Gibson transportation consulting, inc.

MEMORANDUM

TO: Michael Phillips, Hudson Pacific Properties, Inc.

FROM: Brian Hartshorn

DATE: March 13, 2019

RE: Assessment of Circulation and Parking for
10950 Washington Boulevard Parking Improvement Project
Culver City, California **Ref:** J1614

Gibson Transportation Consulting, Inc. was asked to conduct an assessment of potential circulation and queuing changes resulting from inclusion of mechanical stackers and surface lot restriping (Project) at 10950 Washington Boulevard in the City of Culver City (City). This memorandum summarizes our assessment.

PARKING SUPPLY

The existing site currently provides 439 parking spaces. With the reconfigurations to include tandem and triple-tandem spaces, along with mechanical stacking technology (234 stacker spaces which replace some existing spaces), the overall lot will accommodate 603 spaces, a net increase of 164 parking spaces.

EXISTING OPERATIONAL FLOW

All vehicles enter from Washington Boulevard into an 82-foot driveway throat with a transaction arm gate (processing about 450 vehicles per hour). Beyond the gate is approximately 300 feet of linear roadway leading to a parking garage on the right side and a surface lot on the left side (approximately 92 spaces) that is accessible in a circular loop.

Continuing beyond the parking garage, a small field of parking exists against the south garage wall (19 spaces) before entering the south lot, which is a surface field (approximately 126 spaces) that currently operates in a circular loop (to be modified with the proposed plan). The garage consists of three levels above grade: Level 2 with 19 spaces, Level 3 with 57 spaces, and the rooftop level with 124 spaces.

Exiting occurs around the west side of the parking garage via two full travel lanes leading to a right-turn-only exit onto Washington Boulevard.

VALET SERVICES

During observations, five valet stations were identified at each primary parking field:

- North surface lot
- South surface lot
- Level 2 garage
- Level 3 garage
- Rooftop garage

Operationally, this site is fully staffed for the parking demand and able to accommodate nearly every eventual misguided vehicle or unusual parking difficulty. Additional staff is used for monitoring the transaction gate entry and exit (although the exit gates are disabled, the kiosk was staffed to route any wrong-way vehicles).

CURRENT UTILIZATION OF OFF-SITE PARKING

Street Parking

Curbside public street spaces on Washington Boulevard in front of the Project site are currently unmetered. Construction activity was present on Washington Boulevard and this lane was closed during all field observations. However, in discussions with the Project site parking staff, these curbside spaces are typically full (when construction is absent), some utilized by NFL Studios employees. According to the City's ultimate plan, these spaces will likely become metered and have less attraction to daily employees.

Neighborhood Parking

While not quantified, it appears that some employees park in the adjacent neighborhood streets. These vehicles are expected to be recaptured with the new on-site parking configuration.

Satellite Parking

Until recently, a satellite parking lot located at 10000 Washington Boulevard provided approximately 150 spaces reserved for Project employees. NFL Studios provided a shuttle between the site and the satellite. However, this shuttle was rarely utilized, attracting between 0-5 cars per day, due to limited demand at the satellite lot and was discontinued on August 31, 2018.

PROPOSED PLAN

The proposed site plan generally does not alter the circulation pattern on site. The primary change is in the south lot where the circular driveway aisle will be replaced with dual- and triple-tandem parking spaces. To increase parking supply, mechanical stackers will be added to the north side of the north lot and the garage rooftop level and will replace the surface parking along the south garage wall.

Another improvement will be to convert the current ingress into dual lanes (where it currently has width for two lanes, but merges into a single lane at the gate arm via temporary bollards). The inside lane will be used for employees and the outside lane (fire lane curb) will filter visitors. During peak hours, all vehicles can now pull into the site to a secondary gate arm located approximately 280 feet from back of sidewalk at Washington Boulevard. This increases the capacity of the entry for side-by-side loading, and overall facilitate more vehicles during peak periods. The Project reserves the right to operate the near gate (82 feet) during non-peak hours as a security measure to control entry when entry when demand is light.

CIRCULATION REVIEW (PROPOSED PLAN)

A review of the turning radii throughout the site was conducted on the proposed site plan, which includes the vehicle stackers and restriping of the south lot to provide dual- and triple-tandem spaces. The turning radius diagrams were prepared using a large sport utility vehicle to represent a conservative (worst-case) analysis. Smaller, compact cars may be able to navigate more fluidly through any identified tight spots.

South Lot

Figure 1 shows the basic circulation through the south lot, which is a surface parking area that will be restriped with the new plan for dual- and triple-tandem spaces. This lot has only one aisle due to the tandem design. As such, all vehicles that reach the endpoint must execute a three-point turn. Based on the example in Figure 1, this may be accomplished, but it remains a tight turn for a large vehicle.

Figures 2 and 3 demonstrate the difficulties for vehicles accessing two constrained spaces inside the south lot, requiring a series of tight turns to execute the maneuver.

Emergency vehicles cannot circumnavigate this lot without being required to back out of the aisle, which is no different from the current configuration where has a tight radius exists at the endpoint.

The proposed site plan shows parking stall dimensions in the south lot for the triple tandem spaces with a width of 8’-0”, which exceeds the City’s compact space width (7’-6”) but is less than Code for a tandem vehicle stall width of 9’-0”. The length of these stalls varies from 15’-0” to 17’-0”. The Code defines the length of tandem spaces at 18’-0”.

While there are no published standards for valet parking space dimensions, the use of trained valet parking professionals can navigate narrower dimensions and park vehicles tighter than a typical driver. The average width of a standard commuter vehicle is approximately 6’-0” (compact at 5’-5”), and the average length is 15’0”.

The standard parking stall defined by Code is designed to accommodate typical widths including the door clearance on both the passenger and driver side, as well as spacing between bumpers. Valet parking does not require loading/unloading of passengers within the stall and therefore the width would only be required to accommodate driver door clearance. The 12” variation from the standard stall width would adequately account for the lack of passenger door clearance.

Likewise, for the stall depth, valets will park vehicles without requiring additional bumper clearance provided by a typical 18'-0" space.

Valets also have control of where to park vehicles and can size parking appropriately. As such, larger SUV's (which can average 6'-6") can be strategically parked near compact vehicles and optimize an orderly spacing between vehicles.

It is our opinion that the mix of commuter vehicles (compact, standard, and SUV) can be adequately maneuvered in the 8'-0" stalls with shortened depths using professional valet drivers utilizing only the driver side door.

Rooftop

The garage rooftop section is generally navigable with wide aisles, as shown in Figure 4. During typical loading operations, the circulation is adequate. Figure 5 shows three locations where turnaround is difficult for large vehicles, but could be navigated by compact vehicles.

North Lot

The north lot is a surface parking area divided by a sound wall, with stackers proposed on the north side of the wall. All spaces are 90 degrees to the aisle. A clockwise circulation in this lot is preferred and would result in fewer conflicts with vehicles moving on the primary access road, but since this is a parking lot with slow traffic, these minor conflicts are not safety related. Clockwise movement would provide cleaner, tangential entry points to the primary road from the north lot and allow valet staging to stretch within the storage capacity of the aisles.

Figure 6 demonstrates that there are no significant circulation issues with the north lot for commuter vehicles.

Notably, a trash enclosure and a transformer bay are located at the northeast corner of this lot. Typically, the trash bin is picked up by a small truck with forklift attachment and driven outside the property. However, a larger truck does require access to this area on occasion and a 30-foot truck was tested for turning.

Figure 7a shows the circulation for a 30-foot truck entering the location to "back-into" position and requires a clockwise approach. Figure 7b shows the circulation for a "head-into" position and requires a counter-clockwise approach. As shown, either approach can be accommodated for this vehicle depending upon the intended orientation; however the plan does depict a landscape tree which may cause obstruction if not trimmed to an appropriate clearance.

Interior Parking Decks

There are two floors of interior parking that are not part of this review as these decks are not being changed and will continue to operate in their current configurations, with a mix of self-park and valet-park.

VALET STAGING AREAS

Figure 8 illustrates the valet staging areas utilized during all operational hours (current and future), including the three shown and two internal to the garage. These stations will be managed throughout the day, not only during the peak hours. The internal valets can “float” to other areas when demand is greater elsewhere. As shown within all surface lots and the rooftop, stacked vehicles eliminate half of an aisle-width, which will reduce the circulation band. However, because this flow will be operated by professionals (not self-park), able to maintain emergency vehicle throughput at all times, no fatal flaws were identified in this operational portion of the design plan.

Based on the manufacturer specifications, if equipment fails due to power outage or other reason, it would affect only a section of stackers, as these components would be powered with independent breakers so that a “site-wide” failure is unlikely. During such an equipment malfunction, stackers can be lowered (but cannot be raised), and the bottom level of each stacker can still support a parked vehicle.

With all of the stackers inoperable (worst-case), the primary entry would be closed to all approaching vehicles until service was restored. During such an event, on-site vehicles could continue to utilize the bottom row of stackers, as well as all the surface parking spaces.

The plan identifies 369 surface parking spaces, with 88 ground-level stacker spaces, equating to 457 spaces that remain accessible during a catastrophic power outage. This does not include any non-emergency vehicle linear space throughout the site which is estimated to provide temporary parking for more than 70 vehicles (see Figure 9). This value, combined with the surface spaces, equates to space for harboring approximately 530 vehicles without interfering with emergency vehicle paths.

TRANSACTION GATE

As part of the circulation review, data was collected using video cameras to record the highest inbound flux of vehicles. This data was collected during the week prior to the Super Bowl to ensure that activity at the site represented typical operations with a full staff.

The security transaction gate is positioned at approximately 82 feet inside the property line, allowing a stacking capability approximately four vehicles. The entry throat has another 50+ feet of adjacent lane prior to the gate for two additional vehicles, should more space be required.

The inbound transaction gate is staffed and keycards required for all personnel. Visitors are typically pre-approved and listed on the security log for entry. Keycard entries were timed at an average of eight seconds for the vehicle to queue and pass through the gate without issue (for an overall transaction time of 450 vehicles per hour). A visitor may take longer depending on the pre-authorized arrangements. Any long-term difficulties with visitors are rectified by allowing that vehicle to move out of the queue and into an adjacent red-curb area where security may investigate. During observations of the peak ingress, a small percentage of visitors were processed through the gate in less than 20 seconds per vehicle.

Based on the field observations, as well as the video evidence, this driveway did stack to the edge of sidewalk (five vehicles behind the gate) on two occasions during the hour, but cleared within seconds. For the overwhelming portion of the hour, stacking was contained to one to three vehicles at a time.

Due to the "platooning-effect" of arriving vehicles (where vehicles arrive in groups and not strung out equally across the hour), any queues were dissolved before the next wave of vehicles entered; therefore, no cumulative queuing effect occurred at this particular driveway (i.e., no leftover queue was present from the previous platoon to affect the next platoon). This is primarily due to the observed self-metering components that assist in the progression of this driveway. Specifically, the cross-traffic on eastbound Washington Boulevard provided gaps when traffic slowed and during red phases of adjacent traffic signals. Queues in the two-way left-turn lane did not exceed two vehicles and, by the time the gap allowed movement, the driveway throat was cleared. It is important to note that these vehicles were not stacked in the turn lane due to driveway clearances, but due to oncoming traffic which prohibited left turn movement.

EXPECTED QUEUE INCREASE

The expected increase in queue was estimated to account for the vehicles currently parked off-site which will be redirected to the site with the new parking configuration. These are not new trips on the roadway network, since they already exist, but will no longer park off-site. To present a worst-case conservative estimate, those vehicles are expected to increase on-site demand by 100 vehicles once 164 more parking spaces are provided. This future queuing potential was reviewed based on the existing condition demand with the understanding that another one to two vehicles arriving per minute during the peak ingress could be expected, assuming all these vehicles arrived during the same hour and are not spread out over the day.

At a rate of eight seconds per vehicle, this equates to approximately 800 seconds of new gate transactions during the peak hour (100 vehicles multiplied by eight seconds), or an increase of 23% of the total transaction events per hour (100 new events divided by 450 transactions per hour).

Video observations during peak operations demonstrated a consistent reserve capacity prior to the gate of at least two vehicles (approximately 44 feet, not counting the adjacent side-by-side area) for more than 95% of the hour. In the varying platoons of incoming traffic, an increase of 23% in transactions is expected to add to the available stacking over an hour, though not necessarily during every platoon.

To test the result of adding 100 vehicles to the transaction gate times, a Poisson queuing analysis was conducted, which tests varying arrival patterns against gate transaction flow over the entire hour. The inbound demand was adjusted up to 250 total entering vehicles in a single hour.

The Poisson curve showed that stacking would occur for up to six vehicles in the 95th percentile. This means that for 5% of the hour, it would be expected that queuing would be approximately 132 feet (six vehicles multiplied by a standard of 22 feet, which includes the distance between bumpers).

The current single lane configuration is 82 feet of stacking. With dual-lanes, stacking of 164 feet would be provided. However, it is estimated that only 10% of the incoming peak hour vehicles are visitors, so the visitor lane will not be equally filled as the employee lane.

For a worst-case condition, assuming all vehicles are stacked in a single lane (employees only), the queue would extend to Washington Boulevard by approximately 50 feet (132 feet less 82 feet). This equates to approximately two vehicle lengths.

Based on the video footage, arrivals at the entry are evenly split by direction, with generally as many vehicles making a right turn to enter from the curb lane on Washington Boulevard as those making a left turn from the center median.

As identified previously, no more than two vehicles were observed in the two-way left turn lane, and one additional vehicle could be stacked during a worst-case condition (i.e., 5% of the hour). Three vehicles in the turn lane would equate to approximately 66 feet. The center turn lane is used for both directions of traffic on Washington Boulevard utilizing driveways on either side of the road. In the vicinity of the Project, the La Ballona Elementary School (School) operates a driveway on the north side approximately 80 feet east of the Project's driveway (distance between centerlines, with approximately 65 feet of vehicle stacking space), which is used exclusively for teachers and is chained off during the peak demand when Project's driveway is active. Therefore, there is very little conflict for westbound vehicles in the two-way left-turn lane to enter the Project with eastbound vehicles in the same lane.

While the video evidence did not show any conflicts in the center turn lane between the School and the Project left turns, nor does this report define the magnitude of School-related traffic and its utilization its driveway, the ability to share the turn lane is not significantly impacted by the increased Project queue of one vehicle. The turn lane provides back-to-back stacking potential for approximately two vehicles in either direction. The Project and the School have equal rights to the center turn lane and all drivers are expected to adhere to the California Vehicle Code on safely utilizing the shared turn lane.

For vehicles making a right turn into the site, the addition of a single vehicle queued in the curb lane of Washington Boulevard requires a reservoir space of approximately 22 feet. This curb lane has a fire hydrant with red-striping for approximately 70 feet from the edge of the Project driveway to the first on-street parking space. The potential queuing from the Project would not require linear extension of that red curb which is adequate to accommodate the additional vehicle along with the transition distance required to orient against the curb and be removed from the through traffic lane.

The Poisson model was rerun with 25 fewer vehicles to represent the visitor entries removed from the primary entry lane. With this assumption, the 95th percentile is five vehicles, which has the potential to spill one vehicle beyond the sidewalk into Washington Boulevard for 5% of the peak hour. The same criteria for the left turning and/or right turning vehicles discussed above would also apply to this improved condition.

Since this initial review, the Project has installed a secondary entry gate that is located approximately 280 feet into the property which provides enough distance to eliminate the potential for stacking vehicles into the City streets during peak demand hours. The near gate (at

82 feet) is not in operation during the peak hours, instead utilizing the new transaction location at 280 feet. Operators of the facility have identified the need to maintain this near gate placement as a security measure to control entries outside of the peak hours. As such, the Project reserves the right to operate the near gate during off-peak hours to control entry during non-busy periods when stacking is not a concern, but security is paramount. Figure 10 shows the potential stacking at the near gate as well as the improved condition at the peak demand gate. As shown, the potential future stacking can be fully accommodated on site during peak inbound traffic conditions.

Poisson summaries are attached to this document.

VEHICLE STACKERS

A review of data from the mechanical stacker vendor details a mix of technology types will be implemented on this site to include double-height and triple-height stackers. Due to the different configurations, retrieval/storage speeds will vary from 15 seconds (ground level) to 90 seconds (top level). The vendor has compiled an overall average retrieval/storage time for the entire parking lot system at less than one minute.

Complete vehicle stacker dimensions are included in the site plan drawing package delivered under separate cover, as well as stacker power/operational specifications provided by the equipment manufacturer.

Based on the review of the operational valet staging (Figure 8), the amount of linear on-site storage is substantial without interfering with emergency access. Any delays created by equipment deficiency/failure or other loading/unloading issue, would not impact the amount of inbound queuing at the transaction gate (entry) since there is adequate room to hold vehicles on-site, and typically those vehicles will be far removed from the entry gate.

FUTURE NEIGHBORHOOD PARKING

It is evident there is an existing utilization of public street parking by patrons of the site. Whether or not the City enforces residential permits in the future, the advantage of the updated facility is an increase of 164 parking spaces that would induce demand to the site and reduce the instances of off-site parking.

The inclusion of mechanical stacking technology and restriping of the valet controlled areas provide more attraction to the site by eliminating wait times for circulating the lot in search of parking and creating shorter walking distances to the workplace, thereby reducing the reliance on public parking areas. The improvements to the site are expected to reduce dependency on the adjacent neighborhood.

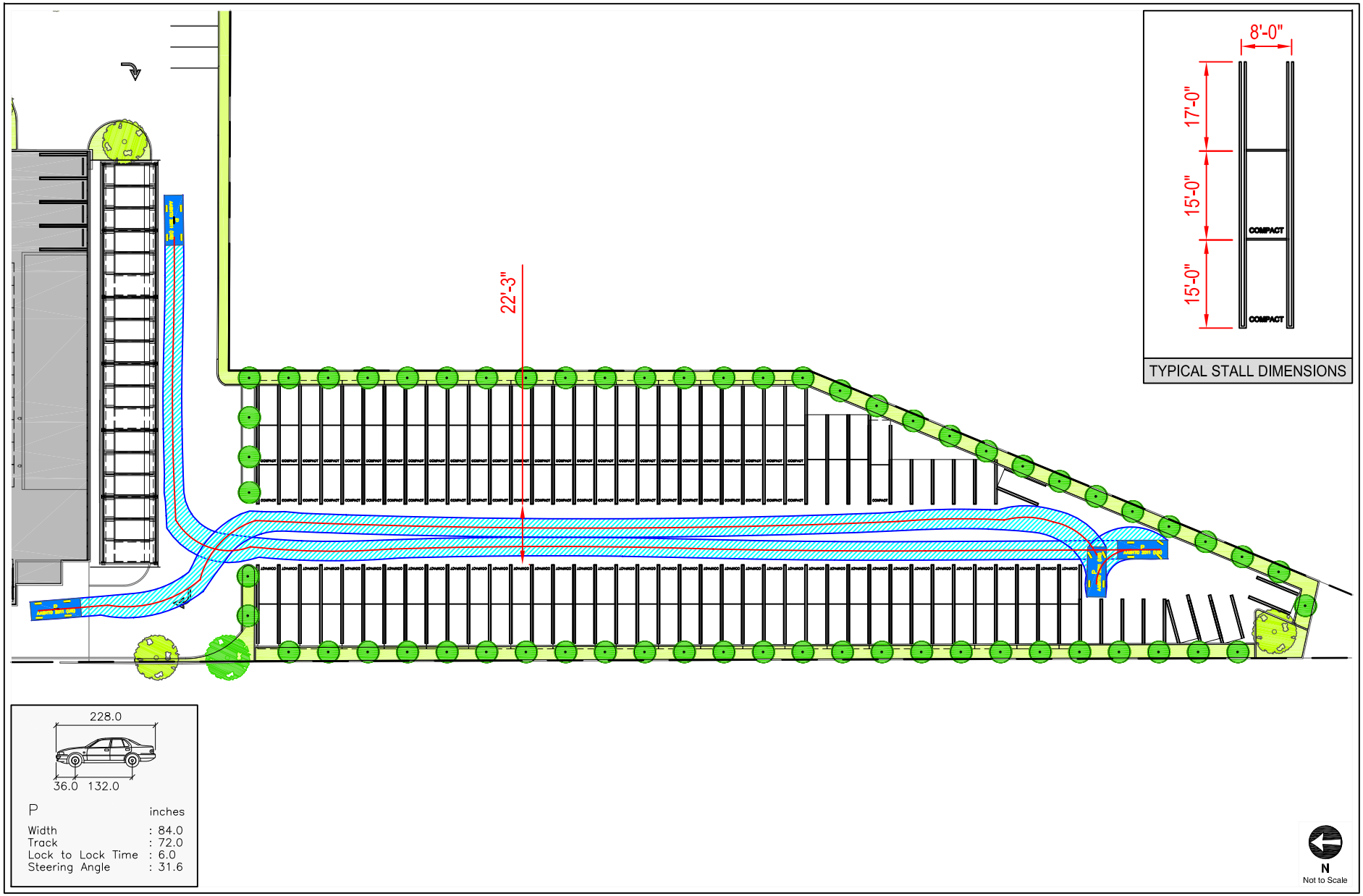
INTERNAL CIRCULATION IMPROVEMENT

Surface parking on the north side of the lot is partitioned with a sound wall. The preferred circulation through this area is in a clockwise direction to better align the exit lane to the

circulation path for egress onto Washington Boulevard. Wayward vehicles that exit from the west aisle are offset from the circulation path and create more conflicts with incoming vehicles and vehicles that exit the parking structure.

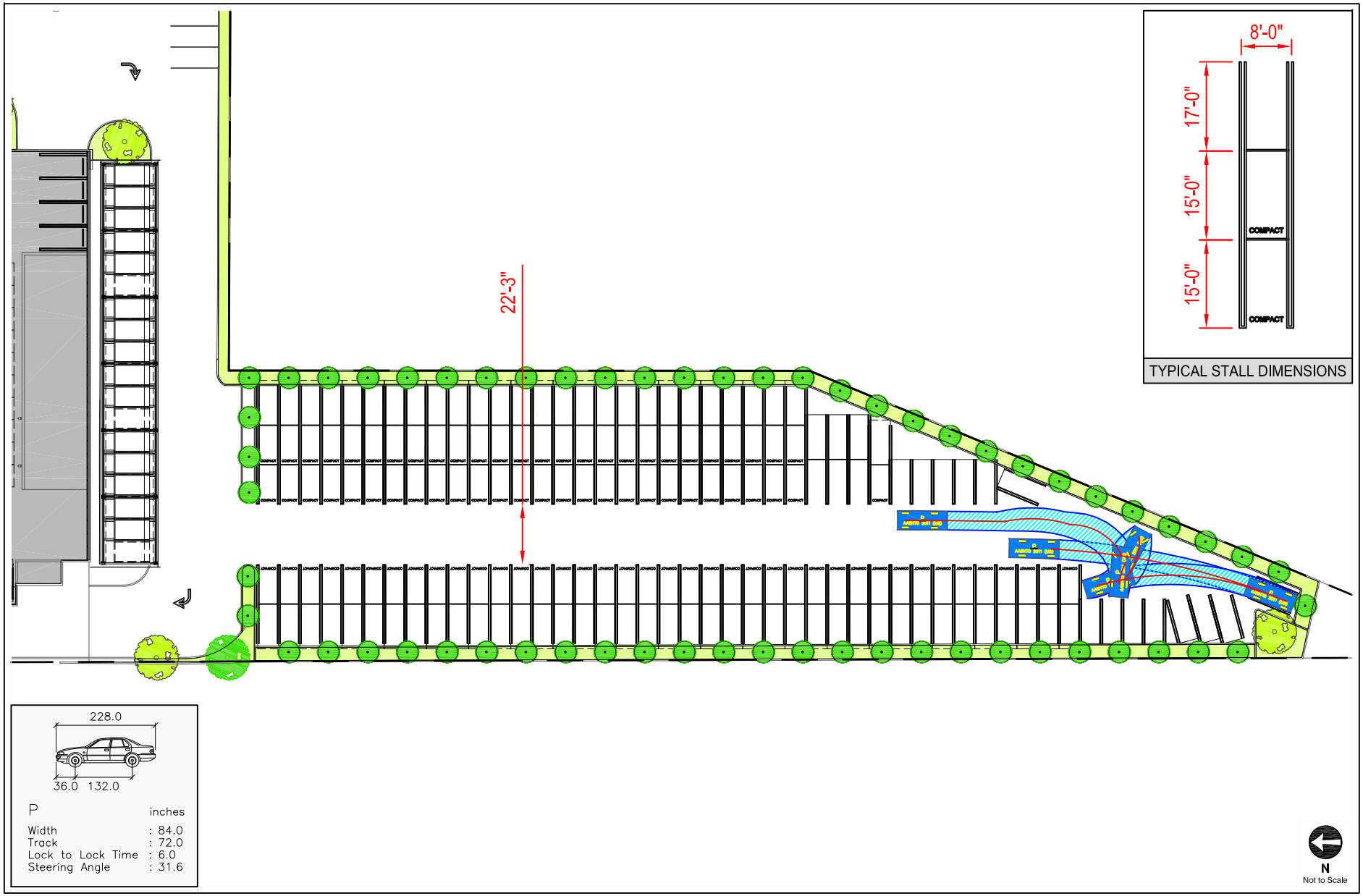
Currently, this circulation is not rigidly enforced, but observations revealed conflicting movements within these aisles due to wrong-way vehicles. Enforcing the circulation pattern will be managed using signage, directional markings, and movable cones or bollards that direct traffic flow in the proper direction. For more rigid enforcement, hardscape (such as raised curbs or islands) could be installed at a low cost.

With more distinct circulation flow into/out-of this surface lot, fewer conflicts will occur, reducing any delays or confusion with directionality particularly with the mechanical parking stackers.



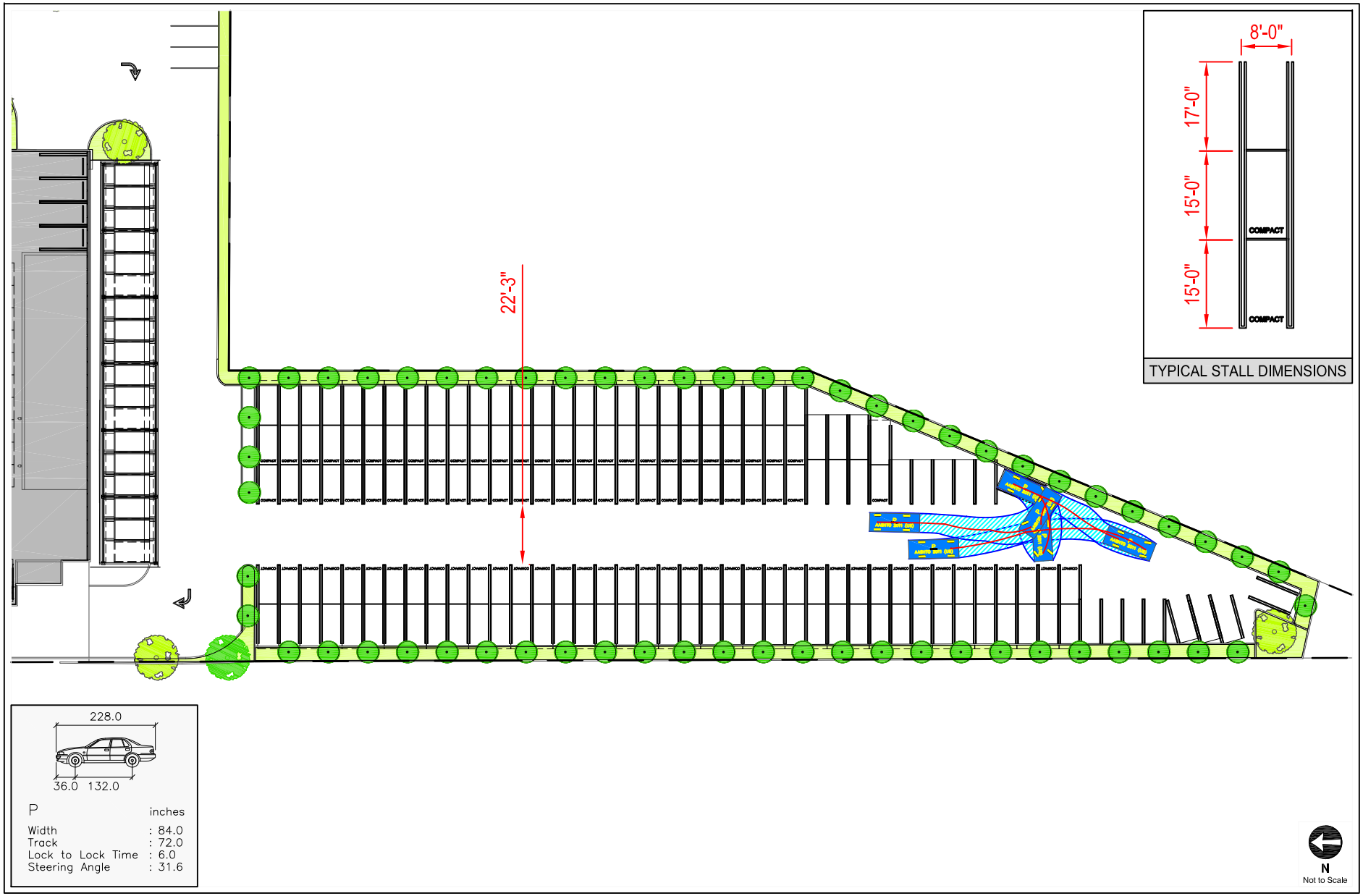
SOUTH LOT CIRCULATION WITH 3-POINT TURN AT END

FIGURE 1



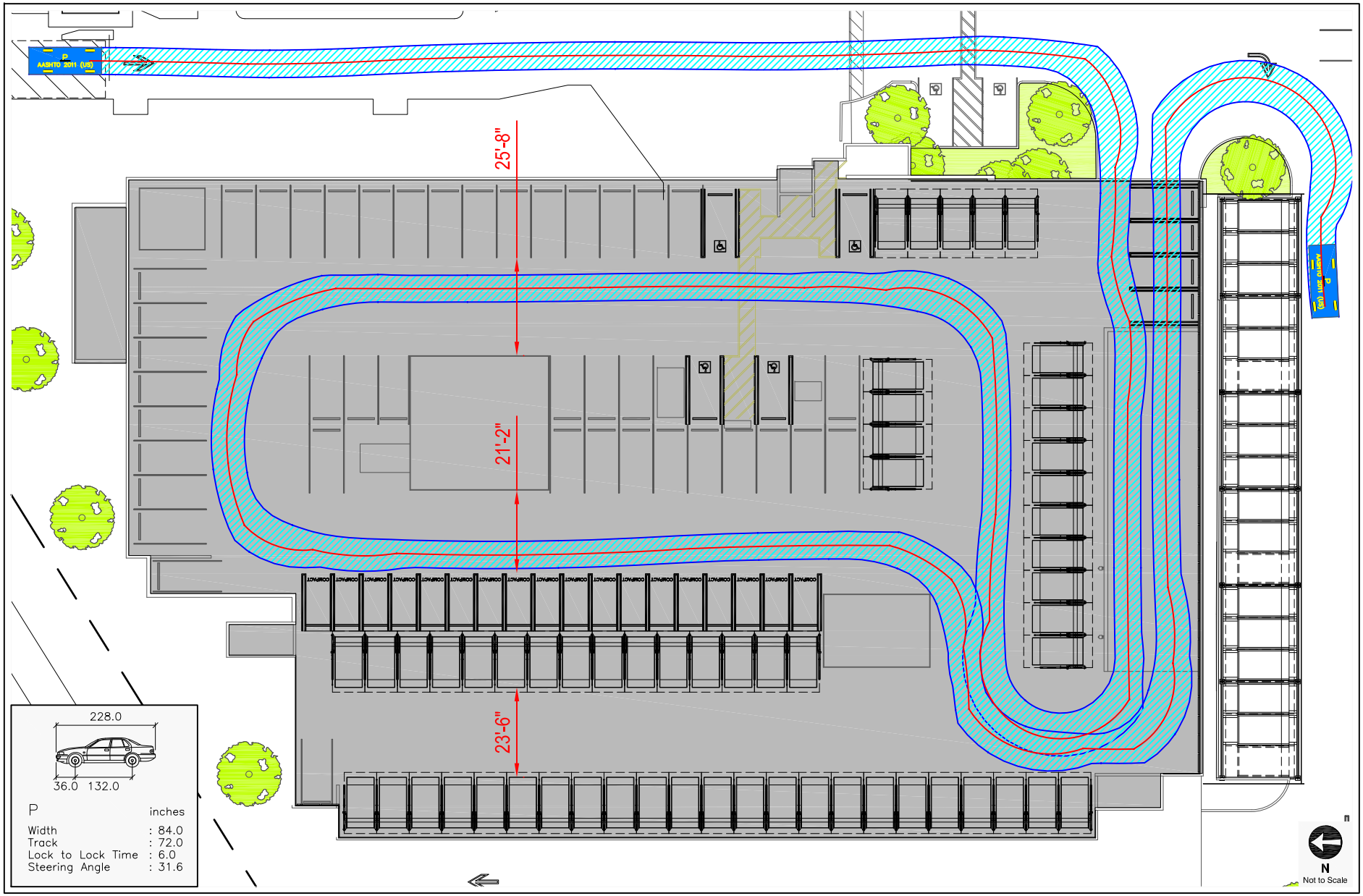
SOUTH LOT CIRCULATION - COMPLICATED PARKING SPACE 1

FIGURE 2



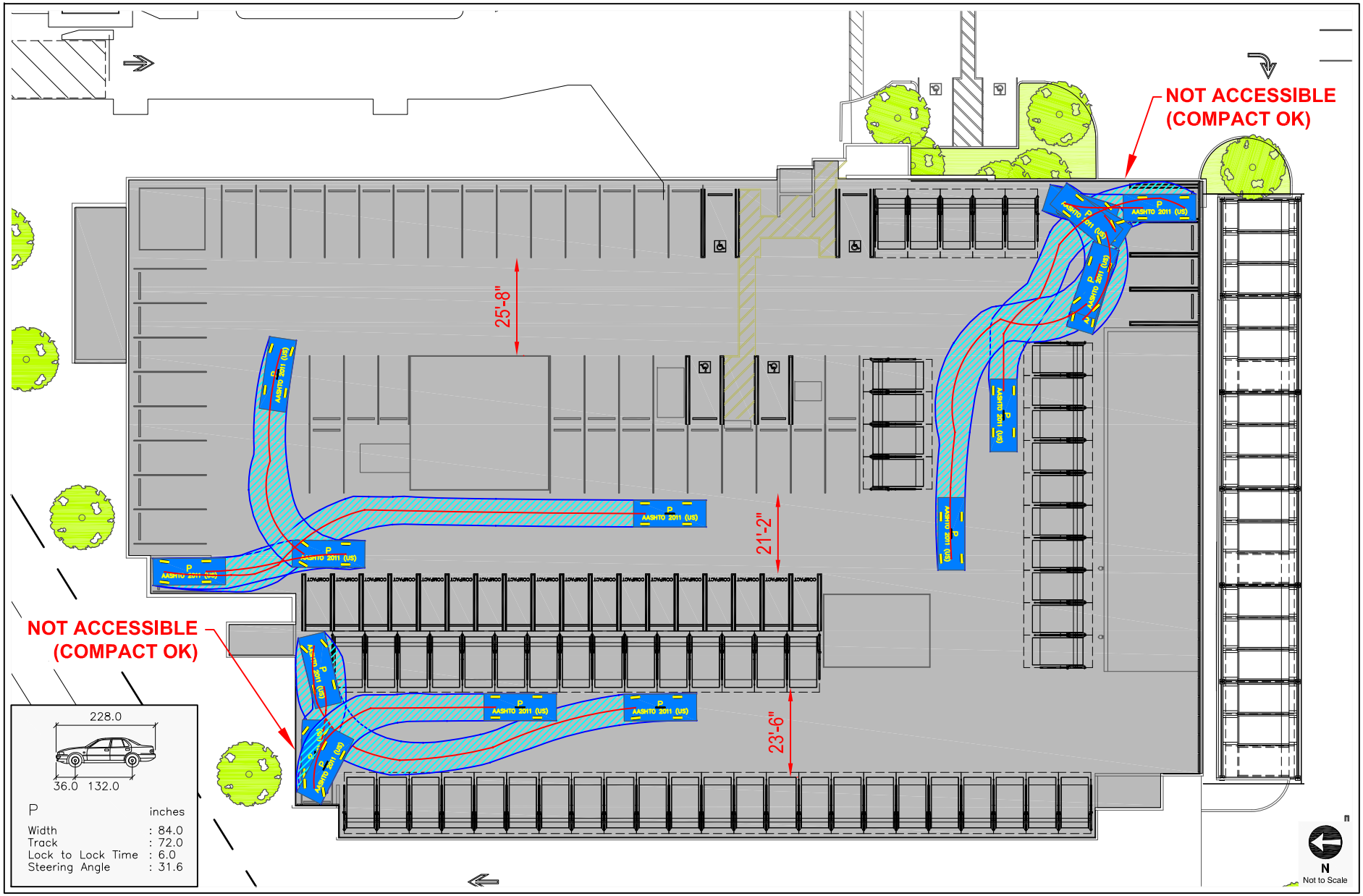
SOUTH LOT CIRCULATION - COMPLICATED PARKING SPACE 2

FIGURE 3



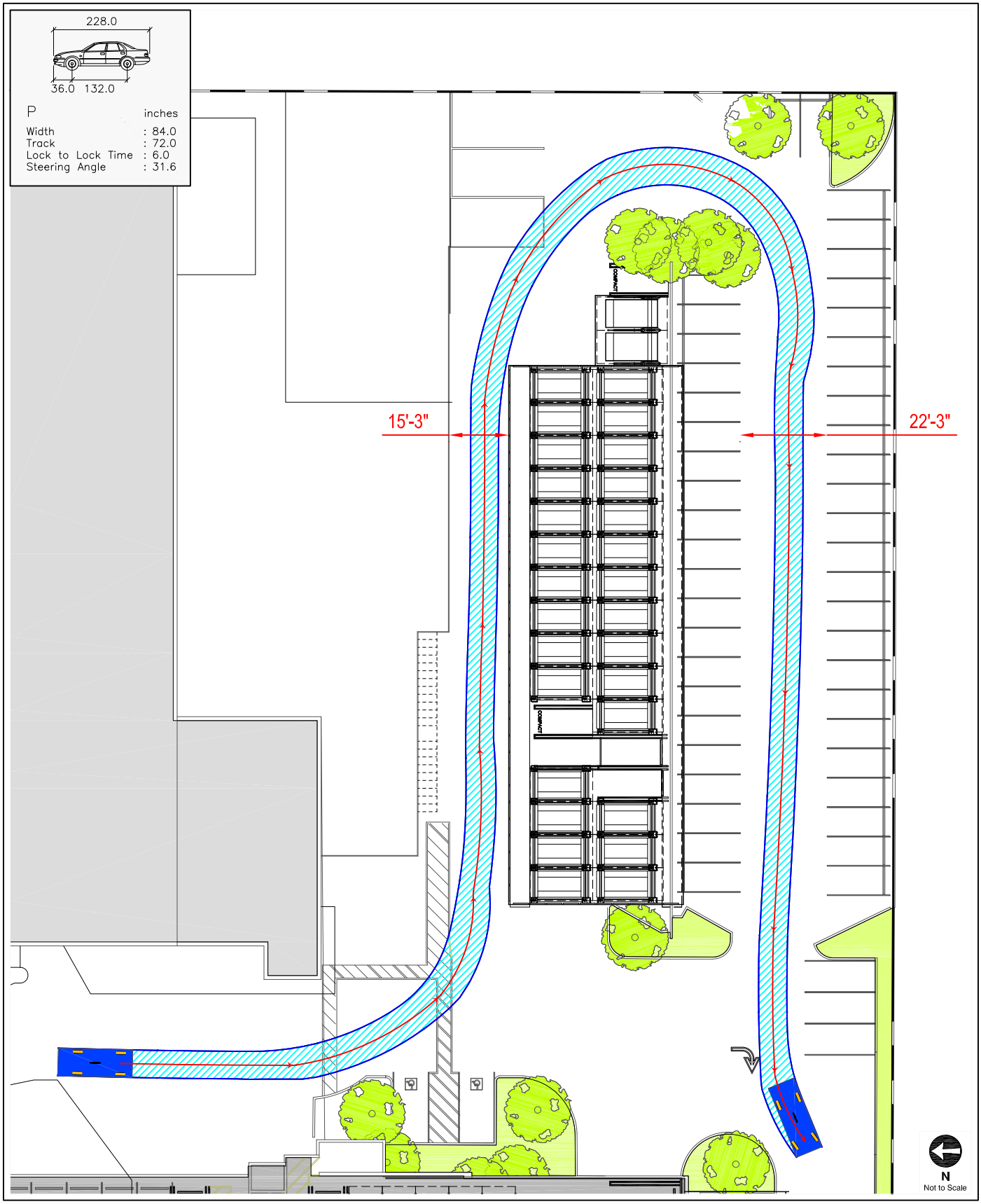
GARAGE ROOFTOP CIRCULATION

FIGURE 4



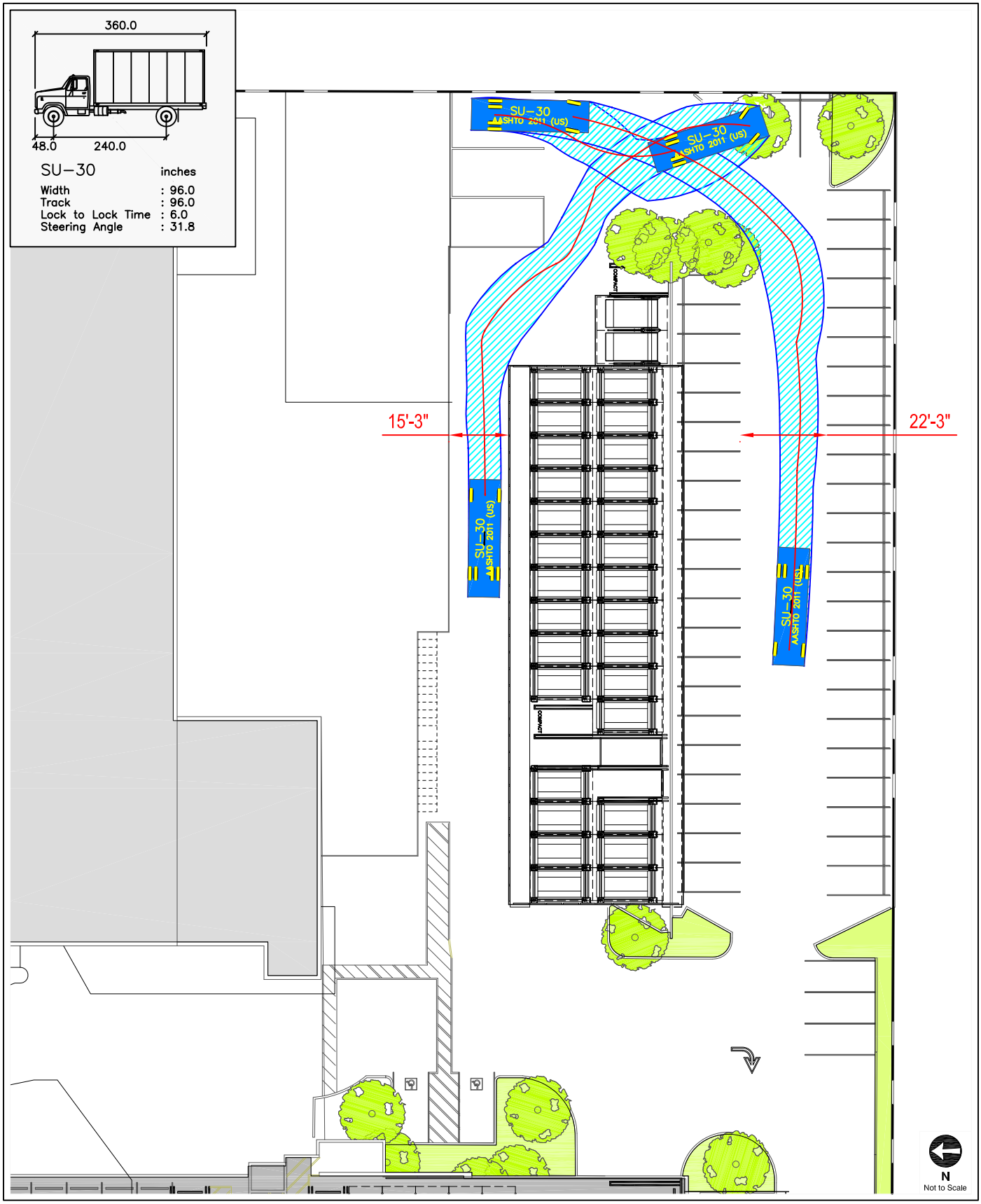
PARKING GARAGE
TIGHT OR POOR-ACCESS SPACES

FIGURE
5



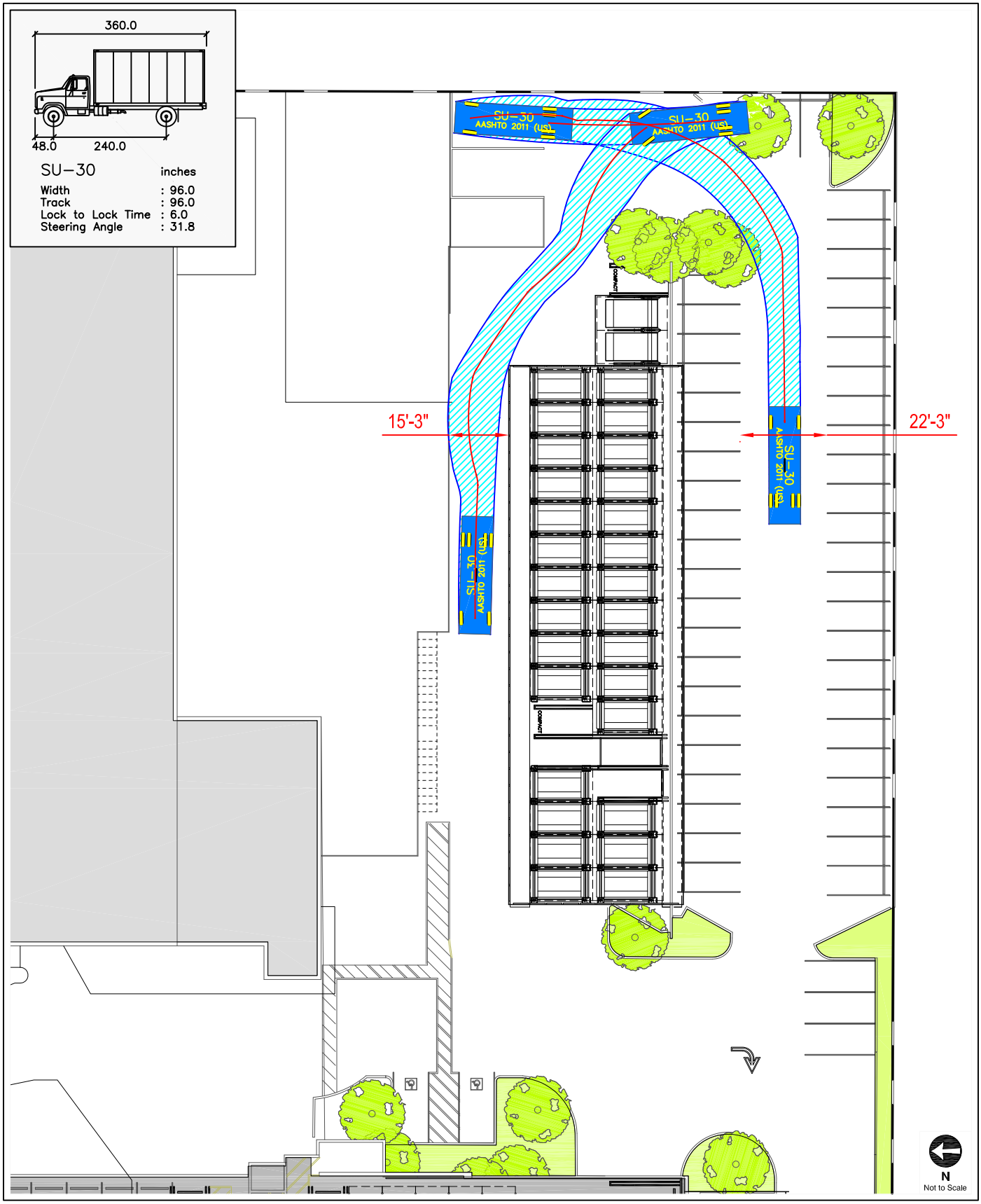
NORTH LOT CIRCULATION (STANDARD VEHICLE)

FIGURE 6



NORTH LOT CIRCULATION (TRASH ENCLOSURE ACCESS)

FIGURE 7A

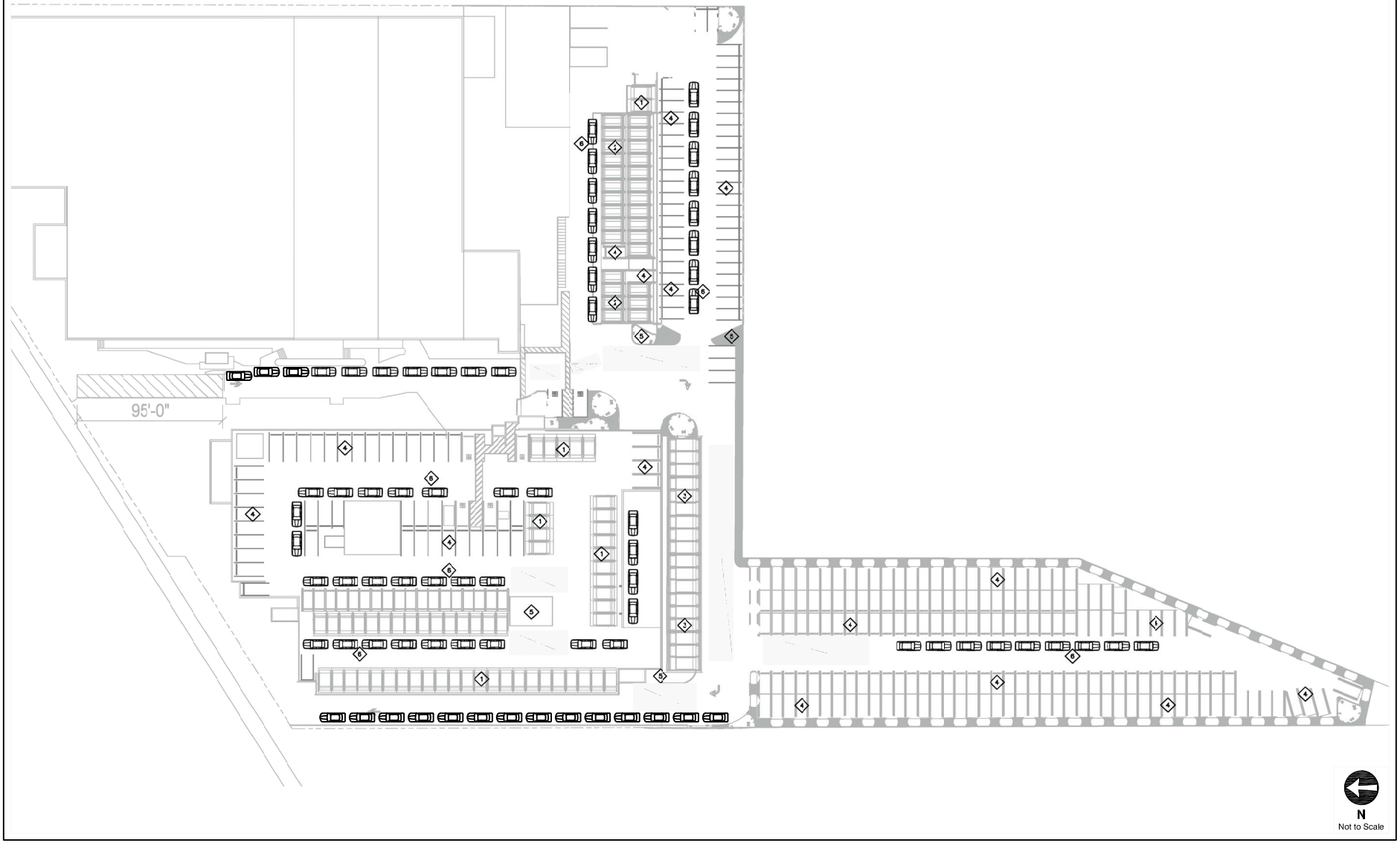


NORTH LOT CIRCULATION (TRASH ENCLOSURE ACCESS)

FIGURE 7B

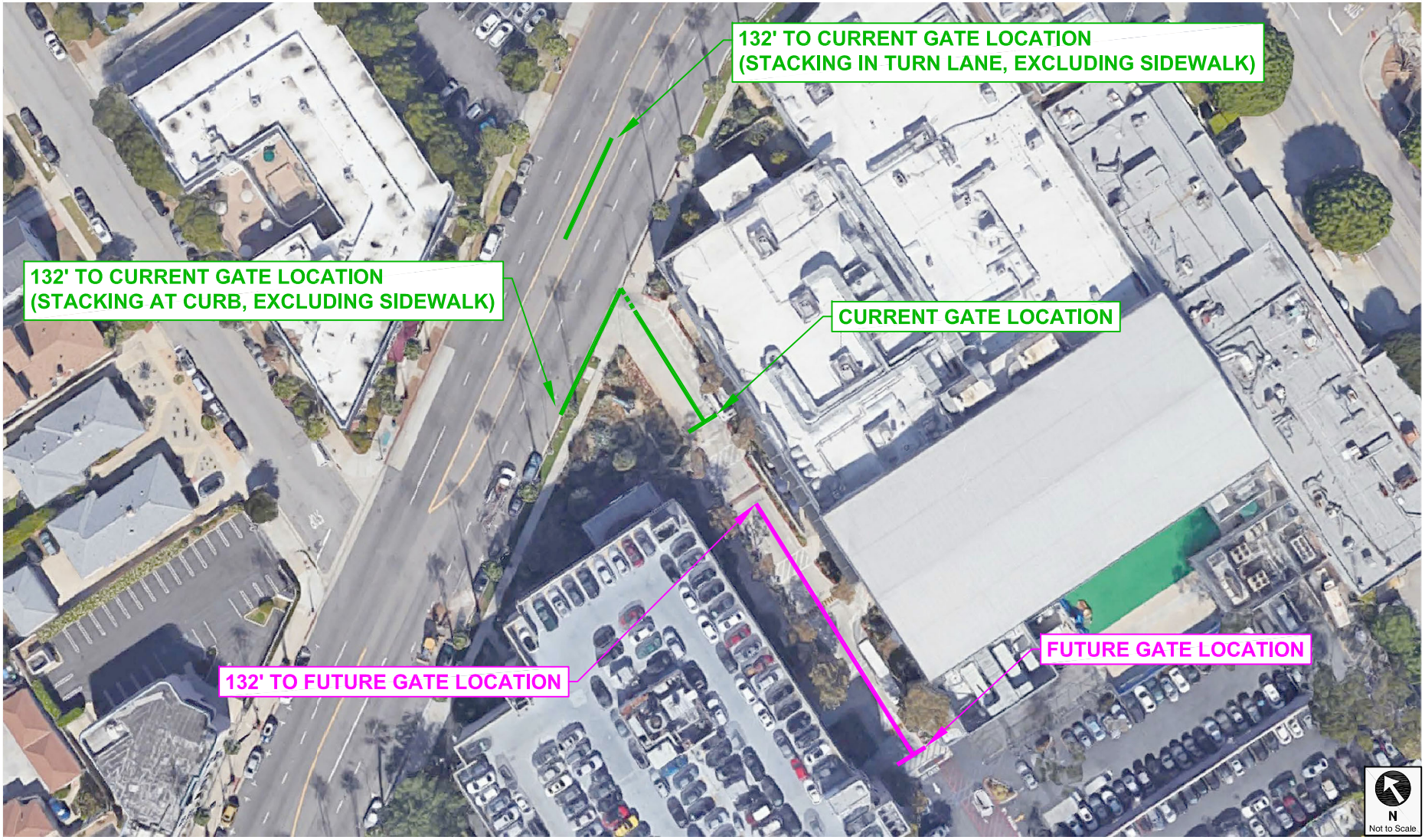
OPERATIONAL PLAN WITH VALET STACKING

FIGURE
8



STACKING DURING POWER FAILURE

FIGURE
9



VEHICLE STACKING (NEAR VS. FAR GATE)

FIGURE
10

Queuing Worksheet - Poisson Distribution

Transactions per Minute:	7
Start Time:	8:00 AM
Minutes per Period:	15
Number of Hours:	1
Number of Tests:	5,000

85th Percentile	4
90th Percentile	5
95th Percentile	6

Begin	End	Volume
8:00 AM	8:15 AM	60
8:15 AM	8:30 AM	65
8:30 AM	8:45 AM	65
8:45 AM	9:00 AM	60

Max Queue	Occurences	Percentile
0	95	1.9%
1	739	16.7%
2	1447	45.6%
3	1291	71.4%
4	800	87.4%
5	350	94.4%
6	198	98.4%
7	55	99.5%
8	15	99.8%
9	7	99.9%
10	1	100.0%
11	1	100.0%
12	1	100.0%

QUEUING FOR SINGLE LANE
250 VEHICLES

Queuing Worksheet - Poisson Distribution

Transactions per Minute:	7
Start Time:	8:00 AM
Minutes per Period:	15
Number of Hours:	1
Number of Tests:	5,000

85th Percentile	3
90th Percentile	4
95th Percentile	5

Begin	End	Volume
8:00 AM	8:15 AM	53
8:15 AM	8:30 AM	60
8:30 AM	8:45 AM	60
8:45 AM	9:00 AM	52

Max Queue	Occurences	Percentile
0	416	8.3%
1	1388	36.1%
2	1526	66.6%
3	989	86.4%
4	396	94.3%
5	188	98.1%
6	82	99.7%
7	13	100.0%
8	1	100.0%
9	1	100.0%

QUEUING FOR SINGLE LANE (REMOVED VISITORS) 225 VEHICLES