

Los Altos Golf Country Club

Maintenance Barn Roof and Ground Mount PV System

144.00 kW Roof and Ground Mount Photovoltaic System

1560 Fairway Drive, Los Altos, CA 94024

Scope of Work	Site Map For APN 331 08 005 and 331 04 196	Vicinity Map
<p>Project Description - To Install a Roof And Ground Mounted Photovoltaic System for an Existing Maintenance Barn</p> <p>System Consist of the Following:</p> <ul style="list-style-type: none">- (240) Trina Solar TSM-NEG19RC.20, 600W PV Modules- (5) Chint Power Systems CPS SCA25KTL-DO-R/US-480 PV Inverters- (1) Ironridge Ground Mount System at 25° and 15° Tilt- (1) 250A Subpanel NF430L2 with 200A Main Breaker in Outdoor NEMA 3R Enclosure MH50WP- (1) 200A Disconnect DH364NRK with 200A Fuses- (121) Tigo TS4-A-2F Rapid Shutdown Receiver- (2) Tigo Rapid Shutdown Transmitter <p>Special Notes:</p> <p>1 - Call 811 Before you Dig - Any Proposed Excavation Sites Shall be Clearly marked out by 811 Prior to Commencement of Excavation.</p> <p>2 - A Load (Pull) Test Shall be Performed on a Sample of at Least (2) Ground Screws Installed in the Region of the Proposed Ground Mounted Photovoltaic Array. The Ground Screws Shall Achieve a Minimum Pullout Value of Tension = 1520 lbs., Lateral = 1000 lbs As Required for Uplift with a Factor of Safety of 2.0.</p> <p>A 3rd Party Special Inspection Agency Shall Perform This Pull Test to Demonstrate the Above Capacity Through A Load Transducer Rated for the Above Referenced Loads.</p> <div><div>Paymon Eskandanian 2025.03.04 14:54:29-08'00'</div><div><div>S 5847 EXP. 12/31/25 REGISTERED PROFESSIONAL ENGINEER PAYMON ESKANDANIAN STATE OF CALIFORNIA</div><div></div></div></div>		
Project Notes	Abbreviations	Sheet Index
<p>1. Ungrounded Photovoltaic System, 1000VDC Design</p> <p>2. All work to be performed to the Applicable Building Codes</p> <p>Applicable codes:</p> <ul style="list-style-type: none">-2022 California Building Codes-2022 California Electrical Code-2022 California Mechanical Code-2022 California Fire Code-2022 California Energy Code/Building Energy Efficiency Code-2022 California Green Building Code (CALGreen) <p>3. All Electrical Equipment Part Numbers are "or Equivalent"</p> <p>4. All Electrical Equipment Must be Installed According to the Manufacturers Installation Manual</p> <p>5. Torque Values for all PV Mounting Hardware Shall be as Follows Unless Noted</p> <p>120 in. lbs. = ¼" SS Mounting System Bolts</p> <p>260 in lbs. = ⅜" SS Mounting System Bolts</p> <p>50-250 in. lbs = Electrical Terminals, See Each Equipment for Torque Values</p> <p>6. Install all Required Weather Resistant Labels per Local Jurisdiction Requirements, See Sheet 10</p> <p>7. Special Inspection Required for Screw Pile Foundations</p>	<div><div>A - Amperes</div><div>AC - Alternating Current</div><div>AWG - American Wire Gauge</div><div>Btw - Between</div><div>CB - Combiner Box</div><div>Ckt - Circuit</div><div>Cu - Copper</div><div>DF - Douglas Fir</div><div>DC - Direct Current</div><div>DIST. - Electrical Distribution Equipmt</div><div>DISC. - Disconnect</div><div>(E) - Existing</div><div>EGC - Equipment Grounding Conductor</div><div>EMT - Electrical Metallic Tubing Conduit</div><div>Eq - Equivalent</div><div>GEC - Grounding Electrode Conductor</div><div>GLB - Glue Laminated Beam</div><div>Gnd - Ground</div><div>HVAC - Heating Ventilation and Air Conditioning</div><div>HSS - Hollow Structural Section</div><div>Inv - Inverter</div><div>Max - Maximum</div></div> <div><div>Mfg - Manufacturer</div><div>Min - Minimum</div><div>MSP - Main Service Panel</div><div>(N) - New</div><div>OWJ - Open Web Joist</div><div>PO - Part Of</div><div>PV - Photovoltaic</div><div>PVC - Polyvinyl Chloride Conduit</div><div>Req - Required</div><div>RMC - Rigid Metallic Conduit</div><div>SE - Service Entrance Panel</div><div>SP - Subpanel</div><div>SS - Stainless Steel</div><div>Typ - Typical</div><div>U.O.N - Unless Otherwise Noted</div><div>V - Vent</div><div>VAC - Alternating Current Voltage</div><div>VDC - Direct Current Voltage</div><div>V.I.F. - Verify In Field</div></div>	<p>Title Page.....Sheet 1 of 18</p> <p>Parcel Map.....Sheet 2 of 18</p> <p>Site Plan.....Sheet 3 of 18</p> <p>Stormwater Management.....Sheet 4 of 18</p> <p>Stormwater Management.....Sheet 5 of 18</p> <p>Conduit Plan.....Sheet 6 of 18</p> <p>PV Array Layout.....Sheet 7 of 18</p> <p>Ground Mount Array.....Sheet 8 of 18</p> <p>Roof Mount Array.....Sheet 9 of 18</p> <p>Electrical Plan.....Sheet 10 of 18</p> <p>Equipment Mounting Details.....Sheet 11 of 18</p> <p>PV Array Signage.....Sheet 12 of 18</p> <p>Electrical System Schematic.....Sheet 13 of 18</p> <p>Electrical Calculations.....Sheet 14 of 18</p> <p>Data Sheets.....Sheet 15 of 18</p> <p>Data Sheets.....Sheet 16 of 18</p> <p>Data Sheets.....Sheet 17 of 18</p> <p>Special Inspection Forms.....Sheet 18 of 18</p>
Structural Design Criteria		
<div><div><div>1. 2022 California Building Code w/ Local Amendments</div><div>2. ASCE 7-16</div><div>3. Existing Construction Type V-B</div><div>4. Risk Category I</div><div>4. Basic Wind Speed 90 mph</div><div>5. Wind Exposure Category C</div><div>6. Mean Roof Height 21'</div><div>7. Structural Calculations Performed by Paymon Eskandanian S.E.</div><div>Laguna Consulting Engineers, Email: paymon@lagunaengineers.com</div></div><div><div>8. Seismic Design</div><div>A. Ss = 2.251</div><div>B. S1 = 0.817</div><div>C. Sds = 1.801</div><div>D. Sd1 = N/A</div><div>E. Site Soil Class: D</div></div></div>		

LAGCC - PV Installation
At Maintenance Barn

Photovoltaic Roof and Ground Mount Installation
1560 Fairway Drive. Los Altos, CA 94024

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1	1.15.2025	90% Plans For Review
2	2.21.2025	100% Plans Submission

Title Page

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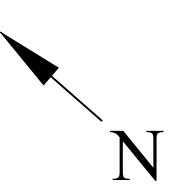
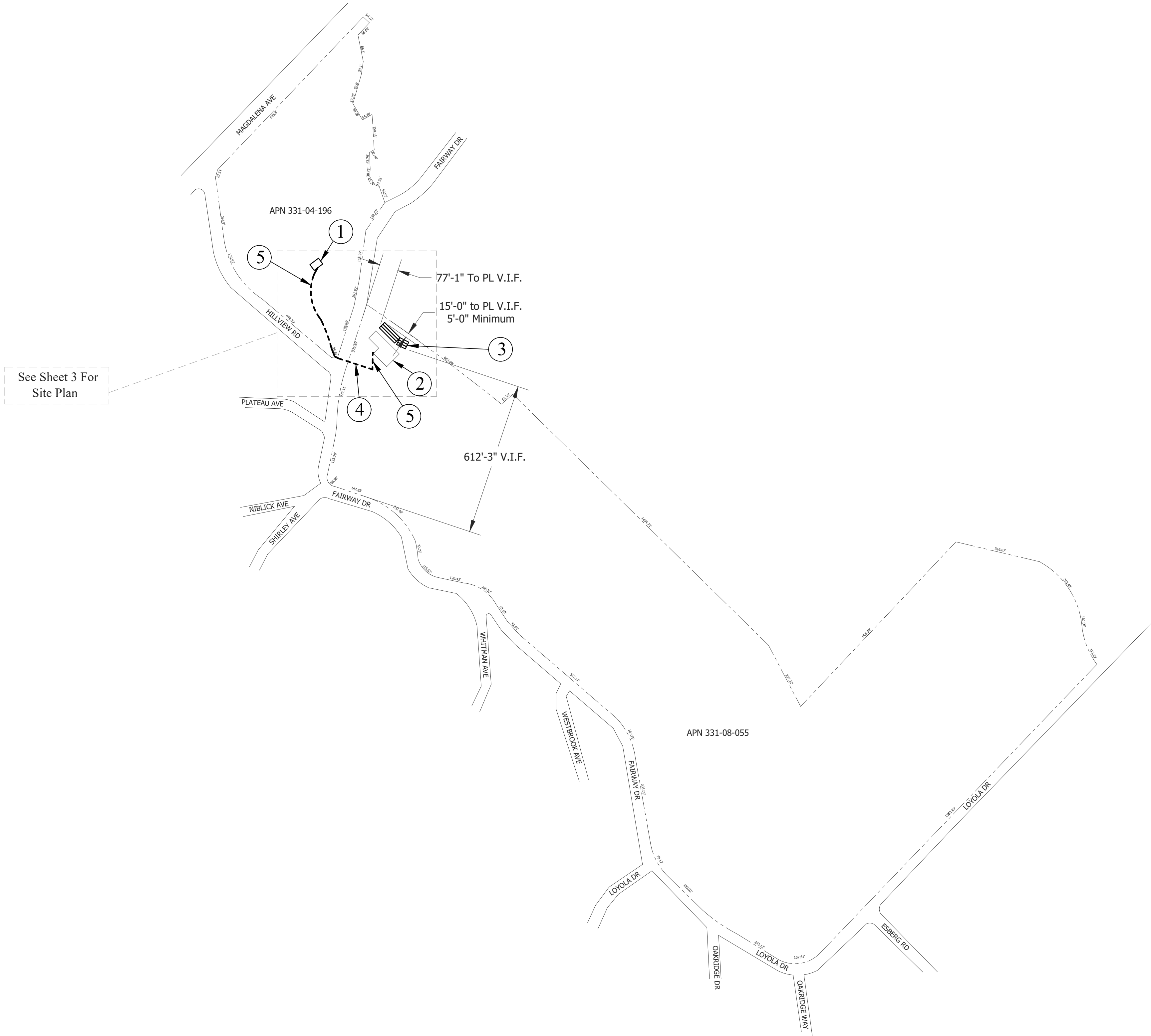
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Prepared ByVRJ

Job Number3920

Job Code1560CountryClub3

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Parcel Map and Erosion Control Plan
Scale: 1/256" = 1'-0"

Keynotes:

- Existing Agricultural Building - Los Altos Golf Country Club - Pumphouse on APN 331 04 196
- Existing Agricultural Building - Los Altos Golf Country Club - Maintenance Barn on APN 331 08 005 with Fire Sprinklers
- New Ground Mount System on 15° and 25° Tilt Ironridge Mounting System
Total PV Module Area = 4,190 sq ft
- Install New Electrical Feeder and Non Conductive Fiber Data Cable in Existing Conduit which Crosses Under Fairway Drive
- Install New Electrical Feeder and Non Conductive Fiber Data Cable in New PVC and HDPE Conduit Installed in new Trench and With Trenchless Boring

Construction Notes:

- Civil Scope of Work is De Minimus and Consists of Trenching and Underground Boring, no Grading to be Performed.
- Existing Conduits Cross Property Lines and Right of Way at Fairway Drive, no Encroachment Permit Required
- Location of Ground Mount PV Structure is Protected by Solar Rights Act. Location Comments must Reflect Specific Adverse Impact on Public Health or Safety
- No On Site Water Treatment System Effected by Underground Construction

Erosion Control Notes:

- Trap sediment-laden runoff water in basins or silt traps to allow soil particles to settle out before flows are released to storm drains, streets, or adjacent property
- Silt fencing or wattles will be installed at downhill locations, five feet from the toe of stockpiles, and as necessary to retain all sediment on site.
- All temporary stockpiles will be covered with 6 mil plastic sheeting (e.g. visqueen) which is suitably anchored to prevent disruption during high wind events.
- Drainage courses will be installed to control surface water over cut and fill slopes and direct surface water away from stockpiles.
- Drainage courses shall contain check dams to reduce drainage velocities. Straw bale barriers or gravel dams can be used as check dams, as appropriate.
- Energy dissipaters shall be installed at all drainage outlets.
- All driveways and construction access roads shall have a gravel surface and shall be well maintained at all times.
- All other exposed bare ground shall be covered with mulching, jute mat, or other erosion control blankets.
- Site Monitoring shall be conducted by the contractor/owner before and after significant rainfall events to verify that the erosion control measures are satisfactory.
- Disturbed vegetated areas will be revegetated.
- All erosion control materials shall be onsite and readily accessible prior to construction for installation due to untimely wet weather.
- Other measures as necessary.

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At Maintenance Barn

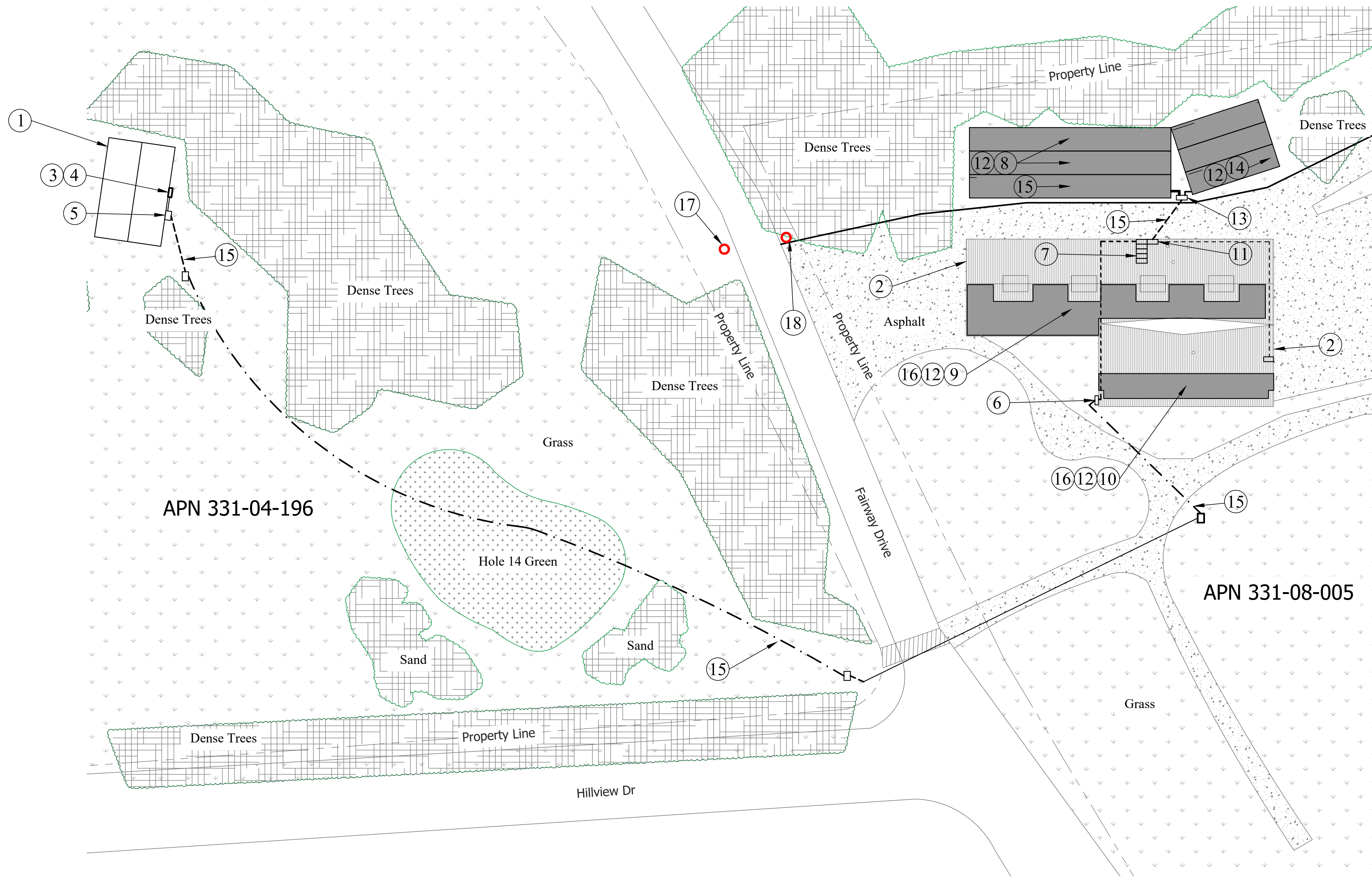
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Parcel Map	
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Maintenance Barn Site Plan
Roof and Ground Mount PV System
Scale: 5/128" = 1'-0"

Keynotes:

- Existing Agricultural Building - Los Altos Golf Country Club - Pumphouse on APN 331 04 196
- Existing Agricultural Building - Los Altos Golf Country Club - Maintenance Barn on APN 331 08 005 with Fire Sprinklers
- Pumphouse Electrical Service With Existing 400A 480Y/277VAC Service Panel and PG&E Meter #1006732887
- Connect New PV System to Line Side of 400A Main Disconnect
- New 200A, 600V Fused AC Disconnect with 200A Fuses on Exterior Wall at Pumphouse - See Sheets 8 and 9
- Install New 250A, 480/277VAC Subpanel with 200A Main Breaker On Exterior Wall of Barn, See Sheet 8 for Details
- (5) Chint 25 kW Inverters Mounted on Interior Barn Wall, See Sheets 8 and 9
- Ground Mount System on 15° Tilt Ironridge Mounting System (96 of 144) PV Modules Trina Solar TSM-NEG19RC.20 (48) Tigo Rapid Shutdown Modules Each PV Module = 29.1 sq ft Total PV Module Area = 4,190 sq ft
- Roof Mount System Flush Mounted to 30° Barn Roof (67) Roof Mount PV Modules Trina Solar TSM-NEG19RC.20 (34) Tigo Rapid Shutdown Modules Each PV Module = 29.1 sq ft Total PV Module Area = 1,950 sq ft
- Roof Mount System Flush Mounted to 22° Barn Roof (29) Roof Mount PV Modules Trina Solar TSM-NEG19RC.20 (15) Tigo Rapid Shutdown Modules Each PV Module = 29.1 sq ft Total PV Module Area = 844 sq ft
- Tigo Rapid Shutdown System Transmitter Installed in Device Box on Interior Wall of Maintenance Barn Next to PV Inverters
- Tigo TS4-A-F 2F Module Rapid Shutdown Boxes Installed One per (2) Adjacent PV Modules
- Equipment Disconnect Location for PV Strings
- Ground Mount System on 25° Tilt Ironridge Mounting System (48 of 144) PV Modules Trina Solar TSM-NEG19RC.20 (24) Tigo Rapid Shutdown Modules Each PV Module = 29.1 sq ft Total PV Module Area = 4,190 sq ft
- Install New Electrical Feeder and Non Conductive Fiber Data Cable in New Joint trench with New and and Existing Conduit
- New Corrugated Metal Roof for Maintenance Barn Under Separate Permit
- Existing Fire Department Fire Hydrant
- Existing Fire Department PIV Valves

Stormwater Management Notes:

- Approx. 7k sqft Solar array with Gaps Every 44" Will Naturally Spread Water Across the Existing Landscape Area. Zero Area Converted to Impervious Surface.
- See Santa Clara Urban Runoff Pollution Prevention Program Checklist on Next Sheet For Complete List of Best Management Practices to Prevent any Contaminated Runoff From Entering Any Stormdrains.
- Use Temporary Swales Around Every Nearby Stormdrain to Prevent any Uncontained Sediment from Entering Storm Drain System During Trenching or Drilling.

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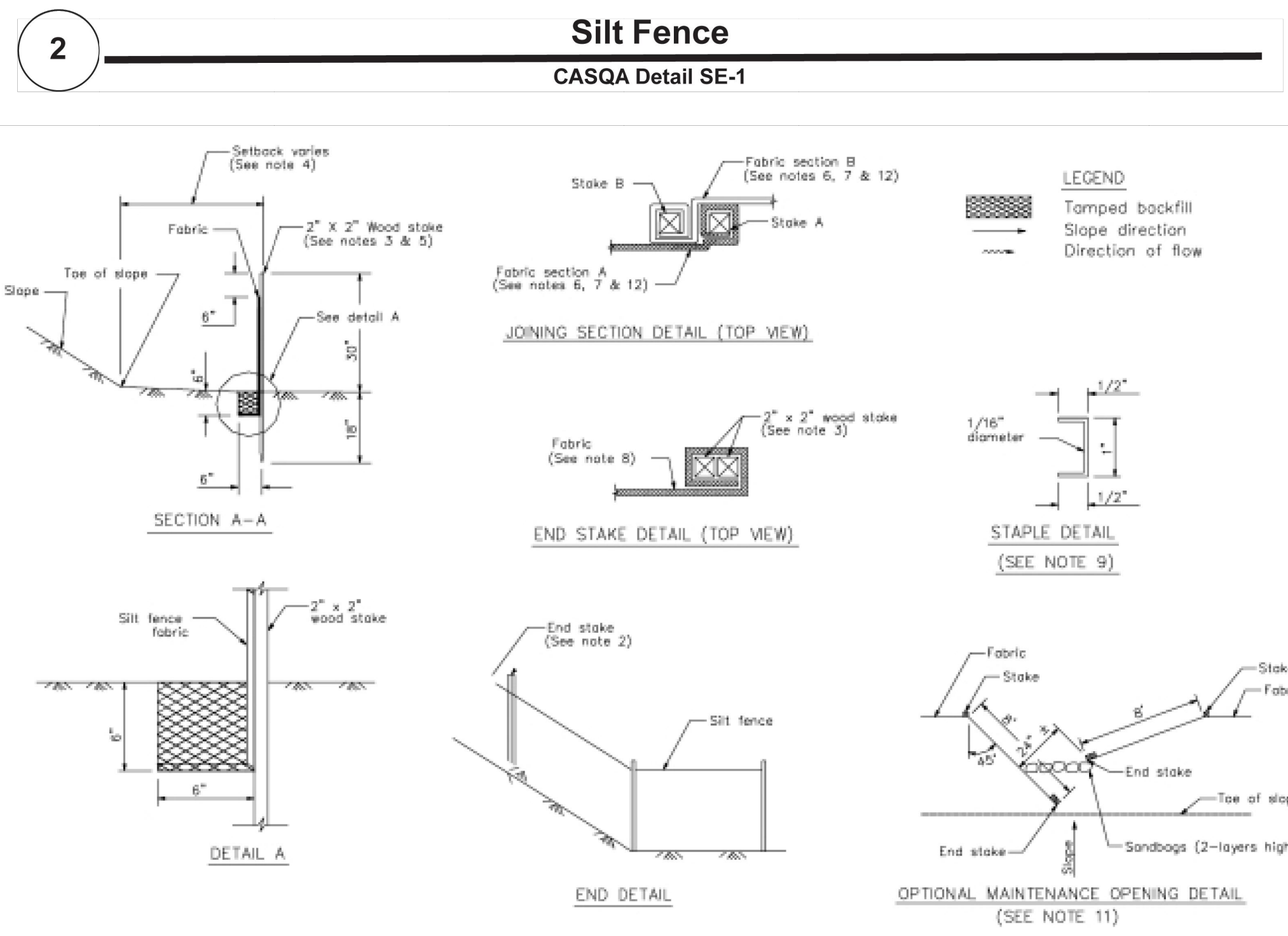
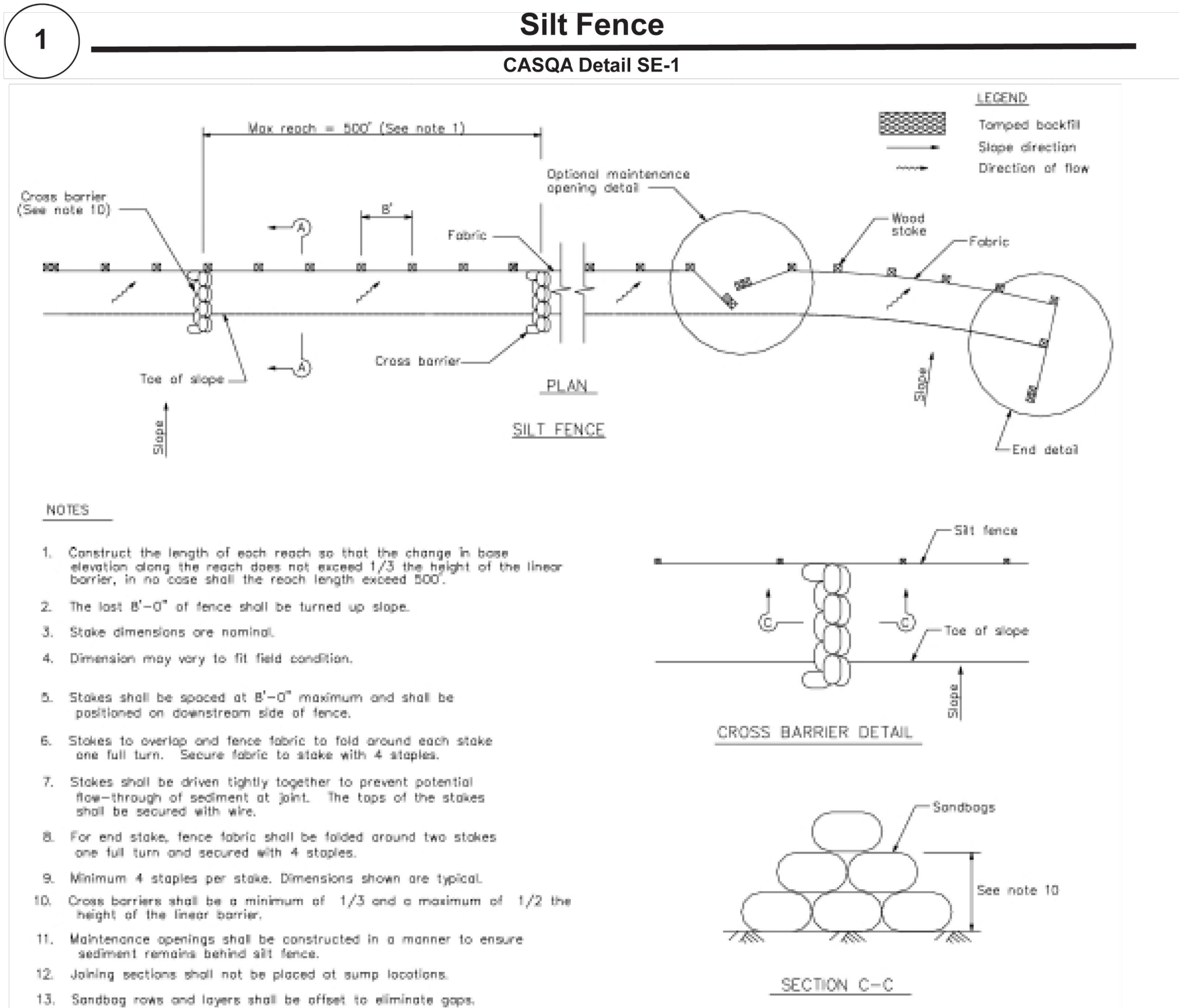
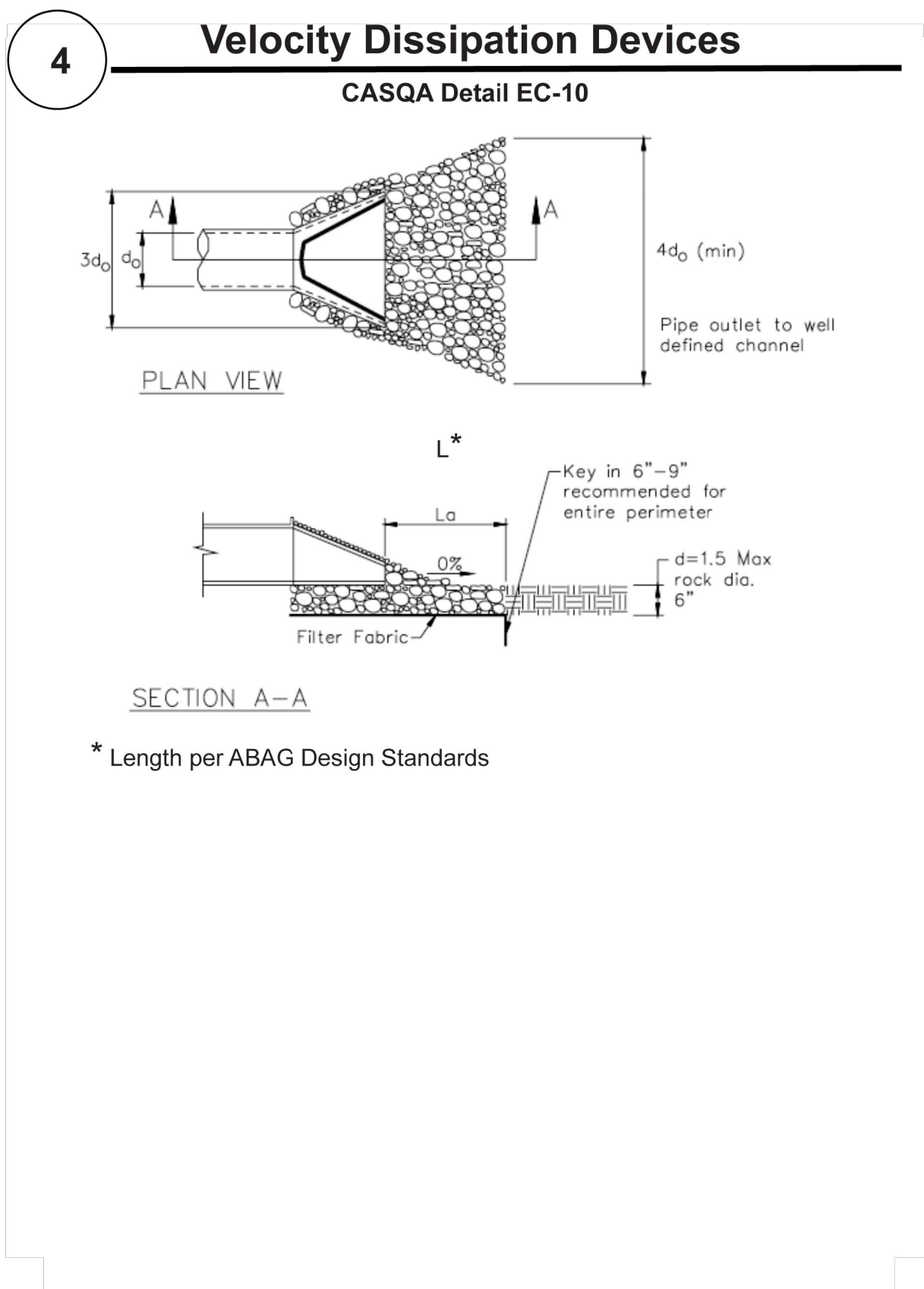
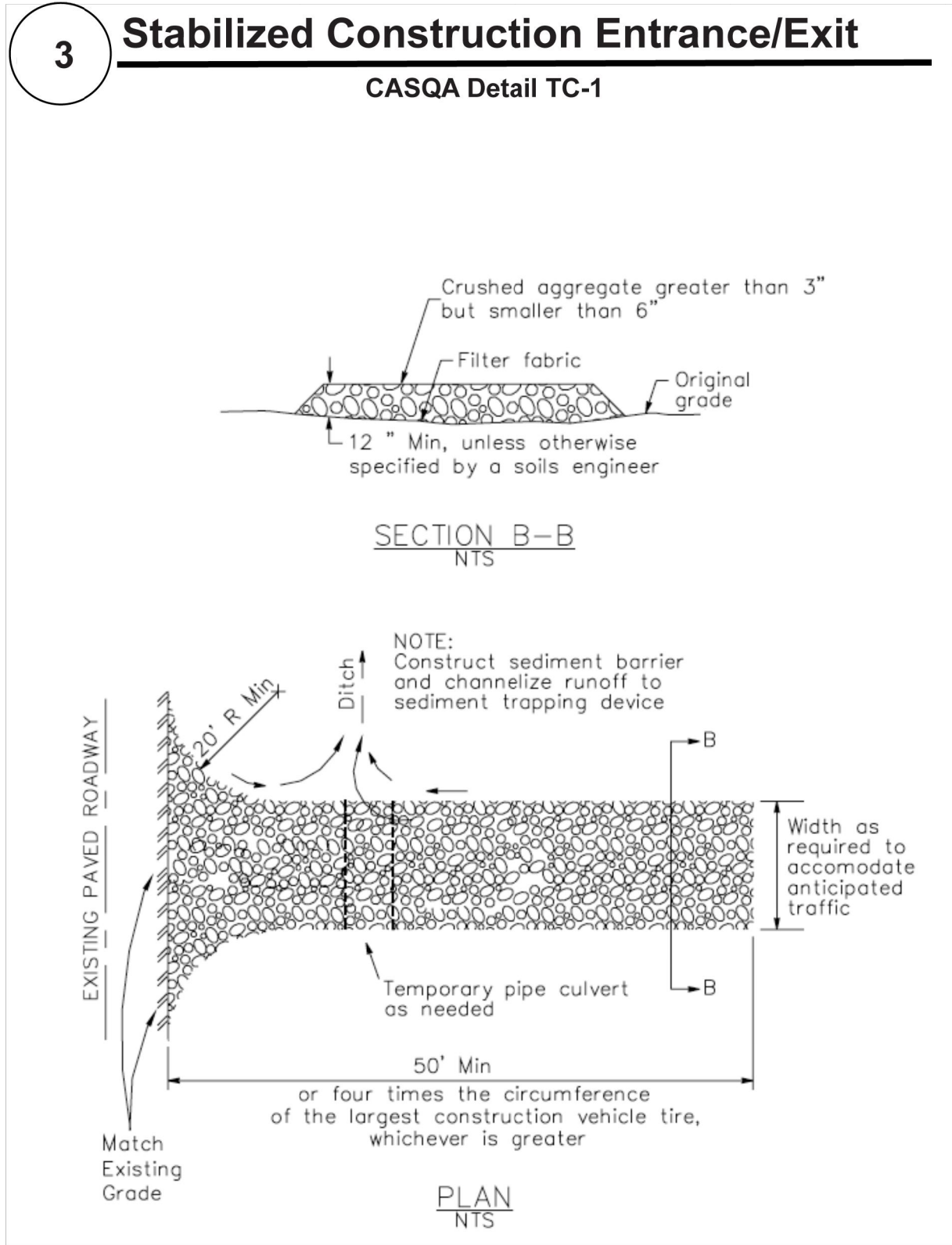
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Site Plan

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STANDARD BEST MANAGEMENT PRACTICE NOTES

- Solid and Demolition Waste Management:** Provide designated waste collection areas and containers on site away from streets, gutters, storm drains, and waterways, and arrange for regular disposal. Waste containers must be watertight and covered at all times except when waste is deposited. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C3) or latest.
- Hazardous Waste Management:** Provide proper handling and disposal of hazardous wastes by a licensed hazardous waste material hauler. Hazardous wastes shall be stored and properly labeled in sealed containers constructed of suitable materials. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-5 to C-6) or latest.
- Spill Prevention and Control:** Provide proper storage areas for liquid and solid materials, including chemicals and hazardous substances, away from streets, gutters, storm drains, and waterways. Spill control materials must be kept on site where readily accessible. Spills must be cleaned up immediately and contaminated soil disposed properly. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-7 to C-8, C-13 to C-14) or latest.
- Vehicle and Construction Equipment Service and Storage:** An area shall be designated for the maintenance, where on-site maintenance is required, and storage of equipment that is protected from stormwater run-on and runoff. Measures shall be provided to capture any waste oils, lubricants, or other potential pollutants and these wastes shall be properly disposed of off site. Fueling and major maintenance/repair, and washing shall be conducted off-site whenever feasible. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C9) or latest.
- Material Delivery, Handling and Storage:** In general, materials should not be stockpiled on site. Where temporary stockpiles are necessary and approved by the County, they shall be covered with secured plastic sheeting or tarp and located in designated areas near construction entrances and away from drainage paths and waterways. Barriers shall be provided around storage areas where materials are potentially in contact with runoff. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-11 to C-12) or latest.
- Handling and Disposal of Concrete and Cement:** When concrete trucks and equipment are washed on-site, concrete wastewater shall be contained in designated containers or in a temporary lined and watertight pit where wasted concrete can harden for later removal. If possible have concrete contractor remove concrete wash water from site. In no case shall fresh concrete be washed into the road right-of-way. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-15 to C-16) or latest.
- Pavement Construction Management:** Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent run-on and runoff pollution and properly disposing of wastes. Avoid paving in the wet season and reschedule paving when rain is in the forecast. Residue from saw-cutting shall be vacuumed for proper disposal. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-17 to C-18) or latest.
- Contaminated Soil and Water Management:** Inspections to identify contaminated soils should occur prior to construction and at regular intervals during construction. Remediating contaminated soil should occur promptly after identification and be specific to the contaminant identified, which may include hazardous waste removal. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-19 to C-20) or latest.
- Sanitary/Septic Water Management:** Temporary sanitary facilities should be located away from drainage paths, waterways, and traffic areas. Only licensed sanitary and septic waste haulers should be used. Secondary containment should be provided for all sanitary facilities. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C-21) or latest.
- Inspection & Maintenance:** Areas of material and equipment storage sites and temporary sanitary facilities must be inspected weekly. Problem areas shall be identified and appropriate additional and/or alternative control measures implemented immediately, within 24 hours of the problem being identified.

STANDARD EROSION CONTROL NOTES

- Sediment Control Management:**
 - Tracking Prevention & Clean Up:** Activities shall be organized and measures taken as needed to prevent or minimize tracking of soil onto the public street system. A gravel or proprietary device construction entrance/exit is required for all sites. Clean up of tracked material shall be provided by means of a street sweeper prior to an approaching rain event, or at least once at the end of each workday that material is tracked, or, more frequently as determined by the County Inspector. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages B-31 to B-33) or latest.
 - Storm Drain Inlet and Catch Basin Inlet Protection:** All inlets within the vicinity of the project and within the project limits shall be protected with gravel bags placed around inlets or other inlet protection. At locations where exposed soils are present, staked fiber roles or staked silt fences can be used. Inlet filters are not allowed due to clogging and subsequent flooding. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages B-49 to B-51) or latest.
 - Storm Water Runoff:** No storm water runoff shall be allowed to drain in to the existing and/or proposed underground storm drain system or other above ground watercourses until appropriate erosion control measures are fully installed.
 - Dust Control:** The contractor shall provide dust control in graded areas as required by providing wet suppression or chemical stabilization of exposed soils, providing for rapid clean up of sediments deposited on paved roads, furnishing construction road entrances and vehicle wash down areas, and limiting the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.
 - Stockpiling:** Excavated soils shall not be placed in streets or on paved areas. Borrow and temporary stockpiles shall be protected with appropriate erosion control measures (tarps, straw bales, silt fences, etc.) to ensure silt does not leave the site or enter the storm drain system or neighboring watercourse.

- Erosion Control:** During the rainy season, all disturbed areas must include an effective combination of erosion and sediment control. It is required that temporary erosion control measures are applied to all disturbed soil areas prior to a rain event. During the non-rainy season, erosion control measures must be applied sufficient to control wind erosion at the site.
- Inspection & Maintenance:** Disturbed areas of the Project's site, locations where vehicles enter or exit the site, and all erosion and sediment controls that are identified as part of the Erosion Control Plans must be inspected by the Contractor before, during, and after storm events, and at least weekly during seasonal wet periods. Problem areas shall be identified and appropriate additional and/or alternative control measures implemented immediately, within 24 hours of the problem being identified.
- Project Completion:** Prior to project completion and signoff by the County Inspector, all disturbed areas shall be reseeded, planted, or landscaped to minimize the potential for erosion on the subject site.
- It shall be the Owner's/Contractor's responsibility to maintain control of the entire construction operation and to keep the entire site in compliance with the erosion control plan.
- Erosion and sediment control best management practices shall be operable year round or until vegetation is fully established on landscaped surfaces.

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At Maintenance Barn**

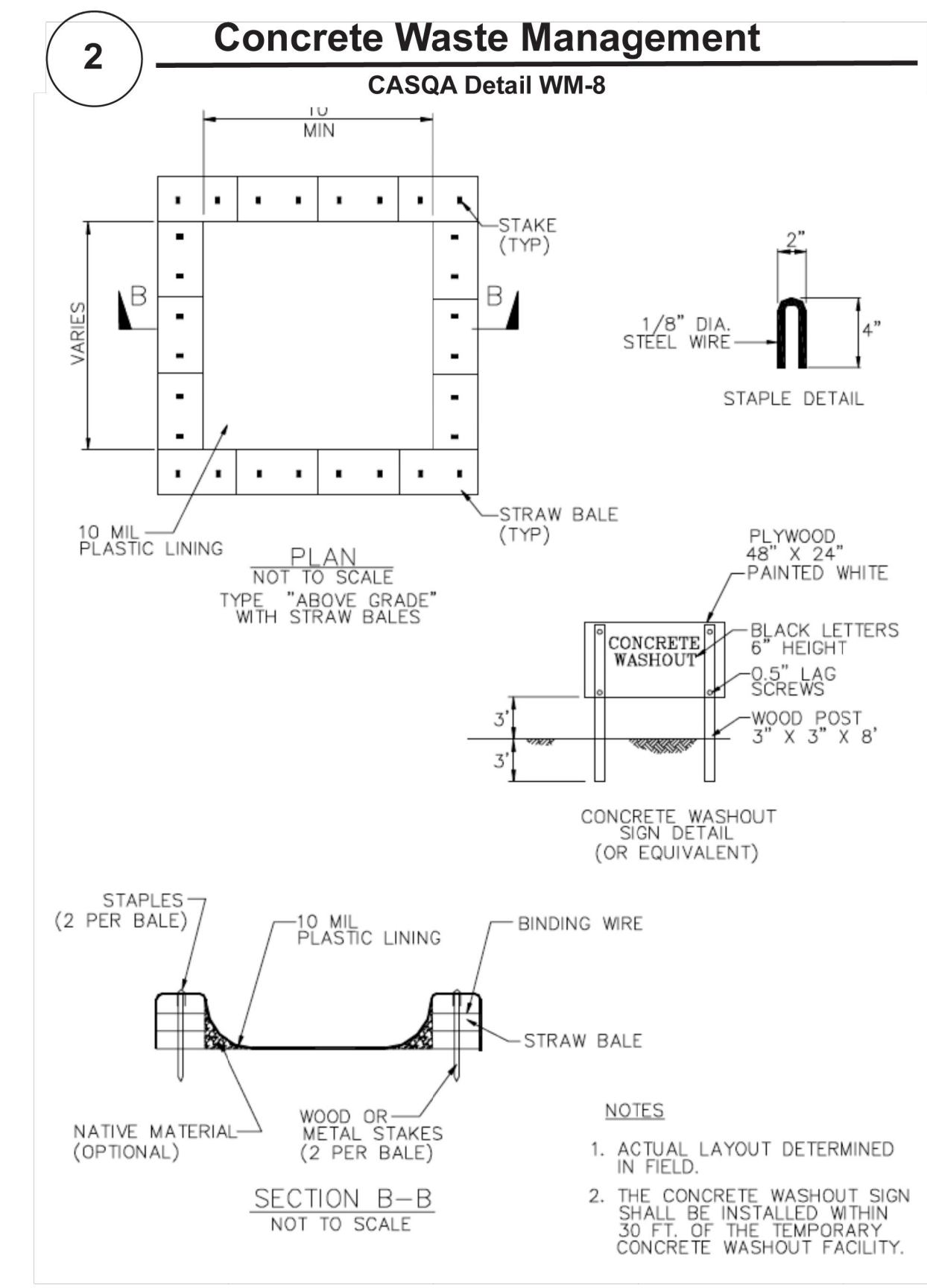
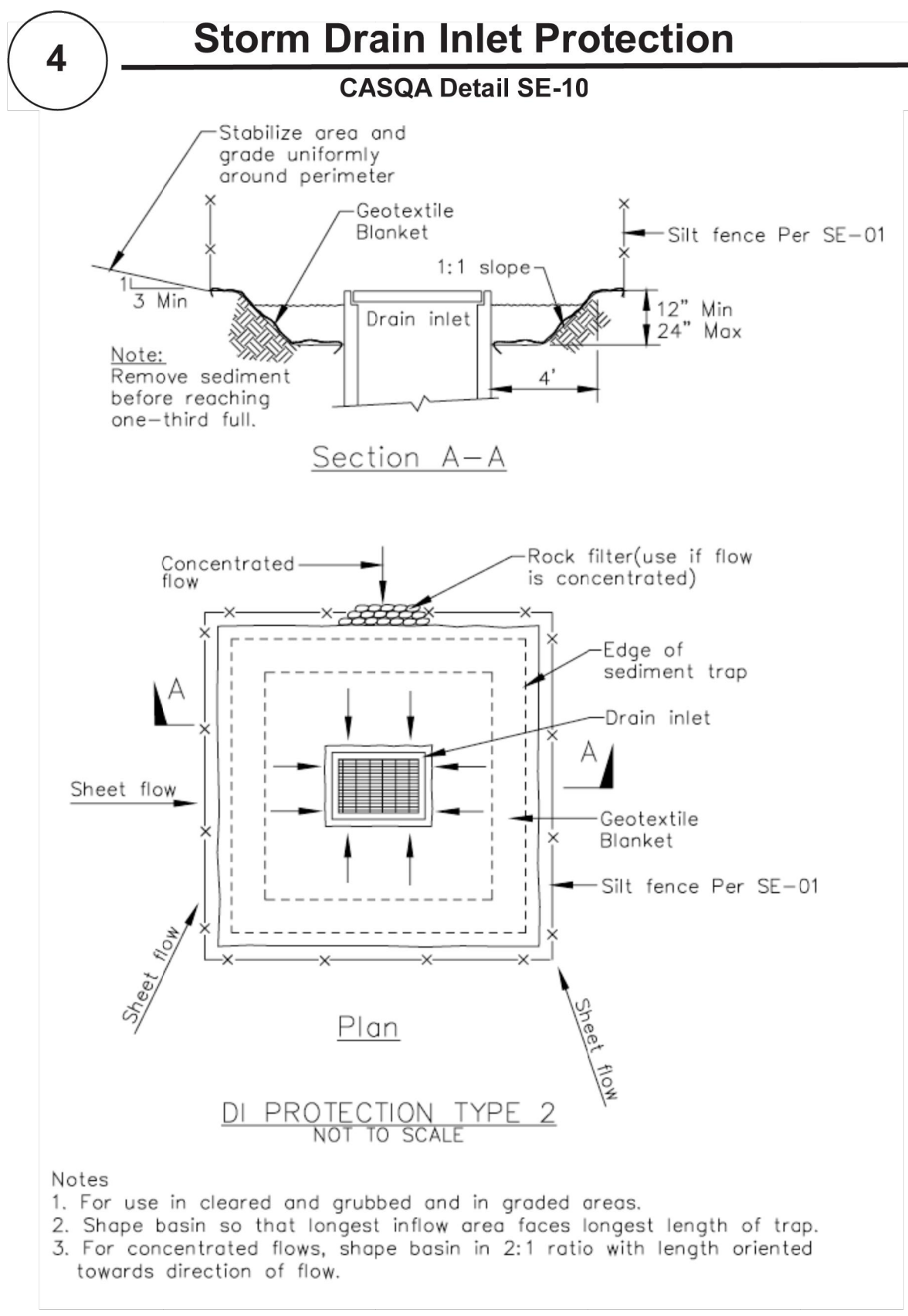
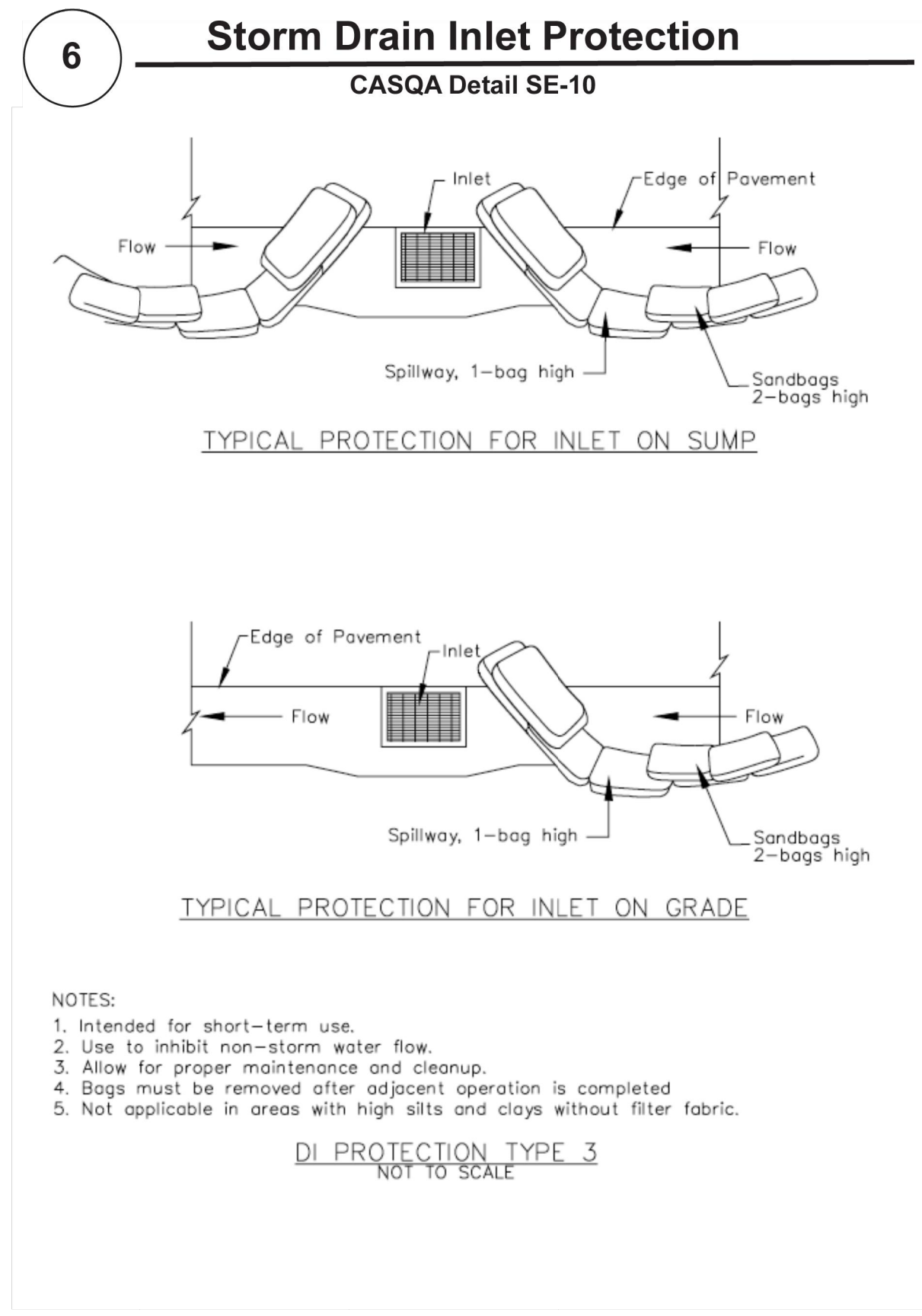
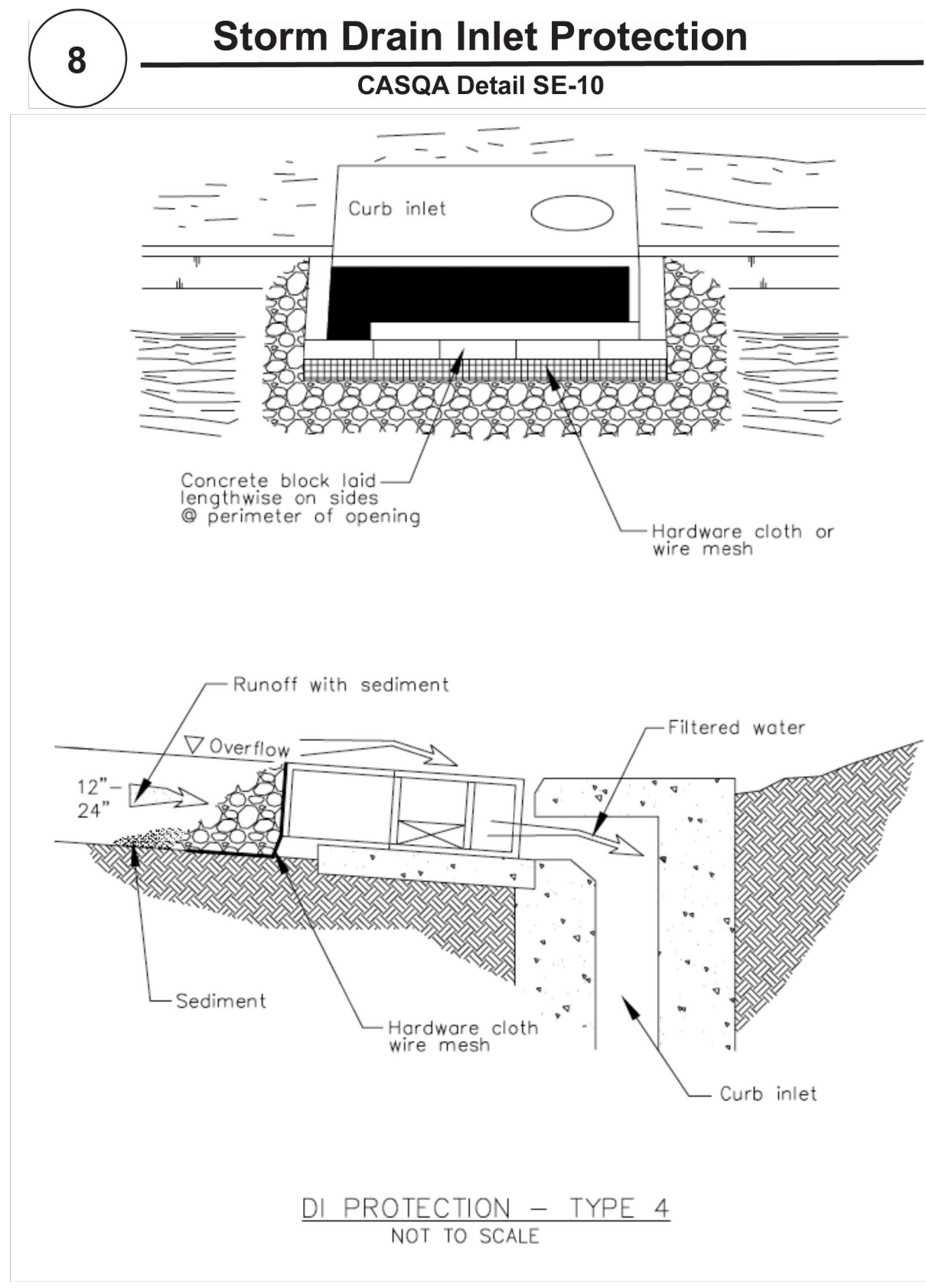
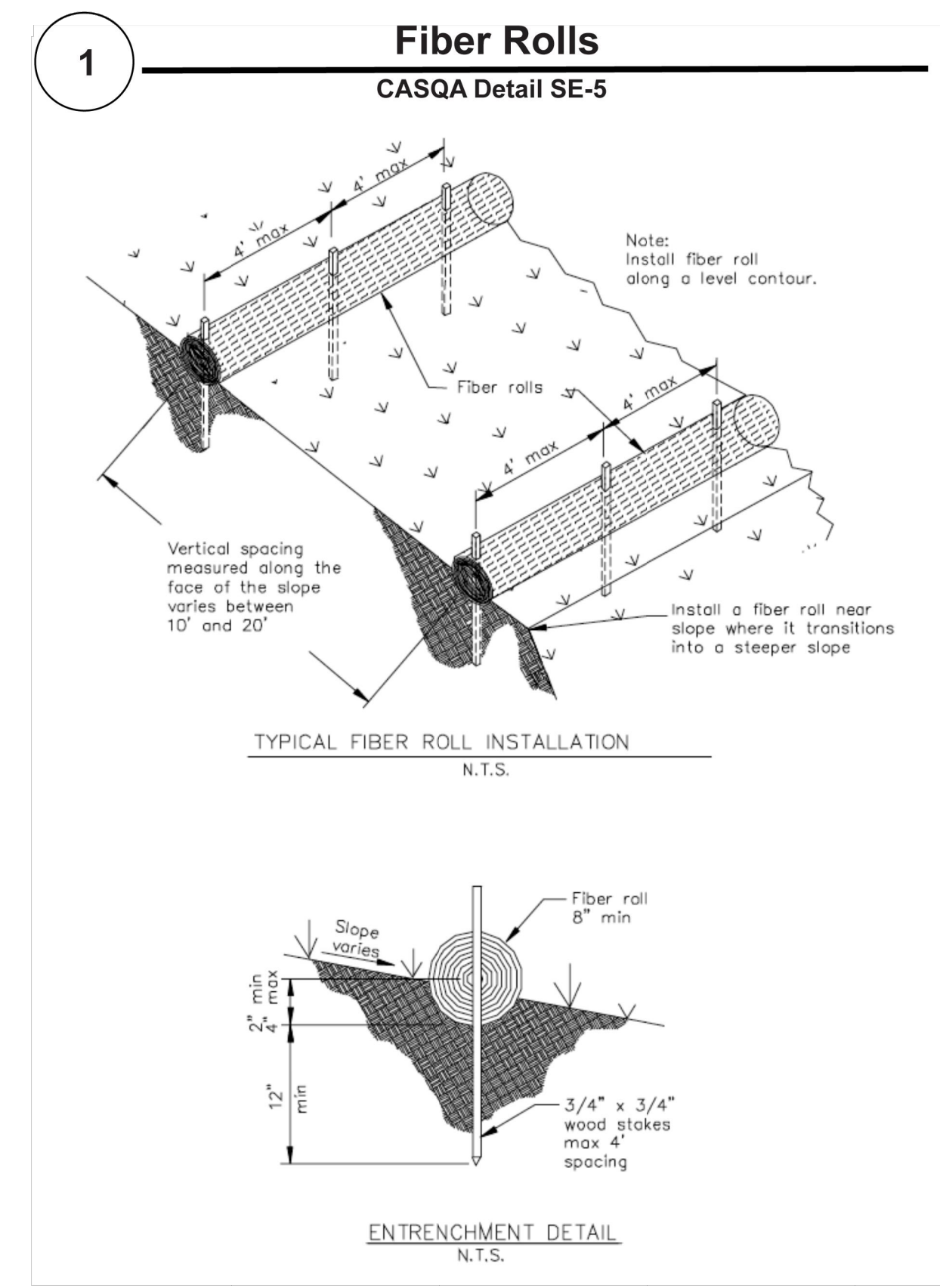
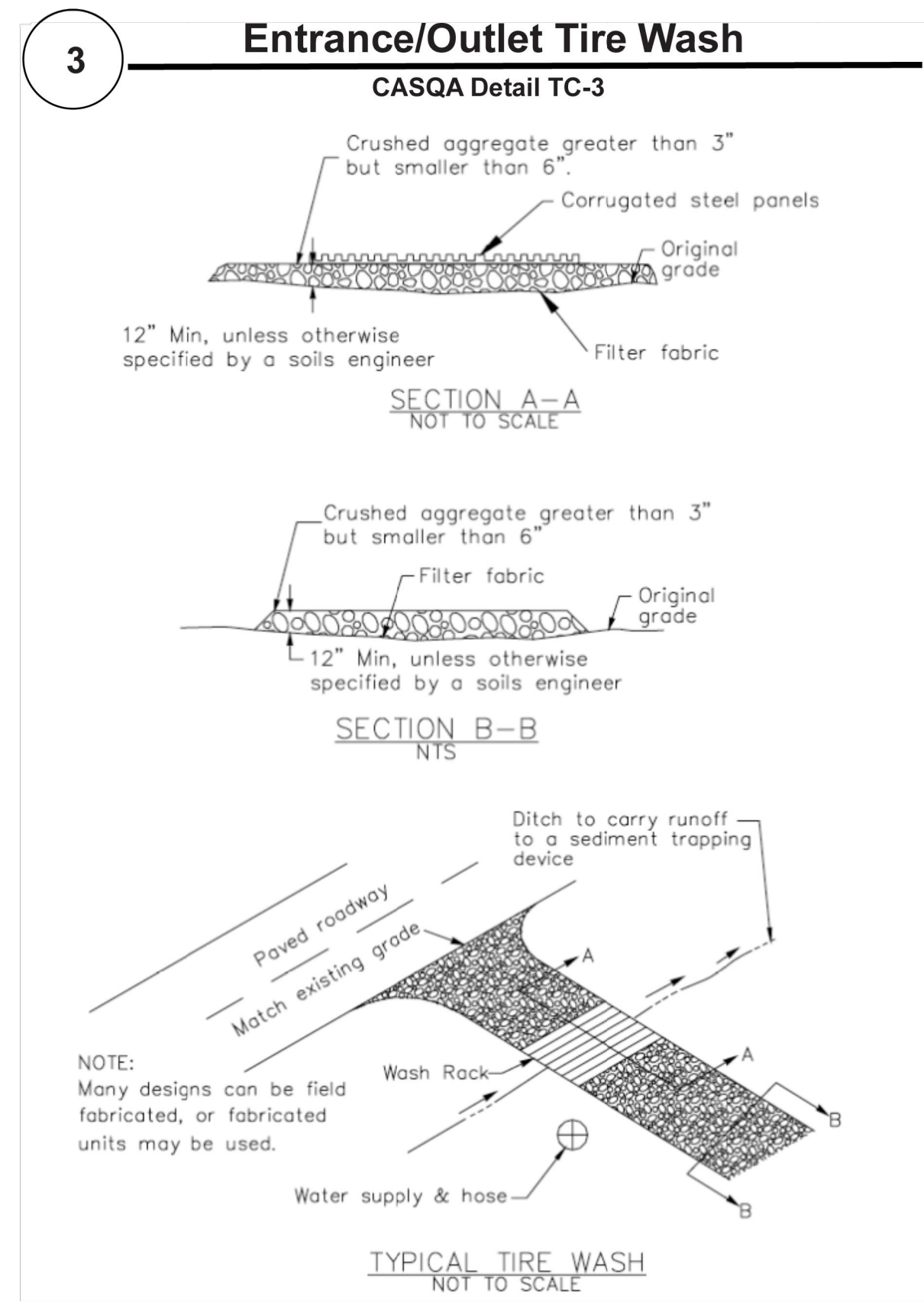
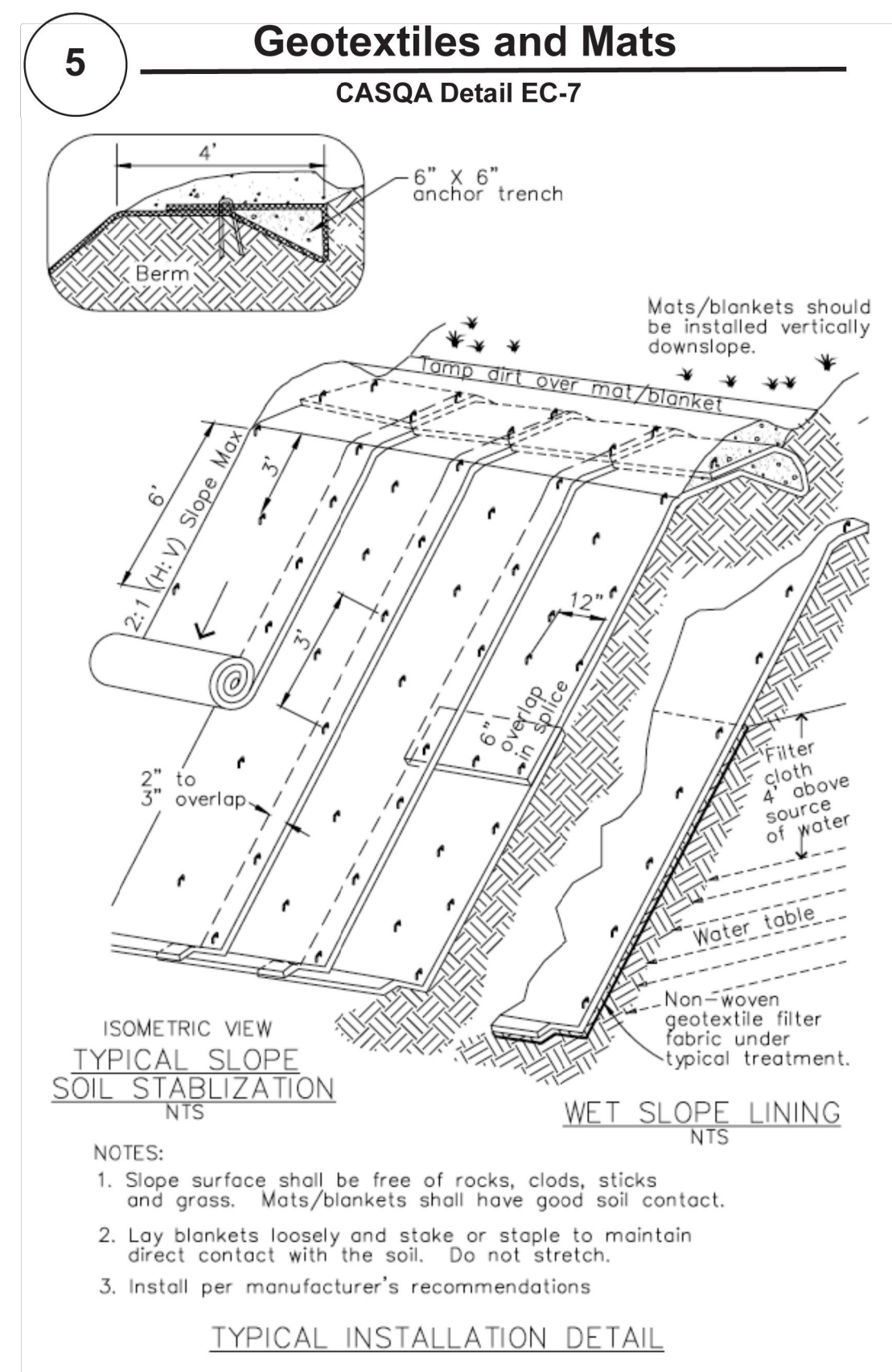
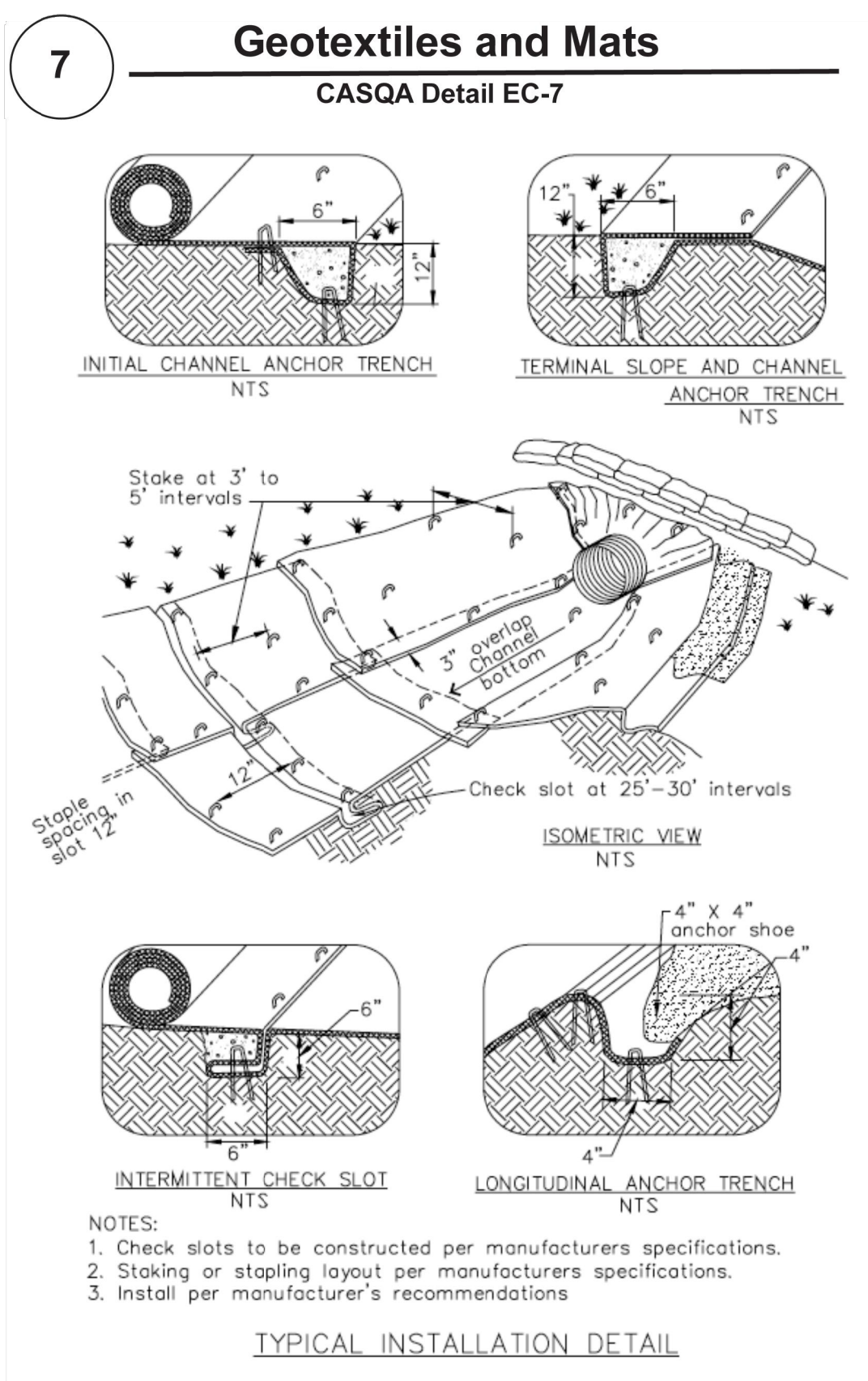
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Stormwater Management	
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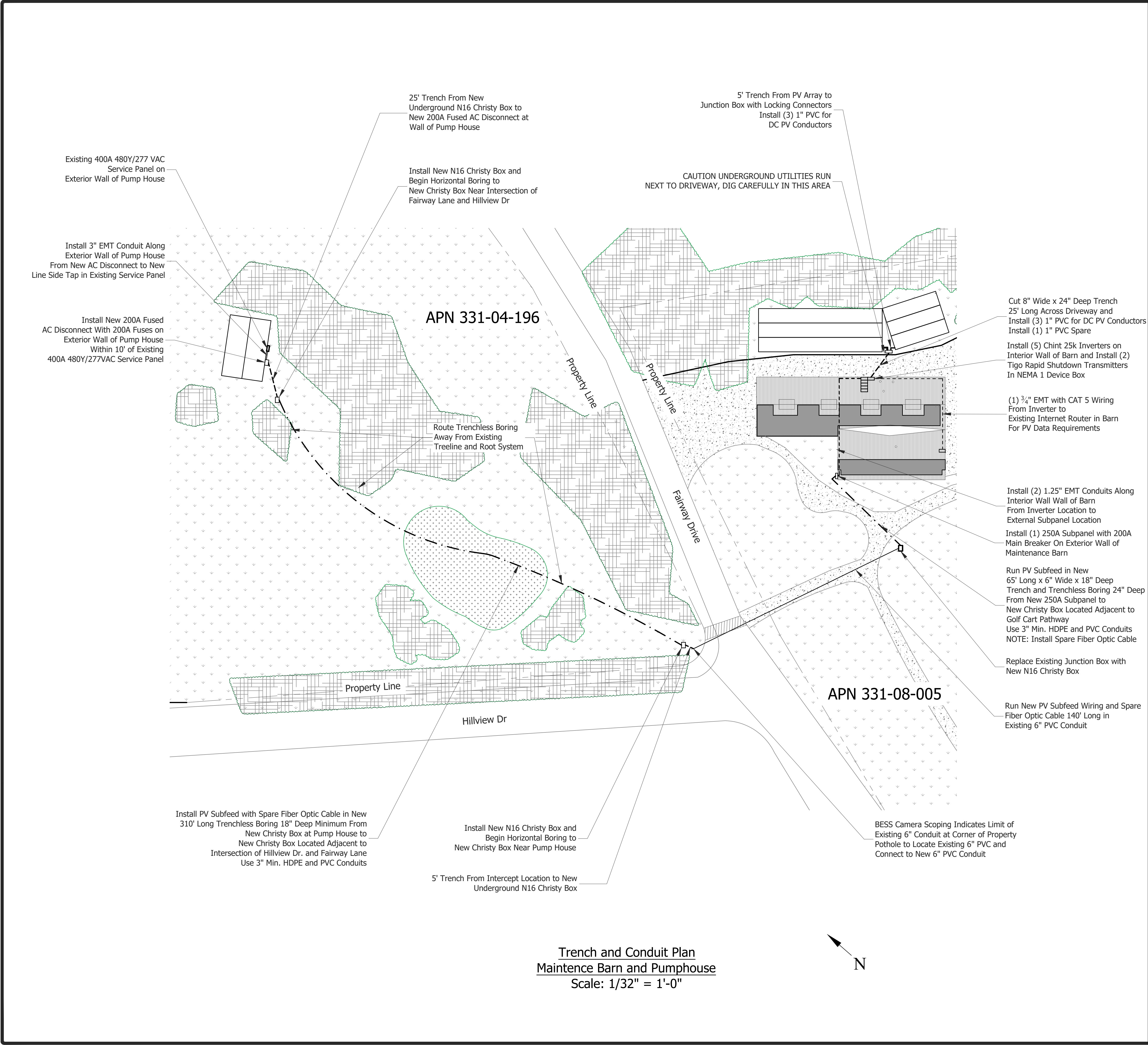
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Stormwater
Management

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Trench and Conduit Plan
Maintenance Barn and Pumphouse
Scale: 1/32" = 1'-0"

Legend:

- PV Array Outline
 - Trina Solar TSM-NEG19RC.20
 - Quantity = (240) Modules
- Underground PVC Conduit - Trench Here
- Underground PVC Conduit - Trenchless Boring
- Existing Underground Conduit
- Above Ground Metallic Conduit
- PV Equipment Location, See Each Callout for Specific Equipment Description

Trenching Notes:

- All Trenches to be 18" or 24" Deep to Top of Conduit and 6" Wide U.O.N.
- All New Christy Boxes to Be Traffic Rated.
- Use Private Locate Service to Identify all Utilities Within Excavation Area before Starting Underground Construction.
- Underground Boring Requires Pot Holing Around Existing Utilities to Visually Locate Existing Utilities and Ensure Clearance to Boring Equipment.
- Install all DC, AC and Low Voltage Conductors in Separate Raceways and Enclosures.
- All Utility Lines Including Plumbing Should be Bedded with at Least 6 Inches Over the Pipe or Conduit with 1/4" 3/8" or 3/4" Crushed Rock or Well Graded Sand Conforming to Pipe Manufacturers Requirements. Sand and Gravel Shall Be Compacted In Place.
- The Remaining Excavated Area Should Be Backfilled with Native On Site Material or Imported Fill and Compacted to at Least 90% Relative Maximum Density and 95% for the Upper 12". Backfill Should be placed in Uniform 8" Lifts and Compacted. Jetting of Trench Backfill is not Recommended. Geotech Engineer shall be Notified 48 Hours before the Start of any Utility Trench Backfill Operations.
- See Geotechnical Report by Silicon Valley Soil Engineering File No. SV1071C Dated May 2, 2024 for Additional Details Regarding Underground Construction.

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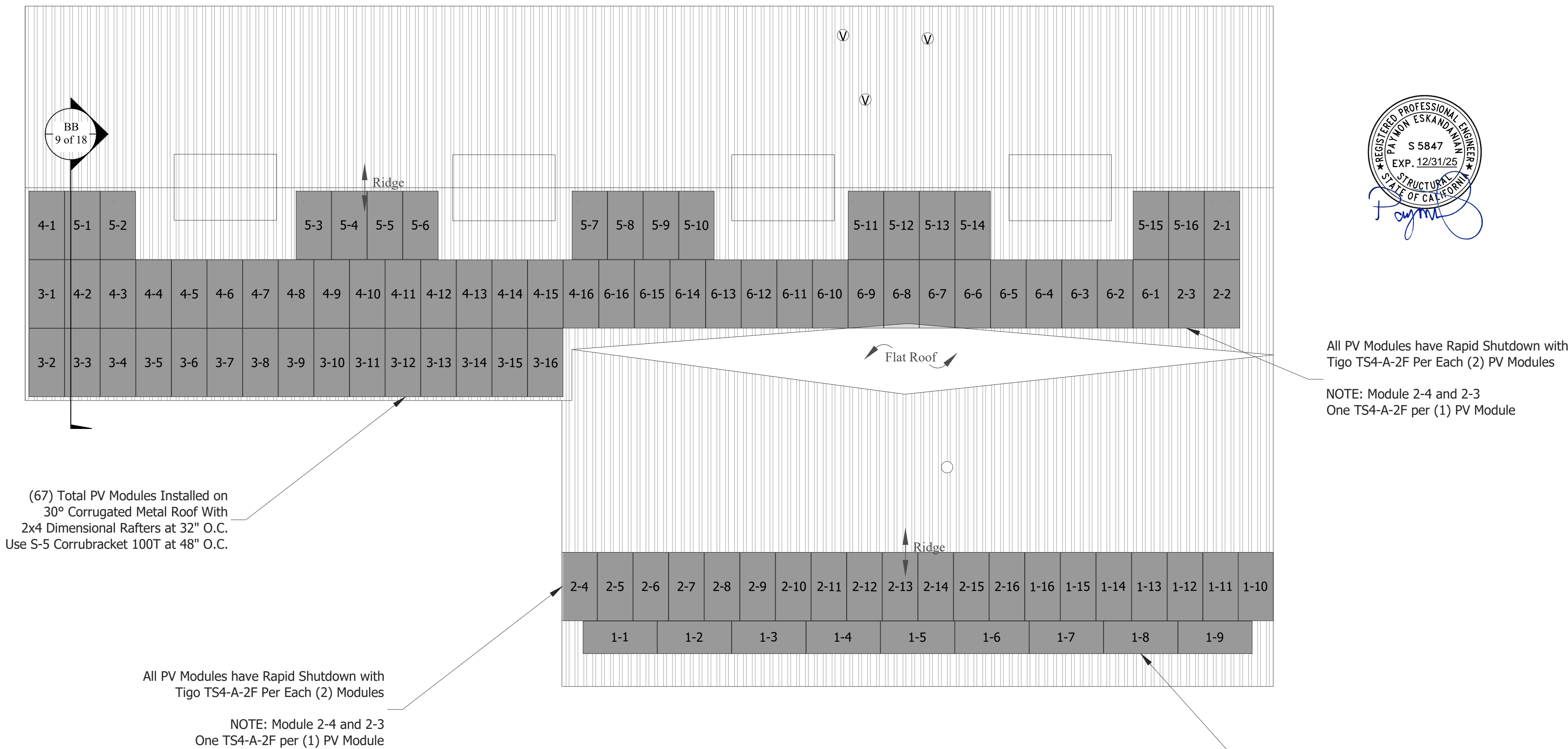
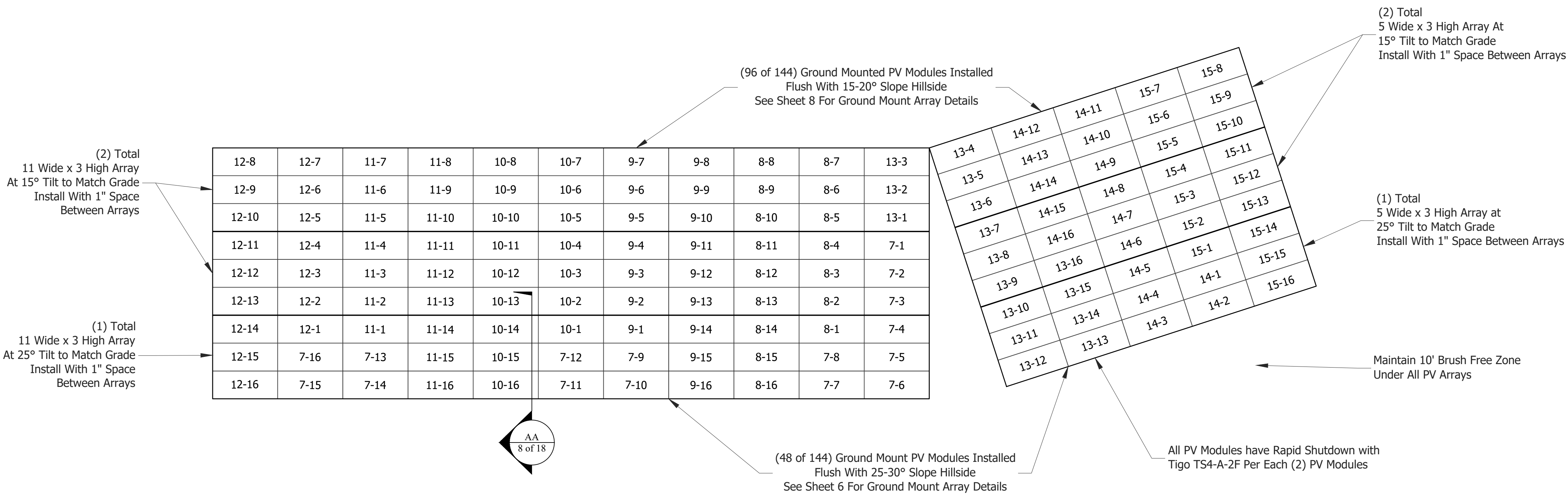
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Conduit Plan

Sheet	6 of 18
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Legend:

- X-XX - (240) Trina Solar TSM-NEG19RC.20
600W PV Modules With
(121) Tigo TS4-A-2F Shutdown Box
Individual Module Dimensions are
93.9" X 44.7" X 1.18"
X-XX Indicates String Number
- Ⓥ - Existing Rooftop Plumbing Vent

Note:

1. Install All Waterproof Metallic Conduit Where Necessary to Support and Protect Wiring.
2. Use Solar Scrim Or Equivalent Underneath Ground Mount Array to Restrict Access to Wiring
3. Final DC Conduit Location To Be Verified In Field
4. All Modules Mounted Flush on 30° and 22° Roof Surfaces or on 15° or 25° Tilt Ground Mount System.
5. New 22 Ga. Aluminum Corrugated Metal Roofing to be Installed on Barn Under Separate Permit
6. Junction Boxes to be Mounted Under PV Arrays and Located in the Field
7. Use Locking Connectors in Accessible Location in Enclosure at Ground Mount for Equipment Disconnect
8. Barn is Not a Habitable Structure - Setbacks and Pathways are Not Required

LAGCC - PV Installation
At Maintenance Barn

Photovoltaic Roof and Ground Mount Installation
1560 Fairway Drive. Los Altos, CA 94024

COBALT POWER SYSTEMS INC.

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MAIN: (650) 938-9574 | FAX (650) 938-9573
2557 WYANDOTTE ST. | MOUNTAIN VIEW, CA 94043

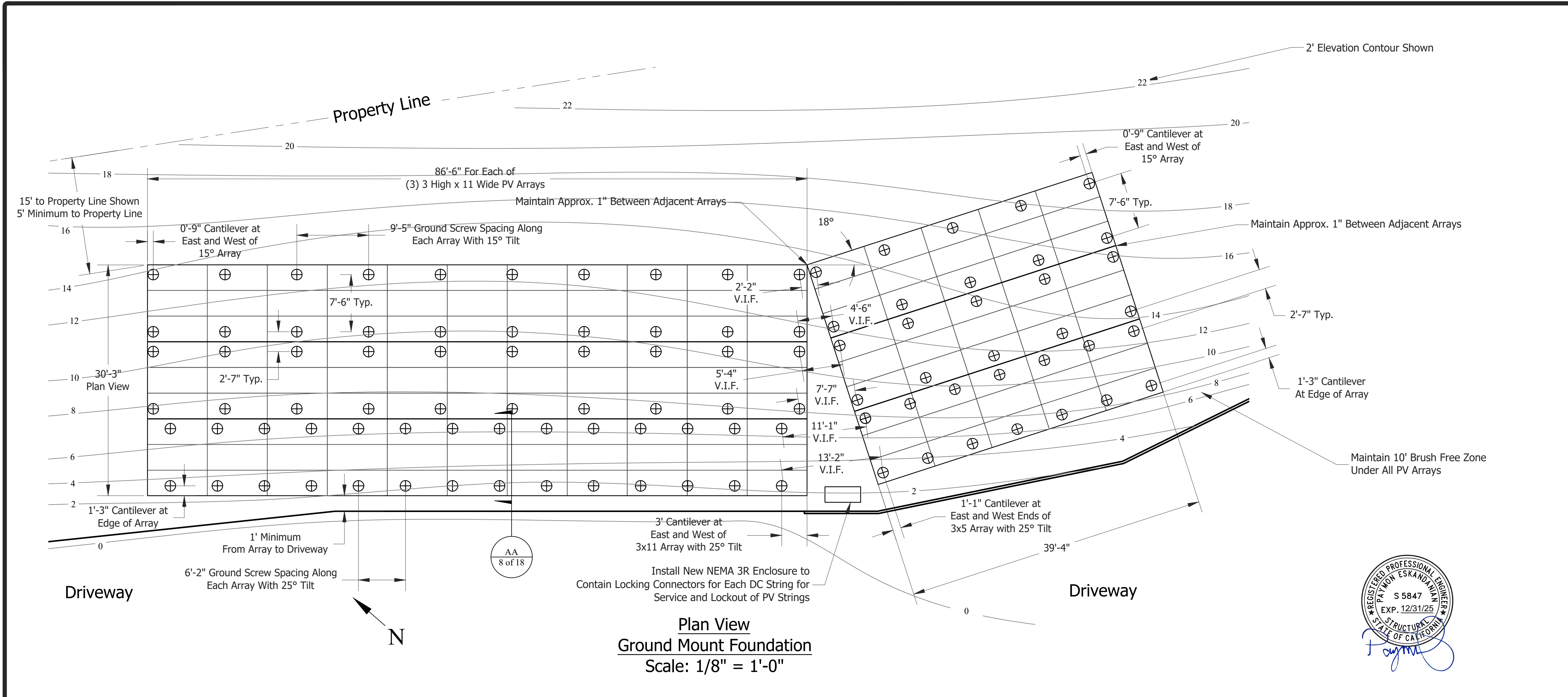
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Rev	Date	Description
1	1.15.2025	90% Plans For Review
2	2.21.2025	100% Plans Submission

PV Array Layout

Sheet	7 of 18
Scale	As Shown
Prepared By	VRJ
Job Number	3920
Job Code	1560CountryClub3

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Legend:

- (102) Foundations for (6) Proposed Ground Mount Arrays
- PV Ground Mount Array at 15° or 25°
Trina Solar TSM-NEG19RC.20
Quantity = (144) Modules
Sqft = 29.1 Per Module
Total Module sqft = 4,190 sqft
Weight = 74.3 lbs. Each
Total Module Weight= 10,700 lbs.

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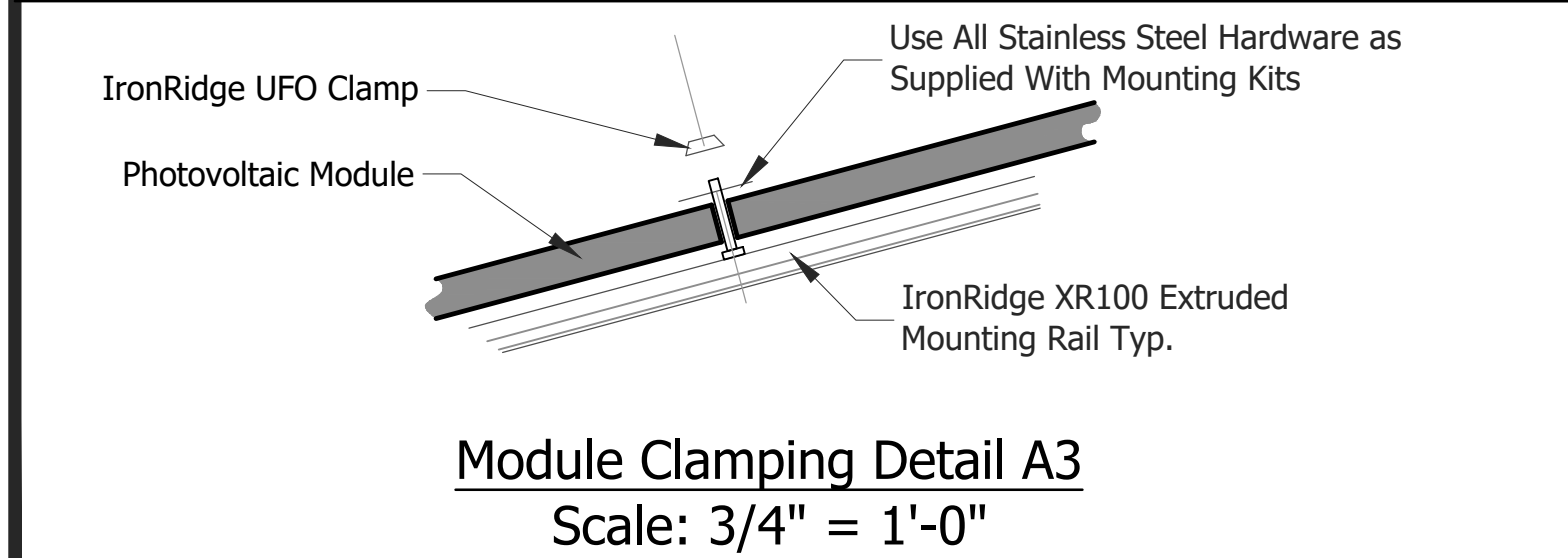
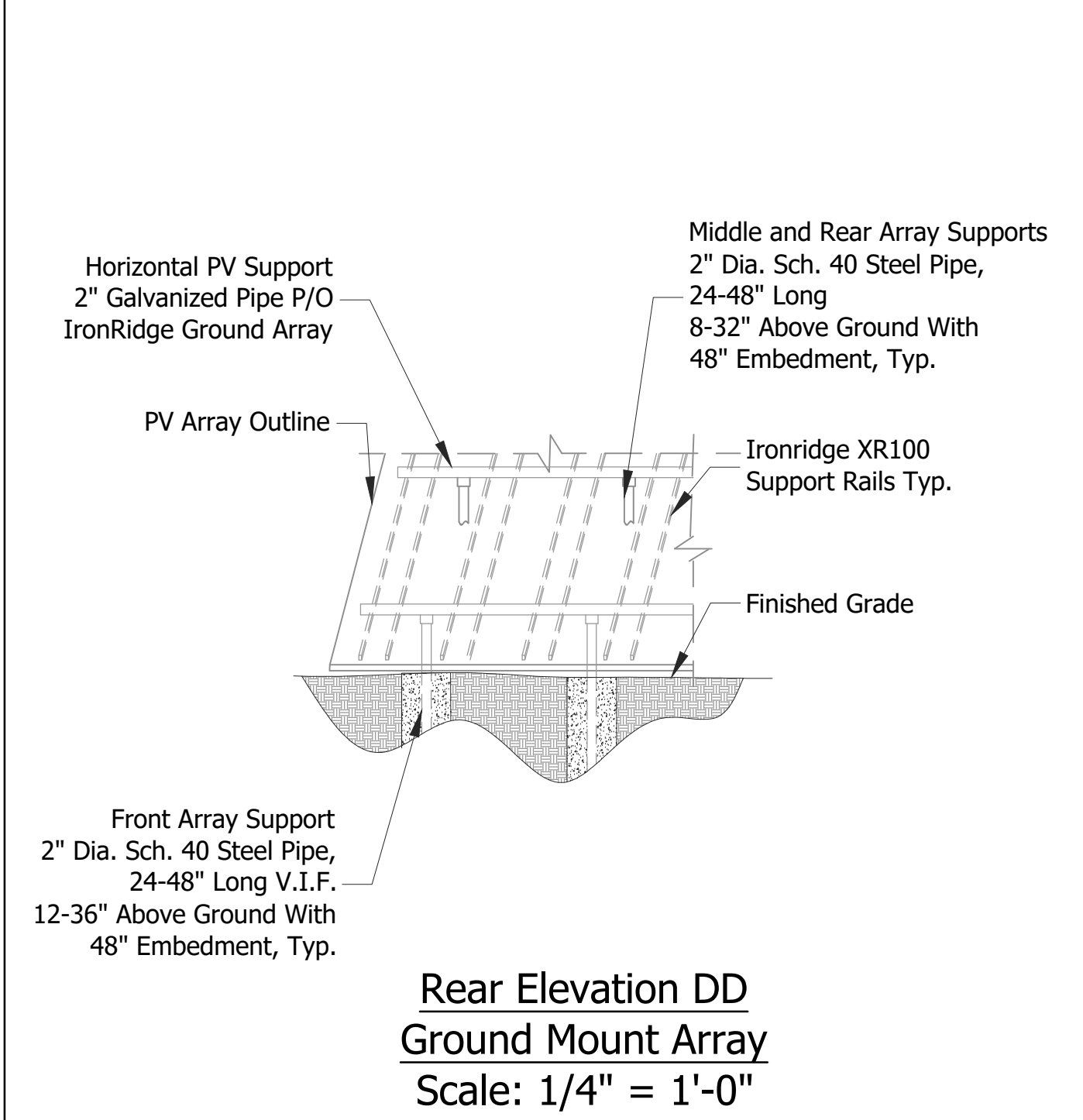
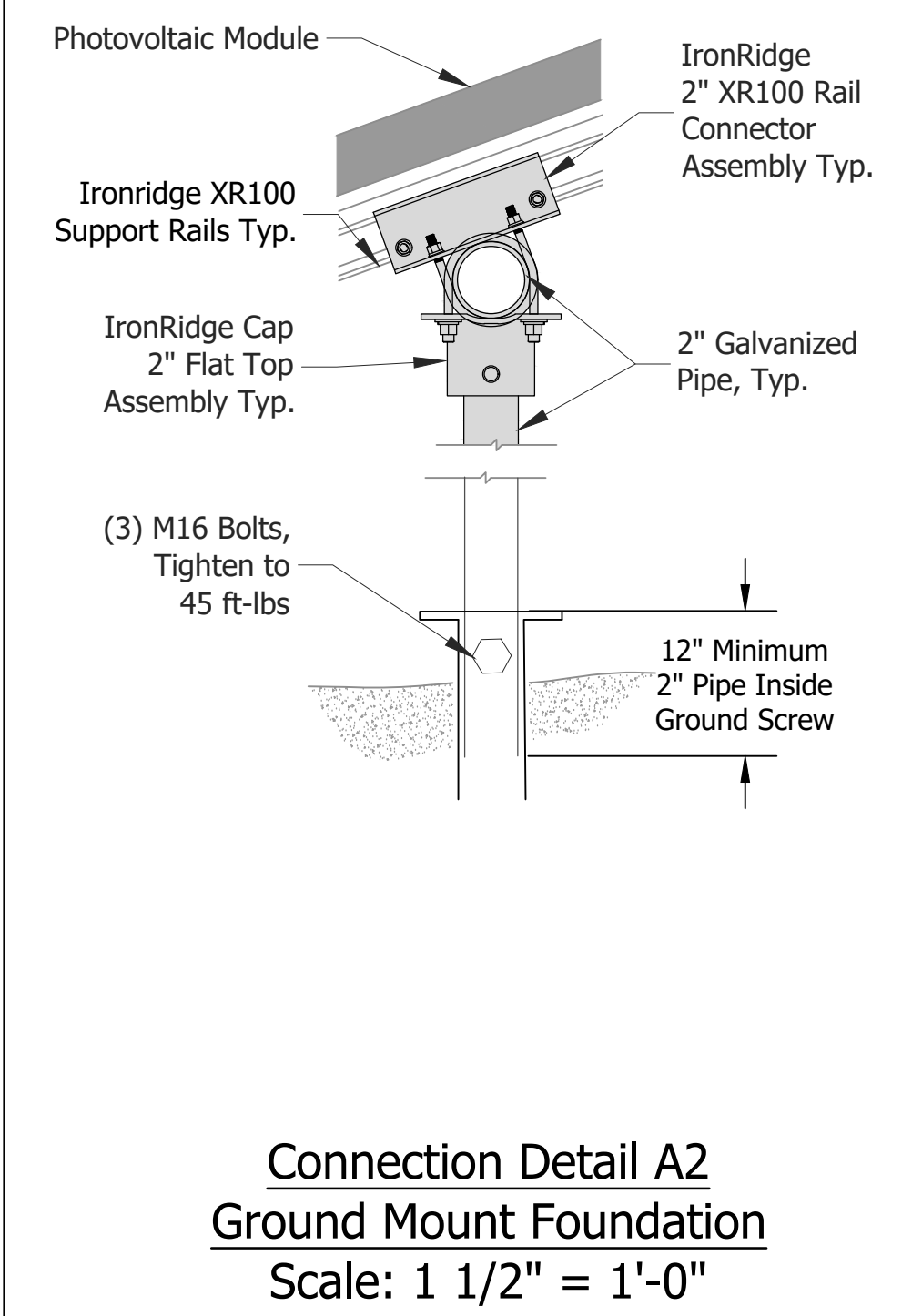
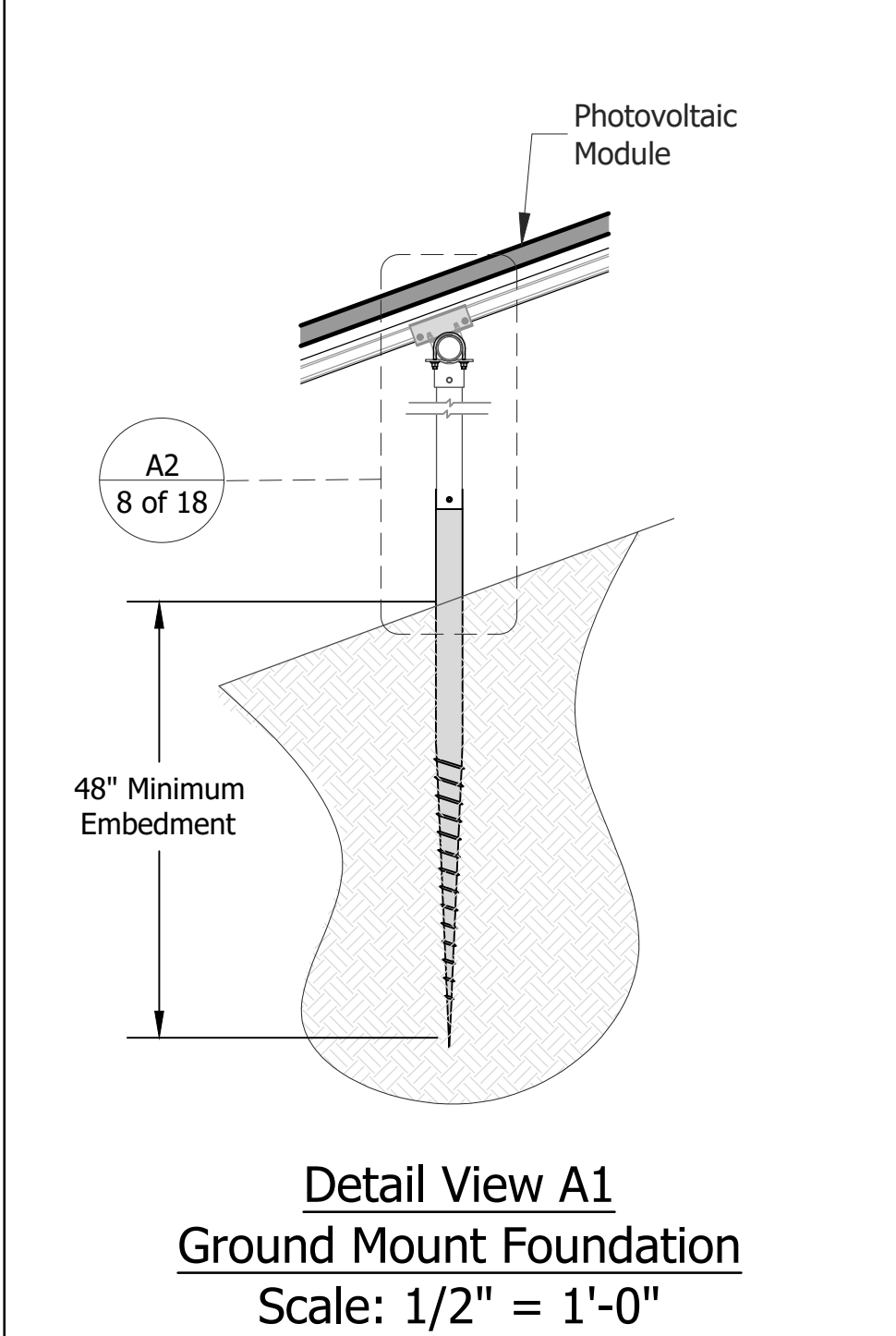
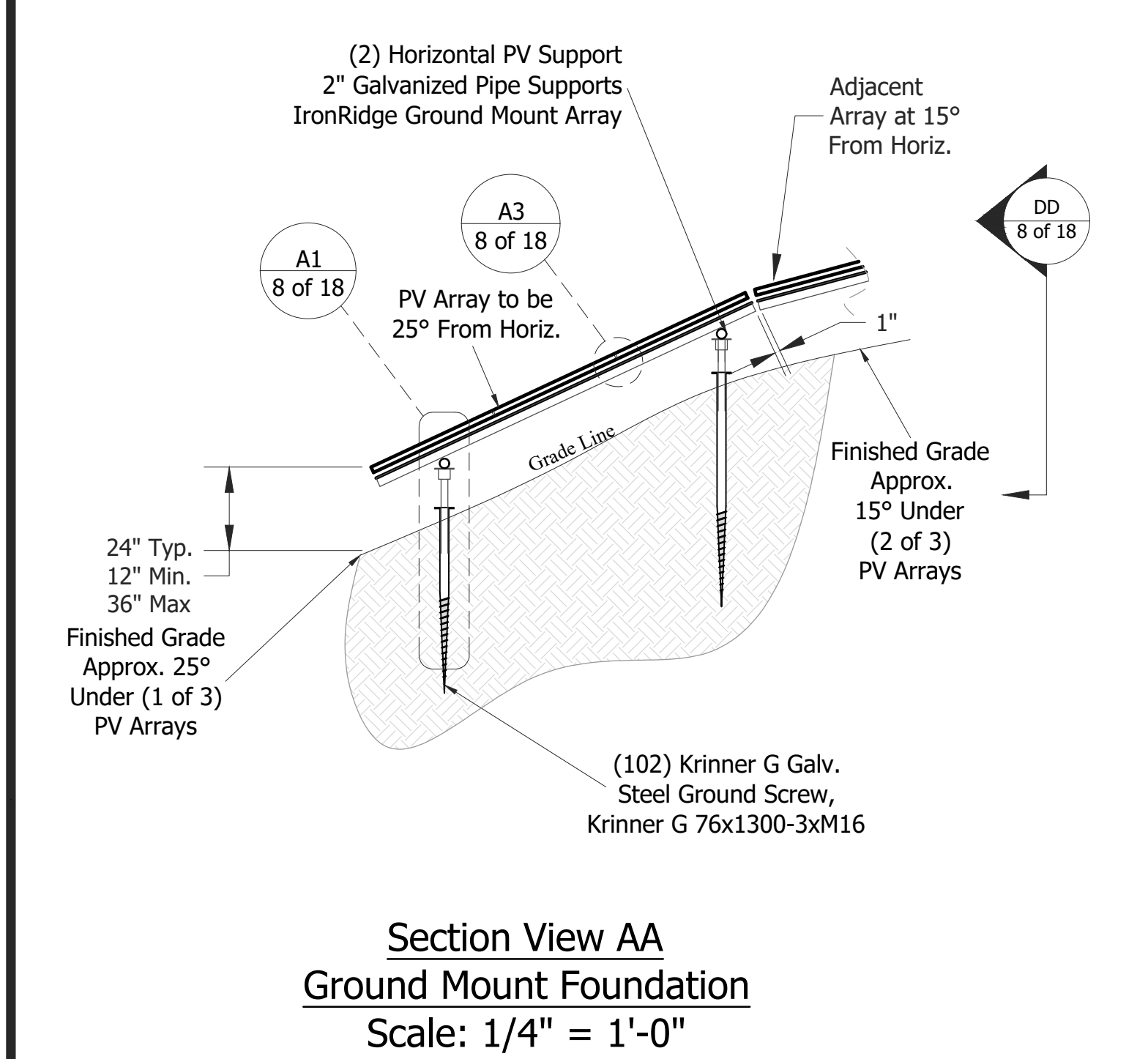
Ground Mount
Array

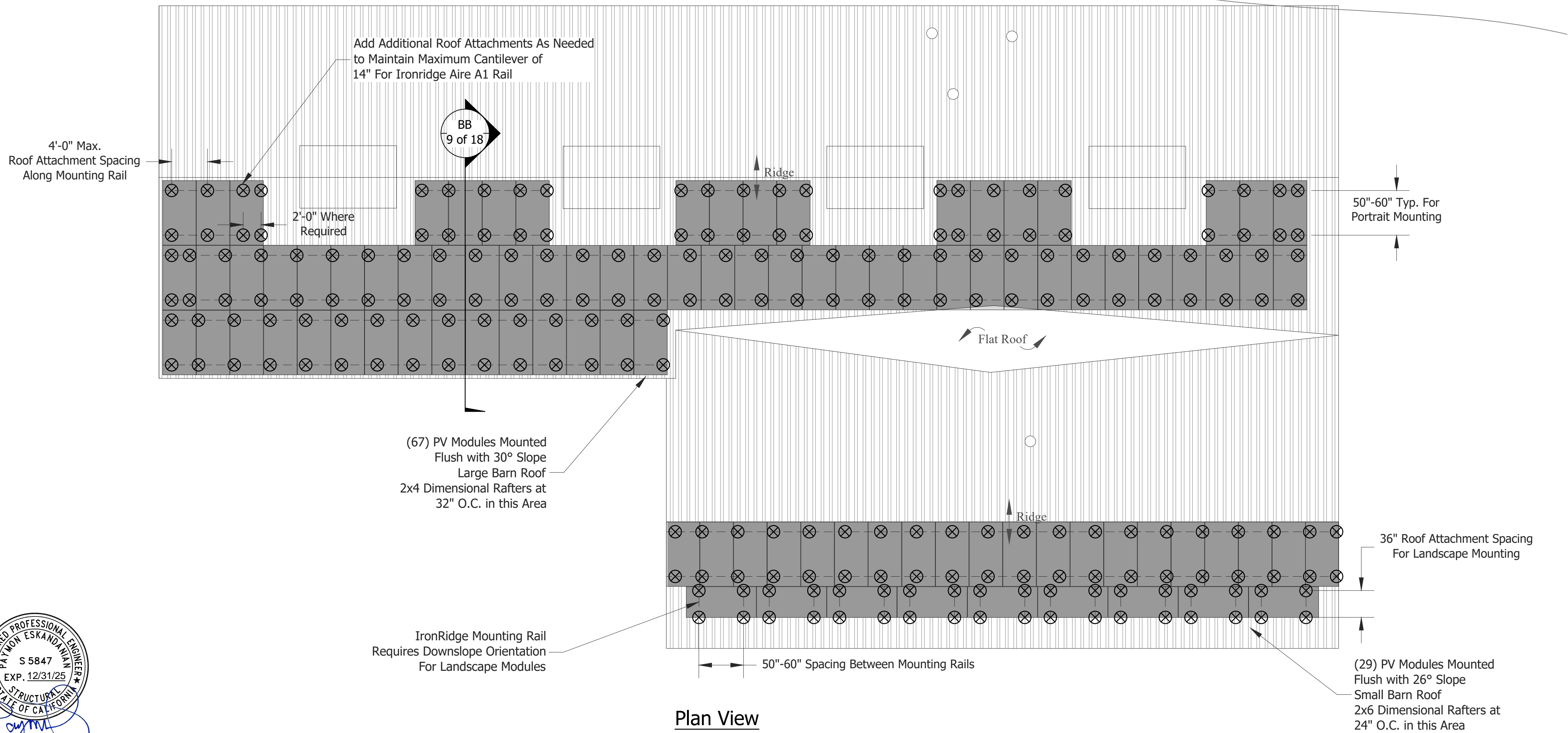
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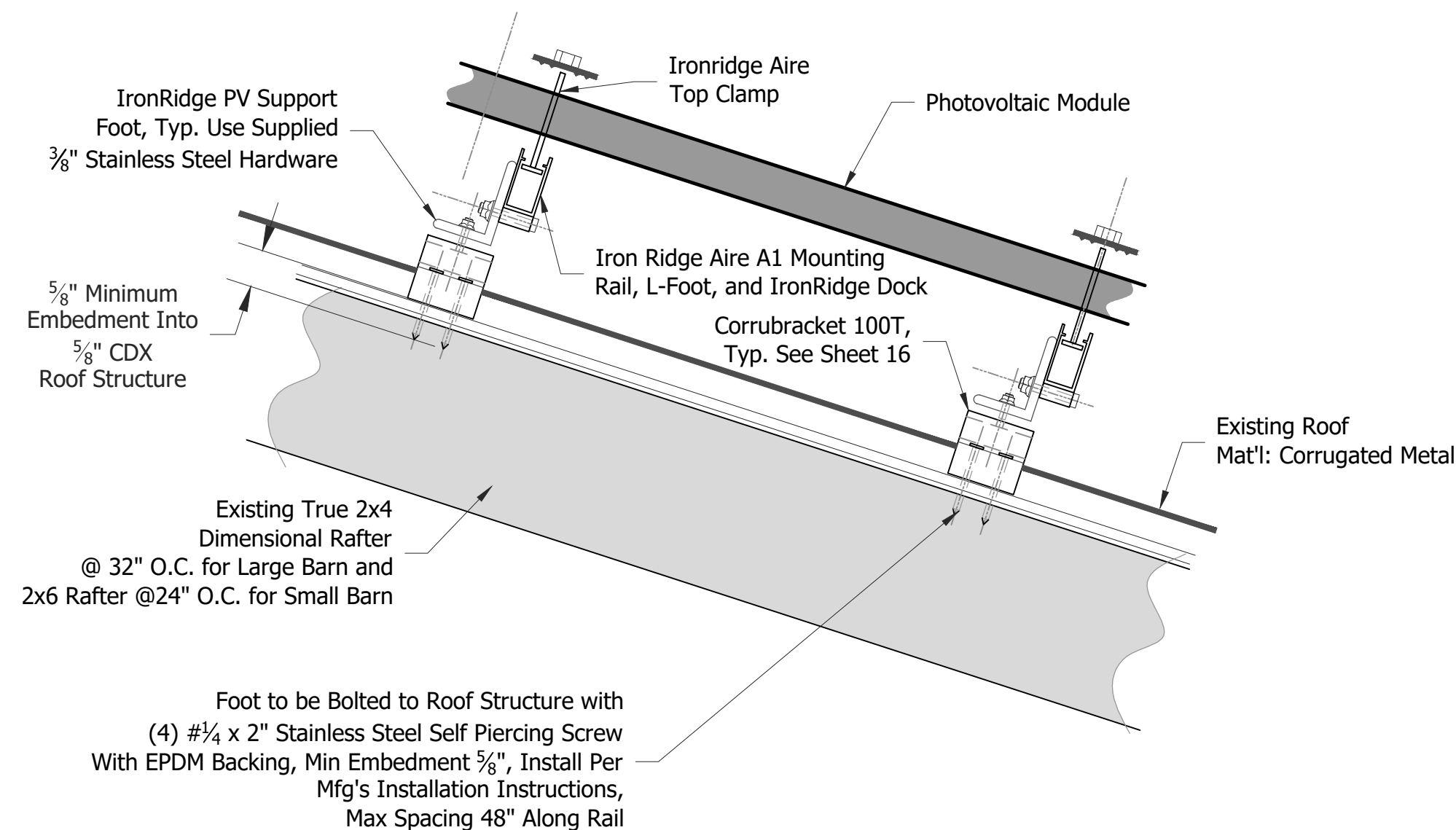
Notes:

- Perform Underground Locate to Confirm all Utility Locations Before Construction
- Perform Survey to Confirm and Mark Final Foundation Locations and Array Boundries Before Installing Ground Screws
- Coordinate Foundation Locations with Obstructions in the Field and Maintain Maximum Spans
- Maximum 2" Support Pipe Span = 9'-5" at 15°
- Maximum 2" Support Pipe Span = 6'-2" at 25°
- Dimensions Shown are Taken From PV Module Frame

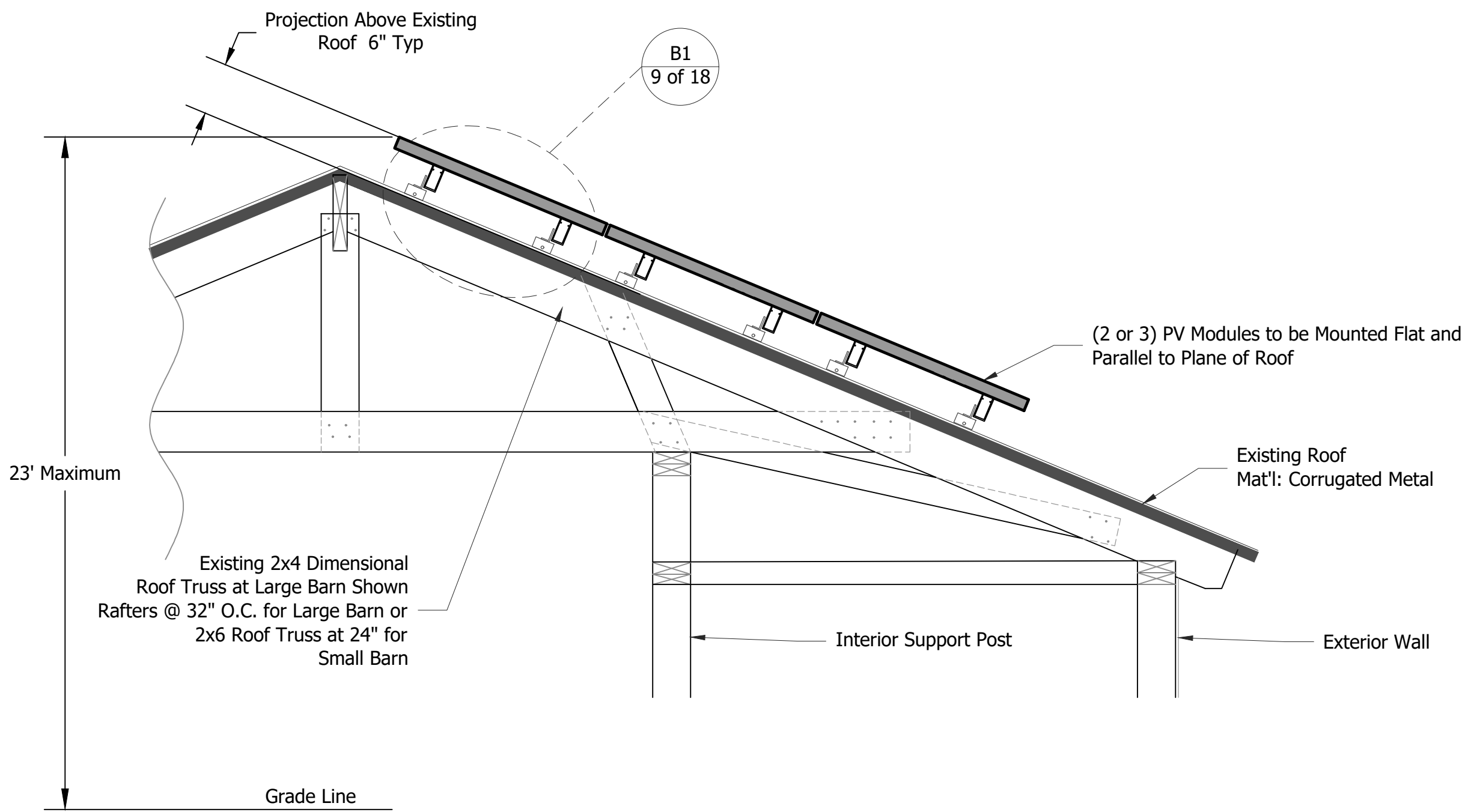




Plan View
Barn Rooftop PV Array
Scale: 1/8" = 1'-0"



Detail B1
PV Panel Mounting Details
Scale: NTS



Section BB
Barn Roof Structure Details
Scale: NTS

Legend:

- ⊗ - (218) Corrugated Metal Roof Mounts V.I.F. S-5 Corrubracket 100T with (4) 1/4" x 2" Self Piercing Screws
- - - - - Ironridge Aire A1 Mounting Rail
- PV Roof Mount Modules Trina Solar TSM-NEG19RC.20
 - Quantity = (96) Modules
 - Sqft = 29.1 Per Module
 - Total Module sqft = 2,795 sqft
 - Weight = 74.3 lbs. Each
 - Total Module Weight= 7,133 lbs.

Notes:

- All PV Modules Mounted to Ironridge Aluminum Mounting Rail - Aire A1
- Barn is a Group U Structure, Fire Setbacks and Pathways Not Required
- PV Attachment to Structure to be 1/4" x 2" Self Piercing Screw to 5/8" CDX Roof Deck. Minimum Embedment 3/8"
- Typical Mounting Rail Span = 48" Max.
- Typical Mounting Rail Spacing = 60" Max
- (142) Corrubracket 100T used for Large Barn Attachment
- (76) Corrubracket 100T used for Small Barn Attachment
- PV Hardware Torque = 144 in/lbs for 5/16" Bolts
- PV Hardware Torque = 260 in/lbs for 3/8" Bolts

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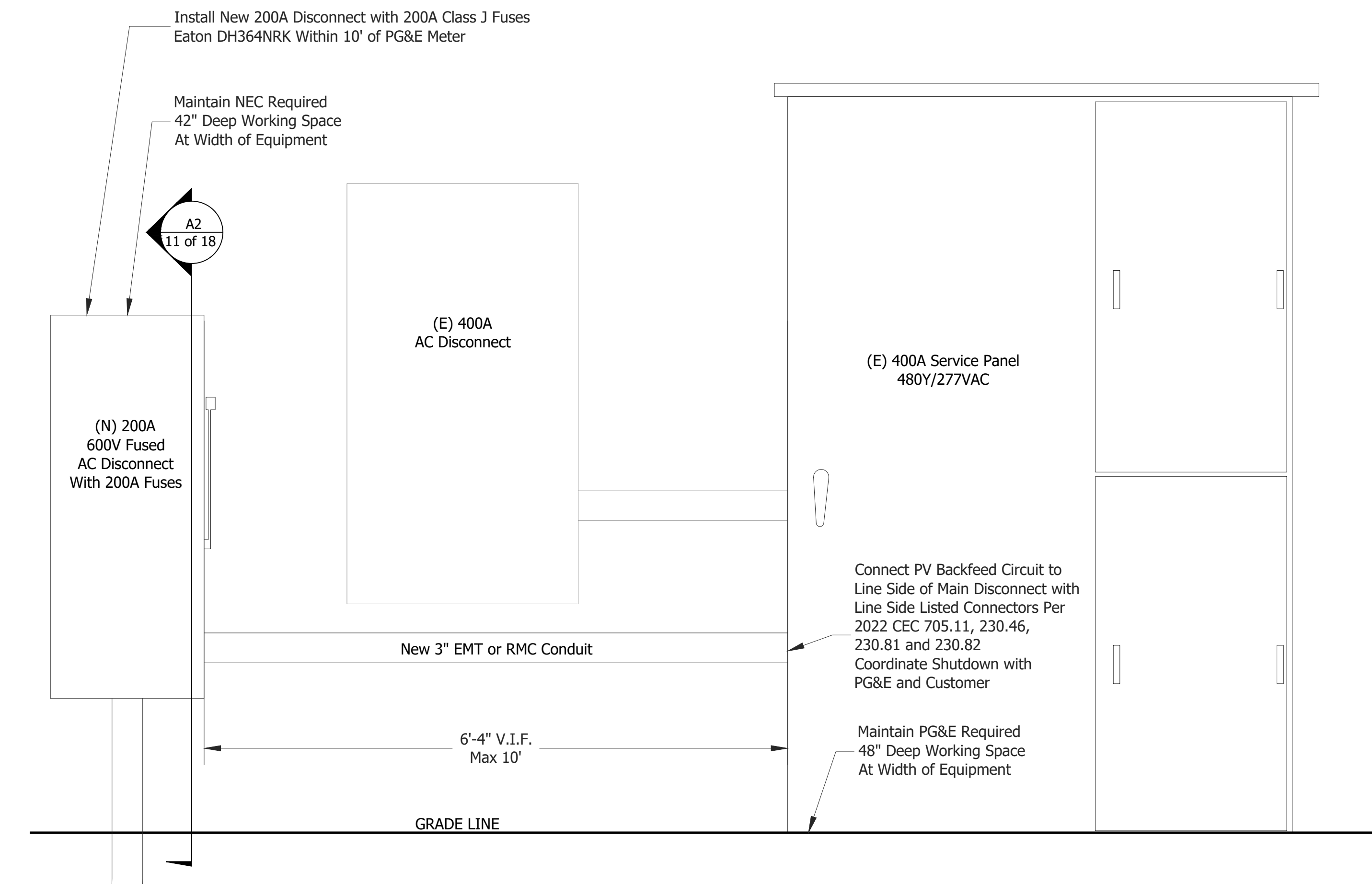
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Roof Mount
Array

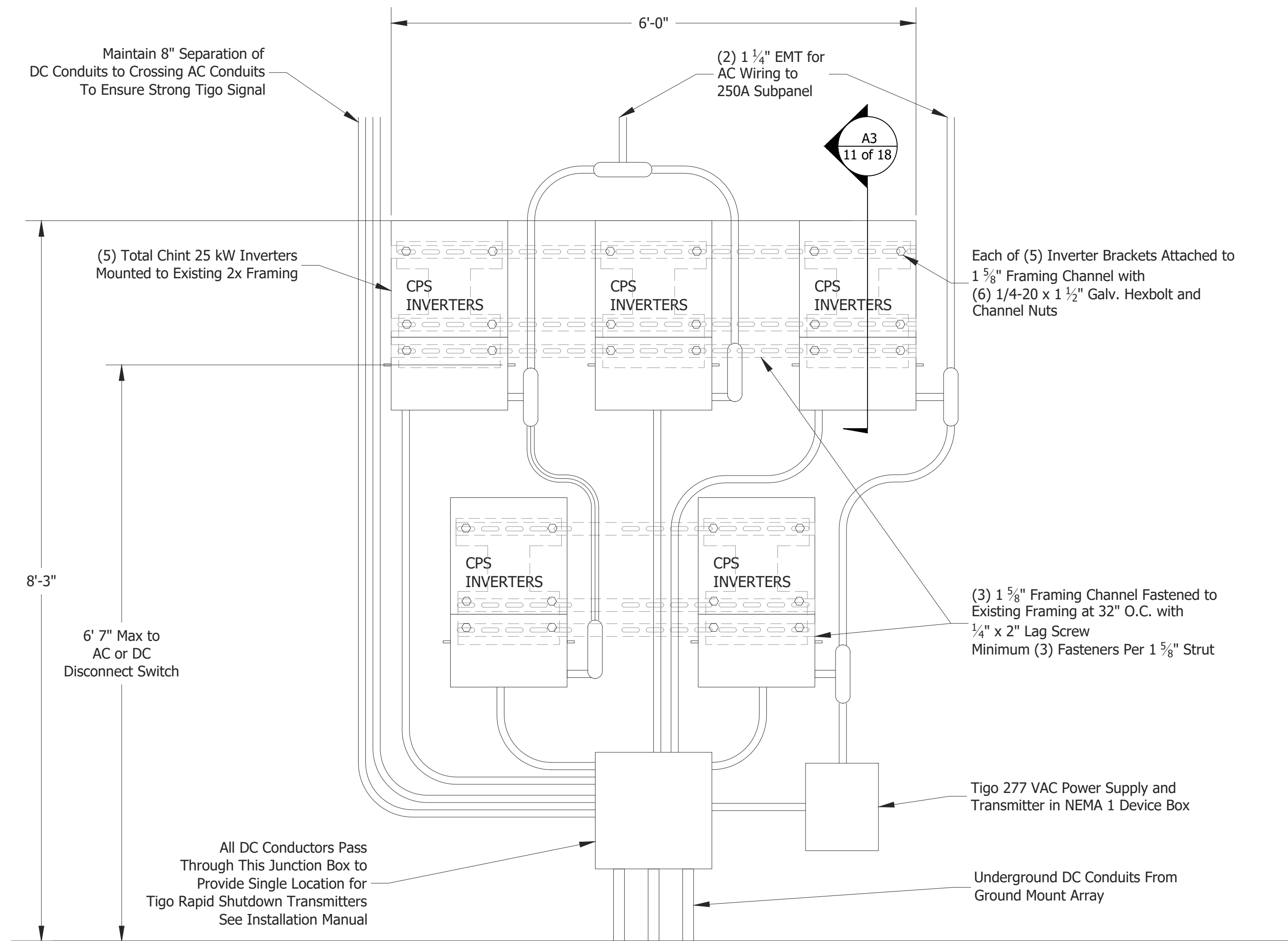
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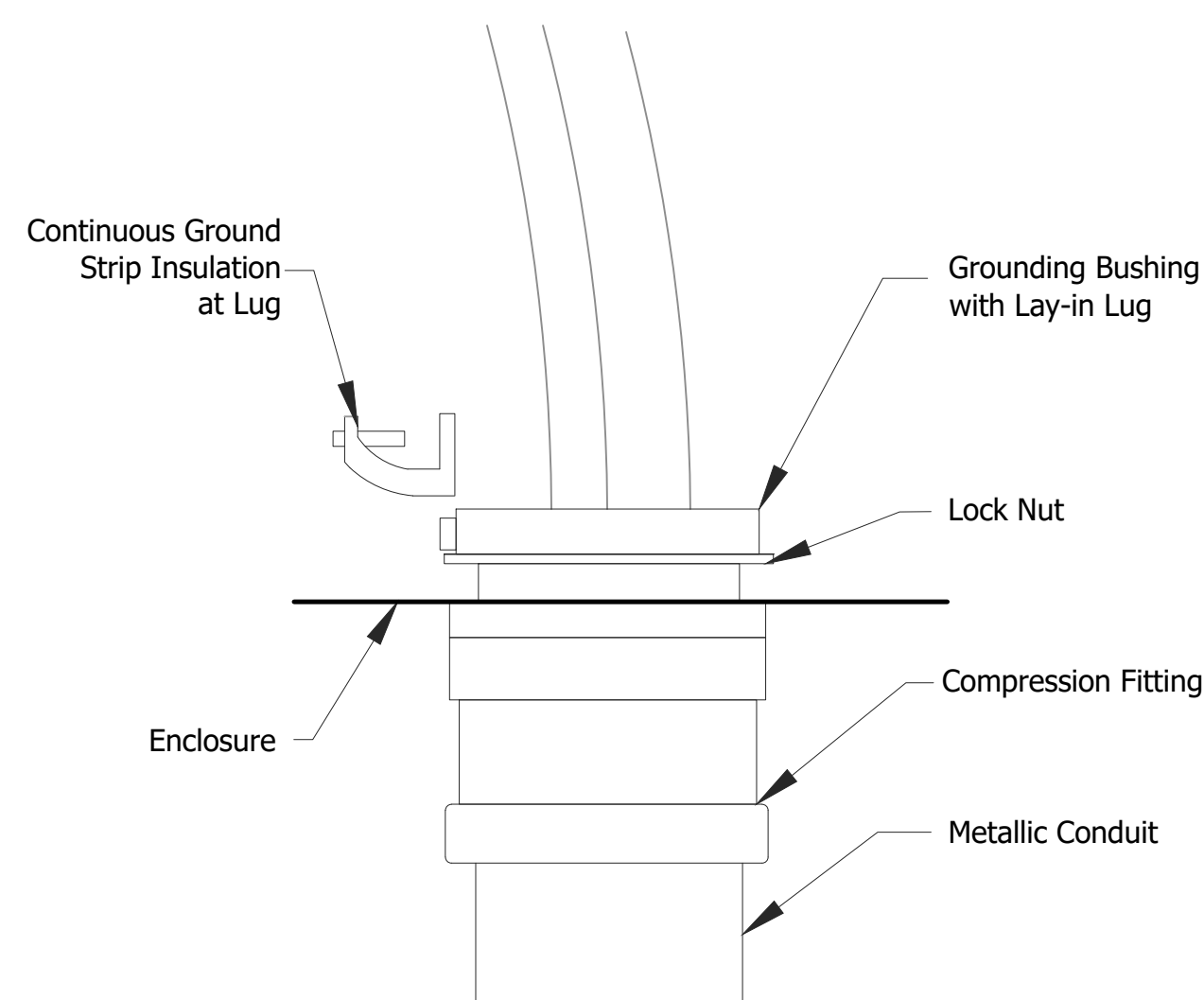
Note:
1. Ensure All Conduit, Fittings and Enclosures are Bonded to EGC

Elevation EE
Electrical Service Area
Scale: 1" = 1'-0"



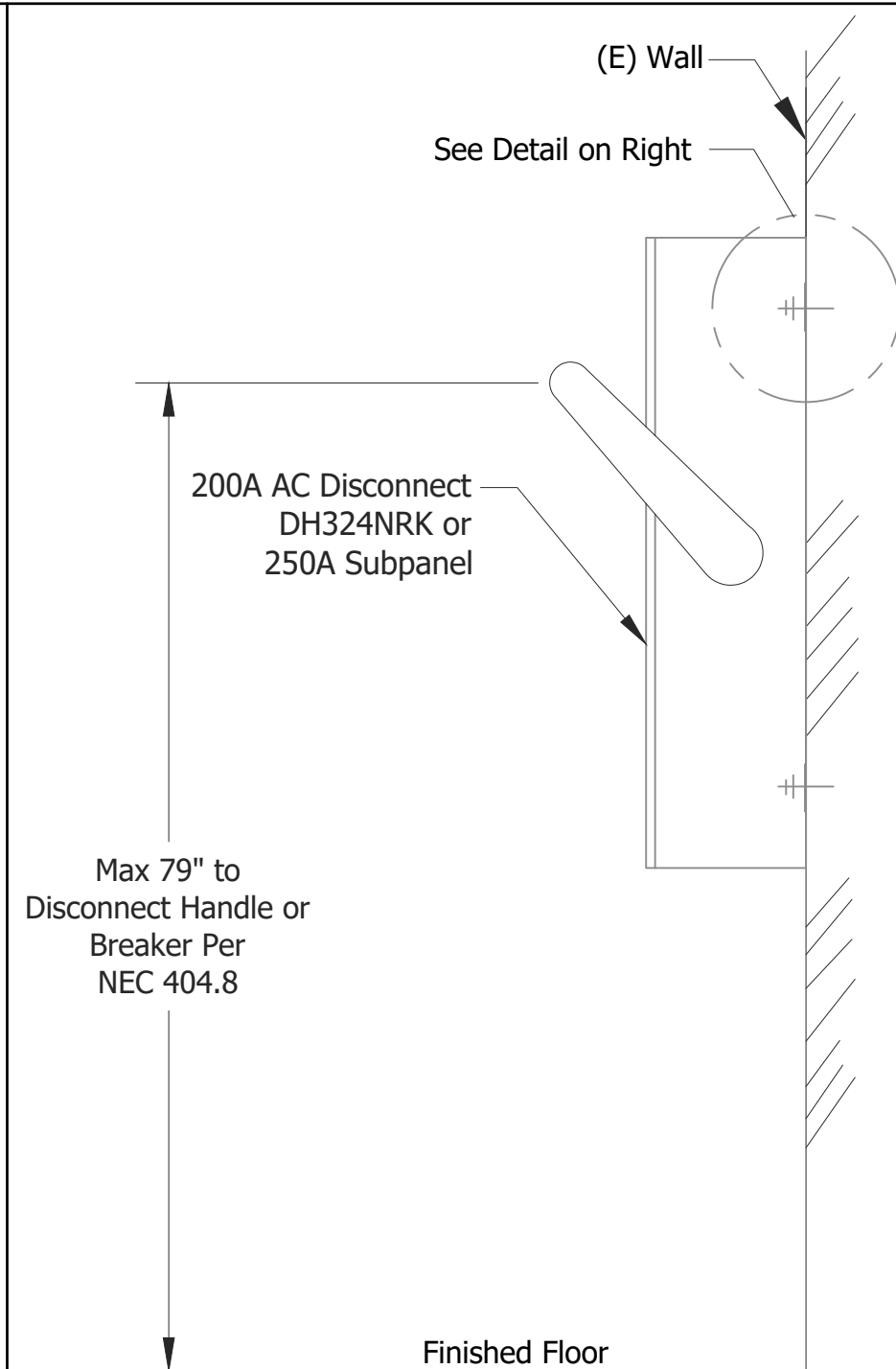
Note:
1. Ensure All Conduit, Fittings and Enclosures are Bonded to EGC

Elevation DD
Inverter Mounting Area
Scale: 1" = 1'-0"

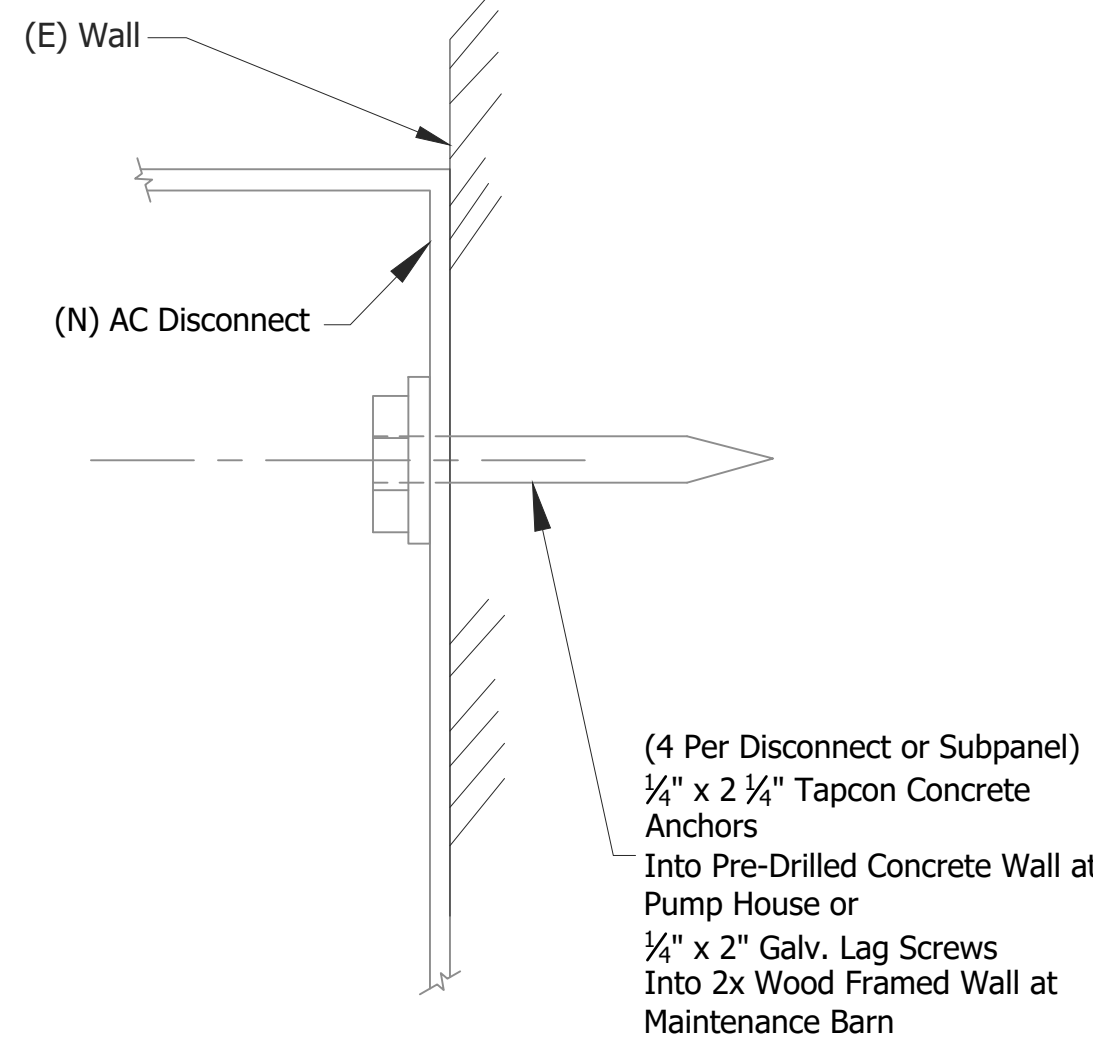


Detail - A1
Conduit Grounding Detail
Scale: NTS

Note:
1. Ensure All Conduit, Fittings and Enclosures are Bonded to EGC



Detail - A2
Subpanel or Disconnect Mounting
Scale: NTS



Detail - A3
Inverter Mounting
Scale: NTS



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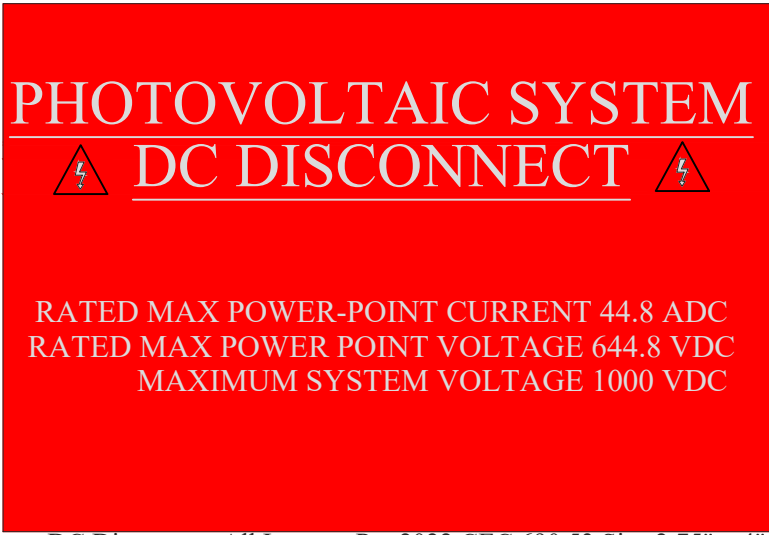
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Equipment Details

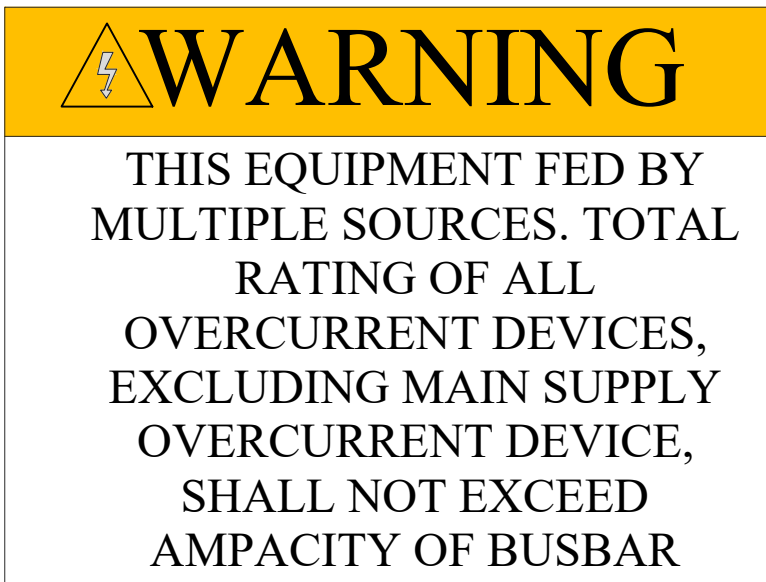
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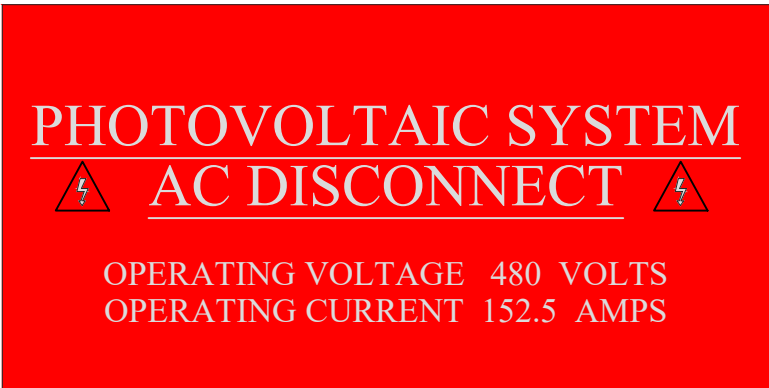
Required Signs and Placards		
Language	Material Description	Location
Install a Permanent Plaque or Directory Providing the Location of the Service Disconnecting Means and Photovoltaic System Rapid Shutdown Means	Permanent Fade Resistant Material Plaques, Red Background, White Engraved Letters, 7" x 7" Min. Size	Exterior of 250A Subpanel, Main Switchboard, PV Inverters
WARNING: Photovoltaic Power Source	Permanent Fade Resistant Material	DC Conductors, Raceways, Enclosures and Junction Boxes (Every 10 ft, at Turns and Above/Below Penetrations)
Photovoltaic System DC Disconnect Inverters M1 Through M5 Rated Max Power Point Current = 44.8A Rated Max Power Point Voltage = 644.8VDC Maximum System Voltage = 1000VDC	Permanent Fade Resistant Material Plaques, Red Background, White Engraved Letters, 2.75" x 4" Min. Size	Inverters M1, M2, M3, M4, and M5 with 3 Strings
Warning, Dual Power Sources Second Source is Photovoltaic System Rated AC Output Current 152.5A Normal Operating Voltage 480Y/277 VAC	Permanent Fade Resistant Material Plaques, Red Background, White Engraved Letters, 2.75" x 4" Min. Size	Service Entrance Panel
AC DISCONNECT- AC OUTPUT OPERATION CURRENT =152.5A NORMAL OPERATING AC VOLTAGE = 480Y/277 VAC	Permanent Fade Resistant Material Plaques, Red Background, White Engraved Letters, 2" x 4" Min. Size	200A Disconnect by Main Service Panel
WARNING: THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR. (Per 2020 NEC 705.12 B.2.3.c)	Permanent Fade Resistant Material Plaques, White Background, Black Engraved Letters, Yellow Header 3" x 4" Min. Size	250A PV Subpanel 'PV Generation'
Available Fault Current Labels	Permanent Fade Resistant Material Plaques, White Background, Black Engraved Letters 2" x 3" Min. Size	Each PV Equipment as Shown on Sheet 14
RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM	Permanent Fade Resistant Material Plaques, Red Background, White Engraved Letters, 2" x 4" Min. Size	AC Disconnect and 250A Subpanel at Barn



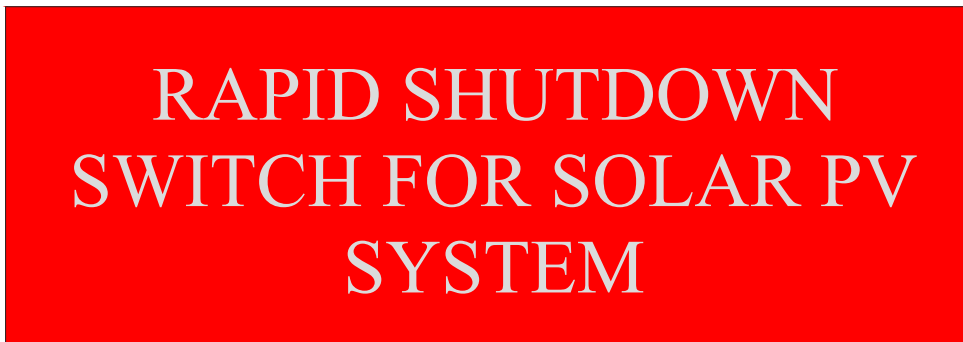
DC Disconnect All Inverter Per 2022 CEC 690.53 Size 2.75" x 4"



Subpanel when Sized to 705.12 (D)(2)(3)(C) Size 3" x 4"



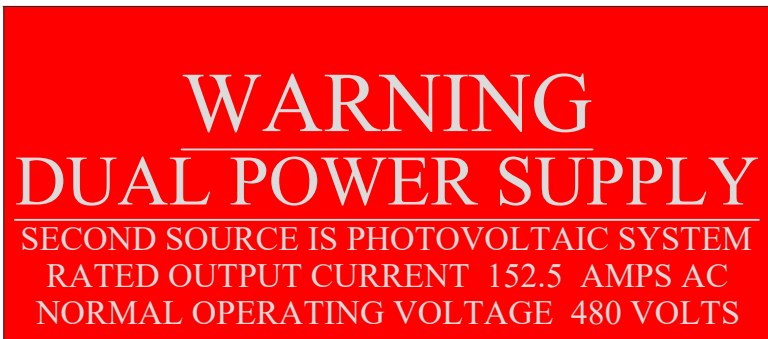
PV AC Disconnect per 2022 CEC 690.54 Size 2" x 4"



At Rapid Shutdown Switch Per 2022 CEC 690.56 (C) Size 2" x 4"



Conduit Each 10 ft. Junction Boxes, Raceways Per 2022 CEC 690.31 (G)(3) Size 1" x 5.5"



Service Panel per 2022 CEC 690.54 Size 2" x 4"

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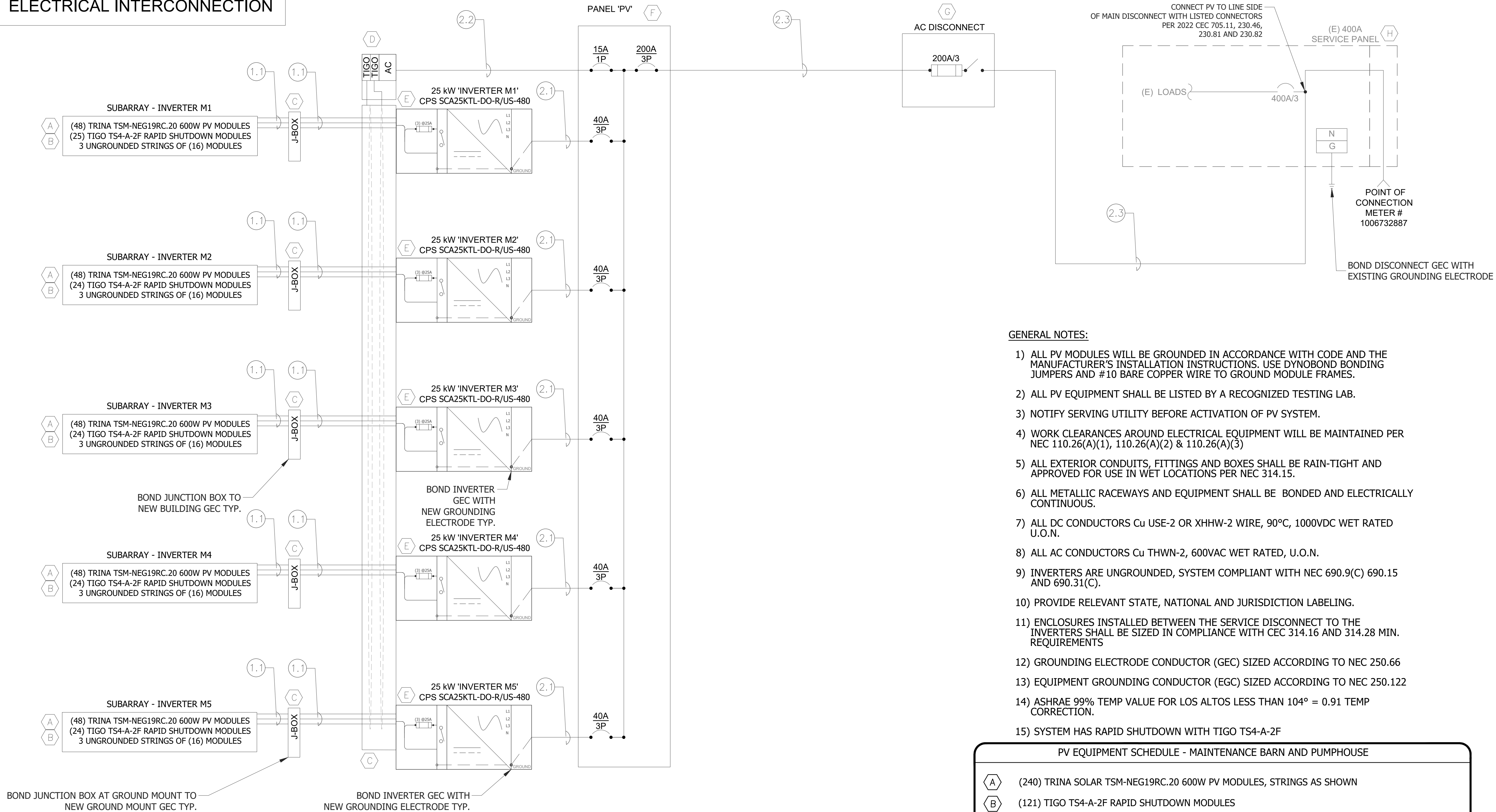
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PV Array
Signage

Sheet12 of 18
ScaleAs Shown
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Job Number3920
Job Code1560CountryClub3

MAINTENANCE BARN
ELECTRICAL INTERCONNECTION



GENERAL NOTES:

- 1) ALL PV MODULES WILL BE GROUNDED IN ACCORDANCE WITH CODE AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. USE DYNABOND BONDING JUMPERS AND #10 BARE COPPER WIRE TO GROUND MODULE FRAMES.
- 2) ALL PV EQUIPMENT SHALL BE LISTED BY A RECOGNIZED TESTING LAB.
- 3) NOTIFY SERVING UTILITY BEFORE ACTIVATION OF PV SYSTEM.
- 4) WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) & 110.26(A)(3)
- 5) ALL EXTERIOR CONDUITS, FITTINGS AND BOXES SHALL BE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS PER NEC 314.15.
- 6) ALL METALLIC RACEWAYS AND EQUIPMENT SHALL BE BONDED AND ELECTRICALLY CONTINUOUS.
- 7) ALL DC CONDUCTORS Cu USE-2 OR XHHW-2 WIRE, 90°C, 1000VDC WET RATED U.O.N.
- 8) ALL AC CONDUCTORS Cu THWN-2, 600VAC WET RATED, U.O.N.
- 9) INVERTERS ARE UNGROUNDED, SYSTEM COMPLIANT WITH NEC 690.9(C) 690.15 AND 690.31(C).
- 10) PROVIDE RELEVANT STATE, NATIONAL AND JURISDICTION LABELING.
- 11) ENCLOSURES INSTALLED BETWEEN THE SERVICE DISCONNECT TO THE INVERTERS SHALL BE SIZED IN COMPLIANCE WITH CEC 314.16 AND 314.28 MIN. REQUIREMENTS
- 12) GROUNDING ELECTRODE CONDUCTOR (GEC) SIZED ACCORDING TO NEC 250.66
- 13) EQUIPMENT GROUNDING CONDUCTOR (EGC) SIZED ACCORDING TO NEC 250.122
- 14) ASHRAE 99% TEMP VALUE FOR LOS ALTOS LESS THAN 104° = 0.91 TEMP CORRECTION.
- 15) SYSTEM HAS RAPID SHUTDOWN WITH TIGO TS4-A-2F

PV EQUIPMENT SCHEDULE - MAINTENANCE BARN AND PUMPHOUSE

- (A) (240) TRINA SOLAR TSM-NEG19RC.20 600W PV MODULES, STRINGS AS SHOWN
- (B) (121) TIGO TS4-A-2F RAPID SHUTDOWN MODULES
- (C) (AS NEEDED) NEMA 3R JUNCTION BOX
- (D) (2) TIGO RAPID SHUTDOWN TRANSMITTER WITH 2 CURRENT TRANSFORMER CORES AND 15A 277VAC POWER SUPPLY INSTALLED IN NEMA 1 DEVICE BOX
- (E) (5) 25kW PV INVERTER 'M1' THROUGH 'M5' CHINT POWER SYSTEMS CPS SCA25KTL-DO-R/US-480 480Y/277 VAC 3φ, 4W, CONNECT (3) DC STRINGS PER INVERTER, INSTALL ON INTERIOR OF MAINTENANCE BARN
- (F) (N) 250A DISTRIBUTION PANEL, 200A 18 KAIC MAIN BREAKER, 480Y/277 VAC, 3φ 4W, CONNECT PV TO (5) NEW 40A 10 KAIC BREAKERS
- (G) (N) 200A AC DISCONNECT 600V EATON DH364NRK, 3φ 4W, 3R ENCLOSURE 200 KAIC WITH 200A CLASS J FUSES, INSTALL OUTDOOR NEXT TO EXISTING SWITCHBOARD
- (H) (E) 400A SWITCHBOARD, 400A MAIN BREAKER, 400A BUSSING 480Y/277 VAC, 3φ 4W, CONNECT PV TO LINE SIDE OF MAIN DISCONNECT

Feeder Schedule	Current Carrying Conductor Size / Insulation	Neutral Size / Insulation	Gnd Size / Insulation	Conduit	Location	Temp. For Ampacity	Notes
DC 1.1	(6 MAX In EMT OR PVC) #10 AWG Cu / USE-2 or XHHW-2 Ungrounded Conductors	NA	(1) #8 Cu IN EMT OR PVC / USE-2 OR XHHW-2 (1) #6 AWG FREE AIR / BARE	1" EMT 1" PVC and Free Air	Rooftop or Ground Mount Conductors From Array to Junction Box and PV Inverter	90° C	Max (6) #10 Wires and (1) #8 GND Per 1" Conduit Conduit Required Where Wiring is not Protected.
AC 2.1	(3) #8 AWG Cu / THWN-2	(1) #10 AWG Cu / THWN-2	(1) GND #10 AWG Cu / THWN-2	1 ¼" EMT	Inverters to Subpanel 'PV Generation'	75° C	Max (9) #8 CCC and (1) #10 GND Per 1.25" Conduit Conduit Required Where Wiring is not Protected. Neutral not a CCC
AC 2.2	(1) #12 Cu / THWN-2	(1) #12 AWG Cu / THWN-2	(1) GND #12 AWG Cu / THWN-2	1 ¼" EMT	Inverters to Subpanel 'PV Generation'	75° C	Power Supply for Rapid Shutdown Shares 1.25" EMT with 2 Inverter Output Circuits
AC 2.3	(3) #350 Kcmil Cu / THWN-2	(1) #1/0 AWG Cu / THWN-2	(1) GND #1/0 AWG Cu / THWN-2	3" EMT, 3" PVC/HDPE and 5" PVC	Subpanel 'PV Generation' to 200A AC Disconnect and 400A Service Panel	75° C	610' Total Length

MODULE GROUNDING

MODULES BONDED TO EACH OTHER THROUGH RACKING SYSTEM, SEE UL 2703 MANUAL

INVERTER GROUNDING

GEC FROM INVERTER SHALL BE CONTINUOUS OR IRREVERSIBLY SPLICED TO GROUND ELECTRODE

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Electrical
Schematic

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CALCULATION OF ELECTRICAL PARAMETERS

1.

DC1.1 CONDUCTORS IN CONDUIT AND FREE AIR FROM PV ARRAY TO INVERTERS AT MAINTENANCE BARN

TRINA TSM-NEG19RC.20 I_{sc} = 15.80A MULTIPLY BY 1.56 PER NEC = 24.6A -> #10 THWN-2 WIRING OK

#10 AWG, 90° USE-2 OR XHHW AMPACITY PER 310.15(B)(16) = 40A

TEMP RANGE CALCULATION: USE DERATING FACTOR OF = 0.91 (UNDER MODULES)

(6 MAX) CURRENT CARRYING CONDUCTORS IN CONDUIT = 0.8 FILL DERATING

THEREFORE #10 AWG AMPACITY IS (40A X 0.91 X 0.8) = 29.1A

OK -->(MORE THAN 24.6A)
2.

GROUND CONDUCTOR FROM PV ARRAY TO INVERTER

1.25 X I_{sc} = 1.25 X 15.0A = 18.8A - #10 AWG IS OK

NO TEMP OR FILL FACTOR DERATING REQUIRED - NOT A CURRENT CARRYING CONDUCTOR
3.

AC2.1 CONDUCTORS FROM CHINT POWER SYSTEMS 25 KW INVERTERS TO 250A DISTRIBUTION PANEL

CPS SCH25KTL-DO/US-480 MAX OUTPUT CURRENT = 30.5A X 1.25 = 38.1A --> #8 CU WIRING OK -> USE 40A CB

#8 AWG 90°C THWN-2 AMPACITY PER NEC 310.15(B)(16) = 55A

TEMP RANGE CALCULATION: USE DERATING FACTOR OF 0.91 (IN CONDUIT)

MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS = 0.7 FILL FACTOR DERATING

THEREFORE #8 AWG AMPACITY IS (55A X 0.91 X 0.7)=35.0A

OK -->(MORE THAN 30.5A)

VOLTAGE DROP:

V DROP = IR

I MAX = 30.5A

CONDUCTOR IS #8 AWG CU, 65' LONG

V DROP = (30.5A) X (0.778) X (0.065) X (1.73)= 2.67V OK -->(1.0%)
4.

AC2.2 CONDUCTORS FROM 250A DISTRIBUTION PANEL TO TIGO RAPID SHUTDOWN TRANSMITTER

POWER SUPPLY MAX CURRENT = 5A X 1.25 = 6.25A --> #12 CU WIRING OK -> USE 15A CB

#12 AWG 90°C THWN-2 AMPACITY PER NEC 310.15(B)(16) = 30A

TEMP RANGE CALCULATION: USE DERATING FACTOR OF 0.91 (IN CONDUIT)

MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS = 0.7 FILL FACTOR DERATING

THEREFORE #8 AWG AMPACITY IS (30A X 0.91 X 0.7)=19.1A

OK -->(MORE THAN 15A)

VOLTAGE DROP: NEGLIGABLE
5.

AC2.3 CONDUCTORS FROM 250A DISTRIBUTION PANEL TO 200A AC DISCONNECT AND SERVICE PANEL

MAX OUTPUT CURRENT = 152.5A X 1.25 = 190.6A --> 350 KCMIL AL WIRING OK -> USE 200A FUSE

350 KCMIL AL THWN-2 @ 90°C AMPACITY PER NEC 310.15(B)(16) = 250A

TEMP RANGE CALCULATION: USE DERATING FACTOR OF 0.91 (IN CONDUIT)

MAXIMUM OF 4 CURRENT CARRYING CONDUCTORS = 0.8 FILL FACTOR DERATING

THEREFORE 350 KCMIL AL AMPACITY IS (250A X 0.91 X 0.8)=182.0A

OK -->(MORE THAN 152.5A)

VOLTAGE DROP:

V DROP = IR

I MAX = 152.5A

CONDUCTOR IS 350 KCMIL AL, 610' LONG

V DROP = (152.5A) X ((0.0605)) X (0.610) X (1.73)= 9.74V OK -->(2.0%)

MAX STRING LENGTH - 25 KW Chint Power Systems CPS SCA25KTL-DO/US-480 WITH TRINA TSM-NEG19RC.20 600 WATT

V_{oc} = 48.4 VDC X 16 MODULES X 1.12 NEC CORRECTION = 867 VDC -> OK FOR 1000VDC MAX INVERTER
6.

GROUNDING

AC GROUNDING ELECTRODE CONDUCTORS FROM INVERTERS, LOAD CENTERS, AND

SERVICE ENTRANCES SHALL NOT BE LESS THAN GIVEN PER NEC 250.66

AC EQUIPMENT GROUNDING CONDUCTOR TO AND FROM INVERTERS IS SIZED PER NEC 690.45, AND 250.122

PV MODULE BONDING THROUGH UL 2703 LISTED MOUNTING SYSTEM, SEE DATA SHEETS AND

INSTALLATION MANUAL FOR DETAILS.



FC² | available fault current calculator

Project Name: **Pump House Service**
Fault Name: **Service Panel**
System: **Three-Phase**
Avail. Fault Current L-L-L (Amps): **65000**
Voltage L-L (Volts): **480**
Calculation Performed On: **Feb 08, 2025 @ 07:52pm**

Calculation performed via Eaton's Bussmann Series Available Fault Current Calculator v1.6



FC² | available fault current calculator

Project Name: **PV Disconnect at Pump House**
Fault Name: **200A AC Disconnect**
System: **Three-Phase**
Avail. Fault Current L-L-L (Amps): **56446**
Voltage L-L (Volts): **480**
Calculation Performed On: **Feb 08, 2025 @ 07:50pm**

Calculation performed via Eaton's Bussmann Series Available Fault Current Calculator v1.6



FC² | available fault current calculator

Project Name: **PV Subpanel at Maintenance Barn**
Fault Name: **250A PV Subpanel**
System: **Three-Phase**
Avail. Fault Current L-L-L (Amps): **6536**
Voltage L-L (Volts): **480**
Calculation Performed On: **Feb 08, 2025 @ 07:55pm**

Calculation performed via Eaton's Bussmann Series Available Fault Current Calculator v1.6

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Electrical
Calculations

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25 kW-480 V, 1000 Vdc String Inverters for North America

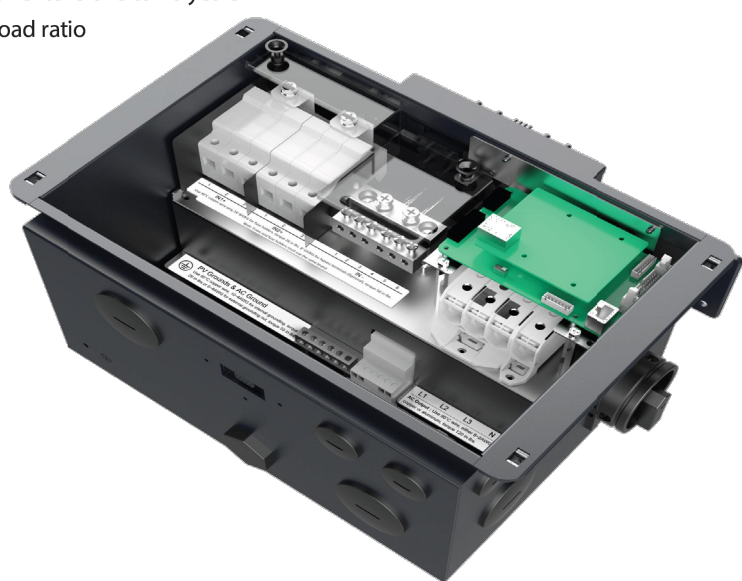
The CPS 25 kW-480 V three-phase string inverter is designed for rooftop and carport applications. These units are high performance, advanced, and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.5% peak and 98.0% CEC, wide operating voltages, broad temperature ranges, and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 25 kW-480 V product ships with a Rapid Shutdown wire box, fully integrated and separable with touch-safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown Wire-box enables PVRSS-certified module-level rapid shutdown when used with APS RSD-S-PLC/RSD-D products. The CPS FlexOM Gateway enables monitoring, controls and remote product upgrades.

Key Features

- NEC 2017/2020 PVRSS-certified rapid shutdown
- NEC 2017/2020-compliant & UL-listed arc-fault circuit protection
- 15-90° mounting orientation for low profile roof installs
- 15° tilt Inverter Rack Assembly available from CPS
- Optional FlexOM Gateway enables remote firmware upgrades
- Integrated AC & DC disconnect switches
- 2 MPPTs with 3 inputs each for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL 1741-SA certified to CA Rule 21, including SA14 - SA18
- UL 1741-SB and IEEE 1547-2018 certified
- Separable wire-box design for fast service
- Standard 10-year warranty with extensions to 20 years
- Generous 1.5 DC/AC inverter load ratio



CPS SCA25KTL-DO-R/US-480



SCA25KTL (480V) Rapid Shutdown Wire-box



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Chint Power Systems America

1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Webs: www.chintpowersystems.com



Technical Data

Model Name	CPS SCA25KTL-DO-R/US-480
DC Input	
Max. PV power	37.5 W (22 kW per MPPT)
Max. DC input voltage	1000 Vdc
Operating DC input voltage range	200-950 Vdc
Start-up DC input voltage / power	330 V / 80 W
Number of MPPT trackers	2
MPPT voltage range for Pmax @ PF > 0.99	560-850 Vdc
Max. PV short-circuit current ¹	72 A (36 A per MPPT)
Number of DC inputs	6 inputs, 3 per MPPT
DC disconnection type	Load-rated DC switch
DC surge protection	Type II MOV
AC Output	
Rated AC output power @ PF=1	25 kW
Max. AC apparent power	25 kVA
Rated output voltage	480 Vac
Output voltage range ²	422-528 Vac
Grid connection type	3Ø / N / PE (neutral optional)
Max. AC output current @ 480 Vac	30.5 A
Rated output frequency	60 Hz
Output frequency range ²	57-63 Hz
Power factor	>0.99 (0.8 adjustable)
Current TRD @ rated load	< 3%
Max. fault current contribution (1 cycle RMS)	31 A (1.02 PU)
Max. OCPD rating	50 A
AC disconnection type	Load-rated AC switch
AC surge protection	Type II MOV
System	
Topology	Transformerless
Max. efficiency	98.5%
CEC efficiency	98.0%
Standby / night consumption	< 1 W
Environment	
Enclosure protection degree	NEMA Type 4X
Cooling method	Variable speed cooling fans
Operating temperature range	-22°F to 140°F / -30°C to 60°C
Non-operating temperature range ³	-40°F to 158°F (-40°C to 70°C)
Operating humidity	0-100%
Operating altitude	13123 ft / 4000 m (derating 9843 ft / 3000 m)
Audible noise	< 60 dBA @ 1 m and 77°F (25°C)
Display and Communication	
User interface and display	LED Indicators, Wi-Fi, and App
Inverter monitoring	SunSpec, Modbus RS485
Site-level monitoring	CPS FlexOM Gateway (1 per 32 inverters)
Modbus data mapping	CPS
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)
Mechanical	
Dimensions (H x W x D)	Inverter: 15.95 x 15.75 x 7.87 in (405 x 400 x 200 mm) Wire Box: 10.24 x 15.75 x 7.87 in (260 x 400 x 200 mm)
Weight	Inverter: 48.5 lb (22 kg) Wire Box: 13.23 lb (6 kg)
Mounting / installation angle ⁴	15 to 90° from horizontal (vertical or angled)
AC termination	Screw clamp (wire range: #8-#2 AWG CU/AL)
DC termination ⁵	Screw clamp (wire range: #14-#8 AWG CU)
Fused string inputs (5 per MPPT)	20 A fuses provided (fuse values up to 30 A acceptable)
Safety	
Certifications and standards	UL 1741-SA/SB Ed. 3, UL 1699B, UL1998, CSA-C22.2 NO.107.1-01, IEEE 1547-2018, FCC Part 15 IEEE 1547a-2014, IEEE 1547-2018, CA Rule 21, 150-NR, HECO
Selectable grid standards	
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Vol-Watt
Warranty	
Standard	10 years
Extended terms	15 and 20 years

1) The sum of parallel-connected PV module short-circuit currents.
2) The "output voltage range" and "output frequency range" may differ according to the specific grid standard.
3) See user manual for further requirements regarding non-operating conditions.
4) Shield Cover accessory required for installation angles of 75 degrees or less.
5) Wire box only includes fuses and fuse holders on the positive polarity, compliant with NEC 2017/2020 Section 690.9(C).
6) Firmware version 5.00 or later required.

Specifications

Eaton DH364NRK

Catalog Number: DH364NRK

Eaton Enhanced visible blade single-throw safety switch, 200 A, NEMA 3R, Painted galvanized steel, Class H, Fusible with neutral, Three-pole, Four-wire, 600 V, Max Hp: 50, 50/ 125, 150 hp (1/3PH @480, 600 V), #6-250 kcmil Cu/Al

General specifications

Product Name	Catalog Number
Eaton heavy duty fusible safety switch	DH364NRK
UPC	Product Length/Depth
782113206837	30 in
Product Height	Product Width
9.5 in	18 in
Product Weight	Warranty
52 lb	Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

Certifications

UL Listed

Physical Attributes

Enclosure
NEMA 3R

Enclosure material
Painted galvanized steel

Fuse class provision
Class H

Fuse configuration
Fusible with neutral

Number Of Poles

Three-pole

Number of wires

4

Type

Heavy duty fusible safety switch

Performance Ratings

Amperage Rating
200A

HP rating - max
50, 50/ 125, 150 hp (1/3PH @480, 600 V)

NEMA rating
NEMA 3R

Voltage rating
600 V

Miscellaneous

Product Category
Heavy Duty, Fusible with neutral

Resources

Specifications and datasheets

Eaton Specification Sheet - DH364NRK

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Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com
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Eaton.com/socialmedia



BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

Mono Multi Solutions

PRODUCT: TSM-NEG19RC20

POWER RANGE: 580-605W

605W

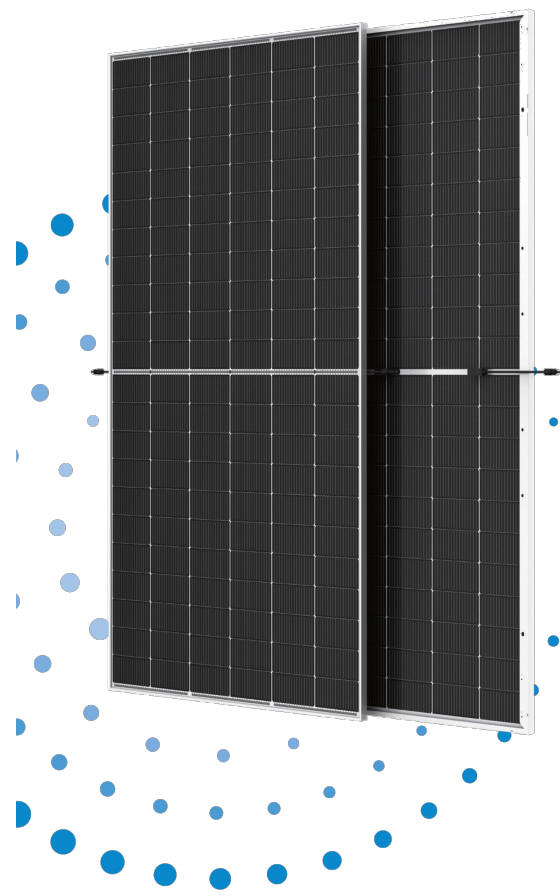
MAXIMUM POWER OUTPUT

0~+5W

POSITIVE POWER TOLERANCE

22.4%

MAXIMUM EFFICIENCY



High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High power up to 605W

- Up to 22.4% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

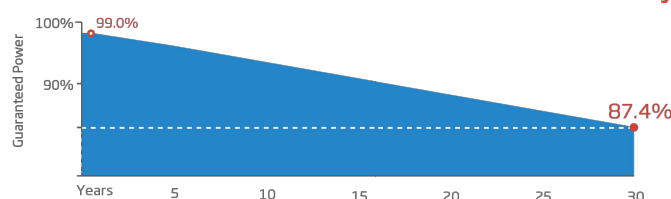
High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.30%) and operating temperature
- Up to 30% additional power gain from back side depending on albedo

Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



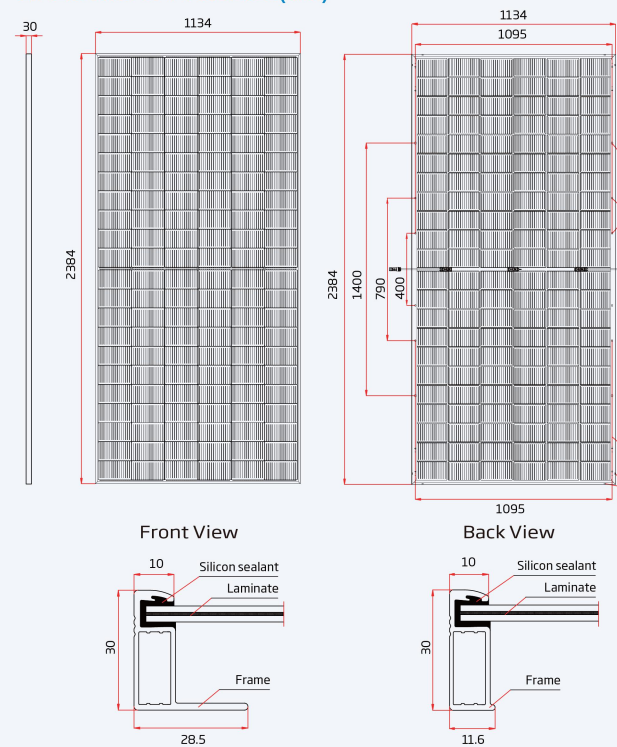
Comprehensive Products and System Certifications

ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO 45001: Occupational Health and Safety Management System
ISO 14064: Greenhouse Gas Emissions Verification
ISO 45002: Occupational Health and Safety Management System

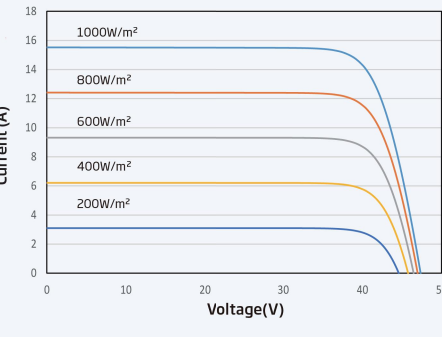


BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

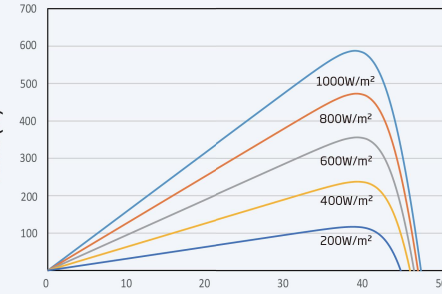
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(595 W)



P-V CURVES OF PV MODULE(595 W)



ELECTRICAL DATA (STC)

Peak Power Watts-Pmax(Wp)*	580	585	590	595	600	605
Power Tolerance-Pmax(W)	0 ~ +5					
Maximum Power Voltage-Vmp(V)	39.2	39.5	39.7	40.0	40.3	40.5
Maximum Power Current-Imp(A)	14.79	14.82	14.86	14.89	14.91	14.94
Open Circuit Voltage-Voc(V)	47.2	47.5	47.8	48.1	48.4	48.7
Short Circuit Current-Isc(A)	15.65	15.68	15.72	15.76	15.80	15.83
Module Efficiency-η(%)	21.5	21.6	21.8	22.0	22.2	22.4
*TC: 1000W/m², 25°C, AM1.5 Global, 1000W/m², 1000h/year, 1000h/year, 1000h/year, 1000h/year, 1000h/year, 1000h/year						
Electrical characteristics with different power bin (reference to 10% irradiance ratio)						
Total Equivalent power-Pmax(Wp)	626	632	637	643	648	653
Maximum Power Voltage-Vmp(V)	39.2	39.5	39.7	40.0	40.3	40.5
Maximum Power Current-Imp(A)	15.97	16.01	16.05	16.09	16.10	16.14
Open Circuit Voltage-Voc(V)	47.2	47.5	47.8	48.1	48.4	48.7
Short Circuit Current-Isc(A)	16.90	16.93	16.98	17.00	17.06	17.10
Irradiance ratio (near-front)	100%					

ELECTRICAL DATA (NOCT)

Maximum Power-Pmax(Wp)	442	446	450	454	458	461
Maximum Power Voltage-Vmp(V)	38.8	39.1	39.3	39.6	39.8	40.0
Maximum Power Current-Imp(A)	12.00	12.02	12.05	12.08	12.10	12.14
Open Circuit Voltage-Voc(V)	44.7	45.0	45.3	45.6	45.9	46.1
Short Circuit Current-Isc(A)	12.61	12.64	12.67	12.70	12.73	12.76

NOCT: Irradiance at 800W/m², Ambient Temperature 35°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	132 cells
Module Dimensions	2384±1±34±30mm(93.86±44.05±1.18 inches)
Weight	21.7kg (47.8 lbs)
Front Glass	2.0mm(0.08 inches), High Transmittance, Heat Strengthened Glass
Encapsulant material	PDE-EVA
Back Glass	2.0mm(0.08 inches), Heat Strengthened Glass (White/Gold Glass)
Frame	30mm(1.18 inches) Anodized Aluminum Alloy
Junction Box	IP68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²)
Connector	MC4 EVOL2 / TSM PLUS / TSM*

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (122°F)
Temperature Coefficient of Pmax	-0.30%/°C
Temperature Coefficient of Voc	-0.24%/°C
Temperature Coefficient of Isc	0.04%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+60°C
Maximum System Voltage	1500V DC (UL)
Max. Series Fuse Rating	35A

WARRANTY

12 year Product Workmanship Warranty	
10 year Power Warranty	
1% first year degradation	
0.40%/year Annual Power Attenuation	

PACKAGING CONFIGURATION

Modules per box: 36 pieces	
Modules per 40' container: 720 pieces	

(*Please refer to transportation warranty for details)



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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Version number: TSM_EN_2023_A

LAGCC - PV Installation At Maintenance Barn

Photovoltaic Roof and Ground Mount Installation

1560 Country Club Dr. Los Altos CA 94024



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MAIN: (650) 938-9574 | FAX (650) 938-9573
2557 WYANDOTTE ST. | MOUNTAIN VIEW, CA 94043

FOR CITY USE

Rev	Date	Description							
1	1.15.2025	90% Plans For Review							
2	2.21.2025	100% Plans Submission							

Datasheets

Sheet	15 of 18
Scale	As Shown
Prepared By	VRJ
Job Number	3920
Job Code	1560CountryClub3

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TS4-A-2F

Module-level rapid shutdown for two modules

The TS4-A-2F (Fire Safety) is the advanced add-on rapid shutdown solution that brings smart module functionality to standard PV modules for higher reliability. Ensure safety by upgrading existing PV systems or by adding safety features to new installations.

The TS4-A-2F complies with NEC 2017, 2020, and 2023 690.12 Rapid Shutdown specifications when installed with the Tigo RSS Transmitter or an inverter with a built-in Tigo certified transmitter.

Features

- High input current rating – now rated for 20 A I_{mp} /25 A I_{sc} to better accommodate bifacial and high-current modules
- Simple, fast installation – snaps to a standard PV module frame or mounts to racking
- Power-line communications (PLC) signaling – rapid shutdown signaling over PV conductors
- Automatic shutdown – PV array enters rapid shutdown mode in the event of AC grid loss
- UL Standards-certified – tested and certified with hundreds of top inverter models
- 25-year warranty

Specifications

	20 A	25 A
Electrical		
Maximum current (I_{mp} / I_{sc})	15 A/20 A	20 A/25 A
Input voltage range (V_{mp})	16 – 80 V	
Maximum input voltage	80 V	
Maximum system voltage (V_{max})	1000 V/1500 V*	
Maximum output current (I_{max})	15 A	
Maximum output power (P_{max})	1000 W (500 W/input)	1400 W (700 W/input)
Maximum fuse rating	25 A	30 A
Maximum efficiency	99.9%	
Rapid Shutdown		
TS4 conductor AWG	12	
Rapid shutdown time limit	<30 sec.	
PVRSE-controlled conductor limits	≤240 VA, ≤8 A, ≤30 V_{oc}	
UL 1741-compliant PVRSE	Yes	
Communications	PLC	
Connections		
Input (from modules) cable lengths	0.13/0.2/1.2/1.3 m	
Output (to string) cable lengths	2.2/2.4 m	
Connectors	MC4/EVO2	

* Depending on UL/IEC certification



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Specifications

	20 A	25 A
Environmental		
Operating temperature range	-40 – 85 °C (-40 – 185 °F)	
Storage temperature range	-40 – 85 °C (-40 – 185 °F)	
Maximum elevation	3000 m (9840 ft.)	
Outdoor IP rating	IP68/NEMA 3R	
Mechanical		
Dimensions (H/W/D)	139.7 x 138.4 x 22.9 mm (5.4 x 5.5 x 0.9 in.)	
Weight	590 g (1.3 lb.)	
General		
Standards compliance	UL 1741 PVSRE, UL 1741 PVRSS, CSA 22.2, IEC 62109, NEC 690.12	
Warranty	25 years	

* 20 A UL ratings: -30 – 75 °C (-22 – 167 °F)

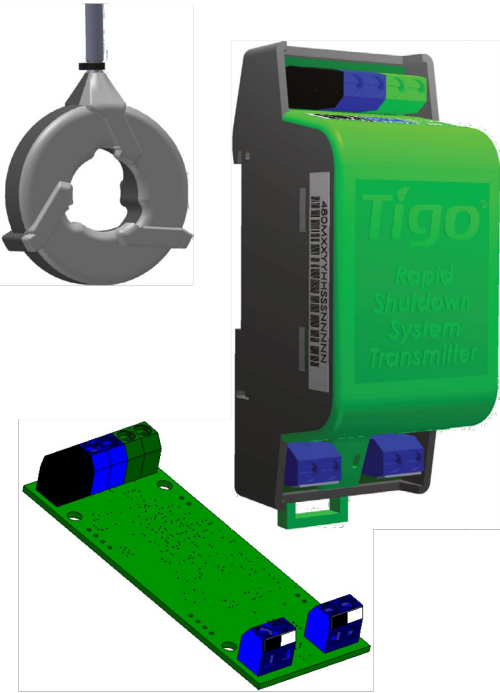
Ordering Information

Part Number	V _{max} Certifications UL/IEC	Cable Lengths	Connectors
20 A I_{sc}			
484-00252-22	1500 V/1000 V	0.13/0.2/2.2 m	MC4
484-00252-24	1500 V/1000 V	1.2/1.3/2.4 m	MC4
484-00261-24	1500 V/1500 V	1.2/1.3/2.4 m	EVO2
484-00261-22	1500 V/1500 V	0.13/0.2/2.2 m	EVO2
484-01252-22	1500 V/1000 V	0.13/0.2/2.2 m	MC4
484-01252-24	1500 V/1000 V	1.2/1.3/2.4 m	MC4
484-01261-22	1500 V/1500 V	0.13/0.2/2.2 m	EVO2
484-01261-24	1500 V/1500 V	1.2/1.3/2.4 m	EVO2
25 A I_{sc}			
485-00252-22	1500 V/1000 V	0.13/0.2/2.2 m	MC4
485-00252-24	1500 V/1000 V	1.2/1.3/2.4 m	MC4
485-00261-22	1500 V/1500 V	0.13/0.2/2.2 m	EVO2
485-00261-24	1500 V/1500 V	1.2/1.3/2.4 m	EVO2
487-00252-22	1000 V*	0.13/0.2/2.2 m	MC4
487-00252-24	1000 V*	1.2/1.3/2.4 m	MC4
487-00261-22	1500 V*	0.13/0.2/2.2 m	EVO2
487-00261-24	1500 V*	1.2/1.3/2.4 m	EVO2

* IEC certified only

tigoenergy.com

TS4-A-2F Specifications and Ordering Information



RSS Transmitter

Rapid shutdown activator with Pure Signal™ technology

Available as a module or PCBA, the Tigo RSS transmitter is part of a module-level rapid shutdown solution when paired with Tigo TS4-A-F/2F MLPE. The RSS transmitter links with multiple RSS transmitters, and it mitigates crosstalk with Tigo's Pure Signal technology that syncs one coordinated keep-alive signal to multiple arrays.

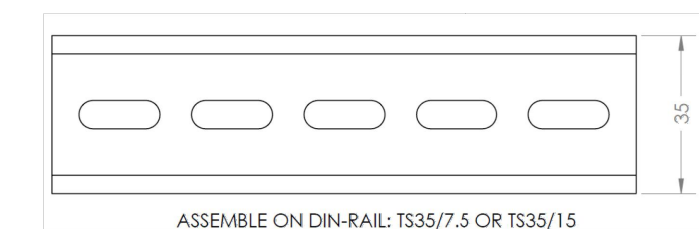
Each transmitter uses powerline communications (PLC) to send the keep-alive signal to MLPE via single or dual cores. Each core encircles up to 10 PV string conductors (negative or positive only).

Features

- PLC communication
- Scalable from residential to large utility projects
- Patented Pure Signal technology for mitigating crosstalk across multiple transmitters
- Configurable with one or two RSS cores
- Bi-colored core ensures consistent conductor polarity

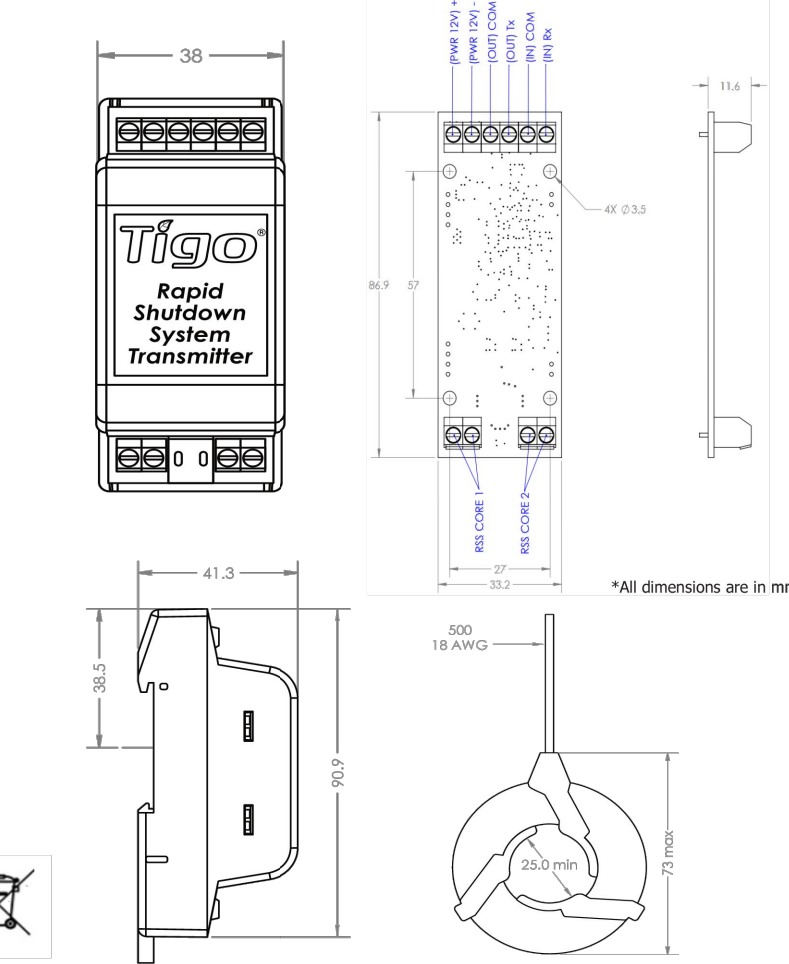
Benefits

- Meets NEC 690.12 2017, 2020, and 2023 requirements
- Automatic or manual shutdown
- Reduces total system cost
- Easy and fast to install
- Compatible with most inverters on the market



Dimensions (height/width/depth)

Module	PCBA
90.9 x 38 x 41.3mm (3.58 x 1.5 x 1.63in)	86.9 x 32.8 x 11.6mm (3.42 x 1.3 x .46in)



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PN: 002-00146-00 | Rev 1.2 | 2023.06.19



Transmitter	
Input voltage	12V _{oc} ±2%
Input current	1A
Power consumption (max/avg)	5.5W/0.85W
Power standby ¹	0.06W
Maximum # of synced transmitters	10
Maximum cable length to last transmitter in a synced series	30m (100ft)
Core	
Conductor length	500mm (19.7in)
Maximum current per core	160A
Maximum string voltage	1500V _{oc}
Maximum # of strings/core	10
Maximum # of PV modules/string	30
Environmental	
Operating temperature range	-40 – 85°C (-40 – 185°F)
Enclosure ² temperature range	-20 – 50°C (-4 – 122°F)
Enclosure ² rating	IP68, NEMA 3R
Enclosure ² dimensions (H/W/D)	270 x 170 x 110mm (10.63 x 6.69 x 4.33in)

¹ PCBA integrated into Inverter
² Optional Tigo outdoor enclosure

Ordering Information

490-00000-51	Single core, RSS transmitter, DIN rail
490-00000-52	Dual core, RSS transmitter, DIN rail
490-00100-51	Single core, RSS transmitter PCBA
490-00100-52	Dual core, RSS transmitter PCBA
492-00000-51	Single core, RSS transmitter, DIN rail, 120/240V _{ac} power source, outdoor enclosure
492-00000-52	Dual core, RSS transmitter, DIN rail, 120/240V _{ac} power source, outdoor enclosure
493-00000-52	Dual core, RSS transmitter, DIN rail, 480/277V _{ac} power source

Resources



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PN: 002-00146-00 | Rev 1.2 | 2023.06.19

S-5!®

The Right Way!

CorruBracket™ 100T

CorruBracket™ 100T is designed specifically for corrugated roofing profiles that are common in North America. CorruBracket 100T is affixed to the crest of the corrugation, leaving the drainage plane free of holes to protect against leaks. For medium-duty applications, the bracket can be attached directly to the sheeting, accommodating ancillary attachment anywhere along the corrugation. For heavy-duty applications, the bracket can be fixed into the underlying substrate for additional support without crushing the corrugation.

Having no messy sealants to apply, CorruBracket 100T comes with a factory-applied EPDM rubber gasket seal already on the base, and the S-5!®-patented reservoir conceals the EPDM from UV exposure, preventing UV degradation.

Installation is simple! CorruBracket 100T is mounted directly into the crest of the corrugation, straddling the valley. No surface preparation is necessary: simply wipe away excess oil and debris, align, and apply. Secure directly into the crest of the corrugation by driving the appropriate screws into the pre-punched holes, or pre-drilling the proper-sized hole through the pre-punched holes and riveting.

The slotted top hole, which accommodates standard M8 nuts and bolts, simplifies alignment and maximizes flexibility in attaching ancillaries.

CorruBracket™ 100T Mini

The CorruBracket™ 100T Mini is a bit shorter than its standard counterpart and has two pre-punched holes in its base rather than four. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!*

*S-5! mini brackets are not compatible with, and should not be used with, S-5! "Snitch"® "Snitcher"®, or "CobraGuard"®, or "X-Gen"® snow retention systems.

S-5!®

The Right Way!

CorruBracket™ 100T can be used for almost any attachment need on corrugated metal roofing commonly found in North America.

S-5!®

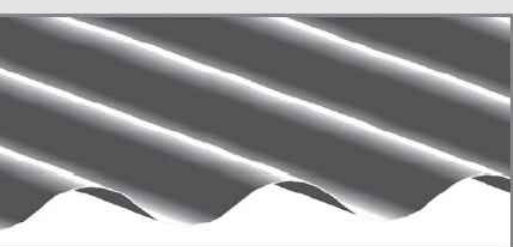
The Right Way!

CorruBracket™ 100T can be used for almost any attachment need on corrugated metal roofing commonly found in North America.

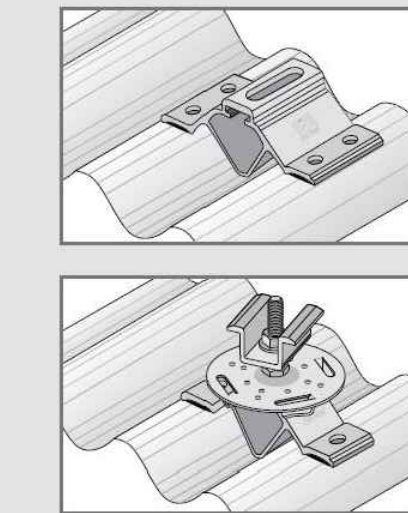
The CorruBracket™ 100T and CorruBracket™ 100T Mini

Each comes with factory-applied EPDM rubber gaskets on the base. A structural aluminum attachment bracket, CorruBracket 100T is compatible with most common metal roofing materials. For design assistance, ask your distributor. Also, please visit our website for more information including CAD details, metallurgical compatibilities, and specifications. S-5!® holding strength is unmatched in the industry.

Example Profile



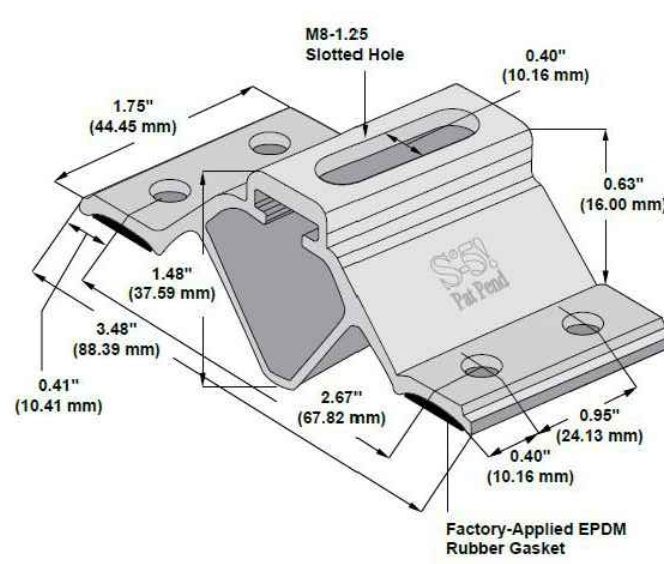
Example Applications



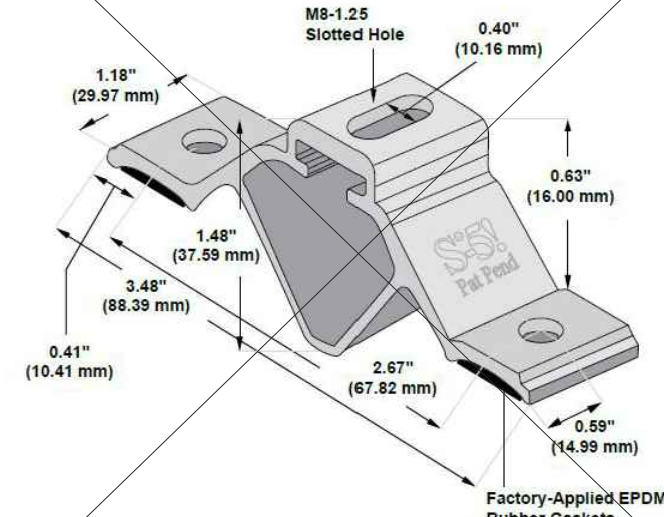
S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, visit the S-5! website, and trademarks, visit the S-5! website at www.S-5.com.
Copyright 2015, Metal-Roof Innovations, Ltd. S-5! products are patent protected.
S-5! aggressively protects its patents, trademarks, and copyrights. Version 052115.

CorruBracket™ 100T



CorruBracket™ 100T Mini



Attachment fasteners not included. Contact your distributor for information about hardware requirements.

Distributed by

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Photovoltaic Roof and Ground Mount Installation
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2557 WYANDOTTE ST. | MOUNTAIN VIEW, CA 94043

FOR CITY USE

Rev	Date	Description
1	1.15.2025	90% Plans For Review
2	2.21.2025	100% Plans Submission

Datasheets

Sheet	16 of 18
Scale	As Shown
Prepared By	VRJ
Job Number	3920
Job Code	1560CountryClub3

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Aire® Flush Mount System



Breathe easy with accelerated installations.

The Aire® racking system has been carefully engineered to streamline every part of the installation process. We've eliminated tiresome hassles, so that you get off the roof and on to your next project faster than ever.

Aire® retains the strength and reliability that IronRidge installers depend on. It also takes wire management to the next level with the first (and only) NEC-compliant rail, formally approved and listed as a cable tray.

- Strength Tested**

All components have been evaluated for superior structural performance.
- PE Certified**

Pre-stamped engineering letters are available online for most states.
- Class A Fire Rating**

Certified to maintain the fire resistance rating of the existing roof structure.
- Approved Cable Tray**

Open channel listed to NEMA VE 1, certified to hold PV and DG cables.
- UL 2703 Listed System**

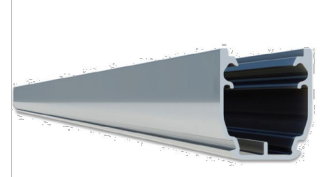
Entire system and components meet the latest effective UL 2703 standards.
- 25-Year Warranty**

Products are guaranteed to arrive without any impairing defects.

One-Tool System - 1/2" Hex-Head Components

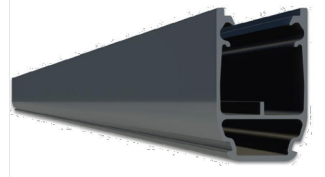
Rails

- Aire® A1 Rail**




The lighter, open Aire® rail for standard conditions.

 - 6' spanning capability
 - Wire management tray
 - Mill or anodized black
- Aire® A2 Rail**



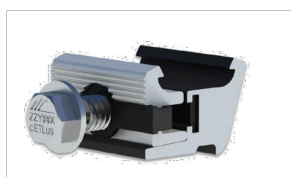
The tougher, open Aire® rail for higher load capacity.

 - 8' spanning capability
 - Wire management tray
 - Mill or anodized black
- Aire® Rail Ties**



Structurally connect and bond Aire® Rails together.

 - Reinstallable, up to 5x
 - Internal splice design
 - No more splice rules
- Aire® Dock**




Connects Aire® Rails to attachments with ease.

 - Clicks on, slides easily
 - Drops into open slots
 - Anodized assembly


Clamps & Grounding

- Aire® Lock Mids**




Securely bond between modules to Aire® Rails.

 - Fits 30-40mm modules
 - Utilizes UFO® design
 - Minimal 1/2" gap
- Aire® Lock Ends**




Securely bond modules to rail ends, entirely hidden.

 - Fits 30-40mm modules
 - Easy rail engagement
 - Clean aesthetics
- Aire® Lock Stealth®**



Securely bonds modules to rail ends, entirely hidden.

 - Angled for easy install
 - Robust tether leash
 - Fits most modules
- Aire® Lug**




Bonds Aire® Rails to grounding conductors.

 - Simplified with single bolt
 - Low-profile form factor
 - Works with 10-6 AWG


Accessories

- Aire® Caps**



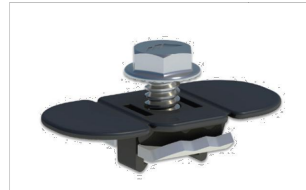
Block entry and provide a finished look to Aire® Rails.

 - Stay secure on rail ends
 - Symmetrical, with drain
 - Cover rough-cut ends
- Aire® Clip**



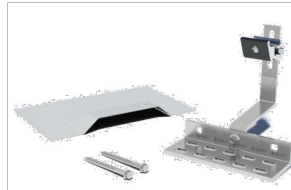
Keeps wiring contained in open Aire® Rail channels.

 - No module interference
 - Simple press-in design
 - Slot for easy removal
- Aire® MLPE Mount**



Securely bonds MLPE and accessories to Aire® Rails.

 - Glove-friendly installation
 - Lays flush in rail channel
 - Low profile form factor
- Aire® All Tile Hook**



Attaches rails to tile roofs, with Aire® Dock included.

 - Works on flat, S, & W tiles
 - Single-socket installation
 - Optional deck flashing

Resources

Design Assistant

Quickly go from rough layout to fully engineered system.

[Go to ironridge.com/design](https://ironridge.com/design)

Approved for FL Hurricane Zones

Aire® has Florida Product Approval. Additional details can be found on the Florida Building Code website.

[Learn More at bit.ly/florida-aire](https://bit.ly/florida-aire)

Ground Mount System



All-Terrain Mounting

The IronRidge® Ground Mount System combines our XR100® or XR1000® rails with locally-sourced steel pipes or mechanical tubing, to create a cost-effective structure capable of handling any site or terrain challenge.

Installation is simple with only a few structural components and no drilling, welding, or heavy machinery required. In addition, the system works with a variety of foundation options—including concrete piers, ground screws, helical or driven piles, and above-ground ballast blocks.

- Rugged Construction**

Engineered steel and aluminum components ensure durability.
- PE Certified**

Pre-stamped engineering letters available in most states.
- UL 2703 Listed System**

Meets newest effective UL 2703 standard.
- Design Software**

Online tool generates engineering values and bill of materials.
- Flexible Architecture**

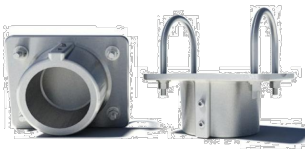
Multiple foundation and array configuration options.
- 25-Year Warranty**

Products guaranteed to be free of impairing defects.




Substructure

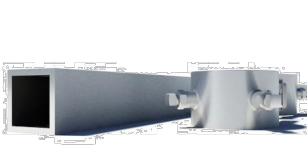
- Top Caps**



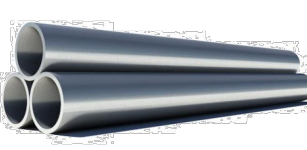
Connect vertical piers with cross pipes or tubing.
- Bonded Rail Connectors**



Attach and bond XR Rails® to cross pipes or tubing.
- Diagonal Braces**



Optional brace provides additional support.
- Cross Pipe & Piers**



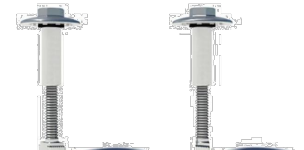
Steel pipes or mechanical tubing for substructure.

Rail Assembly

- XR100® & XR1000® Rails**




Curved XR Rails® increase spanning capabilities.
- UFO®**



Universal Fastening Objects bond modules to rails.
- Stopper Sleeves**



Snap onto the UFO® to turn into a bonded end clamp.
- CAMO®**



Bond modules to rails while staying completely hidden.

Resources

Design Assistant

Go from rough layout to fully engineered system. For free.

[Go to ironridge.com/design](https://ironridge.com/design)

NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

[Go to ironridge.com/training](https://ironridge.com/training)

LAGCC - PV Installation
At Maintenance Barn

Photovoltaic Roof and Ground Mount Installation
1560 Country Club Dr. Los Altos CA 94024

COBALT POWER SYSTEMS INC.

www.cobalt-power.com
MAIN: (650) 938-9574 | FAX (650) 938-9573
2557 WYANDOTTE ST. | MOUNTAIN VIEW, CA 94043

FOR CITY USE

Rev	Date	Description
1	1.15.2025	90% Plans For Review
2	2.21.2025	100% Plans Submission

Datasheets

Sheet	17 of 18
Scale	As Shown
Prepared By	VRJ
Job Number	3920
Job Code	1560CountryClub3

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Special
Inspections

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