6.2.2 Lighting

Lighting is essential to an intermodal freight terminal for two reasons. First, the terminal can operate 24 hours a day. Therefore, adequate lighting is required to safely operate trucks and machinery. It is also necessary to correctly identify containers in order to move them toward their final destination. Second, lighting is important to help ensure the security of the facility.

Recommended maintained illuminances for a parking lot under basic security conditions are as follows:

- Minimum Horizontal Illuminance – 0.2 foot candles
- Uniformity Ratio, Maximum to Minimum – 20:1
- Minimum Vertical Illuminance – 0.1 foot candles

Recommended maintained illuminance for a parking lot under enhanced security conditions are as follows:

- Minimum Horizontal Illuminance – 0.5 foot candles
- Uniformity Ratio, Maximum to Minimum – 15:1
- Minimum Vertical Illuminance – 0.25 foot candles

To meet the enhanced security conditions, 100-foot-high mast lights are used. They are placed down the center of the parking areas with an average spacing of 500 feet on a staggered alignment as shown in Exhibit 6.2. There are to be six 75-watt luminaries per pole.

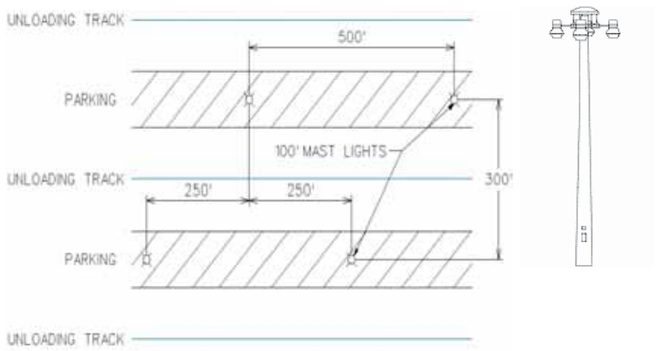


Exhibit 6.2
Typical Lighting Layout

6.2.3 Lift Equipment and Operations

Lift equipment and its use are major factors in the performance of an intermodal terminal. The three most common types of lift equipment are the side loader (Packer), the rubber-tired-gantry (overhead crane) and the reach-stacker, which combines the mobility of the Packer with the ability to reach a load on a second track.

Packers require a major operating aisle and serve only one track. The maneuverability of the machine is beneficial, particularly when there is room nearby to pool the loads in a parking area before loading.

Exhibit 6.3
Packers

Cranes add the operating flexibility of permitting loads to be staged along the track before the railcars are in position. Once the loads are staged, the crane can simply start at one end of a string of cars and load each car in succession. Cranes can only handle the equipment adjacent to the track. All trailers must be transferred to and from the unloading area.

Exhibit 6.4
Crane

The reach-stacker is relatively new to the rail intermodal terminal. Its ability to serve two tracks from the same operating position saves real estate but only one track can be loaded at each position at any one time, and loads on the near track can obstruct the movement of the machine boom when it attempts to load the second track.

These machines also apply a front axle load that is 20 to 25 percent higher than the equivalent packer equipment when the boom is fully extended at maximum load. Most terminal pavements and utility protection systems are not designed for loads of this magnitude.

6.2.4 Drainage

The existing terminals are in areas served by combined sanitary and storm sewer systems. Although much of the Livernois-Junction Yard is now unpaved, the ground is highly compacted and generally clay, with little vegetative cover. Therefore, the existing conditions have a high runoff. The reconstructed yards will generally be fully paved resulting in a small increase in runoff.

The areas used for loading and storing containers and trailers will need to be completely paved. One way to drain the pavement in the parking area is to saddle it in the middle where water will be collected by catch basins. It is estimated the storm sewers system will consist of: catch basins placed every 150 feet down the center of the parking area between unloading tracks, three catch basins to be gathered via 24” RCP then connected to the trunk storm sewer via 36” RCP. The drainage from the yards will be exclusively storm sewer.

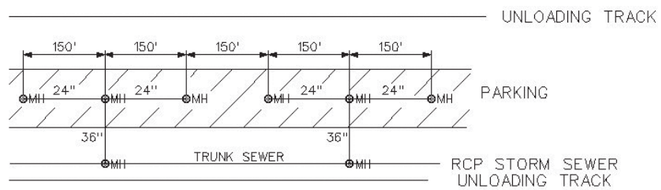


Exhibit 6.5
Typical Drainage Layout

Oversized trunk lines, with restricted outflow, would be used to limit flow to be equal or less than the existing runoff into the combined sewer interceptors. Under severe storms, minor ponding around the catch basins would add to the stormwater detention storage.

6.2.5 Terminal Operations

Switching

In the ideal world, all railcars placed in an intermodal terminal would have the characteristics appropriate for the loads planned for their specific position in the outbound train.

Railcars usually are not delivered in this ideal manner or they may arrive carrying inbound loads for discharge and must be repositioned before they can be reloaded. Whatever the reason, there will be occasions when the set of railcars at a terminal must be switched.

At railroad terminals, local switching crews accomplish this task. At larger terminals, one or two switching crews may be assigned solely to serve the needs of the terminal.

When terminal operators move railcars, they must deal with the question of track authority and their rights, or lack thereof, to operate on trackage located outside the terminal. The usable length of any tail track should be equal to the capacity for the tracks being serviced plus the length of the car-moving equipment being used. The tail track used for train arrival may or may not be appropriate for this switching activity, based on operating jurisdictions.

Railcar Servicing

Before any railcar can be operated in regular train service, it must be inspected for compliance with certain railroad and Federal Railroad Administration (FRA) regulations. Any elements not in compliance with these regulations must be repaired before the car can be moved beyond the repair facility.

Items that may require repair include: brake shoes; air-line hoses; operating elements of the air-brake system; and, wheels. Items known as "dangling appliances" may require cutting, welding, or bending back into position. Most of these repairs can be made quickly when the railcar is positioned on the terminal's loading tracks. At large terminals, it may be desirable to provide separate repair tracks for the servicing of cars requiring significant service time.

Load Blocking

The earliest of the modern double-stack intermodal trains generally ran between two terminal points. These points usually were one of the West Coast ports and either New York City or Chicago. In this point-to-point operation, little attention was paid to the order of cars in a particular train.

Today the service destinations have expanded greatly. A given train may now carry blocks of cars for multiple destinations. The loading area and all elements of the track at the terminal, therefore, should be organized for maximum flexibility in the loading and handling of blocks of cars bound for different destinations.

Inspections

Shortly before a train departs, its cars must be inspected and proper operation of the air-brakes must be certified. Because this is a relatively time-consuming process and because the presence of an assembled train in a terminal can be disruptive, steps must be taken to minimize this disruption.

Because the inspection of the air-brake systems on individual cars may be executed before the train is assembled, many terminal operators choose to complete this activity before the railroad's locomotives arrive at the terminal.

To perform these tests, compressed air must be provided at various locations throughout the terminal. The connection points must be located so that they can be coupled with the ends of railcars near the head of the proposed train.

Qualified personnel must perform the air-brake test, and the results must be certified in writing and given to the train crew when they arrive. Once the test has been performed, air pressure must be maintained on the car's air system until it is connected to the engine's air supply line.

6.2.6 Security Issues

It is important to consider boundary measures such as fencing, walls, or other physical barriers, electronic boundaries (e.g. sensor lines, alarms), and natural barriers to delineate and adequately protect secure areas from unauthorized access.

Access points for personnel and vehicles through the boundary lines, such as gates, doors, guard stations, and electronically controlled or monitored portals, must also be considered. In addition, there are other security measures which should be part of the design that enhance these boundaries and access points such as clear zones on both sides of fences, security lighting, locks, CCTV systems and signage.

The choice of an appropriate security boundary design is not only affected by the cost of equipment, installation, and maintenance, but also by the more important aspects of effectiveness and functionality. Certainly the highest consideration in an effective boundary measure is its ability to prevent unauthorized penetration. Thus, any access points through a boundary line must not only be able to prevent access, but differentiate between an authorized and an unauthorized user.

Regardless of boundary location or type, the number of access points should be minimized for both security and cost efficiency. Proper planning and design can often create fewer, more functional and maintainable access points that will benefit the facility in the long run. Various boundary/barrier and access point types as well as security measures, which can enhance them, are described below.

6.0 Intermodal Terminal Design

Barriers

Physical barriers can be used to deter and delay the access of unauthorized persons onto non-public areas of the facility. These are usually permanent barriers designed to be obvious visually as well as physically. They also serve to meet safety requirements in many cases. Where possible, security fencing or other physical barriers should be aligned with security area boundaries.

Natural barriers may include bodies of water, expanses of trees, dense foliage areas, and other such areas. Natural barriers may be incorporated into the security boundary of the facility in lieu of standard physical barriers. Use of natural barriers may be necessary or advantageous in areas that cannot structurally support physical barriers or fencing, or where use of fencing or physical barriers would cause conflicts.

Fencing

Chain link fencing is typically seven feet of fabric with one additional foot of height comprised of three strands of barbed wire on top, and is normally the most suitable and economic physical barrier, although this may vary somewhat depending on conditions and topography. It is also readily available through a large variety of sources and is easily and cheaply maintained. The fence itself is low-maintenance, provides clear visibility for security patrols, and is available in varieties that can be installed in almost any environment. For locations with aesthetic concerns, there are also a large variety of decorative yet functional styles of fencing available as well as opaque styles that limit public visibility of service, storage or other non-aesthetic areas.

When utilizing fencing as a security boundary, care must be taken to ensure that the provision of fencing does not conflict with the operational requirements of the facility. Access points will need to be made in the fence to allow the passage of authorized vehicles and persons. While the number of access points should be kept to a minimum, adequate access points must be planned for routine operations, maintenance operations, and emergency operations.

To assist in surveillance and security patrol inspection, fences should be kept as straight and uncomplicated as possible. This will also minimize installation and maintenance costs.

Effectiveness of fencing in critical areas can be improved by anchoring or burying the bottom edge of the fence to prevent it from being pulled out or up to facilitate unauthorized entry. Use of concrete mow strips below the fence line and/or burying the bottom of the fence can also deter tunneling underneath the fence by persons and animals. Mowing strips may also reduce security and maintenance man-hours and costs.

Security effectiveness of perimeter fencing is materially improved by the provision of clear areas on both sides of the fence, particularly in the vicinity of the terminal and any other critical facilities. Such clearance areas facilitate surveillance and maintenance of fencing and deny cover to vandals and trespassers.

Suggested clear distances range from 10 to 30 feet, within which there should be no climbable objects, trees, or utility poles abutting the fence line nor areas for stackable crates, pallets, storage containers, or other materials. Likewise, the parking of vehicles along the fence should also be prevented. In addition, landscaping within the clear area should be minimized or eliminated to reduce potential hidden locations for persons, objects, fence damage, and vandalism.

Terminal Access

Typically there are access points through fencing or other barriers for both vehicles and pedestrians. The access points type and their design may be the determining factor in the effectiveness of the security boundary and control in that area. So, in all cases, the number of access points should be minimized and their use and conditions closely monitored.

While the number of access points should be kept to a minimum, adequate vehicle access points must be planned for maintenance and emergency operations. Maintenance operations gates are typically those used to perform non-daily maintenance to remote grounds or equipment. Considerations include:

- Gates should be constructed and installed to the same or greater standard of security as any adjacent fencing in order to maintain the integrity of the area.
- All gates should be equipped so that they can be securely closed and locked, should enhanced security conditions require it. Swing gate hinges should be of the non-liftoff type or provided with additional welding to prevent the gates from being removed.
- Security provided by gates can be improved if they are designed and installed with no more than 4-6” of ground clearance beneath the gate. Where cantilever (slide) and/or rolling gates are used, consideration should be given during planning and design to curb heights, wheel paths, potential obstructions, and drainage issues throughout the full path of the gate and in its adjacent areas.
- Proper drainage grading, planned gaps in curbs, installation of concrete channels or mow strips below the gate path, and use of bollards to prevent obstructions within the gate path and protect gate equipment, are all design considerations which may extend the efficient operation of a slide gate.

Lighting

Lighting of the area on both sides of gates and selected areas of fencing is highly recommended. Not only is lighting beneficial for security inspection, but also to assure fence/gate signage is readable.

Similarly, sufficient lighting is required for any area in which a CCTV camera is intended to monitor activity; reduced lighting or sensor activated lighting may be considered in areas which have minimal traffic throughput in the off-peak hours.

CCTV Coverage

While gates, like all other access points, should be kept to a minimum and, where physically and economically feasible, they should be considered for treatment with access control and CCTV monitoring, it is recognized that certain low-traffic gates, maintenance access points and gates well removed from the principal areas of security concern may be candidates for greater reliance on time-and-distance considerations.

Signage

Signage should be posted on certain security boundaries and access points. Specifics on wording and size should be found in the local ordinances. Signs should be located such that when standing at one sign, the observer should be able to see the next sign in both directions.

The use of signage, even in some non-required locations, provides a deterrent by warning of the consequences for violation.

Many locations with access control or CCTV equipment may warrant signage for either directional or legal purposes (e.g. "Alarm will sound if opened," "Authorized personnel only," "Notice: All activities in this area are being recorded via CCTV," etc.)

6.2.7 Noise and Aesthetics

Earth Berms

Earth berms are the most natural appearing type of noise barrier. To accomplish this, the following should be kept in mind:

- They should have a line and form similar to a natural hillside.
- Slopes should approach a 3:1 ratio wherever possible, with transitions in the form of an S curve. Slopes that are steeper than this, with sharply angled transitions, are erosion prone, difficult to plant and maintain, and appear man made. Rather, one should get the feeling that the berm is a natural landform.
- Where space allows, the line of an earth berm should vary to further create a natural look.
- Planting should be used as vertical-elements on berms, which are distinctly horizontal forms.

Walls

Walls should create visual interest and should be designed with attractive wall textures and materials, varying wall depths and dimensions, decorative structural components and/or creative wall design. Examples of these diverse architectural elements are discussed as follows:

- Walls should meet all noise limit needs of the surrounding area.
- Walls should be constructed of sufficiently durable materials;
- Walls should be easily maintained and the building elements readily available.
- Wall surfaces should be easily maintained (i.e., graffiti removal). Natural, irregular, or rough surface textures are preferred. To the extent feasible, the cultivation of climbing vines to cover the sound walls is encouraged.
- Architectural features should be used, where possible, to promote depth or a three-dimensional design.
- The major structural components of a wall (i.e., columns, inter-column walls and capstones) should be varied, where possible, for greater visual interest. If this is done, it is important that these elements form a harmonious and integrated whole. Variety in the smaller details of the façade should be encouraged for their contribution to the wall's overall visual interest and attractiveness (e.g. tile decorations, finials, climbing vines, wall framing, and harmoniously integrated color varieties).

6.2.8 Parameters for DIFT Design

A number of factors are required to create conceptual yard designs. These parameters are requirements that will be very similar, regardless of the terminal's size, configuration or layout. Some of these factors were laid out in broad terms in a report entitled "Freight Train Operations" dated August 1, 2002, by Arbor Vista Transportation. These factors have been refined based on previous Alfred Benesch & Company (Benesch) experience, data provided by the railroads and AREMA standards.

Parking: Ranges from 100 to 300 annual lifts per parking spot. Benesch has assumed an average target of 200. This correlates well with the individual railroads' requests. Parking spots are designed to 55 ft. x 12 ft.

Annual lifts: Ranges from 1,000 to 1,500 lifts/year per 100' of load track. Benesch used 1,500 lifts per annum per 100 feet of load track.

Loading time: The following have been taken as typical:

- End loading: 5 minutes/trailer
- Side loading: 2.5 — 5 minutes/lift
- Crane loading: 1.5 — 2 minutes/lift

Storage track: Railroads indicate in the range of 1.5 to two times the track footage of loading tracks. The design tried to provide as much storage track as possible for each option, not exceeding two times the loading.

Headroom: Lead/arrival tracks need sufficient length to be able to handle complete train lengths to enable switching moves the arrival and departure of trains without blocking either interlockings or mainlines.

Unloading: Unloading equipment is assumed to be packers in all cases. If cranes are required, the track layout may need to be adjusted. Drawings provided by CP, CSX and NS are laid out to the standards required to operate packers.

Operational widths: Design dimensions are based on the requirements of each railroad.

- Drawings provided by Canadian Pacific Railway (Drawing # 200116001).
- CSX/NS Urban Engineers drawing (# 020500-003 Livernois Intermodal Yard, CSXI & NS Facilities Improvements, Site Plan).
- NS Proposed Triple Crown Facility at Livernois Junction Yard (#TD-2003-77, dated 7/14/03).
- NS Proposed Mitchell, Ill, Triple Crown Site drawing (#TRM-97-0007 R2).
- AREMA guidelines.
- Previous Alfred Benesch & Company railroad facility designs.

7.0 Rail Improvements "Inside the Terminal Fence"

7.1 Preferred Alternative

7.1.1 Overview

For the Preferred Alternative, CN would remain at Moterm and expand the existing facility as it sees fit. The remaining railroads (CSX, CP and NS) would consolidate their intermodal operations at Livernois-Junction Yard.

Under the Preferred Alternative, the CP terminal would be located north of the existing Conrail mainlines, while the CSX and NS terminals would be located south of the existing Conrail mainlines. The existing CSX and NS facilities within Livernois-Junction Yard would be expanded. The NS Triple Crown facility would be located in the old Conrail West Departure Yard. As a result, the following improvements must be made:

- The existing mainline horizontal curve must be removed resulting in the Conrail mainlines being tangent through the entire Livernois-Junction Yard limits.

- In order for CP to access its terminal, it will require rights for a switching lead located at both the east and west ends of the terminal. Located on the west end is a yard lead that will cross through the CP Lou interlocking and head towards the Townline interlocking. On the east end, CP will require a switching lead between its terminal lead and West Detroit interlocking.

- Central Avenue will be grade-separated from the terminal by being lowered and construction of a railroad structure.

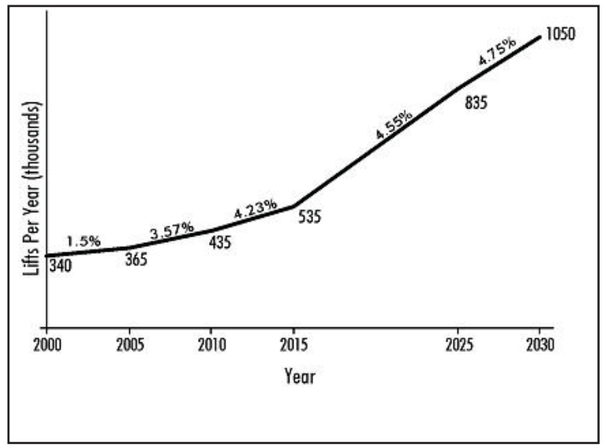
- Lonyo Avenue will be closed.

- Existing John Kronk Street will be relocated along the northern perimeter of the proposed CP facility.

- Improvements will be made to the existing Central Avenue/Dix Avenue intersection.

7.1.2 Projected Intermodal Traffic

As a result of the proposed expansion and consolidation of intermodal traffic at Livernois-Junction Yard, intermodal capacity within the Greater Detroit Area will increase. The Corradino Group generated the following intermodal projections based on the capacity of the proposed terminals, economic growth, and modeling, along with railroad input:



Source: The Corradino Group of Michigan, Inc.

7.1.3 Projected Manifest Traffic

Expected growth of manifest traffic is considered to be significantly lower than that of intermodal traffic. If an annual growth of 2% is assumed, each railroad will operate approximately the number of trains given below.

Railroad	Number of Trains
CN	20
CP	27
CSX	34
NS	34
CN	22
	137

The number of trains includes both through trains and local switching moves.

7.1.4 Projected Passenger Traffic

There are a number of proposals which could, if they come to fruition, increase train numbers in the Greater Detroit Area. These include Amtrak and Ann Arbor Commuter Rail, among others.

Amtrak

Amtrak has been involved with MDOT and nine other Midwest states to explore the feasibility of a Midwestern high-speed passenger rail network. It would use 3,000 miles of existing rail rights-of-way to connect communities in the nine-state region.

Implementation of the plan depends, in large measure, on federal decisions to provide additional funding, and a variety of federal approaches are currently being discussed. In a move to facilitate this initiative, train speeds in western Michigan were recently increased to 90 mph with a further increase to 110 mph planned in the near future. The plan calls for 18 trains (nine each way) to operate through the DIFT area on the existing east-west line currently used by Amtrak. This would require improvements to the West Detroit interlocking. Amtrak is currently investigating the feasibility of constructing the northwest wye track at the West Detroit interlocking to facilitate shorter travel times than those achieved via Bay City Junction.

Other Passenger Proposals

- South East Michigan Rail Study (Ann Arbor Commuter Rail)

  This study proposes the addition of seven trains each way through the Livernois area between Detroit and Ann Arbor.

- Lansing-to-Detroit Passenger Rail

  This study proposes five trips each way for service between Lansing and Detroit, again using the Conrail mains through Livernois.

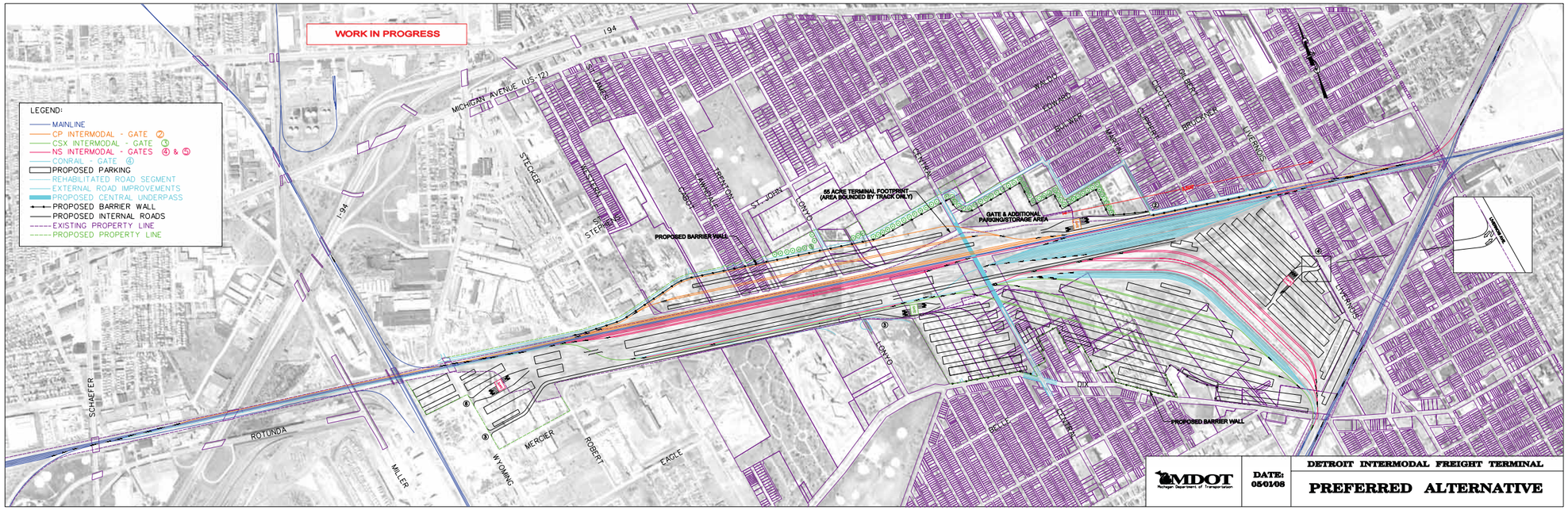


Exhibit 7.1
Preferred Alternative Livernois Junction Yard

7.1.5 Livernois-Junction Yard Layout

With the Preferred Alternative, the intermodal operations of CSX, NS and CP would be consolidated at the Livernois-Junction Yard area. The CP facility would be located north of the existing Conrail mainlines and the existing CSX and NS facilities would be expanded in the southeast portion of the yard. In addition, the NS Triple Crown service would be located in the old Conrail West Departure Yard on the west end of the terminal. The existing Conrail facilities at Livernois-Junction Yard would remain.

The CP facility accommodates only its container service. As previous stated, CP ended its Expressway service in the Greater Detroit Area in June 2004. Vehicular access to the Preferred Alternative is located just west of Livernois Avenue on John Kronk Street. A perimeter wall is proposed along the north side of the CP terminal.

Vehicular access to the NS Triple Crown facility is directly off Wyoming Avenue. A bridge is required internal to the NS facility to eliminate the conflict between NS truck traffic and the CSX terminal lead.

The existing NS and CSX container facilities will be expanded utilizing much of their existing property. The NS gate will remain at Livernois Avenue. The CSX gate that is currently located off Dix Avenue will be closed, and a new gate constructed off Wyoming Avenue. Similar to the CP facility, a perimeter wall is proposed along the southern boundary of the CSX facility where it abuts the residential area.

Detailed exhibits and descriptions of the proposed roadway improvements, such as the Central Avenue underpass, are discussed later in the report.

8.0 Rail Improvements "Outside the Terminal Fence"

Building an expanded intermodal facility at Livernois-Junction Yard requires improvements outside the terminal so trains can be handled at the same efficient level as they will be in the terminal. Numerous meetings and discussions with operating personnel from the Class I carriers have resulted in proposed improvements at a number of interlockings to facilitate more efficient intermodal train movements in the Greater Detroit Area.

8.1 Improvements at Interlockings

Trains must be able to enter and exit terminals with ease and without tying up adjacent interlockings thereby preventing the efficient movement of intermodal traffic in the Greater Detroit Area. By the same token, other traffic must not impede intermodal train operations.

Interlockings are the equivalent of signaled highway intersections requiring the traffic on one route to stop to allow another route to progress. This causes significant delays when a mile-long intermodal train has to stop, restart and traverse an entire interlocking at 10 or 25 mph. This currently happens at many locations in Detroit.

The projected traffic discussed in Section 7 requires rationalization of both timetables and routes by all parties involved in moving intermodal trains around the Livernois-Junction Yard area. In order that the flow of traffic may be eased and appropriate staging areas provided, a number of interlocking alterations are proposed. These interlockings are owned and operated by various railroads and improvements will be made on railroad property. These improvements are proposed to be made at:

- Beaubien
- CN Coolidge & CP YD
- CP Mill
- CP Waterman & Dix
- Delray
- Milwaukee Junction
- Oakwood Junction
- Schaefer
- New Rotunda
- Vinewood
- West Detroit
- Trenton

The locations of the proposed interlockings are displayed on Exhibit 8.1 and discussed on the following pages.

Benefits to Amtrak

The current configuration of interlockings and signal spacing on the NS Dearborn Subdivision requires that Amtrak operate through this area at restricted speed, currently 40 mph.

Modifications to the West Detroit interlocking east of Livernois-Junction Yard would allow the passage of Amtrak trains direct to Vinewood at 30 to 40 mph, avoiding the slow (10 mph) and congested Bay City interlocking.

In addition, rationalization of CN and Conrail right-of-way between West Detroit and Milwaukee Junction would further improve Amtrak service through the removal of the Beaubien interlocking and the alteration of the Vinewood interlocking.

These improvements would reduce by approximately two minutes Amtrak movements through Detroit.

Additional benefits to Amtrak can be obtained through the provision of increased operating speed though interlockings and improved signal spacing, and the provision of increased operating speed from West Detroit towards Pontiac. These improvements not only allow Amtrak to proceed with fewer delays but also allow ease of movement for arriving and departing intermodal trains at Livernois-Junction Yard.

8.0 Rail Improvements "Outside the Terminal Fence"

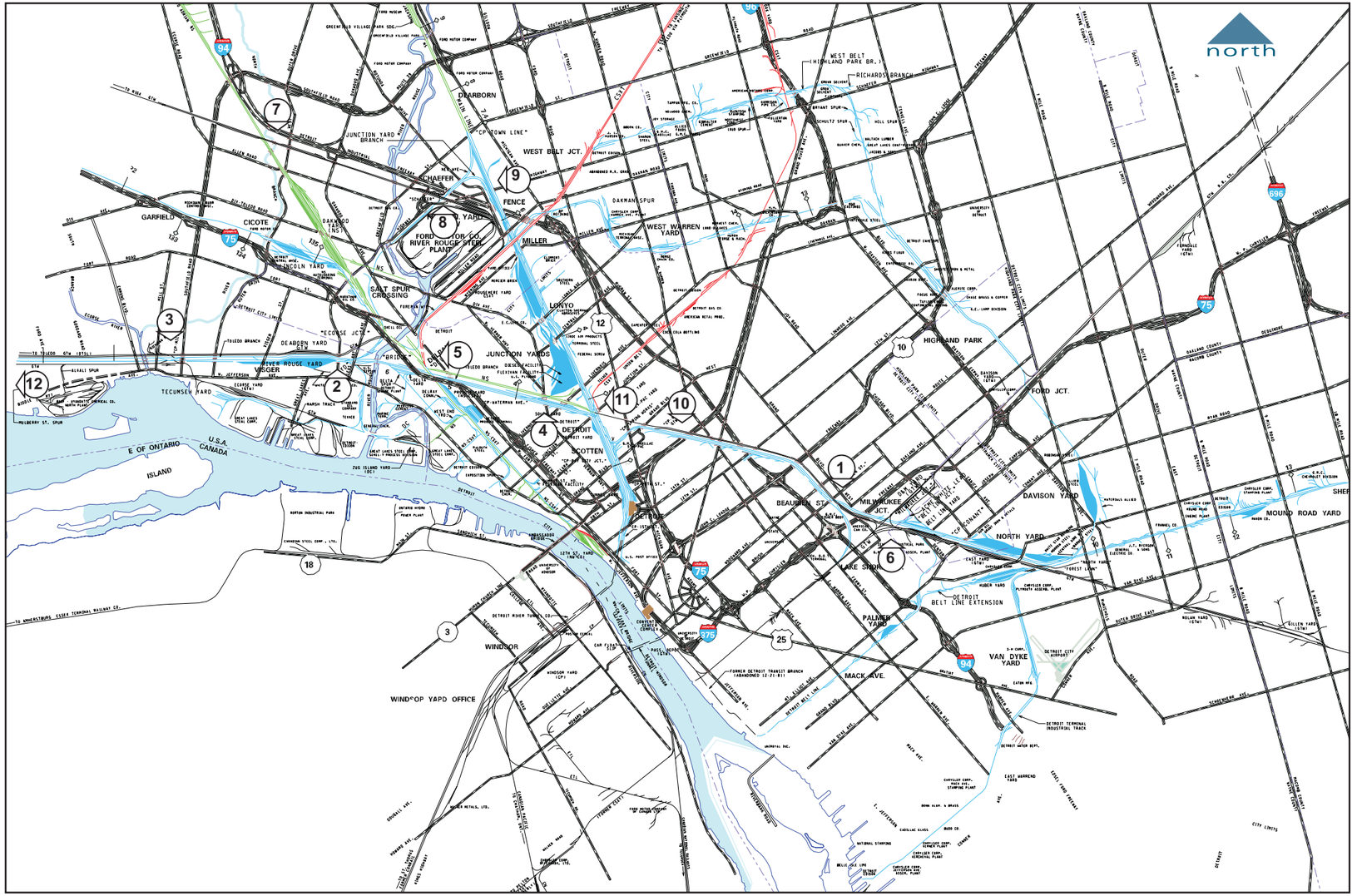


Exhibit 8.1
Proposed Interlocking Improvements

Railroad Interlockings

1. Beaubien
2. CN Coolidge & CP YD
3. CP Mill
4. CP Waterman & Dix
5. Delray
6. Milwaukee Junction
7. Oakwood Junction
8 Schaefer
9. New Rotunda
10. Vinewood
11. West Detroit
12. Trenton

8.0 Rail Improvements "Outside the Terminal Fence"

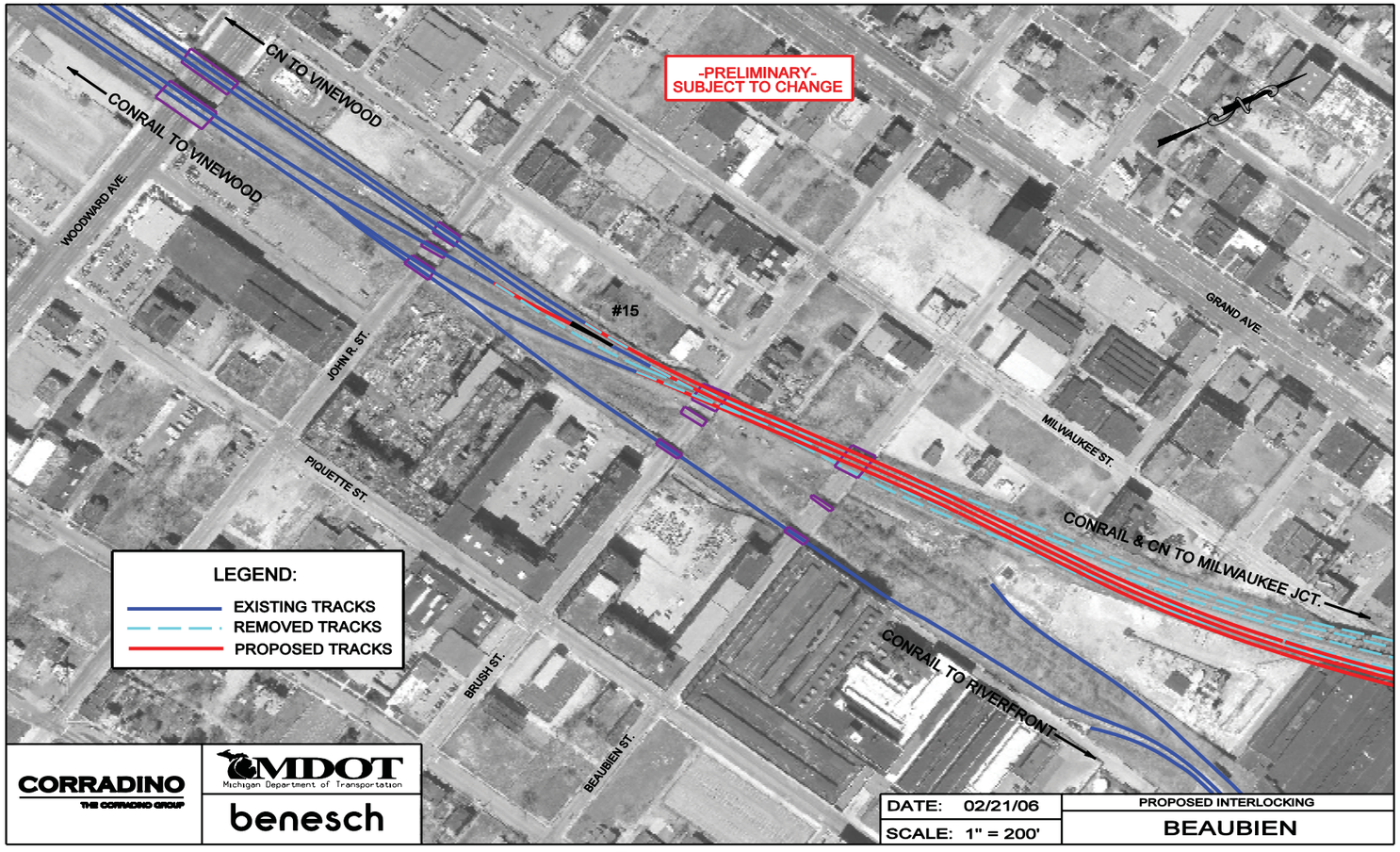


Exhibit 8.2
Proposed Beaubien Interlocking

8.1.1 Beaubien

The Beaubien interlocking is located over Beaubien Street between I-94 and East Grand Boulevard. It is located between the Vinewood and Milwaukee Junction interlockings.

It is a diamond crossing between the CN and Conrail mainlines. The CN Shore Line Subdivision, running between Milwaukee Junction and Trenton, swaps sides with Conrail North Yard Branch, running between West Detroit and North Yard.

Conrail controls the Beaubien interlocking and the maximum speed through the interlocking is 20 mph. Currently all trains operating through the corridor must pass through this interlocking.

The proposed improvements at Beaubien are tied together with the proposed improvements at Milwaukee Junction. The diamond crossing between the CN and Conrail will be eliminated. CN's two northbound tracks would remain, while the two Conrail tracks would be reduced to one through Beaubien. The three tracks will run parallel with each other to Milwaukee Junction. Proposed Milwaukee Junction improvements are discussed later in the report.

Removal of Beaubien will eliminate a 20 mph speed restriction, and a conflict of train movements; a diamond crossing will increase the length of track available for holding trains between Vinewood and West Detroit as trains approach the Livernois-Junction Yard area.

The proposed improvements will also benefit the operations of Amtrak, Conrail and CN through this area.

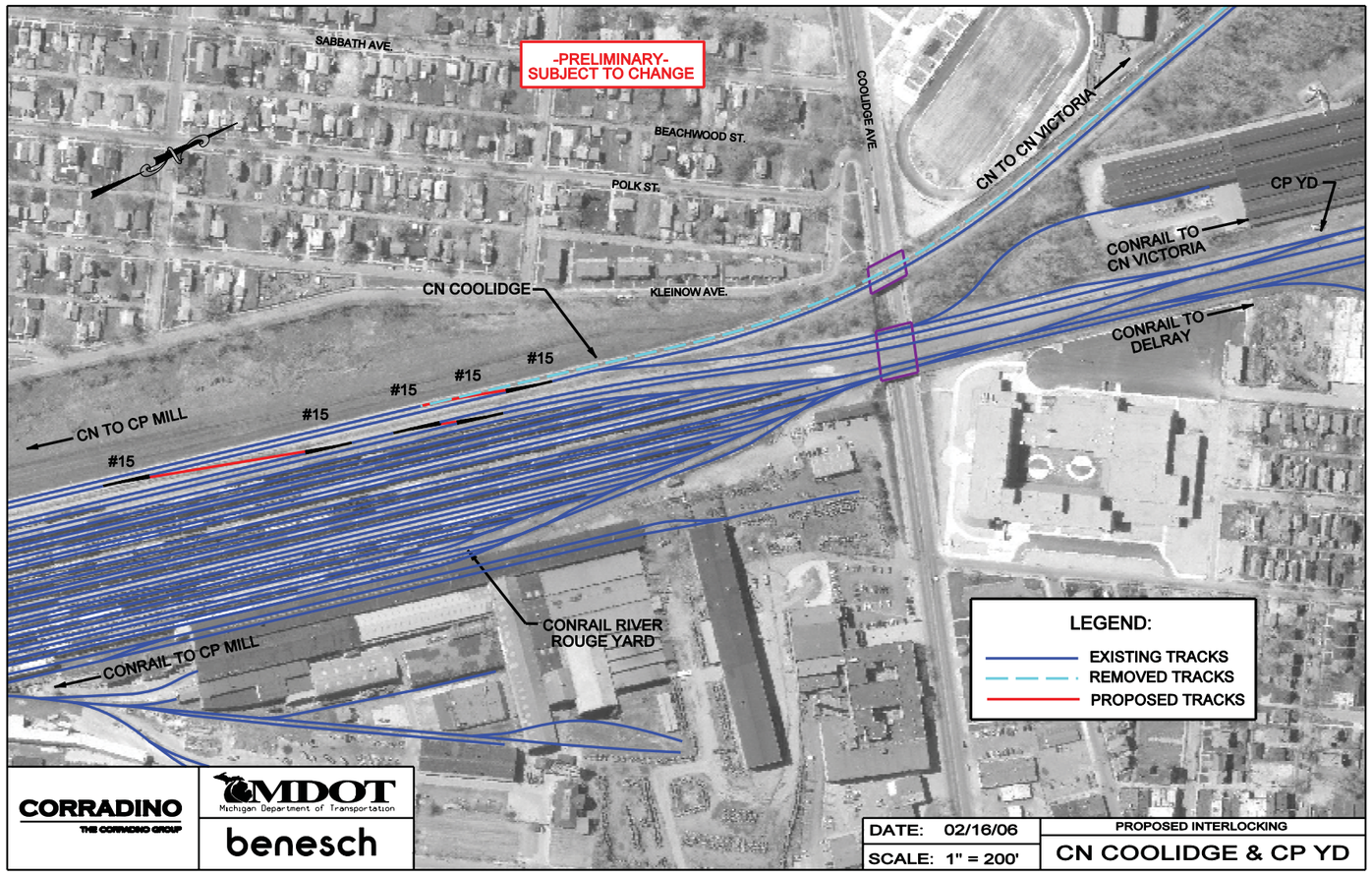


Exhibit 8.3
Proposed CN Coolidge & CP Yard Interlockings

8.1.2 CN Coolidge & YD

CN Coolidge is located near the Rouge River Yard just south of Schaefer Highway. It connects the CN mainline and the Conrail mainline. CN and Conrail control Coolidge jointly. The maximum speed through Coolidge is 30 mph.

The proposed turnout at CN Coolidge between the two mainlines will give trains operating on the CN the ability to access either mainline track at CN Coolidge. The mainline track between CN Coolidge and CN Victoria will be eliminated. With the new turnout at CN Coolidge, the majority of the CN trains will operate on the straight route between Delray and Coolidge rather than through CN Victoria.

The CP YD interlocking is located north of Schaeffer Highway and west of Jefferson Avenue near the Pleasant Street grade crossing. That is between River Rouge Yard and the Delray interlocking. It is the connection between Conrail's Detroit Line and the Conrail Junction branch.

The proposed improvement at CP YD will allow CN trains a choice of two tracks between CP YD to the Delray interlocking. This will also provide an additional area for holding trains less than 5,280 feet off the Conrail and CN mainlines.

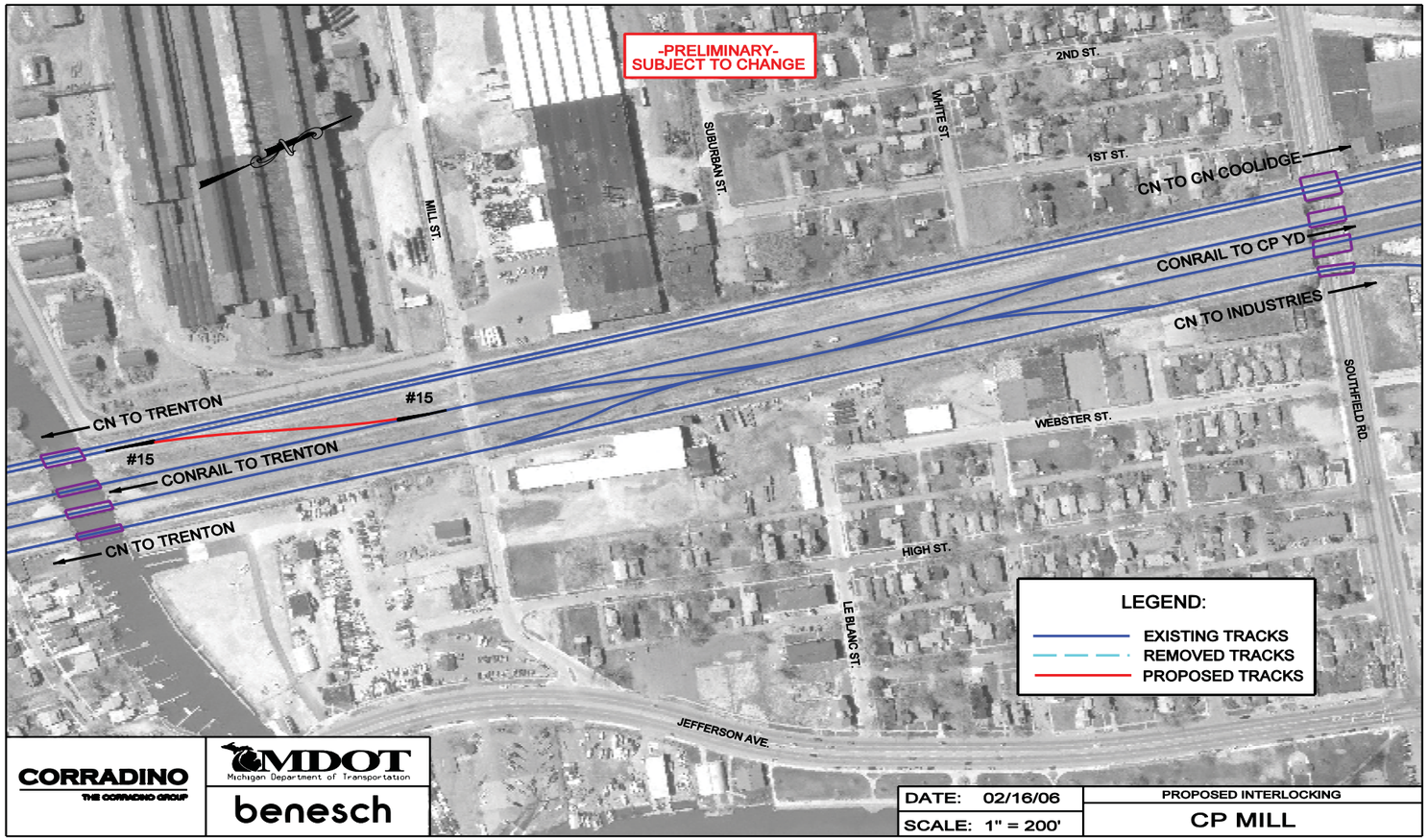


Exhibit 8.4
Proposed CP Mill Interlocking

8.1.3 CP Mill

The CP Mill interlocking is located between Southfield Road to the north, Mill Street to the south, Jefferson Avenue to the east, and the Ecorse River to the west. It is located between the CN Coolidge and Trenton interlockings.

CP Mill is a connection between the CN Flat Rock Subdivision, running between Ecorse Junction and Trenton, and the Conrail Detroit Line, operating between West Detroit and Trenton. Conrail controls CP Mill. The maximum speed is 40 mph.

The proposed improvement will provide a connection between the CN mainline and the Conrail mainline at this location. This allows CN trains a choice of tracks to use between CP Mill and CP YD. This connection also creates more track for holding full-length trains without blocking mainlines in the area or adding additional track.

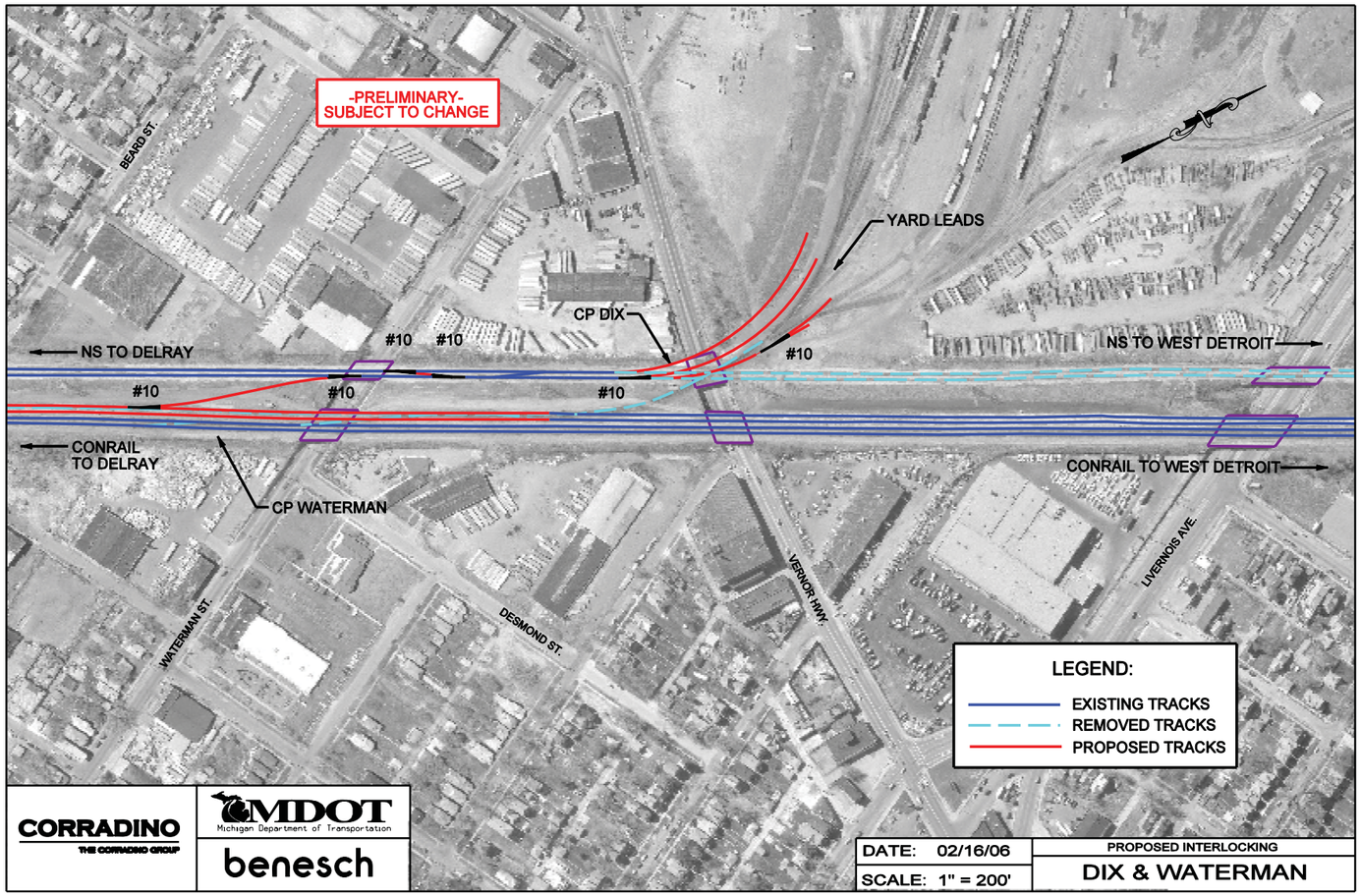


Exhibit 8.5
Proposed Dix & Waterman Interlocking

8.1.4 CP Waterman & Dix

The Waterman interlocking is located just south of Dix Avenue and east of West Vernor Highway. The Waterman interlocking ties the existing Conrail Livernois-Junction Yard lead into the Conrail mainline between Bay City Junction and Delray.

Dix is located at the point where Dix Avenue, Waterman Street, and West Vernor Highway all meet. It is between the West Detroit interlocking to the north and Delray to the south.

Conrail controls both the Waterman and Dix interlockings. The maximum speed through each interlocking is 20 mph.

The Dix interlocking is a diamond crossing between the Conrail and NS mainlines. The Waterman interlocking is an existing diamond crossing between the Conrail Livernois-Junction Yard lead and the NS mainlines.

The purpose of the proposed changes is to remove the current conflicts between yard traffic and mainline traffic. Presently, any movement through Dix also passes through the Waterman interlocking. This frequently blocks both the NS mainlines and the Conrail mainlines and stops all mainline traffic between Delray and West Detroit.

The existing Waterman and Dix interlockings are to be removed to eliminate the conflict between Livernois-Junction Yard operations and mainline track operations. A link between Dix and Waterman would remain for flexibility.

8.1.5 Delray

The Delray interlocking is located between I-75 and Oakwood Avenue. It is found between Ecorse Junction and CN Victoria to the west, Rougemere Yard to the northwest, Waterman to the northeast, and CN Coolidge to the south. Delray is unanimously agreed to by railroad operating personnel to be the biggest "choke point" in the Greater Detroit Area. All of the rail carriers moving through Detroit have to go through Delray.

Delray is a diamond crossing of the CSX and NS mainlines with the Conrail mainlines. The CSX Detroit Subdivision heading towards Flint runs on double track jointly with the NS Detroit District between the Boat Yard and the Rouge River. This double track crosses Conrail's Detroit Line.

The Delray interlocking is controlled by CSX with a maximum speed of 25 mph. Tracks of Conrail (3 directions), NS (2 directions) and CSX (1 direction) converge on the Delray interlocking. These tracks carry not only the trains of these three companies but those of CN and CP as well.

Currently traffic running on Conrail between Bay City Junction and Delray may continue south on either the NS line through to Ecorse Junction or on the Conrail Detroit mainlines to Rouge River Yard. Traffic on the NS mainlines from Dix can only be routed to Ecorse Junction. The same applies to trains coming the other direction. CSX trains run between the Conrail mainline and the CSX line in route to the Rougemere Yard. The interlocking is a single-track operation for trains moving to and from CSX Rougemere Yard and those operating over NS track to and from the Rouge River bridge and West Detroit.

The proposed improvement of the Delray interlocking is critical to traffic flow through the Greater Detroit Area. Re-signaling of the Delray interlocking will allow greater flexibility for train movements and increased speed through the area. Additionally, connections from the NS mainlines to the Conrail mainlines will be provided to give all trains the option of two routes south of Delray and two routes north of Delray.

As part of this proposal, the Delray tower needs to be fully interlocked with the NS River Rouge Bridge and Ecorse Junction so that the passage of trains over this short distance is fully controlled and coordinated by one source. To further improve this capacity, the NS route between Oakwood Yard and Delray should be re-signaled to be bi-directional. This will allow both additional flexibility in movement and transit time reductions by bringing trains up to Delray regardless of the track routing chosen.

NS mainlines to Livernois Junction Yard on far left
Conrail mainlines to West Detroit with CN train
NS and Conrail mainlines to Riverfront at front

NS mainlines approaching Delray
NS and Conrail Riverfront mainlines in foreground

CSX mainlines from Rougemere Yard on the right
NS mainlines to Oakwood Yard on left

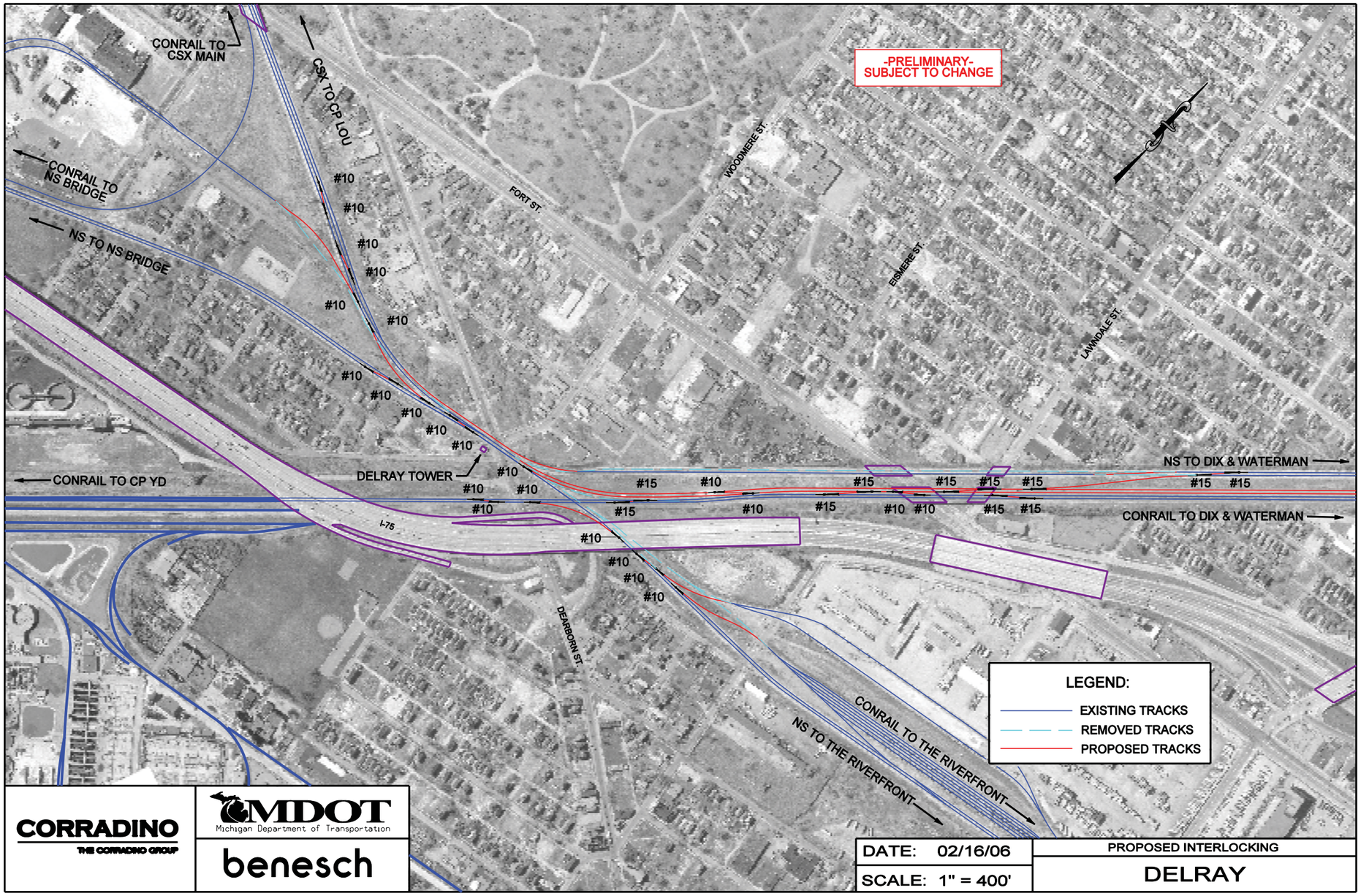


Exhibit 8.6
Proposed Delray Interlocking

8.1.6 Milwaukee Junction

The Milwaukee Junction interlocking is located just north of the I-75 and I-94 interchange. It is a diamond crossing between the CN mainlines and Conrail mainlines. The CN Holly Subdivision crosses the Conrail North Yard and junctions with the CN Mount Clemens and Shore Line Subdivisions.

Milwaukee Junction is also the intersection between traffic from the CN Holly Subdivisions from Durand, Michigan, moving north on the CN Mt. Clemens Subdivision to Port Huron, or south on the Shore Line Subdivision to Toledo, Ohio.

Also, the Detroit Delray Connecting Railroad interchanges with the CN at Milwaukee Junction, running on the former Detroit & Milwaukee trackage to the Detroit River waterfront.

Both Conrail and CN have yards just east of the Milwaukee Junction interlocking. The BOC (Buick, Oldsmobile and Cadillac) Plant has an auto rack loading facility as part of the CN East Yard.

Conrail controls Milwaukee Junction. The maximum speed through the interlocking is 20 mph.

Presently CN trains from West Detroit to Pontiac must cross the Conrail mainlines through diamonds, blocking any simultaneous movement on the Conrail mainlines. The proposed improvements will make the interlocking completely universal and eliminate all the existing diamonds.

With the proposed improvements at Beaubien, CN mainline trains will use the westernmost two tracks, allowing Pontiac trains (which include Amtrak) to diverge without crossing over Conrail. CN trains to Port Huron and Conrail trains to North Yard can pass through crossovers south or north of the CN Riverfront Wye and utilize either one of the Conrail mainlines.

These improvements will increase speed and remove conflicts for CN, Conrail and Amtrak. When combined with the proposed improvements at the other interlockings between Milwaukee Junction and West Detroit, they create operational flexibility and holding areas free of conflicts. These improvements will be increasingly important if Amtrak begins to run additional passenger trains through the area.

Looking north along CN Port Huron mainline
Connection to CN Pontiac mainline on the left
Connection to CN Riverfront on right

Looking North on CN Port Huron Line
Conrail mainlines on the left

Looking south on CN Port Huron mainlines
Conrail mainlines on the right

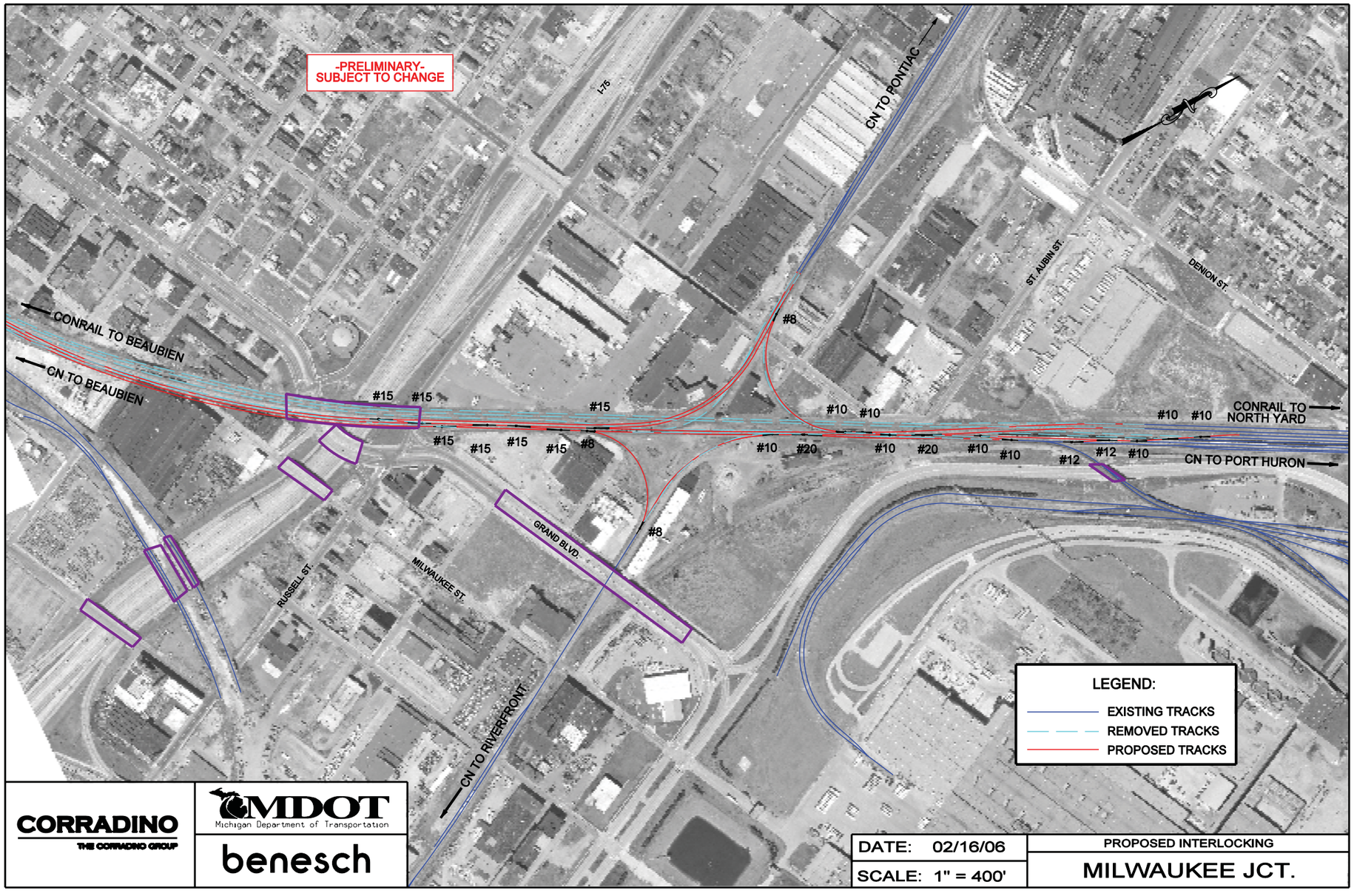


Exhibit 8.7
Proposed Milwaukee Junction Interlocking

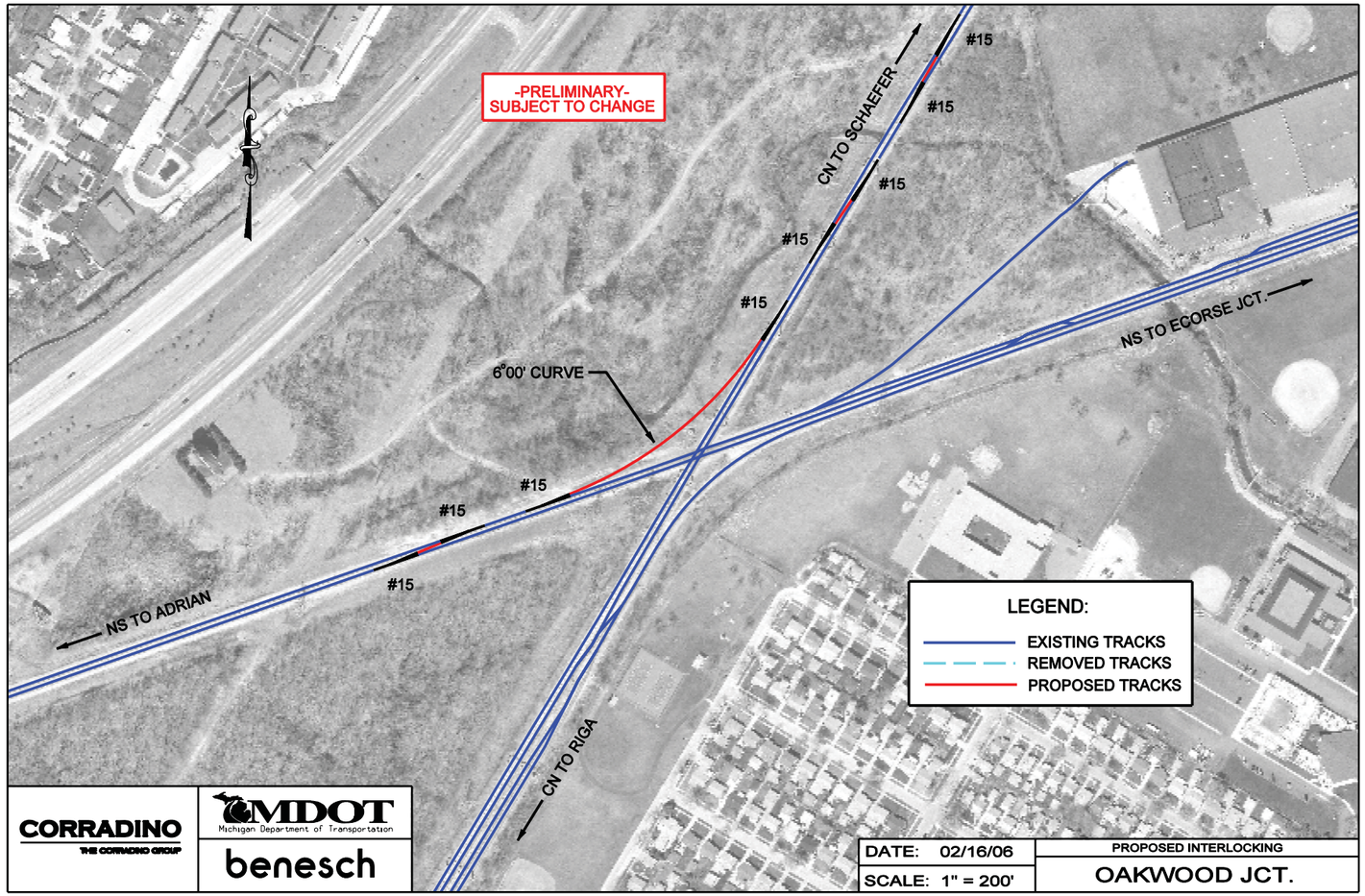


Exhibit 8.8
Proposed Oakwood Junction Interlocking

8.1.7 Oakwood Junction

Oakwood Junction is located just west of Oakwood Yard and south of I-94. It is the intersection of the NS Lake Division double-track mainlines with the CN Dearborn Division double-track mainlines to Flat Rock. The interlocking is comprised of four diamonds and a direct connection in the southeast quadrant connecting the NS and CN mainlines.

Oakwood Junction is controlled by NS. It has a maximum operating speed of 20 mph.

The proposed improvement at Oakwood Junction will allow NS Triple Crown trains to access the new facility at Livernois-Junction Yard via the Schaefer and New Rotunda interlockings.

A new connection is proposed in the northwest quadrant between the NS and CN mainlines. To increase flexibility, a universal crossover has also been included in the proposal north of the junction to allow NS trains the ability to utilize either of the CN mainlines.

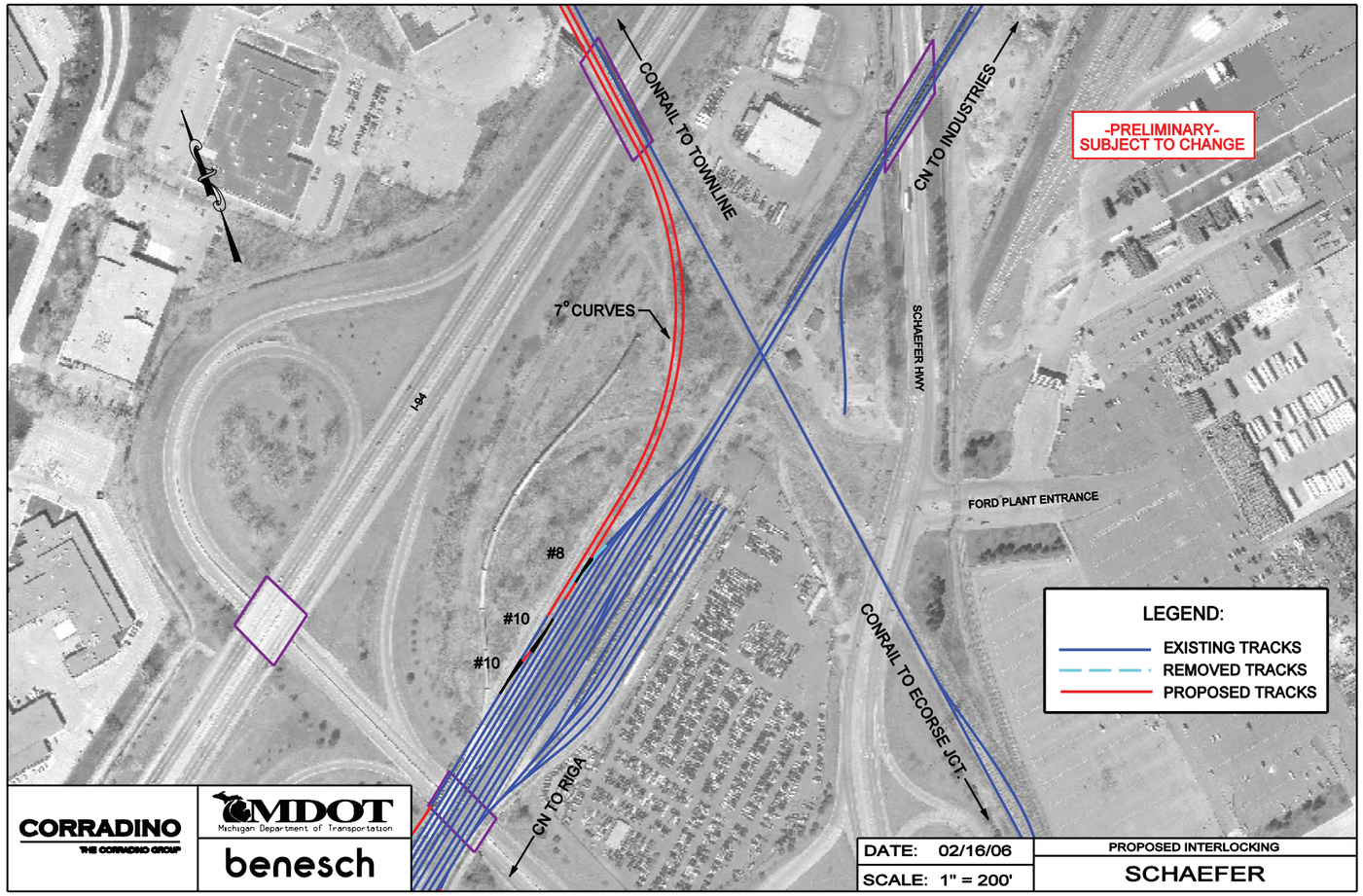


Exhibit 8.9
Proposed Schaefer Interlocking

8.1.8 Schaefer

The Schaefer interlocking is located between I-94 to the west and Schaefer Highway to the east. It is located between the Ecorse Junction and Townline interlockings.

Schaefer Tower is operated by CN and controls the intersection of Conrail's Junction Branch mainline with the CN mainline to Flat Rock, Michigan. The Conrail Junction Yard Branch runs north and south from Townline to Ecorse Junction while the CN mainline runs east and west from Flat Rock to the Ford Rouge Plant.

CN controls the Schaefer interlocking and the maximum speed through the interlocking is 10 mph.

The proposed improvements at the Schaefer interlocking are required to accommodate the NS Triple Crown facility at the Livernois-Junction Yard as defined in the Preferred Alternative. A new connection will be provided to allow NS Triple Crown trains the ability to get from the CN mainlines to the Conrail mainlines.

By utilizing the Oakwood Junction-to-Schaefer route, NS Triple Crown trains will have the correct train orientation to continue north on the CN through Port Huron.

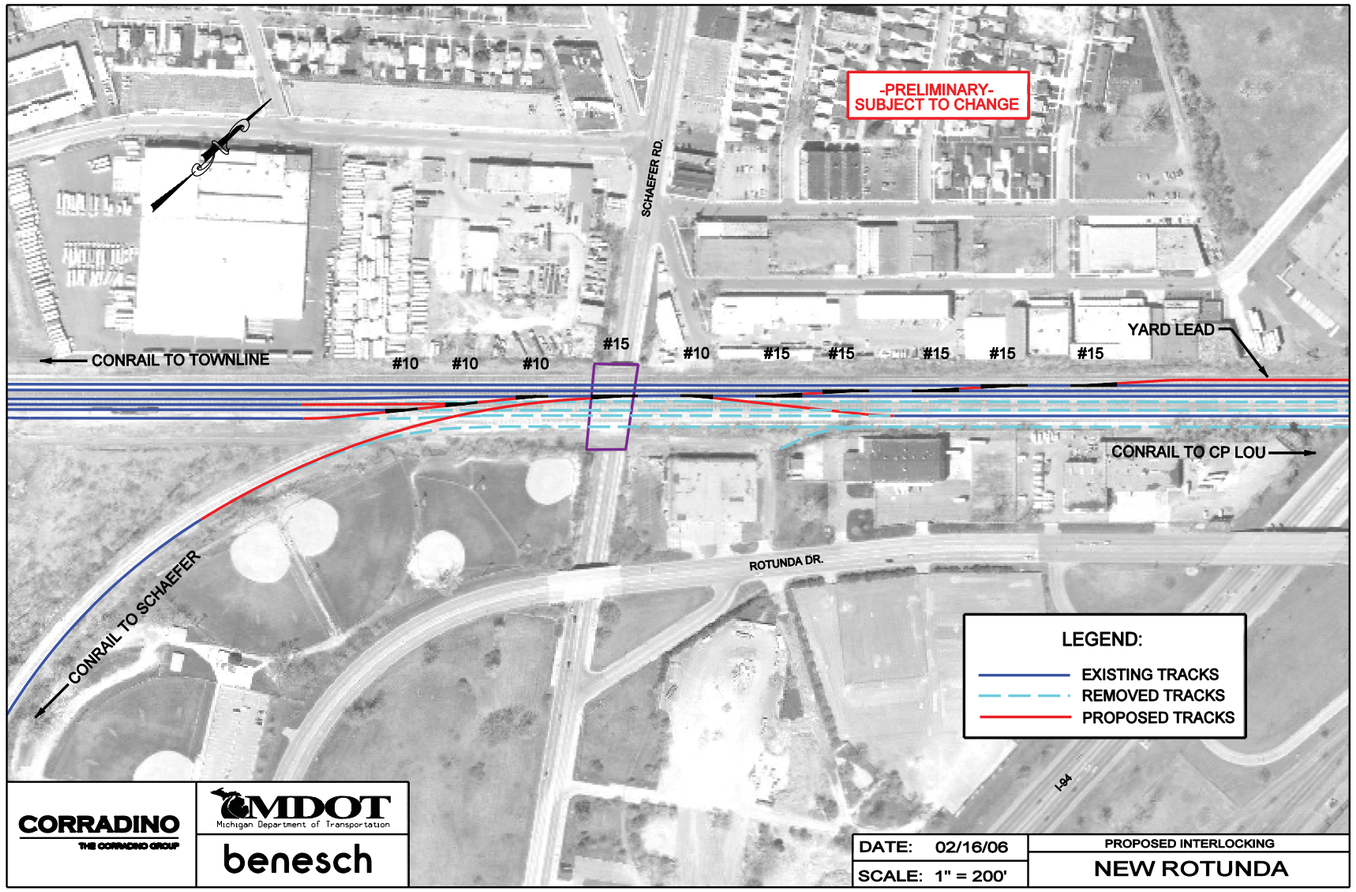


Exhibit 8.10
Proposed New Rotunda Interlocking

8.1.9 New Rotunda

The New Rotunda interlocking is located just north of Rotunda Drive at Schaefer Road. It is just west of Livernois-Junction Yard and is the west leg of the Conrail Junction Branch "wye," which is a lead track into the Ford Rouge plant.

The proposed improvements at New Rotunda will allow complete flexibility with the Conrail Detroit mainline. Some trackwork will be required to tie the existing Conrail storage tracks together. This would be the final improvement required to get NS Triple Crown trains from the NS mainline to the Livernois-Junction Yard. The other two interlocking improvements required to facilitate this movement are Oakwood Junction and Schaefer.

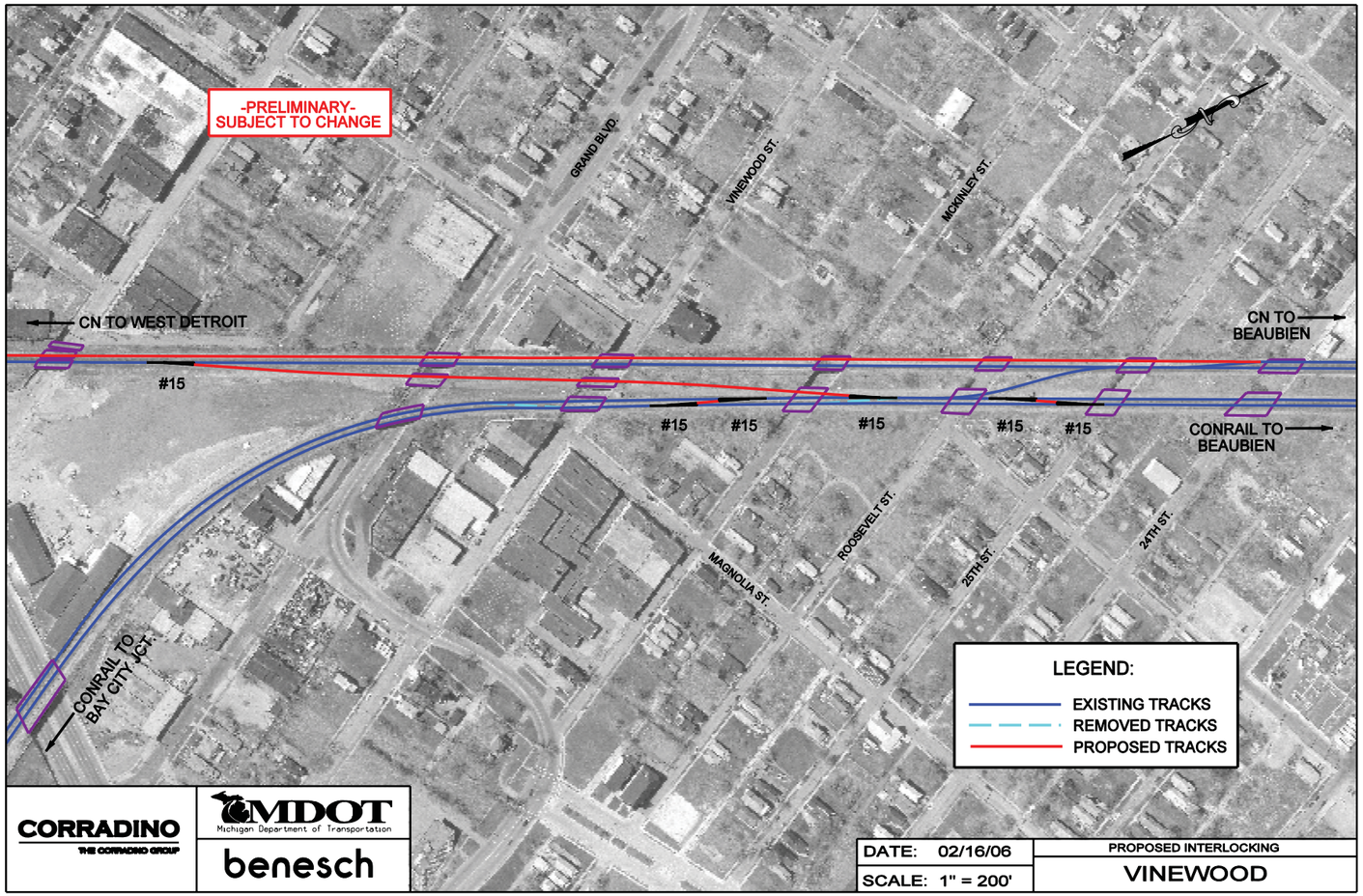


Exhibit 8.11
Proposed Vinewood Interlocking

8.1.10 Vinewood

The Vinewood interlocking is located between I-94 to the northwest, STH 12 to the south, I-96 to the east and Grand Boulevard to the west. It is located between the West Detroit and Beaubien interlockings.

Vinewood connects the Conrail North Yard Branch and CN Shore Line Subdivision which runs from West Detroit to Milwaukee Junction. CN and Conrail operate Vinewood jointly. The maximum speed through the interlocking is 20 mph.

Modifications are proposed at the Vinewood interlocking to allow trains operating through the corridor to use any one of the four mainlines (two CN mainlines and two Conrail mainlines). The old connection at Vinewood between the CN and Conrail has been removed.

The proposed connection will allow Amtrak trains to cross from the CN mainlines to the Conrail mainlines. Currently Amtrak runs on the Conrail mainlines through Livernois-Junction Yard and West Detroit, through Bay City Junction before heading north and to Milwaukee Junction. The elimination of the Bay City Junction route through the proposed modification to the West Detroit interlocking will allow for higher speed and shorter track distance.

8.1.11 West Detroit

The West Detroit interlocking is located over Junction Street between US-12 and Vernor Highway. It is situated between the Vinewood interlocking to the north, Bay City Junction to the east, the Dix interlocking to the south, and Livernois-Junction Yard to the west.

The West Detroit interlocking is a single-track diamond crossing between the CN/NS mainline and the double track Conrail mainlines. The CN mainline crosses the diamonds and then becomes the NS mainline down to Delray, passing through the Dix interlocking.

Trains of all the rail carriers in Detroit, including Amtrak, operate through West Detroit and will continue to do so after intermodal operations are consolidated at Livernois-Junction Yard.

West Detroit is controlled by Conrail. The maximum operating speed is 15 mph.

To allow NS Triple Crown trains going north from Livernois-Junction Yard and allow Amtrak to avoid the speed restriction of Bay City Junction, an improved interlocking between the CN mainlines and the Conrail mainlines is proposed by constructing a connecting track in the northwest quadrant. This would link the double-tracked Conrail mainlines with the CN mainline, which will then be double-tracked up to Vinewood where the existing double track ends. This track would be designed to allow Amtrak trains to move through the interlocking at 35 to 40 mph.

The West Detroit interlocking is proposed to be completely universal. Trains approaching the interlocking will have the ability to get to any of the tracks upon leaving the interlocking. The crossovers which Amtrak trains will use have been designed using #20 turnouts to accommodate faster train speeds.

The proposed connecting track is a reconstruction of a track that had been removed. However, the bridge over the roadway is in poor condition and not ideally positioned for the desired alignment and needs to be replaced.

It should be noted that, at the time of this study, Amtrak was investigating the feasibility of constructing this track independent of the DIFT project. Amtrak believes that there is significant time savings in operating passenger trains around a new connection at West Detroit rather than go around Bay City Junction.

From CN Diamonds looking east towards Bay City Junction

Looking west towards Livernois on Conrail Mainlines
CN Diamonds on track left to right

Bay City Junction looking northeast

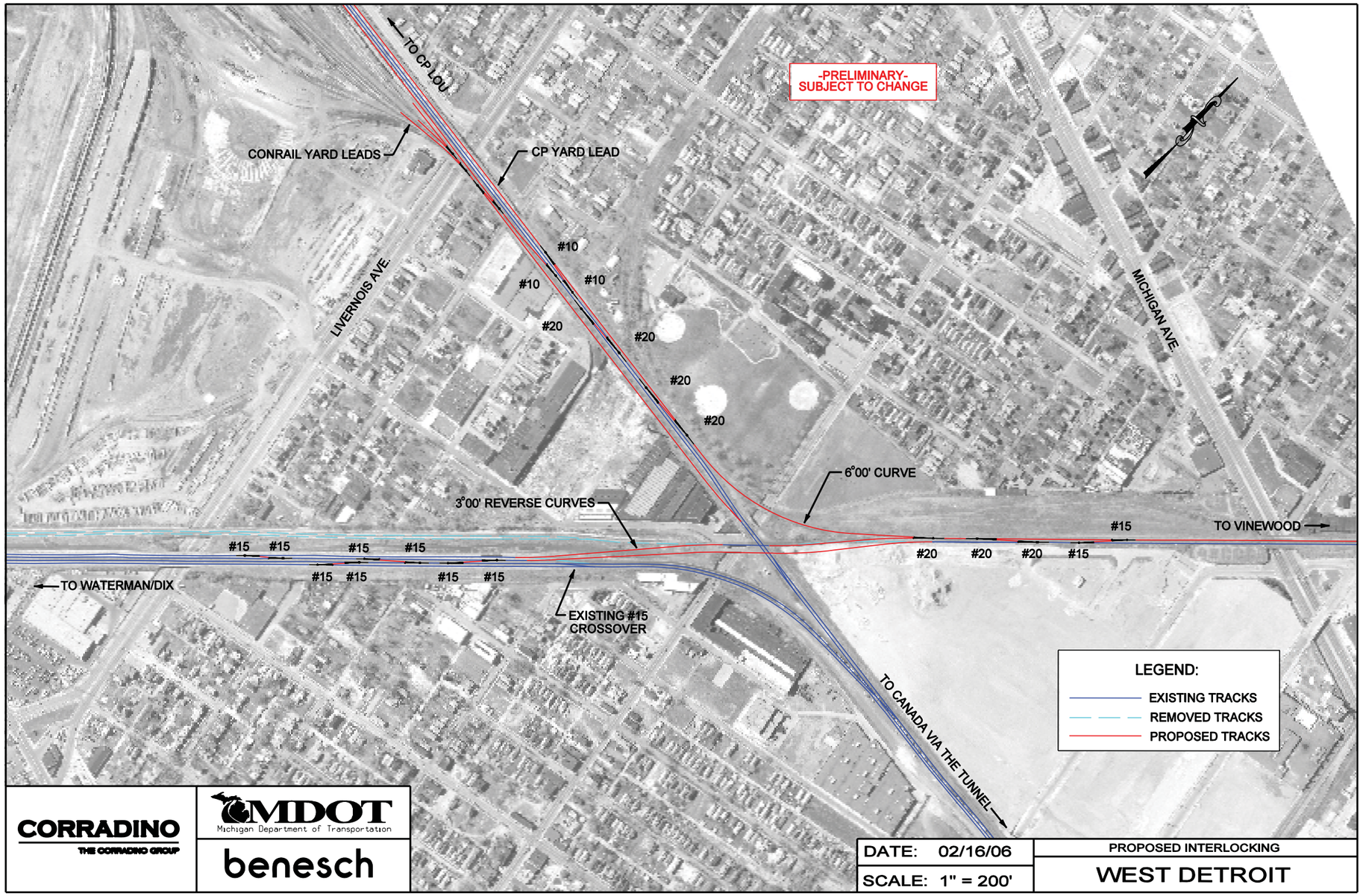


Exhibit 8.12
Proposed West Detroit Interlocking

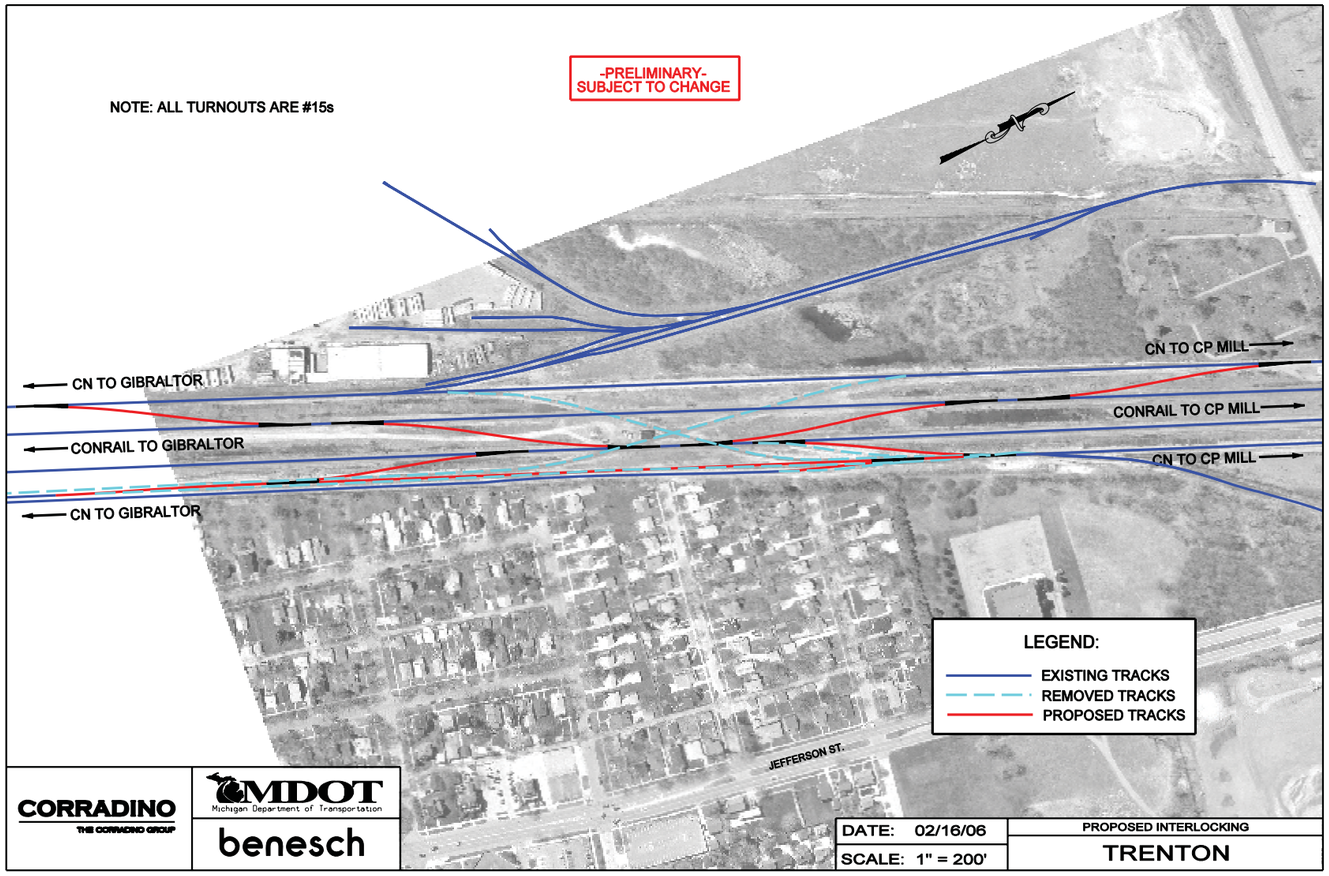


Exhibit 8.13
Proposed Trenton Interlocking

8.1.12 Trenton

The Trenton interlocking is located between Harrison Avenue and King Road in southern Wayne County. Trenton is west of the CP Mill interlocking on the CN Flat Rock subdivision and the Conrail Detroit Line.

The interlocking is a series of diamonds which connect the westernmost CN mainline to the easternmost CN mainline. The two Conrail mainlines are located between the two CN mainlines.

The proposed improvements will eliminate all the diamond crossings and provide a connection between the CN mainlines either side of the Conrail mainline. The improvements to the interlocking will result in a universal crossover between all the mainlines allowing trains to operate on any mainline between Trenton and the CP YD interlocking. This will result in additional operating flexibility, improved staging areas for trains entering Detroit, and increased speeds in conjunction with the similar improvements at CP Mill.