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June 14, 2019

VIA EMAIL

Town of Cortlandt Planning Board
1 Heady Street
Cortlandt Manor, NY 10567

Re: Gasland Cortlandt
Route 6 and Parkway Drive
Town of Cortlandt, New York
MC Project No. 19003182A

Dear Members of the Planning Board:

We have received a copy of the May 22, 2019 memorandum to the Planning Board from Marissa Tarallo, P.E., PTOE and Anthony Russo of AKRF. The following are our responses to the comments contained in their memorandum, together with a copy of the updated Traffic Impact Study, which also includes information requested by the New York State Department of Transportation (NYSDOT) as outlined in their May 31, 2019 email to the Town. This updated report also reflects the elimination of right turns exiting from the site driveway connection to Parkway Drive in response to some initial concerns regarding potential increased traffic on Parkway Drive.

Note that each of the comments from the AKRF memorandum are repeated here and that the responses are numbered to match those in the memorandum for ease of review. Also, note that in addition to coordinating with the Town of Cortlandt, the project review is being coordinated with NYSDOT and will continue to be coordinated with them as part of the Highway Work Permit process.

Projects Along Route 6 Corridor

- Route 6 Traffic Calming and Pedestrian Improvements (from Conklin to Lexington)
- Route 6 and Westbrook Drive Intersection Improvements



Any proposed improvements should be coordinated with these objectives and any other planned work along the corridor based on discussions with NYSDOT.

Response: *As noted in the introductory statement of the memorandum, other planned improvements in the corridor have been identified and the improvements proposed by Gasland in this vicinity will be consistent with those noted. All improvements will also be coordinated with the Town and with the NYSDOT as the Highway Work Permit process proceeds. This work will be consistent with the objectives of the other planned work along the corridor.*

AKRF General Comments

1. On Page 3 and 8 of the TIS, Appendix C is incorrectly referenced.

Response: *The referenced to Appendix C on page 3 and 8 has been modified to reflect the correct reference to Appendix D.*

2. The emergency vehicle preemption system installed as part of the Cortlandt Crossing project should also be included in the discussion of the existing conditions of Route 6.

Response: *The emergency vehicle preemption system discussion has been added to the description of the Route 6 Existing Conditions on Page 3 of the report*

3. Provide justification in the TIS for the use of two different land uses for trip generation purposes.

Response: *The ITE Land Use designations 853 and 945 referencing gas station with convenience store and convenience store with gas pumps respectively, were both referenced in computing the trip generation for the project. Based on the information associated with this facility and information provided by Gasland, as well as their surveys of other Gasland facilities, the trip generation based on Land Use 853 per fueling position is appropriate for the current proposal.*

4. Provide justification for the assignment pattern assumed for the proposed development. For example, why the inbound and outbound travel patterns differ substantially (40 percent of vehicles enter from Parkway Drive but only 20 percent exit to Parkway Drive).



Response: *The assignment distributions used in the initial traffic report were to reflect the original site plan layout with full access to Parkway Drive and that traffic destined to the west on Route 6 would likely use both Parkway Drive, as well as the site main Route 6 access to make left turns to proceed in a westerly direction along Route 6. However, the site plan has been revised to eliminate right turns exiting from the site onto Parkway Drive in response to concerns regarding increased traffic on Parkway Drive. All left turn traffic destined west on Route 6 will now use the main signalized site access driveway on Route 6, which is being reconstructed and upgraded more efficiently to accommodate these movements (see Drawing CIP-1).*

5. Delays and levels of service should be presented by lane group/movement and not by approach as impacts are assessed based on lane groups. For example, Table 2 in Appendix B should show the delays and level of service for the northbound left-turn and shared through/right lane rather than for the entire northbound approach at the intersection of Route 6 and Bear Mountain Parkway westbound on/off ramps and Sinclair gas station.

Response: *In the original Traffic Study, the lane groups and delays for the most part were provided in the summary tables by lane groups and movement and not by approach. With respect to the intersection of the Bear Mountain Parkway westbound ramp and Route 6/Sinclair Gas Driveway, the northbound approach has two lanes for a limited length and the table has now been adjusted to reflect the Level of Service for the left/through movement and the right turn movement separately. Note that the revised traffic report includes this revised Table No. 2, which also identifies any changes in average vehicle delays from No-Build to Build conditions.*

6. Level of service results should be discussed in the report by lane group and impacts should be identified by lane group as the intersection level of service is a weighted average of the approaches and does not address poor operating conditions on individual approaches. Per previous studies conducted in the Town of Cortlandt, impacts should be identified as lane groups operating at mid-LOS D, E or F increasing in delay by greater than 10 percent, or changes in level of service from D to E/F or E to F.

Response: *Comment noted. The summary description presented in the original TIS represented the overall intersection Levels of Service. However, as requested, the text has been expanded to discuss specific individual approaches and lane groups specific to any significant changes in Levels of Service and reflecting Levels of Service D, E, and F conditions. The*



expected increases in delay from No-Build to Build that are greater than 10% have also been identified and are now noted in Table No. 2-R. A reference to that table has been added to the text of the TIS.

7. An analysis of queuing, including comparison of No Build, and With Improvements Conditions should be provided.

Response: *In addition to the delay and Level of Service summary tables, a new table (Table No. 3) has been added to the report, which summarizes the queuing for the various movements for Existing, No-Build, and Build conditions.*

8. Crashes should be summarized by both individual intersections and the roadway segment as a whole. Where the crash rates notably exceed the state average crash rates, the data should be evaluated to determine patterns and potential safety improvement measures.

Response: *The accident data presented in the report has now been stratified and summarized according to crash rates and noted if they exceed the State averages. Any specific safety improvement measures have also been identified in the revised report. See Section II-C of the revised Traffic Study.*

9. Additional details regarding the proposed signal improvements at the intersection of Route 6 and Bear Mountain Parkway should be provided. For instance, the provided signal timing plans show the intersection is presently fully-actuated however actuation is listed as a proposed improvement measure. As actuation and/or coordination improvements are provided as proposed improvements, the signalized intersections in the study area should be evaluated using Synchro Percentile Methodology Delay which is designed to model coordination and actuation in detail.

Response: *The existing traffic signal at Route 6 and Bear Mountain Parkway/Site Access (Signal W-492) is currently fully actuated (see Appendix C of the TIS for the NYSDOT signal plans and timing information). The reference to the actuation improvements in the table was reflective of the reconfigured intersection, including the upgraded pedestrian actuation and other related actuation improvements on the exit driveway, as well as adaptive equipment as initially requested by NYSDOT. The analysis has also been evaluated using the Synchro Percentile Methodology Delay to model the coordination and actuation in detail and the results are summarized in Table No. S-1 in Appendix "B" of the revised Traffic Impact Study.*



10. An alternative analysis which includes allowing the westbound left-turn into the Project's main driveway should be presented. Parkway Drive is currently a local residential roadway which is proposed to accommodate commercial traffic by banning the westbound left-turn lane into the site. This also requires recirculation and additional movements along Route 6 increasing congestion.

Response: *An alternate analysis discussed on Page 10 of the revised Traffic Study has been prepared, which includes allowing Route 6 westbound left turns into the project main driveway (see Appendix G of the Traffic Study). The reason why this was not included in the initial Traffic Impact Study was based on our initial discussions with NYSDOT, it was suggested that we use the Parkway Drive intersection to access the site where there is already a separate left turn lane present on Route 6 westbound. This suggestion was made because there is no ability to provide a full separate left turn lane westbound at the main site driveway due to the constrained roadway width under the Bear Mountain Parkway overpass immediately to the east of the site. The results for this alternative are summarized in Tables No. 2A and 2AR of Appendix "G". The primary difference in the results under this alternative, there are some additional delays on the Route 6 westbound approach due to increased left turns at the driveway.*

11. Based on the crash history along this portion of roadway, providing only a single curb cut on Route 6 at the intersection with Bear Mountain Parkway should be considered which aligns with NYSDOT's access management initiatives.

Response: *The second curb cut on Route 6, which is a channelized right turn entry movement driveway which will be channelized and signed accordingly (see Drawing IP-1). Note that this is a replacement of the existing unrestricted driveway to the site and it was included in the plans to accommodate truck movements for deliveries to the site. This is being reviewed with the Site Engineer to determine if there is an alternate means of accommodating truck deliveries.*

12. With the documented queues on Bear Mountain Parkway Ramp, consideration should be given to a back-queue-detector to trigger the signal at Route 6 to alleviate congestion.

Response: *The back-queue-detector will be incorporated as part of the traffic signal improvements plan if acceptable to NYSDOT.*



13. At the existing Route 6 ATCS system terminates operated from Mohegan Avenue to Jerome Drive, both the intersections of Route 6 and Locust Avenue and Route 6 and Jacobs Hill Road/Parkway Drive would need to be retrofitted with ATCS capability, in addition to the Route 6 and Bear Mountain Parkway intersection, in order to extend the ATCS system if required.

Response: *Current plans are to incorporate the ATCS system at the Bear Mountain Parkway ramp intersection with Route 6 and at Route 6 and Parkway Drive/Jacobs Hill Road. It will be expanded to other locations at the direction of the Town and/or NYSDOT and this work will be coordinated as part of the Highway Work Permit process.*

14. If a double left-turn from the Bear Mountain Parkway eastbound off-ramp to Route 6 is a possible improvement measure, a turning analysis should be conducted to determine the feasibility of this maneuver.

Response: *A turning track analysis for a potential double left turn from the Bear Mountain Parkway ramp is shown on the attached, Figure TT-1.*

15. Any discussions or meetings with NYSDOT should be summarized and included in the Appendix.

Response: *The initial discussions with NYSDOT were held on January 29, 2019 and a copy of the attendance sheet is attached in Appendix H. Any subsequent discussions will also be coordinated with the Town so that representatives of the Town will be present, and any discussions will be documented for future information. Also, note that previous correspondence from NYSDOT, including provision of signal information, crash history is also now included in Appendix E of the revised Traffic Impact Study.*

AKRF Synchro Comments

16. There are discrepancies between the peak hour factor listed in the TMC data summaries and the synchro inputs. For example, at the Sinclair gas station and Route 6 intersection in the PM peak hour.

Response: *The updated analysis now reflects each observed peak hour factor. Note that in the previous analysis, a maximum peak hour factor 0.95 was used in the analysis even though a higher peak hour factor was observed in the*



counts such as 0.98. This was to provide a more conservative analysis of the future operating conditions. The analyses have now been updated to reflect all observed peak hour factors for all locations.

17. There are discrepancies between the heavy vehicle percentage listed in the TMC data summaries and the synchro inputs. For example, at the Sinclair gas station and Route 6 intersection in the Saturday peak hour.

Response: Note that some movements were observed to have no heavy vehicle observed, however in the analysis, a minimum of 2% heavy vehicles was used, again to be conservative and to account for some of the larger observed vehicles such as landscaping trucks. All analyses have been adjusted to reflect the specific heavy vehicle percentages and are included in the revised Traffic Impact Study.

18. Conflicting pedestrians shown in the TMC data summaries should be included in the Synchro analysis.

Response: Conflicting pedestrian movements from the turning movement counts have been included in the revised signalized intersection analysis as noted and the new proposed crosswalks are also considered as part of the improvement conditions analysis.

19. There are discrepancies between the Signal Timing Plan and the Synchro inputs at the intersection of Jacobs Hill Road and Route 6 such as the total splits and the pedestrian inputs. Also, please provide justification as to why the reference phase is at the beginning of yellow.

Response: The original Synchro inputs were based on field observations. Subsequently, the actual Signal Timing Plans were received from NYSDOT and the analyses have now been updated to reflect the current NYSDOT information. The reference phase has been revised to reflect beginning of green.

20. There are discrepancies between the Signal Timing Plan and the Synchro inputs at the Bear Mountain State Parkway Off-Ramp and Route 6 intersection, such as the control type, cycle length, total splits, and pedestrian inputs.



Response: The original Synchro inputs were based on field observations. Subsequently, the actual Signal Timing Plans were received from NYSDOT and the analyses have now been updated to reflect the current NYSDOT information. The reference phase has been revised to reflect beginning of green.

21. Sufficient pedestrian clearance time needs to be provided for the new east crosswalk across Route 6 at the Project Driveway.

Response: The pedestrian clearance intervals have been adjusted to reflect the adequate crossing time for the new crosswalk across Route 6 east of the driveway.

22. Provide the methodology by which roadway grades were obtained from Google.

Response: The approach grades were estimated utilizing the Measurement Ruler feature of Google Earth. These have been updated in the revised Traffic Impact Study based on the Westchester County GIS and the record plan information, which was subsequently received from NYSDOT.

Site Plan and Emergency Access Comments

23. The main driveway to Route 6 is striped as a left-turn only lane and a through lane; however, right turning vehicles are assigned to this driveway. The pavement striping should be absent for this lane or provide through/right-turn designation.

Response: The site plan has been revised to reflect the proposed lane configuration on the reconstructed site driveway approach to Route 6, as well as other details relative to anticipated signal and pedestrian improvements (see Drawing CIP-1).

24. No striping or signage is provided to ban the westbound left-turn movement. Without appropriate signage and delineation, it is not clear this movement is prohibited, and vehicles are likely to make the maneuver. In addition, without a physical barrier to prevent this movement and because the opposing left-turn has protected phasing, the westbound left-turn may occur regardless of signage which would pose a safety concern.



Response: The proposed left turn sign restrictions and other lane utilization information has been added to the concept improvement plans (Drawing CIP-1). Note that a revised detailed signal design plan will be prepared as part of the Highway Work Permit as the project proceeds.

25. Sidewalk should be provided along the site's frontage on Route 6 and Parkway Drive. In addition, the sidewalk should be continued on site to provide a safe connection for pedestrians accessing the convenience store.

Response: The site plan has been revised to include the additional sidewalk requested and a path directing pedestrians to the convenience store has also been striped and added to the site plan.

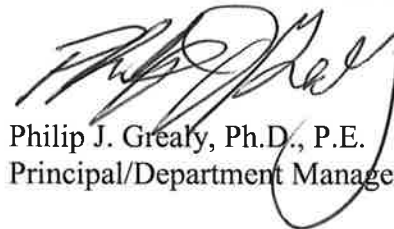
26. Truck turning maneuvers should be provided for all feasible movements to/from the site as well as within in the site for fueling trucks/refuse.

Response: Chazen has updated the site plan set to include truck turning maneuvers to and from the site, including for fueling facilities.

A copy of the updated traffic study and appropriate portions of the revised site plans are included with this submission. If you have any questions regarding the above, please do not hesitate to contact us.

Very truly yours,

MASER CONSULTING P.A.

A handwritten signature in black ink, appearing to read 'Philip J. Greal', is written over the typed name and title.

Philip J. Greal, Ph.D., P.E.
Principal/Department Manager

PJG/ces
Enclosures
cc: