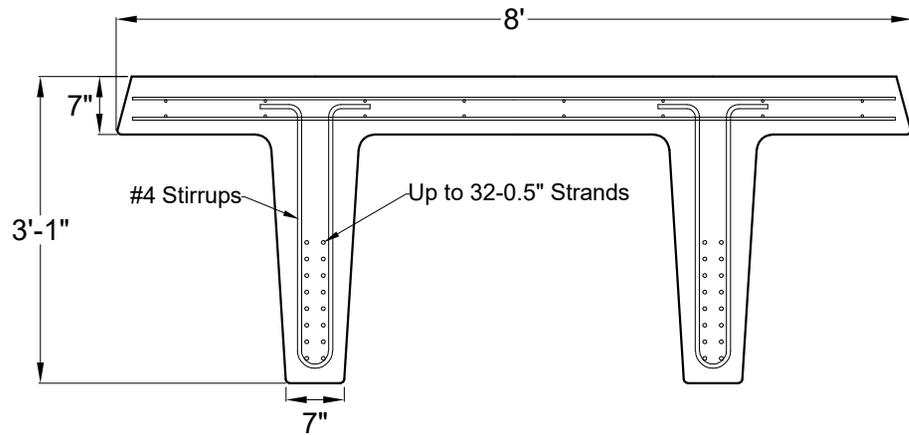


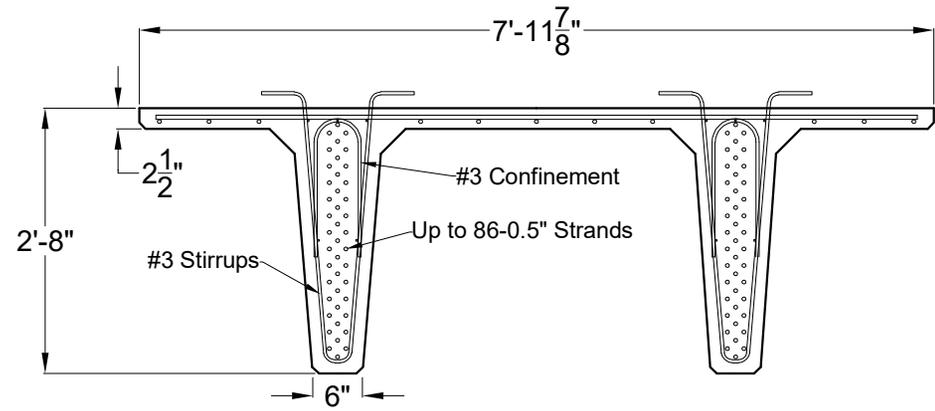
Comparison between Conventional Concrete and UHPC Designs		
Parameters	Conventional Concrete	UHPC
Concrete compressive strength at release (ksi)	8	10
Concrete compressive strength at service (ksi)	10	18
Specified Flexural Strength (ksi)	Unspecified	2
Flange width (ft)	10	10
Member depth (in.)	40	40
Weight (lb/ft)	1,936	920
# of bottom 0.6" strands	46	36
# of top 0.6" strands	4	14
Max design span (ft)	80	90
Bottom fiber stresses limit (ksi)	0.6	1
Bottom fiber stresses at Service III (ksi)	0.56	1
Ultimate moment demand (k.ft)	6,232	6,064
Moment capacity (k.ft)	7,482	6,074
Ultimate shear demand at critical section (kip)	330	258
Shear capacity at critical section (kip)	386*	311**
Camber at release (in.)	2	1.65
Live load deflection at midspan (in.)	-0.68	-1

*Stirrups provided are #4 @ 12"

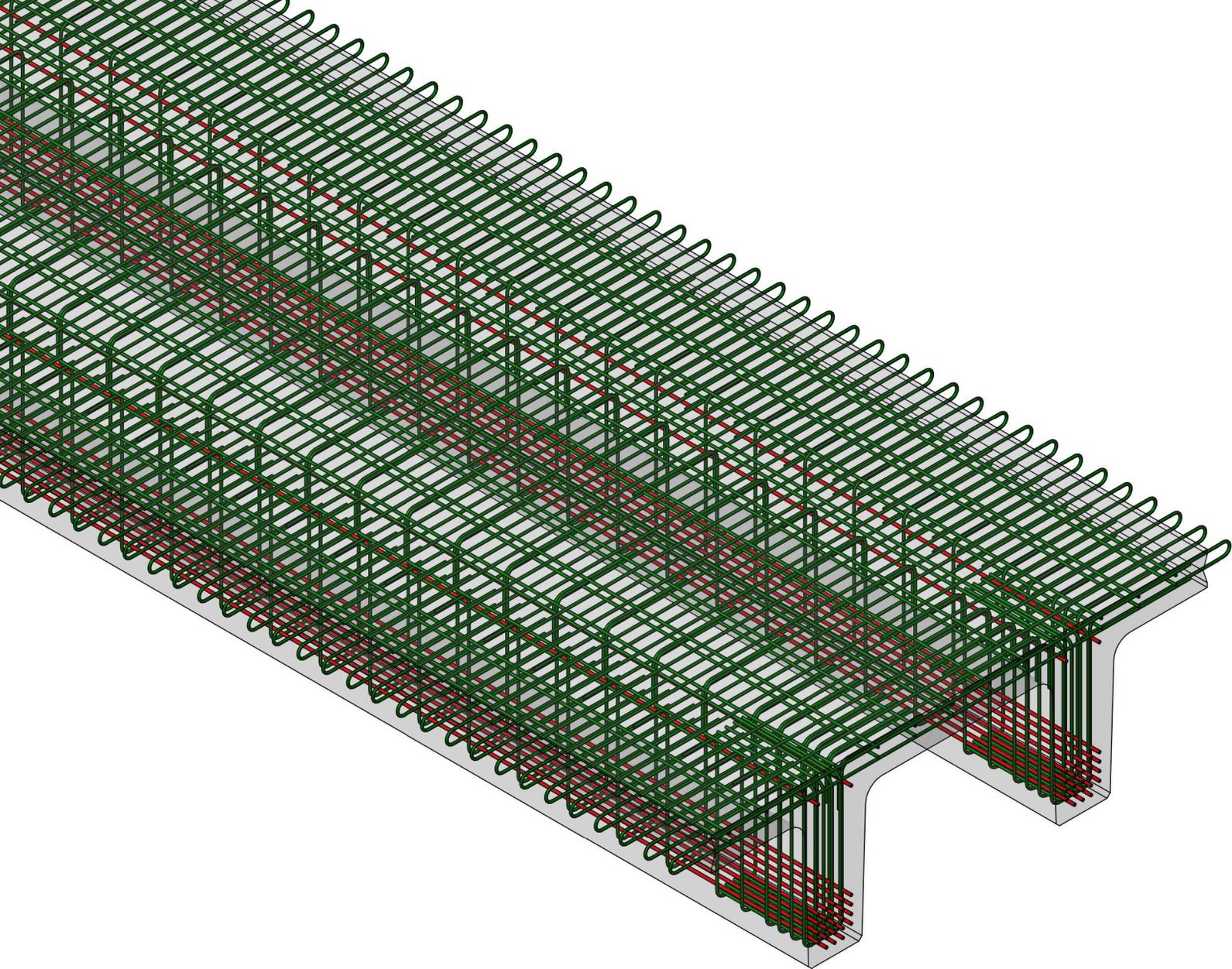
**No stirrups used

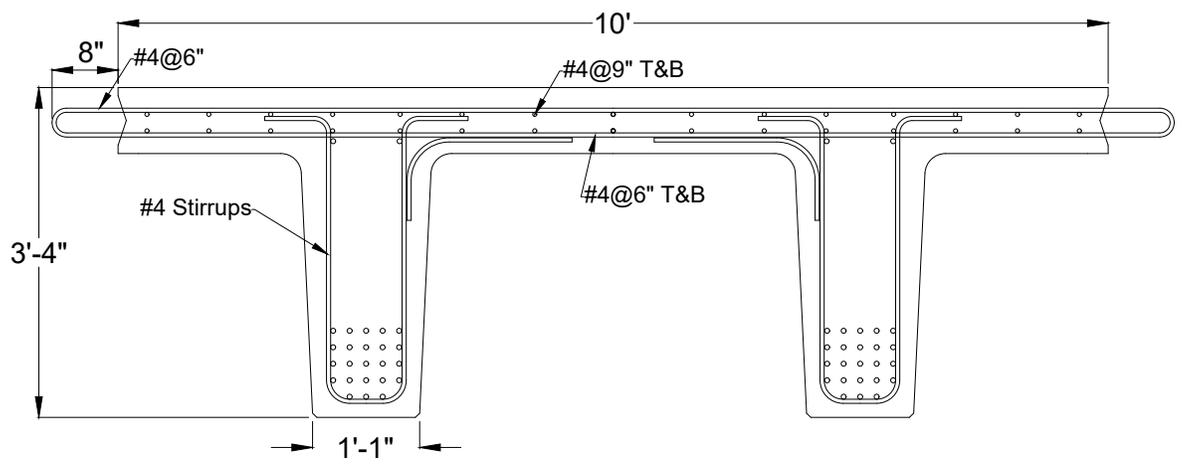


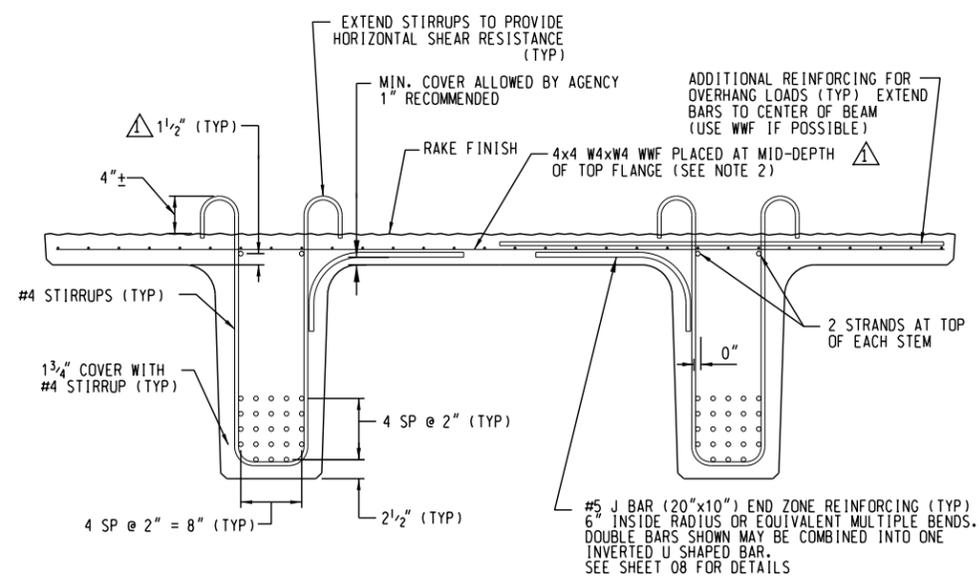
Florida DT Section



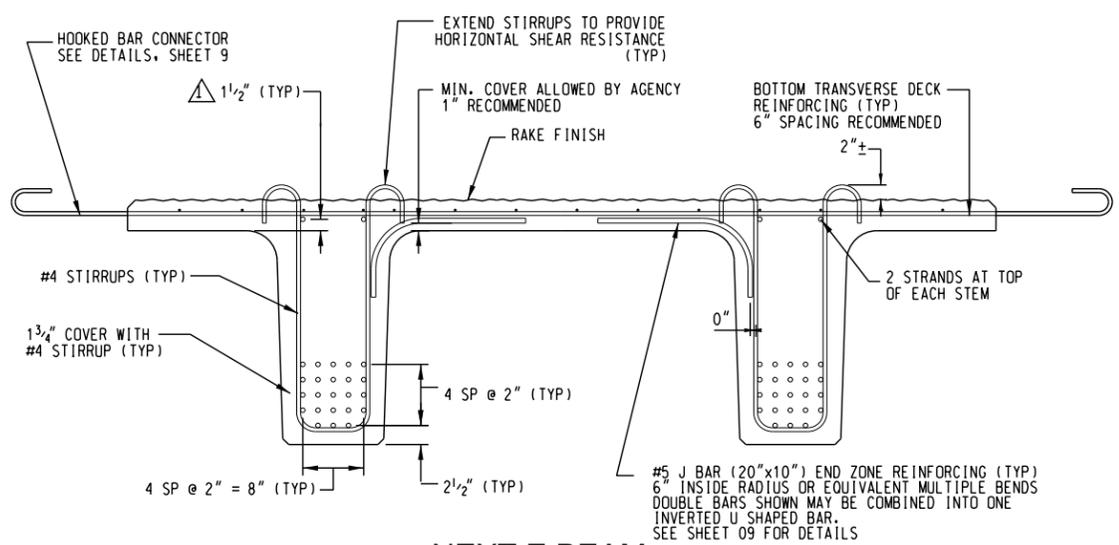
Nebraska DT Section



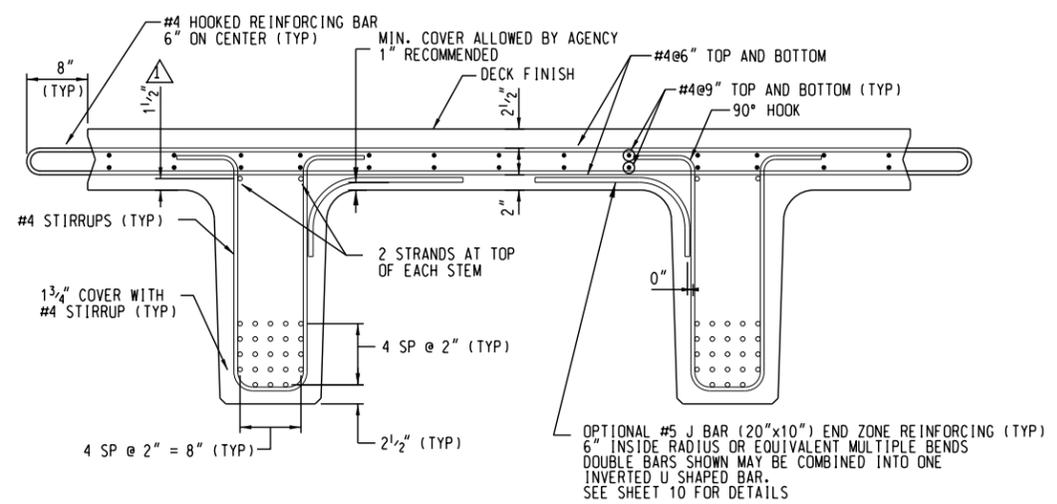




NEXT F BEAM



NEXT E BEAM



NEXT D BEAM

GENERAL NOTES

NEXT F NOTES:

1. THE TOP FLANGE IS INTENDED TO ACT AS A DECK FORM ONLY. A REINFORCED CAST-IN-PLACE CONCRETE DECK SHOULD BE DESIGNED TO SPAN BETWEEN STEMS. THE WELDED WIRE FABRIC SHOWN IS PRELIMINARY AND SHOULD BE USED TO SUPPORT THE WET DECK CONCRETE ONLY. THE REINFORCING SHOWN IS BASED ON AN 8" THICK CAST-IN-PLACE DECK. DESIGNERS SHOULD VERIFY THIS REINFORCING FOR EACH DESIGN BASED ON THE ACTUAL DECK THICKNESS.
2. THE WELDED WIRE FABRIC MAY BE CUT TO FACILITATE THE INSTALLATION AROUND THE STIRRUPS, PROVIDED THAT EQUIVALENT BARS ARE ADDED ADJACENT TO THE CUT FABRIC. EQUIVALENT MILD REINFORCEMENT MAY ALSO BE USED IN PLACE OF THE WWF, PROVIDED THAT THE SPACING OF THE BARS DOES NOT EXCEED 12 INCHES.
3. THE ADDITIONAL TOP STEEL IN THE BEAM OVERHANGS SHOULD ONLY BE USED WHERE THE WELDED WIRE FABRIC CANNOT SUPPORT THE OVERHANG LOADS.
4. SHEAR REINFORCING SHOULD BE KEPT TO #4 BARS IN ORDER TO MAXIMIZE THE COVER ON THE SIDE OF THE STEM.
5. SEE SHEET 14 FOR UTILITIES SUPPORT DETAILS.

NEXT E NOTES:

1. THE TOP FLANGE IS INTENDED TO ACT AS THE BOTTOM PORTION OF THE DECK. A REINFORCED CAST-IN-PLACE CONCRETE TOPPING SHOULD BE DESIGNED TO COMPLETE THE STRUCTURAL DECK. THE REINFORCING SHOWN IS BASED ON A PRELIMINARY DESIGN OF A NEXT BEAM WITH AN 8 1/2 INCH THICK DECK. DESIGNERS SHOULD VERIFY THIS REINFORCING FOR EACH DESIGN BASED ON THE ACTUAL DECK THICKNESS.
2. THE DESIGN OF THE DECK REINFORCING SHOULD BE BASED ON A CONVENTIONAL CAST-IN-PLACE CONCRETE DECK ASSUMING THAT THE STEMS ARE INDIVIDUAL BEAMS.
3. SHEAR REINFORCING SHOULD BE KEPT TO #4 BARS IN ORDER TO MAXIMIZE THE COVER ON THE SIDE OF THE STEM.
4. SEE SHEET 14 FOR UTILITIES SUPPORT DETAILS.

NEXT D NOTES:

1. THE TOP FLANGE IS INTENDED TO ACT AS A STRUCTURAL DECK.
2. SHEAR REINFORCING SHOULD BE KEPT TO #4 BARS IN ORDER TO MAXIMIZE THE COVER ON THE SIDE OF THE STEM.
3. SEE SHEET 14 FOR UTILITY SUPPORT DETAILS.
4. MINOR ADJUSTMENT OF THE SPACING OF THE TOP LONGITUDINAL REINFORCEMENT IS ALLOWABLE TO FACILITATE THE INSTALLATION OF THE STIRRUPS.

DESIGN NOTES

1. THE REINFORCING SHOWN IS PRELIMINARY AND NOT GUARANTEED. DESIGNERS MUST VERIFY THE REINFORCING FOR EACH DESIGN BASED ON THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS OR STATE STANDARDS.
2. THE STRIP METHOD SPECIFIED IN AASHTO LRFD ARTICLE 4.6.2.1 IS RECOMMENDED FOR THE DESIGN OF THE REINFORCING IN THE NEXT E AND D BEAMS.
3. THE REINFORCING BARS EXTENSIONS SHOWN IN THE NEXT E AND D BEAMS SHOULD BE DESIGNED TO RESIST THE POSITIVE BENDING MOMENT AT THE CENTER OF THE JOINT AS DETERMINED BY THE AASHTO STRIP METHOD OF DECK DESIGN. THE NESTED HOOKED BARS CAN BE CONSIDERED A LAP SPLICE WITH THE BARS FULLY DEVELOPED. THE CRACK CONTROL PROVISIONS OF AASHTO ARTICLE 5.7.3.4. SHOULD ALSO BE CHECKED FOR THESE BARS.
4. ADDITIONAL REINFORCEMENT MAY BE REQUIRED FOR DECK OVERHANGS AND BARRIERS.
5. THE DESIGNER SHALL DETAIL ADDITIONAL TOP LONGITUDINAL REINFORCING IN THE TOP FLANGE AT BEAM ENDS IF THE TOP FIBER STRESSES EXCEED 200 PSI. THESE BARS ARE USED TO CONTROL TRANSVERSE CRACKING IN THE TOP FLANGE AT RELEASE. THIS REINFORCING SHALL BE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THIS REINFORCING IS FOR CRACK WIDTH AND LENGTH CONTROL, NOT PREVENTION. IT IS RECOMMENDED THAT IF FULLY TENSIONED TOP STRAND ARE INCLUDED IN THE DESIGN, THEY SHOULD NOT BE USED TO MEET THESE AASHTO PROVISIONS, SINCE THEY ARE ALREADY BEING USED TO CONTROL STRESS IN THE BEAM.

STRAND LAYOUT NOTES

1. DENOTES STRAIGHT STRAND. DRAPED STRANDS ARE NOT PERMITTED.
2. DEBONDING OF STRAND IS ALLOWED. NO MORE THAN 25% OF THE TOTAL NUMBER OF STRANDS SHALL BE DEBONDED. THE SPACING BETWEEN DEBONDED STRANDS SHALL BE AT LEAST 2.5 INCHES IN ANY DIRECTION. THE RESTRICTIONS OUTLINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SHALL ALSO BE FOLLOWED.
3. IT IS RECOMMENDED THAT APPROXIMATELY 50% OF ALL STRAND BE DEBONDED FOR THE FIRST 6" FROM THE END OF THE BEAM IN ORDER TO CONTROL END CRACKING. SPACING RESTRICTIONS OUTLINED IN NOTE 2 DO NOT APPLY TO THIS 6" AREA, BUT DO APPLY BEYOND THIS 6" AREA.
4. STRANDS SHALL BE PLACED WITHIN THE 2"x2" GRID. THE PATTERN MAY BE RAISED IN 2" INCREMENTS FOR DESIGNS THAT REQUIRE PRESTRESS AT A HIGHER ELEVATION. THE NUMBER AND LOCATION OF STRANDS SHALL BE AS REQUIRED BY DESIGN.
5. THE PATTERN SHOWN DEPICTS THE MAXIMUM NUMBER OF STRANDS ALLOWED (50 STRAND INCLUDING THE TOP STRAND). THIS IS BASED ON THE CAPACITY OF TYPICAL CASTING BEDS.
6. THE TWO BOTTOM CORNER STRAND IN EACH STEM ARE OMITTED TO PROVIDE ROOM FOR THE SHEAR REINFORCEMENT BAR BENDS.
7. ALL PRESTRESSING STRAND SHALL BE 0.6" DIAMETER, UNCOATED SEVEN WIRE, LOW RELAXATION STRANDS CONFORMING TO AASHTO M203. THE ULTIMATE STRENGTH OF THE STRANDS SHALL BE 270 KSI.
8. ADDITIONAL STRAND TENSIONED TO A NOMINAL VALUE MAY BE ADDED TO THE TOP FLANGE TO SUPPORT THE TOP FLANGE REINFORCING.



DISCLAIMER: The details shown are guidelines and should not be considered standards. The information has been obtained from sources believed to be reliable. PCI Northeast or its members shall not be responsible for any errors, omissions or damages arising out of this information. PCI Northeast has published this work with the understanding that PCI Northeast is supplying information only. PCI Northeast is not rendering engineering or other professional services through this guideline. If such services are required, please seek an appropriate professional.

REVISIONS		DESCRIPTION
NO.	DATE	LOCATION OF TOP STRAND & REINF. OF NEXT F
1	01/2016	

ISSUE DATE: 03 / 10 / 15
SHEET: NEXT 05

