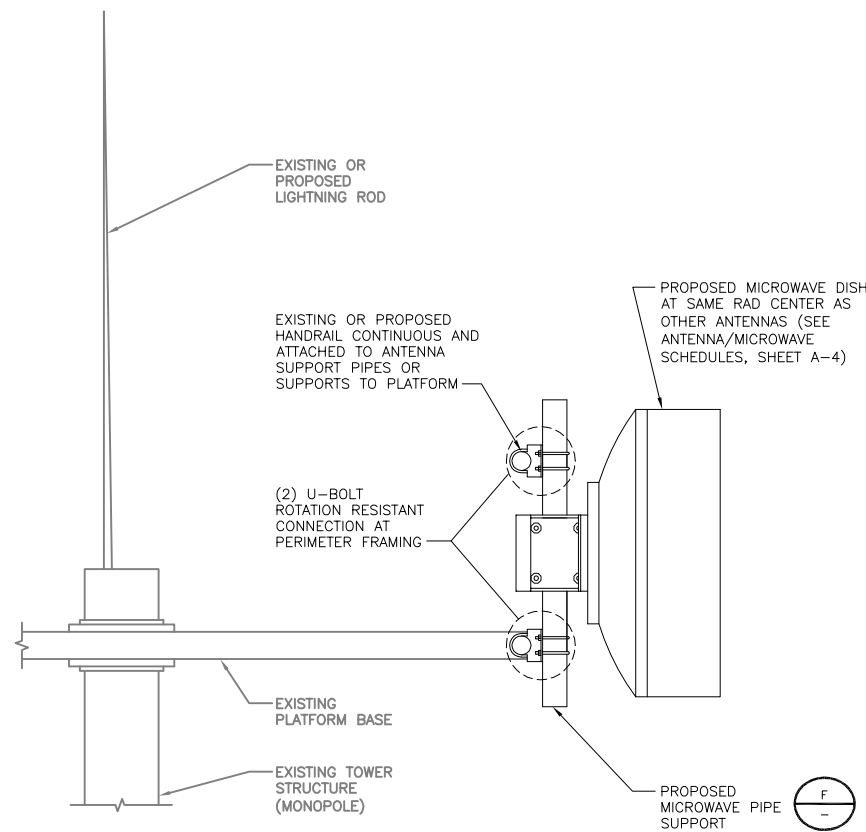
NO SCALE B



NO SCALE C

**FINAL ELEVATION CONCRETE FLOOR**

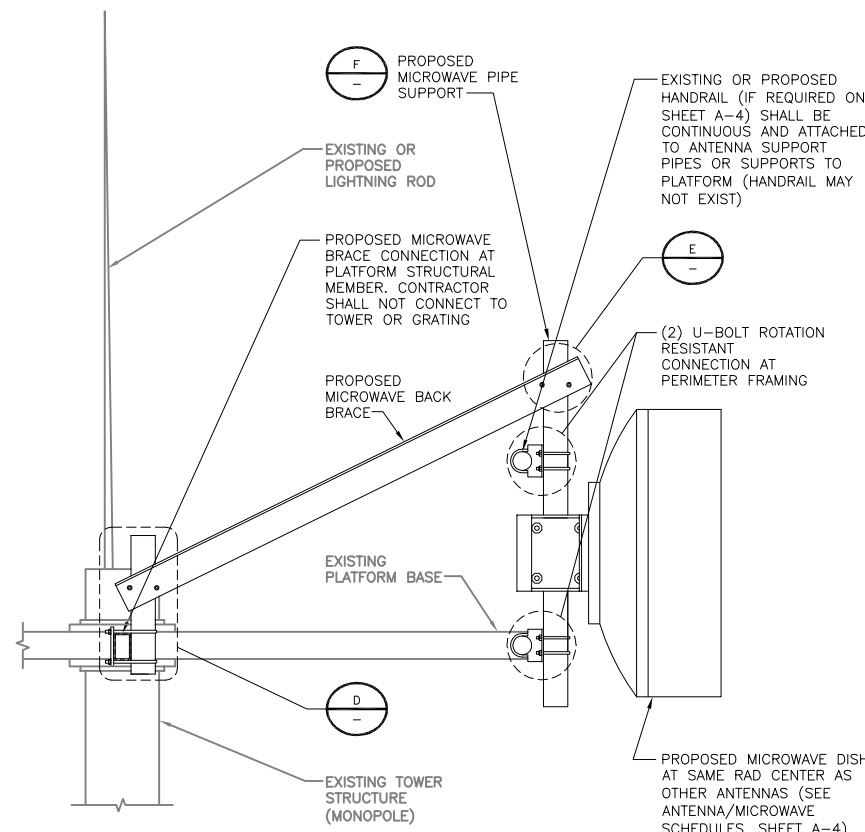
NO SCALE D



MICROWAVE DISH MOUNT - HANDRAIL AT MONOPOLE

NO SCALE

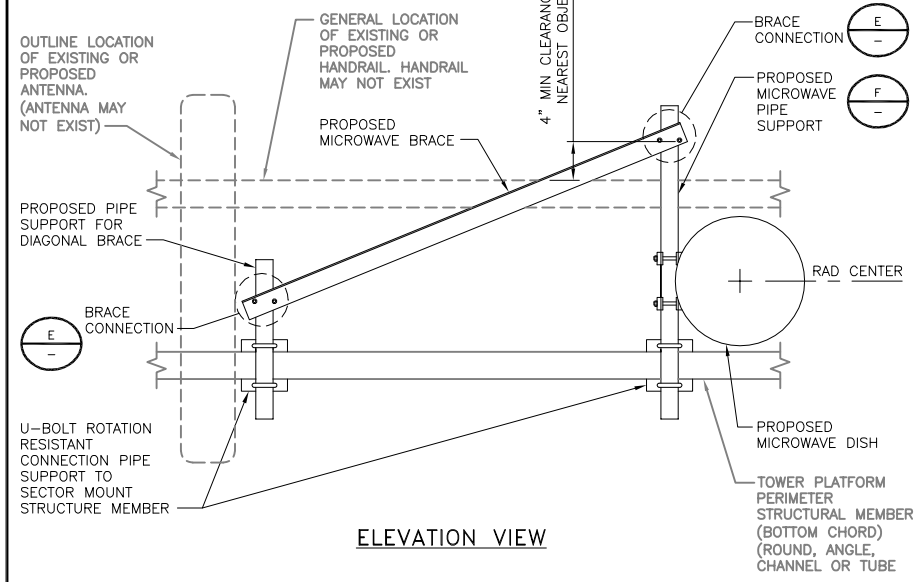
A



MICROWAVE DISH MOUNT - BACK BRACE TO PLATFORM AT MONOPOLE

NO SCALE

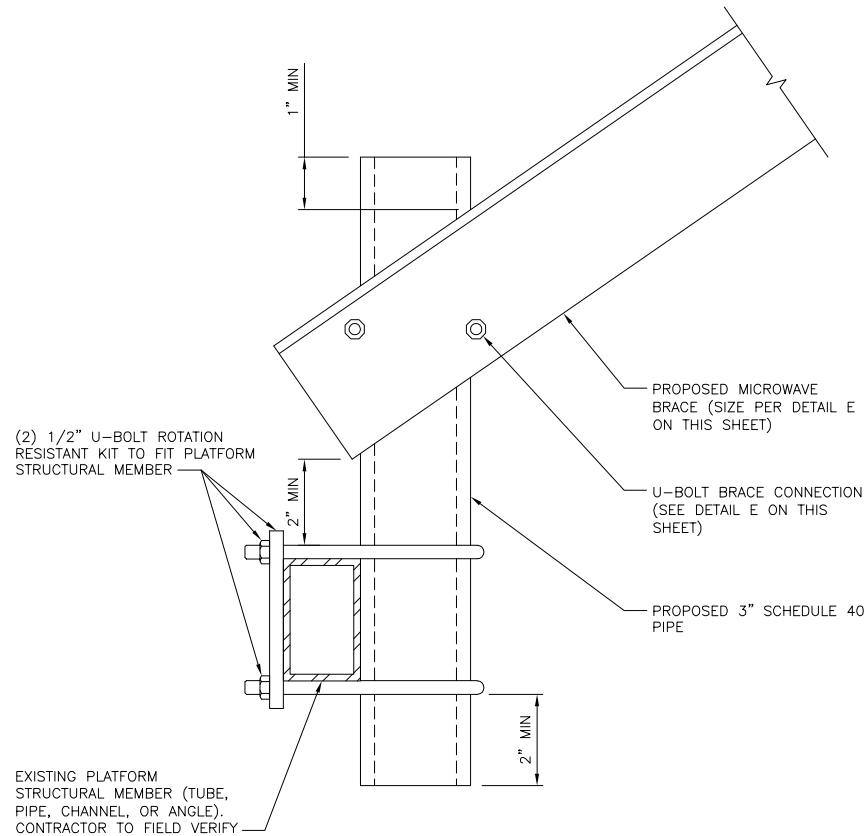
B



MICROWAVE DISH MOUNT - PLATFORM PERIMETER BRACE

NO SCALE

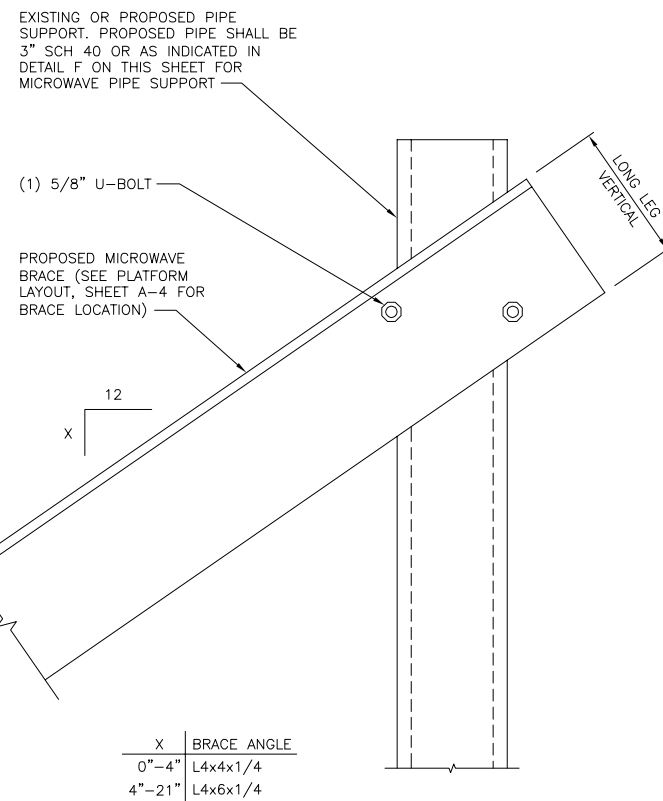
C



MICROWAVE BACK BRACE CONNECTION DETAIL

NO SCALE

D



BRACE SIZING AND CONNECTION DETAIL

NO SCALE

E

MICROWAVE PIPE SUPPORT SCHEDULE	
MICROWAVE DISH DIAMETER	MICROWAVE PIPE MOUNT
1'-0"	3 1/2" O.D. SCH 40
2'-0"	3 1/2" O.D. SCH 40
2'-6"	3 1/2" O.D. SCH 40
3'-0"	4 1/2" O.D. SCH 40
4'-0"	4 1/2" O.D. SCH 40
6'-0"	4 1/2" O.D. SCH 40

MICROWAVE PIPE SUPPORT SCHEDULE

NO SCALE

F



PROJECT NO:	172862
DRAWN BY:	SAF
CHECKED BY:	SEW

REV	DATE	DESCRIPTION
1	10/17/12	100% ISSUED FOR CONSTRUCTION
0	10/03/12	100% ISSUED FOR CONSTRUCTION
B	10/01/12	90% ISSUED FOR PERMITTING
A	07/23/12	90% ISSUED FOR REVIEW



PROFESSIONAL ENGINEER  
I hereby certify that this plan, specification, or report 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 Minnesota.

**MS72XC330-A**  
**F1/MN0330-WITHROP**  
**19900 MANNING TRAIL N**  
**STILLWATER, MN 55082**

SHEET TITLE  
STRUCTURAL DETAILS

SHEET NUMBER  
S-2





## *Memorandum*

**To:** *Grant Planning Commission Meeting November 19, 2012  
Grant City Council Meeting December 4, 2012*

**From:** *Breanne Rothstein, City Planner  
WSB & Associates*

**Date:** *November 8, 2012*

**Re:** *Application from Jessica and Christine Flug (8255 75<sup>th</sup> St. N) for a Conditional Use Permit to allow for a horseboarding facility at more than one horse per every two grazable acres- WSB Project # 1936-25*

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### **Request:**

On October 15, 2012, the City received an application from Jessica and Christine Flug for a conditional use permit to allow for a horse boarding business of more than ten horses at a density greater than one horse per every two grazable acres. In total, they are seeking a permit to allow for the boarding/pasturing of 95 animal units as a business, of which 20 horses would be housed in a paddock in a future building on site. Horse boarding has been conducted on this property for many years and was approved for up to 50 horses in 1982 according to meeting minutes.

### **Site Characteristics:**

The subject property is located at 8255 75st St N (westernmost edge of Grant) and is a total of 164 acres, of which approximately 105 acres would be fenced in for a pasture area. The site is characterized by agricultural use (row crops), wetlands, and some forested areas. Approximately ¼ of the total pasture area is wetland. It is surrounded by agricultural/wetland and an existing horse boarding facility owned by the applicant to the south and east, a residential subdivision to the west (Mahtomedi), and the school property to the north. The Gateway trail runs along the south side of the property, and offers a gravel horse trail for riders.

There are several buildings on the site, including a homestead, one large barn, a large garage, several smaller sheds, and a chicken coop. One barn is proposed to be removed and replaced in the future as part of the effort to make it useable for storage related to the proposed operation.

### **Grant City Code Requirements:**

Horse boarding is a permitted use in the agricultural zoning district at a density of one animal unit per two grazable acres, up to ten horses. Section 32-328 and Section 32-337 allows for property owners to exceed these limitations through the application of a conditional use permit, and subject to the following requirements:

- Must demonstrate that facilities are present and appropriate practices are being employed to preclude surface water or groundwater contamination, excessive manure accumulation, odor, noise or other nuisances
- The applicant must have a state pollution control agency feedlot permit for the proposed use
- Submission of a plan for the storage and removal of manure and control of odors from the operation
- Traffic and parking plan for the operation of the boarding and training facility
- Lighting Plan
- Schedule of plan for equestrian events (sorting, rodeo, shows) to be held on site, hours of operation
- Plan to dissipate noise and compliance with noise regulations
- Fencing and building plans with setbacks

Additionally, city code specifies standards for approving all conditional use permits, which are listed below:

- The use conforms with the City's Comprehensive Plan
- The use will not be detrimental to or endanger the public health, safety or general welfare of the city, its residents, or the existing neighborhood
- The use is compatible with the existing neighborhood
- The use meets conditions or standards adopted by the city through other ordinances
- The use will not create additional requirements for facilities and services at public cost beyond normal uses
- The use will not involve use or activities that will be detrimental to people, property, or the general welfare because of production of traffic, noise, smoke, fumes, glare, odors or any other nuisances
- The use will not result in the destruction, loss or damage of natural, scenic, or historic features of importance
- The use will not increase flood potential or create additional water runoff onto surrounding properties

**Analysis:**

The application has been deemed complete for review by the city planner, therefore the city has 60 days to take action from the date of application, unless an additional 60 days is requested. The initial 60 day deadline for action is December 14, 2012.

A site visit of the property was conducted with the applicant, MPCA staff for feedlot permitting, and the city planner on November 7, 2012. At that meeting, a description of the land use, fencing projects, and permitting requirements was outlined.

A site plan and fencing plan were included in the application, and attached herein.

*Manure Management*

The applicant proposes to keep any manure at least 100 feet from a wetland edge. Furthermore, the applicant proposes to scrap and remove all manure in the paddock area once per year, and

dispose of the material off-site. The pasture area is not planned to be cleaned-passive manure management is proposed. The applicant will be required to follow the rules associated with feedlot operations through the Minnesota Pollution Control Agency. Minnesota Rules Chapter 7020.0350 subpart 2, requires registration for “an animal feedlot capable of holding 50 or more animal units...” A copy of such registration will be a condition listed in the conditional use permit. Also according to these rules, records of manure management are required to be kept by the applicant for over 100 animal units.

The Valley Branch Watershed District does not require a permit for this application. The applicant is working with the Washington Conservation District regarding suggestions for best management practices.

#### *Events*

The horse boarding operation is proposed to be open 7:00 a.m. to 11:00 p.m.

In discussions with the applicant, they are requesting to be able to conduct up to five events per year that would be open to the public (horse shows, boarder meetings, etc). The site’s location off of County Road 19 is suitable for vehicular access, and there are large areas on the site that can accommodate adequate short-term parking on a limited basis.

#### *Compliance with other terms of Conditional Use Permit*

This application is consistent with the Comprehensive Plan’s vision of remaining a rural community with an emphasis on preserving the agricultural uses. The existing neighboring land uses are predominantly agricultural; however, there is an existing, single-family neighborhood nearby, although not immediately adjacent to, the property.

The proposed use does require MPCA registration, which is in process. The MPCA institutes these regulations in order to protect the health, safety, and welfare of the general public and surrounding neighbors and minimize any impacts. The proposal is under the threshold for requiring any stormwater management practices or plan (minimum of 300 animal units).

No additional parking or lighting facilities are proposed as part of this application.

#### **Staff Recommendation:**

Should the Planning Commission recommend approval of the application, staff recommends the following conditions be placed on the conditional use permit;

- 1) A maximum of 95 animal units be permitted to occupy the property at any one time, with a maximum of 20 horses to be housed in a paddock area;
- 2) Manure is kept a minimum of 100 feet from any wetland edge;
- 3) MPCA registration is completed, and a copy is sent to WSB and the City;
- 4) All manure stockpiling be located a minimum of 100 feet from any wetland;
- 5) Records of manure management are kept, and available to city staff upon request;
- 6) Lighting and noise must meet the requirements of the City’s ordinances;
- 7) Hours of operation should be consistent with other CUPs for this use, and follow 7 a.m. to 9 p.m.;

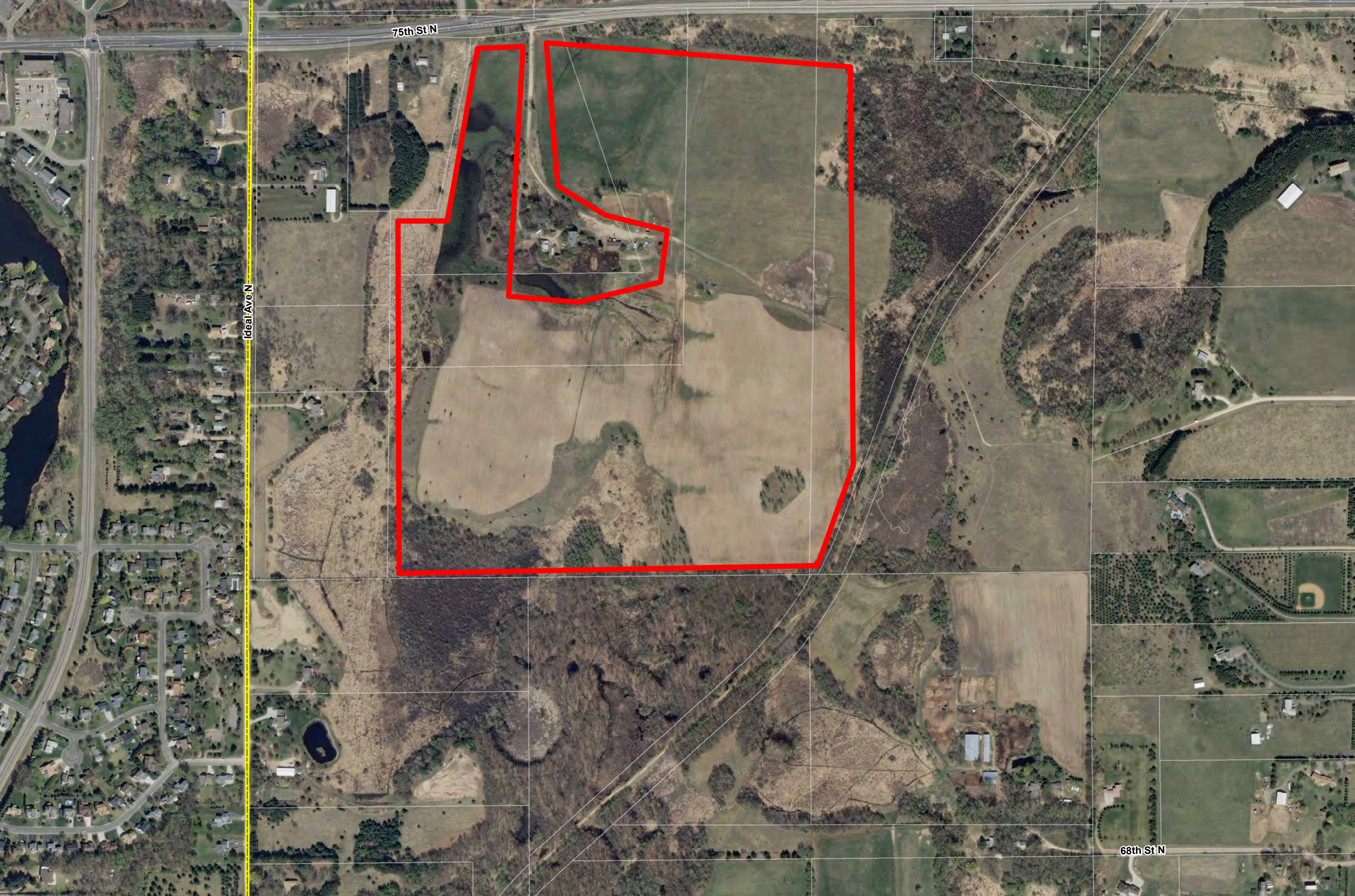
- 8) Public events are limited to no more than five per year, and must follow limited hours of 9 a.m. to 7 p.m.;
- 9) All fencing shall be installed according to the submitted site plan and be properly maintained;
- 10) The applicant shall implement the recommendations of the watershed district and/or the Washington Conservation District;
- 11) All fees and escrows in conjunction with this application are paid in full;
- 12) City shall be allowed to inspect the property with 24 hours' notice to the applicant (up to five times per year). Periodic review of the CUP on a complaint and annual basis is permitted by the City to allow for annual review of compliance with the terms of the CUP. The Applicants shall comply with City Ordinances that require Applicant to pay a CUP review fee;
- 13) Applicants shall be fined \$300 per animal unit if the total number of animal units is exceeded, upon inspection from the city. Such fines shall be due and payable within 10 days of the date of notification from the City, and failure to make payment shall constitute a violation of the Conditional Use Permit and shall subject the permit to suspension or revocation.

**Recommended Motion:**

Motion to recommend that the City Council approve the request for a conditional use permit, subject to the conditions listed in the staff report, and direct staff to prepare a resolution declaring terms of the same.

**Attachments:**

- 1) Application submittal
- 2) Exhibit of site location
- 3) Information from MPCA regarding feedlots



75th St N

Ideal Ave N

68th St N



# LAND USE REQUEST APPLICATION FORM

## CITY OF GRANT

Mailing Address: P.O. Box 577  
Willernie, Minnesota 55090  
Town Hall: 111 Wildwood Road  
Phone: (651) 426-3383 Fax: (651) 429-1998  
E-mail: cityclrk@visi.com

Receipt No.

\_\_\_\_\_

ESCROW: 3,000.00

FEE: 400.00

*Pol 10/15/12 Check # 2040*

Makes checks payable to City of Grant.

Street Location of Property: 8255 75<sup>th</sup> Street North  
 Legal Description of Property: Attached  
 Parcel Identification Number (PIN): 28.030.21.42.0003, 28.030.21.34.0001, 28.030.21.31.0003, 28.030.21.31.0007  
 Fee Owner: Name: Christine Flug Phone: 612-386-0872 33.030.21.21.0002  
 Address: 8324 60<sup>th</sup> Street North  
 City: Stillwater State: MN Zip: 55082  
 Applicant (if other than owner):  
 Name: Christine + Jessica Flug Phone: 612-600-1544  
 Address: 8255 75<sup>th</sup> Street North  
 City: Stillwater State: MN Zip: 55082  
 Type of Request:  Conditional Use Permit (CUP)  Variance  
 Subdivision, Major (> 2 lots)  EIS or EAW  
 Subdivision, Minor (2 lots)  PUD  
 Rezoning  Other: \_\_\_\_\_  
 Comprehensive Plan Amendment  
 Description of Request (be as specific as possible, attach additional sheet if necessary): Attached  
 Present Zoning Classification: A-2 Total Acres: 164.97  
 Is there contiguous property under the same ownership? Yes  
 Proof of Ownership: \_\_\_\_\_ Deed \_\_\_\_\_ Title Opinion  Attorney Letter \_\_\_\_\_ Abstract  
 Existing Use of the Property: horse boarding  
 Proposed Use of the Property: horse boarding  
 Has a request for Rezoning, Variance or Special Use Permit on the subject site or any part thereof been previously sought?  
Not to our knowledge When? \_\_\_\_\_

All requests for planning action must be accompanied by a completed Checklist Form and appropriate notations of compliance. Applicant understands that all fees incurred resulting from the review of this request will be the responsibility of the undersigned. This application will not be considered until all fees and escrow amounts are paid in full.

Signature of Applicant: Jessica Flug Date: 9/17/12

**For City Use Only:** Date Filed: \_\_\_\_\_  
 Fee and Escrow Amounts Paid in Full:  Yes OR  No Total Amount (See Above): \_\_\_\_\_  
 Accepted as Complete on: \_\_\_\_\_ Received By: \_\_\_\_\_  
 60 Day Deadline: \_\_\_\_\_ Last City Council meeting date before the 60 day deadline: \_\_\_\_\_  
 Approved  Denied  by the Planning Commission on \_\_\_\_\_  
 Approved  Denied  by the City Council on \_\_\_\_\_

**Extension of Time Deadlines:** You are hereby notified that this application is not complete until reviewed by the City Planner, City Engineer and City Attorney. The City Planner, City Engineer or City Attorney will notify you within 10 days if your application is complete. The City of Grant may extend the time deadlines pursuant to M.S. Section 15.99 with respect to the written request you have made to the City. The extension may be made for an additional sixty (60) days. In the event the City deems an extension is necessary it will advise you in writing as to why it extended the deadline, as well as, provide you with a date when the City will complete its deliberation on your application.

**References:** In signing this application, I hereby acknowledge that it is the applicant's responsibility to know the requirements of the City code. References for sale from the City Clerk include Grant's Comprehensive Plan, Zoning Ordinance, Subdivision Ordinance, and other ordinances. The Shoreland Management, Mining, and Floodplain ordinances, Individual Sewage Treatment System Regulations manual and aerial photos may be obtained from Washington County offices in Stillwater. Most ordinances are posted on the City website, although only copies from the City/County offices should be considered official.

**Acceptance:** I understand that this application shall not be accepted by the City until all information and copies as required by Ordinance or Resolution of the City Council have been provided to the City Clerk and fees are paid. The fact that the City Clerk accepts an application does not imply that it is accurate or complete. That determination is only made after a thorough review by the City Planner, City Engineer and others as defined by Ordinance.

**Financial:** Fees include an application fee and administration fee as adopted by Resolution of the City Council, and a deposit to be specified by the City Clerk for the purpose of paying all processing expenses incurred by the City in this matter. If expenses are greater than the initial deposit, further funds must be deposited by the applicant or the process stops and a delay may result.

I understand that I am responsible for, and hereby agree to pay all expenses, incurred by the City, with regard to this Application. This will include administrative costs, planning, engineering and legal fees, and other professional consultant fees that the City may incur. These expenses shall be paid by me, the Applicant, before any City approval is given. I agree that the City may withhold the issuance of any permits or licenses which I seek (including Building Permits) if I am delinquent in the payment of any City costs or fees.

I further understand that the deposit or escrow amount collected for the payment of expenses may be held for a period of up to one year from the date of application, or in the case of a minor or major subdivision, until the project has been completed and all necessary disbursements are made to the satisfaction of the City.

**Site Visits:** The undersigned hereby consents that the City of Grant officials, employees, appointed commissioners and consultants hired by the City may enter the property to inspect the layout of structures, proposed placement of planned structures and additions, and the property's site features and dimensions.

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**Property Owner Applicant (if not property Owner)**

The following documents were supplied to the applicant:

\_\_\_\_\_ **Timelines Resolution**

\_\_\_\_\_ **Fee Schedule**

\_\_\_\_\_ **Minor Subdivision Guideline**

\_\_\_\_\_ **Conditional Use Permit Guideline**

\_\_\_\_\_ **Calendar of Meetings**

\_\_\_\_\_ **Major Subdivision Guideline**

\_\_\_\_\_ **Variance Application Guideline**

\_\_\_\_\_ **Other:** \_\_\_\_\_

This is an application for horse boarding on the property consisting of 164 acres on

PIDs

28.030.21.42.0003  
28.030.21.34.0001  
28.030.21.31.0003  
28.030.21.31.0002  
33.030.21.21.0002

The property has been previously approved and used for horse boarding by John and Jean Kohler and then Paul Bruggamen. As the current owner of the property, I would like to board up to 75 horses on pasture and 20 horses in paddock/box stalls. All feed and manure for paddock horses will be provided from offsite and removed off site. Based on the requirements of ordinance 32 section 32-328, the property will comply by the following:

- 1) All paddock areas will be scrapped and the manure removed from the property on a minimum of an annual basis to a location that has the ability to properly utilize it as compost. No manure will be piled within 100 feet of a wetland. There are no streams or other moving water in the property
- 2) No drainage from a paddock area will be allowed to go into a wetland or to create ground water contamination.
- 3) No lighting currently violates section 32-321 or will be installed that would violate section 32-432
- 4) The property shall have operating hours of 7:00 am to 11:00 pm and shall comply with section 32-332 regarding noise. There will be no on-street parking. The property entrance is on a county road that is a main thoroughfare so there is no discernible impact to neighbors
- 5) Horse shows and training exhibitions would be allowed that do not violate the noise, lighting, parking, or hours of operation conditions.
- 6) Fencing will be compliant with normal fencing for horse containment and all setbacks requirements for buildings shall be maintained.



**Stewart Title Guaranty Company**  
**Issued by its Agent, Land Title, Inc.**  
**2200 West County Road C, Suite 2205 Roseville, MN 55113**

**COMMITMENT**

**SCHEDULE A**

Commitment No. 339145

**6th Supplemental**  
Case No. 339145

**EXHIBIT A**

**Parcel A:**

That part of the West half of the Southeast Quarter of Section 28, Township 30, Range 21, Washington County, Minnesota, according to the government survey thereof; described as follows: Beginning at the intersection of the West line of said West half of the Southeast Quarter and the South line of Washington County Right of Way Plat No. 19; thence North 88 degrees 31 minutes 17 seconds East, on a bearing based on the Washington County coordinate system, South zone, along said South plat line a distance of 169.11 feet; thence South 1 degree 28 minutes 43 seconds East along said plat line a distance of 35.00 feet; thence North 88 degrees 31 minutes 17 seconds East along said plat line a distance of 100.00 feet; thence North 1 degree 28 minutes 43 seconds West along said plat line a distance of 35.00 feet; thence North 88 degrees 31 minutes 17 seconds East along said plat line a distance of 276.71 feet to a point on a line parallel with and 545.80 feet West of the West line of said West half of the Southeast Quarter, as measured along the North line of said West half of the Southeast Quarter, thence South 0 degrees 00 minutes 37 seconds West along said parallel line a distance of 188.32 feet; thence North 88 degrees 36 minutes 30 seconds East and parallel with the North line of said West half of the Southeast Quarter a distance of 175.00 feet; thence South 00 degrees 00 minutes 37 seconds West a distance of 60.00 feet; thence South 51 degrees 41 minutes 18 seconds East a distance of 489.02 feet to the Westerly right-of-way line of the Soo Line Railroad, as the same is now located, thence Southwesterly along said Westerly right-of-way line to the South line of said West half of the Southeast Quarter; thence South 88 degrees 36 minutes 02 seconds West along said South line a distance of 39.53 feet to the Southwest corner of said West half of the Southeast Quarter; thence North 0 degrees 00 minutes 37 seconds East along the West line of said West half of the Southeast Quarter a distance of 2573.45 feet to the point of beginning.

AND

**Parcel B:**

All that part of the Northeast Quarter of the Northwest Quarter (NE 1/4 of NW 1/4) and all that part of the Northwest Quarter of the Northeast Quarter (NW 1/4 of NE 1/4) of Section Thirty-three (33), in Township Thirty (30) North, of Range Twenty-one (21) West, Grant Township, Washington County, Minnesota, lying Westerly of the Northwesterly R/W of the Minneapolis, St. Paul and Sault St. Marie Railroad.

AND

This commitment is invalid unless the Insuring Provisions and Schedules A and B are attached.

Schedule A consists of 4 page(s)

Stewart Title Guaranty Company  
Issued by its Agent, Land Title, Inc.  
2200 West County Road C, Suite 2205 Roseville, MN 55113

## COMMITMENT

### SCHEDULE A

Commitment No. 339145

6th Supplemental  
Case No. 339145

**Parcel C:**

That part of the Southwest Quarter of Section 28, Township 30, Range 21, Washington County, Minnesota described as follows: Beginning at the intersection of the West line of the East 1/2 of the West 1/2 of said Southwest 1/4 and the North line of the South 1705.07 feet of said Southwest 1/4; thence South 0° 18' 28" East along said West line a distance of 296.30 feet; thence North 88° 38' 54" East a distance of 1175.23 feet; thence North 19° 35' 52" West to the center line of County State Aid Highway No. 12; thence Westerly along said center line to the center line of a Minnesota Pipe Line Company easement as now laid out across said Southwest 1/4; thence Southerly along the center line of said easement to the North line of the South 1705.07 feet of said Southwest 1/4; thence West to the point of beginning.

AND

**Parcel D:**

East 1/2 of the Southwest 1/4 of Section 28, Township 30 Range 21 in Washington County, Minnesota.

Also that part of the East 1/2 of the West 1/2 of the Southwest 1/4 of Section 28 lying South of the center line of County State Aid Highway No. 12 as now laid out and traveled except the South 980.38 feet of said East 1/2 of the West 1/2 of the Southwest 1/4 and except that part lying Westerly of the center line of a Minnesota Pipe Line Company Easement as now laid out across the Southwest 1/4 of said Section 28 and lying Northerly of the South 1705.07 feet of said East 1/2 of the West 1/2 of the Southwest 1/4 as measured along the West line thereof. Subject to the right of way of County State Aid Highway No. 12 as now laid out and traveled along the North line of said Southwest 1/4 and subject to a 66 foot wide easement to Minnesota Pipe Line Company as now laid out across said Southwest 1/4.

EXCEPT

That part of the Southwest Quarter of Section 28, Township 30, Range 21, Washington County, Minnesota described as follows: Beginning at the intersection of the West line of the East 1/2 of the West 1/2 of said Southwest 1/4 and the North line of the South 1705.07 feet of said Southwest 1/4; thence South 0° 18' 28" East along said West line a distance of 296.30 feet; thence North 88° 38' 54" East a distance of 1175.23 feet; thence North 19° 35' 52" West to the center line of County State Aid Highway No. 12; thence Westerly along said center line to the center line of a Minnesota Pipe Line Company easement as now laid out across said Southwest 1/4; thence Southerly along the center line of said easement to the North line of the South 1705.07 feet of said Southwest 1/4; thence West to the point of beginning.

AND EXCEPT

This commitment is invalid unless the Insuring Provisions and Schedules A and B are attached.

Schedule A consists of 4 page(s)

**Stewart Title Guaranty Company**  
**Issued by its Agent, Land Title, Inc.**  
2200 West County Road C, Suite 2205 Roseville, MN 55113

**COMMITMENT**

**SCHEDULE A**

Commitment No. 339145

**6th Supplemental**  
Case No. 339145

The East 600 feet and the South 980.38 feet of said East 1/2 of the Southwest 1/4.

AND

**Parcel E:**

The East 600.00 feet of the Southwest 1/4; thence South 980.38 feet of the East 1/2 of the Southwest 1/4 lying West of the East 600.00 feet thereof and the South 980.38 feet of the East 1/2 of the West 1/2 of the Southwest 1/4 all in Section 28, Township 30, Range 21, Washington County, Minnesota.

This commitment is invalid unless the Insuring Provisions and Schedules A and B are attached.

Schedule A consists of 4 page(s)



# CONDITIONAL USE PERMIT (CUP) APPLICATION CHECKLIST

## CITY OF GRANT

Mailing Address: P.O. Box 577  
Willernie, Minnesota 55090  
Town Hall: 111 Wildwood Road  
Phone: (651) 426-3383 Fax: (651) 429-1998  
E-mail: cityclrk@visi.com

Receipt No.

ESCROW: \_\_\_\_\_

FEE: \_\_\_\_\_

Makes checks payable to City of Grant.

### GENERAL REQUIREMENTS:

1. Application Form
2. Fees
3. Escrow
4. Complete legal description
5. A description of the request (either on the application form or in a letter)
6. Public Hearing mailing list of property owners within 1,250 feet of the property boundaries. Contact Washington County Surveyor's Office: (651) 430-6875.
7. Site Plan
  - 4 plan sets, 22" x 34"
  - 15 plan sets, 11" x 17"

#### Plan Sheet Requirements:

- Title block
- Name, address, phone number for owner, developer, surveyor, engineer
- Date of preparation and revision dates
- North Arrow
- Graphic scale not less than 1:100

### INCLUDED IN SUBMITTAL

- |   |                             |
|---|-----------------------------|
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO |

### SITE PLAN REQUIREMENTS

#### EXISTING AND PROPOSED:

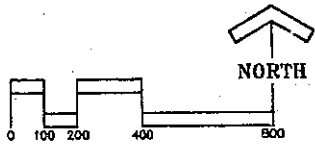
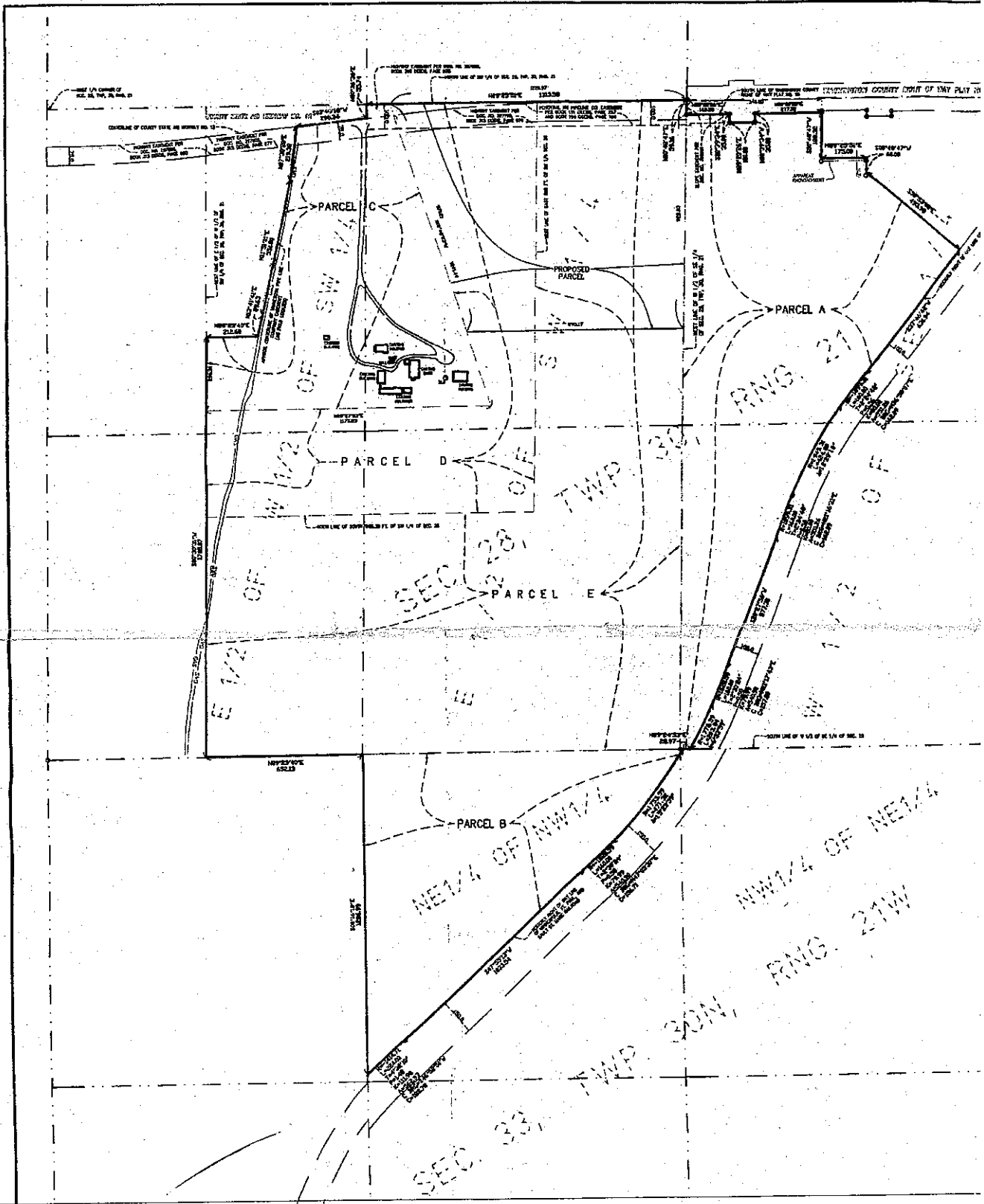
1. Site plans drawn to scale showing property lines and dimensions
2. Area in acres and square feet
3. Setbacks
4. Buildable area
5. Location of all buildings and their size and dimensions, including square footage.
6. Vegetation, landscaping, and screening plans including species and size of trees and shrubs proposed.
7. Wetland delineation
8. Topographic contours at 2-foot intervals, bluff line (if applicable)
9. Waterbodies, Ordinary High Water Level and 100 year flood elevation
10. Curb cuts, driveways, access roads, parking spaces, off-street loading areas, and sidewalks
11. Finished grading and drainage plan sufficient to drain and dispose of all surface water accumulated.
12. Type of business or activity and proposed number of employees. *- up to 5*

### INCLUDED IN SUBMITTAL

- |   |                             |   |
|---|-----------------------------|---|
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A            |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A            |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A            |
| <input type="checkbox"/> YES            | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A            |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A            |
| <input type="checkbox"/> YES            | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> YES            | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> YES            | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> YES            | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A            |

**CONDITIONAL USE PERMIT (CUP)  
APPLICATION CHECKLIST**  
City of Grant, Minnesota

- 
- 13. Proposed floor plan and elevations of any building with use indicated.  YES  NO  N/A
  - 14. Sanitary sewer and water plan with estimated flow rates.  YES  NO  N/A
  - 15. Soil type and soil limitations for the intended use. If severe soil limitations for the intended use are noted, a plan or statement indicating the soil conservation practice or practices to be used to overcome said limitation shall be made part of the application.  YES  NO  N/A
  - 16. A location map showing the general location of the proposed use within the community.  YES  NO  N/A
  - 17. A map showing all principal land use within twelve hundred fifty (1,250) feet of the parcel for which the application is being made. *NOT possible*  YES  NO  N/A
  - 18. Location of wells and septic systems on adjacent properties.  YES  NO  N/A
  - 19. Additional information relevant to the request  YES  NO  N/A



**PROPOSED PARCEL:**

That part of the north 328.36 feet of the East Half of the Southwest Quarter of Section 28, Township 30, Range 21, Washington County, Minnesota lying easterly of the following described line:

Commencing at the southwest corner of the East Half of the West Half of the Southwest Quarter of Section 28, Township 30, Range 21, Washington County, Minnesota; thence North 0 degrees 30 minutes 31 seconds East, assumed bearing, a distance of 1403.77 feet along the east line of said East Half of the West Half of the Southwest Quarter; thence North 89 degrees 27 minutes 33 seconds East a distance of 1175.23 feet to the point of beginning of the line to be described; thence North 18 degrees 46 minutes 53 seconds West a distance of 1088.78 feet to the north line of said Southwest Quarter and said line there terminating.

**GENERAL NOTES:**

1. Bearing system 1983 adj.
2. Underneath to MS 216B cc
3. This survey Committed to

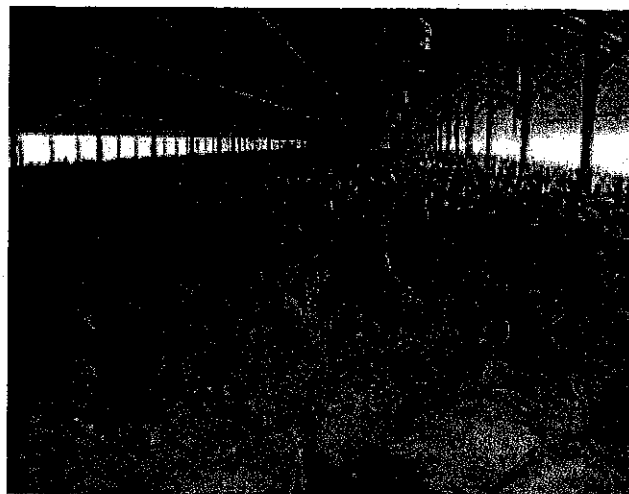


**Minnesota  
Pollution  
Control  
Agency**

# Feedlot Registration

Water Quality/Feedlots 4.01 • Updated August 2009

**M**innesota law requires most feedlots owners to register their feedlot with the Minnesota Pollution Control Agency (MPCA). Owners meet feedlot registration requirements by filling out a form that is provided by the MPCA. Owners that have applied for a permit are automatically registered.



Feedlot owners are required to update their registration information in every four-year interval after the initial registration deadline of January 1, 2002. The MPCA notifies owners 90 days prior to the re-registration deadline

that it takes to exceed 10 animal units or 50 animals units:

**MPCA Area Offices:**

- Rochester:**  
507/285-7343
- Mankato:**  
507/389-5977
- Marshall:**  
507/537-7146
- Willmar:**  
320/214-3786
- Detroit Lakes:**  
218/847-1519
- Brainerd:**  
218/828-2492
- Duluth:**  
218/723-4660
- Metro:**  
651/296-6300
- Toll-Free Number:**  
800/657-3864

**Am I required to register?**

The location and number of animals at the site determines whether or not a feedlot must register. Owners of the following operations must register:

1. Feedlots located in shoreland, and that maintain 10 animal units or more.
2. Feedlots located outside of shoreland, and that maintain 50 animal units or more.

**Shoreland.** Shoreland, in most instances, refers to land that is 1,000 feet or less from a lake or 300 feet or less from a river or stream. In rare instances, land near large ponds, wetlands or ditches is classified as shoreland.

**Animal unit.** An animal unit is a term used to compare the differences in the production of animal manure. The table below shows the typical number of animals

Animal units	Dairy Cows	Beef Cows	Feeder Pigs
10	8	10	30
50	40	50	150

Owners that have closed their feedlots are not required to register. The MPCA defines a closed feedlot as a feedlot that has not had animals for the past five years.

**Pastures**

Livestock operations that are only pastures do not need to be registered. The definition of pastures in Minnesota Rule 7020 states that pastures are areas where grass or other growing plants are used for grazing and where the concentration of animals is such that a vegetation cover is maintained during the growing season except in the immediate vicinity of temporary supplemental feeding or watering devices.



**Minnesota  
Pollution  
Control  
Agency**

Regional  
Division

Feedlot Program

# Construction Short-Form Permit

Water Quality/Feedlots #3.03 February 2001, Revised December 2005

The Construction Short-Form permit covers owners and operators of animal feedlots and manure storage areas having a capacity of 300 to 999 animals who are constructing or expanding their facility.

## Do I Need a Construction Short-Form Permit?

To determine if a Construction Short-Form permit is appropriate for your facility, ask yourself the following four questions:

1. Do you intend to construct or expand a feedlot or manure storage area that is between 300 and 999 animal units?
2. Will the feedlot or manure storage area be constructed and operated in accordance with the technical standards in Minn. Rule chapter 7020.2000 to 7020.2225?
3. Yes or no: the existing facility does **not** presently have a "pollution hazard"?
4. Yes or no: the capacity of the proposed facility will not meet or exceed the Large Concentrated Animal Feeding Operation threshold? (For information about this threshold see the factsheet "NPDES/SDS Feedlot Permits: Frequently Asked Questions" available on MPCA website.)

If you can answer "yes" to all four of the above questions, then the Construction Short-Form permit is appropriate for your situation.

Only construction that is in accordance with the technical standards of the feedlot rules, Minn. R. chap. 7020.2000 to

7020.2225, is covered under this permit. Owners who propose to construct or operate a facility in a method other than that described in the technical standards must apply for and obtain a State Disposal System (SDS) permit.

Sites under 300 animal units that are constructing or expanding and do not have a pollution hazard, do not need to apply for a permit, but do need to comply with the technical standards in the rule.

## Duration of the Permit

Construction Short-Form permits expire after 24 months but may be extended for one 24-month period if construction has not been completed. This extension is to be requested at least 90 days prior to the expiration date of the permit.

## For More Information

The content of the permit application is described under Minn. R. chap. 7020.0505 subp. 4. For a copy of the feedlot rule, contact the MPCA at 651-296-6300, 800-657-3864 or download it from the MPCA website:

<http://www.pca.state.mn.us/hot/feedlot-forms.html>.

Or, for more information call your area office listed on this fact sheet and ask for the feedlot staff person, or call your county feedlot officer.

### MPCA Area Offices:

**Rochester area:**

507/285-7343

**Mankato area:**

507/389-5977

**Marshall area:**

507/537-7146

**Willmar area:**

320/214-3786

**Detroit Lakes area:**

218/847-1519

**Brainerd area:**

218/828-2492

**Duluth area:**

218/723-4660

**Metro area:**

651/296-6300

**Toll-Free Number:**

800/657-3864

**Feedlot Service Center:**

877/333-3508

Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194

(612) 296-6300, toll-free (800) 657-3864, TDD (612) 282-5332

This material can be made available in alternative formats for people with disabilities.







**Minnesota  
Pollution  
Control  
Agency**

Feedlot  
Program

Feedlot Rule  
Summary

# Under 300 Animal Units: Construction and Expansion

February 2001

## Contents

Permits  
Construction notification  
Technical requirements  
Siting restrictions

See fact sheet,  
**Under 300 Animal Units:  
Operation and Management**  
for information about  
registration, manure  
application, pastures,  
stockpiles and other  
operational issues.

## MPCA Area Offices:

**Rochester area:**  
507/285-7343

**Mankato area:**  
507/389-5977

**Marshall area:**  
507/537-7146

**Willmar area:**  
320/214-3786

**Detroit Lakes area:**  
218/847-1519

**Brainerd area:**  
218/828-2492

**Duluth area:**  
218/723-4860

**Metro area:**  
651/296-6300

**Toll-Free Number:**  
800/657-3864

**Feedlot Service Center:**  
877/333-3508

This fact sheet is intended to provide producers with the basic information they need to comply with the revised state feedlot regulations when constructing or expanding a feedlot. See MN Rule Chapter 7020 or referenced rules for specific information. Please keep in mind that where local ordinances are more restrictive than state laws, the local ordinance must also be followed. Please contact your local county feedlot officer or planning and zoning department.

## **Permits**

No state feedlot permit is needed for construction, however, owners must comply with all technical standards for location, designs, construction and operation. Local permits and notifications may be required.

A State Disposal System (SDS) permit is needed for proposed construction that is different than technical standards under Chapter 7020.

## **Construction Notifications**

The local zoning authority must be notified of all construction activities at least 30 days prior to construction.

Owners are required to notify the MPCA or delegated county at least three days prior to commencement of construction and within three days of completion of

construction. Construction notifications must be sent to MPCA or delegated county.

## **Liquid Manure Storage Structures**

Standards for constructing liquid manure storage structures include:

- Seepage limits for various liner types
- Plans and specifications designed by an engineer
- Construction inspections
- Notifications and reports
- Location restrictions
- Separation to bedrock restrictions

A professional engineer or NRCS staff must prepare and sign plans and specifications (except concrete-lined structures having a capacity of less than 20,000 gallons).

## **Location Restrictions**

New feedlots *cannot* be located:

- In shoreland
  - Within 300 feet of a river or stream
  - Within 1,000 feet of a lake, pond or flowage
- In a 100-year floodplain
- Within 300 feet of a sinkhole
- Within 100 feet of a private well

