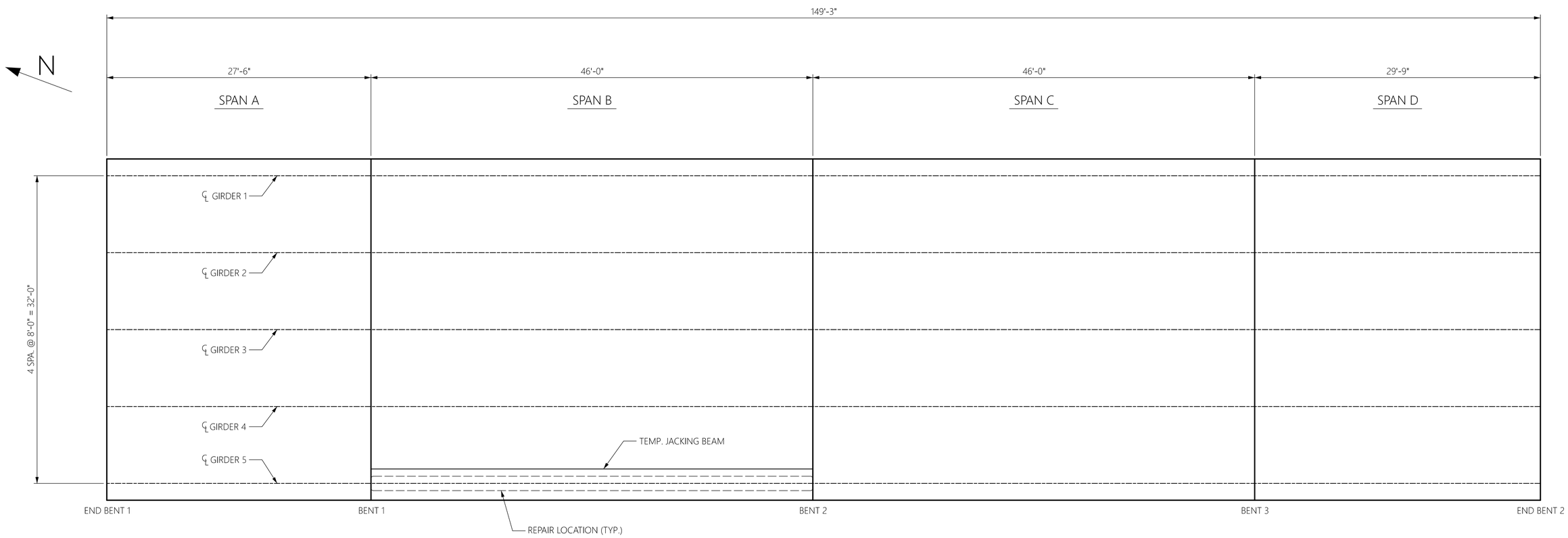

PLAN

JACKING SPANS TO FACILITATE BEAM REPLACEMENT.
JACKING WILL BE NECESSARY AT THE FOLLOWING LOCATIONS:

LOCATION	GIRDER
BENT 1 SPAN B	TEMP. BEAM ADJACENT (MAX. SPACING 1'-6") TO BEAM 5
BENT 2 SPAN B	TEMP. BEAM ADJACENT (MAX. SPACING 1'-6") TO BEAM 5

- INDICATES BEAM END REPLACEMENT LOCATION

NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS.
2. THE TEMP. BEAM SHALL BE LIFTED ENOUGH THAT THE EXISTING BEAM 5 CLEARS THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE TEMP. BEAM. TEMP. BEAM TO BE JACKED SHALL BE JACKED A MAXIMUM OF 1/8".
3. CONTRACTOR SHALL UTILIZE A JACK WITH A MECHANICAL LOCK AND TILT SADDLE AND HAS A MINIMUM CPACITY OF 150% OF ANTICIPATED LOADS SHOWN ON PLANS.
4. JACKS SHALL BE CALIBRATED AND EQUIPPED WITH GAUGES TO MONITOR ACTUAL LOADING DURING JACKING OPERATIONS. IF ACTUAL JACKING LOAD REACHES THE JACKING DESIGN LOAD, STOP JACKING AND NOTIFY ENGINEER.
5. STEEL PLATE SHALL BE ASTM A36.
6. TIMBER CRIBBING SHALL BE SOUTHERN PINE NO.2 OR BETTER AND SHALL BE LAYERED FOR STABILITY WITH EACH LAYER PERPENDICULAR TO THE NEXT.
7. INSTALLATION AND USE OF JACKS SHALL BE IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
8. BRIDGE WILL BE CLOSED TO TRAFFIC DURING JACKING OPERATIONS.
9. IF DURING THE JACKING PROCESS OR WHILE THE TEMP. BEAM IS BEING SUPPORTED THE BEAM SHIFTS FROM ITS ORIGINAL POSITION. ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
10. PRIOR TO JACKING, THE CONTRACTOR SHALL ENSURE THERE ARE NO OBSTACLES PREVENTING BEAM FROM BEING LIFTED.
11. ALL ADJACENT BEARINGS OF BEAMS NOT BEING JACKED SHALL BE LOOSENED TO DECREASE THE RESISTANCE OF THE DECK SLAB DURING JACKING. ALL BEARINGS LOOSENED SHALL BE TIGHTENED BACK AFTER REPAIR OPERATIONS ARE COMPLETED AND THE JACKS AND BLOCKING HAVE BEEN REMOVED.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TRAFFIC CONTROL OR PROTECTION OF WORK ZONE IF REQUIRED.

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT

✓ **ACCEPTED**

____ **ACCEPTED AS NOTED**

____ **RETURNED FOR CORRECTIONS**

✓ **SEE EMAIL**

BY: BIB

DATE: February 4, 2021

NORTH CAROLINA PROFESSIONAL SEAL 032145 ENGINEER TERRY S. ALSEN
1/14/21

Areté ENGINEERS
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Blowing Rock, NC 28605
FIRM LICENSE No. P-1357

BRIDGE JACKING

BRIDGE #100242: NC 191 OVER I 240/26

BUNCOMBE CO., NC
NCDOT PROJECT NO: DM00300
ARETÉ JOB #2959

REVISIONS						S1 OF 3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			2			

DRAWN BY :	DAT	DATE :	1.14.2021
CHECKED BY :	AGF	DATE :	1.14.2021
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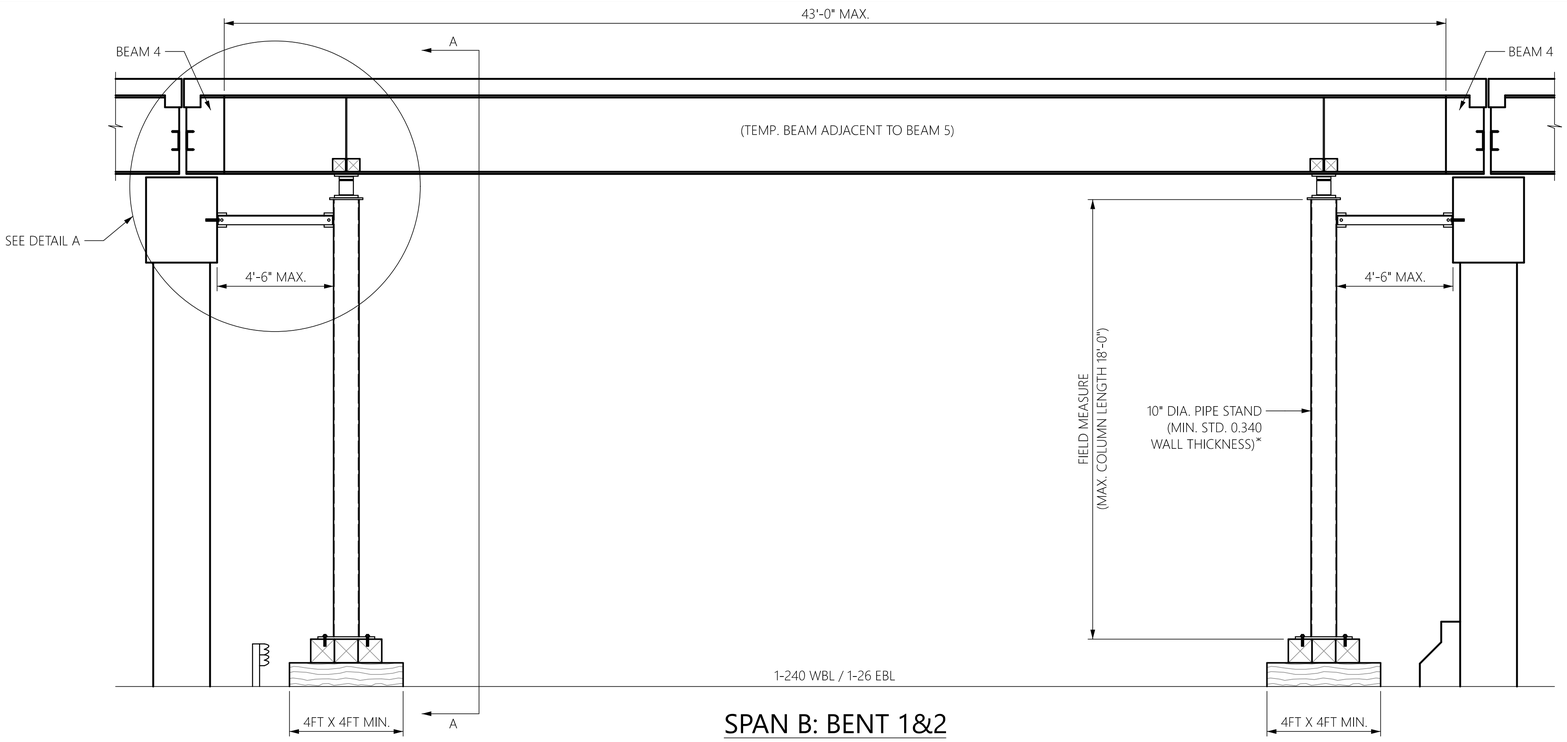
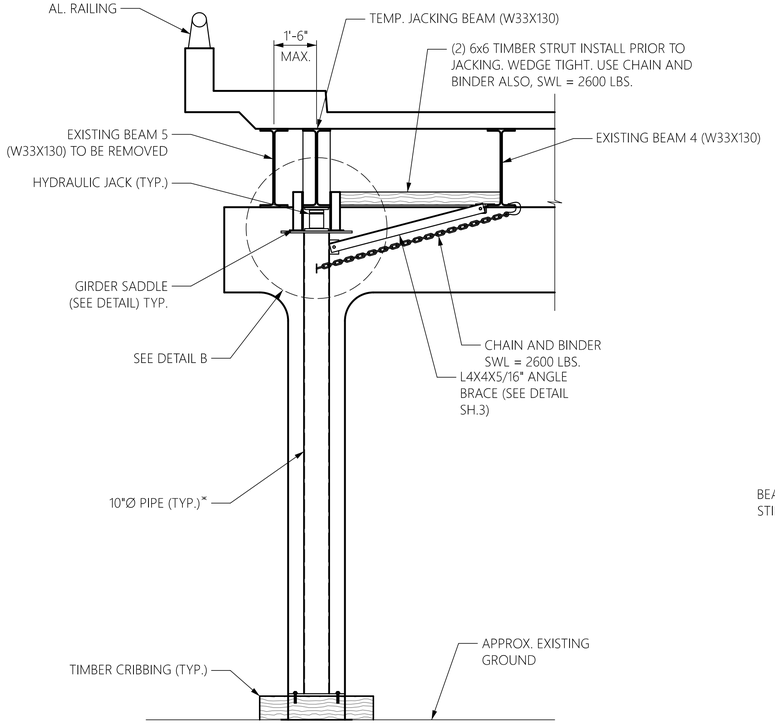
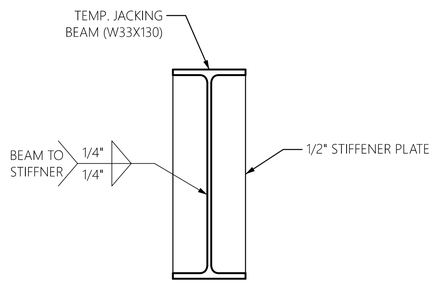


SPAN B: BENT 1&2



SECTION A-A ELEVATION

* CONTRACTOR SHALL USE 10"Ø S PIPE
(MIN. STD. 0.340 WALL THICKNESS)
FOR MAX. PIPE LENGTH OF 18'-0".



STIFFNER DETAIL

SEQUENCE OF OPERATIONS:

1. PREPARE BEARING SURFACE FOR PIPE STAND SUPPORT FIRM AND LEVEL FOR A MAXIMUM APPLIED BEARING LOAD INDICATED IN TABLE.
2. INSTALL TIMBER CRIBBING, PIPE STAND AND SADDLE. SECURE PIPE STAND TO CAP WITH PIPE BRACE AND TO ADJACENT GIRDERS WITH BRACING AS SHOWN. PLACE TIMBER STRUTS AND WEDGE TIGHT. INSTALL JACK BEARING PLATES AND JACK. ENSURE PIPE STAND IS PLUMB AND THAT JACK AND PIPE STAND ARE CENTERED UNDER TEMP. BEAM CENTERLINE.
3. PRESSURIZE JACKS TO LIFT BEAM AT BOTH ENDS, NO MORE THAN 1/8".
4. INSTALL MECHANICAL LOCK ON JACKS.
5. MONITOR RAISED HEIGHT FOR ONE HOUR. IF SETTLEMENT, OCCURS REPEAT STEP 3 UNTIL THERE NO SETTLEMENT.
6. PERFORM REPAIRS AND CONTINUE TO MONITOR SETTLEMENT DAILY. NOTIFY ENGINEER IF THERE IS ANY SETTLEMENT.
7. REMOVE MECHANICAL LOCKS ON JACKS AND LOWER TEMP. BEAM.
8. REMOVE JACKS AND TIMBER BLOCKING.

JACK REACTION AT EACH END LOADS

SPAN	BEAM	DEAD LOAD (K)	LIVE LOAD+IM (K)	TOTAL LOAD (K)	MIN. JACK CAPACITY (KIPS)	ANTICIPATED BEARING PRESSURE AT TIMBER CRIBBING KSF
B	TEMP.	48	LL REMOVED	48	72	3.00

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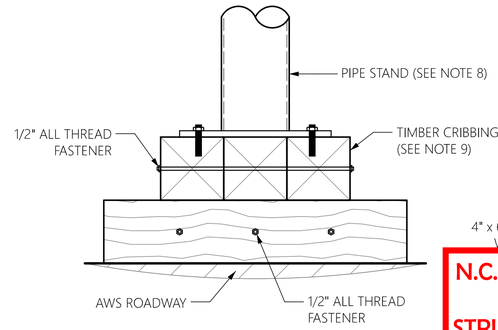
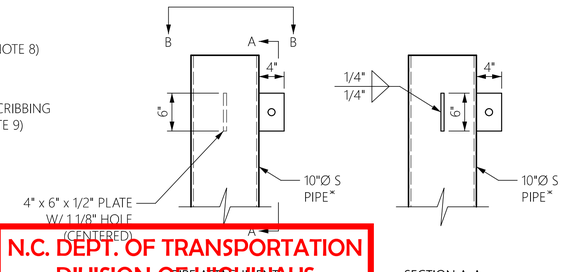
NOTES:

1. PIPE STAND SHALL BE ASTM A53 GRADE B (35 KSI).
2. STEEL PLATE SHALL BE ASTM A325.
3. STRUCTURAL BOLTS SHALL BE ASTM A325.
4. LAG BOLTS SHALL BE ASTM A307.
5. WEDGE ANCHORS SHALL BE HILTI KWIK BOLT 3 EXPANSION ANCHORS WITH A SWL = 4000 LBS TENSION OR EQUIVALENT. CONTRACTOR SHALL TAKE CAUTION TO AVOID DRILLING THROUGH EXISTING REBAR IN CAP. UPON COMPELTION, THE BOLTS SHALL BE REMOVED AND THE HOLE SHALL BE PATCHED WITH A NCDOT APPROVED CEMENTIOUS GROUT.
6. WELDING SHALLBE PERFORMED WITH E70XX ELECTRODES AND IN ACCORDANCE WITH AWS SPECIFICATIONS.
7. CONTRACTOR SHALL MONITOR SETTLEMENT OF PIPE STAND AND PLUMBNESS OF PIPE STAND AT LEAST ONCE A DAY AFTER BEAM HAS BEEN LIFTED. IF THERE IS ANY SETTLEMENT OR SHIFT OF SUPPOR OUT OF PLUMB, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND MAKE NECESSARY ADJUSTMENTS TO STABILIZE.
8. REPAIRS TO GIRDERS SHALL BE MADE IN AN EFFICIENT MANNER BY CONTRACTOR TO MINIMIZE THE TIME THE BEAM IS SUPPORTED ON THE JACK/PIPE STAND.
9. ADJUST LENGTH OF PIPE STAND AS NECESSARY TO MINIMIZE THE HEIGHT OF TIMBER CRIBBING. TIMBER CRIBBING SHALL BE NO MORE THAN 3'-0" IN HEIGHT AND SHALL BE SUCH THAT EACH LAYER RUNS PERPENDICULAR TO THE NEXT. CRIBBING SHALL BE A MINIMUM OF 4'-0"x4'-0" IN PLAN VIEW AND SHALL BE BUILT LEVEL. EACH LAYER OF CRIBBING SHALL BE CONNECTED WITH ALL THREAD FASTENERS.



FOUNDATION DETAIL



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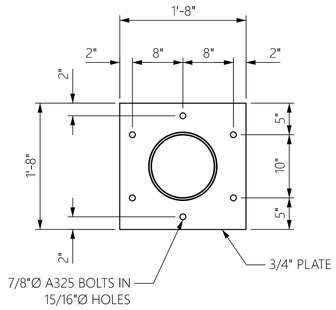
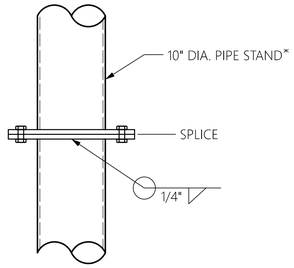
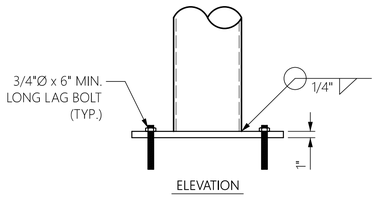
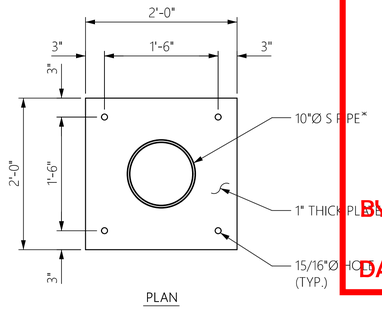


PIPE SPLICE DETAIL

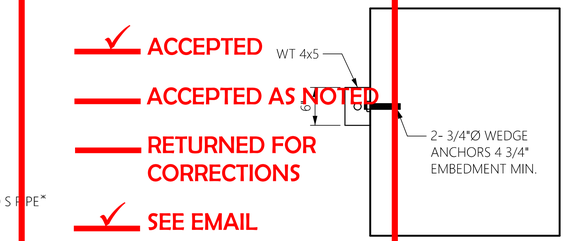


PIPE STNAD MAY BE SPLICED TOGETHER TO ACHIEVE REQUIRED HEIGHT.
(NO MORE THAN 2 SPLICES ALLOWED)

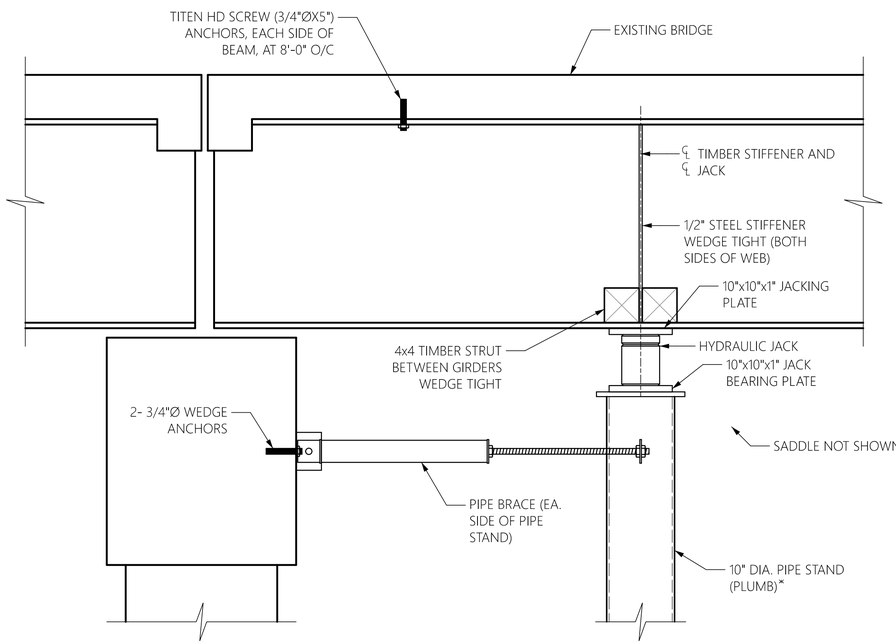




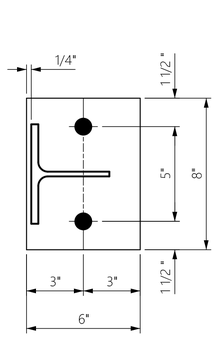
BASE PLATE DETAILS

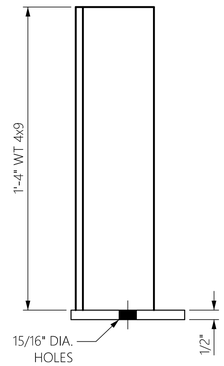


BRACING DETAILS

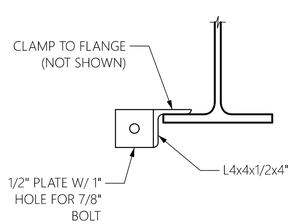


DETAIL A





GIRDER BRACE DETAILS



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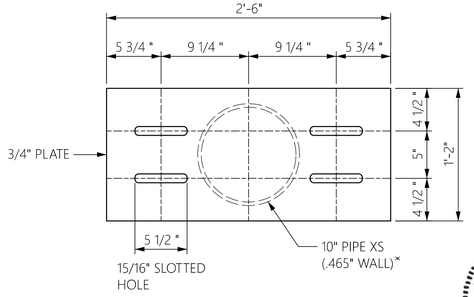
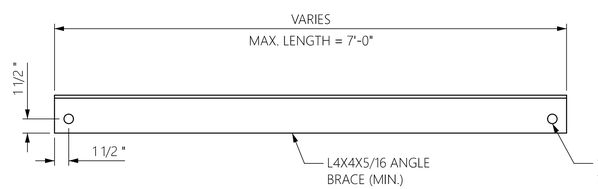
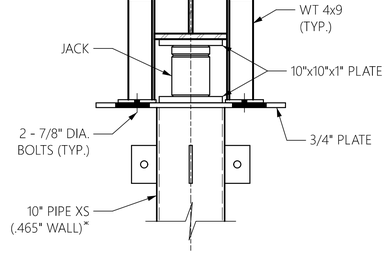


GIRDER SADDLE DETAILS

FULLY WELD WITH 1/4" FILLET WELD



ADJUSTABLE ANGLE BRACE



DETAIL B

USE WT 4x9 TO POSITION PIPE STAND
INSTALL BOTH SIDES PRIOR TO JACKING
TIGHT AGAINST GIRDER FLOANGE OR USE
TIMBER BLOCKING AS NECESSARY TO SECURE.
TORQUE BOLTS TIGHT QUARTER TURN PAST
FINGER TIGHT. USE STD. WASHERS BOTH SIDES.

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