RLC

26 October 2018

U.S. Army Corps of Engineers
Savannah District
Attn: Ms. Sarah Wise
100 West Oglethorpe
Savannah, GA 31401

RE: Bryan County OEM Site **RLC#: 14-225.1**
Bryan County, Georgia
Regulatory Branch #SAS-2015-00235

Dear Ms. Wise:

In a letter dated 7 September 2018, the U.S. Army Corps of Engineers (USACE) provided comments received during the 30 day public notice associated with the proposed Savannah Harbor-Interstate 16 Corridor Joint Development Authority's (JDA) OEM project located in Bryan County, Georgia. As requested by the USACE, the JDA has reviewed each comment and has prepared this package in response to questions and/or comments received. The following identifies the commenting individual or agency and summarizes and provides a response to each outlined in each letter.

U.S. Fish & Wildlife Service: *In an email dated 18 July 2018, USFWS provided the following recommendation:*
I recommend that all gopher tortoises be relocated off the property. This should be done through coordination with John Jensen of the GADNR. The property should be thoroughly surveyed to be sure all gopher tortoise burrows are located for relocation. Relocation should occur in warm weather months when snakes are less likely to inhabit tortoise burrows. Burrows that tortoises are captured from should be scoped before considered them empty and collapsing them.
Response: As outlined in the permit application package and as recommended by USFWS, the applicant will coordinate with GADNR to relocate all gopher tortoises within the project area prior to initiation of any land disturbance activities.

Georgia Department of Natural Resources-Historic Preservation Division: *In a letter dated 25 July 2018, HPD noted the requirement to comply with Section 106 and indicated that they looked forward to reviewing the compliance documentation for the proposed project.*
Response: In August 2018, Brockington & Associates provided the USACE and HPD with a Phase I cultural resources and archeological report. No impacts to historic or archeological resources are anticipated as a result of the survey. The applicant and their consulting team will continue to work with the USACE and HPD to complete report review and Section 106 compliance.

Georgia Department of Natural Resources-Environmental Protection Division: In a letter dated 3 August 2018 EPD provided the following comments: *With the need for such a large wetland mitigation credit purchase, and understanding that the cost of wetland mitigation credits is escalating, would it possibly benefit the applicant to investigate the areas generally south of the proposed rail spur alignment to see if there might be any upland zones still available for alignment shifts/refinement, even if different/additional property purchase would be required? We do understand that there may be property and geometric alignment constraints in this area, but we want to suggest this as an avenue of investigation that may possibly financially pay for itself if any notable lessening of wetland mitigation costs could be achieved.*

As concerns the railbed to be constructed for this railroad spur, whatever alignment is finally decided upon, we suggest and request that culverts/underpasses be employed in order to benefit wildlife passage and wetland hydrologic connectivity over this rather lengthy approximately 6,000 foot wetland crossing.
Response: The proposed project will be serviced by Genesee & Wyoming, Inc. (G&W) which is a short line railroad company. As part of the project design and review, the applicant and engineering team considered alternative rail routes that meet the service and rail access needs for the project and comply with G&W industrial track construction specification (see attached). Considerations included wetland impacts, habitat conditions, property ownership and fixed rail termini (rail must be located within the center of proposed facility and must connect to existing rail line). Four alternative routes were evaluated, and the following provides a brief summary of each:

Option	Complies with Rail Specification	Avoids Property Acquisition	Wetland Impacts	Stream Impacts	Avoids Mature Habitat
A	Yes	Yes	27.29 acres	0.0 lf	Yes
B	Yes	No	32.32 acres	135 lf	No
C	Yes	No	15.71 acres	130 lf	Yes
D	No	No	22.43 acres	0.0 lf	Yes

Option A was proposed because it complied with rail specifications, avoided acquisition of additional property and avoided mature forested wetland habitat (required impacts to managed pine wetland). Option B was determined suitable and was preferred due to the direct linear access and reduced tract length. However, Option B required greater wetland impacts, required impacts to mature hardwood habitats and required acquisition of additional property from multiple property owners. Option C was determined suitable but required additional property acquisition and during discussions between the JDA and the property owner, the property owner raised objections to the proposed corridor bisecting/fragmenting the property. Option D evaluated installation of the rail line on the northern portion of the property at the request of the applicant. This alternative alignment avoided bisecting the property but does not comply with rail construction specifications (greatly exceeded minimum slope and radius requirements). For these reasons, Option A was determined to be the only practicable corridor for rail access.

As recommended by EPD, the railroad spur will include culverts/underpasses to maintain hydrologic connectivity and wildlife passage. A typical section of the rail bed and culverts is attached.

National Marine Fisheries Service: *In a letter dated 16 July 2018 NMFS indicated the project would not occur in the vicinity of EFH and not future action is planned.*
Response: No response required.

Mr. Corde Wilson-Beacon New Homes/Martin Family Trust: *In a letter dated 1 August 2018, Mr. Wilson provided comments regarding the proposed mitigation plan. Mr. Wilson suggested routing the rail line from the facility through his family's property to reduce wetland impacts associated with the rail alignment.*
Response: Addressed above.

Tracy Walden-Stafford on behalf of the Whispering Pines Neighborhood, Aspen Lane Residence: *In a letter dated 29 July 2018, Ms. Walden requested a public hearing to address some concerns including increased traffic volume on Highway 280, increased danger for residents entering and leaving the neighborhood with the proposed entrance at the top of a hill approximately 1000 feet from the subdivision road, effect on water pressure and quality of the community well, noise from possible tractor trailer traffic in and out of the development, noise from the proposed rail spur, impact on wildlife around whispering pines neighborhood.*
Response: As discussed with the USACE, the JDA has met with the neighborhood to discuss the project and concerns expressed by Ms. Stafford. In addition, the JDA is providing the following response to specific questions:

Traffic Safety: The JDA has met with Bryan County and Georgia Department of Transportation (GDOT) regarding the proposed project. The JDA, Bryan County and GDOT will continue to work together to evaluate and resolve any traffic safety concerns.

Effect of Project on Water Pressure and Community Well: Water service to the proposed facility will be provided by Bryan County and the project will not have an impact on water pressure nor water quality of the community well.

Noise from Tractor Trailer Traffic and Rail Spur: Highway 280 is a heavily used State Highway and there will be an increase in truck traffic following completion of the project. However, to aid in the overall reduction of noise impacts, the project will consider design features such as vegetated buffers, constructed berms, etc. within the project area. The proposed rail spur will not have a noise impact as the closest point of rail within the site is over one mile from the neighborhood and proposed rail access is located three miles east of the neighborhood.

Impact on Wildlife: As with any development, this project will result in the loss of managed pine plantation which is used by a wide variety of wildlife species common for Bryan County however, the project will not impact federally listed threatened/endangered species and much of the wildlife currently using the site will continue to use green spaces within the development upon project completion.

Georgia Environmental Restoration Association: *In a letter dated 3 August 2018, GERA provided a series of comments regarding the proposed wetland and stream compensatory mitigation plan*.
Response: The JDA will provide compensatory wetland and stream mitigation in accordance with *SAVANNAH DISTRICT, US ARMY CORPS OF ENGINEERS, REGULATORY GUIDELINES TO EVALUATE PROPOSED MITIGATION BANK CREDIT PURCHASES IN THE STATE OF GEORGIA.* Compensatory mitigation will be provided in the form of wetland and stream mitigation credit purchase from USACE approved mitigation banks.

David E. Deason: *In a letter which was not dated, Mr. Deason provided comments regarding the proposed wetland and stream compensatory mitigation plan.*
Response: Addressed above.

Forbes Buck/Enfoque Consulting*: In a letter dated 3 August 2018, Mr. Buck provided comments regarding the proposed wetland and stream compensatory mitigation plan.*
Response: Addressed above.

Mr. Joseph V. Usher: *In two letters (one dated 3 August 2018 and a separate letter which was not dated), Mr. Usher provided comments regarding the proposed wetland and stream compensatory mitigation plan.*
Response: Addressed above.

AA Shaw Mitigation Bank/Mr. Joseph V. Usher: *In a letter dated 29 July 2018, Mr. Usher provided comments regarding the proposed wetland and stream compensatory mitigation plan.*
Response: Addressed above.

Mr. Brandon Smith/Yam Grandy Mitigation Bank: *In an email dated 2 August 2018, Mr. Smith, on behalf of Yam Grandy Mitigation Bank provided a series of comments regarding the proposed wetland and stream compensatory mitigation plan.*
Response: Addressed above.

Southern Environmental Law Center (SELC): *In a letter dated 3 August 2018, SELC provided comments regarding the permit application and proposed project.*

Comment: *The Corps should find the present application "unrealistically speculative" as well.*

Response: This project is not speculative, and the project purpose is clearly and narrowly defined. The purpose of this project is to obtain a USACE Section 404 permit to facilitate the construction and development of an OEM site. The overall project purpose is to provide a pad ready OEM site which complies with all nine site criteria discussed within the permit application and can support a manufacturing facility. More specifically, the project is proposed to support an automotive OEM site.

A project which could not define the proposed land use would be speculative. For example, a project which proposes to obtain a permit for development where "development" is not defined would be speculative. Evaluation of a project requires that the site use be defined because specific types of developments require specific types of designs to comply with industry standards. A single-family residential subdivision design is different than multifamily. Commercial office space requirements are different than commercial flex space or commercial retail. Requirements for industrial manufacturing are different than industrial sites supporting distribution. Because the use is clearly and narrowly defined and because the site plan has been developed to comply with industry standards, the project is not speculative.

Comment*: A permit application cannot be based on a hypothetical tenant.*
Response: As documented in the permit application and as further discussed with the USACE, the future tenant will be an OEM auto manufacturer and proposed project has been designed to satisfy the requirements for that specific tenant type. This would be similar to a development of a warehouse site designed to satisfy the needs of a distribution company, a residential subdivision designed to satisfy the need of a future lot and home owner, a commercial retail facility designed to satisfy the needs of big box anchor tenant and supporting smaller retail tenants, a hotel designed to satisfy the needs of a future patron, etc. In each of these instances the name of the distribution company, the name of the retail company, the name of the specific home owner, or the name of the hotel guest is not known but project scope and purpose are clearly defined and not hypothetical. For the same reason, the proposed project is not hypothetical.

Comment: *As the Corps regulations provide, "[t]he application must be signed by the person who desires to undertake the proposed activity (i.e., the applicant) or by a duly authorized agent." Thus, unless the Applicant intends to bulldoze the site and fill the wetlands on the site, for this and other reasons, the Corps cannot issue a permit. The Corps must wait until the Applicant attracts a potential tenant.*
Response: The application has been signed by the Savannah Harbor-Interstate 16 Corridor Joint Development Authority (JDA) and all entitlement work will be completed by the JDA. Site work will be completed following site selection by an automotive OEM company.

Comment: *How can one do avoidance and minimization, cumulative impacts, and alternatives analyses if there is no concrete plan to consider?*
Response: The site design and facility layout are based on standard automobile OEM site requirements and all components of the plan are concrete, factual and mandatory when considering a typical OEM project. OEM facilities will typically require management and commercial facilities including corporate offices, a visitor's center, a customer experience center, a training center, etc. Manufacturing elements are expected to include the press building, fabrication building, paint building, product completion building and special products building. The distribution elements will most likely include the train yard, truck yard, and completed product yard. The employee services component will probably include a cafeteria, medical center, employee parking, training center, and the central office. The storage component will likely include the central storage building and liquid storage building. The quality facilities will potentially include a product testing area, testing station and other miscellaneous buildings required for quality assurance support. The final components are expected to include waste facilities, security facilities such as the guard house and fire house, the utility facilities including gas, electric and water, and supplier facilities. Lastly, facility orientation on any OEM site with Interstate or Highway frontage will parallel the road and will be designed to accommodate standard operational and production flow (i.e. the paint shop is not located at the beginning of the production line).

To demonstrate the size and scope of these facilities, five existing manufacturing facilities from various locations across the southeast were overlaid on the project site. While the configuration varies (primarily due to topography), the exhibits clearly justify the proposed project's size and scope.

Comment: *What the applicant is asking the Corps and the public to do is assume that any future tenant would build its facility with the same footprint as the fictional plan included in the application. It is one thing to analyze a proposed project where there is a potential tenant that has made some commitment to building on the site. It is entirely another thing to seek approval for a permit when there is no potential tenant considering the site.*
Response: The proposed project is not fictional. The JDA has applied for a 404 permit to facilitate development of an automobile OEM facility. The JDA is not asking the USACE nor the public to assume anything. The proposed project includes a site plan that is consistent with industry standards (as addressed above) and any change in jurisdictional area impacts as a result of a revised site plan will require USACE review and modification of the permit.

Comment: *If the Applicant is intent on securing a permit for the site, it must first identify a tenant that has a specific plan to use the site.*
Response: As documented in the permit application and as further discussed with the USACE, the future tenant will be an OEM auto manufacturer and proposed project has been designed to satisfy the requirements for that specific tenant type. As previously discussed, this would be similar to development of a warehouse site designed to satisfy the needs of a distribution company, a residential subdivision designed to satisfy the need of a future lot and home owner, a commercial retail facility designed to satisfy the needs of big box anchor tenant and supporting smaller retail tenants, etc. In each of these instances the identity of the distribution company, retail company and home owner are rarely known.

Comment: *As the Corps regulations provide, "(1) The application must include a complete description of the proposed activity including necessary drawings, sketches, or plans sufficient for public notice (detailed engineering plans and specifications are not required); the location, purpose and need for the proposed activity." Although the Applicant's application does include many drawings, sketches, and plans, they do not discuss any activity that might happen on the site. They describe a fictional rendition of an OEM facility that has been drawn to fit on the property. That is not what the Corps means when it says a "complete description of the proposed activity." The fictional OEM plan will never get built whether the permit is granted or not.*
Response: Addressed above.

Comment: *Because the Applicant submitted a premature application, the Corps and the public cannot determine whether wetland impacts could be avoided or minimized. If the Applicant provides nothing more than a fictional rendition of a generic facility, there is no way that the Corps or the public can determine whether wetland impacts can be avoided or minimized. According to the Applicant, a suitable site can be no smaller than 1,500 acres. App. 7. The application site is over 1,944 acres. The proposed wetlands impact to the site is 92 acres. It is difficult to believe that in the 444 extra acres, the Applicant could not carve out 92 acres of wetlands and thus avoid destroying them. The 404(b)(1) Guidelines require as much.*
Response: Acreage of impact is not relative to acreage of site. For example, development of a 100 acre tract may only require 0.2 acre of wetland impact while development of a 4 acre tract may require 2.3 acres of wetland impact. The land use and location of wetlands dictates required wetland impacts. Residential developments can often avoid jurisdictional area impacts because residential lots are small, and roads, utilities and lot layout can be designed to meander through a track to avoid wetland areas. That is not the case with industrial sites and manufacturing facilities where a single building footprint alone can be greater than 50 acres. If the additional 444 acres referenced by SELC consisted of a large pod of contiguous upland and the 92 acres of wetland was only on the perimeter of a square or rectangle, avoidance of impacts may be feasible. However, due to the size of the proposed manufacturing facility and operational configuration, avoidance of wetland impacts is not feasible.

Comment: *Furthermore, if a specified plan were available, a more refined analysis could be performed to determine whether any additional avoidance or minimization could be done. But since the fictional rendition is not based on reality, there is no way that the public or the Corps can discuss any beneficial tailoring of the site plan. If the plan*

were real, the Corps and the public could suggest changes to the proposed site plan. For instance, could the tenant include some multistory building and thus decrease the footprint of the facility?
Response: A specific plan has been provided and no public comments were received recommending changes to the proposed facility/building layout. We expect many of the corporate facilities and operational support facilities will be multi story.

Comment: *Unless the Applicant performs a genuine avoidance and minimization analysis, which it cannot in the current situation, the Corps cannot issue this permit.*
Response: The permit application package includes a complete 404(b)1 analysis which complies with regulatory guidelines.

Comment*: Moreover, a careful examination of the fictional rendition shows that many of the wetlands impacted on the site could be protected if building footprints, parking lots, and rail spurs were realigned. But again, how can one have a useful conversation about such realignments? Ultimately, any future tenant's facility may look much different than the facility included in the application. It is in the interest of the Applicant. By doing so, the Applicant can provide greater flexibility to any future tenant. The tenant may decide to spread out its facility if it already has authorization to fill wetlands that would otherwise have gotten in the way. In this way, a future tenant could, in effect, circumvent avoidance and minimization.*
Response: The project avoids over 200 acres of wetland within the project area. More importantly, the project area/project limits were established to exclude and protect hundreds of acres of wetland adjacent to Black Creek. Clearly, the interest of the applicant is not "to seek authorization to fill as many wetlands on site as possible". Otherwise, a far greater acreage of wetland impact would be associated with the project. In addition, there is absolutely no incentive for the future tenant to "decide to spread out its facility if it already has authorization to fill wetlands that would otherwise have gotten in the way" for several reasons. First, the JDA is committed to sound land planning that promotes environmental stewardship and economic growth. Second, a manufacturing facility functions far more efficiently the closer the facilities are to each other. Third, site development costs associated with design fees, contractor fees, land clearing, stumping, root raking, earth moving, filling, grading, infrastructure installation, material cost associated with concrete, asphalt, steel, copper, pipe, contractor cost, design fees, logistics, and thousands of other considerations are far greater incentives for minimization and compaction of facility footprint. One would be misguided to believe or suggest that the 404 regulations are all that limits a project's size and scope.

Comment: *Also, it is not clear whether storm water discharged into wetlands would be sufficiently treated by any storm water ponds on the site. Such discharges could have a highly detrimental impact on these wetlands. Oil, grease, pesticides, and fertilizers could flow into the wetlands from the roofs, lawns, roads, and driveways throughout the site. Because many of the wetlands are connected to the marsh, the contaminated storm water would also flow into the marsh. These wetlands impacts must be considered in the permit process and avoided and minimized if possible. Because the project plan is fictional, there is no storm water plan that can be analyzed. Thus, the Corps cannot consider the indirect impacts of storm water on any wetlands or other waters on the site. In light of this, the Corps cannot issue this permit.*
Response: The proposed project will comply with all state and local stormwater requirements including treatment and detention.

Comment: *The Applicant does not sufficiently discuss cumulative impacts in its application. This is not surprising considering that the application does not contain a definite plan. In preparing its cumulative impact analysis, the Applicant must consider impacts to waters that have happened in the past, at present, and that could reasonably happen in the future. The proposed fill of this project cannot be viewed in isolation: the incremental impacts of this action must be considered in concert with the impacts of previous action on neighboring property, in addition to reasonably foreseeable future actions. In addition, the application does not address the cumulative impacts of development in this location on the watershed and habitat corridors that extend from the site downstream to the Ogeechee River. Thus, the Corps cannot issue this permit.*
Response: Section 404 of the Clean Water Act does not require an applicant to discuss cumulative impacts. The only reference to "cumulative" within the law is "(e)(1) In carrying out his functions relating to the discharge of dredged

or fill material under this section, the Secretary may, after notice and opportunity for public hearing, issue general permits on a State, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if the Secretary determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal **cumulative** adverse effect on the environment." Additionally, 404(b)1 Guidelines do not require a discussion of cumulative impacts for an OEM manufacturing facility. Rather, the guidelines require evaluation of the degree of effect that a proposed disposal site (associated with a dredging operation) will have, individually and cumulatively, on physical substrate, water circulation, fluctuation, and salinity, suspended particulate/turbidity, and aquatic ecosystems and organisms.

Comment: *Without a definite plan for any future tenant, the Corps cannot evaluate the practical alternatives for that hypothetical tenant. Such a tenant may not require a rail spur or a nearby airport. If these, or other "requirements," were not specified in the application, many other alternative sites with fewer environmental impacts may be identified. By listing specific criteria for potential future tenants, the Applicant has artificially constricted the sites that would ultimately be available to potential tenants.*
Response: As indicated in permit application an OEM site typically requires the following:

- Plant site must be greater than 1000 acres to accommodate all elements of operation and to allow for future expansion beyond the initial investment.
- Expansion opportunities in the general vicinity must be available to support suppliers and other operations.
- Plant site must be adjacent to a major interstate for ease of access to inbound and outbound logistics and to provide visibility to facility.
- Plant site must be rail served for ease of access to outbound logistics and freight links to seaport.
- A Roll-on/Roll-off (RoRo) and Deep-Sea Port must be within 50 miles for fast access to freight export services to the international market place (i.e. Europe and Asia).
- A significant airport must be within 50 miles of the plant for quick access to airfreight and corporate executives.
- Water and electricity services must be suitable to support manufacturing operations.
- The site must be within 30 miles of a major population (200,000+) to meet the workforce requirements.
- A technical college must be within 30 miles for continued availability of skilled workforce.

We believe that all the components outlined above are critical to the success of the facility and no one requirement listed above is more or less important. To suggest that rail or airport access is not required is equivalent to omitting the workforce requirement.

Comment: *Several potential tenants have rejected the site. Instead of trying to attract smaller facilities to the site, the Applicant is applying for a permit that could lock the Applicant in to providing space for very large prospective tenants only, such as auto manufactures. If the permit were granted, it would be based on the needs of such a tenant. If a smaller tenant wanted space that had a different overall project purpose, the permit authorization could not be used. One reason for this is that a smaller tenant could more easily use smaller sites in the area. The practical alternatives analysis would differ dramatically from the practicable alternatives provided in the application.*
Response: The Savannah Harbor-Interstate 16 Corridor Joint Development Authority (JDA) was established in 2014 through resolutions of the County Commissions of Bryan, Bulloch, Chatham, and Effingham Counties. The purpose of creating the JDA was to allow the four counties to work together on economic development projects of regional significance. These types of projects often require multijurisdictional coordination to prepare and market land resources and workforce. In addition, these projects offer possibilities of large job creation and capital investment to the region, as well as the chance for support projects to locate in other sites in the region.

The economic development agencies in the four counties work together to market the region and respond to projects of regional significance, with the goal of helping the four-county region locate a project to an appropriate site in our area.

The development authorities working within the JDA have years of experience working large economic development projects. This experience helps them to determine the specific needs of each individual prospect and propose properties which meet the site specifications for that particular prospect. Companies considering smaller sites would be directed to sites within each of these communities which meet their specific need. Th JDA selected this site for the development of an OEM facility and will not market this site to a prospect who is not an OEM manufacturer.

Comment: *In addition to the criteria in the 404(b)(1) Guidelines, the Corps also bases its decision to issue Section 404 permits on an evaluation involving the following criteria: "the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest." In making the public interest evaluation, the Corps balances the benefits that are reasonably expected to be generated by the proposal against the reasonably foreseeable costs. The district engineers must examine a number of factors in making this analysis including: water quality, wetlands, historic properties, land use, fish and wildlife, and conservation.*
Response: All public interest factors have been evaluated as part of the overall project.

Comment: *The Corps must specifically take into account wetlands in conducting the public interest review. As the Corps regulations provide, "most wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest." The regulations go on to state that no proposed discharges into wetlands can survive the public interest test unless the benefits of the proposed alteration outweigh the damage to the resource.*
Response: The permit application package identifies specific wetland impacts associated with the proposed project and as noted above, the applicant completed an extensive review of habitats within the property. During planning, the applicant specifically designed the project to avoid the productive and valuable wetland associated with Black Creek. With regard to public interest, the proposed project will have widespread regional public economic benefit. While this alone satisfies the public interest, the JDA has provided a full alternative site analysis and avoidance and minimization review to satisfy the requirements of the 404(b)1 Guidelines.

We appreciate your assistance with this project. If you have any questions or require additional information, please do not hesitate to contact us at (912) 443-5896.

Sincerely,

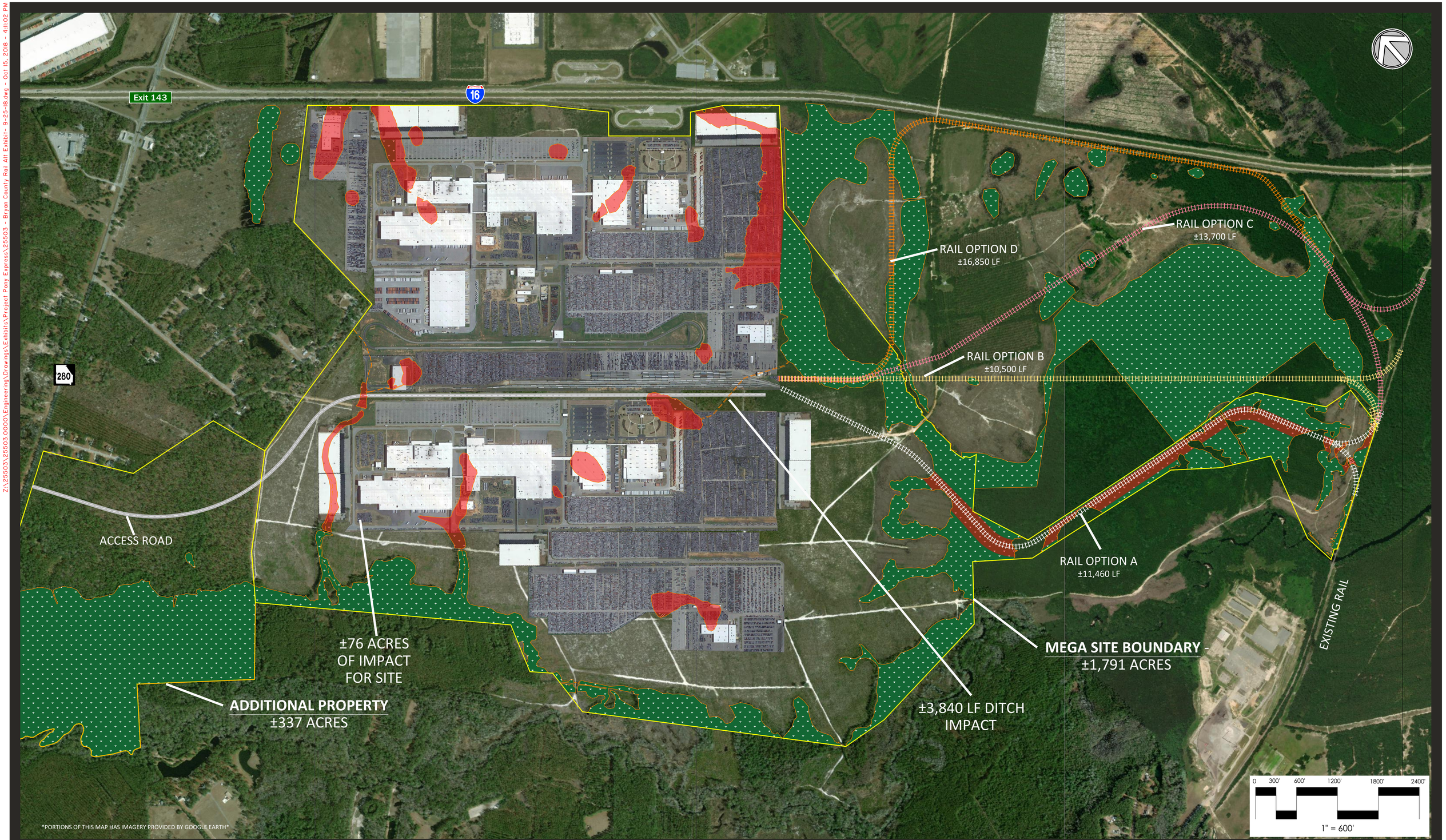
Alton Brown, Jr.
Principal
Resource & Land Consultants

Enclosures

cc: Mr. Trip Tollison - JDA
Ms. Anna Chafin - JDA
Mr. Benjy Thompson - JDA
Mr. Brandt Herndon - JDA
Mr. Ralph Forbes – Thomas & Hutton

CONCEPTUAL RAIL PLAN EXHIBIT

Z:\25503\25503.0000\Engineering\Drawings\Exhibits\Project Pony Express\25503 - Bryan County Rail Alt Exhibit - 9-25-18.dwg - Oct 15, 2018 - 4:11:02 PM



CONCEPTUAL RAIL ALTERNATIVE EXHIBIT

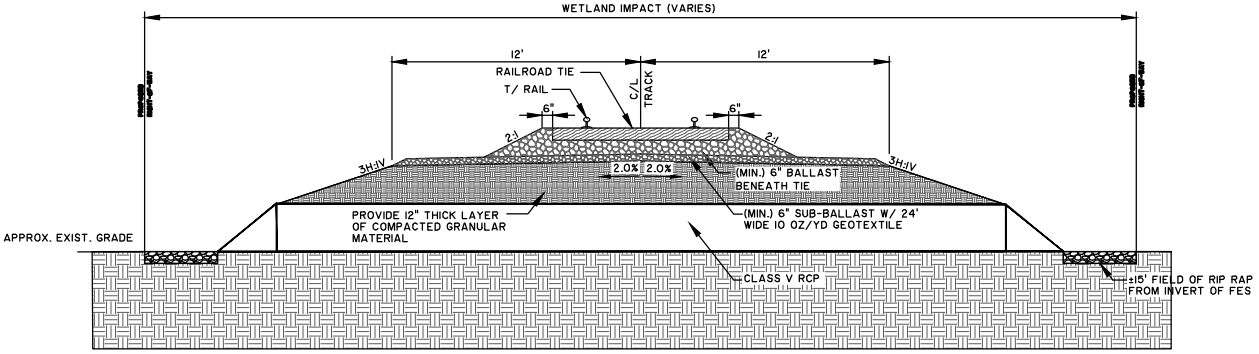
BRYAN COUNTY MEGA SITE

BRYAN COUNTY / GA

9/25/18

THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405 • 912.234.5300
www.thomasandhutton.com

TYPICAL RAIL SECTION



TYPICAL SECTION THRU RAIL SPUR @ DRAINAGE CROSSING

SCALE: NTS

INDUSTRIAL TRACK STANDARD SPECIFICATIONS

INDUSTRIAL TRACK CONSTRUCTION SPECIFICATIONS

All track construction shall be governed by these specifications, Engineering Standards, AVP Engineering Services instructions and other drawings incorporated in these specifications. Any items not covered specifically herein shall be in accordance with American Railway Engineering and Maintenance of Way Association ("AREMA") Manual for Railway Engineering, subject to the approval of the AVP Engineering Services or his authorized representative. Where conflict exists between the AREMA Manual and these specifications, these specifications shall govern. In addition, construction must adhere to all Federal Railroad Administration (USA) or Transport Canada requirements.

These specifications are provided only as a guideline for design and should not be taken as authority to construct without prior review and approval by the office of the AVP Engineering Services of Genesee & Wyoming, Inc. and the Senior Engineering Manager at the Region involved.

All track constructed will require walkways to comply with current and applicable federal, state or local laws. All walkways must conform to the Genesee & Wyoming, Inc. specifications (Section 8) and/or the federal, state, provincial or local regulations whichever is the most protective from the standpoint of safety. Industries shall be responsible for the proper construction and maintenance of walkways in the location where tracks are constructed.

These specifications supersede all previous Specifications for Industrial Tracks and are subject to revision without notice.

Notice:

The Railroad reserves the right to have main track turnouts and "Railroad maintained" track installed by its own contractor, with the cost of such construction billed to the Industry.

Contractors hired by the industry must be approved by the Railroad's Director - Line Maintenance. Material for main track turnouts and "Railroad maintained" track shall meet the specifications of the railroad. The Railroad reserves the right to reject material that does not meet the specifications.

Genesee & Wyoming, Inc. Engineering

March 2013

1. Minimum Safety Requirements for Contractors Safety Instructions (USA)

Safety of personnel, property, rail operations and the public is of paramount importance in the performance of work. As reinforcement and in furtherance of overall safety measures to be observed while on Railroad property by the Contractor (and not by way of limitation), the following special safety rules shall be followed:

1.1 The Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job. The Contractor shall have the proper first-aid supplies available on the job site so that prompt first-aid services can be provided to any person that may be injured on the job site. The Contractor shall promptly notify the Railroad of any U.S. Occupational Safety and Health Administration reportable injuries occurring to any person that may arise during work performed on the job site. The Contractor shall have a non-delegable duty to control its employees, while they are on the job site or other property of the Railroad, to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage or illegally obtained drug, narcotic or other substance.

1.2 In addition to all applicable OSHA, FRA and other federal or state regulations, Contractors must also have copies of and adhere to the following Railroad policies:

1.2.1 Genesee & Wyoming, Inc. Roadway Worker Protection & MofW Rules (Jan 1st, 2010).
1.2.2 Genesee & Wyoming, Inc. Contractor Safety (U.S.A.).
1.2.3 Genesee & Wyoming, Inc. Engineering Safety Rules (2009).

1.3 All heavy equipment provided or leased by the Contractor shall operate in compliance with FRA 214 regulations and be equipped with audible backup warning devices.

1.4 If, in the opinion of the Railroad Representative, any of the Contractor's or any of its subcontractor’s equipment is unsafe for use on the Railroad's right of way, the Contractor, at the request of the Railroad Representative, shall remove such equipment from the Railroad's right of way.

2. Minimum Safety Requirements for Contractors (CDN)

2.1 All personnel authorized to enter upon Genesee & Wyoming, Inc. right-of-way are required to adhere to Safety requirements as set out in Genesee & Wyoming, Inc. Contractor Safety Guidelines (Canadian version) which covers, but is not limited to, the following aspects:

1. Minimum Protective Equipment (CSA Standards) which must be worn by all personnel on Genesee & Wyoming, Inc. right-of-way consisting of:
   (a) Protective Headwear (Hard Hat) CSA Z94 1M-1977
   (b) Protective Footwear (Steel Toe Boots - CSA Grade 1 Certified minimum 6" (150mm) high, laced and with a defined heel)
   (c) Protective Eyewear (Safety Glasses c/w Side Shields) CSA Z94.3-94
   (d) Reflective Vest
2. Rail Traffic Protection - flagging requirements.
3. Restrictions on Construction operations - this applies to all equipment on the right-of-way.
4. Requirements for crossing tracks.
5. Required liability insurance.

NOTE: The requirements of the Genesee & Wyoming, Inc. Contractor Safety Guidelines will be strictly enforced.

3 Check list - Design Information Required

3.1 Plan View

3.1.1 Geometry (complete curve data, Including engineering stations or coordinates).

3.1.2 Location, Size of turnouts, including weight of rail of existing track, weight of rail of proposed track and turnout curve data for the proposed turnout. If insulated turnouts are required, this must be shown on the plan. Point of switch for main track turnout must be stationed with distance from nearest mile post and GPS coordinates shown.

3.1.3 Location and type of derail.

3.1.4 Type of end of track device (bumping post, wheel stops or earthen bumper).

3.1.5 Horizontal clearances to any obstruction within 15' of the centerline of the proposed track.

3.1.6 Overhead wire-line crossings should, include vertical clearance above top of rail and voltage of line.

3.1.7 Underground utility lines should, include type of line, depth below base of rail, proposed encasement details and commodity of pipe.

3.1.8 Any parallel lines (underground or overhead) in the vicinity of the existing or proposed track, especially FIBER OPTIC CABLES.

3.1.9 Drainage devices (size and length) to be installed under existing or proposed tracks, including invert elevations in relation to the top or base of rail. In addition, flow patterns should be shown in the vicinity of all tracks to indicate water control after construction, along with all existing drainage devices in the vicinity.

3.1.10 Fences in vicinity of tracks with locations of gates crossing track (engineering station and typical gate section required).

3.1.11 Location (engineering station) and clearance to any car pulling devices to be installed along proposed track or other type of car moving equipment to be used.

3.1.12 Location, length and type of road crossing surface and the type of warning devices (if any) to be installed

3.1.13 Location of any under-track unloading structure, or underground longitudinal loading/unloading system, along with two sets of detailed signed structural plans which should include type of construction, placement and size of reinforcing steel in concrete, thickness of walls and floor, type and size of rail supporting beams (including weight of the beams), weight of rail to be used over the structure and method of fastening the rail to the beams.

3.1.14 Location and details of any overhead loading devices including side unloading racks with drop platforms. Details should, include size and location of supports, footings, position locking devices, overhead and horizontal clearance. Clearances from the centerline of track should be shown to indicate dimensions when the device is in use and also in the retracted position for train movement.

3.1.15 If any type of track support system, other than the standard "rail and tie plates on wood ties and ballast" is to be used, details must be provided.

3.2 Profile

3.2.1 Top of rail of the proposed track including vertical curve lengths, and engineering stations.

3.2.2 Top of rail of the existing track, 200' in both directions from the proposed point of switch.

3.2.3 Description and location of benchmark used in determining elevations.

3.2.4 All drainage devices including invert elevations should be shown on the profile.

3.2.5 Any underground crossings under the proposed track should be shown and referenced to the top or base of rail.

3.2.6 Typical cross section showing sub-grade, walkway and ditch details.

3.2.7 Stationing of proposed track should begin with 0+00 at the proposed point of switch for each new track.

4. Track Design

4.1 Alignment

4.1.1 Horizontal curves of 10° 00' (Chord Definition) (Radius = 573.69') or less, are preferred. Curves greater than 10°00' must have approval of the AVP Engineering Services and the Senior Engineering Manager at the Region involved.

4.1.2 A tangent distance of at least 100' between reverse curves or facing point switches is required.

4.1.3 Vertical curves shall have a minimum length of 100' and V/L is not to exceed 1.2 for Sags and 2.0 for Summits

$$\frac{V}{L} = \frac{V\ (\text{Grade } 1) - V\ (\text{Grade } 2)}{(\text{Length of curve in stations})}$$

4.1.4 Grade shall not exceed 2%.

4.1.5 Track center minimums are as follows:

(a) Tangent Track - 14' minimum

(b) On curves, the minimum distance between track center lines shall be increased 2 inches for every degree of curvature.

5 Clearance Requirements (USA)

5.1 Horizontal

The minimum clearance will be 8'-6" from the centerline of track to the nearest obstruction. Horizontal clearances are to be increased 1-1/2" per degree of curve where the facility is located adjacent to or within 80' of a turnout or curve limits.

5.2 Vertical

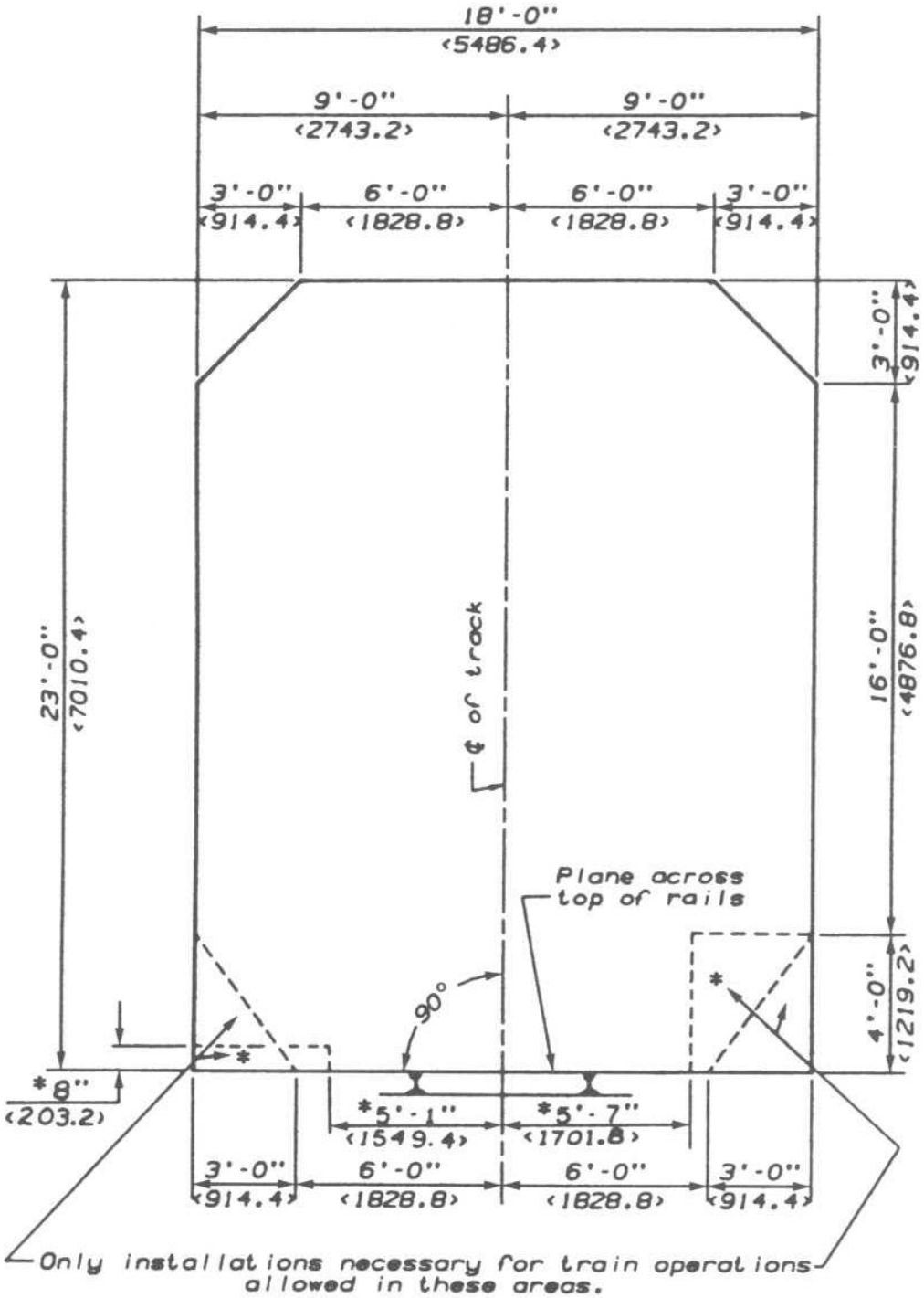
5.2.1 23' from top of rail to nearest overhead obstruction.

5.2.2 27' from top of rail to overhead wires.

5.2.3 27' minimum from top of rail to power lines plus NEA code requirements (usually 27' to 35').

5.2.4 5-1/2 feet minimum below base of rail of any track to the top of pipelines, etc. (see Genesee & Wyoming, Inc. General Specifications for Sub-grade and Above-grade Utility Crossings of Railroad Right-of-Way.

5.2.5 Certain states may accept vertical or horizontal clearances slightly less than Genesee & Wyoming, Inc. standards. Management normally will accept the State's lesser clearance requirements, although the Industry will be required to sign an Impaired Clearance Agreement with the Railroad. **In any case, when either horizontal or vertical clearance is less than those of the State Railway or Public Service Commission, the Industry shall secure necessary approval from the appropriate State Authority for each impaired clearance.** The agreement covering service to the Industry's track will include the specific reference to the substandard clearance involved. When State Law requires clearances that are more restrictive such laws will govern.



TANGENT TRACK

Bracketed dimensions are in mm.

6. Clearance Requirements (CDN)

6.1 Unless otherwise authorized in accordance with the STANDARD RESPECTING RAILWAY CLEARANCES, as approved by the Minister of Transport, the following minimum clearances are required on tangent track:

(a) Vertical: 23'-0" clear headway above the top of the highest rail.

(b) Horizontal: 6'- 0" from the gauge side of the nearest rail to the nearest part of any structure or obstruction at a height greater than 4'-0" above top of rail, and 3'-7¾" from the gauge side of the nearest rail to the nearest part of any structure or obstruction at a height less than 4'-0" above top of rail.

(c) Clearances for industrial and private sidings over which the railway operates shall meet or exceed dimensions shown on diagram (following page).

6.2 Track Centers

Shall comply with the minimum distances between track center lines with due allowance for superelevation and curvature and shall be as follows:

(a)	Main tracks	3.96 m (13 feet)
(b)	Main track and siding	4.27 m (14 feet)
(c)	Main or running tracks and parallel yard tracks	4.24 m (14 feet)
(d)	Yard tracks	4.11 m (13 feet, 6 inches)
(e)	Ladder and other tracks	4.57 m (15 feet)
(f)	Parallel ladder tracks	5.49 m (18 feet)
(g)	Freight shed tracks	3.66 m (12 feet)
(h)	Team tracks in pairs	3.66 m (12 feet)
(i)	Passenger station tracks without platform between	3.96 m (13 feet)

6.3 The minimum distance between track center lines shall be increased to account for curvature and superelevation as follows:

(a) 50.8 mm (2 inches) per degree of curvature of track;

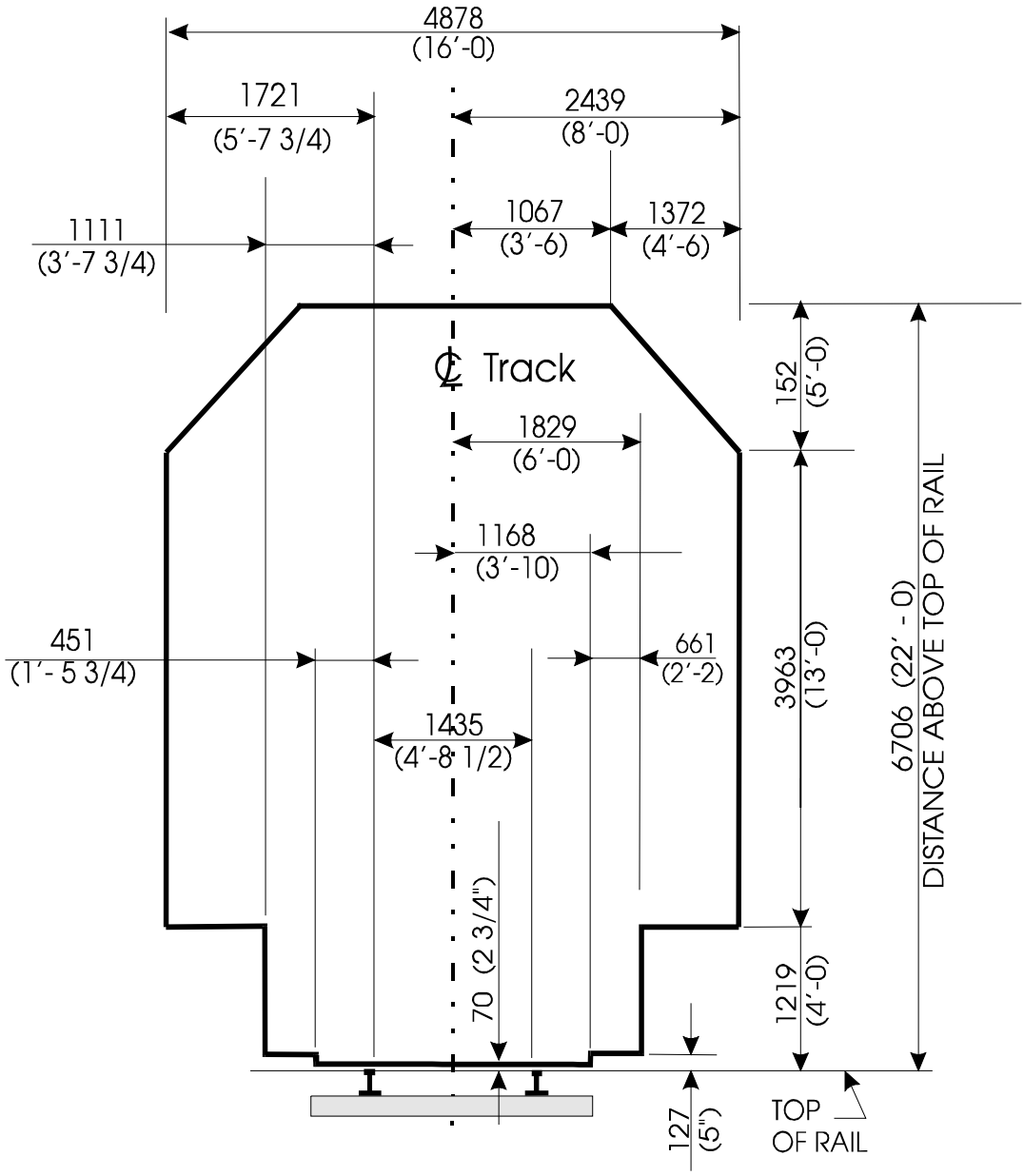
(b) Where the superelevation on the outer track exceeds the superelevation of an adjacent inner track, an additional 63.5 mm (2½ inches) per 25.4 mm (1 inch) of difference in curve superelevation between the adjacent tracks.

Example: Outer track has 2 inches superelevation and the adjacent inner track has 1 inch superelevation on a one degree curve requires tracks to be spread center to center, a total of 4½" greater than on tangent.

6.4 Non-compliance (Less than standard clearances).

It is now the Railway's responsibility to ensure its railway permits safe operation. Therefore, should it not be possible to construct to the above clearance measurements, the Engineering Manager should be contacted to review and ensure the proposed encroachment does not impact railway safety and that the appropriate departments (Transportation, Engineering, Clearance Bureau, etc.) and Transport Canada where required are advised of the less than standard clearance.

Drawing



7. Roadbed (Refer to Drawing ES8048.1)
Sub-ballast - Drainage Structures - Walkways

7.1 Drainage

7.1.1 Thorough drainage is essential. Every effort must be made to keep the tracks, roadbed and walkways properly drained at all times.

7.1.2 All existing and proposed locations of track ditches across and parallel to the proposed track alignment shall be shown on the proposed plans. Profiles of these ditches should also be included on the plans.

7.1.3 At track ditch intercepting drains, rip rap or other protection shall be provided to protect the roadbed if necessary, as directed by the Director of Structures.

7.1.4 All drainage structures shall be approved by the Director of Structures.

7.2 Drainage Structures

7.2.1 Culvert pipes - Use of either Class V reinforced concrete or corrugated metal culvert is satisfactory.

7.2.2 Installation and use of corrugated metal pipe culverts shall be in accordance with Genesee & Wyoming, Inc. Standards.

7.2.3 Minimum size shall be not less than 24" diameter to allow for clean out.

7.2.4 All culvert pipe used shall provide for Cooper E-80 design live load.

7.2.5 Depth from bottom of tie, to top of culvert shall be as per the following table or AREMA Manual for Railway Engineering Chapter 4.9.5.

Minimum and Maximum Height of Cover (in feet)

Pipe Diameter	Gauge thickness of Pipe (2" x 1/2" Corrugation)				
	16 gauge	14 gauge	12 gauge	10 gauge	8 gauge
24"	1-1/2' - 45'	1-1/2' - 50'	1-1/2' – 65		
30"	2' - 35'	1-1/2' - 40'	1-1/2' - 50'		
36"	3' - 30'	2' - 30'	1-1/2' - 40'	1-1/2' - 45'	
42"	2' - 30'	1-1/2' - 45'	1-1/2' - 70'	1-1/2' - 73	1-1/2' - 80'
48"	3' - 30'	2' - 40'	2' - 65'	2' - 65'	2' - 70'

7.2.6 All pipes shall contain camber when installed.

7.2.7 Any reinforced concrete structure designs must be approved by the V.P. of Structures prior to construction, i.e., concrete box culverts, bridges, under track pits, scale pits, etc.

7.3 Grading

7.3.1 Width - 24' minimum, unless otherwise approved by Director - Line Maintenance)

7.3.2 Slopes

(a) Fills: 2:1 unless conditions warrant flatter slopes

(b) Cuts:

- Common material not less than 1-1/2:1 (2:1 recommended)
- Sound rock: 1/4:1

(c) Side Ditches will have a flow line at least 2' or more below finished sub-grade. Flow line width shall be at least 2', or more, as conditions warrant.

(d) Compaction: The construction sub-grade shall be stabilized to a minimum depth of 6" with lime or cement depending on the results of the soils tests, and compacted to not less than 95% of the maximum density, and to within +/- 2% of the optimum moisture content, as determined by ASTM D 1557 (Modified Proctor Testing Procedures).

7.4 Sub-Ballast - Materials

7.4.1 Sub-ballast shall consist of a foundation course for a typical railroad roadbed and shall be composed of either caliche, argillaceous limestone, conglomerate, crushed or screened pit run gravel, crushed slag or other granular materials containing no more than 3% organics by weight as determined by ASTM C-123.

7.4.2 The materials shall meet the requirements hereinafter specified. Aggregate retained on a No. 10 sieve shall consist of hard, durable particles or fragments of stone, gravel, sand or slag. Materials that break up when alternately frozen and thawed or soaked and dried shall not be used. Allowable wear, based on the Los Angeles Abrasion Test, shall not be greater than 50%. A higher or lower percentage of wear may be specified by the Director - Line Maintenance.

7.4.3 Gradations

It is the intent of this specification that the sub-ballast shall consist of gradations as set forth in the following table:

SIEVE SIZE	2"	1"	3/4"	No. 10	No. 40	No. 200
% PASSING (OPTIMUM)	100	95	67	38	21	
% PASSING (PERMISSIBLE)	100	90-100	50-84	26-50	12-30	0-10

7.4.4 Design Requirements

Sub-ballast grade shall conform to the following table or as directed by the Senior Engineering Manager at the Region involved/AVP Engineering Services

EIGHT INCHES (8") OF SUB-BALLAST IS REQUIRED - NO FINER THAN THE GRADATIONS LISTED BELOW.

PERCENT PASSING (BY WEIGHT)	SIEVE SIZE NO. OF MESH PER INCH	GRAIN SIZE IN MM
19	200	.08
74	100	.16
92	60	.26
100	40	.42

TWELVE INCHES (12") OF SUB-BALLAST IS REQUIRED WHERE SUB-GRADE MATERIALS HAVE A GRADATION SMALLER THAN LISTED ABOVE. (See Standard Drawing ES8040.1 for further information on sub-ballast depth. Where a conflict exists between ES8040.1 and the above table, the greater will govern)

7.5 Sub-Ballast Construction

7.5.1 **Preparation of Subgrade**

The roadbed shall be shaped in conformity with the typical sections shown on plans and to the line and grades provided by the engineering design. All unstable or otherwise objectionable materials shall be removed from the subgrade and replaced with approved material. The sub-grade shall be in an acceptable condition to receive the sub-ballast material.

7.5.2 **Lift Thickness**

The sub-ballast shall be constructed in two or more lifts of approximately equal thickness. The maximum compacted thickness of any one lift shall not exceed 6" and shall be compacted to not less than 95% of the maximum density and to within ± 2% of the optimum moisture content, as determined by ASTM D 1557.

7.5.3 **Compaction**

If the material is laid and compacted in more than one lift, the Contractor shall plan and coordinate his work in such a manner that the previously placed and compacted lifts be allowed ample time for curing and development of sufficient stability before vehicles hauling materials for the succeeding lifts, or other heavy equipment, are permitted on the sub-ballast. Prior to placing the succeeding lifts of material, the surface of the lower lift shall be sufficiently moist to insure a strong bond between the lifts. The edges and/or edge slopes of the sub-ballast shall be bladed or otherwise dressed to conform to the lines, grades and dimensions shown on the plans.

Ballast specifications vary by Railway and are to be attached as appendix.

8. Walkways

8.1 Safety

Walkways shall be constructed and maintained to provide a reasonable regular surface and shall be maintained in a safe condition clear of vegetation, debris, standing water and other obstructions which constitute a hazard.

8.2 Grades and Slopes

Walkways shall not have a grade and slope in excess of approximately 1" of elevation per 8" of horizontal length in any direction. Excess slope is permissible where the proximity of adjacent tracks so dictates, so long as the slope between tracks is constant.

8.3 Construction

Walkways shall be constructed to a minimum width of 8'-6" as measured from the centerline of the track. It shall be constructed and maintained in such a manner that the elevation of its surface is at least level with the top of the ties.

8.4 Requirements

Walkways shall be located along sides of the tracks for a minimum distance of 15 feet on each side of every switch stand or other track-side switch throwing mechanism. Walkways are required around all derails equipped with switch stands.

8.5 Minimum Distances

Walkways shall be continuous and maintained from the switch stand through the switch frog and along the diverging tracks to a point at least 25' beyond the clearance point of the switch. An additional 3' of walkway width shall extend for a minimum distance of 4' in each direction from the switch stand or other track-side throwing mechanism on the side of the track where said mechanism is located. This additional 3' of width shall be gradually tapered back to the 6' minimum width in a distance of not less than 20'.

9. Track Material

9.1 Rail

9.1.1 Rail used in Industrial tracks must be 100lb. or greater (see note regarding consideration of 90lb. rail)* Also see ES8040.1 for rail requirements based on type of service.

9.1.2 Part worn or "relay" rail may be used in all locations except turnouts, provided it meets the following standards:

(a) Only lengths of 39, 36, 33, and 30 are acceptable

(b) Rail may have minor imperfections in line and/or surface, or minor physical defects, which in the opinion of the Roadmaster or Engineering Manager, will not interfere with the safe use of the rail for the service intended.

(c) Rail must be within the following limits of wear: AREMA CLASS II

Rail Weight	Loss of vertical height	Flange Wear	Rail end batter
100	3/16"	1/4"	1/8"
110	5/16"	1/2”	1/8"
112	5/16"	1/2”	1/8"
115	5/16"	3/4”	1/8"
132	5/16"	3/4”	1/8"

9.1.3 Track must be constructed with “control cooled” rail.

*9.1.4 *Subject to prior consent of the Railroad, and upon written request of the owner, 90lb. rail may be acceptable for some installations.*

9.2 Turnout Material

9.2.1 Unless otherwise approved by the AVP Engineering Services, turnout rail in mainline must be new 115lb rail extending to the clearance point. If adjoining rail is larger than 115lb., the turnout rail must match or exceed that size.

9.2.2 Unless otherwise directed by Genesee & Wyoming, Inc. AVP Engineering Services or the Senior Engineering Manager at the Region involved, No.10 or 11 turnouts (minimum size) are required for all turnouts installed in Genesee & Wyoming, Inc. main track. No. 8 or 9 turnouts (minimum size) are recommended for industry track installation from other than main track.

9.2.3 Mainline turnouts must be constructed of new turnout components unless otherwise approved by AVP Engineering Services. Main line turnouts will be fully welded, with no joints in CWR. Turnouts on other than main line may be relay material of a quality approved by the Senior Engineering Manager at the Region involved. Rail weight and size for all turnouts are specified on Standard Drawing ES8040.1.

9.2.4 Only adjustable rail braces are acceptable.

9.2.5 Provide washers and cotter pins for bolts, as required by applicable drawing.

9.2.6 Switch stands must be new, complete with connecting rods and targets. The following switch stands are approved for Main Track switch locations:

- Racor 36E or 36EH (High Mast where required for visibility) "Non-trailable" stands.
- Racor 31B "Sealed Column" stands
- National Track Model #1004ARS or #1008ARS (High Mast)

9.2.7 Switch stands on main track must be equipped with a reflectorized red target when the main line switch is lined to for the diverging route and a reflectorized green target when the switch is in the normal position. Switches on other than main track will display a yellow reflectorized target to indicate diverging route and a double bladed green reflectorized target to indicate the normal route. (Refer to Dwg ES5004.0)

9.2.8 Frogs must be as follows:

(a) Main Track - Rail Bound Manganese (RBM) or Spring Rail Frog
(b) Yards - Self Guarded Manganese (SGM), RBM or Rigid Frog

9.3 Other Track Material

9.3.1 Track Spikes to be new (or approved relay) 5/8" x 6" (see ES8050.1 spiking patterns). **Note: ES8050.1 spiking pattern "Spec #3" is to be used for 15 ties ahead of switch points.**

9.3.2 Track Bolts & Washers will be new and appropriately sized for the bolt holes in the rail section with sufficient length to allow a spring washer and full nut threaded on the bolt.

9.3.3 Rail Anchors to be box anchored as per ES8050.1. No anchors will be installed at the joint, or the rail opposite the joint. Turnouts will be fully box anchored except within the point area.

9.3.4 Tie Plates (new or approved relay) 7-1/2" x 11" or 7-1/2" x 14".

9.3.5 Splice Bars (new or approved relay) must match the rail section being used and either 4-hole or 6-hole.

9.3.6 "Forged" Compromise Bars will be utilized when rails of different rail sections are connected. The compromise bars will be of the proper size and type for the rail sections being joined.

9.4 Track Ties

9.4.1 All track and turnout ties on Railroad maintained portion shall be new. (Upon approval from the Senior Engineering Manager at the Region involved, Relay track ties will be considered for the industry maintained portion in lieu of the following specifications)

9.4.2 New creosoted oak, mixed hardwood, Fir or Pine ties spaced at 21" center to center are recommended for industry track (Unless tighter spacing is deemed necessary by AVP Engineering Services, or the Senior Engineering Manager at the Region involved). Track ties shall have minimum dimensions of 8’6” in length by a cross section 6" to 6-1/2" by 8" to 8-1/2".

9.4.3 Tie treatment is to be in accordance with current industry practice and AREMA Manual for Railway Engineering.

9.4.4 On Industrial Grade ties, the corners may be bevelled, provided the minimum flat surface on top or bottom is 7 inches.

9.4.5 The use of alternative cross tie or switch tie materials (concrete, steel, composite) will be considered on a case by case basis. The use of these ties must be approved by the track owner and AVP Engineering Services.

9.5 Special Tie Considerations

9.5.1 Track ties to be installed under road crossings where timber crossing planks are specified, to be 9 feet in length, with cross-section dimensions of 7”x 9”. Some corners may be beveled provided the minimum flat surface on top or bottom is 7-1/2".

9.5.2 Track Ties to be installed under road crossings where asphalt surface, concrete or rubber planks are specified, ties will be of dimensions and spacing as directed by the Railroad Engineering Manager, Roadmaster or as recommended by the crossing system manufacturer/supplier.

9.6 Switch Ties

9.6.1 Switch ties to be new oak, mixed hardwood or Douglas fir, creosote pressure treated. Concrete or steel ties are acceptable.

9.6.2 Switch ties to be supplied in strict accordance to the bill of materials on the appropriate AREA plan.

10. 10. Track Construction

Track Laying and Surfacing shall be supervised by experienced personnel skilled in railroad track construction. Railroad personnel may provide oversight or recommend a qualified contractor or project manager.

10.1 Rail

10.1.1 Rails shall be unloaded, stored and distributed along the roadbed in such a manner as to prevent damage.

10.1.2 Before rails are laid, maintain grade to a good surface and keep ties in alignment.

10.1.3 Do not mix rails of different manufacturers and/or weights in any stretch.

10.1.4 Lay rails with staggered joints, the stagger between joints in opposite rails being not less than 12 feet except as otherwise authorized by the Railway.

10.1.5 Lay rail within the minimum gaps as indicated on the following chart. Use fiber or hardwood shims for obtaining a proper expansion space. Do not remove expansion shims until the rail is properly spiked, bolts tightened and the rail anchors applied.

RAIL TEMPERATURE	33' RAIL GAP	39' RAIL GAP	78' RAIL GAP
Below 25°F	1/4"	1/4"	1/2"
25° to 50°F	1/8"	3/8" every other joint	3/8"
51° to 75°F	1/8" every other joint	1/8"	1/4"
76° to 100°F	1/8" every other joint	1/8" every other joint	1/8"
Above 100°F			1/8" every other joint

10.1.6 Lay partly worn (relay) rail in the same position it occupied before removal from the previous track so that the gauge side remains the gauge side.

10.1.7 Anchor rails immediately after laying.

10.1.8 Place splice bars and tighten bolts before spiking the rail.

10.1.9 Tighten bolts in the rail joints in the following sequence:
- the two bolts at the center of the bar,
- the second bolt from the end of each rail,
- the third bolt from the end of each rail.

10.1.10 Gauge of track after laying must be uniform and set at 4' 8-1/2".

10.1.11 When new rail adjoins rail previously in track (or at any mismatch of rails, in the opinion of the Railway) build up the rails by welding.

10.1.12 Use rail saws and rail drills only for cutting and drilling rail respectively.

10.1.13 Do not use welding equipment to cut rail or drill holes in rail, under any circumstances.

10.2 Ties

10.2.1 Ties shall be placed with the heartwood side down at right angles to the rail and centered with respect to the adjacent ties. Ties shall be centered with respect to the centerline of the track. Ties shall be uniformly spaced center to center of tie. Spike holes must be plugged when re-spiking ties.

10.2.2 Ties shall be handled in such a manner as to avoid breaking or bruising. Ties shall not be thrown from cars or trucks onto rails or rocks.

10.2.3 Tie tongs or other suitable devices shall be used for handling ties. Use of bars, chisels, forks, mauls, picks, shovels or sledges for replacement of ties beneath the rails will not be permitted.

10.3 Plates and Anchors

10.3.1 Tie plates used shall be double shoulder on all track and turnouts. Do not mix together tie plates having different slopes in the same stretch of track.

10.3.2 The bottom of the rail and tie plates shall be cleaned before the rail is laid.

10.3.3 Tie plates shall be applied at the time the rail is laid to avoid unnecessary spiking. Plate shoulder shall bear against the outside base of the rail, centered on the tie with a flat, uniform bearing on the tie, and so that the rail cant is inward.

10.3.4 No portion of the shoulder of the tie plate shall be under the base of the rail

10.3.5 Rail Anchors shall be used on all track and through turnouts, where they do not interfere with the operation of the switch points. They shall be of the same type on any one tie and of a size for the rail section they are designed.

10.3.6 Rail Anchors shall be installed on the gauge side of the rail as per Drawing ES8050.1.

10.3.7 Anchors shall be applied with the proper tool ensuring they are not overdriven.

10.3.8 Anchors shall not be applied on ties which support rail joints, where they will interfere with bond wires or other signal appliances, or where they will be inaccessible for adjustment or visual inspection.

10.4 Spiking

10.4.1 Space ties properly and square to the rail, before driving spikes.

10.4.2 Use a Standard Spike Maul or machine to drive spikes.

10.4.3 Drive the spikes with the head pointing to the rail, except at splice bars and other locations where they are not holding down the rail.

10.4.4 Start and drive spikes vertically, and square, to provide a full bearing against the edge of the base of the rail.

10.4.5 Do not drive spikes to contact the top of the base of rail. Drive them so as to allow not more than 3/16 inch clearance between the underside of the head of the spike and the top of the base of rail.

10.4.6 Use properly adjusted stops on power operated spiking machines.

10.4.7 Do not strike the rail, fastenings or signal appliances with the spiking tool when spiking. Do not drive spikes against the ends of splice bars. Do not drive spikes in the slots of slotted splice bars.

10.4.8 The number of spikes to be used as per Drawing ES8050.1

10.5 Turnouts

10.5.1 Turnouts are not to be located closer than 300' to a main line curve or bridge. If a new turnout is located within 300' of bridge having no walkway, it is required that a walkway be installed on the bridge on the same side as the switch stand.

10.5.2 Unless otherwise approved by AVP Engineering Services or the Senior Engineering Manager at the Region involved, main track turnouts shall be installed no closer than 100’ from the edge of a road crossing and turnouts on other than main tracks shall be installed no closer than 50’ from the edge of a road crossing.

10.5.3 Turnouts must be constructed in accordance with the Railroad's Standard Plans, copies of which are available from the railroad, or in the absence of a Railroad Standard, from AREMA (AREA) Standard Plans.

10.5.4 The straight rail in the turnout shall be spiked first, the closure rail with the proper offset from the straight rail shall be set then the turnout rail will be gauged and spiked in position in its proper relation to the end of the ties. Curved track shall be spiked to gauge 4' 8-1/2". Curves should have a minimum of one anchor spike on the field side of the rail (opposite the field gauge spike) if the plate will allow.

10.5.5 Using an approved rail bender, bend the turnout stock-rail horizontally, as shown on the standard plan. Rail bender to be approved by the Railroad's Engineering Manager.

10.5.6 Ensure that switch point fits snugly against the stock rails for the entire length of the planed portion.

10.5.7 Install switch rod bolts and connecting rod bolts, except the bolt under the switch stand, with the nut on the upper side to permit ready inspection of the cotter pin. Install the connecting rod bolt under the switch stand with the head on the upper side.

10.5.8 Position the handle on table top style switch stands so that when the switch is in the normal position it faces away from the frog and the track, and moves in the same direction as the points when the switch is lined for the diverging route.

10.5.9 Leave points spiked or clamped until approved by the Railroad's Engineering Manager.

10.6 Surfacing and Lining

10.6.1 Ballast Distribution: Place and distribute the ballast in sufficient quantities on track and turnouts to achieve the required lift, as determined by the grade of the stakes, and to conform to the ballast sections as shown on the Standard Plans provided.

10.6.2 Ballast shall be spread and the track raised in a series of lifts to the required height as indicated by the tolerances. No single lift shall be higher than 4". Jacks shall be simultaneously used and properly spaced at not more than quarter points of the rail to avoid breaks or bends in the rail when the track is being raised.

10.6.3 Tamping will not be permitted at the middle of the tie where ballast is to be left to settle of its own accord. Both ends of a tie shall be tamped simultaneously and tamping inside and outside the rail shall be done at the same time.

10.6.4 Load, distribute and place the ballast using rubber tired or high rail equipment, or railway ballast cars. The Contractor is cautioned that damage caused by his equipment to track and turnouts during the distribution of ballast will be repaired by the Contractor at their expense. Use caution when handling ballast with loaders to ensure minimal contamination with soils and fines.

10.6.5 Ensure that track ties are spaced correctly, and at right angles to the rail, prior to unloading of ballast.

10.6.6 Lifting and Lining: Raise all track and turnouts with the ballast to provide a minimum depth of eight (8) inches from the bottom of the tie to top of sub-ballast or to a depth directed by the Railroad. Where necessary, the Railway will advise on the amount of superelevation required on curves. Use tamping machines or other mechanical tamping equipment approved by the Railway to tamp the ballast. For 8 foot ties, tamp both sides of ties from a point 16 inches inside each rail to the end of the ties.

10.6.7 Tamp turnout ties firmly for 16 inches on either side of the mainline and turnout rails. Tamp by hand the areas under the frog, guard rails and heel castings, using bars or mechanical hand tampers.

10.6.8 Hand tamping to be permitted only where power or mechanical tamping is not possible.

10.6.9 Line all track and turnouts to conform to the drawings.

11. Miscellaneous Trackwork

11.1 Clearance Marks and Derails

11.1.1 Yellow paint shall be applied to the entire length along the top of a tie to mark the clearance point at a location where the spacing between tracks is 15 feet between the nearest rail on both tracks. Ties on both tracks shall be painted to indicate the clearance point for both tracks.

11.1.2 Install derails at the location specified by the Railway dependent on track gradient, location and use.

11.1.3 The physical location for derails is governed by local conditions such as grade and length of track, however shall never be located less than 50 feet behind the clearance or "fouling point" with the protected track. Where practical, derails should be located 100 feet from the clearance point, but in any case at a location that a derailed car could not continue to move foul of the protected track after being derailed.

If the derail must be located close to the clearance point, a bent guardrail must be installed between the rails to provide additional assurance that the equipment will not foul the protected track.

11.1.4 The type of derail to be used is determined by the following conditions:

Hinge and sliding type derails may be used where the speed of the equipment to be derailed will not exceed 15 MPH.

Sliding derails are to be used at locations where power operation is required.

A switch point derail shall be installed where;

(a) The grade of track is 0.5% or greater; or

(b) The equipment to be derailed could exceed 15 MPH at the location of the derail; or

(c) There is a private locomotive or shuttle used to move equipment

11.1.5 Install derail marker post at all derails. **Note: All derails are to be yellow. If not supplied in that manner, they shall be painted yellow prior to installing.**

11.2 End of Track Devices (Bumping Posts, Stop Blocks)

11.2.1 End of track devices will be as approved by the Senior Engineering Manager at the Region involved. Devices such as earth and tie bumper, wheel stops, or bumping posts such as Hayes type heavy duty post may be used. All bumping posts or stops shall be sized for the rail section being used in track. Consideration should be given to allow adequate space between the last car spot and the bumping post to allow the car to be coupled into without striking the bumping post.

11.2.2 Install bumping posts, car stops or sand boxes as specified on the plans submitted and in accordance with the manufacturer's instructions. Install car stops and bumping posts 10 feet from the end of the track, with 10 ties in front of, and all ties behind, fully anchored.

11.3 Road Crossings

11.3.1 Track installed near or through road crossings equipped with active warning devices may require insulated turnouts, insulated joints, bonding and modifications to the active warning device system. The industry will be responsible for all costs associated with installation or modifications to active warning device system. Any modification to signal systems will be made by railroad employees or its approved contractor and billed to the industry. Advance payment may be required for this work.

11.3.2 Public crossings to be constructed in accordance with applicable Federal, State or Provincial regulation.

11.3.3 Install crossings only at the locations shown on the drawings. Crossing surface to be as specified by the Railroad.

11.3.4 Only fully planked timber, concrete, asphalt or solid rubber planking will be accepted. Planks to be the full depth of the crossing to match the height of the rail, to a maximum of seven inches. Rubber flangeway material is preferred for asphalt and concrete surfaces.

11.3.5 For timber surfaces, provide a flangeway space of not more than 3 inches nor less than 1-7/8 inches deep and not less than 2-1/2 inches or more than 4-3/4 inches wide.
NOTE: Flangeway clearances may fall under State, Provincial, or Federal Regulation. Flangeways must be constructed as per the policy or regulation applicable.

11.3.6 Fasten timber planks with 1/2" x 12" lag screws, with one fastening in every third tie and ends. Countersink planks for recessing of the washer and the lag bolt head.

11.3.7 Trim the ends of the planks parallel to the road centerline to the width shown on the drawings and bevel the ends of the planks

11.3.8 Keep joints clear of crossings. Where practicable, do not locate joints closer than 10 feet to the crossing surface. Where the width of crossing necessitates, replace jointed rail with welded rail.

APPENDIX

All applicable plans, drawings, specifications, clearances and Federal, State or Provincial regulations to be attached as appendices.

Attached:

Genesee & Wyoming, Inc. standard drawing ES5004.0
Genesee & Wyoming, Inc. standard drawing ES8040.1
Genesee & Wyoming, Inc. standard drawing ES8048.1
Genesee & Wyoming, Inc. standard drawing ES8050.1

EXISTING OEM FACILITIES AERIAL OVERLAY

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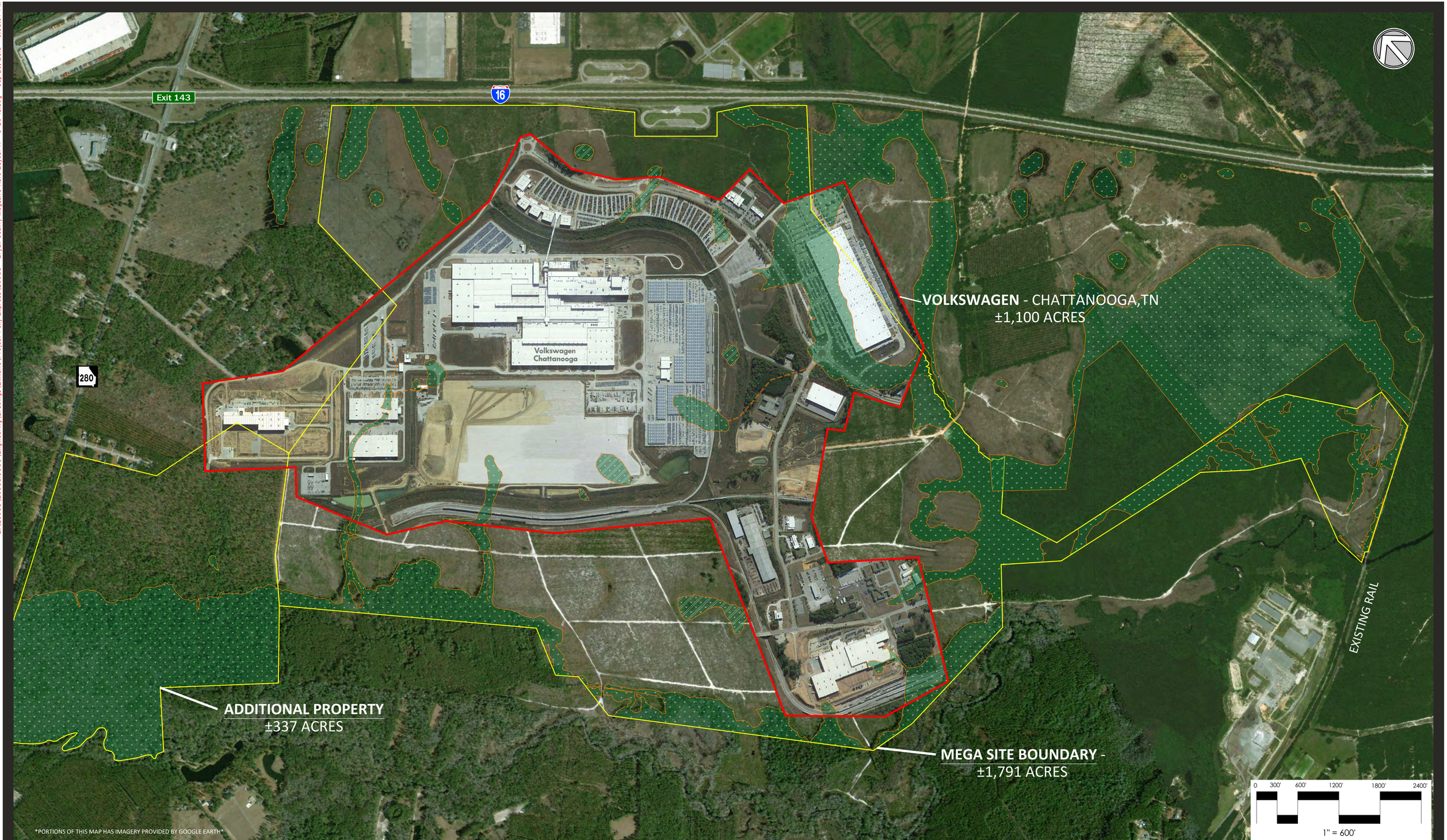

CONCEPTUAL LAYOUT EXHIBIT - A

BRYAN COUNTY MEGA SITE

BRYAN COUNTY / GA

9/25/18

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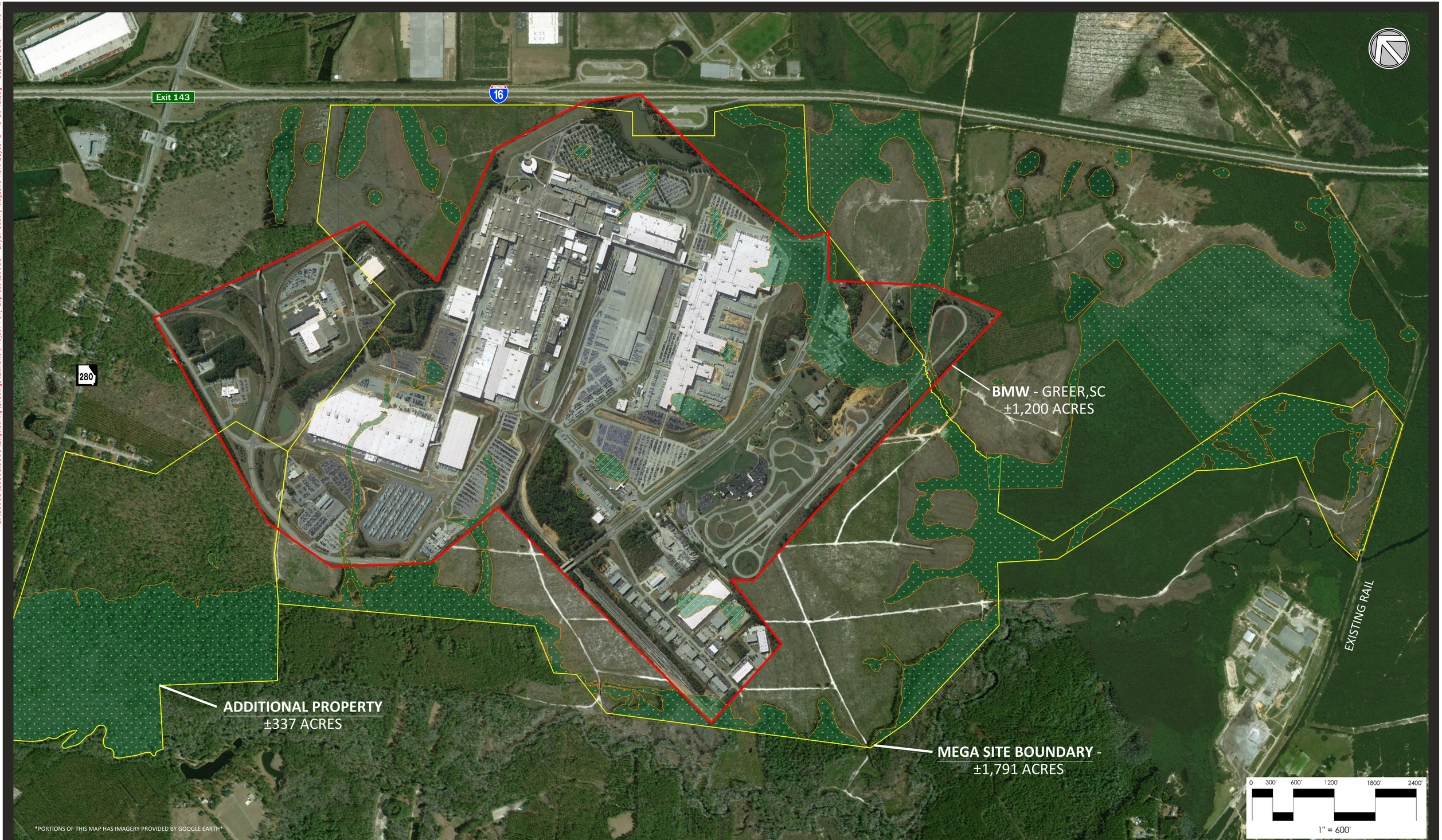

CONCEPTUAL LAYOUT EXHIBIT - B

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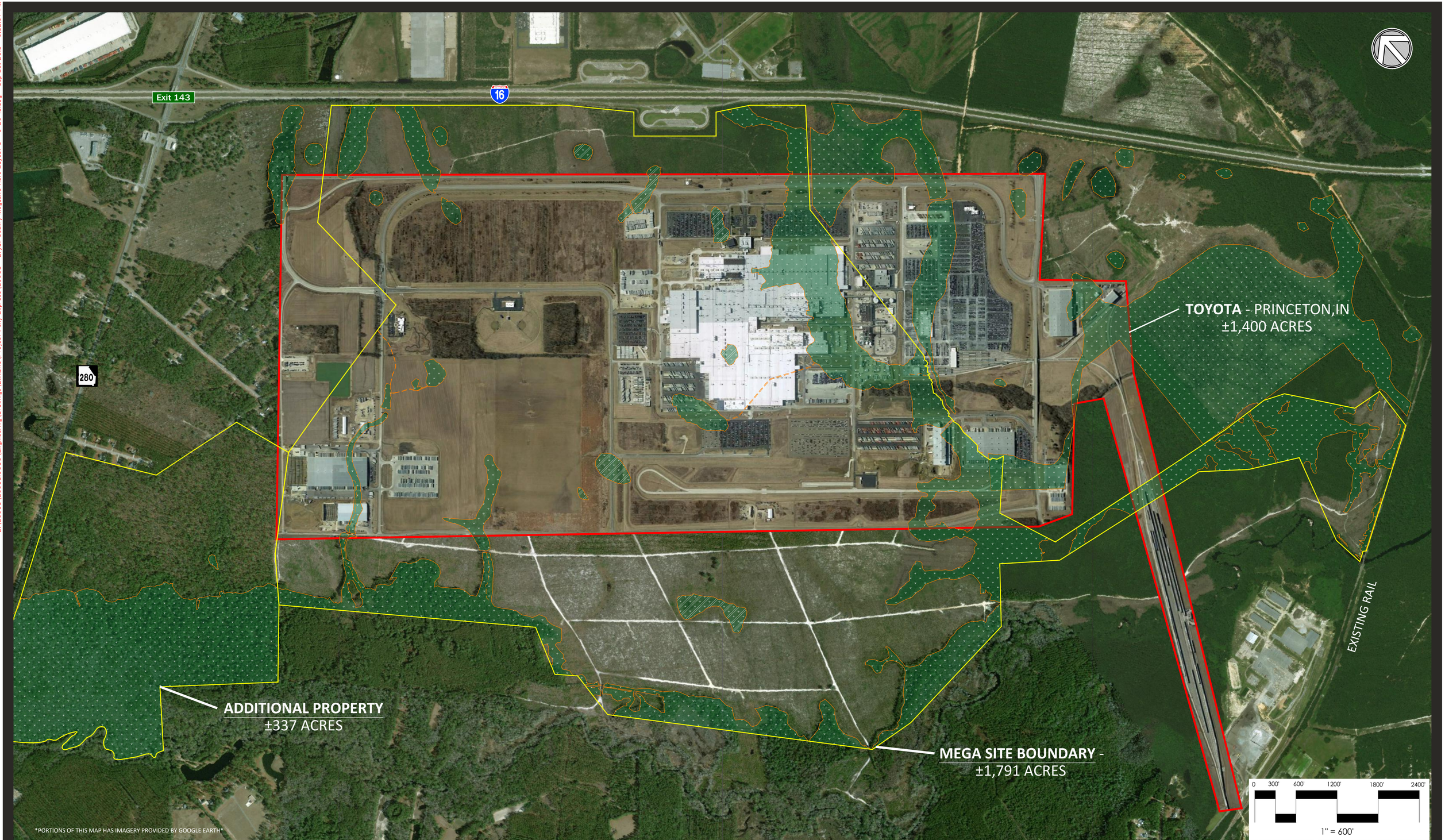

CONCEPTUAL LAYOUT EXHIBIT - C

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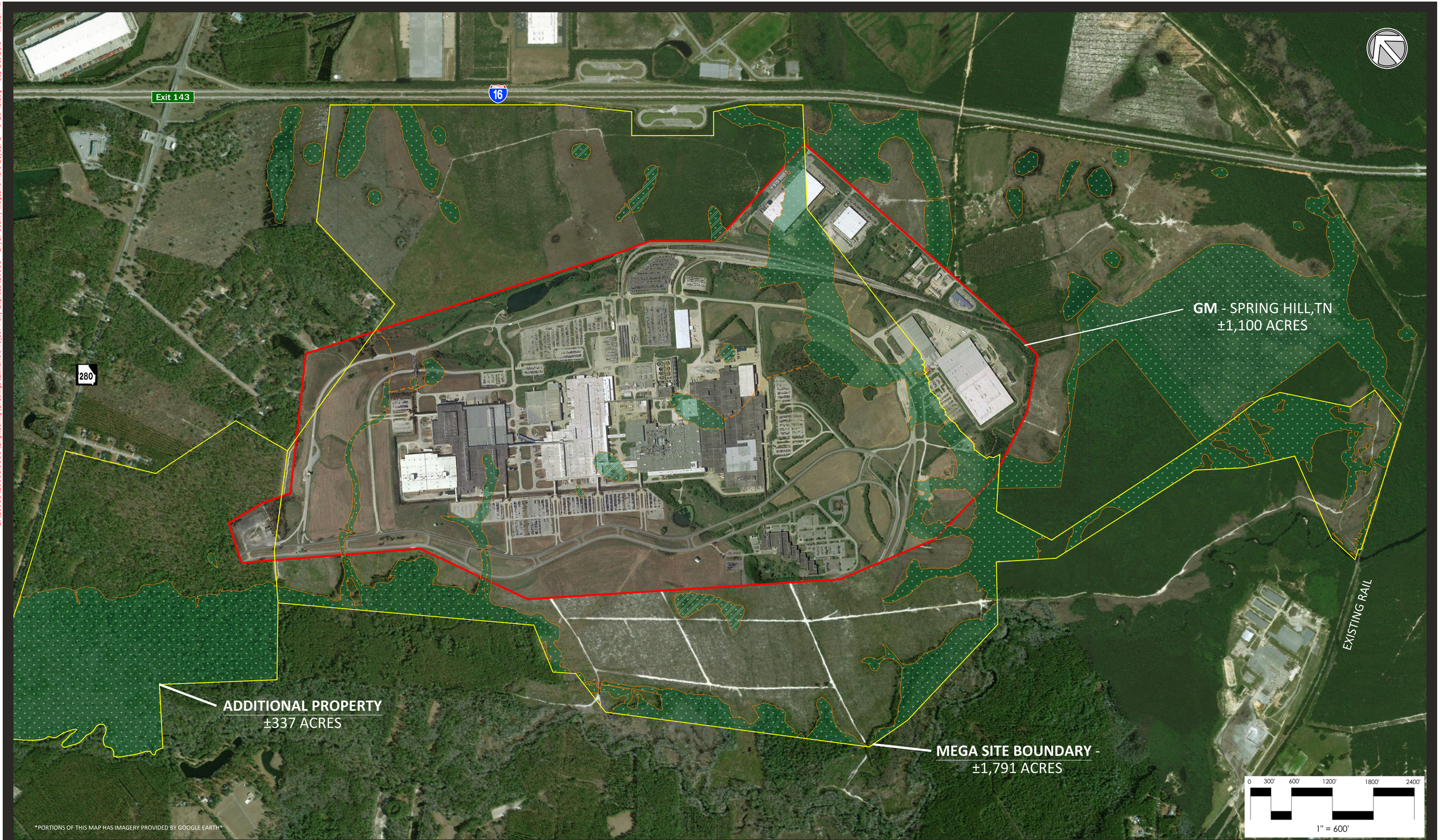

CONCEPTUAL LAYOUT EXHIBIT - D

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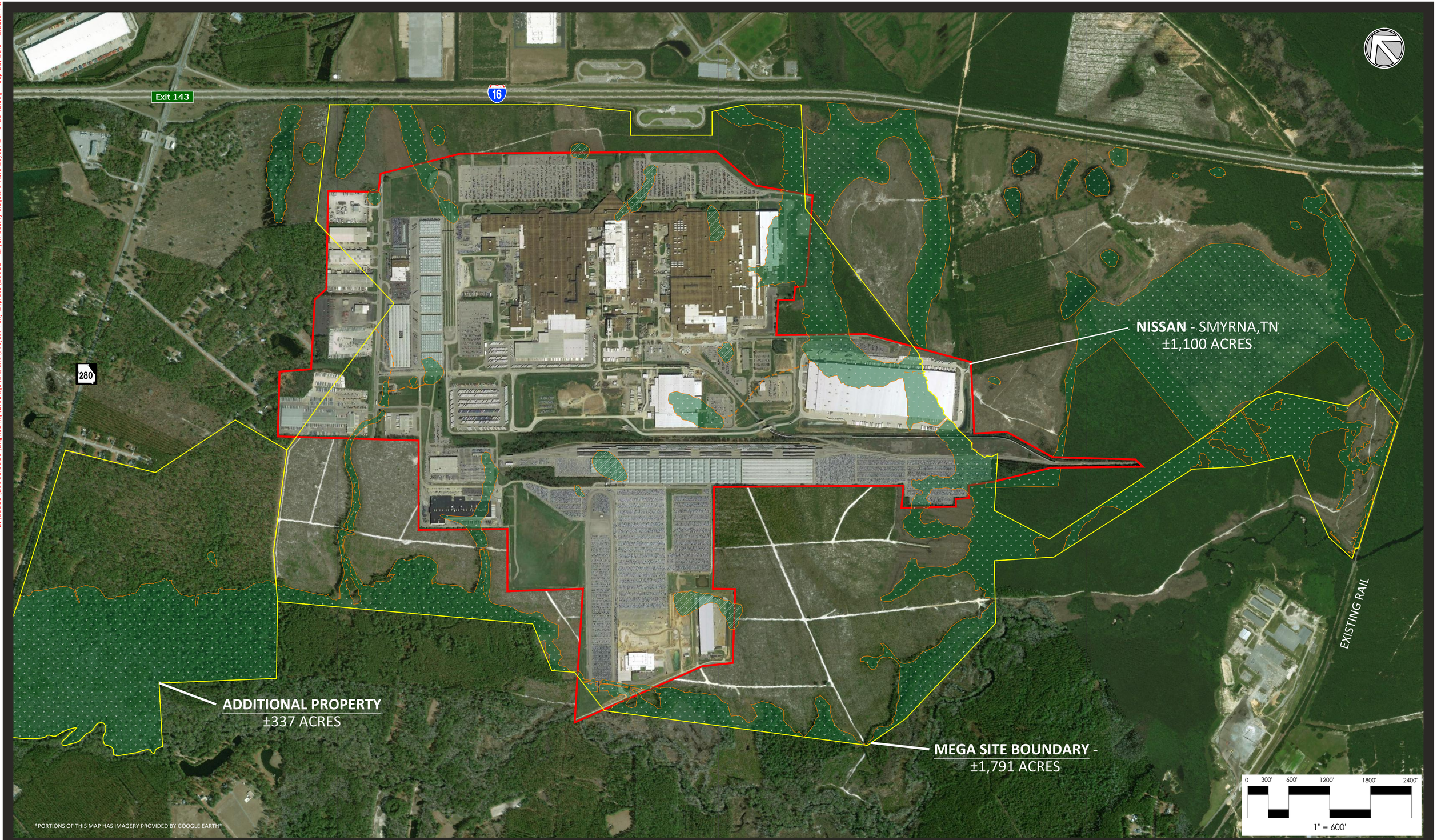

CONCEPTUAL LAYOUT EXHIBIT - E

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