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Engineering Design Notes

Oasis 4-Track Porch Enclosure System

Supporting Exhibit for Permit Review and Field Installation

Document Title	Engineering Design Notes — Oasis 4-Track Porch Enclosure System
System	Oasis 4-Track Porch Enclosure (Removable Panel Infill)
Jurisdictional Code Basis	2021 VRC (based on 2021 IRC) and applicable local amendments; Alternative Materials/Methods (e.g., R104.11 or equivalent)
Revision / Date	Rev A — January 9, 2026
Prepared By	Turnkey Porch Enclosures

1 General Notes and Basis of Design

1.1 Purpose and Scope

This document provides prescriptive installation requirements and supporting engineering rationale for the **Oasis 4-Track Porch Enclosure System** manufactured by Turnkey Porch Enclosures. The information herein is intended to support permit review and field installation for residential porch enclosure applications where the system is installed within an existing porch structure.

The Oasis system is classified as a **non-load-bearing, removable panel infill system**. It is not intended to provide structural support to the existing porch framing and shall not be relied upon as a component of the primary gravity or lateral force-resisting system of the building.

1.2 System Description

The Oasis 4-Track system consists of aluminum-framed vertical sliding panel assemblies incorporating removable vinyl or screen infill. Panels are installed within existing framed porch openings using mechanically fastened aluminum track assemblies secured to existing structural framing members.

The system is intended to improve seasonal comfort by reducing wind, rain intrusion, pollen, and insects while maintaining the ability to revert the porch to an open or screened configuration through panel removal.

1.3 Existing Structure Responsibility

Evaluation of the existing porch structure—including posts, beams, headers, roof framing, foundations, and their connections—shall be the responsibility of the **Contractor and/or Engineer of Record (EOR)** for the project.

The existing structure must be verified as code-compliant and adequate to resist all applicable design loads, including but not limited to dead loads, live loads, snow loads, and wind loads prescribed by the governing building code. Any structural deficiencies or required modifications to the existing porch structure are outside the scope of the Oasis enclosure system and shall be addressed separately.

1.4 Occupancy and Use Limitations

The Oasis enclosure system is intended for installation in **unconditioned, non-habitable porch spaces** and is designed for seasonal or intermittent use. The system is not intended to create a conditioned living space unless the entire porch assembly—including structure, enclosure, thermal performance, and mechanical systems—is evaluated and permitted in accordance with applicable building codes.

1.5 Code Basis and Regulatory Framework

Where adopted by the Authority Having Jurisdiction (AHJ), this document is intended to support review under the applicable residential building code, including but not limited to:

- 2021 Virginia Residential Code (VRC), based on the 2021 International Residential Code (IRC), and applicable local amendments; or
- Equivalent residential building codes and local amendments in other jurisdictions.

Where required by the AHJ, the Oasis enclosure system may be reviewed and approved under the **Alternative Materials, Design, and Methods** provisions of the governing code (e.g., IRC Section R104.11 or equivalent).

1.6 Wind and Environmental Considerations

The Oasis panels are **removable** and are not intended to be classified or permitted as conventional fenestration windows. The system is installed within an existing porch structure that remains responsible for meeting code-required structural performance under environmental loading.

The enclosure panels are not intended to be relied upon to resist design wind pressures in the same manner as permanently installed fenestration assemblies. For projects located in areas of elevated wind exposure, unusual site conditions, or nonstandard framing configurations, the AHJ may require site-specific sealed engineering to verify compliance.

1.7 Installation Requirements

Unless otherwise shown in project-specific details or sealed engineering documents, each enclosure panel shall be secured using a **minimum of twelve (12) corrosion-resistant self-drilling fasteners**. Fasteners shall be spaced in accordance with the installation details and shall penetrate sound, code-compliant framing members.

Fasteners shall be stainless steel or equivalent corrosion-resistant materials compatible with adjacent aluminum components and environmental exposure conditions.

1.8 Limitations and Deviations

Deviations from the requirements presented in this document, including changes to attachment methods, fastener spacing, panel dimensions, or framing conditions, shall not be made without written approval from Turnkey Porch Enclosures and, where applicable, the Engineer of Record or the Authority Having Jurisdiction.

1.9 Document Control

This document is intended to be used as a supporting exhibit for permit review and installation guidance. Revisions shall be tracked by document revision number and date. Only the most current revision shall be considered valid for construction.

2 Applicable Codes and Regulatory References

2.1 Intent of Code References

This section identifies code provisions commonly relied upon by the Authority Having Jurisdiction (AHJ) when reviewing porch enclosures installed within existing residential structures. These references are provided to:

- establish the regulatory basis under which the Oasis 4-Track System may be reviewed;
- clarify scope boundaries between **existing structural framing** and the **non-load-bearing removable infill system**; and
- support permit review consistency across jurisdictions using IRC-based residential codes.

Where local amendments or a different code edition applies, the AHJ's adopted code shall govern.

2.2 Primary Governing Code (Residential)

Unless otherwise required by the AHJ, the Oasis 4-Track System is intended to be reviewed under the applicable residential building code adopted by the jurisdiction, including:

- **Virginia Residential Code (VRC)** (as adopted; based on the IRC), and applicable local amendments; or
- **International Residential Code (IRC)** (as adopted), and applicable local amendments in other jurisdictions.

2.3 Alternative Materials, Design, and Methods (AHJ Approval Path)

Where the Oasis system is not explicitly described by prescriptive code text, it may be evaluated for approval under the governing code's provisions for **Alternative Materials, Design, and Methods** (e.g., IRC **R104.11** or equivalent). Under this path, approval is typically supported by one or more of the following:

- sealed engineering letters addressing discrete performance requirements (e.g., guard / fall protection performance);
- supporting installation details and fastener schedules;
- manufacturer documentation regarding system components and intended use; and/or
- field inspection of substrate framing and attachment locations.

2.4 Structural Design Loads and Existing Structure Requirements

The Oasis 4-Track System is a **non-load-bearing, removable panel infill system**. The **existing porch structure** (posts, beams, headers, roof framing, foundations, and connections) remains responsible for compliance with all applicable design loads and structural provisions of the adopted code, including but not limited to:

- **dead and live loads** applicable to porches and roof structures;
- **wind design criteria** applicable to the existing structure based on exposure and jurisdictional requirements; and
- any **snow/ice** or other environmental load criteria where applicable.

The Oasis panels are **removable** and are not intended to be classified or permitted as conventional fenestration windows. Accordingly, the panel infill system shall not be relied upon as a component of the primary lateral-force resisting system of the building.

2.5 Guard / Fall Protection (Where Applicable)

Where an existing porch opening constitutes a walking surface fall hazard, the governing residential code typically requires guards when the adjacent grade is above the code threshold. Review of these conditions generally falls under the code sections addressing:

- **guards and guard height requirements** (e.g., IRC **R312** or equivalent); and
- **guard loading criteria** (commonly including a **200 lb concentrated load** requirement and related load cases per the governing code).

Where the Oasis system is used to satisfy guard / fall protection requirements, compliance shall be demonstrated by sealed engineering documentation applicable to the system configuration and installation conditions.

2.6 Weather Protection and Water Management

The Oasis system is intended to reduce wind-driven rain intrusion and airborne debris typical of porch environments. It is not intended to be relied upon as a fully weather-tight exterior wall assembly equivalent to conditioned building envelope construction unless explicitly engineered and permitted as such.

Where required by the AHJ, water management and flashing details shall be reviewed in accordance with adopted code requirements for exterior wall openings and penetrations. The Contractor shall ensure appropriate integration with existing cladding, trim, and flashing conditions.

2.7 Referenced Standards (Informational)

The Oasis system is not marketed or permitted as a conventional fenestration window product. Where third-party standards are referenced by reviewers for context, they may be used as informational benchmarks only, unless the AHJ explicitly requires testing or classification under a specific standard.

2.8 Code Reference Matrix (Permit Review Aid)

Topic	Typical IRC/VRC Reference (or Equivalent)
Alternative materials / methods approval	IRC R104.11 (or adopted equivalent)
Existing structure load compliance	IRC R301 (wind/snow/live load criteria; as adopted)
Guards / fall protection	IRC R312 (guards; as adopted)
Guard loading (concentrated load criteria)	Adopted residential code loading provisions (commonly includes 200 lb concentrated load case)
Weather protection integration	Adopted exterior opening / water management provisions (as applicable)

2.9 Reviewer Notes (Clarifying Boundaries)

For plan review clarity, the following boundaries apply:

- The Oasis system provides **panel infill** and associated attachment to existing framing members.
- The Oasis system does **not** certify, upgrade, or replace the existing porch's structural capacity.
- Guard/fall protection compliance (where required) is supported by sealed engineering documentation specific to the applicable system configuration, attachments, and spans.
- If the AHJ determines the project converts the porch into conditioned/habitable space, additional code requirements may apply beyond the scope of this document.

3 System Classification and Definitions

3.1 Purpose of Classification

This section establishes clear terminology and classification boundaries for the Oasis 4-Track Porch Enclosure System to ensure consistent interpretation during permit review, inspection, and enforcement.

The intent of these definitions is to:

- prevent misclassification of the system as conventional fenestration or structural wall construction;

- clearly distinguish the Oasis system from sunrooms, patio enclosures, and conditioned building envelope assemblies; and
- align system terminology with its intended use, performance characteristics, and installation context.

3.2 System Classification

For purposes of permit review and code interpretation, the Oasis 4-Track Porch Enclosure System shall be classified as a:

- **Non-load-bearing removable panel infill system**;
- installed within an **existing porch opening**;
- intended for **unconditioned, non-habitable use**; and
- mechanically attached to existing structural framing members without altering the primary structural load paths.

The system does not function as, and shall not be classified as, a structural wall, shear wall, or lateral-force resisting element.

3.3 Distinction from Fenestration and Windows

The Oasis enclosure panels are not conventional windows and are not intended to be reviewed, tested, or permitted as fenestration assemblies.

Specifically:

- The panels are **removable** and are not permanently fixed glazing systems.
- The system does not form part of the building's conditioned thermal envelope.
- The system is not relied upon for code-required wind pressure resistance applicable to fenestration products.
- The system is not marketed or installed as a substitute for exterior windows or doors governed by fenestration performance standards.

Accordingly, fenestration-specific testing standards, labeling requirements, and performance criteria are not applicable unless explicitly required by the Authority Having Jurisdiction.

3.4 Distinction from Sunrooms and Patio Enclosures

The Oasis system is distinct from sunrooms, patio rooms, and prefabricated enclosure systems that enclose space with permanently installed walls and glazing.

Key distinctions include:

- installation occurs within an **existing porch structure** that remains structurally independent;
- panels are designed to be **removable**, allowing the porch to revert to an open or screened condition;
- the system does not provide roof support, wall bracing, or structural enclosure;
- the system is intended for seasonal environmental control rather than year-round conditioned occupancy.

Unless explicitly engineered and permitted as such, the Oasis system is not intended to create a sunroom or habitable space as defined by residential building codes.

3.5 Terminology Definitions (For Permit Review)

For consistency during plan review and inspection, the following terms apply:

- **Removable Panel**: A vertically sliding or lift-out enclosure panel designed to be manually removed without permanent alteration to the surrounding structure.
- **Panel Infill System**: A non-structural assembly installed within an existing framed opening to provide environmental separation without contributing to structural load resistance.
- **Existing Porch Structure**: The pre-existing roof, posts, beams, headers, foundations, and connections that define the porch opening prior to installation of the Oasis system.
- **Unconditioned Space**: A space not provided with permanent heating, cooling, or insulation intended to maintain indoor environmental conditions equivalent to habitable rooms.

3.6 Structural Role Clarification

The Oasis 4-Track System does not:

- increase allowable spans of existing structural members;
- provide lateral bracing or shear resistance;
- substitute for required guards unless specifically engineered and documented; or
- alter the original design loads or load paths of the existing porch structure.

Any structural performance claims beyond the scope of this document shall be supported by project-specific sealed engineering.

3.7 Inspection and Enforcement Guidance

During inspection, the system should be evaluated based on:

- proper attachment to sound framing members as shown in approved installation details;
- compliance with stated fastener quantities and spacing;
- consistency with approved plans and supporting engineering documentation; and
- maintenance of required guard/fall protection where applicable.

Reclassification of the space as conditioned or habitable may trigger additional code requirements beyond the scope of this document.

3.8 Reviewer Clarification Statement

This section is intended to provide clarity and consistency for plan reviewers and inspectors. Where interpretation differences arise, the Authority Having Jurisdiction retains final authority to determine applicable code provisions based on project-specific conditions.

4 System Components and Materials

4.1 Purpose and Scope

This section identifies the primary components and materials comprising the Oasis 4-Track Porch Enclosure System and establishes baseline material characteristics relevant to permit review and inspection.

The information herein is provided to:

- define the materials supplied as part of the Oasis system;
- clarify the functional role of each component within the overall assembly; and
- ensure consistency between installation details, engineering documentation, and field inspection.

Unless otherwise noted, the components described in this section are not intended to provide primary structural support to the existing porch structure.

4.2 Aluminum Framing and Track Components

The Oasis system utilizes extruded aluminum framing and PVC track assemblies to support vertical sliding panel movement and attachment to existing porch framing members.

- Aluminum components are manufactured from corrosion-resistant aluminum alloys suitable for exterior residential environments.
- Track assemblies are mechanically fastened to existing structural framing members and are not intended to span between supports as load-bearing elements.

- Aluminum components function as panel guides, retainers, and attachment interfaces only.

The aluminum framing does not serve as a structural wall, beam, post, or bracing element and shall not be relied upon to resist primary gravity or lateral loads.

4.3 Panel Frames

Each enclosure panel consists of an aluminum frame designed to house removable infill material and interface with the multi-track system.

- Panel frames are designed to accommodate vertical sliding operation and manual removal.
- Panel frame geometry and connections are intended to support panel self-weight and normal operational loads only.
- Panel frames do not provide structural reinforcement to the existing porch opening.

4.4 Infill Materials

Panel infill materials may include flexible vinyl glazing, screen, or other approved infill types supplied by Turnkey Porch Enclosures.

- Vinyl infill materials are intended to provide environmental separation (wind, rain intrusion, pollen, insects) and are not rigid glazing.
- Infill materials are removable and replaceable without modification to the surrounding structure.
- Infill materials are not intended to meet impact, windborne debris, or fenestration performance standards unless specifically engineered and documented.

4.5 Fasteners and Attachment Hardware

Attachment of the Oasis system to existing porch framing is accomplished using corrosion-resistant mechanical fasteners.

- Fasteners shall be stainless steel or equivalent corrosion-resistant self-drilling fasteners compatible with aluminum substrates.
- Fasteners are installed through aluminum track assemblies into existing sound framing members.
- Unless otherwise shown in sealed engineering documentation, each enclosure panel shall be secured using a **minimum of twelve (12) fasteners**.

Fastener spacing, edge distances, and embedment shall be in accordance with the approved installation details and applicable engineering documentation.

4.6 Guard / Fall Protection Components (Where Applicable)

Where the Oasis system is configured to function as part of a guard or fall protection assembly, additional components may be incorporated, including horizontal rails, intermediate members, or reinforced attachment interfaces.

- Guard-related components are designed to work in conjunction with the existing porch structure.
- Compliance with applicable guard loading requirements shall be demonstrated through sealed engineering documentation specific to the system configuration.
- Guard components are not intended to substitute for structural framing members unless explicitly engineered and approved.

4.7 Surface Finishes and Corrosion Resistance

Aluminum components are finished to provide durability and corrosion resistance appropriate for exterior residential exposure.

- Finishes are intended to resist normal weathering, oxidation, and surface degradation under typical residential conditions.
- Finish selection does not alter the structural classification or load-bearing role of the system components.

4.8 Material Substitutions and Variations

Substitution of materials or components described in this section shall not be permitted without written approval from Turnkey Porch Enclosures and, where applicable, the Engineer of Record or Authority Having Jurisdiction.

Minor dimensional or cosmetic variations that do not affect system performance or attachment requirements may be permitted at the discretion of Turnkey Porch Enclosures.

4.9 Material Responsibility Boundaries

For clarity during review and inspection:

- Turnkey Porch Enclosures is responsible for the materials supplied as part of the Oasis system.
- The Contractor is responsible for verifying compatibility between the Oasis components and the existing porch framing.
- The existing porch structure remains responsible for all code-required structural performance.

5 Installation Requirements and Fastener Schedules

5.1 Purpose and Applicability

This section establishes minimum installation requirements and fastener schedules for the Oasis 4-Track Porch Enclosure System. These requirements are intended to:

- ensure consistent attachment of the system to existing porch framing;
- provide clear criteria for plan review and field inspection; and
- define when project-specific sealed engineering is required.

Unless otherwise approved by the Authority Having Jurisdiction (AHJ), installation shall conform to the requirements outlined in this section and the approved installation details.

5.2 General Installation Requirements

The Oasis system shall be installed only within existing porch openings framed with sound, code-compliant structural members.

- Installation shall not alter or remove existing structural framing members without approval by the Engineer of Record.
- Track assemblies shall be installed plumb, level, and square to ensure proper panel operation and engagement.
- Attachment shall be made directly into framing members capable of accepting mechanical fasteners; attachment into trim-only elements is not permitted.

5.3 Fastener Type

Unless otherwise specified by sealed engineering documentation:

- Fasteners shall be corrosion-resistant self-drilling screws compatible with aluminum substrates.
- Stainless steel fasteners, or equivalent corrosion-resistant fasteners, shall be used for exterior exposure.
- Fasteners shall be of sufficient length to achieve full penetration into the supporting framing member.

5.4 Minimum Fastener Quantity per Panel

Each enclosure panel shall be secured with a **minimum of twelve (12) mechanical fasteners**.

- Fasteners shall be distributed between the top and bottom track assemblies unless otherwise

shown in approved details.

- The minimum fastener quantity applies regardless of panel width, unless superseded by sealed engineering documentation.

This minimum fastener requirement is intended to provide redundancy and consistent attachment across typical residential porch configurations.

5.5 Fastener Spacing

Unless otherwise approved by sealed engineering documentation:

- Fasteners shall be spaced at a maximum of **24 inches on center (24" o.c.)**.
- Edge distances and end distances shall be maintained in accordance with approved installation details.
- Fasteners shall be installed perpendicular to the substrate to ensure proper engagement and load transfer.

5.6 Substrate Requirements

Fasteners shall be installed into one or more of the following approved substrates, as applicable:

- wood framing members (solid sawn or engineered lumber);
- structural composite framing members approved for mechanical fastening; or
- other framing materials specifically approved by the Engineer of Record.

Attachment into non-structural trim, finish materials, or deteriorated framing members is not permitted.

5.7 Panel Alignment and Operation

Upon completion of installation:

- Panels shall slide freely within the track system without binding.
- Panels shall remain seated within the track assemblies under normal operating conditions.
- Removable panels shall be capable of manual removal without damage to surrounding framing.

Operational performance shall not be achieved by reducing fastener quantities or spacing below the minimum requirements stated herein.

5.8 Guard / Fall Protection Installations (Where Applicable)

Where the Oasis system is utilized as part of a guard or fall protection assembly:

- Installation shall conform to the applicable sealed engineering documentation specific to the guard configuration.
- Fastener quantities, spacing, and attachment locations shall match the engineered details exactly.
- Deviations from engineered guard installation details are not permitted without written approval from the Engineer of Record.

5.9 Conditions Requiring Sealed Engineering

Project-specific sealed engineering may be required where any of the following conditions exist:

- panel widths, heights, or configurations exceed typical prescriptive limits;
- the system is relied upon to satisfy guard or fall protection requirements;
- existing framing conditions are atypical, deteriorated, or nonstandard; or
- the Authority Having Jurisdiction determines additional verification is necessary.

5.10 Inspection and Verification

During inspection, the following shall be verified:

- minimum fastener quantities and spacing are met;
- fasteners are installed into approved substrates;
- panels are properly seated and operable; and
- installation is consistent with approved plans and supporting documentation.

5.11 Installation Responsibility

Installation of the Oasis system shall be performed by qualified installers familiar with the system requirements. The Contractor is responsible for ensuring installation complies with the approved plans, this document, and any applicable engineering documentation.

5.12 Limitations

This section provides minimum installation requirements for typical applications. It does not supersede sealed engineering documents, project-specific approvals, or AHJ directives.

6 Guard and Fall Protection Performance (Engineering-Supported)

6.1 Purpose and Applicability

This section addresses conditions under which the Oasis 4-Track Porch Enclosure System may be utilized as part of a guard or fall protection assembly where required by the governing residential building code.

The intent of this section is to:

- identify when guard or fall protection requirements apply;
- define the limits of prescriptive guidance versus engineered design; and
- clearly reference sealed engineering documentation as the governing authority for guard performance.

Nothing in this section shall be construed as eliminating the requirement for sealed engineering where guard or fall protection performance is required.

6.2 Code Basis for Guard Requirements

Residential building codes typically require guards at walking surfaces where the adjacent grade or floor elevation exceeds the code-prescribed threshold.

Where applicable, guard requirements are generally governed by:

- minimum guard height provisions;
- opening limitations to prevent passage of a sphere of prescribed diameter; and
- structural loading requirements, commonly including a **200 lb concentrated load** applied at the top of the guard.

Final determination of guard applicability and compliance rests with the Authority Having Jurisdiction (AHJ).

6.3 Use of the Oasis System in Guard Applications

Where the Oasis system is proposed to function as part of a guard or fall protection assembly:

- the system configuration shall match an approved, engineered condition;
- attachment locations, fastener quantities, and member sizes shall comply with sealed engineering documentation; and
- installation shall not deviate from the engineered details without written approval from the Engineer of Record.

The Oasis system shall not be assumed to satisfy guard requirements unless explicitly documented by sealed engineering applicable to the specific configuration.

6.4 Engineering Documentation

Compliance with guard and fall protection requirements shall be demonstrated through sealed engineering documentation prepared by a licensed professional engineer.

Engineering documentation may include, but is not limited to:

- evaluation of rail heights and intermediate members;
- verification of load resistance under prescribed guard load cases;
- confirmation of attachment adequacy to existing structural framing; and
- configuration-specific limitations such as maximum spans or panel widths.

Sealed engineering documents shall govern in the event of any discrepancy between this document and installation details.

6.5 Limitations of Prescriptive Guidance

Prescriptive installation requirements provided elsewhere in this document do not establish guard performance on their own.

Specifically:

- fastener quantities and spacing prescribed for typical panel installation are not sufficient to infer guard load resistance;
- aluminum track and panel components are not structural guard members unless explicitly engineered as such; and
- guard performance shall not be inferred from material properties alone.

Any representation of guard compliance without sealed engineering is prohibited.

6.6 Installation Requirements for Guard Configurations

Where sealed engineering is provided for a guard configuration:

- installers shall strictly follow the engineered details;
- substitutions of materials, fasteners, or attachment methods are not permitted; and
- field modifications shall require written approval from the Engineer of Record.

6.7 Inspection and Verification

During inspection of guard or fall protection installations, verification shall include:

- presence of applicable sealed engineering documentation;
- conformity of the installed configuration to engineered details;
- verification of attachment locations and quantities; and
- confirmation that no unapproved modifications have been made.

6.8 Responsibility Boundaries

For clarity:

- Turnkey Porch Enclosures provides the enclosure system and supporting documentation;
- the Engineer of Record is responsible for guard and fall protection design verification;
- the Contractor is responsible for installation in accordance with approved documents; and
- the AHJ retains final authority regarding acceptance and enforcement.

6.9 Summary Statement

Where guard or fall protection requirements apply, compliance shall be demonstrated solely through sealed engineering documentation specific to the Oasis system configuration and project conditions. This document serves as a supporting reference and does not replace engineered design.

7 Limitations, Assumptions, and Conditions of Acceptance

7.1 Purpose

This section establishes the assumptions, limitations, and conditions under which the Oasis 4-Track Porch Enclosure System and the supporting documentation herein are intended to be reviewed, approved, and installed.

These provisions are included to:

- define the boundaries of applicability for this document;
- prevent misinterpretation of system performance or scope;
- clarify responsibility among project participants; and
- support consistent enforcement by the Authority Having Jurisdiction (AHJ).

7.2 Assumptions

The following assumptions apply unless specifically modified by sealed engineering documentation or written approval from the AHJ:

- The Oasis system is installed within an **existing porch structure** that is code-compliant or has been verified as such by the Contractor or Engineer of Record.
- The porch structure was originally designed to support all applicable gravity and environmental loads independent of the enclosure system.
- Installation is performed in accordance with approved plans, installation details, and manufacturer instructions.
- Environmental exposure conditions are typical of residential exterior porch environments.

7.3 System Limitations

The Oasis 4-Track Porch Enclosure System is subject to the following limitations:

- The system does not provide structural support, lateral bracing, or load redistribution for the existing porch structure.
- The system is not intended to resist code-prescribed wind pressures applicable to permanently installed fenestration or exterior wall assemblies.
- The system does not upgrade, modify, or certify the existing porch structure's structural capacity.
- The system does not convert an unconditioned porch into a conditioned or habitable space.

7.4 Guard and Fall Protection Limitations

Where the Oasis system is proposed to satisfy guard or fall protection requirements:

- Compliance shall be demonstrated solely through configuration-specific sealed engineering documentation.
- Prescriptive installation requirements elsewhere in this document shall not be interpreted as establishing guard load resistance.
- Guard performance shall not be assumed based on material strength, fastener quantity, or panel configuration alone.

7.5 Conditions Requiring Additional Review

Additional review, documentation, or sealed engineering may be required where any of the following conditions exist:

- Nonstandard porch geometry or framing conditions;
- Elevated wind exposure, coastal conditions, or jurisdiction-specific environmental criteria;
- Panel dimensions or configurations exceeding typical prescriptive limits;
- Use of the system in applications not expressly described in this document; or
- Determination by the AHJ that supplemental verification is necessary.

7.6 Conditions of Acceptance by the AHJ

Acceptance of the Oasis system under this document is subject to the following conditions:

- Installation complies with approved plans, this document, and any supporting sealed engineering.
- No unapproved modifications are made to the system or existing porch structure.
- Any conflicts between this document and sealed engineering documentation shall be resolved in favor of the sealed engineering.
- The AHJ retains the authority to require additional information or clarification as deemed necessary.

7.7 No Expansion of Scope

Nothing in this document shall be construed to:

- transfer responsibility for the existing porch structure to Turnkey Porch Enclosures;
- certify compliance of the existing structure beyond the scope of the enclosure system;
- waive applicable code requirements; or
- replace the role of the Engineer of Record where engineering judgment is required.

7.8 Field Conditions and Modifications

Field conditions may vary from assumptions made during plan review. Where unforeseen conditions are encountered:

- work shall pause in the affected area;
- the condition shall be evaluated by the Contractor and, where required, the Engineer of Record; and
- corrective measures shall be implemented only after approval by the AHJ where applicable.

7.9 Final Clarification

This document is intended to support permit review and installation guidance for the Oasis 4-Track Porch Enclosure System. It does not constitute a structural certification of the existing porch structure and shall be used in conjunction with project-specific plans and engineering documentation as required.

8 Inspection and Verification Checklist

8.1 Purpose

This section provides a standardized inspection and verification checklist intended to assist the Authority Having Jurisdiction (AHJ), inspectors, and installers in confirming compliance of the Oasis 4-Track Porch Enclosure System with the approved plans, this document, and any supporting sealed engineering documentation.

This checklist is provided as an aid only and does not replace the AHJ's inspection authority or discretion.

8.2 Pre-Installation Verification

Prior to installation, the following items shall be verified:

- Approved permit and plans are available on site.
- Applicable sealed engineering documentation (where required) is available on site.
- Existing porch framing members appear sound, intact, and capable of accepting mechanical fasteners.
- Installation location matches the approved plans and scope of work.

8.3 System Classification Verification

During review and inspection, confirm the following:

- The enclosure system is installed within an existing porch opening.
- The system is non-load-bearing and does not support roof, floor, or wall loads.
- The space remains classified as unconditioned and non-habitable unless otherwise approved.

8.4 Attachment and Fastener Verification

Verify the following attachment requirements:

- Track assemblies are fastened directly into approved structural framing members.
- A minimum of twelve (12) fasteners are provided per enclosure panel unless otherwise approved by sealed engineering.
- Fastener spacing does not exceed 24 inches on center (24” o.c.).
- Fasteners are corrosion-resistant and appropriate for exterior use.

8.5 Alignment and Operation

Verify proper system operation:

- Track assemblies are installed plumb, level, and square.
- Panels slide freely without binding or disengagement.
- Removable panels can be manually removed without damage to surrounding framing.

8.6 Guard and Fall Protection Verification (Where Applicable)

Where guard or fall protection requirements apply:

- Applicable sealed engineering documentation is present and approved.
- Installation matches the engineered configuration and details.
- Required rail heights, intermediate members, and attachments are installed as shown.
- No unapproved modifications have been made to engineered guard components.

8.7 Weather Protection and Integration

Verify integration with existing construction:

- Track assemblies and perimeter interfaces are properly sealed as shown in approved details.
- Water management and flashing elements are installed where required.
- Installation does not compromise existing cladding, trim, or water-resistive barriers.

8.8 Post-Installation Verification

Upon completion of installation, verify the following:

- Installation is consistent with approved plans and this document.
- All fasteners are installed and tightened appropriately.
- Panels are secure and fully seated within track assemblies.

- System appearance and operation are consistent with manufacturer intent.

8.9 Field Modifications and Deviations

If deviations or field modifications are observed:

- Modifications have been reviewed and approved by the Engineer of Record where required.
- The Authority Having Jurisdiction has approved any changes affecting code compliance.
- Documentation of approved modifications is retained with the permit records.

8.10 Final Acceptance Criteria

Final acceptance of the Oasis 4-Track Porch Enclosure System is contingent upon:

- satisfactory completion of all required inspections;
- resolution of any identified deficiencies; and
- confirmation that all work complies with approved documents and applicable codes.

8.11 Inspection Disclaimer

This checklist is intended as a general verification aid. The Authority Having Jurisdiction retains full authority to interpret and enforce applicable codes and to require additional inspection or documentation as deemed necessary.

9 Revision History and Document Control Log

9.1 Purpose

This section provides a formal record of revisions and establishes document control procedures for the Oasis 4-Track Porch Enclosure System Engineering Design Notes.

Maintaining a clear revision history:

- ensures reviewers and inspectors are referencing the correct version;
- documents changes made in response to code review or engineering updates; and
- supports consistent use of approved information across projects.

9.2 Revision Control Policy

This document is controlled by revision number and date.

- Only the most current revision shall be considered valid for construction, permit review, and inspection.
- Superseded revisions shall not be used for new installations.
- Revisions affecting engineering performance or code compliance shall be reviewed and approved prior to issuance.

9.3 Revision History

Rev	Date	Description of Revision	Prepared / Approved By
A	January 9, 2026	Initial issue for permit review and installation guidance.	Turnkey Porch Enclosures

9.4 Document Distribution

This document may be distributed for the following purposes:

- submission to Authorities Having Jurisdiction for permit review;
- reference by Engineers of Record in support of project-specific evaluations;
- use by Contractors and Installers for installation guidance; and
- retention within project records.

Unauthorized modification or redistribution of this document without revision tracking is not permitted.

9.5 Superseding Documents

Where project-specific sealed engineering documentation, approved plans, or AHJ directives conflict with this document, the following order of precedence shall apply:

1. Authority Having Jurisdiction directives;
2. Project-specific sealed engineering documentation;
3. Approved construction plans;
4. This document (Engineering Design Notes);
5. Manufacturer installation details not included herein.

9.6 Archiving and Record Retention

Turnkey Porch Enclosures shall retain archived copies of superseded revisions for reference and recordkeeping. Archived documents shall be clearly marked as superseded and shall not be used for active projects.

9.7 Closing Statement

This document represents the current engineering design notes and installation guidance for the Oasis 4-Track Porch Enclosure System as of the revision date shown. Use of this document constitutes acknowledgment of its limitations, assumptions, and conditions of acceptance.

SECTION 1

OASIS ENCLOSURE INSTALLATION

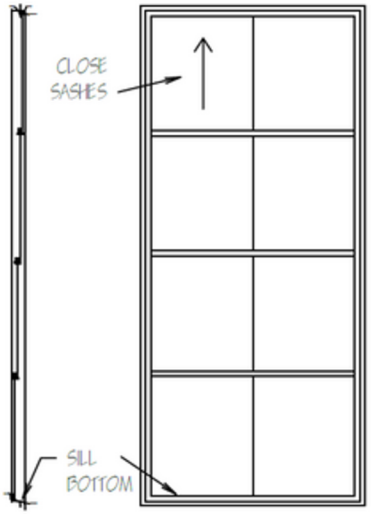
TOOLS NEEDED

- DRILL
- RAZOR KNIFE
- PACKAGE OF SCREWS (SUPPLIED)
- 5-1 TOOL

SCREW SPECIFICATIONS

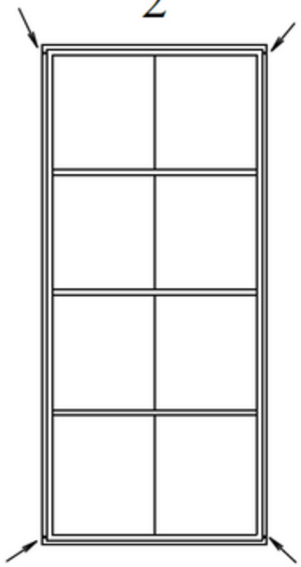
- 10-16 SELF-DRILLING
- CARBON & STAINLESS STEEL
- MINIMUM TENSILE STRENGTH - 2430 LBS
- MINIMUM TORTIAL STRENGTH - 95IN /LBS
- MINIMUM SHEAR STRENGTH - 1460 LBS
- THREAD LENGTH - 1.25"
- INCLUDED WITH ENCLSOURES

1



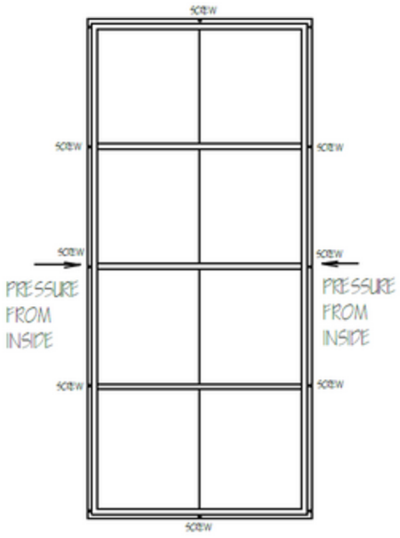
STEP ONE:
CLOSE THE SASHES AND INSURE THE UNIT IS RIGHT SIDE UP.

2



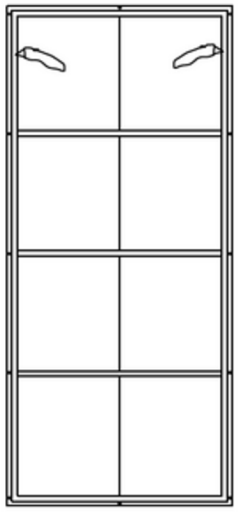
STEP TWO:
PLACE UNIT IN OPENING AND PUSH UP AND CENTER SIDE TO SIDE IN OPENING. INSTALL SUPPLIED SCREWS AT EACH CORNER

3



STEP THREE:
CHECK TO SEE IF SASHES ARE HOLDING IN PLACE WHEN OPENED. IF NOT, APPLY PRESSURE TO THE SIDES USING SHIMS OR 5 IN 1 AND INSTALL REMAINING SCREWS.

4



STEP FOUR:
TIGHTEN SCREEN IF NEEDED BY REMOVING RUBBER GASKET FROM ONE SIDE AND RE APPLY. TRIM SCREEN WHEN DONE.

General Notes

TURNKEY PORCH ENCLOSURES

ENGINEERING DESIGN SHEETS

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SECTION 2

OASIS PORCH ENCLOSURE - FALL RAIL SYSTEM

THE REVIEW OF THE OASIS PORCH ENCLOSURE FALL RAIL SYSTEM IS PRODUCED AS AN ALTERNATIVE TO RAILING AND SCREENING OF A PORCH TO ALSO GIVES THE BENEFIT OF THE PORCH AS USABLE SPACE FOR AT LEAST THREE SEASONS OF THE YEAR. SINCE THE CURRENT APPROVED CODE FOR RESIDENTIAL CONSTRUCTION IS THE 2018 VRC, ALL REFERENCES ARE TO THIS CODE. PENDING APPROVAL OF IRC (VRC) 2021 CODE, ALL PROVISIONS OF THIS ANALYSIS HAVE ALSO BEEN CONFIRMED TO MEET THE 2021 CODE PROVISIONS. SINCE THE WALL ENCLOSURE SYSTEM IS INSTALLED ON A PATIO THAT HAS A ROOF, THE PROVISIONS OF AH101 THROUGH AH106 IN APPENDIX H OF THE BUILDING CODE APPLY AND HAVE BEEN INCORPORATED IN THIS ANALYSIS.

THE LOAD ANALYSIS IS IN COMPLIANCE WITH THE PROVISIONS OF R301.5, TABLE R301.5, R312, AND R609.7.

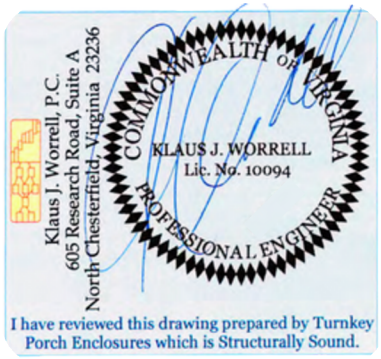
THE WALL SYSTEM IS COMPOSED OF THREE OR FOUR VENTS (THE POLYVINYL FILM ANDVSCREEN) WITH THE INNERMOST SASH FIXED IN PLACE AS NOTED IN THE VENT LOCK PRODUCT ATTACHMENT (ATTACHMENT A). THE INNERMOST SASH CANNOT BE RAISED OR REMOVED, WHILE THE OTHER SASHES IN THE SYSTEM CAN BE OPERATED FOR OPEN AIR OR PLACED IN THE CLOSED POSITION. THE POLYVINYL INFILL HAS BEEN TESTED TO WITHSTAND AT LEAST FOUR TIMES THE REQUIRED FIFTY POUNDS PER SQUARE FOOT APPLIED TO A ONE-FOOT LOAD AREA AT THE CENTER OF THE PANEL. THE BENEFIT OF THE SCREEN RESISTANCE HAS NOT BEEN ADDED TO THE ANALYSIS. THE PROVISIONS OF TABLE R301.5.F AND R301.5.H ARE MET FOR THIS INFILL MATERIAL SINCE THE LOAD RESISTANCE EXCEEDS THE SAFETY FACTOR OF FOUR ON THE ONE-SQUARE-FOOT SURFACE OF THE PANEL.

THE SECOND FACTOR IN THE ANALYSIS IS THE SECURING OF THE PORCH ENCLOSURE PANEL TO THE MAIN FORCE-RESISTING SYSTEM OF THE PORCH COLUMNS. IT IS ASSUMED THAT THE PORCH COLUMNS HAVE BEEN PROPERLY SIZED AND INSTALLED FOR THE SUPPORT OF THE PORCH ROOF SYSTEM AND ARE THEREFORE IN COMPRESSION, WHICH ADDS TO THE STABILITY OF THE SYSTEM FRAME CONNECTION. THE ENCLOSURE IS SECURED TO THE PORCH COLUMNS IN ACCORDANCE WITH THE ATTACHMENT TITLED TURNKEY PORCH ENCLOSURES INSTALLATION INSTRUCTIONS (ATTACHMENT B). SCREWS ARE INSTALLED THROUGH THE FLANGE (SEE ATTACHMENT C) WITH SPACING TO ALIGN WITH THE HORIZONTAL SASH BARS AND NOT TO EXCEED TWENTY-FOUR INCHES ON CENTER. A MINIMUM OF TWELVE SCREWS PER ENCLOSURE PANEL SHALL BE INSTALLED. THIS INSTALLATION METHOD MEETS AND EXCEEDS THE REQUIREMENTS OF R609.7.

THE FALL RAIL WILL BE SET AT THIRTY-SIX INCHES ABOVE THE FINISHED FLOOR AND HAS BEEN TESTED AND DESIGNED TO WITHSTAND THE REQUIRED LOADING OF TWO HUNDRED POUNDS IN ANY DIRECTION ON THE RAIL WITH A MAXIMUM SPAN OF SIXTY INCHES. THE FALL RAIL, WITH A CORE OF ALUMINUM SQUARE FRAME OF ONE AND THREE-QUARTERS INCHES WITH A WALL THICKNESS OF ⅛", WITHOUT SUPPORT FROM THE MOVABLE PANELS, UNDER FULL LOADING HAS A MAXIMUM STRESS IN THE ALUMINUM SPINE OF THE HORIZONTAL RAIL WITHOUT THE WOOD FILL OF SIXTY PERCENT OF THE ALLOWABLE AND A DESIGN DEFLECTION OF 0.0248" (FOR FIXED) OR 0.124" (FOR SIMPLE PINNED ENDS) FOR THE 60" SPAN (THE ALLOWABLE L/240 IS 0.25"). THE DESIGN LIMIT FOR A SIMPLE SPAN IS BASED ON A MAXIMUM OF 60". THE SYSTEM HAS ALSO BEEN DESIGNED AND TESTED TO WITHSTAND THE REQUIRED LOADING WHEN INSTALLED USING THE 14 GA. BRACKETS DESCRIBED IN THE FALL RAIL INSTALLATION SPECIFICATIONS (ATTACHMENTS B AND D).

WHEN INSTALLED ON A TWIN ENCLOSURE INSTALLATION, THE FALL RAIL SHALL BE ADDITIONALLY SECURED TO THE STRUCTURAL VERTICAL CENTER BAR (BASIC I-SHAPE SUPPORTING THE PLASTIC WINDOW SIDE TRACKS WITH ADEQUATE SPACE FOR THE 1" SCREW SUPPORTING THE SUPPORT BRACKET) OF THE UNIT USING #10 FLAT HEAD SCREWS, THUS MAINTAINING A CLEAR SPAN FOR THE FALL RAIL TO BE LESS THAN THE DESIGN SIXTY INCHES. THE TWIN ENCLOSURE PANEL IS LIMITED TO ONE HUNDRED INCHES MAXIMUM FOR A TWO-SPAN CONDITION. THE SHEAR RESISTANCE OF THE #10 SCREW UNDER THE MAXIMUM TWO-HUNDRED-POUND LOAD HAS A SAFETY FACTOR OF AT LEAST THREE. THE LOAD REQUIREMENTS OF R301.5 AND TABLE R301.5.H HAVE BEEN MET.
THIS ANALYSIS ALLOWS FOR THE GRADE OF THE PORCH FLOOR TO BE GREATER THAN 30" AS NOTED IN THE AMENDED SECTION R312 OF THE BUILDING CODE.

THE TURNKEY PORCH ENCLOSURE SYSTEM IS COMPLIANT.



KLAUS J. WORRELL, P.C.
CONSULTING ENGINEER
605 RESEARCH ROAD,
SUITE A
NORTH CHESTERFIELD,
VIRGINIA 23236
NOVEMBER 2024

General Notes

TURNKEY PORCH ENCLOSURES

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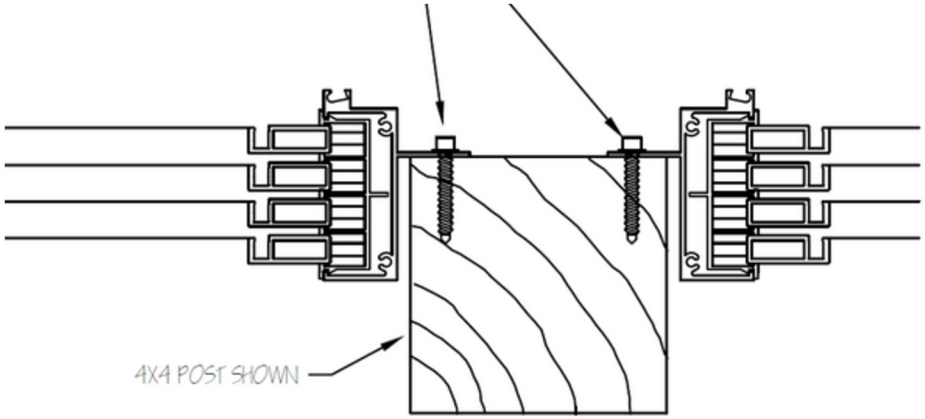
SECTION 2

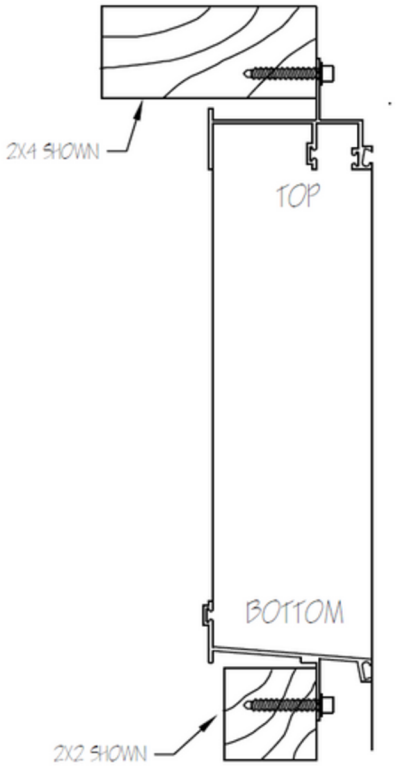
SCREW SPECIFICATIONS AND EMBEDMENT

SCREW SPECIFICATIONS

- 10-16 SELF-DRILLING
- CARBON & STAINLESS STEEL
- MINIMUM TENSILE STRENGTH - 2430 LBS
- MINIMUM TORTIAL STRENGTH - 95IN /LBS
- MINIMUM SHEAR STRENGTH - 1460 LBS
- THREAD LENGTH - 1.25"



TOP DOWN VIEW
PLAN SECTION



SIDE VIEW

General Notes

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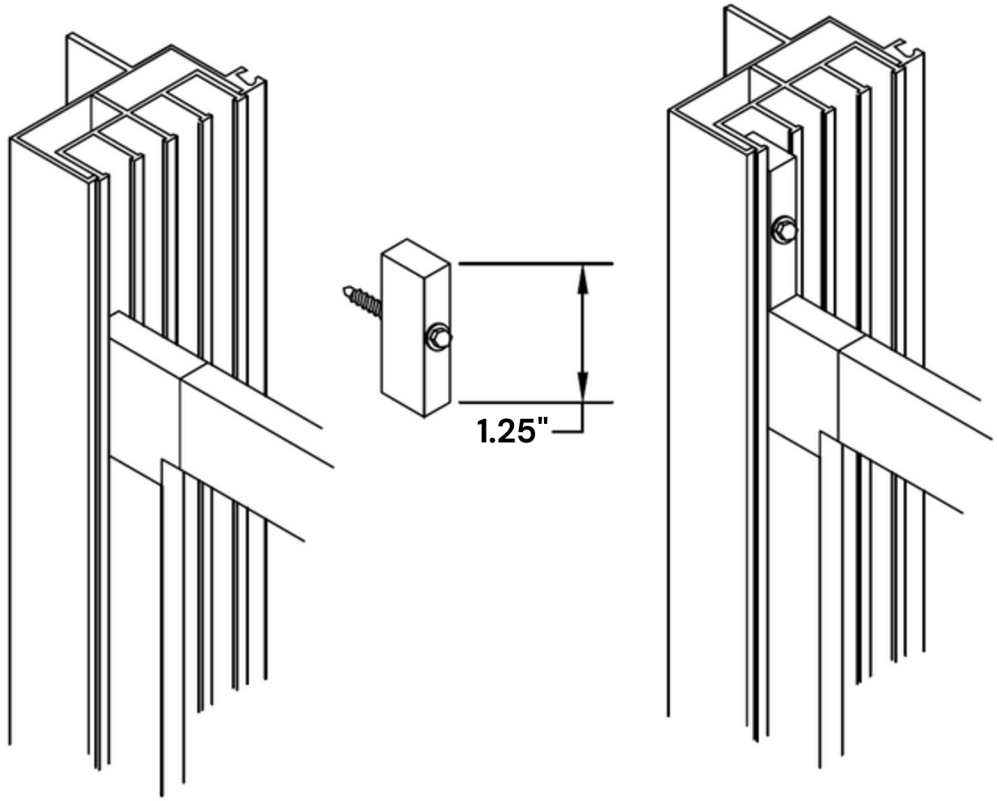
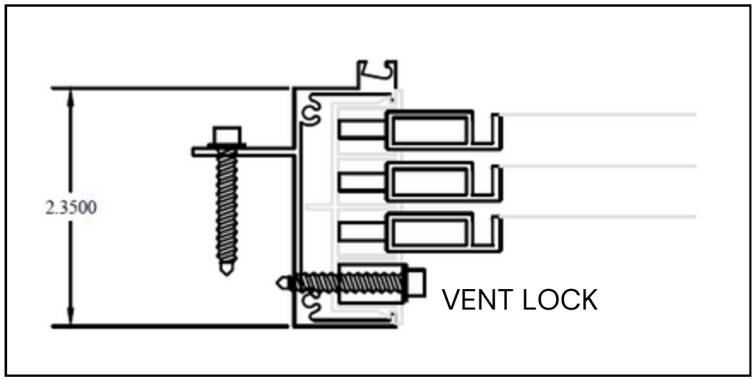
SECTION 2

VENT LOCK INSTALLATION



DETAIL A



SCREW SPECIFICATIONS

- 10-16 SELF-DRILLING
- CARBON & STAINLESS STEEL
- MINIMUM TENSILE STRENGTH - 2430 LBS
- MINIMUM TORTIAL STRENGTH - 95IN /LBS
- MINIMUM SHEAR STRENGTH - 1460 LBS
- THREAD LENGTH - 1.25"

General Notes

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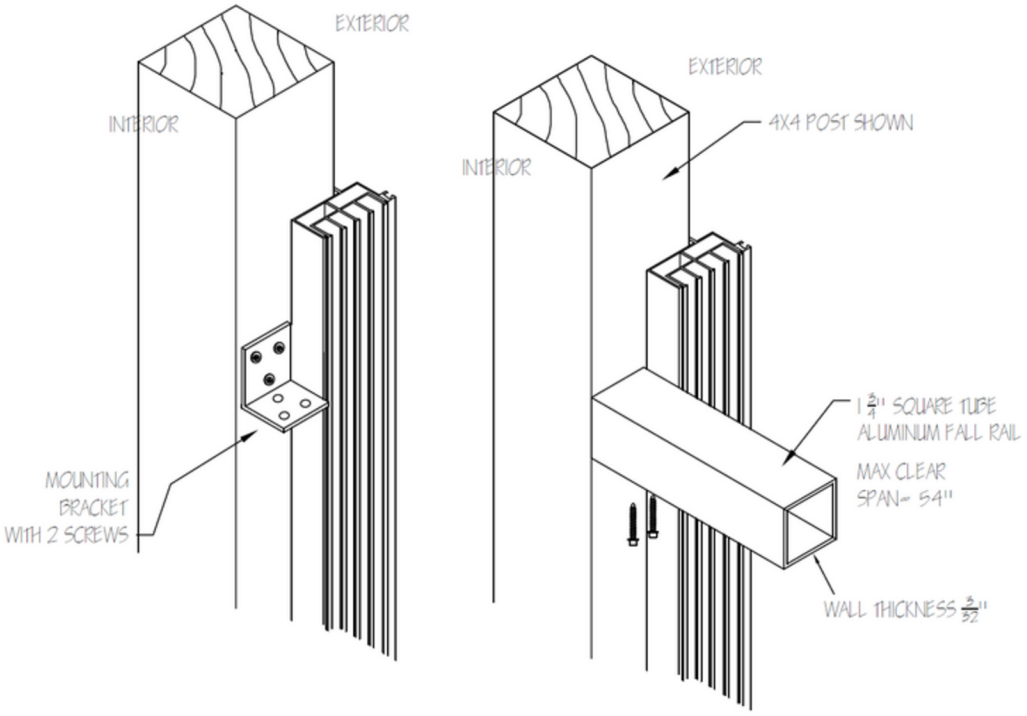
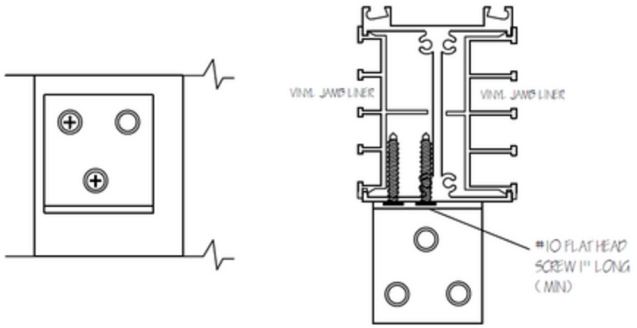
SECTION 2

FALL RAIL INSTALLATION AND SPECIFICATIONS

Post Bracket Installation

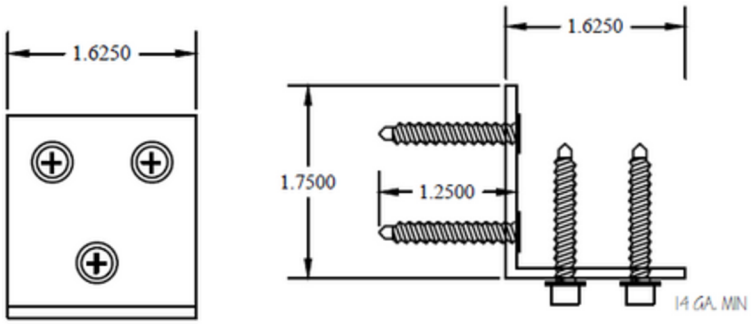


Center Post Bracket Installation (Twin Enclosure)



SCREW SPECIFICATIONS

- 10-16 SELF-DRILLING
- CARBON & STAINLESS STEEL
- MINIMUM TENSILE STRENGTH - 2430 LBS
- MINIMUM TORTIAL STRENGTH - 95IN /LBS
- MINIMUM SHEAR STRENGTH - 1460 LBS
- THREAD LENGTH - 1.25"



General Notes

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SECTION 2

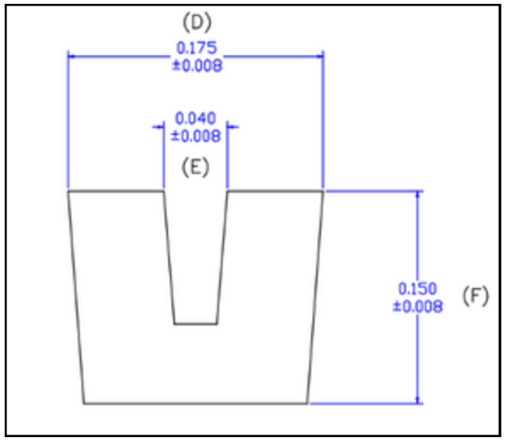
PROPRIETARY VINYL RETENTION SPLINE

THE OASIS 4-TRACK ENCLOSURE SYSTEM INCORPORATES A PROPRIETARY VINYL RETENTION SPLINE ENGINEERED TO SECURE POLYVINYL GLAZING WITHIN THE SASH EXTRUSION WHILE MAINTAINING FLEXIBILITY UNDER LOAD CONDITIONS. THIS SPLINE PLAYS A CRITICAL ROLE IN ENSURING COMPLIANCE WITH THE 50 LB./FT² LOAD REQUIREMENT REFERENCED IN VRC R312.1 (FALL PROTECTION AND GUARDRAILS) FOR PANELS INSTALLED IN ELEVATED PORCHES.

KEY TECHNICAL FEATURES:

1. HIGH-TENSION RETENTION
   - THE SPLINE IS COMPOSED OF A HIGH-DUROMETER FLEXIBLE POLYMER THAT PROVIDES COMPRESSION GRIP WITHIN THE SASH TRACK, PREVENTING DISENGAGEMENT UNDER NORMAL CONDITIONS.
   - THIS ENSURES THAT THE VINYL GLAZING REMAINS SECURELY ATTACHED EVEN UNDER TEMPORARY LIVE LOADS.
2. LOAD DISTRIBUTION & EDGE GRIP TECHNOLOGY
   - THE SPLINE DESIGN UNIFORMLY DISTRIBUTES FORCE ALONG THE PERIMETER OF THE PANEL, PREVENTING STRESS CONCENTRATION AT ANY SINGLE ATTACHMENT POINT.
   - WHEN SUBJECTED TO A 50 LB./FT² UNIFORM LOAD, THE VINYL ELONGATES WITHIN ALLOWABLE LIMITS WHILE THE SPLINE PREVENTS TEARING OR SUDDEN DETACHMENT.
3. PROGRESSIVE FAILURE MECHANISM FOR SAFETY
   - UNDER EXCESSIVE FORCE BEYOND SAFETY THRESHOLDS (E.G., IMPACT LOADS EXCEEDING REQUIRED LIMITS), THE SPLINE ALLOWS CONTROLLED RELEASE, PREVENTING CATASTROPHIC PANEL FAILURE WHILE MAINTAINING STRUCTURAL ATTACHMENT OF THE REMAINING SYSTEM.
   - THIS REDUCES THE RISK OF HAZARDOUS DEBRIS DETACHMENT, ENSURING SAFETY COMPLIANCE.
4. CODE COMPLIANCE JUSTIFICATION
   - VRC R312.1.1 REQUIRES INFILL MATERIALS (SUCH AS VINYL PANELS) USED IN GUARDRAIL APPLICATIONS TO WITHSTAND A MINIMUM CONCENTRATED LOAD OF 50 LB./FT² AT THE CENTER OF THE PANEL.
   - THE OASIS 4-TRACK'S VINYL AND SPLINE SYSTEM HAS BEEN TESTED TO CONFIRM IT MEETS OR EXCEEDS THIS REQUIREMENT BY PREVENTING PANEL DISPLACEMENT UP TO THE DESIGN LOAD THRESHOLD.
   - WHEN COMBINED WITH THE ALUMINUM FALL RAIL KIT, THE SYSTEM REMAINS COMPLIANT WITH FALL PROTECTION STANDARDS FOR PORCH ENCLOSURES OVER 30 INCHES ABOVE GRADE

SPLINE CROSS SECTION



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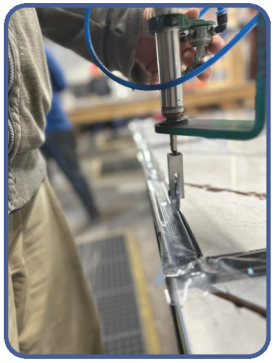

VINYL ELASTICITY DEMOSTRATION

General Notes

TURNKEY PORCH ENCLOSURES

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Date	4.5
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Klaus J. Worrell, P.C. Consulting Engineer
605 Research Road, Suite A, North Chesterfield, Virginia 23236

9 November 2023

Mr. Paul H. Keller
President - Turnkey Enterprises, Inc.
4010 Old Gun Road East
Midlothian, Virginia 23113-1340

RE: SITE OBSERVATION
PORCH ENCLOSURE SYSTEM
TURNKEY PORCH ENCLOSURES, LLC
VIRGINIA

Dear Mr. Keller:

Per your request, I reviewed the system produced as an alternative to railing and screening of a porch to also give the benefit of the porch as usable space at least three seasons of the year. Since the current approved code for residential construction is the 2018 VRC, all referenced are to this code. Pending approval of IRC (VRC) 2021 code, all provisions of this analysis have been confirmed to meet the 2021 code provisions. Since the wall enclosure system is installed on a Patio that has a roof, the provisions of AH101 through AH106 in Appendex H of the Building Code apply and have been incorporated in this analysis.

The load analysis is in compliance with the provisions of R301.5, Table R301.5, R312, and R609.7.

The wall system is composed of three or four sashes (the poly film and the screen) with the innermost sash fixed in place as noted in the Vent Lock Product attachment (attachment A). The inner most sash cannot be raised or removed while the other sashes in the system can be operated for open air or placed in the closed position. The Polyvinyl infill has been tested to withstand at least four times the required fifty pounds per square foot applied to a one foot load area at the center of the panel, the benefit of the screen resistance has not been added to the analysis. The provisions of Table R301.5.f. and R301.5.h. are met by the system infill material since the load resistance exceeds the safety factor of four on the one square foot surface of the panel.

The second factor in the analysis is the securing of the porch enclosure panel to the main force-resisting system of the Porch columns. It is here assumed that the Porch columns have been properly sized and installed for the support of the porch roof system and are therefore in compression which adds to the stability of the system frame connection. The enclosure is secured to the porch columns in accordance with the attachment titled Turnkey Porch Enclosures Installation Instructions (attachment B). Screws are installed through the flange (see attachment C) with spacing to align with the horizontal sash bars and not to exceed twenty-four inches on center. A minimum of twelve screws per enclosure panel shall be installed. This installation method meets and exceeds the requirements of R609.7.

The Fall Rail will be set at thirty-six inches above the finished floor and had been tested and designed to withstand the required loading of two hundred pounds in any direction on the rail with a maximum span of sixty inches. The Fall Rail, with a core of aluminum square frame of one and three quarters inches with a wall thickness of 3/32", without support from the movable panels, under full loading has a maximum stress in the aluminum spine of the horizontal rail without the wood fill of sixty percent of the allowable and a design deflection of 0.0248" (for fixed) or 0.124" (for simple pinned ends) for the 60" span (the allowable L/240 is 0.25")(the design limit for a simple span is based on a maximum of 60"). The system has also been designed and tested to withstand the required loading when installed using the 14 GA. brackets described in the Fall Rail Installation Specifications (attachment B and D). When installed on a twin enclosure installation, the fall rail shall be additionally secured to the structural vertical center bar (basic I shape supporting the plastic window side tracks with adequate space for the 1" screw supporting the support bracket) of the unit using #10 flat head screws thus maintaining a clear span for the fall bar to be less than the design sixty inches, the twin enclosure panel is limited to one-hundred inches maximum for a two span condition. The shear resistance of the #10 screw under the maximum two hundred pound load has a safety factor of at least three. The load requirements of R301.5 and Table 301.5.h have been met.

This analysis allows for the grade of the Porch floor to be greater than 30" as noted in the VRC amended section R312 of the building code. The Turnkey Porch Enclosure System is structurally sound.

Please let me know if you need additional information or if you have any questions.

Sincerely,
Klaus J. Worrell, P.C.

by: Klaus J. Worrell, P.E.
President (804) 241-7970

COMMONWEALTH of VIRGINIA
KLAUS J. WORRELL
Lic. No. 10094
11•9•2023
PROFESSIONAL ENGINEER

Structures R Us Cyrus Mechanic, P.E.
4346 Stonecrest. Suit 100
Ellicott City MD 21043
Tel: 410-371-2981 cyrusmechanic@gmail.com

September 12, 2024

Paul Keller,
4109 W Clay St.
Richmond, VA.
804-349-5365
paulkellerdesigns@gmail.com

To whom it may be a concern,

As requested, I have reviewed the system produced as an alternative to traditional porch railing and screening, making the porch usable for at least three seasons of the year. The current approved residential construction code is the 2018 IRC, so all references are made by this code. However, pending approval of the 2021 IRC code, all provisions in this analysis have also been confirmed to meet the 2021 code standards.

Since the wall enclosure system is installed on a patio or porch with a roof, the provisions of AH101 through AJ106 in Appendix H of the Building Code apply and have been incorporated into this analysis. The load analysis complies with R301.5, Table R301.5, R312, and R609.7 provisions.

The wall system consists of three or four sashes (comprising 10mm poly film and a screen), with the innermost sash fixed in place as noted in the Vent Lock Product attachment (Attachment A). The innermost sash cannot be raised or removed, while the other sashes in the system can be operated for open air or placed in a closed position. The polyvinyl infill has been tested to withstand at least four times the required 50 pounds per square foot, applied to a one-foot load area at the center of the panel. The benefit of the screen resistance has not been factored into the analysis. The provisions of Table R301.5.f and R301.5.b are met by the system's infill material, as its load resistance exceeds the safety factor of four for the one-square-foot surface of the panel.

The second factor in the analysis concerns the securing of the porch enclosure panel to the main force-resisting system of the porch columns. It is assumed here that the porch columns have been properly sized and installed to support the porch roof system, placing them in compression and contributing to the stability of the system's frame connection. The enclosure is secured to the porch columns in accordance with the Turnkey Porch Enclosures Installation Instructions (Attachment B). Screws are installed through the flange (see Attachment C) and are spaced to align with the horizontal sash bars, not exceeding 24 inches on

center. A minimum of 12 screws per enclosure panel shall be installed. This installation method meets and exceeds the requirements of R609.7.

The fall rail will be set 36 inches above the finished floor and has been designed and tested to withstand the required load of 200 pounds in any direction, with a maximum span of 60 inches. The fall rail, constructed with an aluminum square frame (1-3/4 inches with a wall thickness of 3/32"), has a maximum stress of 60% of the allowable in the aluminum spine of the horizontal rail (without wood fill), and a design deflection of 0.0248" (for fixed) or 0.124" (for simple pinned ends) for the 60-inch span (the allowable L/240 is 0.25"). The system has also been designed and tested to withstand the required load when installed using the 14 GA brackets as described in the Fall Rail Installation Specifications (Attachments B and D).

For a twin enclosure installation, the fall rail must also be secured to the structural vertical center bar (a basic "I" shape supporting the plastic window sidetracks with adequate space for the 1" screw supporting the support bracket) of the unit using #10 flat-head screws. This ensures the fall bar has a clear span of less than 60 inches. The twin enclosure panel is limited to a maximum width of 100 inches for a two-span condition. The shear resistance of the #10 screw under the maximum 200-pound load has a safety factor of at least three. The load requirements of R301.5 and Table 301.5.h are met.

This analysis permits the grade of the porch floor to exceed 30 inches, as noted in the amended section R312 of the building code. The Turnkey Porch Enclosure System is structurally sound.

If there are any questions, please call 410-371-2981

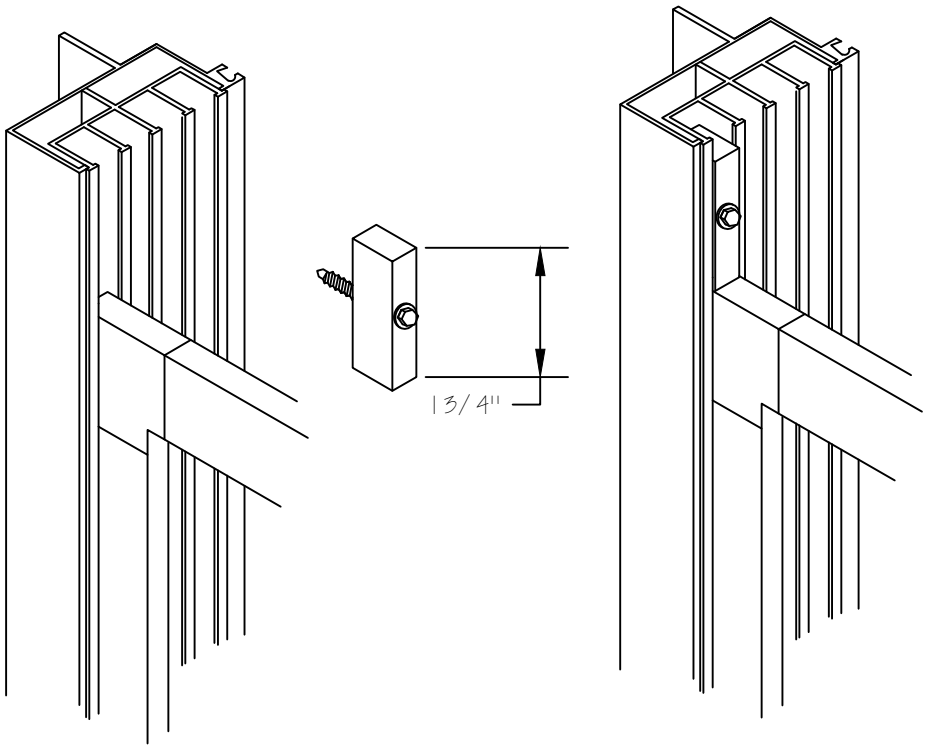
Professional Certification:
I, **Kourosh Mechanic,** hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional Engineer under the laws of the State of Maryland,
License Number: 16290
Expires: 2024-12-11

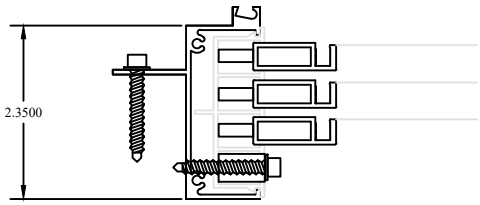
Kourosh Mechanic

Appendix A

TURNKEY PORCH ENCLOSURES

VENT LOCK PRODUCT AND PROCEDURE





SCREW SPECIFICATIONS:
MANUFACTURER- LELAND INDUSTRIES INC.
10 - 16 SELF DRILLING
CARBON & STAINLESS STEEL
MINIMUM TENSILE STRENGTH- 2430 lbs.
MINIMUM TORTIONAL STRENGTH- 95 in.-lbs
MINIMUM SHEAR STRENGTH- 1460 lbs.
THREAD LENGTH - 1.25"

STATE OF MARYLAND
KOUROSH MECHANIC
No. 16290
PROFESSIONAL ENGINEER

Exp. 2024-12-11

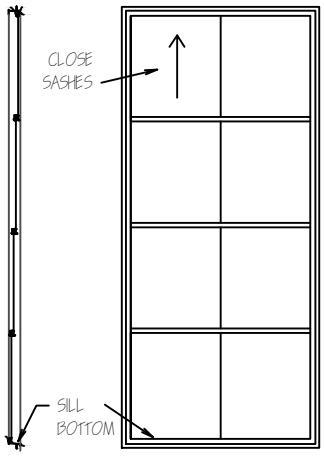
Kourosh Mechanic

Professional Certification:
I, **Kourosh Mechanic** hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional Engineer under the laws and the State of Maryland,
License Number: 16290

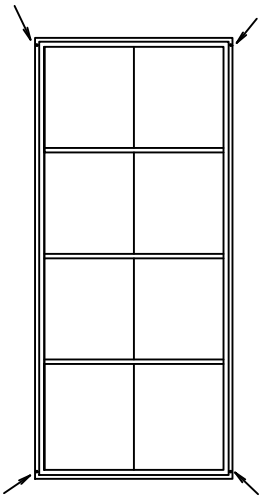
Appendix B

TURNKEY PORCH ENCLOSURES

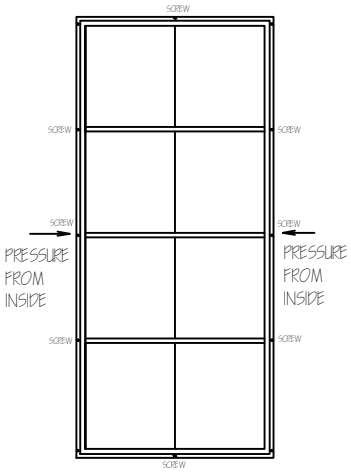
INSTALLATION INSTRUCTIONS



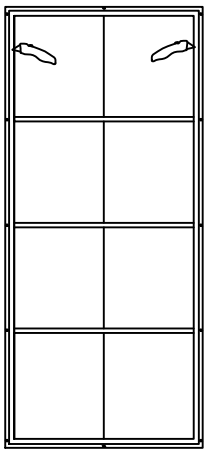
STEP ONE:
CLOSE THE SASHES AND INSURE THE UNIT IS RIGHT SIDE UP.



STEP TWO:
PLACE UNIT IN OPENING AND PUSH UP AND CENTER SIDE TO SIDE IN OPENING.
INSTALL SUPPLIED SCREWS AT EACH CORNER



STEP THREE:
CHECK TO SEE IF SASHES ARE HOLDING IN PLACE WHEN OPENED. IF NOT, APPLY PRESSURE TO THE SIDES USING SHIMS OR 5 IN 1 AND INSTALL REMAINING SCREWS.



STEP FOUR:
TIGHTEN SCREEN IF NEEDED BY REMOVING RUBBER GASKET FROM ONE SIDE AND RE APPLY. TRIM SCREEN WHEN DONE.

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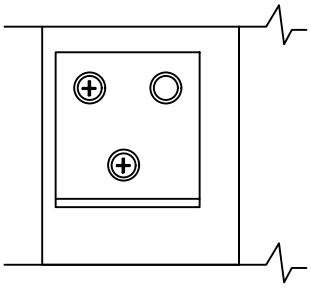
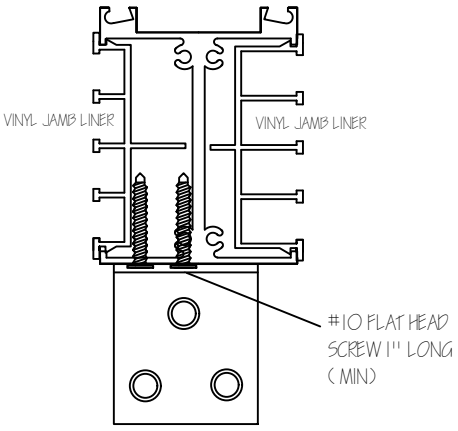
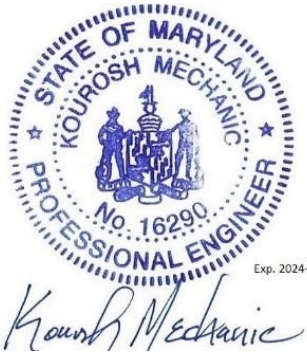
THREAD LENGTH - 1.25"





CENTER SUPPORT FOR TWIN ENCLOSURE



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Exp. 2024-12-31

Appendix C

TURNKEY PORCH ENCLOSURES

SCREW SPECIFICATIONS AND EMBEDMENT

SCREW SPECIFICATIONS:
MANUFACTURER- LELAND INDUSTRIES INC.
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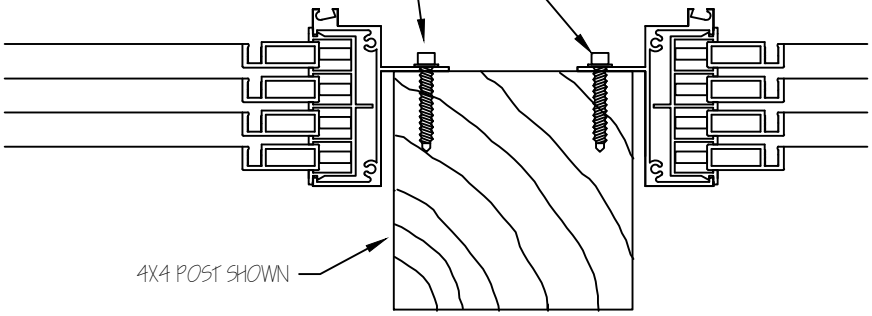
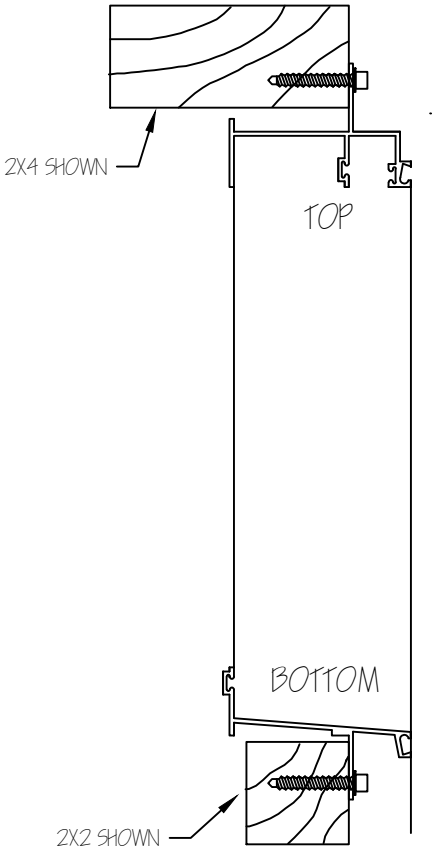
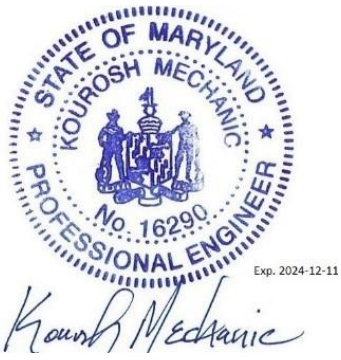


TOP DOWN VIEW,
PLAN SECTION





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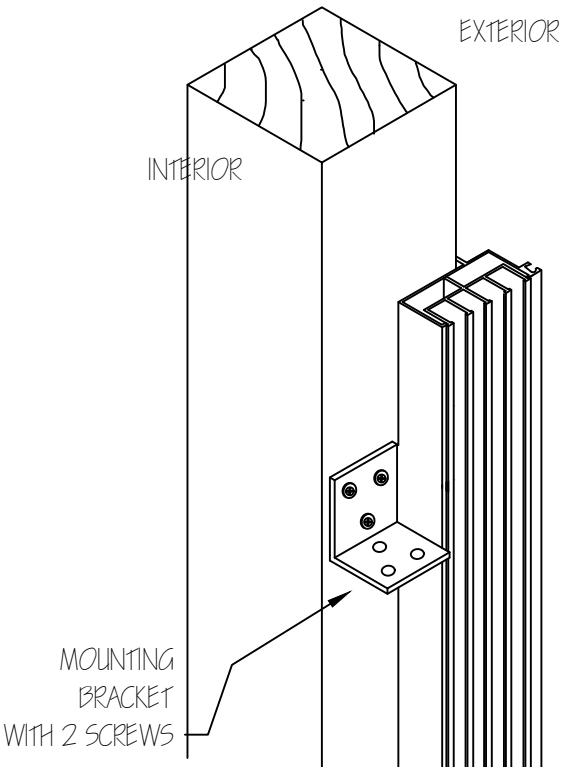
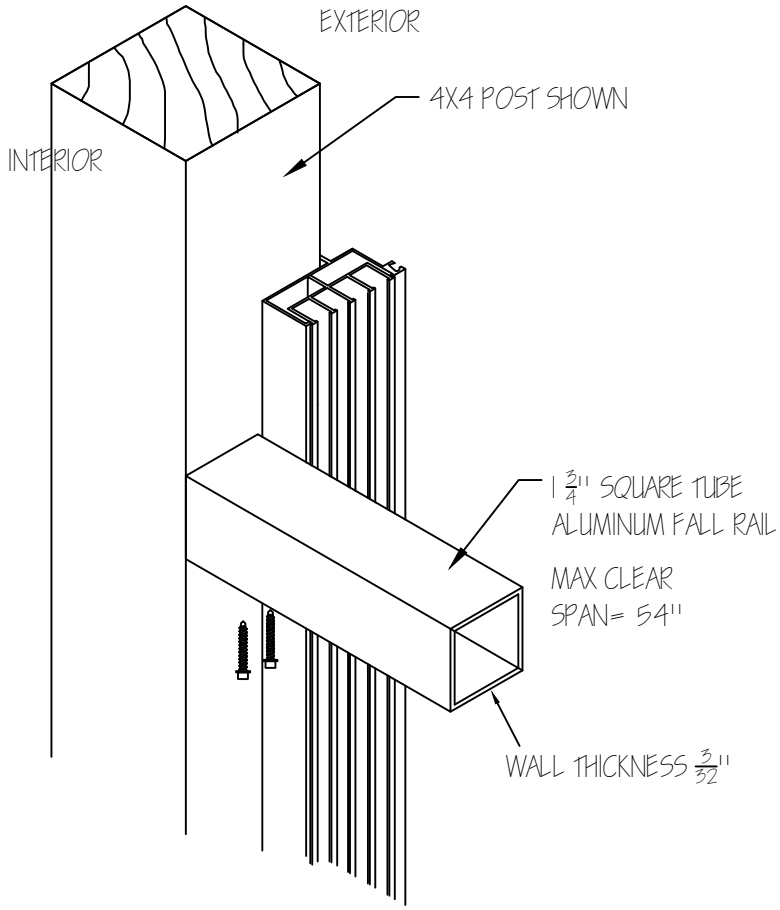
Appendix D

TURNKEY PORCH ENCLOSURES

FALL RAIL INSTALLATION AND SPECIFICATIONS





SCREW SPECIFICATIONS:
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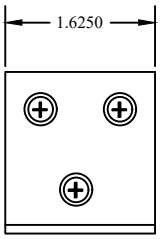

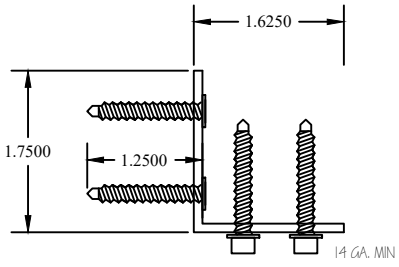

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