

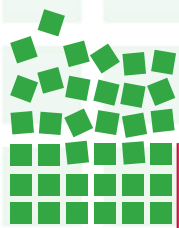
Villanova University

Villanova, PA

■ **Special Event Traffic and Parking Management Plan**

September 2013

13-215



CHANCE
MANAGEMENT ADVISORS, INC.

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I. INTRODUCTION AND METHODS

This **Special Event Traffic and Parking Management Plan (the Plan)** originated from a request by Facilities Management officials seeking a review of the University's existing approach to managing inbound and outbound traffic and parking associated with special events on campus. The purpose of the Plan is to achieve the following results:

- ease traffic congestion along Lancaster Avenue and on any other Township streets;
- reduce event parking spilling over to surrounding neighborhood streets;
- provide better wayfinding and guidance for motorists arriving for events held on campus;
- improve the efficiency of vehicle circulation within campus parking lots and thereby speed vehicle entry and exit; and
- help minimize the potential for pedestrian-vehicular conflicts and ensure pedestrian safety during events.

It is anticipated that the logistical suggestions contained within the Plan will be subject to modification during and after any Township-approved construction projects affecting the University's parking lots along Lancaster Avenue and other Main Campus parking facilities.

In developing this Plan, *CHANCE Management Advisors, Inc. (CMA)* conducted two site visits to the Villanova campus. The first, on Monday, 10 June 2013, was to observe traffic and parking conditions before, during and after a typical evening special event being held at the Pavilion, namely, the graduation ceremonies for the nearby Haverford High School. *CMA* consultants first toured the campus with the Director of Public Safety and discussed traffic and parking challenges. Then beginning at approximately 5:00 p.m., observations were conducted of pedestrian and vehicular conditions within the West Main Lot and East Main Lot during the two and one-half hours leading up to the graduation ceremony, which began at 7:30 p.m. *CMA* also drove within the Main Campus to observe vehicular and pedestrian wayfinding and parking facilities. Additional observations were made between 9:00 and 10:00 p.m. of vehicle exit and pedestrian activity within the West and East Main Lots.

CMA held an informal telephone conversation with a SEPTA official regarding the possibility of installing a dynamic messaging sign on the west side of the SEPTA rail bridge for the Norristown High Speed Line. A second site visit was conducted on Wednesday, 7 August 2013, to conduct interviews related to traffic and parking issues, challenges and visitor volumes with University representatives from the departments of Facilities Management, Public Safety, Admissions, Student Life, the President's Office and Athletics. *CMA* also met with Radnor Township Police Department officials responsible for coordinating support for Villanova's special event traffic management needs.

Additional information was provided by the Public Safety office for *CMA's* review, including parking availability counts taken during special events, and campus maps. The University's website also was reviewed for information regarding special event parking guidance.

II. STATEMENT OF NEED

Villanova University is host to hundreds of special events during the academic year that significantly increase traffic volumes along Lancaster Avenue, particularly during early evening peak traffic periods. This is a shared concern of University and Radnor Township officials and local residents due to the delays and other inconveniences associated with increased congestion, as well as attendant risks to pedestrian safety and the general quality of life in surrounding neighborhoods.

An additional concern of both University and Township officials is the potential for spillover parking and increased traffic in neighborhoods adjacent to campus, particularly before and after events such as Saturday football games in the fall, and evening basketball games in the fall and winter months. Other special events during the academic year pose significant traffic challenges as well, including but not limited to Commencement weekend, prospective and accepted student days, Special Olympics, and other non-University sporting events and activities held in the Pavilion.

To help manage special event traffic volumes, Villanova retains Radnor Township Police Department officers on a voluntary but paid (overtime) basis to provide intersection control at Lancaster and Ithan Avenues. Depending upon the event, additional intersections farther west of the campus, along Lancaster Avenue leading to the Blue Route are under to Police intersection control.

On the more typical weekday basis, Villanova's employees contribute to, but may not necessarily comprise, the bulk of the westward traffic along Lancaster Avenue during the evening commute. Both University and Radnor Township Police officials acknowledge the fact that homeward bound motorists originating east of the campus must necessarily drive Lancaster Avenue on the way to the Blue Route (Interstate 476) and the communities beyond.

The University is highly interested in minimizing special event traffic congestion in its desire to be a "good neighbor" for the surrounding community, as well as being a "good host" for the tens of thousands of visitors coming to the campus annually. The University's Department of Public Safety recently has taken several innovative measures to better manage major parking events, such as live video monitoring of parking lot conditions coupled with temporary electronic message boards to advise motorists of lot full / alternative parking options.

Future roadway improvements to Lancaster Avenue are not likely to be instituted unless and until approval is given to the proposed repurposing of the existing Main and East Main Lots, a possibility that may be several years in the future. However, timely and convenient access to parking, regardless of the stage of campus development, is still a requirement for Villanova visitors. In fact, it may be said that the traffic and parking experience often communicates the first as well as the last impressions of a campus to its visitors.

The University and Radnor Township Police have consistently partnered to mitigate traffic congestion, and both parties are aware of additional measures that may be taken, which include but are not limited to the following:

- First, improved wayfinding to available parking on the Main Campus is needed to alleviate congestion along Lancaster Avenue and within the Villanova West Main and East Main parking lots. Public Safety’s surveys of available parking during selected major events, such as evening basketball games, consistently show available parking quantities in the Spring Mill Road Parking Garage and other locations on the Main Campus. Motorist guidance or wayfinding solutions to these alternative parking locations will help alleviate congestion along Lancaster Avenue and surrounding roadways.

- Second, vehicular circulation within and access to the West Main and East Main lots must be improved to allow for more efficient throughput at the lots’ entrances and exits, which would translate to a direct and immediate benefit for Lancaster Avenue traffic. Even relatively small events at the Pavilion (for instance, the Haverford High School graduation that *CMA* observed) have the ability to create congestion during “crossover” periods, when day students and employees are exiting the West Main and East Main Lots while event patrons and evening students are arriving. A number of improvements can be made to improve pedestrian vehicular circulation and safety within the lots. Accordingly, the Plan therefore contains a number of easily-accomplished and relatively inexpensive solutions that focus on new procedures, nominal physical improvements to the Lots, and modified circulation patterns. Additionally, opportunities exist to improve the University’s communication of directional guidance to major roadways for motorists exiting campus parking areas.

- Third, coordination of the numerous smaller events that generate additional parking and traffic – often on an unplanned or “surprise” basis for Public Safety and Parking staff – must be improved. This requires better communication principally between the more than 100 student organizations and other entities on campus scheduling events, and the University’s Parking and Transportation function. The adoption of a centrally-maintained calendar of events for coordinating campus activities, which has been a goal of the University for a number of years, will be an important improvement in this regard. But even more central to the effort will be the vigorous outreach to these groups by the Director of Parking and Transportation throughout the academic year.

As a group, representatives of various University departments and administrative functions, together with the Radnor Township Police Department, are known to effectively coordinate and consistently improve upon traffic and parking management for the largest events held on campus, such as Commencement. The challenges that this Plan seeks to address are for those large - and not so large, *yet frequent* – events that create somewhat predictable volumes during evening commuting and crossover periods, and for smaller events that also challenge traffic and parking management efforts.

The format of the remaining sections is designed to succinctly list the improvements that should be made as a Plan consisting of four goals for improvement, encompassing the three topics enumerated above, and a fourth, regarding the Plan’s support within the campus and its responsiveness to changing conditions. Suggested actions, responsibilities, coordination and support requirements, relative costs, and estimated timing of the improvements are also provided.

Additional recommendations related to issues of a more generalized parking management nature that arose during interviews with Villanova officials are addressed under separate cover to the University’s project manager for this engagement.

Villanova University Traffic and Parking Management Plan

| Goal 1: Improve Parking Wayfinding and Motorist Guidance To and Within Campus | | | | |
|--|---|--|--|--|
| Item # | Improvement / Suggested Action Item | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 1 | Alleviate excessive occupancy in the West Main Lot and congestion along Lancaster Avenue by providing guidance to alternative parking at the Spring Mill Garage (SMG) for motorists inbound to campus from the Blue Route and points west | Public Safety and Facilities Management | Meetings with SEPTA, PennDOT and Radnor Township officials as needed to coordinate support and address other legal and/or traffic management requirements regarding placement of DMS and static parking information signs Given the desired dimensions and messaging options, DMS costs can vary greatly, and may easily exceed ten to twenty thousand dollars or more; accordingly, a variety of suppliers and message options should be explored Note: CMA held an informal discussion with a SEPTA official concerning the feasibility of placing a DMS on the subject rail bridge, who considered it a feasible solution | At the earliest opportunity following vetting of the suggestion with Radnor Township Police and other officials, and University administrators |
| 1a | <ul style="list-style-type: none"> ■ Initiate formal discussions with SEPTA, Radnor Township and PennDOT officials regarding the installation of a Dynamic Messaging Sign (DMS) on the Norristown High Speed Rail Line overpass of Route 30, which would notify motorists of "Lot Full" conditions at the Main Lots, with guidance to use the Spring Mill Garage as alternative parking □ An illustration of the desired location for the DMS is provided in MAP 1 □ EXHIBIT 1 provides a suggested message for the DMS and images of the existing overpass □ Contact information for the responsible SEPTA officials will be provided under separate cover | | | |
| 1b | <ul style="list-style-type: none"> ■ Coordinate with Township and PennDOT officials as needed on the installation of parking wayfinding signs to direct motorists to the Spring Mill Road Garage at/along the following locations: <ul style="list-style-type: none"> □ In advance of and at the intersection of Routes 320 and 30 (Spring Mill Road and Lancaster Avenue) □ Along Spring Mill Road leading to the Garage □ See MAP 1 for illustrations | | | |
| 1c | <ul style="list-style-type: none"> ■ Coordinate with Township and PennDOT officials as needed on the installation of signs to direct Lancaster Avenue eastbound motorists to use the Church Lane entrance for an alternative to the Ithan Avenue entrance to the West Main Lot | | | |
| 2 | With potentially greater use of the Spring Mill Road Garage, judicious placement within the Villanova campus of additional pedestrian wayfinding signs, along with pathway improvements, improved ways of communicating transportation/shuttle information, and addition of a bus shelter, passenger amenities and timely shuttle service to the Pavilion will enhance the patron experience; this will help encourage repeated / increased use of the Garage for future events at the Pavilion and Villanova Stadium, thereby alleviating congestion at the Lancaster and Ithan intersection | Facilities Management, with Parking and Transportation | Cost estimates presently unassessed | Initiate planning and cost estimates following the approval of alternative messaging technology |

Villanova University Traffic and Parking Management Plan

| Goal 1: Improve Parking Wayfinding and Motorist Guidance To and Within Campus | | | | |
|--|---|----------------------------|--|--|
| Item # | Improvement / Suggested Action Item | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 3 | For events that require a parking fee at the Main Lots, consider promoting the SMG as a no-cost or lower-cost parking option; alternately, consider increasing existing parking fees for charged events in the West and East Main Lots | Parking and Transportation | Unassessed | Could be done immediately for events now charged a parking fee |
| 4 | Include alternative parking locations and campus parking exit guidance directions to major routes in all print and electronic parking informational materials | Parking and Transportation | Nominal cost | Immediate |
| 5 | Establish a policy and procedures to help ensure peripheral parking locations are used by University employees and/or students working at selected events | Parking and Transportation | Coordination of permits | Immediate |
| 6 | On a longer-term basis in the event of cancellation of the developments proposed for the Main Lots, widen the Ithan Avenue entrance lane in the West Main Lot, and widen the Ithan Avenue exit lane in the East Main Lot to facilitate vehicle throughput | Facilities Management | To be determined if needed | Unknown |

Villanova University Traffic and Parking Management Plan

| Goal 2: Improve Vehicle Circulation and Pedestrian Safety Within the Main Lots | | | | |
|---|--|---|---|-----------|
| Item # | Improvement / Suggested Action | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 1 | <p>Coordinate with the Radnor Township Police Department (RTPD) to begin intersection control at Lancaster and Ithan Avenues at least one-half to one hour earlier than the present deployment time, or no later than 2.5 hours prior to an evening event scheduled for the Pavilion when classes are in session</p> <ul style="list-style-type: none"> ■ This would advance the start time for intersection control by one hour (over the presently nominal 6:00 p.m. deployment time) to help alleviate traffic congestion along Lancaster Avenue during the evening cross-over period ■ The advanced deployment also could be instituted subject to successful alleviation of congestion pending the other vehicular circulation improvements within the Main Lots addressed in Plan Points III and IV.2, below | Public Safety and Facilities Management | Depending on the specific nature of the event, this may amount to up to one hour of additional coverage for each RTPD officer deployed | Immediate |
| 2 | Establish new, event-specific vehicular circulation patterns within the West Main Lot for INBOUND event traffic and for OUTBOUND daily traffic through the alternatives indicated in the subsequent References and MAP 2 | Public Safety | <p>Either normal or overtime scheduling of two officers for two to three hours, as needs demand, during the crossover period leading up to the special event</p> <p>NOTE: For special events likely generating relatively more traffic from east of the campus, the approach described in IV.2 would be highly effective. For events thought to generate relatively greater traffic volume from the west, the Suggested Actions described in Section III could help mitigate incoming traffic volumes at Church Lane.</p> | Immediate |
| 2a | <ul style="list-style-type: none"> ■ No later than 2.5 to 3 hours before an evening event, convert the existing exit lane at Ithan Avenue to an entry-only lane through the use of portable signs and traffic cones at strategic points within the Lot, and at the entrance itself | Public Safety | | |
| 2b | <ul style="list-style-type: none"> ■ Staff at least one Public Safety officer within the West Main Lot at the Ithan Avenue entrance to provide internal traffic guidance for vehicles entering at that location, and one Public Safety officer at the Church Lane (western) exit to facilitate both exiting and incoming traffic at that location | Public Safety | | |
| 2c | <ul style="list-style-type: none"> ■ Dedicate the resulting two entry lanes from the lot attendant booth for approximately 10 to 15 parking spaces through the use of plastic cones and ropes, so that vehicles must enter the lot without negotiating hard right or hard left turns, | Public Safety | | |
| 2d | <ul style="list-style-type: none"> ■ Place reversible One-Way and Exit This Way directional signs at strategic locations within the parking rows (elevated at the corners of four spaces, for example) and at the base of the parking aisles to prevent vehicles from crossing the path of incoming motorists | Public Safety | | |

Villanova University Traffic and Parking Management Plan

| Goal 2: Improve Vehicle Circulation and Pedestrian Safety Within the Main Lots | | | | |
|---|---|--|--|---|
| Item # | Improvement / Suggested Action | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 2e | <ul style="list-style-type: none"> ■ Evaluate the benefits of deploying a Radnor Township Police Officer to control the inbound and outbound traffic signalization at the Church Lane entrance to the West Main Lot (given alternative parking information approaches as discussed in Section III) | Public Safety, in conjunction with the Radnor Township Police Department | As previously noted | Immediate |
| 2f | <ul style="list-style-type: none"> ■ While the evening event is taking place, reverse a portion of the One-Way and Exit This Way signs (given occupancy conditions within the West Main Lot, this may be at or beyond a mid-point of the parking area) so that motorists must travel toward either the Church Lane or Ithan Avenue exits in the directions indicated; at typical event conclusion and exit times (c. 9:30 to 10:00 p.m.), the normal entry lanes effectively would be used as exit lanes only | Public Safety | Staffing of officers within the West Main Lot to control directional traffic flow with handheld illumination devices | |
| 3 | <p>To facilitate vehicular circulation and throughput in the East Main Lot, similar (though smaller-scale), event-oriented sign improvements could be made, including but not limited to:</p> <ul style="list-style-type: none"> ■ Dedicating both the entrance and exit lanes along Ithan Avenue as entry-only lanes in the hours leading up to an event at the Pavilion or Stadium, and staffing a Public Safety officer within the lot to facilitate traffic flow ■ Designating the Lancaster Avenue exit on the north side of the East Main Lot as the only operative exit during the INBOUND event period | Public Safety | Coordination with Facilities Management and the Radnor Township Police Department | In conjunction with the West Main Lot procedural improvements described in IV.2 |
| 4 | Install reflective markings and striping to indicate pedestrian pathways within the West Main Lot | Facilities Management | Routine parking lot maintenance costs | Immediate |
| 5 | Remove the shrubbery at the Ithan Avenue portal to the West Main Lot, which presently obscures the exit and entrance lanes from within the Lot | Facilities Management | Routine landscaping maintenance costs | |
| 6 | Trim and/or remove the shrubbery on both sides of the Ithan Avenue portal to the East Main Lot, which presently obscures exiting motorists' views of pedestrians walking along the east side of Ithan Avenue as they cross in front of the entrance/exit lanes | Facilities Management | | |
| 7 | Repair or replace the aged attendant booths within the East and West Main Lots to improve their overall physical appearance and convey a better image of the University | Facilities Management | To be determined by Facilities Management | Immediate |
| 8 | As an alternative to using Public Safety officers for facilitating internal lot traffic flow, the University could consider training either Event One staff (contracted through the Athletics Department) or a cadre of student workers (to be specially trained by Public Safety) to provide this function | Public Safety | Department of Athletics and/or University officials responsible for student employment opportunities | Immediate |

Villanova University Traffic and Parking Management Plan

| Goal 2: Improve Vehicle Circulation and Pedestrian Safety Within the Main Lots | | | | |
|---|--|--|---|------------------------------|
| Item # | Improvement / Suggested Action | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 9 | Coordinate with the Radnor Township Police Department on the feasibility of controlling the post-event traffic signals at Route 320 and Lancaster Avenue in addition to the signal at Church Lane to minimize vehicle queuing along westbound Lancaster Avenue, and to facilitate both left- and right turns onto Lancaster Avenue from Route 320 North. | Public Safety / Parking and Transportation officials | Potential cost for additional PD officer staffing | Prior to the football season |

Villanova University Traffic and Parking Management Plan

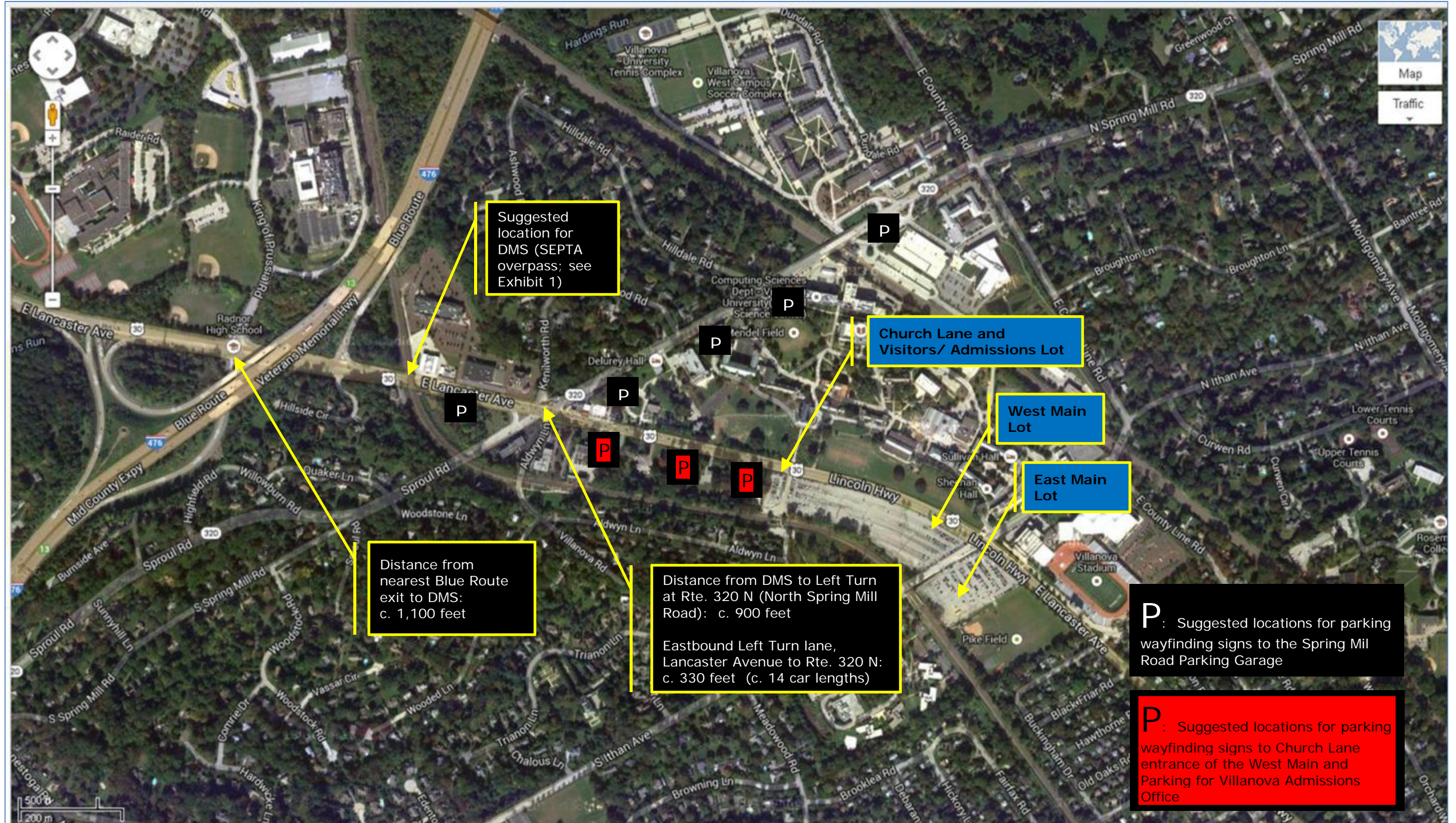
| Goal 3: Enhance Coordination Of Events And Outreach To University Student Groups And Other Entities To Regulate Parking Demand | | | | |
|--|---|---|---|--|
| Number | Improvement / Suggested Action | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 1 | Decide upon a centralized Events Calendar for the University for improved coordination of all events held on CAMPUS to improve (among other things) the University's capacity for managing and planning for parking demand and potential transportation requirements | President's Office, Public Safety, Facilities Management officials and University technology services officials | Seek direction / support from the University President to either advance coordination with Villanova information technology officials, or to procure a commercial software package ^[1] | Establish a deadline by the end of September 2013 to either develop or procure a centralized scheduling system |
| 2 | Establish both a Parking and Transportation Newsletter and Annual Report for the University to proactively communicate with the campus community on parking issues | Public Safety / Director of Parking and Transportation | Time investment by participants, including support staff | By start of Spring 2014 semester |
| 3 | Establish a Parking and Transportation "opt-in" text and/or e-mail notification system to alert employees, students and others (ideally event patrons) to major parking and/or traffic conditions and alternatives | Parking and Transportation; University Communications Office | Utilization of the existing emergency notification system | |
| 4 | Regularly submit guest columns or articles on parking and transportation issues to build awareness of good parking practices within the campus community | Director of Parking and Transportation | Time investment by participants | Beginning in the Fall Semester, 2013, and ongoing thereafter |
| 5 | Establish and execute a schedule to meet with Student Government and Student Life organizations regarding: <ul style="list-style-type: none"> ■ Requirements to notify Parking and Transportation of events generating parking ■ Ways to estimate parking demand for various events | Director of Parking and Transportation, with support in the outreach efforts from leadership within the various offices, to include officials within the President's office | | |
| 6 | Establish and execute a schedule to meet with University administrative, educational and other departments regarding their responsibilities for coordinating event parking requirements with Public Safety / Parking and Transportation, and any centralized scheduling function or system that may be deployed | | | |
| <p>[1] University officials have been exploring for some time the commercial software services that are customized for university use, as they also have been working with Villanova's information technology group on the same issue. The importance of bringing presently <i>unscheduled</i> events into a centralized database is heightened through the University's attempt through this Plan to alleviating traffic congestion and parking problems.</p> | | | | |

Villanova University Traffic and Parking Management Plan

| Goal 4: Ensure the Plan Achieves University Support and Remains Responsive to Traffic and Parking Demand | | | | |
|---|---|---|--|--------------------------|
| Number | Improvement / Suggested Action | Responsibility | Coordination / Support, and Relative Cost | Timing |
| 1 | Circulate plan among various internal stakeholders, including: <ul style="list-style-type: none"> ■ Public Safety ■ Parking and Transportation ■ Facilities Management ■ Athletics ■ Student Life ■ President's Office ■ Admissions ■ other | Facilities Management | Time investment by participants | By end of September 2013 |
| 2 | Convene meeting for comments and input | Facilities Management | | |
| 3 | Coordinate the Plan with Radnor Township Police Department officials | Facilities Management and Public Safety (3 through 6) | | |
| 4 | Incorporate suggestions as appropriate from RTPD | | | |
| 5 | Present final plan to Radnor Township officials | | | |
| 6 | Incorporate suggestions as appropriate from Radnor Township | | | To be determined |
| 7 | Publish and maintain the Plan on appropriate University webpage | Parking and Transportation | | |
| 8 | Establish semi-annual review and coordination (meeting) requirement, with documentation thereof | | | |

Villanova University Traffic and Parking Management Plan

MAP 1: Parking Wayfinding Sign Placements, Including a Dynamic Messaging Sign



Villanova University Traffic and Parking Management Plan


MAP 2: Vehicle Circulation Improvements within Villanova Main Lots, Pre-Event

In the image below, green arrows indicate proposed entry traffic patterns, while the red arrows indicate exit traffic patterns, for the several hours leading to a major evening event at the Pavilion.

Aerial view of Villanova University parking lots with traffic flow arrows and management annotations. The map shows the West Main Lot and East Main Lot. Green arrows indicate proposed entry traffic patterns, while red arrows indicate exit traffic patterns. Orange arrows indicate the placement of traffic cones to create dedicated entry lanes. Small yellow arrows indicate required directional flow through temporary signs prohibiting vehicle exit at the Ithan Avenue portal of the West Main Lot. A yellow box highlights an 'Optional inbound or outbound dedicated lane'.



A crossover lane to facilitate traffic circulation within the West Main Lot for vehicle exiting and recirculation to open spaces is created by displacement of 24 parking spaces using either permanent barricades or temporary traffic cones with ropes as pictured below.

The photo was taken outside of Temple University's Liacouras Parking Garage, where vehicles exiting the garage on North 15th Street are prevented from crossing into southbound traffic.



Maintaining unidirectional vehicular circulation at entry and exit portals on the West and East Main Lots preceding events will help avoid the type of congestion pictured below at approximately 5:00 p.m. on 10 June 2013. At the Ithan Avenue entrance to the West Main Lot, exiting motorists crossing in front of the entrance created significant delays for vehicles entering the Lot, leading to congestion along Ithan Avenue and Lancaster Avenue.

Directional signs and Public Safety or specially-trained Event One staff located at strategic locations within the Lots would enhance pedestrian and motorist safety, help maintain the desired traffic circulation patterns and increase throughput efficiency, thereby lessening congestion on the surrounding roadways.

The orange arrows  indicate the placement of traffic cones to create dedicated entry lanes to facilitate throughput at the entrances and thus lessen street congestion. The small yellow arrows  indicate required directional flow through temporary signs prohibiting vehicle exit at the Ithan Avenue portal of the West Main Lot.

Optional inbound or outbound dedicated lane.

Villanova University Traffic and Parking Management Plan

EXHIBIT 1: Potential Application of a Dynamic Messaging Sign for Parking Wayfinding

Site of Overpass: Route 30 East, Villanova PA, facing east on the SEPTA Norristown High Speed Line overpass (note: the bridge was painted blue in August 2013)

Potential Location: On the western side of the bridge, similar to the CLEARANCE sign shown (looking east toward Villanova University)

A sample message is shown below, intended only to illustrate the concept of a dynamic messaging sign for parking. An enlarged image is shown, below right.

Actual message(s) may vary, as may the number of text lines, colors and, accordingly, costs.



Image from Google Earth



See next page for opposing (west-facing) side of overpass

Villanova University Traffic and Parking Management Plan

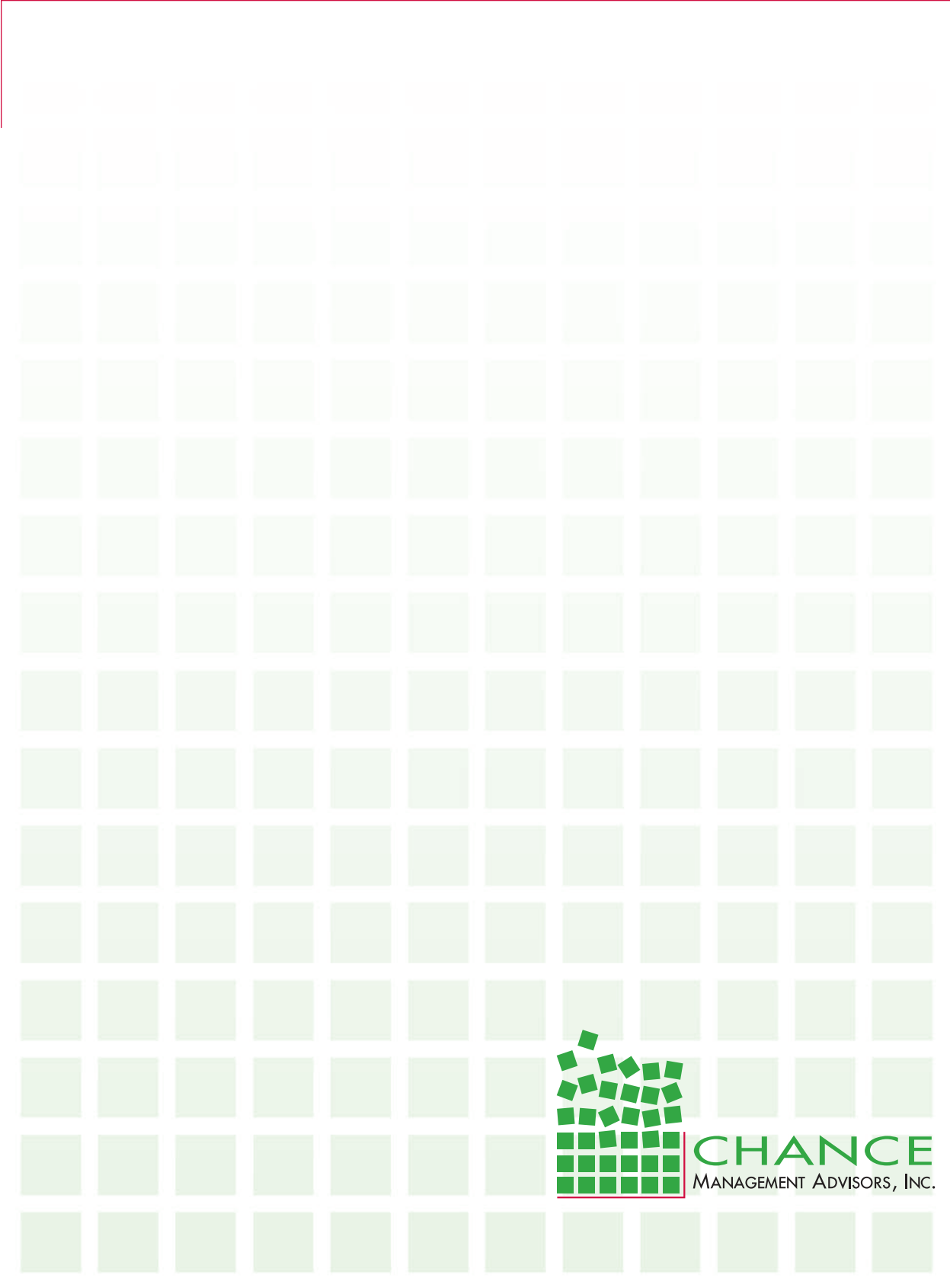
Looking west, the east-face of the overpass has signs for the Blue Route



Image from Google Earth



This photo was taken on 13 August 2013 approaching the Norristown High Speed Line overpass of Route 30, facing east toward campus. Painting was nearly complete.



Parking ■ Transportation ■ Access Management

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