Portside Solar Project

Special Land Use Permit Application Narrative

Prepared for:

Fort Gratiot Township

Prepared by:

Portside Solar, LLC

Submittal Date:

September 2023

TABLE OF CONTENTS

APPENDICES

I. PROJECT INTRODUCTION

On behalf of Portside Solar, LLC (Portside, or the Applicant), Atwell, LLC (Atwell) has prepared this application for a Special Land Use Permit and Site Plan for the Portside Solar Project (the Project) within Fort Gratiot Township, St. Clair County, Michigan. The Project is proposed for development by Ranger Power, LLC (Ranger Power, or Ranger). A checklist summarizing all requirements for the Special Land Use Permit and Site Plan and their location within the application package is included as **Appendix A** and **Appendix B**. In addition, the Fort Gratiot Township Application for Special Land Use Permit form is included as **Appendix C**.

1) APPLICANT INFORMATION

Project Developer:
Toby Valentino
Development Manager
Ranger Power
226 N. Morgan Street, Suite 200
Chicago, IL 60607

Portside Solar:
Portside Solar, LLC
226 N. Morgan Street, Suite 200
Chicago, IL 60607

Ranger Power is a utility-scale renewable energy development company headquartered in Chicago, Illinois, focused on bringing well-sited, community-supported solar energy to states in the Midwest. Ranger Power has a development portfolio of approximately 10 GW of active projects ranging in nameplate capacity from 50 MW to 400 MW.

Since 2017, Ranger has permitted more than 2,600 MW and executed over 2,600 MW of utility-scale Power Purchase and Build-Own-Transfer agreements with leading power providers throughout the region. This represents some of the largest volumes of solar development in the Midwest.

Over 1,100 MW of solar projects developed by Ranger have moved into construction, 586 MW of which are now commercially operating--many of these projects represent the largest solar projects operating in their respective states. By the end of 2023, Ranger anticipates that nearly 1 GW of projects developed by Ranger Power will be in commercial operation, delivering on our sustained value and trust to our partners.

Some examples of Ranger's leadership in the market include the recently completed construction on all three phases of the 239 MW Assembly solar project in Shiawassee County, Michigan, which is the largest operational solar project in the State. The Ranger-developed 149 MW River Fork project started construction in 2021. Dressor Plains, Prairie State, and Big River are all Ranger developed projects in Illinois, collectively 347 MW. Prairie State and Dressor Plains became operational in 2Q 2021 and are the largest operating solar projects in the state. Big River became operational in 3Q 2022.

Ranger is led by one of the most experienced teams in the renewable energy space. Their time-tested approach to development, which separates Ranger from the competition, involves working closely with landowners and communities to gain their support when bringing new investment and clean energy to the region.

Ranger Power is an industry leader because of the commitment to work closely with communities to ensure projects are a win-win. Ranger Power projects represent a significant investment and a new clean energy resource

that benefits local residents, business owners, and stakeholders through bringing new investment and tax base, employment opportunities, and educational opportunities.

2) PROJECT SUMMARY

The Project will include up to 100 MW (megawatts) of photovoltaic solar panels that will be sited within a fenced area of up to approximately 917 acres within Fort Gratiot Township, with an additional portion of the project within Clyde Township in St. Clair County, Michigan (the Project Area). Of the 100 MW capacity generated by the Project, approximately 75 MW is proposed within Fort Gratiot Township. Land use within the Project Area is primarily agriculture and undeveloped woodlots. The Project Area was selected based on land use, interest from landowners, and proximity to existing electrical grid infrastructure.

The Applicant has acquired the rights to develop, construct, and operate an up to 100-MW alternating current (AC) solar project on seventeen parcels of land owned by five private landowners located in Fort Gratiot Township. These land rights are granted by easement agreements or by purchase option agreement. A list of participating parcels in Fort Gratiot Township is included in **Appendix D**.

The Project will consist of solar panels and inverters arranged in photovoltaic (PV) arrays. Associated facilities include the Project substation, overhead transmission line to point-of-interconnection, underground electrical cables to collect the generated power and transmit it to the Project substation, perimeter fencing, and gravel access roads to each PV array. The Project substation is proposed within Clyde Township and will not be discussed further in this document. The proposed locations of the solar arrays, inverters, collection lines, access roads, fencing, and other Project improvements within Fort Gratiot Township are shown in the Site Plan in **Appendix B**.

As demonstrated throughout this application narrative, Ranger Power made a comprehensive and diligent effort in designing and siting a facility that meets or exceeds the requirements of the Fort Gratiot Township Zoning Ordinance and Solar Energy Systems Ordinance. As sited, the Project optimizes efficient use of land to generate solar power, while avoiding impacts to natural resources or existing land uses. Additionally, as designed, the Project avoids impacts to wetlands and floodplains. In addition, the Project will utilize setbacks that meet or exceed the setback requirements set forth in the Fort Gratiot Township Zoning Ordinance and will install landscape screening in areas adjacent to non-participating residential parcels, where adequate screening does not already exist. The Project plans to coordinate with stakeholders and township officials throughout Project permitting, construction, and operation, and has received wide-ranging support from community members.

The Applicant is coordinating a power purchase agreement (PPA) for the purchase of the power generated by Project. Construction is expected to begin in 2025, with commercial operation anticipated in 2026. Exact construction and operation dates are dependent on receipt of necessary permits, equipment, and approvals.

Ranger Power is fortunate to present a project that community members, local stakeholders, and job seekers alike can be proud of.

II. SOLAR ENERGY SYSTEMS ORDINANCE

Pursuant to the Fort Gratiot Township Solar Ordinance, the Project is defined as large principal-use solar energy system (SES). Large principal-use solar energy systems (SES) are a special land use in the AG, O-1, O-2, C-1, C-2, M-1, AND M-2 zoning districts. The Project is sited entirely within the agricultural (AG) zoning district of Fort Gratiot Township. Refer to the Zoning Map in **Appendix B**: Site Plan Sheet 02.

1. GENERAL PROVISIONS

Section 38-117, *General Provisions Regarding Solar Energy Systems*, of the Fort Gratiot Charter Township Zoning Ordinance No. 226, states the requirements for large principal-use solar energy systems (SES), which the Project will be designed to accommodate.

1. **Total height for a large principal-use SES shall not exceed the maximum allowed height in the district in which the system is located.**

   A height of 35 feet shall not be exceeded by Project infrastructure. The height of the solar array at maximum tilt will not exceed the height requirements set forth for the Agricultural District in accordance with that district's schedule of regulations.
   Refer to Solar Details in **Appendix B**: Site Plan Sheet 17.

2. **2. Setback distance shall be measured from the property line or road right-of-way to the closest point of the solar array at minimum tilt or any SES components and as follows:**
   a. In accordance with the setbacks for principal buildings or structures for the zoning district of the project site.
   b. 100 feet from any existing dwelling unit on a non-participating lot.

   The project meets all applicable setback requirements. An additional setback of 100 feet from any solar panels to any existing dwelling unit on a non-participating lot will be followed.
   Refer to Setback Tables in **Appendix B**: Site Plan Sheets 4 - 13.

3. **A large principal-use SES may be secured with perimeter fencing to restrict unauthorized access. If installed, perimeter fencing shall be a maximum of 6' feet in height. Fencing is not subject to setbacks.**

   Perimeter fencing will be installed around all proposed panels with a maximum height of 7' to restrict unauthorized access and to meet standards of the National Electric Safety Code (NESC) and Institute of Electrical and Electronics Engineers (IEEE) guidelines, which the Project will be built in compliance with.
   Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13 and Security Details in **Appendix B**: Site Plan Sheet 14.

4. **A large principal-use SES shall follow the screening and/or landscaping standards for the zoning district of the project site. Any required screening and landscaping shall be placed outside the perimeter fencing. Screening/landscaping detail shall be submitted as part of the site plan that identifies the type and extent of screening for a large principal-use SES, which may include plantings, strategic use of berms, and/or fencing.**

   Vegetative screening is proposed along all non-participating residential and public uses where existing screening is not adequate. All proposed screening will be placed outside the perimeter fencing.
   Refer to the Landscaping Plan in **Appendix B**: Site Plan Sheet 12 and to the Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

5. **A large principal-use SES shall include the installation of ground cover vegetation maintained for the duration of operation until the site is decommissioned. The applicant shall include a ground cover vegetation establishment and management plan as part of the site plan. Vegetation establishment must include invasive plant species and noxious weed control. The following standards apply:**

   a. Sites bound by a Farmland Development Rights (PA 116) Agreement must follow the Michigan Department of Agriculture and Rural Development's Policy for Allowing Commercial Solar Panel Development on PA 116 Lands.

   b. Ground cover at sites not enrolled in PA 116 must meet one or more of the four types of Dual Use defined in this ordinance.
   i. Pollinator Habitat: Solar sites designed to meet a score of 76 or more on the Michigan Pollinator Habitat Planning Scorecard for Solar Sites.
   ii. Conservation Cover: Solar sites designed in consultation with conservation organizations that focus on restoring native plants, grasses, and prairie with the aim of protecting specific species (e.g., bird habitat) or providing specific ecosystem services (e.g., carbon sequestration, soil health).
   iii. Forage: Solar sites that incorporate rotational livestock grazing and forage production as part of an overall vegetative maintenance plan.
   iv. Agrivoltaics: Solar sites that combine raising crops for food, fiber, or fuel, and generating electricity within the project area to maximize land use. Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements.

   c. Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements.

   Construction and implementation of the Project will include the installation of ground cover vegetation maintained for the duration of operation until the site is decommissioned.
   Refer to the Vegetation Plan in **Appendix B**: Site Plan Sheet 13 and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16 for ground cover vegetation establishment and management activities.

   a) Parcels in the Project Area bound by a PA 116 agreement will follow MDARD'S *Policy for Allowing Commercial Solar Panel Development* on PA 116 Lands.
   b) Ground cover in the Project Area not enrolled in PA 116 will meet the Pollinator Habitat dual use type defined in the Fort Gratiot Township Solar Ordinance.
   c) Not Applicable

6. **A large principal-use SES shall not count towards the maximum lot coverage or impervious surface standards for the district.**

   The Applicant understands that large principal-use SES shall not count towards the maximum lot coverage or impervious surface standards for the district.

7. **Land disturbance or clearing shall be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the**

topography of the land. Topsoil distributed during site preparation (grading) on the property shall be retained on site.

Land disturbance or clearing prior to construction of the Project will be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation and grading will be retained on site.

The final site design will include grading and elevations after final engineering. Localized grading will be necessary to meet equipment tolerances and for maintaining drainage. A final grading and soil erosion control plan will be developed by the Engineering, Procurement, and Construction (EPC) contractor upon final electrical design.

Refer to Proposed Conditions in **Appendix B**: Site Plan on Sheets 4 - 13 for topographic contours and existing structures, and to the Landscaping Plan in **Appendix B**: Site Plan Sheet 12 for details on planned disturbance.

8. **New access drives within the SES shall be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. The use of geotextile fabrics and gravel placed on the surface of the existing soil for the construction of temporary drives during the construction of the SES is permitted, provided that the geotextile fabrics and gravel are removed once the SES is in operation.**

   Access roads constructed for the Project will be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. 16’ wide gravel access roads are designed for the Project from public roads to inverter pads. Access drives will be constructed to allow stormwater to sheet across and prevent puddling. Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13 for locations of planned access roads and Crossing & Access Road Details in **Appendix B**: Site Plan Sheet 15 for dimensions and specifications.

9. **SES wiring (including communication lines) may be buried underground. Any above- ground wiring within the footprint of the SES shall not exceed the height of the solar array at maximum tilt.**

   Any aboveground wiring within the footprint of the SES will not exceed the height of the solar array at maximum tilt. Refer to **Appendix B**: Site Plan Sheet 17.

10. **Large principal-use SES lighting shall be limited to inverter and/or substation locations only. Light fixtures shall have downlit shielding and be placed to keep light on-site and glare away from adjacent properties, bodies of water, and adjacent roadways. Flashing or intermittent lights are prohibited.**

    The proposed substation is not sited within Fort Gratiot Township and lighting will not be used at panel inverters. Therefore, lighting is not proposed for the Project within Fort Gratiot Township. Additionally, the project will not produce glare on adjacent properties, bodies of water, and adjacent roadways. Refer to **Appendix G**: Glint/Glare Study.

11. **Signage may be at the project site, with the maximum area signage allowed per the requirements of 38-5 Schedules A, B, C and D. Any signage shall meet the setback, illumination, and materials/ construction requirements of the zoning district for the project site.**

Signage relating to the Project will comply with the maximum area signage allowed per the requirements of the agricultural zoning district, meeting all setback, illumination, and materials/construction requirements for that district. Refer to **Appendix B**: Site Plan Sheet 14.

12. **The sound pressure level of a large principal-use SES and all ancillary solar equipment shall not exceed 45 dBA at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.**

    The Project has been designed to minimize audible sound at neighboring residences and buildings. According to the Project's Sound Modeling Study, the sound pressure level emanating from the Project and supporting infrastructure once constructed sound levels is not anticipated to exceed 45 A-weighted decibels (dBA). Refer to **Appendix E**: Sound Modeling Study.

13. **In addition to repairing or replacing SES components to maintain the system, a large principal-use SES may at any time be repowered, without the need to apply for a new special land-use permit, by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint. a. A proposal to change the project footprint of an existing SES shall be considered a new application, subject to the ordinance standards at the time of the request. Expenses for legal services and other studies resulting from an application to modify an SES will be reimbursed to Fort Gratiot Charter Township by the SES owner in compliance with established escrow policy.**

    The Applicant understands that in addition to repairing or replacing SES components to maintain the system, a large principal-use SES may at any time be repowered, without the need to apply for a new special land-use permit, by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint.

14. **A decommissioning plan is required at the time of application.**

    a. The decommission plan shall include:

    i. The anticipated manner in which the project will be decommissioned, including a description of which above-grade and below-grade improvements will be removed, retained (e.g. access drive, fencing), or restored for viable reuse of the property consistent with the zoning district,

    ii. The projected decommissioning costs for removal of the SES (net of salvage value in current dollars) and soil stabilization, less the amount of the surety bond posted with the State of Michigan for decommissioning of panels installed on PA 116 lands,

    iii. The method of ensuring that funds will be available for site decommissioning and stabilization (in the form of surety bond, irrevocable letter of credit, or cash deposit), and

    b. A review of the amount of the performance guarantee based on inflation, salvage value, and current removal costs shall be completed every 5 years, for the life of the project, and approved by the board. An SES owner may at any time:

    i. Proceed with the decommissioning plan approved by the or Planning Commission and remove the system as indicated in the most recent approved plan; or

    ii. Amend the decommissioning plan with Zoning Administrator approval and proceed according to the revised plan.

c. Decommissioning an SES must commence when the soil is dry to prevent soil compaction and must be complete within 12 months after abandonment. An SES that has not produced electrical energy for 12 consecutive months shall prompt an abandonment hearing.

At the end of the Project's operational life, it will be decommissioned and can be returned to agricultural use. The project will meet all decommissioning requirements. Refer to **Appendix F**: Project Decommissioning Plan.

III. SPECIAL LAND USES [ORDINANCE SEC. 38]

In accordance with Article IV, Section 38-483 of the Fort Gratiot Township Zoning Ordinance, Ranger Power has provided the Planning Commission with this application package, which provides the data required for a Special Land Use Permit (SLUP) application. Refer to the Special Land Use / Site Plan Review Checklist in Appendix A for a summary of SLUP and Site Plan Requirements and where they can be found in this SLUP application package and Site Plan.

PERMIT STANDARDS

GENERAL STANDARDS/REQUIREMENTS FOR APPROVAL FOR SPECIAL LAND USE PERMIT

Ranger Power understands that all solar energy systems, whether ground mounted or roof mounted, are subject to the following general requirements set forth in Section 38-486 of the Fort Gratiot Township Zoning Ordinance:

1) Will be in accordance with the general objectives, intent, and purposes of this chapter.

a. Will be consistent with maintenance of the public health, safety, and welfare.

The Project will not generate traffic, noise, smoke, fumes, glare, or odors detrimental to health, safety, or general welfare of the community during operations. The Project is implementing setbacks from non-participating properties, public roadways, and residences that meet or exceed the requirements set forth in the Fort Gratiot Zoning Ordinance. Construction of the Project will produce a minor increase in local traffic; however, this small increase will be temporary, and measures will be put in place to ensure traffic safety. During operation, vehicular traffic will not increase in association with the Project.

The Project has been designed to minimize audible sound resulting from Project inverters including a voluntary 350' setback from residences. As demonstrated by the Project's Sound Modeling Study (**Appendix E**), sound levels at neighboring residences will comply with all Ordinance requirements.

Operation of a PV solar energy system does not generate emissions, smoke, fumes, or odors. Solar panels are constructed of layered glass, aluminum, and crystalline silicon. Crystalline silicon is a common mineral found naturally within the earth's crust, as well as in sand, stone, concrete, and mortar. As such, the Project will not disturb or be hazardous to any surrounding uses permitted within the adjacent zoning districts or produce any hazardous by-products, as the panels are chemically inert. Furthermore, at the end of its operational life, the Project will be removed in accordance with the Decommissioning Plan provided in **Appendix F**, and land may be returned to its current use.

The Project will not result in glint/glare that would impact neighboring properties or vehicles on the road. The solar panels that will be used for the Project have been designed with an anti-glare coating. A glare hazard analysis did not predict glare to be reflected to any residences or businesses. Refer to the Glint/Glare Study in **Appendix G** for details.

b. Will be of such location, size, and character that it will be in harmony with all applicable regulations of the zoning district in which it is to be located.

Located in the Agricultural District (AG) of Fort Gratiot Township, the Project is designed and will be constructed, operated, and maintained to be harmonious with and in appearance with the rural character of the surrounding area. The Project will maintain the area's low density and will not increase area road traffic once constructed. With the panels positioned to catch the morning or evening sun, the height of the panels will be similar to that of full-grown corn. Perennial vegetative groundcover will be planted and maintained throughout the Project area similar to cover crops in typically agricultural operations or land enrolled in the U.S. Department of Agriculture (USDA) Farm Service Agency Conservation Reserve Program. Refer to the Vegetation Plan in **Appendix B**: Site Plan Sheet 12 and the Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

The Project is sited exclusively on property zoned as Agricultural District (AG) land, the majority of which is currently used for agriculture. Refer to the Zoning Map in **Appendix B**: Site Plan Sheet 2. The Project will preserve the agricultural character and visual appeal of adjacent properties through design measures such as the perimeter fencing that will be constructed with wooden posts and woven fiber, as opposed to standard chain-link fencing; setbacks from roads and residences; landscape buffering; and planting a perennial vegetative ground cover throughout the site. Refer to the Proposed Conditions in **Appendix B:** Site Plan Sheets 4 - 13 and Security Details in **Appendix B:** Site Plan Sheet 14.

The Applicant has committed to seeding the Project Area with a mix of pollinator-friendly and other vegetation determined to be appropriate for the region that will be compatible with the surrounding landscape. Pollinator-friendly vegetation planted within the project area will decrease erosion, increase stormwater control, increase biodiversity within the project area, and maintain the character of the surrounding area. Refer to the Vegetation Plan in **Appendix B:** Site Plan Sheet 13 and the Landscaping and Vegetation Details in **Appendix B:** Site Plan Sheet 16. Overall, the Project is designed to be harmonious and compatible with the general agricultural vicinity and, at the end of the Project's operational life, it will be decommissioned and can be returned to agricultural use. Refer to the Project Decommissioning Plan included in **Appendix F**.

(2) Will be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, refuse disposal, or that persons or agencies responsible for establishment of the proposed use shall be able to provide adequately any such service; will be of a nature that will make vehicular and pedestrian traffic no more hazardous than is normal for the district involved, taking into consideration vehicular turning movements in relation to routes of traffic flow, proximity and relationship to intersections, adequacy of sight distances, location and access of off-street parking and provisions for pedestrian traffic with particular attention to minimizing child-vehicle contacts in residential districts.

The Project does not include any new public roadways and solar panels will be set back from public road rights-of-way (ROWs). During operation, the Project will not generate vehicular or pedestrian traffic. Access roads have been designed to provide safe and efficient ingress and egress points for maintenance crews or emergency vehicles. Refer to the Crossing and Access Road Details in **Appendix B**: Site Plan Sheet 15.

The Project will be served adequately by the existing streets and highways for the construction of the Project. Transportation and installation of the components will not require special accommodations of the existing infrastructure. Workforce and component delivery routes will follow designated and approved routes, and the Project will coordinate with the St. Clair County Road Commission to document road conditions before and after construction to ensure no damage to public roadways has occurred as a result of the Project. Refer to Crossing & Access Road Details in **Appendix B**: Site Plan Sheet 15.

In addition, the Project will comply with all applicable regulations of the St. Clair County Drain Commission. The Applicant will notify the Port Huron Fire Department prior to construction so they can visit during construction to obtain an on-the-ground understanding of the Project layout and emergency access points.

While in operation, the Project will require a staff of 3-6 personnel. The Project will coordinate with local utilities to arrange suitable electric, water, trash disposal, and septic services for the facility. The Project will obtain all building, electrical, plumbing, and other permits required by the St. Clair County Building Inspection and

Environmental Services Department prior to construction. As such, the Project and its use are expected to be served adequately by existing public services and facilities.

In addition, not only will the Project avoid any negative impacts to schools or community, but taxes generated by the Project are anticipated to contribute to community schools, including payments towards school debt. The Project is not expected to require any additional local police or fire department resources and, in fact, will increase local tax revenue benefiting local fire departments. Refer to the Project Property Tax Impact Report in **Appendix H** and the Real Estate Adjacent Property Value Impact Report in **Appendix I**.

(3) Will be compatible with adjacent uses of land and the natural environment.

The Michigan Department of Agriculture & Rural Development ("MDARD") now recognizes the need to install solar arrays on agricultural land, including land enrolled in PA116. Agricultural land is compatible for land use for solar development as the land generally consists of large acreage conducive to low-intensity development such as solar. The Project will serve to supplement farming incomes and allow for nutrient and land recharge while supporting native vegetation and pollinator habitat species. Giving soil rest can help maintain soil quality and contribute to biodiversity of agricultural land to increase nutrient levels and enable the land to revert back to agricultural uses at the end of the operational life for solar installations. The solar arrays will be mounted on piles, minimizing disturbance to the land. Grasses and other vegetation will be allowed to grow underneath and between panels and will be maintained against overgrowth. Refer to the Vegetation Plan in **Appendix B**: Site Plan Sheet 13 and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

Presence of pollinator-friendly species has been shown to increase production of pollinator-dependent crops, such as soybeans. In addition, pollinator-friendly species tend to have deeper root systems, which filter and store more water, thereby decreasing runoff and increasing groundwater storage, and these species tend to require less chemical fertilizer and herbicide, therefore also decreasing pollutants entering surface waters and groundwater. Additionally, soil removal and topographic modifications will be completed in accordance with site-specific construction best management practices (BMPs) and the stabilization of the site will be managed to prevent soil erosion. Refer to the Landscaping Plan in **Appendix B**: Site Plan Sheet 12, Vegetation Plan in **Appendix B**: Site Plan Sheet 13, and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

The Project has been designed to prioritize the preservation of significant natural features such as steeper slopes, wetlands, surface water features, floodplains, sensitive cultural and archaeological sites, and other unique or significant natural areas to the extent practicable. In addition, the Project will utilize 25' voluntary setbacks around natural resources where applicable. As part of the due diligence for the Project, the Applicant contracted Atwell to complete environmental assessments for the Project including a biological habitat assessment, wetland delineation, and cultural resource review. The results of these surveys were used to inform Project design and reduce potential impacts to significant natural features. U.S. Fish and Wildlife Service (USFWS) -recommended BMPs will be used to minimize impacts to potential threatened or endangered species (TES) and their habitat during the construction of the Project.

a. Will be of such location, size and character that it will be in harmony with the appropriate and orderly development of the surrounding neighborhood.

Use of the Project Area for a solar energy system is compatible with surrounding uses and will be harmonious with the appropriate development of the surrounding properties. Uses surrounding the Project include agricultural/croplands, single-family residential and farmsteads, undeveloped woodlots, and access roads. The Project will not impede appropriate and orderly development of the surrounding properties. Refer to the Zoning Map in **Appendix B**: Site Plan Sheet 2 and to the Real Estate Adjacent Property Value Impact Report in **Appendix I**.

b. Will be designed such that the location, size, intensity, site layout and periods of operation of any such proposed use shall eliminate any possible nuisance emanating therefrom which might be noxious to the

occupants of any other nearby permitted uses, whether by reason of dust, noise, fumes, vibration, smoke, or lights.

The Project will include vegetative screening between the areas containing panels and adjacent land uses. The Project will not result in sound or glare impacts to the surrounding properties. Refer to **Appendix E**: Sound Modeling Study and **Appendix G**: Glint/Glare Study.

c. Will be designed such that the proposed location and height of buildings or structures and location, nature and height of walls, fences and landscaping will not interfere with or discourage the appropriate development and use of adjacent land and buildings.

The Project is designed such that it will not interfere with or discourage appropriate development and use of surrounding properties. Specifically, landscape buffering will be implemented along adjacent, non-participating residential and public uses. In addition, in accordance with the Project's ground cover vegetation establishment and management plan, the fenced in areas of the Project will be planted with a seed mix appropriate for the region. The perimeter fencing will be constructed with wooden posts and woven fiber, as opposed to standard chain-link fencing. Refer to the Landscaping Plan in **Appendix B**: Site Plan Sheet 12, Vegetation Plan in **Appendix B**: Site Plan Sheet 13, and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

d. Will not cause substantial injury to the value of other property in the neighborhood in which it is to be located.

The Project will not cause injury to the value of other property in the neighborhood in which it is located. As described in the Real Estate Adjacent Property Value Impact Report, solar facilities of similar size and in similar rural areas in Michigan and across the Midwest have consistently been shown to have no measurable impact on property values in the surrounding area or neighborhood. Refer to the Project Property Tax Impact Report in **Appendix H** and the Real Estate Adjacent Property Value Impact Report in **Appendix I**.

(4) Will promote the use of land in a socially and economically desirable manner; will relate harmoniously with the physical and economic aspects of adjacent land uses as regards prevailing shopping habits, convenience of access by prospective patrons, continuity of development, and need for particular services and facilities in specific areas of the township.

Located in the Agricultural District (AG) of Fort Gratiot Township, the Project is designed and will be constructed, operated, and maintained to be harmonious with and in appearance with the rural character of the surrounding area. The Project will maintain the area's low density and will not increase area road traffic once constructed. With the panels positioned to catch the morning or evening sun, the height of the panels will be similar to that of full-grown corn. The Project is implementing setbacks from non-participating properties, public roadways, and residences that meet the requirements set forth in the Fort Gratiot Zoning Ordinance. Perennial vegetative groundcover will be planted and maintained throughout the Project area similar to cover crops in typically agricultural operations or land enrolled in the U.S. Department of Agriculture (USDA) Farm Service Agency Conservation Reserve Program. The Project is sited exclusively on property zoned as Agricultural District (AG) land, the majority of which is currently used for agriculture. Refer to the Zoning Map in **Appendix B**: Site Plan Sheet 2.

The Project will preserve the agricultural character and visual appeal of the Project from the adjacent properties through design measures such as the perimeter fencing that will be constructed with wooden posts and woven fiber, as opposed to standard chain-link fencing; landscape buffering along adjacent, non-participating residential parcels, if requested by the parcel owner; and planting a perennial vegetative ground cover throughout the site. Refer to the Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13 and Security Details in **Appendix B**: Site Plan Sheet 14.

The Applicant has committed to seeding the Project Area with a mix of pollinator-friendly and other vegetation determined to be appropriate for the region that will be compatible with the surrounding landscape. Pollinator-friendly vegetation planted within the project area will decrease erosion, increase stormwater control, increase

biodiversity within the project area, and maintain the character of the surrounding area. Refer to the Landscaping Plan in **Appendix B**: Site Plan Sheet 12, Vegetation Plan in **Appendix B**: Site Plan Sheet 13, and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

Overall, the Project is designed to be harmonious and compatible with the general agricultural vicinity and, at the end of the Project's operational life, it will be decommissioned and can be returned to agricultural use. Refer to the Project Decommissioning Plan included in **Appendix F.**

Not only will the Project avoid any negative financial impacts to the community, but taxes generated by the Project are anticipated to contribute to community schools, infrastructure, and services in Fort Gratiot. Refer to the Project Property Tax Impact Report in **Appendix H.**

The Project promotes the use of land within Fort Gratiot Township in a socially and economically desirable manner by providing renewable energy to communities in Michigan through a low-profile, strategically sited solar project designed to maintain and protect the land's historical usage for agricultural production. Solar energy generation in St. Clair County will contribute to the stability and availability of energy resources in Michigan.

IV. ZONING ORDINANCE SEC. 38-46

The Applicant has prepared a site plan (**Appendix B**) in accordance with the requirements of Sec. 38-46(1) of the Fort Gratiot Charter Township Zoning Ordinance, which states that a site plan is required for any building or use requiring special approval. Refer to the Special Land Use / Site Plan Review Checklist included with **Appendix A**. The Site Plan includes maps showing the physical features and land uses of the Project Area, both before and after construction of the proposed project.

SITE PLAN REVIEW PROCESS

Per Sec. 38-46(2) of the Fort Gratiot Charter Township Zoning Ordinance, a request may be filed for site plan review by the planning commission by filing with the township clerk the complete application upon the forms furnished by the clerk. At least 11 copies of a site plan will be included.

REQUIRED DATA

In accordance with Sec. 38-46(3) Fort Gratiot Charter Township Zoning Ordinance, the site plan will adhere to the following requirements:

a. The site plan shall be of a scale not greater than one-inch equals 20 feet, and not less than one inch equal 200 feet, and of such accuracy that the planning commission can readily interpret the site plan, and shall include more than one drawing when required for clarity.

b. The property shall be identified by lot lines and location, including dimensions, angles, and size, and correlated with the legal description of such property. Such plan shall further include the name and address of the property owner, and developer. The site plan shall bear at least one or more seals of an architect or professional engineer licensed to practice in the state.

c. The site plan shall show scale; north point; boundary dimensions; topography (at least two-foot contour intervals); and natural features, such as woodlots, streams, rivers, lakes, drains, and similar features.

d. The site plan shall show existing manmade features, such as buildings; structures; high tension towers; pipelines; and existing utilities, such as water and sewer lines, excavations, bridges, culverts, drains, and easements; and shall identify adjacent properties and their existing uses.

e. The site plan shall show the location, proposed finished floor and grade line elevations, size of proposed principal and accessory buildings, their relation one to another and to any existing structures on the site, the height of all buildings, and square footage of floor space. Site plans for residential development shall include a

density schedule showing the number of dwelling units per net acre, including a dwelling schedule showing the unit type and number of each unit type.

f. The site plan shall show the proposed streets, driveways, sidewalks, and other vehicular and pedestrian circulation features within and adjacent to the site; also, the location, size, and number of parking spaces in the off-street parking area, and the identification of service lanes and service parking.

g. The site plan shall show the proposed location, use, and size of open spaces; and the location of any landscaping, fences, or walls on the site. The site plan shall further show any proposed location of connections of existing utilities and proposed extension thereof.

h. A vicinity map shall be submitted showing the location of the site in relation to the surrounding street system.

Refer to **Appendix A:** Special Land Use / Site Plan Review Checklist for a summary of required documents and their locations within the Project Special Land Use Permit Application and Site Plan. The above-listed requirements are included in the Site Plan in **Appendix B** and the Fort Gratiot Charter Township Special Land Use Permit Application in **Appendix C**. Design drawings and engineering calculations have been certified by a Professional Engineer licensed in the State of Michigan.

V. ADDITIONAL INFORMATION

1) CERTIFICATIONS

The Applicant will comply with all applicable federal, state, and local laws and regulations and will obtain all required federal, state, and local approvals, licenses, permits or variances for the proposed large solar energy system prior to the start date of construction. The Applicant ensures their projects are sited in an environmentally responsible manner and in compliance with all applicable local, state, and federal laws and regulations.

The following list represents some of the permits and approvals to be reviewed as part of this project:

AGENCY	DESCRIPTION	STATUS
EGLE-WRD	Potential NREPA permits/approvals include: ● Part 31 Floodplains ● Part 301 Watercourses ● Part 303 Wetlands	Application Anticipated
St. Clair County	Soil Erosion and Sedimentation Control Permit	Application Anticipated
DTE Energy	Electrical Line Easement Crossing Agreements	Application Anticipated
Michigan Department of Transportation	Driveway Crossing Agreements	Application Anticipated

2) CONSTRUCTION CODES AND INTERCONNECTION STANDARDS

Applicant will comply with all applicable state construction and electrical codes and St. Clair County building permit requirements, as well as all applicable utility, Michigan Public Service Commission, and Federal Energy Regulatory Commission interconnection standards.

3) CONSTRUCTION SCHEDULE

Upon approval of the SLUP application, the below table depicts an anticipated construction schedule outlining major project milestones.

Portside Solar Milestones	
Mobilization	Q2 2025
Start of Construction	Q2 2025
Commercial Operation Date	Q4 2026

VI. CONCLUSION

This submission and its attachments demonstrate the Applicant's compliance with the Fort Gratiot Township Zoning Ordinance. Upon approval of the Special Land Use Permit, Ranger Power looks forward to the opportunity to construct the Project. The Project will supply clean renewable energy to the state and will operate in compliance with all applicable local, state, and federal regulations.

Fort Gratiot Township Solar Energy Systems Ordinance – No. 226

The documented requirements for this ordinance are included within the Fort Gratiot Township Special Land Use Permit (SLUP) Application in **Appendix C**. All other necessary information is included within the attached appendices (**Appendices A** – **I**).

The table below summarizes the Fort Gratiot Township Solar Energy Systems Ordinance – No. 226 and provides the location within the application package or its appendices where these items can be found.

Fort Gratiot Township Solar Energy Systems Ordinance – No. 226	Explanation of Project Compliance with Standards for Approval
38-117 Large Principal-Use SES A large principal-use SES is a special land use in the AG, 0-1, 0-2, C-1, C-2, M-1 and M·2 zoning districts and shall meet the following requirements:	Pursuant to the Fort Gratiot Township Solar Ordinance, the Project is defined as large principal-use solar energy system (SES). The Project is sited entirely within the agricultural (AG) zoning district of Fort Gratiot Township. Refer to the Zoning Map in **Appendix B**: Site Plan Sheet 2.
1. Height: Total height for a large principal-use SES shall not exceed the maximum allowed height in the district in which the system is located.	The maximum allowed height in the Agricultural District is 35 feet. The project components are designed to not exceed this height. Refer to Solar Details in **Appendix B**: Site Plan Sheet 17.
2. Setbacks: Setback distance shall be measured from the property line or road right-of-way to the closest point of the solar array at minimum tilt or any SES components and as follows: a. In accordance with the setbacks for principal buildings or structures for the zoning district of the project site. b. 100 feet from any existing dwelling unit on a non-participating lot.	The project meets all applicable setback requirements. An additional setback of 100 feet from any existing dwelling unit on a non-participating lot will be followed. Refer to Setback Tables in **Appendix B**: Site Plan Sheets 04 - 13.
3. Fencing: A large principal-use SES may be secured with perimeter fencing to restrict unauthorized access. If installed, perimeter fencing shall be a maximum of 6' feet in height. Fencing is not subject to setbacks.	Perimeter fencing will be installed around all proposed panels with a maximum height of 7' to restrict unauthorized access. A perimeter fence with a height of 7' is required by National Electric Safety Code (NESC) standards. All components of the solar facility will comply with the National Electric Safety Code and the Institute of Electrical and Electronics Engineers standards. Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13 for locations of fencing.
4. Screening/Landscaping: A large principal-use SES shall follow the screening and/or landscaping standards for the zoning district of the project site. Any required screening and landscaping shall be placed outside the perimeter fencing.	Vegetative screening is proposed along all non-participating residential and public uses where existing screening is not adequate. All proposed screening will be placed outside the perimeter fencing.

Fort Gratiot Township Solar Energy Systems Ordinance – No. 226	Explanation of Project Compliance with Standards for Approval
Screening/landscaping detail shall be submitted as part of the site plan that identifies the type and extent of screening for a large principal-use SES, which may include plantings, strategic use of berms, and/or fencing.	Refer to the Landscaping Plan in **Appendix B**: Site Plan Sheet 12 and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.
5. Ground Cover: A large principal-use SES shall include the installation of ground cover vegetation maintained for the duration of operation until the site is decommissioned. The applicant shall include a ground cover vegetation establishment and management plan as part of the site plan. Vegetation establishment must include invasive plant species and noxious weed control. The following standards apply: a. Sites bound by a Farmland Development Rights (PA 116) Agreement must follow the Michigan Department of Agriculture and Rural Development's Policy for Allowing Commercial Solar Panel Development on PA 116 Lands. b. Ground cover at sites not enrolled in PA 116 must meet one or more of the four types of Dual Use defined in this ordinance. i. Pollinator Habitat: Solar sites designed to meet a score of 76 or more on the Michigan Pollinator Habitat Planning Scorecard for Solar Sites. ii. Conservation Cover: Solar sites designed in consultation with conservation organizations that focus on restoring native plants, grasses, and prairie with the aim of protecting specific species (e.g., bird habitat) or providing specific ecosystem services (e.g., carbon sequestration, soil health). iii. Forage: Solar sites that incorporate rotational livestock grazing and forage production as part of an overall vegetative maintenance plan. iv. Agrivoltaics: Solar sites that combine raising crops for food, fiber, or fuel, and generating electricity within the project area to maximize land use. Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements c. Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements.	Construction and implementation of the Project will include the installation of ground cover vegetation maintained for the duration of operation until the site is decommissioned. Parcels in the Project Area bound by a PA 116 Agreement will follow MDARD'S Policy for Allowing Commercial Solar Panel Development on PA 116 Lands. Ground cover in the Project Area not enrolled in PA 116 will meet the standards set for pollinator habitat of dual use defined in the Fort Gratiot Township Solar Ordinance. The project proposes pollinator habitat be created within all fenced in areas of the Project. Planting mixes to be used will be designed to meet a score of 76 or more on the Michigan Pollinator Habitat Planning Scorecard for Solar Sites. Refer to the Vegetation Plan in **Appendix B**: Site Plan Sheet 13 and Landscaping & Vegetation Details in **Appendix B**: Site Plan Sheet 16.

Fort Gratiot Township Solar Energy Systems Ordinance – No. 226	Explanation of Project Compliance with Standards for Approval
6. Lot Coverage: A large principal-use SES shall not count towards the maximum lot coverage or impervious surface standards for the district.	
7. Land Clearing: Land disturbance or clearing shall be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation (grading) on the property shall be retained on site.	Land disturbance or clearing prior to construction of the Project will be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation and grading will be retained on site. Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13.
8. Access Drives: New access drives within the SES shall be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. The use of geotextile fabrics and gravel placed on the surface of the existing soil for the construction of temporary drives during the construction of the SES is permitted, provided that the geotextile fabrics and gravel are removed once the SES is in operation.	Gravel access roads are utilized and designed for the Project from public roads to inverter pads. Access drives to slope in the direction of the existing grade to allow stormwater to sheet across it and to prevent puddling. Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13 for the location of proposed access roads. Refer to the Crossing & Access Road Details in **Appendix B**: Site Plan Sheet 15 for access road dimensions and specifications.
9. Wiring: SES wiring (including communication lines) may be buried underground. Any above- ground wiring within the footprint of the SES shall not exceed the height of the solar array at maximum tilt.	Any aboveground wiring within the footprint of the SES will not exceed the height of the solar array at maximum tilt. Refer to Solar Details in **Appendix B**: Site Plan Sheet 17.
10. Lighting: Large principal-use SES lighting shall be limited to inverter and/or substation locations only. Light fixtures shall have downlit shielding and be placed to keep light on-site and glare away from adjacent properties, bodies of water, and adjacent roadways. Flashing or intermittent lights are prohibited.	The proposed substation is not sited within Fort Gratiot Township and lighting will not be used at panel inverters. Therefore, the Project will not produce glare on adjacent properties, bodies of water, or adjacent roadways. **Refer to Appendix G:** Glint/Glare Study.
11. Signage: Signage may be at the project site, with the maximum area signage allowed per the requirements of 38-5 Schedules A, B, C and D. Any signage shall meet the setback, illumination, and materials/ construction requirements of the zoning district for the project site.	Signage relating to the Project will comply with the maximum area signage allowed per the requirements of the AG zoning district, meeting all setback, illumination, and materials/construction requirements for that district. Refer to the Security Details in **Appendix B**: Site Plan Sheet 14 for typical signage.
12. Sound: The sound pressure level of a large principal-use SES and all ancillary solar equipment shall not	The sound pressure level emanating from the Project and supporting infrastructure once constructed will

Fort Gratiot Township Solar Energy Systems Ordinance – No. 226	Explanation of Project Compliance with Standards for Approval
exceed 45 dBA at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.	not exceed 45 dbA at the property line or an adjoining non-participating lot. Refer to the Proposed Conditions in **Appendix B**: Site Plan Sheets 04 - 13 to view dbA sound rings around inverters. Refer to **Appendix E**: Sound Modeling Study.
13. Repowering: In addition to repairing or replacing SES components to maintain the system, a large principal-use SES may at any time be repowered, without the need to apply for a new special land-use permit, by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint. a. A proposal to change the project footprint of an existing SES shall be considered a new application, subject to the ordinance standards at the time of the request. Expenses for legal services and other studies resulting from an application to modify an SES will be reimbursed to Fort Gratiot Charter Township by the SES owner in compliance with established escrow policy.	
14. Decommissioning: A decommissioning plan is required at the time of application. a. The decommission plan shall include: i. The anticipated manner in which the project will be decommissioned, including a description of which above-grade and below-grade improvements will be removed, retained (e.g. access drive, fencing), or restored for viable reuse of the property consistent with the zoning district, ii. The projected decommissioning costs for removal of the SES (net of salvage value in current dollars) and soil stabilization, less the amount of the surety bond posted with the State of Michigan for decommissioning of panels installed on PA 116 lands, iii. The method of ensuring that funds will be available for site decommissioning and stabilization (in the form of surety bond, irrevocable letter of credit, or cash deposit), and b. A review of the amount of the performance guarantee based on inflation, salvage value, and current removal costs shall be completed every 5 years, for the life of the project, and approved by the board. An SES owner may at any time: i. Proceed with the decommissioning plan approved by the or Planning Commission and remove the system as indicated in the most recent approved plan; or	At the end of the Project's operational life, it will be decommissioned and can be returned to agricultural use. The project will meet all decommissioning requirements. Refer to **Appendix F**: Project Decommissioning Plan.

Fort Gratiot Township Solar Energy Systems Ordinance – No. 226	Explanation of Project Compliance with Standards for Approval
ii. Amend the decommissioning plan with Zoning Administrator approval and proceed according to the revised plan. c. Decommissioning an SES must commence when the soil is dry to prevent soil compaction and must be complete within 12 months after abandonment. An SES that has not produced electrical energy for 12 consecutive months shall prompt an abandonment hearing.	

Fort Gratiot Township Zoning Ordinance Sec. 38-Article IV– Special Land Uses

The table below summarizes the Fort Gratiot Township Zoning Ordinance Sec. 38-Article IV– Special Land Uses taken directly from the Ordinance, and the location within the Site Plan submittal documents in which these items can be found.

Fort Gratiot Township Zoning Ordinance Sec. 38-Article IV– Special Land Uses	Location within the Site Plan Application
Sec. 38-486. - Required standards and findings for making determinations The planning commission shall review the particular circumstances and facts of each proposed use in terms of the following requirements: (1) Will be in accordance with the general objectives, intent, and purposes of this chapter a. Will be consistent with maintenance of the public health, safety, and welfare. b. Will be of such location, size and character that it will be in harmony with all applicable regulations of the zoning district in which it is to be located.	The Project will not adversely affect the public health, safety, or welfare of the community. The Project will be built in compliance with standardized electric industry code guidelines. Operation of a solar energy system does not generate harmful emissions, fumes, or smoke. As required by federal regulations, the Project will not be accessible to the public and will be surrounded by a perimeter fence, reducing the potential for safety or security issues. Refer to Section III.1.a. and Section III.1.b of the Fort Gratiot Township Permit Application Narrative; **Appendix E**: Sound Modeling Study; and **Appendix G**: Glint/Glare Study.
(2) Will be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, refuse disposal, or that persons or agencies responsible for establishment of the proposed use shall be able to provide adequately any such service; will be of a nature that will make	The Project does not include any new public roadways and solar panels will be set back from public road ROWs. During Project construction, workforce and

Fort Gratiot Township Zoning Ordinance Sec. 38-Article IV– Special Land Uses	**Location within the Site Plan Application**
vehicular and pedestrian traffic no more hazardous than is normal for the district involved, taking into consideration vehicular turning movements in relation to routes of traffic flow, proximity and relationship to intersections, adequacy of sight distances, location and access of off-street parking and provisions for pedestrian traffic with particular attention to minimizing child-vehicle contacts in residential districts.	component delivery routes will follow designed and approved routes. During operation, the Project will not generate vehicular or pedestrian traffic. Access roads have been designed to provide safe and efficient ingress and egress points for maintenance crews or emergency vehicles. The Project will be adequately served by existing public facilities and services, and will generate taxes to local jurisdictions to support, maintain, and improve community services. **Refer to** Section III.2. of the Fort Gratiot Township Permit Application Narrative and **Appendix H**: Project Property Tax Impact Assessment**.**
(3) Will be compatible with adjacent uses of land and the natural environment. a. Will be of such location, size and character that it will be in harmony with the appropriate and orderly development of the surrounding neighborhood. b. Will be designed such that the location, size, intensity, site layout and periods of operation of any such proposed use shall eliminate any possible nuisance emanating therefrom which might be noxious to the occupants of any other nearby permitted uses, whether by reason of dust, noise, fumes, vibration, smoke, or lights. c. Will be designed such that the proposed location and height of buildings or structures and location, nature and height of walls, fences and landscaping will not interfere with or discourage the appropriate development and use of adjacent land and buildings. d. Will not cause substantial injury to the value of other property in the neighborhood in which it is to be located.	The Project will be compatible with adjacent uses of land and the natural environment. a. The Project will be harmonious with the appropriate and orderly development of the community. Refer to Section III.3.a of the Fort Gratiot Township Permit Application Narrative and to the Zoning Map in **Appendix B:** Site Plan Sheet 02. b. The Project will not adversely affect nearby occupants or present any nuisance. Refer to Section III.3.b of the Fort Gratiot Township Permit Application Narrative and to **Appendix E**: Sound Modeling Study; and **Appendix G**: Glint/Glare Study. c. Infrastructure proposed for the Project will not adversely affect future development of land and buildings of the surrounding area.

Fort Gratiot Township Zoning Ordinance Sec. 38-Article IV– Special Land Uses	Location within the Site Plan Application
	Refer to Section III.3.c of the Fort Gratiot Township Permit Application Narrative and to **Appendix I**: Real Estate Adjacent Property Value Impact Report. d. The Project will not cause injury to the value of other property in the neighborhood in which it is located. Refer to Section III.3.d of the Fort Gratiot Township Permit Application Narrative and to **Appendix H**: Project Property Tax Impact Report; and **Appendix I**: Real Estate Adjacent Property Value Impact Report.
(4) Will promote the use of land in a socially and economically desirable manner; will relate harmoniously with the physical and economic aspects of adjacent land uses as regards prevailing shopping habits, convenience of access by prospective patrons, continuity of development, and need for particular services and facilities in specific areas of the township.	The Project will promote the use of land in a socially and economically desirable manner. Once built, the Portside project will generate personal property tax revenue and contribute to an increased tax base in Fort Gratiot Township. The project will increase personal property tax revenue for several local taxing jurisdictions, including St. Clair County, and Clyde and Fort Gratiot Townships. Refer to.; **Appendix H**: Project Property Tax Impact Assessment Report; and **Appendix I**: Real Estate Adjacent Property Value Impact Report.

Fort Gratiot Township Zoning Ordinance Sec. 38-46 – Site Plan Review

The table below summarizes the Fort Gratiot Township Zoning Ordinance Sec. 38-46 – Site Plan Review taken directly from the Ordinance, and the location within the Site Plan submittal documents in which these items can be found.

Fort Gratiot Township Zoning Ordinance Sec. 38-46 – Site Plan Review	Location within the Site Plan Application
Sec. 38-46. - Site plan review.	

Fort Gratiot Township Zoning Ordinance Sec. 38-46 – Site Plan Review	**Location within the Site Plan Application**
It is recognized by this chapter that there is a value to the public in establishing safe and convenient traffic movement to higher density sites, both within the site and in relation to access streets; that there is value in encouraging a harmonious relationship of buildings and uses; further that there are benefits to the public in conserving natural resources. Toward this end, this chapter requires site plan review by the planning commission for certain buildings and structures than can be expected to have a significant impact in natural resources, traffic patterns, and on adjacent land usage.	
(1) *Buildings, structures, and uses requiring site plan.* a. A multiple-family building containing three or more dwelling units. b. More than one multiple-family building on a lot, parcel, or tract by land, or on a combination of lots under one ownership. c. A mobile home park or condominium project. d. All commercial, office, or institutional buildings. e. All commercial buildings. f. Any building or use requiring special approval. g. An expansion of any of the above uses or a change from an existing of use to a dissimilar use which may have different zoning requirements, except that planning commission review may be waived and the site plan approved by the zoning administrator when, in the opinion of the township planner, the change in use will not involve changes substantial enough to warrant planning commission review.	As a proposed use requiring special approval, the Project requires a site plan. Refer to the Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13.
(2) *Application and fee for site plan review.* Any person may file a request for a site plan review by the planning commission by filing with the township clerk the complete application upon the forms furnished by the clerk. The applicant shall file at least 11 copies of a site plan.	Refer to **Appendix C**: Fort Gratiot Township Application for Special Land Use Permit.
(3) *Planning commission review of site plan.* Upon receipt of such application from the clerk, the planning commission shall undertake a study of the same and shall, within 60 days, approve or disapprove such site plan advising the applicant in writing of the recommendation, including any changes or modifications in the proposed site plan as are needed to achieve conformity to the standards specified in this chapter.	
(4) Required data for detailed site plan. a. The site plan shall be of a scale not greater than one inch equals 20 feet, and not less than one inch equal 200 feet, and of such accuracy that the planning commission can readily interpret the site plan, and shall include more than one drawing when required for clarity. b. The property shall be identified by lot lines and location, including dimensions, angles, and size, and correlated with the legal description of such property. Such plan shall further include the name and address of the property owner, and developer. The site plan shall bear at least one or more seals of an architect or professional engineer licensed to practice in the state. c. The site plan shall show scale; north point; boundary dimensions; topography (at least two-foot contour intervals); and natural features, such as woodlots, streams, rivers, lakes, drains, and similar features. d. The site plan shall show existing manmade features, such as buildings; structures; high tension towers; pipelines; and existing utilities, such as	A site plan, drawn to scale and dimensioned and certified by a registered engineer licensed in the State of Michigan, is included as part of this application in **Appendix B**: Site Plan. a. Proposed conditions of the Project are drawn on a scale of one inch equal to 200 feet. Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13. b. Lot lines and locations, including dimensions, angles, and size, and correlated legal

Fort Gratiot Township Zoning Ordinance Sec. 38-46 – Site Plan Review	**Location within the Site Plan Application**
water and sewer lines, excavations, bridges, culverts, drains, and easements; and shall identify adjacent properties and their existing uses. e. The site plan shall show the location, proposed finished floor and grade line elevations, size of proposed principal and accessory buildings, their relation one to another and to any existing structures on the site, the height of all buildings, and square footage of floor space. Site plans for residential development shall include a density schedule showing the number of dwelling units per net acre, including a dwelling schedule showing the unit type and number of each unit type. f. The site plan shall show the proposed streets, driveways, sidewalks, and other vehicular and pedestrian circulation features within and adjacent to the site; also, the location, size and number of parking spaces in the off-street parking area, and the identification of service lanes and service parking. g. The site plan shall show the proposed location, use, and size of open spaces; and the location of any landscaping, fences, or walls on the site. The site plan shall further show any proposed location of connections of existing utilities and proposed extension thereof. h. A vicinity map shall be submitted showing the location of the site in relation to the surrounding street system.	descriptions on such properties are included. Refer to Proposed Conditions in **Appendix B**: Site Plan Sheets 04 - 13 and to the Participating Parcel List, available in **Appendix B**: Site Plan Sheet 2 and **Appendix D**: Participating Parcel List. c. Scale, north arrow, boundary dimensions, topography, and natural features are included. Refer to Proposed Conditions in **Appendix** B: Site Plan Sheets 4 - 13. d. Manmade features are included. Refer to the Vicinity Map in **Appendix B**: Site Plan Sheet 2 and Existing Conditions – Overall in **Appendix B**: Site Plan Sheet 3. e. Localized grading will be necessary to meet equipment tolerances and for maintaining drainage. A final grading and soil erosion control plan will be developed by the EPC contractor upon final electrical design. Refer to Proposed Conditions in **Appendix B**: Site Plan on Sheets 4 - 13 for topographic contours and existing structures. f. Location of access roads are included. There is no parking or sidewalks proposed for the Project. Refer to Proposed Conditions in **Appendix B**: Site Plan on Sheets 4 - 13 and Crossing & Access Road Details in **Appendix B**: Site Plan Sheet 15. g. Locations of open spaces, landscaping, and fences are included. Refer to the Proposed Conditions in **Appendix B**: Site Plan Sheets 4 - 13 and

Fort Gratiot Township Zoning Ordinance Sec. 38-46 – Site Plan Review	**Location within the Site Plan Application**
	Landscaping Plan in **Appendix B**: Site Plan Sheet 12. h. A vicinity map is included and displays the relation of the project with the surrounding street system. Refer to the Site Vicinity Map in **Appendix B**: Site Plan Sheet 1 and Existing Conditions – Overall in **Appendix B**: Site Plan Sheet 3.
(5) Requirements for mobile home park or mobile home condominium project site plans. The township planning commission shall approve the proposed site plan for a mobile home park or condominium project.	*Not Applicable*
(6) Standards for site plan review. In reviewing the site plan, the planning commission shall ascertain whether the proposed site plan is consistent with all regulations of this chapter, and that the applicant has in the proposed site plan, met all the criteria set forth in subsection (4) of this section, or in the case of proposed mobile home park or mobile home condominium, meet all the criteria set forth in subsection (5) of this section.	Refer to **Appendix A:** Special Land Use / Site Plan Review Checklist and **Appendix C**: Fort Gratiot Township Application for Special Land Use Permit, Section IV.
(7) Approval of site plan. Upon the planning commission's recommended approval of a site plan, the applicant shall file with the planning commission one copy thereof. The clerk shall within ten days transmit to the building inspector one copy certifying that such approved site plan conforms to the provisions of this chapter as determined. If the site plan is disapproved by the planning commission, notification of such disapproval shall be given to the applicant within ten days after such commission action. The building inspector shall not issue a building permit until he has received a certified approval site plan.	
(8) Expiration of site plan certificate. The site plan certificate shall expire, and be of no effect 365 days after the date of issuance thereof, unless within such time the building inspector has issued a building permit for any proposed work authorized under the site plan.	
(9) Amendment and revision of site plan. A site plan and site plan certificate, issued thereof, may be amended by the planning commission upon the request of the applicant. Such amendment shall be made upon the application and in accordance with the procedure of this section.	

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

PORTSIDE SOLAR

ST. CLAIR COUNTY, MICHIGAN
FORT GRATIOT TOWNSHIP
SPECIAL LAND USE PERMIT - SITE PLANS

APPLICANT:

PORTSIDE SOLAR, LLC
226 N. MORGAN STREET
SUITE 200
CHICAGO, IL 60607
PHONE: (734) 474-1623
ATTN: TOBY VALENTINO

CONSULTANT:

ATWELL, LLC
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MICHIGAN 48076
PHONE: 248.447.2000
FAX: 248.447.2001
PROJ. MGR: ERNEST SCHENK
ENGINEERING: CRAIG KANTOLA, PE
SURVEYING: CHRIS KELLY, PS

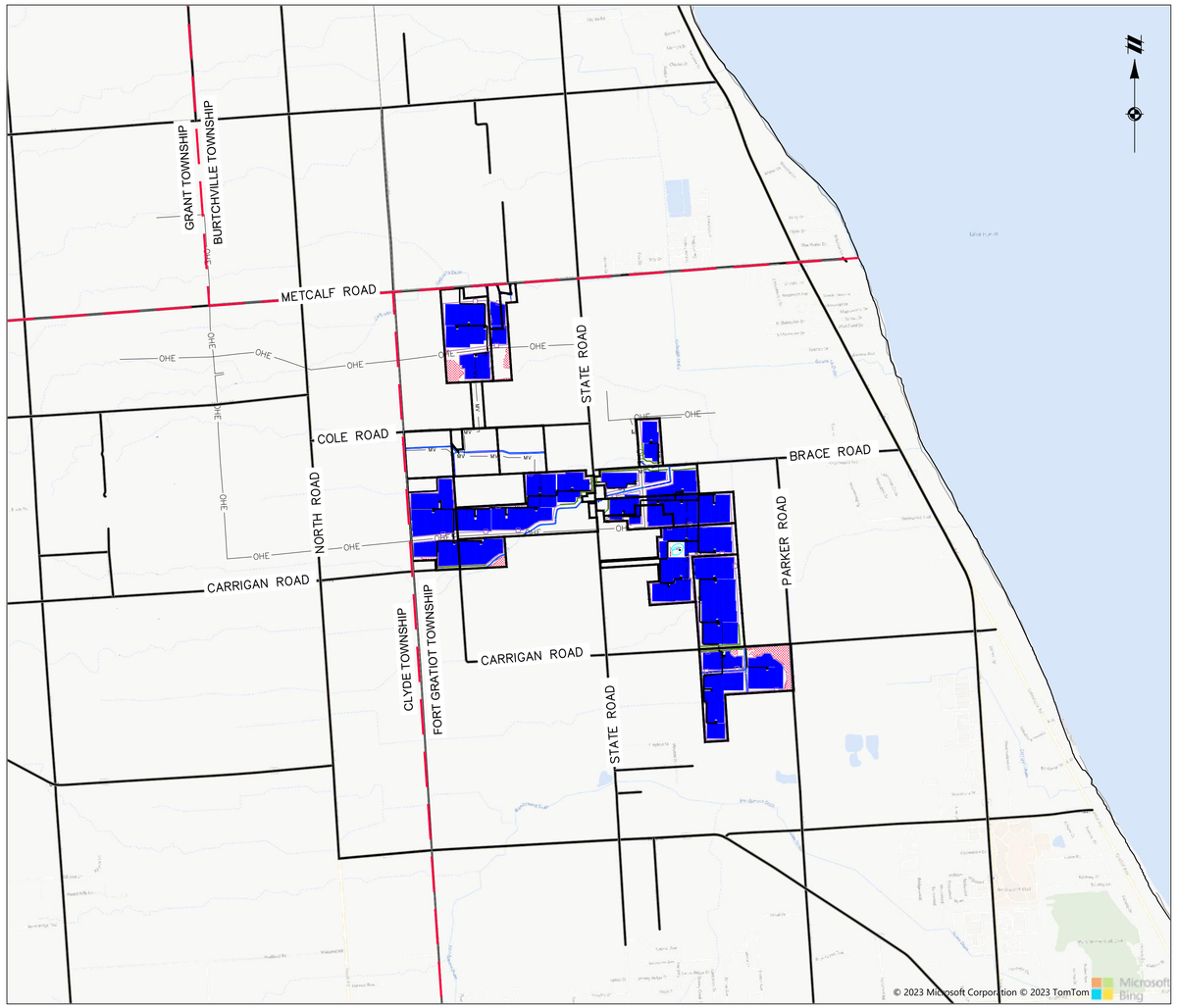
PROJECT SUMMARY:

COUNTY: ST. CLAIR
TOWNSHIP: FORT GRATIOT

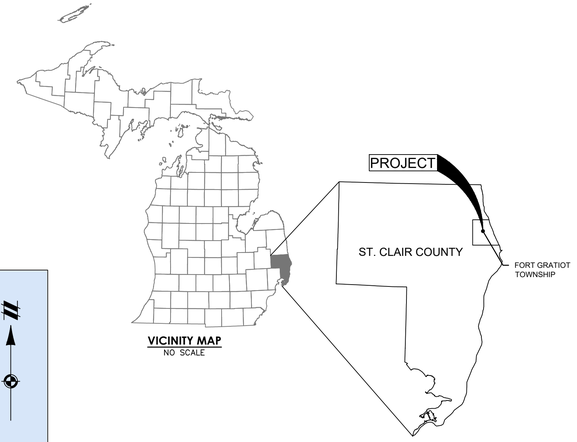
THIS PERMIT APPLICATION COVERS THE FOLLOWING PROPOSED PROJECT FACILITIES:

- SOLAR ARRAY (PANELS AND INVERTERS), UNDERGROUND COLLECTION LINES (PERMANENT)
- PERIMETER FENCING (PERMANENT)
- ACCESS ROADS (PERMANENT)

SEE SHEET 17 FOR ADDITIONAL GENERAL NOTES AND STANDARDS FOR THE PROJECT.



SITE VICINITY MAP
SCALE 1" = 2,000'



VICINITY MAP
NO SCALE

PLAN INFORMATION / DATA SOURCES:

PLAN INFORMATION	DATA SOURCES:
TOPOGRAPHICAL INFORMATION	USGS NATIONAL ELEVATION DATASET (NED), 3 METER DEM DRAIN MAPS PER COUNTY RECORDS
WETLAND DELINEATION	PROVIDED BY ATWELL (FIELD WORK COMPLETED IN MAY AND JUNE 2023)
PROPERTY BOUNDARY INFORMATION	GIS PERFORMED BY ATWELL, LLC (APRIL 2023)
PARCEL PARTICIPATION	PROVIDED BY RANGER POWER (JUNE 2023)
SOLAR ARRAY AND INVERTER LOCATIONS	DESIGNED BY ATWELL (JULY 2023)
PROPOSED ACCESS ROADS	DESIGNED BY ATWELL (JULY 2023)
ELECTRICAL COLLECTION LINE	DESIGNED BY ATWELL (JULY 2023)

Sheet List Table

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS
COVER SHEET

DATE 8/17/2023

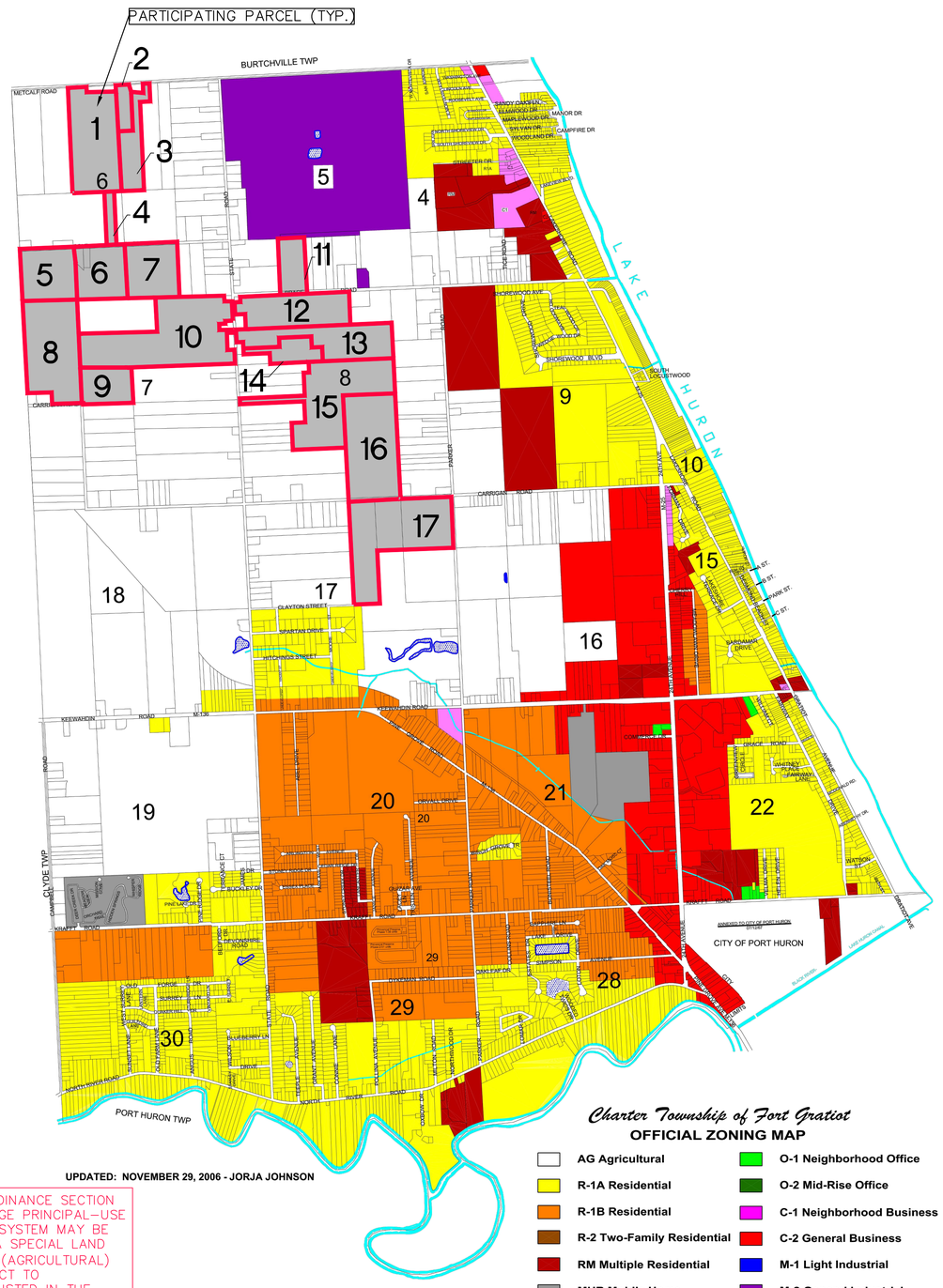
REVISIONS

DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 01

CAD FILE: FORT GRATIOT-01-CV.DWG

L:\PROJECTS-DATA\SHARED-PROJECTS\22005894 - RANGER POWER - PORTSIDE SOLAR\CIVIL\SLUP\FORT GRATIOT SLUP\FORT GRATIOT-01-CV.DWG 8/9/2023 1:18 PM ERNEST SCHENK

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



UPDATED: NOVEMBER 29, 2006 - JORJA JOHNSON

PER ZONING ORDINANCE SECTION 38-639: A LARGE PRINCIPAL-USE SOLAR ENERGY SYSTEM MAY BE PERMITTED AS A SPECIAL LAND USE IN THE AG (AGRICULTURAL) DISTRICT, SUBJECT TO REQUIREMENTS LISTED IN THE ORDINANCE.

Charter Township of Fort Gratiot

OFFICIAL ZONING MAP

AG Agricultural	O-1 Neighborhood Office
R-1A Residential	O-2 Mid-Rise Office
R-1B Residential	C-1 Neighborhood Business
R-2 Two-Family Residential	C-2 General Business
RM Multiple Residential	M-1 Light Industrial
MHR Mobile Home	M-2 General Industrial

ZONING MAP

NOT TO SCALE

NOTE: ALL PARTICIPATING PARCELS LOCATED WITHIN AG AGRICULTURAL

Parcel	PIN	OWNER	LEGAL DESCRIPTION PER TITLE	Acreage
1	74-20-006-1002-010	JAMES R. PALMATEER	BEG S 01D 27M 47S E 330.14' FROM N 1/4 COR AS MONUMENTED, TH S 01D 27M 47S E 2416.32', TH N 89D 57M 14S W 1318.65', TH N 01D 27M 05S W 2705.44', TH N 88D 16M 12S E 657.65', TH S 01D 27M 48S E 330', TH N 88D 16M 10S E 660' TO BEG SECTION 6 T7N R17E 77.471A	77.71
2	74-20-006-2001-100	JAMES R. PALMATEER	BEG AT N 1/4 COR, TH S 88D E 303', TH S 20', TH S 15D E 245', TH S 2D 57M W 975.46', TH N 88D W 365', TH N 2D 16M 20S E 1227' TO BEG SECTION 6 T7N R17E 10.25 A	9.99
3	74-20-006-2001-000	JAMES R. PALMATEER	BEG S 88D E 669.5' FROM N 1/4 COR, TH S 88D E 165', TH S 2D 16M 20S W 500', TH N 88D W 330', TH S 2D 8M W 2260.82', TH N 86D 25M 42S W 530', TH N 2D 16M 20S E 1519.31', TH S 88D E 365', TH N 2D 57M E 975.46', TH S 72D E 306', TH N 2D E 336' TO BEG SECTION 6 T7N R17E 24.39 A	24.54
4	74-20-006-4001-400	JAMES & PAMELA REID	Part of the North half of the Southwest Fractional quarter of Section 6, Town 7 North, Range 17 East, Fort Gratiot Township, St. Clair County, Michigan, described as beginning at a point on the East West quarter line that is South 89 degrees 57 minutes 14 seconds East 1,985.85 feet from the West quarter corner of said Section 6: Thence continuing South 89 degrees 57 minutes 14 seconds East 333.47 feet; Thence South 01 degrees 26 minutes 49 seconds East 1,324.63 feet; Thence along the South line of said North half of the Southwest Fractional quarter, West 333.46 feet; Thence North 01 degree 26 minutes 49 seconds West 1,324.90 feet to the point of beginning.	10.06
5	74-20-006-4005-000	LEWIS LAND LLC	The Southwest 1/4 of the Southwest 1/4, Section 6, Town 7 North, Range 17 East; Fort Gratiot Township, St. Clair County, Michigan.	41.04
6	74-20-006-4004-000	LEWIS LAND LLC	The Southeast ¼ of the Southwest ¼. Except that part lying North and West of a line beginning on the centerline of Cole Road, 1656.4 feet East of West Section line, thence South 1 degree 23 minutes East 581 feet, West 150 feet, South 1 degree 23 minutes East 56 feet and North 42 degrees 11 minutes West 275.5 feet, Section 6, Town 7 North, Range 17 East, Fort Gratiot Township, County of St. Clair, State of Michigan.	36.46
7	74-20-006-3012-000	LEWIS LAND LLC	The Southwest ¼ of the Southeast ¼, Section 6, Town 7 North, Range 17 East, Fort Gratiot Township, County of St. Clair, State of Michigan.	40.78
8	74-20-007-1001-000	LEWIS LAND LLC	West 1/2 of Northwest 1/4 except South 330 feet of West 660 feet and except beginning North 0 degrees 16 minutes 55 seconds East 330 feet from West 1/4 corner, thence North 0 degrees 16 minutes 55 seconds East 22 feet, thence North 89 degrees 59 minutes 55 seconds East 252.96 feet; thence South 0 degrees 16 minutes 55 seconds West 28 feet, thence North 88 degrees 38 minutes 30 seconds West 253 feet to beginning, Section 7, Town 7 North, Range 17 East, 74.85 acres, Fort Gratiot Township, St. Clair County, Michigan.	76.44
9	74-20-007-1004-000	LEWIS LAND LLC	South 1/3 of East 1/2 of Northwest 1/4, Section 7, Town 7 North, Range 17 East, 26.66 acres, Fort Gratiot Township, St. Clair County, Michigan.	25.97
10	74-20-007-1003-000	THE TED E. FURNESS AND CYNTHIA A. FURNESS REVOCABLE TRUST	The middle 1/3 of Northeast 1/4 and middle 1/3 of East 1/2 of Northwest 1/4, Section 7, more commonly referred to as the East 80 acres of the North 1/2 of the South 2/3 of the North 1/2, Section 7, Town 7 North, Range 17 East, excepting therefrom, the following parcel. Commencing at the Northeast corner of said Section7; thence proceeding South West 948.32 feet along the East line of said Section 7 to the Point of Beginning of this description; thence North 90 degrees West 210 feet; thence South-West 414.86 feet; thence South 90 degrees East 210 feet to the East line of said Section 7; thence North East 414.86 feet along the East line of said Section 7 to the Point of Beginning. Also, the East 1/2 of the following: the North 1/3 part of the Northeast 1/4 and the North 1/3 part of the East 1/2 of the Northwest 1/4, Section7, Town 7 North, Range 17 East, excepting the North 164 feet of the East 217.8 feet, and also excepting the South 200 feet of the East 387 feet except the West 177 feet of the North 70 feet.	117.99
11	74-20-005-4003-000	THE TED E. FURNESS AND CYNTHIA A. FURNESS REVOCABLE TRUST	The West Half (1/2) of the Southeast Quarter (1/4) of the Southwest Quarter (1/4) of Section 5, Town 7 North, Range 17 East, being 20 acres more or less.	20.99
12	74-20-008-1002-000	THE TED E. FURNESS AND CYNTHIA A. FURNESS REVOCABLE TRUST	The West 60 acres of the North 1/3 of the West 3/4 of the North 1/2 of Section 8, Town 7 North, Range 17 East, excepting therefrom the North 11 1/2 rods of the West 10 1/2 rods thereof and except the South 388.93 feet of the West 280 feet thereof.	54.38
13	74-20-008-2013-000	THE TED E. FURNESS AND CYNTHIA A. FURNESS REVOCABLE TRUST	The South 1/2 of the North 2/3 of the West 3/4 of the North 1/2 except the South 264.33 feet of the West 824 feet thereof and except the West 200 feet of the North 150 feet of the South 1,433.88 feet of the Northwest 1/4 of Section 8, except the following: A parcel of land in Section 8 described as: Commencing at the West quarter corner of Section 8, thence North 0 degrees 12 minutes 30 seconds West 1,144.03 feet along the West section line; thence South 89 degrees 22 minutes 00 seconds East 200.00 feet to the Point of Beginning, thence continuing South 89 degrees 22 minutes 00 seconds East 628.91 feet; thence South 264.33 feet; thence South 89 degrees 22 minutes 00 seconds East 1,234.87 feet; thence North 01 degrees 04 minutes 00 second, East 372.75 feet; thence North 88 degrees 08 minutes 30 seconds West 212.14 feet; thence North 4 degrees 16 minutes 30 seconds West 246.87 feet; thence North 89 degrees 22 minutes 00 seconds West 764.99 feet; thence South 0 degrees 12 minutes 30 seconds East 219.10 feet; thence North 89 degrees 22 minutes 00 West 876.59 feet; thence South 0 degrees 12 minutes 30 seconds East 139.85 feet to the Point of Beginning of this description.	55.66
14	74-20-008-1006-500	THE TED E. FURNESS AND CYNTHIA A. FURNESS REVOCABLE TRUST	Commencing at the West quarter corner of Section 8; thence North 0°12'30" West 1,144.03 feet along the West section line; thence South 89°22'00" East 200.00 feet to the Point of beginning; thence continuing South 89°22'00" East 628.91 feet; thence South 264.33 feet; thence South 89°22'00" East 1,234.87 feet; thence North 01°04'00" East 372.75 feet; thence North 88°08'30" West 212.14 feet; thence North 4°16'30" West 246.87 feet; thence North 89°22'00" West 764.99 feet; thence South 0°12'30" East 219.10 feet; thence North 89°22'00" West 876.59 feet; thence South 0°12'30" East 139.85 feet to the Point of the Beginning of this description. Containing 17.26 acres more or less.	19.44
15	74-20-008-1003-000	JAMES R. PALMATEER	Beginning at the West ¼ corner; thence North 00 degrees 12 minutes 30 seconds West 35 feet; thence South 89 degrees 23 minutes East 1624 feet, thence North 00 degrees 12 minutes 30 seconds West 592.35 feet; thence South 89 degrees 23 minutes East 119 feet; thence North 00 degrees 12 minutes 30 seconds West 252.35 feet; thence South 89 degrees 23 minutes East 2193.36 feet; thence South 00 degrees 2 minutes 16 seconds East 896.2 feet; thence North 89 degrees 8 minutes 33 seconds West 1312.03 feet; thence South 00 degrees I minutes 17 seconds East 1320.97 feet; thence North 89 degrees 8 minutes 32 seconds West 1318.55 feet; thence North 00 degrees 2 minutes 56 seconds East 660 feet; thence South 89 degrees 8 minutes 32 seconds East 326 feet; thence North 0 degrees 2 minutes 56 seconds East 530 feet; thence North 89 degrees 8 minutes 32 seconds West 1646 feet; thence North 00 degrees 2 minutes 56 seconds East 130.93 Feet to the point of beginning. Section 8, Town 7 North Ranger 17 East, Fort Gratiot Township, St. Clair County, Michigan.	86.93
16	74-20-008-3001-000	PETERS BROTHERS LLC	The West ½ of the Southeast ¼ of Section 8, Town 7 North, Range 17 East, Fort Gratiot Township, St. Clair County, Michigan.	86.93
17	74-20-017-2001-001	PETERS BROTHERS LLC	A parcel of land being the West 1/2 of the West 1/2 of the Northeast 1/4; The North 20 Acres of the East 1/2 of the West 1/2 of said Northeast 1/4 and part of the East 1/2 of the Northeast 1/4, all situated in Section 17, Town 7 North, Range 17 East, Fort Gratiot Township, St. Clair County, Michigan and said parcel is completely and particularly described as: Beginning at the Northeast corner of said Section 17; thence South 03 degrees 35 minutes 09 seconds East 1332.03 feet along its East line; thence South 86 degrees 43 minutes 47 seconds West 1961.34 feet; thence South 03 degrees 39 minutes 23 seconds East 1311.60 feet thence South 86 degrees 45 minutes 34 seconds West 653.24 feet to the center post of said Section 17; thence North 03 degrees 40 minutes 48 seconds West 2643.25 feet to its North 1/4 corner; thence North 86 degrees 43 minutes 42 seconds East 2617.32 feet to the Point of Beginning.	99.72

PARTICIPATING PARCEL LIST

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC

PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS

ZONING MAP & PARTICIPATING PARCEL LIST

DATE 8/17/2023

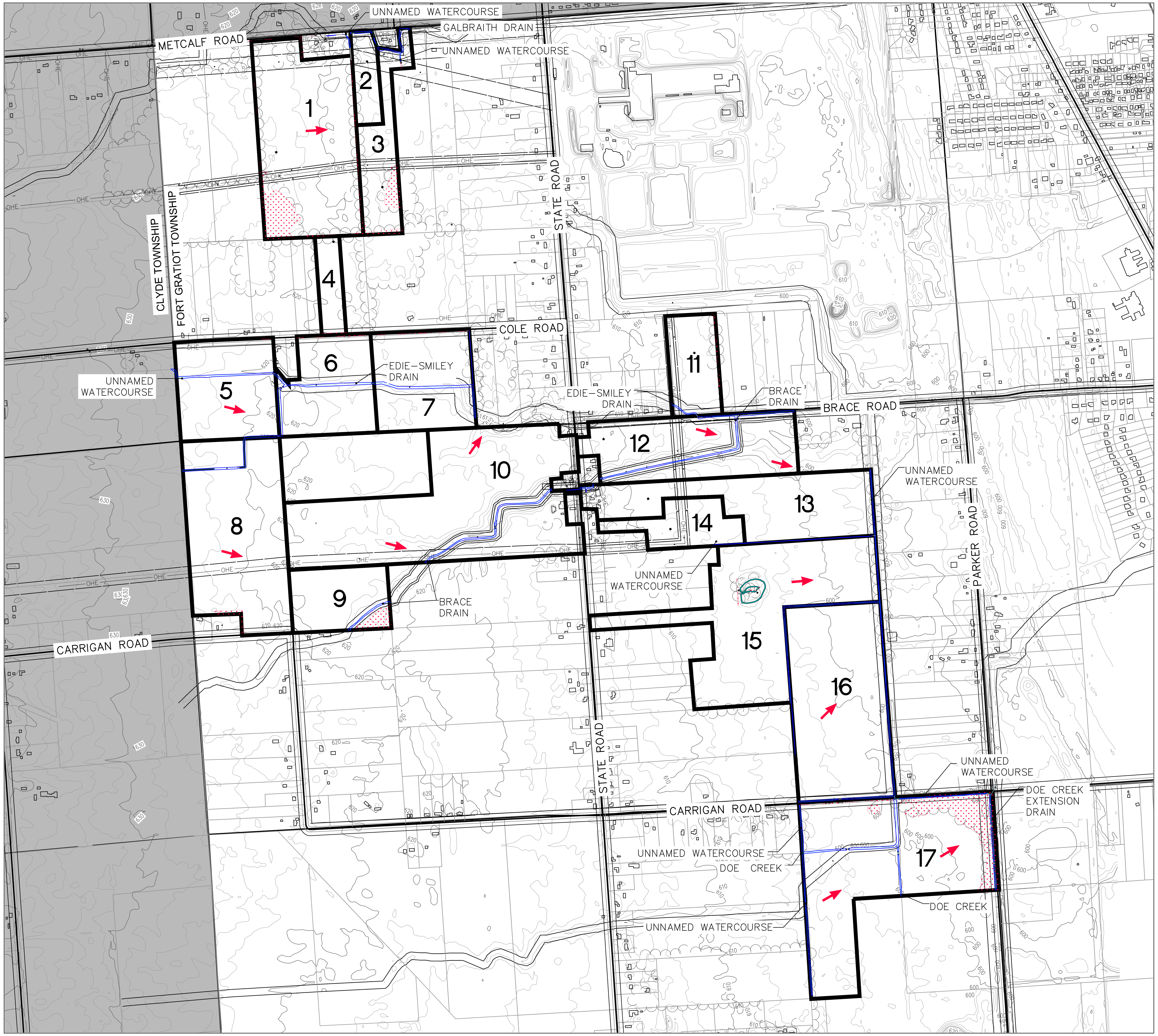
REVISIONS

DR.	MB	CH.	ES
P.M.	ES		
BOOK	--		
JOB	22005894		
SHEET NO.	02		

CAD FILE: FORT GRATIOT-01-CV.DWG

G:\22005894 - PANGEA - PORTSIDE SOLAR\DESIGN\CAD\FORT GRATIOT SUP\FORT GRATIOT-01-CV.DWG 8/9/2023 3:38 PM ERNEST ESENCAN

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



LEGEND

	EXIST. TREE LINE
	EXIST. WATERCOURSE TOB
	EXIST. WATERCOURSE CENTERLINE
	EXIST. WETLAND (EGLE REGULATED)
	EXIST. EASEMENT (DRAIN/UTILITY)
	EXIST. ROAD R.O.W.
	EXIST. ROAD CENTERLINE
	EXIST. SECTION / QUARTER SECTION
	EXIST. TOWNSHIP BOUNDARY
	NON-PARTICIPATING PARCEL BOUNDARY
	PARTICIPATING PARCEL BOUNDARY
OHE	EXIST. OVERHEAD ELECTRICAL
	EXIST. STRUCTURE
	EXIST. CULVERT
	EXIST. CONTOUR MINOR
	EXIST. CONTOUR MAJOR
	FLOW ARROWS
16	PARCEL ID (SEE SHEET 02)

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS

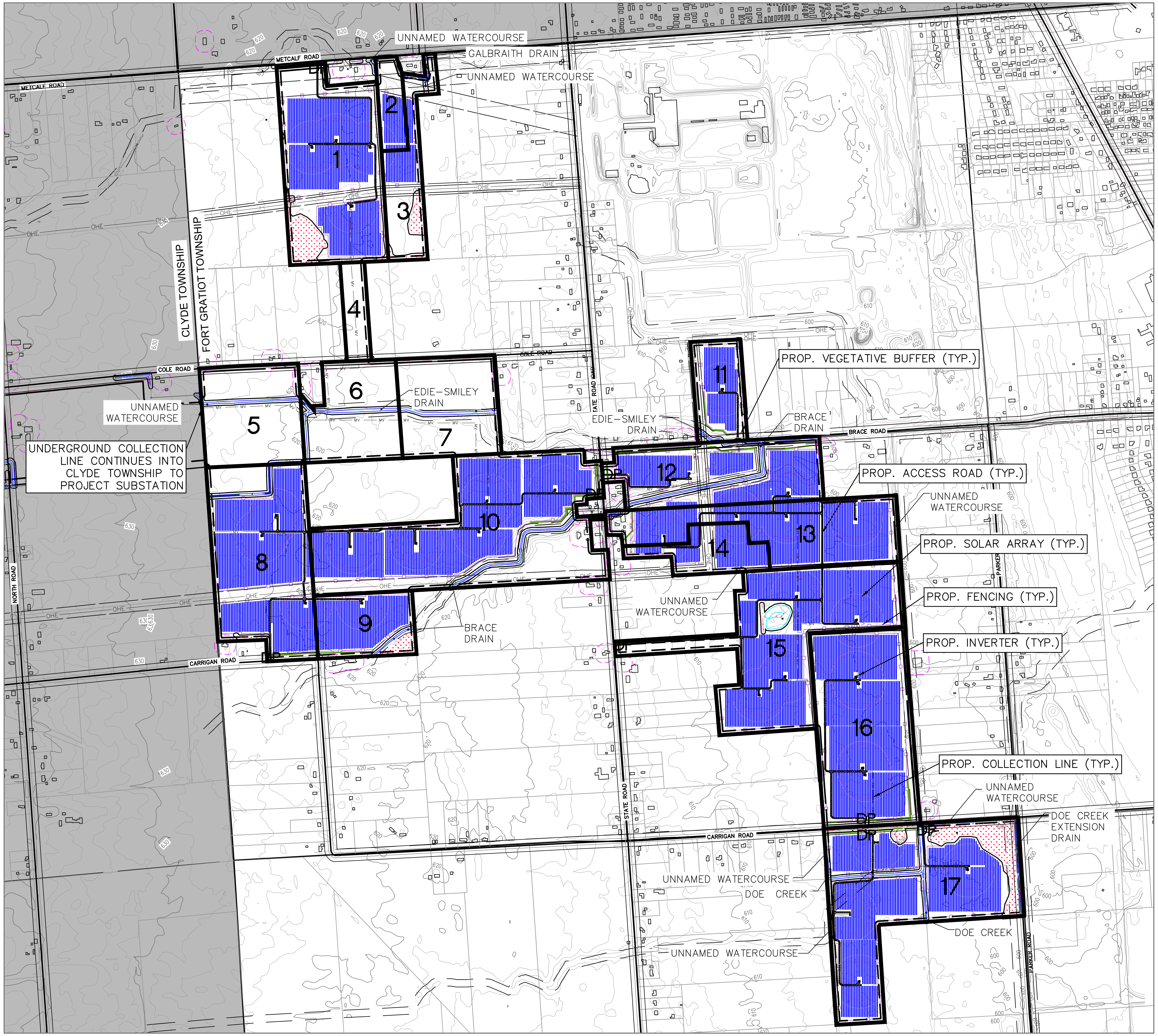
EXISTING CONDITIONS - OVERALL

DATE 8/17/2023

REVISIONS

SCALE 0 350 700
1" = 700 FEET
DR. MB CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 03

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



NOTES

1. SEE SHEET 17 FOR ADDITIONAL NOTES.
2. EXISTING CONTOURS ARE BASED ON PUBLICLY AVAILABLE LIDAR DATA AND ARE PROVIDED FOR PRELIMINARY DESIGN AND REVIEW ONLY – NOT TO BE USED FOR CONSTRUCTION.
3. LOCALIZED GRADING WILL BE NECESSARY TO MEET TRACKER VENDOR TOLERANCES AND FOR MAINTAINING DRAINAGE. THE EPC WILL BE RESPONSIBLE FOR DEVELOPING A FINAL GRADING AND SOIL EROSION CONTROL PLAN UPON FINAL ELECTRICAL AND TRACKER DESIGN.
4. PROPOSED ROADS ARE INTENDED TO GENERALLY MATCH EXISTING GRADE AND SHALL BE GRADED TO NOT IMPEDE THE FLOW OF RUNOFF TO DOWNSTREAM AREAS.
5. CULVERTS TO BE PROVIDED AT PROPOSED DRIVEWAYS WHERE NECESSARY BASED ON PRESENCE OF ROADSIDE DRAINAGE DITCH AND APPROVAL FROM THE COUNTY.
6. PARCEL BOUNDARY LABELS ARE BASED ON COUNTY GIS LINEWORK AND SUBJECT TO CONFIRMATION/ADJUSTMENT BASED ON FIELD BOUNDARY SURVEYS PRIOR TO CONSTRUCTION.

LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL (OHE)
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION (MV)
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER (SCREENING)
- DP — DRIVEWAY PERMIT REQUIRED FROM ST. CLAIR COUNTY
- 45 DBA SOUND LEVEL BANDS
- 16 — PARCEL ID (SEE SHEET 02)

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT – SITE PLANS

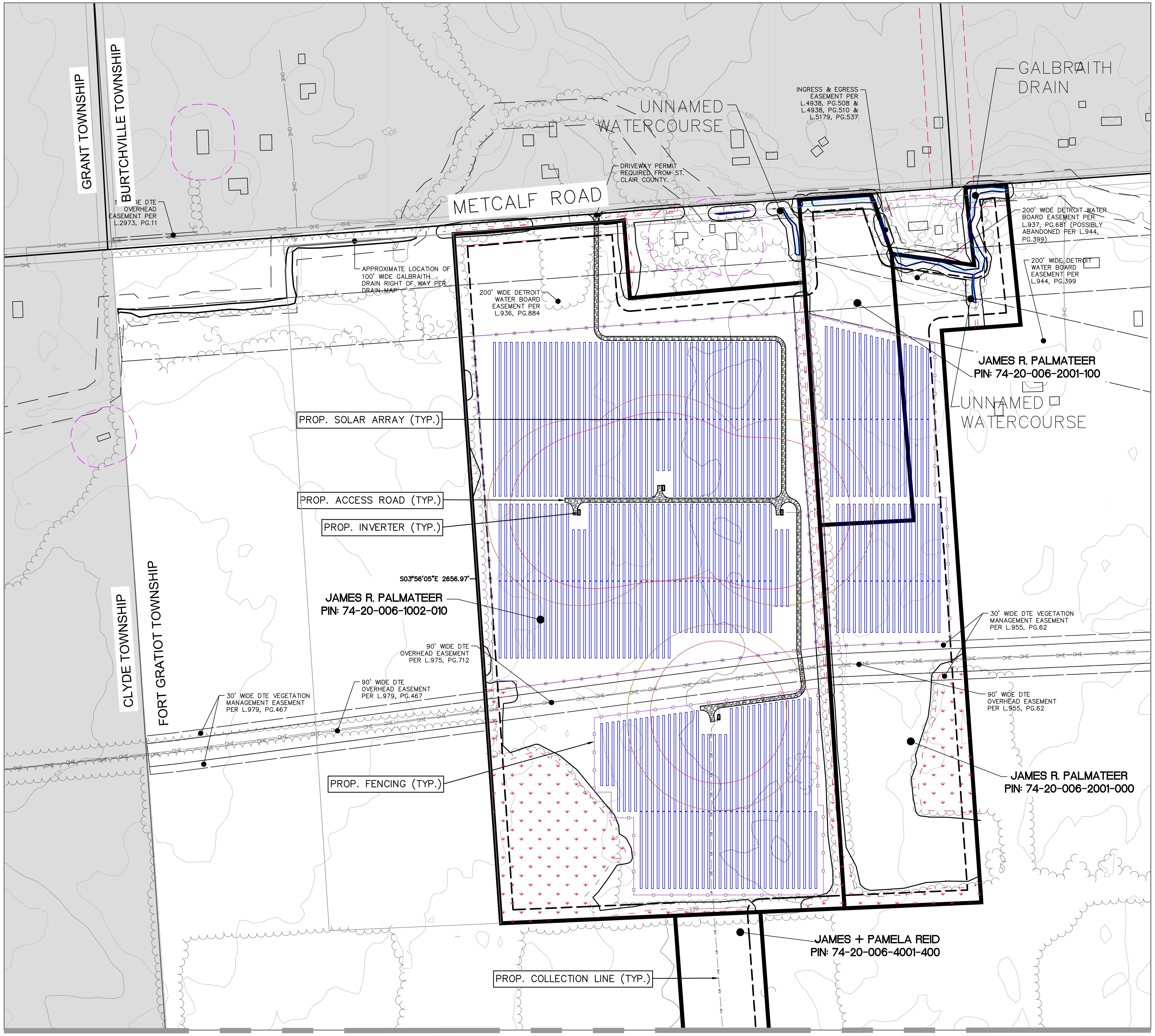
PROPOSED CONDITIONS – OVERALL

DATE: 8/17/2023

REVISIONS

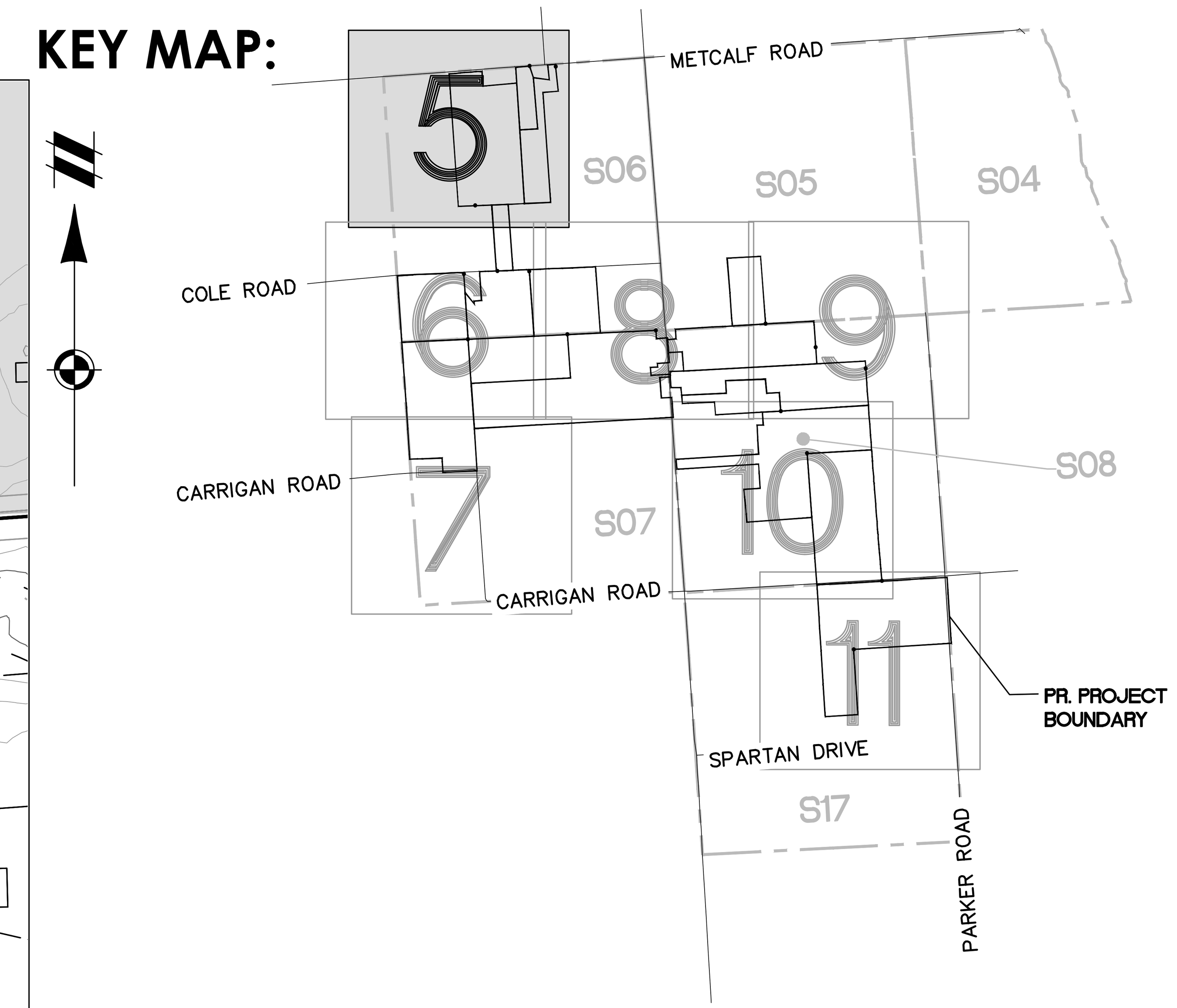
SCALE 0 350 700
1" = 700 FEET
DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 04

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



MATCHLINE-01 (SEE SHEET 06)

KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR SPECIAL LAND USE PERMIT - SITE PLANS

PROPOSED CONDITIONS - 5

DATE 8/17/2023

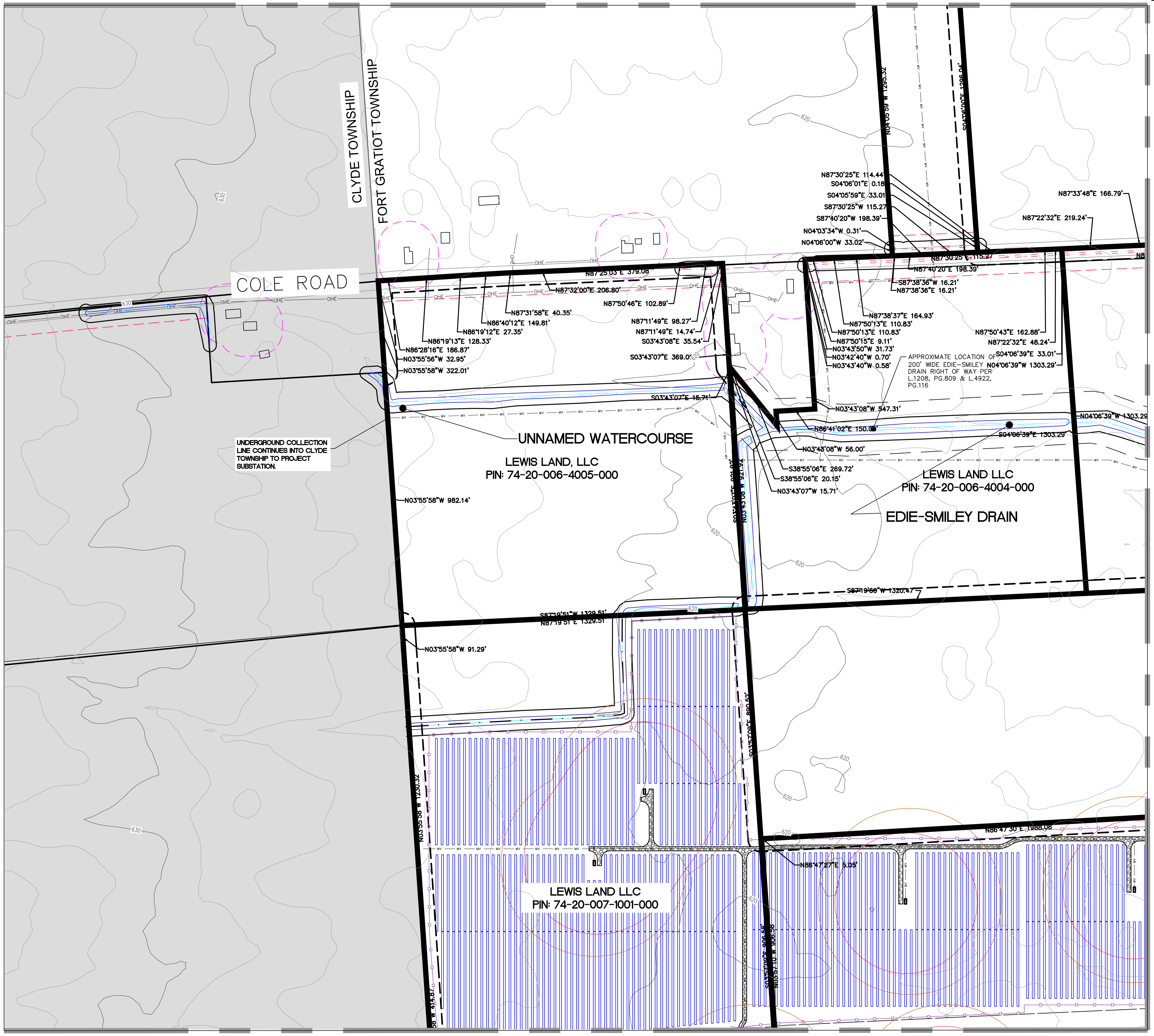
REVISIONS

SCALE 0 100 200
1" = 200 FEET

DR.	MB	CH.	ES
P.M.	ES		
BOOK	--		
JOB	22005894		
SHEET NO.	05		

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

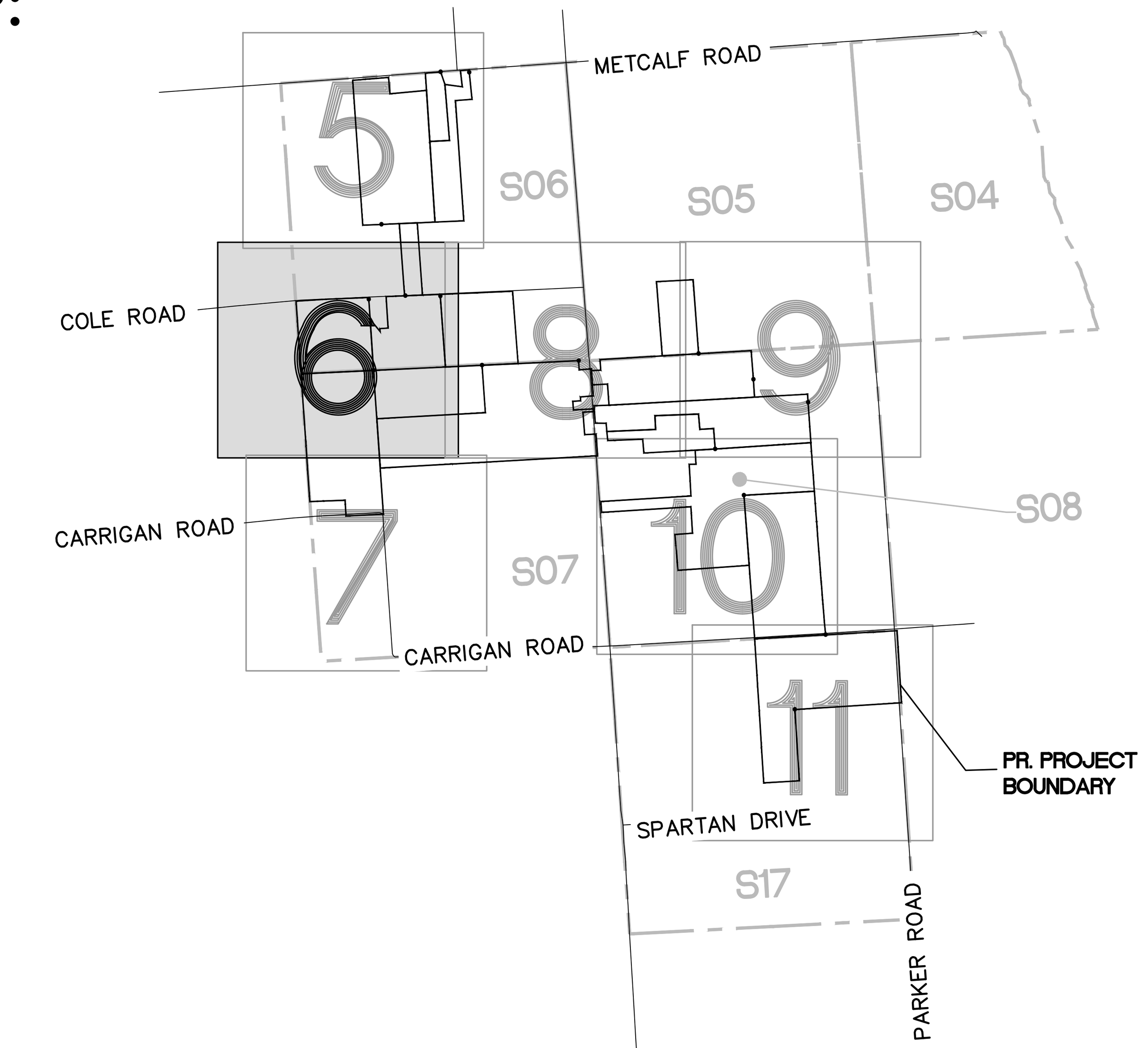
MATCHLINE-01 (SEE SHEET 05)



MATCHLINE-03 (SEE SHEET 08)

MATCHLINE-02 (SEE SHEET 07)

KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5–8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT – SITE PLANS

PROPOSED CONDITIONS – 6

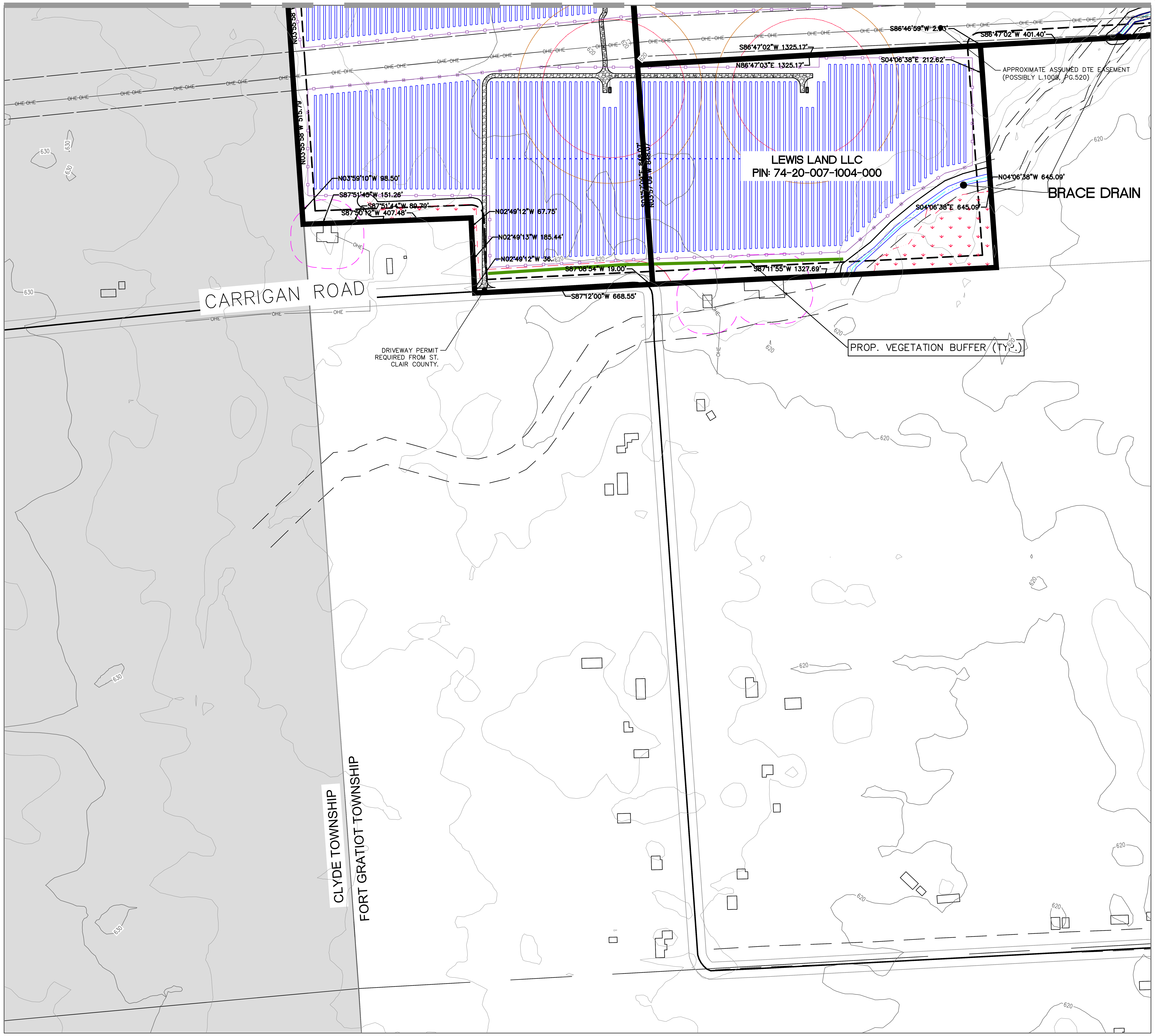
DATE: 8/17/2023

REVISIONS

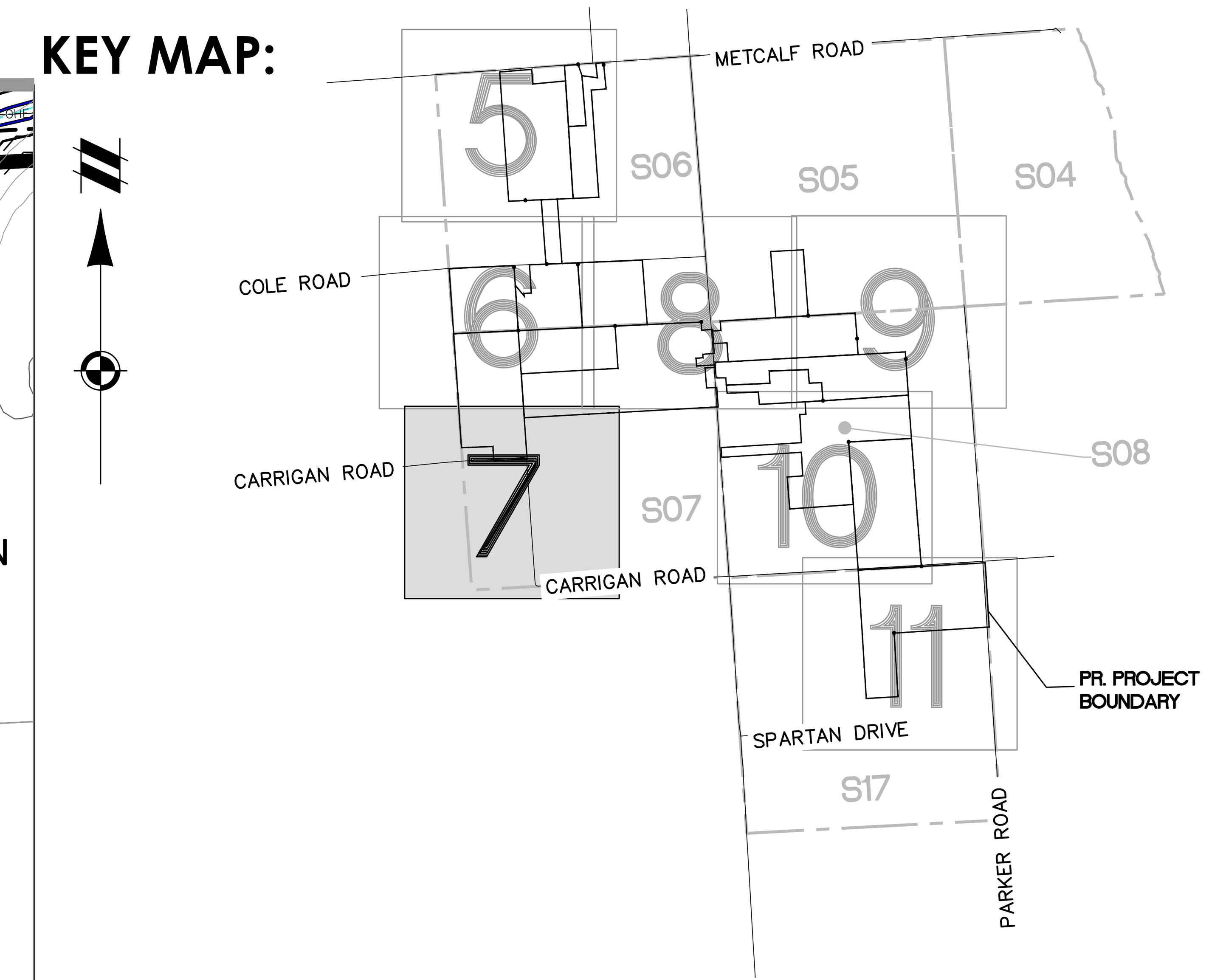
SCALE: 0 100 200
1" = 200 FEET
DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 06

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

MATCHLINE-03 (SEE SHEET 06)



KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

Know what's **below.**
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT **PORTSIDE SOLAR, LLC**

PROJECT **PORTSIDE SOLAR**
SPECIAL LAND USE PERMIT - SITE PLANS

PROPOSED CONDITIONS - 7

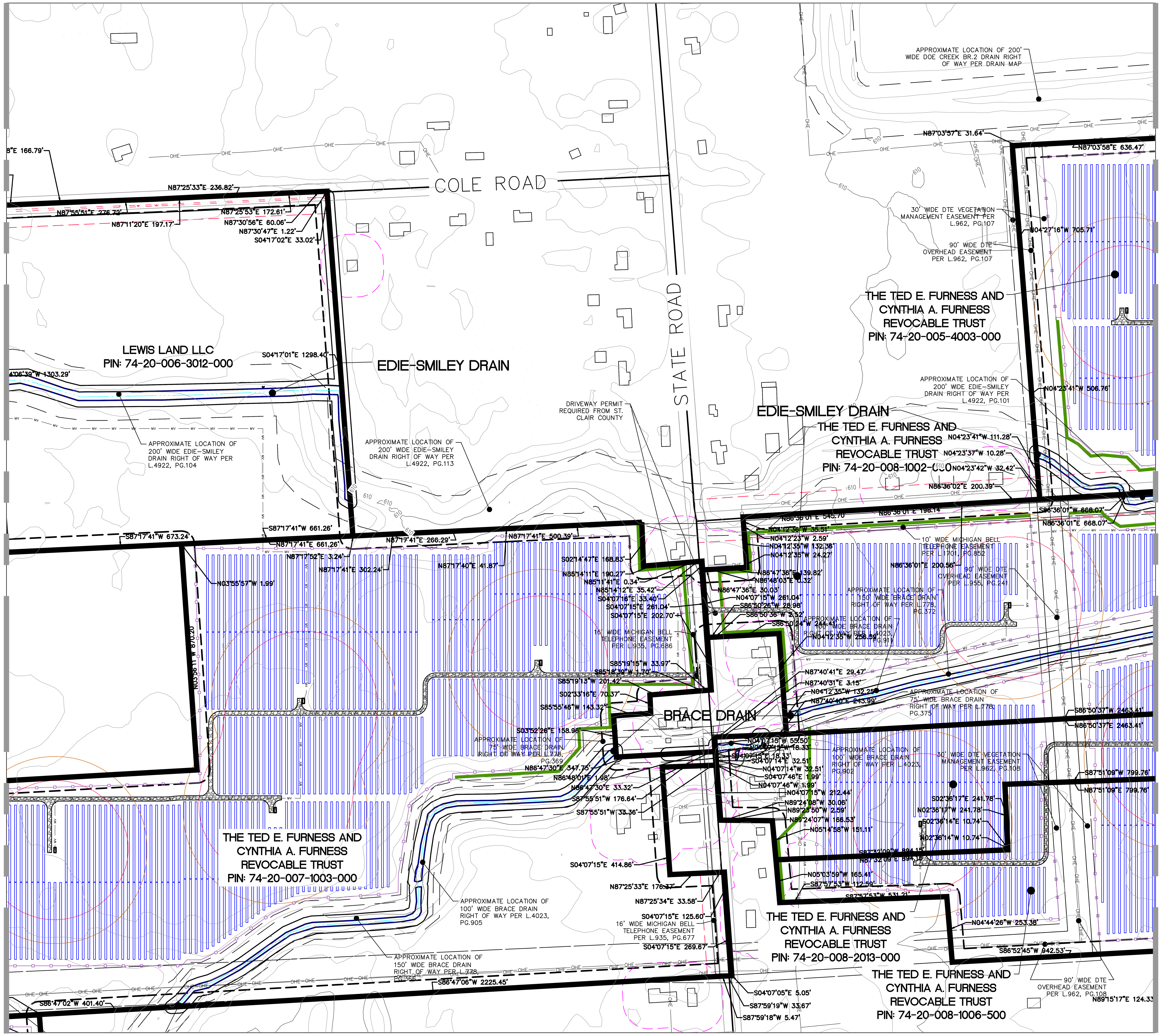
DATE 8/17/2023

REVISIONS

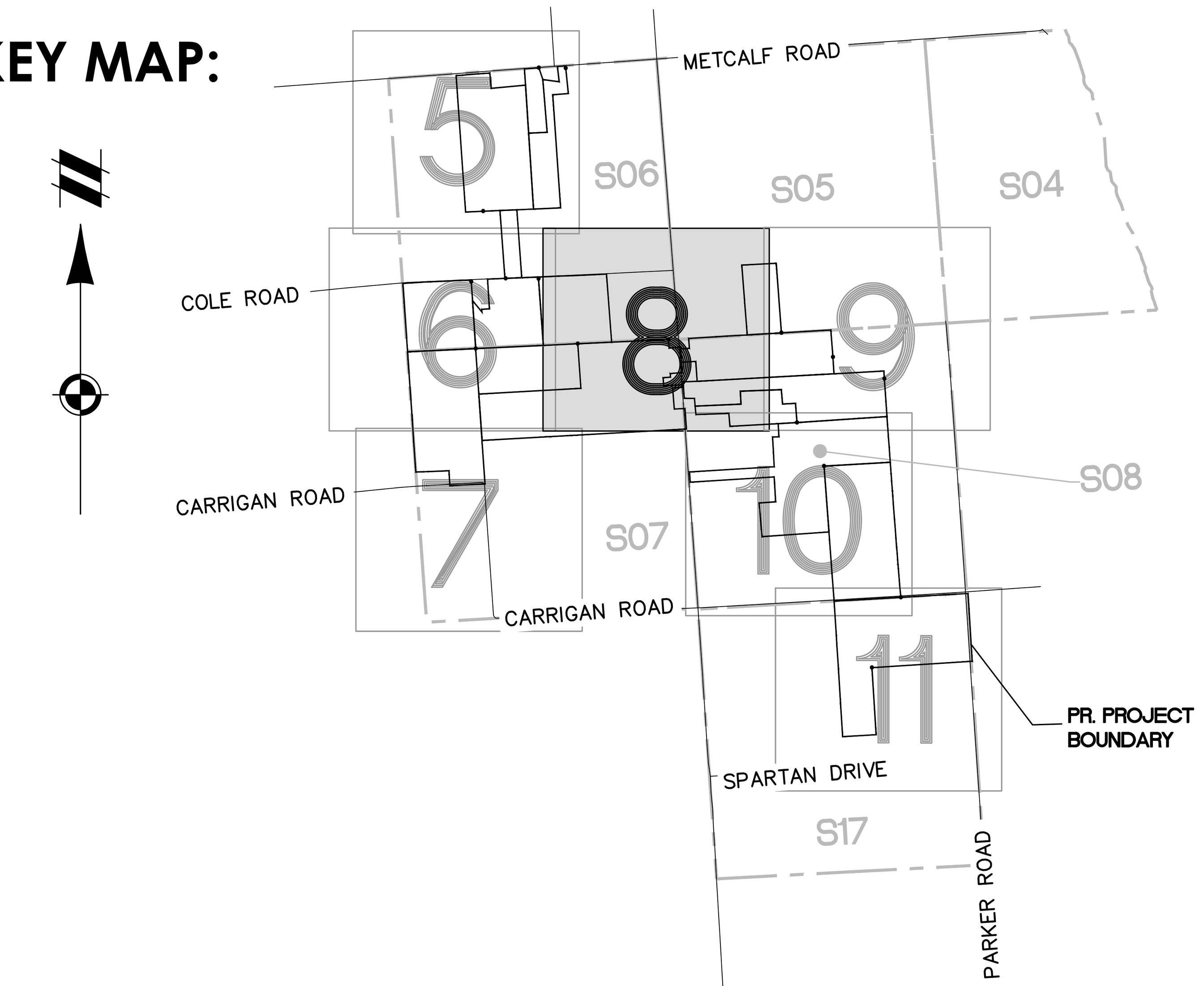
SCALE 0 100 200
1" = 200 FEET

DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 07

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE
25' EGLE SETBACKS
50' NON-PARTICIPATING PARCEL SETBACKS
50' ROW SETBACKS
100' RESIDENCE SETBACKS
350' INVERTER SETBACKS

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

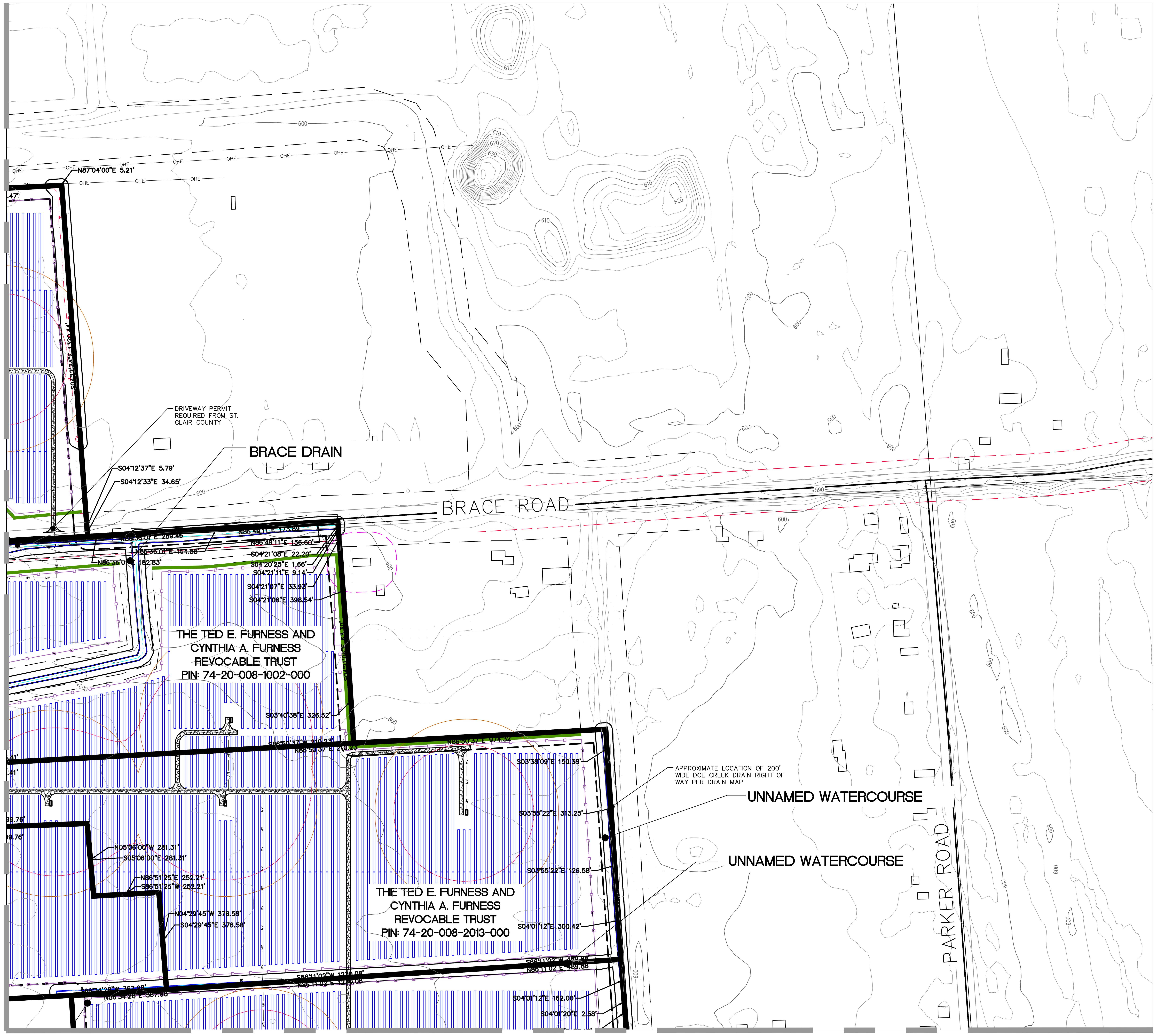
CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR SPECIAL LAND USE PERMIT - SITE PLANS
PROPOSED CONDITIONS - 8

DATE: 8/17/2023

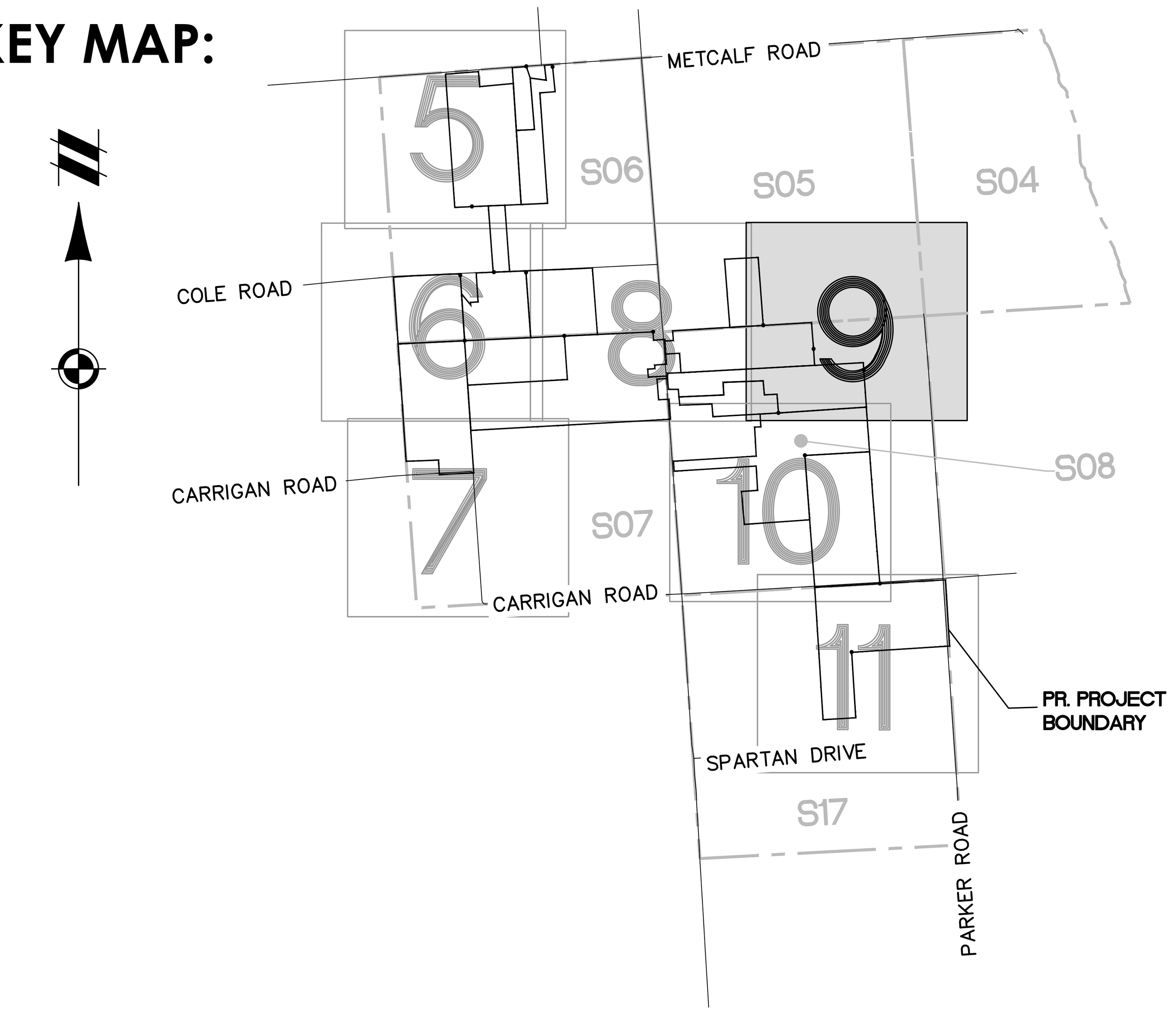
REVISIONS

SCALE 0 100 200
1" = 200 FEET
DR. MB CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 08

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC

PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS

PROPOSED CONDITIONS - 9

DATE 8/17/2023

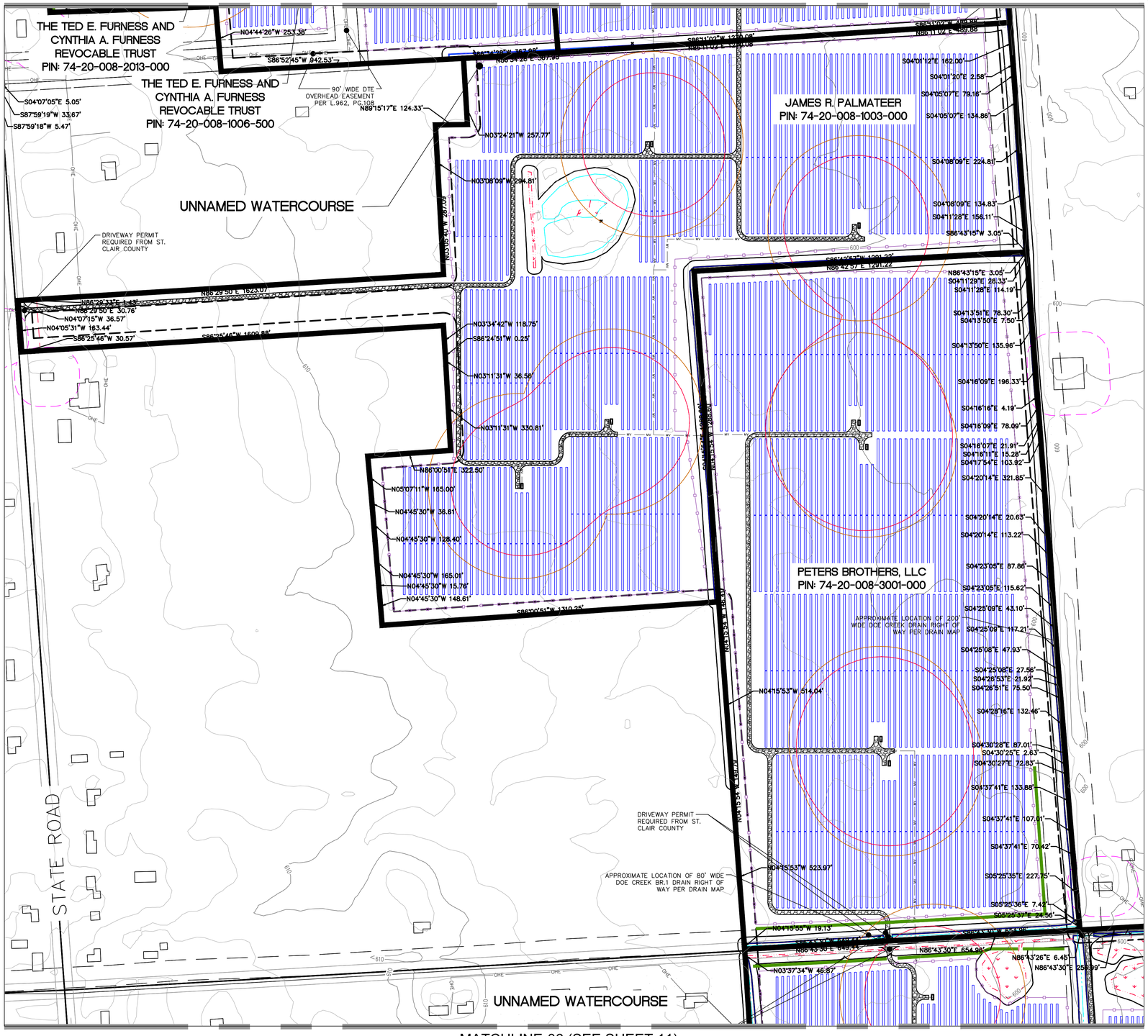
REVISIONS

SCALE 0 100 200
1" = 200 FEET

DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 09

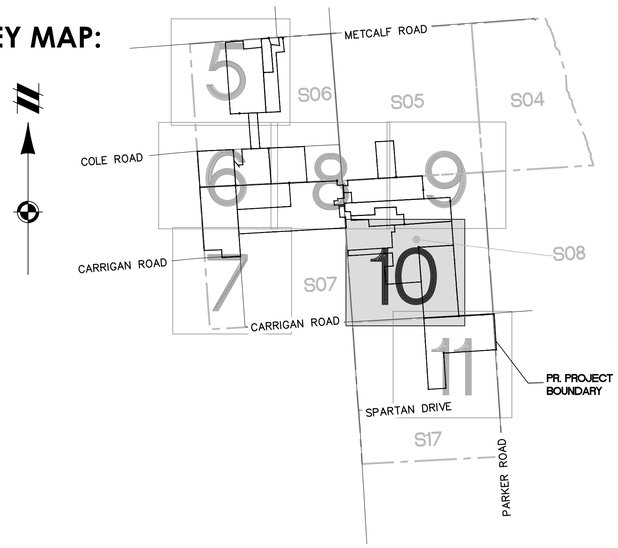
PRELIMINARY PLANS - NOT FOR CONSTRUCTION

MATCHLINE-05 (SEE SHEET 09)



MATCHLINE-06 (SEE SHEET 11)

KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS
PROPOSED CONDITIONS

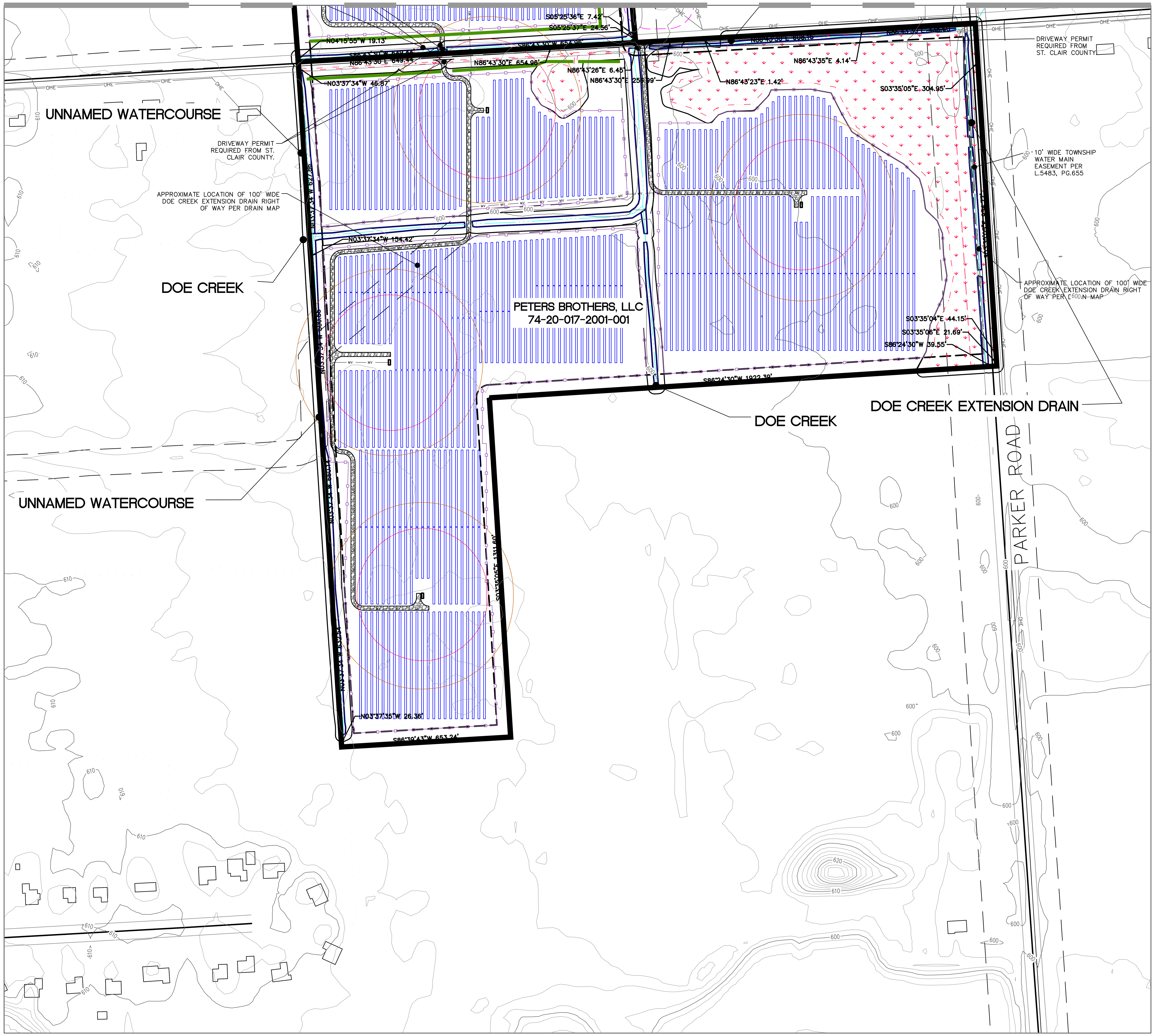
DATE: 8/17/2023

REVISIONS

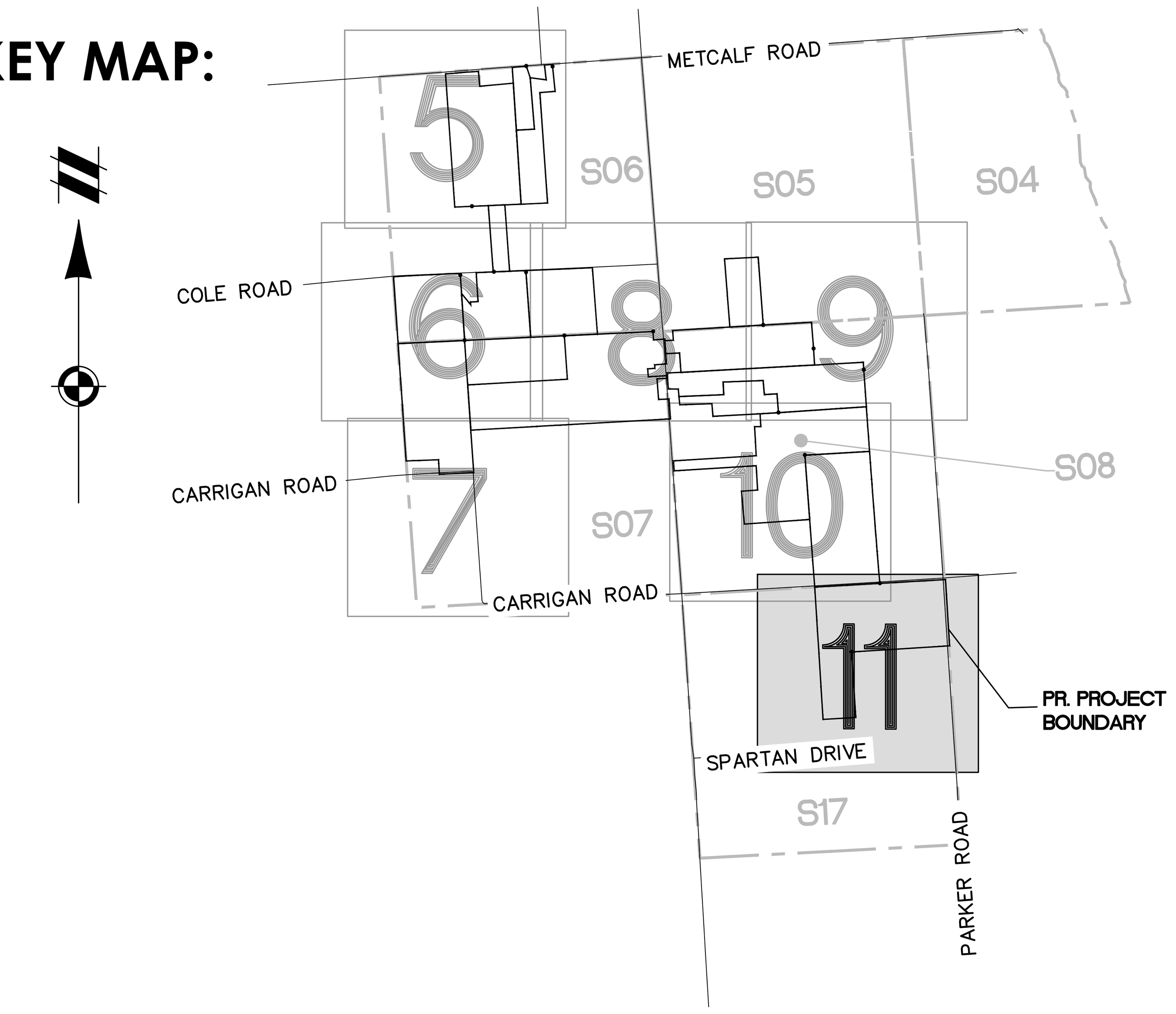
SCALE 0 100 200
1" = 200 FEET
DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 10

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

MATCHLINE-06 (SEE SHEET 10)



KEY MAP:



LEGEND

- EXIST. TREE LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. EASEMENT (UTILITY/DRAIN)
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. CULVERT
- EXIST. CONTOUR MINOR
- EXIST. CONTOUR MAJOR
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER
- 45 DBH SOUND LEVEL BAND

SETBACK TABLE	
25' EGLE SETBACKS	
50' NON-PARTICIPATING PARCEL SETBACKS	
50' ROW SETBACKS	
100' RESIDENCE SETBACKS	
350' INVERTER SETBACKS	

NOTES

1. SEE SHEET 04 & 17 FOR GENERAL NOTES.

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT PORTSIDE SOLAR, LLC

PROJECT PORTSIDE SOLAR SPECIAL LAND USE PERMIT - SITE PLANS

PROPOSED CONDITIONS - 11

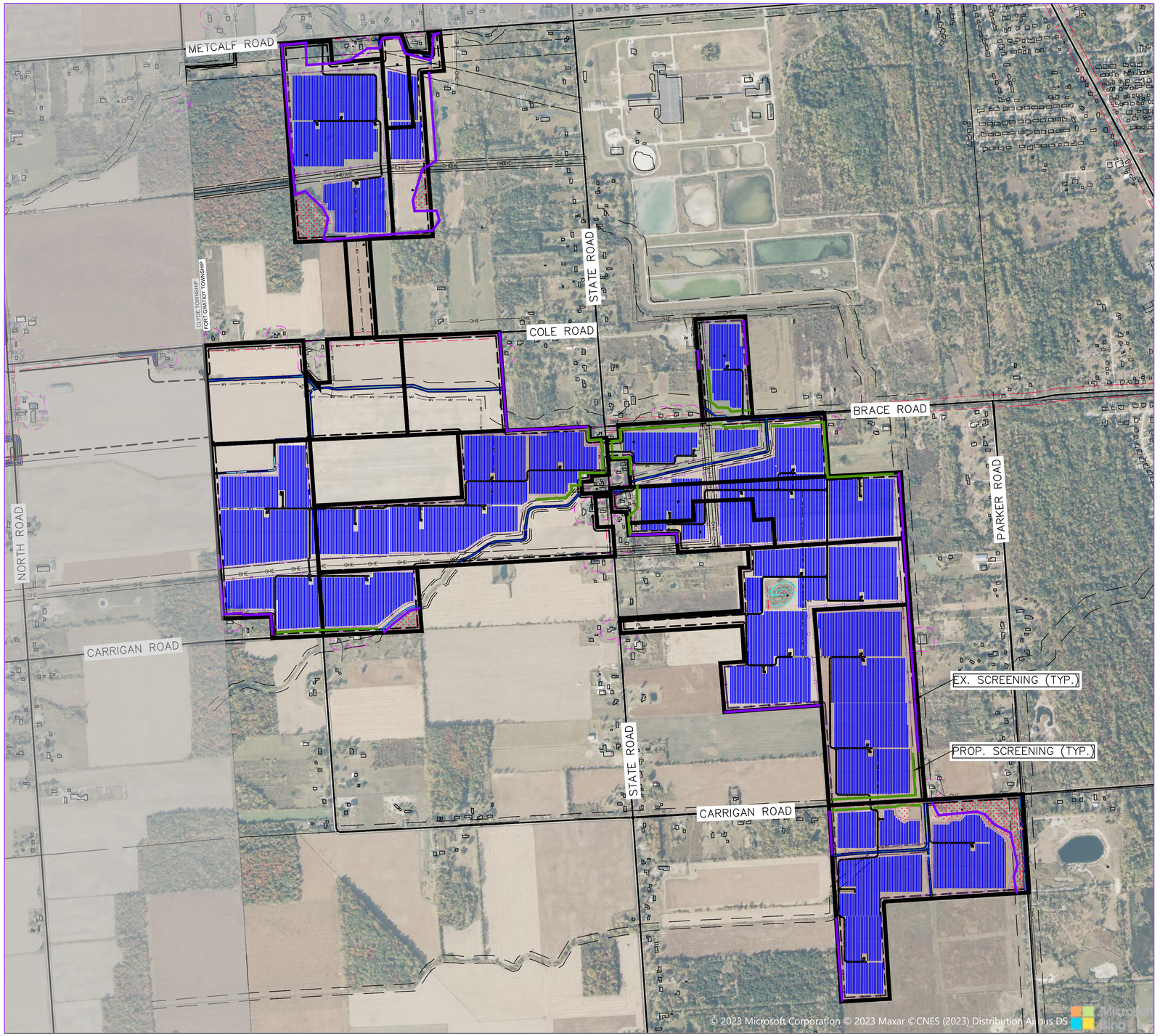
DATE 8/17/2023

REVISIONS

SCALE 0 100 200
1" = 200 FEET

DR. MB CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 11

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



GENERAL NOTES:

1. VEGETATIVE SCREENING PROPOSED ALONG ALL NON-PARTICIPATING RESIDENTIAL AND PUBLIC USES WHERE EXISTING SCREENING IS NOT ADEQUATE.
2. ALL PROPOSED SCREENING PLACED OUTSIDE THE PERIMETER FENCING.
3. APPROXIMATELY 13,970 LINEAR FEET OF VEGETATIVE SCREENING IS PROPOSED FOR THE PROJECT WITHIN FORT GRATIOT TOWNSHIP.
4. REFER TO SHEET 16 FOR SCREENING/PLANTING DETAILS.

LEGEND

- EXIST. FOREST LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. WETLAND (NON-REGULATED)
- EXIST. EASEMENT
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. STORM SEWER
- EXIST. VEGETATION (SCREENING)
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. VEGETATION BUFFER (SCREENING)

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR – SPECIAL LAND USE PERMIT – SITE PLANS

LANDSCAPING PLAN

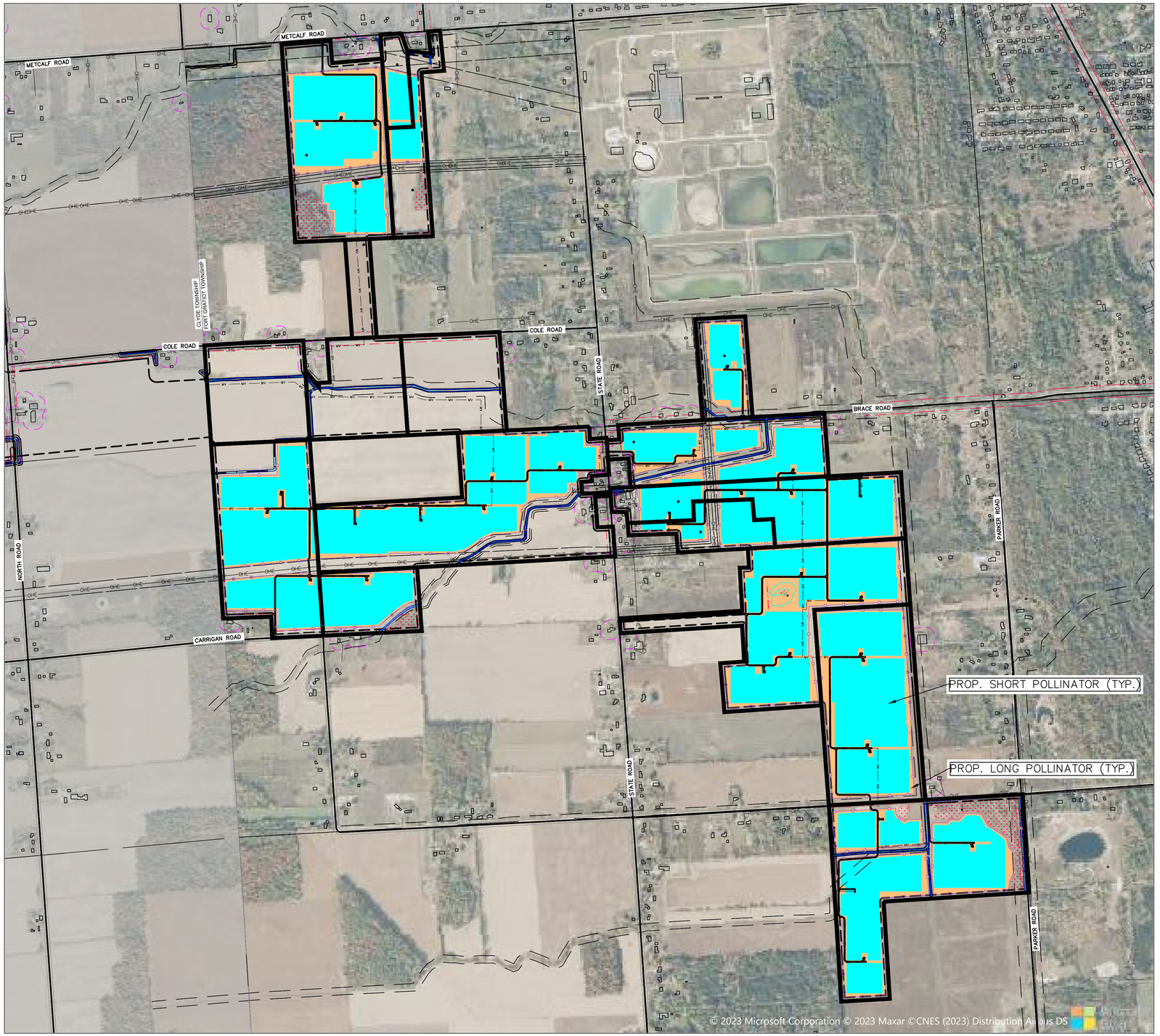
DATE 8/17/2023

REVISIONS

SCALE 0 350 700
1" = 700 FEET

DR. MB	CH. ES
P.M. ES	
BOOK --	
JOB 22005894	
SHEET NO. 12	

PRELIMINARY PLANS - NOT FOR CONSTRUCTION



GENERAL NOTES:

1. THE PROJECT PROPOSES POLLINATOR HABITAT BE CREATED WITHIN ALL FENCED IN AREAS.
2. PLANTING MIXES TO BE USED WILL BE DESIGNED TO MEET A SCORE OF 76 OR MORE ON THE MICHIGAN POLLINATOR HABITAT PLANNING SCORECARD FOR SOLAR SITES. FINAL SEED MIXES WILL BE DETERMINED AND APPROVED OF BEFORE CONSTRUCTION.
3. A SHORT VEGETATION SEED MIX WILL BE USED UNDER SOLAR ARRAY PANELS, TOTALING APPROXIMATELY 423 ACRES.
4. A LONG VEGETATION SEED MIX WILL BE USED WITHIN ALL OTHER FENCED IN AREAS NOT INCLUDING ACCESS ROADS, TOTALING APPROXIMATELY 91 ACRES.
5. EACH SEED MIX WILL BE GUARANTEED NOT TO CONTAIN MICHIGAN INVASIVE SPECIES OR NOXIOUS WEEDS.
6. POLLINATOR HABITAT WILL BE MANAGED IF INVASIVE SPECIES OR NOXIOUS WEEDS EXCEEDS 10% OF THE VEGETATION WITHIN AN AREA.
7. REFER TO SHEET 16 FOR ADDITIONAL PLANTING NOTES.

LEGEND

- EXIST. FOREST LINE
- EXIST. WATERCOURSE TOB
- EXIST. WATERCOURSE CENTERLINE
- EXIST. WETLAND (EGLE REGULATED)
- EXIST. WETLAND (NON-REGULATED)
- EXIST. EASEMENT
- EXIST. ROAD R.O.W.
- EXIST. ROAD CENTERLINE
- EXIST. SECTION / QUARTER SECTION
- EXIST. TOWNSHIP BOUNDARY
- NON-PARTICIPATING PARCEL BOUNDARY
- PARTICIPATING PARCEL BOUNDARY
- EXIST. OVERHEAD ELECTRICAL
- EXIST. STRUCTURE
- EXIST. STORM SEWER
- PROP. UNDERGROUND COLLECTION
- PROP. SOLAR ARRAY
- PROP. FENCE
- PROP. GRAVEL ACCESS DRIVE
- PROP. INVERTOR
- PROP. SHORT POLLINATOR MIX
- PROP. LONG POLLINATOR MIX

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC

PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS

VEGETATION PLAN

DATE 8/17/2023

REVISIONS

SCALE 0 350 700
1" = 700 FEET

DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 13

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

SIGNAGE DETAILS

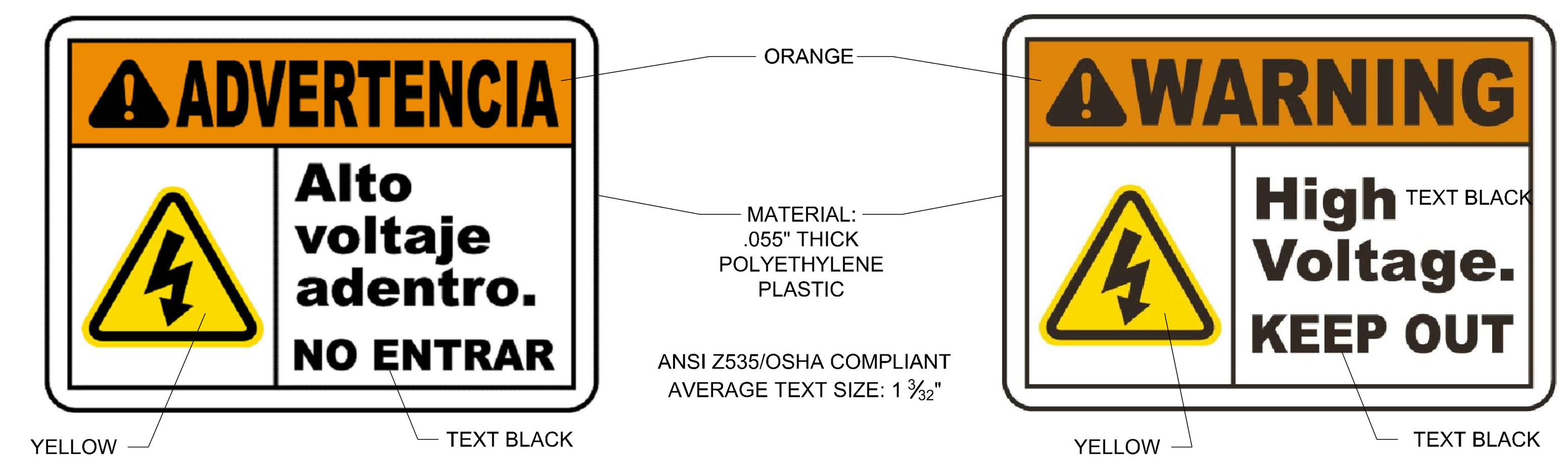
WARNING:
HAZARDOUS VOLTAGE
AUTHORIZED ACCESS
ONLY

NOTES:

1. TOP OF SIGN TEXT 125 mm (5") MIN CLEAR SPACE FROM GATE OR DOOR JAMB (STRIKE SIDE).
2. PROVIDE A BLANK PANEL FOR BACK SIDE.
3. CONTRAST BETWEEN CHARACTER, SYMBOLS AND THEIR BACKGROUND SHALL BE 70% MINIMUM AND HAVE A NON-GLARE FINISH.
4. CHARACTERS SHALL HAVE A WIDTH-TO-HEIGHT RATIO OF BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH-TO-HEIGHT RATIO OF BETWEEN 1:5 AND 1:10.
5. SIGN SHALL BE 1 mm (0.04") THK (MIN) ALUMINUM SHEET.
6. RAISED UPPERCASE LETTER 1 mm (1/32") TALL, MIN.
7. FOR PCS TRANSFORMER MV COMPARTMENT.

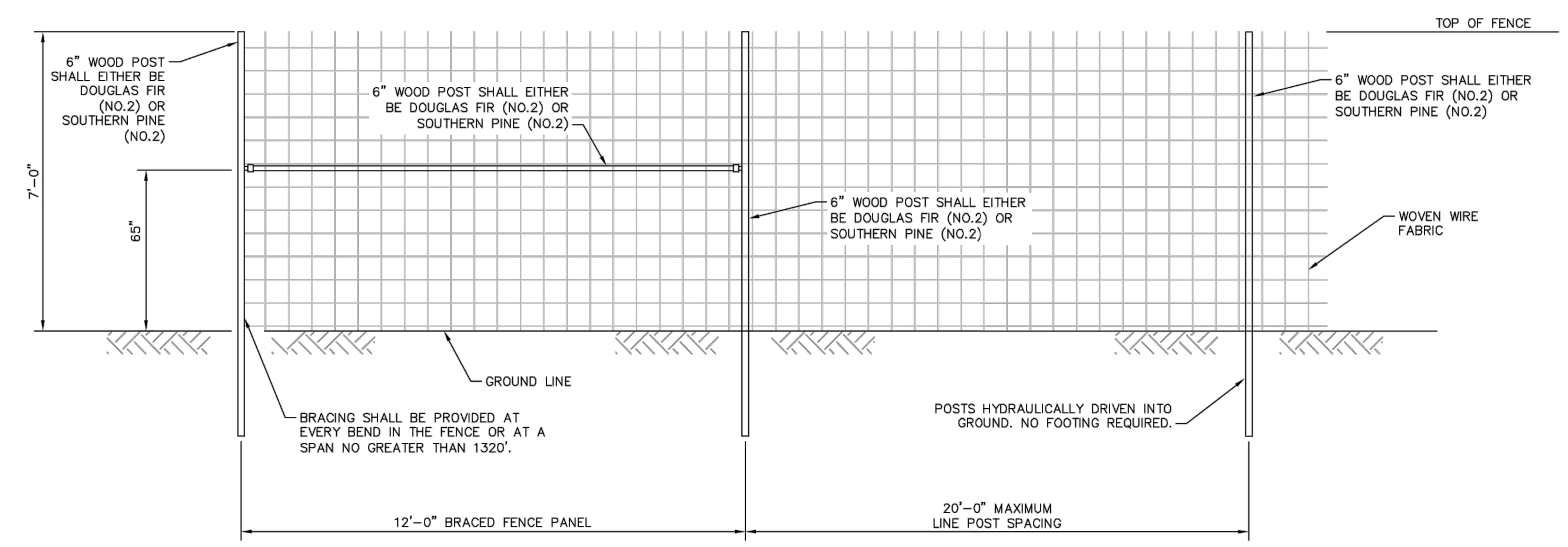
AUTHORIZED PERSONNEL SIGNAGE

NO SCALE



WARNING SIGNS

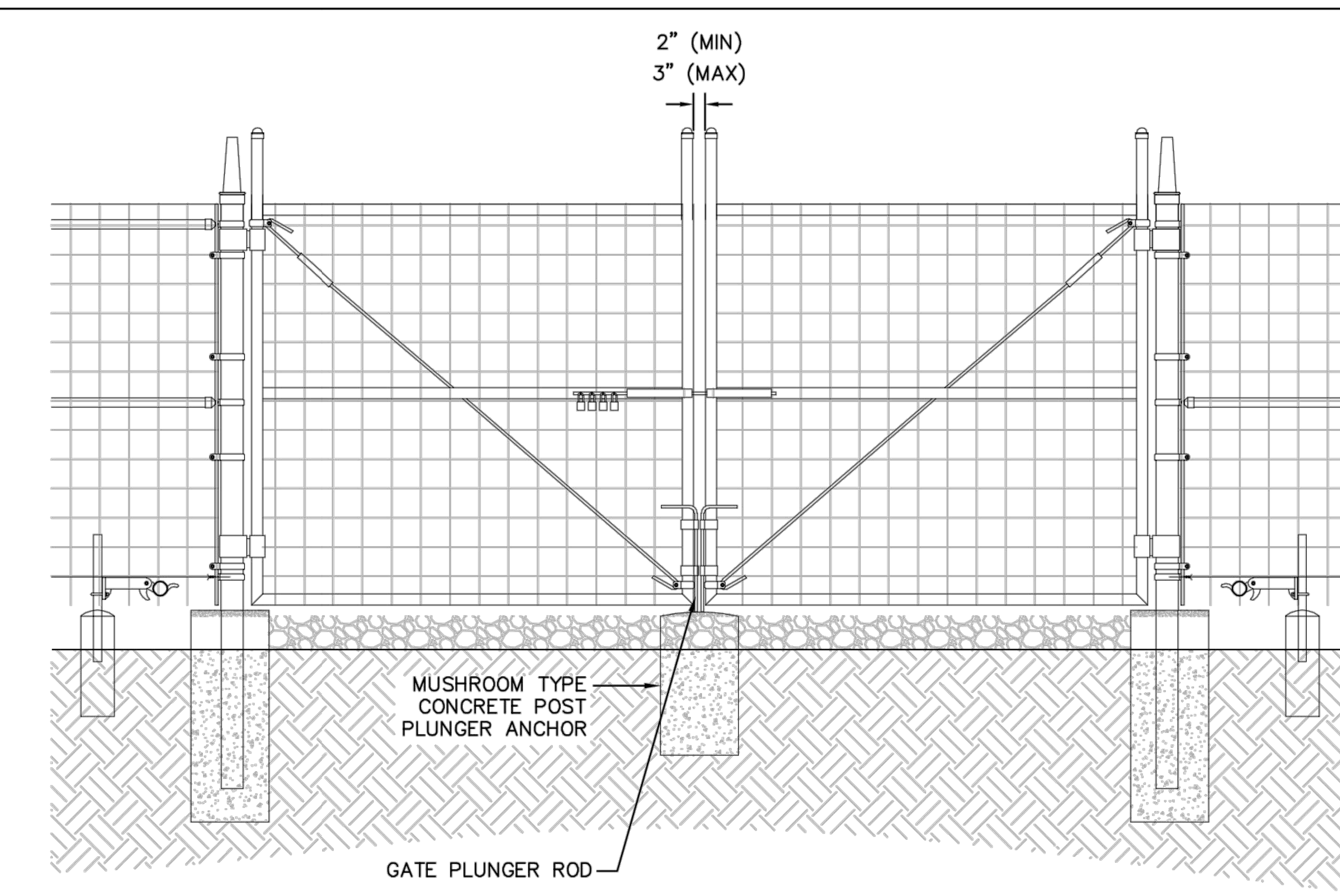
NO SCALE



NOTES:

1. WOVEN WIRE SHALL BE 2096-12 WIRE OR OWNER APPROVED EQUAL.
2. WIRE COATING SHALL BE CLASS 3 GALVANIZED, ZINC ALUMINUM BEZINAL COATING OR PAINTED BLACK BEZINAL COATING AS SPECIFIED BY OWNER.
3. NO BARBED WIRE SHALL BE INSTALLED.
4. FENCES SHALL BE LOCATED A MINIMUM OF 15' FROM PANELS.

1 WOVEN WIRE FENCING DETAIL — SCALE: NTS



2 PERIMETER VEHICULAR GATE DETAIL — SCALE: NTS

NOTE: ALL DETAILS REPRESENTED ON THIS PLAN SHEET ARE CONCEPTUAL IN NATURE, PROVIDED ONLY TO INDICATE A GENERAL OVERVIEW OF PROPOSED PROJECT FACILITIES, AND ARE EXPECTED TO BE MODIFIED AND REFINED.

Know what's **below.**
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC

PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS

SECURITY DETAILS

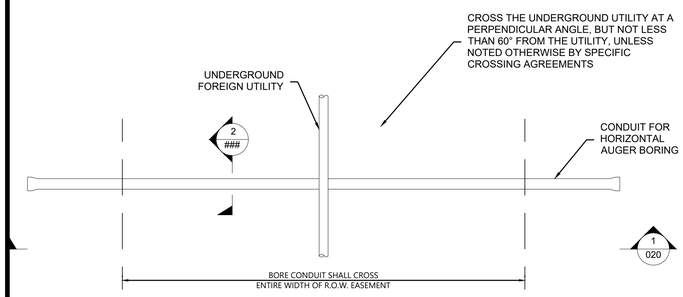
DATE: 8/17/2023

REVISIONS

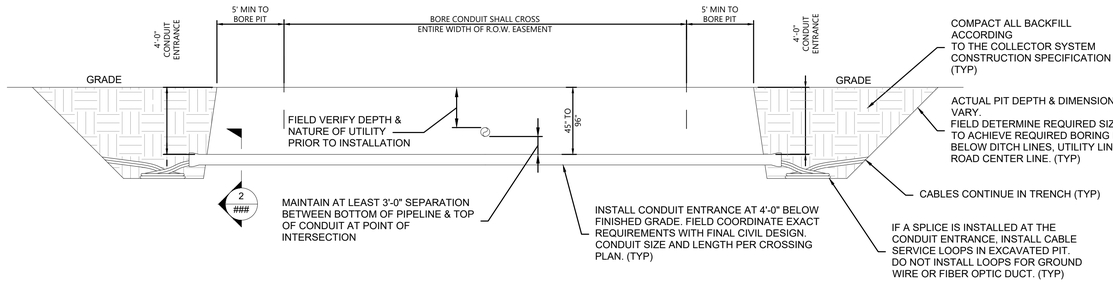
DR.	MB	CH.	ES
P.M.	ES		
BOOK	--		
JOB	22005894		
SHEET NO.	14		

CAD FILE: FORT GRATIOT-07-DET.DWG

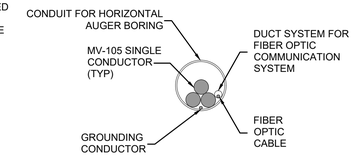
PRELIMINARY PLANS - NOT FOR CONSTRUCTION



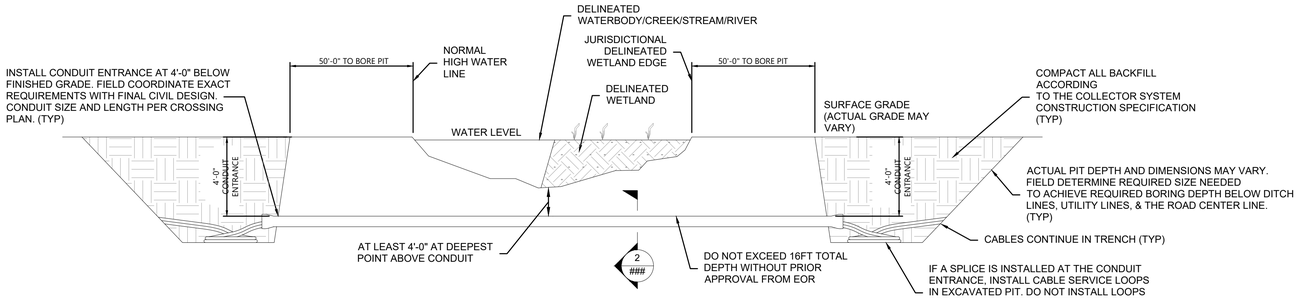
TYPICAL UTILITY CROSSING PLAN
NOT TO SCALE



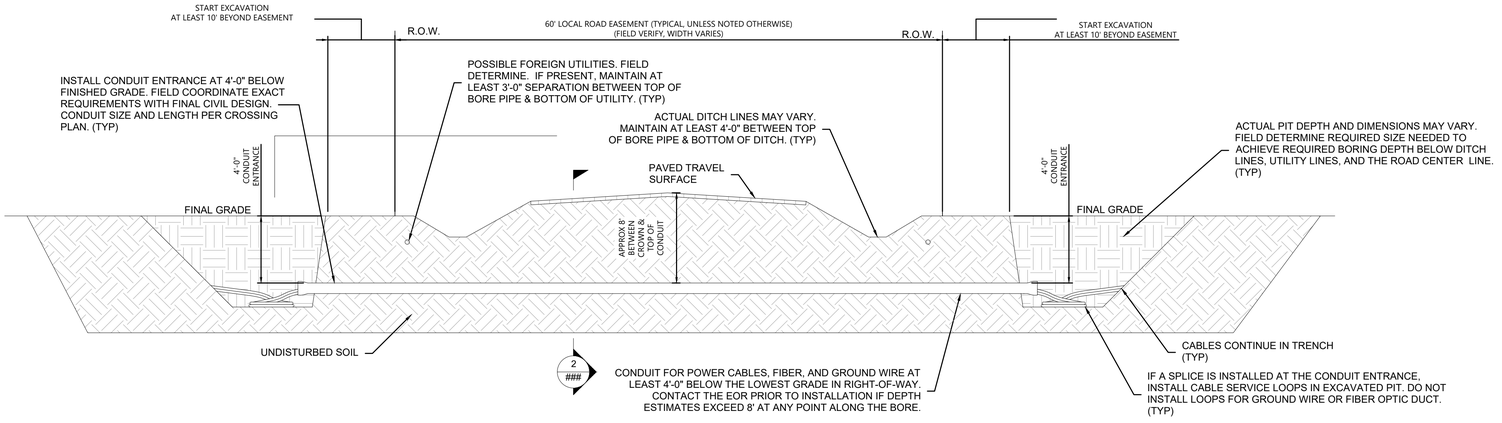
SECTION 1
TYPICAL UTILITY CROSSING SECTION
SEE THIS DWG
NOT TO SCALE



SECTION 2
TYPICAL BORE SECTION
SEE THIS DWG
NOT TO SCALE

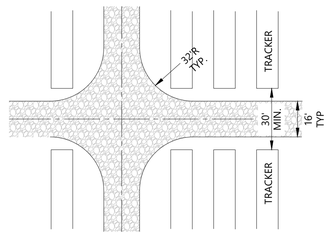


TYPICAL NATURAL FEATURE CROSSING SECTION
NOT TO SCALE

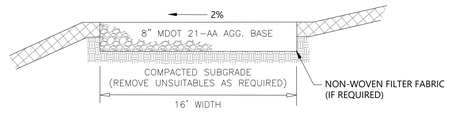


TYPICAL ROAD CROSSING SECTION
NOT TO SCALE

ACCESS ROAD & GRADING DETAILS



PRELIMINARY ACCESS DRIVE GEOMETRY
(PLAN VIEW)
NO SCALE



NOTES:
1. REMOVE TOPSOIL AND ALL UNSUITABLE MATERIAL AS REQUIRED AND REPLACE WITH GRAVEL.
2. ACCESS DRIVES TO SLOPE IN THE DIRECTION OF THE EXISTING GRADE AT A MINIMUM OF 2.0%. DRIVEWAY SHALL BE GRADED TO ALLOW STORMWATER TO SHEET ACROSS IT AND TO PREVENT PUDDLING.
3. PROOF ROLL TO MEET COMPACTION REQUIREMENTS, IF COMPACTION CANNOT BE MET USE FILTER FABRIC.
4. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MDOT SPEC 910.03.C (GEOTEXTILE SEPARATOR) AND SHALL BE PLACED OVER THE CLEARED AREA PRIOR TO THE PLACING OF ROCK.
5. REFER TO MDOT SPEC SECTIONS 302 (AGGREGATE BASE COURSE), 306 (AGGREGATE SURFACE COURSE), 308 (GEOTEXTILES FOR BASE), 902 (AGGREGATES) AND 910 (GEOSYNTHETICS).
6. ALL ACCESS ROAD SUBGRADES SHALL BE COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR.

ACCESS DRIVE CROSS SECTION
NO SCALE

NOTE: ALL DETAILS REPRESENTED ON THIS PLAN SHEET ARE CONCEPTUAL IN NATURE, PROVIDED ONLY TO INDICATE A GENERAL OVERVIEW OF PROPOSED PROJECT FACILITIES, AND ARE EXPECTED TO BE MODIFIED AND REFINED.

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5-8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT: PORTSIDE SOLAR, LLC
PROJECT: PORTSIDE SOLAR
SPECIAL LAND USE PERMIT - SITE PLANS

CROSSING & ACCESS ROAD DETAILS

DATE: 8/17/2023

REVISIONS

DR. MB | CH. ES
P.M. ES
BOOK --
JOB 22005894
SHEET NO. 15

CAD FILE: FORT GRATIOT-07-DET.DWG

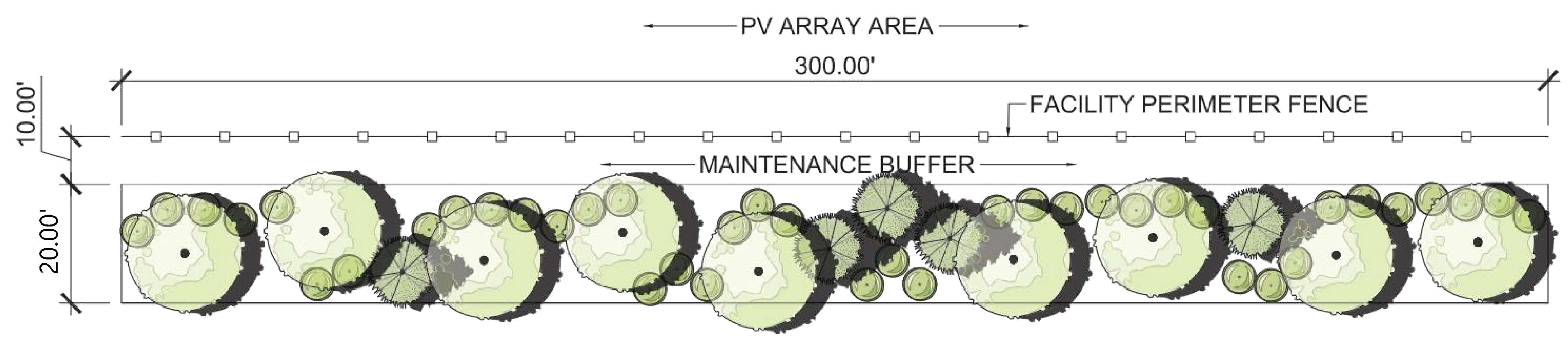
FILE NAME: \\ath\project-data\Shared-Projects\22005894 - Ranger Power - Portside Solar\DWG\Pro Sets\Fort Gratiot SLUP\Fort Gratiot-07-DET.dwg LAST SAVED BY: mschenk 9/8/2023 11:10 AM PLOTTED BY: Ernest Schenk 9/8/2023 PAPER: ARCH FULL BLEED D (24.00 X 36.00 INCHES) DEVICE: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 PLOT STYLE: BASE-HALFSIZE.CTB

\\ATWORKGROUP\DATA\OWNED-PROJECTS\22005894 - RANGER POWER - PORTSIDE SOLAR\DWG\PLAN SETS\FORT GRATIOT SLUP\FORT GRATIOT-07-DET.DWG 8/9/2023 1:34 PM ERNEST SCHENK

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

PROPOSED SCREENING DETAIL

1. A MIX OF EVERGREEN TREES, DECIDUOUS TREES, AND SHRUBS IS PROPOSED WITHIN VEGETATIVE SCREENING AREAS FOR THE PROJECT ALONG NON-PARTICIPATING RESIDENTIAL OR PUBLIC USES WHERE ADEQUATE SCREENING DOES NOT EXIST.
2. TREES AND SHRUBS TO BE STAGGERED IN ROWS WITHIN A 20' VEGETATION BUFFER.
3. LARGE DECIDUOUS TREES STARTING SIZE OF A LEAST 2.5 CALIPER INCHES. PLACED NOT MORE THAN 30' ON CENTER.
4. LARGE EVERGREEN TREES STARTING SIZE OF AT LEAST 6' IN HEIGHT. PLACED NOT MORE THAN 20' ON CENTER.
5. MEDIUM SHRUBS STARTING SIZE OF AT LEAST 30 INCHES IN HEIGHT. PLACED NOT MORE THAN 6' ON CENTER.
6. A 10' MINIMUM MAINTENANCE BUFFER WILL BE USED BETWEEN THE PROPOSED VEGETATIVE SCREENING AND PERIMETER FENCING.



PROPOSED PLANTING SCHEDULE *

LARGE DECIDUOUS TREE		9
	Acer saccharum / Sugar Maple	
	Quercus alba / White Oak	
	Quercus macrocarpa / Bur Oak	
	Quercus rubra / Red Oak	
	Tilia americana / American Linden	
LARGE EVERGREEN		5
	Abies balsamea / Balsam Fir	
	Abies concolor / White Fir	
	Picea glauca / White Spruce	
	Pinus resinosa / Red Pine	
	Pinus strobus / White Pine	
MEDIUM SHRUB		40
	Aronia melanocarpa / Black Chokeberry	
	Cornus amomum / Silky Dogwood	
	Cornus sericea / Red Twig Dogwood	
	Corylus americana / American Hazelnut	
	Lindera benzoin / Spicebush	

* NOTE: THE ABOVE SPECIFIED SPECIES COULD BE SUBJECT TO LOCAL AVAILABILITY (WITHIN 150 MILES OF THE PROJECT), ANY SUBSTITUTIONS DUE TO LIMITED AVAILABILITY WILL BE OF SIMILAR SPECIES NATIVE TO MICHIGAN AND WILL BE APPROVED ADMINISTRATIVELY BY THE TOWNSHIP.

STORMWATER DRAINAGE

THE CONVERSION OF LAND USED FOR AGRICULTURAL CROP DEVELOPMENT TO SOLAR ARRAY WITH PREDOMINANTLY GRASSY GROUND COVER AND GRAVEL ACCESS DRIVEWAYS WILL REDUCE THE OVERALL RUNOFF GENERATED BY THE PROPOSED SITE. THERE ARE THREE KEY VARIABLES THAT DETERMINE THE AMOUNT OF RUNOFF WHEN USING EITHER THE RATIONAL METHOD OR THE STATE OF MICHIGAN EGLE METHODOLOGY DOCUMENT 'COMPUTING FLOOD DISCHARGES FOR SMALL UNGAGED WATERSHEDS'

1. DRAINAGE AREA: THE PROJECT DOES NOT PROPOSE TO ALTER THE NATURAL DRAINAGE PATTERNS. GRADING FOR THE PROJECT WILL BE LIMITED TO SMOOTHING LARGER HUMPS AND DIPS AS NECESSARY TO ALLOW FOR THE ARRAY TRACKERS TO MEET VENDOR AND TOWNSHIP REQUIREMENTS FOR MINIMUM HEIGHT AND MAXIMUM HEIGHT. THEREFORE THE DRAINAGE AREAS FOR EXISTING AND PROPOSED CONDITIONS ARE THE SAME.
2. TIME OF CONCENTRATION: AS NOTED ABOVE, GRADING WILL BE LIMITED TO LOCALIZED HUMPS AND DIPS, AND WILL NOT HAVE AN IMPACT ON THE LENGTH OF DRAINAGE PATTERNS ONSITE. THEREFORE THE TIME OF CONCENTRATION FOR EXISTING AND PROPOSED CONDITIONS ARE THE SAME.
3. LAND USE / GROUND COVER: THE RATIONAL METHOD IS SIMPLISTIC IN ITS CONSIDERATION OF GROUND COVER (TYPICALLY LIMITED TO PERVIOUS OR IMPERVIOUS), THEREFORE THE MORE COMPREHENSIVE EGLE METHODOLOGY IS MORE SUITABLE TO ACCOUNT FOR THE LAND USE CHANGE FROM AGRICULTURAL CROP DEVELOPMENT TO A VEGETATED GRASSY MEADOW COVER BENEATH THE ARRAY. PER THE EGLE METHOD, THE RUNOFF CURVE NUMBERS (CN) ARE LISTED BELOW FOR COMPARISON WHERE IT CAN BE SEEN THAT THE COMBINATION OF GRASSY MEADOW AND GRAVEL DRIVEWAYS HAS A MUCH LOWER CN THAN THE AGRICULTURAL CROP CONDITION, AND IS LESS THAN OR EQUAL TO A WOODED CONDITION.

HYDROLOGIC SOIL GROUP:	A	B	C	D
ROW CROPS, GOOD CONDITION	67	78	85	89
WOODS, AVERAGE CONDITION	36	60	73	79
MEADOW	30	58	71	78
IMPERVIOUS (GRAVEL)	98	98	98	98
MEADOW (97%) W/ GRAVEL (3%*)	32	59	72	79

*GRAVEL COVER IS TYPICALLY 3% OR LESS WITHIN THE ARRAY AREA

THEREFORE AS A RESULT, THE OVERALL RUNOFF FROM THE SITE WILL NOT BE INCREASED (POST-DEVELOPMENT RUNOFF WILL NOT EXCEED PRE-DEVELOPMENT RUNOFF) AND NO PERMANENT STORMWATER MANAGEMENT FACILITIES ARE NECESSARY.

THIS CONCLUSION IS CONSISTENT WITH A STUDY PERFORMED BY ASCE THAT COMPARED RUNOFF FROM AN EXISTING GRASSY (MEADOW) LAND COVER WITH AND WITHOUT A SOLAR ARRAY INSTALLED, WHERE IT WAS DETERMINED THAT THE SMALL AMOUNT OF RUNOFF INCREASE FROM THE ARRAY WOULD NOT WARRANT THE NEED FOR STORMWATER DETENTION FACILITIES. IT'S IMPORTANT TO NOTE THAT THE ASCE COMPARISON WAS BASED ON A CONDITION WHERE THE EXISTING LAND COVER WAS THE SAME AS THE ARRAY CONDITION (BOTH GRASSY MEADOW), AND DID NOT REFLECT A CHANGE FROM A HIGHER CN CONDITION (CROPS) TO A GRASSY MEADOW CONDITION (ARRAY). A COPY OF THE ASCE CAN BE PROVIDED FOR REFERENCE.

Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5–8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT PORTSIDE SOLAR, LLC
PROJECT PORTSIDE SOLAR
SPECIAL LAND USE PERMIT – SITE PLANS
LANDSCAPING & VEGETATION DETAILS

DATE 8/17/2023

REVISIONS

DR. MB CH. ES
P.M. ES
BOOK ––
JOB 22005894
SHEET NO. 16

CAD FILE: FORT GRATIOT-07-DET_RECOVER.DWG

PRELIMINARY PLANS - NOT FOR CONSTRUCTION

1.Introduction

Canadian Solar is one of the world's largest suppliers of solar photovoltaic modules, system solutions, and one of the largest solar power plant developers. By October 2022, Canadian Solar has shipped more than 80GW solar modules to customers in over 160 countries worldwide and owns a global portfolio of 25GW solar PV projects and 40GWh energy storage projects. CSI solar, the majority-owned subsidiary of Candian Solar, expanded its module manufacturing capacity to 32GW in 2022 and expects to reach 50GW module manufacturing capacity by the end of 2023. In 2022, Canadian Solar was again recognized as one of the most bankable PV module brands in the world by Bloomberg New Energy Finance.

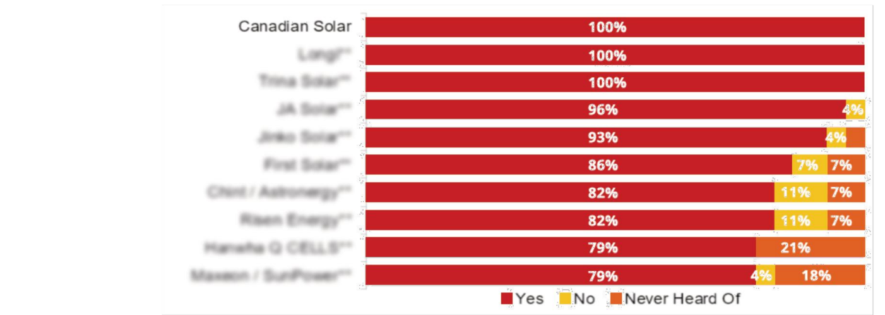


Figure 1. The world's top 10 most bankable PV module brands in BNEF's 2022 survey

CSI Solar focuses on continuously improving the performance and reliability of its solar modules and providing high quality products to customers, by actively exploring and introducing new cell and module technologies. CSI Solar was one of the first companies introducing cell and module technologies that later became industry mainstream, such as bifacial modules (back in 2010), modules with larger-format wafers (up to 210mm) and, nowadays, N-type high-efficiency cells and modules. Since 2019, CSI Solar has been developing N-type TOPCon (Tunnel Oxide Passivated Contacts) technologies, and now launches a diversified TOPCon module portfolio covering both 182mm and 210mm cells, single-glass and double-glass encapsulation, and various module sizes and power outputs to satisfy different application scenarios.

TOPHiKu6 Monofacial | TOPBiHiKu6 Bifacial | TOPBiHiKu7 Bifacial

CS6R-T | CS6W-T | CS6W-TB-AG | CS7L-TB-AG | CS7N-TB-AG

Figure 2. CSI TOPCon Module Family

1

Module Power (W)	420~435	560~580	555~570	620~635	680~700
Module Type	CS6R-T	CS6W-T	CS6W-TB-AG	CS7L-TB-AG	CS7N-TB-AG
Module Efficiency	22.30%	22.50%	22.10%	22.40%	22.50%
Module Size (mm)	1722×1134×30	2278×1134×30	2278×1134×30	2172×1303×33	2384×1303×33

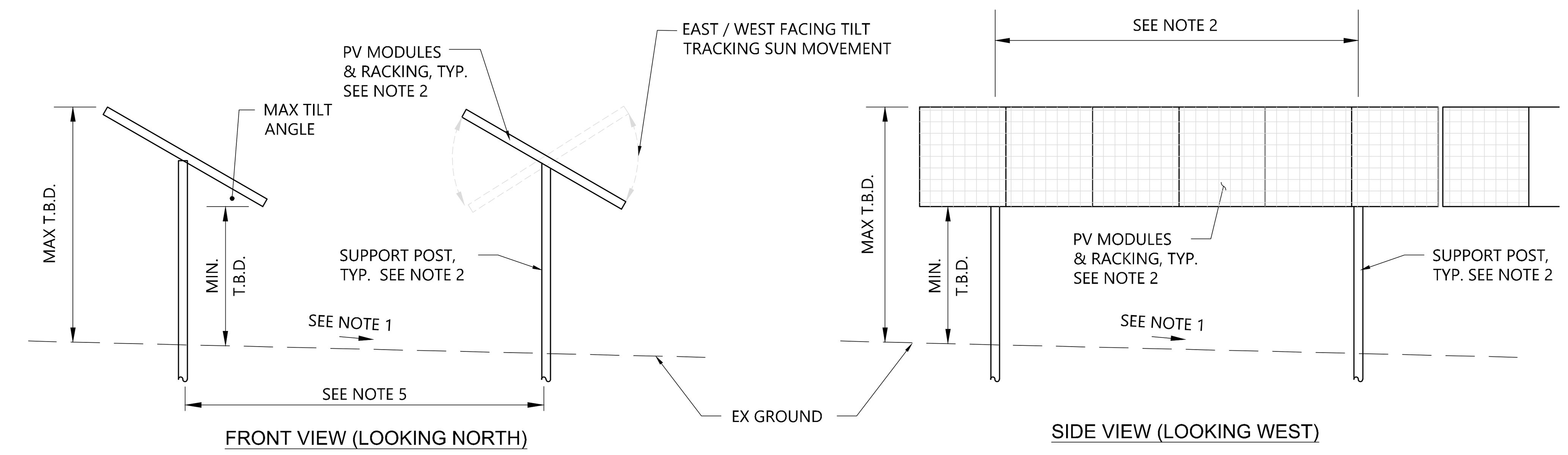
Table 1. Key Parameters of CSI TOPCon Modules

Module	PERC Bifacial-660W	TOPCon Bifacial-685W
Power (W)	660	685
Module area(m2)	3.11	3.11
Module efficiency	21.20%	22.10%
Module Open-Circuit Voltage(V)	45.4	47.1
Annual Degradation Rate	0.45%	0.40%
Site	Los Angeles, USA	
DC System Size (MWdc)	28.7	
DC/AC Ratio	1.3	
Project site area (m2)	Same area	
Installation Method	Single-axis tracked (1 row portrait installation)	
Service Life	30 years	
Ground Coverage Ratio	0.313	0.301
Pitch (m)	7.62	7.91
Module Number/String	31	30
String Number per rack	2	
Module Number per rack	62	61
Module Power per rack (W)	40,920	41,785
Length of rack (m)	83.4	80.8
Total Module Area per rack (m2)	192.6	186.4

Table 3. Parameters used in system performance simulation

MODULE DETAILS
NO SCALE

GENERAL MODULE NOTES:
1. THE PROJECT ANTICIPATES TO UTILIZE A CSI HIGH EFFICIENCY TOPCON 690W MODULE, OR SIMILAR.



FRONT VIEW (LOOKING NORTH)

SIDE VIEW (LOOKING WEST)

CONCEPTUAL SOLAR PV TRACKER DETAIL
NO SCALE

GENERAL ARRAY NOTES:
1. SITE DRAINAGE IS INTENDED TO FOLLOW NATURAL DRAINAGE PATTERNS WITH LOCALIZED GRADING AS REQUIRED TO MEET TRACKER VENDOR REQUIREMENTS FOR MAX SLOPE AND POST HEIGHT TOLERANCES.
2. FINAL PV MODULE RACKING CONFIGURATION AND SUPPORT POST DESIGN (SIZE, EMBEDMENT DEPTH, SPACING, ETC.) TO BE DETERMINED DURING THE ENGINEERING PHASE.
3. SOLAR MODULES SHALL NOT BE INSTALLED WITHIN REQUIRED PERIMETER SETBACK AREAS.
4. PROPOSED SPACING BETWEEN ROWS ±23 FEET, SUBJECT TO CHANGE PENDING FINAL DESIGN.

SG3425UD-MV/ SG3600UD-MV

Turnkey Station for North America 1500 Vdc System - MV Transformer Integrated

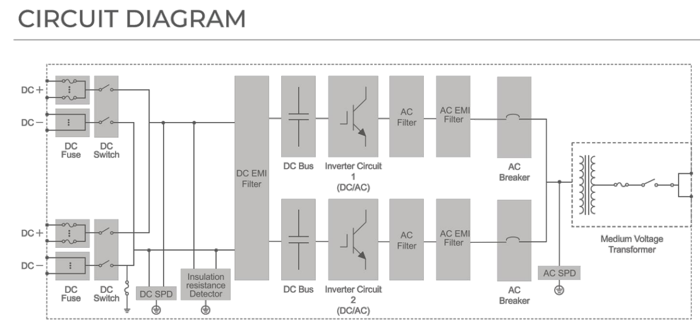
HIGH YIELD
- Advanced three-level technology, max. efficiency 98.9%
- Inverter full power operation up to 45 ℃ (113 ℉)
- Effective cooling, wide operation temperature
- Max. DC/AC ratio up to 2.0

EASY O&M
- Integrated current, voltage and MV parameters monitoring function for online analysis and trouble shooting
- Modular design, easy for maintenance

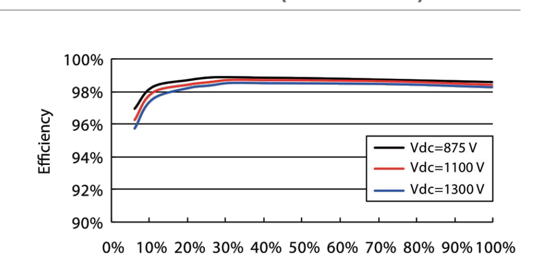
SAVED INVESTMENT
- Low transportation and installation cost due to 20-foot container size design
- DC 1500V system, low system cost
- Integrated MV transformer and LV auxiliary power supply
- Q at night optional

GRID SUPPORT
- Compliance with standards:UL 1741,UL 1741 SA, IEEE 1547, Rule 21 and NEC code
- Low / High voltage ride through (L/HVRT), L/HFRT, soft start/stop
- Active & reactive power control and power ramp rate control

CIRCUIT DIAGRAM



EFFICIENCY CURVE (SG3425UD)



SUNGROW
Clean power for all

Type designation	SG3425UD-MV	SG3600UD-MV
Input (DC)		
Max. PV input voltage	1500 V	
Min. PV input voltage / Startup input voltage	875 V / 915 V	915 V / 955 V
Available DC fuse sizes	250 A - 630 A	
MPP voltage range	875 V - 1500 V	915 V - 1500 V
Full power MPP voltage range @ 45 ℃	875 V – 1300 V *	915 V – 1300 V *
No. of independent MPP inputs	1	
No. of DC inputs	24 (optional : 28)	
Max. DC short-circuit current	2 Switches / 5000 A (Optional : 4 Switches / 10000 A)	
PV array configuration	Negative grounding (Optional : Floating)	
Output (AC)		
AC output power	3425 kVA @ 45 ℃ (113 ℉) 3083 kVA @ 50 ℃ (122 ℉) **	3600 kVA @ 45 ℃ (113 ℉) 3240 kVA @ 50 ℃ (122 ℉)**
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 50 – 65 Hz	
THD	< 3 % (at nominal power)	
Power factor at nominal power / Ajustable power factor	> 0.99 / 0.8 leading - 0.8 lagging	
Efficiency		
Inverter Max. efficiency	98.9 %	
Inverter CEC efficiency	98.5 %	
Transformer		
Transformer rated power	3425 kVA	3600 kVA
Transformer Max. power	3425 kVA	3600 kVA
LV / MV voltage	0.6 kV / (12 – 35) kV	0.63 kV / (12 – 35) kV
Transformer vector	Dy 1 (Optional: Dy 11, Yny 0)	
Transformer cooling type	KNAN (Optional : ONAN)	
Protection		
DC input protection	Load switch + fuse	
Inverter output protection	Circuit breaker	
AC MV output protection	Load switch + fuse	
Overvoltage protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
General Data		
Dimensions (W*H*D)	6058 mm * 2896 mm * 2438 mm 238.5'' * 114.0'' * 96.0''	
Weight	18000 kg 39683.2 lbs	
Degree of protection	NEMA 4X (Electronic for Inverter) / NEMA 3R (Others)	
Auxiliary power supply	5 kVA , 120 Vac ; Optional : 30 kVA 480 Vac + 5 KVA 120 Vac	
Operating ambient temperature range(it refers to the ambient temperature of 1m around the inverter.)	-35 to 60 ℃ (> 45 ℃ derating) / optional: -40 to 60 ℃ (> 45 ℃ derating) -22 to 140 ℉ (> 113 ℉ derating) / optional: -40 to 140 ℉ (> 113 ℉ derating)	
Allowable relative humidity range	0 - 100 %	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	1000 m (Standard) / > 1000 m (Customized) (3280.8 ft (standard) / > 3280.8 ft (Customized))	
DC-coupled storage interface	Optional	
Charging power from the grid	Optional	
Communication	Standard: RS485, Ethernet	
Compliance	UL 1741, IEEE 1547, UL1741 SA, NEC 2017, CSA C22.2 No.107.1-01	
Grid support	Q at night function (optional), L/HVRT, L/HFRT, Active & reactive power control and power ramp rate control, Volt-var, Frequency-watt	

*Full power MPP range is temperature dependent, check the characteristic curve of the inverter for more information.
**For sustained operation above 40°C, an optional 60 °C temperature rise transformer is recommended.

INVERTER STATION DETAILS
NO SCALE

SUP/SITE PLAN NOTES
FORT GRATIOT TOWNSHIP

OWNER COMMITMENTS

DESIGN STANDARDS

1. ACCESS ROAD SIZING:
   1.1. 16' WIDE CLEARANCE REQUIRED FOR EMERGENCY PATHWAYS LEADING TO INVERTERS.

SETBACKS

2. A MINIMUM SETBACK DISTANCE OF FIFTY (50) FEET OF THE EDGE OF THE SOLAR ARRAY TO ALL NON-PARTICIPATING PARCEL PROPERTY LINES. INTERNAL PROPERTY LINES OF PARTICIPATING PARCELS UTILIZED FOR PLACEMENT OF THE SOLAR ARRAY ARE NOT SUBJECT TO ANY SETBACKS.
3. A MINIMUM SETBACK DISTANCE OF FIFTY (50) FEET OF THE EDGE OF THE SOLAR ARRAY TO ROAD RIGHT-OF-WAYS.
4. A MINIMUM SETBACK DISTANCE OF ONE HUNDRED (100) FEET FROM THE EDGE OF A DWELLING REGARDLESS OF IF THE RESIDENCE IS PARTICIPATING OR NOT PARTICIPATING IN THE PROJECT.
5. A MINIMUM SETBACK DISTANCE OF THREE HUNDRED AND FIFTY (350) FEET FROM THE SOLAR ARRAY INVERTER AND EDGE OF A DWELLING REGARDLESS OF IF THE RESIDENCE IS PARTICIPATING OR NOT PARTICIPATING IN THE PROJECT.
6. A VOLUNTARY MINIMUM SETBACK DISTANCE OF TWENTY FIVE (25) FEET FROM PROJECT INFRASTRUCTURE AND NATURAL FEATURES, WHEREVER APPLICABLE.

GLARE STANDARDS

7. ALL SOLAR PANEL ORIENTATION WILL BE DESIGNED IN SUCH A WAY TO MINIMIZE CONCENTRATED SOLAR GLARE ONTO NEARBY PROPERTIES OR ROADWAYS TO THE GREATEST EXTENT PRACTICAL.

SOUND STANDARDS

8. SOUND PRESSURE MAY NOT EXCEED 45 DB(A) AT ANY NON-PARTICIPATING PROPERTY BOUNDARY MEASURED AS LEQ(1 HOUR).

LIGHTING STANDARDS

9. ANY REQUIRED LIGHTING FOR THE SOLAR FACILITY OR BUILDINGS OF THE SOLAR FACILITY SHALL BE DIRECTED AWAY AND BE SHIELDED FROM ADJACENT PROPERTIES AND PUBLIC ROADWAYS.

FENCING STANDARDS

10. THE MAXIMUM HEIGHT OF PERIMETER FENCING FOR FORT GRATIOT TOWNSHIP IS SIX (6) FEET. DUE TO FEDERAL REGULATIONS, THE SOLAR FACILITY SHALL BE COMPLETELY ENCLOSED BY A SEVEN (7) FOOT HIGH PERIMETER FENCE TO RESTRICT UNAUTHORIZED ACCESS.

SAFETY & CERTIFIED COMPONENTS STANDARDS

11. ALL COMPONENTS OF THE SOLAR FACILITY WILL COMPLY WITH THE NATIONAL ELECTRIC SAFETY CODE (NESC) AND INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE),

GENERAL NOTES

1. ARRAY SOURCE: ATWELL, LLC 7/1/23. THIS PLAN IS PRELIMINARY FOR PERMITTING PURPOSES. FINAL ARRAY CONFIGURATION TO BE OPTIMIZED DURING ENGINEERING PHASE.
2. THERE IS NO LIGHTING PROPOSED FOR THE PROJECT, THEREFORE LIGHTING AND PHOTOMETRIC PLANS ARE NOT NECESSARY OR PROVIDED.
3. FINAL STRING SIZING TO BE CONFIRMED BY ENGINEER-OF-RECORD.
4. MV COLLECTION CROSSINGS ARE TBD AFTER MV COLLECTION LAYOUT. ALL CROSSINGS TO BE FINALIZED BY ENGINEER OF RECORD.
5. SITE IS IN FEMA FLOOD ZONE X.
6. CONSTRUCTION IS PLANNED TO START IN EARLY 2025.
7. VEHICULAR AND PEDESTRIAN TRAFFIC, IN RELATION TO STREETS AND SIDEWALKS WILL BE SAFE AND CONVENIENT.
8. CONSTRUCTION: CONSTRUCTION OF THE PROJECT SHALL COMPLY WITH THE NATIONAL ELECTRIC SAFETY CODE (NESC), STATE CONSTRUCTION CODE, AND COUNTY BUILDING CODE.
9. COMPONENTS: COMPONENTS OF THE SOLAR ARRAY SHALL BE APPROVED BY THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE), SOLAR RATING AND CERTIFICATION CORPORATION (SRCC), ELECTRONICS TESTING LABRATORY (ETL), OR OTHER CERTIFICATION ORGANIZATION OF APPROVED BY CITY.
10. DISTRIBUTION, TRANSMISSION & INTERCONNECTION: ALL COLLECTION LINES AND INTERCONNECTIONS FROM THE SOLAR ARRAY TO ANY ELECTRICAL COLLECTION POINT SHALL BE LOCATED AND MAINTAINED UNDERGROUND INSIDE THE FENCED ARRAY, EXCEPT IN AREAS WHERE TECHNICAL OR PHYSICAL CONSTRAINTS MAKE IT PREFERABLE TO INSTALL EQUIPMENT ABOVE GROUND. THIS REQUIREMENT EXCLUDES TRANSMISSION EQUIPMENT MEANT TO CONNECT THE PROJECT TO THE LOCAL TRANSMISSION OR DISTRIBUTION SYSTEM.
11. ALL SCREENING SHALL FOLLOW TOWNSHIP ZONING ORDINANCE STANDARDS - REFER TO LANDSCAPING PLAN. VEGETATIVE COVER CAN BE SEEN ON THE BACKGROUND AERIAL IMAGE.
12. THE PERIMETER OF THE ARRAY WILL BE COMPLETELY ENCLOSED BY PERIMETER FENCING.
13. EXISTING DRAINAGE PATTERNS WILL GENERALLY BE MAINTAINED TO FOLLOW EXISTING CONDITIONS. LOCALIZED GRADING WILL BE PERFORMED AS NECESSARY TO SMOOTH TERRAIN TO SUIT TRACKER VENDOR REQUIREMENTS AND OPTIMIZE POST HEIGHT REQUIREMENTS.
14. DURING CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED IN ACCORDANCE WITH PERMITTING REQUIREMENTS OF THE AGENCY HAVING JURISDICTION.
15. FINAL GROUND COVER OF THE ARRAY WILL CONSIST OF GRASSES SUITABLE FOR GROWTH IN THIS AREA WITH MINIMAL MAINTENANCE (NO IRRIGATION). MAINTENANCE WILL CONSIST OF MOWING AS NECESSARY TO AVOID SHADING ON PANELS.
16. EXISTING SURVEY INFORMATION ON THESE PLANS IS BASED ON DESKTOP DATA SOURCES (GIS, ETC.) AND IS NOT SUITABLE TO BE USED FOR CONSTRUCTION. FIELD SURVEY IS REQUIRED TO BE PERFORMED PRIOR TO PROCEEDING WITH DETAILED DESIGN AND IFC DRAWINGS.
17. DRIVEWAY APPROACHES TO AND/OR UTILITY CROSSINGS OF EXISTING COUNTY ROADS SHALL REQUIRE A PERMIT AND BE DESIGNED IN ACCORDANCE WITH ST. CLAIR COUNTY ROAD COMMISSION REQUIREMENTS.
18. CONNECTIONS AND/OR CROSSINGS OF EXISTING COUNTY DRAINS WILL REQUIRE A PERMIT AND BE DESIGNED IN ACCORDANCE WITH ST. CLAIR COUNTY DRAIN COMMISSIONER REQUIREMENTS.
19. UNDERGROUND UTILITY CROSSINGS OF COUNTY ROADS, DRAINS, WATERCOURSES AND REGULATED WETLANDS SHALL BE VIA TRENCHLESS INSTALLATION TO MINIMIZE IMPACTS TO THOSE FEATURES.

NOTE: ALL DETAILS REPRESENTED ON THIS PLAN SHEET ARE CONCEPTUAL IN NATURE, PROVIDED ONLY TO INDICATE A GENERAL OVERVIEW OF PROPOSED PROJECT FACILITIES, AND ARE EXPECTED TO BE MODIFIED AND REFINED.

Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

ATWELL
866.850.4200 www.atwell-group.com
TWO TOWNE SQUARE, SUITE 700
SOUTHFIELD, MI 48076
248.447.2000

SECTIONS: 5–8, 17
TOWN, RANGE: T07N, R17E
FORT GRATIOT TOWNSHIP
ST. CLAIR COUNTY, MICHIGAN

CLIENT PORTSIDE SOLAR, LLC
PROJECT PORTSIDE SOLAR
SPECIAL LAND USE PERMIT – SITE PLANS

SOLAR DETAILS

DATE 8/17/2023

REVISIONS

DR. MB | CH. ES
P.M. ES
BOOK ––
JOB 22005894
SHEET NO. 17

CAD FILE: FORT GRATIOT-07-DET_RECOVER.DWG

BY PARCEL ID

Parcel ID	Site Address	Map #	Owner	Owner Street Address	Owner C/S/Z
20-005-4003-000	BRACE RD VAC	11	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-006-1002-010	METCALF RD VAC	1	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-2001-000	METCALF RD VAC	3	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-2001-100	METCALF RD VAC	2	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-3012-000	COLE RD VAC	7	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-4001-400	COLE RD VAC	4	REID JAMES	5729 BURTCH RD	GRANT, MI 48032
20-006-4004-000	COLE RD VAC	6	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-4005-000	COLE RD VAC	5	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1001-000	CARRIGAN RD VAC	8	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1003-000	5397 STATE RD	10	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-007-1004-000	CARRIGAN RD VAC	9	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-008-1002-000	STATE RD VAC	12	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-1003-000	STATE RD VAC 5304	15	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-008-1006-500	STATE RD VAC	14	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-2013-000	5404 STATE RD	13	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-3001-000	CARRIGAN RD VAC	16	PETERS BROTHERS, LLC	2807 STAPLETON RD	MEMPHIS, MI 48041
20-017-2001-001	CARRIGAN RD VAC	17	PETERS BROTHERS, LLC	2807 STAPLETON RD	MEMPHIS, MI 48041

BY MAP NUMBER

Parcel ID	Site Address	Map #	Owner	Owner Street Address	Owner C/S/Z
20-006-1002-010	METCALF RD VAC	1	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-2001-100	METCALF RD VAC	2	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-2001-000	METCALF RD VAC	3	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-4001-400	COLE RD VAC	4	REID JAMES	5729 BURTCH RD	GRANT, MI 48032
20-006-4005-000	COLE RD VAC	5	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-4004-000	COLE RD VAC	6	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-3012-000	COLE RD VAC	7	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1001-000	CARRIGAN RD VAC	8	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1004-000	CARRIGAN RD VAC	9	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1003-000	5397 STATE RD	10	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-005-4003-000	BRACE RD VAC	11	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-1002-000	STATE RD VAC	12	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-2013-000	5404 STATE RD	13	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-1006-500	STATE RD VAC	14	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-1003-000	STATE RD VAC 5304	15	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-008-3001-000	CARRIGAN RD VAC	16	PETERS BROTHERS, LLC	2807 STAPLETON RD	MEMPHIS, MI 48041
20-017-2001-001	CARRIGAN RD VAC	17	PETERS BROTHERS, LLC	2807 STAPLETON RD	MEMPHIS, MI 48041

BY OWNER

Parcel ID	Site Address	Map #	Owner	Owner Street Address	Owner C/S/Z
20-005-4003-000	BRACE RD VAC	11	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-007-1003-000	5397 STATE RD	10	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-1002-000	STATE RD VAC	12	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-1006-500	STATE RD VAC	14	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-008-2013-000	5404 STATE RD	13	FURNESS TED/CYNTHIA	5404 STATE RD	FORT GRATIOT, MI 48059
20-006-3012-000	COLE RD VAC	7	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-4004-000	COLE RD VAC	6	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-4005-000	COLE RD VAC	5	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1001-000	CARRIGAN RD VAC	8	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-007-1004-000	CARRIGAN RD VAC	9	LEWIS LAND LLC	5082 NORTH RD	NORTH STREET, MI 48049
20-006-1002-010	METCALF RD VAC	1	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-2001-000	METCALF RD VAC	3	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-006-2001-100	METCALF RD VAC	2	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-008-1003-000	STATE RD VAC 5304	15	PALMATEER JAMES R	4417 GRATIOT AVE	FORT GRATIOT, MI 48059
20-008-3001-000	CARRIGAN RD VAC	16	PETERS BROTHERS, LLC	2807 STAPLETON RD	MEMPHIS, MI 48041
20-017-2001-001	CARRIGAN RD VAC	17	PETERS BROTHERS, LLC	2807 STAPLETON RD	MEMPHIS, MI 48041
20-006-4001-400	COLE RD VAC	4	REID JAMES	5729 BURTCH RD	GRANT, MI 48032

6823-Ranger_Atwell-PortsideSolar-FtGratiot-SoundLetter-230908.docx

September 8, 2023

Mr. Ernest Schenk
Project Manager
Atwell, LLC
Two Towne Square, Suite 700
Southfield, MI 48076

Subject: **Sound Level Assessment – Fort Gratiot Township**
Portside Solar Project – St. Clair County, Michigan

Dear Mr. Schenk:

Epsilon Associates, Inc. (Epsilon) is pleased to provide this letter report to Atwell, LLC (Atwell) for a sound level assessment for the proposed Portside Solar Project "the Project". This project is being developed by Ranger Power, LLC (Ranger). The Project is expected to be 100 MW in size, approximately 75 of which is located in Fort Gratiot Township in St. Clair County, Michigan. The Project will consist of 47 Sungrow 3600 inverters (32 of which are in Fort Gratiot Township), a collector substation (Clyde Township), and solar panel arrays. The assessment included sound level modeling of operational sound from the facility and an evaluation against the local regulatory limits. A brief overview of the modeling and the sound level evaluation for Fort Gratiot Township is provided herein.

Sound Terminology

There are several ways in which sound levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level terminology used in this report.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two or more separate sounds do not add arithmetically. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (53 dB), which is equal to doubling in sound energy, but not equal to a doubling in decibel quantity (100 dB). Thus, every 3-dB change in sound level represents a doubling or halving of sound energy. The human ear does not perceive changes in the sound pressure level as equal changes in loudness. Scientific research demonstrates that the following general relationships hold between sound level and human perception for two sound levels with the same or very similar frequency

characteristics[1]:

- 3 dB increase or decrease results in a change in sound that is just perceptible to the average person,
- 5 dB increase or decrease is described as a clearly noticeable change in sound level, and
- 10 dB increase or decrease is described as twice or half as loud.

Another mathematical property of decibels is that if one source of sound is at least 10 dB louder than another source, then the total sound level is simply the sound level of the higher-level source. For example, a sound source at 60 dB plus another sound source at 47 dB is equal to 60 dB.

A sound level meter (SLM) that is used to measure sound is a standardized instrument. It contains "weighting networks" (e.g., A-, C-, and Z-weightings) to adjust the frequency response of the instrument. Frequencies, reported in Hertz (Hz), are detailed characterizations of sounds, often addressed in musical terms as "pitch" or "tone". The most commonly used weighting network is the A-weighting because it most closely approximates how the human ear responds to sound at various frequencies. The A-weighting network is the accepted scale used for community sound level measurements; therefore, sounds are frequently reported as detected with a sound level meter using this weighting. A-weighted sound levels emphasize middle frequency sounds (i.e., middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. These sound levels are reported in decibels designated as "dBA". Z-weighted sound levels are measured sound levels without any weighting curve and are otherwise referred to as "unweighted". Sound pressure levels for some common indoor and outdoor environments are shown in Figure 1.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from some number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value between 0 and 100 in terms of percentage. Several sound level metrics that are reported in community sound monitoring are described below.

- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder sounds like those from passing motor vehicles.

---

1 Bies, David, and Colin Hansen. 2009. *Engineering Noise Control: Theory and Practice*, 4th Edition. New York: Taylor and Francis.

- L_{90} is the sound level exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent sound sources.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (i.e., the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is typically A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by loud sounds if there are fluctuating sound levels.

Fort Gratiot Township Regulations

Fort Gratiot Township has a zoning ordinance regulating solar energy systems where Chapter 38, Article III, Division 1, Section 38-117 applies to "Large Principal-Use" solar energy systems (SES). The following language pertains to Sound:

> *12. Sound: The sound pressure level of a large principal-use SES and all ancillary solar equipment shall not exceed 45 dBA (Leq (1-hour)) at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.*

Sound Level Modeling

The primary sources of sound from the Project will be the solar inverters and substation transformer (Clyde Township). There are 47 Sungrow 3600 inverters and one (1) 200 MVA (megavolt ampere) transformer proposed for the Project. Thirty-two of the inverters are located in Fort Gratiot Township and the transformer is in Clyde Township. The model utilized sound level data from the proposed manufacturer for the inverters and Epsilon estimated the broadband sound power level of the transformer using the MVA capacity and techniques in the Electric Power Plant Environmental Noise Guide[2] (Edison Electric Institute). The proposed inverters, solar panel arrays, substation, and project boundary are identified in Figure 2.

Sound levels from the facility were predicted using the CadnaA noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. Elevation contours for the modeling domain were directly imported into CadnaA which allowed for consideration

---

2 Bolt Beranek and Newman Inc. (1984). *Electric Power Plant Environmental Noise Guide* (2nd ed.). Edison Electric Institute.

of terrain shielding where appropriate.

Epsilon used CadnaA, the proposed site plan, and the sound level data to predict "Project-only" sound levels. A modeling grid with a 10-meter spacing was calculated for the area surrounding the Project. The grid was modeled at a height of 1.5 meters above ground level to mimic the ears of a typical standing person. This modeling grid allowed for the creation of sound level isolines as shown in Figure 3.

Sound Level Modeling Evaluation

All modeled sound levels, as output from CadnaA are A-weighted equivalent sound levels (L_{eq}, dBA). In order to comply with Section 38-117 of the Fort Gratiot Zoning Ordinance, sound levels from the Project cannot exceed 45 dBA at non-participating property lines. A close review of Figure 3, which presents the modeled 45 dBA sound level contour, shows that the L_{eq} 45 dBA sound level contour line does not extend onto any non-participating parcels. **Therefore, the Project complies with the Fort Gratiot ordinance during operations at the proposed facility.**

Conclusion

A comprehensive sound level modeling analysis was conducted for the Portside Solar Project in St. Clair County, Michigan. Modeled sound levels were predicted in and around the Project via a modeling grid in CadnaA to allow for the evaluation of the Fort Gratiot Township quantitative sound level limit.

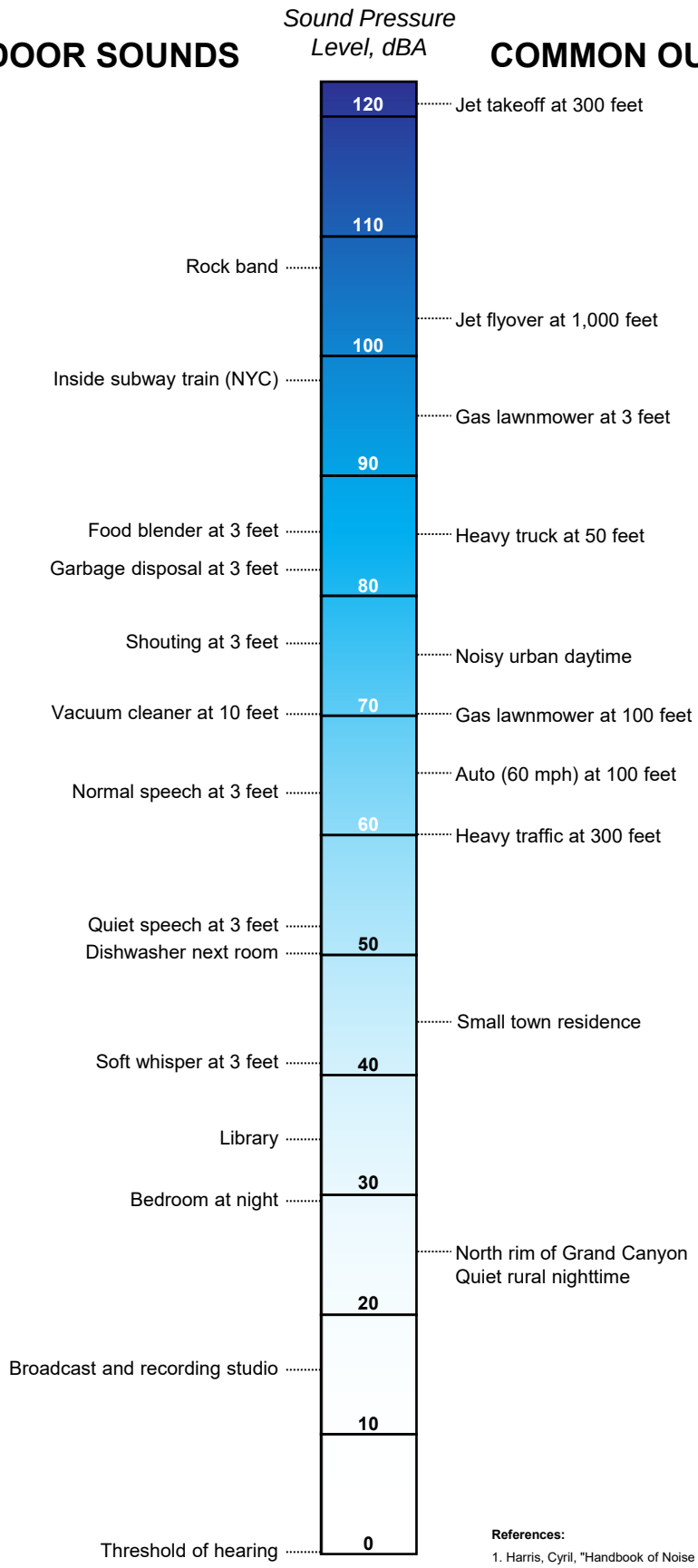
The predicted Project only sound levels from the proposed operation of the solar project are expected to remain at or below 45 dBA at the nearest non-participating property boundaries; therefore, the Project is expected to be in compliance with the Fort Gratiot Zoning Ordinance with respect to sound.

Sincerely,

EPSILON ASSOCIATES, INC.

Richard Lampeter, INCE
Principal

Attachments Figure 1: Common Indoor and Outdoor Sound Levels
Figure 2: Aerial Locus
Figure 3: Sound Level Modeling Results – Fort Gratiot Township



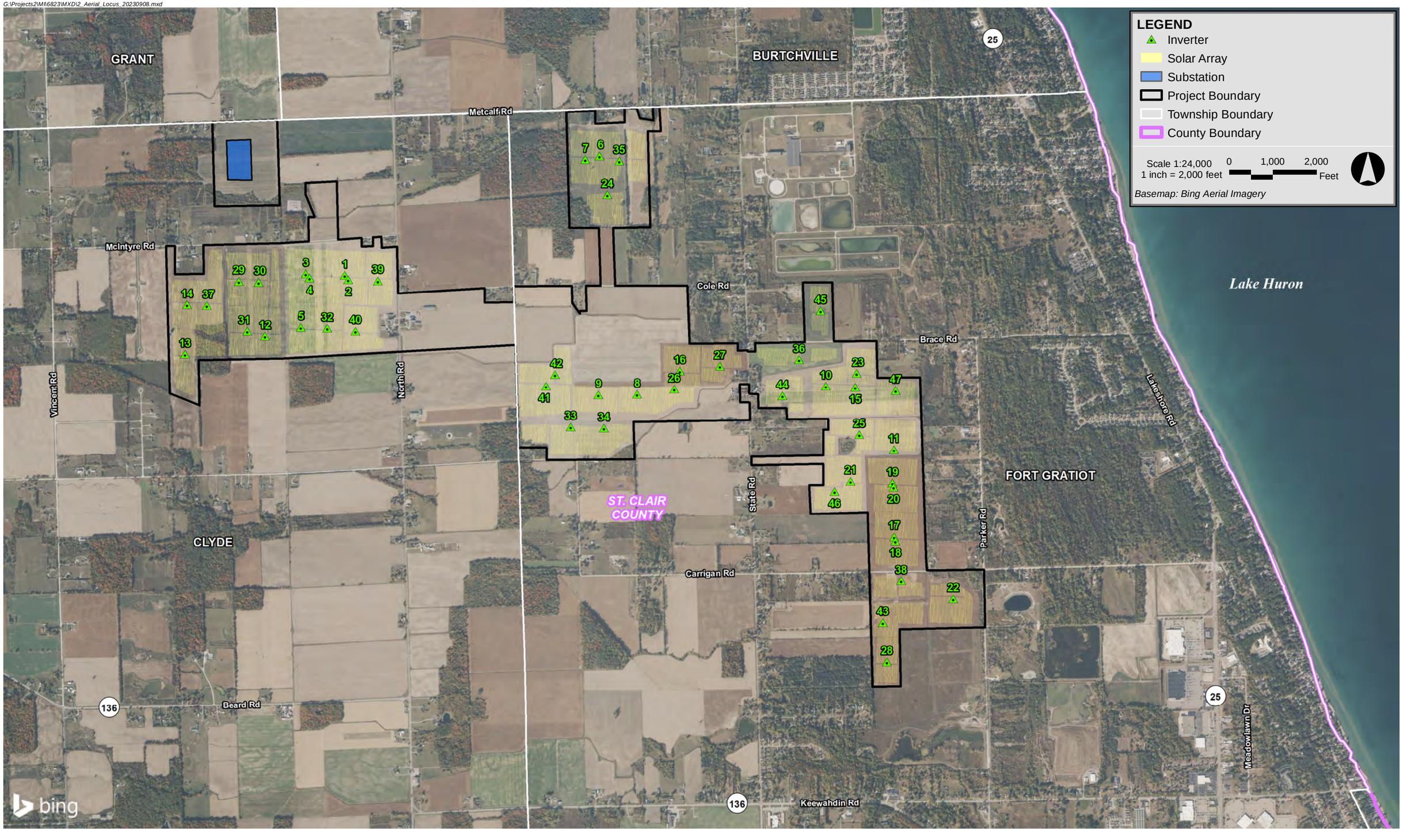
References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 1

Common Indoor and Outdoor Sound Levels

G:\Projects2\M\6823\MXD\2_Aerial_Locus_20230908.mxd

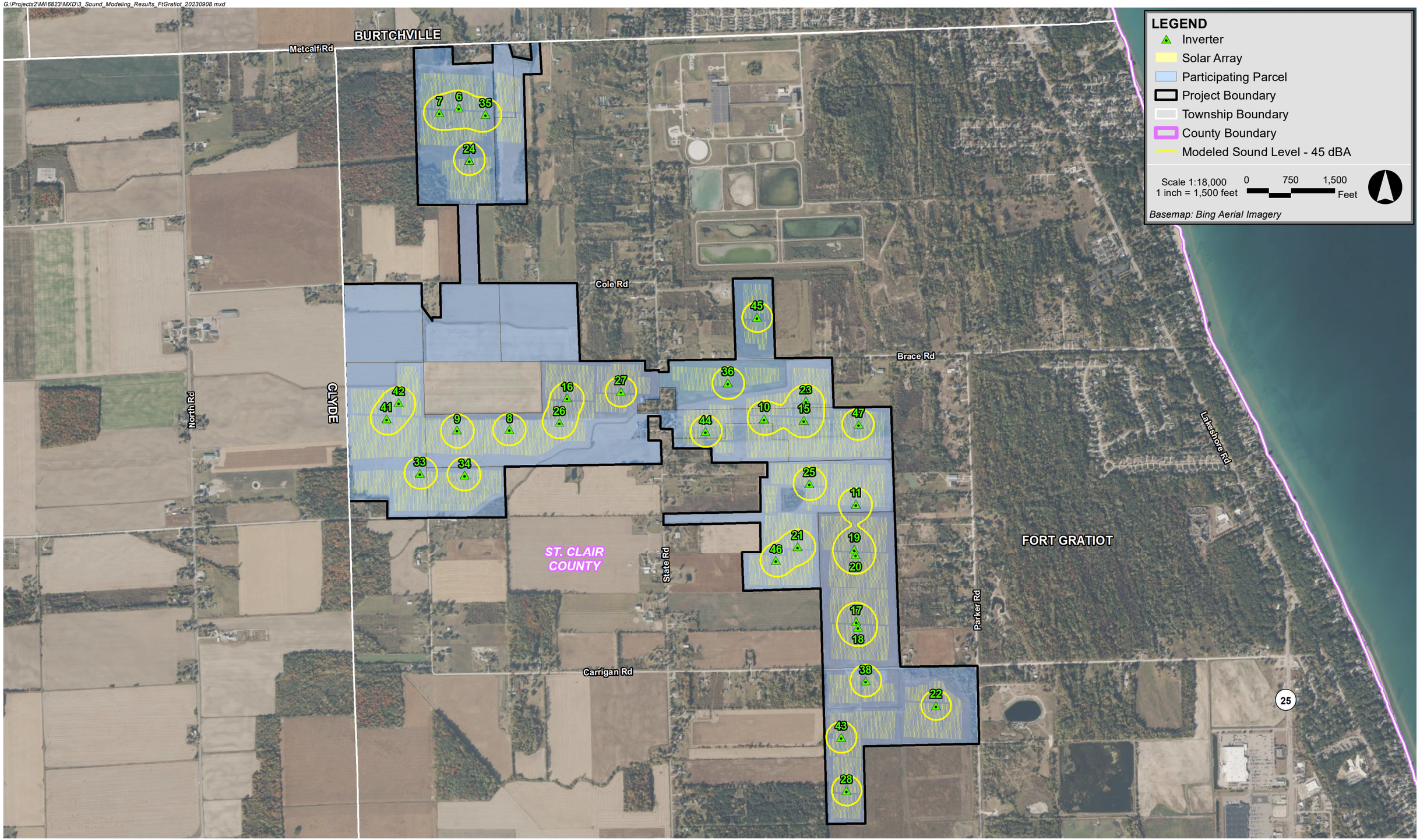


Portside Solar **Saint Clair County, Michigan**

Epsilon ASSOCIATES INC.

Figure 2
Aerial Locus

G:\Projects2\MI\6823\MXD\3_Sound_Modeling_Results_FtGratiot_20230908.mxd



Portside Solar **Saint Clair County, Michigan**

Epsilon ASSOCIATES INC.

Figure 3

Sound Level Modeling Results - Fort Gratiot Township

Project:	*Portside Solar*	Engineer:	*D. Bonello*
Client:	*Portside Solar, LLC*	Issue Date:	*9/6/23*
Location:	*Fort Gratiot Township, MI*	Revision:	*1*

OPINION OF PROBABLE COST - PV PLANT DECOMISSIONING - SAT

The Portside Solar Project is a proposed 100 Megawatt (MW) solar electric generating facility using ground mounted photovoltaic panels. The vast majority of the site is currently in agricultural use, most of it farmed in row crops. At the end of the project's life, the land will be reclaimed to reengage farming activities to the extent practicable and acceptable to the landowner. The portion of the project located in Fort Gratiot Township, St. Clair County, Michigan, will have a generating capacity of approximately 75.4 MW.

This opinion of probable costs is based on the engineer's experience in the design and construction of energy facilities and are subject to final engineering. This opinion is also based on our experience supervising the construction of PV plants and supervising the demolition of other non-PV facilities. Costs are estimated with best practices at today's values. The total opinion of probable costs for the project is approximately $(908,859). See Table 2: Opinion of Probable Cost - PV Plant Decommissioning for a detailed breakdown of the project.

This opinion assumes a third-party contractor, experienced in the construction and decommissioning of PV facilities will lead the effort. The reported costs include union labor, permitting, materials, taxes, insurance, transport costs, equipment rental, contractor's overhead, and contractor's profit. Labor costs have been estimated using regional labor rates and labor efficiencies from the Bureau of Labor Statistics.

This opinion of cost has been split between plant disassembly, site restoration, and salvage, which reflects the overall decommissioning process. The PV plant will first be disassembled, with all above and below grade components removed. This includes all buried cables, conduits, and foundations. Costs for disassembly are overall less than those for original assembly of the facility. While PV modules will need to be removed by hand to retain their salvage value, the racks, buried cables, and concrete can be removed by machine to increase efficiency. It is assumed that concrete, gravel, and fiber optic cable do not have salvage value and will be disposed off site. Other materials are assumed to have salvage value and can be sold at market prices. The total disassembly and disposal costs for the project is approximately $4,324,129. See Table 2: Opinion of Probable Cost - PV Plant Decommissioning for a detailed breakdown of the project. Methodology for disassembly of the PV systems can be found in Tables 1 .

It is expected that the entire site will be re-seeded with native grasses and vegetation. Planting of trees, shrubs, and other woody vegetation (re-forestation) or other beautification is not included in the costs. It is assumed that mulching and stabilization of seeded areas will only be required where gravel roads or concrete foundations were removed. The remainder of site will already be vegetated and disassembly activities will not significantly disturb the vegetation. Seeding in those areas is included as a precautionary measure. Restoration of the site will occur when the soil is dry and be completed within 12 months after abandonment. The total costs for site restoration the project is approximately $185,301 See Table 2: Opinion of Probable Cost - PV Plant Decommissioning for a breakdown of Site Restoration Costs.

Any permits required will be included as part of the decommissioning effort. Erosion and sediment control best management practices will be installed during decommissioning.

Salvage values have been estimated using publicly available data from http://www.scrapmonster.com. Inverters were priced at the rate for Complete Computers, which is lower than what could be attained if they were disassembled on site. Transformers were priced at 80% of the market rate for Sealed Unit Transformers. PV modules were assumed to have residual value as functioning units. They are priced assuming the power output degrades at 0.4% per year for 25 years, and 5% are broken during disassembly. The modules were assumed to have a market price of $0.05/W, which is less than half of the price projection for new modules made by the Department of Energy in year 25. It is assumed that module recycling will be $50/module plus transportation cost to the nearest recycling facility. Due to uncertainty of the salvage market in 25 years, the salvage value in the decommissioning summary have been reduced to 1/3 their original value.

Inflation was not included in this estimate. In the event that inflation is included, it will be projected based on the Producer Price Indices for Final Demand Construction, Iron Steel Scrap, and Copper Base Scrap. PPI is a more appropriate measure than CPI as it is targeted to the specific commodity. Detailed assumptions and the total opinion of cost for decommissioning is provided on the next sheets. The total salvage value for the project is approximately $3,415,269. See Table 2: Opinion of Probable Cost - PV Plant Decommissioning .

This opinion of probable costs is based on the engineer's experience in the design and construction of energy facilities and are subject to final engineering. The engineer accepts no liability for errors, omissions, or the accuracy and adequacy of this opinion. It is a violation of state law for any person, unless they are acting under direction of a licensed professional engineer to alter this document in any way. Portside Solar, LLC will provide the township security in the form of either surety bond, irrevocable letter of credit, or cash deposit before construction. A review of the amount of the performance guarantee based on inflation, salvage value, and current removal costs will be provided every five years for the life of the project.

Project:	*Portside Solar*	Engineer:	*D. Bonello*
Client:	*Portside Solar, LLC*	Issue Date:	*9/6/23*
Location:	*Fort Gratiot Township, MI*	Revision:	*1*

TABLE 1: PV PLANT ANTICIPATED DISASSEMBLY METHODS

ITEM	DISASSEMBLY METHOD
PV Modules	Hand Removal. Place modules face down on pallets, tape wire ends, tied down and transport via skid-steer to staging location. Assumed 5% breakage, salvage value for crystalline, no salvage for thin-film.
Inverters	Removal by crane and transport via flat-bed to staging location. Assume no disassembly. Assumed salvage value.
Transformers	Removal by crane and transport via flat-bed to staging location. Assume no disassembly. Oil removal performed by scrap facility. Assumed salvage value.
Racking Frame	Stabilize w/ machine. Cut legs and lower to ground level. Cut cross beams to appropriate size and transport via dump truck to staging location. Assumed salvage value.
Racking Posts	Remove via post-puller and transport via dump truck to staging location. Assumed salvage value.
Racking Wiring	Disconnect PV connectors, cut cable ties, and remove wires from cable tray. Transport via dump truck to staging area. Assumed salvage value.
Underground Cable	Excavate to cable depth at one end of trench. Use tractor or backhoe pull out all cables in common trench. Cables are direct buried so complete excavation of trenches is not required. Transport via dump truck to staging area. Assumed salvage value.
Fence	Machine roll fence fabric. Remove posts via post-puller and transport via dump truck to staging location. Assumed salvage value.
Concrete	Remove with excavator and jack hammer. Backfill and compact as needed. Transport via dump truck to staging area. Assumed offsite disposal.
Gravel	Remove with skid steer with sweeper. Transport via dump truck to staging area. Assumed offsite disposal.
Offsite Disposal	Assumed disposal at $95/ton or $45/CY including tipping fee.
Re-Seeding	Re-seed using an ATV-pulled drill seeder, at 5lbs bulk seed per acre of native grasses. Stabilize and mulch on areas where concrete or gravel was removed only.
Re-Grading	Minor re-grading will be done to restore the site to pre-construction condition.
Erosion & Sediment Control	Install silt fence around project perimeter. Install tracking control at site entrance and replace once during disassembly. Remove at end of disassembly.

Project:	*Portside Solar*	Engineer:	*D. Bonello*
Client:	*Portside Solar, LLC*	Issue Date:	*9/6/23*
Location:	*Fort Gratiot Township*	Revision:	*1*

TABLE 2: OPINION OF PROBABLE COST - PV PLANT DECOMISSIONING - ANNUAL INFLATION=0% - END OF LIFE: YEAR 30

DISASSEMBLY & DISPOSAL

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
1.0	PV Modules (690W)	232,616	$ 2.46	$ 572,235.36
1.1	PV Modules Recycling	11,631	$ 52.00	$ 604,812.00
2.0	PV Inverter(s) (3.6 MVA)	21	$ 793	$ 16,653.00
3.0	PV Transformer(s) (3.6 MVA)	21	$ 396	$ 8,316.00
4.0	Racking Frame (Single Axis)	3,877	$ 79	$ 306,283.00
5.0	Racking Posts	34,893	$ 11	$ 383,823.00
6.0	Tracker Motors	3,877	$ 14	$ 54,278.00
7.0	Racking Wiring	1,991,806 LF	$ 0.05	$ 99,590.30
8.0	Underground Cable (LV, MV, Comm)	1,500,635 LF	$ 0.45	$ 675,285.75
9.0	PV Plant Fence	80,637 LF	$ 1.70	$ 137,082.90
10.0	Interconnection Facilities	1 LS	$ 369,181.77	$ 369,181.77
11.0	Concrete	65 CY	$ 111	$ 7,215.00
12.0	Gravel	9,975 CY	$ 21	$ 209,475.00
13.0	Offsite Disposal by Volume	10,041 CY	$ 45	$ 451,845.00
14.0	General Conditions Buffer (Per MW Est)	76 MW	$ 3,211	$ 242,751.60
			SUBTOTAL	$ 4,138,827.68

SITE RESTORATION

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
15.0	Seeding	441 ACRES	$ 86	$ 37,926.00
16.0	Grading	1 LS	$ 14	$ 14.00
17.0	Erosion and Sediment Control	1 LS	$ 147,361	$ 147,361.00
			SUBTOTAL	$ 185,301.00

SALVAGE

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
18.0	PV Modules (690W)	220,985	$ 31	$ 6,850,535.00
19.0	PV Inverter(s) (3.6 MVA)	21	$ 9,921	$ 208,341.00
20.0	PV Transformer(s) (3.6 MVA)	21	$ 28,122	$ 590,562.00
21.0	Racking Frame (Single Axis)	10,938,956 LBS	$ 0.05	$ 546,947.80
22.0	Racking Posts	5,757,345 LBS	$ 0.05	$ 287,867.25
23.0	Tracker Motors	209,358 LBS	$ 0.19	$ 39,778.02
24.0	Interconnection Steel Structures	48,082 LBS	$ 0.05	$ 2,404.10
25.0	Interconnection Power & Instrument Transformers	355,421 LBS	$ 0.05	$ 17,771.05
26.0	Interconnection Disconnect Switches (1 & 3-Phase)	7,532 LBS	$ 0.65	$ 4,895.80
27.0	Interconnection Primary Conductor	10,447 LBS	$ 0.65	$ 6,790.55
28.0	Interconnection Pre-Fab Steel Buildings	34,500 LBS	$ 0.05	$ 1,725.00
29.0	Control Panels	1,000 LBS	$ 0.05	$ 50.00
30.0	Electronic Controls	383 LBS	$ 0.14	$ 53.62
31.0	LV Wiring (PV Plant & Interconnection)	658,482 LBS	$ 2.17	$ 1,428,905.94
32.0	MV Wiring	291,215 LBS	$ 0.89	$ 259,181.35
			SUBTOTAL	$ 10,245,808.48

TOTAL DISASSEMBLY, DISPOSAL, & SITE RESTORATION COST	*$ 4,324,128.68*
TOTAL SALVAGE VALUE [1/3 subtotal due to uncertainty]	*$ 3,415,269.49*
NET DECOMISSIONING COST	*$ 908,859.19*

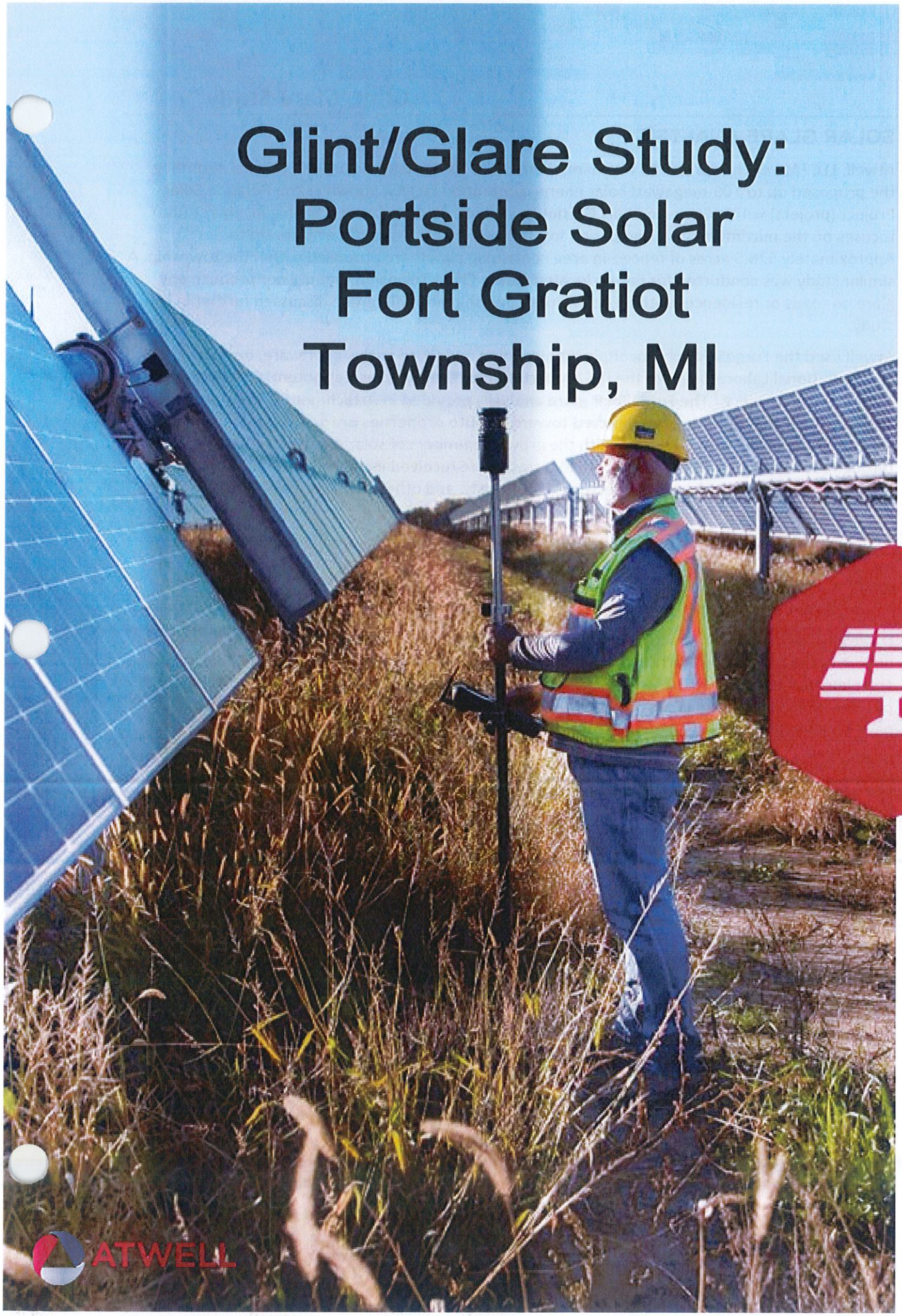
Atwell, LLC

9/6/2023

Date

Jared Hicks, PE
Director - Power & Energy
(248) 310-8107

Glint/Glare Study: Portside Solar Fort Gratiot Township, MI



ATWELL

SOLAR GLARE ANALYSIS

Atwell, LLC (Atwell) has prepared this Glint/Glare Study for Portside Solar, LLC, (Client) regarding the proposed up to 100-megawatt solar energy generation facility, known as the Portside Solar Project (project) within Clyde and Fort Gratiot townships, St. Clair County, Michigan. This study focuses on the maximum proposed panels located within Fort Gratiot Township. Up to Approximately 526.5 acres of fenced-in area containing panels are proposed within the township. A similar study was conducted for panels located within Clyde Township that did not produce any glare on roads or residences within Fort Gratiot Township and will not be discussed further in this study.

Atwell used the ForgeSolar photovoltaic (PV) Planning and Glare analysis software, developed by Sandia National Laboratories for the U.S. Department of Energy, to assess potential for solar glint or glare from the project.[1] **The ForgeSolar glare analysis, provided in Attachment B, did not identify concentrated solar glint or glare directed toward or onto properties or roadways adjacent to the project in any of the four analyses.** With the growing numbers of solar energy installations throughout the United States, glare from PV arrays have received increased attention as a real hazard for pilots, air-traffic control personnel, motorists, and others. The ForgeSolar suite of tools provide a quantified assessment of:

1. When and where glare will occur throughout the year for a prescribed solar installation;
2. Potential effects on the human eye at locations where glare occurs; and
3. Annual energy production from the PV system so that alternative designs can be compared.

ForgeSolar employs an interactive Google map where the user can quickly locate a site, draw an outline of the proposed PV array(s), and specify observer locations or paths. Latitude, longitude, and elevation are automatically queried from Google, providing necessary information for sun position and vector calculations. Additional information regarding the orientation and tilt of the PV panels, reflectance, environment, and ocular factors are entered by the user.

If glare is found, the tool calculates the retinal irradiance and subtended angle (size/distance) of the glare source to predict potential ocular hazards ranging from temporary after-image to retinal burn. The results are presented in a simple, easy-to-interpret plot that specifies when glare will occur throughout the year, with color codes indicating the potential ocular hazard. The tool can also predict relative energy production while evaluating alternative designs, layouts, and locations to identify configurations that maximize energy production while mitigating the impacts of glare.

FUNDAMENTALS

Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.

The difference between glint and glare is duration. Industry-standard glare analysis tools evaluate the occurrence of glare on a minute-by-minute basis; accordingly, they generally refer to solar hazards as 'glare'.

[1] Ho, Clifford K., and Cianan A. Sims, Julius E. Yellowhair (Sandia National Laboratories). 2016. Solar Glare Hazard Analysis Tool (SGHAT) User's Manual v. 3.0. https://www.forgesolar.com/static/docs/SGHAT3-GlareGauge_user_manual_v1.pdf

The ocular impact of solar glare is quantified into three categories[1]:

- Green - low potential to cause after-image (flash blindness)
- Yellow - potential to cause temporary after-image
- Red - potential to cause retinal burn (permanent eye damage)

These categories assume a typical blink response in the observer. Note that retinal burn is typically not possible for PV glare since PV modules do not focus reflected sunlight.

The ocular impact of glare is visualized with the Glare Hazard Plot and summarized for the entire project. The chart displays the ocular impact as a function of glare subtended source angle and retinal irradiance. Each minute of glare is displayed on the chart as a small circle in its respective hazard zone. For convenience, a reference point is provided which illustrates the hazard from viewing the sun without filtering, i.e. staring at the sun. Each plot includes predicted glare for one PV array and one receptor. The summary table identifies glare hazard for each PV array.

The resting angle of single axis trackers determines how the PV modules are modeled when the sun is past the rotation limit (60 degrees), in the early morning and late afternoon. The module position is adjusted to the resting position when the sun's position would put it outside the module's range of rotation. For example, at a resting angle of 50 degrees and rotation limit of 50 degrees, the modules lie flat in the morning until the sun reaches the position matching the 50-degree rotation. The modules are constantly rotating on the trackers throughout the day as it follows the sun from east to west. In the evening, once the sun moves past the corresponding 50-degree rotation position, the modules return to 0° again. This analysis usually represents the worst-case scenario for glare occurrence due to the sunlight glancing off the modules when they are flat, and the sun is low in the sky.

Obstructions utilized in the glare analysis consist of existing vegetation that are located between panels and observation points experiencing glare. ForgeSolar does not consider existing obstructions unless defined by the user, therefore, when glare is present, a Line-of-Site (LOS) analysis is performed to determine if existing screening is sufficient to mitigate any glare. The obstructions are then considered in further analyses. The LOS was performed in two parts using Google Earth Street view and on-site verification of vegetation when street view images are not available or insufficient.

RESULTS

Atwell performed four glare analyses using ForgeSolar PV Planning and Glare analysis software on the proposed project. The simulations were performed varying the heights of observers within Fort Gratiot Township and whether or not a reflective coating is considering on the surface of the solar PV modules. The four simulations are as follows:

- 6 foot observer height, 6 foot route receptor height with an anti-reflective coating,
- 6 foot observer height, 6 foot route receptor height without an anti-reflective coating,
- 20 foot observer height, 10 foot route receptor height with an anti-reflective coating,
- 20 foot observer height, 10 foot route receptor height without an anti-reflective coating.

The varying simulations were performed to ensure that whether or not an observer is on the first or second floor of their home or in a car or driving a semi-truck, they will not experience glare when in proximity to the Portside Solar Project. Varying the use of the anti-reflective coating is

done to test the conditions of the site even in the most conservative of conditions.

Forty observation points and nine route receptors were analyzed in proximity to the project to detect any presence of glare. Forty observations points is the maximum number of observers allowed by ForgeSolar while the number of route receptors was determined by the routes in the surrounding area. The glare analysis modeled was a single axis tracking system with a tracker resting angle equal to 52°.

PV arrays 4-1 and 7-1 initially produced glare on OP 1, OP 2, OP 3, OP 4 and State Road. Atwell performed desktop and field verification methods to assess existing vegetation between proposed panels and the observations points by documenting location, height, and species composition for adequacy of screening before placing in the model. Field verification confirmed that Obstructions 1, 2, 3, 4, 5 and 7 were adequate screening at heights that exceeded 25'. A desktop review of roadside photographs confirmed Obstructions 6 and 8 to be adequate screening. With obstructions added to the model, the project yielded no glare to nearby properties or roadways. See **Attachment A**, Obstruction Photo Log, for photographs of existing obstructions blocking glare from PV 4-1 and PV 7-1.

See **Figure 1** below for the location and vicinity of the proposed project used in the analysis and **Attachment B** for detailed results and locations of obstructions.

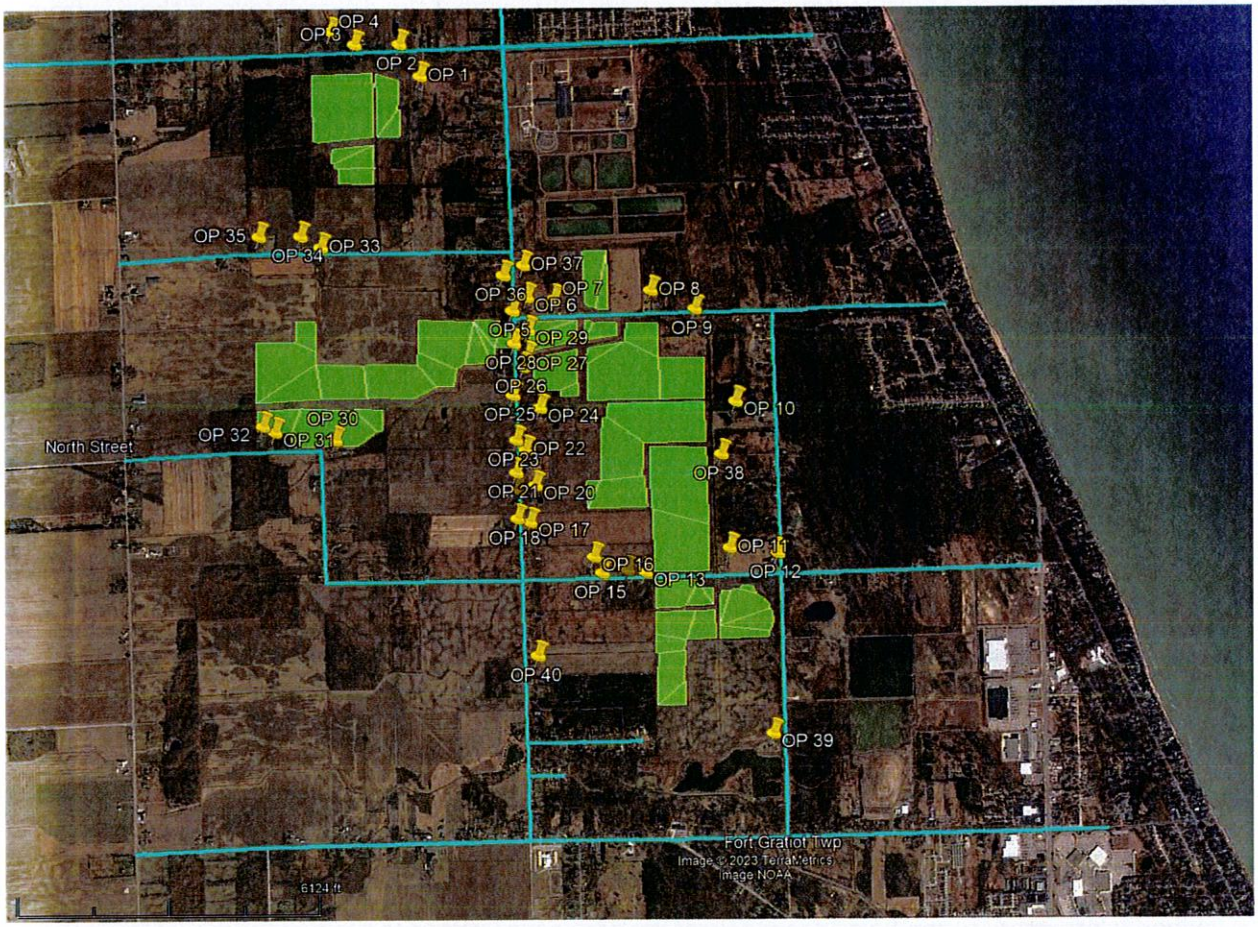


Figure 1. Project Location

ATTACHMENT A

OBSTRUCTION PHOTO LOG

Exhibit 1: View of Obstruction 3, looking to the north.

Exhibit 2: View of Obstructions 3 and 1, looking to the northeast.

Exhibit 3: View of Obstruction 1, looking to the northeast.

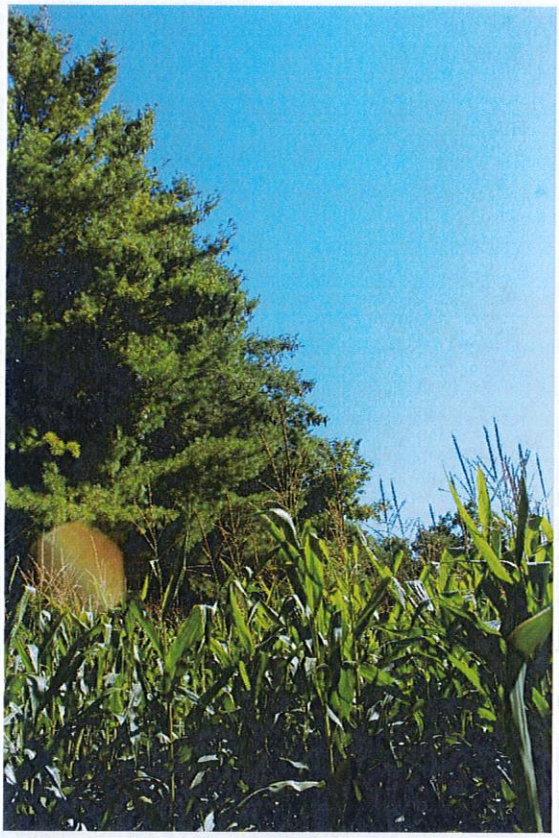


Exhibit 4: View of Obstruction 1, looking to the northwest.

Exhibit 5: View of Obstruction 1, looking to the north.

Exhibit 6: View of Obstruction 1, looking to the west.

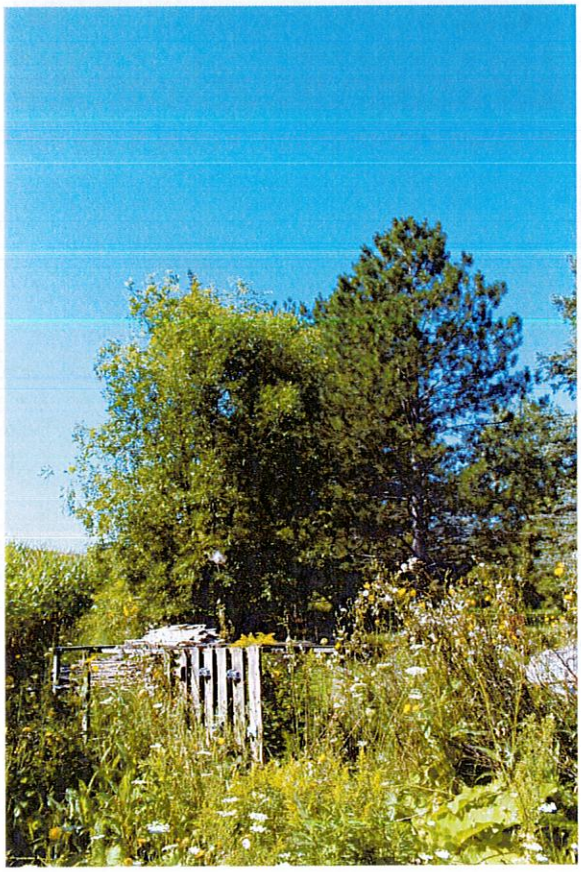


Exhibit 7: View of Obstruction 4, looking to the north.

Exhibit 8: View of Obstruction 7, looking to the northeast

Exhibit 9: View of Obstruction 4, looking to the east.

Exhibit 10: View of Obstruction 2, looking to the south.

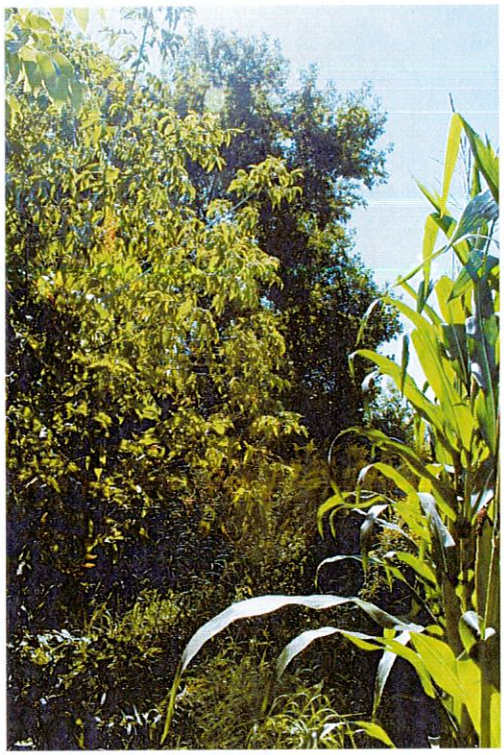
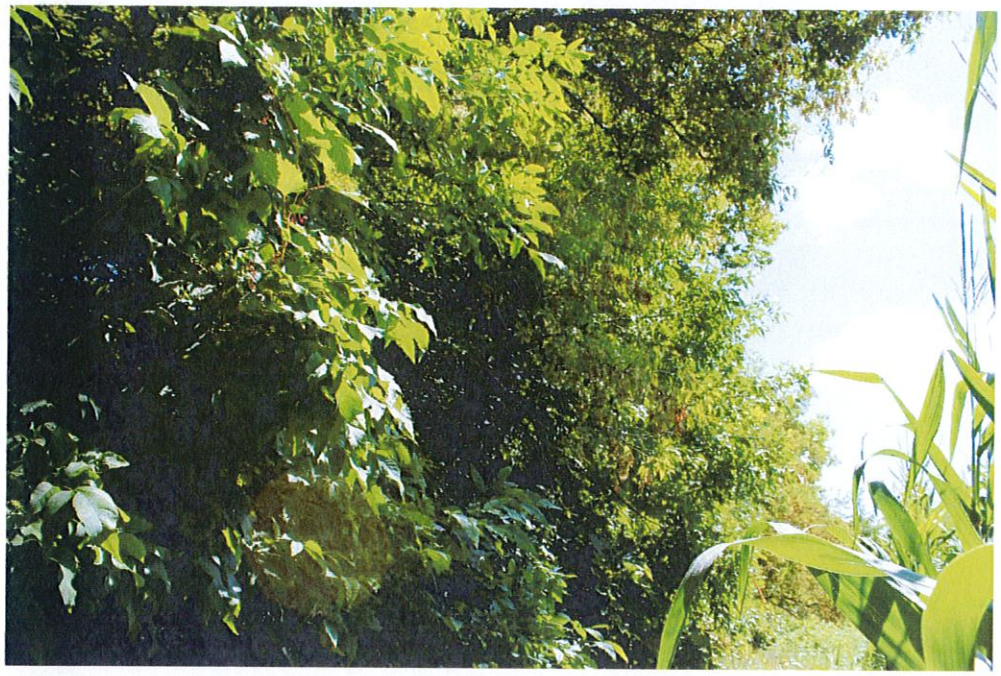


Exhibit 11: View of Obstruction 2, looking to the southeast.



ANDERSON ECONOMIC GROUP

Memorandum

Date: September 6, 2023

To: Toby Valentino, Project Developer, Portside Solar LLC

From: Tyler Theile, Vice President & Director, Public Policy, and
Tina Dhariwal, Senior Analyst, Anderson Economic Group

Re: Property tax impact of utility-scale solar development

Purpose

Ranger Power is a utility-scale energy developer with experience in renewable generation systems across the United States. Ranger Power plans to develop a utility-scale solar project in St. Clair County, Michigan. Ranger Power retained Anderson Economic Group to determine the property tax impact the project will have on local taxing jurisdictions, including St. Clair County, Clyde Township, Fort Gratiot Township, local schools, public health and safety, fire services, and others.

Project Overview

Portside Solar is a solar project located in St. Clair County, Michigan. The project will include up to 100 megawatts (MW) of photovoltaic (PV) solar panels that will be sited within approximately 1,000 acres in Clyde and Fort Gratiot Townships. Land use in the vicinity of the project is primarily agriculture and undeveloped woodlots. In keeping with the rural and agricultural nature of the community, the project will be completely enclosed by a woven-wire fence with wooden posts. The project was selected based on land use and proximity to the existing electrical grid infrastructure. The project will consist of solar panels arranged in PV arrays. Associated facilities include the project substation, an operations and maintenance (O&M) facility, underground electrical cables to collect the generated power and transmit it to the project substation, and gravel or compacted soil access roads to each PV array.

Project construction is expected to end in 2026, and cost approximately $140 million. Upon completion, the Portside Solar project will generate substantially increased property tax revenues for local taxing jurisdictions.

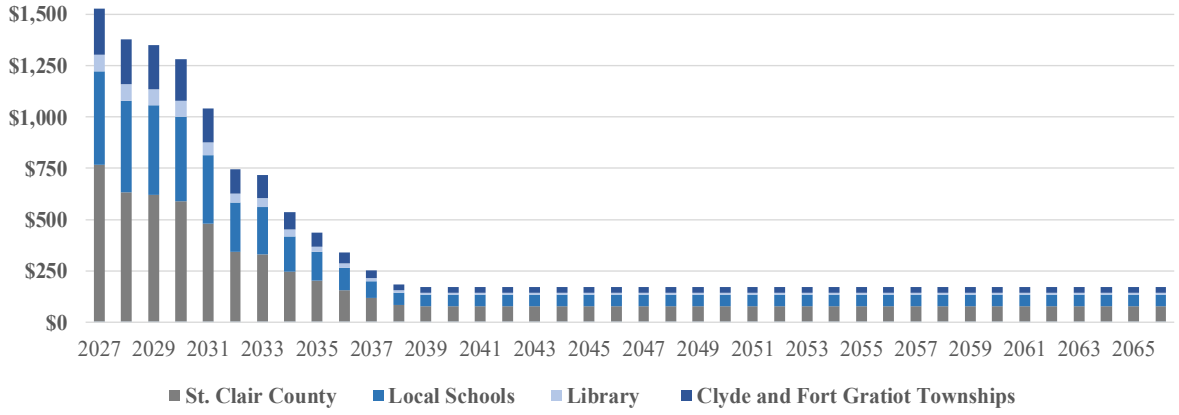
Findings

Our analysis shows that the Portside project will generate $1.5 million in personal property tax revenues in the first year alone, and $15.6 million in personal property tax revenues over the next 40 years.

Once built, the Portside project will generate approximately $12.9 million in personal property tax revenue over the next 25 years, and $15.6 million over 40 years. The project will increase personal property tax revenue for several local taxing jurisdictions, including St. Clair County, Clyde and Fort Gratiot Townships, St. Clair Regional Education Services Agency (RESA), and the library authority. This includes $7.8 million in tax revenue for St. Clair County, $859,000 for the library authority, and $2.3 million in combined revenue for the local township governments.

We show projected annual property tax revenues for each taxing jurisdiction by year in Figure 1. See Table 1 below for a detailed summary of personal property tax revenues for each taxing jurisdiction by year.

Figure 1. Portside Solar Project Annual Personal Property Tax Revenues by Taxing Jurisdictions, 2027-2066 (Thousands)

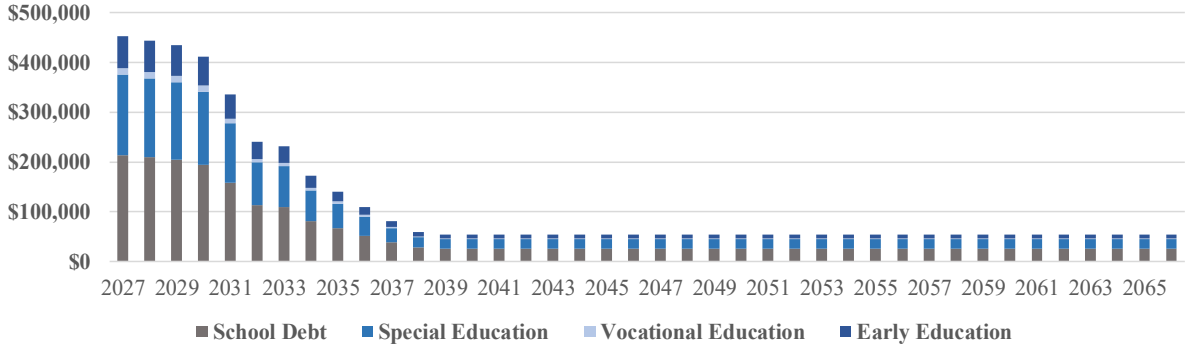


Source: Anderson Economic Group analysis using data from Portside Solar, LLC, Ranger Power, St. Clair County, and the State of Michigan.
Note: St. Clair County includes county operations, veteran and seniors services, parks, emergency services, the St. Clair Community College, roads, as well as public health and safety services that include the drugs task force and police. Library includes the library authority. Clyde and Fort Gratiot Townships include township operations and fire services. Fort Gratiot Township also includes the Blue Water Area Transit Commission, and the Lighthouse.
Local schools include Clyde and Fort Gratiot School Debt and St. Clair Regional Education Services Agency (RESA).

Of the total revenue, $4.6 million is attributed to local schools. This includes School Debt and St. Clair County RESA, which provides services to the county's 20,000 students and seven public school districts. St. Clair RESA's main services include special education like autism support, vocational education, and early education services such as childcare and parent support.

We show projected annual property tax revenues for each component of the local schools by year in Figure 2.

Figure 2. Portside Solar Project Annual Personal Property Tax Revenue Payments to Local Schools, 2027-2066



Source: Anderson Economic Group analysis using data from Portside Solar, LLC, Ranger Power, St. Clair County, and the State of Michigan.

Note: Local schools include Clyde and Fort Gratiot school debt and St. Clair Regional Education Services Agency Special Education, Vocational Education and Early Education.

About Anderson Economic Group

Founded in 1996, Anderson Economic Group is a boutique research and consulting firm, with offices in East Lansing, Michigan, and Chicago, Illinois. The experts at AEG have particular expertise in conducting economic and fiscal impact studies, having performed these services for a wide range of clients. These clients include public and private utilities, wind and solar developers, state and local governments, nonprofit organizations, and corporations across the United States. A few relevant publications from our firm include:

- Fiscal Impact of several utility-scale solar projects in Michigan and other states, 2022.
- Economic and Fiscal Impact of an Offshore Wind Development, 2020.
- Economic and Fiscal Impact of Solar Developments in Three Michigan Counties, 2019.
- Economic and Fiscal Impact of St. Clair Power Plant in St. Clair County, Michigan, 2017.
- Economic and Fiscal Impact of Proposed Gas-Powered Plan in Niles, Michigan, 2017.
- Economic and Fiscal Impact of Proposed Wind Development in Tuscola County, Michigan, 2016.

For more information about the authors, please visit AndersonEconomicGroup.com.

Table 1. Portside Project Personal Property Tax Revenue by Taxing Jurisdiction and Year

Year	St. Clair County								Clyde Township		Fort Gratiot Township			Local Schools		*Personal Property Tax Impact*
	St Clair County	Veterans and Senior Services	Parks	Emergency Services	College	Roads	Public Health and Safety	Library	Clyde Township	Fire	Fort Gratiot Township	Fire	Other (BWATC and Lighthouse)	School Debt	RESA	
2027	$380,804	$62,867	$34,608	$35,000	$131,740	$8,733	$112,686	$84,000	$22,369	$34,118	$24,024	$116,410	$26,642	$213,500	$239,162	$1,526,662
2028	$373,187	$61,610	$33,916	$34,300	$129,105	$8,558	$110,432	$82,320	$21,921	$33,436	$23,544	$114,082	$26,109	$209,230	$234,379	$1,496,128
2029	$365,571	$60,352	$33,224	$33,600	$126,470	$8,383	$108,179	$80,640	$21,474	$32,753	$23,063	$111,754	$25,576	$204,960	$229,596	$1,465,595
2030	$346,531	$57,209	$31,493	$31,850	$119,883	$7,947	$102,544	$76,440	$20,355	$31,047	$21,862	$105,933	$24,244	$194,285	$217,637	$1,389,262
2031	$281,795	$46,522	$25,610	$25,900	$97,488	$6,462	$83,388	$62,160	$16,553	$25,247	$17,778	$86,143	$19,715	$157,990	$176,980	$1,129,730
2032	$201,826	$33,320	$18,342	$18,550	$69,822	$4,628	$59,724	$44,520	$11,855	$18,083	$12,733	$61,697	$14,120	$113,155	$126,756	$809,131
2033	$194,210	$32,062	$17,650	$17,850	$67,187	$4,454	$57,470	$42,840	$11,408	$17,400	$12,252	$59,369	$13,587	$108,885	$121,973	$778,597
2034	$144,705	$23,889	$13,151	$13,300	$50,061	$3,318	$42,821	$31,920	$8,500	$12,965	$9,129	$44,236	$10,124	$81,130	$90,882	$580,131
2035	$118,049	$19,489	$10,728	$10,850	$40,839	$2,707	$34,933	$26,040	$6,934	$10,577	$7,447	$36,087	$8,259	$66,185	$74,140	$473,265
2036	$91,393	$15,088	$8,306	$8,400	$31,618	$2,096	$27,045	$20,160	$5,368	$8,188	$5,766	$27,938	$6,394	$51,240	$57,399	$366,399
2037	$68,545	$11,316	$6,229	$6,300	$23,713	$1,572	$20,283	$15,120	$4,026	$6,141	$4,324	$20,954	$4,796	$38,430	$43,049	$274,799
2038	$49,504	$8,173	$4,499	$4,550	$17,126	$1,135	$14,649	$10,920	$2,908	$4,435	$3,123	$15,133	$3,463	$27,755	$31,091	$198,466
2039	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2040	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2041	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2042	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2043	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2044	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2045	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2046	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2047	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2048	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2049	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2050	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2051	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2052	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2053	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2054	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2055	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2056	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2057	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2058	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2059	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2060	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2061	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2062	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2063	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2064	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2065	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199
2066	$45,696	$7,544	$4,153	$4,200	$15,809	$1,048	$13,522	$10,080	$2,684	$4,094	$2,883	$13,969	$3,197	$25,620	$28,699	$183,199

Source: Anderson Economic Group analysis using data from Portside Solar LLC, Ranger Power, St. Clair County, and the State of Michigan

Note: Assumes future tax rates are constant

Appendix: Methodology

We constructed a custom property tax impact model to determine the impact of the Portside project on relevant local entities. The model is based on our review of Michigan property assessment guidelines, and on assessments for other solar projects in the state. Our model projects the total property tax liability for the project's generation equipment (personal property). We describe our model below.

Personal Property Tax

In Michigan, solar generation equipment is considered personal property.[1] To determine the initial taxable value of the personal property associated with the project, we obtained construction cost data from Portside Solar and Ranger Power, and determined the property's initial taxable value. Based on our review of Michigan Department of Treasury guidance, we determined that the personal property associated with the Portside project would be classified entirely as industrial personal property.[2]

After determining the initial taxable value of the personal property, we projected the future taxable value of the project's personal property using the proper depreciation schedule.[3] Because the project will be assessed as industrial personal property, it will be exempt from local school operating taxes and the from Michigan's education tax.

Property Tax Projection Limitations

The property tax revenue projections presented here are based on current assessment practices in Michigan and on precedents set by the assessment of other solar projects in the state. The projections herein do not constitute tax advice, and are subject to limitations that include:

- Solar power is a nascent industry in Michigan, with many of the state's utility-scale projects coming online in the last five to ten years. The projections in this memorandum extend for 40 years—a length of time far exceeding the existence of any utility-scale solar project in Michigan.
- At some point over the next 40 years, it is possible that the State of Michigan will issue new guidance on how solar projects should be assessed. Our projections do not speculate on future regulatory changes or their impact on future property tax revenues.
- Our model assumes no increase in local taxing jurisdiction millage rates over the next 40 years. Our projections may differ from actual property tax revenues if local taxing jurisdictions raise their tax rates, or if Ranger Power builds additional capacity or brings new equipment onto the site at a later date.

---

1. See Michigan Department of Treasury memorandum, "Guidance Regarding Valuation and Assessment of Photovoltaic (Solar) Electric Generation Systems," April 5, 2022, www.michigan.gov/.
2. Ibid.
3. See Michigan Department of Treasury Form 5762, "2022 Solar Energy System Report (as of 12-31-2021)," www.michigan.gov/.

Sources Consulted

- Project construction costs from Ranger Power.
- Annual millage rates in Clyde and Fort Gratiot Townships from St. Clair County.
- Michigan Department of Treasury Form 5762, "2022 Solar Energy System Report (as of 12-31-2021)," www.michigan.gov/documents/treasury/5762_draft_10-07-21_002_738242_7.pdf.
- Michigan Department of Treasury, "Guidance Regarding Valuation and Assessment of Photovoltaic (Solar) Electric Generation Systems," michigan.gov/documents/treasury/Updated_Guidance_Regarding_Valuation__Assessment_of_Solar_Electric_Generation_Systems_750801_7.pdf.
- Michigan State Tax Commission, "State Tax Commission Guide to Basic Assessing," 2018, www.michigan.gov/documents/treasury/Guide_to_Basic_Assessing_1-16_511508_7.pdf

RANGER POWER

Portside Solar
Special Land Use Permit and Final Site Plan
Planning Commission Meeting

October 10, 2023

FOUNDED IN 2017

Ranger Power Experience

Led by an experienced team of developers with a **proven track record of community-supported renewable energy**, including operating clean energy products across the United States.

Ranger has successfully permitted over 2,400 MWs of projects and executed over 2,400 MW of utility-scale power agreements throughout the Midwest, including in Nebraska, Indiana, Wisconsin, Michigan, Illinois, and Missouri.

Many of these represented the largest utility-scale solar investments to be permitted in their respective states at the time.

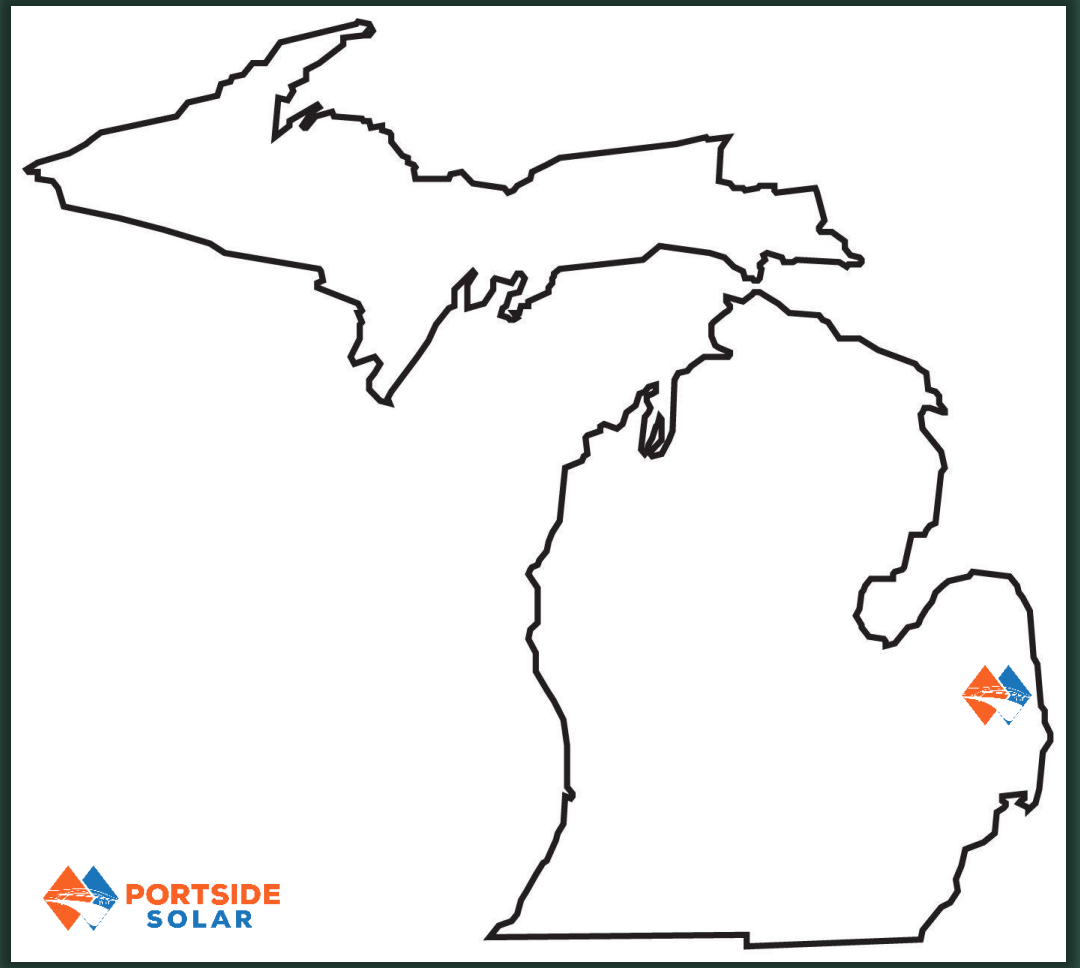
Ranger is currently developing a portfolio of approximately 10 GW of active development projects ranging in size from to 20-400 MW across the country, including in Michigan, Illinois, Indiana, Missouri, Oregon, and New York.

We pride ourselves on working closely with local communities to develop projects in a collaborative manner.

The Portside Solar Project is being developed by Ranger Power

Project Details:
Site Selection Process

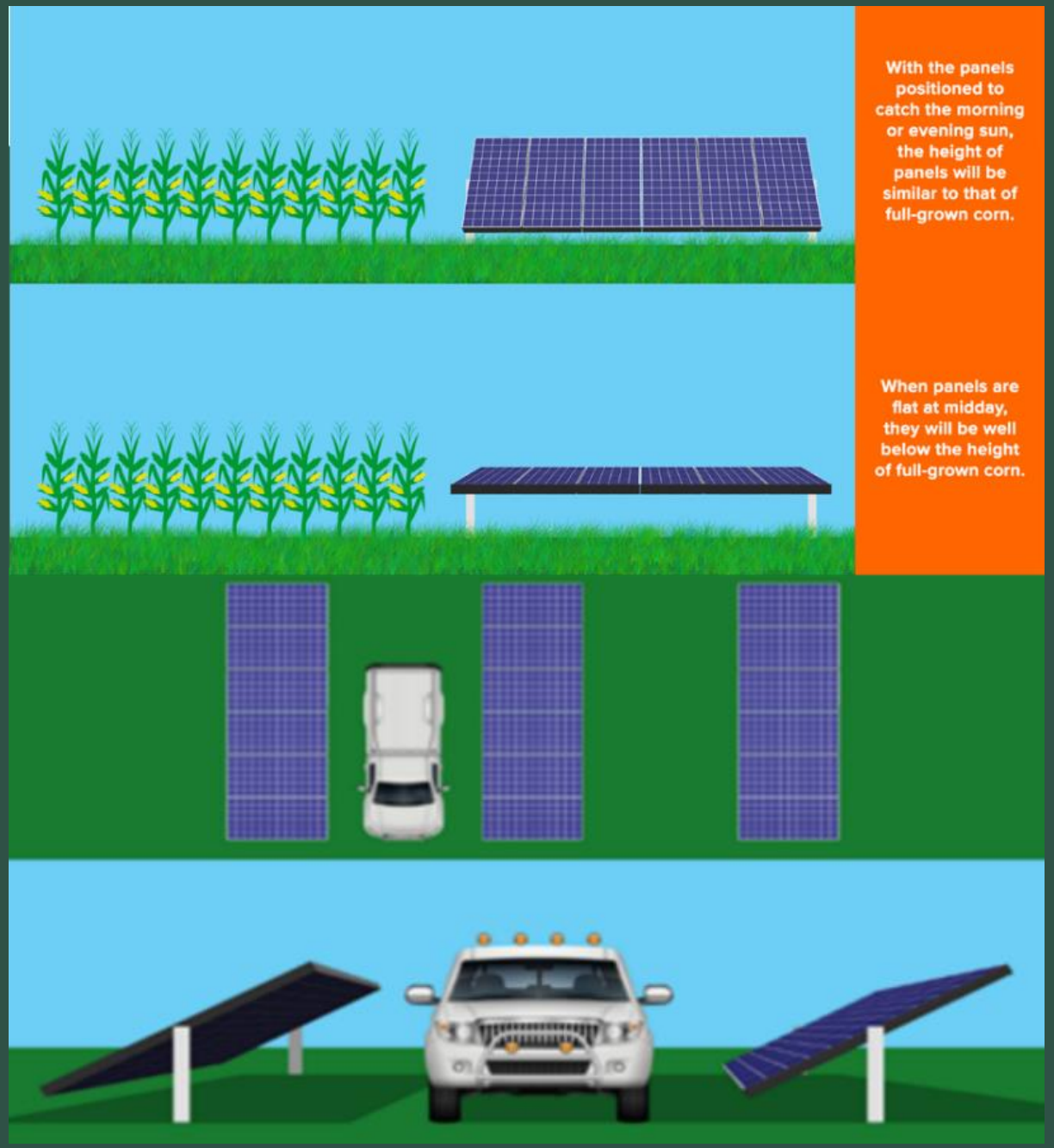
- Portside Solar utilizes existing transmission infrastructure and resources
- The Project will avoid impacts to wetlands, streams, and impacts to rare plants and endangered animals
- Ranger Power has committed to planting pollinator habitat and native vegetation throughout the project area, aiding stormwater control and benefitting the local ecosystem
- Close to large load centers like Port Huron and Detroit



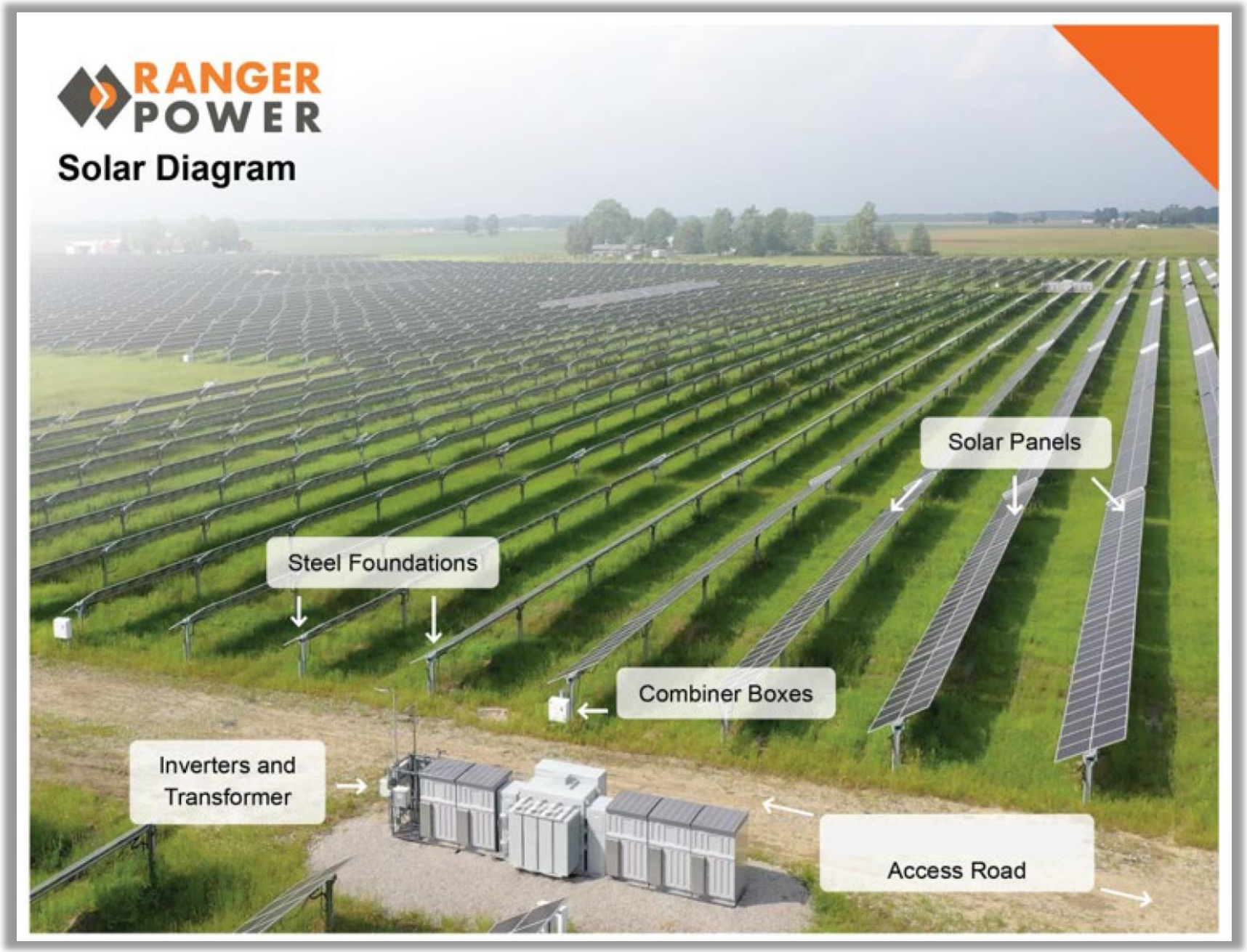
RANGER POWER

Solar Energy at a Glance

- Photovoltaic panel tracking systems (“PV trackers”) are currently the most economical solar technology available
- PV trackers operate without producing air or ground pollution or greenhouse gases
- Major equipment includes solar panels, steel I-beam posts, racking, electrical collector lines, inverters, access roads, and fencing
- Solar panels contain no toxic elements or materials and all contents are naturally occurring

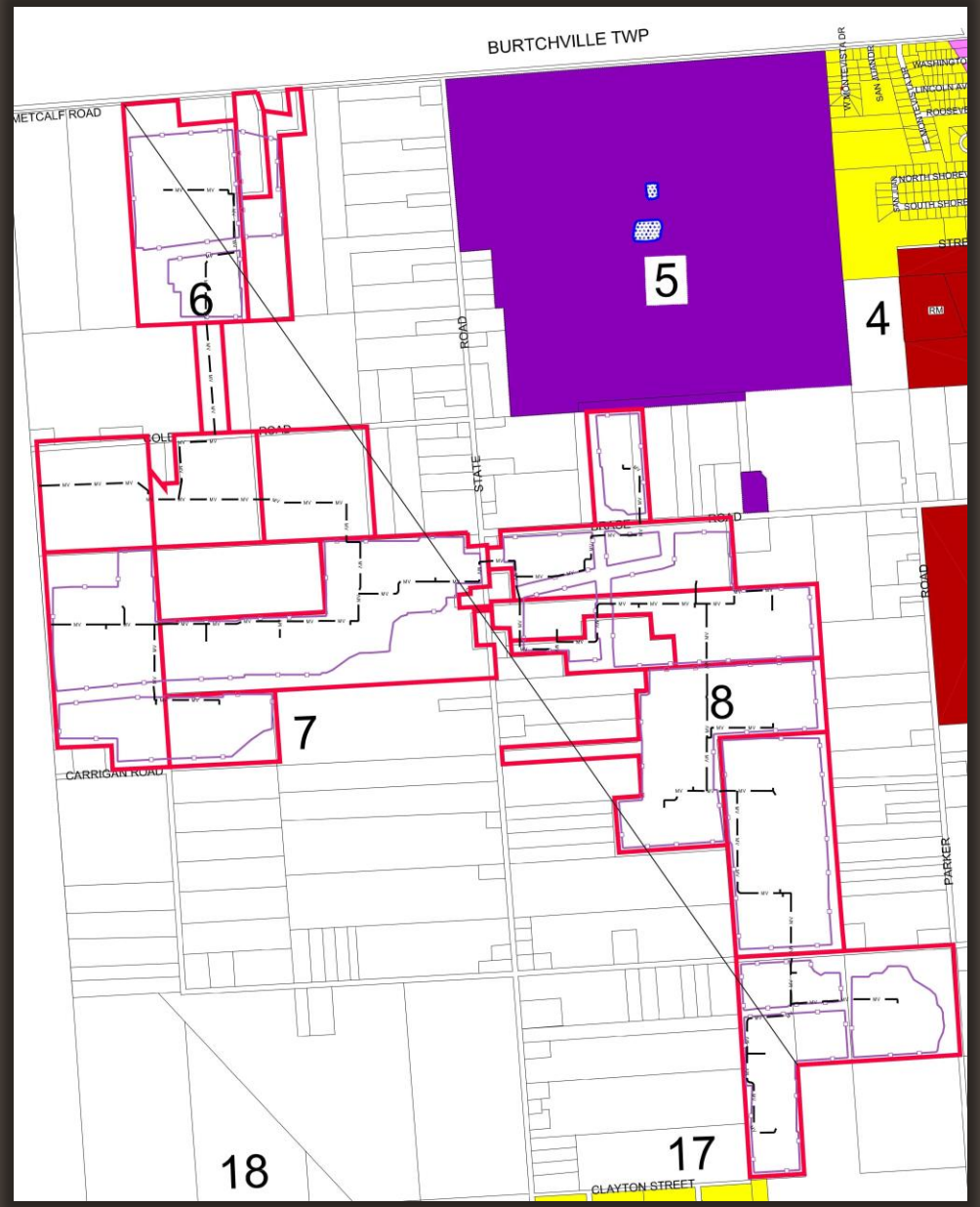


RANGER POWER


RANGER POWER
Solar Diagram
Solar Panels
Steel Foundations
Combiner Boxes
Inverters and Transformer
Access Road

Portside Solar Overview

- The Portside Solar Project is a 100MW solar project located in Fort Gratiot and Clyde townships sited on approximately 1,000 acres of privately owned land. **No eminent domain.**
- The Portside Solar Project will interconnect into an existing substation located in Clyde Township.
- The Project will provide much needed **domestic** electricity to Michiganders
- The Project is sited on suitable land of interested participants.
- Portside Solar **keeps land agricultural** that is currently zoned as agricultural.



RANGER POWER

Decommissioning

- Solar energy systems are passive land uses and easily decommissioned
- **Topsoil retained on site** during and after project construction **as required by ordinance**
- A Decommissioning Plan including a financial security **guaranteeing removal to be posted before construction** is included in the application in accordance with Chapter 38-639 (14) of the Fort Gratiot Solar Energy Systems Ordinance
- Michigan Department of Agriculture and Rural Development **requires a security** to be posted **before construction** for all participating land enrolled in PA 116
- All agreements between Portside Solar and landowners **require decommissioning security to be posted before construction**
- The Project is responsible for **all costs of decommissioning**

Environmental Benefits

- Project specific studies show **no sound, glare, or chemicals**
- Improves air quality by reducing regional reliance on fuel-burning generation
  - No air emissions
  - No water emissions
- Vegetation management
  - Plant pollinator habitat
  - Improve soil and water quality
  - Reduce storm water runoff
  - Reduce soil erosion
- **At the end of project life, land will be restored and available for agricultural use, as required by agreements between Portside Solar and participating landowners, local township, and Michigan Department of Ag and Rural Development**

RANGER POWER

Portside Solar will provide:

1. Approx. $140mm of additional **investment in St. Clair County.**
2. Additional electricity to power approx. 25,000 homes.
3. Stable diversified income for more landowners while **protecting and preserving** agricultural land for future generations
4. Millions of dollars in additional tax revenue to help fund local schools, fire departments, and other infrastructure and services.
5. Clean, **domestic energy** generation and long-term **stable energy prices**
6. Local **well-paying jobs** during construction

RANGER POWER

Community Focus

Jonesville Community Schools Grant Program

"We are grateful for Heartwoods' commitment to enriching the education of our students."

- Erik Weatherwax, JCS Superintendent

Ranger Power's Heartwood Solar Project partnered with the Hillsdale County Community Foundation to fund school programs & initiatives

- The grant program will receive **annual contributions of $12,000** until Heartwood reaches commercial operations, at which point the grant program will transition to a long-term endowment fund, beginning with a **$300,000 principal donation**.
  - 75% of funding will support Jonesville Schools' teachers & classrooms and 25% will support a local food pantry
- The new biannual grant program will be open to educators at all grade levels, and will aim to support and enrich educational programs and other projects to aimed at enhance creative and innovative opportunities within the district
  - The first batch of grants will go towards a new robotics program and meal preparation course at Jonesville High School
- Representing a **$150 million investment**, Heartwood Solar is projected to generate $17 million in tax revenue to Hillsdale County (including $2 million in its first year of operation) over the project's lifetime

RANGER POWER

Hawkeye Solar Project Endowment Fund

“Ranger Power launches new charitable funds for Grand Mound, two school districts”

- Clinton Herald

The Hawkeye Solar Project Endowment Fund was voluntarily established after the project had been permitted, in partnership with the LincolnWay Community Foundation in Clinton County

- The endowment is permanently invested and a percentage of earnings will pay out annually to support projects that fit the mission of the fund, which consists of **annual contributions of $20,000** until the project’s completion, at which time an additional **$500,000** will be invested into the fund.
- The fund will facilitate projects in and around Grand Mound, benefitting the local community and students in the Central DeWitt and Calamus-Wheatland school Districts
- Additionally, Ranger Power has set up a fund with cash resources that are immediately available to satisfy these needs before the endowment’s annual payouts begin.

RANGER POWER

Headland Solar Community Scholarship Fund

Ranger Power's Headland Solar Project established the Headland Solar Community Scholarship Fund for Fowlerville High School as part of the Community Foundation for Livingston County

- In 2023, the three recipients were awarded a one-time, $5,000 scholarship to study at various universities in Michigan
    - Similar scholarships will be awarded annually, and the Fund will become permanently endowed upon Headland Solar reaching COD.
- The Fund is intended to support students pursuing post-secondary educational programs focused on agricultural science, agricultural business management, natural resources management, environmental sustainability, renewable energy science, engineering, or construction.
- The Headland Solar Project is located within the boundaries of the Fowlerville School District in Livingston County, Michigan.

"The Community Foundation is honored to assist Headland Solar in making an impact in the future of Fowlerville's students."

- Randy Ross, Community Foundation VP of Donor Services

RANGER POWER

Compliant with Regulations

Portside Solar has been designed to **meet or exceed** all of the township zoning requirements, including:

- Decommissioning
- Setbacks
- Sound and Glare
- Landscape Buffering
- Pollinator Planting
- General Aesthetics
- Master Plan Goals
- Future Land Use Plan Goals

Committed to Community

- Ranger is committed to working closely with landowners and communities to bring investment and clean energy
- Since beginning work in Fort Gratiot township in 2020, Ranger Power has held **over 200 meetings** with residents, stakeholders, and government officials sharing contact information and project details
- Ranger Power is committed to being **available and transparent** throughout the development process. This includes scheduling flexible **in-person meetings and answering any questions asked**

RANGER POWER

We thank you for your time!

Toby Valentino

Development Manager
226 N Morgan St Suite 200
Chicago, IL 60607

734-474-1623
toby@rangerpower.com

PortsideSolar.com

RANGER POWER

_____ o'clock p.m. Chairperson _____calls the meeting of the Planning Commission to order and opens any Public Hearings on the agenda, then continues with the regular agenda.

1. **ROLL CALL**
   PRESENT: Buechler ☐, Hilton ☐, Koob ☐, Mills ☐, Muir ☐, Oprita ☐, Wurmlinger ☐

   ABSENT: Buechler ☐, Hilton ☐, Koob ☐, Mills ☐, Muir ☐, Oprita ☐, Wurmlinger ☐

   ALSO PRESENT:

2. **APPROVAL OF AGENDA: May 09, 2023**
   Motion by_____, supported by_____, to approve the agenda as printed and posted or with additions/deletions/changes. Voice Vote, /

3. **APPROVAL OF MINUTES: January 10, 2023**
   Motion by_____, supported by_____, to approve the minutes as presented/with corrections. Voice Vote, /

4. **REPORT FROM TOWNSHIP BOARD REPRESENTATIVE: Clerk Robert Buechler**

5. **REPORT FROM ZBA REPRESENTATIVE: Nathan Oprita**

6. **PUBLIC COMMENT**
   - Address the Planning Commission Chair only.
   - Individual conversations should not be held during the meeting.
   - Please stand at the podium; speak your name and address clearly for the record.
   - Each person will be permitted to speak one time for 3 minutes.
   - If you are speaking to a Public Hearing on this agenda, please hold your comments until the public comment portion for the specific Public Hearing.

7. **PUBLIC HEARINGS: None**

8. **UNFINISHED BUSINESS:**

9. **NEW BUSINESS:**

Item 9-1: SITE PLAN APPROVAL FOR RETAIL BUILDING, 24TH AVENUE 74-20-022-1001-010
APPLICANT: TDG Architects, 79 Oakland Avenue, Pontiac, Michigan 48342
REQUEST: Site Plan Approval for proposed 3,500 square foot retail building
LOCATION: 4290 24th Avenue (will require new address)
PARCEL#: 74-20-022-1001-010

APPLICANT PRESENTATION:

BOARD DISCUSSION:

Motion by _____, supported by _____, to (postpone until _____/ approve / approve with conditions / deny) the site plan for 4290 24th Avenue, 74-20-022-1001-010
Voice Vote _____/_____

10. **COMMISSIONER UPDATES:**

11. **ADJOURNMENT**
    Motion by _____, supported by _____, to adjourn. Voice Vote, _____. Time, _____ P.M.

SOLAR ENERGY SYSTEMS (SES) REGULATIONS
Fort Gratiot Charter Township

SECTION 38-636. SOLAR ENERGY SYSTEMS

The intent of this section is to promote the public health, safety, and general welfare by regulating the noise, air, and aesthetic impacts of solar energy systems in all districts; requiring buffering between incompatible land uses; regulating the appearance of property abutting public rights-of-way; protecting and preserving the appearance, character of the community; promoting the conservation of property values and natural resources; and preventing soil erosion.

(a) DEFINITIONS. For the purpose of this section, the following words and phrases shall have the meanings hereinafter defined:

Accessory Ground-Mounted Solar Energy System: A ground-mounted solar energy system with the purpose primarily of generating electricity for the principal use on the site.

Building-Integrated Solar Energy System: A solar energy system that is an integral part of a primary or accessory building or structure (rather than a separate mechanical device), replacing or substituting for an architectural or structural component of the building or structure. Building-integrated systems include, but are not limited to, photovoltaic or hot water solar energy systems that are contained within roofing materials, windows, skylights, and awnings.

Dual Use: A solar energy system that employs one or more of the following land management and conservation practices throughout the project site:

- Pollinator Habitat: Solar sites designed to meet a score of 76 or more on the Michigan Pollinator Habitat Planning Scorecard for Solar Sites.
- Conservation Cover: Solar sites designed in consultation with conservation organizations that focus on restoring native plants, grasses, and prairie with the aim of protecting specific species (e.g., bird habitat) or providing specific ecosystem services (e.g., carbon sequestration, soil health.)
- Forage: Solar sites that incorporate rotational livestock grazing and forage production as part of an overall vegetative maintenance plan.
- Agrivoltaics: Solar sites that combine raising crops for food, fiber, or fuel, and generating electricity within the project area to maximize land use.

Ground-Mounted Solar Energy System: A solar energy system mounted on support posts, like a rack or pole, that are attached to or rest on the ground.

Invasive Plant: Non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

(Leq(h)) Equivalent sound level over a specified number of hours. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Large Solar Energy System: A Principal-Use SES generating more than 2 MW DC for the primary purpose of off-site use through the electrical grid or export to the wholesale market.

Maximum Tilt: The maximum angle of a solar array (i.e., most vertical position) for capturing solar radiation as compared to the horizon line.

Minimum Tilt: The minimal angle of a solar array (i.e., most horizontal position) for capturing solar radiation as compared to the horizon line.

Non-Participating Lot(s): One or more lots for which there is not a signed lease or easement for development of a principal-use SES associated with the applicant project.

Participating Lot(s): One or more lots under a signed lease or easement for development of a principal-use SES associated with the applicant project.

Photovoltaic (PV) System: A semiconductor material that generates electricity from sunlight.

Principal-Use Solar Energy System: A commercial, ground-mounted solar energy system that converts sunlight into electricity for the primary purpose of off-site use through the electrical grid or export to the wholesale market.

Repowering: Reconfiguring, renovating, or replacing an SES to maintain or increase the power rating of the SES within the existing project footprint.

Roof-Mounted Solar Energy System: A solar energy system mounted on racking that is attached to or ballasted on the roof of a building or structure.

Small Solar Energy System: A Principal-Use SES generating up to and including 2 MW DC for the primary purpose of off-site use through the electrical grid or export to the wholesale market.

Solar Array: A photovoltaic panel, solar thermal collector, or collection of panels or collectors in a solar energy system that collects solar radiation.

Solar Carport: A solar energy system of any size that is installed on a structure that is accessory to a parking area, and which may include electric vehicle supply equipment or energy storage facilities. Solar panels affixed on the roof of an existing carport structure are considered a Roof-Mounted SES.

Solar Energy System (SES): A photovoltaic system or *solar thermal system* for generating and/or storing electricity or heat, including all above and below ground equipment or components required for the system to operate properly and to be secured to a roof surface or the ground. This includes any necessary operations and maintenance building(s), but does not include any temporary construction offices, substation(s) or other transmission facilities between the SES and the point of interconnection to the electric grid.

Solar Thermal System: A system of equipment that converts sunlight into heat.

Wildlife-Friendly Fencing: A fencing system with openings that allow wildlife to traverse over or through a fenced area.

(b) SES GENERAL PROVISIONS. Roof-Mounted SES, Accessory Ground-Mounted SES, and Building-Integrated SES are permitted in all zoning districts where structures of any sort are allowed, and shall meet the following requirements:

(1) ROOF-MOUNTED SES

a. Height. Roof-Mounted SES shall not exceed 5 feet above the finished roof and are exempt from any rooftop equipment or mechanical system screening.

b. Nonconformities. A Roof-Mounted SES or Building-Integrated SES installed on a nonconforming building, structure, or use shall not be considered an expansion of the nonconformity.

c. Application. All SES applications must include plot plan. Applications for Roof-Mounted SES must include horizontal and vertical elevation drawings that show the location and height of the SES on the building and dimensions of the SES.

(2) ACCESSORY GROUND-MOUNTED SES

a. Height. Ground-Mounted SES shall not exceed sixteen (16') feet measured from the ground to the top of the system when oriented at maximum tilt.

b. Setbacks. A Ground-Mounted SES must be a minimum of five (5') feet from the property line or the required setback that would apply to accessory structures in the side or rear yard in the respective zoning district, whichever is greater. Setback distance is measured from the property line to the closest point of the SES at minimum tilt.

c. Lot Coverage. The area of the solar array shall not exceed fifty percent (50%) of the square footage of the primary building on the property unless it is sited over required parking (i.e., solar carport,) in which case there is no maximum lot coverage for the Ground-Mounted SES. A Ground-Mounted SES shall not count towards the maximum number or square footage of accessory structures allowed on site or maximum impervious surface area limits if the ground under the array is pervious.
d. Visibility-Residential. A Ground-Mounted SES in residential districts R-1A, R-1B, R-2, RM, and MHR, shall be located in the side or rear yard to minimize visual impacts from the public right(s)-of-way.
    1. Ground-Mounted SES may be placed in the front yard with administrative approval, where the applicant can demonstrate that placement of the SES in the rear or side yard will:
        i. Decrease the efficiency of the SES due to topography, accessory structures, or vegetative shading from the subject lot or adjoining lots;
        ii. Interfere with septic system, accessory structures, or accessory uses; or
        iii. Require the SES to be placed on the waterfront side of the building housing the primary use.
e. Exemptions. A SES used to power a single device or specific piece of equipment such as a lawn ornament, lights, weather station, thermometer, clock, well pump or other similar singular devices is exempt from 38-636 (b.)
f. Nonconformities. A Ground-Mounted SES installed on a nonconforming lot or use shall not be considered an expansion of the nonconformity.
g. Application. All SES applications must include a plot plan. Applications for Ground-Mounted SES must include drawings that show the location of the system on the property, height, tilt features (if applicable,) the primary structure, accessory structures, and setbacks to property lines. Accessory use applications that meet the ordinance requirements shall be granted administrative approval.

(3) BUILDING-INTEGRATED SES. Building-Integrated SES are subject only to zoning regulations applicable to the structure or building and not subject to accessory ground or roof-mounted SES permits.

(c) SMALL PRINCIPAL-USE SES. A Small Principal-Use SES is a permitted use in all non-residential zoning districts and subject to site plan review. A Small Principal-Use SES requires special land use and site plan approval in the R-1A, R-1B, R-2, RM, and MHR zoning districts and shall meet all of the following requirements:
(1) Height. Total height shall not exceed sixteen (16') feet measured from the ground to the top of the system when oriented at maximum tilt.
(2) Setbacks. Setback distance shall be measured from the property line or road right-of-way to the closest point of the solar array at minimum tilt or any SES components and as follows:
    a. A Ground-Mounted SES shall follow the setback distance for primary buildings or structures for the district in which it is sited.
    b. A Ground-Mounted SES is not subject to property line setbacks for common property lines of two or more participating lots, except road right-of-way setbacks shall apply.
(3) Fencing. A Small Principal-Use SES may be secured with perimeter fencing to restrict unauthorized access. If installed, perimeter fencing shall be a maximum of eight (8') feet in height. Fencing is not subject to setbacks. A fence permit is required if it is not included on the building permit or site plan.
(4) Screening and Landscaping. A Small Principal-Use SES shall be designed to follow the screening and/or landscaping standards for the zoning district of the project site. Any required screening and landscaping shall be placed outside the perimeter fencing.
    a. In districts that call for screening or landscaping along rear or side property lines, these shall only be required where an adjoining non-participating lot has an existing residential or public use.
    b. When current zoning district screening and landscaping standards are determined to be inadequate based on a legitimate community purpose consistent with local government planning documents, the Planning Commission may require substitute screening consisting of native deciduous trees

planted thirty (30') feet on center, and native evergreen trees planted fifteen (15') feet on center along existing non-participating residential uses.

c. The Planning Commission may reduce or waive screening requirements provided that any such adjustment is in keeping with the intent of the Ordinance and is appropriately documented (e.g., abutting participating lots; existing vegetation.)
d. Screening and landscaping detail shall be submitted as part of the site plan that identifies the type and extent of screening for a Small Principal-Use SES, which may include plantings, strategic use of berms, fencing, and other approved screening methods.

(5) Ground Cover. A Small Principal-Use SES shall include the installation of perennial ground cover vegetation maintained for the duration of operation until the site is decommissioned. The applicant shall include a ground cover vegetation establishment and management plan as part of the site plan.
   a. An SES utilizing agrivoltaics is exempt from perennial ground cover requirements for the portion of the site employing the dual-use practice.
   b. Project sites with majority existing impervious surface or those that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, are exempt from ground cover requirements. These sites must comply with the on-site stormwater requirements of the Ordinance.

(6) Lot Coverage. A Small Principal-Use SES shall not count towards the maximum lot coverage or impervious surface standards for the zoning district in which it is located.

(7) Land Clearing. Land disturbance or clearing shall be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation (grading) on the property shall be retained on site.

(8) Access Drives. New access drives within the SES shall be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. The use of geotextile fabrics and gravel placed on the surface of the existing soil for temporary roadways during the construction of the SES is permitted, provided that the geotextile fabrics and gravel are removed once the SES is in operation.

(9) Wiring. SES wiring (including communication lines) may be buried underground. Any above-ground wiring within the footprint of the SES shall not exceed the height of the solar array at maximum tilt.

(10) Lighting. Lighting shall be limited to inverter and/or substation locations only. Light fixtures shall have downlit shielding and be placed to keep light on-site and glare away from adjacent properties, bodies of water, and adjacent roadways. Flashing or intermittent lights are prohibited.

(11) Signage: Signage may be at the project site, with the maximum area signage allowed per the requirements of 38-626 Signs. Any signage shall meet the setback, illumination, and materials/ construction requirements of the zoning district for the project site.

(12) Sound: The sound pressure level of a Small Principal-Use SES and all ancillary solar equipment shall not exceed 45 dBA (Leq (1-hour)) at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.

(13) Repowering: In addition to repairing or replacing SES components to maintain the system, a Small Principal-Use SES may at any time be repowered by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint.
   a. A proposal to change the project footprint of an existing SES shall be considered a new application, subject to the ordinance standards at the time of the request.

(14) Decommissioning: Upon application, a decommissioning plan shall be submitted indicating the anticipated manner in which the project will be decommissioned, including a description of which above-grade and below-grade improvements will be removed, retained (e.g. access drive, fencing), or restored for viable reuse of the property consistent with the zoning district.

a. An SES owner may at any time:
    i. Proceed with the decommissioning plan approved by the Planning Commission and remove the system as indicated in the most recent approved plan; or
    ii. Amend the decommissioning plan with Zoning Administrator approval and proceed according to the revised plan.
b. Decommissioning an SES must commence when the soil is dry to prevent soil compaction and must be complete within 12 months after abandonment. An SES that has not produced electrical energy for 12 consecutive months shall prompt an abandonment hearing.

(d) LARGE PRINCIPAL-USE SES. A large principal-use SES is a special land use in the AG, O-1, O-2, C-1, C-2, M-1, and M-2 zoning districts and shall meet the following requirements:
(1) Height: Total height for a large principal-use SES shall not exceed the maximum allowed height in the district in which the system is located.
(2) Setbacks: Setback distance shall be measured from the property line or road right-of-way to the closest point of the solar array at minimum tilt or any SES components and as follows:
    a. In accordance with the setbacks for principal buildings or structures for the zoning district of the project site.
    b. 100 feet from any existing dwelling unit on a non-participating lot.
    c. A Ground-Mounted SES is not subject to property line setbacks for common property lines of two or more participating lots, except road right-of-way setbacks shall apply.
(3) Fencing: A large principal-use SES may be secured with perimeter fencing to restrict unauthorized access. If installed, perimeter fencing shall be a maximum of 8’ feet in height. Fencing is not subject to setbacks.
(4) Screening/Landscaping: A large principal-use SES shall follow the screening and/or landscaping standards for the zoning district of the project site. Any required screening and landscaping shall be placed outside the perimeter fencing.
    a. In districts that call for screening or landscaping along rear or side property lines, these shall only be required where an adjoining non-participating lot has an existing residential or public use.
    b. When current zoning district screening and landscaping standards are determined to be inadequate based on a legitimate community purpose consistent with local government planning documents, the Planning Commission may require substitute screening consisting of native deciduous trees planted 30 feet on center, and native evergreen trees planted 15 feet on center along existing non-participating residential uses.
    c. The Planning Commission may reduce or waive screening requirements provided that any such adjustment is in keeping with the intent of the Ordinance.
    d. Screening and landscaping detail shall be submitted as part of the site plan that identifies the type and extent of screening for a large principal-use SES, which may include plantings, strategic use of berms, and/or fencing.
(5) Ground Cover: A large principal-use SES shall include the installation of ground cover vegetation maintained for the duration of operation until the site is decommissioned. The applicant shall include a ground cover vegetation establishment and management plan as part of the site plan. Vegetation establishment must include invasive plant species and noxious weed control. The following standards apply:
    a. Sites bound by a Farmland Development Rights (PA 116) Agreement must follow the Michigan Department of Agriculture and Rural Development’s Policy for Allowing Commercial Solar Panel Development on PA 116 Lands.
    b. Ground cover at sites not enrolled in PA 116 must meet one or more of the four types of Dual Use as defined in section 38-636 (a) *Definitions*.

c. Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements.

(6) Lot Coverage: A large principal-use SES shall not count towards the maximum lot coverage or impervious surface standards for the district.

(7) Land Clearing: Land disturbance or clearing shall be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation (grading) on the property shall be retained on site.

(8) Access Drives: New access drives within the SES shall be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. The use of geotextile fabrics and gravel placed on the surface of the existing soil for the construction of temporary drives during the construction of the SES is permitted, provided that the geotextile fabrics and gravel are removed once the SES is in operation.

(9) Wiring: SES wiring (including communication lines) may be buried underground. Any above-ground wiring within the footprint of the SES shall not exceed the height of the solar array at maximum tilt.

(10) Lighting: Large principal-use SES lighting shall be limited to inverter and/or substation locations only. Light fixtures shall have downlit shielding and be placed to keep light on-site and glare away from adjacent properties, bodies of water, and adjacent roadways. Flashing or intermittent lights are prohibited.

(11) Signage: Signage may be at the project site, with the maximum area signage allowed per the requirements of 38-626 Signs. Any signage shall meet the setback, illumination, materials, and construction requirements of the zoning district for the project site.

(12) Sound: The sound pressure level of a large principal-use SES and all ancillary solar equipment shall not exceed 45 dBA (Leq (1-hour)) at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.

(13) Repowering: In addition to repairing or replacing SES components to maintain the system, a large principal-use SES may at any time be repowered, without the need to apply for a new special land-use permit, by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint. a. A proposal to change the project footprint of an existing SES shall be considered a new application, subject to the ordinance standards at the time of the request. Expenses for legal services and other studies resulting from an application to modify an SES will be reimbursed to Fort Gratiot Charter Township by the SES owner in compliance with established escrow policy.

(14) Decommissioning: A decommissioning plan is required at the time of application, with periodic administrative review, regulated as follows:

a. The decommission plan shall include:
   i. The anticipated manner in which the project will be decommissioned, including a description of which above-grade and below-grade improvements will be removed, retained (e.g. access drive, fencing,) or restored for viable reuse of the property consistent with the zoning district; and
   ii. The projected decommissioning costs for removal of the SES (net of salvage value in current dollars) and soil stabilization, less the amount of the surety bond posted with the State of Michigan for decommissioning of panels installed on PA 116 lands; and
   iii. The method of ensuring that funds will be available for site decommissioning and stabilization in the form of surety bond, irrevocable letter of credit, or cash deposit.

b. A review of the amount of the performance guarantee based on inflation, salvage value, and current removal costs shall be completed every 5 years, for the life of the project, and approved by the board.

c. An SES owner may at any time:
   i. Proceed with the decommissioning plan approved by the or Planning Commission and remove the system as indicated in the most recent approved plan; or
   ii. Amend the decommissioning plan with Zoning Administrator approval and proceed according to the revised plan.
d. Decommissioning an SES must commence when the soil is dry to prevent soil compaction and must be complete within 12 months after abandonment. An SES that has not produced electrical energy for 12 consecutive months shall prompt an abandonment hearing.

QUICK REFERENCE GUIDE – SOLAR ENERGY SYSTEMS BY DISTRICT

DIVISION 2. AG AGRICULTURAL DISTRICTS

38-142 – Permitted Uses.

(11) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(12) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-143 – Special Approval Uses

(20) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

DIVISION 3. R-1A, R-1B AND R-2, SINGLE AND TWO FAMILY RESIDENTIAL DISTRICTS *(Large Principal-Use Not Permitted)*

38-172 – R-1A, R-1B Permitted Uses

(a,10) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)

38-173 – R-1A, R-1B Special Approval Uses

(16) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-177 – R-2 Permitted Uses

(6) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)

38-178 – R-2 Special Approval Uses

Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

DIVISION 4. RM RESIDENTIAL MULTIPLE-FAMILY DISTRICTS *(Large Principal-Use Not Permitted)*

38-202 – Permitted Uses

(9) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)

38-203 – Special Approval Uses

(6) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

DIVISION 5. MHR RESIDENTIAL MULTIPLE-FAMILY DISTRICTS *(Large Principal-Use Not Permitted)*

38-232 – Permitted Uses

(4) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)

38-233 – Special Approval Uses

Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

DIVISION 6. O-1 OFFICE DISTRICTS

38-262 – Principal Permitted Uses

(9) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(10) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-263 – Special Approval Uses

(8) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

DIVISION 7. O-2 OFFICE DISTRICTS

38-292 – Principal Permitted Uses

(6) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(7) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-293 – Special Approval Uses

(3) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

DIVISION 8. C-1 NEIGHBORHOOD BUSINESS DISTRICTS

38-322 – Permitted Uses

(21) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(22) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-323 – Special Approval Uses

(5) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

DIVISION 9. C-2 GENERAL BUSINESS DISTRICTS

38-352 – Permitted Uses

(44) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(45) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-353 – Special Approval Uses

(18) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

DIVISION 10. M-1 LIGHT INDUSTRIAL DISTRICTS

38-382 – Permitted Uses

(5) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(6) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-383 – Special Approval Uses

(6) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

DIVISION 11. M-2 HEAVY INDUSTRIAL DISTRICTS

38-412 – Permitted Uses

(4) Roof-Mounted, Accessory Ground-Mounted, and Building-Integrated Solar Energy Systems as provided in sec. 38-636 (b.)
(5) Solar Energy Systems – Small Principal-Use subject to Site Plan Approval, as provided in sec. 38-636 (c.)

38-413 – Special Approval Uses

(11) Solar Energy Systems – Large Principal-Use as provided in sec. 38-636 (d.)

FORT GRATIOT CHARTER TOWNSHIP
PLANNING COMMISSION
COUNTY OF ST. CLAIR, MICHIGAN

Please be advised that your neighbor is requesting special land use approval from the Fort Gratiot Planning Commission. All property owners within 300' of the property described herein, by law, must be notified. The applicant, owner, or a representative must be present for the Commission to take action on the request.

APPLICANT: **Portside Solar, LLC**

REQUEST: **Proposed Solar Energy Generation Facility per Ord. No. 226**

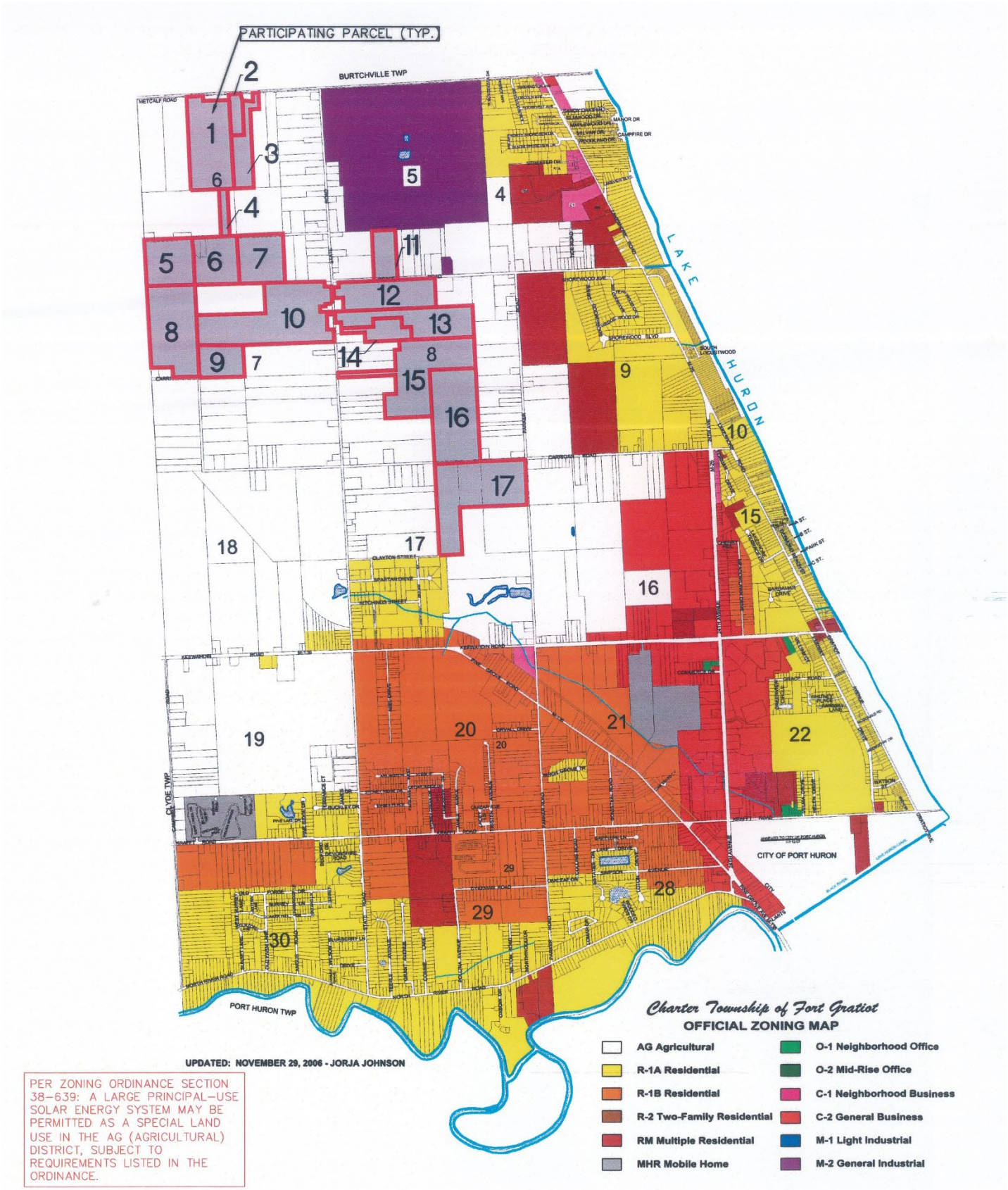
PROPERTIES INCLUDED:

OWNER	PARCEL ID	SITE ADDRESS	# ON MAP	ACRES
Ted/Cynthia Furness 5404 State Road, Fort Gratiot, MI 48059	20-005-4003-000	Brace Rd Vac	11	20
	20-007-1003-000	5397 State Rd	10	115.68
	20-008-1002-000	State Rd Vac	12	57.2
	20-008-1006-500	State Rd Vac	14	17.26
	20-008-2013-000	5404 State Rd	13	55.63
Lewis Land LLC 5082 North Road, North Street, MI 48049	20-006-3012-000	Cole Rd Vac	7	40
	20-006-4004-000	Cole Rd Vac	6	35.79
	20-006-4005-000	Cole Rd Vac	5	40
	20-007-1001-000	Carrigan Rd Vac	8	76.7
	20-007-1004-000	Carrigan Rd Vac	9	26.66
James R. Palmateer 4417 Gratiot Avenue, Fort Gratiot, MI 48059	20-006-1002-010	Metcalf Rd Vac	1	77.471
	20-006-2001-000	Metcalf Rd Vac	3	24.39
	20-006-2001-100	Metcalf Rd Vac	2	10.25
	20-008-1003-000	State Rd Vac	15	87.538
Peters Brothers, LLC 2807 Stapleton Road, Memphis, MI 48041	20-008-3001-000	Carrigan Rd Vac	16	80
	20-017-2001-001	Carrigan Rd Vac	17	99.67
James Reid 5729 Burtch Road, Grant, MI 48032	20-006-4001-400	Cole Rd Vac	4	10.14

PLEASE TAKE NOTICE that a regular meeting of the Fort Gratiot Charter Township Planning Commission will be held on **Tuesday, October 10, 2023** beginning at 7:00 o'clock p.m., in the Gardendale Meeting Room at the Municipal Center, 3720 Keewahdin Road, Fort Gratiot, Michigan 48059, for the purpose of reviewing the above request, to hear comments and/or objections and to take action.

If you have any questions or concerns regarding this request, please contact the Office of Community Development at planning@fortgratiot.us or by phone at (810) 385-4489, prior to the meeting date.

*** * * M A P O N R E V E R S E * * ***



PER ZONING ORDINANCE SECTION 38-639: A LARGE PRINCIPAL-USE SOLAR ENERGY SYSTEM MAY BE PERMITTED AS A SPECIAL LAND USE IN THE AG (AGRICULTURAL) DISTRICT, SUBJECT TO REQUIREMENTS LISTED IN THE ORDINANCE.

ZONING MAP
NOT TO SCALE

NOTE: ALL PARTICIPATING PARCELS LOCATED WITHIN AG AGRICULTURAL