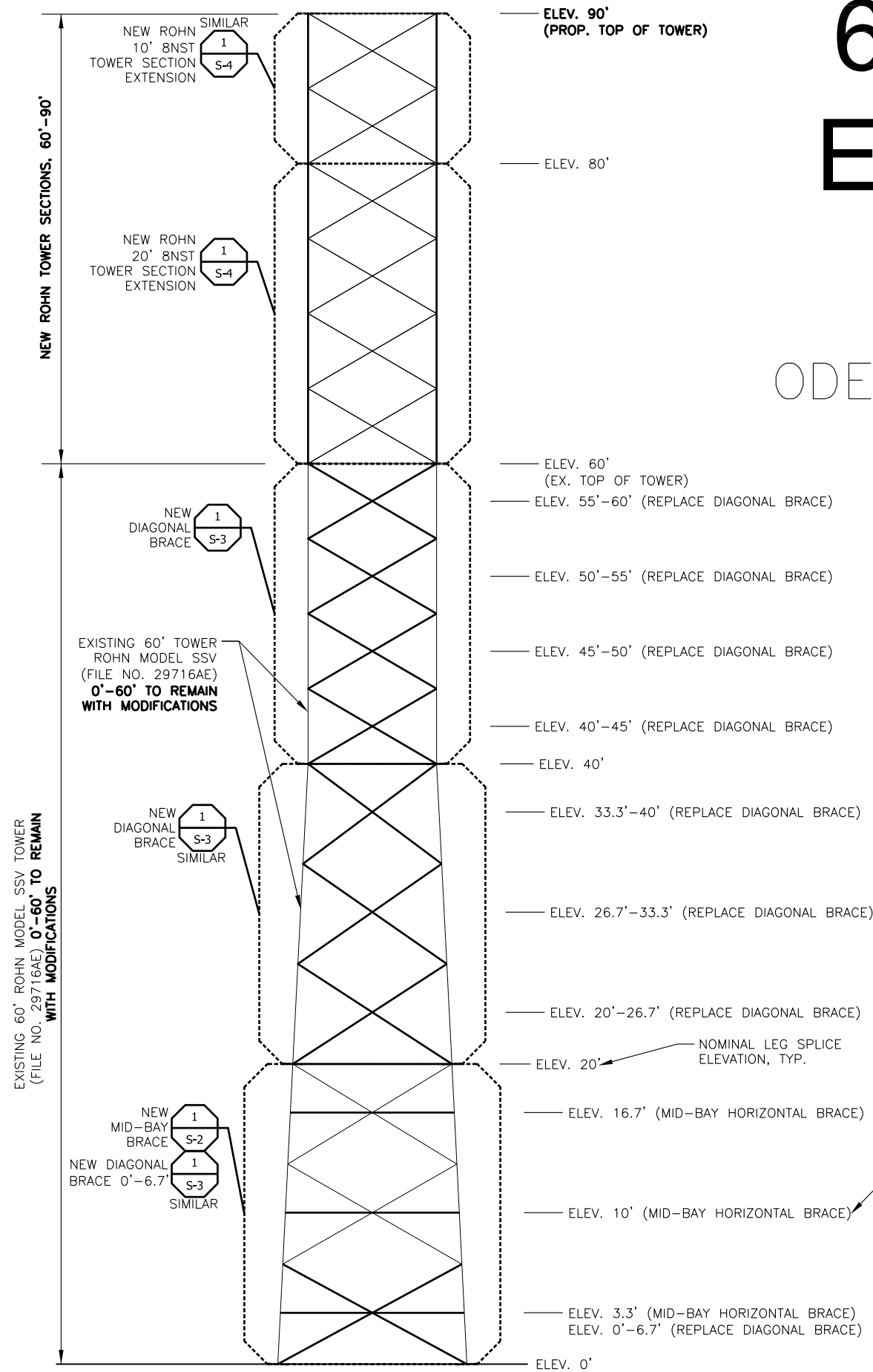


# 60-FT SS TOWER EXTEND TO 90-FT, HYAK, WA

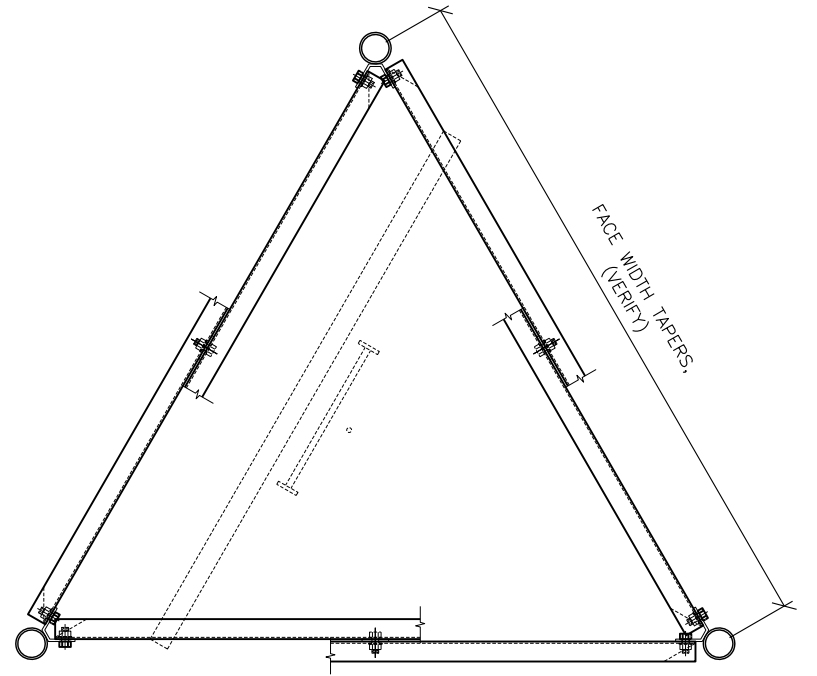
ODELIA PACIFIC / PSERN / WSDOT



- ELEV. 90' (PROP. TOP OF TOWER)
- ELEV. 80'
- ELEV. 60' (EX. TOP OF TOWER)
- ELEV. 55'-60' (REPLACE DIAGONAL BRACE)
- ELEV. 50'-55' (REPLACE DIAGONAL BRACE)
- ELEV. 45'-50' (REPLACE DIAGONAL BRACE)
- ELEV. 40'-45' (REPLACE DIAGONAL BRACE)
- ELEV. 40'
- ELEV. 33.3'-40' (REPLACE DIAGONAL BRACE)
- ELEV. 26.7'-33.3' (REPLACE DIAGONAL BRACE)
- ELEV. 20'-26.7' (REPLACE DIAGONAL BRACE)
- ELEV. 20' — NOMINAL LEG SPLICE ELEVATION, TYP.
- ELEV. 16.7' (MID-BAY HORIZONTAL BRACE)
- ELEV. 10' (MID-BAY HORIZONTAL BRACE)
- ELEV. 3.3' (MID-BAY HORIZONTAL BRACE)  
ELEV. 0'-6.7' (REPLACE DIAGONAL BRACE)
- ELEV. 0'

SHEET INDEX	
S-1	COVER SHEET, PLAN & ELEVATION
S-2	NEW MID-BAY REDUNDANT HORIZONTAL BRACE ASSEMBLY
S-3	NEW DIAGONAL BRACE ASSEMBLY
S-4	NEW 30' EXTENSION ROHN TOWER SECTIONS
S-5	PARTS CHARTS
S-6	SPECIAL INSPECTIONS AND STRUCTURAL OBSERVATIONS
△ E-1	TOWER MEMBERS AND EQUIPMENT (TNXTOWER MTO)
△ A-1	FEED LINE CROSS SECTION (8.5" x 11")
G-1	GENERAL NOTES

— REFER TO STRUCTURAL ANALYSIS REPORT No. 181700.03  
 — REFER TO ROHN TOWER AND FOUNDATION DRAWINGS (ENG. FILE 29716AE)

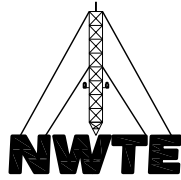


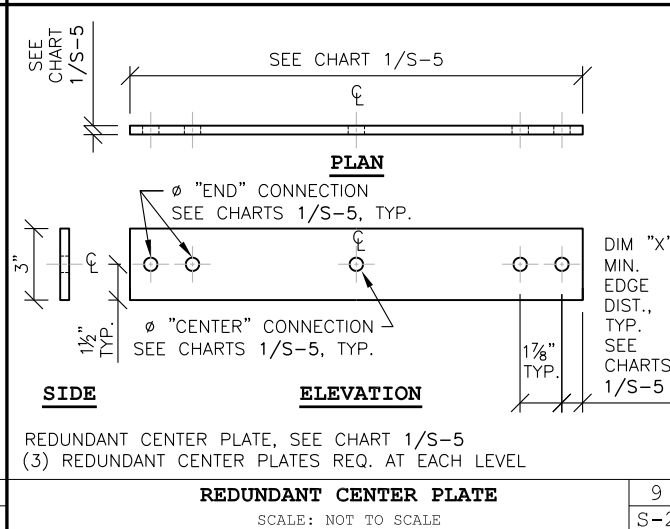
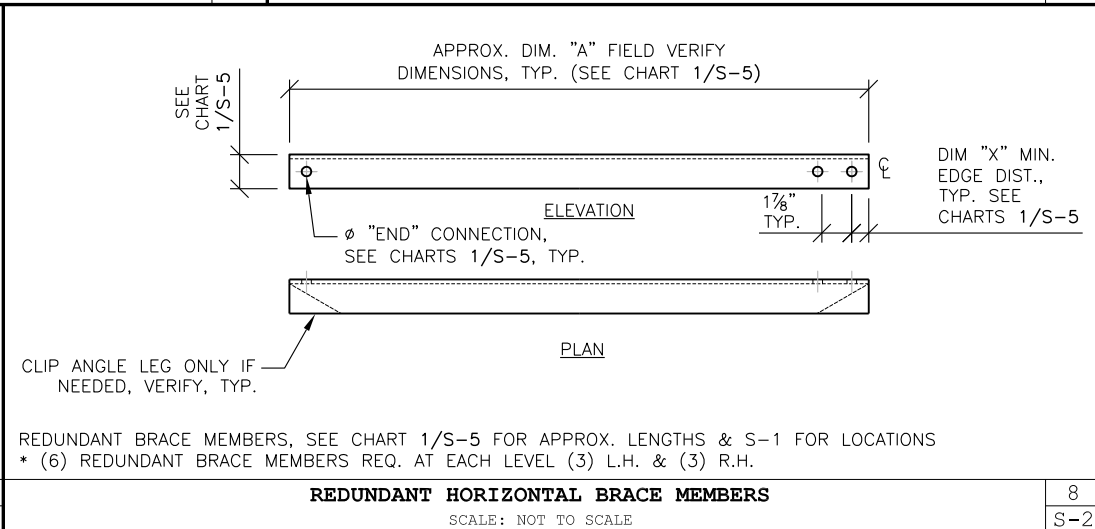
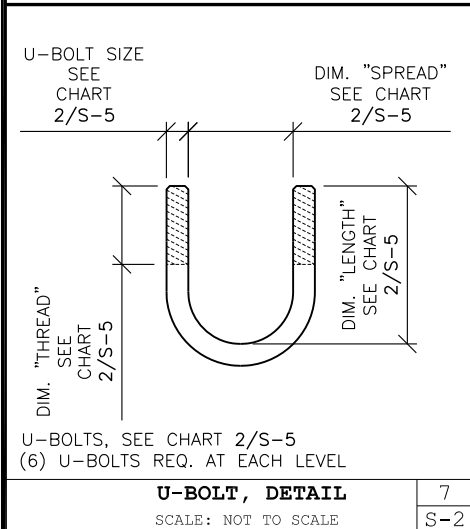
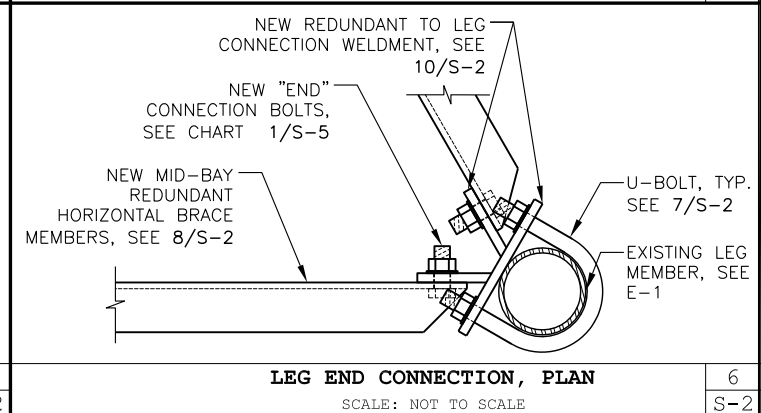
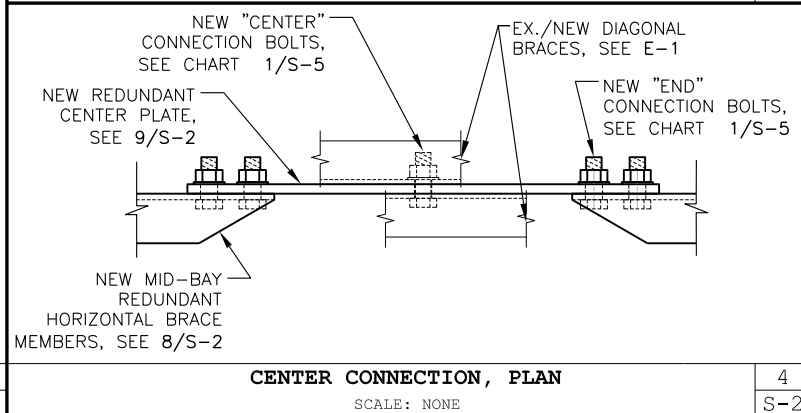
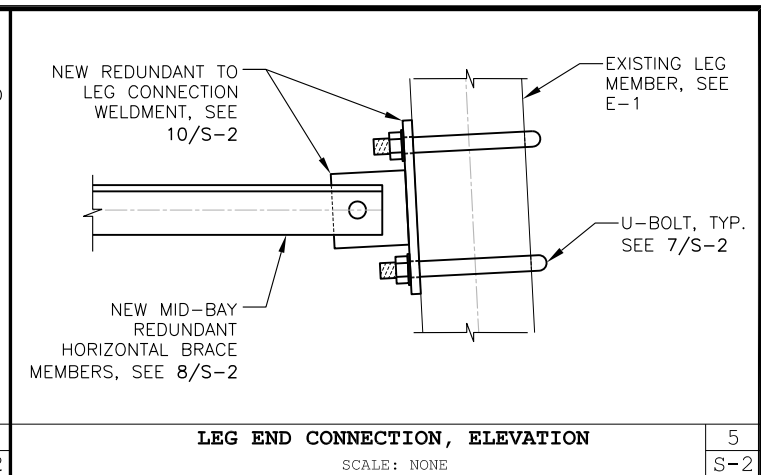
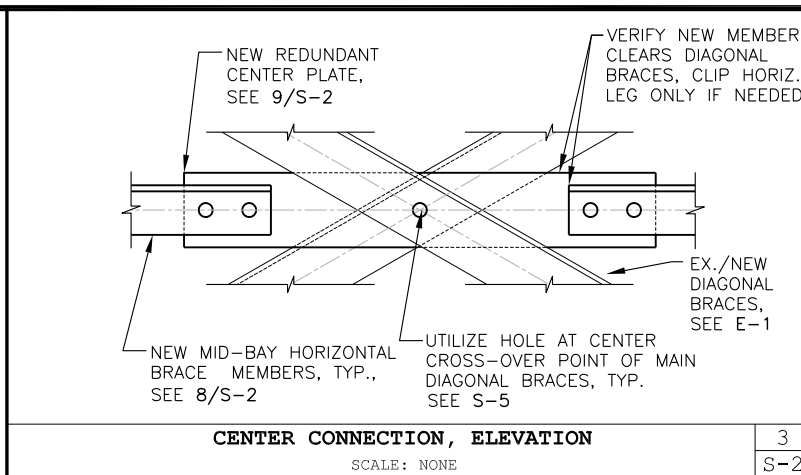
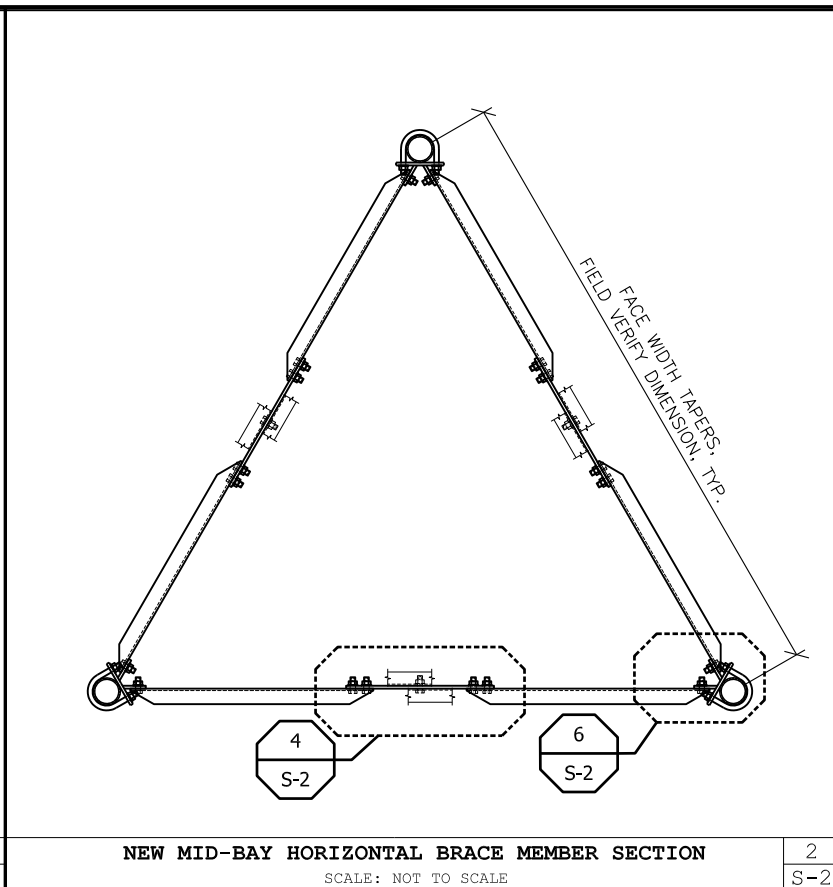
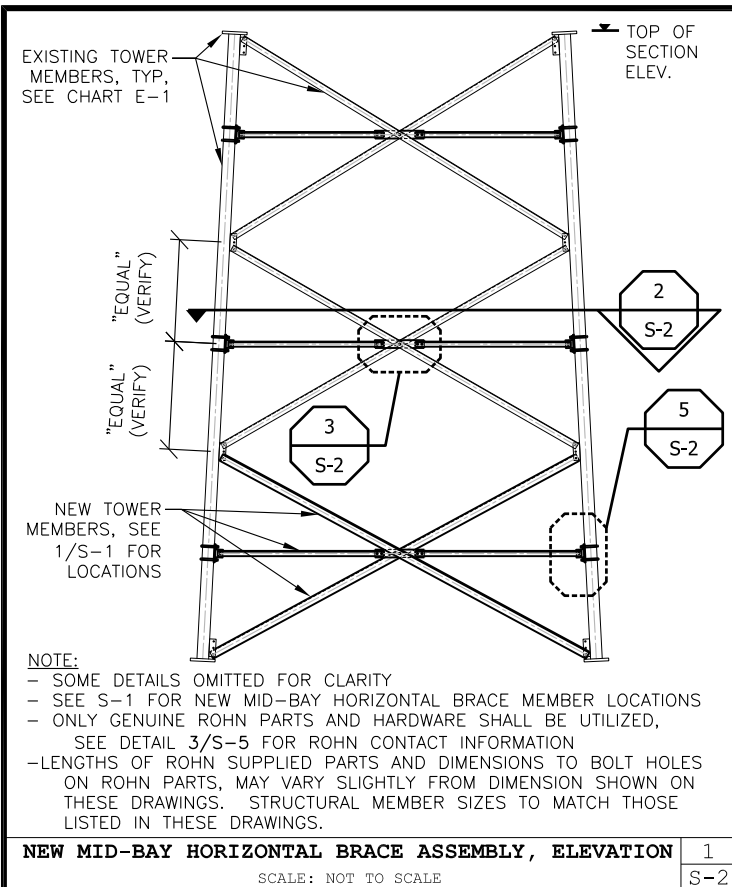
NOTE:  
 — EXISTING INTERNAL BRACING, APPURTENANCES, SHELTER, COMPOUND FENCE & UTILITIES NOT SHOWN, FIELD VERIFY.  
 — REFER TO A-1 FOR FEED LINE ROUTING

<b>TOWER PLAN, SECTION</b>	2
SCALE: NOT TO SCALE	S-1

<b>TOWER ELEVATION</b>	1
SCALE: NOT TO SCALE	S-1



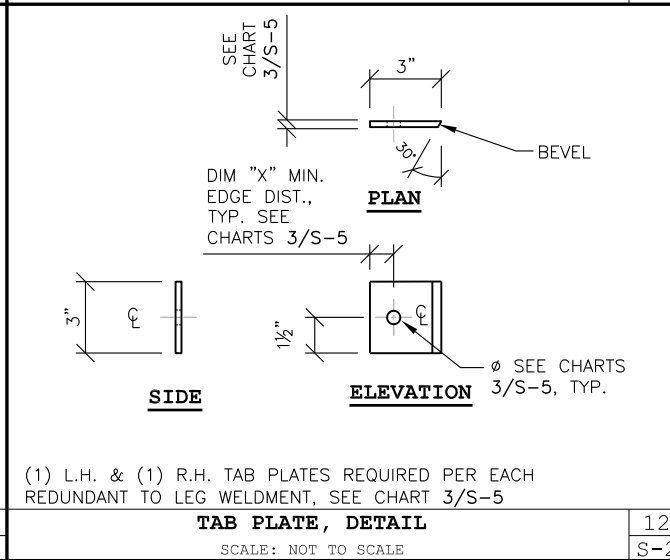
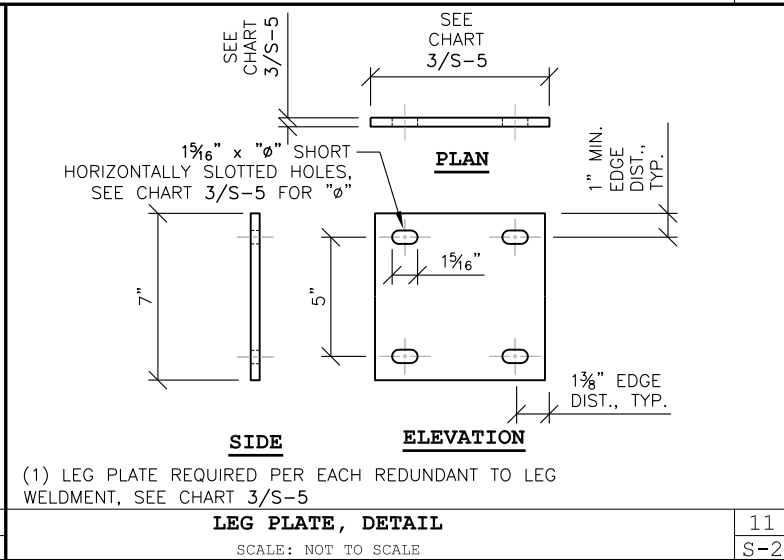
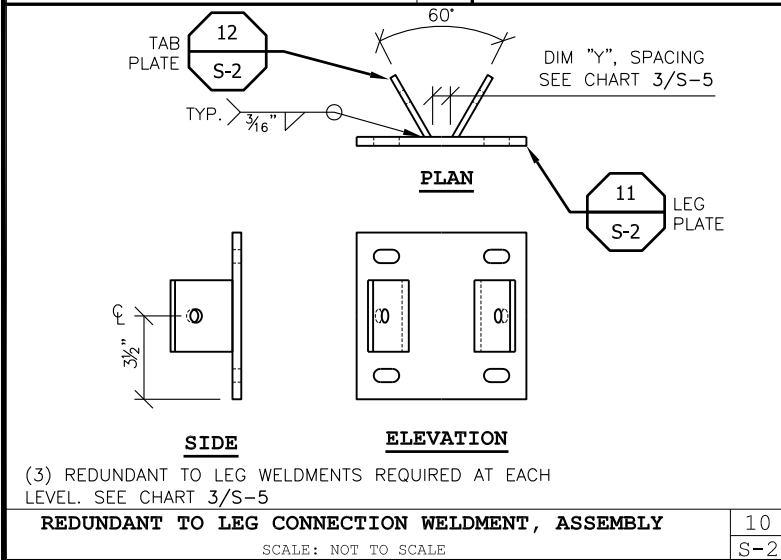
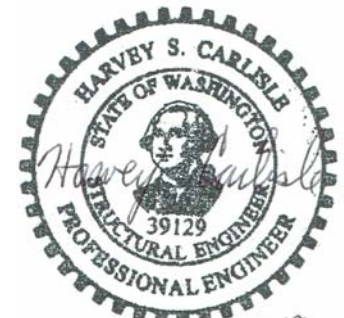
 <b>NorthWest Tower Engineering</b> 2210 HEWITT AVE, SUITE 209 EVERETT, WA 98201-3767 PHONE: 425.258.4248 FAX: 425.258.4289	ISSUE DATE	REV. NO.	REVISION DESCRIPTION	BY	
	01-10-18	△	ISSUE FINAL MODIFICATION DRAWINGS	K.P.W.	
	02-09-18	△	ISSUE REVISED MODIFICATION DRAWINGS	K.P.W.	
	SHEET TITLE: COVER SHEET, PLAN & ELEVATION PROJECT TITLE & LOCATION: 60-FT SS TOWER EXTEND TO 90-FT HYAK, WA CLIENT NAME: WSDOT ODELIA PACIFIC / PSERN NOTICE: NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING				
CURRENT DATE:	DRAWN BY:	CHECKED BY:	APPROVED BY:	PROJECT NUMBER:	SHEET NUMBER:
02-09-18	K.P.W.	S.A.D.	H.S.C.	181700.02-REV1	S-1



**DRILLING NOTES:**

- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION AND ERECTION OF ANY MATERIALS.
- ALL HOLES SHALL BE 3/16" Ø HOLES FOR 1/2" Ø BOLTS AND 1/8" Ø HOLES FOR 5/8" Ø BOLTS, U.N.O. ALL HOLES, INCLUDING FIELD DRILLED HOLES SHALL BE DRILLED AND NOT BURNED.
- AREAS SURROUNDING FIELD DRILLED HOLES AND ANY OTHER AREAS WITH DAMAGED GALVANIZATION ON STRUCTURAL MEMBERS, SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT.
- EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153
- NEW HARDWARE AND MODIFICATION TO EXISTING WAVEGUIDE LADDER, CLIMB LADDER AND SUPPORTS MAY BE REQUIRED DUE TO CONFLICTS DURING CONSTRUCTION AND WITH NEW MEMBERS.

SEE G-1 FOR MORE NOTES

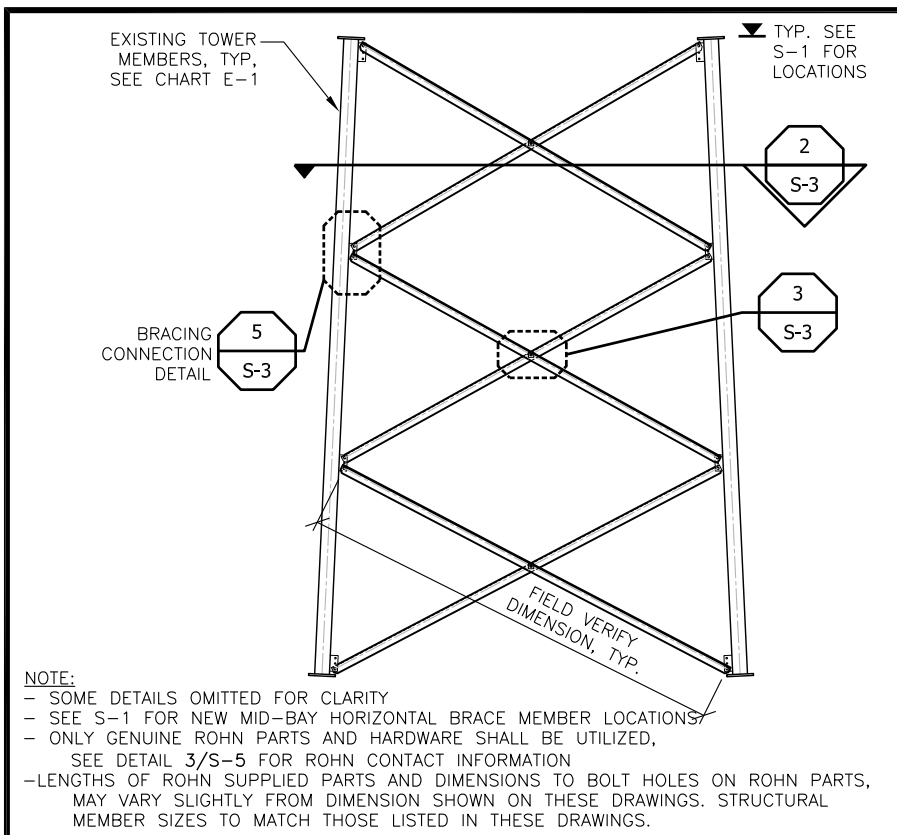


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02-09-18	1	ISSUE REVISED MODIFICATION DRAWINGS	K.P.W.

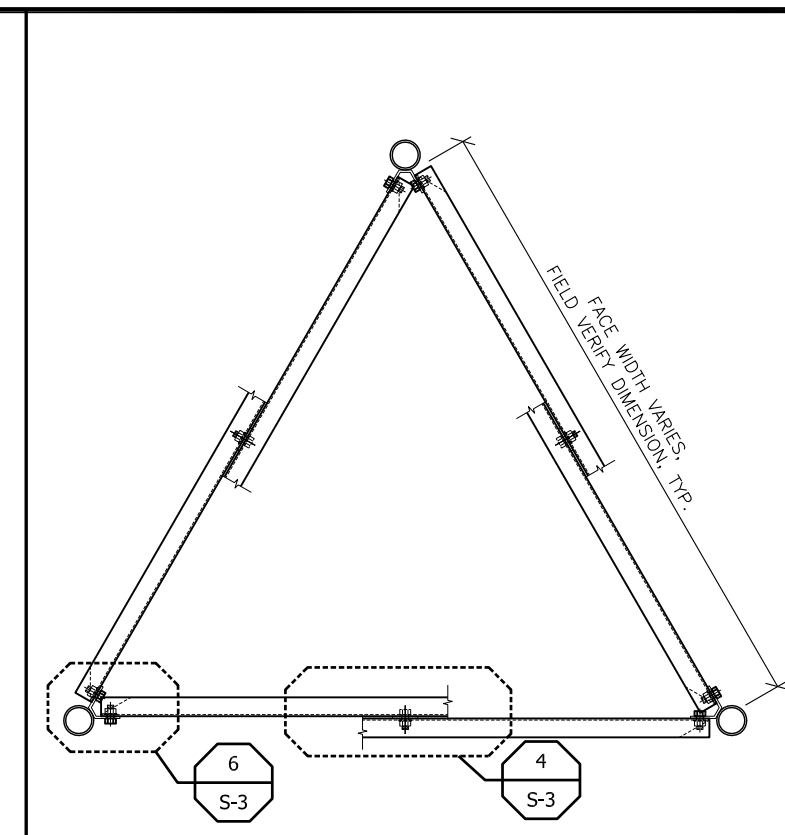
**NorthWest Tower Engineering**  
2210 HEWITT AVE, SUITE 209  
EVERETT, WA 98201-3767  
PHONE: 425.258.4248  
FAX: 425.258.4289

SHEET TITLE	PROJECT TITLE & LOCATION	CLIENT NAME	NOTICE
REDUNDANT MID-BAY HORIZONTAL BRACE ASSEMBLY & DETAILS	60-FT SS TOWER EXTEND TO 90-FT HYAK, WA	WSDOT ODELIA PACIFIC / PSERN	NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING

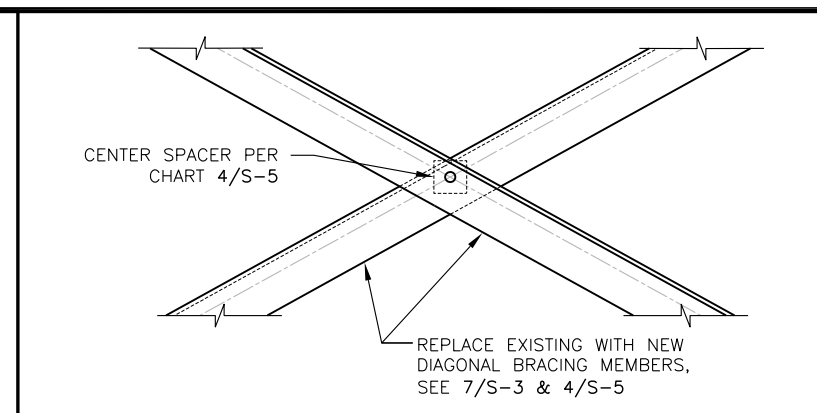
CURRENT DATE:	DRAWN BY:	CHECKED BY:	APPROVED BY:	PROJECT NUMBER:	SHEET NUMBER:
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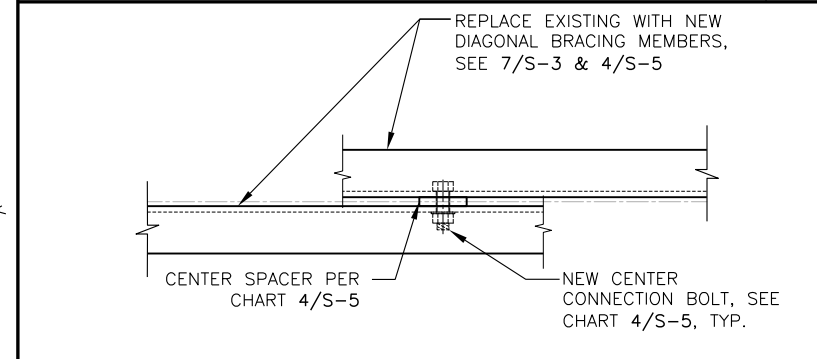
**NEW DIAGONAL BRACE ASSEMBLY, ELEVATION** 1  
SCALE: NOT TO SCALE S-3



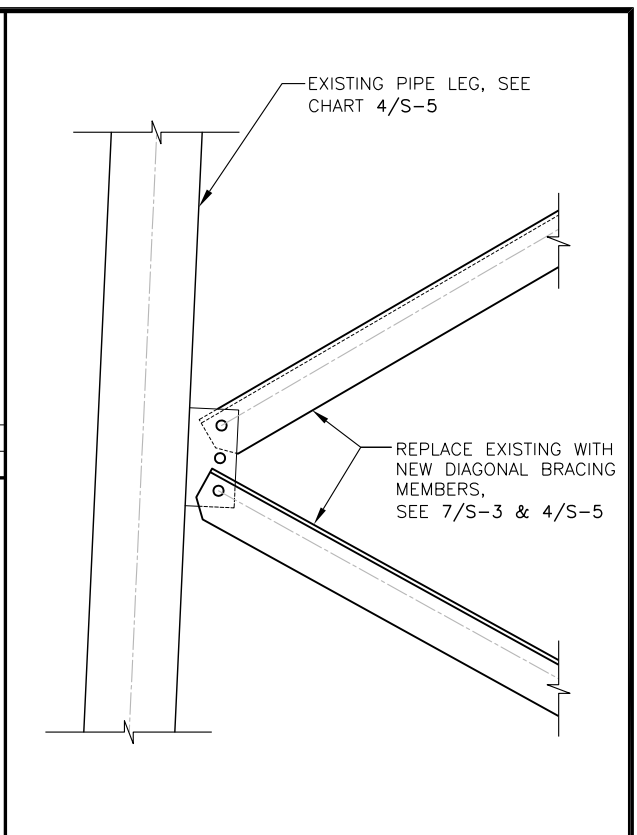
**NEW DIAGONAL BRACE SECTION** 2  
SCALE: NOT TO SCALE S-3



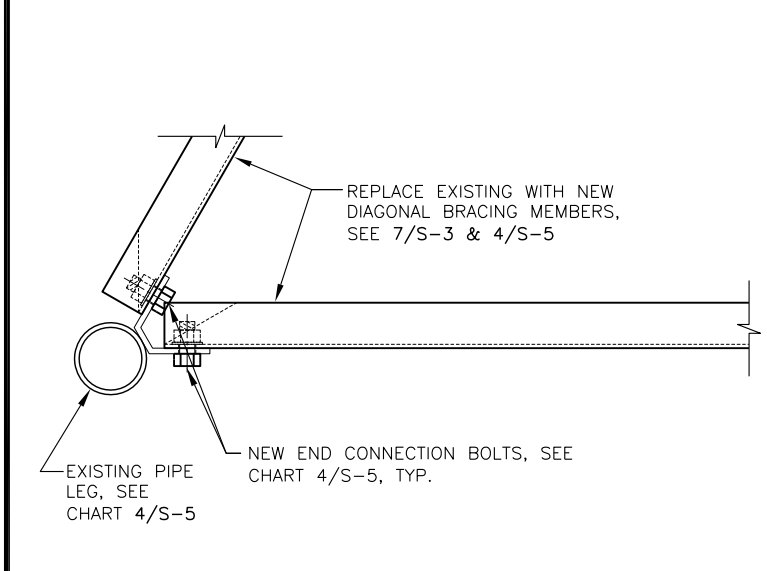
**DIAGONAL BRACE CENTER CONNECTION, ELEVATION** 3  
SCALE: NONE S-3



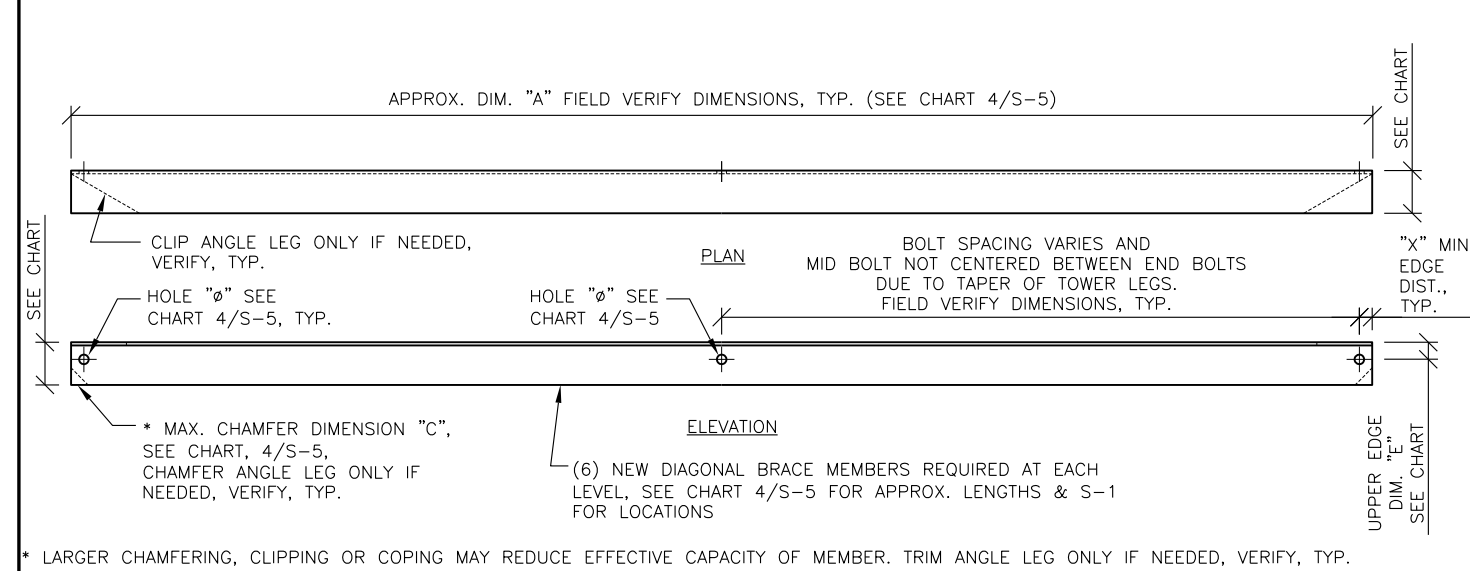
**DIAGONAL BRACE CENTER CONNECTION, PLAN** 4  
SCALE: NONE S-3



**DIAGONAL BRACE END CONNECTION, ELEVATION** 5  
SCALE: NONE S-3



**DIAGONAL BRACE END CONNECTION, PLAN** 6  
SCALE: NOT TO SCALE S-3



**NEW DIAGONAL BRACE MEMBERS** 7  
SCALE: NONE S-3

**NOTES:**

- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING OF ANY MATERIALS. ONLY GENUINE ROHN PARTS AND HARDWARE MAY BE UTILIZED, CONTACT ROHN, SEE DETAIL 3/S-5.
- ALL HOLES SHALL BE 1/16" Ø HOLES FOR 1/2" Ø BOLTS AND 1/16" Ø HOLES FOR 5/8" Ø BOLTS U.N.O. ALL HOLES, INCLUDING FIELD DRILLED HOLES SHALL BE DRILLED AND NOT BURNED.
- SEE CHART 4/S-5, FOR NEW CONNECTION BOLTS. **NO BOLTS ARE TO BE REUSED.**
- SEE CHART, 4/S-5, FOR MAX. CHAMFER DIMENSION "C". **LARGER CHAMFER MAY REDUCE EFFECTIVE CAPACITY OF MEMBER, ONLY TRIM OR CHAMFER IF ABSOLUTELY NECESSARY.**
- DAMAGED GALVANIZING ON STRUCTURAL MEMBERS WITH FIELD DRILLED HOLES SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT.
- EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153.
- NEW HARDWARE AND MODIFICATION TO EXISTING WAVEGUIDE LADDER, CLIMB LADDER AND SUPPORTS MAY BE REQUIRED DUE TO CONFLICTS DURING CONSTRUCTION AND WITH NEW MEMBERS.

SEE G-1 FOR MORE NOTES

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EVERETT, WA 98201-3767  
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FAX: 425.258.4289

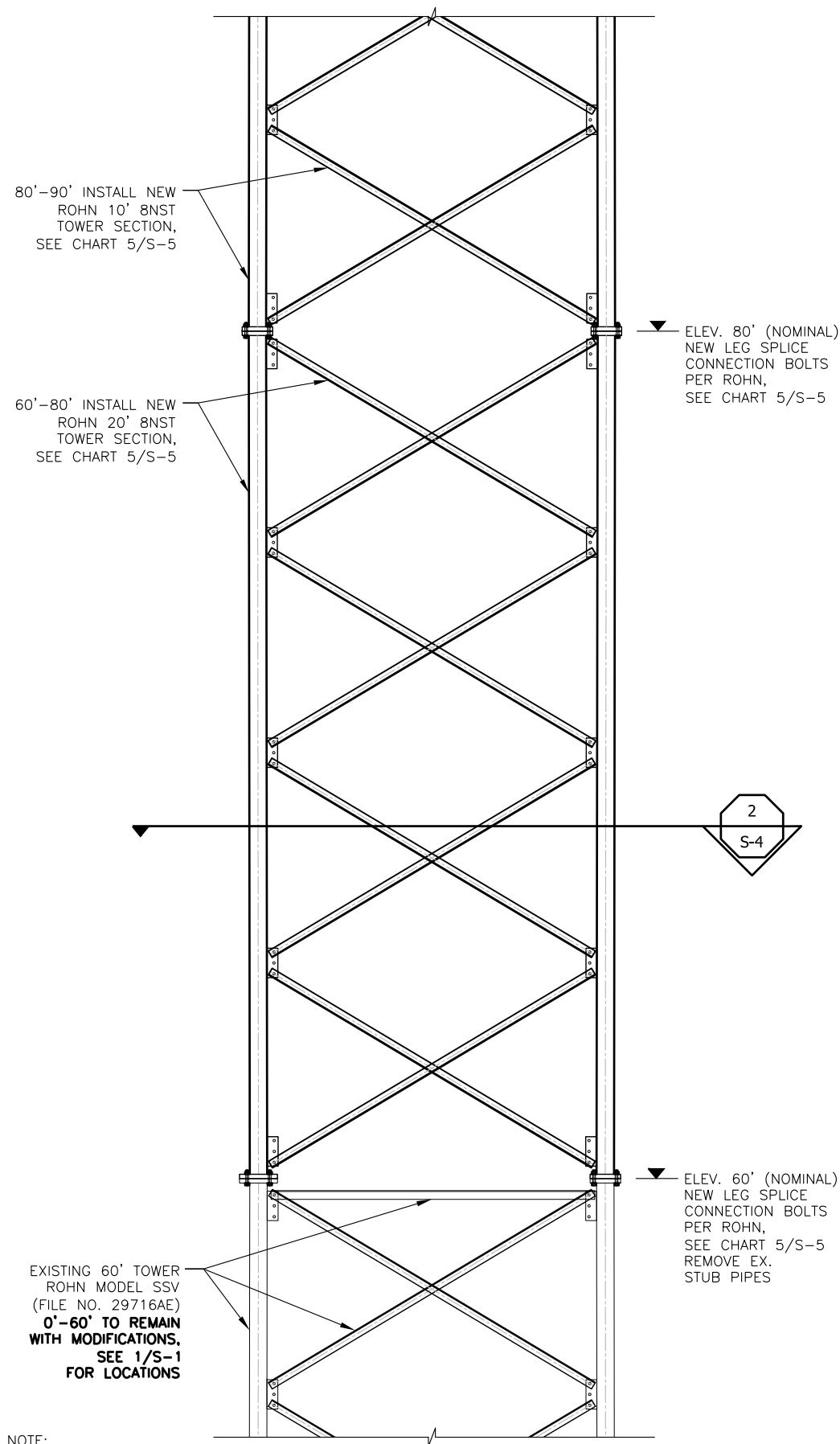
ISSUE DATE	REV NO.	REVISION DESCRIPTION	BY
01-10-18	0	ISSUE FINAL MODIFICATION DRAWINGS	K.P.W.
02-09-18	1	ISSUE REVISED MODIFICATION DRAWINGS	K.P.W.

SHEET TITLE	DIAGONAL BRACING MEMBER ASSEMBLY & DETAILS
PROJECT TITLE & LOCATION	60-FT SS TOWER EXTEND TO 90-FT HYAK, WA
CLIENT NAME	WSDOT ODELIA PACIFIC / PSERN
NOTICE	NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING

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**NOT USED** 8  
SCALE: NONE S-3



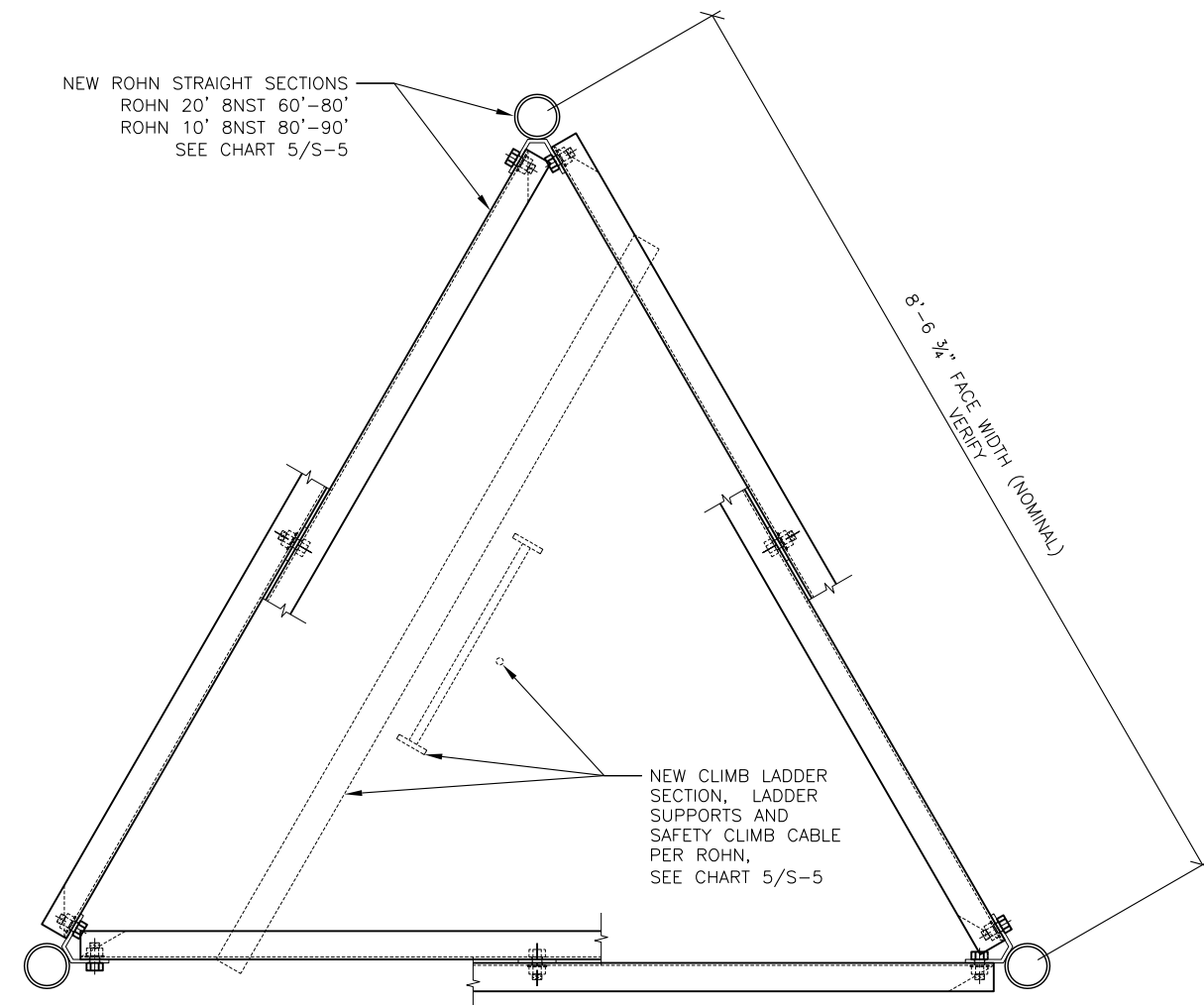


NOTE:  
 - SOME DETAILS OMITTED FOR CLARITY.  
 - REFER TO CHART 5/S-5 FOR LIST OF NEW TOWER SECTIONS AND OTHER APPARATUS

**NEW ROHN TOWER SECTIONS, ELEVATION**

SCALE: NOT TO SCALE

1  
S-4

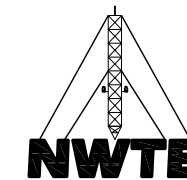


NOTE:  
 - SOME DETAILS OMITTED FOR CLARITY.  
 - REFER TO CHART 5/S-5 FOR LIST OF NEW TOWER SECTIONS AND OTHER APPARATUS

**CLIMB LADDER, LADDER SUPPORTS AND SAFETY CABLE, SECTION**

SCALE: NOT TO SCALE

- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION AND ERECTION OF ANY MATERIALS.
  - IF REQUIRED, AREAS ON STRUCTURAL MEMBERS WITH FIELD DRILLED HOLES AND DAMAGE SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT.
  - EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153
  - MODIFICATION TO EXISTING WAVEGUIDE LADDER AND SUPPORTS MAY BE REQUIRED DUE TO CONFLICTS DURING CONSTRUCTIONS.
- SEE E-1 FOR EXISTING TOWER GEOMETRY & G-1 FOR MORE NOTES



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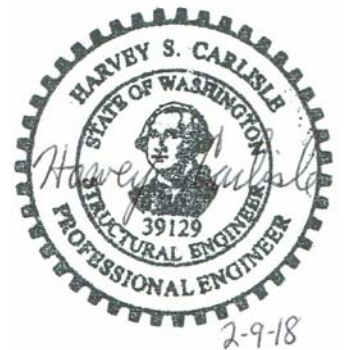
SHEET TITLE: NEW ROHN TOWER SECTIONS

PROJECT TITLE & LOCATION: 60-FT SS TOWER EXTEND TO 90-FT HYAK, WA

CLIENT NAME: WSDOT ODELIA PACIFIC / PSERN

NOTICE: NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING

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**NOTES**

SCALE: NONE

3  
S-4

NEW REDUNDANT HORIZONTAL BRACING MEMBERS PARTS KEY										ALTERNATE ROHN HORIZONTAL GIRT, CENTER PLATE & HARDWARE, ASSEMBLY QUANTITY & REFERENCE NO.
APPROX. ELEV.	PIPE LEG O.D.	ROHN SECTION DESIGNATION / DWG NUMBER	NEW REDUNDANT BRACE MEMBER			BOLTS				
			REDUNDANT BRACE MEMBER QUANTITY, MATERIAL & GRADE	REDUNDANT BRACE MEMBER DIM. "A" (APPROX.) OVER-ALL LENGTH (FIELD VERIFY)	REDUNDANT CENTER PLATE QUANTITY, MATERIAL & GRADE	CENTER CONNECTION BOLT QUANTITY, SIZE & GRADE	END CONNECTION BOLT MEMBERS QUANTITY, SIZE & GRADE	Ø BOLT HOLE DIAMETER	DIM. "X" (MIN. EDGE DISTANCE)	
16.7'	2 7/8"	10N41	(6) L 2"x2"x1/2", A36	57.06"	(3) PL 1-5 1/2"x3"x1/4", A36	(3) 1/2"Øx1 1/2" LONG, A325	(18) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	15/16"	CONTACT ROHN
10'	2 7/8"		(6) L 2"x2"x1/4", A36	61.08"	(3) PL 1-5 1/2"x3"x1/4", A36	(3) 1/2"Øx1 1/2" LONG, A325	(18) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	15/16"	CONTACT ROHN
3.3'	2 7/8"		(6) L 2"x2"x1/4", A36	65.04"	(3) PL 1-5 1/2"x3"x1/4", A36	(3) 1/2"Øx1 1/2" LONG, A325	(18) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	15/16"	CONTACT ROHN

- \* NOTE:  
- LARGER LEG CLIPPING OR CHAMFERING MAY REDUCE EFFECTIVE CAPACITY OF BRACING MEMBER. **ONLY TRIM IF REQUIRED.**  
- NO BOLT SHALL BE REUSED  
- (6) REDUNDANT BRACE MEMBERS REQUIRED AT EACH LEVEL; (3) L.H. & (3) R.H.  
- ONLY GENUINE ROHN PARTS AND HARDWARE BE UTILIZED, SEE DETAIL 3/S-5 FOR ROHN CONTACT INFORMATION

U-BOLTS PARTS KEY					ALTERNATE ROHN HARDWARE, ASSEMBLY QUANTITY & REFERENCE NO.
APPROX. ELEV.	PIPE LEG O.D.	ROHN SECTION DESIGNATION / DWG NUMBER	LEG U-BOLT, QUANTITY, SIZE (DIAMETER x SPREAD x LENGTH) & GRADE	U-BOLT THREAD LENGTH (MINIMUM)	
16.7'	2 7/8"	10N41	(6) 1/2"Ø x 3" x 4 1/2", A193-B7	1 1/2"	CONTACT ROHN
10'	2 7/8"		(6) 1/2"Ø x 3" x 4 1/2", A193-B7	1 1/2"	CONTACT ROHN
3.3'	2 7/8"		(6) 1/2"Ø x 3" x 4 1/2", A193-B7	1 1/2"	CONTACT ROHN

- \* NOTE:  
- ONLY GENUINE ROHN PARTS AND HARDWARE BE UTILIZED,  
SEE DETAIL 3/S-5 FOR ROHN CONTACT INFORMATION

**REDUNDANT HORIZONTAL BRACE MEMBER PARTS KEY**  
SCALE: NOT TO SCALE

1  
S-5

**U-BOLT PARTS KEY**  
SCALE: NOT TO SCALE

2  
S-5

REDUNDANT TO LEG CONNECTION WELDMENT PARTS KEY									ALTERNATE ROHN GIRT SUPPORT BRACKETS, ASSEMBLY & REFERENCE NO.
APPROX. ELEV.	PIPE LEG O.D.	ROHN SECTION DESIGNATION / DWG NUMBER	REDUNDANT TO LEG CONNECTION WELDMENT QUANTITY, DESCRIPTION	LEG PLATE		TAB PLATE			
				QUANTITY, MATERIAL, OVERALL DIMENSIONS & GRADE	SHORT HORIZONTALLY SLOTTED HOLES (1 1/2" x "Ø")	QUANTITY, MATERIAL, OVERALL DIMENSIONS & GRADE	Ø BOLT HOLE DIAMETER	DIM. "X" (MIN. EDGE DISTANCE)	
16.7'	2 7/8"	10N41	(3) WELDMENTS	(3) PL 7"x6 1/8"x3/8", A36	1 1/2" x 9/16"Ø	(6) PL 3"x3"x3/8", A36	9/16"Ø	7/8"	CONTACT ROHN
10'	2 7/8"		(3) WELDMENTS	(3) PL 7"x6 1/8"x3/8", A36	1 1/2" x 9/16"Ø	(6) PL 3"x3"x3/8", A36	9/16"Ø	7/8"	CONTACT ROHN
3.3'	2 7/8"		(3) WELDMENTS	(3) PL 7"x6 1/8"x3/8", A36	1 1/2" x 9/16"Ø	(6) PL 3"x3"x3/8", A36	9/16"Ø	7/8"	CONTACT ROHN

FOR INFORMATION ON ROHN PARTS AND  
INSTALLATION PROCEDURES, PLEASE  
CONTACT:  
ROHN PRODUCTS LLC  
PEORIA, ILLINOIS  
  
PH: 309/566-3038  
FAX: 309/566-3095  
EMAIL: Tim.Rohn@rohnet.com  
WEBSITE: www.rohnet.com

- \* (3) REDUNDANT TO LEG WELDMENTS REQUIRED AT EACH LEVEL  
- ONLY GENUINE ROHN PARTS AND HARDWARE BE UTILIZED, SEE DETAIL 3/S-5 FOR ROHN CONTACT INFORMATION

**REDUNDANT TO LEG WELDMENT PARTS KEY**  
SCALE: NOT TO SCALE

3  
S-5

REPLACEMENT DIAGONAL BRACE MEMBER PARTS KEY												ALTERNATE ROHN BRACE SET & BRACE CLIPS ASSEMBLY QUANTITY & REFERENCE NO.
APPROX. ELEV.	PIPE LEG O.D.	ROHN SECTION DESIGNATION / DWG NUMBER	BOLTS			NEW DIAGONAL BRACING MEMBERS						
			END CONNECTION, DIAGONAL BRACE BOLTS QUANTITY, SIZE & GRADE	CENTER CONNECTION, DIAGONAL BRACE BOLTS QUANTITY, SIZE & GRADE	BOLT HOLE Ø (CENTER & END)	CENTER BRACING SPACER, QUANTITY, SIZE & GRADE	PROPOSED MEMBER QUANTITY, MATERIAL & MIN. GRADE	DIM. "A" APPROX. OVER-ALL LENGTH (FIELD VERIFY)	DIM. "C" CHAMFER DISTANCE (IF NEEDED)	DIM. "E" UPPER EDGE DISTANCE	DIM. "X" MIN. END EDGE DISTANCE	
55.0'-60.0'	2 7/8"	8N74	(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	9'-9"	1/2"x1/2"	1"	15/16"	VB305
50.0'-55.0'	2 7/8"		(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	9'-9"	1/2"x1/2"	1"	15/16"	VB305
45.0'-50.0'	2 7/8"		(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	9'-9"	1/2"x1/2"	1"	15/16"	VB305
40.0'-45.0'	2 7/8"		(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	9'-9"	1/2"x1/2"	1"	15/16"	VB306
33.3'-40.0'	2 7/8"	9N117	(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	10'-7 1/2"	1/2"x1/2"	1"	15/16"	VB605
26.7'-33.3'	2 7/8"		(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	11'-2"	1/2"x1/2"	1"	15/16"	VB606
20.0'-26.7'	2 7/8"		(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	REUSE EXISTING SPACE	(6) L 2"x2"x1/4", A36	11'-7 9/16"	1/2"x1/2"	1"	15/16"	VB607
0.0'-6.7'	2 7/8"	10N41	(12) 1/2"Øx1 1/2" LONG, A325	(3) 1/2"Øx1 1/2" LONG, A325	9/16"Ø	UTILIZE NEW REDUNDANT BRACE	(6) L 3"x3"x1/4", A36	13'-4 3/16"	3/4"x3/4"	1 1/8"	15/16"	CONTACT ROHN

- NOTES:  
- NO BOLT SHALL BE REUSED  
- LARGER LEG CLIPPING OR CHAMFERING MAY REDUCE EFFECTIVE CAPACITY OF BRACING MEMBER. **ONLY TRIM IF REQUIRED.**  
- (6) NEW DIAGONAL BRACING MEMBERS REQUIRED AT EACH LEVEL, (3) L.H. & (3) R.H.  
- ONLY GENUINE ROHN PARTS AND HARDWARE BE UTILIZED, SEE DETAIL 3/S-5 FOR ROHN CONTACT INFORMATION

**REPLACEMENT DIAGONAL BRACE MEMBER PARTS KEY**  
SCALE: NOT TO SCALE

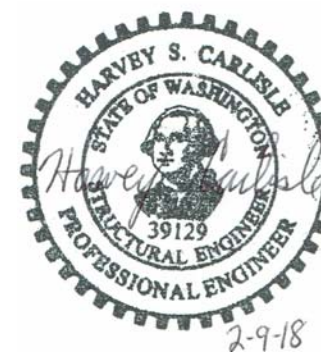
4  
S-5

ROHN TOWER EXTENSION PARTS KEY				
APPROX. ELEV.	PROPOSED ROHN SECTION PART NUMBERS SECTION DESIGNATION	NEW LEG CONNECTION BOLT QUANTITY, SIZE & GRADE	INTERNAL CLIMB LADDER AND SUPPORT BRACKETS	OTHER MISCELLANEOUS APPARATUS
80'-90'	8N24 - 10' 8NST SECTION	PER ROHN	10-FT CLIMB LADDER & ASSOCIATED SUPPORT HARDWARE (PER ROHN)	NEW LIGHTNING ROD & EXTENSION AT TOP OF TOWER (REFER TO A&E DRAWING FOR MOUNTING DETAIL)
60'-80'	8N124 - 20' 8NST SECTION	PER ROHN	20-FT CLIMB LADDER & ASSOCIATED SUPPORT HARDWARE (PER ROHN)	NEW WA VEGUIDE LADDER 0'-90' - NEW FULL HEIGHT SAFETY CLIMB CABLE

- NOTE:  
- ONLY GENUINE ROHN PARTS AND HARDWARE SHALL BE UTILIZED, SEE DETAIL 3/S-5 FOR ROHN CONTACT INFORMATION  
- LENGTHS OF ROHN SUPPLIED PARTS AND DIMENSIONS TO BOLT HOLES ON ROHN PARTS, MAY VARY SLIGHTLY FROM DIMENSION  
SHOWN ON THESE DRAWINGS. STRUCTURAL MEMBER SIZES TO MATCH THOSE LISTED IN THESE DRAWINGS.

**NEW ROHN TOWER SECTION PARTS**  
SCALE: NONE

5  
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**NWTE**  
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EVERETT, WA 98201-3767  
PHONE: 425.258.4248  
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ISSUE DATE	REV NO.	REVISION DESCRIPTION	BY
01-10-18	0	ISSUE FINAL MODIFICATION DRAWINGS	K.P.W.
02-09-18	1	ISSUE REVISED MODIFICATION DRAWINGS	K.P.W.

SHEET TITLE: NEW MEMBERS PARTS KEY CHARTS  
PROJECT TITLE & LOCATION: 60-FT SS TOWER EXTEND TO 90-FT HYAK, WA  
CLIENT NAME: WSDOT ODELIA PACIFIC / PSERN  
NOTICE: NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING

CURRENT DATE:	DRAWN BY:	CHECKED BY:	APPROVED BY:	PROJECT NUMBER:	SHEET NUMBER:
02-09-18	K.P.W.	S.A.D.	H.S.C.	181700.02-REV1	S-5

**TABLE N5.4-1**  
**Inspection Tasks Prior to Welding**

Inspection Tasks Prior to Welding	QC	QA
Welding procedure specifications (WPSs) available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type/grade)	O	O
Welder identification system <sup>1</sup>	O	O
Fit-up of groove welds (including joint geometry)		
- Joint preparation		
- Dimensions (alignment, root opening, root face, bevel)	O	O
- Cleanliness (condition of steel surfaces)		
- Tacking (tack weld quality and location)		
- Backing type and fit (if applicable)		
Configuration and finish of access holes	O	O
Fit-up of fillet welds		
- Dimensions (alignment, gaps at root)	O	O
- Cleanliness (condition of steel surfaces)		
- Tacking (tack weld quality and location)		
Check welding equipment	O	-

<sup>1</sup> The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low stress type.

**TABLE N5.4-2**  
**Inspection Tasks During Welding**

Inspection Tasks During Welding	QC	QA
Use of qualified welders	O	O
Control and handling of welding consumables		
- Packaging	O	O
- Exposure control		
No welding over cracked tack welds	O	O
Environmental conditions		
- Wind speed within limits	O	O
- Precipitation and temperature		
WPS followed		
- Settings on welding equipment	O	O
- Travel speed		
- Selected welding materials		
- Shielding gas type/flow rate		
- Preheat applied		
- Interpass temperature maintained (min./max.)		
- Proper position (F, V, H, OH)		
Welding techniques		
- Interpass and final cleaning	O	O
- Each pass within profile limitations		
- Each pass meets quality requirements		

**TABLE N5.4-3**  
**Inspection Tasks After Welding**

Inspection Tasks After Welding	QC	QA
Welds cleaned	O	O
Size, length and location of welds	P	P
Welds meet visual acceptance criteria		
- Crack prohibition		
- Weld/base-metal fusion	P	P
- Crater cross section		
- Weld profiles		
- Weld size		
- Undercut		
- Porosity		
Arc strikes	P	P
k-area <sup>1</sup>	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P

<sup>1</sup> When welding of doubler plates, continuity plates or stiffeners has been performed

**AISC TABLE N5.4-1**  
INSPECTION TASKS PRIOR TO WELDING

1  
S-6

**AISC TABLE N5.4-2**  
INSPECTION TASKS DURING WELDING

2  
S-6

**AISC TABLE N5.4-3**  
INSPECTION TASKS AFTER WELDING

3  
S-6

**TABLE N5.6-1**  
**Inspection Tasks Prior to Bolting**

Inspection Tasks Prior to Bolting	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Proper bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers and other fastener components	O	O

**AISC TABLE N5.6-1**  
INSPECTION TASKS PRIOR TO BOLTING

4  
S-6

**TABLE N5.6-2**  
**Inspection Tasks During Bolting**

Inspection Tasks During Bolting	QC	QA
Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required	O	O
Joint brought to the snug-tight condition prior to the pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges	O	O

**AISC TABLE N5.6-2**  
INSPECTION TASKS DURING BOLTING

5  
S-6

**TABLE N5.6-3**  
**Inspection Tasks After Bolting**

Inspection Tasks After Bolting	QC	QA
Document acceptance or rejection of bolted connections	P	P

**AISC TABLE N5.6-3**  
INSPECTION TASKS AFTER BOLTING

6  
S-6

**DEFINITIONS:**

QC - QUALITY CONTROL PROVIDED BY THE FABRICATOR AND ERECTOR  
 QA - QUALITY ASSURANCE PROVIDED BY OTHERS QUALIFIED TO PERFORM SPECIAL INSPECTIONS  
 O - OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.  
 P - PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER OR FOR EACH BOLTED CONNECTION.

**NOTES:**

PER AISC N5.6 (1), FOR SNUG-TIGHT JOINTS, PRE-INSTALLATION VERIFICATION TESTING AS SPECIFIED IN TABLE N5.6-1 AND MONITORING OF THE INSTALLATION PROCEDURES AS SPECIFIED IN TABLE N5.6-2 ARE NOT APPLICABLE. THE QC AND QA INSPECTORS NEED NOT BE PRESENT DURING THE INSTALLATION OF FASTENERS IN SNUG-TIGHT JOINTS. SNUG-TIGHT JOINTS ARE ALLOWED IF LOCKING DEVICES ARE INSTALLED. OTHERWISE BOLTS SHALL BE TIGHTENED USING THE TURN-OF-THE-NUT METHOD AS DESCRIBED IN SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS.

PER AISC N7, QUALITY ASSURANCE (QA) INSPECTIONS, EXCEPT NONDESTRUCTIVE TESTING (NDT), MAY BE WAIVED WHEN THE WORK IS PERFORMED IN A FABRICATING SHOP OR BY AN ERECTOR APPROVED BY THE AUTHORITY HAVING JURISDICTION (AJH) TO PERFORM THE WORK WITHOUT QA.

STRUCTURAL OBSERVATION BY NWTE SHALL BE CARRIED OUT AT THE TIME THE STRUCTURAL WORK IS COMPLETED. CONTRACTOR SHALL COORDINATE WITH NWTE IN ORDER TO SCHEDULE A SITE VISIT WITH CONTRACTOR PRESENT. NWTE WILL CLIMB THE TOWER AND VISUALLY OBSERVE THE STRUCTURAL MODIFICATION WORK AND VERIFY THAT THE WORK HAS BEEN DONE IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. VISUAL OBSERVATIONS WILL BE MADE OF THE NEW STRUCTURAL MEMBERS AND CONNECTIONS. NWTE WILL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT SUMMARIZING THE OBSERVATIONS MADE, INCLUDING ANY DEFICIENCIES WHICH, TO THE BEST OF NWTE'S KNOWLEDGE, HAVE BEEN RESOLVED.

**OTHER INSPECTION NOTES:**

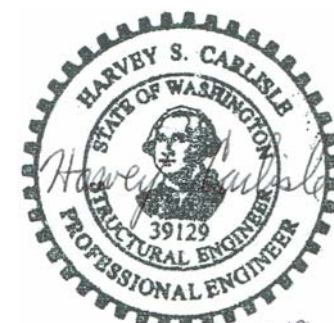
REFER TO G-1 FOR INSPECTION AND OBSERVATIONS REQUIRED FOR OTHER THAN BOLTING AND WELDING

**DEFINITIONS/NOTES - SPECIAL INSPECTIONS & STRUCTURAL OBSERVATIONS**  
SCALE: NONE

7  
S-6

**NOT USED**  
SCALE: NONE

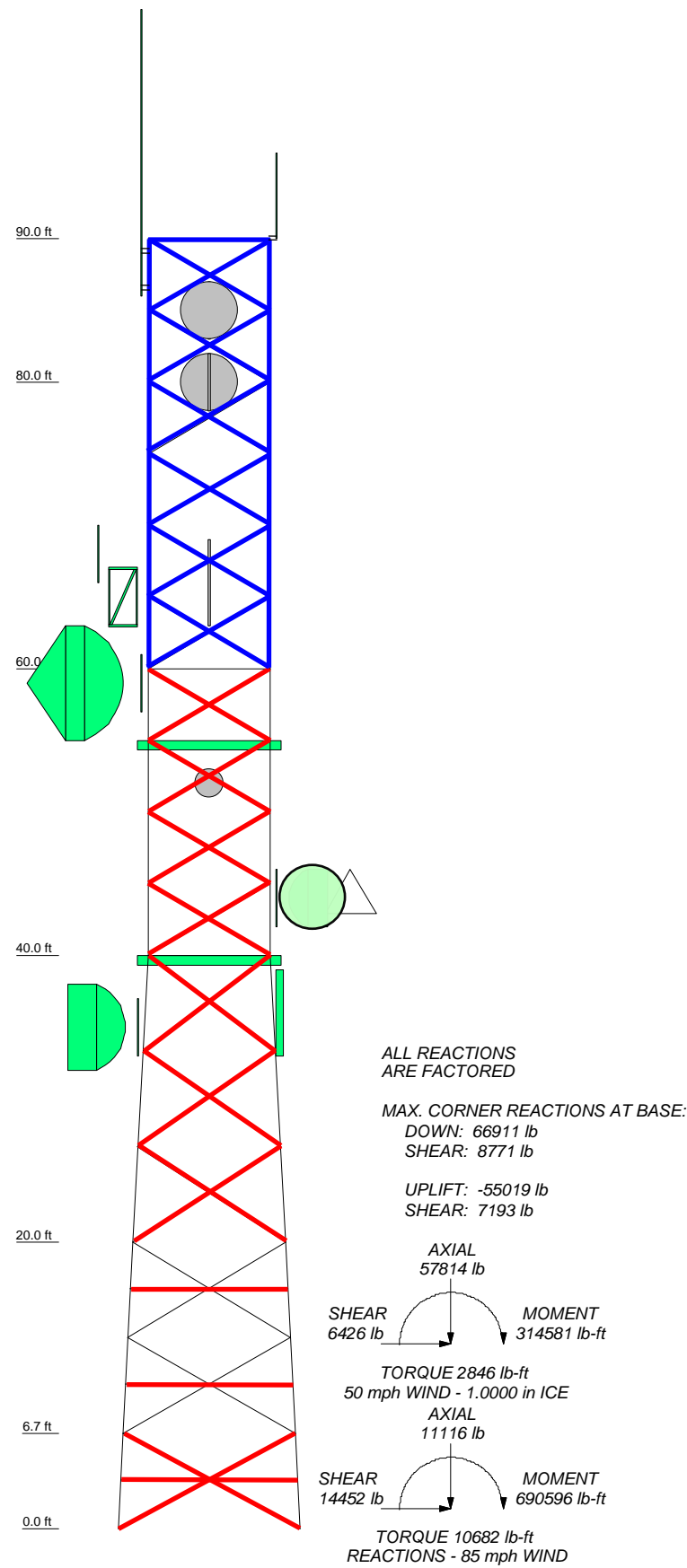
2-9-18



 <b>NorthWest Tower Engineering</b> 2210 HEWITT AVE, SUITE 209 EVERETT, WA 98201-3767 PHONE: 425.258.4248 FAX: 425.258.4289	ISSUE DATE	REV NO.	REVISION DESCRIPTION	BY
	01-10-18	0	ISSUE FINAL MODIFICATION DRAWINGS	K.P.W.
	02-09-18	1	ISSUE REVISED MODIFICATION DRAWINGS	K.P.W.
SHEET TITLE	SPECIAL INSPECTIONS AND STRUCTURAL OBSERVATIONS			
PROJECT TITLE & LOCATION	60-FT SS TOWER EXTEND TO 90-FT HYAK, WA			
CLIENT NAME	WSDOT ODELIA PACIFIC / PSERN			
NOTICE	NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING			
CURRENT DATE:	DRAWN BY:	CHECKED BY:	APPROVED BY:	PROJECT NUMBER:
02-09-18	K.P.W.	S.A.D.	H.S.C.	181700.02-REV1
				SHEET NUMBER: S-6

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S-6

Section	T1	T2	T3	T4	T5	T6
Legs	ROHN 2.5 STD (2.875" x .203)				ROHN 2.5 EH (2.875" x .276)	
Leg Grade		A572-50				
Diagonals	L1 3/4x1 3/4x3/16				L2 1/2x2 1/2x3/16	L3x3x1/4
Diagonal Grade		A36				
Top Chords	L2x2x1/8	N.A.				
Sec. Horizontals		N.A.			L2x2x1/4	
Face Width (ft)	8.5625				10.6042	11.9375
# Panels @ (ft)		10 @ 5			6 @ 6.66667	
Weight (lb)	488.0	876.1	1175.1	1198.6	1022.1	690.1



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
DB Spectra DS7D06F36U-N (WSDOT)	90	2' MW STD (WSDOT, Dodge Ridge)	52
4' Lightning Rod on 15' Extension Pipe (Tip 104')	86	CCTV	45
Dish Mount (PSERN)	85	4' MW HP (WSDOT, Stampede)	44
4' MW HP (PSERN, Dodge Ridge)	85	Dish Mount	44
Dish Mount (relocate)	80	Junction Box	42
4' MW HP (WSDOT, Dodge Ridge)	80	CCTV	42
Standoff Mount (WSDOT)	65	Junction Box	42
3' omni (WSDOT, relocated)	65	Junction Box	42
Standoff Mount (WSP)	63	Platform	40
5' omni (WSP, relocate)	63	Platform	40
Dish Mount	59	Platform	40
8' MW RAD (WSDOT, Stampede)	59	16"x12" Panel	36
Platform	55	6' MW HP (PSERN, Stampede)	35
Platform	55	Dish Mount (PSERN)	35
Platform	55	Single Loop Dipole	17

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

**TOWER DESIGN NOTES**

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 85 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0'
7. TOWER RATING: 78.5%

<p><b>NWTE</b> 2210 Hewitt Ave, #209 Everett, WA 98201 Phone: (425) 258-4248 FAX: (425) 258-4289</p>	<p>Job: <b>181700.02 Rev1 90-ft SSV WSDOT Hyak, WA</b></p>
	<p>Project: <b>Proposed Extension &amp; UG Vasd=85-mph, 50-mph With 1"</b></p>
	<p>Client: Odell/PSERN      Drawn by: Kirk      App'd:</p>
	<p>Code: TIA-222-G      Date: 02/09/18      Scale: NTS</p>
	<p>Path:      Dwg No. E-1      </p>





NorthWest Tower Engineering  
 2210 Hewitt Ave. Suite 209  
 Everett, WA 98201-3767  
 Phone: 425-258-4248  
 Fax: 425-258-4289

Job Name:

60-ft S.S. (Extend to 90') - WSDOT Hyak, WA

Page: 1 A-1

Project Number:

181700.02 Rev1

Date: 2/9/2018

Client Name:

Odelia Pacific / PSERN

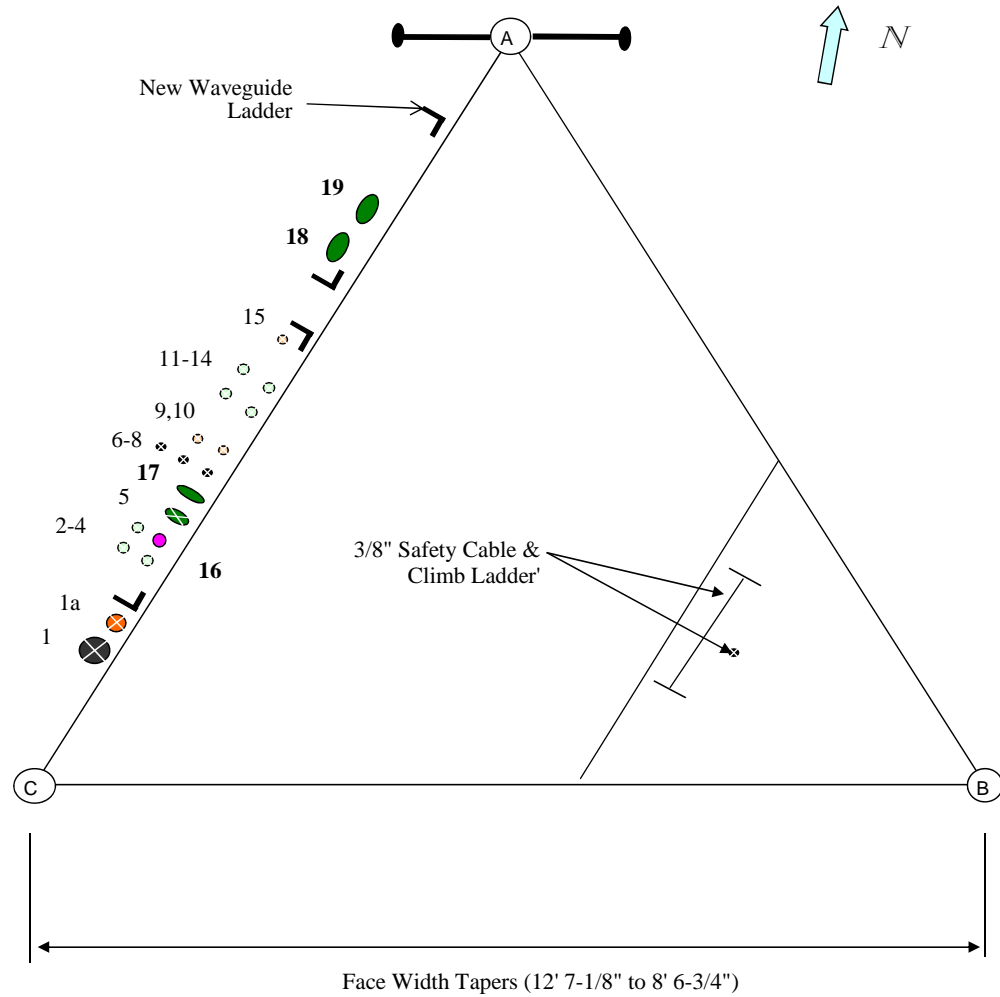
By: HC

**EXISTING FEEDLINES**

Coax Number	Coax Description	Termination Elevation	Coax Key
1	3" Conduit	45'	⊗
1a	1" Conduit	45'	⊗
	3/4" Flex Conduit	45' to 60'	
2	1/2" Coax	63'	⊙
3	1/2" Coax	63'	⊙
4	1/2" Coax	52'	⊙
5	EW90	59'	⊗
6-8	(3) 3/8" Coax	36'	*
9	1/4" Coax	42'	⊙
10	1/4" Coax (dead)	26'	⊙
11	1/2" Coax <b>(remove)</b>	63'	⊙
12	1/2" Coax	52'	⊙
13	1/2" Coax	44'	⊙
14	1/2" Coax	52'	⊙
15	1/4" Coax	17'	⊙

**PROPOSED FEEDLINES**

16	7/8" Coax	90'	●
17	EW90	80'	●
18	EW65	35'	●
19	EW65	85'	●





## GENERAL

- ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
- ALL DIMENSIONS AND DETAILS SHOWN ARE BASED ON THE INFORMATION GATHERED ON SITE BY NWTE ON 10-31-17, FOR THE PURPOSE OF PERFORMING A STRUCTURAL ANALYSIS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO PURCHASING OR FABRICATION AND ERECTION OF ANY MATERIALS.
- THESE DRAWINGS INDICATE THE MAJOR OPERATIONS TO BE PERFORMED, BUT DO NOT SHOW EVERY FIELD CONDITION THAT MAY BE ENCOUNTERED. THEREFORE, PRIOR TO STARTING WORK, THE CONTRACTOR SHOULD SURVEY THE JOB SITE TO CONFIRM SITE CONDITIONS.
- ANY SUBSTITUTIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND SAFETY REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS. (REFER TO TIA-1019-A-2011, STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS).
- CONTACT THE ENGINEER OF RECORD IF MODIFICATIONS ARE REQUIRED TO THE DESIGN DUE TO EXISTING CONDITIONS.
- AFTER COMPLETION OF THE WORK, THE SITE SHALL BE CLEARED OF ALL DEBRIS AND REMOVED. ANY SURPLUS MATERIALS NOT TO BE REMOVED FROM SITE SHALL BE STORED ON SITE AS DESIGNATED BY THE OWNER.

## CODES AND STANDARDS

- TIA-222-G: STRUCTURAL STANDARD FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES
- IBC: INTERNATIONAL BUILDING CODE, 2015
- ASTM: STANDARDS FOR BUILDING CODES, LATEST EDITION.
- ACI 315: AMERICAN CONCRETE INSTITUTE, DETAILS AND DETAILING OF CONCRETE REINFORCEMENT, LATEST EDITION.
- ACI 318: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, LATEST EDITION.
- CRSI: CONCRETE STEEL REINFORCING INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.
- AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, 14TH EDITION.
- AWS: AMERICAN WELDING SOCIETY, STRUCTURAL WELDING CODE, LATEST EDITION.

## DESIGN CRITERIA

- BASIC WIND SPEED AND COEFFICIENTS PER TIA-222-G:  
85 MPH (3-SEC GUST) NO ICE, 50 MPH (3-SEC GUST) WITH 1" ICE.  
(EQUIVALENT TO VULT =115 MPH, PER IBC 2015)  
EXPOSURE CATEGORY C,  
TOPOGRAPHIC CATEGORY 1  
STRUCTURE CLASS III  
(EQUIVALENT TO RISK CATEGORY IV)
- SEISMIC LOADING IS DETERMINED PER IBC 2015, ASCE7-10 & TIA-222-G. SEISMIC LOADS DO NOT GOVERN FOR THIS STRUCTURE.
- FOR PROPOSED ANTENNA AND FEED LINE CONFIGURATION REFER TO TOWER ELEVATION DRAWING E-1 AND CROSS SECTION ON A-1.
- THE TOWER RESTS ON A 17'-6" SQUARE BY 4' THICK CONCRETE MAT. THE TOWER CENTROID IS OFFSET FROM THE CENTER OF THE FOUNDATION APPROXIMATELY 2'-6" TO THE SOUTHWEST. THE BASE OF THE NORTH LEG HAS AN EXTRA BASE PLATE AND (2) 3/4" DIAMETER POST INSTALLED ANCHORS IN ADDITION TO THE ORIGINAL ANCHOR BOLTS. THE POST INSTALLED ANCHORS WERE ADDED BECAUSE TWO OF THE ORIGINAL ANCHOR BOLTS WERE DAMAGED PRIOR TO TOWER ERECTION. THE REPAIR WAS DESIGNED BY ROHN. CALCULATIONS CONFIRMED THE ADEQUACY OF THE FOUNDATION.
- NO X-RAY, SUBSURFACE EXCAVATION, OR OTHER SIMILAR EXAMINATION OF THE TOWER, FOUNDATION SYSTEM, OR WELDED CONNECTIONS WAS CONDUCTED. FOR PORTIONS OF THE TOWER AND FOUNDATION SYSTEM THAT WERE NOT VISUALLY ACCESSIBLE, NO DETERMINATION REGARDING THE CONDITION OR ADEQUACY WAS MADE.
- ANTENNA, FEEDLINES AND SUPPORT STRUCTURES: WEIGHTS AND EXPOSED AREAS PROVIDED BY CLIENT AND BY MANUFACTURER.

## FOUNDATIONS

- CONTRACTOR SHALL VERIFY THE LOCATION OF UNDERGROUND UTILITIES IN THE AREA WHERE EXCAVATION WORK IS TO BE PERFORMED.
- ALL FOUNDATIONS SHALL BEAR ON FIRM UNDISTURBED SOIL.
- ALL FOOTING EXCAVATIONS SHALL BE MANUALLY CLEANED PRIOR TO PLACING CONCRETE. COMPACT THE EXPOSED SOIL SURFACE AND ANY GRANULAR FILL UNDER THE FOUNDATION TO 90% OF THE MODIFIED PROCTOR DENSITY.
- FOOTINGS MAY BE POURED IN NEAT EXCAVATIONS PROVIDED THE SIZE IS INCREASED 3 INCHES AT EACH INTERFACE WITH THE SOIL.
- CONTRACTOR SHALL PROVIDE DESIGN AND INSTALLATION OF ALL CRIBBING, SHEATHING, AND SHORING REQUIRED TO SAFELY RETAIN THE EARTH BANKS.
- BACKFILL NEAR AND AROUND THE FOUNDATIONS SHALL BE A WELL GRADED FILL MATERIAL PLACED IN 12" THICK LAYERS THAT HAS BEEN COMPACTED TO 90% OF THE MODIFIED PROCTOR DENSITY.

## CONCRETE

- ALL CONCRETE FOR FOUNDATIONS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AFTER 28 DAYS.
- THE CONCRETE MIX SHALL NOT CONTAIN LESS THAN 5 1/2" SACKS OF CEMENT (ASTM C 150 TYPE II) PER CUBIC YARD.
- THE CONCRETE SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 7/8".
- THE CONCRETE MIX SHALL PRODUCE A MAXIMUM SLUMP OF 5" ± 1".
- THE CONCRETE MIX SHALL HAVE A TOTAL AIR CONTENT OF 5%, WITH A TOLERANCE OF PLUS OR MINUS 1.5%. AIR-ENTRAINING ADMIXTURES SHALL CONFORM TO ASTM C 260.
- THE CONCRETE MIX SHALL HAVE A MAXIMUM WATER-CEMENT RATIO OF 0.45. WATER REDUCING OR ACCELERATING ADMIXTURES SHALL CONFORM TO ASTM C 494.
- THE CONCRETE SHALL NOT CONTAIN CALCIUM CHLORIDE OR ANY OTHER ADMIXTURE CONTAINING CHLORIDE OTHER THAN NATURAL IMPURITIES.
- FORMWORK SHALL CONFORM TO ACI 318 SPECIFICATIONS (LATEST EDITION).
- ALL CONCRETE SHALL BE PLACED IN A MONOLITHIC POUR UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- PROVIDE CHAMFERS AT ALL EXPOSED CORNERS OF CONCRETE.
- CONCRETE WORK UNDER EXTREME WEATHER CONDITIONS SHALL CONFORM TO ACI 318 SPECIFICATIONS (LATEST EDITION).

## STRUCTURAL STEEL

- DETAILING, FABRICATION, AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION, 14TH EDITION.
- W SHAPES SHALL BE A992 50 KSI, ANGLES, CHANNELS, AND PLATES TO BE ASTM A36, Fy=36 KSI.
- SOLID RODS TO BE ASTM A572, Fy=50 KSI.
- RECTANGULAR & SQUARE HOLLOW STRUCTURAL SECTIONS (HSS) TO BE ASTM A500-B, Fy=46 KSI. ROUND HOLLOW STRUCTURAL SECTIONS (HSS) TO BE ASTM A500-B, Fy=42 KSI.
- PIPE TO BE ASTM A53-B, Fy=35 KSI.
- NEW STRUCTURAL STEEL CONNECTION BOLTS TO BE ASTM A325 TYPE 3. CONNECTION BOLTS SHALL BE TIGHTENED SNUG-TIGHT IF LOCKING DEVICES ARE INSTALLED. OTHERWISE BOLTS SHALL BE TIGHTENED USING TURN-OF-NUT METHOD AS DESCRIBED IN SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS. NO BOLT SHALL BE REUSED.
- U-BOLTS SHALL BE GALVANIZED STEEL GRADE A193-B7. U-BOLTS SHALL BE INSTALLED SNUG TIGHT. TAKE CARE NOT TO DAMAGE PIPE MEMBERS.
- BLIND BOLTS SHALL BE BOXBOLT TYPE C, MANUFACTURED BY LNA SOLUTIONS.
- EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. STEEL HARDWARE SHALL BE GALVANIZED PER ASTM A153
- THREADBAR SHALL BE ASTM A615 GRADE 75, MANUFACTURED BY DYWIDAG
- NEW WILLIAMS FORM ALL-THREAD REBAR SHALL BE ASTM A615 GR 75. WILLIAMS FORMS PARTS AND ASSOCIATED HARDWARE TO BE HOT-DIPPED GALVANIZED. NEW ANCHORS TO BE SET WITH ULTRABOND 1 EPOXY CONCRETE ANCHOR SYSTEM, FOLLOW WILLIAMS FORM INSTALLATION INSTRUCTIONS.

## PAINT

- AREAS OF DAMAGED PAINT OR GALVANIZING, CAUSED BY THE CONTRACTOR, ON STRUCTURAL MEMBERS SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT.
- IF APPLICABLE, NEW STEEL SHALL BE PAINTED TO MATCH EXISTING TOWER PAINT.

## STEEL REINFORCEMENT

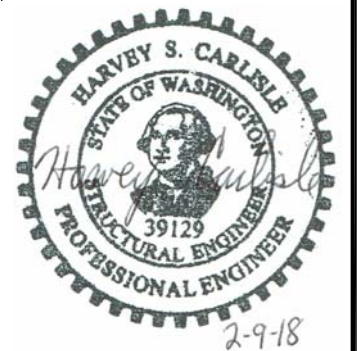
- ALL REINFORCING STEEL FOR CONCRETE TO BE GRADE 60 DEFORMED BILLET STEEL PER ASTM A615.
- ANCHOR RODS TO BE ASTM F155, GRADE 55 WITH A PLATE, WASHER, AND NUT UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- REINFORCEMENT SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE ACI 315 AND CRSI. SUPPORT REINFORCING AS REQUIRED BY CRSI TO PREVENT DISPLACEMENT UPON CONCRETE POURING.
- MAINTAIN ALL CLEARANCES NOTED ON THE DRAWINGS. WHERE NO DIMENSIONS ARE NOTED, USE THE ACI RECOMMENDED CLEARANCES.
- MINIMUM COVER FOR REINFORCING BARS SHALL BE 3", FOR CONCRETE POURED AGAINST SOIL.
- TIE BARS SECURELY WITH #16 ANNEALED WIRE AND SUPPORT AS REQUIRED.
- ALL WELDED WIRE FABRIC TO BE PER ASTM A185. ALL BARS AND WIRE SHALL BE FREE OF RUST, MILL SCALE, DIRT, OR OTHER FOREIGN MATERIAL PRIOR TO CASTING CONCRETE.
- PROVIDE MINIMUM LAP SPLICES OF 36 BAR DIAMETERS UNLESS NOTED OTHERWISE.
- FIELD BENDING OR WELDING OF REINFORCEMENT BARS IS NOT PERMITTED.

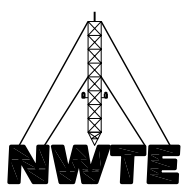
## WELDING

- WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE.
- ELECTRODES TO BE E70XX LOW HYDROGEN.
- MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS.
- MAXIMUM WELD SIZE NOT TO EXCEED MINIMUM STEEL PLATE THICKNESS.

## SPECIAL INSPECTION & OBSERVATIONS

- SPECIAL INSPECTIONS AS REQUIRED BY IBC CHAPTER 17 SHALL BE CARRIED OUT BY A QUALIFIED TEST AGENCY. STRUCTURAL OBSERVATIONS AS REQUIRED BY IBC 1704.6, BY REGISTERED DESIGN PROFESSIONAL.
- THE FOLLOWING WORK SHALL BE INSPECTED ON A PERIODIC BASIS AND THE MATERIALS TESTED:  
STRUCTURAL CAST-IN-PLACE CONCRETE AND STEEL REINFORCING.  
STRUCTURAL HIGH STRENGTH BOLTED CONNECTIONS, PER ANSI/AISC 360-10 TABLES N5.6-1, -2, -3. BLIND FASTENER CONNECTIONS.  
FIELD AND FULL PENETRATION STRUCTURAL WELDING. PER ANSI/AISC 360-10 TABLES N5.4-1, -2, -3. BACKFILLING ABOVE GUY ANCHOR BLOCKS.  
PLACEMENT OF THREADBAR INTO EXISTING FOUNDATION  
POST INSTALLED ADHESIVE ANCHORS  
PRESSURE GROUTING PIPE LEG MEMBERS
- REPORTS SHALL SUBMITTED IN ACCORDANCE WITH IBC CHAPTER 17.
- STRUCTURAL OBSERVATION BY NWTE MAY BE CARRIED OUT AT THE TIME THE STRUCTURAL WORK IS COMPLETED. CONTRACTOR SHALL COORDINATE WITH NWTE IN ORDER TO SCHEDULE A SITE VISIT WITH CONTRACTOR PRESENT. NWTE WILL CLIMB THE TOWER AND VISUALLY OBSERVE THE STRUCTURAL MODIFICATION WORK AND VERIFY THAT THE WORK HAS BEEN DONE IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. VISUAL OBSERVATIONS WILL BE MADE OF THE NEW STRUCTURAL MEMBERS AND CONNECTIONS. NWTE WILL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT SUMMARIZING THE OBSERVATIONS MADE, INCLUDING ANY DEFICIENCIES WHICH, TO THE BEST OF NWTE'S KNOWLEDGE, HAVE BEEN RESOLVED.



 <b>NorthWest Tower Engineering</b> 2210 HEWITT AVE, SUITE 209 EVERETT, WA 98201-3767 PHONE: 425.258.4248 FAX: 425.258.4289	ISSUE DATE	REV NO.	REVISION DESCRIPTION	BY	
	01-10-18	△	ISSUE FINAL MODIFICATION DRAWINGS	K.P.W.	
	02-09-18	△	ISSUE REVISED MODIFICATION DRAWINGS	K.P.W.	
SHEET TITLE	GENERAL NOTES				
PROJECT TITLE & LOCATION	60-FT SS TOWER EXTEND TO 90-FT HYAK, WA				
CLIENT NAME	WSDOT ODELIA PACIFIC / PSERN				
NOTICE	NOT TO BE COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF NORTHWEST TOWER ENGINEERING				
CURRENT DATE:	DRAWN BY:	CHECKED BY:	APPROVED BY:	PROJECT NUMBER:	SHEET NUMBER:
02-09-18	K.P.W.	S.A.D.	H.S.C.	181700.02-REV1	G-1



ROHN Products LLC

1 Fairholm Avenue  
 Peoria, IL 61603  
 309.566-3021  
 309.566-3079 (fax)

January 5, 2018

Q18-101-002

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 NorthWest Tower Engineering  
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[www.nwtower.net](http://www.nwtower.net)

60FT SSV Tower w/ 30' extension

File No. 29716AE

Quantity	Part Number	Description	Price
1	VB947A	GIRT ASSY 8NST L2.5X.19" .5"	\$ 93.10
1	8N24	10' 8NST SECTION	\$ 937.50
1	8N124	20' 8NST SECTION	\$ 1,462.50
4	NEW	CP50 CAP PLATE	\$ 25.00
4	NEW	50LR CAP PLATE	\$ 28.00
		<b>8N74 W/ L2X.25 DIAG NOT L 1.75X.25 NEED CUSTOMER APPROVAL</b>	
18	VB305	L2X2X.25 DIAG-GR50	\$ 991.50
6	VB306	L2X2X.25 DIAG-GR50 NEED EOR APPROVAL	\$ 330.50
15	210018GA	BOLT ASSY 1/2X1-1/2 A325 HDG	\$ 22.50
60	210017GA	BOLT ASSY 1/2X1-1/4 A325 HDG	\$ 91.50
6	210019GA	BOLT ASSY 1/2X1-3/4 A325 HDG	\$ 10.80
3	KY695	CLIP ASSY ANGLE BRACE LADORW/G	\$ 18.00
4	J44AA	J-BOLT ASSY 3/8 X 3-11/16 HDG	\$ 12.00

		9N117 W/L2X.25 DIAG	
6	VB605	L2.00X2.00X.25X127.50 9N D	\$ 318.00
6	VB606	L2.00X2.00X.25X134.00 9N D	\$ 325.50
6	VB607	L2.00X2.00X.25X139.31 9N D	\$ 340.50
15	210018GA	BOLT ASSY 1/2X1-1/2 A325 HDG	\$ 27.00
36	210017GA	BOLT ASSY 1/2X1-1/4 A325 HDG	\$ 64.50
3	KY695	CLIP ASSY ANGLE BRACE LADORW/G	\$ 18.00
4	J44AA	J-BOLT ASSY 3/8 X 3-11/16 HDG	\$ 12.00



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<b>10N41 W/3X.25 DIAG BOT BAY &amp; L2X.25 HORIZ</b>			
6	NEW	L3X.25X13.35' GR50	\$ 811.50
6	VB2327	L2.00X2.00X.25X57.06 10N H	\$ 219.00
6	VB2328	L2.00X2.00X.25X61.08 10N H	\$ 235.50
6	VB2329	L2.00X2.00X.25X65.04 10N H	\$ 246.00
9	VX4379	BAR FLAT CONN 3X.25X1.46'	\$ 165.00
9	VX4208	BRACKET 2-4"LEG S9EH1	\$ 469.50
18	JR84AW	U-BOLT ASSY 1/2 X 3 W/WASHER	\$ 48.00
3	STBCLSG	CLIP STEP BOLT 7GA 1.25" HDG	\$ 8.00
9	210019GA	BOLT ASSY 1/2X1-3/4 A325 HDG	\$ 18.00
36	210018GA	BOLT ASSY 1/2X1-1/2 A325 HDG	\$ 54.00
12	210017GA	BOLT ASSY 1/2X1-1/4 A325 HDG	\$ 18.30
3	KY695	CLIP ASSY ANGLE BRACE LADORW	\$ 18.00
4	J44AA	J-BOLT ASSY 3/8 X 3-11/16 HDG	\$ 12.00

**PAL NUTS FOR ALL TOWER BOLTS**

**TOP 30' TOWER BRACING USING L1.75X.19 NPLACED OF L1.75X.13  
 NEED EOR APPROVAL**

**ALL PARTS PROVIDED USED ROHN STD CLIPPING EDGE DEST &  
 GAGE LINES**

**HORIZ DETAILS USING DWG NO. D050019**

**ALL MOUNTS BY OTHERS**

**BRACING OF L2X2X.25 USED INPLACE OF L1.75X.25 NEED EOR  
 APPROVAL**

<b>OPTIONAL ITEMS</b>			
	TT100LAD	SAFETY DEVICE	\$ 351.00
	TT-WG-500- WSMC	TROLLEY	\$ 186.00
	TTFBH-4D	HARNES	\$ 109.00



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Peoria, IL 61603  
309.566-3021  
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**Validity:** This quotation valid for 30 days from date of issue.

**Estimated Ship Date: 5 to 6 weeks.** Please note that lead times are estimated and can fluctuate due to production capacity. The lead times are reassessed upon receiving the Purchase Order and are listed on the Order Acknowledgement. Please contact me to verify current lead times or if a better delivery date is possible when placing an order.

**Terms:**

1. For established accounts purchase orders are accepted. (Net 30 days.)
2. Cash due in advance of shipping order.
3. Please refer to the attached forms for additional terms and conditions.
4. Freight quotes assume commercial address no special services.
5. Sales tax and shipping charges not included.

**Shipping:** FOB Peoria, IL - Freight to be lined up by customer or paid in advance if lined up by ROHN.

**Please return your purchase order by email or address below:**

[m.hurst@rohntower.com](mailto:m.hurst@rohntower.com)

ROHN Products, LLC  
PO Box 5999  
Peoria, IL 61601-5999

Regards,

Mike Hurst  
309-566-3021



Rohn Terms and  
Conditions.pdf