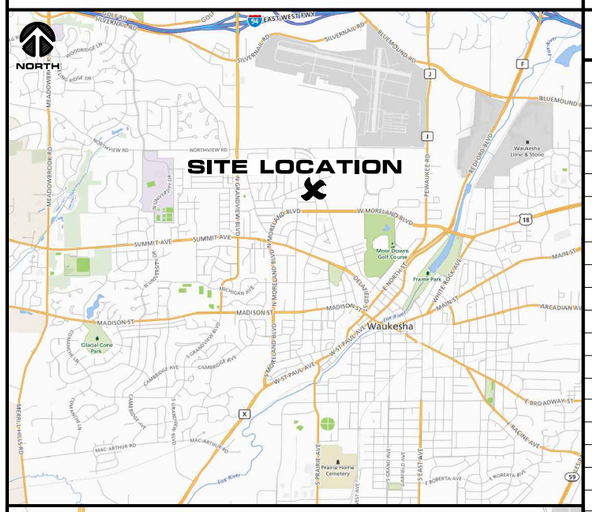
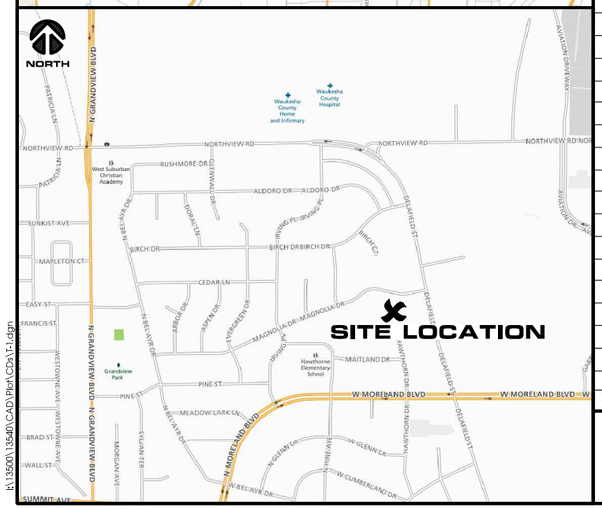
U.S. Cellular

WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN
CONSTRUCTION DRAWINGS
106' MONOPINE

Edge
Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

SITE LOCATION MAPS





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* COMPLETED BY OTHERS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS/CONDITIONS ON SITE. IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PERFORMING ANY WORK OR BE RESPONSIBLE FOR THE SAME.

DIRECTORY

ENGINEERING COMPANY:
EDGE CONSULTING ENGINEERS, INC.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
CONTACT: ANDREW BRADLEY
PHONE: 608.644.1449
FAX: 608.644.1549

CLIENT:
U.S. CELLULAR - CEDAR RAPIDS
4201 RIVER CENTER CT. NE SUITE 101
CEDAR RAPIDS, IA 52402
CONTACT: NIKA ASWEGAN
PHONE: 319.743.1229

SITE ACQUISITION:
FIRST AMERICAN SITE ACQUISITION
2124 LARRY DRIVE, N.E.
CEDAR RAPIDS, IA 52402
CONTACT: JULIE SHEBEK
PHONE: 319.721.0411
FAX: 319.294.0977

SURVEYOR:
MERIDIAN SURVEYING, LLC
N8774 FIRELANE 1
MENASHA, WI 54952
CONTACT: CRAIG KEACH
PHONE: 920.993.0881

PROJECT INFO

SITE LOCATION:
915 MAGNOLIA DRIVE
WAUKESHA, WI 53188

E911 ADDRESS: TBD

SITE #: 784719

PROPERTY OWNER:
BOARD OF TRUSTEES OF EL BUEN
SAMARITANO UNITED METHODIST CHURCH
915 MAGNOLIA DRIVE
WAUKESHA, WI 53188

1A INFORMATION (NAD 1983/2011)
-TOWER BASE- (CENTER OF LEASE PARCEL)
LAT: 43°-01'-38.45"
LONG: 88°-14'-39.13"
GROUND ELEVATION (NAVD 88): 938.1'

PLSS INFORMATION:
PART OF THE SW1/4 OF THE NW1/4, SECTION 34,
AND THE WE1/4 OF THE NE1/4, SECTION 33,
ALL IN T.7N., R.19E.,
CITY OF WAUKESHA,
WAUKESHA COUNTY
WISCONSIN

PARCEL NUMBER:
WAKC0998988 (LEASE & EASEMENT)
WAKC0993019 (EASEMENT)

SCOPE OF WORK

PROJECT DESCRIPTION:

PROJECT TYPE:	106' MONOPINE
EQUIPMENT:	11'-3" x 16'-0" EQUIPMENT SHELTER

RF DESCRIPTION (VERIFY WITH ECR):

PRO: ANTENNA C/L:	100' AGL
ANTENNAS:	(3) CDMA ANTENNAS
	(3) LTE ANTENNAS
CABLES:	(3) PRO. HYBRID LINES
EQUIPMENT:	(3) PRO. SURGE PROTECTORS
	(9) PRO. REMOTE RADIO UNITS
	(6) PROPOSED DIPLEXERS

FAA REQUIREMENTS

PROPOSED STRUCTURE MAY NOT EXCEED AN ELEVATION OF 1049' PER FAA AERONAUTICAL STUDY NO. 2016-AGL-4926-OE; NO APPURTENANCE MAY EXCEED THIS ELEVATION

UTILITY INFO

ELECTRIC PROVIDER: NAME: WE ENERGIES
PHONE: 1.800.662.4797

FIBER OPTIC PROVIDER: NAME: TO BE DETERMINED
PHONE:

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CALL DIGGER'S HOTLINE

TOLL FREE
1-800-242-8511
FAX A LOCATE 1-800-338-3860

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

ENGINEER SEAL:

I HEREBY CERTIFY THAT THIS PLAN SET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION OTHER THAN THE EXCEPTIONS NOTED IN THE SHEET INDEX, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WISCONSIN.

Signature: _____

Date: _____

SHEET TITLE:
TITLE SHEET
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB
PLOT DATE: 10/31/2016
PROJECT #: 13540
FILE NAME: T-1.dgn

SHEET NUMBER:
T-1

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GENERAL REQUIREMENTS

1. SITE WORK SHALL BE COMPLETED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS (US CELLULAR STANDARD PLANS AND SPECIFICATIONS) AND THE REFERENCED STANDARDS.
   A. ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.
   B. UNIFORM BUILDING CODE (UBC) BUILDING OFFICIALS & CODE ADMINISTRATORS (BOCA) AS APPLICABLE.
   C. AMERICAN CONCRETE INSTITUTE (ACI).
   D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
   E. ELECTRONICS INDUSTRIES ASSOCIATION STANDARDS (EIA/TIA-222-F) MOST CURRENT VERSION ADOPTED BY SUBJECT STATE.
   F. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
2. WHERE A CONFLICT OCCURS BETWEEN REFERENCED STANDARDS AND US CELLULAR STANDARD PLANS AND SPECIFICATIONS, THE MORE STRINGENT STANDARD SHALL APPLY.
3. THE FACILITY IS AN UNOCCUPIED SPECIALIZED MOBILE RADIO FACILITY.
4. PLANS ARE NOT TO BE SCALED AND ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY. UNLESS NOTED OTHERWISE THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
5. PRIOR TO THE SUBMISSIONS OF THE BIDS, THE CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE.
6. THE CONTRACTOR SHALL RECEIVE IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEM NOT CLEARLY IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
8. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING BEST SKILLED PERSONNEL. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT INCLUDING CONTACT AND COORDINATION WITH THE LANDLORDS AUTHORIZED REPRESENTATIVE.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS OF THE SITE AND NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BEFORE STARTING ANY WORK.
10. WHEN CONTRACTOR'S ACTIVITIES IMPEDE OR OBSTRUCT TRAFFIC FLOW, CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL DEVICES, SIGNS, AND FLAGMEN IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
11. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND US CELLULAR PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS SUCH AS BUT NOT LIMITED TO, PAVING, CURBS, AGRICULTURAL CROPS, DRAIN TILE, FENCES, LANDSCAPING, GALVANIZED SURFACES, ETC. AND UPON COMPLETION OF WORK REPAIR ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
13. THE LOCATIONS OF UTILITIES SHOWN ON THE PLAN ARE BASED ON EXISTING RECORDS, FIELD LOCATIONS OR OWNER SUPPLIED INFORMATION AND MAY NOT BE ACCURATE. THE CONTRACTOR SHALL MARK ALL PUBLIC & PRIVATE UTILITIES. THE CONTRACTOR SHALL CALL THE LOCAL "ONE CALL" PROVIDER A MINIMUM OF THREE BUSINESS DAYS PRIOR TO EXCAVATING TO ALLOW MEMBER UTILITIES TO LOCATE THEIR FACILITIES. THE PROPERTY OWNER SHALL BE NOTIFIED IN A SIMILAR FASHION TO ALLOW HIM TO LOCATE HIS PRIVATE UTILITIES.
14. WHEN EXCAVATING AROUND UTILITIES, THE CONTRACTOR SHALL USE REASONABLE CARE IN LOCATING AND PROTECTING UTILITIES. US CELLULAR SHALL BE NOTIFIED IMMEDIATELY OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
15. DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHALL BE REPORTED TO US CELLULAR AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE RESULTING FROM CONTRACTOR'S NEGLIGENCE OR FAILURE TO ACT WITH DUE REGARD SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
16. UNLESS OTHERWISE NOTED ON THE PLANS, CONTRACTOR SHALL ASSUME ALL SURFACE FEATURES SUCH AS BUILDINGS, PAVEMENTS, LANDSCAPING FEATURES AND PLANTS ARE TO BE SAVED AND PROTECTED FROM DAMAGE.
17. KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
18. THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
19. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.
20. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY US CELLULAR WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.
21. MEANS AND METHODS OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, THE DESIGN AND PLACEMENT OF FORMS AND SHORING ARE THE RESPONSIBILITY OF THE CONTRACTOR.
22. THE GENERAL CONTRACTOR SHALL COORDINATE/ASSIST DIFFERENT TRADE CONTRACTORS IN TERMS OF COORDINATION OF SITE ACCESS.
23. ALL ARCHITECTURAL, MECHANICAL & ELECTRICAL SYSTEM AND COMPONENTS IN THIS FACILITY SHALL BE INSTALLED TO RESIST WIND, ICE AND SNOW FORCES AS PER NATIONAL STANDARDS AND BUILDING CODES (LATEST ADOPTED EDITION).
24. US CELLULAR WILL OBTAIN NECESSARY PERMITS AND LICENSES FROM THE FEDERAL COMMUNICATIONS COMMISSION (FCC) AND THE FEDERAL AVIATION ADMINISTRATION (FAA). UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL OTHER PERMITS NECESSARY FOR CONSTRUCTION.
25. US CELLULAR WILL ORDER AND PAY FOR ANY NECESSARY ELECTRIC AND TELEPHONE UTILITY INSTALLATIONS TO THE POINT OF TERMINATION AS SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES.
26. US CELLULAR WILL PROVIDE PRIMARY HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE TO CORRECTLY TRANSFER LINE AND GRADE. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL STAKING OR RE-STAKING.
27. US CELLULAR MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTORS WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING TESTS.
28. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY UTILITIES OR FACILITIES IT DEEMS NECESSARY TO COMPLETE IT'S WORK. THIS INCLUDES, BUT IS NOT LIMITED TO WATER, SEWER, POWER, TELEPHONE, HEAT, LIGHTING OR SECURITY.
29. NOTIFY ENGINEER 2 DAYS IN ADVANCE OF INITIATING SITE CONSTRUCTION ACTIVITIES.

DEMOLITION

1. PERFORM DEMOLITION AND REMOVAL OF EXISTING MATERIALS OR STRUCTURES AS SHOWN ON THE PLANS AND AS SPECIFIED IN SPECIAL CONDITIONS. PROTECT EXISTING FACILITIES OR STRUCTURES THAT ARE TO REMAIN.
2. COMPLETE DEMOLITION IN A SYSTEMATIC MANNER BEGINNING AT THE HIGHEST LEVEL.
3. NEATLY SAW OR CUT JOINTS AT THE LIMITS OF REMOVAL: WHENEVER POSSIBLE LOCATE CUTS AT EXISTING JOINTS.
4. PATCH AND REPAIR ANY DAMAGED SURFACES OR STRUCTURAL MEMBERS AT THE LIMITS OF REMOVAL.
5. REMOVAL DEMOLITION DEBRIS FROM THE SITE ON A REGULAR BASIS. DISPOSE ALL DEBRIS OFFSITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. BURNING OF MATERIAL SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

CLEARING AND GRUBBING

1. REMOVE TREES, STUMPS, SHRUBS, GRASS AND OTHER VEGETATION AS SHOWN ON THE PLANS TO ALLOW FOR CONSTRUCTION OF NEW CELLULAR FACILITIES.
2. WHEN POSSIBLE, NEATLY TRIM OR CUT BACK EXISTING TREES OR VEGETATION TO ALLOW FOR CONSTRUCTION OF NEW CELLULAR FACILITIES.
3. WHEN CLEARING TREES, PROTECT ALL SURROUNDING STRUCTURES, PAVEMENTS AND LANDSCAPING BY TOPPING, TRIMMING AND USING GUY LINES.
4. COMPLETELY REMOVE ALL STUMPS AND ROOTS. STUMPS AND ROOTS MAY BE REMOVED BY GRUBBING, CHIPPING OR GRINDING.
5. DISPOSE OF ALL DEBRIS OFFSITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. BURNING OF MATERIAL SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

EARTHWORK

1. REMOVE TOPSOIL FROM BENEATH ALL PROPOSED ROADS, PARKING AREAS, BUILDINGS AND AREAS TO RECEIVE MORE THAN 6" OF FILL. STOCKPILE TOPSOIL FOR USE DURING RESTORATION.
2. ALL TREES DESIGNATED TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION BY A 5 FOOT HIGH TREE BARRIER UTILIZING WIRE FENCING, OR PROTECTIVE SAFETY NETTING. SEE DETAIL A/L-1 (IF APPLICABLE).
3. GRADE AREAS IN ACCORDANCE WITH ELEVATIONS AND GRADES SHOWN ON THE PLANS OR AS NECESSARY IN GRADING TO PROVIDE DRAINAGE.
4. FILL MATERIAL USED IN GRADING OPERATIONS SHALL CONSIST OF EARTH WHICH IS FREE OF DEBRIS, BOULDERS OR ORGANIC MATERIAL. FILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 90% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.
5. ALL FILL SHALL BE TESTED FOR FIELD DENSITY. TESTS SHALL BE TAKEN IN EACH LIFT OF FILL AT LOCATIONS DESIGNATED BY THE OWNER'S REPRESENTATIVE.
6. SELECT GRANULAR FILL SHALL BE USED WHEN FILLING OR BACKFILLING BENEATH AND/OR AROUND ANY STRUCTURES, ROADS OR PARKING AREAS. SELECT FILL SHALL BE PLACED IN 9" LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. SELECT GRANULAR FILL SHALL CONSIST OF SAND, GRAVEL OR MIXTURE OF SAND AND GRAVEL FREE OF ORGANIC MATERIAL. THE MATERIAL SHALL HAVE A 2" MAXIMUM SIZE, LESS THAN 10% PASSING NO. 200 SIEVE, A PLASTICITY INDEX OF 6 OR LESS, AND A UNIFORMITY COEFFICIENT OF 5 OR GREATER.
7. ALL DISTURBED AREAS SHALL BE RESTORED AS SOON AS POSSIBLE WITH 4" TOPSOIL, SEED, FERTILIZER AND MULCH. GRASS SEED SHALL BE A SUITABLE MIX CONTAINING BOTH ANNUAL AND PERENNIAL VARIETIES OF FESCURE, RYE AND BLUEGRASS. FERTILIZER SHALL CONTAIN A MINIMUM OF 10% EACH OF NITROGEN, PHOSPHORIC ACID AND POTASH. MULCH SHALL BE A STRAW OR HAY MIXTURE FREE OF NOXIOUS WEED SEEDS. APPLY SEED AND FERTILIZER AS RECOMMENDED BY MANUFACTURER. MULCH SHALL BE CRIMPED AFTER APPLICATION.

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SPECIFICATIONS

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WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
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FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB

PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: SP-1.dgn

SHEET NUMBER:

SP-1

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9. THE CONTRACTOR SHALL VERIFY, UPON COMPLETION OF DEVELOPMENT, THE SITE IS PROPERLY STABILIZED AND ALL INDICATED SWALES & STORMWATER FACILITIES ARE CONSTRUCTED AS INDICATED ON THE PLANS.

10. TOWER, TOWER FOUNDATIONS, SLABS, MODULAR BUILDINGS, AND ELECTRICAL AND MECHANICAL FEATURES ARE TO BE DESIGNED AND SPECIFIED BY OTHERS.

11. EROSION CONTROL - ALL MEASURES SHALL BE INSPECTED DAILY AND IMMEDIATELY FOLLOWING ALL RAIN FALL EVENTS. ALL DEFICIENCIES SHALL BE NOTED AND REPAIRED IMMEDIATELY.

12. SEDIMENTATION CONTROL - SEDIMENTATION CONTROL SHALL BE ACCOMPLISHED DURING CONSTRUCTION THROUGH THE USE OF SILT FENCING PLACED AS SHOWN ON THE ATTACHED PLAN. THE CONTROL DEVICES SHALL BE SET AT THE ONSET OF SITE GRADING TO PREVENT SILTING OF THE EXISTING STORMWATER FACILITIES.

EROSION CONTROL

1. CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH THE MOST STRINGENT OF: PROJECT PLANS, SPECIAL PROVISIONS, THE IOWA DEPARTMENT OF NATURAL RESOURCES OR LOCAL ORDINANCES.

2. ESTABLISH EROSION CONTROL MEASURES PRIOR TO STARTING CONSTRUCTION AND MAINTAIN THROUGHOUT CONSTRUCTION. INSPECT EROSION CONTROL MEASURES FOLLOWING EACH RAINFALL EVENT AND REPAIR AS NECESSARY.

ROAD AND PARKING AREA CONSTRUCTION

1. PREPARE SUBGRADE FOR ROADS AND PARKING AREAS IN ACCORDANCE WITH "EARTHWORK" SECTION.

2. PROOF ROLL ROAD TO IDENTIFY UNSUITABLE MATERIALS. EXCAVATE UNSUITABLE MATERIAL AND DISPOSE OFFSITE. BACKFILL UNDERCUT EXCAVATION USING 3" BREAKER RUN MATERIAL. BREAKER RUN MATERIAL SHALL BE CRUSHED STONE MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% WEIGHT PASSING
3"	100
1 1/2"	0-50
3/4"	0-20
#200	0-10

3. PLACE CRUSHED AGGREGATE BASE COURSE IN MAXIMUM OF 6" THICK LIFTS IN ACCORDANCE WITH DETAIL DRAWINGS. MOISTURE CONDITION BASE COURSE AS NECESSARY TO ACHIEVE COMPACTION. BASE COURSE SHALL BE COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. BASE COURSE MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:

3" BASE COURSE

SIEVE SIZE	% WEIGHT PASSING
3"	100
2 1/2"	25-60
3/4"	0-20
3/8"	0-5

1 1/2" BASE COURSE

SIEVE SIZE	% WEIGHT PASSING
1 1/2"	100
1"	70-100
3/4"	55-95
3/8"	30-65
#4	25-55
#10	15-40
#200	0-10

4. PLACE BASE COURSE WITH CROWN OR UNIFORM SLOPE AS NECESSARY TO PROVIDE DRAINAGE FROM THE SITE.

5. GEOTEXTILE FABRIC SHALL BE USED IN THE EVENT OF UNSTABLE SOIL CONDITIONS. VERIFICATION OF SUCH CONDITIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.

CONCRETE AND STEEL REINFORCEMENT

1. CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94. CONCRETE SHALL BE 6 BAG MIX HAVING A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI, MAXIMUM AGGREGATE SIZE OF 1", MAXIMUM WATER CEMENT RATIO OF 0.45, AIR ENTRAINMENT OF 6% +/- 1%, AND SLUMP OF 3" +/- 1". DEVIATIONS FROM THE MIX MUST BE APPROVED BY US CELLULAR PRIOR TO USE.

2. CONCRETE CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST STRINGENT OF: PROJECT PLANS, SPECIAL PROVISIONS, OR THE AMERICAN CONCRETE INSTITUTE (ACI) PUBLICATIONS. CONCRETE WORK FOR TOWER FOUNDATIONS SHALL BE COMPLETED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS PROVIDED BY THE TOWER VENDOR.

3. FORM MATERIALS WILL COMPLY WITH ACI 301. PLYWOOD FORMS SHALL BE APA B-B PLYFORM CLASS I SOUND SHEETS. LUMBER SHALL BE SPRUCE-PINE-FIR SPECIES #2 OR BETTER GRADE. TUBULAR COLUMN FORMS MAY BE SPIRALLY WOUND LAMINATED FIBER MATERIAL. FORM TIES SHALL BE REMOVABLE OR SNAP-OFF METAL TYPE.

4. CONCRETE SHALL BE MADE OF CEMENT MEETING THE REQUIREMENTS OF ASTM C150, NORMAL, TYPE I PORTLAND. FINE AND COARSE AGGREGATES FOR CONCRETE SHALL MEET THE REQUIREMENTS OF ASTM C33.

5. PLACE, SUPPORT AND SECURE REINFORCEMENT STEEL AT LOCATIONS SHOWN ON PLANS. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315. REBAR YIELD STRENGTH = 60,000PSI

6. AIR ENTRAINING ADMIXTURES SHALL MEET THE REQUIREMENTS OF ASTM C260; WATER REDUCING ADMIXTURES SHALL MEET THE REQUIREMENTS OF ASTM C494, TYPE A. ALL OTHER ADMIXTURES ARE PROHIBITED WITHOUT PRIOR APPROVAL BY US CELLULAR.

7. VAPOR BARRIER SHALL BE 6 MIL THICK POLYETHYLENE, MEETING THE REQUIREMENTS OF ASTM D2103.

8. CURING COMPOUND SHALL MEET THE REQUIREMENTS OF ASTM C309.

9. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

10. ALL CONSTRUCTION AND EXPANSION JOINTS SHALL BE INSTALLED PER THE DRAWINGS.

12. ALL EXPOSED CORNERS OF CONCRETE WORK SHALL BE CHAMFERED 3/4 " UNLESS NOTED OTHERWISE.

13. PLACE, SUPPORT AND SECURE REINFORCEMENT STEEL AT LOCATIONS SHOWN ON PLANS. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315.

14. ALL FORM WORK SHALL BE RIGID, TIGHT, LEVEL, PLUMB AND SUFFICIENTLY SHORED TO RESIST CONSTRUCTION LOAD CONDITIONS. COAT FORMS WITH RELEASE AGENT PRIOR TO PLACING REINFORCING STEEL.

15. PREPARE SUBGRADE FOR CONCRETE IN ACCORDANCE WITH PROJECT PLANS AND SPECIAL PROVISION. DO NOT PLACE CONCRETE ON FROZEN SUBGRADE.

16. PROVIDE US CELLULAR A MINIMUM OF 48 HRS. NOTICE PRIOR TO PLACING CONCRETE TO ALLOW FOR INSPECTION AND SCHEDULING OF TESTING.

17. UTILIZE CHUTES, TROUGHS OR CONVEYORS TO PLACE CONCRETE SO THAT HANDLING OF CONCRETE IS MINIMIZED. AVOID SEGREGATION OF THE AGGREGATE AND DISTURBING REINFORCING STEEL.

18. UNIFORMLY CONSOLIDATE CONCRETE USING HAND TOOLS OR MECHANICAL VIBRATORS. THOROUGHLY CONSOLIDATE EACH LAYER PRIOR TO PLACING SUBSEQUENT LAYERS.

19. WHEN PLACING OPERATIONS ARE TEMPORARILY SUSPENDED, THE UNFINISHED FACE OF THE POUR SHALL BE COVERED WITH WET BURLAP UNTIL PLACING OPERATIONS ARE RESUMED. WHEN PLACING OPERATIONS ARE SUSPENDED FOR MORE THAN 30 MINUTES, PROVIDE AN BONDING AGENT TO CONSTRUCTION JOINT.

20. TROWEL FINISH SURFACES UNLESS OTHERWISE DIRECTED ON THE PLANS.

21. AFTER FINAL FINISHING, PROVIDE POLYETHYLENE VAPOR BARRIER OR CURING COMPOUND TO MAINTAIN MOISTURE AND TEMPERATURE OF CONCRETE.

22. IN EXTREME WEATHER PLACE AND CURE CONCRETE IN ACCORDANCE WITH EITHER ACI 306R-89 FOR COLD WEATHER OR ACI 305R-89 FOR HOT WEATHER.

23. WELDING OF REINFORCING STEEL IS PROHIBITED.

24. REMOVE FORMS IN A MANNER THAT DOES NOT DAMAGE THE CONCRETE. FILL AND PATCH POCKETS OR HOLES ON EXPOSED SURFACES USING MORTAR MIXTURE.

25. PROVIDE TEST CYLINDERS AS FOLLOWS:
    A. EQUIPMENT ENCLOSURE:
        1 CYLINDER AT 7 DAYS.
        1 CYLINDER AT 14 DAYS.
        2 CYLINDER AT 28 DAYS.

26. NOTIFY ENGINEER 48 HOURS IN ADVANCE OF TOWER FOUNDATION INSTALLATION.

27. REFER TO TOWER MANUFACTURER SPECIFICATIONS REGARDING FOUNDATION REQUIREMENTS.

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608.644.1549 fax
www.edgeconsult.com

SPECIFICATIONS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB
PLOT DATE: 10/31/2016
PROJECT #: 13540
FILE NAME: SP-2.dgn

SHEET NUMBER:
SP-2

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NORTH

MAGNOLIA DRIVE

RIGHT-OF-WAY

PARCEL LINE

PROPERTY LINE

C/L OF PROPOSED 30' WIDE U.S. CELLULAR ACCESS AND UTILITY EASEMENT

PROPOSED UNDERGROUND UTILITY CONDUIT ROUTING; APPROXIMATELY 430'± FROM COMPOUND TO R.O.W.

CONTRACTOR TO HAND DIG IN AREA OF EXISTING BURIED UTILITIES; NATURAL GAS LINE IN VICINITY

PROPOSED 35'-0" x 40'-0" CEDAR FENCED COMPOUND

PROPOSED LANDSCAPING SCREENING TREES (TYP.); SEE PAGE L-1 FOR DETAILS

PROPOSED 12'-0" WIDE ASPHALT ACCESS DRIVE

PROPOSED 106'-0" MONOPINE

PROPOSED 60'-0" x 60'-0" U.S. CELLULAR LEASE AREA

25' SETBACK LINE

58' TOWER SETBACK LINE

EXISTING ASPHALT DRIVE

EXISTING BUILDING

GRASS

ASPHALT

WOODS

OHE

HAWTHORNE DRIVE

BIRD'S EYE OVERVIEW OF SITE

SCALE: 11" x 17" - 1" = 50'
22" x 34" - 1" = 25'

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SITE PLAN

WAUKESHA AIRPORT II [784719]

WAUKESHA, WISCONSIN

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REV. FINAL DWGS - 11/01/2016	TAS

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FILE NAME: C-1.dgn

SHEET NUMBER: C-1

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NORTH

GRASS

PROPOSED UNDERGROUND UTILITY CONDUIT ROUTING; APPROXIMATELY 430'± FROM COMPOUND TO R.O.W.

25' SETBACK LINE

PROPOSED FIBER OPTIC SPLICE BOX

PROPOSED TRANSFORMER

5'-0" 8'-6" 16'-0" 5'-6"

PROPOSED 10" x 10" HINGED OPENING FOR ELECTRICAL METER READ-OUT; SEE PAGE C-4 FOR DETAIL

PROPOSED MULTI-METER UTILITY RACK; SEE PAGE E-2 FOR DETAILS

PROPOSED 11'-3" x 16'-0" U.S. CELLULAR EQUIPMENT SHELTER

C/L OF PROPOSED 30' WIDE U.S. CELLULAR ACCESS AND UTILITY EASEMENT

PROPOSED 12'-0" WIDE ASPHALT ACCESS DRIVE

GRAVEL COMPOUND

(2) PROPOSED GPS ANTENNAS MOUNTED TO ICE BRIDGE POSTS

PROPOSED 13' LONG U.S. CELLULAR ICE BRIDGE; SEE PAGE A-2 FOR DETAILS

R 20'-0"

58' TOWER SETBACK LINE

PROPOSED 106'-0" MONOPINE

PROPOSED 12'-0" WIDE DOUBLE-SWING ACCESS GATE

EXISTING FIRE PIT TO BE REMOVED

R 5'-0"

PROPOSED 30'-0" ASPHALT TURNAROUND AREA

PROPOSED 35'-0" x 40'-0" CEDAR FENCED COMPOUND

PROPOSED LANDSCAPING SCREENING TREES (TYP.); SEE PAGE L-1 FOR DETAILS

PROPOSED 60'-0" x 60'-0" U.S. CELLULAR LEASE AREA

27'-0" 8'-0" 25'-0"

PROPOSED 35'-0" CEDAR FENCED COMPOUND

PROPOSED 60'-0" U.S. CELLULAR LEASE AREA

5'-0" 7'-0" 11'-3" 13'-9" 8'-0" 15'-0" 3'-0" 6'-0" 15'-0" 12'-0" 4'-0"

935'

PROPOSED TOWER LOCATION (LOOKING EAST)

5' 0' 5' 10'

SCALE: 11" x 17" - 1" = 10'
22" x 34" - 1" = 5'

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ENLARGED SITE PLAN
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

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SHEET NUMBER: **C-2**

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NOTES:

REMOVE ALL TOPSOIL, ORGANIC MATERIAL AND WET OR POOR SOILS ALONG ACCESS DRIVE. CONTRACTOR TO REVIEW SITE CONDITIONS AND CONSULT GEOTECHNICAL REPORT FOR ANTICIPATED DEPTH OF SOILS THAT WILL REQUIRE REMOVAL. IF POOR SOILS ARE ENCOUNTERED AT A DEPTH OF MORE THAN 12", CONTACT CONSTRUCTION MANAGER FOR GUIDANCE.

SUBGRADE TO BE COMPACTED TO 95% MODIFIED PROCTOR AND VERIFIED BY PROOF-ROLL OR GEOTECHNICAL RECOMMENDATIONS.

CONSULT GRADING PLAN OR SITE PLAN FOR FINAL SITE GRADES.

RESTORATION:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASPHALT ACCESS DRIVE REPAIR AND RESTORATION FOLLOWING CONSTRUCTION COMPLETION. ANY DISTURBED OR DAMAGED AREAS SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION UPON COMPLETION OF WORK.

ASPHALT DRIVE REQUIREMENTS:

THICKNESS OF ASPHALT ACCESS DRIVE BASE COURSE TO BE DETERMINED BASED ON THE EXISTING SOIL BEARING CAPACITY:

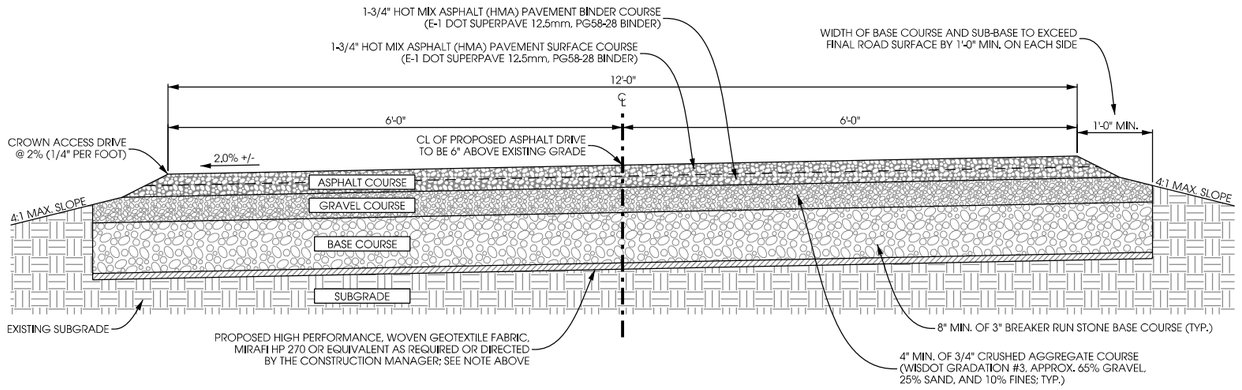
BEARING CAPACITY	REQ'D AGGREGATE THICKNESS
1000 PSF	*16" MIN.
1500 PSF	12" MIN.
≥ 2000 PSF	8" MIN. (SEE DETAIL)

*A HIGH PERFORMANCE, WOVEN GEOTEXTILE FABRIC MAY BE USED TO REPLACE 6" OF AGGREGATE (MIRAFI HP 270 OR EQUIVALENT)

IF POOR OR WET SOILS ARE PRESENT BELOW BASE COURSE, CONTRACTOR TO INSTALL 6" MIN. WELL-GRADED GRAVEL/SAND SUB-BASE TO FACILITATE ADEQUATE DRAINAGE AND STABILITY.

FOR ACCESS DRIVE SLOPES GREATER THAN 10%, CONTRACTOR TO USE MIRAFI HP 270 OR EQUIVALENT GEOTEXTILE FABRIC.

CONSULT GEOTECHNICAL REPORT FOR ANTICIPATED SOIL CONDITIONS.



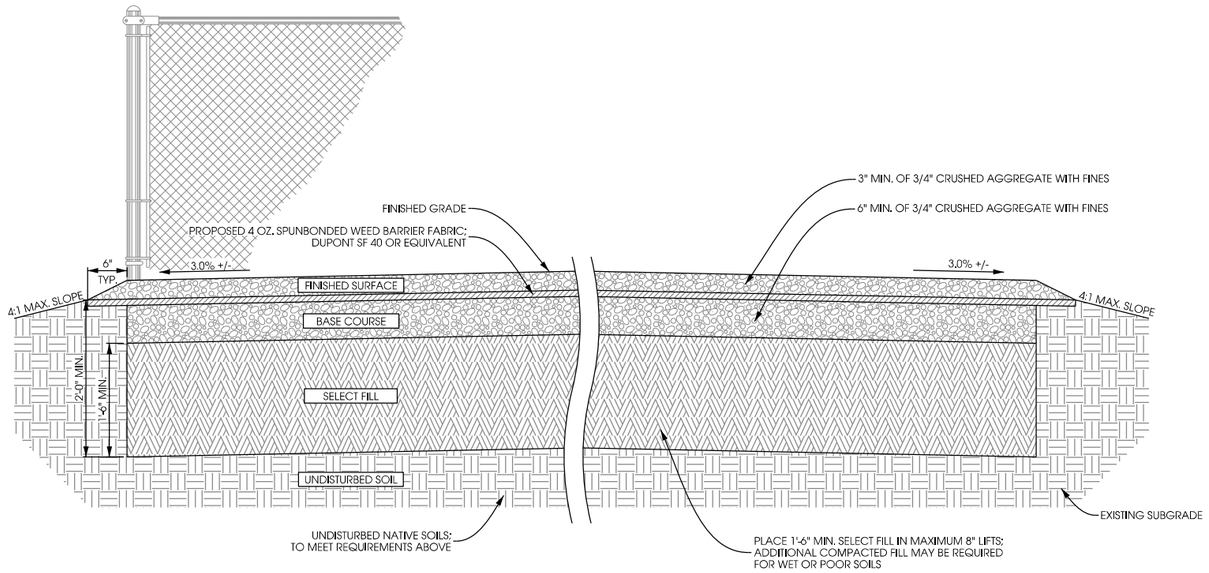
A ASPHALT DRIVE CROSS SECTION

SCALE: 11" x 17" - 1/2" = 1'-0"
22" x 34" - 1" = 1'-0"

NOTES:

REMOVE ALL TOPSOIL, ORGANIC MATERIAL AND WET OR POOR SOILS WITHIN COMPOUND AREA. CONTRACTOR TO REVIEW SITE CONDITIONS AND CONSULT GEOTECHNICAL REPORT FOR ANTICIPATED DEPTH OF SOILS THAT WILL REQUIRE REMOVAL. IF POOR SOILS ARE ENCOUNTERED AT A DEPTH OF MORE THAN 2'-0", ADDITIONAL SELECT FILL MAY BE REQUIRED. CONTACT CONSTRUCTION MANAGER FOR GUIDANCE.

FINAL TOWER FOUNDATION DESIGN RECOMMENDATIONS TO SUPERCEDE GRADING PLAN OR SITE PLAN ELEVATIONS.



B COMPOUND CROSS SECTION

SCALE: NTS

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CONSTRUCTION DETAILS
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SHEET NUMBER: C-3

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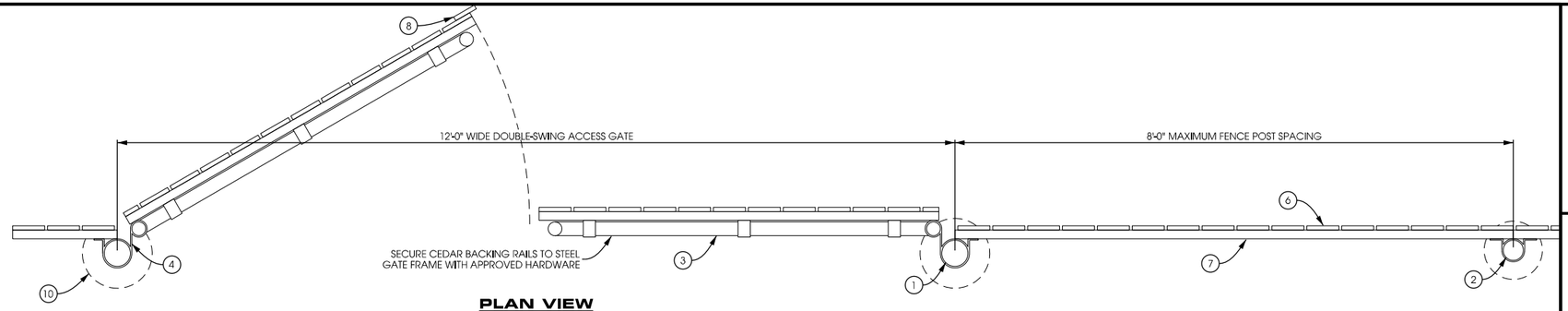
REFERENCE NOTES:

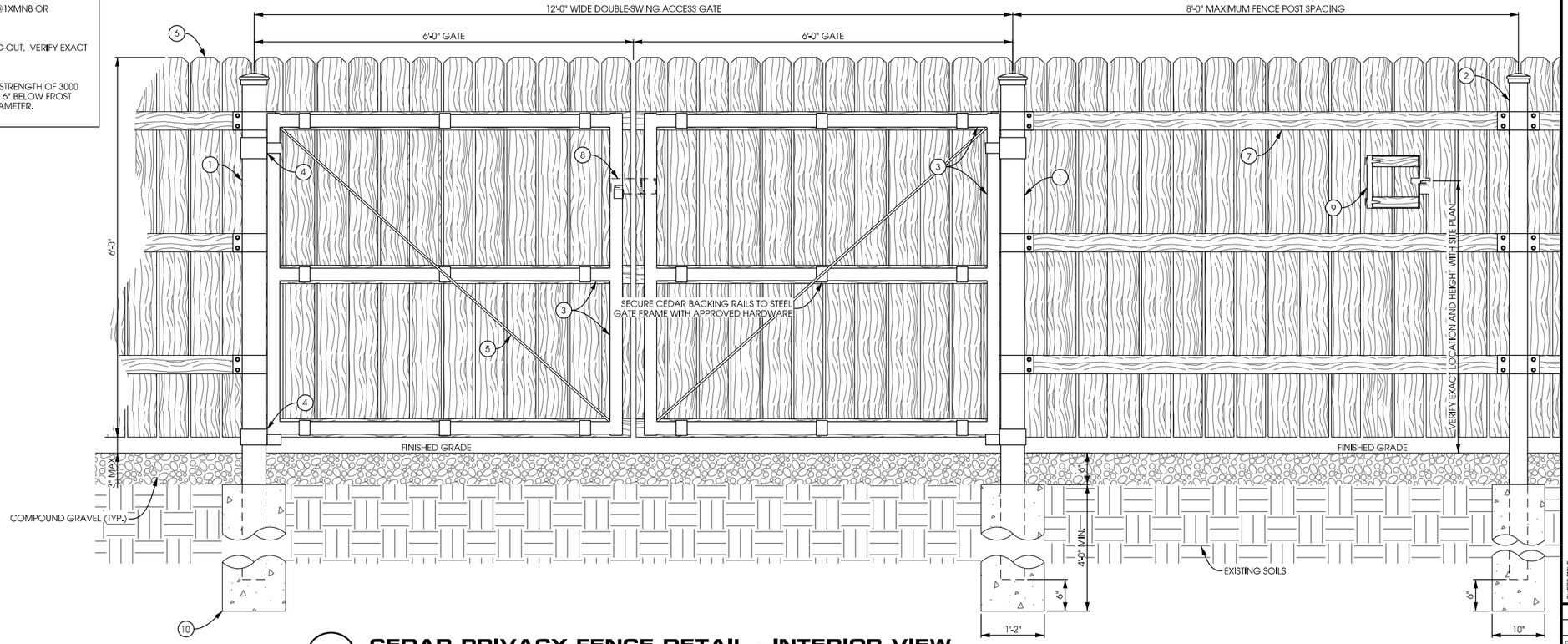
1. 4" DIA. SCHEDULE 40 GALVANIZED STEEL CORNER AND GATE POSTS; PROVIDE END CAP.
2. 3" DIA. SCHEDULE 40 GALVANIZED STEEL INTERMEDIARY LINE POSTS, TO BE EQUALLY SPACED AT MAXIMUM 8'-0" O.C.; PROVIDE END CAP.
3. 2" WELDED STEEL GATE FRAME
4. HEAVY DUTY BUTT HINGES
5. 3/8" DIA. TENSION ROD
6. 1" x 6" DOG-EARED VERTICAL CEDAR PLANKS SECURED TO HORIZONTAL RAILS. FINISH WITH CLEAR WOOD SEALER.
7. 2" x 4" HORIZONTAL CEDAR BACKING RAILS SECURED TO FENCE POSTS WITH MANUFACTURER APPROVED HARDWARE. FINISH WITH CLEAR WOOD SEALER.
8. LATCH WITH PADLOCK ON EXTERIOR GATE (GRAINGER @1XMN8 OR EQUIVALENT).
9. 10" x 10" HINGED OPENING FOR ELECTRICAL METER READ-OUT. VERIFY EXACT POSITION AND HEIGHT WITH SITE PLAN.
10. CONCRETE PIER FOUNDATION; TO ACHIEVE A MINIMUM STRENGTH OF 3000 PSI AT 28 DAYS. CONCRETE DEPTH TO BE A MINIMUM OF 6" BELOW FROST LINE (48" MINIMUM, TYP.). SEE DETAIL FOR PROPOSED DIAMETER.

FENCING NOTES:

CONTRACTOR TO FOLLOW MANUFACTURER INSTALLATION RECOMMENDATIONS. ALL HARDWARE TO FOLLOW MANUFACTURER SPECIFICATIONS.



PLAN VIEW



A **CEDAR PRIVACY FENCE DETAIL - INTERIOR VIEW**

SCALE: NTS

GENERAL NOTES

1.0 SCOPE:

1.1 THIS SECTION COVERS THE REQUIREMENTS FOR THE MATERIALS AND THE CONSTRUCTION OF SITE FENCING.

2.0 SPECIAL REQUIREMENTS:

2.1 ALL FITTINGS, HARDWARE AND STEEL MEMBERS USED FOR SITE AREA FENCING, SHALL BE HOT DIPPED GALVANIZED (ASTM A153) OR OTHER APPROVED NON CORROSIVE MATERIAL AND CONFORM TO FEDERAL SPEC RR-F-191G (1-25-74).

2.2 ALL NON-CORROSIVE MATERIAL SHALL BE PRE-APPROVED BY THE PROJECT MANAGER.

2.3 ANY DAMAGE TO GALVANIZING OR NON-CORROSIVE COATING DURING CONSTRUCTION SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S RECOMMENDED METHODS.

2.4 ALL WOOD TO BE CEDAR WITH CLEAR WOOD SEALER FINISH.

3.0 FENCE POSTS:

3.1 LOCATION OF CORNER POSTS SHALL BE DETERMINED FROM STAKES AND PROPERTY PINS INSTALLED BY THE REGISTERED LAND SURVEYOR UNDER CONTRACT FOR THE PROJECT. IF THE STAKES ARE NOT PRESENT OR DO NOT CONFORM TO THE SITE PLAN, CONSULT WITH THE PROJECT MANAGER.

3.2 CORNERS AND GATE POST FOR SITE SHALL BE 4" DIA. SCHEDULE 40 GALVANIZED PIPE. INTERMEDIARY POSTS SHALL BE 2-1/2" OR 3" DIA. SCHEDULE 40 GALVANIZED PIPE.

3.3 CORNER POSTS SHALL BE SET WITHIN ONE INCH (1") OF DIMENSIONS INDICATED ON THE SITE PLAN.

3.4 FENCE POSTS SHALL BE VERTICALLY PLUMB IN ALL PLANES WITHIN 1/2 INCH (1/2").

3.5 CORNER AND GATE POST FOUNDATIONS SHALL BE A MINIMUM FOUR FEET (4') DEEP OR SIX INCHES (6") BELOW THE FROST LINE, WHICHEVER IS GREATER, WITH MINIMUM THREE INCH (3") CLEARANCE BETWEEN BOTTOM OF POST AND BOTTOM OF THE HOLE.

3.6 POST FOUNDATIONS GATE AND CORNER POSTS SHALL BE 14 INCHES (14") IN DIAMETER. INTERMEDIARY POSTS FOUNDATIONS SHALL BE 10 INCHES (10") IN DIAMETER.

3.7 LINE POSTS BETWEEN CORNER AND GATE POSTS SHALL BE EQUALLY SPACED WITH AN EIGHT FOOT (8') MAXIMUM SPACING. GATE POST LOCATIONS SHALL BE IN ACCORDANCE WITH SITE PLAN AND SHALL BE VERIFIED WITH THE PROJECT MANAGER.

3.8 ALL POSTS SHALL BE CAPPED.

3.9 ALL FOUR CORNERS POSTS AND BOTH GATE POSTS SHALL BE CONNECTED TO THE SITE GROUNDING SYSTEM (REFER TO GROUNDING SYSTEM STANDARD).

4.0 FENCE ENCLOSURE:

4.1 ENCLOSURE BACKING RAILS TO CONSIST OF 2 INCH (2") BY 4 INCH (4") NOMINAL CEDAR PLANKS. ALL CEDAR TO HAVE CLEAR WOOD SEALER FINISH.

4.2 ENCLOSURE BOARDS TO BE HEAVY DUTY 1 INCH (1") BY 6 INCH (6") NOMINAL CEDAR PLANKS. ALL CEDAR TO HAVE CLEAR WOOD SEALER FINISH.

4.3. ALL ENCLOSURE BOARDS TO BE SECURED TO FENCE POSTS WITH MANUFACTURER APPROVED HARDWARE. CONTRACTOR TO FOLLOW MANUFACTURER RECOMMENDATIONS AND SPECIFICATIONS.

5.0 GATE:

5.1 LOCATION OF GATE SHALL CONFORM TO THE SITE PLAN. GATE SIZE SHALL BE 12-0" WIDE (UNLESS OTHERWISE NOTED).

5.2 GATE FRAME TO BE CONSTRUCTED OF 2 INCH (2") WELDED STEEL WITH HEAVY DUTY HINGES. CONTRACTOR TO FOLLOW MANUFACTURER RECOMMENDATIONS AND SPECIFICATIONS.

5.3 GATE HINGES SHALL PROVIDE FOR 180 DEGREE RADIUS GATE SWING. ANY HINGE NUTS SHALL BE ON THE INSIDE AND DOUBLE-NUT TO DETER UNAUTHORIZED ENTRY.

5.4 GATE SHALL BE INSTALLED PLUMB AND SHALL OPEN AND CLOSE FREELY.

5.5 GATE POSTS SHALL NOT BE SHARED AS A CORNER POST.

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624 Water Street
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FENCE DETAILS

WAUKESHA AIRPORT II [784719]

WAUKESHA, WISCONSIN

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SHEET NUMBER: **C-4**

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NORTH

NOTE:

THIS GRADING PLAN WAS PREPARED PRIOR TO RECEIPT OF TOWER FOUNDATION DESIGN AND GEOTECHNICAL REPORT. PROPOSED GRADES, ELEVATIONS AND CORRESPONDING SOIL COVER MAY REQUIRE FINAL ADJUSTMENT ONCE THE ABOVE NOTED DOCUMENTS ARE AVAILABLE. RECOMMENDATIONS IN THIS GRADING PLAN SHOULD NOT SUPERCEDE ANY REQUIREMENTS SPECIFIED IN THE FOUNDATION DESIGN.

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

PROPOSED 12'-0" WIDE ASPHALT ACCESS DRIVE

PROPOSED EROSION MAT

REMOVE TREES AS NECESSARY TO ACHIEVE GRADING REQUIREMENTS

PROPOSED 35'-0" x 40'-0" CEDAR FENCED COMPOUND

P: 944.25 E: 944.12
P: 944.18 E: 944.11
P: 944.37 E: 944.37
P: 944.27 E: 944.27
P: 944.59 E: 944.59
P: 944.35 E: 944.13
P: 944.58 E: 944.58
P: 944.91 E: 944.91
P: 944.34 E: 943.93
P: 944.44 E: 944.44
P: 944.00 E: 943.74
P: 943.50 E: 943.07
P: 943.46 E: 943.46
P: 944.18 E: 944.18
P: 942.42 E: 942.40
P: 942.00 E: 941.73
P: 942.66 E: 942.66
P: 942.55 E: 942.39
P: 942.17 E: 941.99
P: 940.90 E: 940.66
P: 941.10 E: 940.69
P: 940.90 E: 939.62
P: 942.19 E: 941.58
P: 942.00 E: 941.04
P: 939.85 E: 939.15
P: 940.05 E: 938.64
P: 939.85 E: 937.02
TOC: 940.67 P: 940.17 E: 938.43

2% +/-
1.5% +/-
4.5% +/-
4.5% +/-
1% +/-
3% +/-
1% +/-

4:1 MAX.© SLOPE
4:1 MAX.© SLOPE

PROPOSED ASPHALT TURN AROUND AREA

TIE INTO EXISTING GRADE

GRADING EXTENTS

PROPOSED SILT FENCE BARRIER, APPROXIMATELY 220' TOTAL LENGTH; CONTRACTOR TO INSTALL PRIOR ALL CONSTRUCTION ACTIVITIES TO AVOID DISTURBANCE; SEE DETAIL A/C-6

GRASS

GRASS

GRASS

ASPHALT

EXISTING BUILDING

EXISTING BUILDING

PROPERTY LINE

RIGHT OF WAY

944

943

942

941

940

939

938

937

936

935

GRADING LEGEND

963'
= EXISTING CONTOUR GRADES

963'
= PROPOSED CONTOUR GRADES

= PROPOSED SPOT ELEVATIONS

= PROPOSED DRAINAGE PATH

= SILT FENCE

= EROSION MAT

GRADING NOTES

1. CONTOUR INTERVAL IS 1 FOOT.
2. CONTRACTOR SHALL GRADUALLY MATCH INTO EXISTING GRADE.
3. NO PROPOSED EARTHWORK SHALL HAVE A GREATER SLOPE THAN 3:1.
4. DRIVEWAY GRADE WITHIN 25 FEET OF PUBLIC ROAD ACCESS POINT SHALL BE LESS THAN 10% (10:1).
5. THIS GRADING PLAN INCLUDES DRIVEWAY SLOPES IN EXCESS ON 10%. SITE ACCESS ON THE STEEP SLOPES MAY BE DIFFICULT DURING WINTER MONTHS AND/OR ICY CONDITIONS.
6. FINISHED GRADE SLOPES GREATER THAN 4:1, DITCH BOTTOMS AND GRASS SURFACES WITHIN 6 FEET OF ANY PAVED OR GRAVEL SURFACE REQUIRE EROSION MAT (TYPE 2.D - 12 MONTH LONGEVITY, DOUBLE NET EROSION CONTROL BLANKET)
7. ALL DISTURBED GRASS/TURF AREAS SHALL BE RESTORED WITH TOPSOIL, SEED AND MULCH. TOPSOIL TO BE 6-INCHES MINIMUM. SEED TO CONSIST OF NATIVE PURE LIVE SEED (PLS) AT 98% PURITY AND 95% GERMINATION. MULCH TO BE WEED-FREE GRAIN STRAW.
8. INSTALL DITCH CHECKS EVERY 300 FEET AND IMMEDIATELY UPSTREAM OF CULVERTS TO PREVENT EXCESSIVE EROSION.
9. CONTRACTOR TO PERFORM MAINTENANCE AND INSPECTION OF EROSION CONTROL DEVICES AND EXPOSED GRADE THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL CONTINUE MAINTENANCE AND INSPECTION UNTIL FULL VEGETATION ESTABLISHMENT AND/OR PROJECT ACCEPTANCE.

15' 0 15' 30'

SCALE: 11" x 17" - 1" = 30'
22" x 34" - 1" = 15'

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GRADING PLAN
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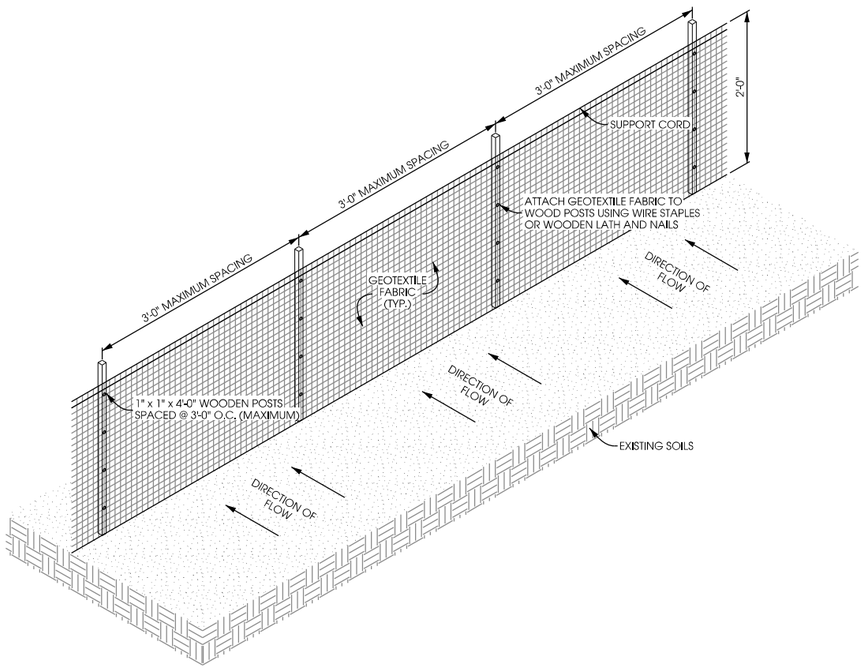
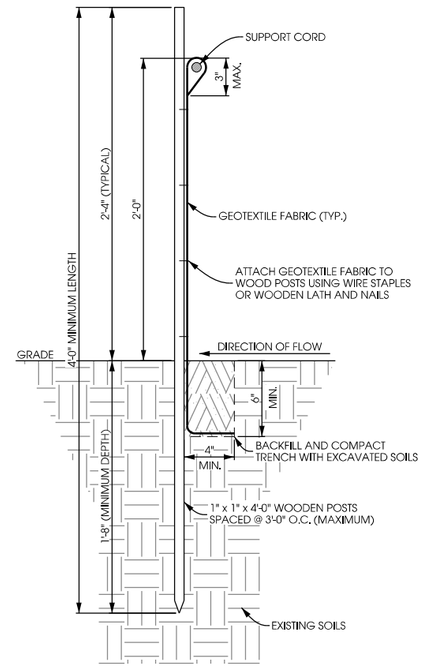
NOTES:

1. TRENCH SHALL BE A MINIMUM OF 4" WIDE AND 6" DEEP TO ACHIEVE ADEQUATE GEOTEXTILE FABRIC ANCHORAGE. FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.
2. WOOD POSTS SHALL BE 1" x 1" x 4'-0" MINIMUM AND CONSIST OF HICKORY OR OAK.
3. 8'-0" POST SPACING IS ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.
4. ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOIL CONDITIONS.



ISOMETRIC VIEW

SCALE: 11" x 17" - 1/2" = 1'-0"
22" x 34" - 1" = 1'-0"



ELEVATION VIEW

SCALE: 11" x 17" - 1" = 1'-0"
22" x 34" - 1" = 2'-0"

A **SILT FENCE DETAIL**

SCALE: VARIES

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SITE DETAILS

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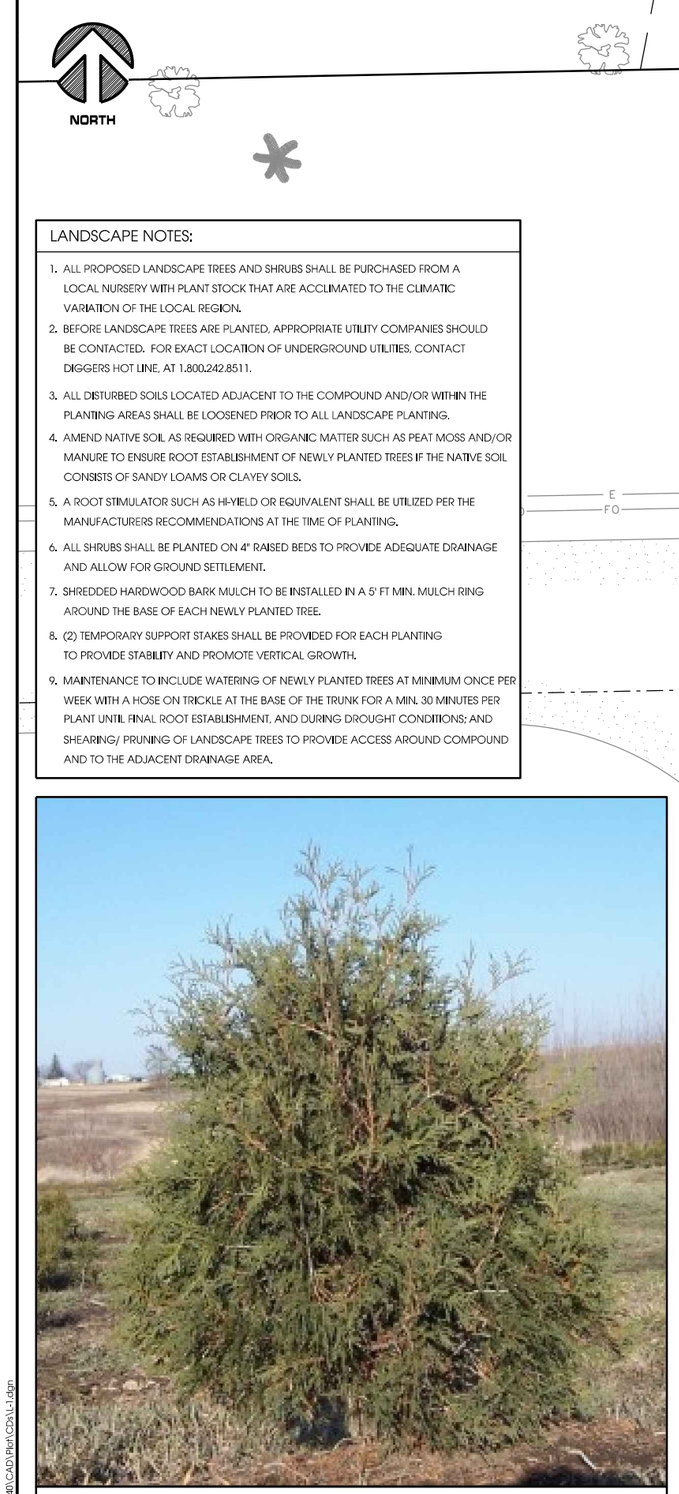
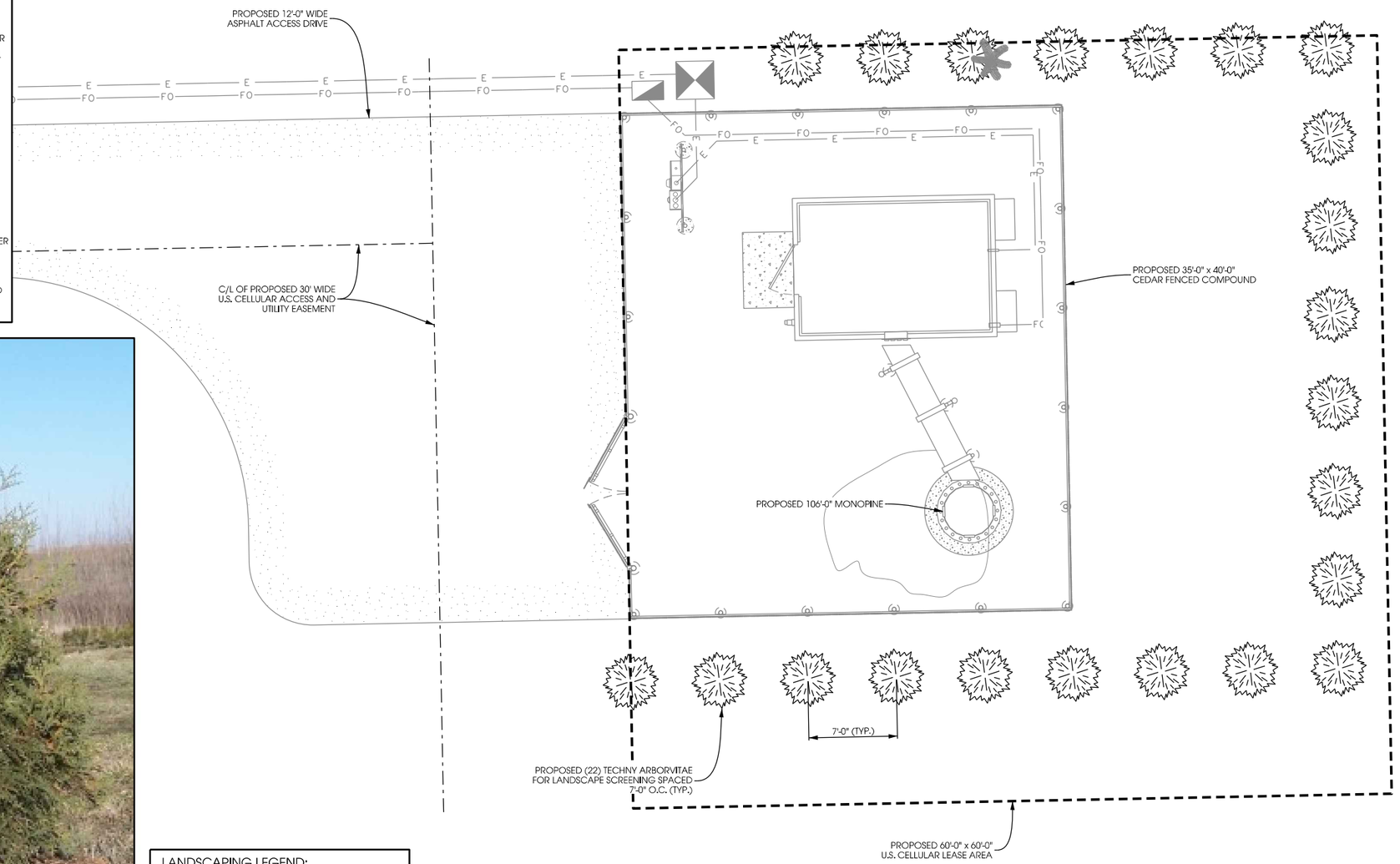
LANDSCAPE NOTES:

1. ALL PROPOSED LANDSCAPE TREES AND SHRUBS SHALL BE PURCHASED FROM A LOCAL NURSERY WITH PLANT STOCK THAT ARE ACCLIMATED TO THE CLIMATIC VARIATION OF THE LOCAL REGION.
2. BEFORE LANDSCAPE TREES ARE PLANTED, APPROPRIATE UTILITY COMPANIES SHOULD BE CONTACTED. FOR EXACT LOCATION OF UNDERGROUND UTILITIES, CONTACT DIGGERS HOT LINE, AT 1.800.242.8511.
3. ALL DISTURBED SOILS LOCATED ADJACENT TO THE COMPOUND AND/OR WITHIN THE PLANTING AREAS SHALL BE LOOSENED PRIOR TO ALL LANDSCAPE PLANTING.
4. AMEND NATIVE SOIL AS REQUIRED WITH ORGANIC MATTER SUCH AS PEAT MOSS AND/OR MANURE TO ENSURE ROOT ESTABLISHMENT OF NEWLY PLANTED TREES IF THE NATIVE SOIL CONSISTS OF SANDY LOAMS OR CLAYEY SOILS.
5. A ROOT STIMULATOR SUCH AS HI-YIELD OR EQUIVALENT SHALL BE UTILIZED PER THE MANUFACTURERS RECOMMENDATIONS AT THE TIME OF PLANTING.
6. ALL SHRUBS SHALL BE PLANTED ON 4" RAISED BEDS TO PROVIDE ADEQUATE DRAINAGE AND ALLOW FOR GROUND SETTLEMENT.
7. SHREDDED HARDWOOD BARK MULCH TO BE INSTALLED IN A 5' FT MIN. MULCH RING AROUND THE BASE OF EACH NEWLY PLANTED TREE.
8. (2) TEMPORARY SUPPORT STAKES SHALL BE PROVIDED FOR EACH PLANTING TO PROVIDE STABILITY AND PROMOTE VERTICAL GROWTH.
9. MAINTENANCE TO INCLUDE WATERING OF NEWLY PLANTED TREES AT MINIMUM ONCE PER WEEK WITH A HOSE ON TRICKLE AT THE BASE OF THE TRUNK FOR A MIN. 30 MINUTES PER PLANT UNTIL FINAL ROOT ESTABLISHMENT, AND DURING DROUGHT CONDITIONS; AND SHEARING/ PRUNING OF LANDSCAPE TREES TO PROVIDE ACCESS AROUND COMPOUND AND TO THE ADJACENT DRAINAGE AREA.



TECHNY ARBORVITAE

(Thuja occidentalis)



LANDSCAPING LEGEND:

(22) TECHNY ARBORVITAE *(Thuja occidentalis)*

= MIN PLANTING SIZE = 5' TALL

MATURE SIZE = 8 - 12' SPREAD
10' - 15' TALL

5'-0" 0 5'-0" 10'-0"

SCALE: 11" x 17" - 1" = 10'-0"
22" x 34" - 1" = 5'-0"

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624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
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LANDSCAPING PLAN
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INI:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB

PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: L-1.dgn

SHEET NUMBER: **L-1**

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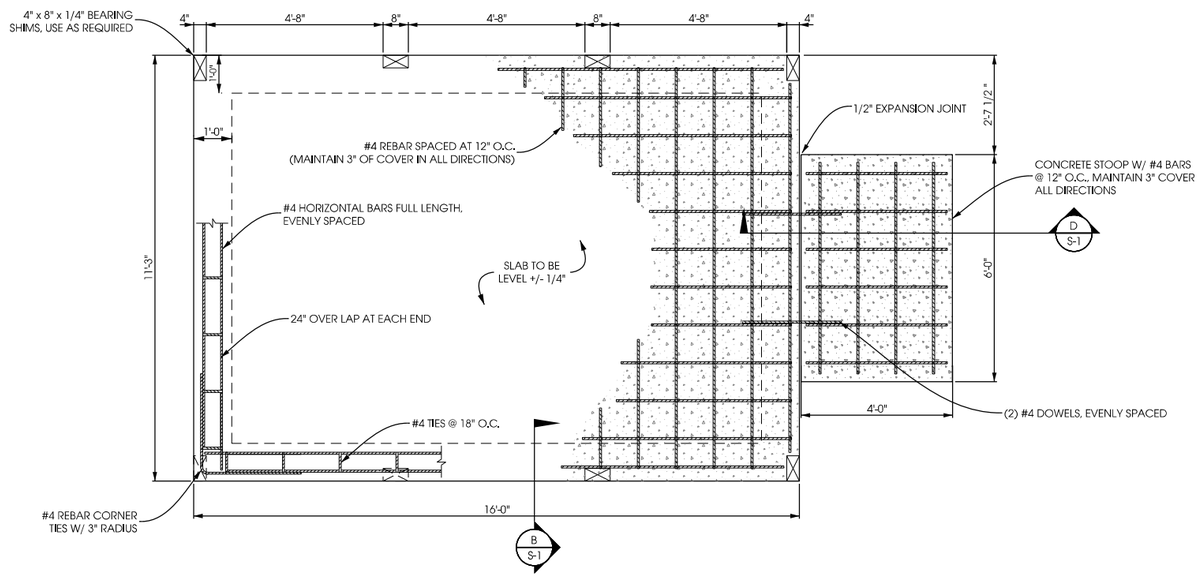
SHIM NOTE:

BEARING SHIM: GALV STEEL, 4 ON EACH SIDE OF SLAB, USE SHIMS AS REQUIRED TO ASSURE SHELTER IS BEARING AT PERIMETER

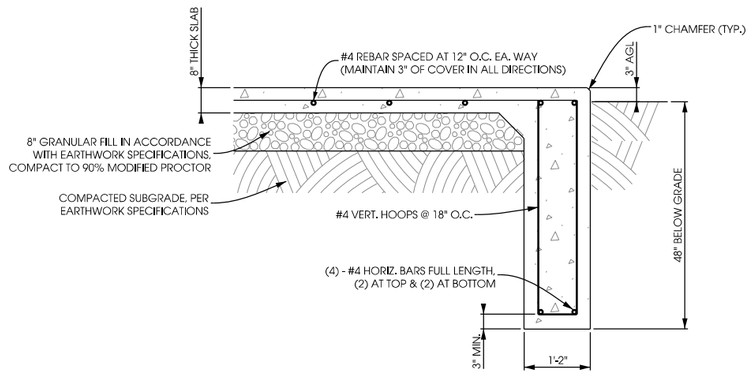


A SHELTER FOUNDATION PLAN

SCALE: 11" x 17" - 1/4" = 1'-0"
22" x 34" - 1/2" = 1'-0"

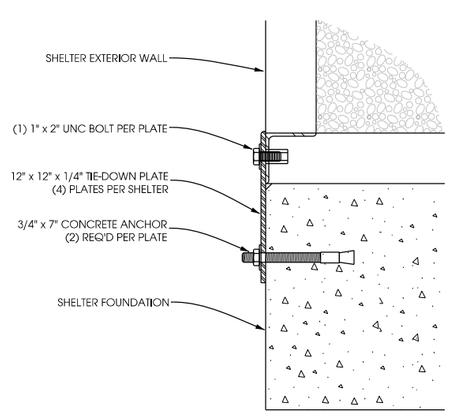
NOTE:

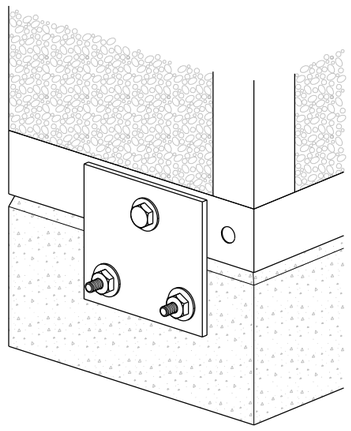
3" MINIMUM CONCRETE COVER OVER BAR AND WIRE



C TYPICAL FOUNDATION DETAIL

SCALE: 11" x 17" - 3/8" = 1'-0"
22" x 34" - 3/4" = 1'-0"





B TIE DOWN PLATE DETAIL

SCALE: NTS

CONCRETE AND REINFORCING NOTES:

1.) ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODE REQUIREMENTS AND MOST CURRENT VERSION OF ACI STANDARDS.

2.) ALL CONCRETE UNLESS SPECIFICALLY NOTED SHALL BE NORMAL WEIGHT (145 PCF) AND SHALL ACHIEVE A 28-DAY COMPRESSIVE STRENGTH (f'c) OF 4,000 PSI. EXPOSED EXTERIOR CONCRETE TO BE AIR ENTRAINED WITH 6% +/- 1% AIR CONTENT. CONTRACTOR TO PERFORM CONCRETE SLUMP TEST (4" MAX SLUMP). NO WATER TO BE ADDED AFTER SLUMP HAS BEEN MEASURED.

3.) ALL CONCRETE REINFORCING SHALL BE ASTM A615 GRADE 60 AND PLACED IN ACCORDANCE WITH ACI STANDARDS

4.) REMOVE ALL ORGANIC MATERIAL, SOFT AND/OR UNSUITABLE SOILS WITHIN FOUNDATION FOOTPRINT. DO NOT UTILIZE THESE SOILS FOR BACKFILL.

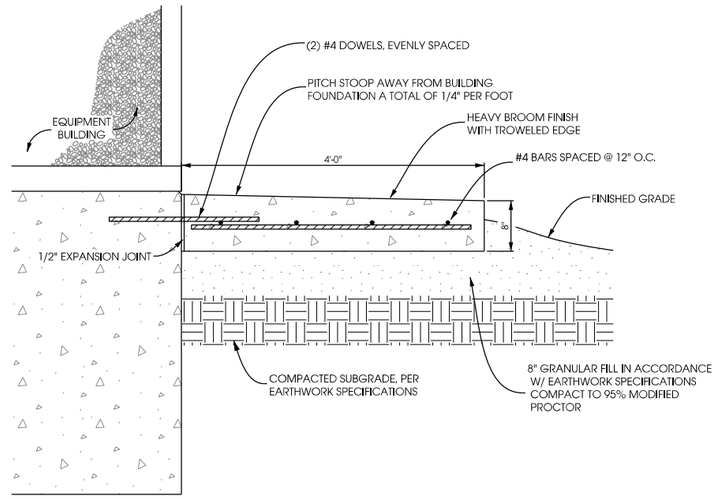
5.) CONSULT GEOTECHNICAL INVESTIGATION REPORT FOR ANTICIPATED SOIL CONDITIONS AND CONSTRUCTION CONSIDERATIONS.

6.) FOUNDATION DESIGN BASED ON A PRESUMPTIVE SOIL BEARING CAPACITY OF 2000 PSF AND MAX. PLASTICITY INDEX OF 20. CONTRACTOR TO CONFIRM BEARING SOILS MEET THESE CONDITIONS BEFORE INSTALLATION.

7.) SOILS NOT MEETING THE DESIGN BEARING STRENGTH SHALL BE UNDERCUT AND REPLACED WITH 3-INCH BREAKER STONE. UNDERCUT ONE FOOT ON EACH SIDE OF THE FOOTING FOR EVERY FOOT IN DEPTH. CONSULT WITH ENGINEER FOR REQUIRED UNDERCUT DEPTH.

8.) CONTRACTOR TO ENSURE POSITIVE DRAINAGE FROM ALL FOUNDATIONS.

9.) FOUNDATION DESIGN BASED ON INFORMATION PROVIDED BY SHELTER MFG. (WEIGHT, LIVE LOAD, ETC.). CONTRACTOR TO VERIFY EXACT SHELTER SIZE AND TYPE.



D BUILDING STOOP DETAIL

SCALE: 11" x 17" - 3/8" = 1'-0"
22" x 34" - 3/4" = 1'-0"

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FOUNDATION DETAILS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

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CHECKED BY: ABB

PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: S-1.dgn

SHEET NUMBER: **S-1**

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ITEM LIST

ITEM NO.	DECRIPTION
1	200A ELECTRICAL SWITCH PANEL, CUTLER HAMMER
2	SERVICE ENTRY, 2" X 8" GALVANIZED NIPPLE
3	100A GENERATOR RECEPTACLE, CROUSE HINDS AREA 10315S22
4	6"x6"x4" ENCLOSURE W/ 1-1/2" x 8" GALV. NIPPLE TO ITEM #3
5	SURGE ARRESTOR (SUPPLIED BY US CELLULAR)
6	INTERIOR LIGHT SWITCH/ 4 x 4 JUNCTION BOX
7	WIRE, #2 SOLID COPPER, BARE, TINNED
8	DUPLEX CONVENIENCE OUTLET
9	GFCI RECEPTACLE/2x4 WP JUNTION BOX
10	TOWER LIGHT CONTROLLER (SUPPLIED BY US CELLULAR)
11	100W HPS EXTERIOR LIGHT W/ PHOTOCELL, METALUX HPWL100
12	INTERIOR LIGHTS, METALUX MWTR240A120LE3
13	CAP, SCH 40, 1 1/2" W/ NIPPLE, RIGID, 1 1/2" X 8" LONG
14	3 TON AIR CONDITIONER #2 W/ 10 KW HEAT
15	3 TON AIR CONDITIONER #1 W/ 10 KW HEAT & ECONOMIZER
16	THERMOSTAT, SINGLE STAGE HEAT/COOL
17	LOW TEMPERATURE ALARM, DAYTON 2E206
18	HIGH TEMPERATURE ALARM, DAYTON 2E206
19	MAGNETIC DOOR CONTACT
20	24V SMOKE DETECTOR W/ 1/2" CONDUIT DROP
21	ALARM TERMINATION BLOCK (SUPPLIED BY US CELLULAR)
22	4' x 4' x 3/4" TELCO BOARD
23	6" x 6" x 4" ENCLOSURE W/ (2) 3/4" CONDUIT DROPS
24	3'6" x 7'0" HOLLOW METAL DOOR
25	48" DOOR CANOPY
26	DOOR, LOCKGUARD, 10", STAINLESS STEEL 32D
27	HALO GROUND, #2/0 GREEN W/ (4) EXIT DROPS
28	1/2" PVC CAST @ 45° (GRND. PENETRATION)
29	1/4" x 4" x 20" GROUND BAR
30	GROUND STRAP, 14"
31	CABLE TRAY, 12" ZINC CHROMATE
32	WAVE GUIDE ENTRY PORT, MICROFLECT B1118
33	UNISTRUT, 1-1/2"
34	1/4" x 3" x 3" GALV. ANGLE, ICE SHIELD
35	4" PVC COUPLING, TELCO ENTRY
36	4 x 4 JUNCTION BOX
37	4-11/16" SQ. JUNCTION BOX
38	4 x 4 JUCTION BOX W/ 1/2" x 9" WALL PENETRATION
39	4 x 4 JUNTION BOX W/ 3/4" x 9" WALL PENETRATION
40	1-3/4" x 1-3/4" CABLE TRAY WALL MOUNTED SUPPORT ANGLE

CODE SUMMARY:

- WISCONSIN COMMERICAL BUILDING CODE
- 2009 - IBC, IMC, IECC
- 2008 - NEC
- OCCUPANT LOAD = 0
- NOT INTENDED FOR HUMAN HABITATION

- USE GROUP: S-2 (FBC, IBC, SBC, UBC)

- CONSTRUCTION TYPE: V - B (IBC, FBC

DESIGN PARAMETERS:

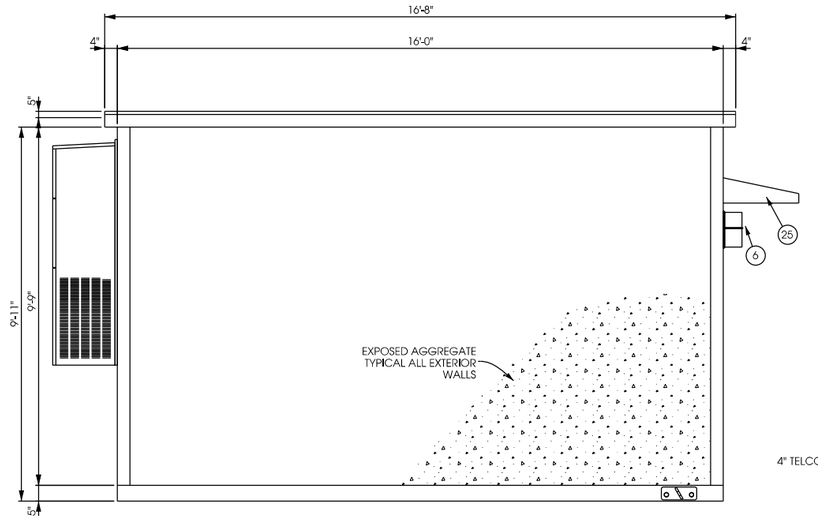
- ROOF LIVE LOAD: 93 PSF
- FLOOR LIVE LOAD: 208 PSF
- WIND SPEED: 120 MPH
- SEISMIC ZONE: 4
- CONCRETE f'c: 5000 PSI AT 28 DAYS
- CONCRETE UNIT WEIGHT: 110 PCF

PHYSICAL PROPERTIES:

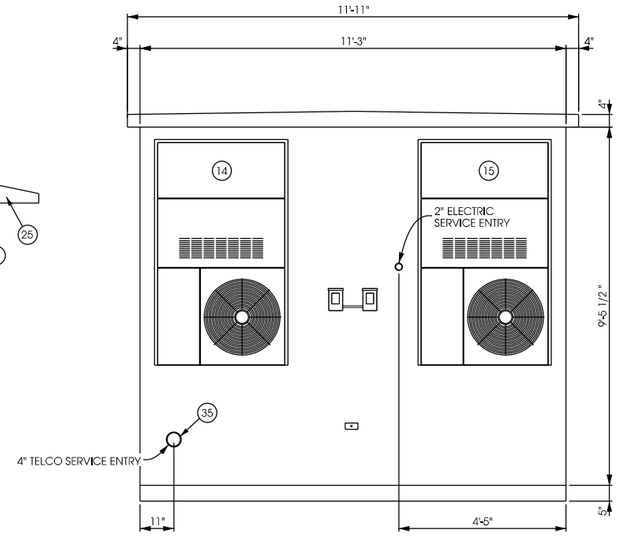
- SHELTER DIMENSIONS: 11'-3"w X 19'-4"l X 10'-6 1/2"h
- SHIPPING DIMENSIONS: 11'-11"w X 20'-10"l X 10'- 7"h
- INTERIOR DIMENSIONS: 10'-2 5/8"w X 18'-3 5/8"l X 9'-5 9/16"h
- SHELTER WEIGHT (AS SHIPPED): 47,500 #

FINISH SCHEDULE:

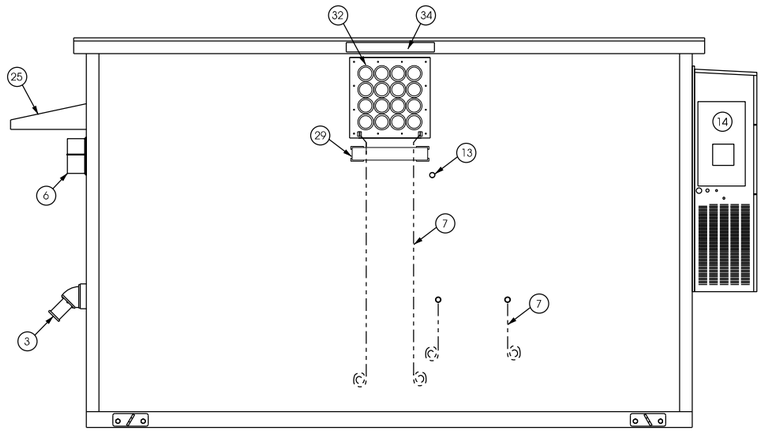
- EXTERIOR WALLS: EXPOSED LIGHT WEIGHT AGGREGATE
- EXTERIOR METALS: PPG URETEK, CUSTOM COLOR MATCH
- INTERIOR WALLS: 5/16" WHITE, WOOD GRAIN PANELING/7/16" OSB/1 1/2" R-MAX TSX8500 INSULATION
- CEILING: 5/16" WHITE, WOOD GRAIN PANELING/7/16" OSB/1 1/2" R-MAX TSX8500 INSULATION
- FLOORING: .100 VINYL TILE, CONGOLEUM CX-14, COLOR "WHITE/LIGHT PEBBLE"



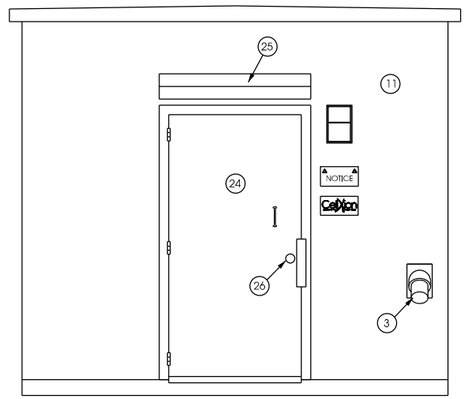
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

A EQUIPMENT SHELTER ELEVATIONS

SCALE: 11" x 17" - 1/4" = 1'-0"
22" x 34" - 1/2" = 1'-0"

UTILITY NOTE:

PVC JUNCTION BOX FOR UTILITY PENETRATIONS PREFERRED. WHEN METAL JUNCTION BOX REQUIRED, CONTRACTOR TO INSTALL TWO-HOLE GROUND LUG CONNECTION TO SHELTER GROUND RING.

DETAILS ON THIS SHEET PROVIDED BY CELLXION FOR 11'-3" x 16'-0" CONCRETE SHELTER

CELLXION
5031 HAZEL JONES ROAD
BOSSIER CITY, LA 71111
VOICE: 318.213.2900
FAX: 31.8213.2919
WWW.CELLXION.COM

Edge
Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

SHELTER ELEVATIONS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

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PRELIM DWGS - 03/07/2016	TAS
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EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB
PLOT DATE: 10/31/2016
PROJECT #: 13540
FILE NAME: S-2.dgn

SHEET NUMBER: S-2

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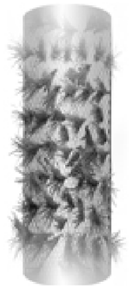


ANTENNA WRAP:

- SABRE SITE SOLUTIONS
  WWW.SABRESITESOLUTIONS.COM
  PART#: C10-106-001 - FOR ANTENNAS UP TO 6'
  C10-106-002 - FOR ANTENNAS TALLER THAN 6'

B ANTENNA WRAP

SCALE: NTS

SW6432 – Garden Spot

Color Name: Garden Spot **RGB Value:**
Color Number: SW 6432 R: 106 G: 122 B: 69

Collection(s): Violet

Color Information: Color Family: Green **Hex Value:** 6a7a45

Store Strip Location: 62

SW6069 – French Roast

Color Name: French Roast **RGB Value:**
Color Number: SW 6069 R: 81 G: 58 B: 45

Collection(s): Violet

Color Information: Color Family: Warm Neutral **Hex Value:** 513a2d

Store Strip Location: 10

C PAINT COLORS

SCALE: NTS

NOTES:

CONTRACTOR TO VERIFY HEIGHT AND DIRECTION OF ANTENNAS WITH PROJECT MANAGER.

ALL ANTENNA AZIMUTHS TO BE FROM TRUE NORTH.

1-5/8" COAX CABLE LENGTH	
QUANTITY FROM SHELTER	6
LENGTH FROM COAX PORT TO TOWER CENTER	15 FT
LENGTH FROM T.O.C. TO ANTENNA C/L	100 FT
TOTAL LENGTH OF COAX	115 FT
ROUNDED LENGTH **	130 FT

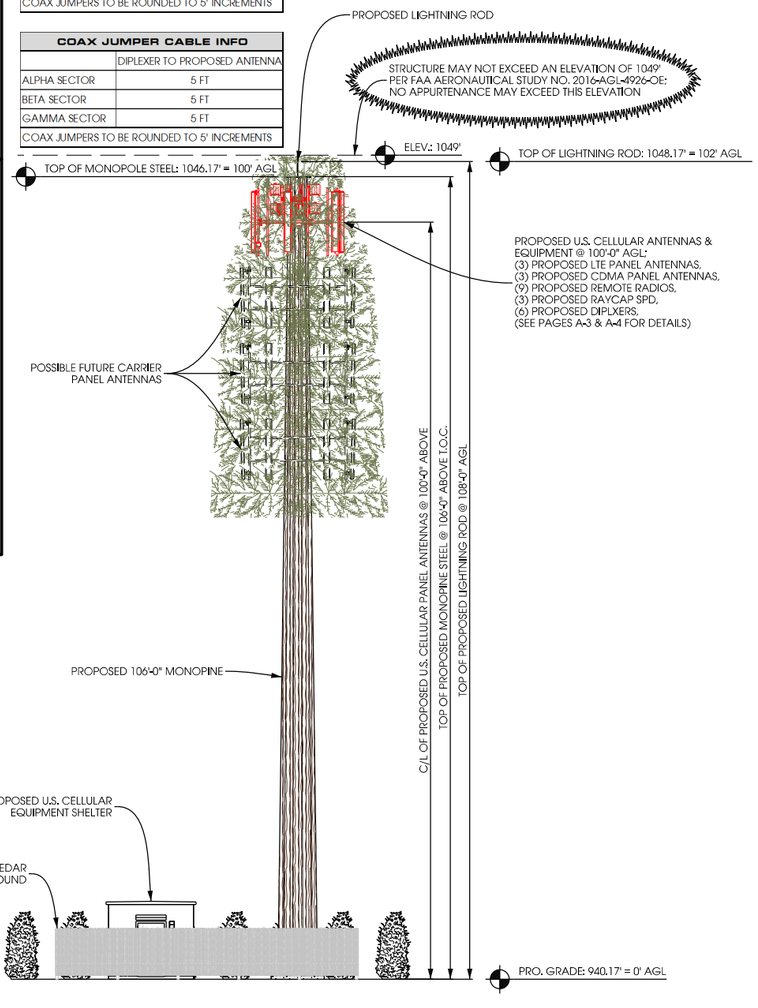
COAX JUMPER CABLE INFO	
	REMOTE RADIO TO DIPLEXER
ALPHA SECTOR	15 FT
BETA SECTOR	15 FT
GAMMA SECTOR	15 FT
COAX JUMPERS TO BE ROUNDED TO 5' INCREMENTS	

COAX JUMPER CABLE INFO	
	DIPLEXER TO PROPOSED ANTENNA
ALPHA SECTOR	5 FT
BETA SECTOR	5 FT
GAMMA SECTOR	5 FT
COAX JUMPERS TO BE ROUNDED TO 5' INCREMENTS	

EUPEN HYBRID CABLE LENGTH	
QUANTITY FROM SHELTER RAYCAP SPD	3
LENGTH FROM SHELTER RAYCAP SPD TO COAX PORT	20 FT
LENGTH FROM COAX PORT TO TOWER CENTER	15 FT
LENGTH FROM T.O.C. TO TOWER TOP RAYCAP SPD	100 FT
TOTAL LENGTH OF HYBRID CABLE	135 FT
ROUNDED LENGTH **	150 FT

HYBRID JUMPER CABLE INFO		
	RAYCAP TO REMOTE RADIO	
ALPHA SECTOR	16.4 FT	5 m
BETA SECTOR	16.4 FT	5 m
GAMMA SECTOR	16.4 FT	5 m

* PREFERRED JUMPER LENGTH OF 5m (16.4')
* MAXIMUM JUMPER LENGTH OF 6m (19.7')



A TOWER PROFILE (WEST ELEVATION)

SCALE: 11" x 17" - 1" = 20'-0"
22" x 34" - 1" = 10'-0"

ANTENNA LEGEND:

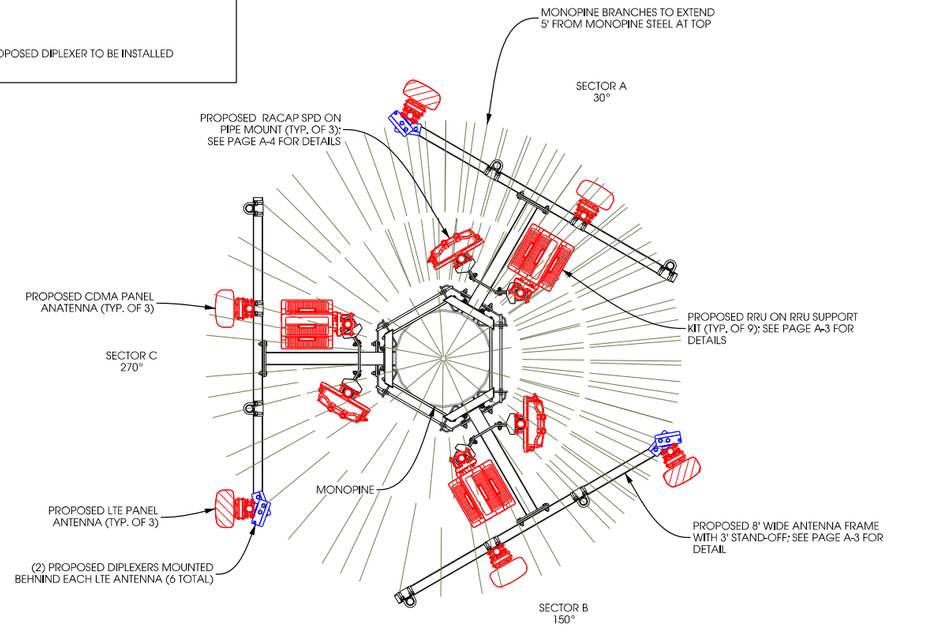
- PROPOSED LTE ANTENNA TO BE INSTALLED
- PROPOSED CDMA ANTENNA TO BE INSTALLED
- PROPOSED RAYCAP SPD TO BE INSTALLED
- PROPOSED REMOTE RADIO UNIT TO BE INSTALLED
- PROPOSED DIPLEXER TO BE INSTALLED

PROPOSED ANTENNAS TO BE WRAPPED (DETAIL B/A-1); MOUNTING FRAMES, PIPES, REMOTE RADIOS, DIPLEXERS AND RAYCAPS TO BE PAINTED TO MATCH TOWER (DETAIL C/A-1)

NOTE:

ALL ANTENNA AZIMUTHS TO BE FROM TRUE NORTH

NORTH



Proposed Loading

			Antennas								Cable				Tower Top Related Equipment					
Sector	Ant ID	Antenna Model	Ant Qty	Rad Ctr.	Azm	Mech Tilt	"RET" Tilt	Radome Notes	Tech	Band	Cable Type	Coax Size	Cable Qty	Cable Length	Top Bias-T	TMA	RRU	Raycap Box	Other	Notes or Other Tower Top Equipment
Alpha	1	AM-X-CD-17-65-00T-RET	1	100	30	0	2	Shared	LTE	B5/B12	Hybrid 6x12	Hybrid 1-1/4"	1	TBD			2	1	2	RRU-11 / RUSDC-6267-PF-48 / DBC0056F1v51
Alpha						0	0	Shared	LTE	B2							1			Ericsson RRU-11
Alpha	2	BXA-70080-8CF-EDIN-0	1	100	30	0	0	Dedicated	CDMA	B5	Coax	1-5/8"	2	125						
Alpha	3																			
Alpha	4																			
Alpha																				
Beta	5	AM-X-CD-17-65-00T-RET	1	100	150	0	2	Shared	LTE	B5/B12	Hybrid 6x12	Hybrid 1-1/4"	1	TBD			2	1	2	RRU-11 / RUSDC-6267-PF-48 / DBC0056F1v51
Beta						0	0	Shared	LTE	B2							1			Ericsson RRU-11
Beta	6	BXA-70080-8CF-EDIN-0	1	100	150	0	0	Dedicated	CDMA	B5	Coax	1-5/8"	2	125						
Beta	7																			
Beta	8																			
Beta																				
Gamma	9	AM-X-CD-17-65-00T-RET	1	100	270	0	2	Shared	LTE	B5/B12	Hybrid 6x12	Hybrid 1-1/4"	1	TBD			2	1	2	RRU-11 / RUSDC-6267-PF-48 / DBC0056F1v51
Gamma						0	0	Shared	LTE	B2							1			Ericsson RRU-11
Gamma	10	BXA-70080-8CF-EDIN-0	1	100	270	0	0	Dedicated	CDMA	B5	Coax	1-5/8"	2	125						
Gamma	11																			
Gamma	12																			
Gamma																				
		Total	6									Total	9		0	0	9	3	6	Total

PER U.S. CELLULAR eSIP DATED 02/29/2016 PROVIDED BY OTHERS

TECHNOLOGY BAND	
CDMA	YELLOW
GSM	VIOLET
LTE	ORANGE

FREQUENCY BAND	
700	GREEN
800	BROWN
1900	BLUE
2100	WHITE

SECTOR BAND ASSIGNMENTS					
SECTOR BAND	ASSIGNED COLOR	LINE 1	LINE 2	LINE 3	LINE 4
APLHA (SECTOR 1)	RED	1 RED BAND	2 RED BANDS	3 RED BANDS	4 RED BANDS
BETA (SECTOR 2)	WHITE	1 WHITE BAND	2 WHITE BANDS	3 WHITE BANDS	4 WHITE BANDS
GAMMA (SECTOR 3)	BLUE	1 BLUE BAND	2 BLUE BANDS	3 BLUE BANDS	4 BLUE BANDS
DELTA (SECTOR 4)	GREEN	1 GREEN BAND	2 GREEN BANDS	3 GREEN BANDS	4 GREEN BANDS
EPSILON (SECTOR 5)	VIOLET	1 VIOLET BAND	2 VIOLET BANDS	3 VIOLET BANDS	4 VIOLET BANDS
ZETA (SECTOR 6)	BROWN	1 BROWN BAND	2 BROWN BANDS	3 BROWN BANDS	4 BROWN BANDS

USE SCOTCH VINYL TAPE 35, AVAILABLE AT GRAYBAR OR LOCAL 3M DISTRIBUTOR.

NOTES:

1. BEGIN SECTOR BAND >10" FROM CABLE TERMINATION.
2. SECTOR POSITION BANDS INDICATE LINE 1, LINE 2, ETC. REPEAT FOR EACH UNIQUE TECHNOLOGY.
3. IF ANTENNA IS DUPLEXED, BOTH TECHNOLOGY BANDS SHOULD BE USED.

D ANTENNA PLATFORM ASSIGNMENT

SCALE: 11" x 17" - 1/4" = 1'-0"
22" x 34" - 1/2" = 1'-0"

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SITE ELEVATION

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WAUKESHA, WISCONSIN

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SHEET NUMBER: A-1

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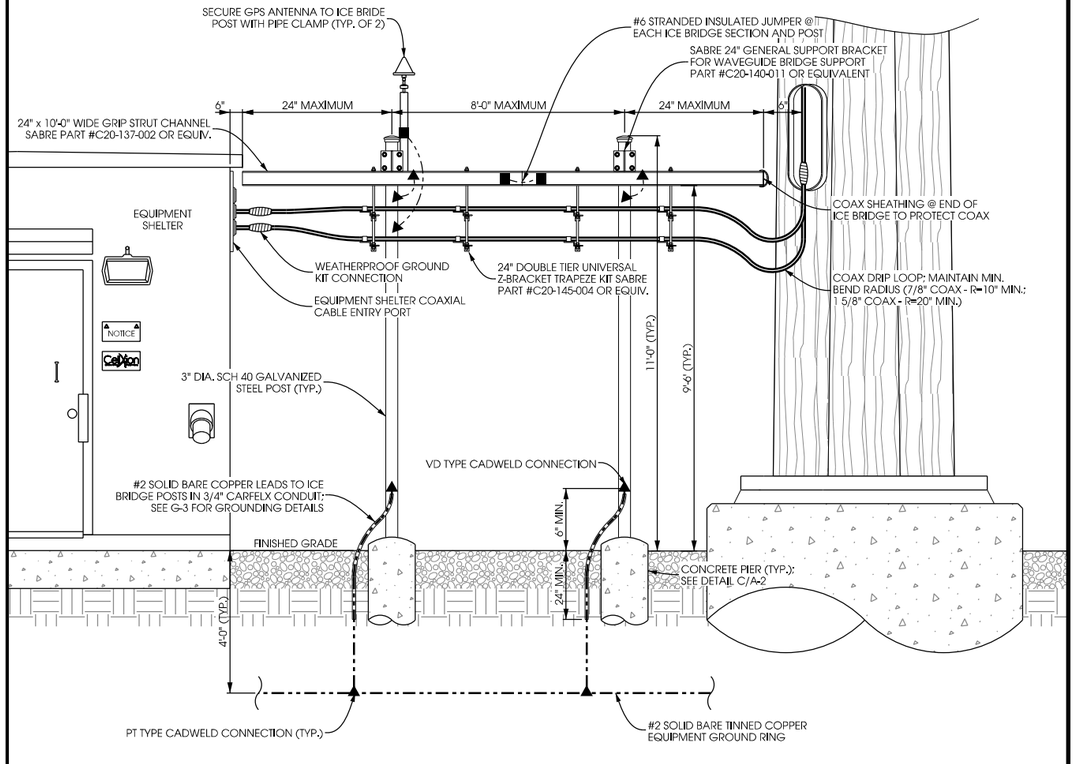


NOTE:

3/8" FILLISTER-HEAD BOLTS, LOCK WASHERS & NUTS FOR ATTACHMENT OF CABLE HANGERS TO SUPPORT BRACKET. PROVIDE SABRE HARDWARE KITS OR EQUAVALENT TO MATCH (NUMBER OF KITS REQUIRED).

ICE BRIDGE NOTES:

1. FOR COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 9 FEET FOR 10 FEET.

2. COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS SHOULD BE PROVIDED AT THE SUPPORT IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.

3. FREE ENDS OF ICE BRIDGE CHANNELS SHOULD NOT EXCEED A CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORTS.

4. CUT BRIDGE CHANNEL SECTIONS SHOULD HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.

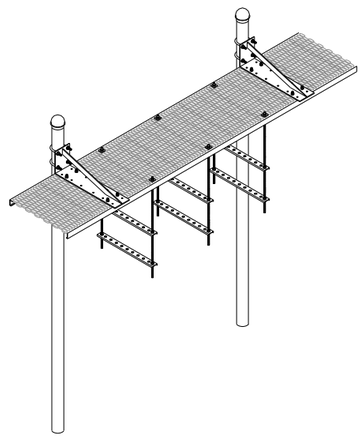
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM MANUFACTURERS OTHER THAN SPECIFIED, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.

6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.

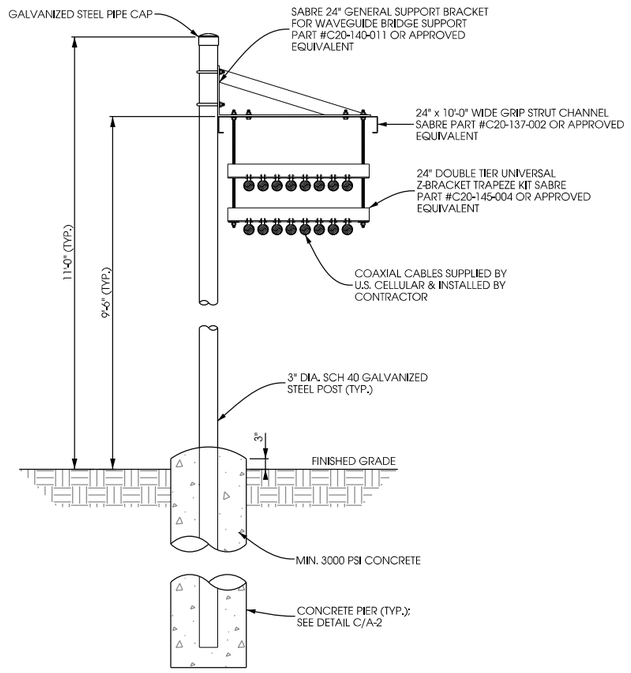
7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS SHOWN ON SITE SPECIFIC DRAWINGS OR STANDARD DETAILS REQUIRE ENGINEERING APPROVAL.

A TYP. ICE BRIDGE DETAIL

SCALE: NTS



ISOMETRIC VIEW



ICE BRIDGE KIT:

- 24" x 10'-0" WIDE GRIP STRUT CHANNEL SABRE PART #C20-137-002 OR EQUIVALENT.
- SABRE 24" GENERAL SUPPORT BRACKET FOR WAVEGUIDE BRIDGE SUPPORT PART #C20-140-011 OR EQUIVALENT.
- 3" SCH. 40 X 15'-4" LONG SUPPORT POSTS, CAPS, & MOUNTING HARDWARE- ALL GALV.
- 24" DOUBLE TIER UNIVERSAL Z-BRACKET TRAPEZE KIT SABRE PART #C20-145-004 OR EQUIVALENT.

B ICE BRIDGE DETAIL

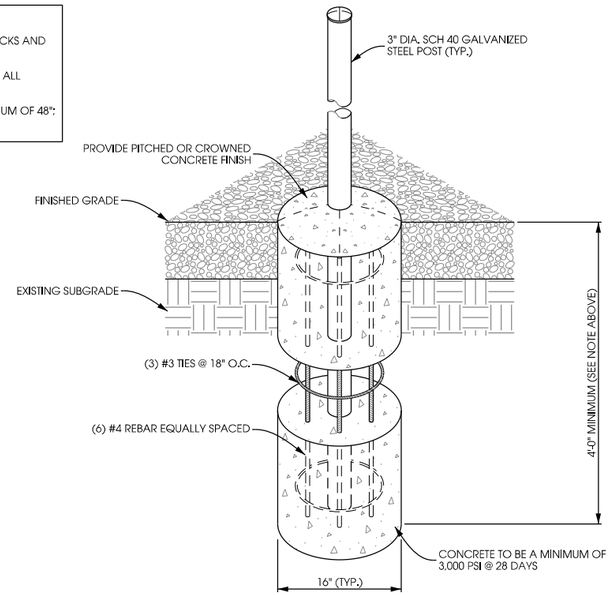
SCALE: NTS

NOTES:

PIER REINFORCING USED FOR UTILITY RACKS AND ICE BRIDGE POSTS.

MAINTAIN 3" MINIMUM REBAR COVER IN ALL DIRECTIONS.

PIER FOUNDATION DEPTH TO BE A MINIMUM OF 48"; DEPTH TO EXCEED LOCAL FROST DEPTH.



C PIPE FOUNDATION DETAIL

SCALE: 11" x 17" - 1/2" = 1'-0"
22" x 34" - 1" = 1'-0"

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608.644.1449 voice
608.644.1549 fax
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ICE BRIDGE DETAILS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INIT.
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB
PLOT DATE: 10/31/2016
PROJECT #: 13540
FILE NAME: A-2.dgn

SHEET NUMBER:

A-2

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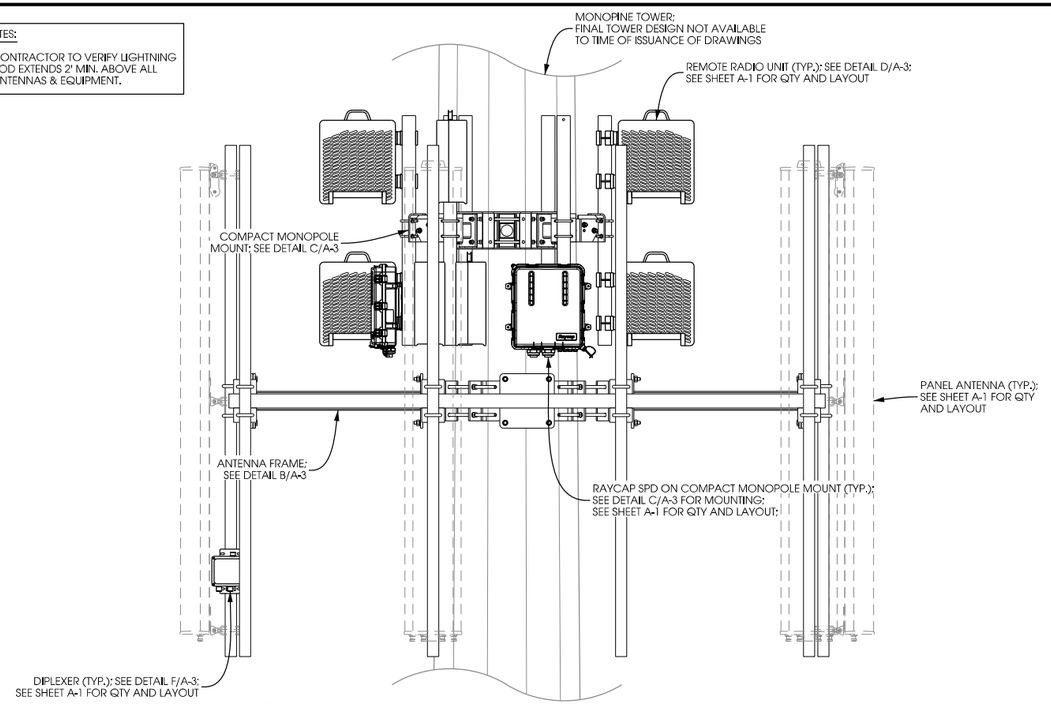
NOTES:

CONTRACTOR TO VERIFY LIGHTNING ROD EXTENDS 2' MIN. ABOVE ALL ANTENNAS & EQUIPMENT.



A ANTENNA & EQUIPMENT MOUNTING

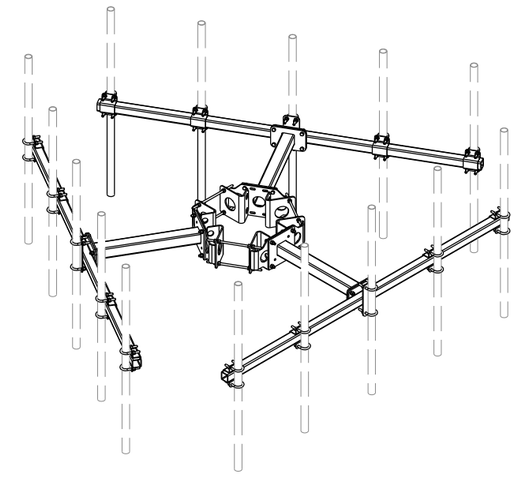
SCALE: NTS

8' WIDE SAF-T ARMS (SQUARE MEMBER):

- SABRE PART #: C10-856-401
- INCLUDES (3) T-ARM ASSEMBLIES, TRI-COLLAR BRACKET AND (15) SETS OF MOUNTING HARDWARE
- MOUNTING PIPES ORDERED SEPARATELY
- FITS 10" TO 40" POLE DIAMETER

NOTES:

1.) CONTRACTOR TO VERIFY TOWER SIZE AND SUITABILITY OF PROPOSED MOUNT FOR SITUATION. IF AN ALTERNATE SOLUTION IS PROPOSED NOTIFY ENGINEER AND OWNER PRIOR TO PROCEEDING.



ISOMETRIC

B 8' WIDE SAF-T ARMS DETAIL (3' STANDOFF)

SCALE: NTS

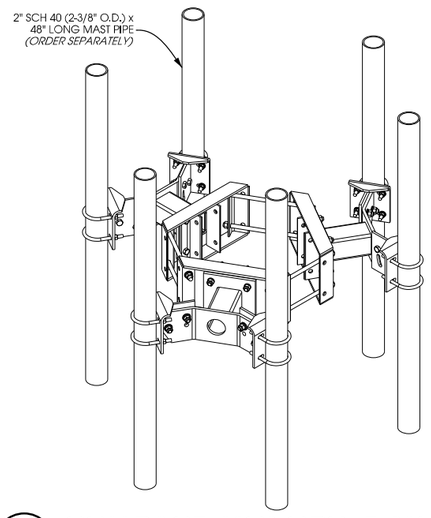
COMPACT MONOPOLE MOUNT:

SITE PRO 1 PART #: UWS6-NP (POLE DIAMETER 10-1/2" TO 28")
LP-42 (28" TO 42" LARGE POLE ADAPTER KIT)

14-1/2" STANDOFF FROM POLE, 21-5/8" PIPE SEPARATION

ACCEPTS 2-3/8", 2-7/8", OR 3-1/2" O.D. PIPES

PURCHASE MAST PIPES SEPARATELY



C COMPACT MONOPOLE MOUNT

SCALE: NTS

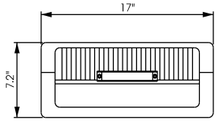
REMOTE RADIO UNIT:

ERICSSON PART # RRUS 11

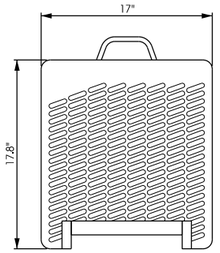
DIMENSIONS: 17.8" x 17" x 7.2" (H x W x D)

NOTE:

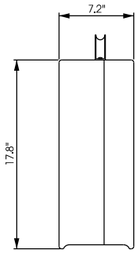
REMOTE RADIO UNITS MUST BE POWERED UP WITHIN 48 HOURS OF INSTALLATION ON TOWER



TOP VIEW



FRONT VIEW



SIDE VIEW

D REMOTE RADIO UNIT (RRU)

SCALE: NTS

RRU SUPPORT KIT:

SINGLE SUPPORT KIT: ERICSSON PART # SXK 107 2839/1
WEIGHT: 11 LBS

EXPANSION KIT ORDERED IN ADDITION TO SINGLE SUPPORT KIT FOR DUAL MOUNT: ERICSSON PART # SXK 107 2839/2
WEIGHT: 4 LBS 6.5 OZ.

ALL HARDWARE INCLUDED

SINGLE UNIT

DOUBLE UNIT

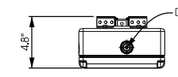
E RRU SUPPORT KIT

SCALE: NTS

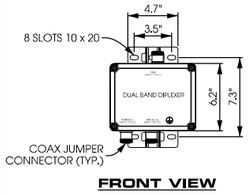
PRODUCT SPECIFICATIONS:

PRODUCT DESCRIPTION:
- 700/850 DUAL BAND DIPLEXER
- KAELUS PART # DBC0056F1VX-1

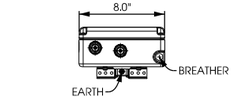
MECHANICAL SPECIFICATIONS:
- COLOR: LIGHT GREY
- CONNECTOR INTERFACE:
  7-16 DIN FEMALE x 3 LONG NECK
- DIMENSIONS (H x W x D): 8" x 6.2" x 3.7"
- WEIGHT: 6.6 LBS



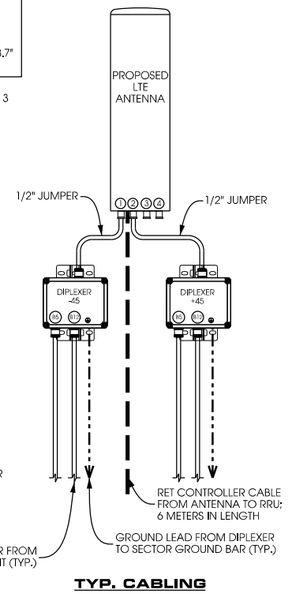
TOP VIEW



FRONT VIEW



BOTTOM VIEW



TYP. CABLING

F DIPLEXER

SCALE: NTS

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608.644.1549 fax
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INSTALLATION DETAILS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB

PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: A-3.dgn

SHEET NUMBER: A-3

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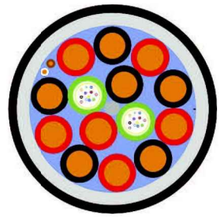
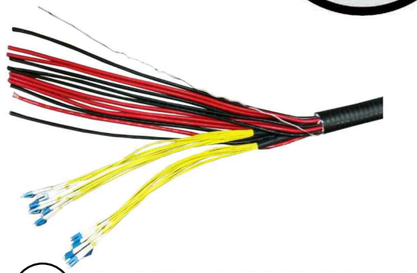
PRODUCT DESCRIPTION:

- 1-1/4" HYBRID FIBER OPTIC CABLE WITH 48V ENERGY FEEDER IN CORRUGATED ALUMINUM SHIELDING WITH UV RESISTANT PE JACKET.
- MINIMUM BENDING RADIUS: 360mm (14")
- MAXIMUM PULLING STRENGTH: 150 daN
- MAXIMUM HANGER SPACING: 1.0 m
- APPROX. WEIGHT: 2300 kg/km (1.55 LB/FT)
- SHIPPED W/4' PROTECTED JACKET (2.25" O.D.) AT EACH END
- NON-ARMORED ENDS ARE 3" IN LENGTH (2" O.D.)





A EUPEN HYBRID CABLE

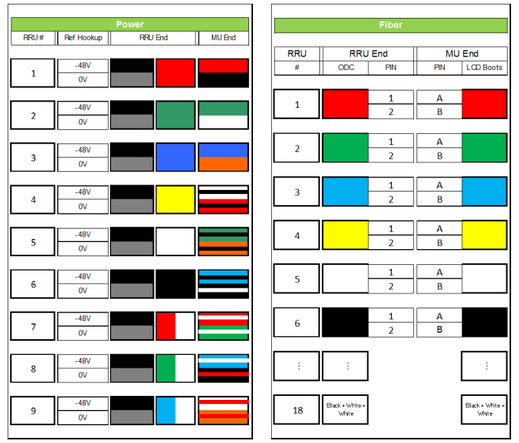
SCALE: NTS

PRODUCT DESCRIPTION:

- BARREL CUSHION FOR 1-5/8" SNAP-STACK HANGERS
- ACCOMMODATES (4) 1/2" COAX
- SITE PRO 1 PART # BC124
- DOUBLE STACKING ALLOWED PER MANUFACTURER

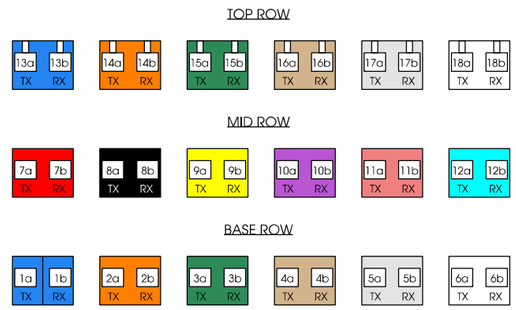
B STACKABLE SNAP-IN HANGER ON UNIVERSAL STANDOFF KIT

SCALE: NTS



C HYBRID COLOR CODING

SCALE: NTS



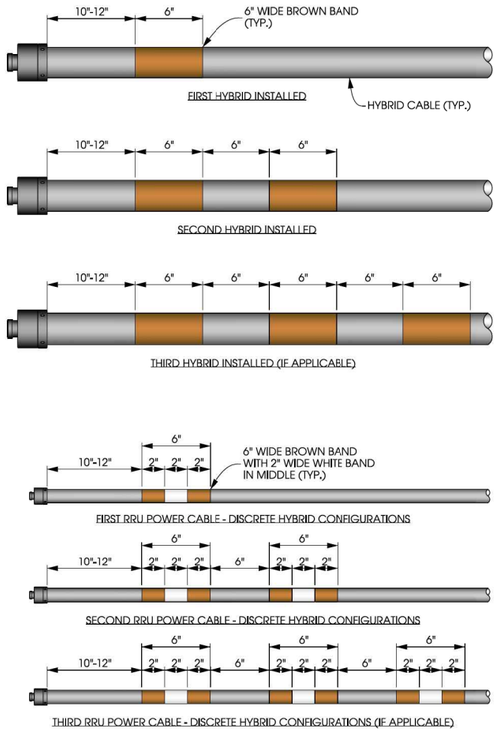
D FIBER LABEL

SCALE: NTS

NOTE:

AT THE TOP OF THE TOWER/BUILDING/WATER TOWER AND AT THE ENTRY POINT OF THE GROUND LEVEL JUNCTION BOX, HYBRID/DISCRETE CABLES MUST BE BANDED IN ACCORDANCE TO THE ILLUSTRATION BELOW. THE ILLUSTRATION SHOWS THE FIRST HYBRID/DISCRETE CABLE INSTALLED WITH ONE BROWN BAND, THE SECOND HYBRID/DISCRETE CABLE WITH TWO BROWN BANDS AND THE THIRD (IF APPLICABLE) WITH THREE BROWN BANDS.

REFER TO LATEST EDITION OF U.S. CELLULAR STANDARD: STD72 TO VERIFY CURRENT COLOR CODING



E TYP. HYBRID CABLE BANDING

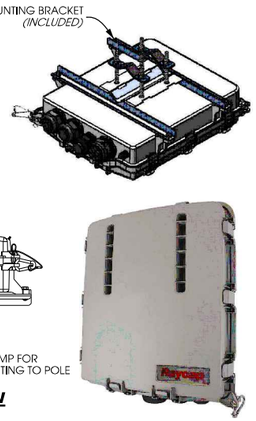
SCALE: NTS

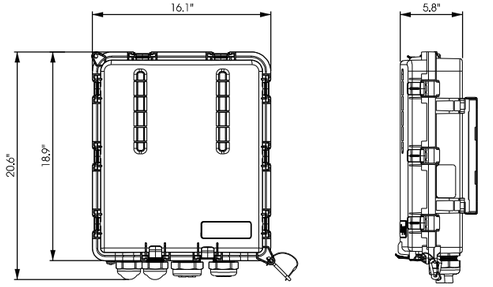
RAYCAP RRU SURGE PROTECTION:

RAYCAP MODEL #: RUSDC-6267-PF-48

DIMENSIONS: 20.6" x 18.9" x 5.8" (H x W x D)

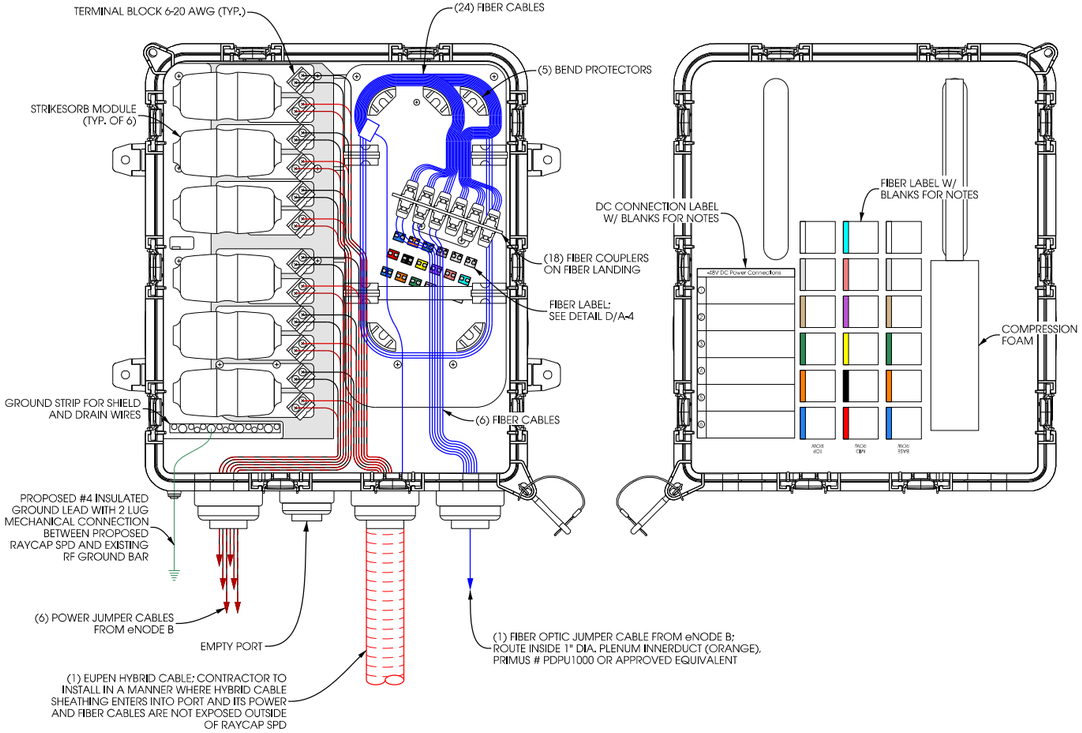
WEIGHT: 19.95 lbs





F RAYCAP SURGE PROTECTIVE DEVICE (SPD)

SCALE: NTS



G RAYCAP SPD CABLING

SCALE: NTS

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SPD AND FIBER CABLING
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB

PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: A-4.dgn

SHEET NUMBER: **A-4**

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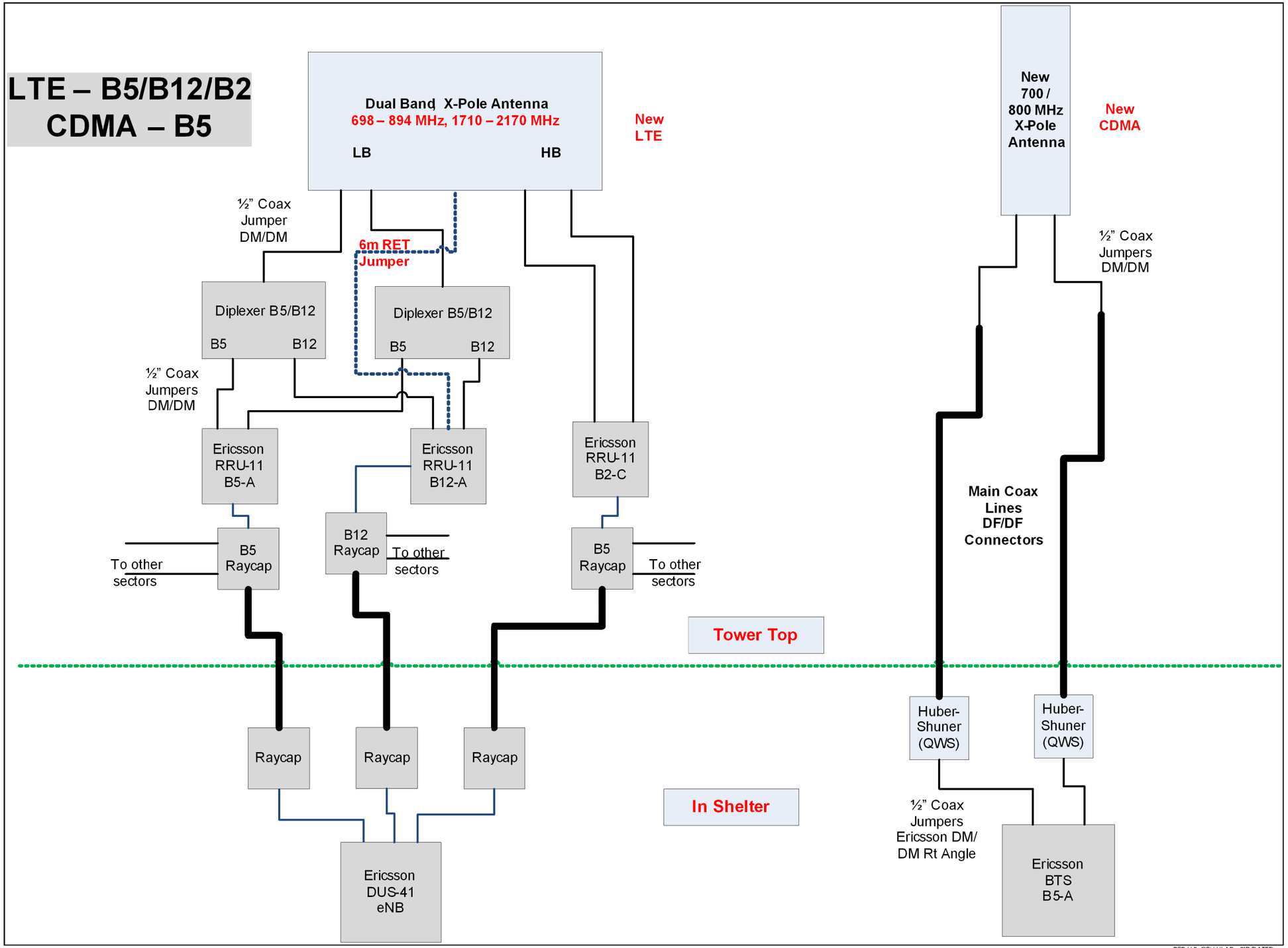
LTE – B5/B12/B2
CDMA – B5



PER U.S. CELLULAR eSIP DATED
02/29/2016 PROVIDED BY OTHERS

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Edge
Consulting Engineers, Inc.
624 Water Street
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608.644.1449 voice
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PLUMBING DIAGRAM
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY:
ABB

PLOT DATE:
10/31/2016

PROJECT #:
13540

FILE NAME:
A-5.dgn

SHEET NUMBER:
A-5

© EDGE CONSULTING ENGINEERS, INC.

696-900 MHz

Amphenol ANTENNA SOLUTIONS

BXA-70080-8CF-EDIN-X

X-Pol | FET Panel | 80° | 15.0 dBd

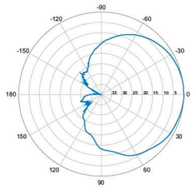
Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	82°	80°
Vertical beamwidth	9°	7°
Gain	14.5 dBd (16.6 dBi)	15.0 dBd (17.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 7	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-14.4 dB	-18.3 dB
Front-to-back ratio (+/-30°)	-34.6 dB	-34.8 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -30 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	2404 x 204 x 151 mm	94.6 x 8.0 x 5.9 in
Depth with z-brackets	191 mm	7.5 in
Weight without mounting brackets	10.4 kg	23 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.49 m^2 Side: 0.36 m^2	Front: 5.3 ft^2 Side: 3.9 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 813 N Side: 620 N	Front: 167 lbf Side: 138 lbf

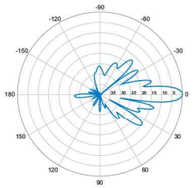
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70080-8CF-EDIN-X-FP		

BXA-70080-8CF-EDIN-X



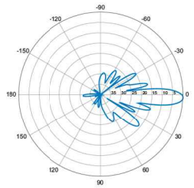
Horizontal | 750 MHz

BXA-70080-8CF-EDIN-0

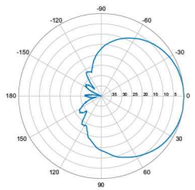


0° | Vertical | 750 MHz

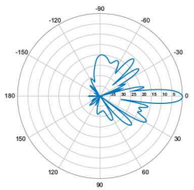
BXA-70080-8CF-EDIN-2



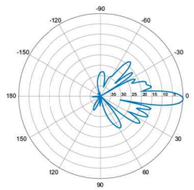
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



2° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

A **ANTENNA SPECIFICATIONS**
SCALE: NTS

Simply Intelligent

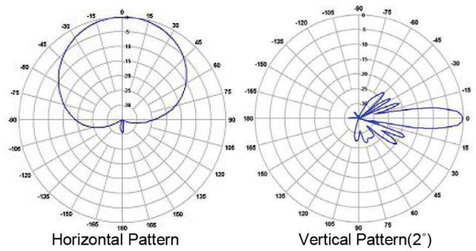
KMW COMMUNICATIONS

AM-X-CD-17-65-00T-RET

8' 65° Dual Broadband Electrical Downtilt Antenna
698 ~ 894MHz, X-pol., H65° / V9.5°
1710 ~ 2170MHz, X-pol., H65° / V6.4°

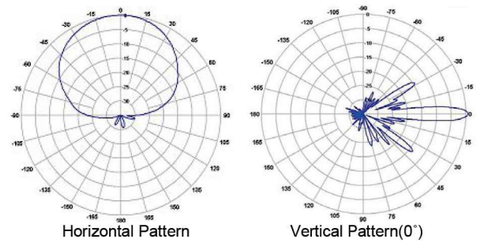
Electrical Specification

Frequency(MHz)		698~806	824~894	1710~1755	1850~1900	2110~2155
Impedance(Ω)		50	50	50	50	50
Polarization		±45°	±45°	±45°	±45°	±45°
Gain(dBi/dBd)		16.8 /14.65	17.5/15.35	17.3/15.05	17.8/15.55	18.1/15.75
Beamwidth	Horizontal	66°	64°	62°	65°	70°
	Vertical	10°	9°	6.7°	6.4°	6.0°
VSWR		≤1.5:1	≤1.5:1	≤1.5:1	≤1.5:1	≤1.5:1
Front-to-Back Ratio(dB)		≥27	≥27	≥27	≥27	≥27
Electrical Downtilt		0° ~ 12°	0° ~ 12°	0° ~ 10°	0° ~ 10°	0° ~ 10°
Isolation Ports(dB)		≥30	≥30	≥30	≥30	≥30
Isolation Frequency(dB)		≥35	≥35	≥35	≥35	≥35
Cross Pole Discrimination		10.0 dB @ ±60° 15.0 dB @ 0°	10.0 dB @ ±60° 15.0 dB @ 0°	10.0 dB @ ±60° 15.0 dB @ 0°	10.0 dB @ ±60° 15.0 dB @ 0°	10.0 dB @ ±60° 15.0 dB @ 0°
USLS(dB)		16	16	16	16	16
Side Lobe Suppression		> 16dB @ 0-6° > 18dB @ 7-12°	> 16dB @ 0-6° > 18dB @ 7-12°	> 16dB @ 0-6° > 18dB @ 7-10°	> 16dB @ 0-6° > 18dB @ 7-10°	> 16dB @ 0-6° > 18dB @ 7-10°
PIM (2x20w, dBc)		≤ -150	≤ -150	≤ -150	≤ -150	≤ -150
Input Power(W)		500	500	300	300	300



Horizontal Pattern Vertical Pattern(2°)

700MHz Band Pattern



Horizontal Pattern Vertical Pattern(0°)

AWS Band Pattern

AISG Antenna Interface Standards Group

KMW Communications
www.kmwcomm.com
Contact: info@kmwcomm.com

B **ANTENNA SPECIFICATIONS**
SCALE: NTS

Edge
Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

SHEET TITLE:
ANTENNA SPECIFICATIONS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

ISSUE DATE:	INIT.
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

CHECKED BY: ABB
PLOT DATE: 10/31/2016
PROJECT #: 13540
FILE NAME: A-6.dgn
SHEET NUMBER: **A-6**

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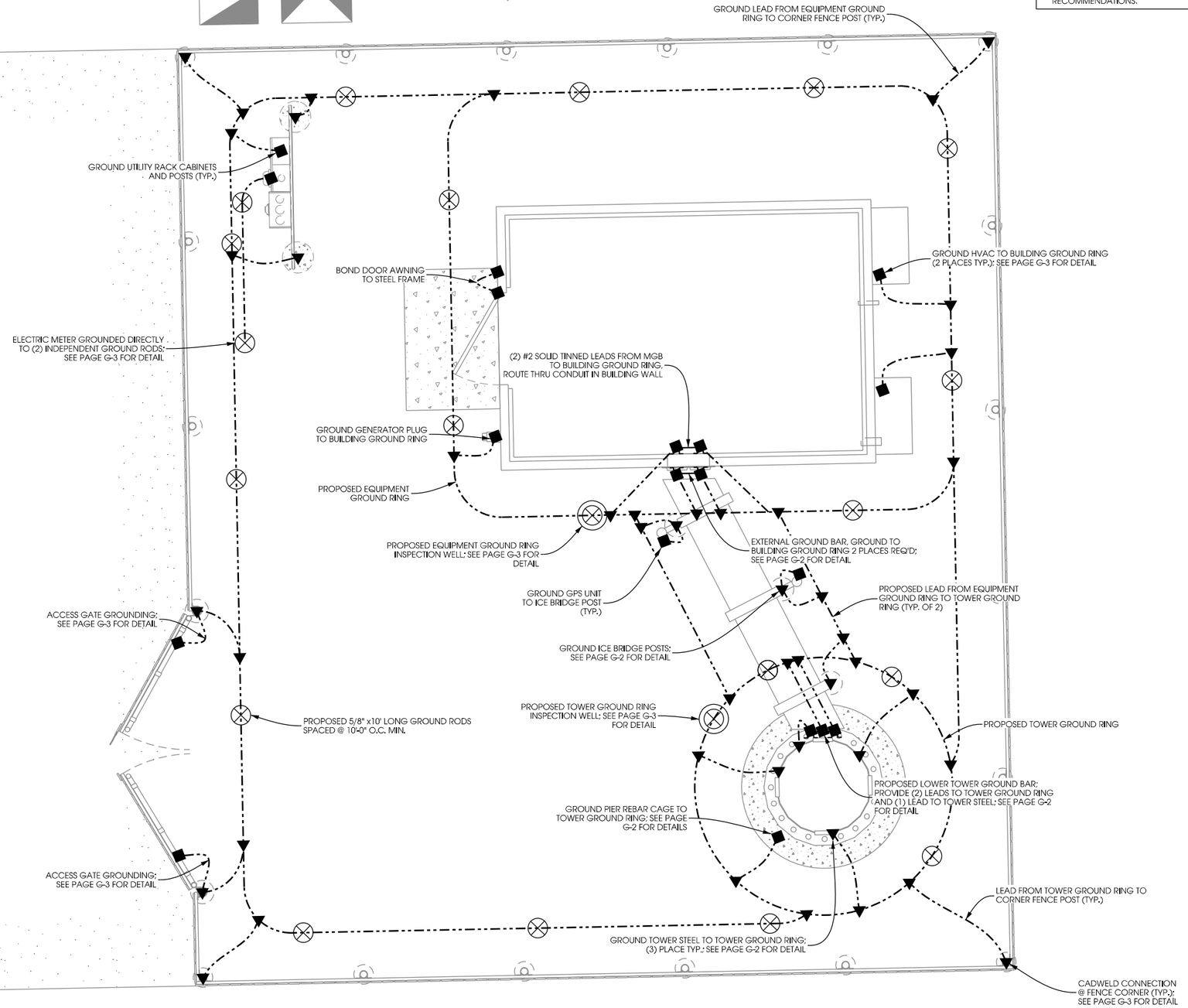
NORTH

GROUNDING NOTE:

THIS GROUNDING PLAN WAS PREPARED PRIOR TO THE COMPLETION OF THE GEOTECHNICAL REPORT AND RECEIPT OF THE TOWER FOUNDATION DESIGN. THE LAYOUT OF RADIALS AND GROUND RODS ARE APPROXIMATE IN NATURE AND MAY NEED TO BE ADJUSTED IN THE FIELD. GROUND RODS SHOULD NOT EXTEND THROUGH THE TOWER FOUNDATION OR OTHER STRUCTURAL ELEMENTS WITHOUT PRIOR APPROVAL FROM THE DESIGN ENGINEER. IN ADDITION, SOME ADJUSTMENT TO THE GROUND METHOD MAY BE REQUIRED IN INSTANCES WHERE SHALLOW BEDROCK OR OTHER UNIQUE CIRCUMSTANCES ARE ENCOUNTERED. CONTRACTOR SHALL CONSULT GEOTECHNICAL REPORT FOR FURTHER DESIGN AND CONSTRUCTION RECOMMENDATIONS.



GROUNDING SCHEDULE:

- ▲ CADWELD CONNECTION
- ■ MECHANICAL BURNDY CONNECTION
- ⊗ GROUND ROD (5/8" x 10' LONG COPPER CLAD SPACED 10' O.C.)
- ⊗ GROUND ROD W/INSPECTION WELL
- #2 AWG SOLID, TINNED COPPER
  - FENCE COMPOUND GROUND RING
  - LEADS FROM GROUND RING TO TOWER
  - LEADS FROM GROUND RING TO SHELTER
  - LEADS FROM GROUND RING TO EQUIPMENT
  - MAIN LEADS TO GROUND BARS

NOTES:

1. ALL GROUND LEADS EXTENDING FROM BELOW GRADE SHALL EXTEND A MINIMUM OF 6" ABOVE GRADE FOR TESTING PURPOSES.
2. ALL GROUND LEADS EXTENDING FROM BELOW GRADE TO BE ENCASED IN 3/4" CARFLEX OR 3/4" RIGID CONDUIT W/ THE CONDUIT BEING BURIED A MIN. OF 24" BELOW GRADE.
3. PRIOR TO FINAL COMPACTION, CONTRACTOR SHALL TEST GROUND SYSTEM TO VERIFY 5 OHM OR LESS CRITERIA IS ACHIEVED. CONTRACTOR SHALL SUPPLEMENT GROUND SYSTEM AS NEEDED. FINAL TEST RESULTS SHALL BE DOCUMENTED AND PROVIDED TO ENGINEER.
4. CHEM-ROD TO BE UTILIZED IN EVENT OF SHALLOW BEDROCK, OVERLYING SHALLOW FOUNDATION WHERE CONVENTIONAL RODS CANNOT BE INSTALLED, WHERE GROUND SYSTEM NEEDS TO BE SUPPLEMENTED TO ACHIEVE 5 OHM OR LESS RESISTANCE.

2'-6" 0' 2'-6" 5'-0"

SCALE: 11" x 17" - 1" = 5'
22" x 34" - 1" = 2'-6"

Edge
Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
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GROUNDING PLAN

WAUKESHA AIRPORT II [784719]

WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
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FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

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PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: G-1.dgn

SHEET NUMBER: G-1

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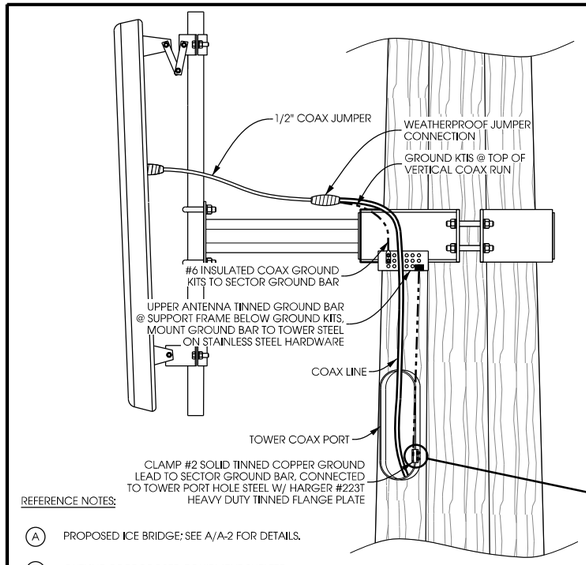
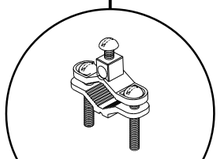


REFERENCE NOTES:

- (A) PROPOSED ICE BRIDGE; SEE A/A-2 FOR DETAILS.
- (B) OUTLINE OF PROPOSED EQUIPMENT SHELTER.
- (C) EQUIPMENT SHELTER ENTRY PORT FURNISHED BY BUILDING MFG. CONTACTOR TO PROVIDE (2) LEADS TO EXTERNAL GROUND BAR; SEE DETAIL C/G-2.
- (D) GROUND HATCH PLATE WITH #6 AWG STRANDED JUMPER W/LONG BARREL COMPRESSION LUGS; USE STAR WASHERS, LOCK WASHERS, AND STAINLESS 5/16" BOLTS TO SECURE TO EXTERNAL GROUND BAR.
- (E) MASTER GROUND BAR BY BUILDING MFR.; SEE DETAIL D/G-2. ELECTRICAL CONTRACTOR TO EXTEND (2) #2 SOLID TINNED COPPER LEADS DOWN THROUGH BUILDING WALL @ 45° ANGLE AND INTO 3/4" CARFLEX CONDUITS.
- (F) EXTERIOR GROUND BAR BY BLDG. MFR. ELECTRICAL CONTRACTOR TO EXTEND (2) #2 SOLID TINNED COPPER LEADS DOWN INTO 3/4" CARFLEX CONDUITS AND PROVIDE NECESSARY CADWELD CONNECTIONS.
- (G) (2) #2 SOLID TINNED COPPER LEADS IN SEALED END 3/4" CARFLEX CONDUIT FROM EQUIPMENT RING TO MGB. CONTRACTOR TO PROVIDE ALL REQUIRED CADWELD CONNECTIONS.
- (H) 3/4" DIA. PVC CONDUITS SECURED W/GALV. "C" CLAMPS TO EXTERNAL GROUND BAR. EXTEND PVC PIPE 24" BELOW GRADE.
- (I) MONOPOLE TOWER.
- (J) COAXIAL CABLE GROUND KITS TO TGB. KIT SUPPLIED BY U.S. CELLULAR AND INSTALLED BY ANTENNA CONTRACTOR.
- (K) 4" x 12" x 1/4" THK TINNED INSUL. GROUND BARS. MOUNT LOWER TGB DIAGONALLY ON TOWER FOR EASIER HOOK-UP OF GROUNDING STRAPS. MOUNT BAR ON TOWER JUST BELOW ICE BRIDGE LEVEL AND AT THE TOP OF THE TOWER (UGB) USING STAINLESS STEEL HARDWARE.
- (L) #2 AWG SOLID, TINNED COPPER GROUND LEADS FROM LOWER TGB (1) TO BASE PLATE STEEL (2) TO GROUND RING.
- (M) #2 AWG SOLID TINNED COPPER GROUND LEADS ENCASED IN CARFLEX CONDUIT FROM TOWER STEEL (3) TO GROUND RING (CADWELD TYPE VD).
- (N) COAXIAL CABLES WITH DRIPLOOP INSTALLED BY ANTENNA CONTRACTOR; MAINTAIN MINIMUM BEND RADIUS.
- (O) #2 AWG SOLID TINNED COPPER BETWEEN WAVEGUIDE BRIDGE AND STEEL SUPPORT POST BY ANTENNA CONTRACTOR. PROVIDE TYPE VD CADWELD CONNECTION TO SUPPORT POST AND LONG BARREL COMPRESSION LUG CONNECTION TO ICE BRIDGE. ORIENT HIGH SIDE TOWARDS TOWER.
- (P) #2 AWG SOLID, TINNED COPPER LEADS TO BE CADWELDED TO ICE BRIDGE POSTS 6" MIN. ABOVE FINISHED GRADE. ENCASE IN 3/4" CARFLEX CONDUIT.

NOTES:

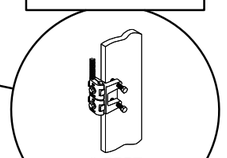
1. ALL BELOW-GRADE CONNECTIONS ARE TO BE EXOTHERMICALLY WELDED A MINIMUM OF 48" BELOW GRADE.
2. ALL LEADS EXTENDING ABOVE GRADE TO BE ENCASED IN 3/4" CONDUIT AND EXTEND A MINIMUM OF 6" ABOVE FINISHED GRADE AND 24" BELOW FINISHED GRADE.
3. APPLY COLD GALVANIZATION TO ALL ABOVE-GROUND EXOTHERMICALLY WELDED CONNECTIONS.
4. APPLY ANTI OXIDENT "KOPR SHIELD" TO ALL MECHANICAL CONNECTIONS.
5. UPPER AND LOWER TOWER GROUND BARS TO BE BONDED DIRECTLY TO TOWER STEEL WITH #2 CONDUCTORS.



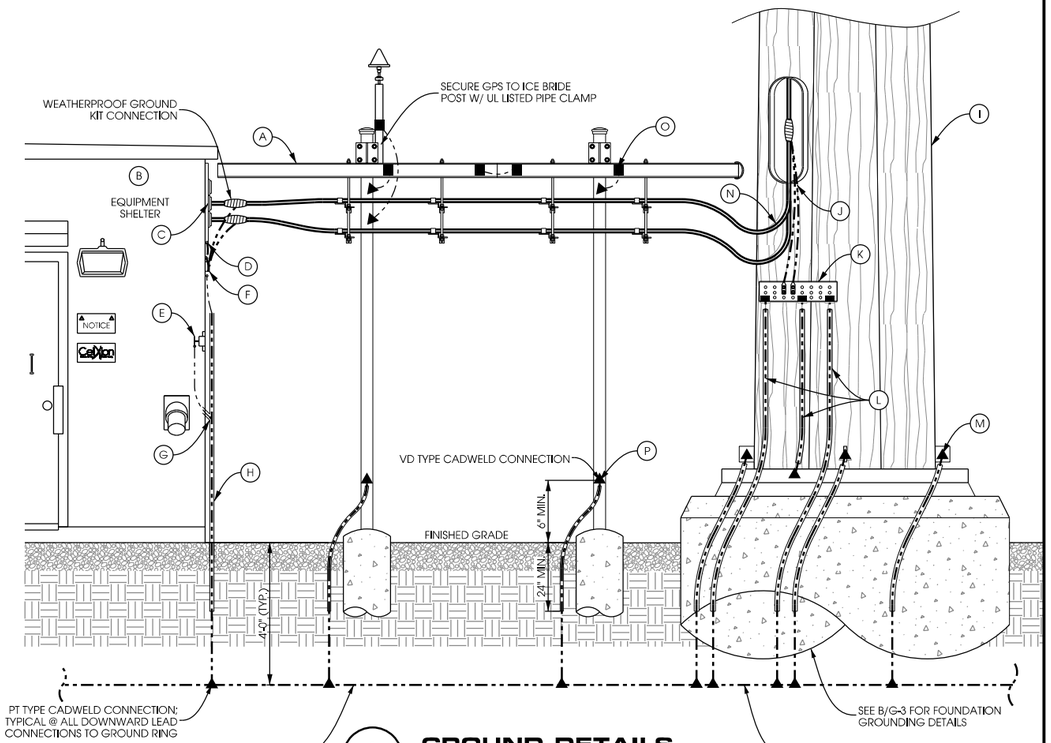
 # BGC41.25-2 FOR ROUND MEMBERS

NOTES:

1. USE 2-HOLE CONNECTOR W/
   - HARGER BGC41.25-2 PIPE CLAMPS FOR 1 1/4" TO 2" DIA. ROUND MEMBERS OR
   - HARGER #223T HEAVY DUTY TINNED FLANGE BONDING PLATE
2. USE EXTERNAL ANTI-OXIDATION COMPOUND.
3. PAINT WITH COLD GALV. COMPOUND AFTER BONDING.

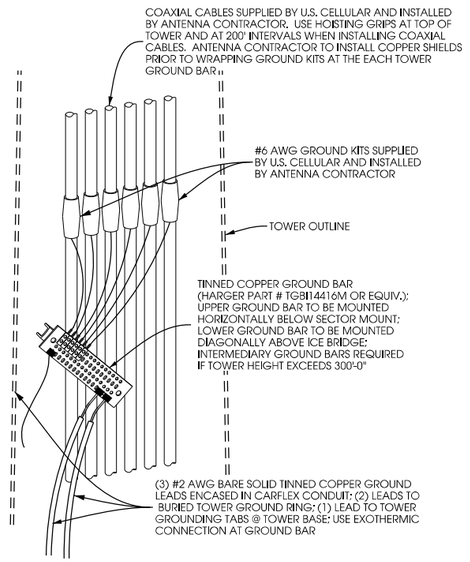


 # 223T FOR FLANGE MEMBERS



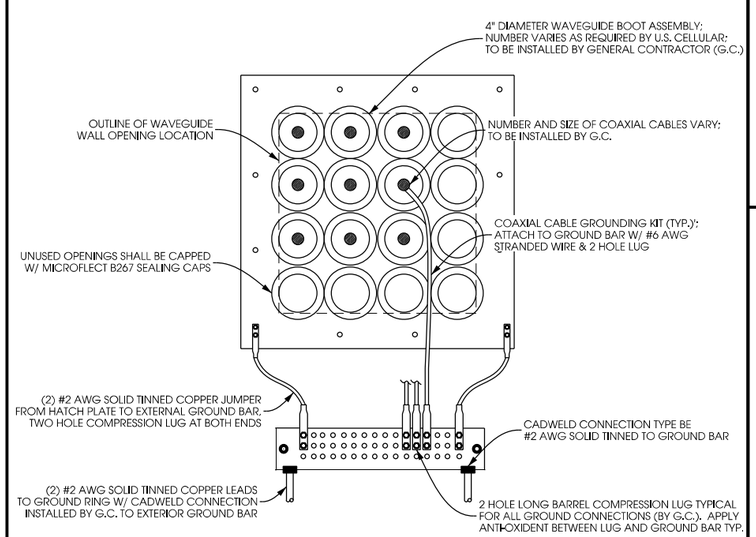
A GROUND DETAILS

SCALE: NTS



B COAX GROUNDING AT TOWER

SCALE: NTS

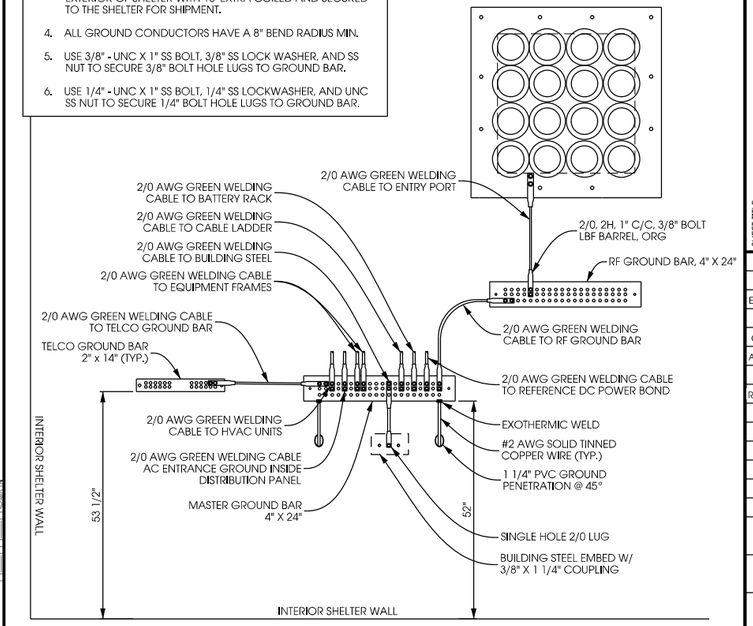


C EXTERNAL SHELTER GROUND BAR

SCALE: NTS

NOTES:

1. TELCO GROUND BAR TO BE LOCATED ON TELCO BOARD.
2. RF GROUND BAR TO BE LOCATED AT INSTALLED WAVEGUIDE ENTRY PORT.
3. #2 AWG SOLID TINNED COPPER WIRE SHALL BE PULLED TO EXTERIOR OF SHELTER WITH 10' EXTRA COILED AND SECURED TO THE SHELTER FOR SHIPMENT.
4. ALL GROUND CONDUCTORS HAVE A 8" BEND RADIUS MIN.
5. USE 3/8" - UNC X 1" SS BOLT, 3/8" SS LOCK WASHER, AND SS NUT TO SECURE 3/8" BOLT HOLE LUGS TO GROUND BAR.
6. USE 1/4" - UNC X 1" SS BOLT, 1/4" SS LOCKWASHER, AND UNC SS NUT TO SECURE 1/4" BOLT HOLE LUGS TO GROUND BAR.



D INTERNAL SHELTER GROUNDING DIAGRAM

SCALE: NTS

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624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
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GROUNDING DETAILS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
EQUIP. SLAB, ETC. - 03/09/2016	TAS
EQUIP. SHELTER - 03/17/2016	TAS
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PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: G-2.dgn

SHEET NUMBER: **G-2**

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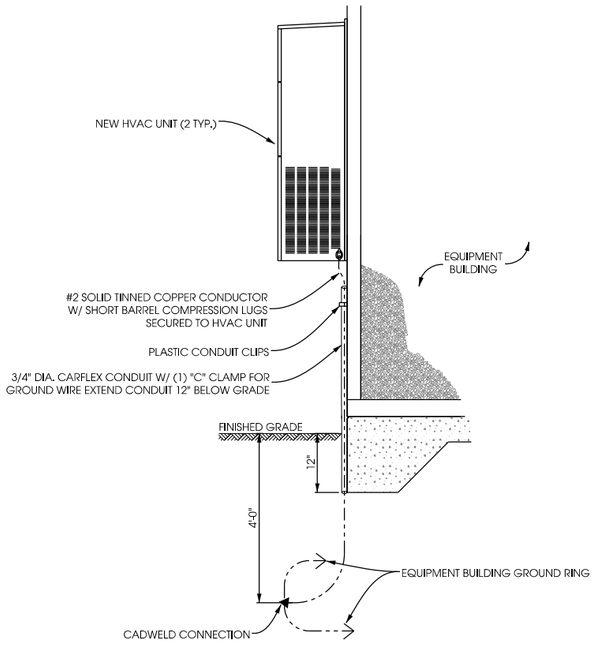
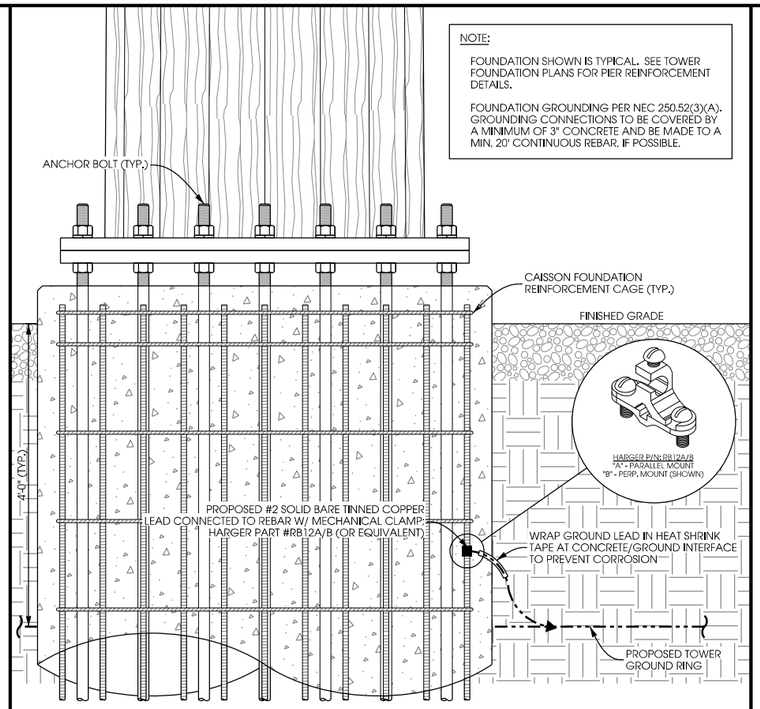


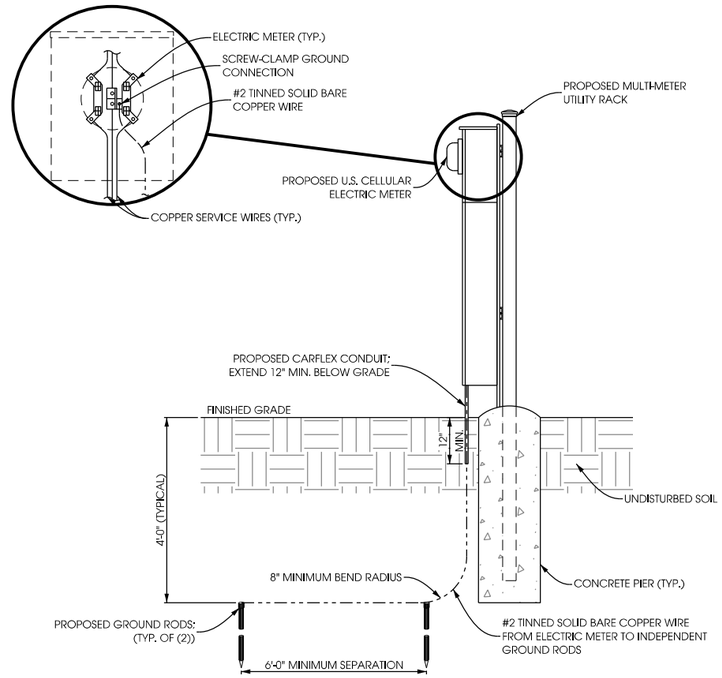
A HVAC GROUNDING DETAIL

SCALE: NTS



B TOWER FOUNDATION GROUNDING DETAILS

SCALE: NTS



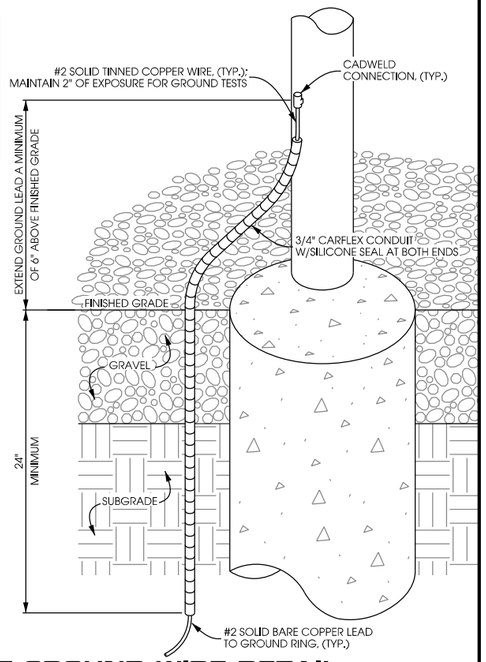
C ELECTRIC METER GROUND DETAIL

SCALE: NTS

NOTES:

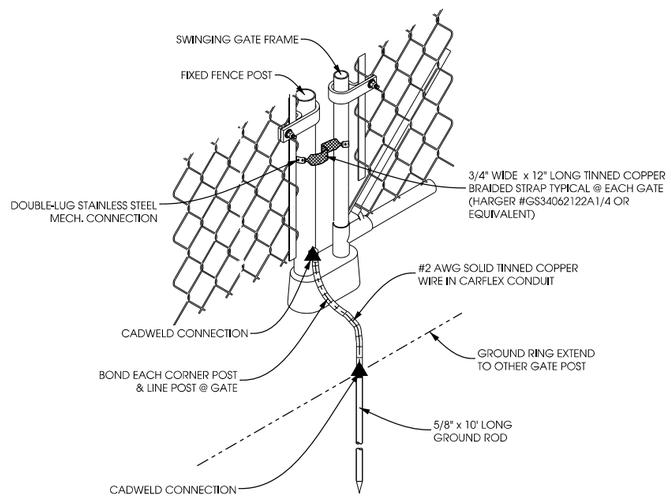
EXTEND 3/4" CARFLEX CONDUIT A MINIMUM OF 24" BELOW FINISHED GRADE. PROVIDE SILICONE SEAL AT BOTH ENDS.

GROUND WIRE DETAIL SHOWN PERTAINS TO THE FOLLOWING SITE COMPONENTS:
- COMPOUND FENCE POSTS
- ICE BRIDGE POSTS
- UTILITY RACK POSTS



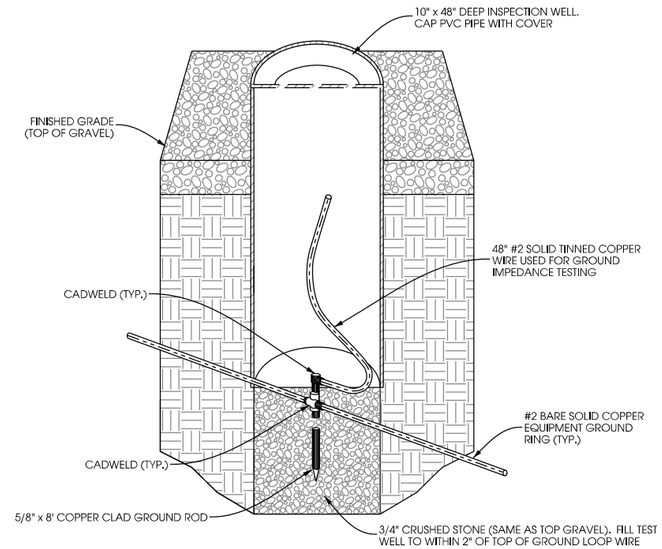
D POST GROUND WIRE DETAIL

SCALE: NTS



E GATE GROUNDING DETAIL

SCALE: NTS



F INSPECTION WELL DETAIL

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624 Water Street
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ANTENNA & COAXIAL/HYBRID CABLE INSTALLATION

I. SCOPE:

THIS SECTION COVERS THE SPECIFICATIONS FOR ANTENNA AND COAXIAL/HYBRID CABLE INSTALLATION. THE AREAS OF FOCUS ARE THE INSTALLATION OF: ANTENNAS, COAXIAL/HYBRID, CONNECTIONS, AND ICE BRIDGE. BEND ON TOWER GROUND BAR; AND ON BUILDING GROUND BAR BEFORE ENTRY INTO WAVEGUIDE PORTS. 4" CABLE BOOTS

II. ANTENNAS:

A: ANTENNAS SHALL BE PLUMB AND INSTALLED SO THAT ENTIRE WHIP EXTENDS ABOVE VERTICAL PIPE MOUNT. DIRECTIONAL ANTENNAS SHALL BE ORIENTED TO PROPER AZIMUTH, PROVIDED ON THE RF SPECIFICATION SHEET. NOTE: THE ANTENNA MAY BE ORIENTED USING THE REFLECTOR AS THE REFERENCE. ADJUSTING ITS AZIMUTH 180 DEGREES FROM MAXIMUM ANTENNA RADIATION.

B: MICROWAVE ANTENNAS (DISHES) SHALL BE ASSEMBLED PER MANUFACTURER'S DRAWINGS. STIFF ARMS AND RADOMES SHALL BE INSTALLED WITH POLARIZATION PROVIDED BY RF SPECIFICATION SHEET. IF PATH IS NOT READY TO ALIGN, DISH SHOULD BE POINTED TOWARD CALCULATED AZIMUTH, OR DIRECTION OF FIELD STAKE DENOTING OPPOSITE END. TWO STIFF ARMS SHALL BE PROVIDED FOR MICROWAVE DISHES 6'-0" IN DIAMETER AND GREATER.

C: A TRANSIT SHALL BE USED TO PROPERLY ALIGN CELLULAR AND MICROWAVE ANTENNAS.

III. HYBRID/COAXIAL/HYBRID CABLE:

A: COAXIAL/HYBRID CABLE SHALL BE SUPPORTED WITH SNAP IN HANGERS. SNAP IN HANGERS SHOULD BE USED EVERY 3 FEET THE ENTIRE HEIGHT OF TOWER. ANGLE ADAPTERS OR ROUND MEMBER ADAPTERS WITH BUTTERFLY CLAMPS SHALL BE USED ELSEWHERE, I.E. SIDEARMS, PLATFORMS, AND MICROWAVE MOUNTS.

B: COAXIAL/HYBRID CABLE SHALL ALSO BE SUPPORTED WITH HOISTING GRIPS, INSTALLED AT MAXIMUM INTERVALS OF 200 FEET. HOISTING GRIPS SHALL BE ATTACHED WITH SHACKLES, BOLTED IN THE 7/16" HOLE OF WAVEGUIDE LADDER.

C: ALL JUMPERS USED BETWEEN COAXIAL/HYBRID CABLE AND ANTENNA SHALL BE SUPPORTED WITHIN 18 INCHES OF ANTENNA, USING BUTTERFLY CLAMPS WITH ANGLE ADAPTERS OR ROUND MEMBER ADAPTERS AROUND PIPES. CELLULAR ANTENNAS TYPICALLY USE 6' JUMPERS; MICROWAVE DISHES USE 3' JUMPERS.

D: COAXIAL/HYBRID CABLE SHALL BE NEATLY BENT WHEN REQUIRED, USING A MINIMUM BENDING RADIUS OF 10 TIMES THE DIAMETER OF THE COAXIAL/HYBRID CABLE. DRIP LOOPS SHOULD BEGIN AT THE ICE BRIDGE. THE BEND IN THE COAXIAL/HYBRID CABLE SHOULD BE AT A LOWER HEIGHT THAN THE ENTRY PORT.

E: COAXIAL/HYBRID CABLE SHALL BE SUPPORTED WITH SNAP IN HANGERS ON THE WAVEGUIDE LADDER UNDER ICE BRIDGE. COAXIAL/HYBRID CABLE SHOULD BE NEATLY CUT 16" INSIDE BUILDING AND TERMINATED AT THE QUARTER WAVE SHORTS.

F: CONNECTORS WILL NORMALLY BE PROVIDED FIRST OFF REEL FROM FACTORY. CONNECTORS TERMINATED IN BUILDING SHALL BE NEATLY INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

G: OPENINGS #1, #2, AND #3 SHOULD BE USED FOR THE X SECTOR; OPENINGS #5, #6, AND #7 SHOULD BE USED FOR THE Y SECTOR; OPENINGS #9, #10, AND #11 SHOULD BE USED FOR THE Z SECTOR. OPENINGS #4, #8, AND #12 SHOULD BE RESERVED FOR MICROWAVE WAVEGUIDE.

H: COAXIAL/HYBRID CABLES SHOULD BE LABELED WITH TAGS INSIDE THE BUILDING.

SECTOR INDICATOR - PRIMARY COLORS
USE 3/4" TO 1" WIDE COLORED TAPE TO INDICATE SECTORS
ALPHA SECTOR FOR SECTORED SITE: RED
BETA SECTOR FOR SECTORED SITE: WHITE
GAMMA SECTOR FOR SECTORED SITE: BLUE
DELTA SECTOR FOR SECTORED SITE: BLUE
EPSILON SECTOR FOR SECTORED SITE: VIOLET
ZETA SECTOR FOR SECTORED SITE: BROWN
FUNCTION INDICATOR - SECONDARY COLORS
USE 3" WIDE COLORED TAPE TO INDICATE TECHNOLOGY.
CDMA: YELLOW GSM: VIOLET LTE: ORAGNE
USE 3" WIDE COLORED TAPE TO INDICATE FREQUENCY.
700: GREEN 800: BROWN 1900: BLUE 2100: WHITE
USE 6" WIDE COLORED TAPE TO INDICATE HYBRID CABLES.
HYBRID CABLES : BROWN

I: ALL EXCEPTIONS NEED TO BE VERIFIED WITH THE PROJECT MANAGER.

IV. CONNECTORS:

A: ALL CONNECTIONS, AND GROUNDING KITS SHALL BE WEATHER PROOFED USING COLD SHRINK OR ANDREW APPROVED WEATHER STRIPPING.
NOTE: NO PORTION OF CONNECTOR SHALL BE EXPOSED TO THE ELEMENTS.

B: COAXIAL/HYBRID CABLE SHALL BE GROUNDED USING GROUNDING KITS AT THE TOP, BELOW THE BEND; BOTTOM, ABOVE THE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

C: GROUNDING KITS SHALL BE NEATLY INSTALLED SO THAT THE JUMPER RUNS IN THE SAME DIRECTION AS THE COAXIAL/HYBRID AND GROUND BAR. JUMPER WIRE SHOULD RUN IN A DIRECT PATH TO THE GROUND BAR/TOWER LADDER, BUT HAVE ADEQUATE SLACK FOR EXPANSION, CONTRACTION, AND REPAIR. NON-OXID GREASE SHOULD BE APPLIED BETWEEN LUG AND BAR/TOWER.

D: TOWER GROUND BAR SHALL BE INSTALLED ON THE ANGLE BEHIND THE FIRST DIAGONAL WAVEGUIDE LADDER RUNG, ABOVE 8'6".

V. ICE BRIDGE:

A: ICE BRIDGE SHALL BE ATTACHED AT ONE END WITH BOLTS, TO THE ANGLE ON THE BUILDING, ABOVE THE WAVEGUIDE PORTS. SINCE THE ANGLE (28°) IS TYPICALLY WIDER THAN THE ICE BRIDGE (24"), THE BRIDGE SHOULD BE CENTERED SO THAT IS COVERS THE WAVEGUIDE PORT ENTRY WHICH IS 24" WIDE. THE OPPOSITE END OF BRIDGE SHOULD BE 6" FROM TOWER FACE. IF FIELD CUT, IT SHOULD BE FILED SMOOTH AND COLD GALVANIZED.

B: IF BRIDGE IS SUPPORTED BY VERTICAL PIPES, THEY SHOULD BE CUT EVENLY AND CAPPED, APPROXIMATELY 18" ABOVE ICE BRIDGE.

C: 2 TIER WAVEGUIDE LADDER SHALL BE INSTALLED UNDER ICE BRIDGE PROPERLY SUPPORTED PER TOWER MANUFACTURER'S DRAWINGS.

GROUNDING SYSTEM NOTES

1. SCOPE:

THIS SECTION COVERS THE SPECIFICATIONS FOR CELL SITE GROUNDING. THE AREAS OF FOCUS ARE: TOWER, EQUIPMENT SLAB, AND INSTALLATION METHODS.

2. GENERAL:

2.1 ALL GROUND RODS SHALL BE 5/8" COPPER CLAD STEEL 10 FT. LONG. GROUND RODS SHALL BE EQUALLY SPACED AT 10 FT. INTERVALS. REFER TO SITE GROUNDING PLAN FOR DETAILS AND PLACEMENT WITH GROUNDING.

2.2 GROUNDING A SYSTEM SHALL BE MEGGAR TESTED TO ASSURE SATISFYING 5 OHMS OR LESS RESISTANCE.

2.3 ALL CADWELD CONNECTIONS TO GALVANIZED MATERIAL SHALL BE PROPERLY PREPARED TO ASSURE A SATISFACTORY CADWELD. THE CADWELD CONNECTION SHALL BE COATED WITH A COLD GALVANIZING SPRAY .

2.4 CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF THE GROUND SYSTEM BY PROVIDING A CD TO US CELLULAR. REQUIRED PHOTOS SHALL INCLUDE:
* ALL BUSS BARS AND COAX GROUND CONNECTIONS.
* TOWER COUNTERPOISE.
* EQUIPMENT SLAB COUNTERPOISE.* CONNECTIONS TO POWER, TELCO, A.C., FENCING AND ICE BRIDGE.
* CONNECTIONS TO POWER, TELCO, A.C., FENCING AND ICE BRIDGE.

2.5 CONTRACTOR SHALL PROVIDE AS-BUILT PLANS SHOWING LOCATION AND DIMENSIONS OF BELOW GRADE GROUNDING FEATURES.

3. INSTALLATION:

3.1 ALL EXTERIOR ABOVE AND BELOW GROUND CONNECTIONS SHALL BE CADWELD. NO ALUMINUM CONNECTORS SHALL BE USED UNLESS SPECIFIED OTHERWISE ON PLANS.

3.2 NO RIGHT-ANGLE CADWELD CONNECTION (OTHER THAN GROUND RODS TO GROUND RING CONNECTION) SHALL BE USED. ALL WIRE-TO-WIRE CONNECTIONS SHALL UTILIZE "Y-TYPE" CONNECTIONS.

3.3 ALL VERTICAL JUMPERS SHALL NOT BE WELDED WITHIN TWO (2) FT. OF THE GROUND ROD.

3.4 KOPR SHIELD REQUIRED FOR ALL MECHANICAL CONNECTIONS.

3.5 ALL CADWELDS FINISHED WITH COLD GALVANIZED SHIELD.

4. TOWER:

4.1 A #2 SOLID BARE COPPER WIRE SHALL BE BURIED A MINIMUM FOUR (4) FT. UNDERGROUND AND ENCIRCLE TOWER FOUNDATION TWO (2) FT. FROM THE FOUNDATION. THIS GROUNDING SYSTEM SHALL BE CONNECTED TO THE EQUIPMENT GROUND RING IN TWO (2) PLACES USING CADWELD CONNECTIONS. SUCH CONNECTIONS SHALL BE "Y-TYPE" CADWELD CONNECTIONS.

4.2 THREE (3) #2 SOLID BARE COPPER WIRES SHALL BE RUN FROM THE TOWER GROUND RING TO THE TOWER. THESE WIRES SHALL BE CONNECTED TO THE TOWER USING A CADWELD CONNECTION. NO SHARP BENDS SHALL BE PLACED IN THESE GROUND LEADS.

4.3 GROUND SYSTEM SHALL INCLUDE THE INSTALLATION OF AN ISOLATED LIGHTNING ROD AT THE TOP OF THE TOWER ABOVE THE HIGHEST ANTENNA. A #2 INSULATED COPPER WIRE SHALL BE CONNECTED TO THE TOWER LIGHTNING ROD USING AN APPROVED MECHANICAL CONNECTOR, OR CADWELDED, TO TOWER STEEL.

5. EQUIPMENT SLAB:

5.1 A #2 SOLID BARE COPPER WIRE SHALL BE BURIED A MINIMUM OF FOUR (4) FT. UNDERGROUND AND ENCIRCLE EQUIPMENT SLAB TWO (2) FEET FROM THE FOUNDATION. GROUND RING CORNERS SHALL BE INSTALLED WITH A MINIMUM TWO FOOT RADIUS (NO SHARP RIGHT ANGLE BENDS).

5.2 A #2 SOLID BARE TINNED COPPER WIRE SHALL BE INSTALLED FROM THE EQUIPMENT GROUND RING AND CONNECTED TO THE COPPER BUS BAR WITH A MINIMUM NINE (9) INCHES RADIUS. A "Y-TYPE" OR PARALLEL-TYPE" CADWELD CONNECTION SHALL BE USED FOR ALL CONNECTIONS TO THE GROUND RING.

6. FENCING:

6.1 A #2 SOLID BARE COPPER GROUND WIRE SHALL BE INSTALLED FROM THE FENCE CORNER POSTS TO THE GROUND RING AND SHALL BE BURIED A MINIMUM FOUR (4) FT. UNDERGROUND. THESE RUNS SHALL INCLUDE GROUND RODS EQUALLY SPACED AT 10 FT. INTERVALS. THESE RUNS SHALL BE BROUGHT ABOVE GROUND LEVEL AND SUPPORTED ABOVE GROUND WITH TEMPORARY POSTS UNTIL PERMANENT FENCING IS INSTALLED. GROUND WIRE SHALL BE CONNECTED TO THE FENCE POSTS USING CADWELD TYPE CONNECTIONS.

7. EXISTING GROUND SYSTEMS:

7.1 CONTRACTOR SHALL PROVIDE CONNECTIONS TO ALL EXISTING GROUND SYSTEMS AT THE SITE (SCADA, TELEMETRY, ETC.).

8. COMPLIANCE:

8.1 ELECTRICAL CODE COMPLIANCE

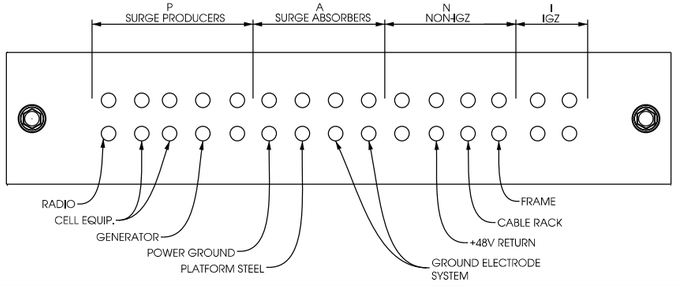
COMPLY WITH APPLICABLE LOCAL ELECTRICAL CODES REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, AND NEC AS APPLICABLE TO ELECTRICAL GROUNDING AND BONDING, PERTAINING TO SYSTEMS, CIRCUITS AND EQUIPMENT.

8.2 UL COMPLIANCE

COMPLY WITH APPLICABLE REQUIREMENTS OF UL467, 486A AND 869 PERTAINING TO GROUNDING AND BONDING OF SYSTEMS, CIRCUITS AND EQUIPMENT. USE GROUNDING AND BONDING PRODUCTS WHICH ARE UL-LISTED AND LABELED FOR THEIR INTENDED USAGE.

8.3 IEEE COMPLIANCE

COMPLY WITH APPLICABLE REQUIREMENTS OF RECOMMENDED INSTALLATION PRACTICES OF IEEE STANDARDS 80, 81, 141 AND 142 PERTAINING TO GROUNDING AND BONDING OF SYSTEMS, CIRCUITS AND EQUIPMENT.



MASTER GROUND BAR NOTES:

THE MASTER GROUND BAR (MGB) IS THE EXTENSION OF THE BUILDING GROUNDING SYSTEM AND SERVES AS THE MAIN POINT OF BONDING WITHIN THE FACILITY. THE MGB WILL BE THE COMMON GROUND POINT WHERE ALL GROUND POINTS FOR THE FACILITY WILL CONNECT.

THE MGB SHOULD BE LOCATED SO THAT THE BONDING CONDUCTOR IS AS SHORT AND STRAIGHT AS POSSIBLE TO THE FACILITY GROUND RING.

THE MGB WILL BE LOCATED NEAREST THE PRIMARY GROUND WHILE MAINTAINING HEIGHT AND DISTANCE CLEARANCES REQUIRED BY APPLICABLE ELECTRICAL CODES.

THE MGB WILL BE PREDRILLED COPPER ELECTRO TIN-PLATED BUS BAR WITH STANDARD NEMA BOLT SIZING AND SPACING WITH MINIMUM DIMENSIONS OF 1/4" THICK BY 4" WIDE AND 24" IN LENGTH. THE LENGTH MAY BE LONGER TO MEET FUTURE GROWTH PROJECTIONS.

THE MGB WILL BE INSULATED FROM ITS SUPPORT WITH MINIMUM 2" SEPARATION REQUIREMENT ON ISOLATED STANDOFFS.

THE MGB WILL BE PERMANENTLY AND APPROPRIATELY LABELED AND IDENTIFIED WITH THE "P", "A", "N" AND "I" SECTION OF THE MGB CLEARLY AND PERMANENTLY IDENTIFIED.

P = PRODUCERS, A = ABSORBERS, N = NON-PRODUCERS, I = ISOLATED (SWITCH, DCS)

ALL CONNECTIONS MADE TO MGB WILL BE STANDARD 2-HOLE LUG.

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Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
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WAUKESHA, WISCONSIN

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SHEET NUMBER:
G-4

ANTENNA INSTALLATION NOTES | **GROUNDING NOTES** | **GROUNDING NOTES**

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ELECTRICAL NOTES

GENERAL

A. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATING SYSTEM ENERGIZED THROUGHOUT AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.

B. CONTRACTOR IS TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.

C. CONTRACTOR SHALL OBTAIN ALL NECESSARY BUILDING PERMITS, INSPECTIONS AND APPROVALS, AND PAY ALL REQUIRED FEES PURSUANT TO THE WORK.

D. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE AND ANY APPLICABLE NATIONAL, STATE AND LOCAL CODES. ALL COMPONENTS SHALL BE U.L. APPROVED.

E. CONTRACTOR SHALL BEFORE SUBMITTING HIS BID, VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS OR FAILURE OF THE CONTRACTOR TO OBSERVE THEM.

F. EXACT LOCATION OF ALL EQUIPMENT SHALL BE COORDINATED WITH OWNER AND OTHER TRADES.

G. CONTRACTOR SHALL PROVIDE ALL VERIFICATION OBSERVATION TESTS AND EXAMINE ALL WORK PRIOR TO ORDERING THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT/ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.

H. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN SAFE CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT (SEE NOTE G. FOR EXCEPTIONS). MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, NBFU AND "UL" LISTED.

I. WHERE EQUIPMENT IS SPECIFIED BY MANUFACTURER AND TYPE, SUBSTITUTION SHALL ONLY BE MADE WITH THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL SUBMIT DETAILS OF PROPOSED MATERIALS, REASON FOR CHANGE AND CHANGE IN CONTRACT AMOUNT.

J. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY LABELED WITH ENGRAVED PLASTIC LABELS FOR EACH PANELBOARD, PULL BOX, J-BOX, SWITCH BOX, ETC. IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)

K. THESE PLANS ARE DIAGRAMMATIC ONLY AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE.

L. THE NEUTRAL IS TO BE GROUNDED AT THE METER MAIN PEDESTAL ONLY. AT ALL OTHER POINTS IN THE DISTRIBUTION SYSTEM, IT IS TO REMAIN INSULATED FROM ALL OTHER GROUNDS UNLESS OTHERWISE INDICATED ON DRAWING.

M. THE TEMPERATURE RATING ASSOCIATED WITH THE AMPACITY OF A CONDUCTOR SHALL BE SO SELECTED AND COORDINATED AS TO NOT EXCEED THE LOWEST TEMPERATURE RATING OF ANY CONNECTED TERMINATION, CONDUCTOR, OR DEVICE, REFER TO TABLE A.

N. ALL ENCLOSURES CONTAINING THE SERVICE CONDUCTORS-SERVICE RACEWAY, CABLE ARMOR, BOXES, FITTINGS, CABINETS MUST BE EFFECTIVELY BONDED TOGETHER.

O. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE SPECIFIED, WITH UV PROTECTION (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH SPECIFIED BY NATIONAL STATE AND LOCAL CODES. IT IS REQUIRED AND WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO NOTIFY THE DIGGER HOTLINE OR OTHER SUCH NOTIFYING AGENCY FORTY EIGHT (48) HOURS PRIOR TO THE START OF DIGGING, TRENCHING, EXCAVATION, OR OTHER SUCH EARTH REMOVAL.

P. THE UNDERGROUND SERVICE ENTRANCE WORK MUST BE CONSTRUCTED ACCORDING TO THE LOCAL BUILDING CODE, NEC & UTILITY STANDARDS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL UTILITY BEFORE QUOTING AND DURING THE CONSTRUCTION.

MATERIALS, ELECTRICAL WIRING AND RACEWAYS

A. ALL CIRCUIT BREAKERS, FUSES, CONDUCTORS AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT TO WHICH THEY MAY BE SUBJECTED AND A MINIMUM OF 10,000 AIC RATING UNLESS SPECIFIED OTHERWISE.

B. PLASTIC PLATES FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS SHALL HAVE ENGRAVED LETTERING WHERE INDICATED ON THE DRAWINGS. WEATHERPROOF RECEPTACLES SHALL HAVE SIERRA "WPD 8" LIFT COVER PLATES.

C. METER SOCKET AMPERAGE, VOLTAGE AND NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS AND MANUFACTURED BY SQUARE "D" COMPANY OR AN APPROVED EQUAL.

D. INSTALLATION OF RIGID METAL CONDUIT SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF ARTICLES 300 & 346-NEC. SHALL BE UL APPROVED

E. INSTALLATION OF ELECTRICAL METALLIC TUBING (EMT) SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF ARTICLES 300 & 348-NEC. SHALL BE U.L. APPROVED.

F. INSTALLATION OF INTERMEDIATE METAL CONDUIT (IMC) SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF ARTICLES 300 & 348-NEC. SHALL BE UL APPROVED.

G. PLASTIC CONDUIT SHALL BE SCHEDULE 40, HIGH IMPACT, POLYVINYL CHLORIDE AND SHALL BE USED WITH UNTHREADED SOLVENT CEMENT PLASTIC CONDUIT FITTINGS. COUPLINGS SHALL HAVE A CENTER STOP TO TYPE ENSURE PROPER SEATING. CONDUIT SHALL BE MANUFACTURED BY CARLON OR ACCEPTABLE EQUAL SHALL BE IN COMPLIANCE WITH ART 300 & 347-NEC, UL APPROVED.

H. ALL WIRING OF ALL KINDS MUST BE INSTALLED IN CONDUIT, UNLESS OTHERWISE NOTED OR APPROVED BY THE ELECTRICAL ENGINEER.

I. ALL WIRING SHALL BE COPPER TYPE TINNED AND IN ACCORDANCE WITH THE (NEC) NATIONAL ELECTRICAL CODE OR AS INDICATED ON PLANS.

J. RACEWAYS SHALL BE STEEL GALVANIZED, WITH SIZE AS SPECIFIED AND IN ACCORDANCE WITH THE (NEC) NATIONAL ELECTRICAL CODE UNLESS OTHERWISE NOTED ON PLANS. ALL RACEWAYS SHALL BE APPROVED PRIOR TO INSTALLATION.

K. JUNCTION BOXES OR PULL BOXES SHALL MEET (NEC) NATIONAL ELECTRICAL CODE STANDARDS AND AS APPROVED FOR INSTALLATION OF RACEWAYS AND WIRING.

L. THE RACEWAY AND WIRING INSTALLATION SHALL BE GROUNDED PERMANENTLY AND EFFECTIVELY IN ACCORDANCE WITH ARTICLE 250 OF THE (NEC) NATIONAL ELECTRICAL CODE.

M. THE CONTRACTOR SHALL BE AWARE THAT ALL STATE AND LOCAL CODES SHALL APPLY TO THIS INSTALLATION AND MUST BE ADHERED TO.

SCOPE OF WORK

A. THE CONTRACTOR SHALL PROVIDE ALL ELECTRICAL WIRING AND EQUIPMENT UNLESS OTHERWISE INDICATED. MAIN COMPONENTS ARE AS FOLLOWS:
1. PROVIDE ELECTRICAL SERVICE AS INDICATED ON THE DRAWINGS.
2. PROVIDE TELEPHONE CONDUIT WITH PULL WIRE AS INDICATED HEREIN AND ON DRAWINGS.
3. COORDINATE ELECTRICAL SERVICE WITH LOCAL POWER COMPANY.
4. COORDINATE TELEPHONE SERVICE WITH LOCAL TELEPHONE COMPANY.
5. INSTALL WIRE AND CONDUIT AS INDICATED. PROVIDE CABLE SUPPORTS AS INDICATED.
6. PROVIDE GROUNDING AS INDICATED.

B. ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" OR "AS-BUILT" DRAWINGS AT THE COMPLETION OF THE JOB SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS SHALL BE PROVIDED TO CLIENT. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO CLIENT AT JOB COMPLETION.

C. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF ELECTRICAL WORK.

D. UPON COMPLETION OF WORK, CONDUIT CONTINUITY, SHORT CIRCUIT, AND GROUNDING FALL POTENTIAL TEST WILL BE MADE FOR APPROVAL. SUBMIT TEST REPORTS TO CLIENT. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE IN A COMPLETE AND UNDAMAGED CONDITION.

E. THE COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF SITE ACCEPTANCE BY CLIENT. ANY WORK MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AND AT THE EXPENSE OF THE CONTRACTOR.

F. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE ELECTRICAL EQUIPMENT PROVIDED BY CLIENT'S SUPPLIERS.

TERMINATION RATING		CONDUCTOR INSULATION RATING	
	60 DEGREES C	75 DEGREES C	90 DEGREES C
60 DEGREES C	OK	OK AT 60 DEGREES C AMPACITY	OK AT 60 DEGREES C AMPACITY
75 DEGREES C	NO	OK	OK AT 75 DEGREES C AMPACITY
60/75 DEGREES C	OK	OK AT 60 DEGREES C OR 75 DEGREES C AMPACITY	OK AT 60 DEGREES C OR 75 DEGREES C AMPACITY
90 DEGREES C	NO	NO	OK 90 DEGREES C RATING ONLY IF EQUIPMENT HAS

Edge
Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

ELECTRICAL NOTES
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

SHEET TITLE:

ISSUE DATE:	INT:
PRELIM DWGS - 03/07/2016	TAS
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EQUIP. SHELTER - 03/17/2016	TAS
GRADING PLAN - 03/24/2016	ADP
ANTENNA FRAME - 04/04/2016	TAS
FINAL DWGS - 04/11/2016	TAS
REV. FINAL DWGS - 11/01/2016	TAS

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FILE NAME: E-1.dgn

SHEET NUMBER:
E-1

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NOTE:

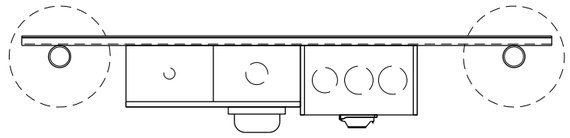
1. INSTALL METAL CONDUITS FOR SERVICE LATERAL CONNECTION TO UTILITY AND BOND- VERIFY REQUIRMENTS W/UTILITY PROVIDER

2. EXTEND SERVICE LATERAL CONDUITS UNDERGRUOND BEYOND FENCELINE. CAP ENDS (NO DUCT TAPE ALLOWED) AND STAKE. EQUIP WITH PULL CORD -VERIFY REQUIREMENTS W/UTILITY PROVIDER

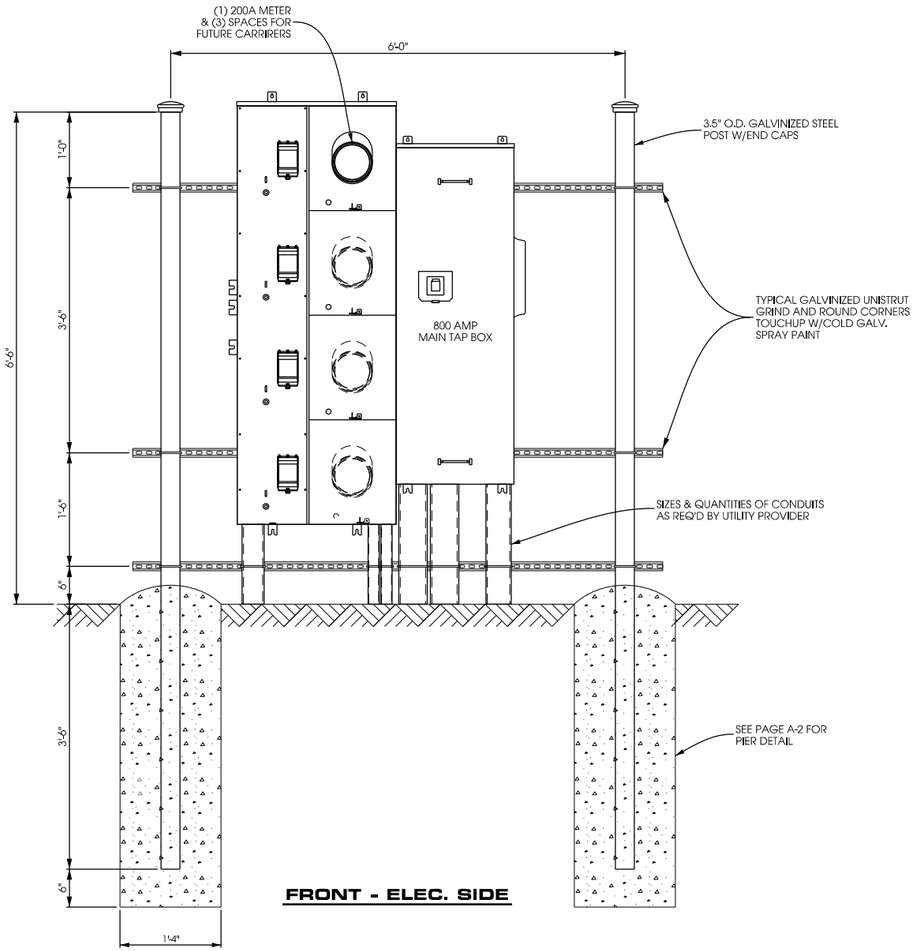
3. MARK CARRIER METER SLOT @ BREAKER OR SOCKET EXTERIOR

4. SQD EZ METER PAK, 120/240 VAC 1 PHASE, 3 WIRE OR EQUIV. - VERIFY REQUIREMENTS W/UTILITY PROVIDER

FINAL LAYOUT & DESIGN DETERMINED BY CONTRACTOR/UTILITY, VERIFY FINAL DESIGN WITH US CELLULAR



PLAN VIEW



FRONT - ELEC. SIDE

A MULTI-CARRIER UTILITY RACK DETAILS

SCALE: NTS

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Consulting Engineers, Inc.
624 Water Street
Prairie du Sac, WI 53578
608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

UTILITY RACK DETAILS
WAUKESHA AIRPORT II [784719]
WAUKESHA, WISCONSIN

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PLOT DATE: 10/31/2016

PROJECT #: 13540

FILE NAME: E-2.dgn

SHEET NUMBER: **E-2**

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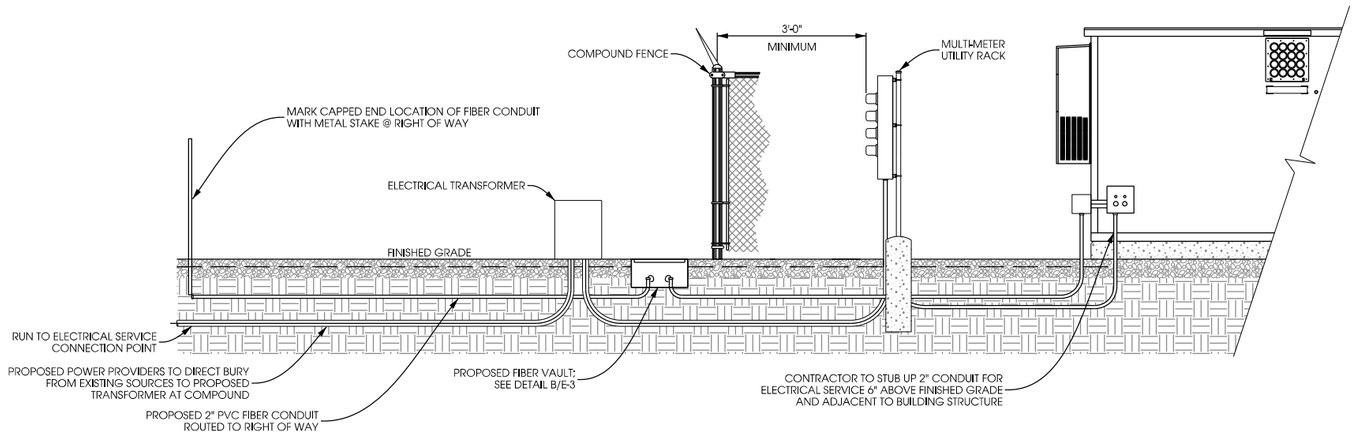
NOTE:

INSTALL IN ACCORDANCE WITH LOCAL CODES AND UTILITY COMPANY REQUIREMENTS.

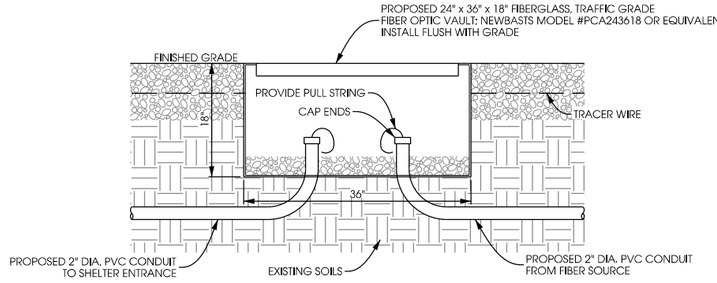


A STANDARD UNDERGROUND POWER

SCALE: NTS

NOTE:

PROVIDE 8" x 8" x 6" PVC BOX AT SHELTER TELCO ENTRANCE: CANTEX MODEL #5133164 OR EQUIVALENT



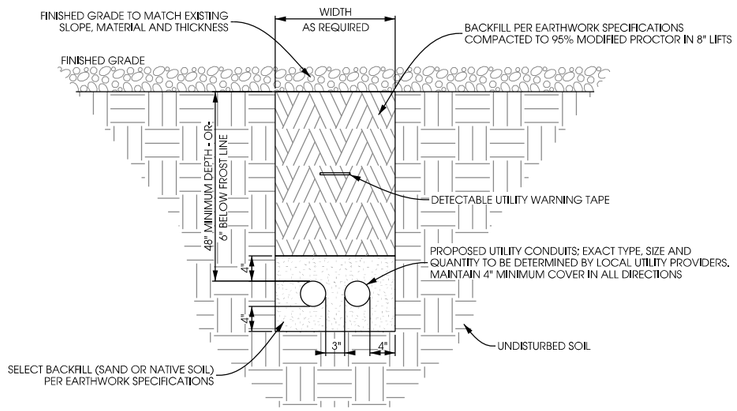
B FIBER VAULT DETAIL

SCALE: 11" x 17" -1/2" = 1'-0"
22" x 34" -1" = 1'-0"

NOTES:

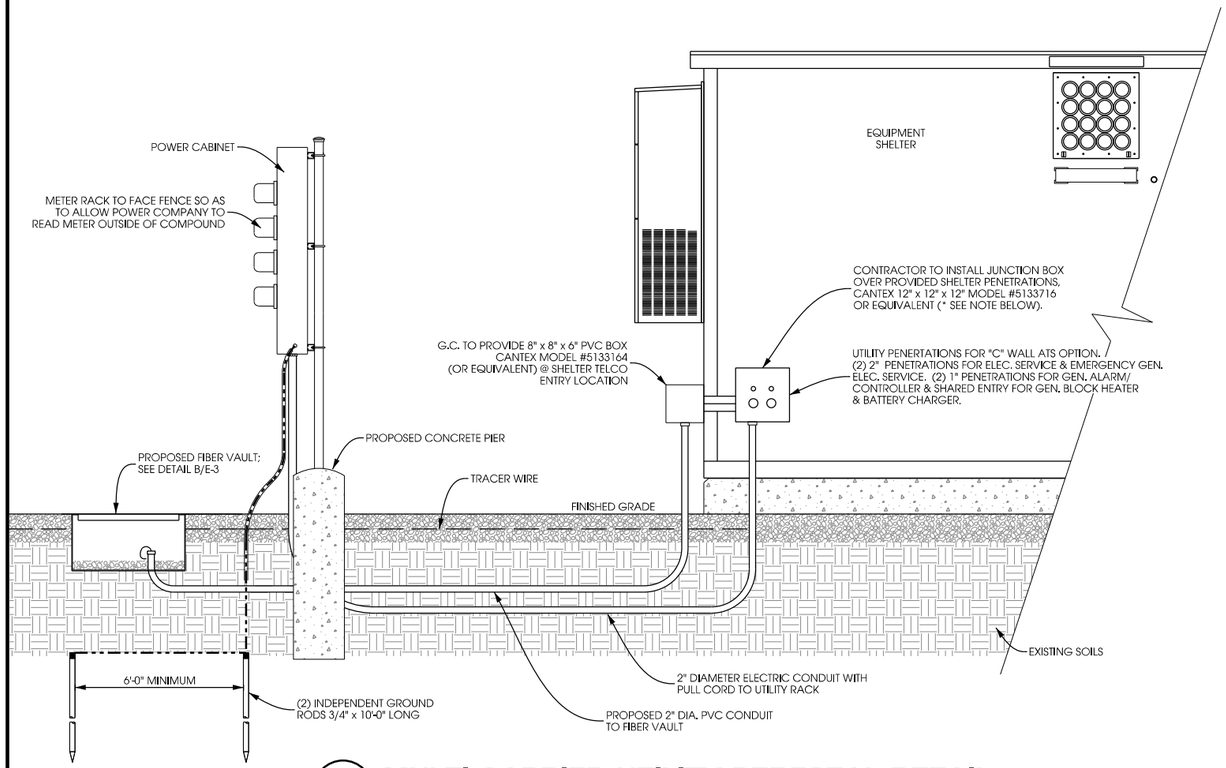
UTILITY CONDUITS TO BE BURIED A MINIMUM DEPTH OF 48" BELOW GROUND LEVEL OR 6" BELOW THE FROST LINE.

CONDUIT TYPE, SIZE, QUANTITY AND SEPARATION TO BE VERIFIED WITH LOCAL UTILITY PROVIDER REQUIREMENTS.



C UTILITY TRENCH DETAIL

SCALE: NTS



D MULTI-CARRIER UTILITY PEDESTAL DETAIL

SCALE: NTS

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Consulting Engineers, Inc.
624 Water Street
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608.644.1449 voice
608.644.1549 fax
www.edgeconsult.com

ELECTRICAL SITE DETAILS
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