

October 2017

Port of South Louisiana

Engineering Appendix

**Globalplex Intermodal Efficiency Improvements
Project**

TIGER IX Grant

A COMBINATION OF POWER AND FUNCTIONALITY

DIESEL-ELECTRIC MODEL 6 MOBILE HARBOR CRANES



MODEL 6 MOBILE HARBOR CRANES

HIGH PERFORMANCE FOR HIGHER HANDLING RATES

Konecranes Gottwald Model 6 Mobile Harbor Cranes are extremely robust, diesel-electrically driven cranes for high-performance applications. As representatives of the large crane family from Konecranes, they offer powerful lifting capacity curves with lifting capacities of up to 125 tonnes, maximum working radii of 51 metres and lifting speeds of up to 120 m/min.

Konecranes Gottwald Model 6 Mobile Harbor Cranes are designed for a particularly broad range of applications. In your universal or special-purpose terminal, they help you on vessels up to post-Panamax class to handle:

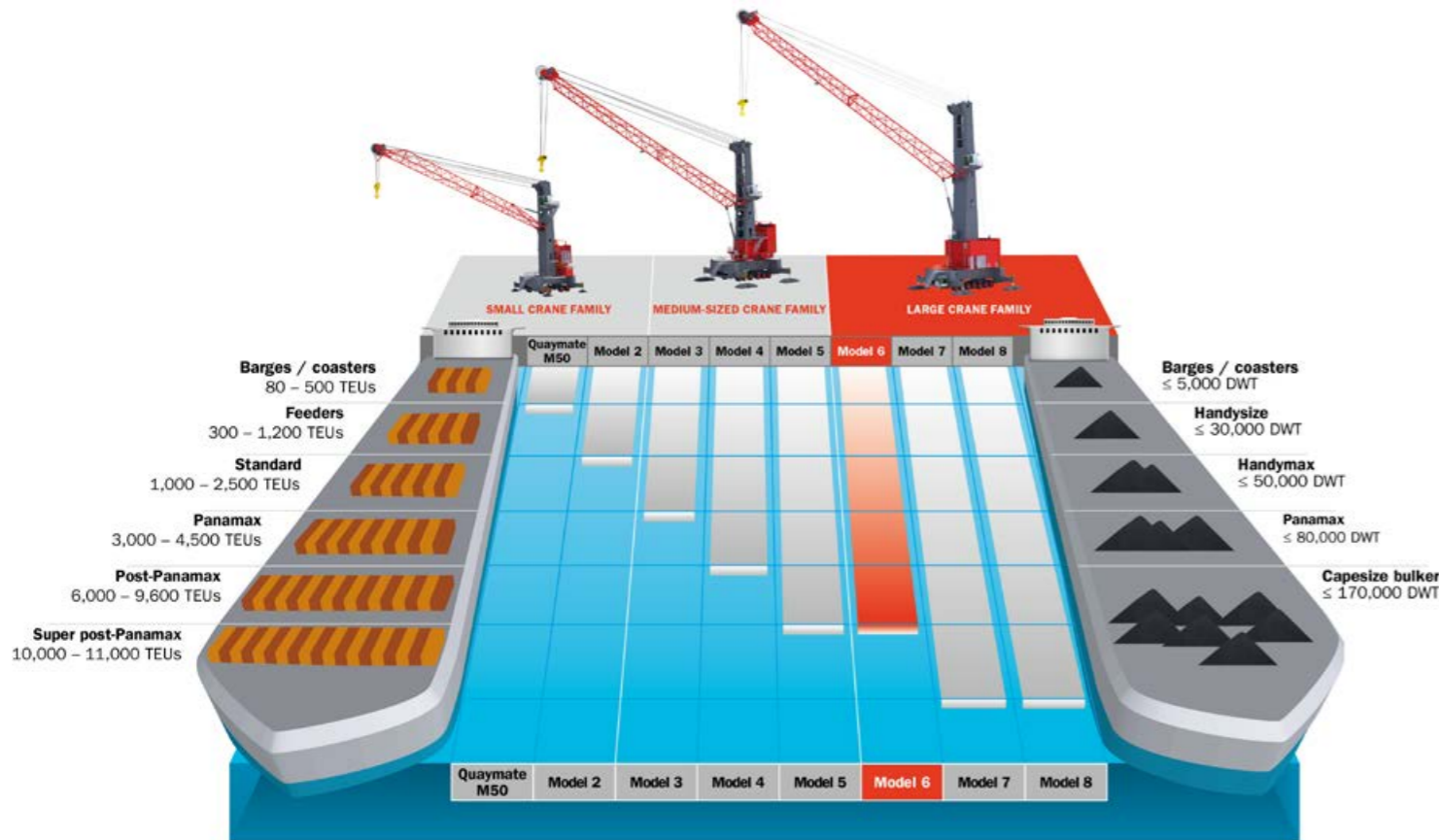
- containers,
- general cargo,
- bulk materials and
- project cargo.

VARIANTS FOR DEDICATED APPLICATIONS

With Model 6 mobile harbor cranes, you profit from a number of dedicated two-rope and four-rope grab variants with a wide working radius for efficient container twinlift operation. High towers also permit the handling of high container stacks on deck. For the professional handling of bulk materials, a 50-tonne grab curve is also available.

Model 6 mobile harbor cranes embody a combination of power and functionality and possess all the features you expect in a handling machine for productive and durable operation. Model 6 cranes are:

- versatile,
- easy to maintain,
- ergonomic and
- environmentally friendly.



Model 6 as the four-rope grab variant for professional bulk handling

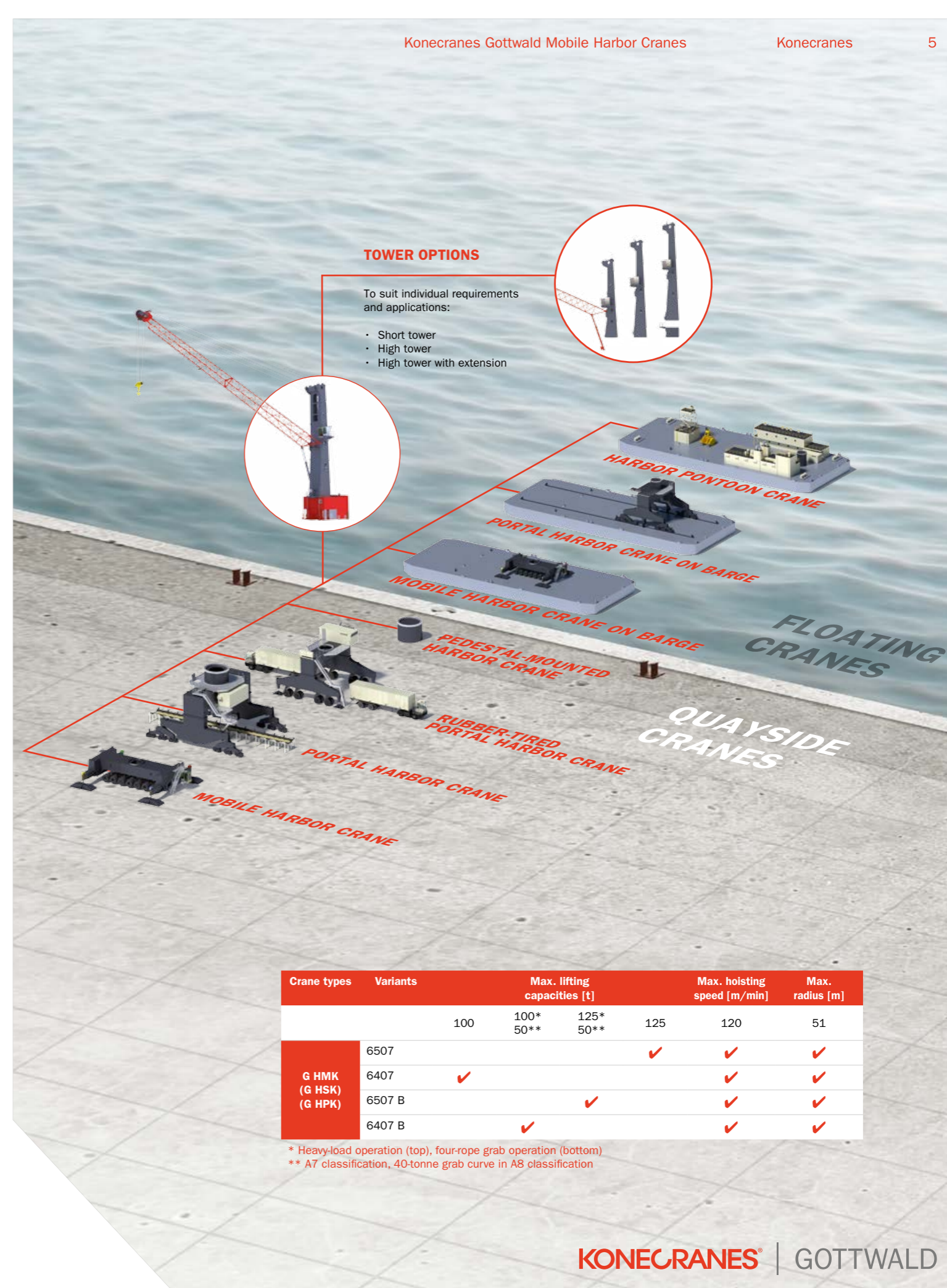
MODEL 6 CRANE TYPES – HARD TO BEAT

THE RIGHT CRANE FOR EVERY SITE

As the industry's pioneer, Konecranes created modular quayside and floating crane types based on mobile harbor crane technology to suit a wide variety of applications on quay, mid-stream and on the open sea.

FOR FAST, EFFICIENT CARGO HANDLING

Available in different crane types and variants, the Model 6 crane is a universally applicable machine which can quickly and efficiently handle cargo with a broad range of lifting gear.



TOWER OPTIONS

To suit individual requirements and applications:

- Short tower
- High tower
- High tower with extension

| Crane types | Variants | Max. lifting capacities [t] | | Max. hoisting speed [m/min] | | Max. radius [m] |
|-----------------------------|----------|-----------------------------|------|-----------------------------|-----|-----------------|
| | 100 | 100* | 125* | 125 | 120 | 51 |
| G HMK (G HSK) (G HPK) | 6507 | | | ✓ | ✓ | ✓ |
| | 6407 | ✓ | | | ✓ | ✓ |
| | 6507 B | | ✓ | | ✓ | ✓ |
| | 6407 B | | ✓ | | ✓ | ✓ |

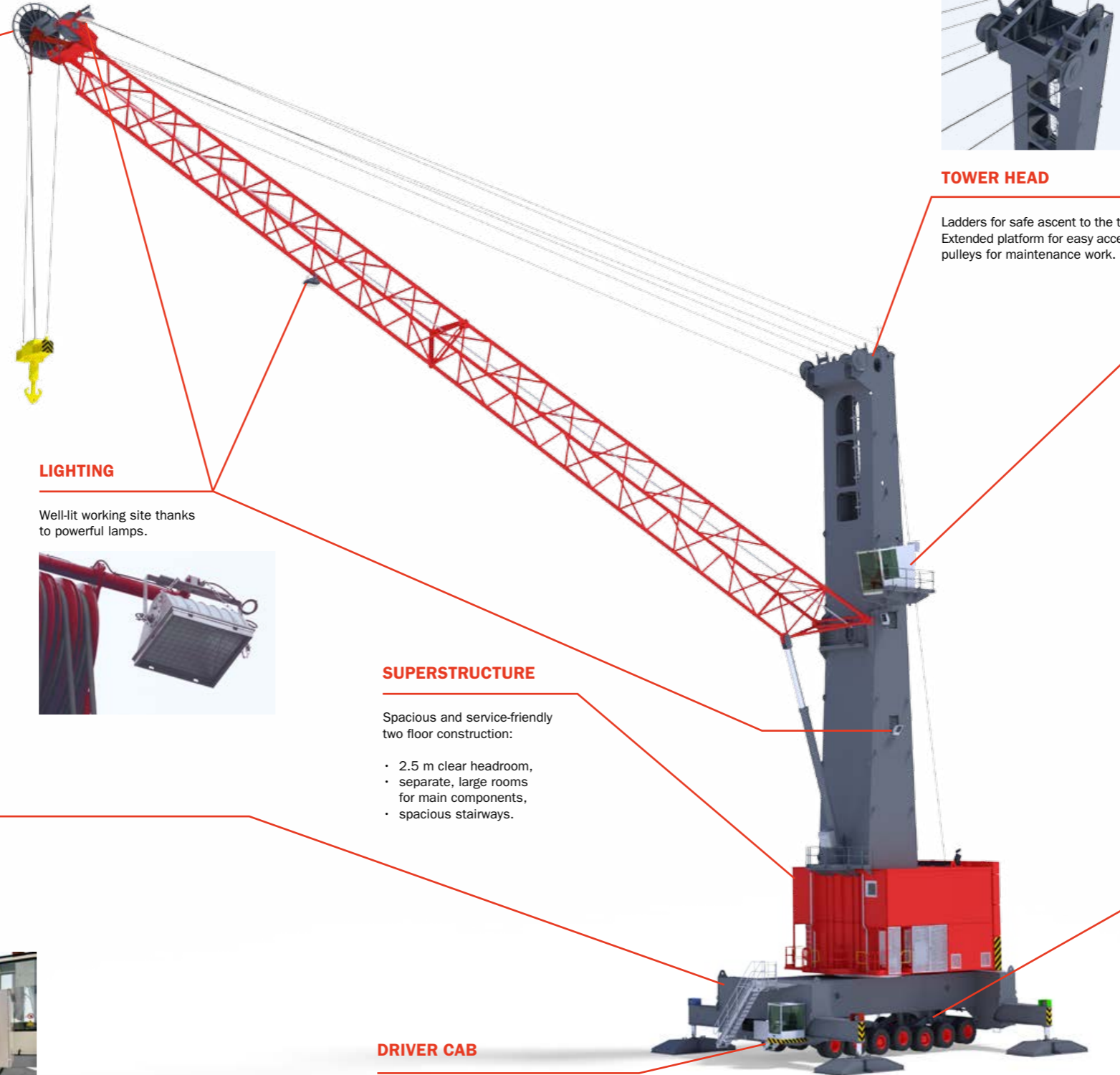
* Heavy-load operation (top), four-rope grab operation (bottom)
 ** A7 classification, 40-tonne grab curve in A8 classification

MODEL 6 MOBILE HARBOR CRANES AT A GLANCE

ALL-ROUND EXCELLENT DESIGN

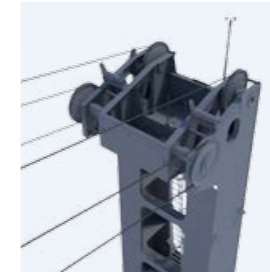
CABLE REEL

Safe cable control and reduced cable loading due to torque-regulated cable reel.



TOWER HEAD

Ladders for safe ascent to the tower head. Extended platform for easy access to rope pulleys for maintenance work.



TOWER CAB

Ergonomically designed cab affords enhanced comfort.

High crane uptime through enhanced diagnostic via the Visumatic® crane management system.

Excellent view of the work site due to tower cab located high up on the tower. Even better view thanks to the forward-mounted cab (optional).



LIGHTING

Well-lit working site thanks to powerful lamps.



SUPERSTRUCTURE

Spacious and service-friendly two floor construction:

- 2.5 m clear headroom,
- separate, large rooms for main components,
- spacious stairways.

PROPPING SYSTEM

Proven H-type stabilizers including:

- automated propping system,
- stabilizer pads chosen for the particular conditions of the quay,
- optional interlocking stabilizer beams for reduced passage width.



RUBBER-TIRED CHASSIS

Maintenance-free equalizer beams with vertical compensation of up to +/- 250 mm means the axle load is always evenly distributed.

Tight turning circle and crab steering provide excellent maneuverability.

To meet the requirements of particularly challenging quay infrastructures, Model 6 can also be supplied with an additional axle (optional).



DRIVER CAB

Driver cab as standard on the chassis.

SPACIOUSLY ARRANGED AND EASILY ACCESSIBLE

SUPERSTRUCTURE – TOP FLOOR

HOISTS

- Easily accessible
- Proven planetary gear integrated in the drum with oil cooler
- 3-phase drive, smooth acceleration and deceleration of the hoisting motion
- Second hoist for four-rope grab machines



CENTRAL LUBRICATION SYSTEM

- Provides regular and proper lubrication of slew ring, boom root and luffing cylinder bearings
- Optionally extendable to include chassis and rope pulleys
- Pinion lubrication using special-purpose, high-performance grease via separate central lubrication system



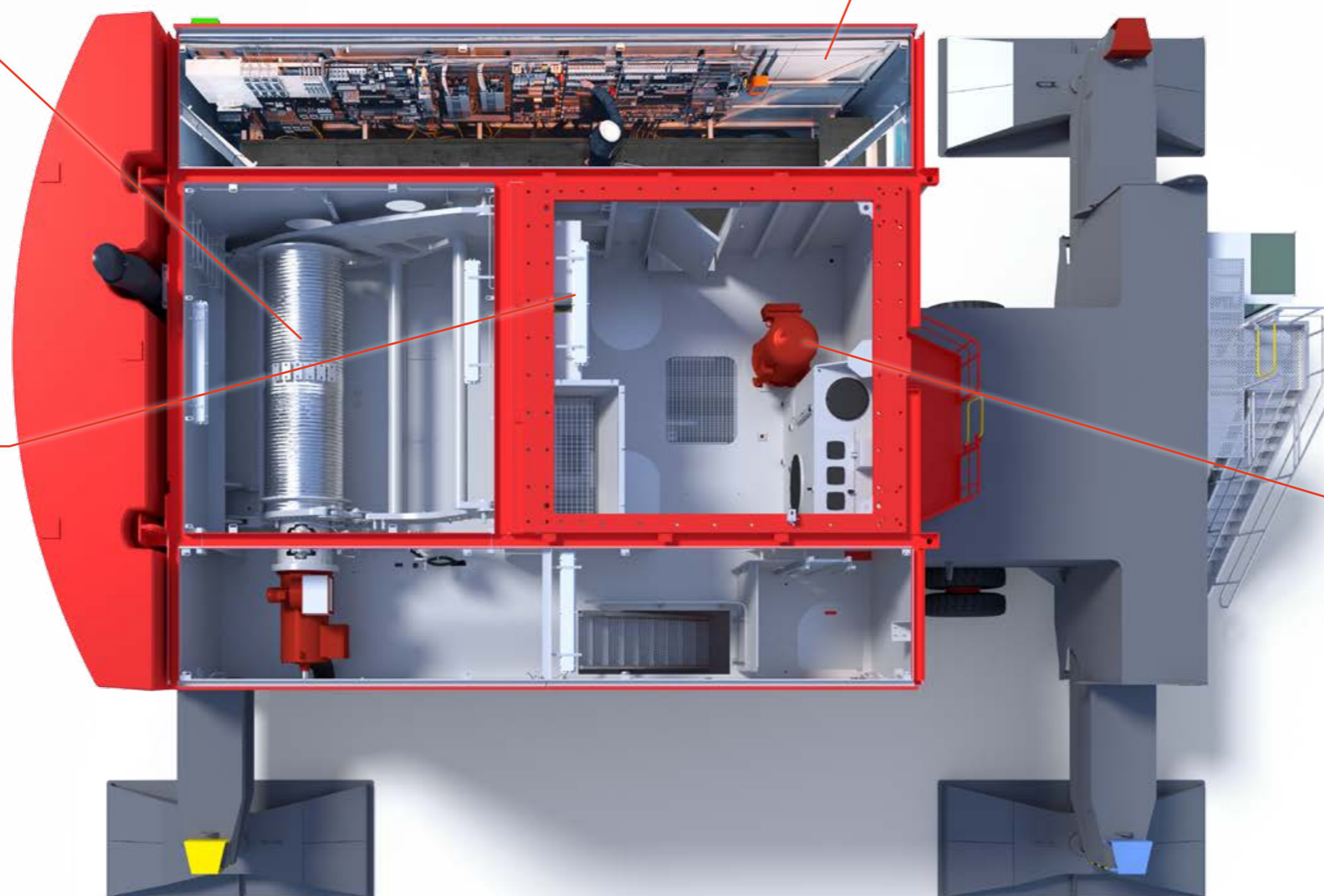
ELECTRICS ROOM

- Weatherproof and air-conditioned
- Contains electrical equipment and control system
- Clearly divided into function groups
- Features diagnostics panel to facilitate troubleshooting



HYDRAULIC UNIT

- With main hydraulic pump and tank
- Supplies luffing cylinder, travel gear, stabilizers, steering and brake systems with hydraulic oil



SERVICE-FRIENDLY AND COMPACT

SUPERSTRUCTURE – LOWER FLOOR

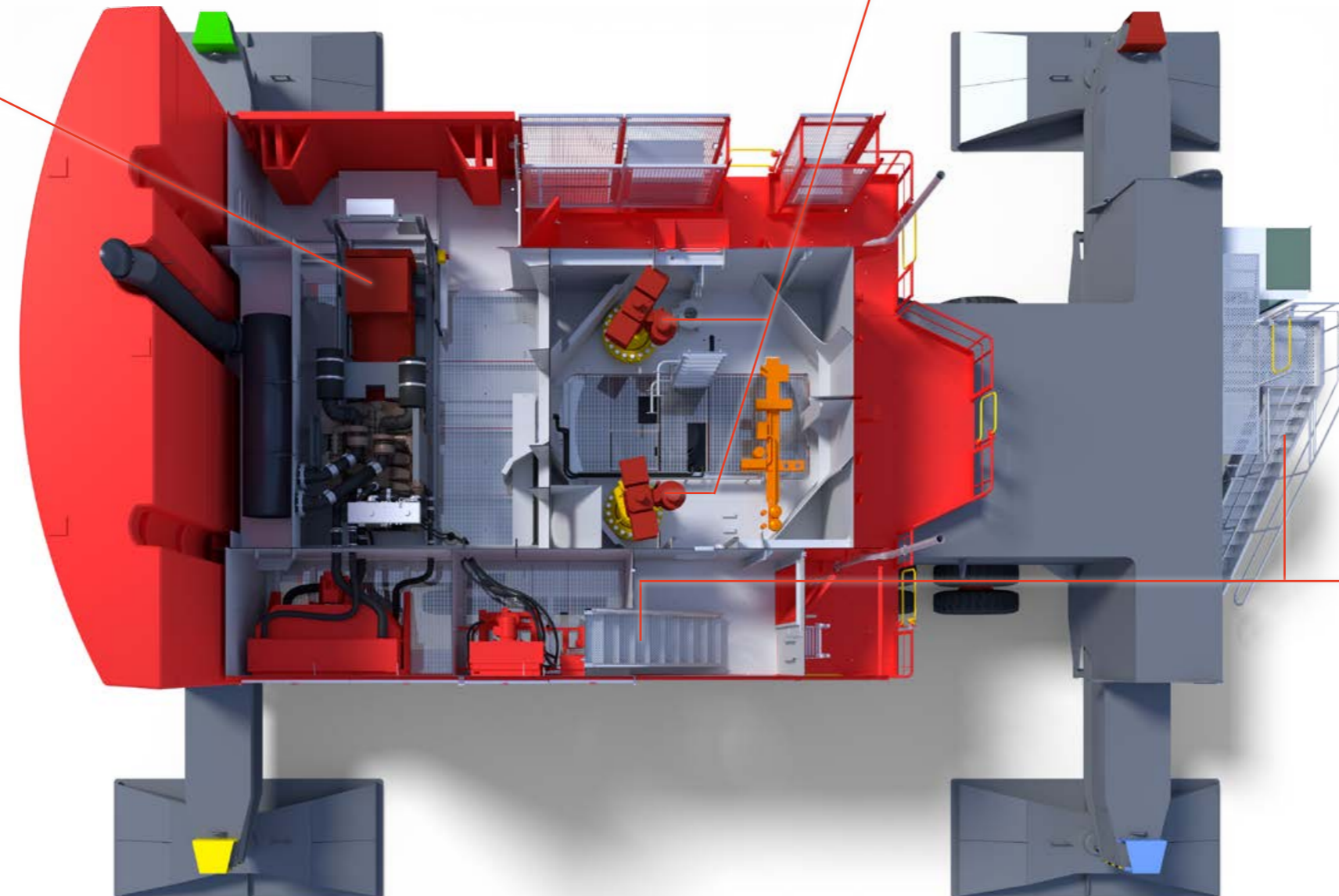
DIESEL GENERATOR

- Mounted on slide for easy replacement
- Features drive power based on crane variants and application
- Provides sufficient power for all crane functions to be performed simultaneously and independently of each other



SLEWING GEAR UNITS

- Slewing gear units designed as modular assemblies
- Drive units are performance-matched to the crane variant and applications
- Proven planetary gear
- 3-phase drive, smooth acceleration and deceleration of the slewing motion



STAIRWAYS

- Provide easy access to the tower cab
- Feature an ergonomic design – with 50° inclination



EXTERNAL POWER SUPPLY

Our cranes can make use of low or medium-voltage mains supplies. They may be equipped with the necessary units ex works or upgraded at a later date.

3-PHASE TECHNOLOGY

Model 6 – with innovative electric-drive concept

With Model 6, Konecranes has expanded its electric drive concept and takes full advantage of technical progress and economic efficiency in 3-phase technology for drive motors.

The advantages of 3-phase power:

- regular maintenance of carbon brushes no longer required,
- gentle, power-dependent starts mean reduced power surges for the generator,
- easier application of energy-saving technologies because certain equipment is present from the start, for fitting ultracaps, for example,
- mitigated line-side harmonics in power supplies.

DRIVE

ELECTRICAL, EFFICIENT AND ECO-FRIENDLY

The Model 6 mobile harbor crane is powered by electricity. The crane draws its power from the on-board diesel-powered generator or from the quayside mains supplying low or medium-voltage electricity.

GENERATING ELECTRICITY ON-BOARD

The diesel-powered generator features low fuel consumption thanks to its outstanding efficiency. Use of state-of-the-art dynamic brake resistors – standard on Konecranes Gottwald cranes – can provide savings in primary energy of up to 15% depending on operating conditions and crane capacity.

EXTERNAL POWER SUPPLY

If used with electricity from the harbor mains, your Konecranes Gottwald crane offers:

- enhanced efficiency throughout the drive train,
- the opportunity to return electricity to the mains,
- help in reducing overhead costs,
- zero exhaust emissions in the terminal,
- reduced noise emissions,
- reduced servicing costs.

HYBRID DRIVE

When generating power on-board, the crane is more efficient with the Konecranes Gottwald hybrid drive – a combination of the diesel-powered generator and electrostatic short-term storage media. The energy recovered from lowering and braking motions is stored in ultracaps, and is then available to the crane's electric circuits for the next work cycle. The result is a potential reduction in fuel consumption of up to 23% depending on operating conditions and crane capacity.



Electrostatic short-term storage media

KONECRANES GOTTWALD MOBILE HARBOR CRANES

SMART, USER-FRIENDLY, SAFE

The Model 6 mobile harbor crane is packed with smart technology. Konecranes focuses on safety and productivity for both the machine and the crane driver.

AS STANDARD: ERGONOMIC, TOP-OF-THE-RANGE EQUIPMENT

The Model 6 mobile harbor crane includes user-friendly functions:

- comfortable, air-conditioned tower cab, with optional air-suspension seat for safe, comfortable work,
- Visumatic® crane management system with clearly arranged graphic symbols for intuitive operator guidance,
- camera on the boom tip for a close-up view of the work site via the monitor screen in the cab,
- ergonomically designed stairways with an inclination of 50° for comfortable, easy access to tower cab, machinery rooms and service points.

MORE CONTROL – MORE EFFICIENCY

Many optional features enable customers to adapt their Konecranes Gottwald Model 6 crane to the exact conditions of use, these features include:

- radio remote control – to avoid repeated ascent to the tower cab during complex crane maneuvers,
- automatic point-to-point handling mode to provide efficient support for repetitive load moves,
- vertical lift assistant to stop the load swinging after being raised and prevent horizontal loads on the boom,
- tandem lift assistant permits use of full lifting capacities and control of two cranes by only one operator,
- grab fill level control to reduce overload cut-outs and to improve the bulk handling performance,
- hold totalization feature for register and record bulk handling rates per hold and in total,
- web-based information and diagnostics system to record operating data and provide access to service data.



EVERYTHING UNDER CONTROL

Intuitive operation through user-friendly human-machine interface.

HIGHLY EFFICIENT SOLUTIONS

PERFECTLY INTEGRATED HANDLING

Konecranes offers a comprehensive range of equipment for all points along the logistics chain – to provide integrated handling solutions from a single source.

As an experienced port solutions provider, we meet the needs of the entire logistics chain and its interfaces – whether in container, general cargo or bulk handling.

THE RIGHT CHOICE – FROM THE START

We also offer planning and advisory services on all aspects of terminal investments and expansion projects. To help you, we employ state-of-the-art software solutions including simulation and emulation specifically for container handling.

BULK HANDLING

Konecranes also enhances bulk handling capability by offering:

- consultancy services and
- software designed specifically for bulk terminals.

Konecranes Gottwald Mobile Harbor Cranes are suitable for a complete range of cargo handling applications and are adapted to specific quay infrastructures. Our ever-expanding product range also includes software developed specifically for bulk terminals.



SOLUTIONS FOR TERMINALS WITH RAIL INFRASTRUCTURE

Model 6 portal harbor cranes with customized portals in regards to height, span and quay loading.



SOLUTIONS FOR LIMITED OR MISSING QUAY INFRASTRUCTURES

We have made a name for ourselves as a manufacturer of sophisticated, complete floating crane solutions including the barge and the maritime classification.

SOLUTIONS FOR CONTAINER TERMINALS

We offer a comprehensive range of container handling equipment for the entire logistic chain.



YOUR MODEL 6 MOBILE HARBOR CRANE IS IN THE BEST HANDS WITH US
COMPREHENSIVE SERVICE

During the development of our Model 6 mobile harbor cranes and their variants we were already thinking about ease of maintenance. The robust machines are user-friendly thanks to easily accessible maintenance points. Our expertise is complemented by the use of components from globally renowned manufacturers.

WE MAINTAIN AVAILABILITY

We contribute to maintaining the availability of your Model 6 mobile harbor crane. Our global service organization is local to you in all time zones, and offers you expertise in maintenance and repair in combination with fast delivery of spare parts.

WE KEEP THE VALUE OVER MANY YEARS


We are the right choice to provide support for your Model 6 mobile harbor crane because we built it and therefore know it best. With our comprehensive service portfolio, your crane remains state of the art, its service life increases and it maintains its value over many years.



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MODEL 6 MOBILE HARBOR CRANES

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working radius of 51 m and lifting speeds of up to 120 m/min. It is available in grab variants with 40 t (A8 classification) and 50 t (A7 classification) grab up to post-Panamax and Capesize Bulker class.

The Model 6 has a unique and generously designed superstructure space operators can choose between three tower variants, with corresponding crane heights for the crane operator, to adapt the crane to their individual requirements employed for practically all port lifting applications.

| Variant | Maximum lifting capacity [t] | Hoisting speed [m/min] | Hoist configuration |
|--------------|------------------------------|------------------------|---------------------------|
| G HMK 6407 | 100 | 0 – 120 | 1 x 2 = one 2-rope hoist |
| G HMK 6507 | 125 | 0 – 120 | 1 x 2 = one 2-rope hoist |
| G HMK 6407 B | 100 / 50 / 40 | 0 – 120 | 2 x 2 = two 2-rope hoists |

G HMK
6507 B

125 / 50 / 40

0 – 120

2 x 2 = two 2-
rope hoists

Options

The Model 6 crane is equipped with a standard range of features that improve economical, sustainable cargo handling in ports and terminals.

We also offer a range of optional, special features such as:

- Load guidance system, including:
 - linear load motion
 - load antisway
 - point-to-point handling mode
 - hoisting height limiting system
- Tandem lift assistant and vertical lift assistant
- Verifiable weighing system

The use of energy-efficient hybrid drive units or external power sources significantly reduces the drive system and helps reduce the environmental impact.

TECHNICAL SPECIFICATIONS ▼

| | G HMK 6407 / G HMK 6507 | G HMK 6407 B / G HMK 6507 B |
|---|----------------------------|--------------------------------|
| DIMENSIONS AND WEIGHT | | |
| Radius | 11.0 – 51.0 m | 11.0 – 51.0 m |
| Boom pivot point – short tower | 17.6 m | 17.6 m |
| Boom pivot point – high tower | 23.0 m | 23.0 m |
| Boom pivot point – with extension | 26.0 m | 26.0 m |
| Tower cab (crane operator eye level) – short tower | 20.7 m | 20.7 m |
| Tower cab (crane operator eye level) – high tower | 26.1 m | 26.1 m |
| Tower cab (crane operator eye level) – with extension | 29.1 m | 29.1 m |
| Propping base | 14.0 m x 12.5 m | 14.0 m x 12.5 m |
| Chassis in travel mode | 18.5 m x 9.0 m | 18.5 m x 9.0 m |
| Chassis in travel mode (optional) | 18.5 m x 8.3 m | 18.5 m x 8.3 m |

| | | |
|------------------|-------|-------|
| Weight (approx.) | 420 t | 420 t |
|------------------|-------|-------|

HOISTING HEIGHTS

| | | |
|------------------|--------|--------|
| Above quay level | 47.0 m | 47.0 m |
|------------------|--------|--------|

| | | |
|------------------|--------|--------|
| Below quay level | 12.0 m | 12.0 m |
|------------------|--------|--------|

TRAVEL GEAR

| | | |
|-------|---|---|
| Axles | 7 | 7 |
|-------|---|---|

| | | |
|---------------|---|---|
| Steered axles | 7 | 7 |
|---------------|---|---|

| | | |
|--------------|---|---|
| Driven axles | 2 | 2 |
|--------------|---|---|

| | | |
|---------------|-----|-----|
| Crab Steering | 25° | 25° |
|---------------|-----|-----|

WORKING SPEEDS AND DRIVE POWER

| | | |
|---------|-------------|-------------|
| Slewing | 0 – 1.6 rpm | 0 – 1.6 rpm |
|---------|-------------|-------------|

| | | |
|---------|--------------|--------------|
| Luffing | 0 – 82 m/min | 0 – 82 m/min |
|---------|--------------|--------------|

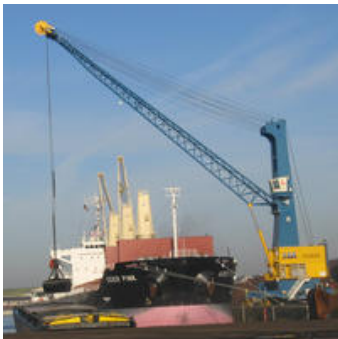
| | | |
|-----------|--------------|--------------|
| Traveling | 0 – 80 m/min | 0 – 80 m/min |
|-----------|--------------|--------------|

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Brochures

[6 Mobile harbour crane](#) 

IMAGE GALLERY





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Mobile Harbour Crane

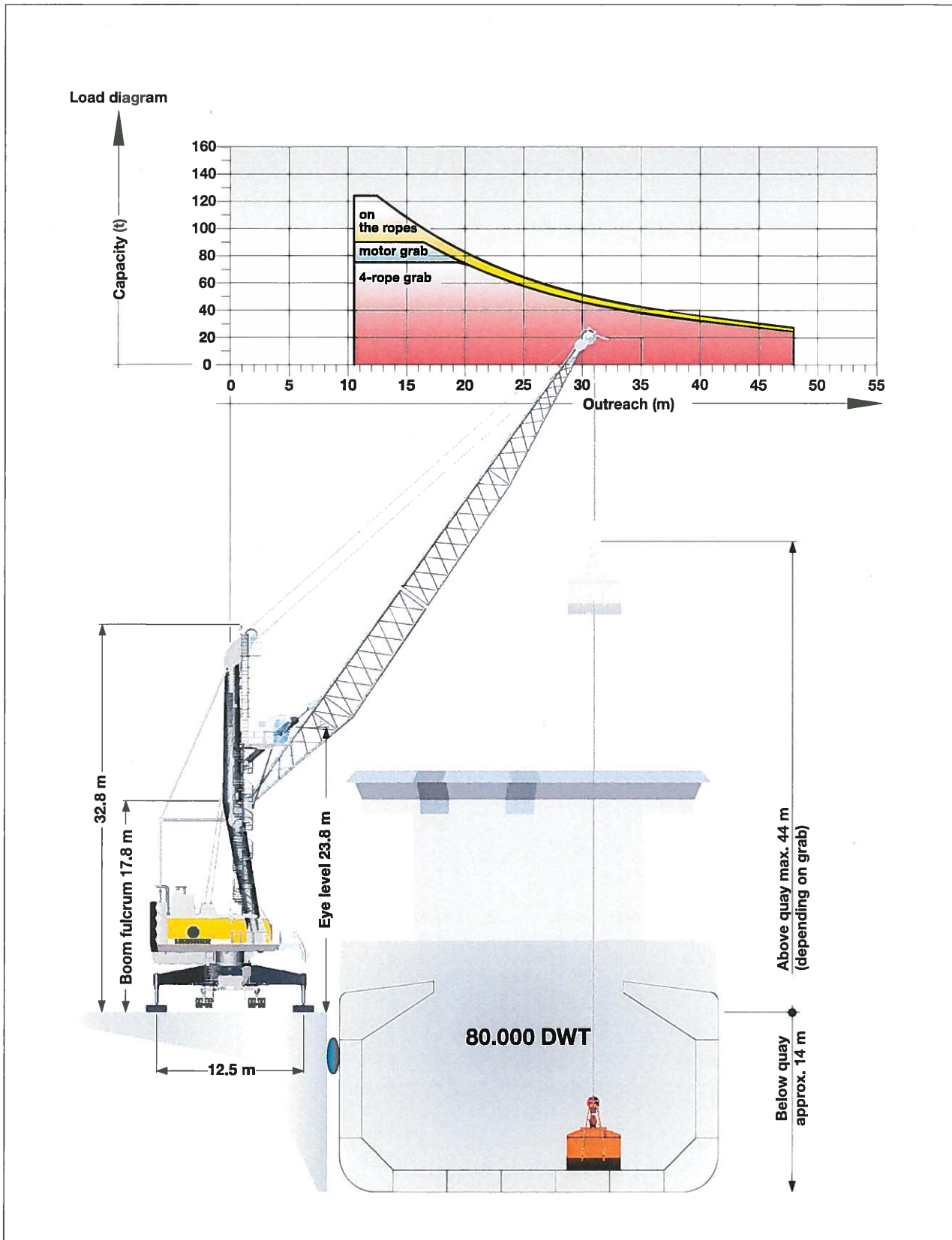
LHM 420



LIEBHERR

Main dimensions

Bulk operation



Bulk operation

| Maximum crane capacity 124 t | | | |
|------------------------------|--------------------------------|----------------|------------|
| Outreach | Hook operation on the ropes | Grab operation | |
| | | 4-rope grab | motor grab |
| (m) | (t) | (t) | (t) |
| 10.5 | 124.0 | 75.0 | 90.0 |
| 11 | 124.0 | 75.0 | 90.0 |
| 12 | 124.0 | 75.0 | 90.0 |
| 13 | 117.6 | 75.0 | 90.0 |
| 14 | 111.5 | 75.0 | 90.0 |
| 15 | 105.6 | 75.0 | 90.0 |
| 16 | 100.1 | 75.0 | 90.0 |
| 18 | 90.0 | 75.0 | 81.0 |
| 19 | 85.3 | 75.0 | 76.8 |
| 20 | 81.0 | 72.9 | 72.9 |
| 22 | 73.1 | 65.8 | 65.8 |
| 24 | 66.2 | 59.6 | 59.6 |
| 26 | 60.2 | 54.2 | 54.2 |
| 28 | 55.1 | 49.5 | 49.5 |
| 30 | 50.6 | 45.5 | 45.5 |
| 31 | 48.6 | 43.7 | 43.7 |
| 34 | 43.4 | 39.1 | 39.1 |
| 36 | 40.5 | 36.5 | 36.5 |
| 38 | 38.0 | 34.2 | 34.2 |
| 40 | 35.7 | 32.1 | 32.1 |
| 42 | 33.5 | 30.2 | 30.2 |
| 44 | 31.4 | 28.3 | 28.3 |
| 46 | 29.3 | 26.3 | 26.3 |
| 48 | 27.3 | 24.5 | 24.5 |

Weight ramshorn hook 3.8 t
Weight rotator 3.0 t

| Maximum crane capacity 84 t | | | |
|-----------------------------|--------------------------------|----------------|------------|
| Outreach | Hook operation on the ropes | Grab operation | |
| | | 4-rope grab | motor grab |
| (m) | (t) | (t) | (t) |
| 10.5 | 84.0 | 45.0 | 52.0 |
| 11 | 84.0 | 45.0 | 52.0 |
| 12 | 84.0 | 45.0 | 52.0 |
| 13 | 84.0 | 45.0 | 52.0 |
| 14 | 84.0 | 45.0 | 52.0 |
| 15 | 84.0 | 45.0 | 52.0 |
| 16 | 84.0 | 45.0 | 52.0 |
| 18 | 84.0 | 45.0 | 52.0 |
| 19 | 84.0 | 45.0 | 52.0 |
| 20 | 81.0 | 45.0 | 52.0 |
| 22 | 73.1 | 45.0 | 52.0 |
| 24 | 66.2 | 45.0 | 52.0 |
| 26 | 60.2 | 45.0 | 52.0 |
| 28 | 55.1 | 45.0 | 49.5 |
| 30 | 50.6 | 45.0 | 45.5 |
| 31 | 48.6 | 43.7 | 43.7 |
| 34 | 43.4 | 39.1 | 39.1 |
| 36 | 40.5 | 36.5 | 36.5 |
| 38 | 38.0 | 34.2 | 34.2 |
| 40 | 35.7 | 32.1 | 32.1 |
| 42 | 33.5 | 30.2 | 30.2 |
| 44 | 31.4 | 28.3 | 28.3 |
| 46 | 29.3 | 26.3 | 26.3 |
| 48 | 27.3 | 24.5 | 24.5 |

Weight ramshorn hook 2.2 t
Weight rotator 2.2 t

Standard configuration Pactronic®

Turnover up to 1500 t per hour
Turnover up to 2000 t per hour

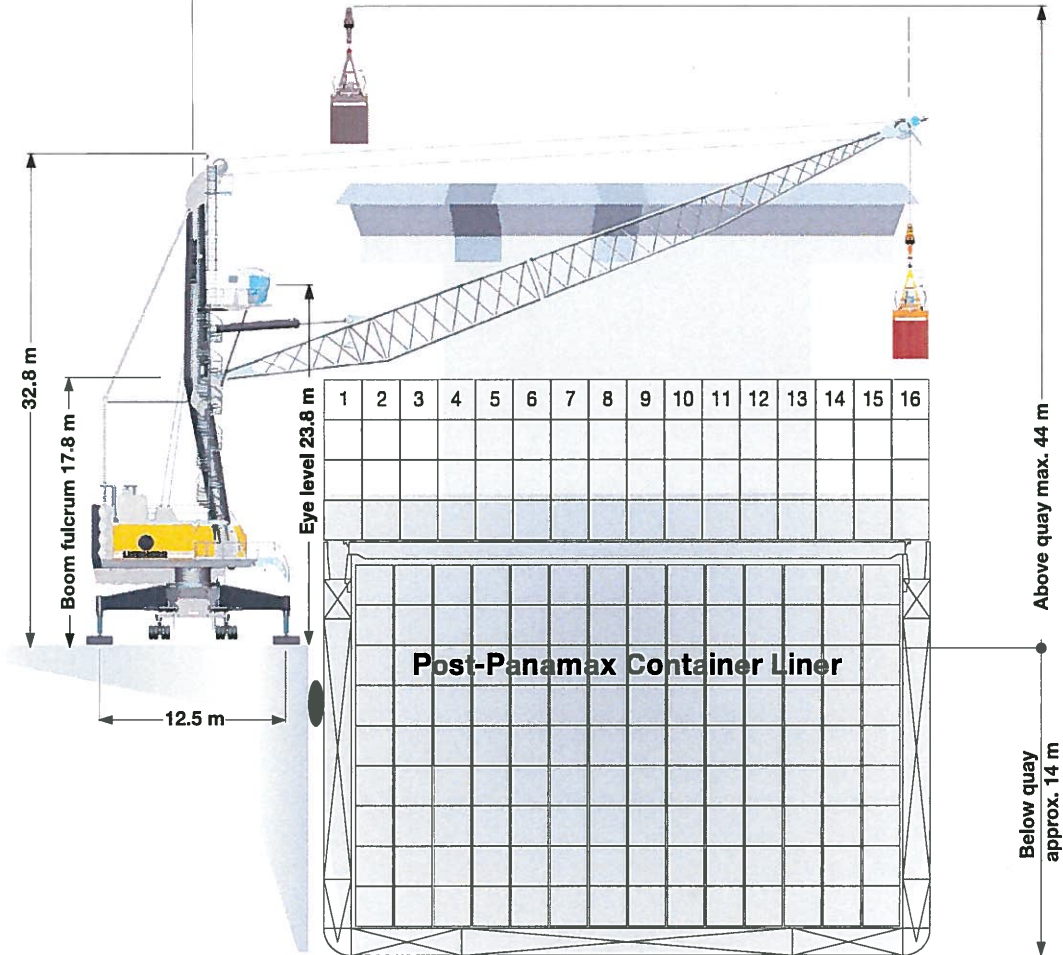
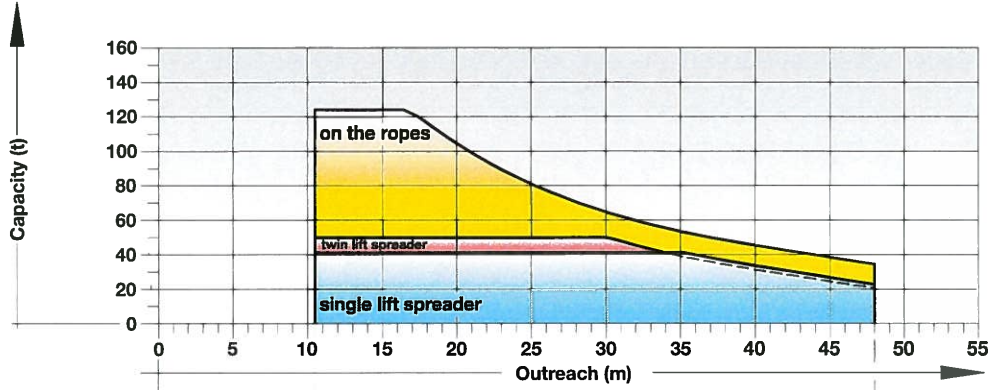
The powerful hydrostatic transmission and advanced Liebherr electronics ensure short, productive working cycles during bulk handling.

- During grab operation, hoisting, slewing, and luffing are driven simultaneously at maximized speed to achieve the highest (possible) turnover.
- During grab filling, features such as automatic lowering and hoisting guarantee the optimum filling level of the grab.
- The slack rope monitoring system ensures extended life-time of the ropes and increases operational safety.
- Reverse power is returned to the drive process through closed loop hydraulics which results in reduced fuel consumption.
- The Cycprotronic® anti-sway system automatically compensates for all rotational swing, transverse and longitudinal sway of the load at maximum speeds.
- To provide safe and stress-free working conditions for the operator, Liebherr offers the Cycprotronic® including Teach-In® feature, a semi-automatic system, which pilots the crane from the vessel hatch to the quay without any sway. Especially for bulk operation into hoppers, the Teach-In® system increases turnover and ensures consistent turnover rates during the entire ship unloading.
- Liebherr technology is absolutely resistant to all types of dust and dirt due to the closed hydraulic system and an electronic system which is military proven and tested.
- The airflow needed for cooling hydraulic and engine systems is routed external from the main machinery house. This helps keep the engine room clean and free of debris.

Main dimensions

Container operation

Load diagram



Container operation

| Maximum crane capacity 124 t* | | | |
|-------------------------------|--------------------------|-----------|-----------------------------|
| Outreach | Spreader operation under | | Hook operation on the ropes |
| | Single lift | Twin lift | Heavy lift |
| (m) | (t) | (t) | (t) |
| 10.5 | 41.0 | 50.0 | 124.0 |
| 11 | 41.0 | 50.0 | 124.0 |
| 12 | 41.0 | 50.0 | 124.0 |
| 13 | 41.0 | 50.0 | 124.0 |
| 14 | 41.0 | 50.0 | 124.0 |
| 16 | 41.0 | 50.0 | 124.0 |
| 18 | 41.0 | 50.0 | 113.9 |
| 20 | 41.0 | 50.0 | 102.5 |
| 22 | 41.0 | 50.0 | 92.5 |
| 24 | 41.0 | 50.0 | 83.8 |
| 26 | 41.0 | 50.0 | 76.2 |
| 28 | 41.0 | 50.0 | 69.2 |
| 30 | 41.0 | 50.0 | 64.1 |
| 32 | 41.0 | 45.5 | 59.2 |
| 33 | 41.0 | 43.3 | 57.0 |
| 34 | 41.0 | 41.3 | 55.0 |
| 35 | 41.0 | 39.3 | 53.0 |
| 38 | 36.1 | 34.4 | 48.1 |
| 40 | 33.2 | 31.5 | 45.2 |
| 42 | 30.5 | 28.8 | 42.5 |
| 44 | 27.8 | 26.1 | 39.8 |
| 46 | 25.1 | 23.4 | 37.1 |
| 48 | 22.5 | 20.8 | 34.5 |

Weight rotator 3.0 t
 Weight fully automatic (telescopic) spreader 9 t
 Weight twin lift spreader 10.7 t
 *) also available in 4-rope configuration

| Maximum crane capacity 84 t* | | | |
|------------------------------|--------------------------|-----------|-----------------------------|
| Outreach | Spreader operation under | | Hook operation on the ropes |
| | Single lift | Twin lift | Heavy lift |
| (m) | (t) | (t) | (t) |
| 10.5 | 41.0 | 50.0 | 84.0 |
| 11 | 41.0 | 50.0 | 84.0 |
| 12 | 41.0 | 50.0 | 84.0 |
| 13 | 41.0 | 50.0 | 84.0 |
| 14 | 41.0 | 50.0 | 84.0 |
| 16 | 41.0 | 50.0 | 84.0 |
| 18 | 41.0 | 50.0 | 84.0 |
| 20 | 41.0 | 50.0 | 84.0 |
| 23 | 41.0 | 50.0 | 84.0 |
| 24 | 41.0 | 50.0 | 83.8 |
| 26 | 41.0 | 50.0 | 76.2 |
| 28 | 41.0 | 50.0 | 69.7 |
| 30 | 41.0 | 50.0 | 64.1 |
| 32 | 41.0 | 46.3 | 59.2 |
| 33 | 41.0 | 44.1 | 57.0 |
| 34 | 41.0 | 42.1 | 55.0 |
| 35 | 41.0 | 40.1 | 53.0 |
| 38 | 36.9 | 35.2 | 48.1 |
| 40 | 34.0 | 32.3 | 45.2 |
| 42 | 31.3 | 29.6 | 42.5 |
| 44 | 28.6 | 26.9 | 39.8 |
| 46 | 25.9 | 24.2 | 37.1 |
| 48 | 23.3 | 21.6 | 34.5 |

Weight rotator 2.2 t
 Weight fully automatic (telescopic) spreader 9 t
 Weight twin lift spreader 10.7 t
 *) also available in 4-rope configuration

Standard configuration Pactronic®

Turnover up to 32 cycles per hour Turnover up to 38 cycles per hour

Precision to perfection: With incredibly short acceleration times for all crane motions, Liebherr is the top performer in container handling.

- The crane can be fitted with various types of spreaders (fixed or telescopic) connected to the rotator. Manual, semi or fully automatic telescopic spreaders are available for various container sizes.
- Liebherr Cycoptronic® is an accurate, sway-free load motion control system that uses in-house designed software. Cycoptronic® allows for direct load positioning and aids the crane driver in mastering his task. With Cycoptronic® turnover, safety and the confidence of the operator will be improved.
- Safety: The luffing cylinder is positioned above the lattice boom. This eliminates the possibility of any damage to the cylinder through swinging loads or highly stowed rows of containers on board the vessel.
- The Liebherr hydrostatic drive is the most reliable and highest performing drive system for mobile harbour cranes. Independent closed loop hydraulic systems utilize the minimum number of components to guarantee highly responsive, smooth and precise operation while maximizing operational safety.

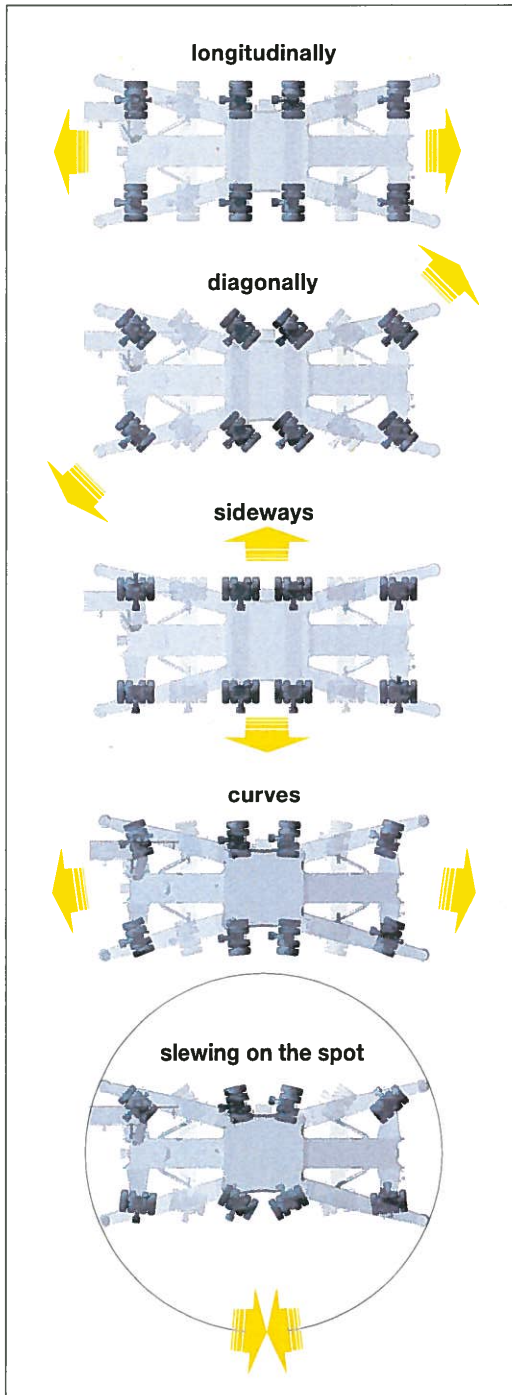
Undercarriage

Mobility

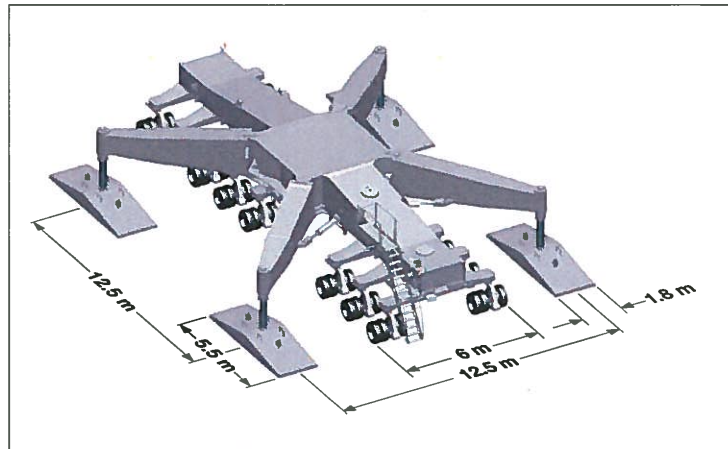
- Outstanding mobility and manoeuvrability
- Curves at any possible radii and even slewing on the spot

Modular propping system

- Minimised stress and strain of undercarriage due to cruciform support base which directs the load path from boom tip to quay
- Modular system allows further reduction of quay loads by installing additional axle sets
- Easy adaptation to various sizes of support pads and bases

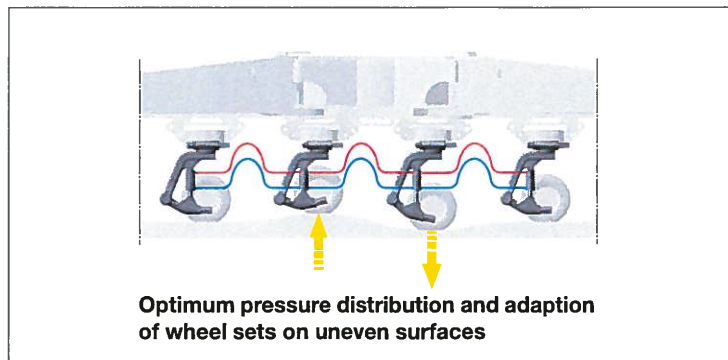


Schematic diagram



Hydraulic load distribution

- Hydraulic suspension avoids overloading of individual wheel sets
- Standard trailer tyres making requisition of spares economical and time-saving
- Increased lifetime of tyres due to individually steerable wheel sets



Technical data

Capacity and Classification

| | Capacity | Classification |
|--------------------|----------|----------------|
| Grab operation | < 52 t | A8 |
| Standard operation | < 70 t | A6 |
| Container | < 57 t | A7 |
| Heavy lift | < 124 t | A3 |

Main dimensions

| | |
|---------------------------------|-----------|
| Min. to max. outreach | 10.5–48 m |
| Height of boom fulcrum | 17.8 m |
| Tower cabin height (eye level) | 23.8 m |
| Overall height (top of tower) | 32.8 m |
| Overall length of undercarriage | 20.0 m |
| Overall width of undercarriage | 6.0 m |

| | Bulk | Container |
|--------------------------------|------|-----------|
| Number of axle sets (standard) | 14 | 16 |
| Number of axle sets (optional) | 24 | 24 |

Working speeds

| | |
|---------------------|---------------|
| Hoisting / lowering | 0 – 120 m/min |
| Slewing | 0 – 1.6 rpm |
| Luffing | 0 – 85 m/min |
| Travelling | 0 – 5 km/h |

Propping arrangements

| | |
|---|--------------------|
| Standard supporting base | 12.5 m x 12.5 m |
| Standard pad dimension | 4 x 5.5 m x 1.8 m |
| Standard supporting area of pads | 9.9 m ² |
| Optional size of supporting pads and bases on request | |

Quay load arrangements

| | Bulk | Container |
|----------------------------|----------------------|----------------------|
| Uniformly distributed load | 1.3 t/m ² | 1.4 t/m ² |
| Max. load per tyre | 6.1 t | 5.8 t |

Due to a unique undercarriage design the quay loads specified above can even be reduced. Pad sizes, supporting base and the number of axle sets can easily be adapted to comply with the most stringent quay load restrictions.

Weight

| | Bulk | Container |
|---------------------------------|-------|-----------|
| Total weight of crane (approx.) | 342 t | 371 t |

Hoisting heights

| | |
|------------------------------|------|
| Above quay at minimum radius | 44 m |
| Above quay at maximum radius | 29 m |
| Below quay level (approx.) | 14 m |

Optional equipment

1. Pactronic® - power by accumulator and electronics
2. Cycoptronic® - anti-sway system
3. Teach-In - semi-automatic point to point system
4. Sycratronic® - synchronizing crane control system
5. Vertical Line Finder - diagonal pull preventing system
6. Dynamic anti-collision system
7. Lidat® - basic package
8. Lidat® - tele service package
9. Lidat® - turnover package
10. SCULI - crane analyzer with various features
11. Economy software - for optimised fuel consumption
12. Video monitoring system
13. Radio remote control
14. Autopropping undercarriage
15. Cyclone air-intake system for the engine
16. Low temperature package
17. Customer-specific painting & logo
18. Additional (driven) axle sets
19. Axle sets equipped with foamed tyres
20. Different supporting bases and pad sizes
21. And many more as per customers' requirements

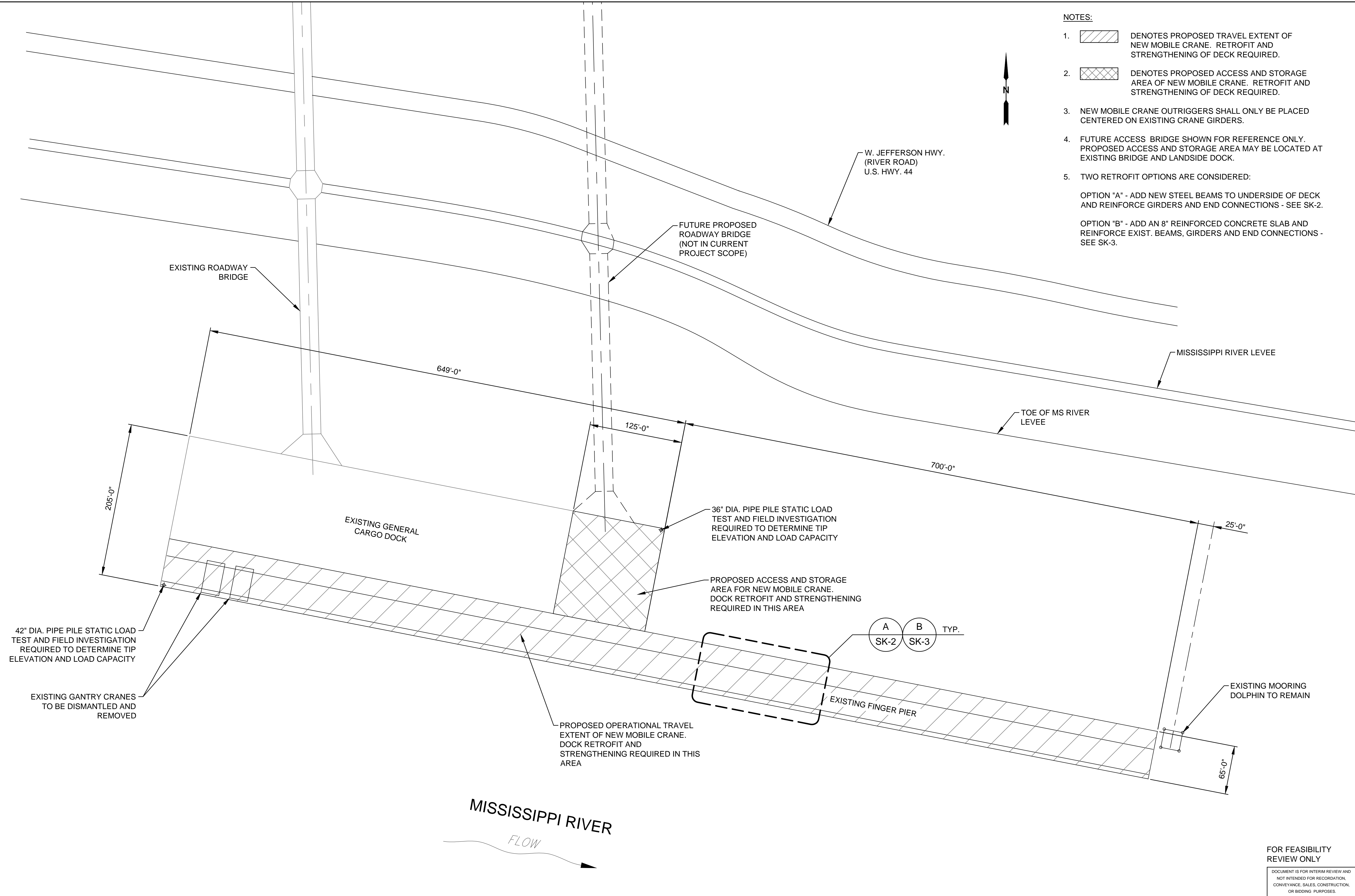
Practical solutions



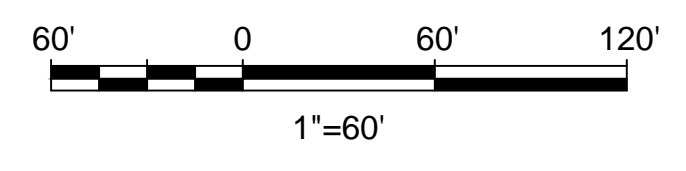
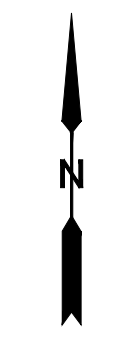
Liebherr develops and produces special designs and solutions to meet customer-specific requirements

- The Liebherr Portal Crane, LPS, is an efficient combination of a space-saving portal (mounted on rails) and the proven mobile harbour crane concept. Particularly on narrow quays, individual portal solutions permit (railway) trains and (road) trucks to travel below the portal.
- Liebherr Fixed Slewing Cranes (LFS) are an efficient combination of a mobile harbour crane upper carriage and a fixed pedestal. LFS cranes provide an economical and space-saving solution for the installation on quaysides and jetties, especially where room for manoeuvring is limited and low ground pressure is essential.

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- NOTES:**
- DENOTES PROPOSED TRAVEL EXTENT OF NEW MOBILE CRANE. RETROFIT AND STRENGTHENING OF DECK REQUIRED.
 - DENOTES PROPOSED ACCESS AND STORAGE AREA OF NEW MOBILE CRANE. RETROFIT AND STRENGTHENING OF DECK REQUIRED.
 - NEW MOBILE CRANE OUTRIGGERS SHALL ONLY BE PLACED CENTERED ON EXISTING CRANE GIRDERS.
 - FUTURE ACCESS BRIDGE SHOWN FOR REFERENCE ONLY. PROPOSED ACCESS AND STORAGE AREA MAY BE LOCATED AT EXISTING BRIDGE AND LANDSIDE DOCK.
 - TWO RETROFIT OPTIONS ARE CONSIDERED:
 OPTION "A" - ADD NEW STEEL BEAMS TO UNDERSIDE OF DECK AND REINFORCE GIRDERS AND END CONNECTIONS - SEE SK-2.
 OPTION "B" - ADD AN 8" REINFORCED CONCRETE SLAB AND REINFORCE EXIST. BEAMS, GIRDERS AND END CONNECTIONS - SEE SK-3.



GLOBALPLEX DOCK RETROFIT PLAN
SCALE: 1"=60'

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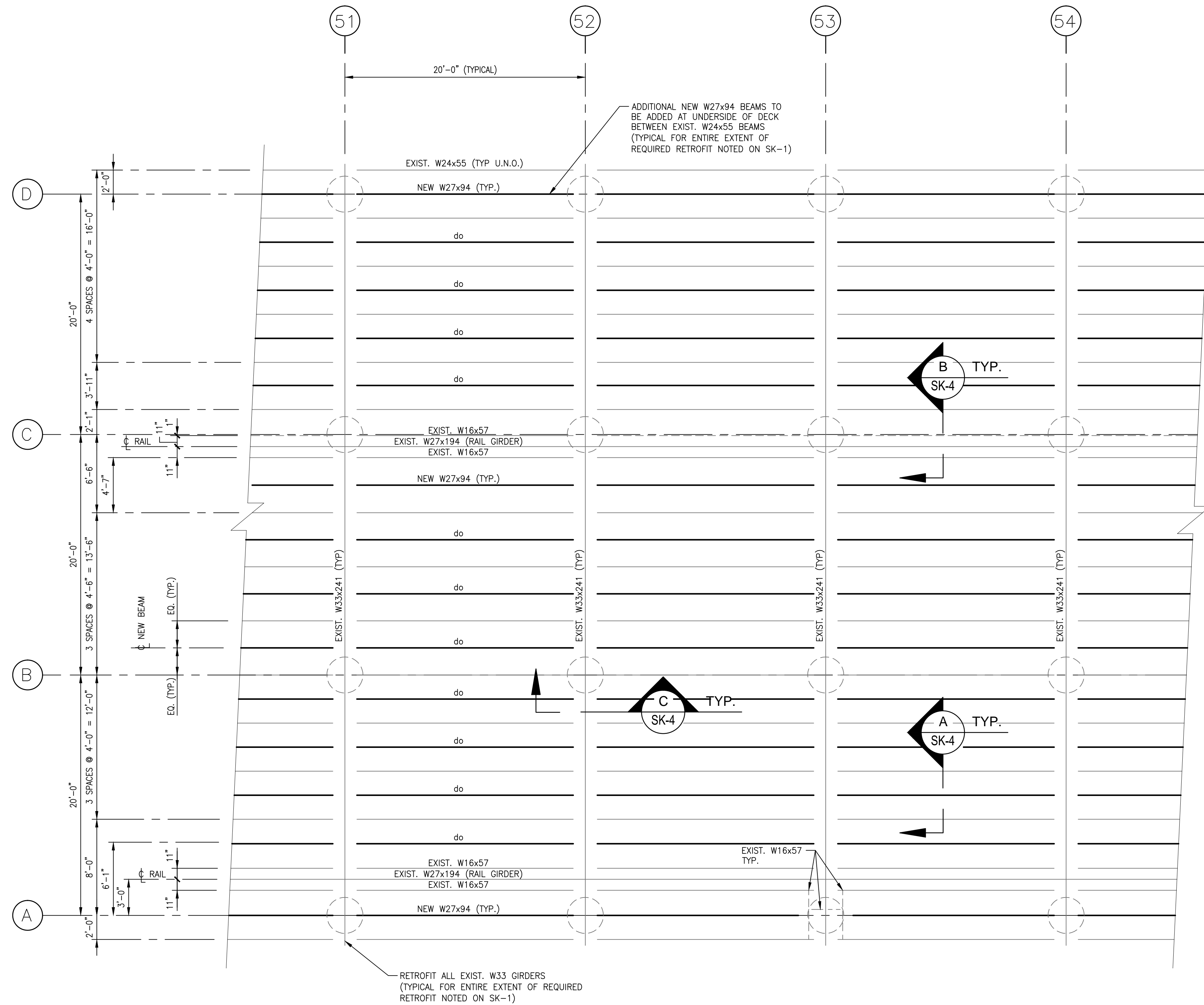
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PORT OF SOUTH LOUISIANA
 GENERAL CARGO AND FINGER PIER
 LOUISIANA
 GLOBALPLEX DOCK MOBILE
 CRANE RETROFIT PLAN
 ST. JOHN PARISH

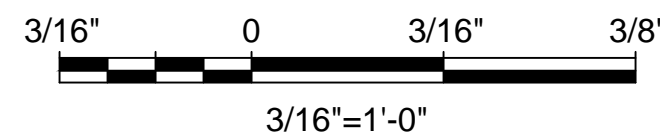
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TYPICAL DOCK FRAMING RETROFIT PLAN
(OPTION "A")

SCALE: 3/16"=1'-0"



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CIVIL DISCIPLINE
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LOUISIANA
ST. JOHN PARISH
TYPICAL EXIST. DOCK RETROFIT
FRAMING PLAN (OPTION "A")

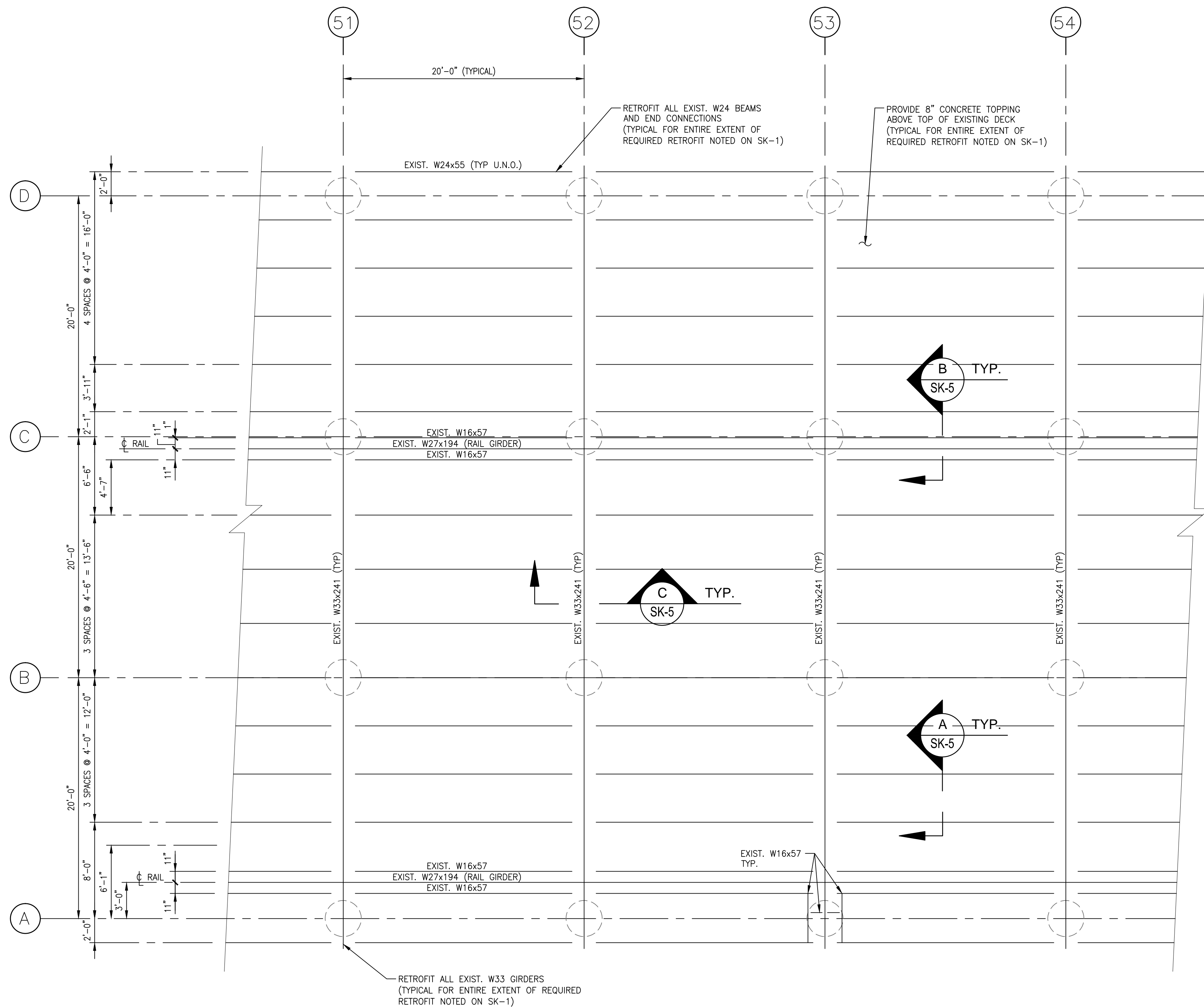
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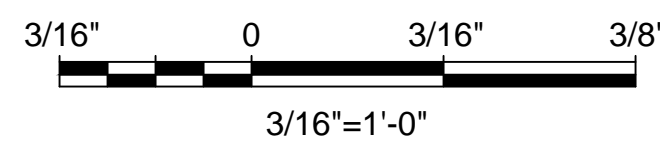
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TYPICAL DOCK FRAMING RETROFIT PLAN
(OPTION "B")

SCALE: 3/16"=1'-0"



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SK-3

PORT OF SOUTH LOUISIANA
GENERAL CARGO AND FINGER PIER
LOUISIANA
ST. JOHN PARISH
TYPICAL EXIST. DOCK RETROFIT
FRAMING PLAN (OPTION "B")

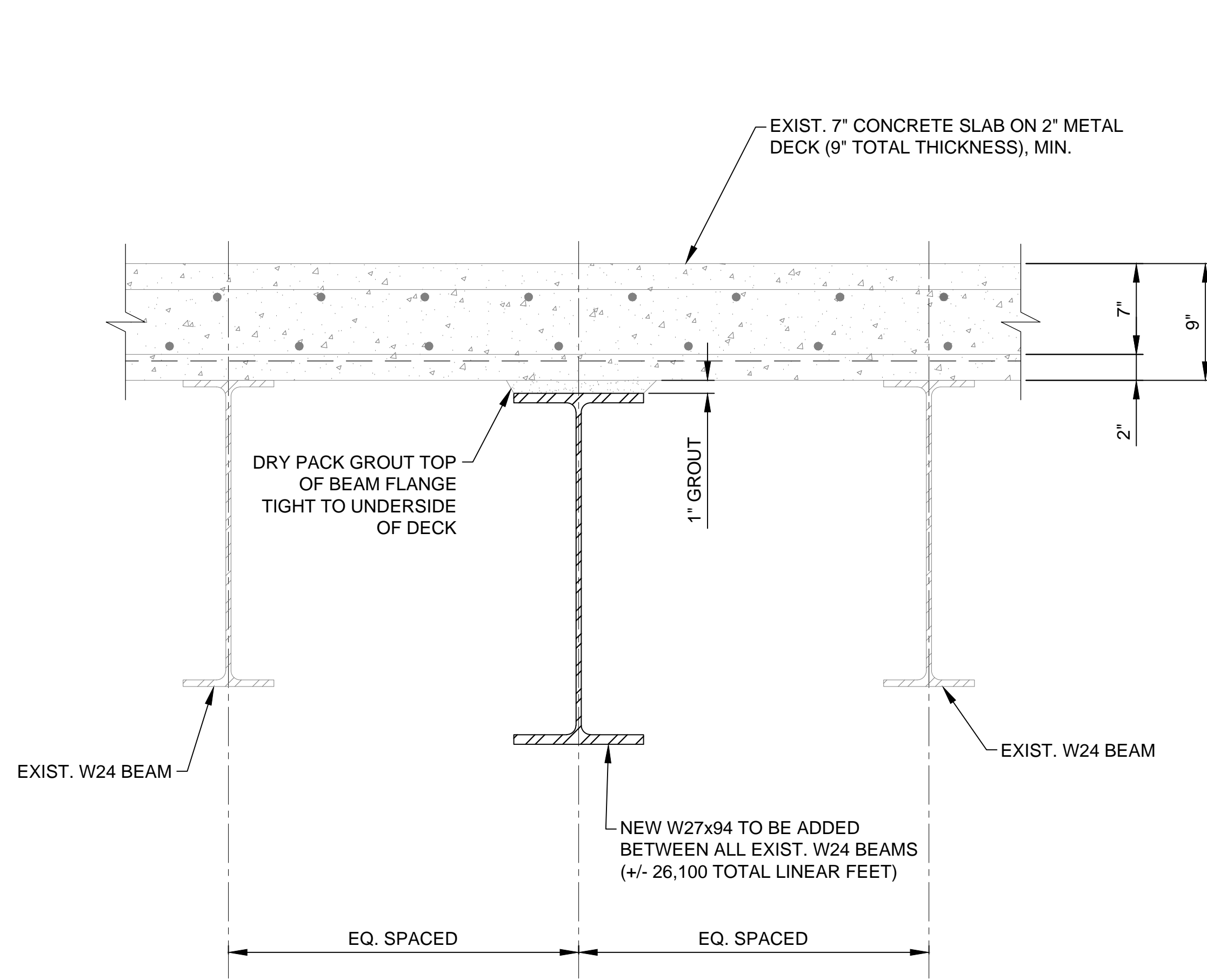
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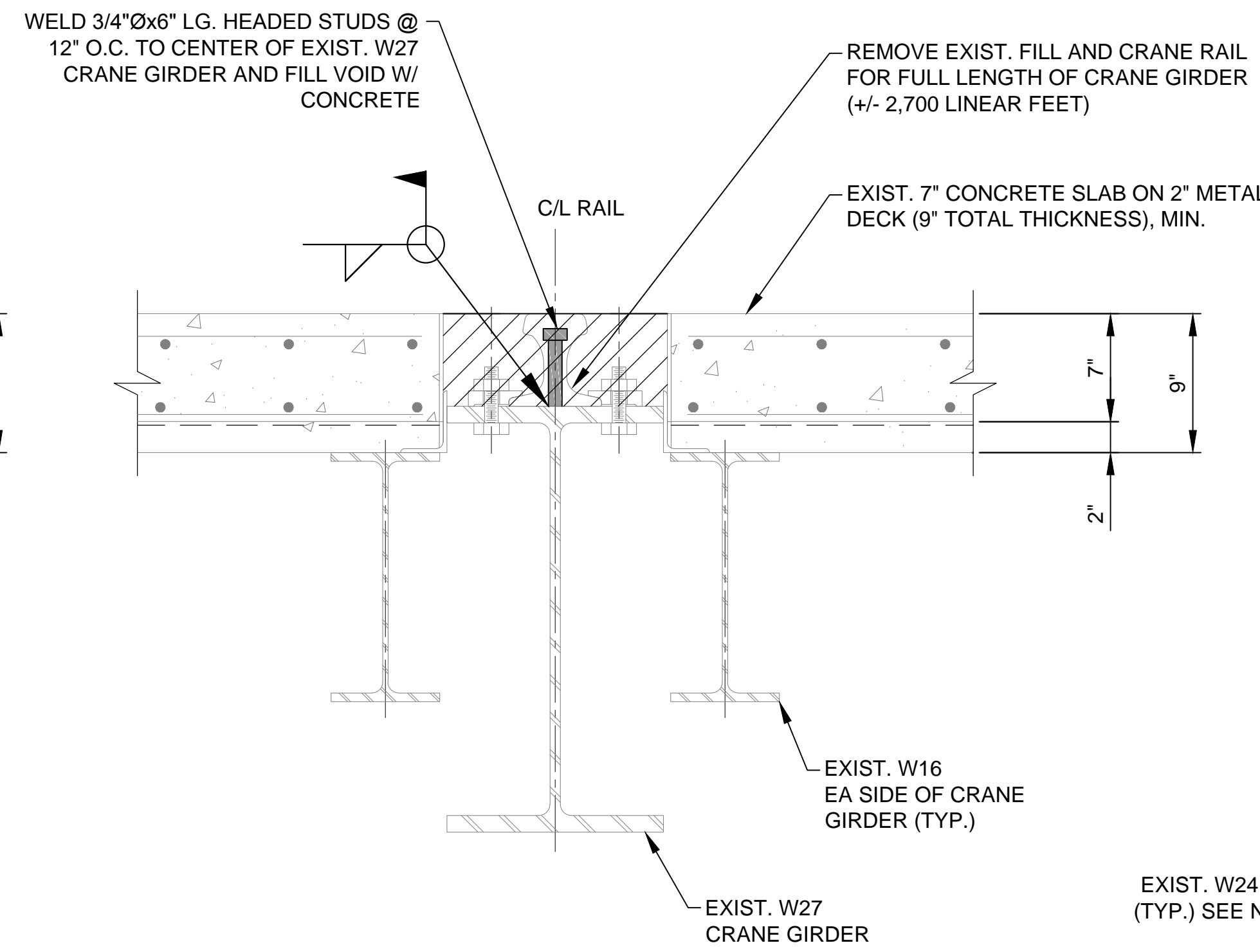
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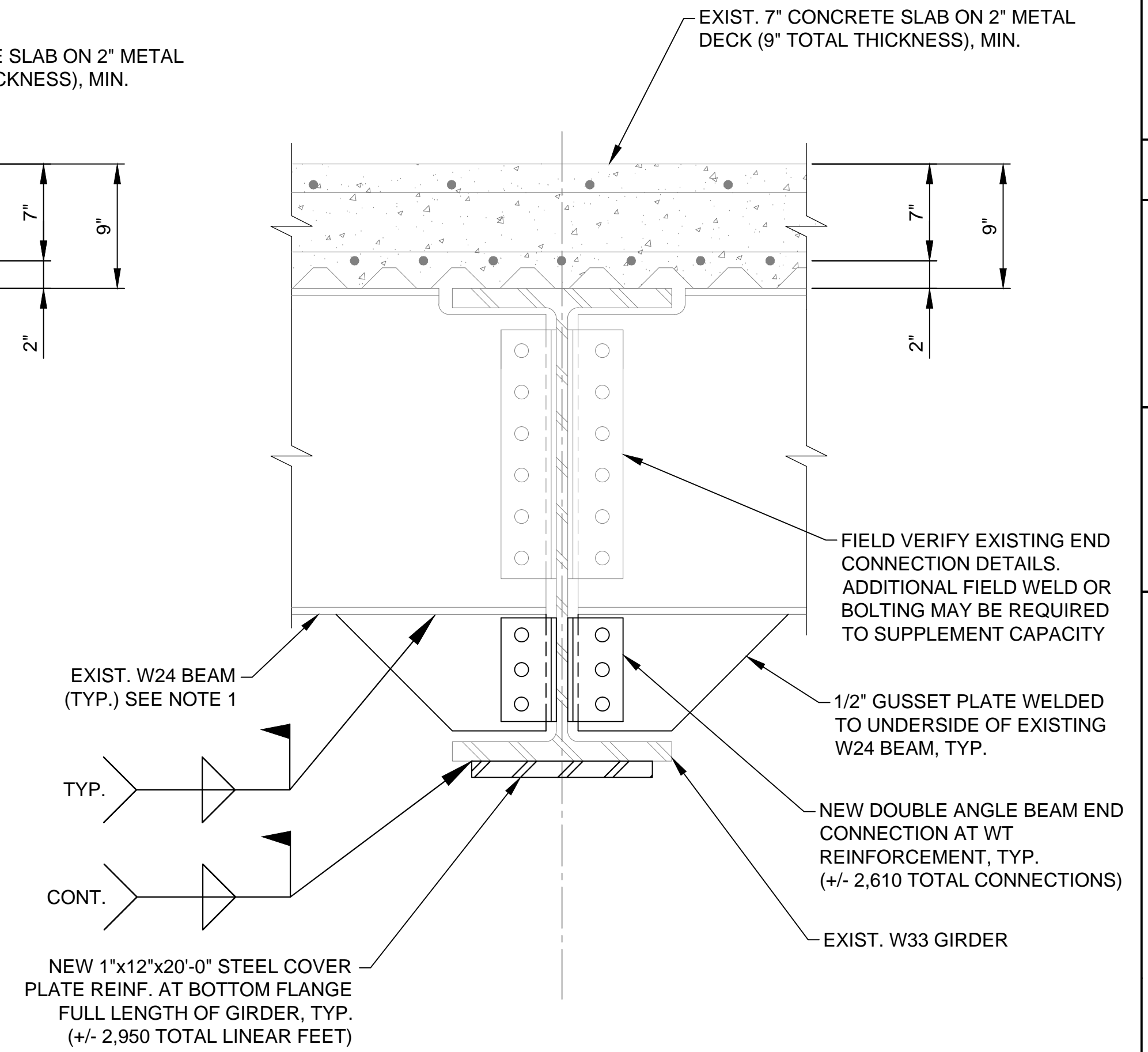
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A SECTION
SK-2 SCALE: 1 1/2"=1'-0"



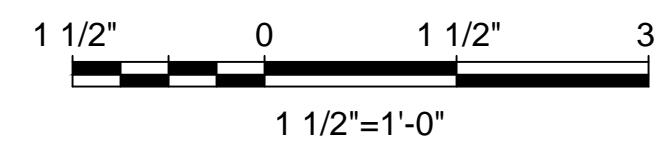
B SECTION
SK-2 SCALE: 1 1/2"=1'-0"



C SECTION
SK-2 SCALE: 1 1/2"=1'-0"

- NOTES:**
- WT SHAPES TO BE ASTM A992, ANGLES TO BE ASTM A36, PLATE TO BE ASTM A572, GR 50.
 - ALL NEW STRUCTURAL BOLTS TO BE 3/4" DIAMETER ASTM A490-X, HEADED STUDS TO BE ASTM A1044.
 - ALL WELDING TO BE ELECTRIC WELDING CONFORMING TO AWS D.1.1. ELECTRODES TO BE E70XX.
 - ALL NEW STEEL TO RECEIVE FIELD APPLIED COAL TAR EPOXY COATING AFTER WELDING.
 - STRUCTURAL STEEL FABRICATION AND ERECTION SHALL CONFORM TO THE AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, LATEST EDITION.

- NOTES:**
- SECTION SIMILAR AT NEW W27 BEAMS. PROVIDE NEW BOLTED/WELDED DOUBLE ANGLE END CONNECTIONS AT EACH END OF W27 BEAMS CAPABLE OF DEVELOPING 50% UDL REACTION



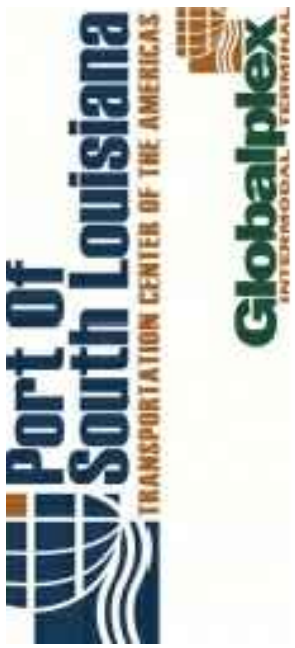
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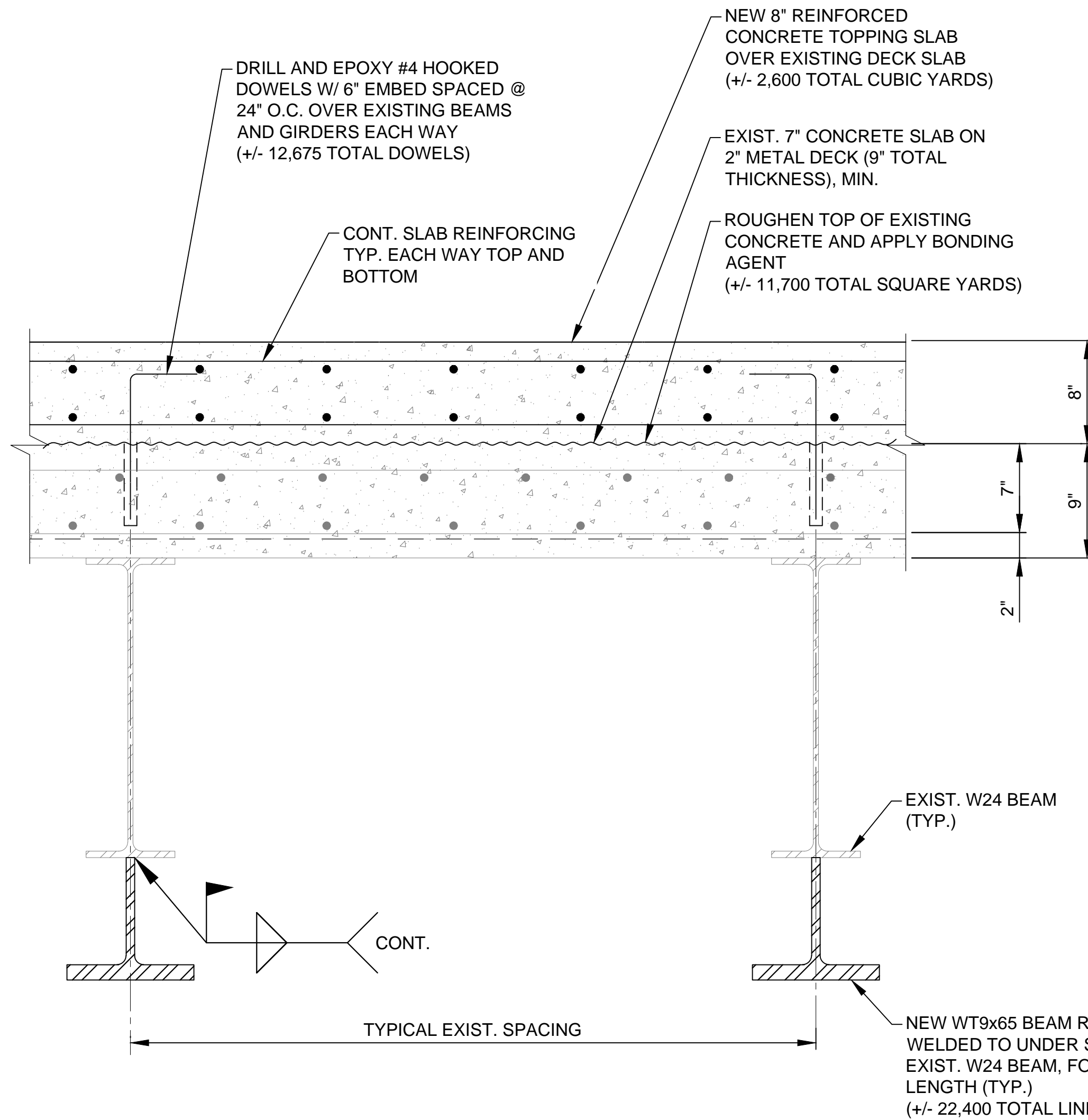
PORT OF SOUTH LOUISIANA
GENERAL CARGO AND FINGER PIER
LOUISIANA
STRUCTURAL RETROFIT SECTIONS AND DETAILS (OPTION "A")
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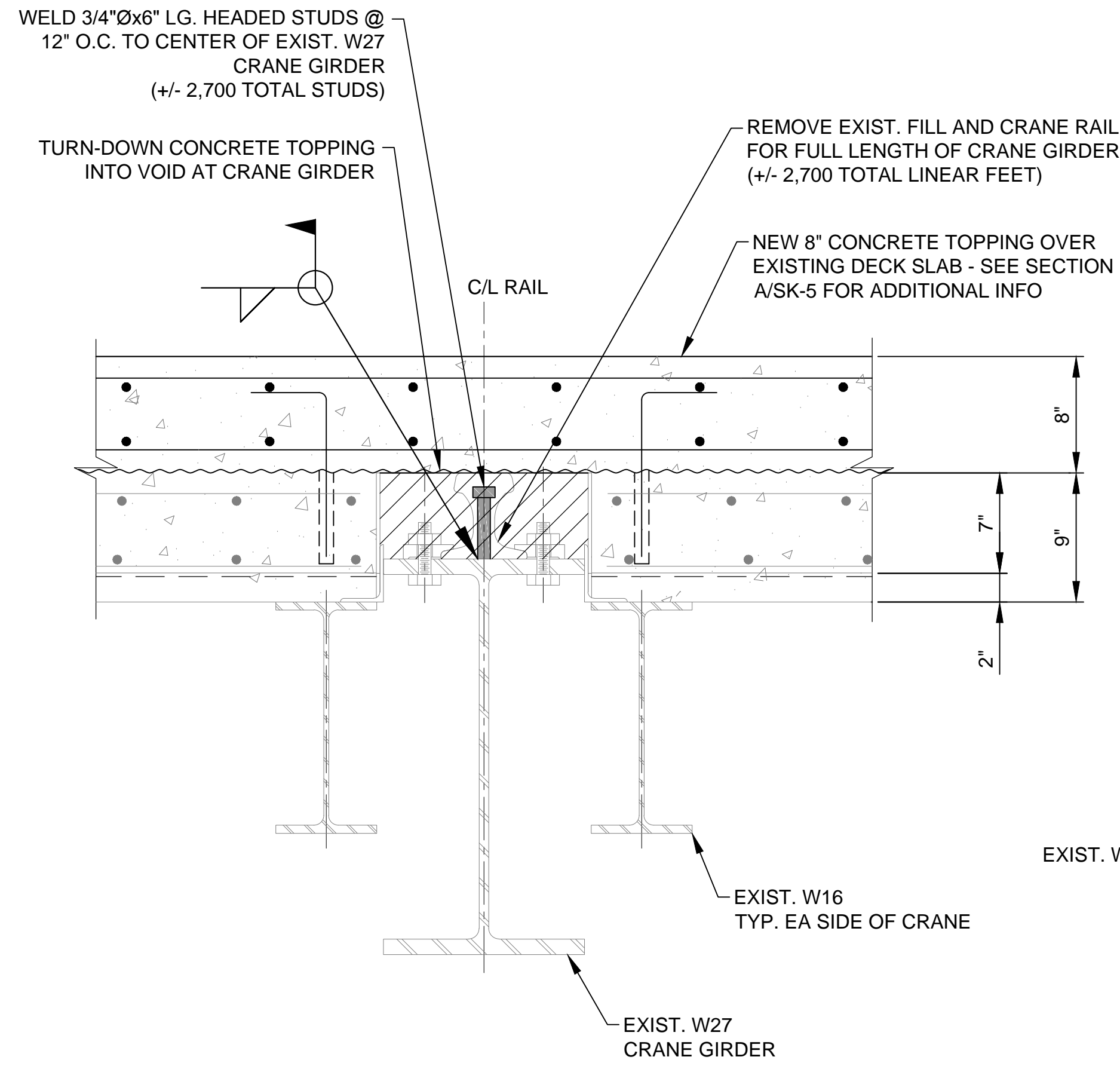
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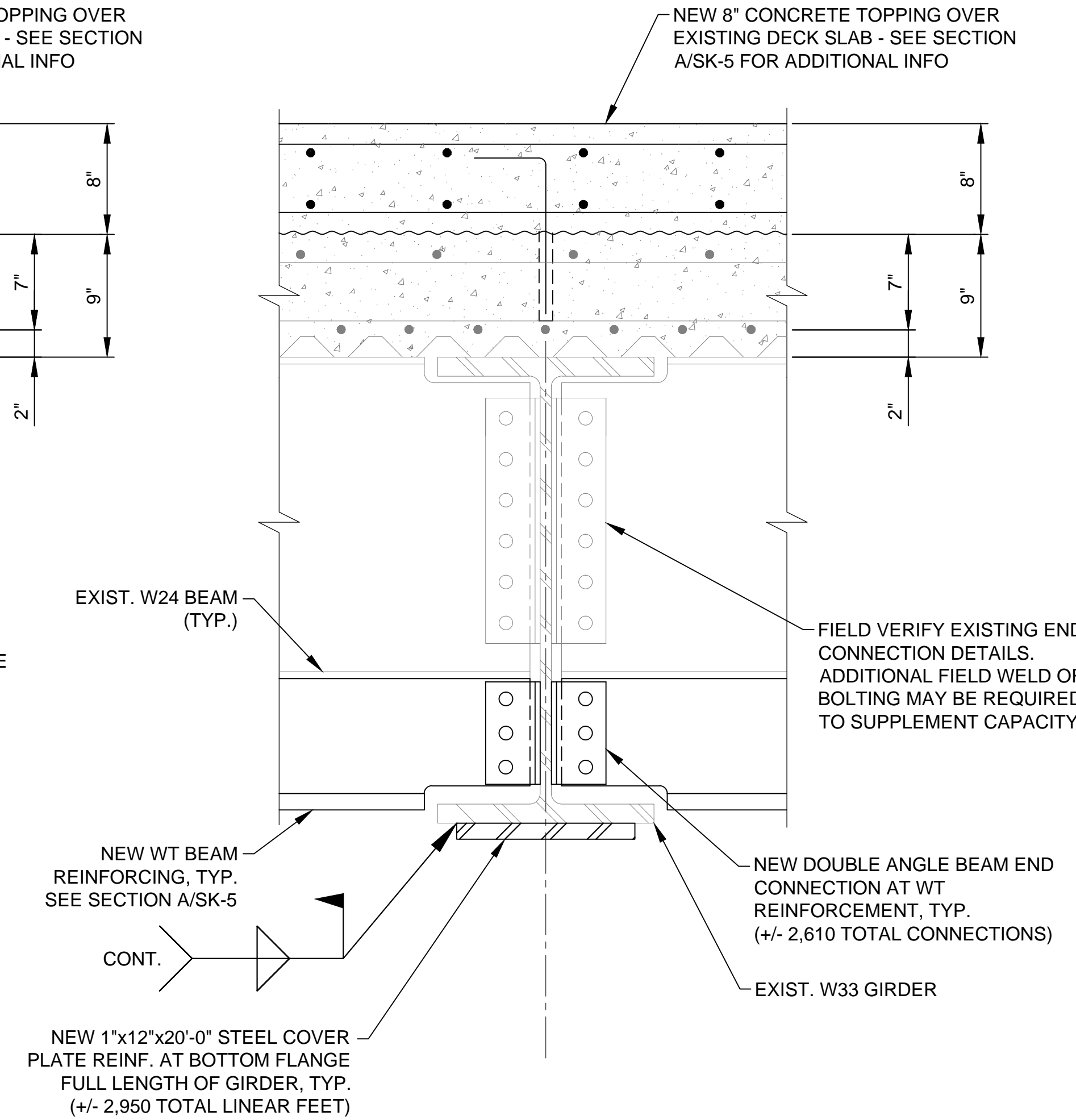
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A SECTION
SK-3 SCALE: 1 1/2"=1'-0"



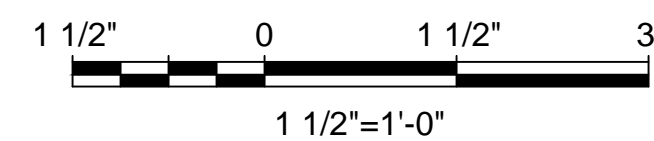
B SECTION
SK-3 SCALE: 1 1/2"=1'-0"



C SECTION
SK-3 SCALE: 1 1/2"=1'-0"

NOTES:

- WT SHAPES TO BE ASTM A992, ANGLES TO BE ASTM A36, PLATE TO BE ASTM A572, GR 50.
- ALL NEW STRUCTURAL BOLTS TO BE 3/4" DIAMETER ASTM A490-X, HEADED STUDS TO BE ASTM A1044.
- ALL WELDING TO BE ELECTRIC WELDING CONFORMING TO AWS D.1.1. ELECTRODES TO BE E70XX.
- ALL NEW STEEL TO RECEIVE FIELD APPLIED COAL TAR EPOXY COATING AFTER WELDING.
- STRUCTURAL STEEL FABRICATION AND ERECTION SHALL CONFORM TO THE AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, LATEST EDITION.
- ALL EXISTING STEEL BEAM AND GIRDER REINFORCEMENT AND END CONNECTION REINFORCEMENT SHALL BE IN PLACE AND COMPLETED PRIOR TO PLACEMENT OF CONCRETE TOPPING SLAB.
- CONCRETE REINFORCEMENT TO BE ASTM A-615, GR. 60.
- CONCRETE TOPPING SLAB SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 4,000 PSI AT 28 DAYS.
- SLOPE CONCRETE TOPPING SLAB TO MATCH EXISTING SLOPE OF CONCRETE DECK. CONCRETE TOPPING SLAB JOINTS SHALL MATCH EXISTING CONCRETE DECK (20' x 20' TYPICAL GRID).
- EPOXY TO BE HILTI HIT-RE 500 SD OR APPROVED EQUAL.



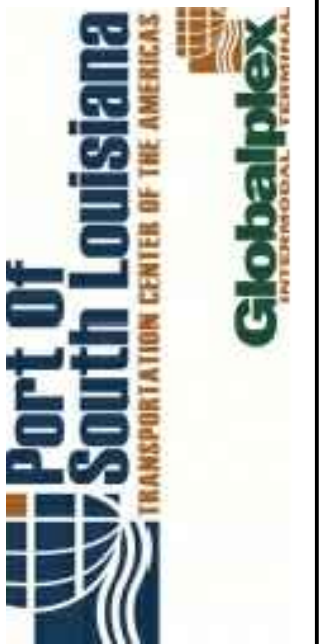
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STRUCTURAL RETROFIT SECTIONS
AND DETAILS (OPTION "B")

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SK-5