APPENDIX H

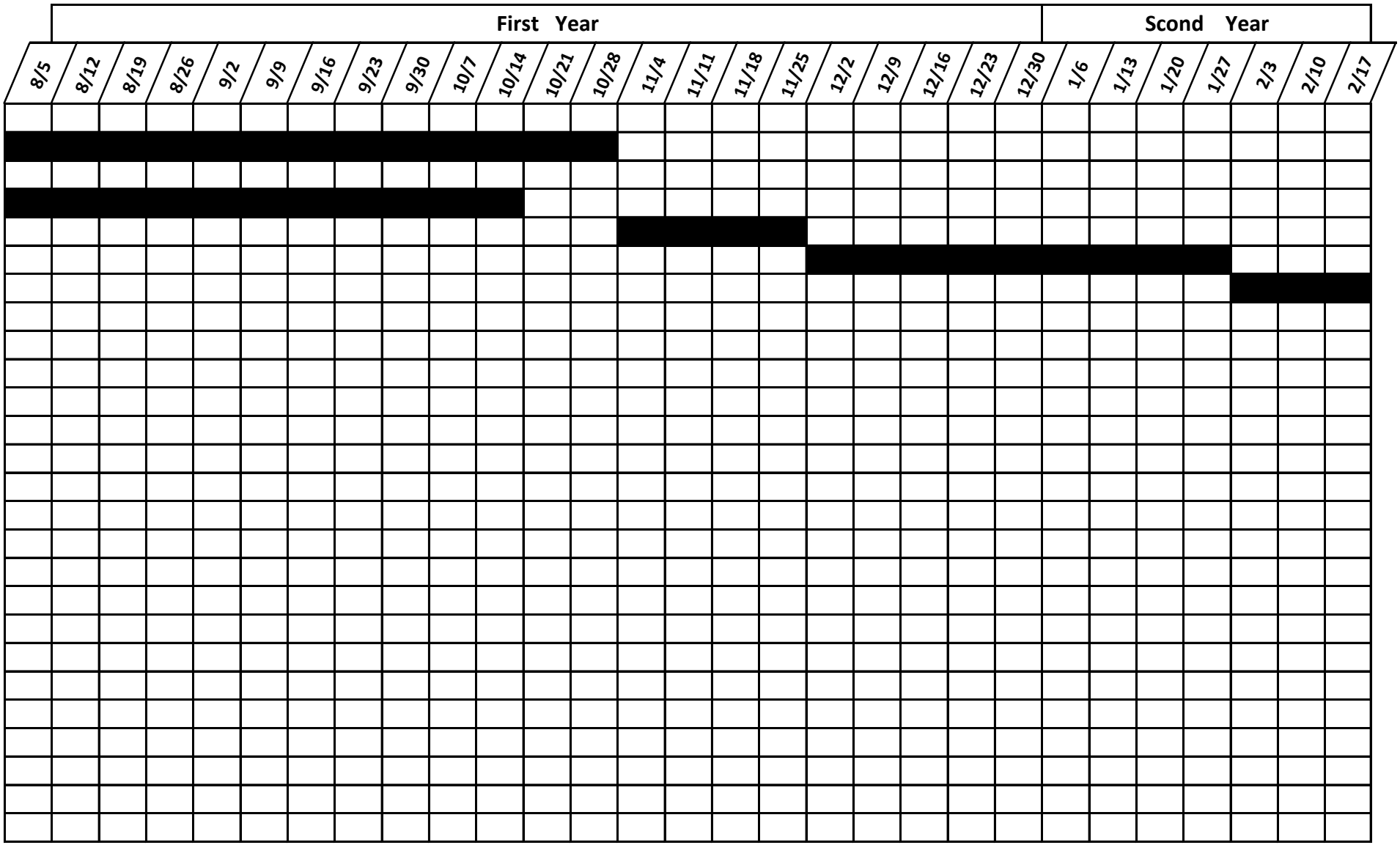
Alternate A: Major Rehabilitation Details

ALTERNATE A- MAJOR REHABILITATION SCHEDULE

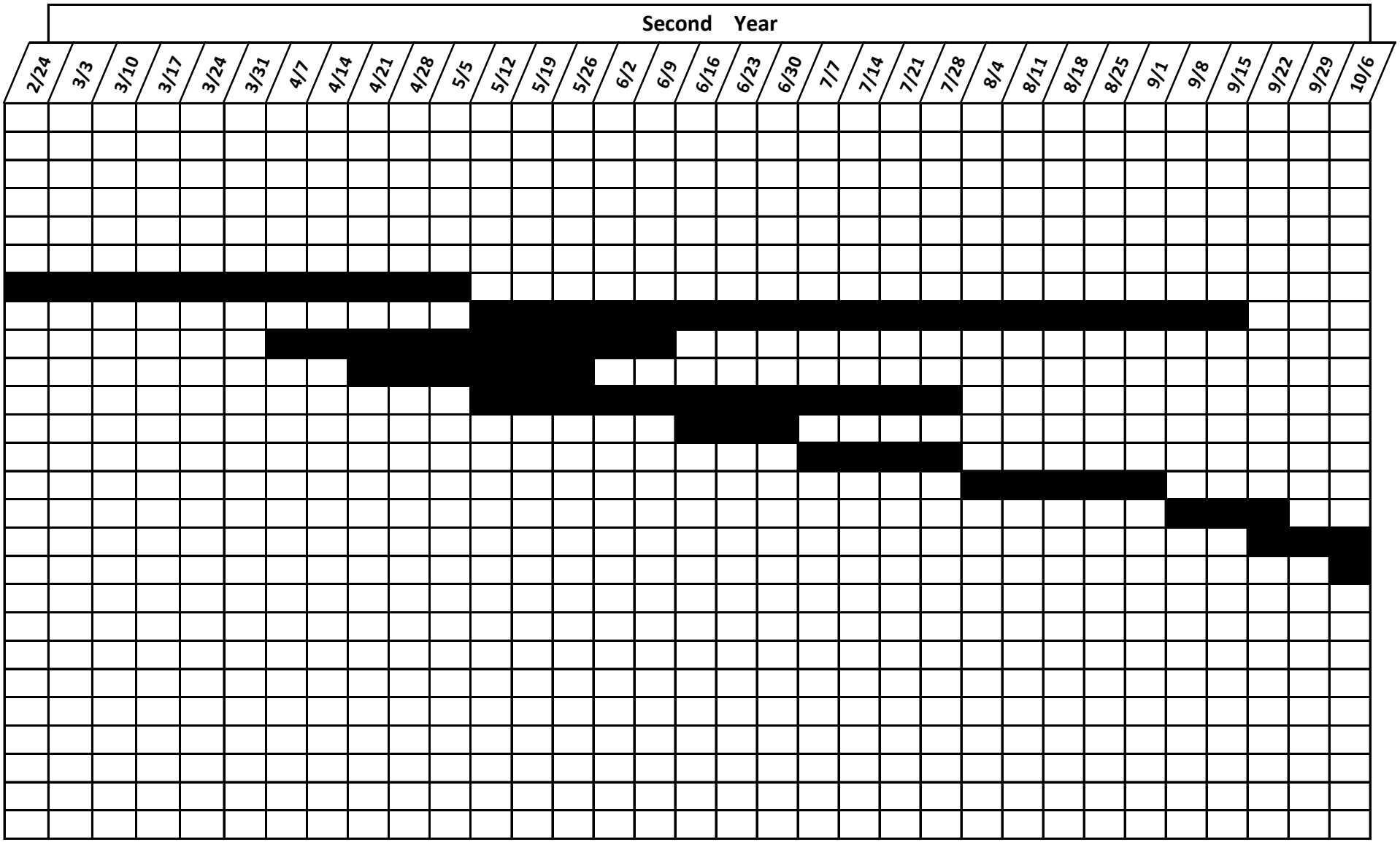
ACTIVITY	First Year																	
	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20	5/27	6/3	6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/29
Mobilization	■																	
Construct temporary bridge and roadway		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Substructure patching		■	■	■	■	■	■	■	■	■	■	■	■					
Structural steel repairs														■	■	■	■	■
Remove trusses																		
Inspection of truss damage/drawing development																		
Truss member fabrication																		
Replace/repair and paint trusses																		
Electrical/Mechanical Repairs																		
Remove existing fender systems																		
Install new fender systems																		
Remove deck sections & Pier 2 support system																		
Install new Pier 2 support & replace deck sections																		
Modify truss panel point connections																		
Screw Jack/Limit Switch Modifications																		
Install metal bridge rail support system																		
Install metal bridge rail																		
Install trusses																		
Install barrier gates																		
Removal of bituminous wearing surface																		
Deck Patching																		
Field painting of superstructure																		
Membrane and pave deck																		
Install asphaltic plug joints																		
Remove temporary bridge and roadway																		
Misc. work and clean up																		

Note: shop drawing process and ordering materials may delay construction +/- 2 months. 8 months for construction to be provided.

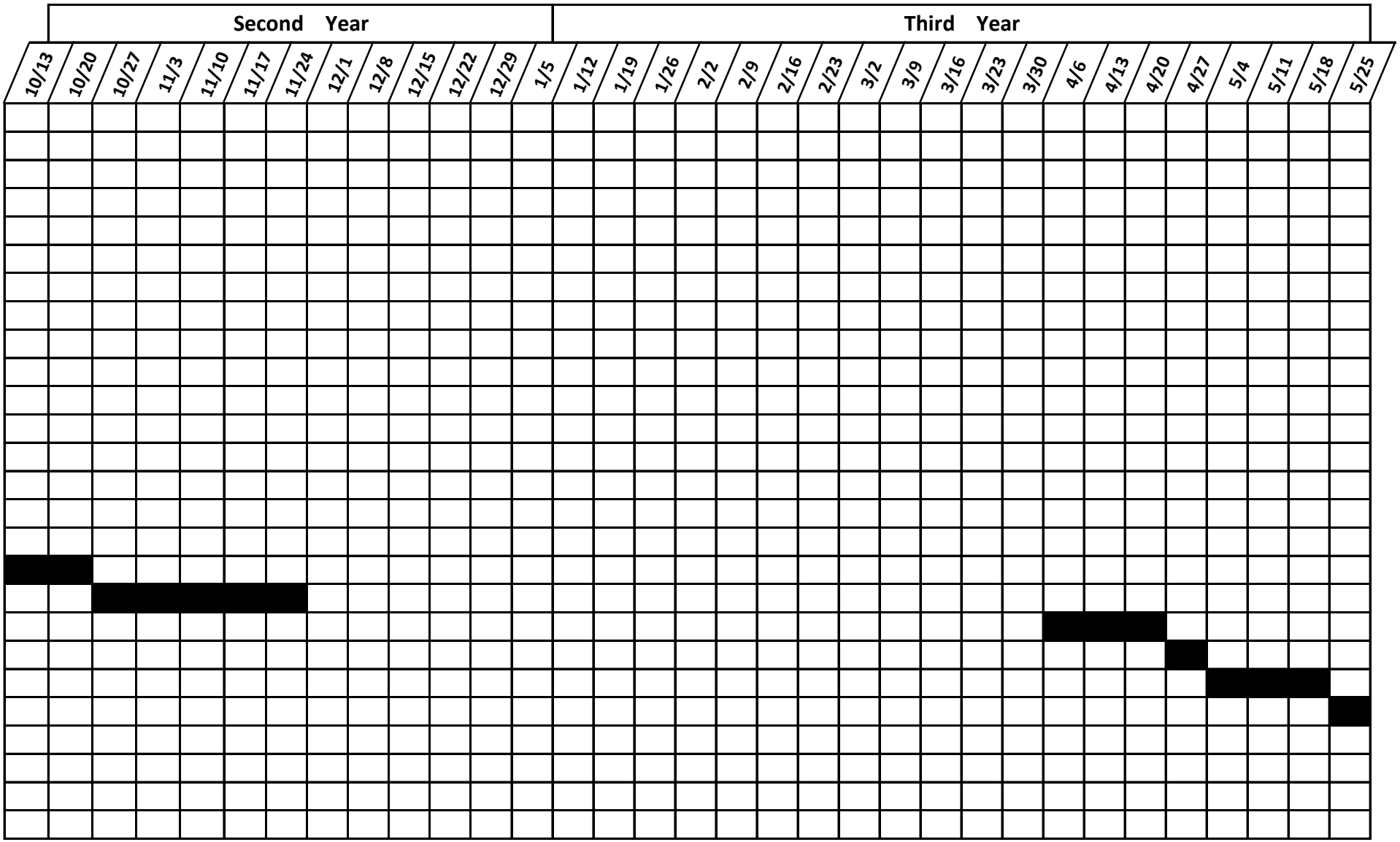
ALTERNATE A- MAJOR REHABILITATION SCHEDULE



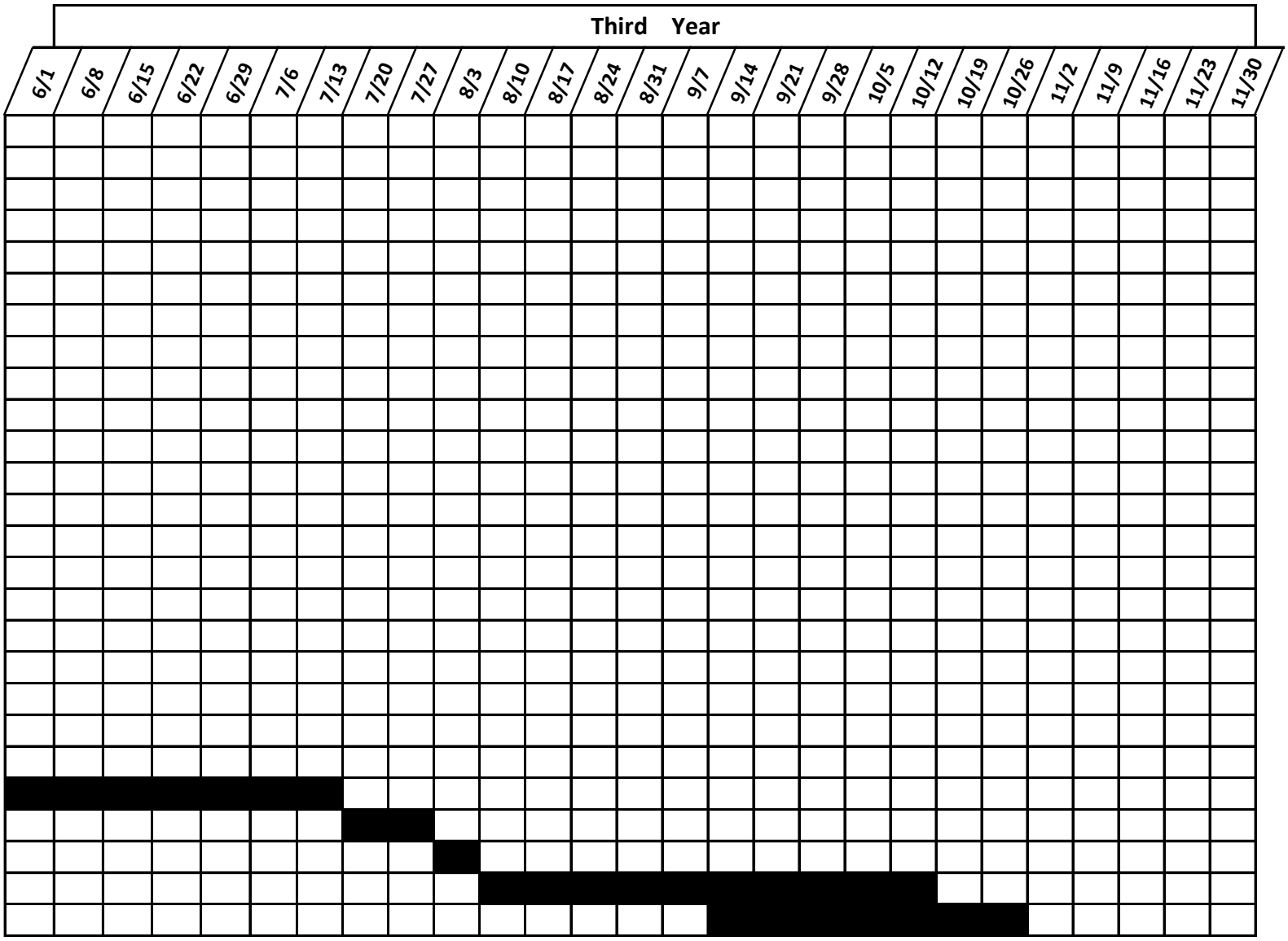
ALTERNATE A- MAJOR REHABILITATION SCHEDULE



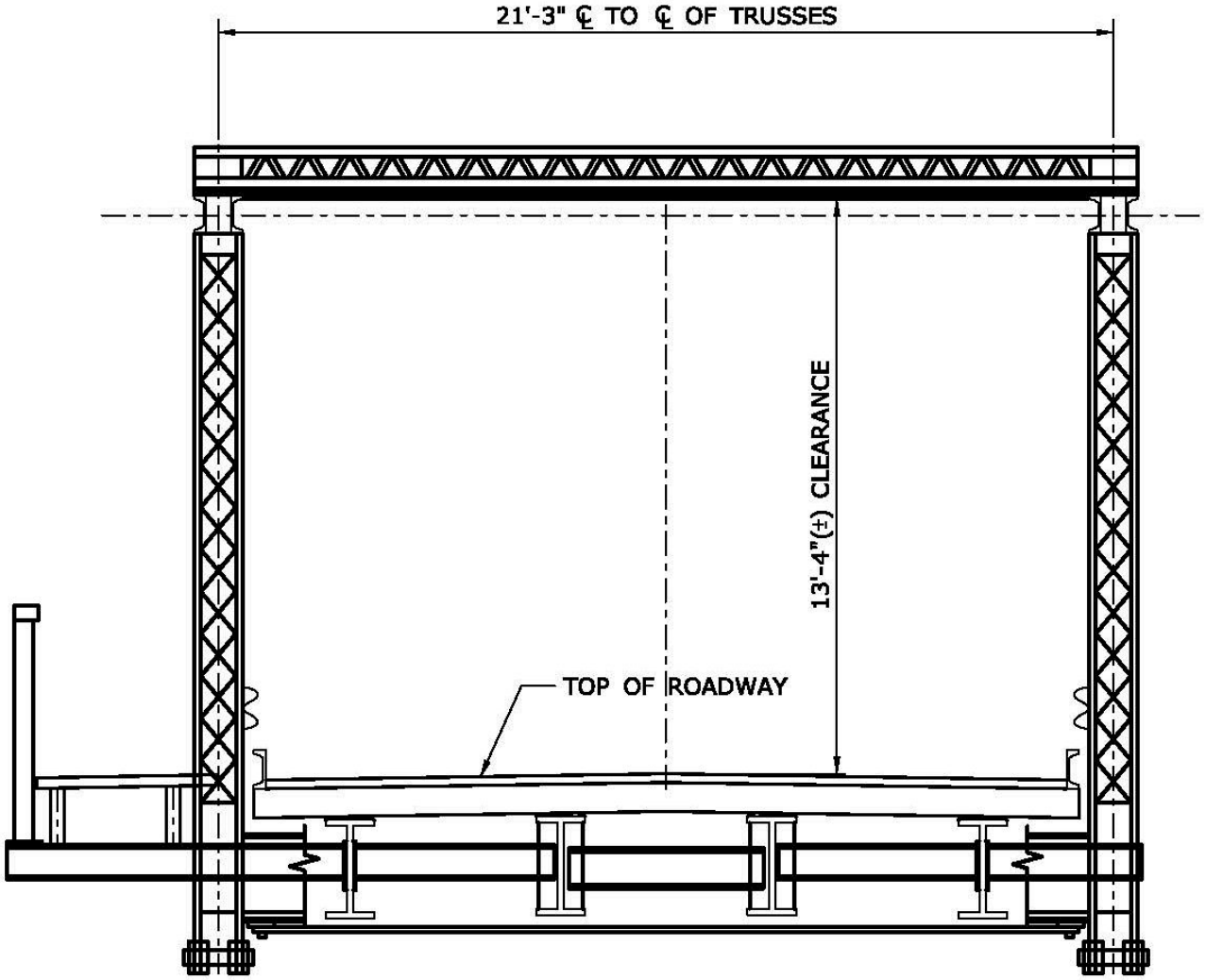
ALTERNATE A- MAJOR REHABILITATION SCHEDULE

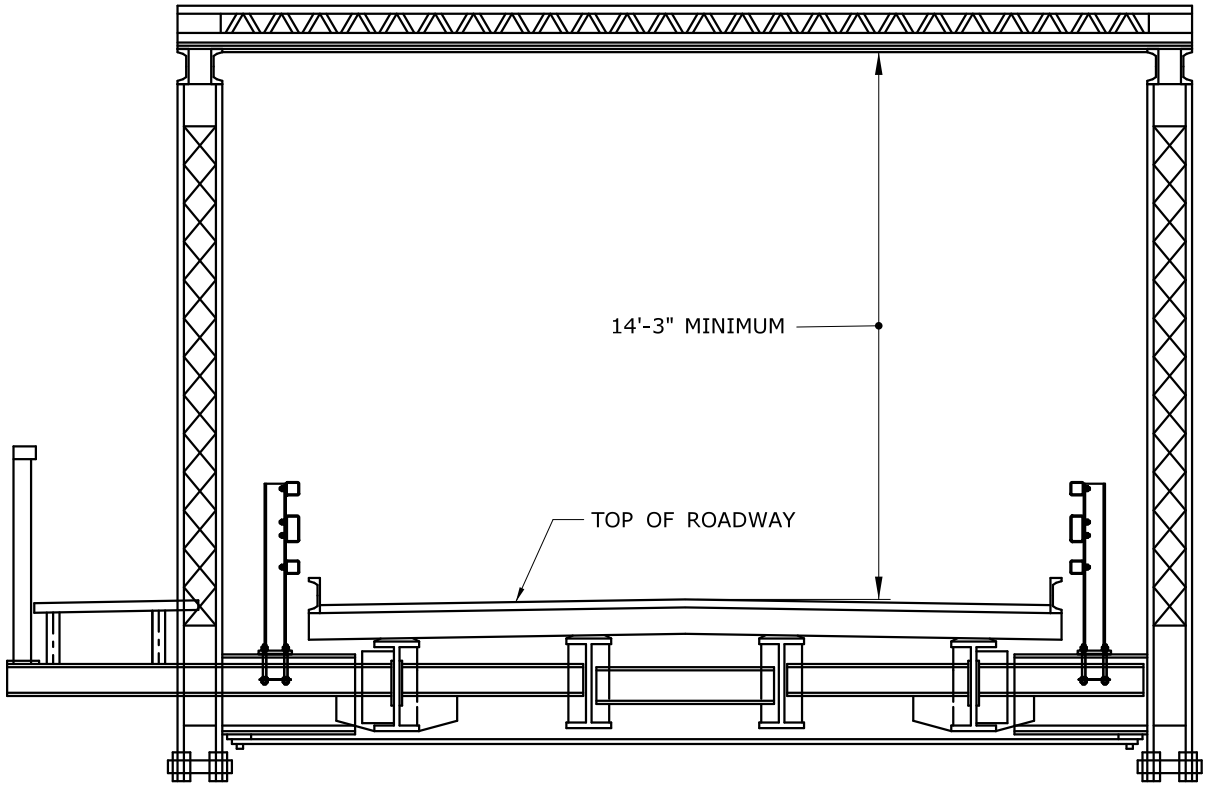


ALTERNATE A- MAJOR REHABILITATION SCHEDULE



Existing Truss Vertical Clearance

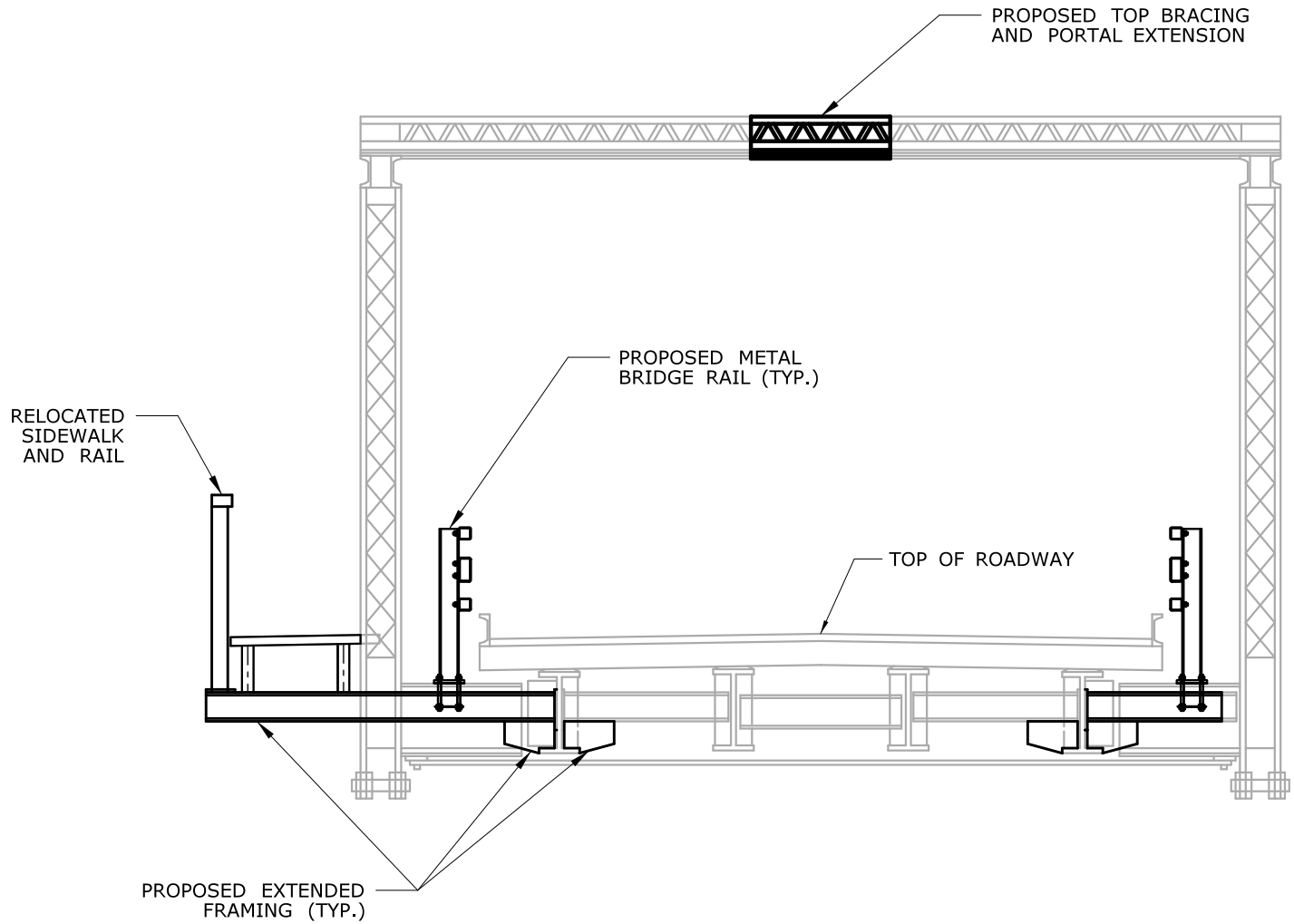




PROPOSED SECTION

SCALE: 1"=40'-0"

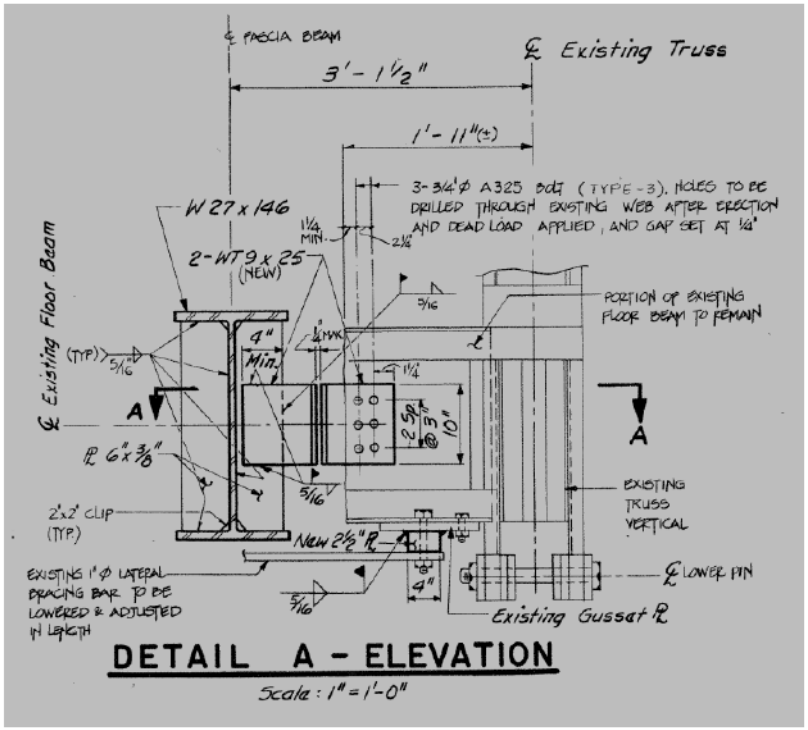
REHABILITATION OF ROUTE 136 OVER SAUGATUCK RIVER	
PROPOSED SECTION - ALTERNATE A	
CITY/TOWN: WESTPORT	BRIDGE NO. 01349
STATE PROJECT NO.: 158-212	DATE: 4/8/2016



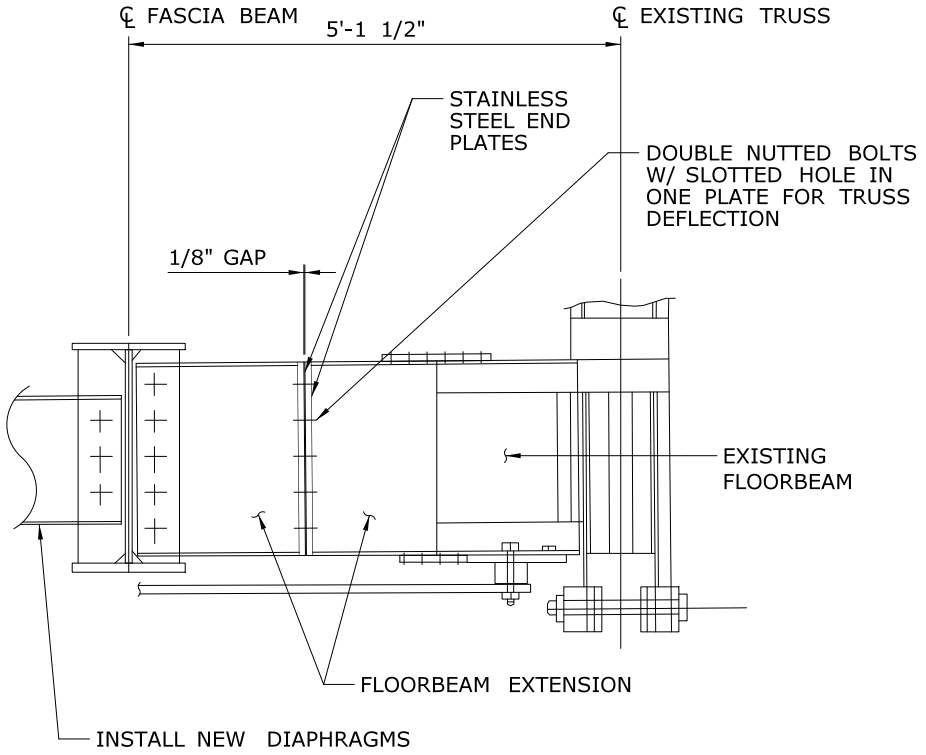
PROPOSED FRAMING AND BRIDGE RAIL

SCALE: 1"=40'-0"

REHABILITATION OF ROUTE 136 OVER SAUGATUCK RIVER	
PROPOSED FRAMING - ALTERNATE A	
CITY/TOWN: WESTPORT	BRIDGE NO. 01349
STATE PROJECT NO.: 158-212	DATE: 12/28/2015

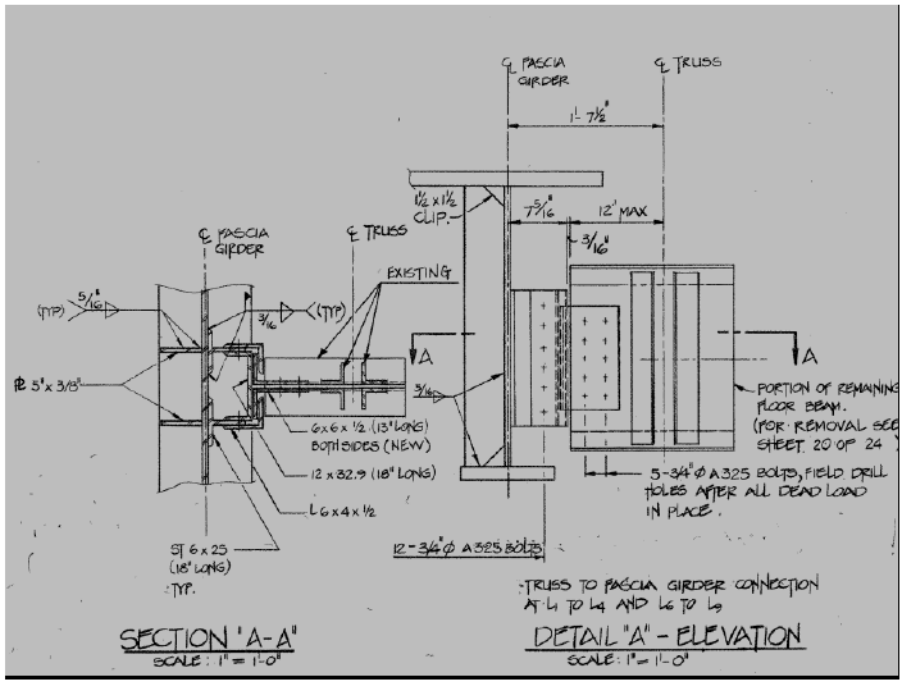


EXISTING ELEVATION

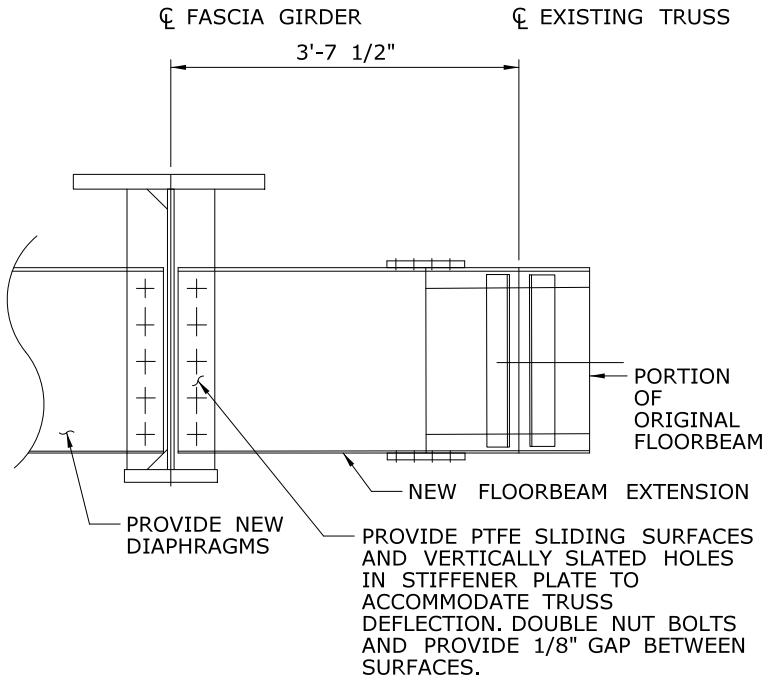


PROPOSED ELEVATION

REHABILITATION OF ROUTE 136 OVER SAUGATUCK RIVER	
FLOORBEAM EXTENSION FIXED SPAN	
CITY/TOWN: WESTPORT	BRIDGE NO. 01349
STATE PROJECT NO.: 158-212	DATE: 3/22/2016



EXISTING SECTION



PROPOSED SECTION

REHABILITATION OF ROUTE 136 OVER SAUGATUCK RIVER

FLOORBEAM EXTENSION SWING SPAN

CITY/TOWN:	BRIDGE NO.
WESTPORT	01349
STATE PROJECT NO.: 158-212	DATE: 3/23/2016

Pier 2 Support System Removal & Replacement
Construction Sequencing

Notes:

1. Construction to be completed during roadway closure.
2. Truss leaves to be removed during crane work from bridge.
3. Crane placement on bridge for fixed span center pile support system removal and installation. Outside piles may be removed and erected from barge mounted cranes or bridge mounted crane (See following Existing Pier 2 Support System).
4. The piles of the swing span side of the support system are assumed to be removed and replaced with a deck mounted or barge mounted crane on the fixed span side, or barge mounted crane; with the swing span open, due to the superstructure configuration (Beam spacing and exodermic deck construction).
5. Due to space restrictions the piles are assumed to be extracted and free driven (no leads).
6. Piles estimated to be HP 14 x 89- 35'long (Pile weight= 3115 lbs).
7. Pile driving hammer estimated to be Vulcan 30 Double Acting steam hammer with rated driving energy of 7260 lbs; hammer weight= 7090 lbs (See following specification sheet).
8. With hook block and ball and rigging (+/- 500 lbs) the system weight 3115 + 7090 + 500 = 10,750 lbs.
9. Crane placement will be at the pier with an operating radius of +/- 15 feet, with outriggers extended (See following crane capacity charts).
10. Crane weights are +/- 28,000 to 41,000 lbs (See following crane capacity charts).
11. Crane weight loaded max. +/- 41,000 + 10,750 = 51,750 lbs. Live load capacity of bridge is in excess of 72,000 lbs at midspan.

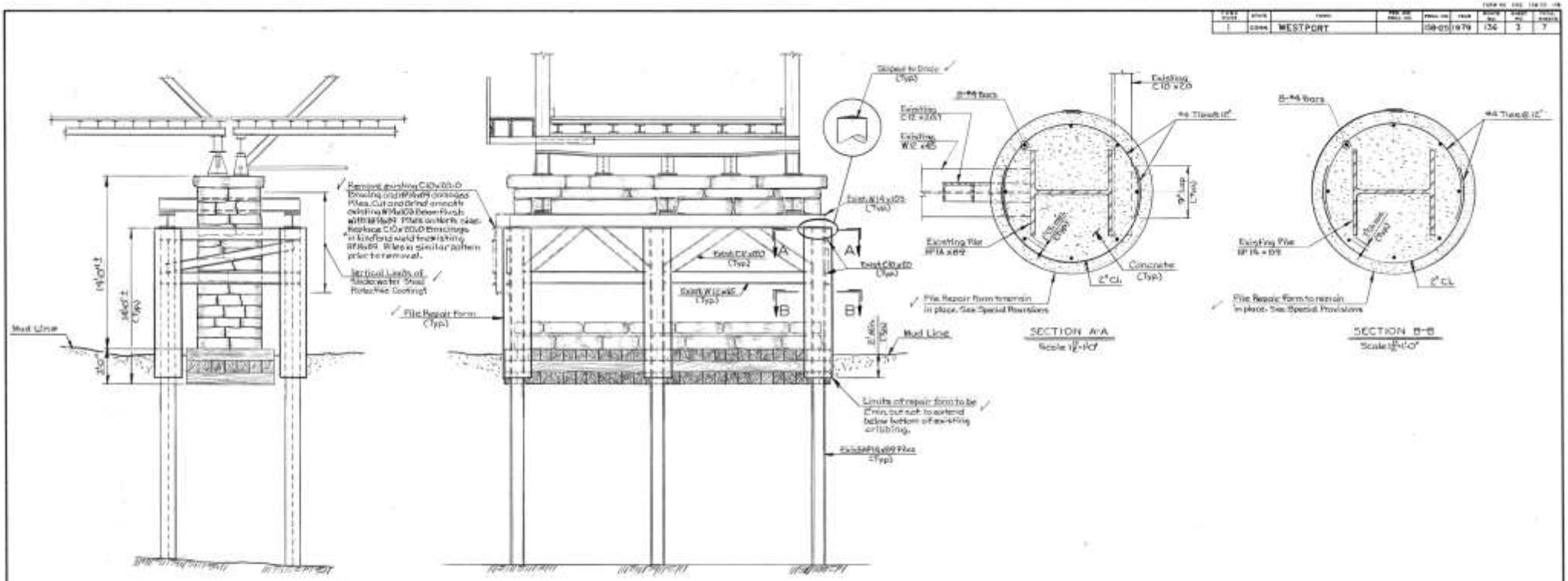
Sequence

1. Remove pier cap concrete areas and cross beams by through drilling or hydro-demolition (see sketch). Note that the superstructure and truss dead loads and construction equipment loads will be supported by the stone pier during removal and replacement of the support system.
2. Remove the existing support system bracing and exterior piles from barge mounted cranes or deck supported crane (4 piles).
3. Cut a hole +/- 4' x 4' in the fixed span deck and extract the center pile from the deck.
4. Extract the center pile of the swing span side of the support system.
5. Install new piles and bracing.
6. Replace deck section and pier cap removal areas.

EXISTING PIER 2 SUPPORT SYSTEM- TO BE REMOVED

SIMILAR SYSTEM NEW TO BE INSTALLED

(Note original superstructure and pier cap shown)



PROPOSED REPAIRS – PIER NO. 2

NO.	DATE	DESCRIPTION
		REVISIONS

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

CONNECTICUT
DEPARTMENT OF TRANSPORTATION

WESTPORT

CONN. RTE. 136
OVER
SAUGATUCK RIVER
SUBSTRUCTURE REPAIRS

DETAIL SHEET

ENGINEER Bridge Design Unit
DESIGNER W.F.C. DRAFTSMAN R.T.R. CHECKER W.F.C.
APPROVED [illegible] DATE 12-26-98
STRUCTURE NO. 058-135-01549 BRIDGE LOG NO. 01549 STRUCTURE SHEET NO. 2 OF 2

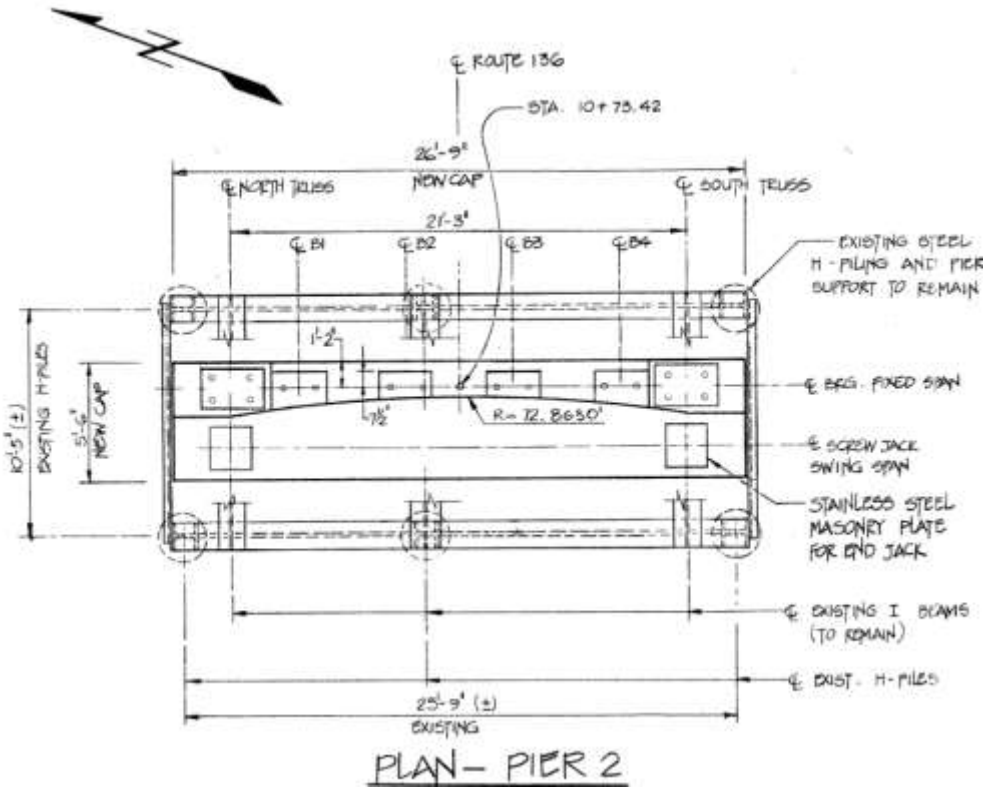
158 125

158 10

EXISTING PIER 2 SUPPORT SYSTEM- TO BE REMOVED

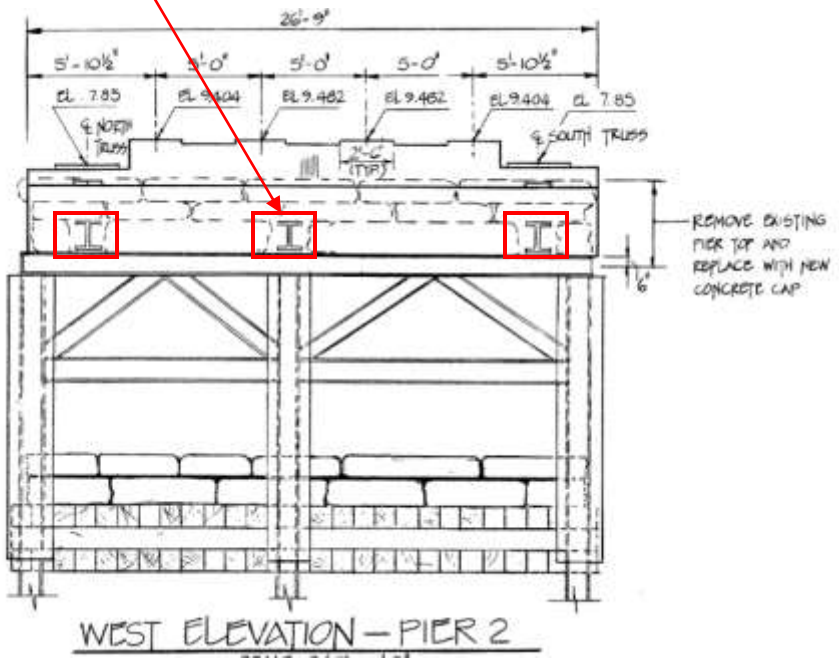
SIMILAR SYSTEM NEW TO BE INSTALLED

(New pier cap shown)



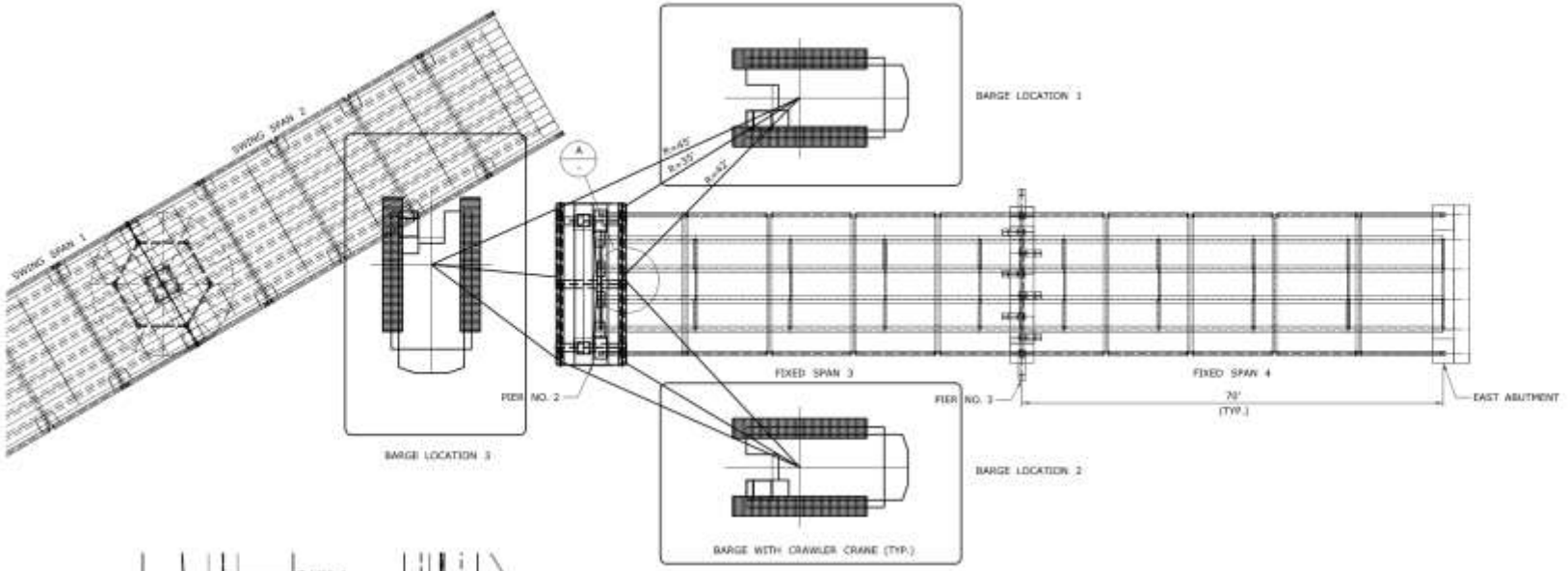
PLAN – PIER 2

Area of concrete to be removed by through drilling or hydro-demolition to facilitate cap beam replacement (Typ.)

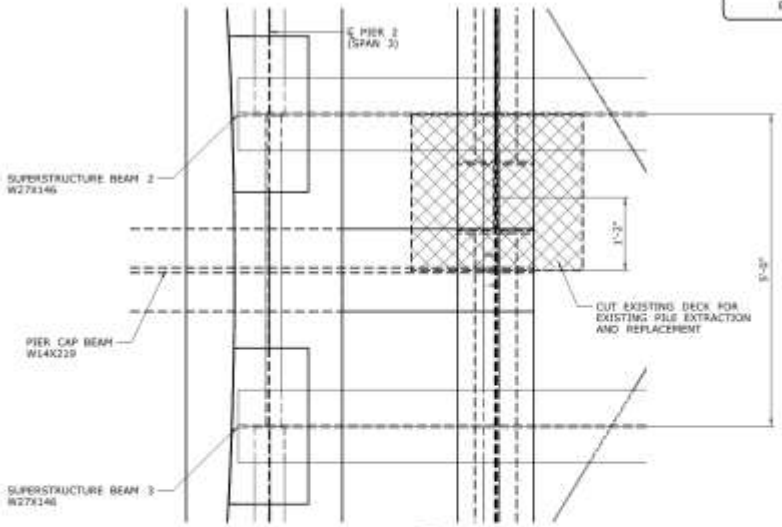


WEST ELEVATION – PIER 2

Note: Dead load and construction equipment loads will be transferred to the existing stone pier through the superstructure and truss during support system removal and replacement.



PLAN



DETAIL A

NO. DATE REVISION DESCRIPTION SHEET NO. Release Date: 4/4/2018		DESIGNED BY: B.A. DRAWN BY: T.M.R. CHECKED BY:	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: BARGE PLATE 1.dgn	SUBMITTED BY:	REHABILITATION OF ROUTE 136 OVER SAUGATUCK RIVER BRIDGE NO. 01349	TOWN: WESTPORT DRAWING TITLE: PIER 2 SUPPORT SYSTEM REMOVAL AND REPLACEMENT	PROJECT NO. 158-212 DRAWING NO. SK-1 SHEET NO.

BAY CRANE

www.baycrane.com

15 ton

Grove YB4415 XT
Load Charts

RATED LIFTING CAPACITIES IN POUNDS ON OUTRIGGERS FULLY EXTENDED - 360°

17 FT. - 40 FT. BOOM

Radius in Feet	Main Boom Length in Feet					
	***17** (18.4)	***20** (21.4)	***25** (26.4)	***30** (31.4)	***35** (36.4)	***40** (41.4)
6	30,000	28,950	28,200	27,850	27,650	
8	28,050	28,100	28,150	27,800	26,400	23,750
10	23,000	23,100	23,150	23,200	22,450	20,650
12	18,100	18,250	18,350	18,450	18,500	17,550
14		14,750	14,850	14,900	14,950	14,950
16		12,300	12,450	12,450	12,500	12,500
18			10,600	10,650	10,700	10,700
20			9,070	9,070	9,070	9,070
22				7,760	7,760	7,760
24				6,740	6,740	6,740
26				5,930	5,930	5,930
28					5,260	5,260
30					4,710	4,710
32						4,240
34						3,840
36						3,490
Minimum boom angle (°) for indicated length (no load)						0
Maximum boom length (ft.) at 0 degree boom angle (no load)						40

Lifting Capacity at Zero Degree Boom Angle On Outriggers Fully Extended 360°

Boom Angle	Main Boom Length in Feet					
	***17** (18.4)	***20** (21.4)	***25** (26.4)	***30** (31.4)	***35** (36.4)	***40** (41.4)
0°	9,080 (13.3)	8,100 (16.3)	5,940 (21.3)	4,600 (26.3)	3,720 (31.3)	3,070 (36.3)

Note: ( ) Reference radii in feet. (Applicable to boom nose sheaves in down position only.)

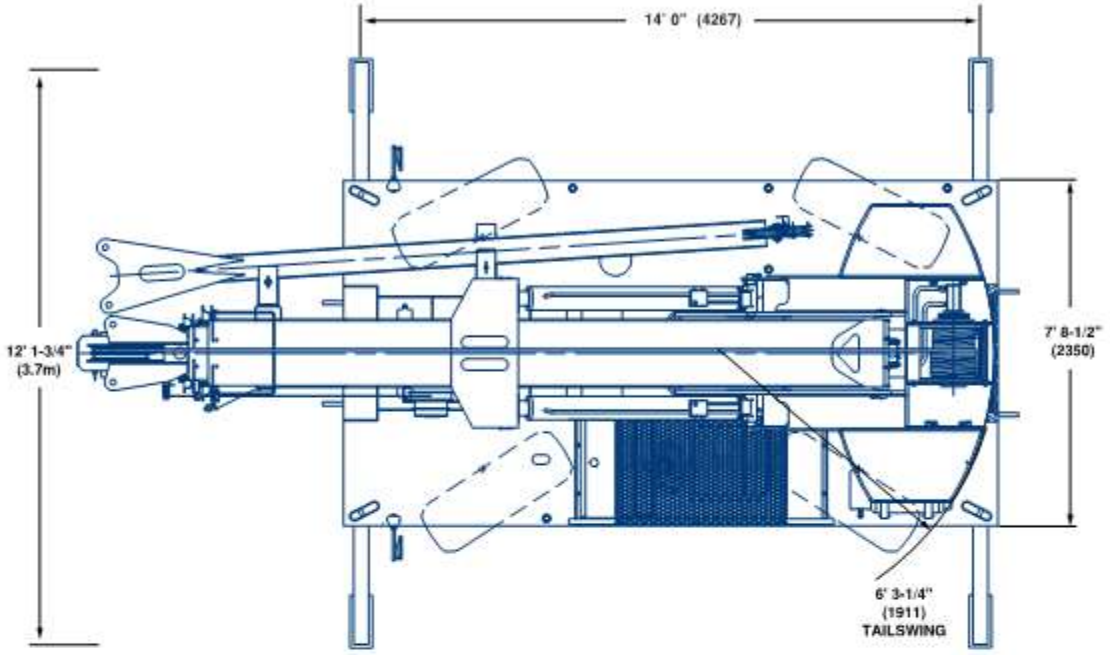
A6-829-100221B

*Boom length varies between boom nose sheaves in down position (in bold), or up & out position (in parenthesis).

1. Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE J765.
2. Capacities appearing above the bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.
3. With boom nose sheaves down (in lower position), single, 2-part or 4-part line may be used. With boom nose sheaves up and out (low profile position), single or 2-part line may be used, with maximum boom angle limited to 70°.

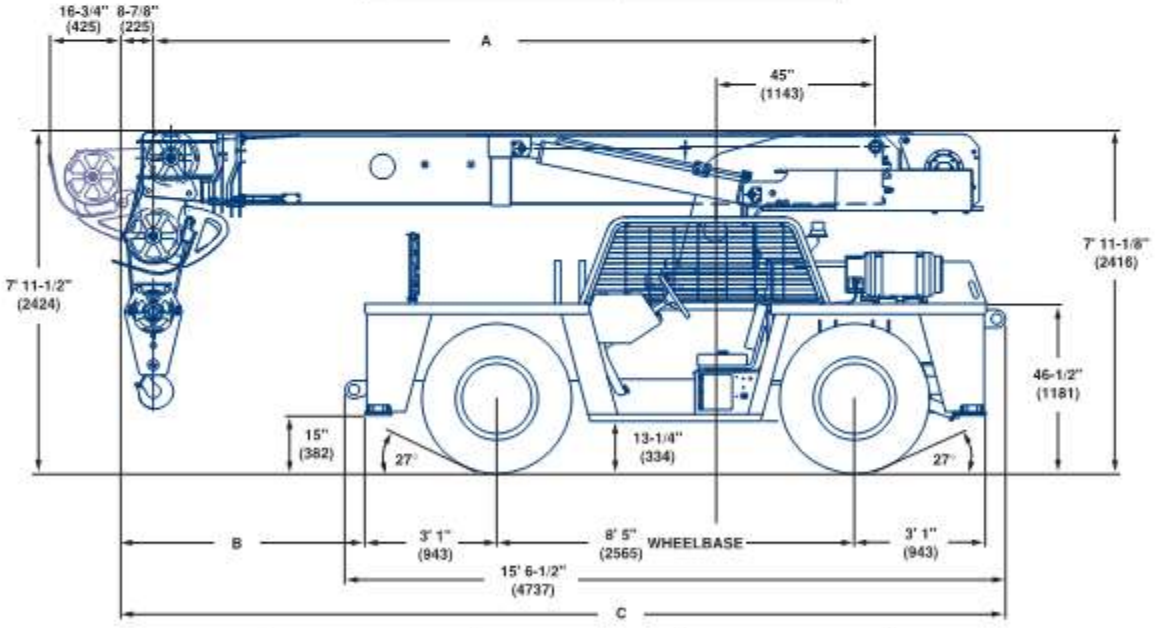
Dimensions

Turning Radius 20' 11" (6.4m) 2 Wheel Steer
11' 10-1/2" (3.6m) 4 Wheel Steer



Note: ( ) Reference dimensions in mm

	40' (12.2m) BOOM	52' (15.6m) BOOM
A	17' 0" (5182)	21' 5" (6528)
B	5' 3" (1603)	10' 2" (3099)
C	20' 9-5/8" (6340)	25' 2-1/2" (7684)



WORKING WEIGHTS	40' (12.2m) Boom	52' (15.6m) Boom
Front Axle	11,900, (5398)	13,900 (6305)
Rear Axle	15,600 (7076)	14,850 (6736)
GVW	27,500 (12,474)	28,750 (13,041)

BAY CRANE

www.baycrane.com

28 ton

Tadano TR280XL
Load Charts

TR-280XL TOTAL RATED LOAD CHART (IN POUNDS)

ON OUTRIGGERS FULLY EXTENDED 360° ROTATION

Load Radius in Feet	Boom Length in Feet							
	29.5 (9.0m)	36 (11.0m)	42 (12.8m)	48 (14.6m)	54 (16.5m)	60 (18.3m)	66 (20.1m)	72.2 (22.0m)
10	56,000 (60°)	36,000 (66°)	36,000 (70°)	35,000 (73°)	29,750 (75°)	29,150 (76°)	22,250 (77°)	20,850 (80°)
12	40,000 (56°)	36,000 (62°)	36,000 (67°)	35,000 (70°)	29,750 (72°)	29,150 (74°)	22,250 (76°)	20,850 (77°)
15	31,700 (48°)	31,500 (57°)	31,500 (62°)	31,200 (66°)	29,750 (69°)	29,150 (71°)	22,250 (73°)	20,850 (74°)
20	24,000 (32°)	24,000 (47°)	24,000 (54°)	24,000 (59°)	24,000 (63°)	23,100 (66°)	22,250 (68°)	20,850 (70°)
25		18,800 (34°)	18,800 (45°)	18,800 (52°)	18,800 (57°)	18,800 (61°)	18,300 (64°)	17,650 (66°)
30		15,900 (9°)	15,900 (34°)	15,900 (44°)	15,900 (50°)	15,900 (55°)	15,300 (58°)	14,950 (61°)
35			12,900 (16°)	12,900 (34°)	12,900 (43°)	12,900 (49°)	12,900 (53°)	12,700 (57°)
40				10,800 (19°)	10,800 (34°)	10,800 (42°)	10,800 (47°)	10,800 (52°)
45					9,020 (21°)	9,020 (34°)	9,020 (41°)	9,020 (46°)
50						7,420 (23°)	7,420 (34°)(	7,420 (41°)
55							6,200 (24°)	6,200 (34°)
60							5,200 (6°)	5,200 (25°)
65								4,400 (12°)

Boom Angle in Degree	Boom Length in Feet		
	72.2(22m)Boom + 24.6(7.5m)Jib		
	5° tilt	25° tilt	45° tilt
80°	8,800	4,410	3,300
75°	8,260	4,410	3,300
70°	6,920	4,410	3,100
65°	5,920	4,000	2,960
60°	5,190	3,750	2,860
55°	4,590	3,560	2,760
50°	4,090	3,400	2,660
45°	3,710	3,290	2,550
40°	3,420	3,180	
35°	3,190	3,100	
30°	2,820	2,800	
25°	2,530	2,500	
20°	2,300		
15°	2,100		
10°	1,900		
5°	1,800		

1,650 lbs. (750 kg) shall be subtracted from the total rated load of the main boom when jib is attached to the main boom head.

WARNING AND OPERATING INSTRUCTIONS FOR LIFTING CAPACITIES

GENERAL

1. Total rated loads shown on the TOTAL RATED LOAD CHART apply only to the machine as originally manufactured and normally equipped by TADANO LTD. Modifications to the machine or use of optional equipment other than that specified can result in a reduction of capacity.
2. Construction equipment can be dangerous if improperly operated or maintained. Operation and maintenance of this machine must be in compliance with the information in the operation, safety and maintenance manual supplied with machine. If this manual is missing, order replacement through the distributor.
3 The operator and other personnel associated with this machine shall fully acquaint themselves with the latest applicable American National Standards Institute (ANSI) safety standards for cranes.

SET UP

1. Total rated loads shown on the chart are the maximum allowable crane capacities and are based on the machine standing level on firm supporting surface under ideal job conditions. Depending on the nature of the supporting surface, it may be necessary to have structural supports under the outrigger floats or tires to spread the load to a larger bearing surface.
2. For outrigger operation, outriggers shall be fully extended with tires free of supporting surface before operating crane.

OPERATION

1. Total rated loads with outriggers fully extended do not exceed 85% of the tipping loads as determined by SAE Crane Stability Test Code J-765.
2. Total rated loads above bold lines in the chart are based on crane strength and those below, on its stability. They are based on actual load radius increased by boom deflection.
3. Total rated loads include the weight of main hook block (600 lbs for 30 tons capacity), auxiliary hook ball (220 lbs for 4.4 tons capacity), sling and auxiliary lifting devices and their weights shall be subtracted from the listed capacities to obtain the net load to be lifted.
4. Total rated loads are based on freely suspended loads and make no allowance for such factors as the effect of wind, sudden stopping of loads, supporting surface conditions, inflation of tires, operating speeds, side loads, etc. Side pull on boom or jib is extremely dangerous.
5. Total rated loads do not account for wind on lifted load or boom. Total rated loads and boom length shall be appropriately reduced, when wind velocity is above 20 mph (9m/sec.).
6. Total rated loads at load radius shall not be exceeded. Do not tip the crane to determine allowable loads.
7. Do not operate at boom lengths beyond radii or boom angle, where no capacities are shown. Crane may overturn without any load on the hook.
8. When boom length is between values listed, refer to the total rated loads of the next longer and next shorter booms for the same radius. The lesser of the two total rated loads shall be used.
9. When making lifts at a load radius not shown, use the next longer radius to determine allowable capacity.
10. Single line operation should not exceed 8,800 lbs (4000 kg).
11. Loaded boom angles are approximate. The boom angle before loading should be greater to account for deflection.
12. The 29.5' (9.0 m) boom length capacities are based on boom fully retracted. If not fully retracted [less than 36' (11.0 m)boom length], use the total rated loads for the 36' (11.0 m) boom length.
13. Extension or retraction of the boom with loads may be attempted within the limits of the TOTAL RATED LOAD CHART. The ability to telescope loads is limited by hydraulic pressure, boom angle, boom length, crane maintenance, etc.
14. For lifting capacity of single top, reduce the total rated loads of relevant boom by 550 lbs (250 kg). Capacities of single top shall not exceed 6,610 lbs (3000 kgs) including main hook.
15. When erecting and stowing jib, be sure to retain it by hand or by other means to prevent its free movement.
16. 1650 lbs (750 kgs) shall be subtracted form the total rated loads of the main boom, when jib is attached to main boom head. Jib weight is 770 lbs (350 kgs).
17. Use Anti-Two Block (OVERWIND CUTOUT) disable switch when erecting and stowing the jib and stowing the hook block. While the switch is pushed, the hoist does not stop, even when overwind condition occurs.
18. For boom lengths with 24.6' (7.5 m) Jib, total rated loads are determined by loaded boom angle only in the column headed "72.2' (22 m) Boom + 24.6' (7.5m) Jib". For boom angles not shown, use the next lower loaded boom angle to determine allowable capacity.
19. When lifting a load by using jib (auxiliary hoist) and boom (main hoist) simultaneously, do the following:
    - Illuminate the jib indicator lamps and make the jib offset display screen indicate the same value as the actual offset by repeatedly pushing the boom state register switch.
    - Before starting operation, make sure that the weight of load is within the total rated load for jib.

DEFINITIONS

1. *Load Radius:* Horizontal distance from a projection of the axis of rotation to supporting surface before loading to the center of the vertical hoist line or tackle with load applied.
2. *Loaded Boom Angle:* The angle between the boom base section and the horizontal, after lifting the total rated load at the load radius.
3. *Working Area:* Area measured in a circular arc about the centerline of rotation.
4. *Freely Suspended Load:* Load hanging free with no direct external force applied except by the hoist line.
5. *Side Load:* Horizontal side force applied to the lifted load either on the ground or in the air.

TADANO

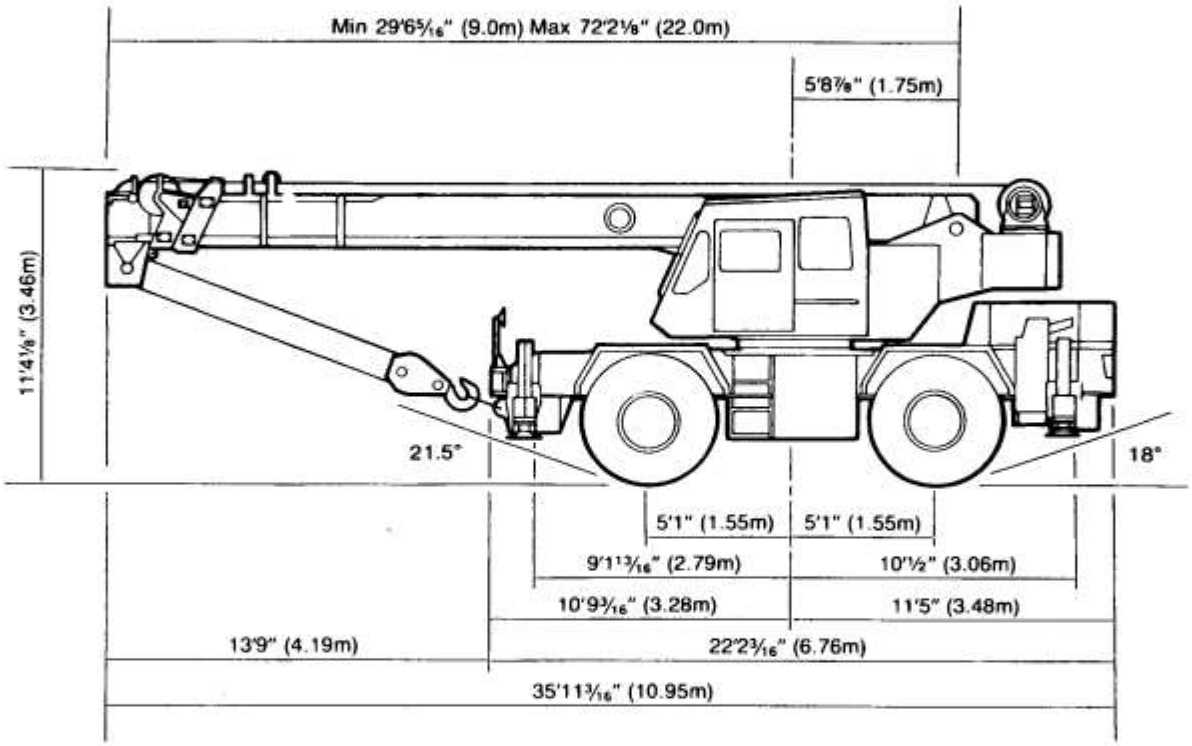
TR-280XL

28 Ton Capacity (25.4 Metric Tons)

HYDRAULIC ROUGH TERRAIN CRANE

DIMENSIONS

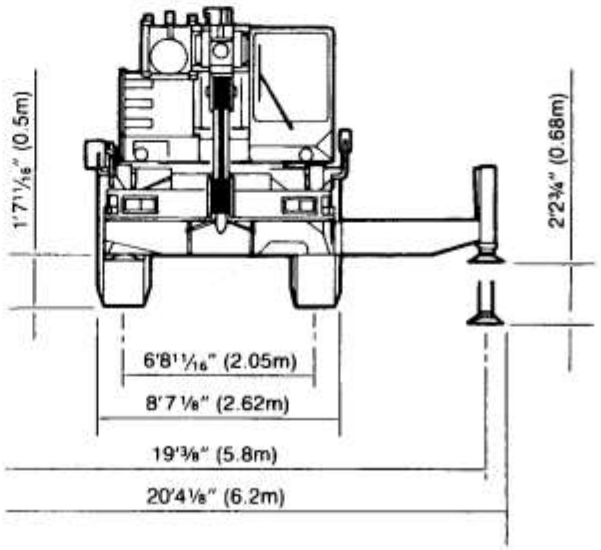
(20.5 X 25 Tires)



GENERAL DIMENSIONS

(20.5 X 25 Tires)

	Feet	Meters
Tail swing counterweight	9' 8 1/8"	2.95
Turning Radius:		
4 wheel steer	20' 11 3/4"	6.4
2 wheel steer	35' 9 1/8"	10.9



BAY CRANE

11-02 43rd Avenue Long Island City, NY 11101
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← 530 (http://vulcanhammer.com/specifications/530-2/)
50C → (http://vulcanhammer.com/specifications/50c/)

Rated Strike Energy, ft-lbs (kJ):	7260
Blows per Minute, Normal Stroke, No Set:	133
Nominal Stroke, ft-in (mm):	12 1/2
Steam Consumption, lb/hr (Kg/hr):	2412
Size of Hose, Inches:	1-1/2"
Steam Pressure, LBS. per Sq. Inch - At Hammer:	120
Air Pressure, LBS. per Sq. Inch - At Hammer:	120
Boiler Heating Surface, Sq. Ft.:	480
Volume Free Air, Cu. Ft. Per Min. - Adiabatic:	488
Volume Free Air, Cu. Ft. Per Min. - Isothermal:	930
Equivalent Stroke, Ft:	2.42
Boiler Horse Power, Nominal Rating:	40
Boiler Horse Power, A.S.M.E. Rating:	70
**&sqrt;EW Rating:	4666
Diameter of Small Piston, Inches:	6 1/2
Area Small Piston - Sq Inches:	33.18
Length of Hammer with Standard Base:	9' 8-1/8"
Length of Hammer with McDermid Base:	9' 10-3/8"
Diameter of opening in Standard base, Inches:	16
Diameter of opening in McDermid base, Inches:	12
Distance Between Jaws, Inches	19
Width of Jaws, Inches	7-1/4"
*Largest Dimensions of Concrete Pile, Inches:	15-1/5"
No. of Sheaves:	1
Size of Wire Hoisting Rope, Inches:	5/8"
No. Parts of Hoisting Rope:	2
Weight of Striking Parts, Lbs:	3000
Net Weight with Standard Base, Lbs:	7036
Net Weight with McDermid Base, Lbs:	7090
Shipping Weight with Standard Base, Lbs:	7281
Shipping weight with McDermid Base:	7335