DYWIDAG-SYSTEMS INTERNATIONAL

REV.3

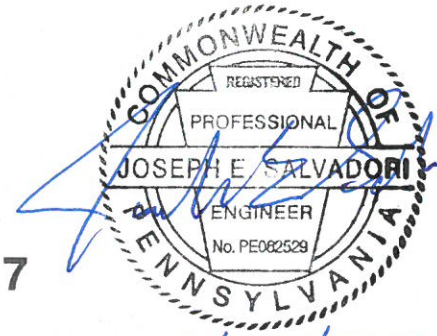
SUBMITTAL

FOR

COPLAY-NORTHAMPTON BRIDGE

POST-TENSIONING ASSEMBLY DRAWING, STRESSING SEQUENCE & ELONGATION SCHEDULE AND STRESSING CALCULATIONS (FOR NON-EIT AND EIT TENDONS)

SUBMITTED FOR APPROVAL



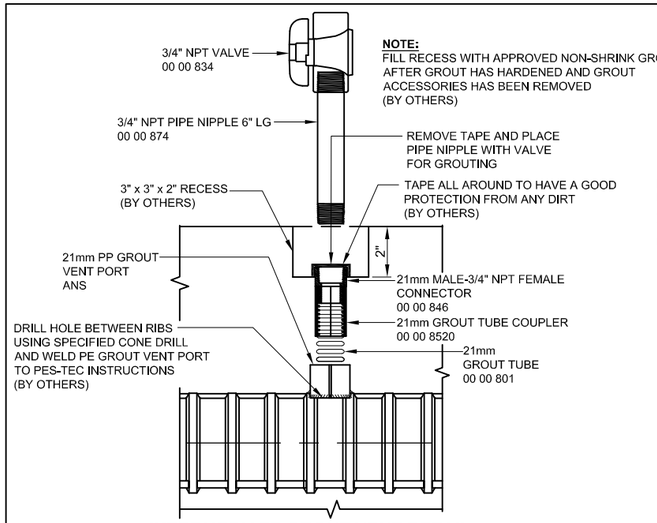
December 21, 2017

01/02/2018

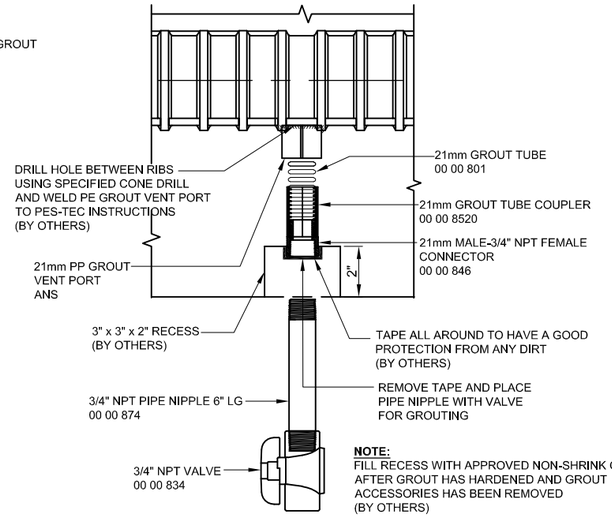
NOTES FOR REVIEWER/APPROVAL BODY:

1. Please note that DSI's supplied duct and intermediate grout vent ports are made of polypropylene material (Note from Rev.1).
   However, the trumpet, duct coupler and grout tube, as shown in the material table on sheet PT-1, are made of polyethylene. Industry standards and specifications, such as the PTI/ASBI M50, section 4.3.2 as well as AASHTO LRFD section 10.8.5, allow the use of either polyethylene or polypropylene for inlets, outlets and vents (Note from Rev.1).

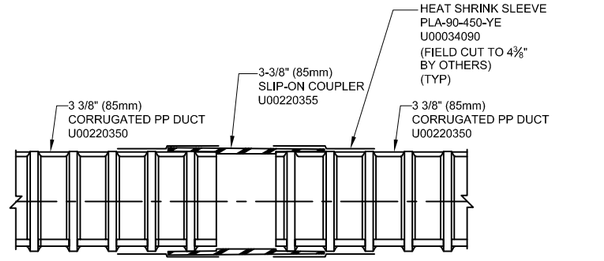
2. Rev.2 combines both the non-EIT tendons and EIT tendons in one submittal.
3. This Rev.3 addresses the removal of PE Spacer from EIT Tendon, change of closure pour width from 2' to 1', and minor other changes.



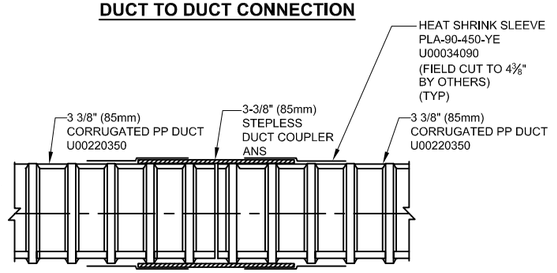
INTERMEDIATE GROUT VENT DETAIL
(AS NEEDED)



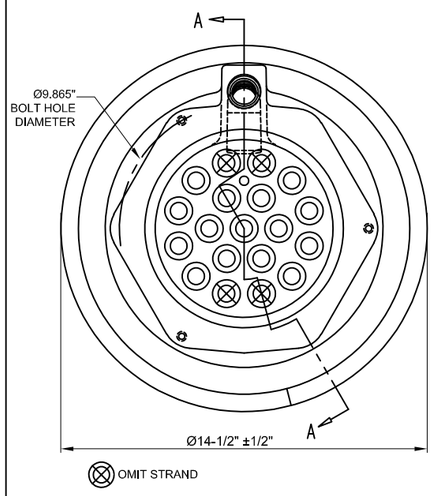
DRAIN DETAIL AT LOW POINT
(AS NEEDED)



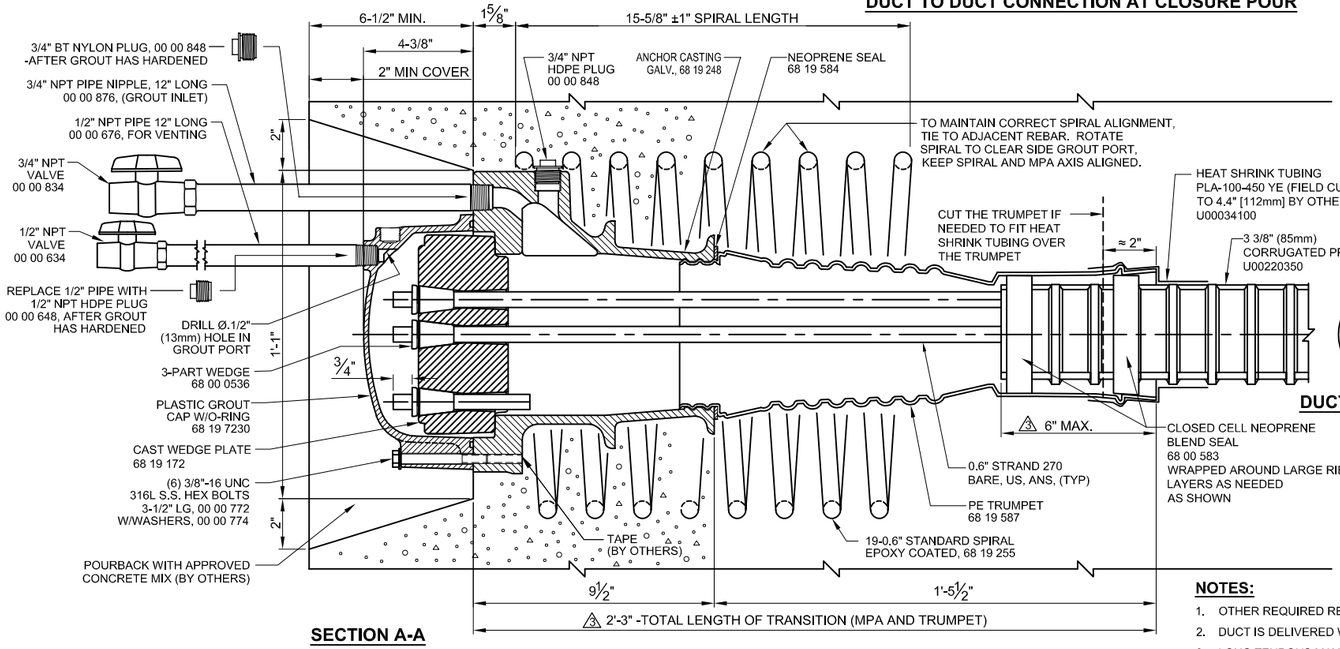
DUCT TO DUCT CONNECTION



DUCT TO DUCT CONNECTION AT CLOSURE POUR



END VIEW
(WEDGE PLATE, MPA & SPIRAL ONLY)



SECTION A-A

DUCT END VIEW

⚠ WARNING: READ AND COMPLY WITH ALL APPLICABLE SAFETY AND OPERATING INSTRUCTIONS AND WARNINGS FOR MULTI-STRAND STRESSING BEFORE STARTING ANY WORK OR OPERATION.

⚠ CAUTION: WHEN PRESSURIZING GROUT CAPS, DO NOT STAND BEHIND CAPS!

INSTALLATION PROCEDURE

1. PREASSEMBLE THE MULTI-PLANE ANCHOR, SPIRAL AND PE TRUMPET. GREASE THE BOLTS TO FACILITATE REMOVAL LATER.
2. BOLT THE MULTI-PLANE ANCHOR (MPA) WITH PE TRUMPET TO THE POCKET FORMER (BY OTHERS) USING SOME OF THE SIX THREADED HOLES IN MPA. THE MPA SHOULD BE ORIENTED SUCH THE GROUT HOLE POINTS UP. THE SPIRAL SHOULD BE ATTACHED TO ADJACENT REBARS AND ROTATED SUCH THAT IT WON'T INTERFERE WITH 3/4" NPT PIPE ATTACHMENT (IF USING TOP GROUT HOLE IN MPA). ALIGN AXIS OF SPIRAL WITH ANCHOR. SEAL UNUSED PORT IN MPA AS SHOWN.
3. INSTALL THE DUCT SYSTEM AND SPIRAL AS SHOWN. THREAD TRUMPET INTO MPA CASTING USING NEOPRENE SEAL BETWEEN AS SHOWN. INSERT DUCT WITH SPACER INTO TRUMPET AND HEAT SHRINK. SECURE PLASTIC DUCT PROFILE EVERY TWO FEET.
4. ATTACH GROUT VENT/DRAIN PORT TO THE DUCT AS SHOWN AND WHERE NEEDED.

CONCRETING CAN NOW PROCEED

5. AFTER COMPLETION OF CONCRETE PLACEMENT, PROVE THAT THE DUCTS ARE CLEAR OF ANY OBSTRUCTIONS OR DAMAGE. PASS A TORPEDO THROUGH THE DUCT TO DEMONSTRATE.
6. INSTALL STRANDS BY PUSHING OR PULLING INDIVIDUALLY OR AS A BUNDLE INTO DUCTS. ALLOW SUFFICIENT TAIL LENGTH FOR STRESSING.
7. CHECK THE WEDGE PLATE FOR RUST, DIRT AND GRIT. CLEAN WEDGE HOLES WITH WIRE BRUSH IF NECESSARY. LIGHTLY GREASE OR OIL WEDGE HOLES.
8. CHECK WEDGES FOR RUST, DIRT AND GRIT. DISCARD RUSTY WEDGES. USE ONLY CLEAN WEDGES.
9. INSTALL WEDGE PLATE, SLIP THE WEDGES OVER THE STRANDS AND LOOSELY SEAT IN WEDGE HOLES USING A 3/4" Ø ID PIPE.
10. BLOCK THE UNUSED HOLES WITH A PIECE OF STRAND.

STRESSING CAN PROCEED WHEN CONCRETE STRENGTH IN CLOSURE POURS HAS REACHED ITS SPECIFIED STRENGTH PER CONTRACT DOCUMENTS

⚠3 11. RECOMMENDED PARAMETERS IN THE CALCULATION OF TYPICAL TENDON FORCE ARE A CURVATURE FRICTION COEFFICIENT OF 0.23, A WOBBLE COEFFICIENT OF 0.0002/FT AND AN ANCHOR SET OF 3/8".

12. FOLLOW THE STRESSING SEQUENCE PER THE CONTRACT PLANS.
13. FOLLOW THE OPERATING INSTRUCTIONS PROVIDED WITH THE EQUIPMENT FOR STRESSING THE TENDONS AND RELEASING THE JACK
14. AFTER STRESSING OPERATION IS COMPLETED AND ENGINEER'S APPROVAL IS OBTAINED, CUT THE STRAND TAILS TO 3/4" AS SHOWN. USE AN ABRASIVE SAW. DO NOT USE A TORCH.
15. INSTALL GROUT CAP WITH O-RING USING SIX BOLTS (DRILL 1/2" HOLE IN GROUT PORT BEING USED. RECOMMEND USING HOLE SAW BIT OR SPADE BIT BE CAREFULL TO PREVENT DAMAGE TO THREADS OR CAP).
16. THREAD 3/4" GROUT INLET PIPE ASSEMBLY INTO THE FRONT PORT OF THE MPA.
17. THREAD 1/2" NPT PIPE INTO FRONT OF THE THREADED PORT PROVIDED IN THE GROUT CAP. THIS HOLE IS USED AS A GROUT VENT ONLY.

GROUTING CAN NOW PROCEED

18. AFTER GROUT HAS HARDENED, REMOVE GROUT PORT PIPES AND INSTALL NPT PLUGS. FILL BLOCK-OUT WITH APPROVED CONCRETE MIX.
19. REMOVE NPT PIPE NIPPLE FROM VENT/DRAIN RECESS AND FILL WITH APPROVED NON-SHRINK GROUT.

NOTES:

1. OTHER REQUIRED REINFORCING BARS NOT SHOWN.
2. DUCT IS DELIVERED WITH PROTECTIVE CAPS IN STRAIGHT SECTIONS AND IS NOT INTENDED TO BE COILED.
3. LONG TENDONS MAY REQUIRE TEMPERATURE EXPANSION JOINTS DURING PLACEMENT TO COMPENSATE FOR 1/2% CONTRACTION DUE TO CHANGE IN TEMPERATURE FROM 90° TO 40°.
4. THIS SHEET IS APPLICABLE FOR NON-ELECTRICALLY ISOLATED TENDONS. FOR ELECTRICALLY ISOLATED TENDONS (EIT), SEE PT-3 AND PT-4.

MATERIAL LIST 19-0.6

PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
ANS	0.6" STRAND	0.6 STRAND 270 BARE US
68 19 248	19-0.6" MULTI-PLANE ANCHOR CASTING, GALV.	DUCTILE IRON ASTM A536, GR 65-45-12
68 19 255	19-0.6" STANDARD SPIRAL, EPOXY COATED	ASTM A615, GR. 60, #5, 1-7/8" PITCH 14-1/2" O.D., ~8 TURNS
68 19 587	19-0.6" PE TRUMPET	POLYETHYLENE
68 19 172	19-0.6" CAST WEDGE PLATE	DUCTILE IRON, 80-55-06
68 00 0536	3-PART WEDGE FOR 0.6" STRAND	AISI-C12L14 HEAT TREATED
68 19 7230	19-0.6" PLASTIC GROUT CAP W/O-RING	NYLON 6, 20% GLASS FIBER FILLED
U00220350	3 3/8" (85mm) CORRUGATED PP DUCT	"PPEX3"
U00220355	3 3/8" (85mm) SLIP ON COUPLER	HDPE
68 19 584	NEOPRENE SEAL	CLOSED CELL NEOPRENE BLEND
U00034090	HEAT SHRINK SLEEVE PLA-90-450 YE	ACCORDING TO PROJECT SPECS.
U00034100	HEAT SHRINK SLEEVE PLA-100-450 YE	ACCORDING TO PROJECT SPECS.
ANS	3 3/8" (85mm) STEPLESS COUPLER (FOR CLOSURE POUR)	POLYETHYLENE
ANS	21mm PP GROUT VENT PORT	POLYPROPYLENE

MATERIAL LIST

PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
00 00 846	21mm MALE-3/4" NPT FEMALE CONNECTOR	20% GLASS-FILLED NYLON
00 00 876	3/4" NPT PIPE NIPPLE, 12" LONG	SCH 40, BLACK WELDED STEEL
00 00 874	3/4" NPT PIPE NIPPLE, 6" LONG	SCH 40, BLACK WELDED STEEL
00 00 676	1/2" NPT PIPE NIPPLE, 12" LONG	SCH 40, BLACK WELDED STEEL
00 00 834	3/4" NPT VALVE	PVC
00 00 634	1/2" NPT VALVE	PVC
00 00 848	3/4" NPT PLUG	HDPE
00 00 648	1/2" NPT PLUG	HDPE
00 00 772	(6) 3/8"-16 UNC HEX BOLTS 3-1/2" LONG	316L STAINLESS STEEL
00 00 774	NARROW WASHERS FOR 3/8"-UNC BOLTS	316L STAINLESS STEEL
00 00 8520	GROUT TUBE COUPLER	HDPE, WHITE (OIT)
68 00 583	1/4" x 1" NEOPRENE STRIP	CLOSED CELL NEOPRENE BLEND
00 00 801	21mm GROUT TUBE	HDPE
ANS	3 3/8" (85mm) PROTECTIVE CAPS FOR DUCTS (NOT SHOWN)	POLYETHYLENE

OWNER: COMMONWEALTH OF PENNSYLVANIA DOT

CONTRACTOR: TRUMBULL CORPORATION

PROJECT: **COPLAY-NORTHAMPTON BRIDGE**

19-0.6" MA ANCHOR SYSTEM WITH 15 STRANDS
ASSEMBLY DRAWINGS

DATE: 06/22/17 | DWG: I. TIRA | CHK: S.N | APP: S.N.

DYWIDAG SYSTEMS INTERNATIONAL, USA INC. DOES NOT ASSUME ANY LIABILITY FOR THE DESIGN OF THIS STRUCTURE. THIS SHOP DRAWING IS INTENDED TO PROVIDE POST TENSIONING DETAILS ONLY.

	REV.	DATE	ISSUE DESCRIPTION	NAME	CHKD.
WEIGHT	0	06/23/17	FOR APPROVAL	I.T.	S.N.
	1	08/22/17	FOR FINAL APPROVAL	I.T.	S.N.
SCALE 1:6	2	10/13/17	FOR FINAL APPROVAL	S.D.	S.N.
	⚠3	12/21/17	FOR FINAL APPROVAL	I.T.	S.N.

JOB NUMBER **J116488**

DRAWING NUMBER: **PT-1**

DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC.
POST TENSIONING / REINFORCING UNIT PHONE: 630-739-1100
320 MARMON DRIVE - BOLINGBROOK, IL FAX: 630-739-1405

JOB NAME: COPLAY-NORTHAMPTON BRIDGE

STRESSING SEQUENCE, JACKING FORCE AND ELONGATION SCHEDULE (REV. 1)

Assumed Values:

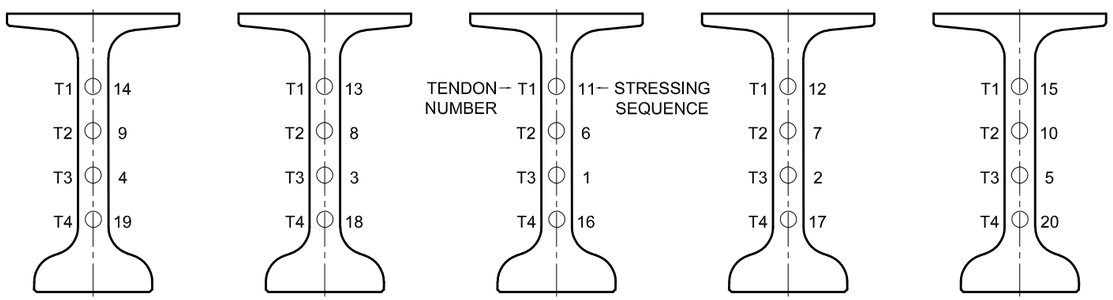
Coefficient of angular friction	0.23	/ rad
Coefficient of wobble friction	0.0002	rad / ft
Cross sectional area of strand	0.217	in^2
Modulus of elasticity of strand	28500	ksi
Live End Anchor Set	0.375	in
Dead End Anchor Set	0.125	in
Length of strand inside the jack	45	in
Stress ratio to ultimate	0.75	

STRESSING SEQUENCE	BEAM NO.	TENDON ID	TENDON MARK FOR STRESSING RECORDS	No. OF STRANDS PER TENDON (O.6" DIAM.)	20% OF REQUIRED JACKING FORCE (kips)	20% OF REQUIRED JACKING GAUGE PRESSURE (psi)	REQUIRED JACKING FORCE (kips)	REQUIRED JACKING GAUGE PRESSURE (psi)	ELONGATION BETWEEN WEDGES		FIRST END TARGET ELONGATION		SECOND END TARGET ELONGATION	
									ELONG. AT FIRST PULL (inch)	ELONG. AT SECOND PULL (inch)	BEFORE LOCK-OFF (inch)	AFTER LOCK-OFF (inch)	BEFORE LOCK-OFF (inch)	AFTER LOCK-OFF (inch)
1	B18	T3	B18-T3	15	131.9		659.3		40.83	2.49	33.02	32.39	2.81	2.12
2	B19	T3	B19-T3	15	131.9		659.3		40.67	2.46	32.89	32.26	2.78	2.09
3	B17	T3	B17-T3	15	131.9		659.3		40.99	2.51	33.15	32.52	2.83	2.14
4	B16	T3	B16-T3	15	131.9		659.3		41.16	2.58	33.28	32.65	2.90	2.21
5	B20	T3	B20-T3	15	131.9		659.3		40.51	2.44	32.76	32.13	2.76	2.07
6	B18	T2	B18-T2	15	131.9		659.3		40.41	2.51	32.68	32.05	2.83	2.14
7	B19	T2	B19-T2	15	131.9		659.3		40.25	2.48	32.56	31.93	2.80	2.11
8	B17	T2	B17-T2	15	131.9		659.3		40.56	2.54	32.80	32.17	2.86	2.17
9	B16	T2	B16-T2	15	131.9		659.3		40.73	2.61	32.94	32.31	2.93	2.24
10	B20	T2	B20-T2	15	131.9		659.3		40.09	2.46	32.43	31.80	2.78	2.09
11	B18	T1	B18-T1	15	131.9		659.3		39.99	2.53	32.35	31.72	2.85	2.16
12	B19	T1	B19-T1	15	131.9		659.3		39.83	2.50	32.22	31.59	2.82	2.13
13	B17	T1	B17-T1	15	131.9		659.3		40.14	2.56	32.47	31.84	2.88	2.19
14	B16	T1	B16-T1	15	131.9		659.3		40.31	2.65	32.60	31.97	2.97	2.28
15	B20	T1	B20-T1	15	131.9		659.3		39.67	2.48	32.09	31.46	2.80	2.11
16	B18	T4	B18-T4	15	131.9		659.3		41.26	2.47	33.36	32.73	2.79	2.10
17	B19	T4	B19-T4	15	131.9		659.3		41.10	2.44	33.24	32.61	2.76	2.07
18	B17	T4	B17-T4	15	131.9		659.3		41.42	2.49	33.49	32.86	2.81	2.12
19	B16	T4	B16-T4	15	131.9		659.3		41.60	2.54	33.64	33.01	2.86	2.17
20	B20	T4	B20-T4	15	131.9		659.3		40.94	2.41	33.11	32.48	2.73	2.04

* Target elongation is that elongation as determined by theoretical calculation that should occur when stressing from 20% of the total required jacking force.

STRESSING NOTE:

1. **TARGET ELONGATION:**
   - **a. First End Pull:**
     BEFORE LOCK-OFF: (Elongation between wedges + Elongation inside jack + Dead end anchor set) x 0.80
     AFTER LOCK-OFF: (Elongation between wedges + Dead end anchor set) x 0.80 - Live End Anchor Set
   - **b. Second End Pull:**
     BEFORE LOCK-OFF: (Elongation between wedges + Elongation inside jack) x 1.00
     AFTER LOCK-OFF: (Elongation between wedges x 1.00) - Live End Anchor Set
2. Elongation between wedges is elongation before Anchor Set (i.e., wedge seating loss in not included)
3. The tendons shall be stressed from both ends one at a time. No need to do simultaneous stressing.
4. Tendon Mark B18-T3 stands for Beam No. 18, Tendon 3 and shall be identified as such for stressing records puporses. Tendons are designated as T1, T2, T3 and T4 from top to bottom.
5. Stressing shall begin when concrete in all closure pours (in all spans) has reached its minimum specified strength per contract documents.
6. For the first end pull in each sequence, stress tendon to 20% of Pjack, mark strands (M1) as reference for elongation measurement.
7. Table columns for gauge pressures are filled onsite based on provided calibrated equipment
8. In practise, it is more convenient to use the "Before Lock-off" elongation values while the jack is still in place.



BEAM B16 **BEAM B17** **BEAM B18** **BEAM B19** **BEAM B20**

STRESSING SEQUENCE ACROSS BRIDGE

(NTS) LOOKING EAST, (WHEN LOOKING WEST, MIRROR)

△2 NOTES:

1. TENDON T1's ARE ELECTRICALLY ISOLATED TENDONDS (EIT).
2. TENDONS T2 THROUGH T4 ARE NON-ELECTRICALLY ISOLATED TENDONS (EIT).
3. STRESSING TABLE ON THIS SHEET IS APPLICABLE TO BOTH ELECTRICALLY ISOLATED TENDONS (EIT) AND NON-ELECTRICALLY ISOLATED TENDONS (NON-EIT).

OWNER:	COMMONWEALTH OF PENNSYLVANIA
CONTRACTOR:	TRUMBULL CORPORATION
PROJECT:	**COPLAY-NORTHAMPTON BRIDGE**
	STRESSING SEQUENCE AND ELONGATION SCHEDULE
DATE: 06-23-17	DWG: G. Malecki / CHK: S.N / APP: S.N.

WEIGHT	REV.	DATE	ISSUE DESCRIPTION	NAME	CHKD.
	0	06-12-17	FOR APPROVAL	I.T.	S.N.
	1	08-22-17	FOR FINAL APPROVAL	I.T.	S.N.
SCALE	△2	10/13/17	FOR FINAL APPROVEMENT	S.D.	S.N.
NTS					

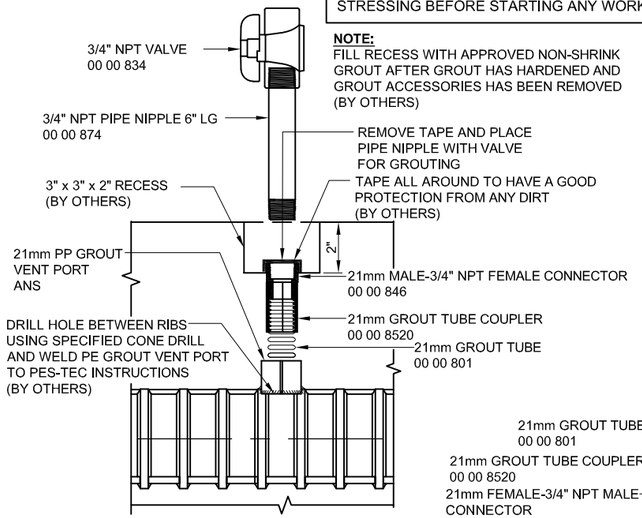
JOB NUMBER **J116488**

DRAWING NUMBER: **PT-2**

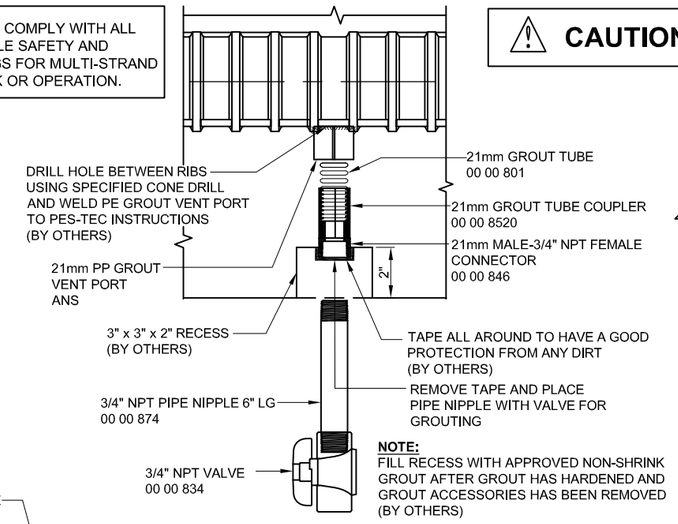
DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC.
POST TENSIONING / REINFORCING UNIT PHONE: 630-739-1100
320 MARMON DRIVE - BOLINGBROOK, IL FAX: 630-739-1405

⚠ WARNING: READ AND COMPLY WITH ALL APPLICABLE SAFETY AND OPERATING INSTRUCTIONS AND WARNINGS FOR MULTI-STRAND STRESSING BEFORE STARTING ANY WORK OR OPERATION.

⚠ CAUTION: WHEN PRESSURIZING GROUT CAPS, DO NOT STAND BEHIND CAPS!



INTERMEDIATE GROUT VENT DETAIL
(AS NEEDED)



DRAIN DETAIL AT LOW POINT
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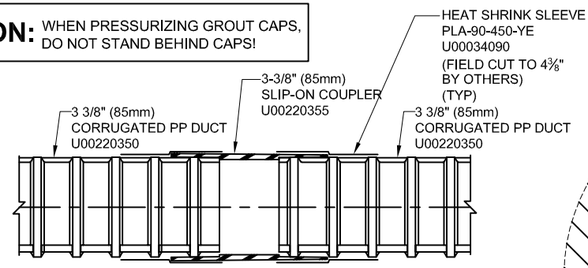
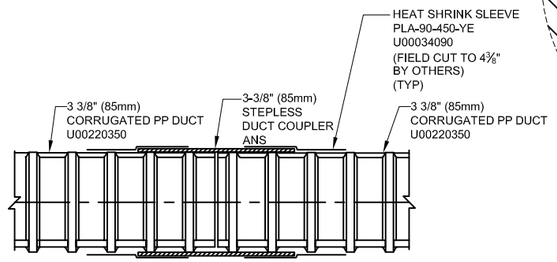
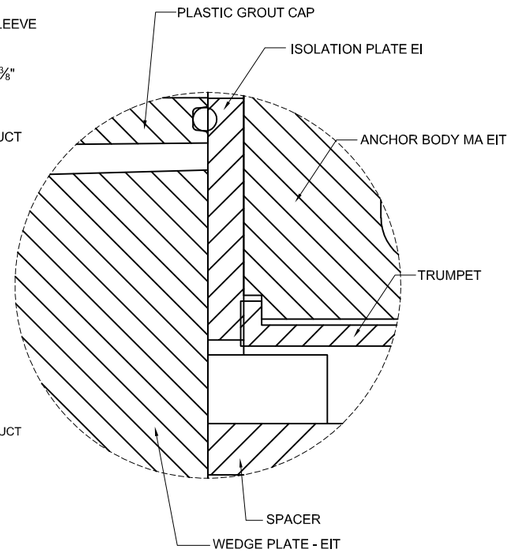


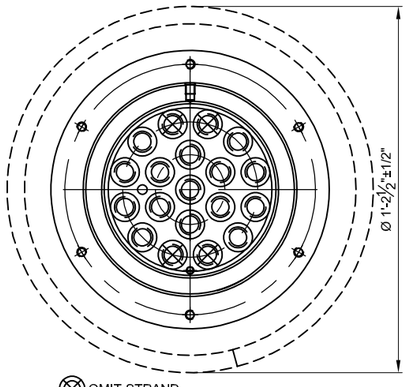
DUCT TO DUCT CONNECTION



DUCT TO DUCT CONNECTION AT CLOSURE POUR



ENLARGE DETAIL 1



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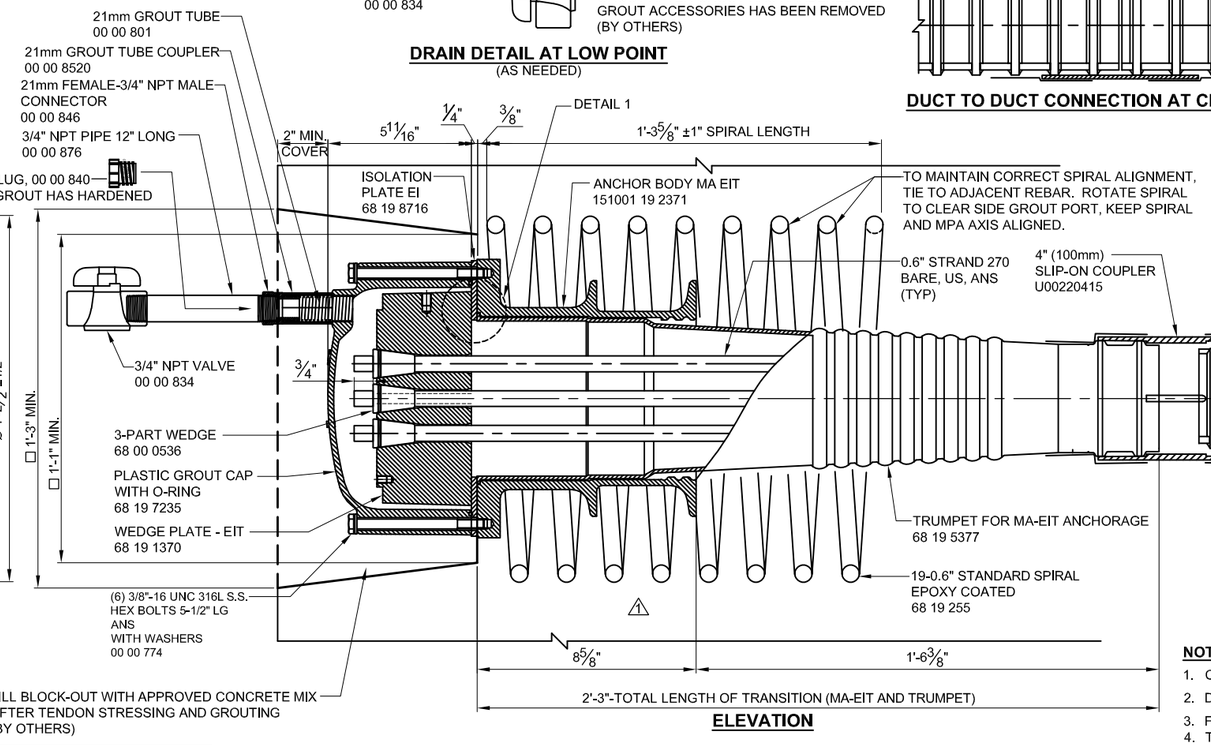
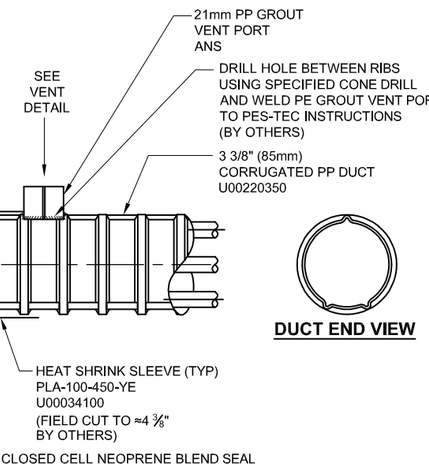
(WEDGE PLATE, MPA & SPIRAL ONLY)



ELEVATION



DUCT END VIEW

NOTES:

1. OTHER REQUIRED REINFORCING BARS NOT SHOWN.
2. DUCT IS DELIVERED IN STRAIGHT SECTIONS AND IS NOT INTENDED TO BE COILED.
3. FOR EIT TEST AND OTHER DETAILS SEE PT-4.
4. THIS SHEET IS APPLICABLE FOR ELECTRICALLY ISOLATED TENDONS (EIT). FOR NON-ELECTRICALLY ISOLATED TENDONS (NON-EIT), SEE SHEETS PT-1 AND PT-2.
5. SEE DOCUMENT J116488-EIT-1017 FOR INSTALLATION PROCEDURES.

MATERIAL LIST 19-0.6

ITEM NO.	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
1	ANS	0.6" STRAND	0.6 STRAND 270 BARE US
2	151001 19 2371	ANCHOR BODY MA EIT	EN 1563 EN-GJS-500-7
3	68 19 255	19-0.6" STANDARD SPIRAL, EPOXY COATED	ASTM A615, GR. 60, #5, 1-7/8" PITCH 14-1/2" O.D., ~8 TURNS
4	68 19 5377	TRUMPET FOR MA-EIT ANCHORAGE	THERMOPLASTICS ISO 1872-PE,B,57
5	68 19 1370	19-0.6" WEDGE PLATE - EIT	STEEL, DIN EN 10 083-1 C45+TN
6	68 00 0536	3-PART WEDGE FOR 0.6" STRAND	AISI-C12L14 HEAT TREATED
7	⚠1	⚠1	⚠1
8	68 19 8716	ISOLATION PLATE EI	PLASTIC
9	68 19 7235	19-0.6" PLASTIC GROUT CAP W/O-RING	NYLON 6, 20% GLASS FIBER FILLED
10	U00220350	3 3/8" (85mm) CORRUGATED PP DUCT	"PPEX3"
11	U00220355	3 3/8" (85mm) SLIP ON COUPLER	HDPE
12	U00034090	HEAT SHRINK SLEEVE PLA-90-450 YE	ACCORDING TO PROJECT SPECS.
13	U00034100	HEAT SHRINK SLEEVE PLA-100-450 YE	ACCORDING TO PROJECT SPECS.
14	ANS	3 3/8" (85mm) STEPLESS COUPLER (FOR CLOSURE POUR)	POLYETHYLENE
15	U00220415	4" (100mm) SLIP-ON COUPLER	HDPE

MATERIAL LIST

ITEM NO.	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
16	ANS	21mm PP GROUT VENT PORT	POLYPROPYLENE
17	00 00 846	21mm MALE-3/4" NPT FEMALE CONNECTOR	20% GLASS-FILLED NYLON
18	00 00 876	3/4" NPT PIPE NIPPLE, 12" LONG	SCH 40, BLACK WELDED STEEL
19	00 00 874	3/4" NPT PIPE NIPPLE, 6" LONG	SCH 40, BLACK WELDED STEEL
20	00 00 834	3/4" NPT VALVE	PVC
21	00 00 840	21mm PLUG	HDPE
22	ANS	(6) 3/8"-16 UNC HEX BOLTS 5-1/2" LONG	316L STAINLESS STEEL
23	00 00 774	NARROW WASHERS FOR 3/8"-UNC BOLTS	316L STAINLESS STEEL
24	00 00 8520	GROUT TUBE COUPLER	HDPE, WHITE (OIT)
25	68 00 583	1/4" x 1" NEOPRENE STRIP	CLOSED CELL NEOPRENE BLEND
26	00 00 801	21mm GROUT TUBE	HDPE
27	ANS	3 3/8" (85mm) PROTECTIVE CAPS FOR DUCTS (NOT SHOWN)	POLYETHYLENE

OWNER: COMMONWEALTH OF PENNSYLVANIA DOT

CONTRACTOR: TRUMBULL CORPORATION

PROJECT: **COPLAY-NORTHAMPTON BRIDGE**

19-0.6" MA EIT SYSTEM WITH 15 STRANDS
ASSEMBLY DRAWINGS (EIT TENDONS)

DATE: 10/11/17 | DWG: I. TIRA | CHK: | APP:

DYWIDAG SYSTEMS INTERNATIONAL, USA INC. DOES NOT ASSUME ANY LIABILITY FOR THE DESIGN OF THIS STRUCTURE. THIS SHOP DRAWING IS INTENDED TO PROVIDE POST TENSIONING DETAILS ONLY.

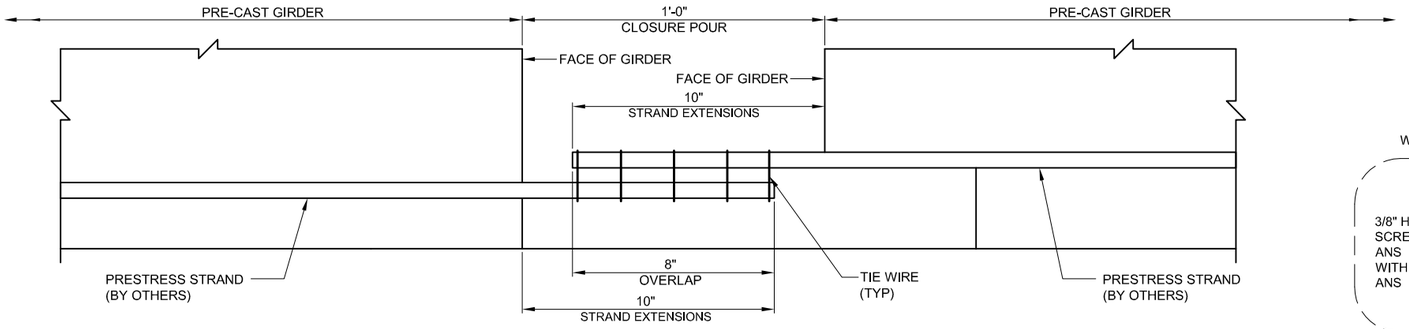
REV.	DATE	ISSUE DESCRIPTION	NAME	CHKD.
0	10/13/17	FOR APPROVAL	I.T/S.D	S.N.
⚠1	12/21/17	FOR FINAL APPROVAL	I.T.	S.N.

JOB NUMBER: **J116488**

SCALE 1:6

DRAWING NUMBER: **PT-3**

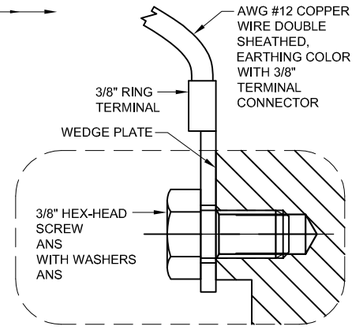
DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC.
POST TENSIONING / REINFORCING UNIT PHONE: 630-739-1100
320 MARMON DRIVE - BOLINGBROOK, IL FAX: 630-739-1405



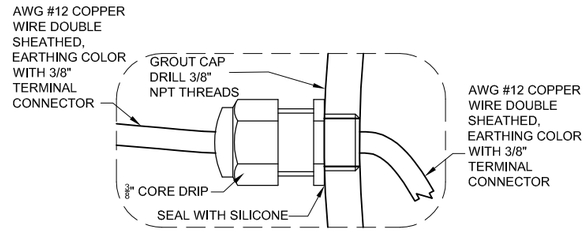
NOTE: CLEAN STRAND EXTENSIONS TO REMOVE GREASE, DIRT, ETC.

⚠1 STRAND LAP SPLICING DETAIL AT CLOSURE POUR (TYP. FOR 1 STRAND)

(2 STRANDS TO PROTRUDE AND SPLICE)

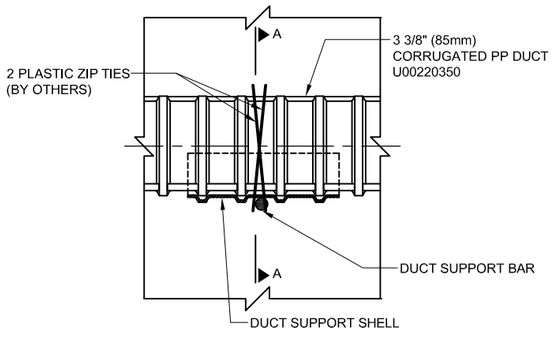


ENLARGED DETAIL 1

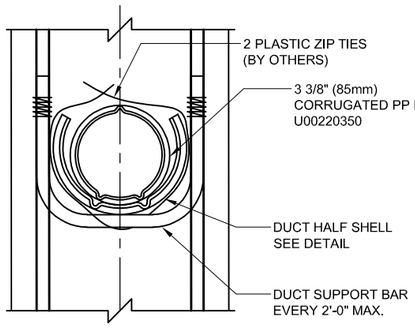


ENLARGED DETAIL 2

NOTE: DRILL 3/8" NPT HOLE IN GROUT CAP BEFORE INSTALLING THE 3/8" CORE DRIP



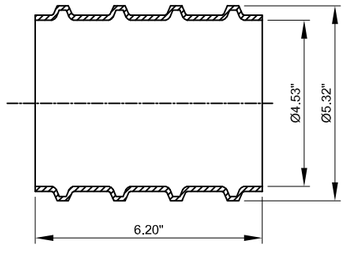
ELEVATION



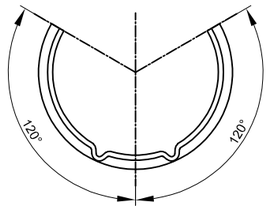
SECTION A-A

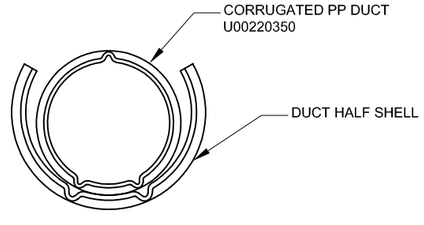
DUCT SUPPORT DETAIL

DUCT SUPPORT NOTES:
1. MATCH CORRUGATIONS OF DUCT AND HALF SHELL SUPPORT (LOOSE CONDITION SHOWN) AND TIGHTEN WITH 2 PLASTIC ZIP TIES.
2. HALF SHELL DUCT SUPPORTS MUST BE USED AT ALL DUCT SUPPORT LOCATIONS

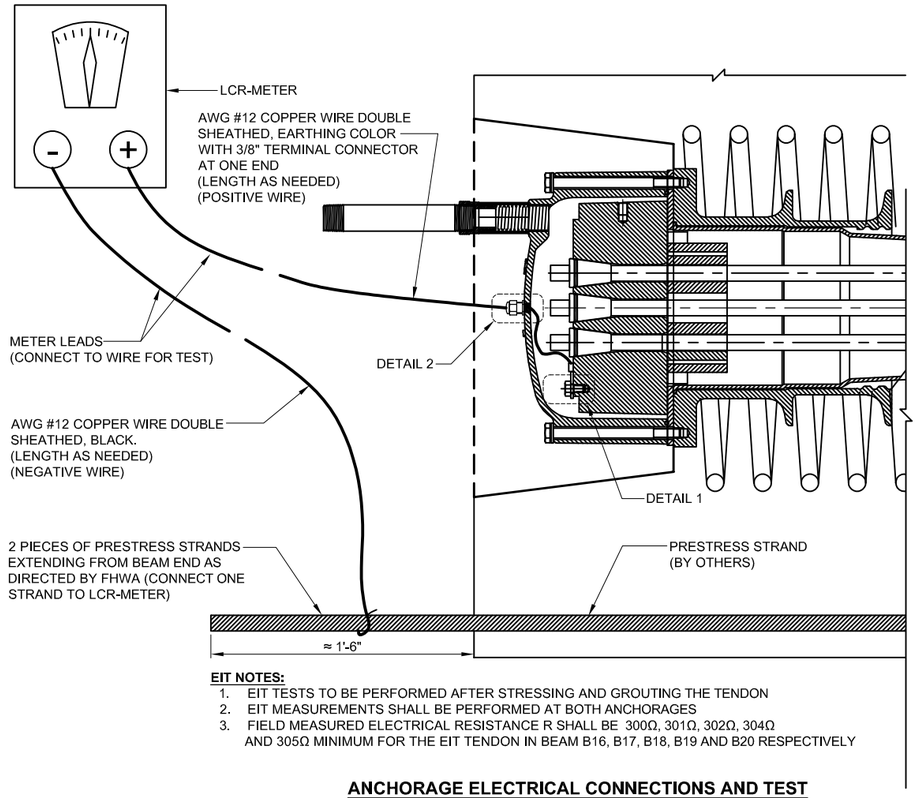


GTI Ø 100 FC DUCT HALF SHELL
(GTI PN 221927)





DUCT AND HALF SHELL SUPPORT FITTING
(LOOSE CONDITION SHOWN)



EIT NOTES:
1. EIT TESTS TO BE PERFORMED AFTER STRESSING AND GROUTING THE TENDON
2. EIT MEASUREMENTS SHALL BE PERFORMED AT BOTH ANCHORAGES
3. FIELD MEASURED ELECTRICAL RESISTANCE R SHALL BE 300Ω, 301Ω, 302Ω, 304Ω AND 305Ω MINIMUM FOR THE EIT TENDON IN BEAM B16, B17, B18, B19 AND B20 RESPECTIVELY

ANCHORAGE ELECTRICAL CONNECTIONS AND TEST

NOTES:

1. WORK THIS SHEET WITH SHEET PT-3.
2. SEE DOCUMENT J116488-EIT-1017 FOR EIT TENDON INSTALLATION AND PROCEDURES.

OWNER:	COMMONWEALTH OF PENNSYLVANIA DOT
CONTRACTOR:	TRUMBULL CORPORATION
PROJECT:	**COPLAY-NORTHAMPTON BRIDGE**
	ELECTRICALLY ISOLATED TENDON (EIT) DETAILS

DATE: 10/01/17 | DWG: I. TIRA | CHK: S.N. | APP:

DYWIDAG SYSTEMS INTERNATIONAL, USA INC. DOES NOT ASSUME ANY LIABILITY FOR THE DESIGN OF THIS STRUCTURE. THIS SHOP DRAWING IS INTENDED TO PROVIDE POST TENSIONING DETAILS ONLY.

REV.	DATE	ISSUE DESCRIPTION	NAME	CHKD.
0	10/13/17	FOR APPROVAL	I.T/S.D	S.N.
⚠1	12/21/17	FOR FINAL APPROVAL	I.T.	S.N.

JOB NUMBER: **J116488**

SCALE: N.T.S.

DRAWING NUMBER: **PT-4**

DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC.
POST TENSIONING / REINFORCING UNIT PHONE: 630-739-1100
320 MARMON DRIVE - BOLINGBROOK, IL FAX: 630-739-1405

COPLAY-NORTHAMPTON BRIDGE

Installation Instructions for Electrically Isolated Tendons (EIT)

DSI PROJECT NO. J116488

PREPARED FOR TRUMBALL CORPORATION

October 13, 2017

Table of Contents

1 Introduction and Scope

The installation and stressing of electrically isolated tendons requires special attention and skills. The electrically isolated material, i. e. the ducts, the trumpet and the insulating plate shall never be damaged during the installation process. At anchors, ducts, duct couplers and vent tube joints a leak tight connection shall generally be provided by appropriate actions.

2 Installation Procedures at the Precast Yard

1. Preassemble the multi-plane anchor (151001 19 2371) and plastic trumpet (68 19 5377) as shown in sheet PT-3. Make sure trumpet is inserted all the way as shown. Before securing the anchor body to the forms, an inspection shall be performed to ensure the trumpet flange is engaged as shown in Detail 1 of sheet PT-3. Grease the bolts to facilitate removal later.
2. Bolt the multi-plane anchor with trumpet to the form using the six threaded holes in anchor body. The spiral should be tied to adjacent reinforcement. Align axis of spiral with anchor body. Plug unused port in the anchor body as shown.
3. Connect the trumpet to the duct as shown using closed cell neoprene blend seal (68 00 583), slip-on-coupler (U00220415) and heat shrink it. Install the duct according to the profile specified in the project documents. Make sure to secure the duct at every two feet using two (2) plastic zip ties. No damage should be done to the duct system during installation.
4. At both ends of each precast segment, make sure two (2) prestress strands are protruding 18 inches. This will be used later at the job site as shown in sheet PT-4.
5. Concrete shall not be poured until a thorough inspection is carried out and approval is given to proceed.

→ **Concreting can now proceed.**

3 Installation Procedures at the Job Site

3.1 Completion of System Installation

1. After the precast segments are erected, couple the duct at the closure pours using short section of ducts and stepless duct coupler as shown on sheet PT-3.
2. Before casting closure pours, lap splice protruding prestress strands as shown on sheet PT-4.
3. After the concrete in the closure pours has gained the required strength, install strands by pushing or pulling individually or as a bundle into ducts. Allow sufficient tail length for stressing.
4. Check the wedge plate for rust, dirt and grit. Clean wedge holes with wire brush if necessary. Lightly grease or oil wedge holes.
5. Check wedges for rust, dirt and grit. Discard rusty wedges. Use only clean wedges.
6. Install the isolation plate (68 19 8716).
7. Install the PE-spacer (68 19 6084).
8. Install the wedge plate (68 19 1370), slip the wedges over the strands and loosely seat in wedge holes using a 3/4" ø ID pipe.

→ **Stressing can now proceed**

9. Follow the stressing sequence and procedure per shop drawings sheet PT-2.

10. After the stressing operation is completed and engineer's approval is obtained, cut the strand tails by an abrasive saw. Do not use a torch.
11. Prepare the grout cap before its installation as described below in section 3.2. Install the grout cap with O-ring using six bolts. Be careful to prevent damage to cap threads or the cap itself.
12. Thread 3/4" NPT pipe nipple into the threaded port of the grout cap using short 21mm grout tube and 21mm female-3/4" NPT male connector (see sheet PT-3). This hole is used as a grout injection.
13. Perform a final check of all grouting ports, vents and valves. Prepare for grouting operations.

→ **Grouting can now proceed.**

14. Follow the submitted and approved project grouting plan.
15. After the grout has hardened, perform the electrical resistance test as described below in section 4.
16. After the EIT test is completed and approved, remove grout ports pipe nipple and insert plugs. Clean the blockout and fill the pour back with approved concrete mix.
17. Cut grout tube at low and high points flush with concrete and fill the recess with an approved non- shrink grout.

3.2 Preparation of Grout Cap

Drill a hole for the 3/8" NPT core drip in the centre of the cap dome as shown in shop drawing PT-4. Install 3/8" core drip and connect the electrical AWG #12 copper wire to the wedge plate as shown in Detail 1 and Detail 2 in shop drawing PT-4. Seal the core drip with silicone.

4 Electrical Resistance Test Procedure

Electrical measurements shall be performed by a qualified electrician using a suitable LCR-meter, i.e. CMT-437 or equivalent. Measurements shall be done at both anchorages as shown in drawing PT-4.

Table 1: expected minimum values of electrical resistance based on tendon length

Beam No.	Length, L (ft)	Length, L (m)	R_L (kΩm)	Minimum R (Ω)
16	547.34	166.83	50	300
17	544.63	166.00	50	301
18	542.36	165.31	50	302
19	540.08	164.62	50	304
20	537.79	163.92	50	305

R_L is the min. value of the length normalized electrical resistance.

$R = R_L/L$

- Connect the positive electrical wire to the tendon through the anchorage, and the negative cable to the protruding prestressed strand.
- Measure the electrical resistance R using standard LCR-meter.
- The field Measured minimum electrical resistance R shall be as shown in table above.

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 13:18:35

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B16-T1

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B16-T1)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.53	1	63.00	22.00	75.00	0.00	0.37	0.20	175.86	186.48	181.29
2	175.75	1	75.00	53.25	75.00	0.11	0.50	0.11	181.29	175.29	181.98
3	191.06	1	75.00	22.00	63.00	0.18	0.60	0.00	181.98	188.50	178.22

547.34 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	183.12	ksi
Long term stress losses	0.00	ksi
Final average stress	183.12	ksi
Final average force in tendon	596.07	k
Anchor set influence from left pull (189.21ksi;0.701)	94.46	ft
Anchor set influence from right pull (190.38ksi;0.705)	99.11	ft
Elongation at left pull before anchor set	40.306	inch
Elongation at right pull before anchor set	2.647	inch
Elongation at left pull after anchor set	39.931	inch
Elongation at right pull after anchor set	2.272	inch
Total elongation after anchor set	42.203	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.660; Max along tendon 0.705

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

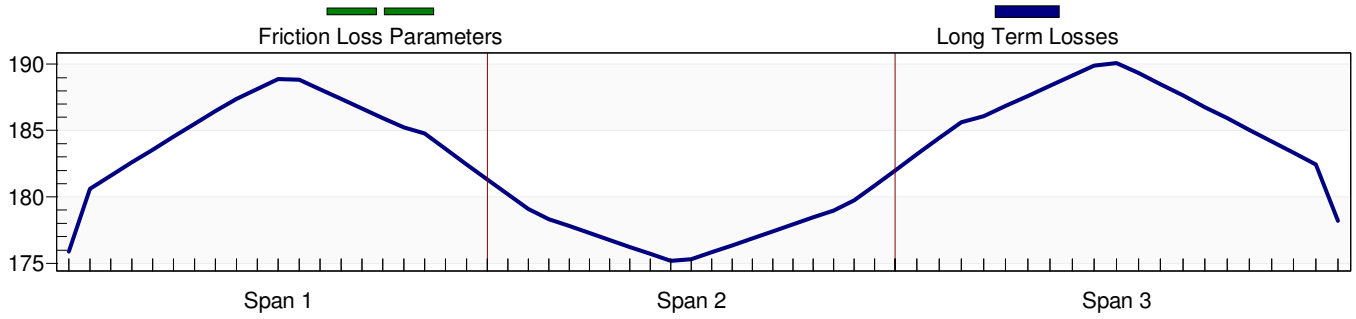
Date: 8/22/2017 Time: 13:19

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

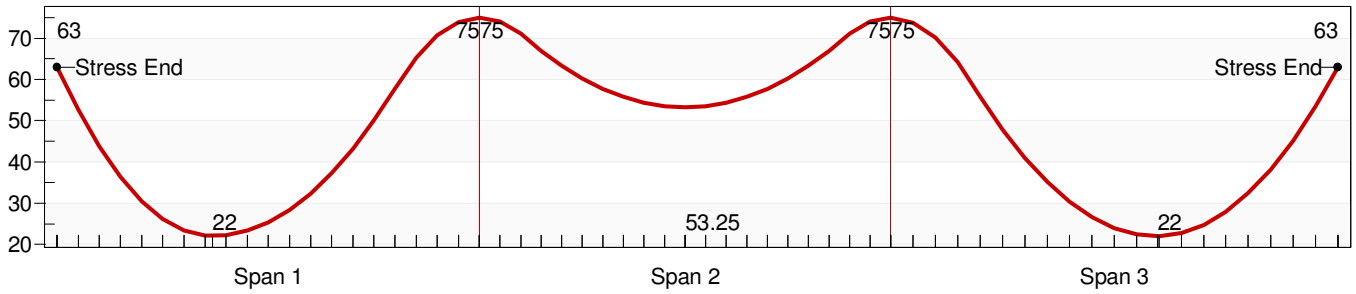
1.1 SPECIFIC TITLE : B16-T1

1.2 FILE NAME : B16-T1

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	183.12	ksi
Long term stress losses	0.00	ksi
Final average stress	183.12	ksi
Final average force in tendon	596.07	k
Anchor set influence from left pull (189.21ksi;0.701) ..	94.46	ft
Anchor set influence from right pull (190.38ksi;0.705) ..	99.11	ft
Elongation at left pull before anchor set	40.306	inch
Elongation at right pull before anchor set	2.647	inch
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Total elongation after anchor set	42.203	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.660; Max along tendon 0.705

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014
ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 13:37:50

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B16-T2

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B16-T2)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.53	1	47.00	16.00	69.00	0.00	0.37	0.20	179.04	187.73	183.23
2	175.75	1	69.00	47.25	69.00	0.11	0.50	0.11	183.23	176.93	183.68
3	191.06	1	69.00	16.00	47.00	0.18	0.60	0.00	183.68	189.48	180.93

547.34 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	184.82	ksi
Long term stress losses	0.00	ksi
Final average stress	184.82	ksi
Final average force in tendon	601.59	k
Anchor set influence from left pull (190.80ksi;0.707)	99.87	ft
Anchor set influence from right pull (191.74ksi;0.710)	104.25	ft
Elongation at left pull before anchor set	40.730	inch
Elongation at right pull before anchor set	2.614	inch
Elongation at left pull after anchor set	40.355	inch
Elongation at right pull after anchor set	2.239	inch
Total elongation after anchor set	42.594	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.670; Max along tendon 0.710

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

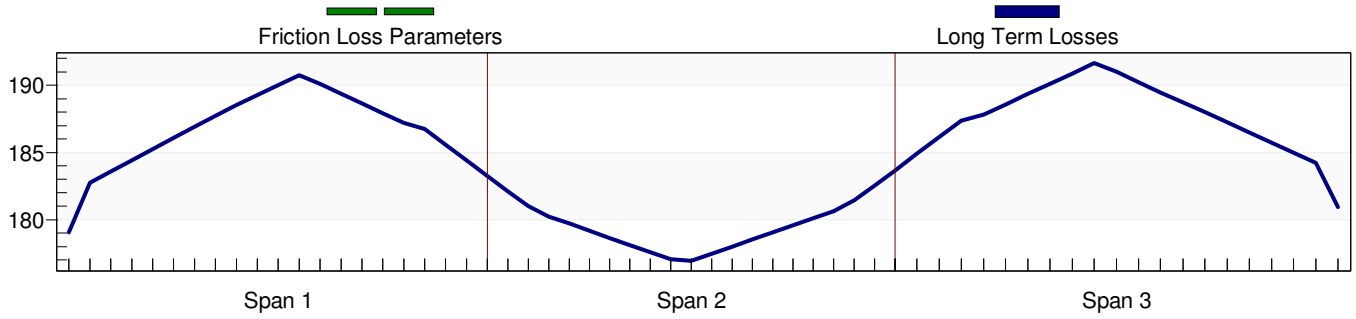
Date: 8/22/2017 Time: 13:38

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

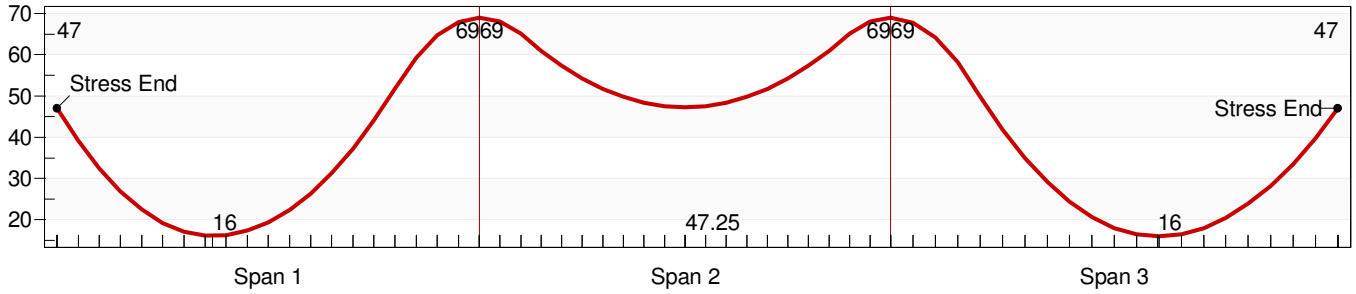
1.1 SPECIFIC TITLE : B16-T2

1.2 FILE NAME : B16-T2

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	184.82	ksi
Long term stress losses	0.00	ksi
Final average stress	184.82	ksi
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Anchor set influence from left pull (190.80ksi;0.707) ..	99.87	ft
Anchor set influence from right pull (191.74ksi;0.710) ..	104.25	ft
Elongation at left pull before anchor set	40.730	inch
Elongation at right pull before anchor set	2.614	inch
Elongation at left pull after anchor set	40.355	inch
Elongation at right pull after anchor set	2.239	inch
Total elongation after anchor set	42.594	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.670; Max along tendon 0.710

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 13:39:23

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B16-T3

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B16-T3)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right -->
1	180.53	1	31.00	10.00	63.00	0.00	0.37	0.20	182.31	189.04	185.21
2	175.75	1	63.00	41.25	63.00	0.11	0.50	0.11	185.21	178.59	185.39
3	191.06	1	63.00	10.00	31.00	0.18	0.60	0.00	185.39	190.52	183.72

547.34 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	186.53	ksi
Long term stress losses	0.00	ksi
Final average stress	186.53	ksi
Final average force in tendon	607.16	k
Anchor set influence from left pull (192.43ksi;0.713)	105.00	ft
Anchor set influence from right pull (193.13ksi;0.715)	109.15	ft
Elongation at left pull before anchor set	41.160	inch
Elongation at right pull before anchor set	2.578	inch
Elongation at left pull after anchor set	40.785	inch
Elongation at right pull after anchor set	2.203	inch
Total elongation after anchor set	42.988	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.680; Max along tendon 0.715

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

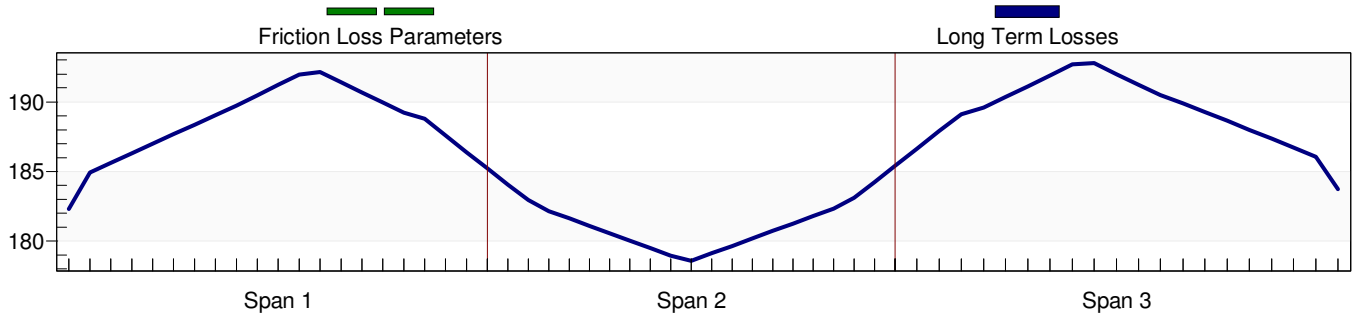
Date: 8/22/2017 Time: 13:39

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

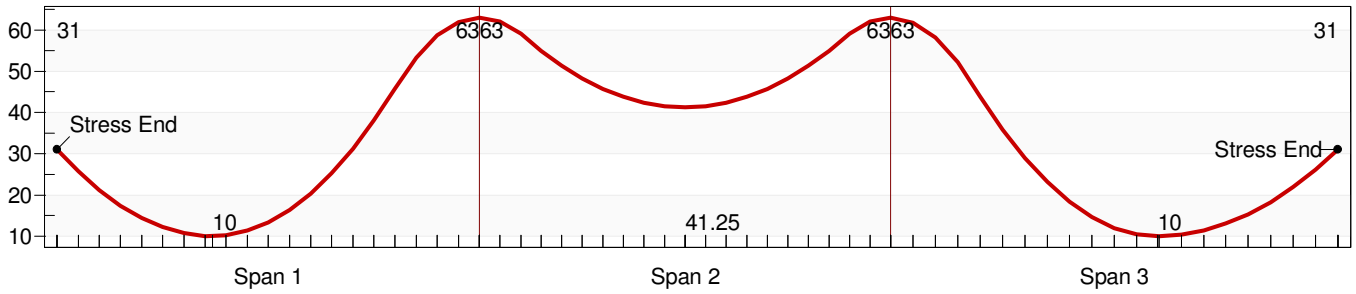
1.1 SPECIFIC TITLE : B16-T3

1.2 FILE NAME : B16-T3

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	186.53	ksi
Long term stress losses	0.00	ksi
Final average stress	186.53	ksi
Final average force in tendon	607.16	k
Anchor set influence from left pull (192.43ksi;0.713) ..	105.00	ft
Anchor set influence from right pull (193.13ksi;0.715) ..	109.15	ft
Elongation at left pull before anchor set	41.160	inch
Elongation at right pull before anchor set	2.578	inch
Elongation at left pull after anchor set	40.785	inch
Elongation at right pull after anchor set	2.203	inch
Total elongation after anchor set	42.988	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :

At stressing 0.750; At anchorage 0.680; Max along tendon 0.715

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014
ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 13:40:43

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B16-T4

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B16-T4)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.53	1	15.00	4.00	57.00	0.00	0.37	0.20	185.66	190.41	187.21
2	175.75	1	57.00	35.25	57.00	0.11	0.50	0.11	187.21	180.36	187.13
3	191.06	1	57.00	4.00	15.00	0.18	0.60	0.00	187.13	191.60	186.56

547.34 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	188.27	ksi
Long term stress losses	0.00	ksi
Final average stress	188.27	ksi
Final average force in tendon	612.83	k
Anchor set influence from left pull (194.11ksi;0.719)	109.89	ft
Anchor set influence from right pull (194.56ksi;0.721)	113.82	ft
Elongation at left pull before anchor set	41.596	inch
Elongation at right pull before anchor set	2.544	inch
Elongation at left pull after anchor set	41.221	inch
Elongation at right pull after anchor set	2.169	inch
Total elongation after anchor set	43.389	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.691; Max along tendon 0.721

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

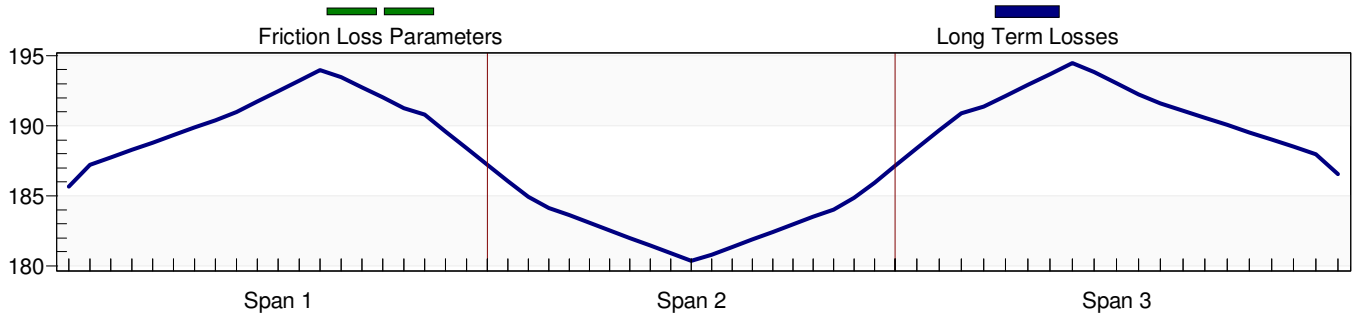
Date: 8/22/2017 Time: 13:41

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

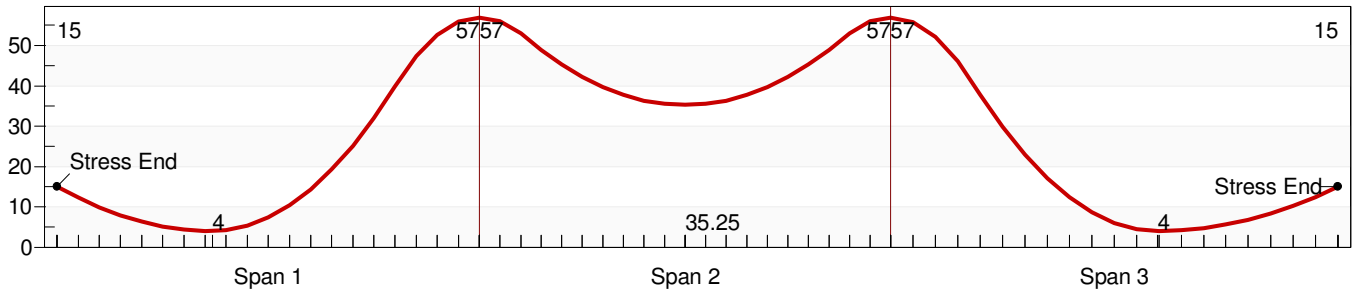
1.1 SPECIFIC TITLE : B16-T4

1.2 FILE NAME : B16-T4

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	188.27	ksi
Long term stress losses	0.00	ksi
Final average stress	188.27	ksi
Final average force in tendon	612.83	k
Anchor set influence from left pull (194.11ksi;0.719) ..	109.89	ft
Anchor set influence from right pull (194.56ksi;0.721) ..	113.82	ft
Elongation at left pull before anchor set	41.596	inch
Elongation at right pull before anchor set	2.544	inch
Elongation at left pull after anchor set	41.221	inch
Elongation at right pull after anchor set	2.169	inch
Total elongation after anchor set	43.389	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.691; Max along tendon 0.721

5 - DESIGNER'S NOTES

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| ADAPT-FELT Standard 2014 |
| ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM |

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 13:58:37

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B17-T1

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B17-T1)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right ->
1	180.53	1	63.00	22.00	75.00	0.00	0.37	0.20	175.86	186.48	181.29
2	175.75	1	75.00	53.25	75.00	0.11	0.50	0.11	181.29	175.13	181.78
3	188.35	1	75.00	22.00	63.00	0.19	0.62	0.00	181.78	188.11	177.20

544.63 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	182.91	ksi
Long term stress losses	0.00	ksi
Final average stress	182.91	ksi
Final average force in tendon	595.38	k
Anchor set influence from left pull (189.21ksi;0.701)	94.46	ft
Anchor set influence from right pull (189.88ksi;0.703)	97.18	ft
Elongation at left pull before anchor set	40.139	inch
Elongation at right pull before anchor set	2.556	inch
Elongation at left pull after anchor set	39.764	inch
Elongation at right pull after anchor set	2.181	inch
Total elongation after anchor set	41.945	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

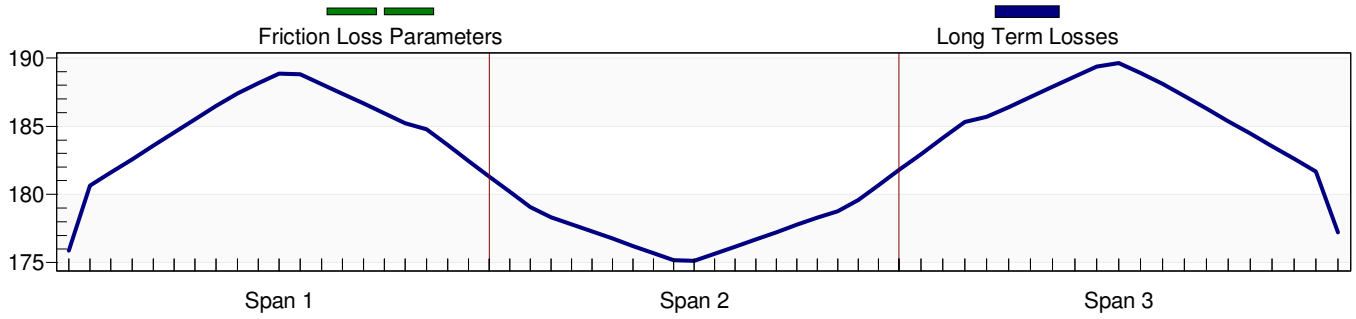
Date: 8/22/2017 Time: 13:58

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

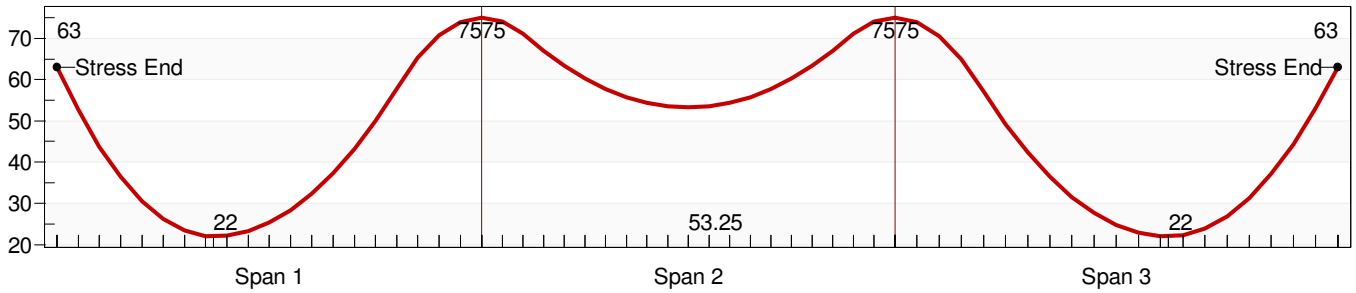
1.1 SPECIFIC TITLE : B17-T1

1.2 FILE NAME : B17-T1

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	182.91	ksi
Long term stress losses	0.00	ksi
Final average stress	182.91	ksi
Final average force in tendon	595.38	k
Anchor set influence from left pull (189.21ksi;0.701) ..	94.46	ft
Anchor set influence from right pull (189.88ksi;0.703) ..	97.18	ft
Elongation at left pull before anchor set	40.139	inch
Elongation at right pull before anchor set	2.556	inch
Elongation at left pull after anchor set	39.764	inch
Elongation at right pull after anchor set	2.181	inch
Total elongation after anchor set	41.945	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :

At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

5 - DESIGNER'S NOTES

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ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 14:00:05

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B17-T2

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B17-T2)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right ->
1	180.53	1	47.00	16.00	69.00	0.00	0.37	0.20	179.04	187.73	183.23
2	175.75	1	69.00	47.25	69.00	0.11	0.50	0.11	183.23	176.87	183.59
3	188.35	1	69.00	16.00	47.00	0.19	0.62	0.00	183.59	189.15	180.12

544.63 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	184.66	ksi
Long term stress losses	0.00	ksi
Final average stress	184.66	ksi
Final average force in tendon	601.08	k
Anchor set influence from left pull (190.80ksi;0.707)	99.87	ft
Anchor set influence from right pull (191.34ksi;0.709)	102.55	ft
Elongation at left pull before anchor set	40.562	inch
Elongation at right pull before anchor set	2.536	inch
Elongation at left pull after anchor set	40.187	inch
Elongation at right pull after anchor set	2.161	inch
Total elongation after anchor set	42.347	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.709

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

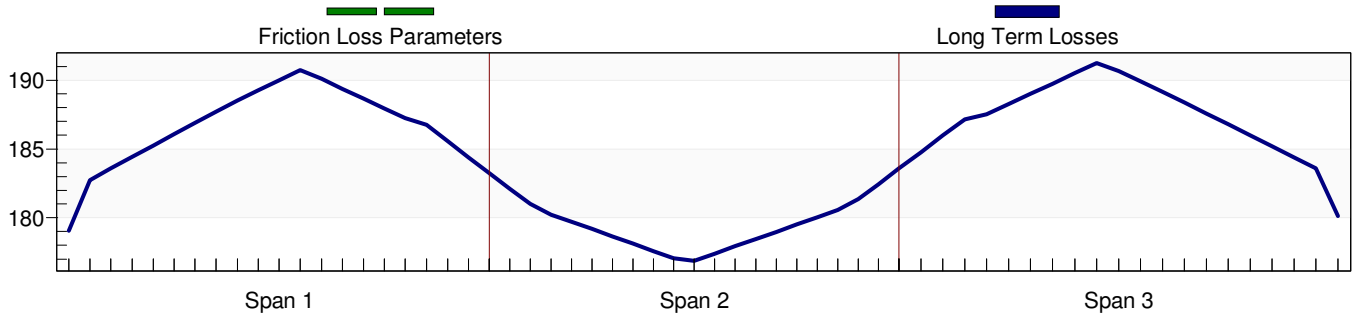
Date: 8/22/2017 Time: 14:00

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

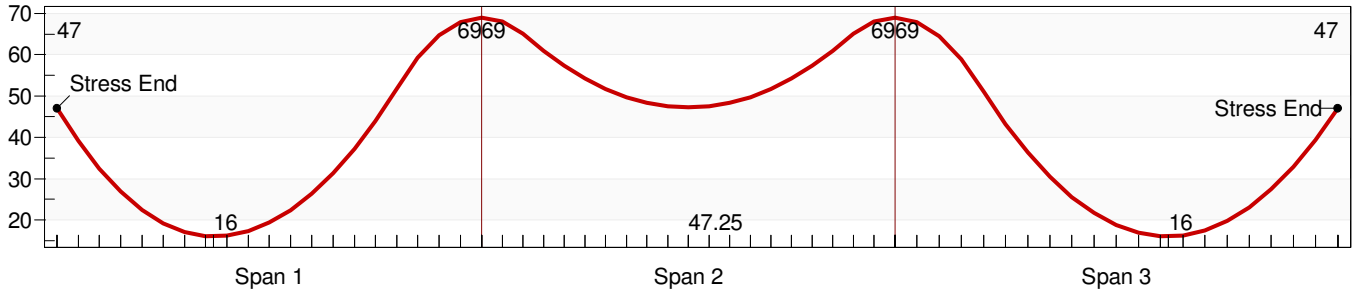
1.1 SPECIFIC TITLE : B17-T2

1.2 FILE NAME : B17-T2

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	184.66	ksi
Long term stress losses	0.00	ksi
Final average stress	184.66	ksi
Final average force in tendon	601.08	k
Anchor set influence from left pull (190.80ksi;0.707) ..	99.87	ft
Anchor set influence from right pull (191.34ksi;0.709) ..	102.55	ft
Elongation at left pull before anchor set	40.562	inch
Elongation at right pull before anchor set	2.536	inch
Elongation at left pull after anchor set	40.187	inch
Elongation at right pull after anchor set	2.161	inch
Total elongation after anchor set	42.347	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.709

5 - DESIGNER'S NOTES

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DATE: Aug 22, 2017 TIME: 14:01:39

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B17-T3

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B17-T3)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.53	1	31.00	10.00	63.00	0.00	0.37	0.20	182.31	189.04	185.21
2	175.75	1	63.00	41.25	63.00	0.11	0.50	0.11	185.21	178.64	185.42
3	188.35	1	63.00	10.00	31.00	0.19	0.62	0.00	185.42	190.24	183.12

544.63 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	186.43	ksi
Long term stress losses	0.00	ksi
Final average stress	186.43	ksi
Final average force in tendon	606.84	k
Anchor set influence from left pull (192.43ksi;0.713)	105.00	ft
Anchor set influence from right pull (192.84ksi;0.714)	107.65	ft
Elongation at left pull before anchor set	40.989	inch
Elongation at right pull before anchor set	2.514	inch
Elongation at left pull after anchor set	40.614	inch
Elongation at right pull after anchor set	2.139	inch
Total elongation after anchor set	42.753	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

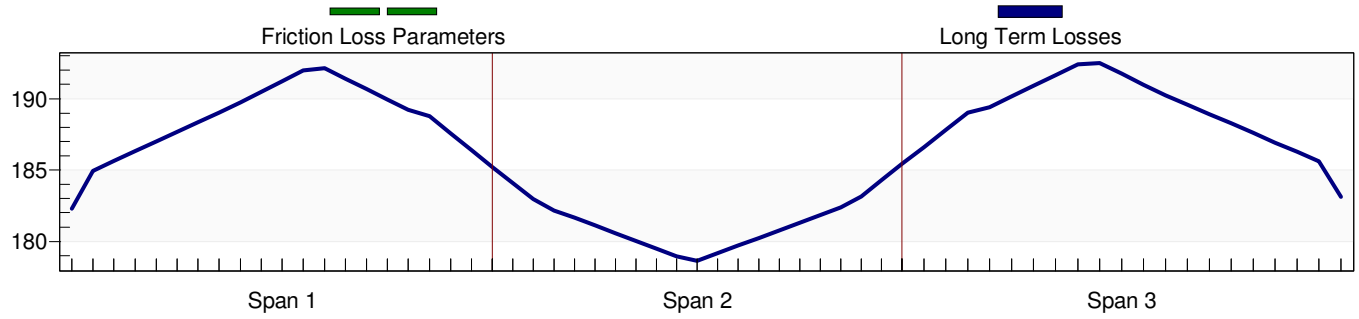
Date: 8/22/2017 Time: 14:02

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

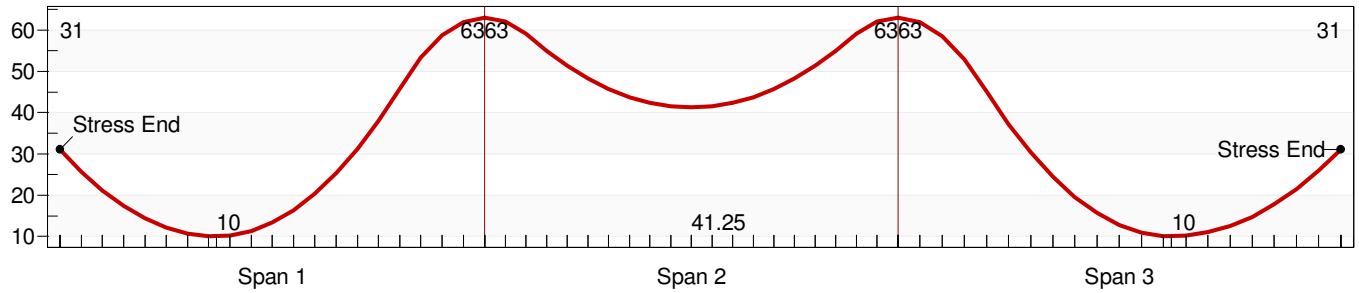
1.1 SPECIFIC TITLE : B17-T3

1.2 FILE NAME : B17-T3

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	186.43	ksi
Long term stress losses	0.00	ksi
Final average stress	186.43	ksi
Final average force in tendon	606.84	k
Anchor set influence from left pull (192.43ksi;0.713) ..	105.00	ft
Anchor set influence from right pull (192.84ksi;0.714) ..	107.65	ft
Elongation at left pull before anchor set	40.989	inch
Elongation at right pull before anchor set	2.514	inch
Elongation at left pull after anchor set	40.614	inch
Elongation at right pull after anchor set	2.139	inch
Total elongation after anchor set	42.753	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

5 - DESIGNER'S NOTES

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This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 14:03:07

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B17-T4

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B17-T4)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right -->
1	180.53	1	15.00	4.00	57.00	0.00	0.37	0.20	185.66	190.41	187.21
2	175.75	1	57.00	35.25	57.00	0.11	0.50	0.11	187.21	180.42	187.28
3	188.35	1	57.00	4.00	15.00	0.19	0.62	0.00	187.28	191.38	186.19

544.63 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	188.23	ksi
Long term stress losses	0.00	ksi
Final average stress	188.23	ksi
Final average force in tendon	612.70	k
Anchor set influence from left pull (194.11ksi;0.719)	109.89	ft
Anchor set influence from right pull (194.37ksi;0.720)	112.52	ft
Elongation at left pull before anchor set	41.423	inch
Elongation at right pull before anchor set	2.492	inch
Elongation at left pull after anchor set	41.048	inch
Elongation at right pull after anchor set	2.117	inch
Total elongation after anchor set	43.165	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.690; Max along tendon 0.720

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

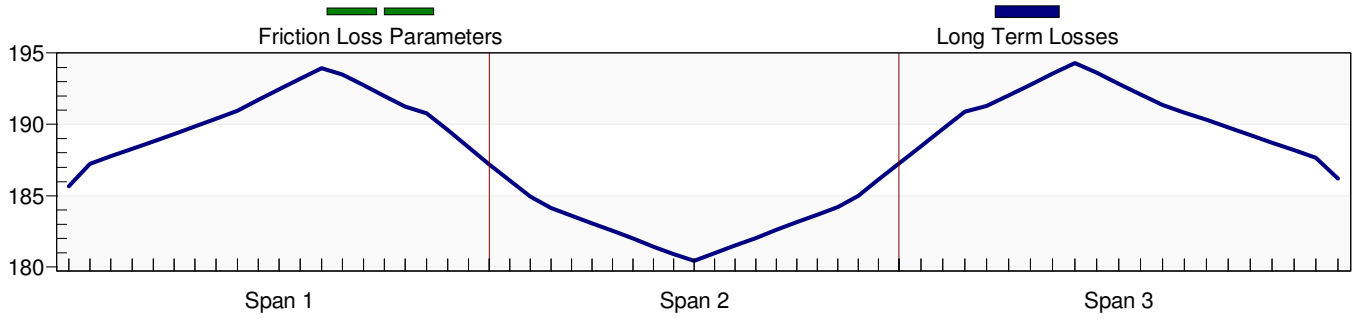
Date: 8/22/2017 Time: 14:03

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

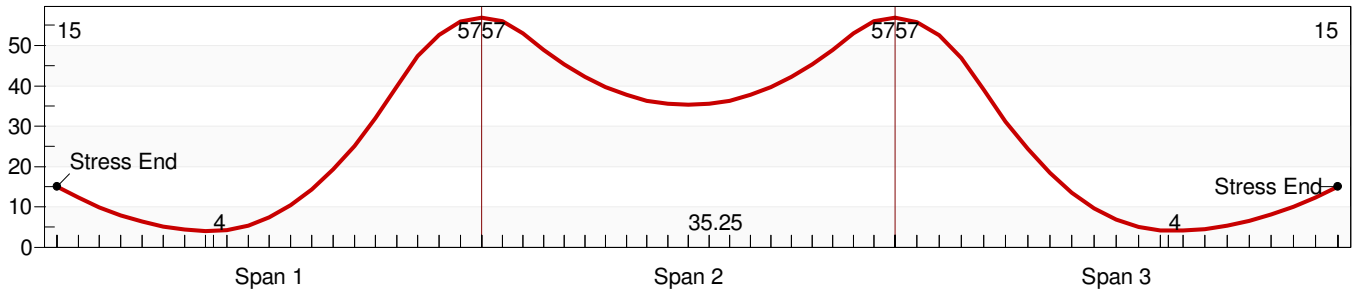
1.1 SPECIFIC TITLE : B17-T4

1.2 FILE NAME : B17-T4

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	188.23	ksi
Long term stress losses	0.00	ksi
Final average stress	188.23	ksi
Final average force in tendon	612.70	k
Anchor set influence from left pull (194.11ksi;0.719) ..	109.89	ft
Anchor set influence from right pull (194.37ksi;0.720) ..	112.52	ft
Elongation at left pull before anchor set	41.423	inch
Elongation at right pull before anchor set	2.492	inch
Elongation at left pull after anchor set	41.048	inch
Elongation at right pull after anchor set	2.117	inch
Total elongation after anchor set	43.165	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :

At stressing 0.750; At anchorage 0.690; Max along tendon 0.720

5 - DESIGNER'S NOTES

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| ADAPT-FELT Standard 2014 |
| ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM |

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 14:06:26

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B18-T1

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B18-T1)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right ->
1	180.69	1	63.00	22.00	75.00	0.00	0.37	0.20	175.88	186.49	181.29
2	175.92	1	75.00	53.25	75.00	0.11	0.50	0.11	181.29	175.10	181.77
3	185.75	1	75.00	22.00	63.00	0.19	0.61	0.00	181.77	187.98	177.15

542.36 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	182.88	ksi
Long term stress losses	0.00	ksi
Final average stress	182.88	ksi
Final average force in tendon	595.29	k
Anchor set influence from left pull (189.21ksi;0.701)	94.50	ft
Anchor set influence from right pull (189.85ksi;0.703)	96.77	ft
Elongation at left pull before anchor set	39.986	inch
Elongation at right pull before anchor set	2.528	inch
Elongation at left pull after anchor set	39.611	inch
Elongation at right pull after anchor set	2.153	inch
Total elongation after anchor set	41.764	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

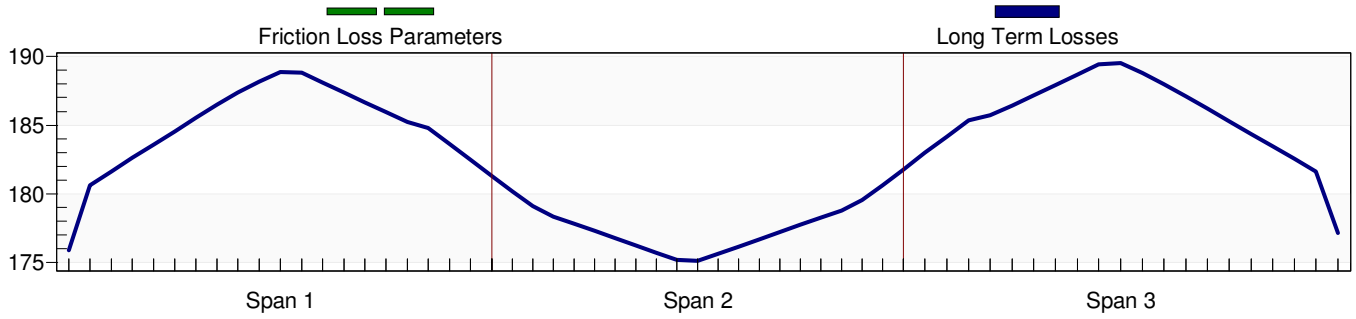
CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

ADAPT Structural Concrete Software

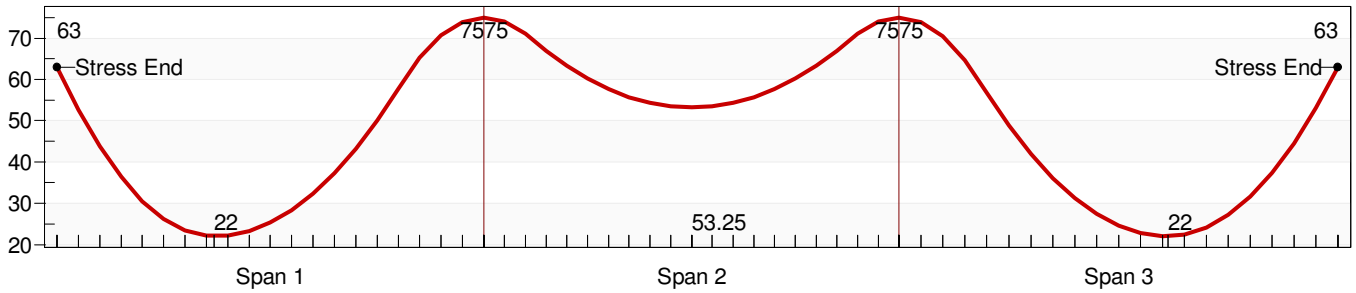
E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com
ADAPT-FELT Ver. 2014
Date: 8/22/2017 Time: 14:06

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER
1.1 SPECIFIC TITLE : B18-T1
1.2 FILE NAME : B18-T1

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	182.88	ksi
Long term stress losses	0.00	ksi
Final average stress	182.88	ksi
Final average force in tendon	595.29	k
Anchor set influence from left pull (189.21ksi;0.701) ..	94.50	ft
Anchor set influence from right pull (189.85ksi;0.703) ..	96.77	ft
Elongation at left pull before anchor set	39.986	inch
Elongation at right pull before anchor set	2.528	inch
Elongation at left pull after anchor set	39.611	inch
Elongation at right pull after anchor set	2.153	inch
Total elongation after anchor set	41.764	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

5 - DESIGNER'S NOTES

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ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 14:08:34

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B18-T2

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B18-T2)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.69	1	47.00	16.00	69.00	0.00	0.37	0.20	179.05	187.74	183.24
2	175.92	1	69.00	47.25	69.00	0.11	0.50	0.11	183.24	176.85	183.58
3	185.75	1	69.00	16.00	47.00	0.19	0.61	0.00	183.58	189.04	180.08

542.36 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	184.64	ksi
Long term stress losses	0.00	ksi
Final average stress	184.64	ksi
Final average force in tendon	601.00	k
Anchor set influence from left pull (190.80ksi;0.707)	99.93	ft
Anchor set influence from right pull (191.31ksi;0.709)	102.02	ft
Elongation at left pull before anchor set	40.406	inch
Elongation at right pull before anchor set	2.509	inch
Elongation at left pull after anchor set	40.031	inch
Elongation at right pull after anchor set	2.134	inch
Total elongation after anchor set	42.165	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.709

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

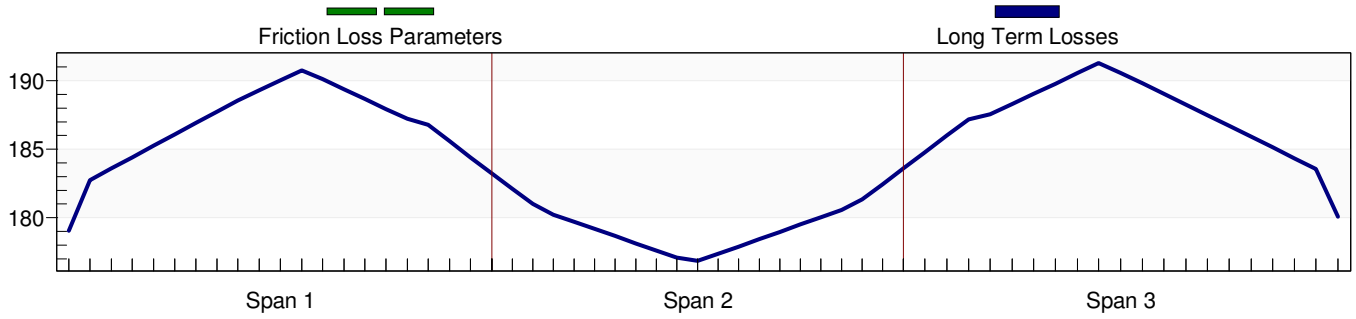
Date: 8/22/2017 Time: 14:08

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

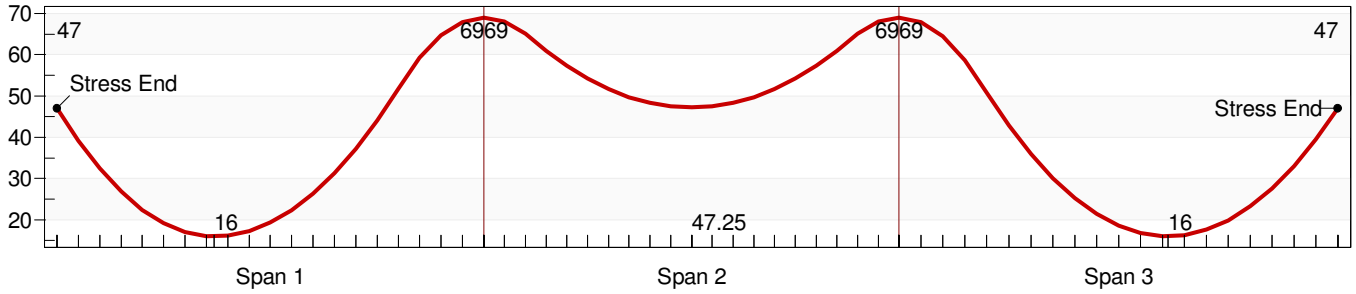
1.1 SPECIFIC TITLE : B18-T2

1.2 FILE NAME : B18-T2

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	184.64	ksi
Long term stress losses	0.00	ksi
Final average stress	184.64	ksi
Final average force in tendon	601.00	k
Anchor set influence from left pull (190.80ksi;0.707) ..	99.93	ft
Anchor set influence from right pull (191.31ksi;0.709) ..	102.02	ft
Elongation at left pull before anchor set	40.406	inch
Elongation at right pull before anchor set	2.509	inch
Elongation at left pull after anchor set	40.031	inch
Elongation at right pull after anchor set	2.134	inch
Total elongation after anchor set	42.165	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.709

5 - DESIGNER'S NOTES

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| ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM |

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 14:10:11

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B18-T3

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B18-T3)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.69	1	31.00	10.00	63.00	0.00	0.37	0.20	182.32	189.05	185.21
2	175.92	1	63.00	41.25	63.00	0.11	0.50	0.11	185.21	178.62	185.42
3	185.75	1	63.00	10.00	31.00	0.19	0.61	0.00	185.42	190.14	183.08

542.36 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	186.41	ksi
Long term stress losses	0.00	ksi
Final average stress	186.41	ksi
Final average force in tendon	606.76	k
Anchor set influence from left pull (192.44ksi;0.713)	105.06	ft
Anchor set influence from right pull (192.82ksi;0.714)	107.04	ft
Elongation at left pull before anchor set	40.832	inch
Elongation at right pull before anchor set	2.487	inch
Elongation at left pull after anchor set	40.457	inch
Elongation at right pull after anchor set	2.112	inch
Total elongation after anchor set	42.569	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

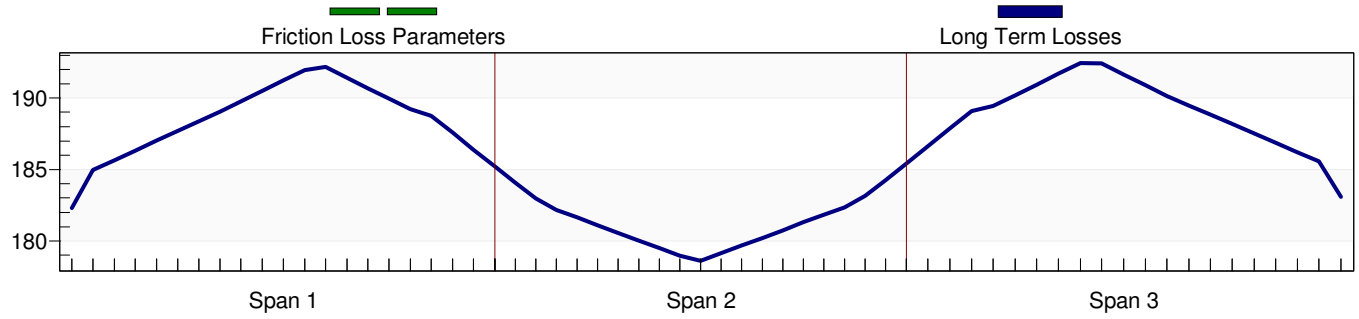
Date: 8/22/2017 Time: 14:10

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

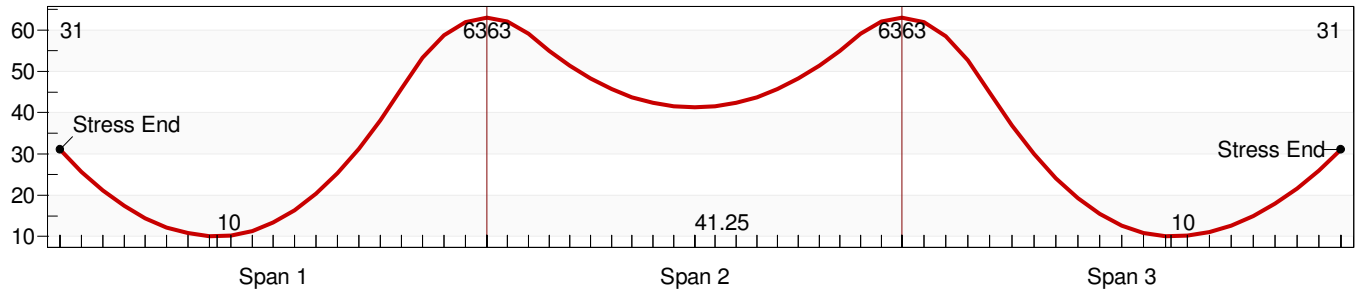
1.1 SPECIFIC TITLE : B18-T3

1.2 FILE NAME : B18-T3

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	186.41	ksi
Long term stress losses	0.00	ksi
Final average stress	186.41	ksi
Final average force in tendon	606.76	k
Anchor set influence from left pull (192.44ksi;0.713) ..	105.06	ft
Anchor set influence from right pull (192.82ksi;0.714) ..	107.04	ft
Elongation at left pull before anchor set	40.832	inch
Elongation at right pull before anchor set	2.487	inch
Elongation at left pull after anchor set	40.457	inch
Elongation at right pull after anchor set	2.112	inch
Total elongation after anchor set	42.569	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

5 - DESIGNER'S NOTES

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ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 14:11:40

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B18-T4

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B18-T4)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right -->
1	180.69	1	15.00	4.00	57.00	0.00	0.37	0.20	185.67	190.42	187.21
2	175.92	1	57.00	35.25	57.00	0.11	0.50	0.11	187.21	180.41	187.27
3	185.75	1	57.00	4.00	15.00	0.19	0.61	0.00	187.27	191.29	186.15

542.36 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	188.21	ksi
Long term stress losses	0.00	ksi
Final average stress	188.21	ksi
Final average force in tendon	612.62	k
Anchor set influence from left pull (194.11ksi;0.719)	109.94	ft
Anchor set influence from right pull (194.35ksi;0.720)	111.82	ft
Elongation at left pull before anchor set	41.264	inch
Elongation at right pull before anchor set	2.466	inch
Elongation at left pull after anchor set	40.889	inch
Elongation at right pull after anchor set	2.091	inch
Total elongation after anchor set	42.980	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.689; Max along tendon 0.720

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

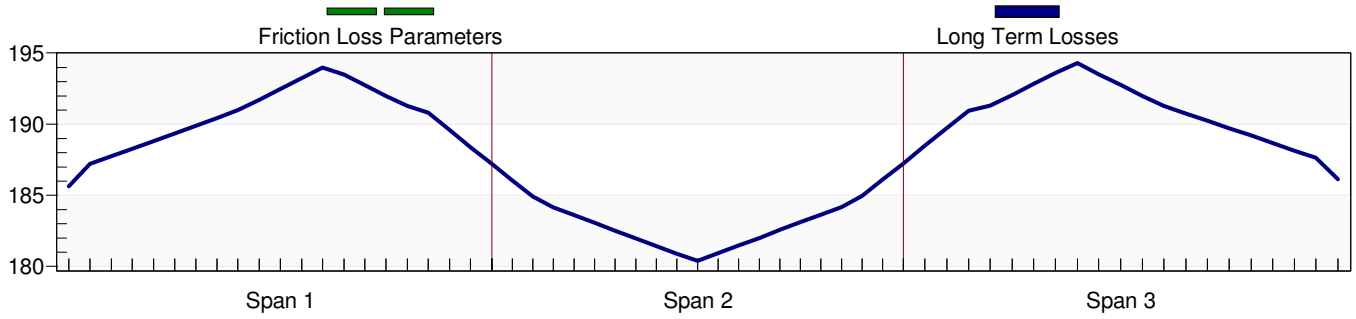
Date: 8/22/2017 Time: 14:11

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

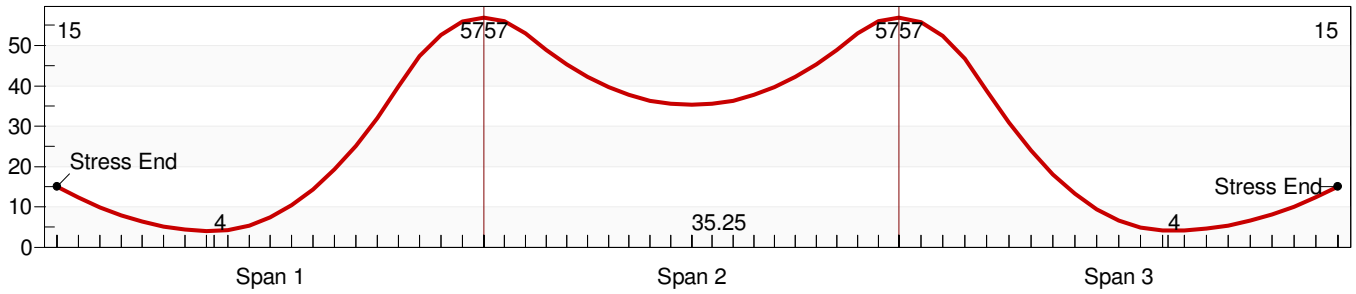
1.1 SPECIFIC TITLE : B18-T4

1.2 FILE NAME : B18-T4

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	188.21	ksi
Long term stress losses	0.00	ksi
Final average stress	188.21	ksi
Final average force in tendon	612.62	k
Anchor set influence from left pull (194.11ksi;0.719) ..	109.94	ft
Anchor set influence from right pull (194.35ksi;0.720) ..	111.82	ft
Elongation at left pull before anchor set	41.264	inch
Elongation at right pull before anchor set	2.466	inch
Elongation at left pull after anchor set	40.889	inch
Elongation at right pull after anchor set	2.091	inch
Total elongation after anchor set	42.980	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.689; Max along tendon 0.720

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:19:37

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B19-T1

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B19-T1)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.85	1	63.00	22.00	75.00	0.00	0.37	0.20	175.89	186.50	181.30
2	176.08	1	75.00	53.25	75.00	0.11	0.50	0.11	181.30	175.05	181.72
3	183.15	1	75.00	22.00	63.00	0.19	0.61	0.00	181.72	187.87	177.14

540.08 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	182.86	ksi
Long term stress losses	0.00	ksi
Final average stress	182.86	ksi
Final average force in tendon	595.20	k
Anchor set influence from left pull (189.22ksi;0.701)	94.54	ft
Anchor set influence from right pull (189.85ksi;0.703)	96.37	ft
Elongation at left pull before anchor set	39.829	inch
Elongation at right pull before anchor set	2.503	inch
Elongation at left pull after anchor set	39.454	inch
Elongation at right pull after anchor set	2.128	inch
Total elongation after anchor set	41.582	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

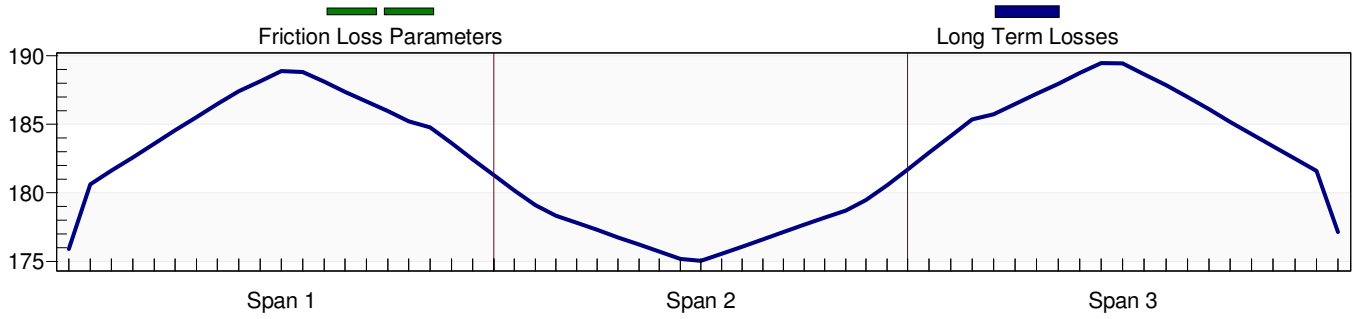
Date: 8/22/2017 Time: 15:20

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

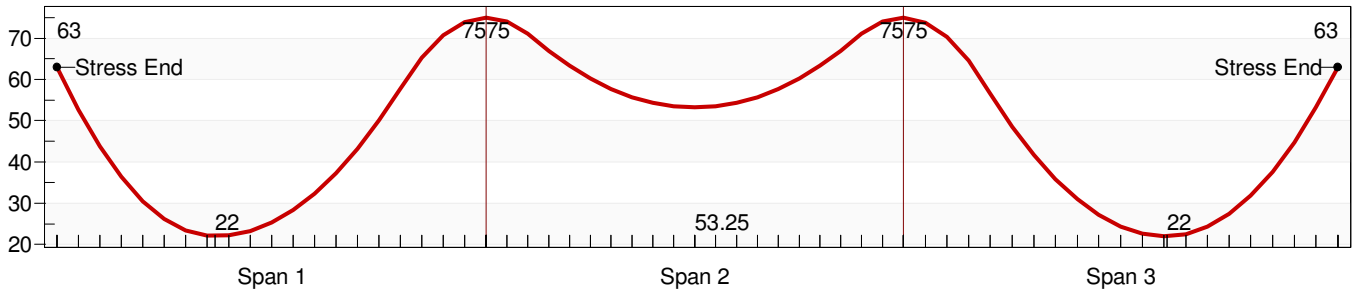
1.1 SPECIFIC TITLE : B19-T1

1.2 FILE NAME : B19-T1

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	182.86	ksi
Long term stress losses	0.00	ksi
Final average stress	182.86	ksi
Final average force in tendon	595.20	k
Anchor set influence from left pull (189.22ksi;0.701) ..	94.54	ft
Anchor set influence from right pull (189.85ksi;0.703) ..	96.37	ft
Elongation at left pull before anchor set	39.829	inch
Elongation at right pull before anchor set	2.503	inch
Elongation at left pull after anchor set	39.454	inch
Elongation at right pull after anchor set	2.128	inch
Total elongation after anchor set	41.582	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :

At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014
ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:21:14

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B19-T2

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B19-T2)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right -->
1	180.85	1	47.00	16.00	69.00	0.00	0.37	0.20	179.07	187.75	183.24
2	176.08	1	69.00	47.25	69.00	0.11	0.50	0.11	183.24	176.79	183.53
3	183.15	1	69.00	16.00	47.00	0.19	0.61	0.00	183.53	188.93	180.06

540.08 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	184.61	ksi
Long term stress losses	0.00	ksi
Final average stress	184.61	ksi
Final average force in tendon	600.90	k
Anchor set influence from left pull (190.81ksi;0.707)	99.96	ft
Anchor set influence from right pull (191.31ksi;0.709)	101.50	ft
Elongation at left pull before anchor set	40.248	inch
Elongation at right pull before anchor set	2.483	inch
Elongation at left pull after anchor set	39.873	inch
Elongation at right pull after anchor set	2.108	inch
Total elongation after anchor set	41.981	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.709

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

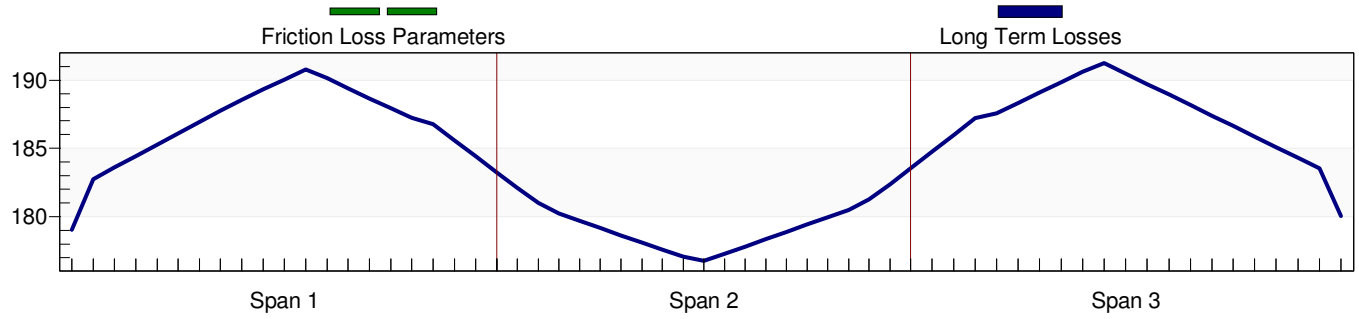
Date: 8/22/2017 Time: 15:21

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

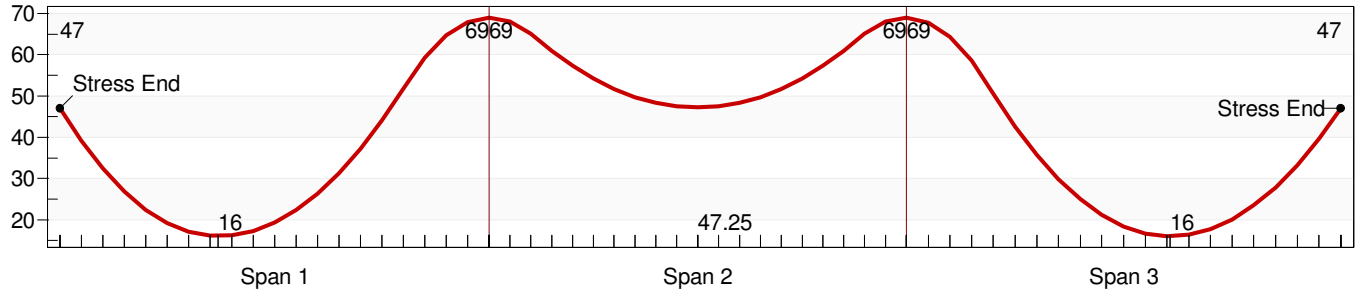
1.1 SPECIFIC TITLE : B19-T2

1.2 FILE NAME : B19-T2

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	184.61	ksi
Long term stress losses	0.00	ksi
Final average stress	184.61	ksi
Final average force in tendon	600.90	k
Anchor set influence from left pull (190.81ksi;0.707) ..	99.96	ft
Anchor set influence from right pull (191.31ksi;0.709) ..	101.50	ft
Elongation at left pull before anchor set	40.248	inch
Elongation at right pull before anchor set	2.483	inch
Elongation at left pull after anchor set	39.873	inch
Elongation at right pull after anchor set	2.108	inch
Total elongation after anchor set	41.981	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.709

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:22:36

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B19-T3

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B19-T3)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.85	1	31.00	10.00	63.00	0.00	0.37	0.20	182.33	189.06	185.21
2	176.08	1	63.00	41.25	63.00	0.11	0.50	0.11	185.21	178.56	185.36
3	183.15	1	63.00	10.00	31.00	0.19	0.61	0.00	185.36	190.04	183.06

540.08 ft (total length of tendon)

SUMMARY :

Average initial stress (after release).....	186.38	ksi
Long term stress losses	0.00	ksi
Final average stress	186.38	ksi
Final average force in tendon	606.66	k
Anchor set influence from left pull (192.44ksi;0.713) ..	105.10	ft
Anchor set influence from right pull (192.81ksi;0.714) ..	106.39	ft
Elongation at left pull before anchor set	40.671	inch
Elongation at right pull before anchor set	2.461	inch
Elongation at left pull after anchor set	40.296	inch
Elongation at right pull after anchor set	2.086	inch
Total elongation after anchor set	42.383	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

ADAPT Structural Concrete Software

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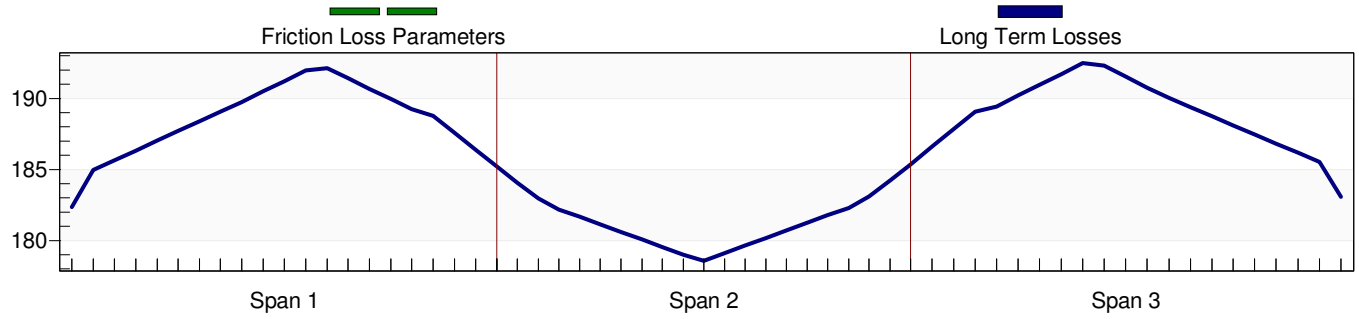
Date: 8/22/2017 Time: 15:22

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

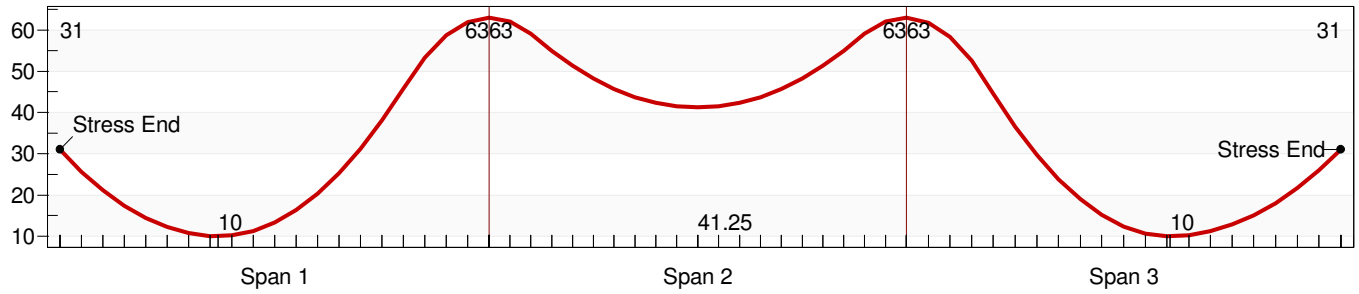
1.1 SPECIFIC TITLE : B19-T3

1.2 FILE NAME : B19-T3

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	186.38	ksi
Long term stress losses	0.00	ksi
Final average stress	186.38	ksi
Final average force in tendon	606.66	k
Anchor set influence from left pull (192.44ksi;0.713) ..	105.10	ft
Anchor set influence from right pull (192.81ksi;0.714) ..	106.39	ft
Elongation at left pull before anchor set	40.671	inch
Elongation at right pull before anchor set	2.461	inch
Elongation at left pull after anchor set	40.296	inch
Elongation at right pull after anchor set	2.086	inch
Total elongation after anchor set	42.383	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

5 - DESIGNER'S NOTES

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| ADAPT-FELT Standard 2014 |
| ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM |

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:23:53

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B19-T4

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B19-T4)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	180.85	1	15.00	4.00	57.00	0.00	0.37	0.20	185.67	190.42	187.21
2	176.08	1	57.00	35.25	57.00	0.11	0.50	0.11	187.21	180.36	187.22
3	183.15	1	57.00	4.00	15.00	0.19	0.61	0.00	187.22	191.20	186.13

540.08 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	188.17	ksi
Long term stress losses	0.00	ksi
Final average stress	188.17	ksi
Final average force in tendon	612.50	k
Anchor set influence from left pull (194.11ksi;0.719)	109.99	ft
Anchor set influence from right pull (194.34ksi;0.720)	111.05	ft
Elongation at left pull before anchor set	41.101	inch
Elongation at right pull before anchor set	2.440	inch
Elongation at left pull after anchor set	40.726	inch
Elongation at right pull after anchor set	2.065	inch
Total elongation after anchor set	42.791	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

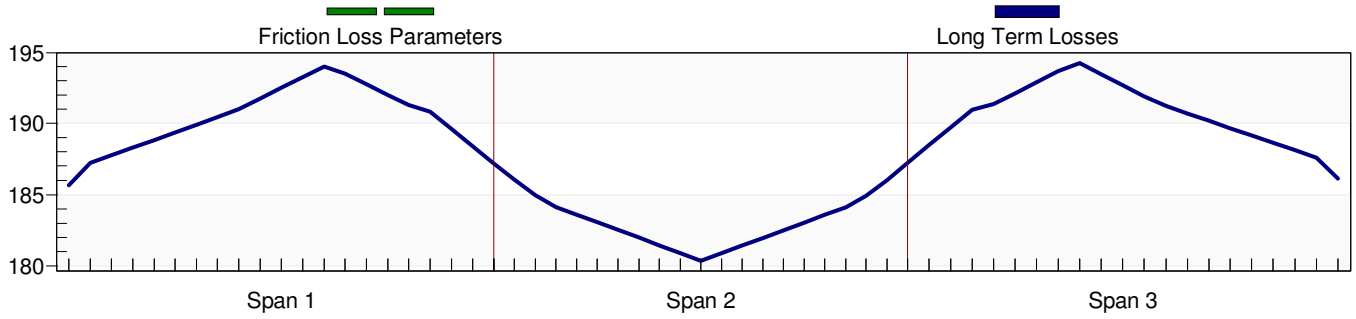
CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.689; Max along tendon 0.720

ADAPT Structural Concrete Software

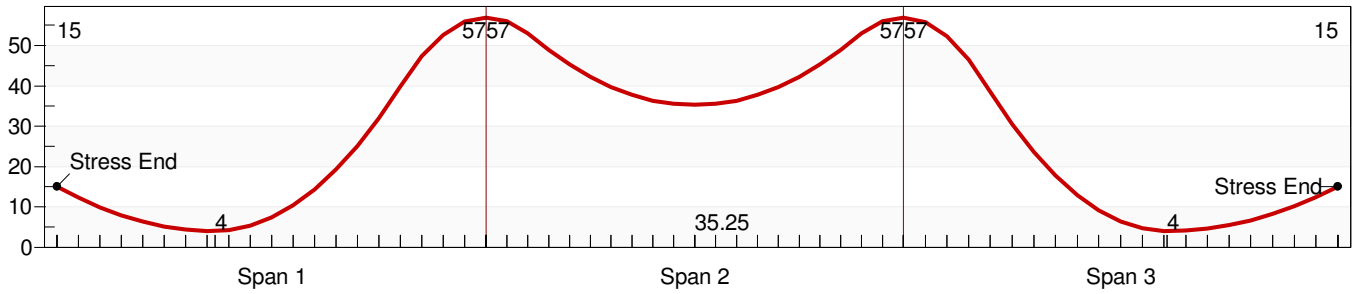
E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com
ADAPT-FELT Ver. 2014
Date: 8/22/2017 Time: 15:24

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER
1.1 SPECIFIC TITLE : B19-T4
1.2 FILE NAME : B19-T4

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	188.17	ksi
Long term stress losses	0.00	ksi
Final average stress	188.17	ksi
Final average force in tendon	612.50	k
Anchor set influence from left pull (194.11ksi;0.719) ..	109.99	ft
Anchor set influence from right pull (194.34ksi;0.720) ..	111.05	ft
Elongation at left pull before anchor set	41.101	inch
Elongation at right pull before anchor set	2.440	inch
Elongation at left pull after anchor set	40.726	inch
Elongation at right pull after anchor set	2.065	inch
Total elongation after anchor set	42.791	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.689; Max along tendon 0.720

5 - DESIGNER'S NOTES

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ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:25:23

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B20-T1

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B20-T1)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	181.01	1	63.00	22.00	75.00	0.00	0.37	0.20	175.87	186.50	181.30
2	176.24	1	75.00	53.25	75.00	0.11	0.50	0.11	181.30	174.95	181.64
3	180.54	1	75.00	22.00	63.00	0.19	0.60	0.00	181.64	187.75	177.11

537.79 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	182.81	ksi
Long term stress losses	0.00	ksi
Final average stress	182.81	ksi
Final average force in tendon	595.04	k
Anchor set influence from left pull (189.21ksi;0.701)	94.55	ft
Anchor set influence from right pull (189.83ksi;0.703)	95.97	ft
Elongation at left pull before anchor set	39.667	inch
Elongation at right pull before anchor set	2.478	inch
Elongation at left pull after anchor set	39.292	inch
Elongation at right pull after anchor set	2.103	inch
Total elongation after anchor set	41.395	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

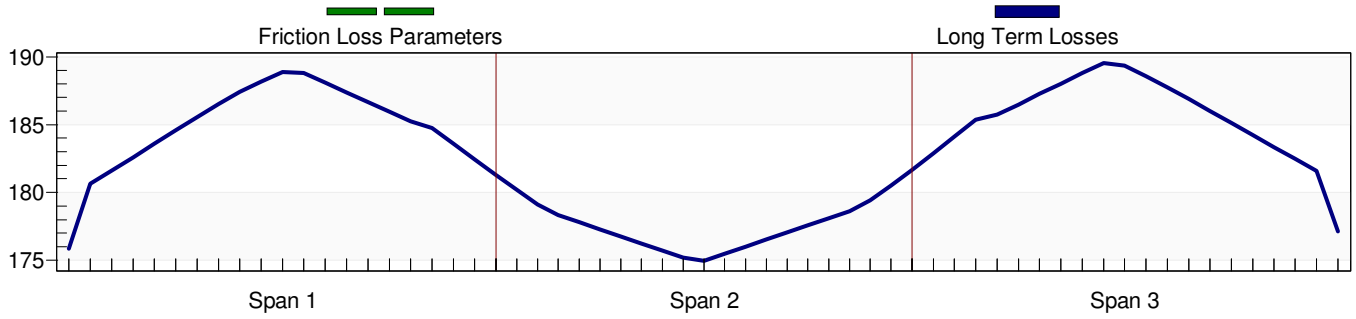
Date: 8/22/2017 Time: 15:25

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

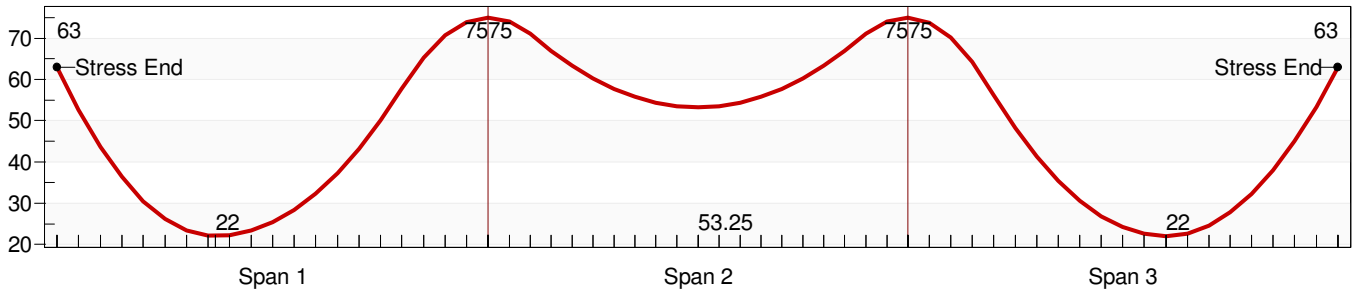
1.1 SPECIFIC TITLE : B20-T1

1.2 FILE NAME : B20-T1

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	182.81	ksi
Long term stress losses	0.00	ksi
Final average stress	182.81	ksi
Final average force in tendon	595.04	k
Anchor set influence from left pull (189.21ksi;0.701) ..	94.55	ft
Anchor set influence from right pull (189.83ksi;0.703) ..	95.97	ft
Elongation at left pull before anchor set	39.667	inch
Elongation at right pull before anchor set	2.478	inch
Elongation at left pull after anchor set	39.292	inch
Elongation at right pull after anchor set	2.103	inch
Total elongation after anchor set	41.395	inch
Ratio of total elongation to tendon length after anchor set	0.077	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :

At stressing 0.750; At anchorage 0.656; Max along tendon 0.703

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:27:26

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B20-T2

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B20-T2)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) --> start	center	right
1	181.01	1	47.00	16.00	69.00	0.00	0.37	0.20	179.05	187.75	183.24
2	176.24	1	69.00	47.25	69.00	0.11	0.50	0.11	183.24	176.70	183.45
3	180.54	1	69.00	16.00	47.00	0.19	0.60	0.00	183.45	188.82	180.04

537.79 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	184.56	ksi
Long term stress losses	0.00	ksi
Final average stress	184.56	ksi
Final average force in tendon	600.75	k
Anchor set influence from left pull (190.80ksi;0.707)	99.98	ft
Anchor set influence from right pull (191.29ksi;0.708)	100.97	ft
Elongation at left pull before anchor set	40.085	inch
Elongation at right pull before anchor set	2.457	inch
Elongation at left pull after anchor set	39.710	inch
Elongation at right pull after anchor set	2.082	inch
Total elongation after anchor set	41.792	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.708

ADAPT Structural Concrete Software

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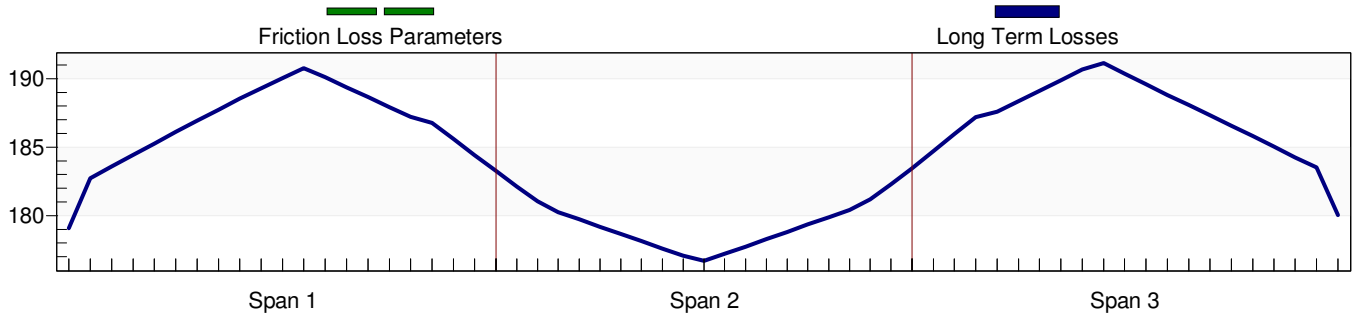
Date: 8/22/2017 Time: 15:27

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

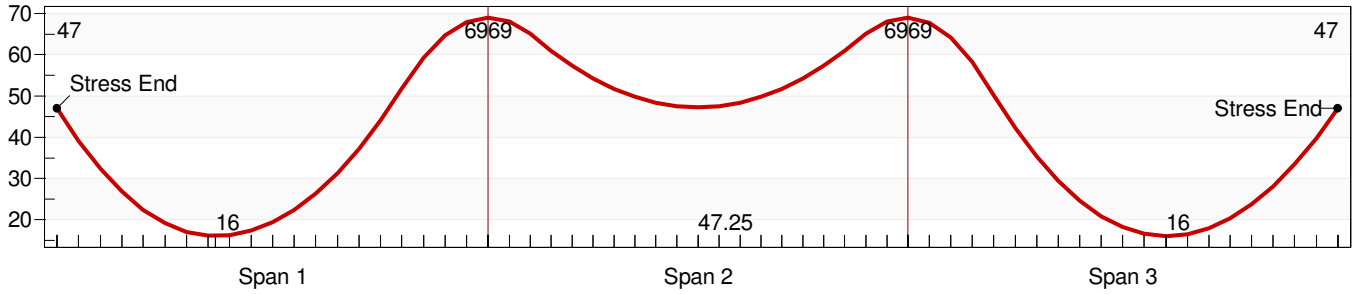
1.1 SPECIFIC TITLE : B20-T2

1.2 FILE NAME : B20-T2

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	184.56	ksi
Long term stress losses	0.00	ksi
Final average stress	184.56	ksi
Final average force in tendon	600.75	k
Anchor set influence from left pull (190.80ksi;0.707) ..	99.98	ft
Anchor set influence from right pull (191.29ksi;0.708) ..	100.97	ft
Elongation at left pull before anchor set	40.085	inch
Elongation at right pull before anchor set	2.457	inch
Elongation at left pull after anchor set	39.710	inch
Elongation at right pull after anchor set	2.082	inch
Total elongation after anchor set	41.792	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.667; Max along tendon 0.708

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:28:51

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B20-T3

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B20-T3)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right -->
1	181.01	1	31.00	10.00	63.00	0.00	0.37	0.20	182.32	189.06	185.22
2	176.24	1	63.00	41.25	63.00	0.11	0.50	0.11	185.22	178.46	185.28
3	180.54	1	63.00	10.00	31.00	0.19	0.60	0.00	185.28	189.94	183.03

537.79 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	186.33	ksi
Long term stress losses	0.00	ksi
Final average stress	186.33	ksi
Final average force in tendon	606.52	k
Anchor set influence from left pull (192.44ksi;0.713)	105.14	ft
Anchor set influence from right pull (192.79ksi;0.714)	105.74	ft
Elongation at left pull before anchor set	40.507	inch
Elongation at right pull before anchor set	2.436	inch
Elongation at left pull after anchor set	40.132	inch
Elongation at right pull after anchor set	2.061	inch
Total elongation after anchor set	42.193	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

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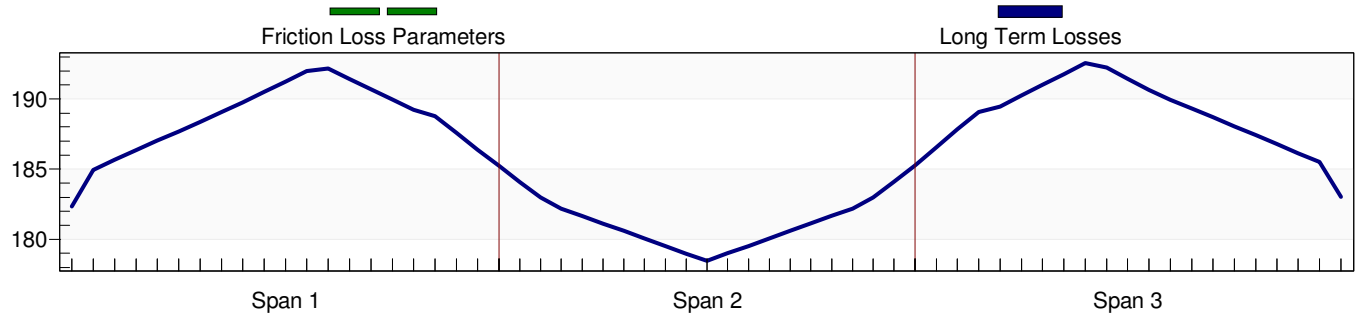
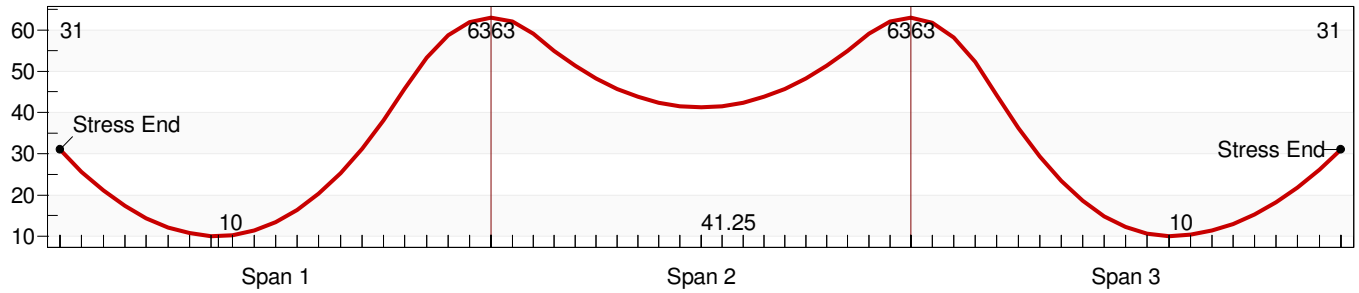
Date: 8/22/2017 Time: 15:29

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER
1.1 SPECIFIC TITLE : B20-T3
1.2 FILE NAME : B20-T3

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	186.33	ksi
Long term stress losses	0.00	ksi
Final average stress	186.33	ksi
Final average force in tendon	606.52	k
Anchor set influence from left pull (192.44ksi;0.713) ..	105.14	ft
Anchor set influence from right pull (192.79ksi;0.714) ..	105.74	ft
Elongation at left pull before anchor set	40.507	inch
Elongation at right pull before anchor set	2.436	inch
Elongation at left pull after anchor set	40.132	inch
Elongation at right pull after anchor set	2.061	inch
Total elongation after anchor set	42.193	inch
Ratio of total elongation to tendon length after anchor set	0.078	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.678; Max along tendon 0.714

5 - DESIGNER'S NOTES

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ADAPT-FELT Standard 2014

ADAPT POST-TENSIONING STRESS LOSS & ELONGATION PROGRAM

This program calculates the long-term and immediate stress losses in a post-tensioned tendon. It outputs the elongations at the stressing ends and the final stress profile along the tendon.

DATE: Aug 22, 2017 TIME: 15:30:23

P R O J E C T T I T L E :
SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

S P E C I F I C T I T L E :
B20-T4

F R I C T I O N & E L O N G A T I O N C A L C U L A T I O N S :

INPUT PARAMETERS :

Coefficient of angular friction (meu).....	0.23000	/radian
Coefficient of wobble friction (K).....	0.00020	rad/ft
Ultimate strength of strand	270.00	ksi
Ratio of jacking stress to strand's ultimate strength	0.75	
Anchor set	0.38	inch
Cross-sectional area of strand	0.217	inch^2
Total Number of Strands per Tendon.....	15	
Modulus of elasticity of strand	28500.00	ksi
STRESSING	AT BOTH ENDS	

LEGEND :
P ..... = Tendon profile type defined as: 1=reversed parabola;
2=partial/regular parabola; 3=harped; 4=general; 5=straight;
6=extended reversed parabola; 7=cantilever down
X1/L etc = horizontal distances to control points in geometry of the
tendon divided by span length
Stresses tabulated are after anchor set but before long-term losses.

TENDON ID, GEOMETRY AND STRESS PROFILE (B20-T4)

SPAN	LENGTH ft	P	< TENDON HEIGHT in.> start	center	right	Horizontal ratios X1/L	X2/L	X3/L	<- STRESS (ksi) start	center	right -->
1	181.01	1	15.00	4.00	57.00	0.00	0.37	0.20	185.67	190.42	187.22
2	176.24	1	57.00	35.25	57.00	0.11	0.50	0.11	187.22	180.37	187.14
3	180.54	1	57.00	4.00	15.00	0.19	0.60	0.00	187.14	191.11	186.10

537.79 ft (total length of tendon)

SUMMARY :

Average initial stress (after release)	188.13	ksi
Long term stress losses	0.00	ksi
Final average stress	188.13	ksi
Final average force in tendon	612.37	k
Anchor set influence from left pull (194.11ksi;0.719)	110.05	ft
Anchor set influence from right pull (194.32ksi;0.720)	110.30	ft
Elongation at left pull before anchor set	40.936	inch
Elongation at right pull before anchor set	2.414	inch
Elongation at left pull after anchor set	40.561	inch
Elongation at right pull after anchor set	2.039	inch
Total elongation after anchor set	42.600	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.689; Max along tendon 0.720

ADAPT Structural Concrete Software

E-mail: support@adaptsoft.com, Web site: www.adaptsoft.com

ADAPT-FELT Ver. 2014

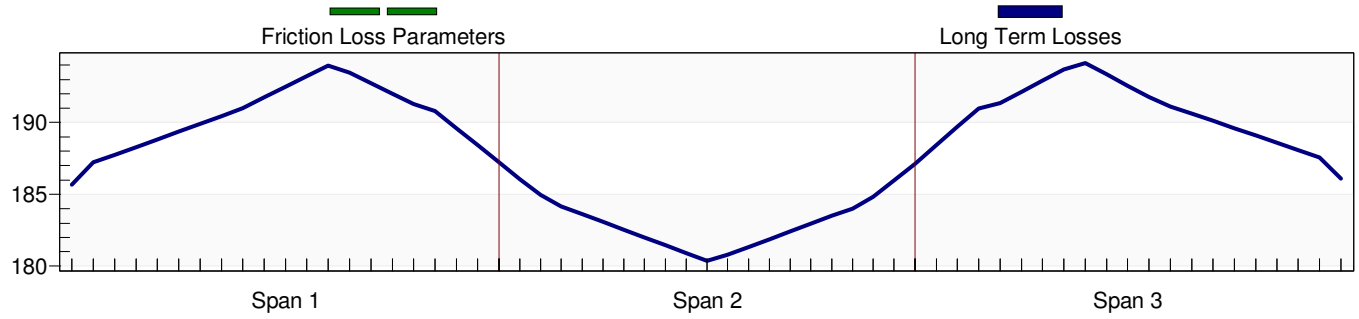
Date: 8/22/2017 Time: 15:30

1- PROJECT TITLE : SR 7404 SEC 07M OVER THE THE LEHIGH RIVER

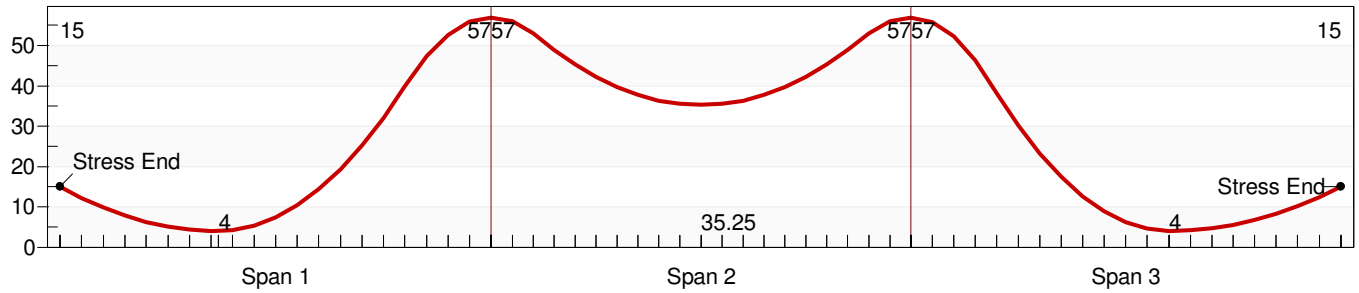
1.1 SPECIFIC TITLE : B20-T4

1.2 FILE NAME : B20-T4

2 - TENDON STRESSES [ksi]



3 - TENDON PROFILE [in]



4 - SUMMARY

Average initial stress (after release).....	188.13	ksi
Long term stress losses	0.00	ksi
Final average stress	188.13	ksi
Final average force in tendon	612.37	k
Anchor set influence from left pull (194.11ksi;0.719) ..	110.05	ft
Anchor set influence from right pull (194.32ksi;0.720) ..	110.30	ft
Elongation at left pull before anchor set	40.936	inch
Elongation at right pull before anchor set	2.414	inch
Elongation at left pull after anchor set	40.561	inch
Elongation at right pull after anchor set	2.039	inch
Total elongation after anchor set	42.600	inch
Ratio of total elongation to tendon length after anchor set	0.079	inch/ft
Jacking force	659.30	k

CRITICAL STRESS RATIOS :
At stressing 0.750; At anchorage 0.689; Max along tendon 0.720

5 - DESIGNER'S NOTES