Groot Industries, Inc. Lake Transfer Station

LAKE TRANSFER STATION

LOCAL SITING HEARING

Groot Industries, Inc. Lake Transfer Station

MICHAEL A. WERTHMANN, P.E., P.T.O.E.

- Principal engineer at Kenig, Lindgren, O'Hara, Aboona, Inc., Rosemont, Illinois
- Registered Professional Engineer in the States of Illinois and Wisconsin
- Certified Professional Traffic Operations Engineer (P.T.O.E.)
- Bachelor of Science, Civil Engineering, Michigan State University
- Master of Science, Management, Kellogg Graduate School of Management - Northwestern University
- 23 years of experience in traffic engineering for both the public and private sectors
- Provided testimony on 21 solid waste related projects
- Member of the Institute of Transportation Engineers

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SECTION 39.2
CRITERION 6
TRAFFIC IMPACT

"…the traffic patterns to or from the facility are so designed as to minimize the impact on existing traffic flows."

CRITERION 6 – TRAFFIC

- Criterion acknowledges that, similar to any development, these facilities generate traffic and thereby have an impact on the existing roadways.
- Therefore, the Criterion requires that these facilities and the routes serving them are so designed/operated to minimize the impacts on the existing traffic flows.
- Criterion does not state that the impacts must be eliminated.
- Criterion only requires that these facilities minimize the impacts on the existing traffic flows and does not require these facilities to mitigate the impacts associated with future growth.

METHODOLOGY

- Based on methodology accepted within the industry and with transportation and planning officials.
- Three phase study:
  - Existing conditions: Examined the existing physical and operating characteristics of the roadway system.
  - Facility traffic characteristics: Determined the type / volume of traffic generated by the development and the travel routes.
  - Evaluation and recommendations: Evaluated the impact the development-generated traffic will have on the roadway system.

EXISTING CONDITIONS - TASKS COMPLETED

- Investigated and familiarized with area traffic and roadway conditions
- Discussions with transportation officials:
- Collected information and reviewed data
- Conducted traffic counts at critical intersections /roadways in the site vicinity
- Performed a gap study along IL-120 at Porter Drive

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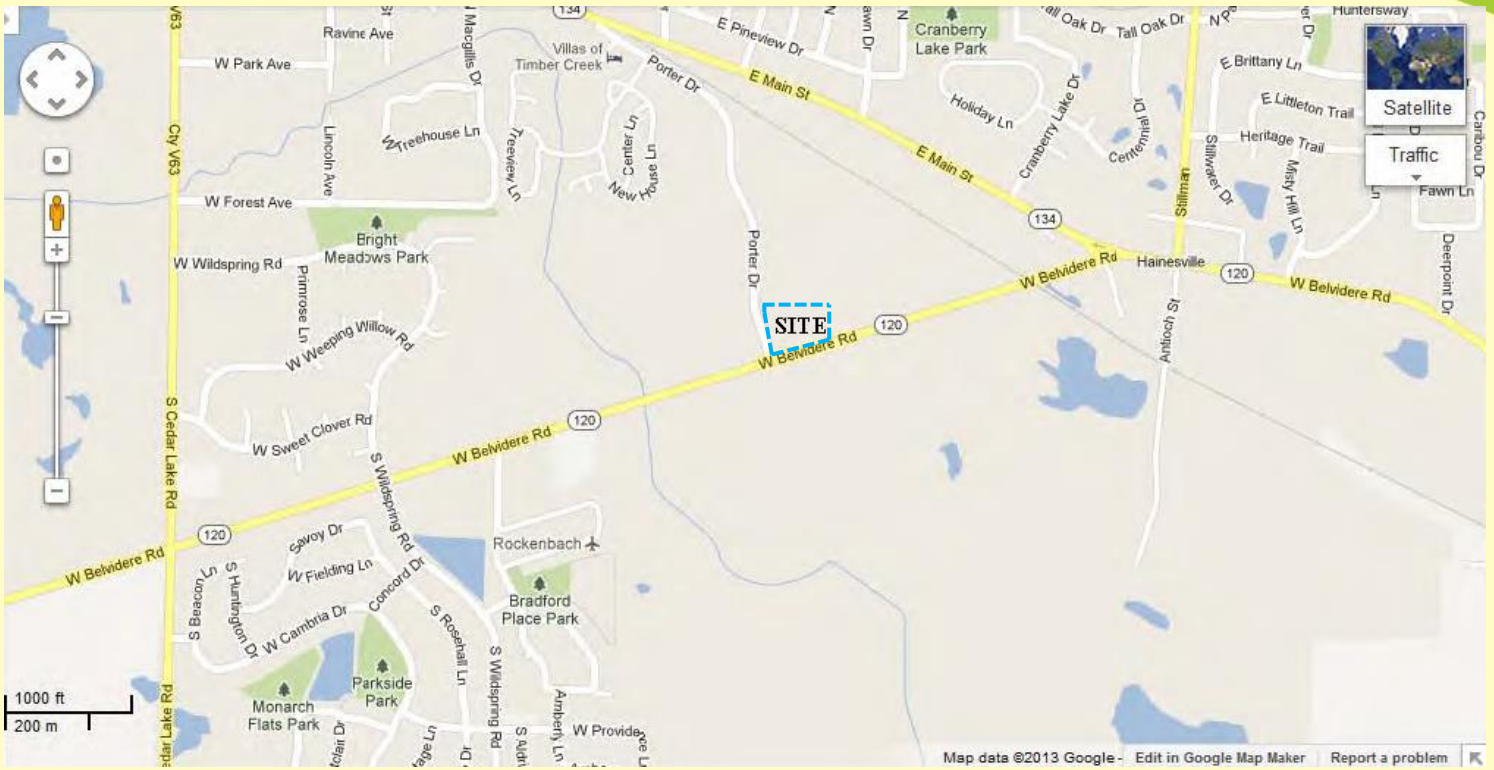
SITE LOCATION



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AREA ROADWAYS – IL 120

- East-west arterial roadway
- Two-lane cross-section
- Separate left turn lanes provided at most intersections
- Posted speed limit of 50 mph west of railroad tracks and 40 mph to east
- IDOT jurisdiction
- Average daily traffic volume of 18,100 vehicles (4.5% of which are trucks)

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AREA ROADWAYS – IL 134

- Southeast-northwest arterial roadway
- Two-lane cross-section
- Posted speed limit varies between 30 and 40 mph
- IDOT jurisdiction
- Average daily traffic volume is 9,800 vehicles (4% of which are trucks)

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AREA ROADWAYS – HAINESVILLE ROAD

- North-south arterial roadway
- Two-lane cross-section
- Separate left-turn lanes provided at most intersections, including at IL 120
- Posted speed limit of 40 mph
- Lake County Division of Transportation jurisdiction
- Average daily traffic volume is 12,300 vehicles

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AREA ROADWAYS – CEDAR LAKE ROAD

- North-south arterial roadway
- Two-lane cross-section
- At signalized intersection with IL 120, is widened to provide a separate left-turn lane, a through lane, and a shared/through right turn lane on both approaches.
- Posted speed limit of 45 mph
- Lake County Division of Transportation jurisdiction

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AREA ROADWAYS – PORTER DRIVE

- North-south collector roadway
- Extends between IL 134 and IL 120
- Two-lane cross-section
- Posted speed limit of 25 mph
- Village of Round Lake Park jurisdiction, Class III truck route

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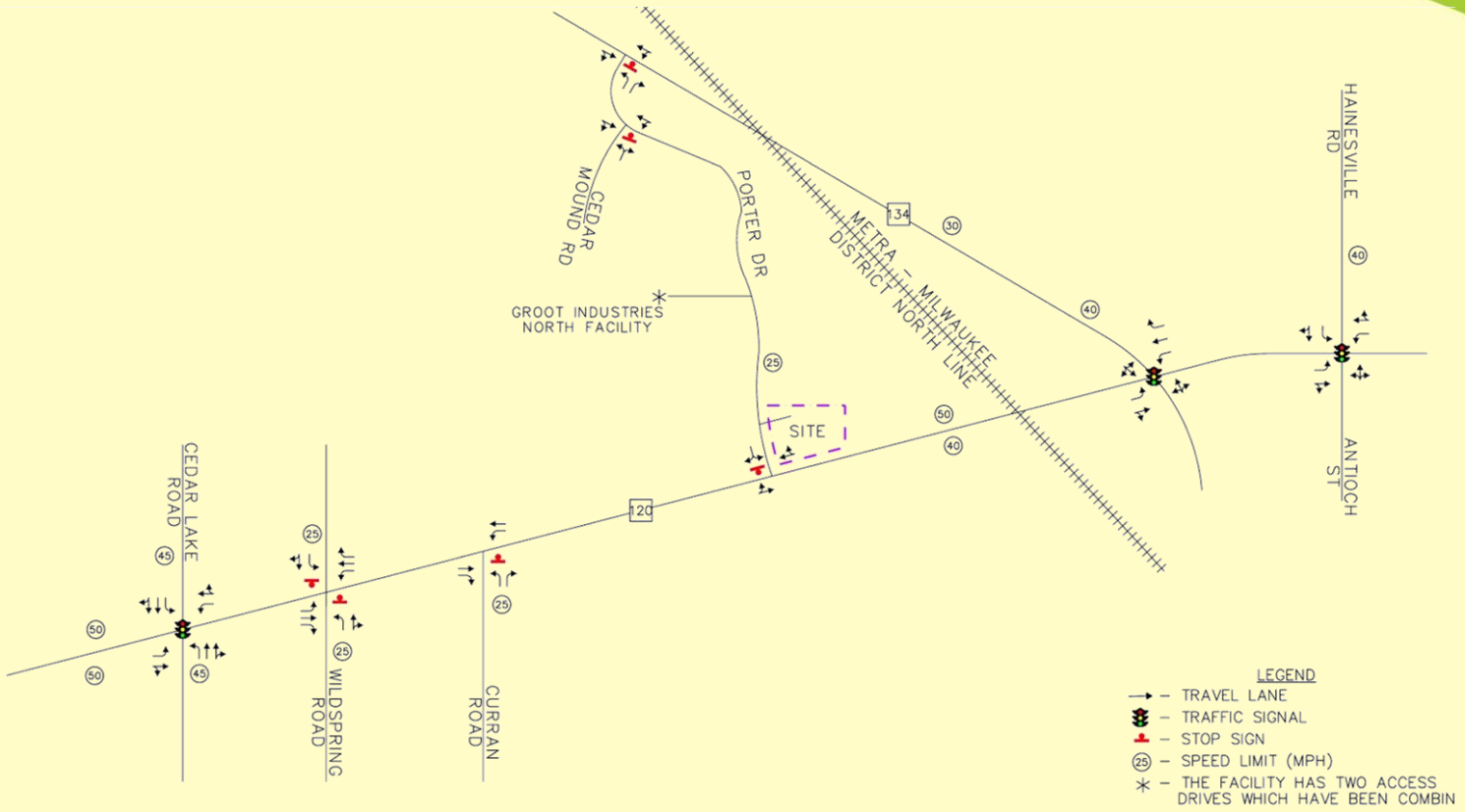
EXISTING ROADWAY CHARACTERISTICS



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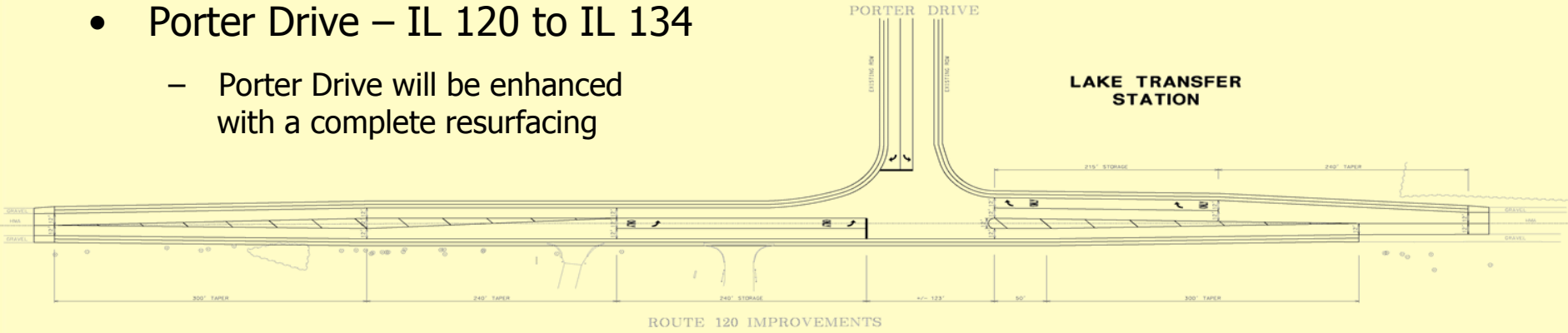
FACILITY PLANNED ROADWAY IMPROVEMENTS

- IL 120 with Porter Drive Intersection
  - IL 120 is proposed to be widened to provide a separate left-turn lane and a separate right-turn lane serving Porter Drive.
  - Porter Drive approach to IL 120 is proposed to be to provide separate left-turn and right-turn lanes serving IL 120
  - Intersection radii is proposed to be increased in order to efficiently accommodate turning transfer trailers
- Porter Drive – IL 120 to IL 134
  - Porter Drive will be enhanced with a complete resurfacing



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OTHER PLANNED ROADWAY IMPROVEMENTS

- IL 120 with Hainesville Road Intersection
  - Addition of westbound to northbound right-turn lane and traffic signal upgrade
  - IDOT has received design approval
- IL 120 Traffic Signal Interconnect
  - Interconnect all traffic signals between IL 83 to IL 134
  - LCDOT has prepared plans
- Cedar Lake Road Reconstruction
  - Reconstruction of Cedar Lake Road from IL 120 to Nippersink Road
  - LCDOT completing Phase I study
- IL 120 Corridor Study
  - Route 120 Corridor Planning Council recommended improving IL 120 to four lanes
  - Construction of a 7 mile bypass from approximately Almond Road west to Fish Lake Road

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TRAFFIC COUNTS

- Conducted morning and evening peak period counts in April and May 2013 at the following intersections:
  - IL 120 with Hainesville Road
  - IL 120 with IL 134
  - IL 120 with Porter Drive
  - Porter Drive with Cedar Mound Road
  - Porter Drive with Groot North access drives
  - IL 120 with Curran Road
  - IL 120 with Wildspring Road
  - IL 120 with Cedar Lake Road
  - IL 134 with Porter Drive
- 24-hour machine counts conducted on Porter Drive just north of IL 120
- Morning peak hour occurs from 7:15 to 8:15 A.M.
- Evening peak hour occurs from 4:00 to 5:00 P.M.

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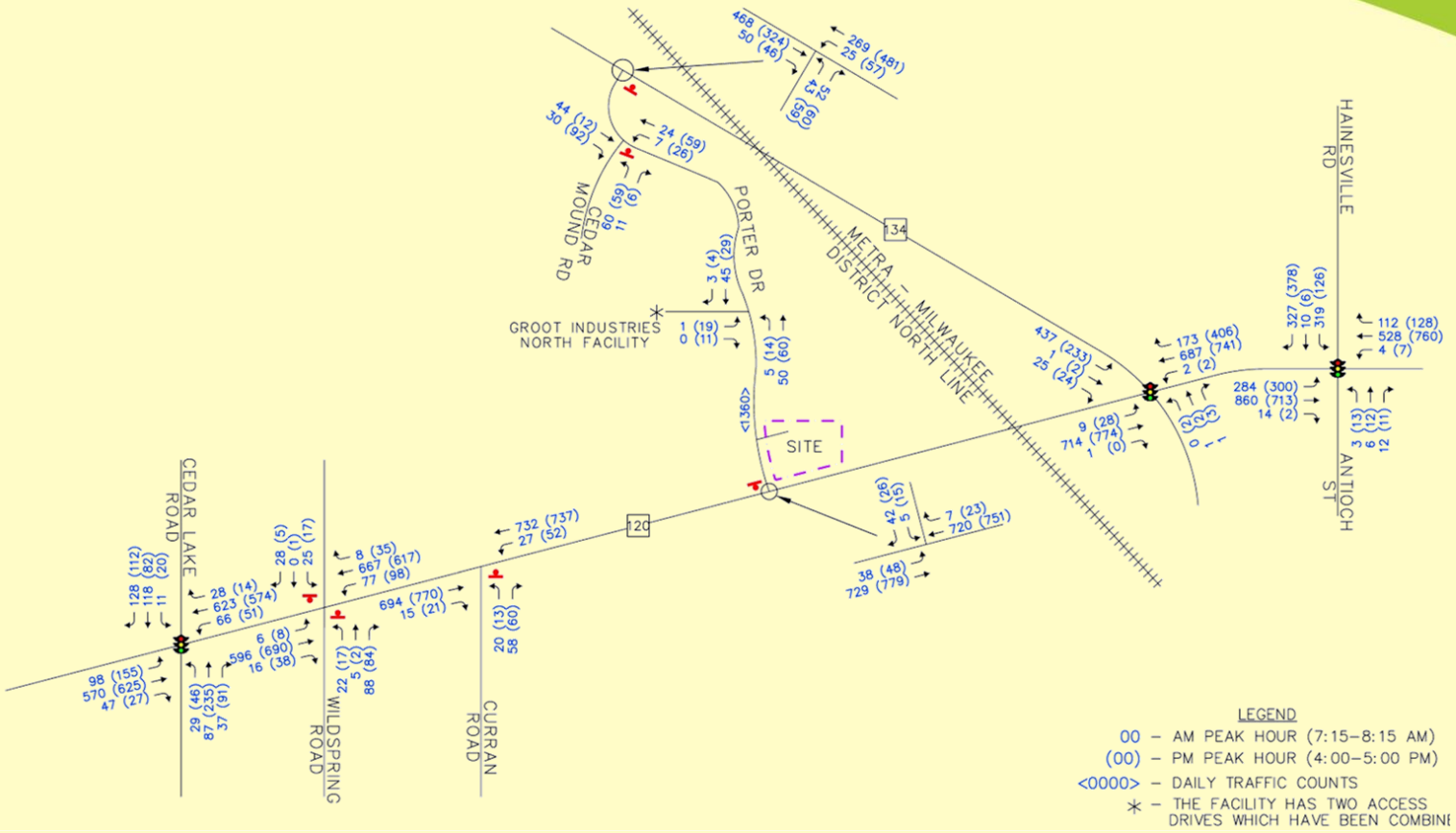
EXISTING PEAK HOUR VOLUMES



FACILITY CHARACTERISTICS – TASKS COMPLETED

- Facility and hauling characteristics
- Directional distribution analysis (travel routes)
- Lake Transfer Station trip generation estimates
- Future traffic assignments

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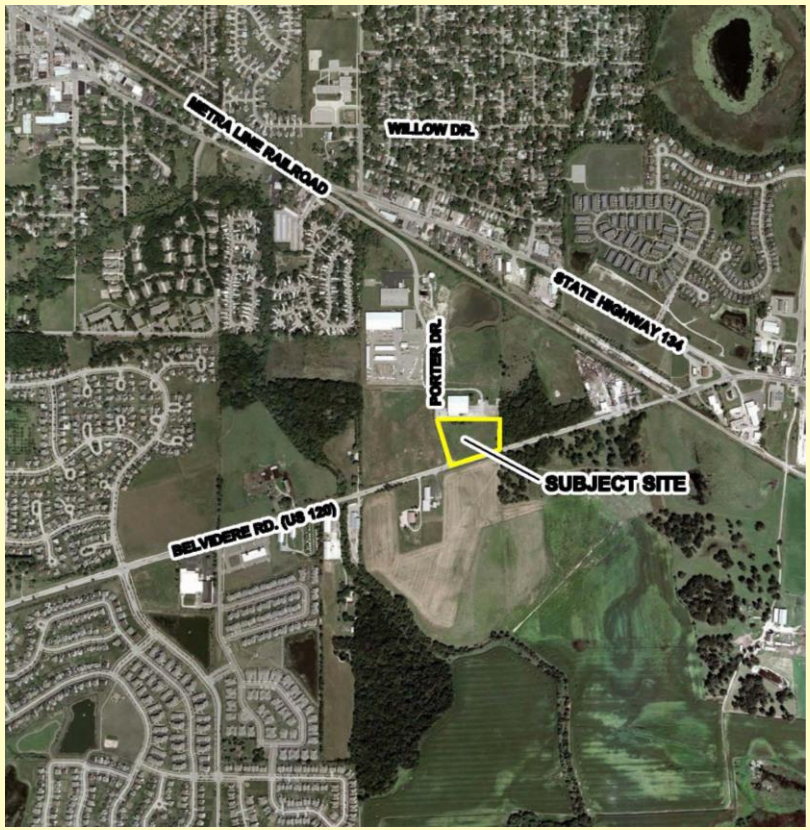
SUMMARY OF FACILITY OPERATIONS AND DESIGN



- 3.9 acres
- Will typically accept 750 tons of waste per day
- One access drive on Porter Drive

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MINIMIZATION OF IMPACTS FROM FACILITY OPERATIONS AND DESIGN

- The volume of traffic generated in any one time period is limited as the proposed transfer station traffic will be distributed throughout the day.
- The peak traffic periods of the transfer station will occur during the late morning and early afternoon, outside of the critical commuter peak hours.
- The site of the transfer station is proximate to the Groot North Facility, minimizing its impact on the area roadways
  - The existing Groot Industries North Facility is a storage/maintenance yard for approximately 65 to 70 trucks and containers that will support the proposed transfer station.
  - These trucks are already on area roadways with mobilization from Groot North, collection, direct haul to regional landfills, and return to Groot North.
  - After delivering waste to the proposed transfer station, many collection trucks will only traverse Porter Drive as they will be parked at the Groot North Facility.

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HAULING CHARACTERISTICS

- Direct Haul Waste
  - Packer (8 tons) and roll off trucks (4 tons)
  - Trucks will access the facility via the arterial roadways – IL 120, IL 134, Hainsville Road
- Transfer/Semi Trailer Waste
  - 24 ton (average payload) trailers
  - Trucks will access the facility via the west on IL 120

MINIMIZING IMPACT THROUGH OPERATING RESTRICTIONS

- Facility truck traffic will be directed to use the IL 120/Porter Drive intersection when accessing the arterial roadway system.
- Between the hours of 7:00-9:00 A.M. and 3:00-5:00 P.M., facility truck traffic will be prohibited from making a left turn from Porter Drive to IL 120.

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ESTIMATED DIRECTIONAL DISTRIBUTION
(WITHOUT TURNING RESTRICTIONS AT PORTER DRIVE)

Direction	Collection Trucks	Transfer Trailers
To and from the east on IL 120 (east of Hainesville Road)	45%	0%
To and from the west on IL 120 (west of Cedar Lake Road)	20%	100%
To and from the north on Hainesville Road	10%	0%
To and from the north on Cedar Lake Road	5%	0%
To and from the south on Cedar Lake Road	10%	0%
To and from the northwest on IL 134 (via the IL 120/IL 134 intersection)	10%	0%
Total	100%	100%

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ESTIMATED SITE TRAFFIC GENERATION

- Anticipated waste intake = 750 tons of waste per day
- Modeled waste intake = 900 tons of waste per day
- 5 to 6 trips per day due to maintenance / service of the facility
- 12 total employees that will work one of 2 shifts

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ESTIMATED SITE TRAFFIC GENERATION

		Morning Peak Hour		Evening Peak Hour		Daily	
		In	Out	In	Out	In	Out
750 Tons of Waste Per Day							
Collection Trucks		9	9	6	6	111	111
Transfer Trailers		2	2	2	2	32	32
Miscellaneous Traffic		0	0	0	0	20	20
	Total	11	11	8	8	163	163
900 Tons of Waste Per Day							
Collection Trucks		11	11	7	7	134	134
Transfer Trailers		3	3	3	3	38	38
Miscellaneous Traffic		0	0	0	0	20	20
	Total	14	14	10	10	192	192

Notes:

- Miscellaneous traffic includes employee traffic and service and maintenance traffic.
- A large percentage of the traffic shown in the table is currently generated by the existing Groot Industries North Facility that will support the proposed transfer station.

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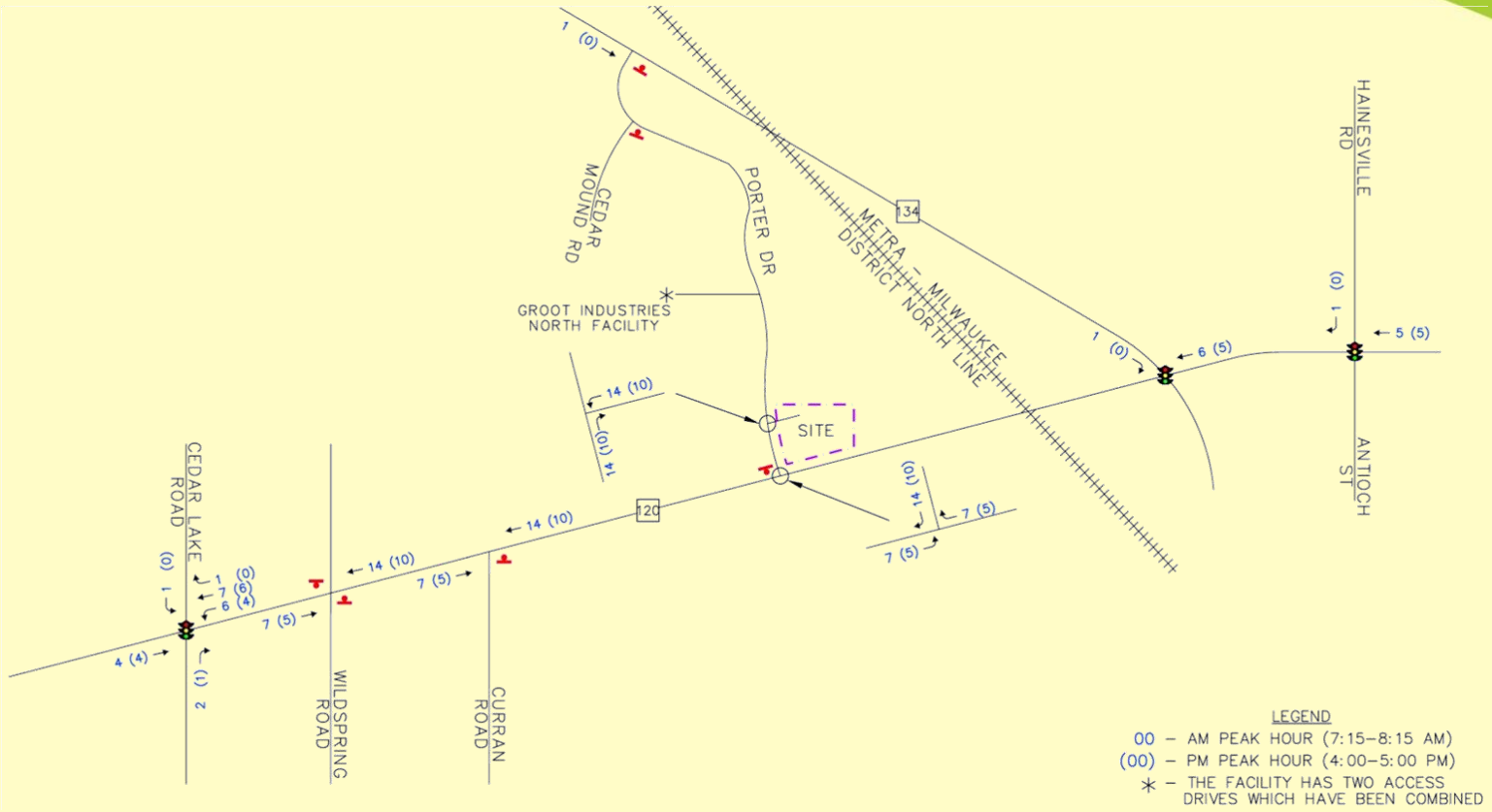
SITE GENERATED PEAK HOUR VOLUMES



SITE-GENERATED PEAK HOUR VOLUMES

- The peak hour volumes assumed for the Lake Transfer Station are conservative (worst case) projections.
  - Assumes transfer station is processing 900 tons per day versus the anticipated 750 tons per day average
  - No reductions were assumed for the existing truck traffic that is generated by the Groot North Facility which will be supporting the operation of the proposed transfer station
  - Assumes all traffic leaving the transfer station will be traveling along the external roadway system when many of these trucks will only be traveling along Porter Drive to be parked at Groot North for the evening

FUTURE GROWTH

- In addition to traffic generated by the proposed Lake Transfer Station, increase in traffic from other projected growth was also considered
  - Groot Industries Eco-Campus
    - » To be located in the northwest quadrant of the IL 120/Porter Drive intersection.
    - » Will process a maximum of 500 tons of construction and demolition materials per day.
    - » Similar to the transfer station, all truck traffic generated by the Eco-Campus will be directed to use the IL 120/Porter Drive intersection and prohibited from making a left turn from Porter Drive to IL 120 from 7:00 A.M. to 9:00 A.M. and 3:00 P.M. to 5:00 P.M.
  - Ambient Growth

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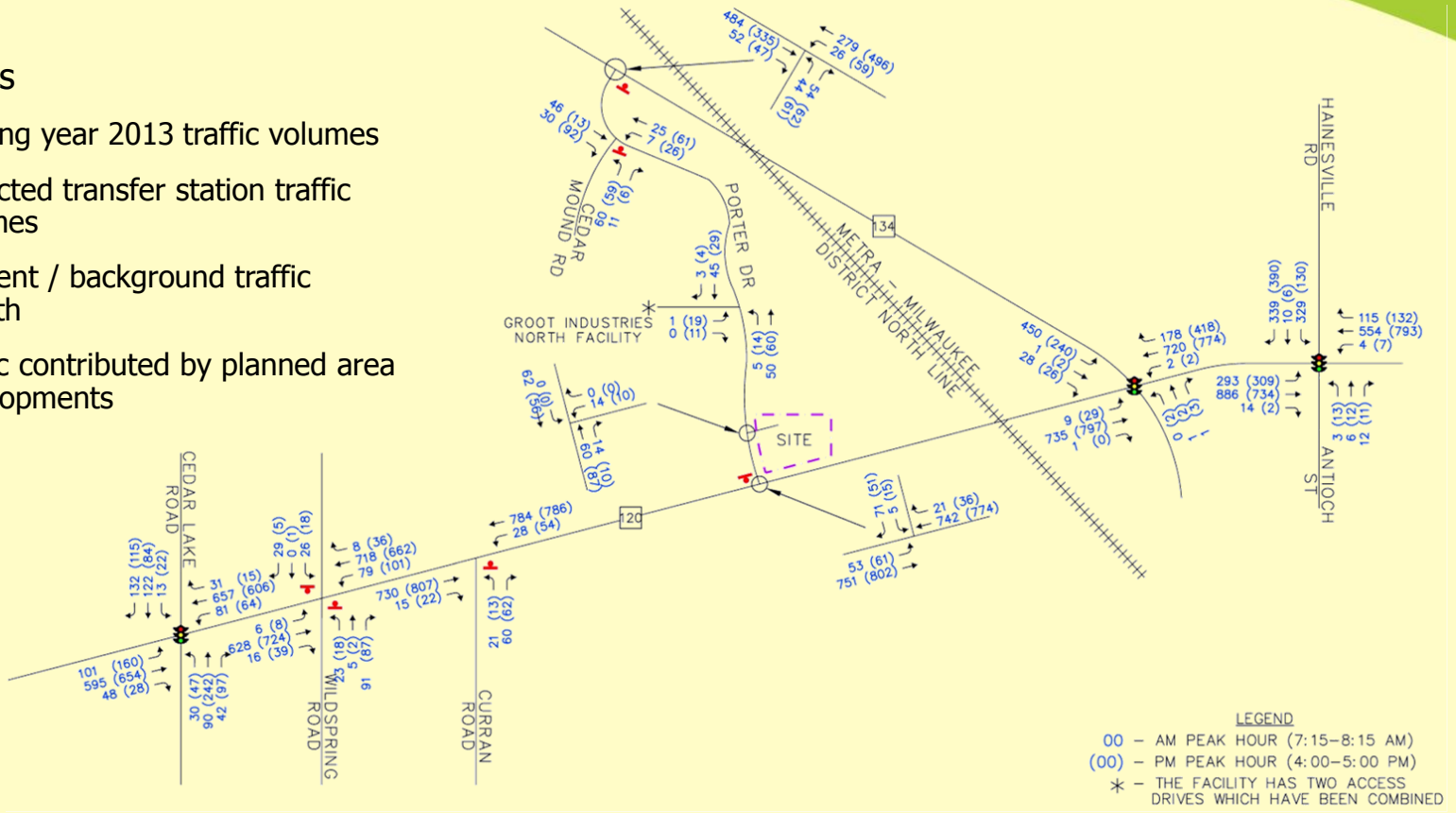
YEAR 2016 PEAK HOUR VOLUMES

Includes

- Existing year 2013 traffic volumes
- Projected transfer station traffic volumes
- Ambient / background traffic growth
- Traffic contributed by planned area developments



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EVALUATION AND RECOMMENDATIONS
TASKS COMPLETED

- Traffic analysis
- Gap study
- Site access review

TRAFFIC ANALYSES

- The traffic analyses were performed using the Highway Capacity Software (HCS)
- The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter grade from A to F based on the average control delay experienced by vehicles passing through the intersection

Service Level A	=	Best traffic flow, least delay
Service Level B	=	
Service Level C	=	
Service Level D	=	
Service Level E	=	
Service Level F	=	Oversaturated conditions, extensive delays

IL 120 & PORTER DRIVE INTERSECTION

- The facility traffic represents an approximate 1.75 percent or less increase in traffic at any of the studied area intersections.
- Significant improvements are proposed with Transfer Station Application
  - IL 120 will be widened to provide a separate left-turn lane and a separate right-turn lane serving Porter Drive
  - Porter Drive approach to IL 120 will be widened to provide separate left-turn and right turn lanes serving IL 120
  - Intersection radii will be increased in order to efficiently accommodate turning transfer trailers

IL 120 & PORTER DRIVE INTERSECTION

- All transfer station truck traffic will be prohibited from making a left turn from Porter Drive to IL 120 from 7:00-9:00 A.M. and 3:00-5:00 P.M.
- With the intersection improvements and the left-turn restriction during the peak periods, all of the movements at this intersection are projected to continue to operate at a good level of service.

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GAP ANALYSIS – IL 120 AT PORTER DRIVE

Gap Interval - (seconds)	Number of Gaps per Interval during the Morning Peak Hour (7:15 A.M. to 8:15 A.M.)	Number of Gaps per Interval during the Evening Peak Hour (4:00 P.M. to 5:00 P.M.)
IL 120 Westbound Gap (Right Turn Out/Left Turn In)		
6.0 to 9.9	31	48
10.0 to 13.9	18	30
14.0 to 16.9	15	9
17.0 to 19.9	3	6
20.0+	31	25

- Based on the results of the gap study, adequate gaps are available in the IL 120 traffic stream to accommodate the traffic turning to and from Porter Drive.

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SITE ACCESS REVIEW

- Access to the facility will be provided via one access drive located on Porter Drive at the north end of the site
- One inbound lane and one outbound lane
- Large radius to accommodate turning truck traffic

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OPINION

It is my professional opinion that the traffic patterns to and from the facility are so designed as to minimize the impact on existing traffic flows, satisfying Criterion 6.

BASIS OF OPINION

- Operation of the Facility
  - The volume of traffic generated in any one time period is limited as the proposed transfer station traffic will be distributed throughout the day.
  - The peak traffic periods of the transfer station will occur during the late morning and early afternoon, outside of the critical commuter peak hours.
- Proximity of the Facility to the Groot North Facility
  - Many of the transfer station collection trucks are already on the area roadway system and generated by the Groot North Facility.
  - After delivering waste to the proposed transfer station, many collection trucks will only traverse Porter Drive as they will be parked at the Groot North Facility.

BASIS OF OPINION

- Proposed Roadway Improvements
  - IL 120 with Porter Drive is proposed to be improved with exclusive turn lanes and increased radiuses.
  - Porter Drive will be resurfaced between IL 120 and IL 134.
- Truck Restrictions
  - Truck traffic generated by the proposed transfer station will be directed to use the IL 120/Porter Drive intersection when accessing the arterial roadway system.
  - Between the hours of 7:00-9:00 A.M. and 3:00-5:00 P.M., facility truck traffic will be prohibited from making a left turn from Porter Drive to IL 120.

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BASIS OF OPINION

- Routes Serving the Facility
  - Truck traffic will travel to/from the facility via the arterial roadway system.
  - Higher classification type roads that have been designed to accommodate truck traffic.
- Design of the Access Drive
  - One access drive located on Porter Drive.
  - Access drive has been designed to serve the facility and will ensure efficient and orderly access.
- Minimal Impact on Roadway Operations
  - The facility traffic represents an approximate 1.75 percent or less increase in traffic at any of the studied area intersections.
  - With recommended IL 120/Porter Drive intersection improvements and truck restrictions the intersection capacity analyses have shown that the traffic generated by the proposed transfer station will have a negligible impact on the existing roadway system.