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August 16, 2021

Mr. Daniel Illkiewicz
Planning and Public Works
County of Peterborough
470 Water St;
Peterborough, ON
K9H 3M3

Reference: Proposed Residential Development
Heritage Line, Keene, ON
Traffic Brief - Proposal
Project Nº 2188-21

Dear Mr. Illkiewicz:

Asurza Engineers Ltd. was retained by the developer to undertake a traffic review for the proposed subdivision to be located next to Heritage Line in the Township of Otonabee-South Monaghan, County of Peterborough. The analysis will evaluate the operation of the proposed subdivision to estimate the trips to be generated. The number of trips will be evaluated to determine any impact on the adjacent road.

This letter provides an overview of traffic generation and will determine if the proposed development will generate impacts to the current traffic operations on the adjacent road and intersection.

Background

CR34, also known as Heritage Line is a two-lane (one lane per direction) rural road, with a posted speed of 50 km/h. Within the site area, Heritage Line shows a transition from urban to rural cross-section; north of the proposed entrance, the road shows granular shoulders and ditches for water drainage.

Exhibit 1: *Site Location.*

The proponent is planning to develop a vacant lot of approximately 55,663 m^2 to include 20 single-family detached units. According to the site plan, the site will be served by one access next to Heritage Line. The draft site plan is enclosed at the end of this letter.

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Development Trip Generation and Trip Distribution

Estimation of trips generated by the proposed development were derived from the Trip Generation Manual, 10th Edition, published by the Institute of Transportation Engineers (ITE). The land use which most closely describe the proposed development is 'Single-Family Detached Housing - Land Use 210'.

The trip rates and the estimated numbers of trips to be generated by the proposed development are shown in the following table:

TRIP GENERATION RATES BY LAND USE								
ITE Code	ITE Land Use	Unit of Measure	Weekday AM Peak Hr.			Weekday PM Peak Hr.		
			Rate	In	Out	Rate	In	Out
210	Single Family Detached Housing	Dwelling Units	0.74	25%	75%	0.99	63%	37%

ESTIMATED NUMBER OF TRIPS BY LAND USE								
ITE Code	ITE Land Use	Total Units	Weekday AM Peak Hr.			Weekday PM Peak Hr.		
			Trips	In	Out	Trips	In	Out
210	Single Family Detached Housing	20	15	4	11	20	12	7

Exhibit 2: *Estimation of Trips.*

According to the ITE trip generation manual, single-family detached units had the highest trip generation rate per dwelling unit of all residential uses because they were the largest units in size and had more residents and more vehicles per unit than other residential land uses; they were generally located farther away from shopping centers, employment areas, and other trip attractors than other residential land uses; and they generally had fewer alternative modes of transportation available because they were typically not as concentrated as other residential land uses.

It is estimated that the 20 single-family detached units will generate 15 additional trips during a typical weekday morning peak hour and 20 additional trips during a typical weekday afternoon peak hour.

During the morning peak hour, it is estimated that 4 trips are entering and 11 trips are leaving the site. During the afternoon peak hour, it is estimated that 12 trips are entering and 7 trips are leaving.

From the estimated generation of trips, it is clear that the number of trips during peak hours are very minor to impact the current traffic operations on Heritage Line and nearest intersections.

Discussion

The "Transportation Impact Analyses for Site Development – an ITE Recommended Practice", from the Institute of Transportation Engineers (ITE), provides baseline guidelines to help in determining the need for a traffic impact analysis, one of them is the generation of additional 100 vehicles per hour by any proposed development which can create some traffic issues (i.e. reduction of capacity, extended queues, low level of service).

The publication also indicates that the 100 vehicles per hour should not been seen as a strict threshold for the initiation of a transportation impact analysis. Due to the sensitivity of densely populated areas where the environment includes diverse urban characteristics (i.e. high-rise buildings with commercial areas), many jurisdictions tend to use lower thresholds; these threshold levels may vary among agencies in response to particular local conditions and priorities.

Knowing that the proposed development is very minor and is not located in a densely populated area, it is understood that the number of generated trips does not reach any threshold to require an in-depth traffic analysis. Estimation of trip generation and the distribution of trips were done however to illustrate the minimal number of trips.

Sight Distance

In general, driveways provide physical transition between the site and the abutting roadway. Driveways should be located and designated to minimize impacts on traffic while providing safe entry and exit from the served development. In order to provide a safe entry and exit, adequate sight distance is to be provided. Sight distance is the distance needed by a driver on a roadway, or a driver exiting a driveway or street, to verify that the road is clear and avoid conflicts with other vehicles. Sight lines must be kept free of objects which might interfere with the ability of the driver to see incoming vehicles.

According to Schedule "A" to By-Law No. 2012-26, visibility in both directions to the adjacent road shall be provided from entrances. For 50 km/h posted speed on Heritage Line (CR34), the visibility of 100 m is required. Based on the height of turning vehicle driver's eye of 1.1 m to the top of the approaching vehicles 1.3 m above the pavement, the sight lines from/to the entrance were measured on the field. Although there is a vertical curvature on Heritage Line south of the proposed entrance, the sight distance as measured reach approximately 107 m, which complies with the minimum required. The sight distance north of the proposed entrance exceed substantially the minimum required as noted in the by-law. Therefore, no issues were identified for sight lines.

Auxiliary Lanes Review

The need for auxiliary lanes (right turn taper and left turn lane) on Heritage Line (CR34) at the site access location were reviewed.

The MTO Design Supplement for the Geometric Design Guide for Canadian Roads (TAC Manual) was consulted to evaluate the need for a left turn lane.

The methodology is based on the design speed, advancing volume, opposed volume and percentage of left turns from the advancing volumes. For purposes of the design speed, as general practice has been assumed the following:

- For low posted speeds of 60 km/h or less, increase of 10 km/h.
- For high posted speeds of 70 km/h or greater, increase of 20 km/h.

Therefore, the design speed for Heritage Line is estimated to 60 km/h.

Using the morning and afternoon peak hour volumes, it was determined that a left turn lane is not warranted (see enclosed procedures).

According to the Virginia Department of Transportation warrant criteria for evaluating the need of right turn lane/taper, it was determined that a right turn lane/taper is not warranted (see enclosed procedures).

Conclusion

Due to the very limited scale of the proposed development, the additional trips will impose virtually no impact on Heritage Line; any minor traffic impact as a result of the new trips will be negligible to the current traffic operations.

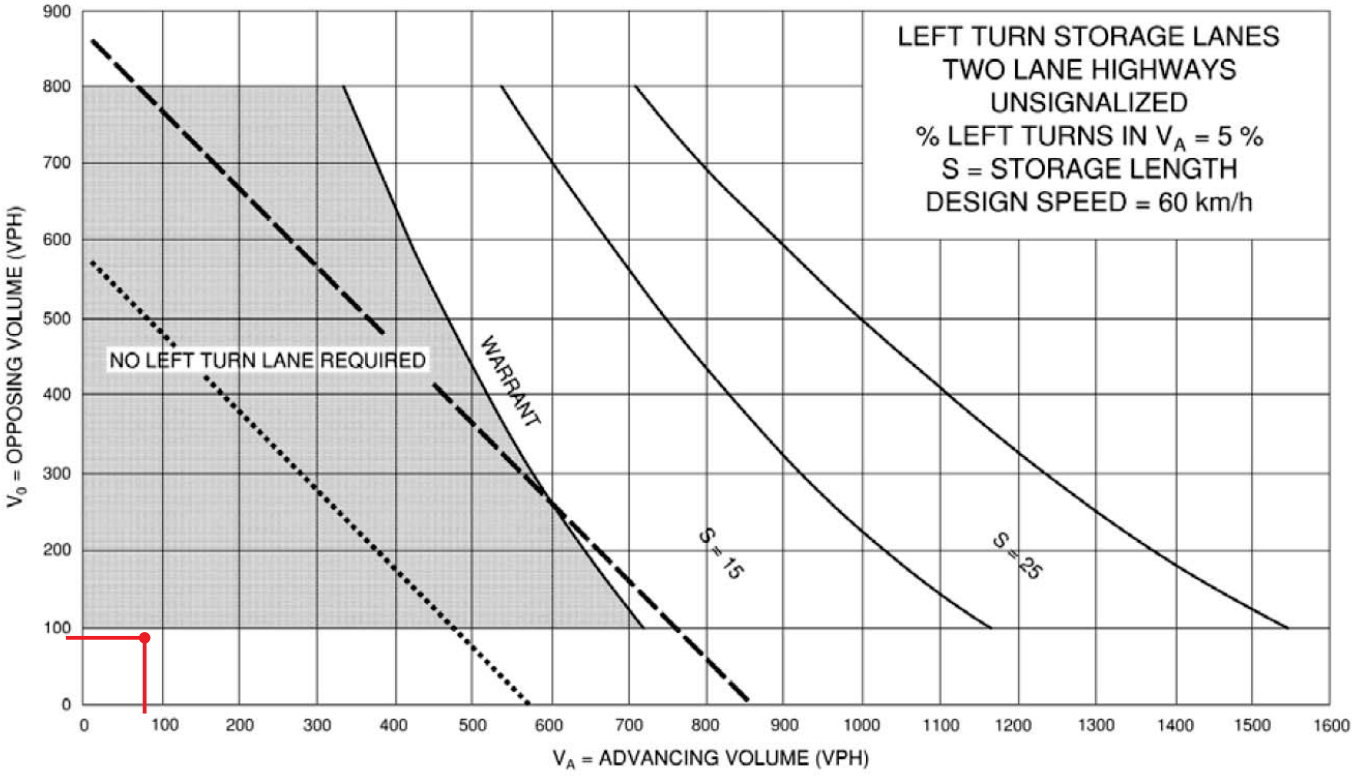
Should you require any further information in consideration of the above, please contact the undersigned.

Sincerely;

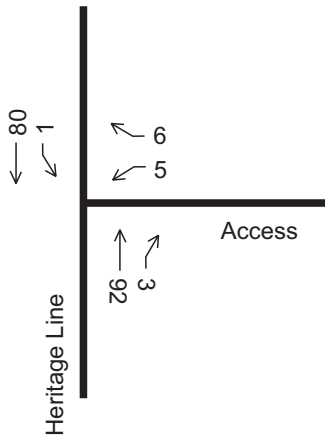
Martin Asurza, M.Eng, P.Eng.
Senior Transportation/Traffic Engineer

Left Turn Lane Review Requirements

Exhibit 9A-6



AM Volumes for 2025



Assumed Design Speed - 60 km/h

Opposing Volumes - 95 veh

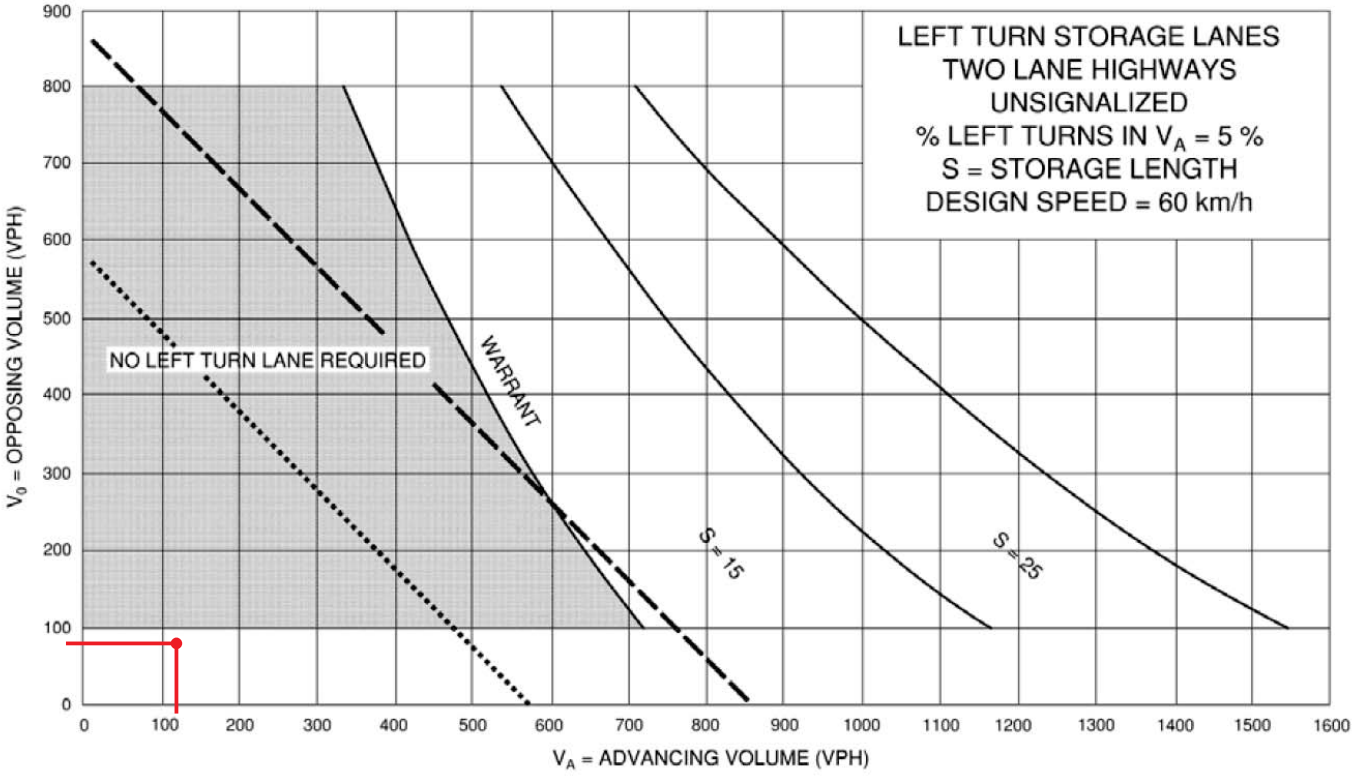
Advancing Volumes - 81 veh

Left Turning Volumes - 1 veh

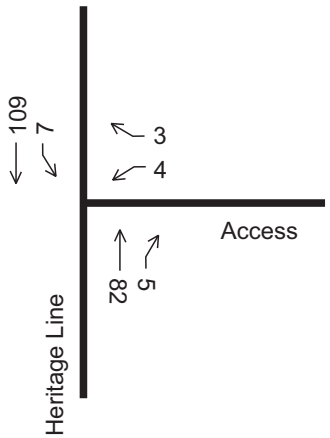
% Left Turning of Advancing Volumes - 5% (actual less than 1%)

Left Turn Lane Review Requirements

Exhibit 9A-6



PM Volumes for 2025



Assumed Design Speed - 60 km/h

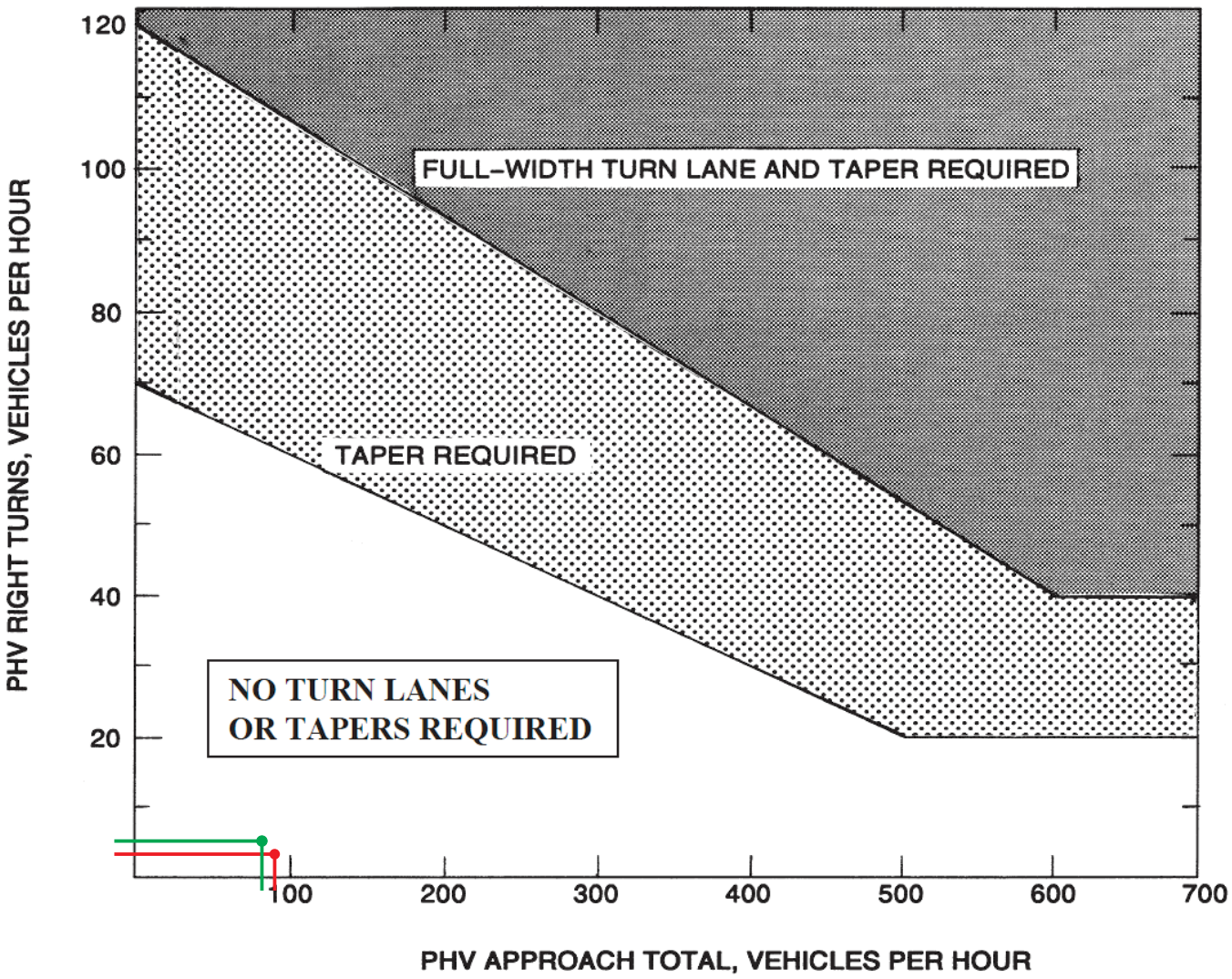
Opposing Volumes - 87 veh

Advancing Volumes - 116 veh

Left Turning Volumes - 7 veh

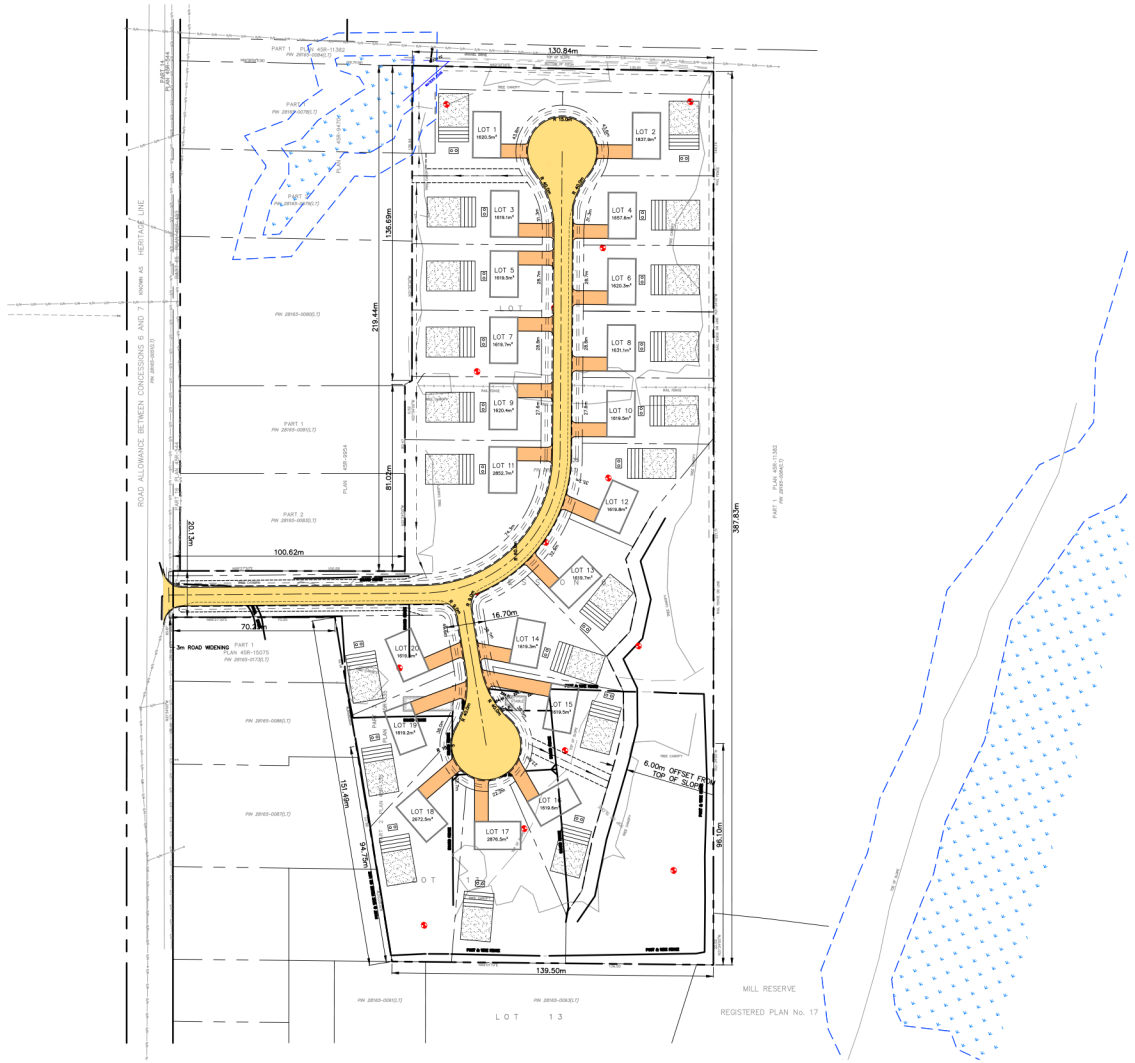
% Left Turning of Advancing Volumes - 5% (actual 6%)

Right Turn Taper/Lane Review Requirements



Peak Hour Volumes for 2025

AM Peak Hour	PM Peak Hour
Total Approach (PHV) - 95 veh	Total Approach (PHV) - 87 veh
PHV Right Turns - 3 veh	PHV Right Turns - 5 veh



SUMMARY TABLE

10985 – HERITAGE LINE, KEENE	
REGULATIONS	PROPOSED
NUMBER OF LOTS	20 LOTS
LOT AREA (MIN.)	0.4 ACRE (1618.73m²)
LOT FRONTAGE (MIN.)	22.0m
AVERAGE LOT DEPTH	49.7m
ROAD AREA	0.90ha
BUFFER AREAS	1.11ha
TOTAL SITE AREA	5.63ha

BM1 – 206.93m
N: 4902490.35m
E: 726461.29m
KEENE PUBLIC SCHOOL, TABLET IN NORTHEAST FACE OF CONCRETE FOUNDATION WALL

TRUE NORTH

KEY PLAN

REVISIONS

No.	Description	Date
1	ZBA – 1ST SUBMISSION	21/09/02

METRIC	Dimensions are in METRES and/or MILLIMETRES unless otherwise shown
LEGEND	TO BE READ IN CONJUNCTION WITH OPSD 100 SERIES

WILLS

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Project Name/Location

HERITAGE LINE RESIDENTIAL

KEENE, ONTARIO

Drawing Title

SITE PLAN

Drawn By: M.B.	SCALE: Horz. 1:1000	Vert. –	
Designed By M.B.	Issue Date: SEPTEMBER 22, 2021		
Checked By: J.D.F.	Project No.: 21–10985	Sht. No.:	
Engineer: – – –	Dwg File No.: 10985–SP	400	

NOT FOR CONSTRUCTION

Printed By: mbell Printed On: September 22, 2021
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