# **GENERAL NOTES:**

- ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND REGISTERED TO DO THE WORK IN THIS STATE.
- UNLESS SHOWN OR NOTED OTHERWISE ON THE DESIGN DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
- ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
- ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS. AND IN CONFORMANCE WITH THE DESIGN DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS, OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
- ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A I O.48 (LATEST EDITION), FEDERAL, STATE, AND LOCAL REGULATIONS, AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A I 0.48 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).
- ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION, OR CONSTRUCTION WORK ON THIS PROJECT, CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK
- ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
- IO. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.
- ALL TOWER DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION, NOTIFY THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED.
- 2. ALL TOWER MODIFICATION WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-322, "LOADING, ANALYSIS, AND DESIGN CRITERIA RELATED TO THE INSTALLATION, ALTERATION AND MAINTENANCE OF COMMUNICATION STRUCTURES
- I 3. THE CLIMBING FACILITIES, SAFETY CLIMB, AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED, OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE TOWER OWNER OR ENGINEER OF RECORD
- 4. ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET THE ANSI/TIA-1019-A, OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019-A, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
- 15. ANTENNAS AND OTHER APPURTENANCES MAY NEED TO BE TEMPORARILY RELOCATED DURING THE INSTALLATION OF MODIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE. RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE

# STRUCTURAL STEEL NOTES:

- STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, THE RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, AND THE CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.
- 2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS

ASTM A572-50 A. ANGLE: B PIPF/TUBE: ASTM A500-46

ASTM A572-50 (SELF-SUPPORTING AND GUYED TOWERS) C. PLATE:

D. PLATE: ASTM A572-65 (MONOPOLES)

E. BOLTS: ASTM A325 GALVANIZED HIGH STRENGTH BOLTS

F. U-BOLTS: ASTM A L93 GRADE B7

G. NUTS: ASTM A563 CARBON AND STEEL ALLOY NUTS H. WASHERS: ASTM F436 HARDENED STEEL WASHERS

- ALL CONNECTIONS NOT FULLY DETAILED IN THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH THE LATEST AISC STEEL CONSTRUCTION MANUAL.
- 4. HOLES SHALL NOT BE FLAME CUT THROUGH STEEL UNLESS APPROVED BY THE ENGINEER.
- HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE. ADDITIONALLY, ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS. ALL HOT-DIP GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.
- 6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED. WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL LINIFORMLY OVER SURFACES TO BE COATED AND WIPE OF EXCESS MATERIAL. AFTER REPAIR, STEEL SHALL BE REPAINTED TO MATCH EXISTING FINISH.
- 7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
- 8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
- 9. ALL STEEL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIFLD WELDED SHALL BE PREPARED FOR FIFLD WELDING PER AWS DILLI AND AS SHOWN ON THE DRAWINGS, CONTRACTOR SHALL AVOID 90 DEGREE CORNERS, IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS.
- IO. THE CONTRACTOR SHALL TOUCH UP ANY AND ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION, GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS. CUTS. FIELD DRILLING AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES.

# WELDING NOTES:

- I. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST AWS DI.I/DI.IM: "STRUCTURAL WELDING CODE - STEEL".
- 2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS. AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE DI.I.
- 3. CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS.
- 4. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING AND ANY OTHER CONTAMINANTS 2" BEYOND ALL FIELD WELD SURFACES. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING
- 5. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW O DEG F. THE MINIMUM PREHEAT AND INTERPASS TEMPERATURE REQUIREMENTS SHALL COMPLY WITH SECTION 3.5.1 AND TABLE 3.2 OF THE AWS DI.I/DI.IM.
- 6. DO NOT WELD ON WET OR FROST-COVERED SURFACES AND PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS
- USE 70 KSI LOW HYDROGEN ELECTRODES FOR ALL WELDING. POLYGONAL MONOPOLE REINFORCEMENT SHALL USE 80 KSI ELECTRODES. THE ELECTRODES SHALL BE APPROPRIATE FOR THE WELDING POSITION REQUIRED TO MAKE THE JOINT.

- 8 AFTER FINAL INSPECTION THE AREA OF THE WELDS AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE AT LEAST TWO (2) COATS OF ZRC COLD GALVANIZING COMPOUND. THIS COATING SHALL BE APPLIED BY BRUSH. OTHER APPROVED GALVANIZING COMPOUNDS SHALL CONTAIN A MINIMUM OF 95% ± PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3 MILS.
- 9. FULL PENETRATION WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 100% NDE INSPECTED BY ULTRASONIC TESTING (UT) IN ACCORDANCE WITH AWS D1.1
- IO. PARTIAL PENETRATION AND FILLET WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 50% NDE INSPECTED BY MAGNETIC PARTICLE (MT) IN ACCORDANCE WITH

# **BOLT TIGHTENING PROCEDURE:**

I. UNLESS OTHERWISE NOTED, ALL BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS.

### 8. L SNUG-TIGHTENED JOINTS

ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND WITH NUTS THREADED TO COMPLETE THE ASSEMBLY COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE PLIES INTO FIRM CONTACT. FIRM CONTACT IS THE CONDITION THAT EXISTS ON A FAYING SURFACE WHEN THE PLIES ARE SOLIDLY SEATED AGAINST EACH OTHER, BUT NOT NECESSARILY IN CONTINUOUS CONTACT.

2. SPLICE/FLANGE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS.

## TURN-OF-THE-NUT PRETENSIONING

ALL BOLTS SHALL BE INSTALLED AND BROUGHT TO A SNUG-TIGHT CONDITION IN ACCORDANCE WITH THE REQUIREMENTS IN SECTION 8.1. ALL BOLTS IN THE CONNECTION SHALL BE FURTHER TIGHTENED BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED BELOW. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRETENSIONED BOLTS. THE PART NOT TURNED BY THE WRENCH SHALL BE PREVENTED FROM ROTATING DURING THIS OPERATION

3. PROVIDE NUT ROTATION FROM THE SNUG-TIGHT CONDITION TO TURN-OF-NUT PRETENSIONING, USING THE CHART BELOW (PARTIAL RCSC TABLE 8.2):

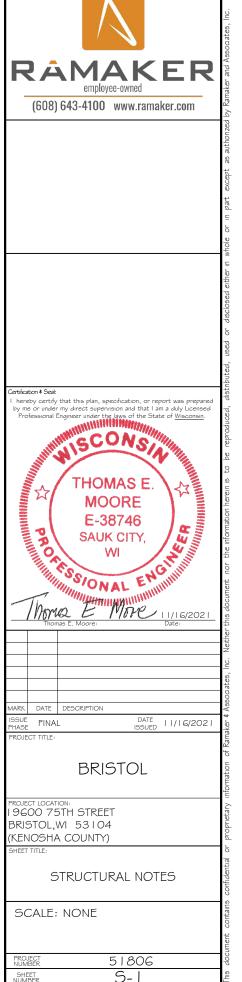
## BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS:

1/2" BOLT	LENGTH ≤ 2.0 INCHES	+ I/3 TURN BEYOND SNUG TIGHT
5/8" BOLT	LENGTH ≤ 2.5 INCHES	+ I/3 TURN BEYOND SNUG TIGHT
3/4" BOLT	LENGTH ≤ 3.0 INCHES	+ I/3 TURN BEYOND SNUG TIGHT
7/8" BOLT	LENGTH ≤ 3.5 INCHES	+ I/3 TURN BEYOND SNUG TIGHT
I " BOLT	LENGTH ≤ 4.0 INCHES	+ I/3 TURN BEYOND SNUG TIGHT

## BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS

1/2" BOLT	LENGTH = 2.25 TO 4.0 INCHES	+ I/2 TURN BEYOND SNUG TIGHT
5/8" BOLT	LENGTH = 2.75 TO 5.0 INCHES	+ I/2 TURN BEYOND SNUG TIGHT
3/4" BOLT	LENGTH = 3.25 TO 6.0 INCHES	+ I/2 TURN BEYOND SNUG TIGHT
7/8" BOLT	LENGTH = 3.75 TO 7.0 INCHES	+ I/2 TURN BEYOND SNUG TIGHT
I " BOLT	LENGTH = 4.25 TO 8.0 INCHES	+ I/2 TURN BEYOND SNUG TIGHT

- 4 ALL BOLTS SHALL BE INSTALLED WITH A NUTLLOCKING DEVICE OR MECHANISM SLICH AS BUT NOT LIMITED TO, LOCK NUTS, LOCK WASHERS, OR PALNUTS, TO PREVENT LOOSENING
- 5. ALL NEW BOLTS SHALL BE LONG ENOUGH TO FULLY ENGAGE THE FULL DEPTH OF THE NUT
- 6 ALL ONE-SIDED BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH MANUFACTURER **RECOMMENDATIONS**



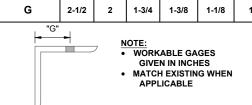
NO.	ELEVATION (FT)	TOWER MODIFICATION SCHEDULE	REFERENCE DETAIL/SHEET	
1	118.1' - 98.4'	REINFORCE TOWER MEMBERS	S-2 & S-3	

- NOTES:

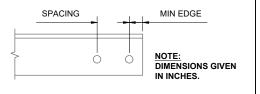
  1. ALL PROPOSED STEEL AND HARDWARE TO BE HOT-DIPPED GALVANIZED.
  2. ALL PROPOSED BOLTS TO BE GRADE A325, UNLESS NOTED OTHERWISE.
- 3. DO NOT REUSE EXISTING BOLTS, INSTALL NEW BOLTS.
- 4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE TOWER DURING CONSTRUCTION.
- 5. SEE STRUCTURAL NOTES ON PAGE S-1

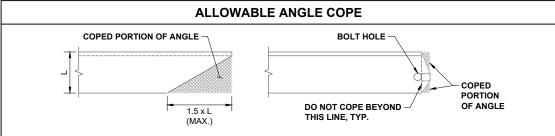
NOMINAL HOLE DIMENSIONS				
BOLT DIA.	STANDARD HOLE	SHORT SLOT		
1/2	9/16	9/16 x 11/16		
5/8	11/16	11/16 x 7/8		
3/4	13/16	13/16 x 1		
7/8	15/16	15/16 x 1-1/8		
1	1-1/16	1-1/16 x 1-5/16		
NOTE: DIMENSIONS GIVEN IN INCHES				

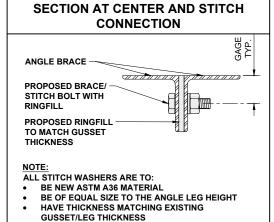
WORKABLE GAGES						
LEG	4	3-1/2	3	2-1/2	2	1-3/4
G	2-1/2	2	1-3/4	1-3/8	1-1/8	1
"G"						



BOLT EDGE AND SPACING					
BOLT DIA.	MIN. EDGE	SPACING			
1/2	7/8	1-1/2			
5/8	1-1/8	1-7/8			
3/4	1-1/4	2-1/4			
7/8	1-1/2	2-5/8			
1	1-3/4	3			

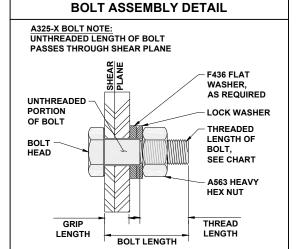


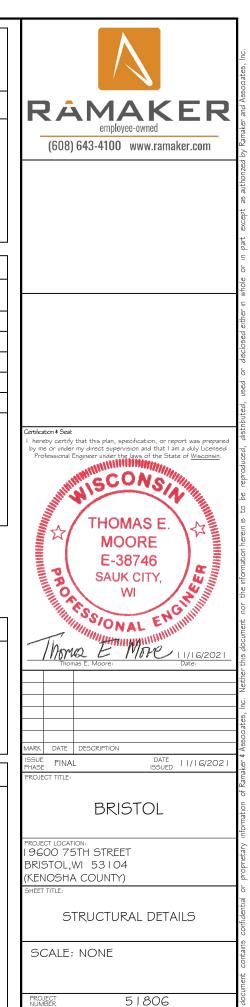




TOWER ELEVATION

SCALE: NTS





5-2

DIAGONAL BRACE SCHEDULE							
ELEVATION (FT)	DIAGONAL BRACE			BRACE BOLTS (A325-X)	STITCH BOLTS (A325-X)		
	EXISTING	PROPOSED (ASTM A572-50)	AVERAGE LENGTH	QTY	BOLT x QTY	BOLT x QTY	MAXIMUM SPACING
118.1' - 98.4'	L3-1/2 x 3 x 1/4 S.L.V.	L3-1/2 x 3 x 1/4 S.L.V.	15'-6"±	12	3/4"Ø x 72	3/4"Ø x 48	2'-5"± (1/3RD PT)

