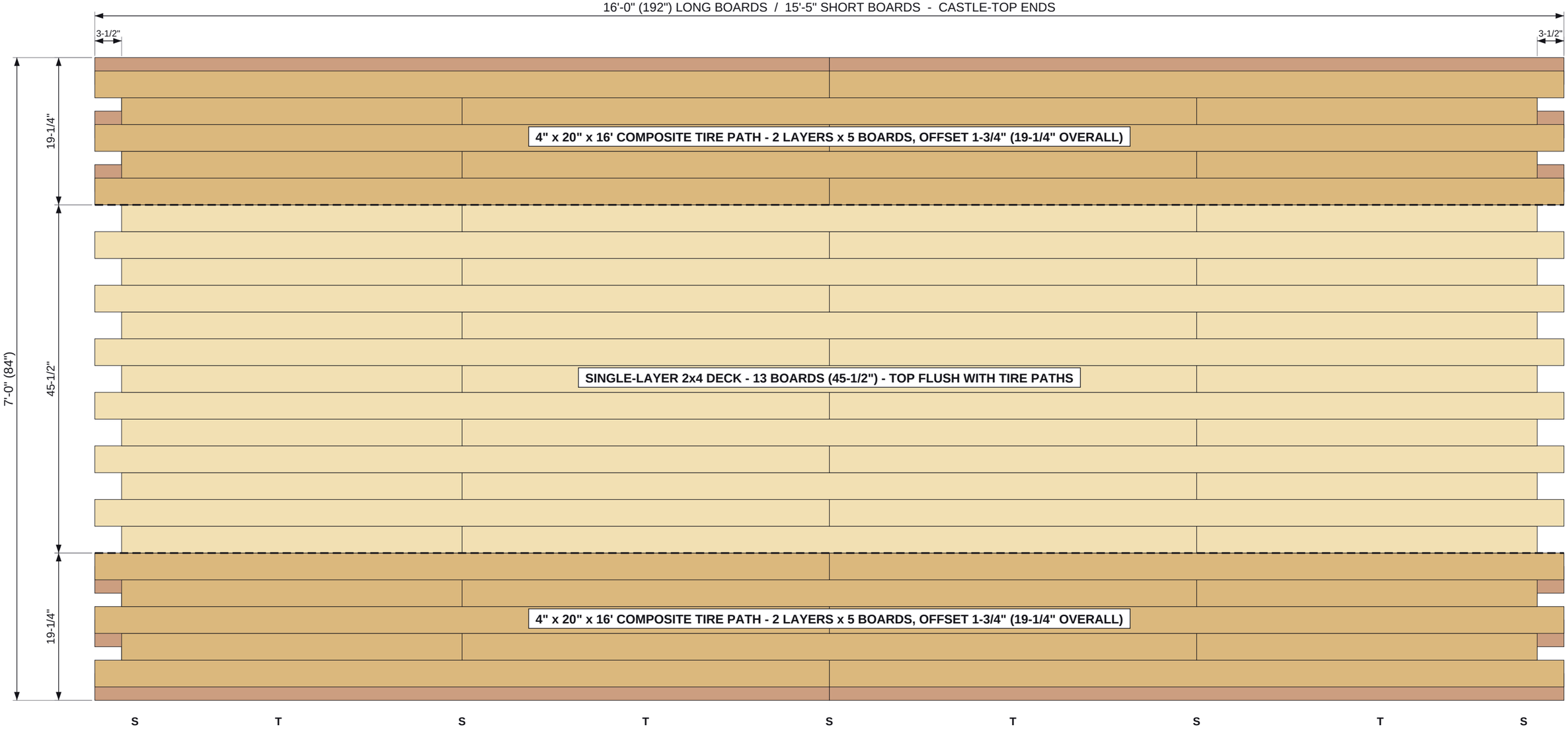


GENERAL NOTES

1. EVERY MEMBER IS 2x4x8' PINE (ACTUAL 1-1/2" x 3-1/2" x 96"). FASTENERS ARE THE ONLY OTHER ITEM (SHEET 5).
2. TOP-VIEW STAGGER (CASTLE TOP): ALTERNATE BOARD COLUMNS ARE LONG (16'-0") AND SHORT (15'-5"), GIVING A CRENELLATED END AT BOTH ENDS, AS IN PHOTOS 2 AND 3. THE 3-1/2" NOTCH DEPTH IS SCALED FROM THE PHOTOS - CONFIRM.
3. FRONT-VIEW STAGGER: TOP-LAYER CRACKS FALL AT THE MIDDLE OF THE LOWER-LAYER BOARDS (1-3/4" OFFSET) - SEE SHEET 3.
4. BODY BOARDS ARE 8' AND 4' MEMBERS ONLY. JOINTS FALL AT 4', 8' AND 12', ALWAYS OVER A 7' SUPPORT.
5. FLAT TOP: ALL 23 TOP BOARDS ARE COPLANAR. THE LOWER LAYER SHOWS AS A 1-3/4" LEDGE, 1-1/2" DOWN, ALONG BOTH OUTER EDGES.
6. SCAFFOLDING IN THE PHOTOS (LOOSE CROSSBARS, SIDE BOARDS, CARDBOARD TEMPLATES, TOOLS) IS OMITTED.
7. TIRE-PATH STRIPS ARE AT THE OUTER EDGES (ASSUMED) - CONFIRM AGAINST THE TRAILER'S TIRE LOCATIONS.
8. 2 SCREWS AT EACH STUD END, NEVER MORE THAN 2 IN ANY ONE LOCALE; SPANS FASTENED WEB TO FLANGE AND TO THE DECK - SHEET 5.

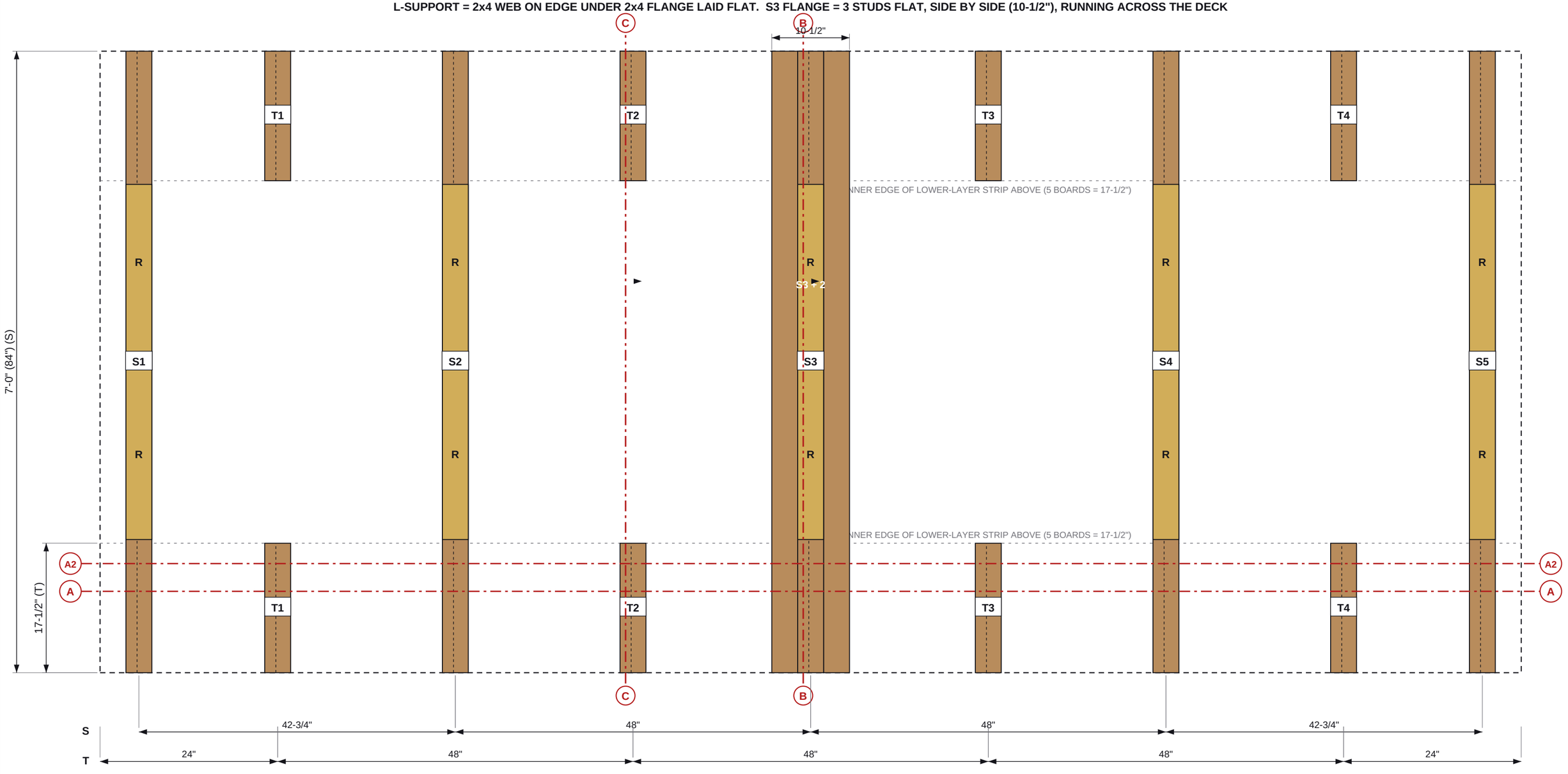
LEGEND

- TOP BOARD OVER CENTER (SINGLE LAYER)
- TOP BOARD OVER LOWER LAYER (TIRE PATH)
- LOWER-LAYER BOARD SHOWING AT OUTER EDGE

BOARD PATTERNS (BOTH LAYERS):
A = 96+96 (JOINT AT 8'-0")
B = 48+96+48 (JOINTS AT 4'-0", 12'-0")
A / B AND LONG / SHORT BOTH ALTERNATE ACROSS COLUMNS.

PROJECT	SHEET TITLE	SCALE	SHEET	DWG NO.
PINE 2x4 TRAILER DECK - 16'-0" x 7'-0" ALL MEMBERS 2x4x8' PINE - NO OTHER MATERIAL	**DECK PLAN (TOP VIEW) - CASTLE TOP, FLAT TOP**	**1:14.4 (11x17)** UNITS: INCHES, ACTUAL SIZES	**1 OF 6**	**TD-001**

L-SUPPORT = 2x4 WEB ON EDGE UNDER 2x4 FLANGE LAID FLAT. S3 FLANGE = 3 STUDS FLAT, SIDE BY SIDE (10-1/2"), RUNNING ACROSS THE DECK



FRAMING NOTES

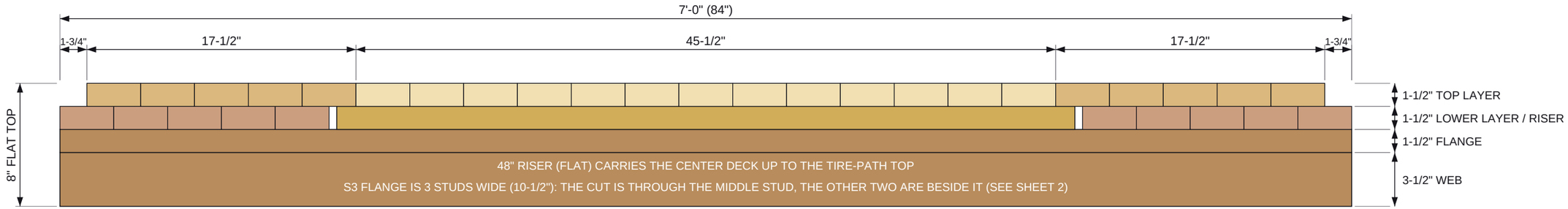
1. S2-S4 SIT AT 4', 8', 12'. S1 AND S5 ARE INSET TO 5-1/4" SO THE SHORT (NOTCHED) BOARDS STILL BEAR FULLY ON THEIR FLANGES.
2. S3 IS THE DEAD-CENTER SPAN (8'-0" FROM EITHER END). TWO MORE 7' STUDS LAID FLAT BESIDE ITS FLANGE MAKE A 3-STUD, 10-1/2" FLANGE. THE ADDED STUDS RUN ACROSS THE DECK LIKE S3. S3's WEB STAYS UNDER ITS MIDDLE STUD.
3. R: FIVE 48" RISERS (2x4 FLAT, 4' MEMBERS), ONE ON EACH S FLANGE BETWEEN THE STRIPS, LIFT THE CENTER DECK TO A FLAT TOP.
4. T1-T4: FOUR 17-1/2" L-SUPPORTS UNDER EACH LOWER-LAYER STRIP (8 TOTAL; 5 BOARDS = NOMINAL 20"), OFFSET 24" FROM S.
5. FLANGE IS CENTERED ON ITS STATION LINE; WEB IS FLUSH WITH THE FLANGE'S LEFT (-X) EDGE (HIDDEN WEB SHOWN DASHED).
6. HOW THE 7' SPANS BEAR ON THE TRAILER FRAME IS NOT DEFINED AND IS NOT DRAWN. CUT MARKS A, A2, B, C ARE ON SHEET 3.

L-SUPPORT FLANGE / ADDED STUD (2x4 FLAT)

RISER (2x4 FLAT)

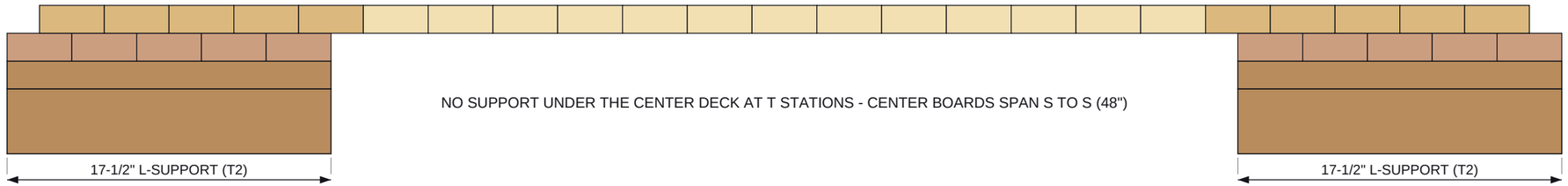
L-SUPPORT WEB BELOW (2x4 ON EDGE)

PROJECT	SHEET TITLE	SCALE	SHEET	DWG NO.
PINE 2x4 TRAILER DECK - 16'-0" x 7'-0" ALL MEMBERS 2x4x8' PINE - NO OTHER MATERIAL	**SUPPORT FRAMING PLAN (DECKING REMOVED)**	**1:14.4 (11x17)** UNITS: INCHES, ACTUAL SIZES	**2 OF 6**	**TD-002**



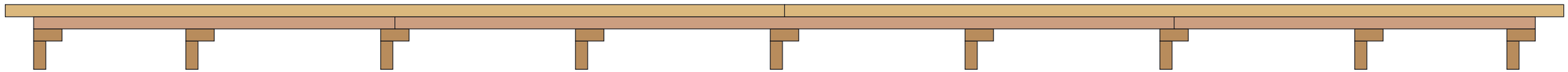
SECTION B-B - THROUGH 7'-0" SPAN S3 (LOOKING +X) - SCALE 1:7.2

FRONT-VIEW STAGGER: TOP CRACKS FALL IN THE MIDDLE OF THE LOWER BOARDS

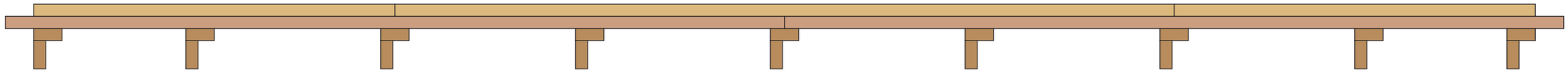


SECTION C-C - THROUGH 17-1/2" SPAN T2 (LOOKING +X) - SCALE 1:7.2

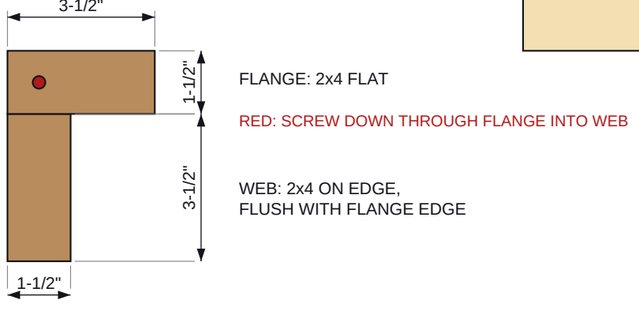
TOP-VIEW STAGGER: LONG / SHORT BOARDS GIVE THE 3-1/2" CASTLE-TOP ENDS. ALL JOINTS (4', 8', 12') SIT OVER 7' SUPPORTS.



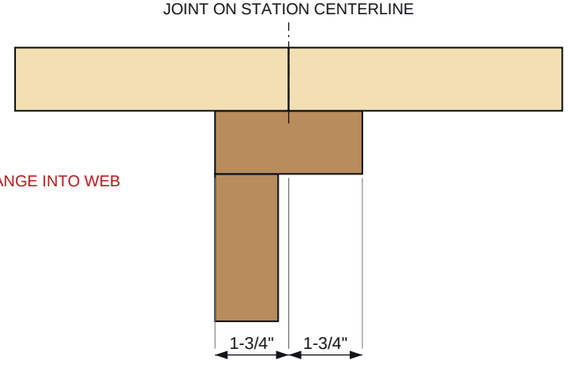
SECTION A-A - LONGITUDINAL, TOP BOARD 8'+8' (LONG) OVER LOWER BOARD 4'+8'+4' (SHORT) - SCALE 1:14.4



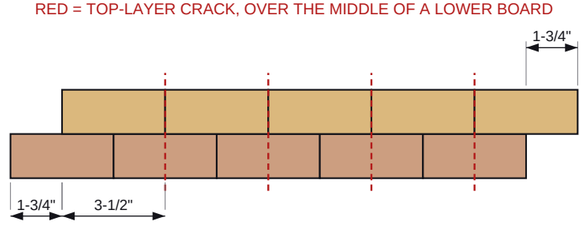
SECTION A2-A2 - NEXT COLUMN: TOP BOARD 4'+8'+4' (SHORT) OVER LOWER BOARD 8'+8' (LONG)



DETAIL D - L-SUPPORT (TYP.) - 1:3.6



DETAIL E - JOINT BEARING (TYP.) - 1:3.6



DETAIL F - HALF-BOARD OFFSET, TIRE PATH (LEFT) - 1:5.1

PROJECT	SHEET TITLE	SCALE	SHEET	DWG NO.
PINE 2x4 TRAILER DECK - 16'-0" x 7'-0" ALL MEMBERS 2x4x8' PINE - NO OTHER MATERIAL	**SECTIONS AND DETAILS**	**AS NOTED** UNITS: INCHES, ACTUAL SIZES	**3 OF 6**	**TD-003**

MARK	DESCRIPTION	QTY	CUT LENGTH	8' STOCK	NOTES
D1	Deck board - 8' members (patterns A and B)	51	96" (uncut)	51	A: 2 per column x 18; B: 1 per column x 15. Short-column end pieces trimmed 3-1/2" each end
D2	Deck board - 4' members, pattern B	30	48"	15	Two per stock board; B: 2 per column x 15. Short-column end pieces trimmed 3-1/2"
S1	7' L-support flange (2x4 flat)	5	84"	5	S1-S5; 12" offcut each
S2	7' L-support web (2x4 on edge)	5	84"	5	S1-S5; 12" offcut each
S3	Added flat studs beside the S3 flange (3-stud, 10-1/2" flange)	2	84"	2	One each side of S3, running across the deck
T1	17-1/2" L-support flange (2x4 flat)	8	17-1/2"	2	T1-T4 in each strip; up to 5 per stock board
T2	17-1/2" L-support web (2x4 on edge)	8	17-1/2"	2	T1-T4 in each strip; up to 5 per stock board
R1	Riser (2x4 flat), one on each S flange between the strips	5	48"	3	4' members, two per stock board
	TOTAL 2x4x8' PINE STOCK BOARDS			**86**	

BOARD COUNT CHECK

DECK: 33 board columns (23 top + 10 lower) x 2 stock boards = 66. SUPPORTS: 10 (7' L) + 2 (added S3 studs) + 4 (17-1/2" L) + 3 (risers) = 19. TOTAL = 85.
COLUMNS: 18 pattern A + 15 pattern B. 15 columns are short (castle notch): 11 top + 4 lower. SAW KERF: allow about 1/8" per cut. SCREWS: SEE SHEET 5.

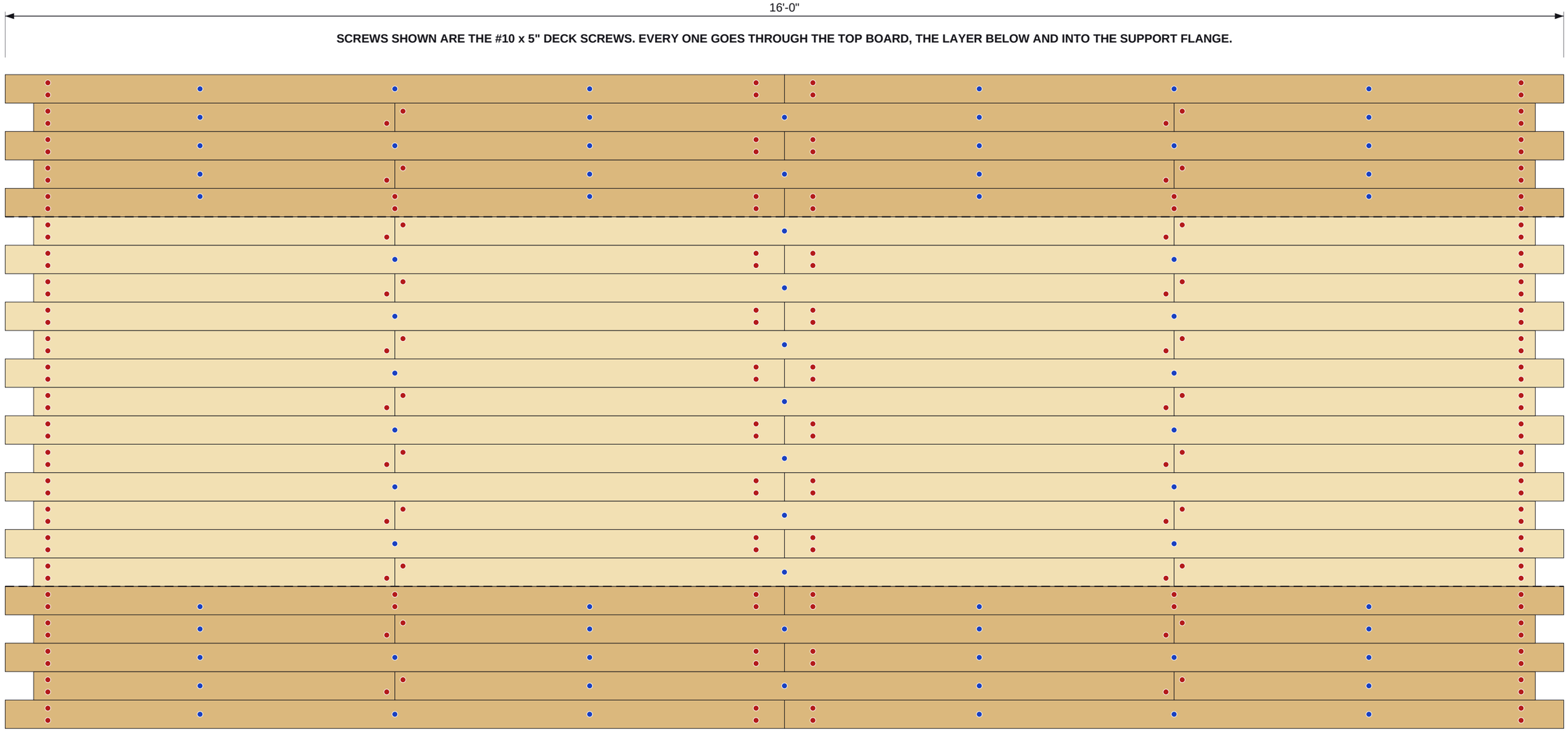
ASSUMPTIONS (CONFIRM BEFORE CUTTING)

1. 4" x 20" x 16' COMPOSITE: each layer is 5 boards wide (5 x 4" nominal = 20"), offset 1-3/4" (half a board): 19-1/4" overall, 3" thick actual (two 1-1/2" layers). Actual 2x4 thickness is 1-1/2", not 2".
2. FRONT-VIEW STAGGER: top-layer cracks fall in the middle of lower-layer boards. The lower layer shows as a 1-3/4" ledge at each outer edge; the top layer overhangs 1-3/4" on the inner edge and rests on a riser.
3. TOP-VIEW STAGGER (CASTLE TOP): alternate columns are 16'-0" and 15'-5" at both ends. Notch depth of 3-1/2" is scaled from photos 2 and 3. Tell me the real depth and I will update it.
4. FLAT TOP: all 23 top boards are coplanar. Risers (my addition, 2x4 pine, 48") lift the center deck and the top-layer overhangs. Scaffolding in your photos is omitted.
5. DEAD-CENTER 3-STUD SPAN: the original single dead-center board is S3's flange (X = 8'-0"). Two more studs lie flat beside it, running across the deck, for a 10-1/2" flange. S3's web stays under its middle stud.
6. BOARDS: 8' and 4' members only, with joints at 4', 8', 12' over the 7' supports. Only the castle trims, supports and risers are cut to other lengths.
7. FASTENERS: you specified none, so sheet 5 proposes exterior structural wood screws (#10 x 5" and #10 x 3-1/2"). No more than 2 screws in any locale (one board column x one support).
8. Tire-path strips sit at the outer edges (19-1/4" + 45-1/2" + 19-1/4" = 84"). The 17-1/2" supports are under the lower-layer strips only.
9. TRUCK (sheet 6): 2003 F-350 Crew Cab Long Bed SRW, 7,400 lb as given. Axle split (60/40 front-heavy), track (68"), wheelbase (156") and body outline are my approximations - confirm against your truck.

NOT SHOWN / NOT ANALYZED

- How the deck and S supports attach to the trailer frame, axles or fenders.
- Structural capacity is only partly met: see sheet 6 for the 7,400 lb truck. Have the design verified by a PE before loading a truck.

PROJECT	SHEET TITLE	SCALE	SHEET	DWG NO.
PINE 2x4 TRAILER DECK - 16'-0" x 7'-0" ALL MEMBERS 2x4x8' PINE - NO OTHER MATERIAL	**CUT LIST, BILL OF MATERIALS AND ASSUMPTIONS**	**N/A** UNITS: INCHES, ACTUAL SIZES	**4 OF 6**	**TD-004**



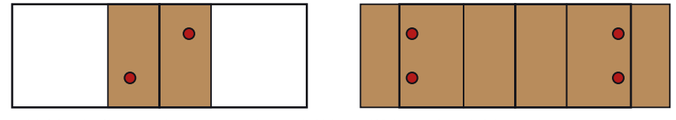
- LOCALE WITH A STUD END OR LAYER END: 2 SCREWS (AT A SINGLE-FLANGE JOINT THE TWO ENDS SHARE THEM, 1 EACH; AT THE 3-STUD S3 FLANGE EACH END GETS 2)
- LOCALE WHERE A BOARD ONLY CROSSES A SUPPORT: 1 SCREW (FASTENS THE DECK TO THE SPANS BELOW). NO LOCALE HAS MORE THAN 2.

FASTENER SCHEDULE (PROPOSED - YOU SPECIFIED NO FASTENER; EXTERIOR-RATED STRUCTURAL WOOD SCREWS, PRE-DRILL NEAR ENDS)

MARK	FASTENER	WHERE / RULE	COUNT
F2	#10 x 5" screw	DECK TO SPANS: every top board, through the layer below / riser into the flange. Deck ends 2, joints 2 (S2, S4) or 4 (S3), layer or riser ends 2, plain crossings 1.	92 deck ends + 92 joints + 8 layer/riser ends + 71 crossings = 263
F3	#10 x 3-1/2" screw	WEB TO FLANGE of every L-span, down through the flange into the web edge. Only in locales with room (cap 2). S2-S4: 10 each; T spans: 4 each; S1/S5: 1 per end.	3 x 10 + 2 x 2 + 8 x 4 = 66
F4	#10 x 5" screw	S3 SIDE STUDS: 2 screws at each end, driven edge-wise into the middle stud.	2 studs x 2 ends x 2 = 8
		TOTAL SCREWS	**271 (5") + 66 (3-1/2") = 337**

S1 AND S5: every locale is already full with the deck-end pair, so web-to-flange there is limited to 1 screw per end. Say if you want more.

DETAIL H - LOCALE AT A JOINT (PLAN, ONE BOARD COLUMN, 1:5)



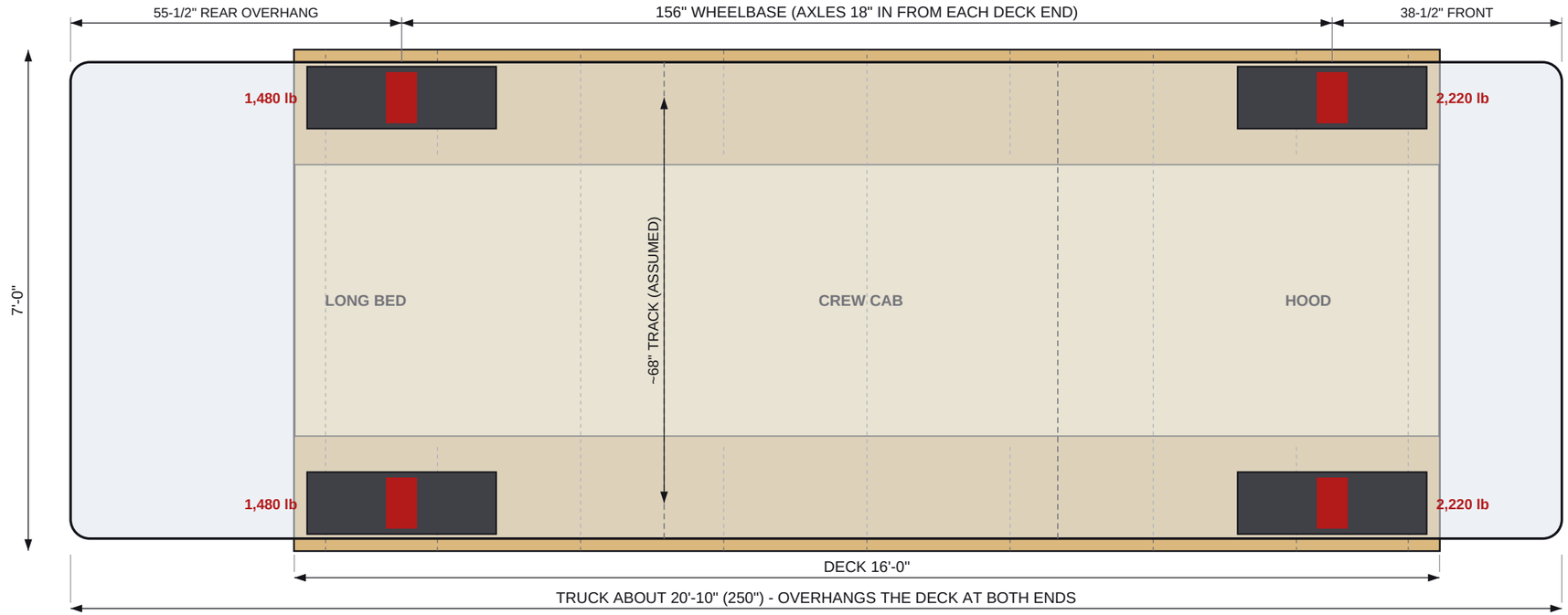
S2 / S4: 3-1/2" FLANGE - THE TWO ENDS SHARE 2 SCREWS

S3: 2-1/2" FLANGE - 2 SCREWS PER END

PROJECT	SHEET TITLE	SCALE	SHEET	DWG NO.
PINE 2x4 TRAILER DECK - 16'-0" x 7'-0" ALL MEMBERS 2x4x8' PINE - NO OTHER MATERIAL	**FASTENER PLAN AND SCHEDULE**	**1:14.4 (11x17)** UNITS: INCHES, ACTUAL SIZES	**5 OF 6**	**TD-005**

PLAN

TRUCK ON DECK,
WHEELS IN THE
TIRE-PATH STRIPS



LOADS (ASSUMED)
TRUCK 7,400 LB (GIVEN)
60/40 FRONT-HEAVY SPLIT:
FRONT AXLE 4,440 LB
= 2,220 LB PER WHEEL
REAR AXLE 2,960 LB
= 1,480 LB PER WHEEL
TIRE PATCH ~8.5" x 5.2"

DECK RESULTS, BENDING DEMAND / CAPACITY:
(1.00 = AT THE LIMIT)
LAYERS ACT SEPARATELY / IF FULLY GLUED TOGETHER

PARKED AS SHOWN
FRONT WHEEL 1.16 / 0.58
REAR WHEEL 0.77 / 0.39

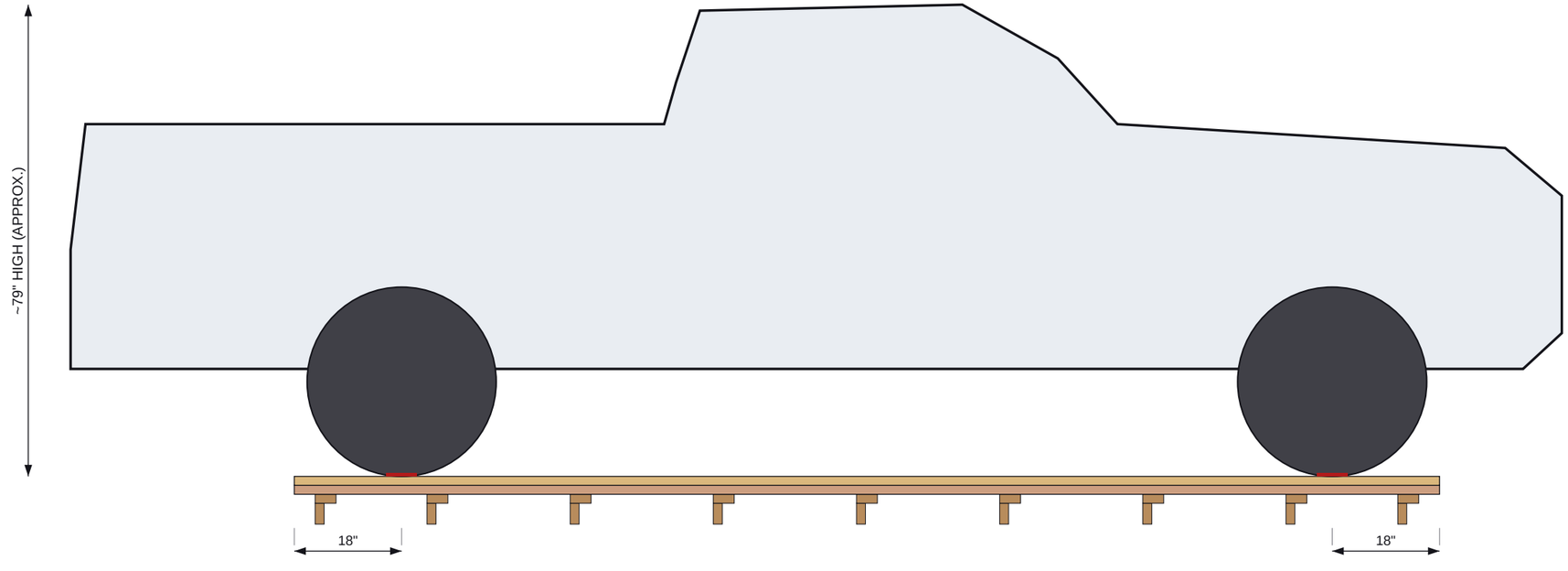
DRIVING ON (WORST SPOT, MIDSPAN, x1.25 IMPACT)
FRONT WHEEL 2.13 / 1.07
REAR WHEEL 1.42 / 0.71

SHEAR UNDER 0.85 - OK.
SCREWS GIVE UNDER 5% COMPOSITE ACTION ON 24" SPANS; THE FIRST COLUMN IS THE REAL CASE.

DECK ~850-970 LB + TRUCK 7,400 LB = ~8,300 LB ON THE TRAILER (NOT CHECKED).

SIDE ELEVATION

(OUTLINE
IS APPROX.)



PROJECT	SHEET TITLE	SCALE	SHEET	DWG NO.
PINE 2x4 TRAILER DECK - 16'-0" x 7'-0" ALL MEMBERS 2x4x8' PINE - NO OTHER MATERIAL	**TRUCK ON DECK - F-350 CREW CAB LB SRW**	**1:23 (11x17)** UNITS: INCHES, ACTUAL SIZES	**6 OF 6**	**TD-006**