

### **ADDENDUM #2**

ADDENDUM NUMBER	02				
PROJECT NAME	BAKER COUNTY	EMERGENCY	OPERATIONS CEN	NTER	
PROJECT NUMBER	23-105				
DATE	7/28/2025			PROVIDED BY	COLE/ARCHITECTS

THIS ADDENDUM IS HEREBY MADE PART OF THE CONTRACT DOCUMENTS TO THE EXTENT AS THOUGH IT WAS ORIGINALLY INCLUDED THEREIN. REFER TO THE BID FORM FOR ACKNOWLEDGEMENT OF ADDENDUM.

#### **GENERAL:**

- 1) BID Date Revision: August 5, 2025 Time: 2:00 PM
  - A. See Section 002113 Instruction to Bidders (ADD-02) for revised Bid Form Cover Sheet.
- 2) Addendum #3 to be issued: Thursday, July 31, 2025 Time: 2:00 PM
- 3) Q: The structural engineering firm is also listed as a bidder. Is this proper where this firm has had knowledge of the details for months while contractors are given three weeks?
  - A. These are two different companies:
    - CBSE, LLC is the structural engineering company that provided structural engineering on this project. See revised G000 Cover Sheet.
    - CB Const, Inc is the general contracting firm that attended the pre-bid meeting.

#### CIVIL:

- 4) Q: Is Baker County accomplishing the demolition and if so, what is the scope of work. What are the grades and limits. Is the irrigation included?
  - A. The scope of site demolition is provided on sheet C1.0, to be provided by the contractor, except Baker County will complete 1 on C1. Finish grade will be left at 3416. Baker County will repair/ replace irrigation line and re-seed excavation area for new water line through lawn area. Baker County will rough out building footprint plus 2' not to exceed a depth -10" from top of slab FLR-A Level 0'-0". The scope of building demolition is provided on sheet A001, to be provided by the contractor, except Baker County will complete 2.01 and 2.07.
- 5) Q: Is the Geo Tech report to be followed?
  - A. The Geotechnical Engineering Report, prepared by Liberty Geotech is attached to this addendum.
- 6) Q: Is the excavation to be 4.5ft to 7.0ft deep?
  - A. Pavement excavation is 1.75 ft deep; utility excavation is approximately 3ft to 5ft deep and drainage basin excavation for the filter sand layer is approximately 6ft deep; I'll defer to the structural engineer for the footing excavation depth.

#### **ARCHITECTURE:**

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- 7) Q: P-3 is listed in the specs but doesn't have a color/product associated, confirm it is used and what it is?

  A. P-3 has been removed from the project.
- 8) Q: Are Doors FG and FG2 intended to be HM as shown or storefronts?
  - A. Callouts FG & FG2 on Sheet A611 are calling out the Door Types. Revised Door & Window Schedules to reflect Exterior Aluminum Storefront (to Match Existing) and retaining interior HM (Paint to Match Existing). See Revised Sheet: A611 Window-Door Types & Schedules (ADD-02)
- 9) Q: I see a spec for manufactured roof expansion joints but none for seismic wall/floor/ceiling expansion joints (1,2&3/A521, 1&2/A511, 5/A541). Architect to provide specification.
  - A. Wall/floor/ceiling Seismic Expansion material to be similar in nature to the basis-of-design roof expansion joint system. See A511 & A521 details for flashing covers.
- 10) Q; Angle shown on 3&4/A511 doesn't identify what the material is and hatch pattern doesn't match anything else. Architect to verify material and applicable spec.
  - A. The triangular item at the base of the footing is a cant strip to provide a smooth transition from horizontal to vertical surface. It can be made of fiberboard, rigid insulation board, perlite, or pressure-treated wood.
- 11) Q: There is no specification/materials callout for the ADA stations/countertops. Reference keynote 22.14/A401. Please provide materials specification.
  - A. Countertop material to be laminate countertop material. Basis-of-Design: Wilsonart, Formica or Approved Equal. Color & finish to be selected during submittal process by architect.
- 12) Q: Substrate board and vapor barrier are mentioned in the specification section 704323 TOP, however detail 1/A601 Roof Types does not call out for these items in the roof assembly. Please confirm if a substrate board and vapor barrier are part of the roof assembly. If so, please provide product information.
  - A. Revised Roof Type R1 to show air/vapor barrier as part of assembly. See Sheet: A601 Roof-Ceiling-Floor Assemblies (ADD-02)
- 13) Revised Door Hardware Sets & Specification Section 087100 for clarification of client needs. See revised Sheet: A611 Window-Door Types & Schedules (ADD-02) & Revised Project Manual: Section 087100 Door Hardware (ADD-02)

#### STRUCTURAL:

- 14) Q: Is there a fastener detail for the bar joist to the squash blocks on detail 10S5.0?
  - A. Refer to 20/S5.0. There is no squash block. There is a bearing seat that is integral to the joist that will be provided with the joist from the manufacturer.
- 15) Q: Is there a fastener detail for the bridging to the angle on 15S5.0?
  - A. Provide 1/4" bevel weld for the top flange.
- 16) Q: I am having trouble finding the footing thickness. Please advise.
  - A. The Footing thickness is noted on detail 20/S3.1 at 1'-4" UON.

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- 17) Q: Details 10,15&20/A5.0 seem to be non-typical details. Is the intention to have the metal deck penetrate the concrete parapet?
  - A. Yes. The metal deck must connect to the wall via embed plate. The remaining parapet can then be cast.
- 18) Q: Detail 20/A5.0 what is the component that takes up the 5" between the angle iron embed and the ioist?
  - A. There is a joist seat that will be integrated into the joist. The exact size should be verified with the joist manufacturer.

#### **ELECTRICAL:**

- 19) Q: Please provide the fault currents for the service per 2023 NEC 110.24.
  - A. See revised E6.03 one line diagram with available fault currents shown for the service disconnect 'MDA' and for the new panel 'C'. See Sheet: E6.03 Electrical One-Line Diagram (ADD-02)
  - B. See revised E6.02 panel 'C' AIC rating to 22kAIC. See Sheet: E6.02 Electrical Schedules (ADD-02)

#### FIRE PROTECTION:

- 20) Q: Sheet G010 states YES to Fire Sprinklers, G000 requires a "Deferred Submittal". Division 21 seems to be missing. Are there drawings and or specifications?
  - A. Fire Sprinklers and Fire Alarm are to be design-build as an extension of the existing systems. No drawings have been provided. See added Section 210000 Fire Protection Design-Build Criteria.
- 21) What is the current make and model of the existing fire alarm system?
  - A. Make: Silent Knight IntelliKnight (Fire Alarm Control Communicator) & Model: 5808

#### **ICT/LOW VOLTAGE:**

- 22) Q: In the Main Operations Room 106 there are (2) 2" conduits that are to accessible and 2" encased. Of those 2 lines it shows to install 2 sets of 4 drops into each box. Per the NEC code, the max 40% fill rate will only allow for 16-17 cables to reach that code requirement. The plans show to install 40 in each of those lines. That is just not possible. Please advise.
  - A. Conduits are to be sized to accommodate required wire fill as per code. We need to confirm the cable counts with Baker County IT first. They may not want that many drops. For bid purposes, assume a total of (8) 2"C stubbed to accessible ceiling space in 2" of concrete encasement.
- 23) Q: Provide specifications and layout diagram for the data room, including data racks and the ladder racking.
  - A. The layout is diagrammatic. Further coordination will be needed during construction as input will be needed from the IT team for Baker County as to their preferences for the data racks and ladder racking.



- 24) Q: Sheet T1.01 Sheet Note D. refers to a low voltage responsibility matrix on T5.01. Please provide that matrix.
  - A. The note for the low voltage matrix of responsibility is erroneous. Scope is spelled out in General Notes.
- 25) SCOPE CHANGE: Owner to provide video equipment and key card readers. Contractor to provide infrastructure and installation. Baker County has their own purchasing agreement with Avigilon for exterior and interior cameras and Kantech for key car readers.
  - A. See revised Sheet: T1.01 System Communication Level 1 Plan (ADD-02)

#### **SUBSTITUTION REQUESTS:**

DIVISION	PRODUCT	SUBSTITUTION	APPROVED/REJECTED
Section 031000	ICF	Stronghold	Approved
Section 075423	TPO Roofing	GAF Manufacturer	Approved
Section 230000	Mini-Split Units	Lennox	See Comments
Section 237413	Roof Top Units	Lennox	See Comments
Section 265000	Light Fixtures	ALR, Inc.	See Comments

#### ATTACHEMENTS:

- 1. Geotechnical Engineering Report, prepared by Liberty Geotech, dated July 25, 2024.
- 2. Section 002113 Instruction to Bidders (ADD-02)
- 3. Section 087100 Door Hardware (ADD-02)
- 4. Section 210000 Fire Protection Design-Build Criteria.
- 5. Sheet: G000 Cover Sheet (ADD-02)
- 6. Sheet: A601 Roof-Ceiling-Floor Assemblies (ADD-02)
- 7. Sheet: A611 Window-Door Types & Schedules (ADD-02)
- 8. Sheet: E6.02 Electrical Schedules (ADD-02)
- 9. Sheet: E6.03 Electrical One-Line Diagram (ADD-02)
- 10. Sheet: T1.01 System Communication Level 1 Plan (ADD-02)
- 11. BEOC Sub 031000 ICF Stronghold (ADD-02)
- 12. BEOC\_Sub\_075423\_TPO Roofing GAF (ADD-02)
- 13. BEOC\_Sub\_230000\_Mini-Split\_Lennox (ADD-02)
- 14. BEOC\_Sub\_237413\_RTU\_Lennox (ADD-02)
- 15. BEOC\_Sub\_265000\_Lighting \_ALR Priors (ADD-02)

#### **END OF ADDENDUM #2**

### **Geotechnical Engineering Report**

3410 K Street
Parcel No: 09S40E08CC00200
Baker City, Oregon 97814

### **Prepared For:**

Dan McQuisten
Baker County Oregon
1995 3rd Street
Baker City, Oregon 97814



#### Prepared By:



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Report Date: July 26, 2024 Job Number: 24089



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Appendix D: Field Infiltration Testing Results

Appendix E: Laboratory Testing Results

Appendix F: Photo Log



#### 1.0 EXECUTIVE SUMMARY

The following geotechnical engineering report has been prepared for a building expansion of the Baker County Sheriff's Office located at 3410 K Street in Baker City, Oregon. The following items have been identified at the project site and proposed construction that should be carefully considered during design and construction:

- Undocumented fill was observed to a depth of approximately 4½ to 7 feet below the ground surface. Based on the SPT blow counts, the relative density of the fill was very soft to soft.
- The undocumented fill should be removed to a depth of two feet below concrete driveways, sidewalks, or patios, and should be fully removed below shallow foundations, or settlement-prone, heavily-loaded structures.
- Foundations should bear on the compacted native soil or *Structural Fill*.. A suitable bearing layer was encountered at 2.5 to 5 feet and below the existing fill.
- The silty soils at the site are considered to be highly frost-susceptible. If these soils become saturated and freeze, heave may occur. One way to reduce the potential heave is to remove any frost-susceptible soil down to below the frost line and replace it with non-frost-susceptible, compacted sand or gravel with less than 5 percent passing the No. 200 sieve. Sand or sandy gravel, having less than 5 percent particles by weight passing a 200 sieve, is considered to be non-frost-susceptible.
- A moisture barrier should be installed if moisture-sensitive flooring is proposed. Additional recommendations can be provided upon request.

An important checklist is provided for convenience in Appendix A: Geotechnical Engineering Report Checklist that summarizes the recommended involvement during design and checkpoints during construction. If Liberty Geotech (or an approved third-party testing firm) is not afforded the opportunity to observe and test as recommended in this report, Liberty Geotech is not the engineer of record. Furthermore, Liberty Geotech does not have any liability for the recommendations provided if no observations or testing is performed. Liberty Geotech is available to clarify any unclear recommendations provided in the report further in person or via a conference call.

#### 2.0 PROPOSED CONSTRUCTION

The proposed construction consists of a building expansion of the Baker County Sheriff's Office along with associated stormwater management facilities and pavement areas. The expansion will be 4,000 to 5,000 square feet. The type of construction is proposed to be a one-story, wood-framed commercial building. The building foundation is assumed to be shallow, concrete footings with concrete slab-on-grade flooring support.



Stormwater disposal will consist of swales, typical single or double-depth drywells positioned within the swale areas, or a gravel infiltration gallery.

Furthermore, the recommendations included in this report are based on an aerial imagery of the site plan provided by the client, not dated.

#### 3.0 GEOTECHNICAL EXPLORATION

Subsurface exploration was performed by drilling three exploratory borings to depths ranging from 6.5 feet to 16.5 feet below the ground surface. The drilling was performed with a SANY drill rig. Standard penetration test (SPT) soil sampling was performed at approximately 2.5-foot intervals. The sampler diameter was a standard split spoon sampler. In addition, a single-ring infiltration test was performed on the north side of the property. Subsurface exploration was performed at the project site on July 9, 2024. The exploratory boring logs are attached in Appendix C: *Subsurface Exploration Logs*. The contractor or client is recommended to notify Liberty Geotech if the soil conditions are different from those described in the following sections.

Throughout this report, test pit infiltration test and boreholes are abbreviated TP and BH and are hyphenated with a numbering system that corresponds to Appendix B: *Exploration Site Plan* and Appendix C: *Subsurface Exploration Logs*. The test pit and boreholes were located in the field using the accuracy of a cell phone location system. The locations were not surveyed and the accuracy is expected to be within 10 feet of the depicted location. Also, the elevation of each test pit and borehole was estimated using the Google Earth™ mapping service with the GWS84 EGM96 geoid.

#### 3.1 Geology, Topography, and Current Site Use

The Geologic Map and Sections of the Baker Quadrangle, Oregon (Gannet and Mckee, 1937) was reviewed to determine the geologic deposit at the site. The geologic map indicated that the geologic unit was a deposit in the present stream valleys, and alluvial fans. In addition, the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2024) was reviewed. The soil survey indicates that the soil unit is the Powval silt loam consisting of silt loam from the ground surface to a depth of 100 inches. The soil survey describes the soil as a mixed alluvium.

The site has existing structures with asphaltic-concrete parking area. The topography is relatively level with approximately one to two feet of elevation change across the site based on the elevations obtained from the Google Earth<sup>™</sup>. Analysis of historical aerial imagery reveals the existing structures were constructed before 1994.



#### 3.2 Summary of Soil Encountered During Exploration

The soil encountered during the exploration is generally consistent with the geologic research. However, undocumented fill was observed to depths of 4½ and 7 feet below the ground surface. Below the fill, all boreholes encountered alluvium consisting of sandy silt, silty sand, silt with sand, and well-graded sand with silt and gravel.

#### 3.3 Estimated Groundwater Elevations

Groundwater was not observed during the exploration. According to the well logs in the vicinity of the site (Oregon Water Resources Department Well Report Mapping Tool), the static water levels can range from approximately 17 to 27 feet beneath the ground surface. Seasonal and annual fluctuations in groundwater levels should be anticipated.

#### 3.4 Summary of Infiltration Testing

A single ring infiltration test was performed at TP-1, and the results are provided in Appendix D: *Field Infiltration Testing Results*. The test pit was excavated to a depth of three feet and a single-ring infiltrometer was installed. The portion of the ring was embedded to the soil approximately 14 inches and the exposed height of the ring was 10 inches. The diameter of the pipe used was 12 inches. The rates for infiltration were calculated based on the total area of soil inside a ring. The infiltration test lasted for five hours and 47 minutes.

The civil engineer is recommended to use a design infiltration rate of 2.68x10–5 cubic feet per second per square foot (cfs/sf) for an infiltration gallery that is placed in the vicinity of the TP-1. A factor of safety of 1.3 has been used to develop the recommendation.

#### 4.0 LABORATORY TESTING RESULTS

Soil samples were obtained in the exploration locations at varying depths to characterize the alluvium. The results of laboratory testing results are presented in Appendix E: *Laboratory Testing Results*. The laboratory testing was performed referencing the following American Society for Testing and Material Standard Methods (ASTM):

- ASTM D1140 Amount of Material in Soils Finer than the No. 200 Sieve,
- ASTM D2216 Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass, and
- ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.

#### 4.1 Summary of Laboratory Testing Results

The following table summarizes the laboratory tests that were performed on the soil samples obtained from the site. Additional details are provided in Appendix C and E.



Table 4.1.A - Summary of Laboratory Testing

Soil Unit	Lab Tests Performed	Summary of Results
Native Alluvium	<ul> <li>Percent Passing No. 200 Sieve</li> <li>Gradation Sieve</li> <li>Natural Moisture Content</li> </ul>	Soil is classified as well-graded sand with silt and gravel, silty sand, and sandy silt.  • C <sub>u</sub> : 33.7  • C <sub>c</sub> : 1.4  • % Passing No. 200: 7% - 55%  • Moisture Content: 5.1% - 31.7%

#### 5.0 GEOTECHNICAL RECOMMENDATIONS

#### 5.1 Earthwork

The following recommendations should be considered by the general contractors and earthwork subcontractors prior to providing a cost estimate for the earthwork on the project.

#### 5.1.1 Subgrade Preparation

Clear and grub all vegetation, strip all remaining topsoil, and remove undocumented fill to prepare the subgrades under all foundations, floor areas (either slab-on-grade or wood-framed flooring areas), asphalt, or concrete paved areas. Undocumented fill removal is estimated to be 4.5 to 7.0 feet across the building footprint. All footings should bear on compacted native soil or *Structural Fill* as verified by Liberty Geotech.

All stormwater facilities should be a minimum of ten feet from foundations and hardscapes to minimize the effects on improvements.

Liberty Geotech should be contacted once the subgrade areas have been exposed to review the subgrade conditions.

#### 5.1.2 Earthwork Soil Products, Compaction, and Testing Frequency

Different soil products should be used for different applications. The following table presents recommendations for anticipated earthwork construction:i

Table 5.1.2.A - Soil product selection.

Soil Product	Project Use	Soil Description
Structural Fill	Fill areas under the foundation.	Soil classified as:  • Well-Graded or Poorly-Graded



	<ul> <li>Fill to achieve subgrade under the slab or driveway.</li> <li>Backfill of shallow foundations.</li> </ul>	Gravel with Silt (GP-GM or GW-GM)  Silty Gravel (GM)  Well-Graded or Poorly-Graded Sand with Silt (SP-SM or SW-SM) Silty Sand (SM) Soil should be free of organics, deleterious material, and all material larger than 6-inches in diameter.
Concrete Slab Cushion	Fill immediately below slab-on-grades, sidewalks and exterior hardscapes.	Soil should meet the percent passing the following sieve size:  • 1": 80-100%  • No. 4: 25-65%  • No. 200: 6% maximum  Soil should be free of organics, clay fines, deleterious material, and all material larger than 2-inches in diameter.
Crushed Surfacing	Fill immediately below slab-on-grades, asphaltic pavement, concrete pavement, sidewalks and exterior hardscapes.	Crushed rock should meet the percent passing the following sieve size:  • 1-1/4": 99-100%  • 1": 80-100%  • 5/8": 50-80%  • No. 4: 25-45%  • No. 40: 3-18%  • No. 200: 7.5% maximum  • Sand equivalent: 40 minimum  Also, the material should be free of wood, roots, bark, and deleterious material. For roadway base the following requirements should also be met:  • Fracture face: 75%, minimum  • Los Angeles Wear, 500 rev: 35%, maximum.  • Degradation factor: 15 minimum.
Landscaping Fill	<ul> <li>Non-structural fill areas.</li> <li>Vegetated areas.</li> </ul>	Soil meeting the following requirements:  Silt or Clay: 35% to 70%  Sand: 20% to 60%  Organic material: 2% to 20%  Deleterious materials (gravel, rock, slag, cinder, roots, sod): 5% max  pH between 5 and 7



The following table provides compaction recommendations specific to ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort.* All fill products should be compacted in lifts of soil not exceeding 12 inches measured prior to compaction.

Table 5.1.2.B - Compaction recommendation.

#### **Project Use** Recommended Compaction Fill areas under the foundation. 95 percent of the maximum dry Fill to achieve subgrade under the slab or density of Modified Proctor. driveway. • Fill immediately below slab-on-grades. Fill immediately below the asphaltic-concrete pavement, concrete pavement, sidewalks, and exterior hardscapes. Exterior wall backfill. 92 percent of the maximum dry Utility trench backfills. density of Modified Proctor. Non-structural fill areas. 80 to 85 percent of the maximum Vegetated areas. dry density of Modified Proctor.

If more than 30 percent of native or imported *Structural Fill* material is retained on the ¾" sieve, ASTM D1557 *Laboratory Compaction Characteristics of Soil Using Modified Effort* is not recommended to be used. In this case, a soil-specific method specification can be developed. A nuclear density gauge can be used during earthwork operations to establish a moisture and compaction method that provides an acceptable maximum dry density. Method specification earthwork operations are recommended to have full-time soil testing to ensure adequate compaction.

The soil products are recommended to have passing compaction testing results at the following frequency to ensure the soil is uniformly meeting compaction requirements. Failing test results should be retested after additional compactive effort and, if necessary, water is added. At least 90% of the compaction testing results must achieve the required maximum dry density or as approved by the engineer of record.

Table 5.1.2.C - Testing Frequency.

**Project Use** 

Below interior building concrete slabs for fill less than a vertical foot.	2,500 square feet and a minimum of 2 tests.
<ul> <li>Along the building footings for every vertical foot of fill.</li> </ul>	50 lineal feet and a minimum of 2 tests.

**Testing Frequency** 



Structural fill placements larger than one foot in height	100 cubic yards
Fill under asphalt parking areas and exterior concrete flatwork	5,000 square feet and a minimum of 2 tests.
Utility trenches for every two vertical feet of trench backfill.	300 lineal feet and a minimum of 2 tests.

The jurisdictional requirements should be conformed to if there is a conflict with the requirements of Table 5.1.2.C. Excavations deeper than four feet must have adequate trenching protection or sloped back in accordance with state and federal requirements in order to be compaction tested.

#### 5.1.3 Excavation Construction Considerations

Undocumented fill and alluvium are removable with a toothed bucket on an excavator.

No excavation support or sloped excavation has been reviewed in preparation of this report. The contractor should perform excavations in accordance with state and federal regulations. If requested, Liberty Geotech is available to provide further analysis of excavation support or shoring design. Liberty Geotech is not responsible for the safety of trenches, excavations or shoring support.

#### 5.1.4 Weather-Related Earthwork Considerations

Wet weather, freezing conditions, or snow can impede or prevent earthwork operations. The following recommendations should be considered by the contractors and owners during construction:

- 1. It is not recommended that soil products be placed during freezing conditions. No concrete or soil products should be placed on frozen soil.
- 2. The on-site soils and other imported materials may become saturated during earthwork operations and will reduce operation production.
- Stockpiles of soil products should be protected during wet weather. Soil products that have been compacted should be protected and not traveled on during wet weather to prevent disturbing the subgrade.

This report does not provide recommendations for erosion, runoff, trackout from trucks removing site stripping, or environmental considerations associated with earthwork operations.



#### 5.2 Shallow Foundation Design

The following design parameters are provided based on the project understanding described in Section 2.0. Liberty Geotech should be notified to revise or confirm the following recommendations if the building location, locations of the site improvements, or structural loads change.

- Allowable bearing capacity for foundations: 2,000 psf.
- Footing embedment for exterior foundations: 2 feet.
- Estimated total settlement for foundations on compacted native soil or *Structural Fill:* Less than 1 inch.
- A sliding coefficient of friction of 0.35 may be used between the shallow foundations and compacted native soil or *Structural Fill*.

Differential settlement can occur when two different foundations exert different bearing pressures on the soil. The magnitude of the differential settlement depends on the foundation pressure difference. Or, differential settlement can occur due to differences in the soil resistance to the foundation pressure. Differential settlement is anticipated to be less than ½ inch.

#### **5.3 Concrete Slab Design and Construction Considerations**

The following recommendations should be considered to be the minimum design requirements. The structural engineer's design supersedes these recommendations. A structural engineer should design concrete slabs supporting more than 200 pounds per square foot.

- The concrete slab should be a minimum of four inches thick.
- The slab reinforcement is recommended to not be less than No. 3 rebar, 18 inches on center in both directions, and constructed in the middle of the slab. There is a high probability that the concrete slab will crack if rebar is not constructed in the slab.
- The modulus of subgrade support is recommended to be 230 pounds per square inch per inch (pci).
- The slab should be supported with four inches of compacted *Concrete Slab Cushion* soil in accordance with Section 5.1.

Vapor transmission through the concrete slabs may damage moisture-sensitive floor coverings. Also, substantial moisture can penetrate slabs if they are cast on soils that are saturated. The moisture may be measured and should not be above 3 pounds per 1,000 square feet per 24-hour period as measured in ASTM F2170 Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. In addition, the in-situ relative humidity measurements may be determined at 40 percent of the slab depth. The client should consult with the flooring manufacturer for an acceptable slab relative humidity measurement prior to installing floor coverings. The relative humidity measurements should be



made in accordance with ASTM F2170 Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

The design and ownership team should carefully consider the design publication *Guide to Concrete Floor and Slab Construction* (ACI, 2015) before omitting a vapor retarder under the slab. If a moisture retarder is used, it should meet the requirements of ASTM E1643: *Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.* 

Concrete slabs can crack because of numerous reasons. The following considerations should be mitigated during construction to reduce the risk of the concrete slabs cracking.

- The concrete mix design can be altered based on the ambient temperature, aggregate
  moisture content, anticipated time in the mix truck, and finishing methods. A poorly
  designed mix that does not incorporate these factors can cause concrete slabs to crack.
- The contractor's means and methods can cause concrete slabs to crack including improper placement of rebar support, improper crack control joints, improper curing methods or poor finishing techniques, and placing concrete during cold or hot weather.

#### 5.4 Seismicity and Liquefaction

The proposed site is designated a **Site Class E**. The following table presents seismicity coefficients referencing the 2018 International Building Code (IBC) code. The acceleration parameters listed are based on interpolated values calculated from the ASCE 7-16 code (OSHPD). The interpolations were visually confirmed with the maps in Table 1613.2.1(1) through 1613.2.1(8) in the 2018 IBC.

**Table 5.4.A Seismic Design Parameters** 

0.2 Second MCE Spectral Response Acceleration	Ss	0.335
1.0 Second MCE Spectral Response Acceleration	S <sub>1</sub>	0.119
0.2 Second MCE Spectral Response Acceleration	Sds	0.483
1.0 Second MCE Spectral Response Acceleration	S <sub>D1</sub>	0.332
Design Peak Ground Acceleration	PGAм	0.322

**Latitude:** 44.7920399

Longitude: -117.84871



There is a moderate potential for liquefaction based on the review of the Data Basin Oregon Liquefaction Susceptibility Map (2024).

#### 5.5 Lateral Earth Pressure Design

The following table provides equivalent fluid pressures recommended to be used by the structural engineer. Walls with a back slope or slope in front of the wall (toe slope) should have the global stability analyzed.

**Table 5.5.A Lateral Earth Pressure Design Parameters** 

<b>Equivalent Fluid Pressure Designation</b>	Unit Weight (PCF)
Active Equivalent Fluid Pressure	40
At-rest Equivalent Fluid Pressure	55
Passive Equivalent Fluid Pressure	350

Retaining walls backfilled with clean (less than 5% passing the No. 200 sieve) *Crushed Surfacing* may use a reduced lateral active and at-rest earth pressure. The fill should be compacted to 92% of the dry density of the modified Proctor, ASTM D1557. A triangular zone based on a 45-degree projection from the toe of the foundation should be backfilled with *Crushed Surfacing*. If these conditions are met, the active EFP may be reduced to 30 pcf, and the at-rest EFP may be reduced to 40 pcf.

Concrete foundation walls that are fully restrained should be designed for at-rest equivalent fluid pressure. Flexible walls or concrete walls that are allowed to crack may be designed for the active equivalent fluid pressure. Soil that is preventing a retaining wall or foundation wall from sliding may be analyzed with the passive equivalent fluid pressure.

#### 5.6 Drainage and Stormwater Infiltration Recommendations

The soil conditions are suitable for subsurface infiltration. The following recommendations should be used by the civil engineer to design bio-infiltration swales, drywell structures, or infiltration galleries:

- The depth to a restrictive layer is at least 27-feet below the ground surface based on a review of well logs available in the vicinity of the site (Oregon Water Resources Department Well Report Mapping Tool, 2024).
- Swales and drywells should be located 10 feet from the edge of buildings and concrete hardscapes to minimize the effects of infiltration.



 Hardscaping and landscaping should be sloped at least five percent away from buildings or settlement-prone site improvements.

Subsurface infiltration using bio-infiltration swales or infiltration galleries may be designed with a hydraulic conductivity of 23 inches per hour, which should be used for infiltration design.

Single- and double-depth drywells may utilize a design outflow rate of 0.14 and 0.23 cubic feet per second, respectively. The drywells should be installed within the relatively clean sand encountered at a depth of 12 feet below ground surface. Single- and double-depth drywells must conform to the jurisdiction specification in which they were constructed.

#### **5.7 Pavement Section Design Recommendations**

The following pavement design recommendations are provided for 3.0 inches of asphaltic-concrete pavement over 6.0 inches of *Crushed Surfacing*. The Structural Number for this pavement section is 1.84 and the number of passes with an equivalent single-axle load (ESAL) is 35,000. The following design parameters were used in the analysis:

- Subgrade support modulus, M<sub>r</sub>: 8,000 psi.
- Reliability percent: 80%.
- Standard deviation: 0.45.
- Asphaltic-concrete layer coefficient, a1: 0.42.
- Aggregate base layer coefficient, a2: 0.12.
- Drainage coefficient of aggregate base, m: 0.80.

Paving operations can be observed and tested by Liberty Geotech at the request of the owner. Asphalt should be compacted to 92 percent of the Rice density. Liberty Geotech can provide additional traffic analysis or life-cycle cost analysis upon request.

#### 6.0 DESIGN REVIEW AND CONSTRUCTION OBSERVATIONS

#### **6.1 Geotechnical Consultant versus Geotechnical Inspector**

In order to retain Liberty Geotech as the geotechnical engineer of record, the client must contact Liberty Geotech or require their contractor to contact Liberty Geotech to perform the observations and notifications that are recommended within this report. Liberty Geotech is not the engineer of record and has no liability for the construction or design based on this report if observations and material testing are not performed and meet the recommendations contained within this report. In addition, Liberty Geotech's liability is limited to the authorized proposal dated May 20, 2024.



#### 6.2 Revisions and Transfer of Geotechnical Recommendations

Liberty Geotech should be notified to update recommendations if the proposed development changes or subsurface soil or groundwater conditions vary from those described in this report. This report cannot be relied upon by property owners adjacent to this property without confirmation of their specific site soil conditions. Also, the report recommendations cannot be transferred to other business entities or subsequent property owners without written authorization. No warranty or certification of construction is provided with this report. Liberty Geotech should review the final construction drawings to confirm the incorporation of the recommendations of this report.

#### 7.0 REFERENCES

- ACI Committee 302. "Guide for Concrete Floor and Slab Construction." ACI 302.1R-15.

  American Concrete Institute, P.O. Box 19150 Redford Station, Detroit, Michigan 48219.
- Applied Technology Council (ATC). "Hazards by Location." Accessed July 24, 2024. https://hazards.atcouncil.org/
- Gilluly, James, 1937. Geology and Mineral Resources of the Baker Quadrangle, Oregon.

  Department of the Interior United States Geologic Survey.
- Oregon Department of Geology and Mineral Industries. "Data Basin, Oregon Liquefaction Susceptibility Map". Accessed July 24, 2024. <a href="https://databasin.org/maps/">https://databasin.org/maps/</a>
- Oregon Water Resources Department. "Oregon Water Resources Department Well Report Mapping Tool". Accessed July 23, 2024. <a href="https://apps.wrd.state.or.us/">https://apps.wrd.state.or.us/</a>
- United States Department of Agriculture, Natural Resources Conservation Service. "Web Soil Survey." Accessed July 23, 2024. <a href="http://websoilsurvey.nrcs.usda.gov/">http://websoilsurvey.nrcs.usda.gov/</a>

APPENDIX A  Geotechnical Engineering Report Checklist	

### Geotechnical Engineering Report Checklist



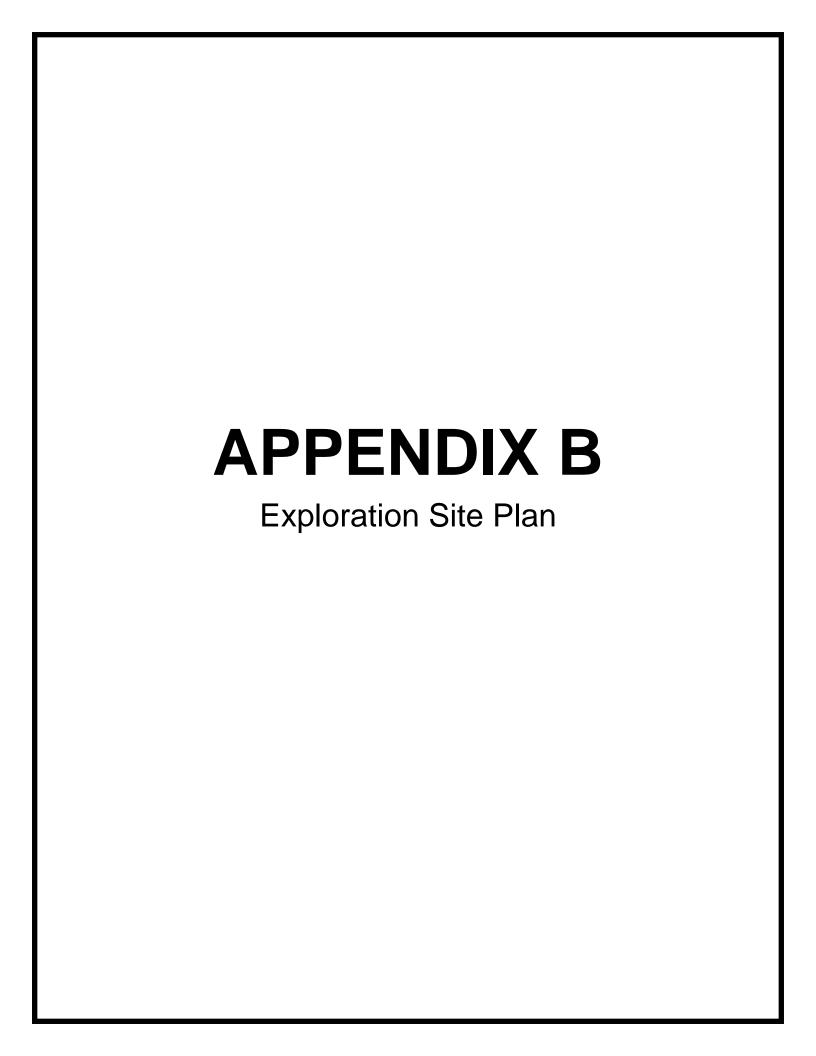
3012 N Sullivan Rd, Ste D, Spokane Valley, WA 99216

Job No: 24089
Project Name: 3410 K St
Project Address: 3410 K Street
Project City and State: Baker City, Oregon
Geotech Report Date: July 25, 2024

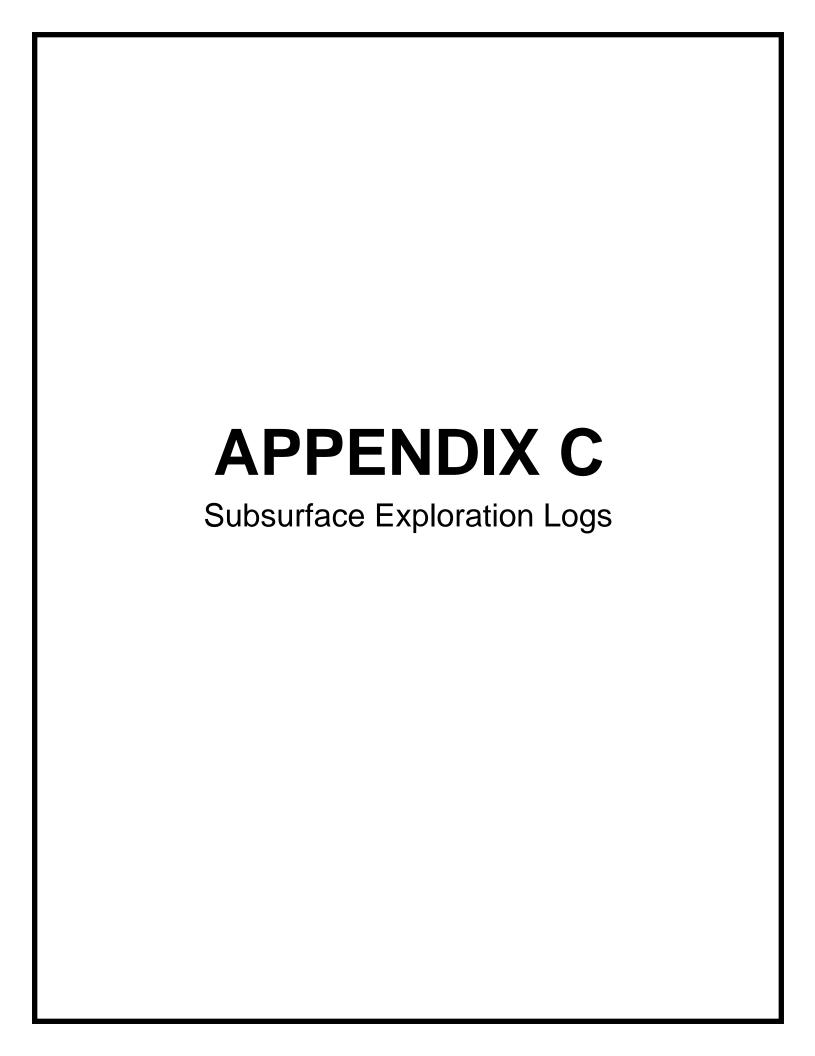
This checklist is a supplement to the report. The recommendations in the referenced *Geotechnical Engineering Report* must be implemented in their entirety to retain Liberty Geotech as the geotechnical engineer of record. The following recommendations do not supplant the requirements of the Building Official (BO). The BO can waive any or all recommendations within this checklist.

requirements of the Building Official (BO). The BO can waive any or all recommendat	ions within this checklist.	
Design Review & Pre-construction	Report No:	Signed Off
Effects to adjacent structures, slopes, and property have been engineered.		
Subgrade	Report No:	Signed Off
All undocumented fill has been removed below settlement prone structures.		
Test pits have been remediated.		
Drainage conditions are as anticipated in the geotech report.		
Soil type and density are as anticipated in the geotech report.		
The subgrade has been prepared.		
Density testing has been performed.		
Geotechnical Review of Foundations	Report No:	Signed Off
Acceptable embedment depth.		
Structural Fill is an acceptable material.		
The foundation has been stepped in accordance with the plans.		
Density of Structural Fill is acceptable.		
Concrete Hardscapes, Interior SOG, & Settlement-Prone Structures	Report No:	Signed Off
Material below slab is acceptable.		
Material below slab is acceptable.  Density of material below slab is acceptable.		

Site grading and native slopes appear to conform to grading plan.	
Embankment Fill is acceptable material.	
Landscaping fill is acceptable material.	
Density of Embankment Fill is acceptable.	
Engineer of Record's Final Sign Off:	







UNIFIED SOIL CLASSIFICATION SYSTEM							
	MAJOR DI	VISIONS	GRAPHIC SYMBOL	USCS GROUP SYMBOL	SOIL DECRIPTION		
		CLEAN GRAVEL		GW	WELL-GRADED GRAVEL		
	GRAVEL	CLEAN GRAVEL	00000	GP	POORLY-GRADED GRAVEL		
	OWVEL	GRAVEL WITH FINES		GM	SILTY GRAVEL SILTY GRAVEL WITH SAND		
COURSE GRAINED		ORAVEE WITH INCO		GC	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND		
SOIL		CLEAN SAND		SW	WELL-GRADED SAND		
	SAND	OLE/ II O/ II I		SP	POORLY-GRADED SAND		
	37112	SAND WITH FINES		SM	SILTY SAND		
		OAND WITH INCO		SC	CLAYEY SAND		
		- 4415 01 447		ML	INELASTIC SILT		
	LIC	TAND CLAY QUID LIMIT S THAN 50%		CL	LEAN CLAY		
				OL	ORGANIC SILT		
FINE GRAINED SOIL				МН	ELASTIC SILT		
	SII	T AND CLAY		СН	FAT CLAY		
	LI	QUID LIMIT TER THAN 50%		ОН	ORGANIC CLAY		
				PT	PEAT		

ABBREVATIONS BGS - BELOW EXISTING GROUND SURFACE N.E. - NOT ENCOUNTERED

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE	BLOW COUNTS (NVALUE)	% PASSING NO. 200 SIEVE	PL, LL, PI	MOISTURE CONTENT (%)	POCKET PENETRO- METER(TSF)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silt with Sand (ML) Very Soft, Dark Brown, Moist	_ _3415 _ _	- - - 5		ss	WOH- WOH-1 (1)					Weight of Hammer
ALLUVIUM - Silt with Sand (ML) Medium Stiff, Brown, Moist	_3410	_		ss	2-2-3 (5)					
ALLUVIUM - Sandy Silt (ML) Medium Stiff, Gray Brown, Moist	- -	_ 10		ss	2-2-2 (4)					
ALLUVIUM - Well-Graded Sand with Silt and Gravel (SW-SM) Very Dense to Dense, Brown, Moist	_3405	-		ss	15-26-30 (56)	7		5.1		
	- -	_ 15 _		ss	15-20-22 (42)					

Borehole completed at 16.5-feet bgs.

Client: Baker County Oregon	Borehole Number: 1
Project: 3410 K Street	Project Number: 24089
Equipment: SANY Drill Rig	Date Excavated: 7/9/2024
Depth to Groundwater: NE	Logged By: TT

Sheet: 1 of 3

USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE	BLOW COUNTS (NVALUE)	% PASSING NO. 200 SIEVE	PL, LL, PI	MOISTURE CONTENT (%)	POCKET PENETRO- METER(TSF)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silt (ML) Soft, Dark Brown, Moist	_ _3415 _	-		ss	1-1-3 (4)					
ALLUVIUM - Silty Sand (SM) Loose, Dark Brown, Moist	] -	_ 5		ss	3-3-4 (7)	45		31.7		

Borehole completed at 6.5-feet bgs.

Client: Baker County Oregon	Borehole Number: 2
Project: 3410 K Street	Project Number: 24089
Equipment: SANY Drill Rig	Date Excavated: 7/9/2024
Depth to Groundwater: NE	Logged By: TT



Sheet: 2 of 3

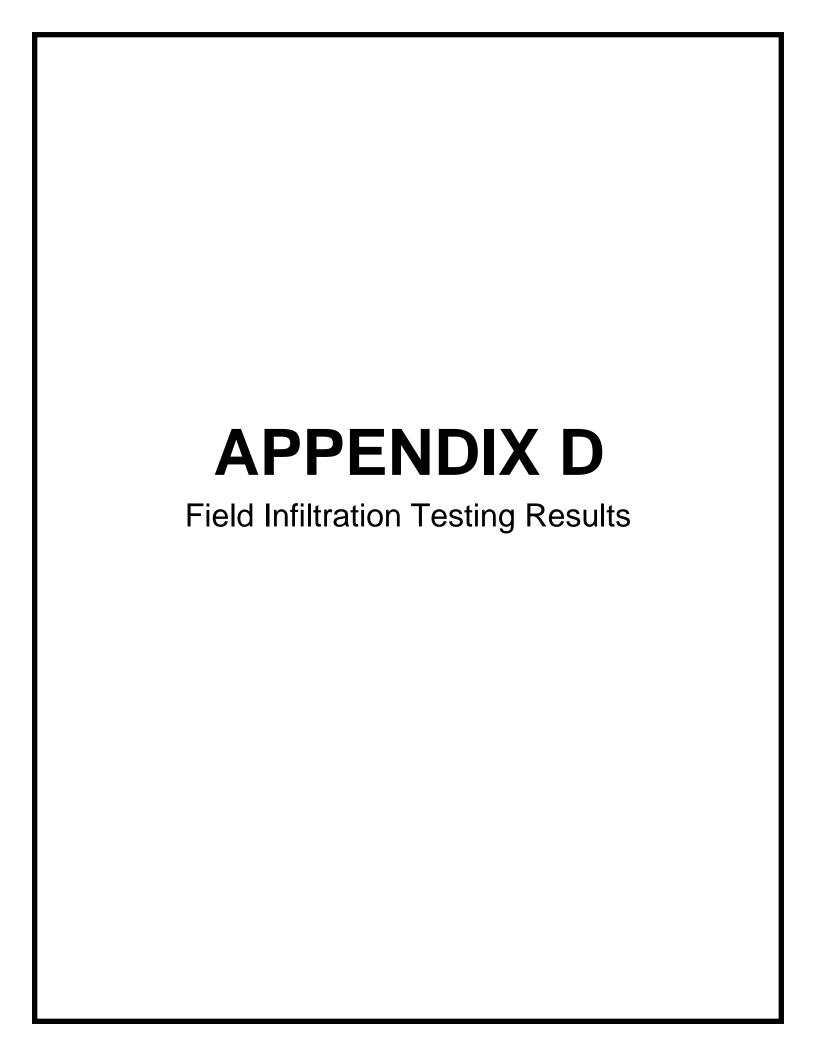
USCS DESCRIPTION	ELEVATION (FT)	DEPTH (FT)	LITHOLOGY	SAMPLE	BLOW COUNTS (NVALUE)	% PASSING NO. 200 SIEVE	PL, LL, PI	MOISTURE CONTENT (%)	POCKET PENETRO- METER(TSF)	ADDITIONAL NOTES
UNDOCUMENTED FILL - Silt (ML) Very Soft, Dark Brown, Moist	_	-								
	_3415	<b>-</b>		Ss	1-1-1 (2)					
ALLUVIUM - Sandy Silt (ML) Very Soft to Stiff, Gray Brown, Moist	_	_ 5 -		ss	2-1-1 (2)	55		23.7		
	3410	_		ss	2-5-5 (10)					

Borehole completed at 8.0-feet bgs.

Client: Baker County Oregon	Borehole Number: 3
Project: 3410 K Street	Project Number: 24089
Equipment: SANY Drill Rig	Date Excavated: 7/9/2024
Depth to Groundwater: NE	Logged By: TT



Sheet: 3 of 3



## **Single Ring Infiltration Method TP-1**

Project Name: 3410 K Street
Test Date: 7/9/2024
Project Number: 24089

Actual Infiltration Rate: 3.48E-05 cfs/sf

Factor of Safety:

Recommended Infiltration Rate: 2.68E-05 cfs/sf

1.3

Client: Radius (ft)

**Total Time** 

Height (ft)
Total Area of Soil in Ring

of Soil in Ring 5.23

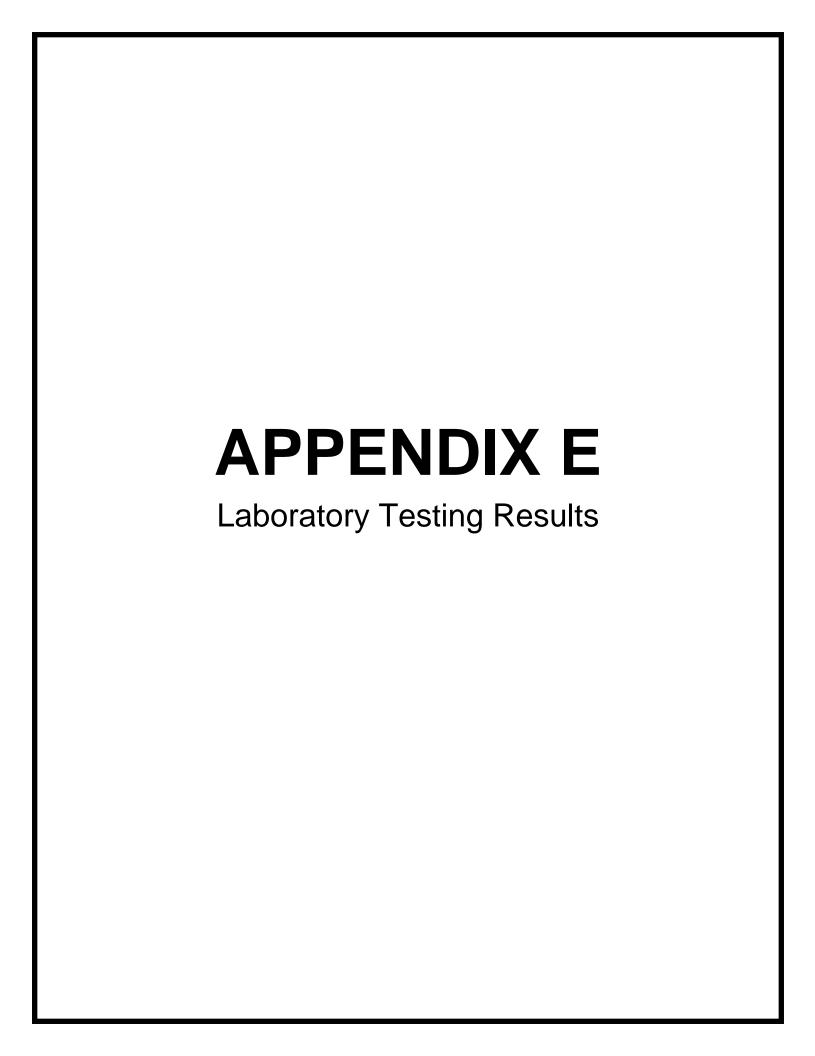
Baker County Oregon

0.51.166666667

.23 sq.ft

20,820

Time	Elapsed Time (minutes)	Hydraulic Head (inches)	Gallons	Notes
9:52	0	0.00	4.90	
11:17	85	7.75		
11:55	38	6.88		
12:23	28	6.00		
13:51	88	4.75		
13:54	3	6.00	2.94	Added 0.39 cu. ft of water
14:09	15	6.00	2.94	
14:24	15	6.00	2.94	
14:39	15	6.00	2.94	
14:54	15	6.00	2.94	
15:09	15	6.00	2.94	
15:24	15	6.00	2.94	
15:39	15	6.00	2.94	



#### ASTM D6913 Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis

Project:3410 K StTest No.:1Testing Date:7/12/2024Job No:24089Sample Location:BH-1 at 12.5' to 14.0' bgsLab Technician:Megan Calvert

Method Used: Method A Max Particle Size: 3/8"

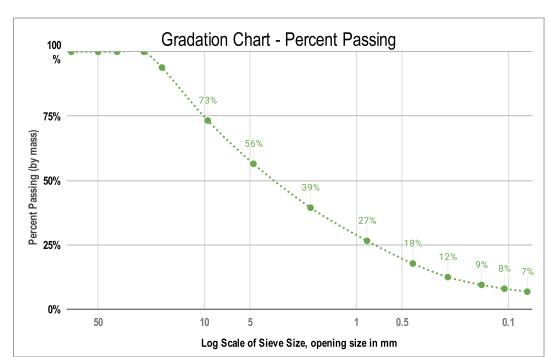
Total Sample Mass: 578 grams Minimum Sample Size: 165 grams

Drying Method: Oven Dry



#### Summary:

	•
3"	100%
2"	100%
1.5"	100%
1"	100%
3/4"	94%
3/8"	73%
#4	56%
#10	39%
#20	27%
#40	18%
#60	12%
#100	9%
#140	8%
#200	7%
Pan	0%



Notes:

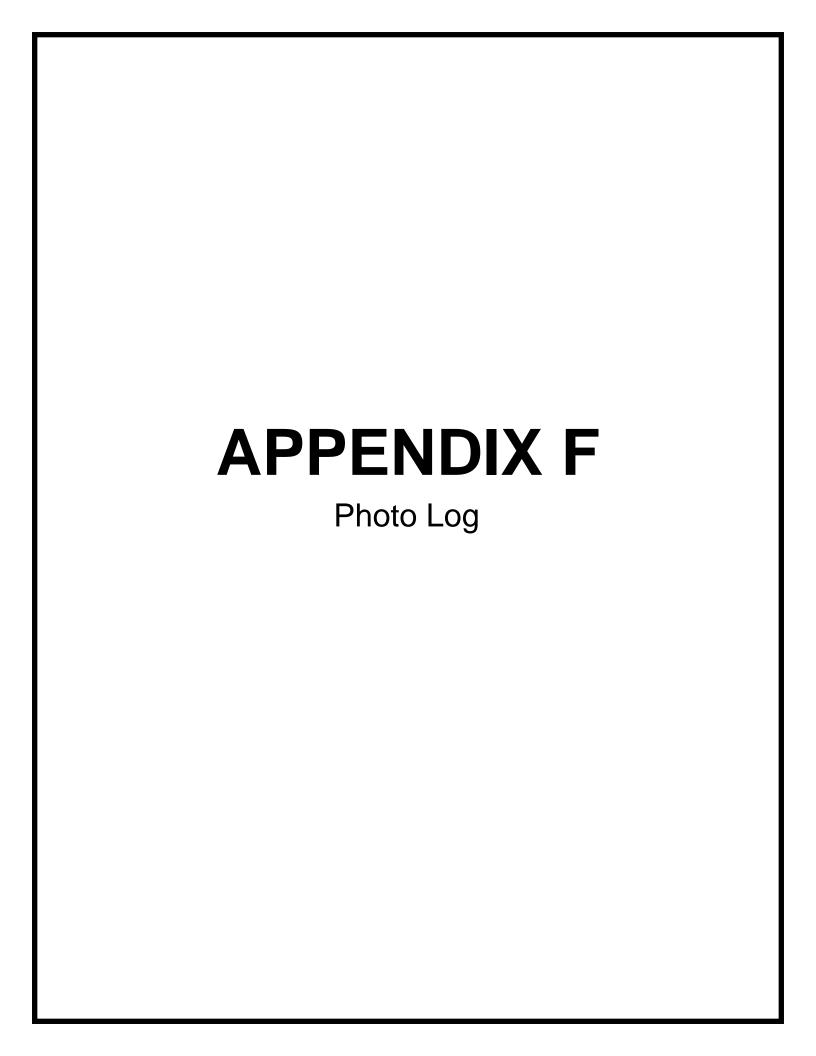
**Additional Results** 

Soil Classification: Well-graded Sand with Silt and Gravel

Excluded Material: None. Percent Moisture: 5.1%

**%Gravel**: 44% **%Sand**: 50% **%Fines**: 7%

Coefficient of Uniformity, Cu: 33.7 Coefficient of Curvature, Cc: 1.4



JOB NO: 24089

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PHOTO 1: BH-1 LOCATION.



PHOTO 3: BH-1 5.0' TO 6.5' BGS. SPT BLOWCOUNTS ARE 1-1-1.



PHOTO 2: BH-1 2.5' TO 4.0' BGS. SPT BLOWCOUNTS ARE WOH-WOH-1.



PHOTO 4: BH-1 7.5' TO 9.0' BGS. SPT BLOWCOUNTS ARE 2-2-3.

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PHOTO 5: BH-1 10.0' TO 11.5' BGS. SPT BLOWCOUNTS ARE 2-2-2.



PHOTO 7: BH-1 15.0' TO 16.5' BGS. SPT BLOWCOUNTS ARE 15-20-22.



PHOTO 6: BH-1 12.5' TO 14.0' BGS. SPT BLOWCOUNTS ARE 15-26-30.



PHOTO 8: BH-2 LOCATION.

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PHOTO 9: BH-2 2.5' TO 4.0' BGS. SPT BLOWCOUNTS ARE 1-1-3.



PHOTO 11: BH-3 LOCATION.



PHOTO 10: BH-2 5.0' TO 6.5' BGS. SPT BLOWCOUNTS ARE 3-3-4.



PHOTO 12: BH-3 2.5' TO 4.0' BGS. SPT BLOWCOUNTS ARE 1-1-1.

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PHOTO 13: BH-3 5.0' TO 6.5' BGS. SPT BLOWCOUNTS ARE 2-1-1.



PHOTO 15: BH-1 IS ABOUT 5 FEET ABOVE ASPHALT LEVEL.



PHOTO 14: BH-3 6.5' TO 8.0' BGS. SPT BLOWCOUNTS ARE 2-5-5.



PHOTO 16: BH-1 LOCATION.

Appendix F: Photo Log

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PHOTO 17: HOLE 3 FEET DEEP, 12X24 RING, 10 INCH ABOVE GROUND. 14" OF EMBEDMENT.



PHOTO 18: START OF PRE-SOAK. 10 ICNHES OF WATER.

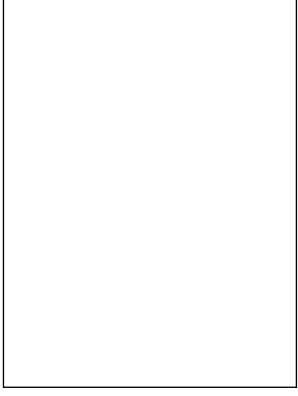


PHOTO 19: PHOTO 20:

SECTION 00 41 00 - BID FORM

19	KER COUNTY FACILITIES DEPARTMENT 95 3rd STREET, SUITE 60 KER CITY, OR 97814	OWN ADDRI CITY/STA	ESS
BA	-		
		Citiyon	A 1 F
FROM:			\\\L
		BIDE	DER
		ADDR	ESS
		CITY/STA	ATE
		TELEPHO	NE
		EMAIL ADDRI	ESS
	Having become completely familiar with Work at the place where Work is to be they currently exist, and having careful.	the local conditions and legal requirements affecting executed, and having carefully examined the site coly examined Bidding Documents prepared by COLE	nditions as
	titled,		
	Baker County Em	ergency Operations Center	
	proposes and agrees to provide all labo	ding Documents as listed hereinafter, the undersign, materials, physical plant, equipment, transportation rrequired to execute all of the Work described by the sideration:	n and other
	BASE BID:	Dollars (\$	).

Specifications and to execute a contract for the above-named project work and the above-stated

consideration on the form required, within ten (10) calendar days of such notification.

#### SECTION 087100 - DOOR HARDWARE

#### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Hardware for wood, aluminum and hollow metal doors.
- B. Hardware for fire-rated doors.
- C. Lock cylinders for doors with balance of hardware specified in other sections.
- D. Thresholds.
- E. Weatherstripping and gasketing.
- F. Key lock boxes

#### 1.02 RELATED REQUIREMENTS

- A. Section 081113 Hollow Metal Doors and Frames.
- B. Section 081416 Flush Wood Doors.
- C. Section 084113 Aluminum-Framed Storefronts: Door hardware, except as noted in section.

#### 1.03 REFERENCE STANDARDS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ASTM E283/E283M Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2019.
- C. BHMA A156.1 Standard for Butts and Hinges 2021.
- D. BHMA A156.2 Bored and Preassembled Locks and Latches 2017.
- E. BHMA A156.3 Exit Devices 2020.
- F. BHMA A156.4 Door Controls Closers 2019.
- G. BHMA A156.5 Cylinders and Input Devices for Locks 2020.
- H. BHMA A156.6 Standard for Architectural Door Trim 2021.
- I. BHMA A156.7 Template Hinge Dimensions 2016.
- J. BHMA A156.8 Door Controls Overhead Stops and Holders 2021.

K.

- L. BHMA A156.16 Auxiliary Hardware 2018.
- M. BHMA A156.18 Materials and Finishes 2020.
- N. BHMA A156.21 Thresholds 2019.
- O. BHMA A156.22 Standard for Gasketing 2021.
- P. BHMA A156.28 Recommended Practices For Mechanical Keying Systems 2018.
- Q. BHMA A156.115 Hardware Preparation In Steel Doors And Steel Frames 2016.
- R. BHMA A156.115W Hardware Preparation in Wood Doors with Wood or Steel Frames 2006.

- S. DHI (H&S) Sequence and Format for the Hardware Schedule 2019.
- T. DHI (KSN) Keying Systems and Nomenclature 2019.
- U. DHI (LOCS) Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames 2004.
- V. DHI WDHS.3 Recommended Locations for Architectural Hardware for Flush Wood Doors 1993; also, in WDHS-1/WDHS-5 Series, 1996.
- W. ICC A117.1 Accessible and Usable Buildings and Facilities 2017.
- X. ITS (DIR) Directory of Listed Products Current Edition.
- Y. NFPA 80 Standard for Fire Doors and Other Opening Protectives 2022.
- Z. NFPA 105 Standard for Smoke Door Assemblies and Other Opening Protectives 2022.
- AA. NFPA 252 Standard Methods of Fire Tests of Door Assemblies 2022.
- BB. UL (DIR) Online Certifications Directory Current Edition.
- CC. UL 10C Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.
- DD. UL 1784 Standard for Air Leakage Tests of Door Assemblies Current Edition, Including All Revisions.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by affected installers and the following:
  - 1. Architect.
  - 2. Supplier's Architectural Hardware Consultant (AHC).
  - 3. Hardware Installer.
  - Owner's Security Consultant.
- D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- E. Keying Requirements Meeting:
  - 1. Schedule meeting with Owner prior to Contractor occupancy.
  - 2. Attendance Required:
    - a. Owner.
  - 3. Agenda:
    - a. Establish keying requirements.
    - b. Verify locksets and locking hardware are functionally correct for project requirements.
    - c. Verify that keying and programming complies with project requirements.
    - d. Establish keying submittal schedule and update requirements.

- 4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
- 5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- 6. Deliver established keying requirements to manufacturers.

#### 1.05 SUBMITTALS

- A. See Section 013000 Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.
  - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
  - 2. Comply with DHI (H&S) using door numbering scheme and hardware set numbers as indicated in Contract Documents.
    - a. Submit in vertical format.
  - 3. Include complete description for each door listed.
- D. Shop Drawings Electrified Door Hardware: Include diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
  - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
  - 2. Elevations: Include front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
  - 3. Diagrams: Include point-to-point wiring diagrams that show each device in door opening system with related colored wire connections to each device.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.
- H. Supplier's qualification statement.
- I. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- J. Keying Schedule:
  - 1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- K. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- L. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

- M. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 016000 Product Requirements, for additional provisions.

#### 1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

#### 1.08 WARRANTY

- A. See Section 017800 Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.
  - 1. Closers: Thirty years, minimum.
  - 2. Exit Devices: Ten years, minimum.
  - 3. Locksets and Cylinders: Ten years, minimum.

#### **PART 2 PRODUCTS**

#### 2.01 GENERAL REQUIREMENTS

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Locks: Provide a lock for each door, unless it's indicated that lock is not required.
  - Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's Series. As indicated in hardware sets.
  - 2. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.
  - 3. Strikes:
    - a. Finish: To match lock or latch.
    - b. Curved-Lip Strikes: Provide as standard, with extended lip to protect frame, unless otherwise indicated.

c. Center Strike At Pairs of Doors: 7/8 inch (22.2 mm) lip.

#### D. Closers:

- 1. Provide door closer on each exterior door, unless otherwise indicated.
- 2. Provide door closer on each fire-rated and smoke-rated door.
- 3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
- E. Drip Guards: Provide at head of outswinging exterior doors unless protected by roof or canopy directly overhead.

#### F. Thresholds:

1. Exterior Applications: Provide at each exterior door, unless otherwise indicated.

#### G. Weatherstripping and Gasketing:

- Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
- 2. Provide door bottom sweep on each exterior door, unless otherwise indicated.
- 3. Provide applicable gasketing on doors as indicated in hardware sets.

#### H. Fasteners:

- 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
  - a. Aluminum fasteners are not permitted.
  - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
- 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
  - a. Self-drilling (Tek) type screws are not permitted.
- Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
- 4. Provide wall grip inserts for hollow wall construction.
- 5. Fire-Resistance-Rated Applications: Comply with NFPA 80.
  - Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
  - b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

#### I. Key Lock Boxes:

- 1. Provide key lock boxes designed for storage of ten keys.
- 2. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - a. Knox Company
- 3. Install where indicated or approved by Architect to provide controlled access for fire and medical emergency personnel.

#### 2.02 PERFORMANCE REQUIREMENTS

- A. Provide door hardware products that comply with the following requirements:
  - 1. Applicable provisions of federal, state, and local codes.
  - 2. Accessibility: ADA Standards and ICC A117.1.

- Fire-Resistance-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
- 4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), testing firm acceptable to authorities having jurisdiction, or as suitable for application indicated.
- Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
- 6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
- 7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
- 8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

9.

#### 2.03 HINGES

- A. Manufacturers: Conventional butt hinges.
  - 1. Ives, or equivalent by McKinney or Stanley.
  - 2. Substitutions: See Section 016000 Product Requirements.

#### B. Properties:

- 1. Butt Hinges: As applicable to each item specified.
  - a. Standard Weight Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
  - b. Heavy Weight Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.
  - c. Template screw hole locations.
  - d. Bearing assembly installed after plating.
  - e. Bearings: Exposed fully hardened bearings.
  - f. Bearing Shells: Shapes consistent with barrels.
  - g. Pins: Easily seated, non-rising pins.
    - 1) Fully plate hinge pins.
    - Non-Removable Pins: Slotted stainless steel screws.
  - h. UL 10C listed for fire-resistance-rated doors.
- C. Sizes: See Door Hardware Schedule.
  - 1. Hinge Widths: As required to clear surrounding trim.
  - 2. Sufficient size to allow 180 degree swing of door.
- D. Finishes: See Door Hardware Schedule.
  - 1. Fully polish hinges, front, back, and barrel.
- E. Grades:
  - 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
  - 2. Comply with BHMA A156.18 Materials and Finishes.
- F. Material: Base metal as indicated for each item by BHMA material and finish designation.
- G. Types:
  - 1. Butt Hinges: Include full mortise hinges.

- H. Options: As applicable to each item specified.
- I. Quantities:
  - 1. Butt Hinges: Three (3) hinges per leaves up to 90 inches (2286 mm) in height. Add one (1) for each additional 30 inches (762 mm) in height or fraction thereof.
    - a. Hinge weight and size unless otherwise indicated in hardware sets:
      - 1) For doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.
      - 2) For doors from 36 inches (914 mm) wide up to 42 inches (1067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.145 inch (3.7 mm) and a minimum of 4-1/2 inches (114 mm) in height.
      - 3) For doors from 42 inches (1067 mm) wide up to 48 inches (1219 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
      - 4) For doors greater than 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
- J. Applications: At swinging doors.
  - Provide non-removable pins at out-swinging doors with locking hardware and all exterior doors.
- K. Products:
  - 1. Butt Hinges:
    - a. Ball Bearing, Five (5) Knuckle.

#### 2.04 LOCK CYLINDERS

- A. Manufacturers:
  - Schlage
  - 2. Substitutions: Not permitted.
- B. Properties:
  - 1. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
    - a. Provide cylinders from same manufacturer as locking device.
    - b. Provide cams and/or tailpieces as required for locking devices.
    - c. Provide cylinders with appropriate format interchangeable cores where indicated.
- C. Grades:
  - 1. Standard Security Cylinders: Comply with BHMA A156.5.
- D. Material:
- E. Types: As applicable to each item specified.
  - 1. Standard large format interchangeable core (LFIC) type cylinders.
- F. Applications: At locations indicated in hardware sets, and as follows
  - As required for items with locking devices provided by other sections, including elevator controls and cabinets.

- a. When provisions for lock cylinders are referenced elsewhere in the Project Manual to this Section, provide compatible type of lock cylinder, keyed to building keying system, unless otherwise indicated.
- G. Products: As listed in hardware sets.

#### 2.05 CYLINDRICAL LOCKS

- A. Manufacturers:
  - 1. Schlage
  - 2. Substitutions: Not permitted.
- B. Properties:
  - Mechanical Locks:
    - a. Fitting modified ANSI A115.2 door preparation.
    - b. Door Thickness Fit: 1-3/8 inches (35 mm) to 2-1/4 inches (57 mm) thick doors.
    - c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.
      - 1) Through-bolted anti-rotational studs.
    - d. Bored Hole: 2-1/8 inch (54 mm) diameter.
    - e. Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
    - f. Latch: Single piece tail-piece construction.
      - 1) Latchbolt Throw: 1/2 inch (12.7 mm), minimum.
    - g. Cylinders:
      - 1) Cylinder Core Types: Locks capable of supporting manufacturers' cores, as applicable.
    - h. Lever Trim:
      - 1) Style: See Door Hardware Schedule.
      - 2) Outside Lever Sleeve: Seamless one-piece construction.
- C. Finishes: See Door Hardware Schedule.
  - 1. Core Faces: Match finish of lockset.
- D. Grades: Comply with BHMA A156.2, Grade 1.
- E. Material: Manufacturer's standard for specified lock.
- F. Options: Construction Keying.
- G. Products: Cylindrical locks, including mechanical types.
  - 1. ALX and ND Series, as specified in the hardware groups.

#### 2.06 PANIC HARDWARE

- A. Manufacturers:
  - 1. Von Duprin
  - 2. Substitutions: Not permitted.
- B. Products:
  - 1. Von Duprin 99 series.

DOOR HARDWARE

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#### 2.07 CLOSERS

- A. Manufacturers:
  - 1. LCN
  - 2. Substitutions: Not permitted.
- B. Properties:
  - 1. Surface Mounted Closers: Manufacturer's standard.
    - a. Construction: Cast iron.
    - b. Hydraulic Fluid: All-weather type.
    - c. Arm Assembly: Standard for product specified.
      - 1) Include hold-open, integral stop, or spring-loaded stop feature, as specified in Door Hardware Schedule.
      - 2) Parallel arm to be a heavy-duty rigid arm.
    - d. Covers:
      - 1) Type: Standard for product selected.
        - (a) Full.
      - 2) Material: Plastic.
      - 3) Finish: Painted.
- C. Types:
  - 1. Rack-and-pinion, surface-mounted. 1-1/2 inches (38 mm) minimum bore.
- D. Installation:
  - 1. Mounting: Includes surface mounted installations.
  - 2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
  - 3. At outswinging exterior doors, mount closer on interior side of door.
  - 4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
  - 5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
- E. Products:
  - 1. Surface Mounted:
    - a. LCN 4040XP.

#### 2.08 PROTECTION PLATES

- A. Manufacturers:
  - 1. Ives, or equivalent by Tice or Trimco.
  - 2. Substitutions: See Section 016000 Product Requirements.
- B. Properties:
  - 1. Plates:
    - a. Armor Plates: Provide on bottom half of push side of doors that require protection from objects moving through openings that may damage door surface.
      - 1) Size: 34 inches (854 mm) high by 1 inch (38 mm) less door width (LDW) on pull side and 2 inch (51 mm) LDW on push side of door.

- b. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
  - 1) Size: 10 inches (254 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.
- c. Edges: Beveled, on four (4) unless otherwise indicated.
- C. Grades: Comply with BHMA A156.6.
- D. Material: As indicated for each item by BHMA material and finish designation.
  - 1. Metal Properties: Stainless steel.
    - a. Metal, Standard Duty: Thickness 0.050 inch (1.27 mm), minimum.
- E. Installation:
  - 1. Fasteners: Countersunk screw fasteners
- F. Products: As listed in hardware sets.

#### 2.09 OVERHEAD STOPS AND HOLDERS

Manufacturers:

Glynn Johnson, or equivalent by Rixson.

Substitutions: See Section 016000 - Product Requirements.

Properties:

Stop Settings: At 85 degrees opening. Adjustable friction tension.

Sizes: Manufacturer's standard for the application.

Finishes:

Arms and Brackets: 630 stainless steel.

Grades: As applicable to item specified.

Comply with BHMA A156.8, Grade 1.

Material: Base metal as indicated for each item by BHMA material and finish designation.

Track Channel: Extruded aluminum alloy. Slide Block: Machined from solid brass alloy.

Types:

Surface-applied.

Products:

Surface Overhead Stops and Holders:

Glynn Johnson, 90S or 100S series.

#### 2.10 STOPS AND HOLDERS

- G. Manufacturers:
  - 1. Ives, or equivalent by Trimco.
  - 2. Substitutions: See Section 016000 Product Requirements.
- H. General: Provide overhead stop/holder when wall or floor stop is not feasible.
- I. Grades:

DOOR HARDWARE

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- 1. Door Holders, Wall Bumpers, and Floor Stops: Comply with BHMA A156.16 and Resilient Material Retention Test as described in this standard.
- J. Material: Base metal as indicated for each item by BHMA material and finish designation.
- K. Types:
  - 1. Floor Stops: Provide with bumper floor stop.
- L. Installation:
  - 1. Non-Masonry Walls: Confirm adequate wall reinforcement has been installed to allow lasting installation of wall bumpers.

#### M. Products:

- 1. Wall Bumpers.
- 2. Floor Stops.

#### 2.11 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
  - 1. Zero International, or equivalent by NGP or Pemko.
  - 2. Substitutions: See Section 016000 Product Requirements.
- B. Properties:
  - 1. Weatherstripping Air Leakage Performance: Not exceeding 0.3 cfm/sq ft of door opening at 0.3 inches of water pressure differential for single doors, and 0.5 cfm/sq ft of door area at 0.3 inches of water pressure differential for double doors for gasketing other than smoke control, as tested according to ASTM E283/E283M; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
  - 2. Adhesive-Backed Perimeter Gasketing: Silicone gasket material applied to frame with self- adhesive.
- C. Grades: Comply with BHMA A156.22.
- D. Products:
  - Gasketing: As listed in hardware sets.

#### 2.12 KEYS AND CORES

- A. Manufacturers:
  - Schlage Everest 29-S.
  - 2. Substitutions: Not permitted.
- B. Properties: Complying with guidelines of BHMA A156.28.
  - 1. Provide large format interchangeable core.
  - 2. Provide keying information in compliance with DHI standards.
  - 3. Keying Schedule: Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
  - 4. Keying: Master keyed.
  - 5. Include construction keying and control keying with removable core cylinders.
  - 6. Supply keys in following quantities:

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- a. Master Keys: 4 each.
- b. Construction Master Keys: 6 each.
- c. Construction Keys: 15 each.
- d. Construction Control Keys: 2 each.
- e. Control Keys if New System: 2 each.
- 7. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
- Deliver keys with identifying tags to Owner by security shipment direct from 8. manufacturer.
- Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."
- 10. Include installation of permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

#### C. Products:

- 1. Patented:
  - a. Schlage, Everest 29-S.

#### 2.13 FINISHES

A. Finishes: Identified in Hardware Sets.

#### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Correct all defects prior to proceeding with installation.
- C. Verify that electric power is available to power operated devices and of correct characteristics.

#### 3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- Install hardware using the manufacturer's fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.
- C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- D. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- Use templates provided by hardware item manufacturer.
- Do not install surface mounted items until application of finishes to substrate are fully completed.
- G. Wash down masonry walls and complete painting or staining of doors and frames.
- H. Complete finish flooring prior to installation of thresholds.

DOOR HARDWARE 08 71 00 - 12

- Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list, unless noted otherwise in Door Hardware Schedule or on drawings.
  - 1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
  - 2. For Steel Doors and Frames: See Section 6549.
  - 3. For Steel Door Frames: See Section 081213.
  - 4. For Aluminum-Framed Storefront Doors and Frames: See Section 084313.
  - 5. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
  - 6. Flush Wood Doors: See Section 081416.
  - 7. Stile and Rail Wood Doors: See Section 081433.
  - 8. Mounting heights in compliance with ADA Standards:
    - a. Locksets: 40-5/16 inch (1024 mm).
    - b. Push Plates/Pull Bars: 42 inch (1067 mm).
    - c. Deadlocks (Deadbolts): 48 inch (1219 mm).
    - d. Exit Devices: 40-5/16 inch (1024 mm).
    - e. Door Viewer: 43 inch (1092 mm); standard height 60 inch (1524 mm).
- J. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal, anchor thresholds with stainless steel countersunk screws.
- K. Include in installation for existing doors and frames any necessary field modification and field preparation of doors and frames for new hardware. Provide necessary fillers, reinforcements, and fasteners for mounting new hardware and to cover existing door and frame preparations.

#### 3.03 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation activities.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.
- D. See Section 017419 Construction Waste Management and Disposal, for additional requirements.

#### 3.04 PROTECTION

- A. Protect finished Work under provisions of Section 017000 Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

#### **Manufacturer List**

Code Name

GLY Glynn Johnson

Cole Architects
23-105-OR

Baker County Emergency Operations Center Baker City, Oregon

IVE Ives
LCN LCN
SCH Schlage
VON Von Duprin
ZER Zero International

#### **Finish List**

Code	Description
652	Satin Chrome
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted or Powder Coated
AL	Aluminum

#### **Hardware Groups**

HARDWARE GROUP NO. 01

100A

#### PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	POWER TRANSFER	EPT10 CON	<b>№</b> 689	VON
1	EA	KEY REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-99-EO 24 VDC	<b>№</b> 626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-99-NL-OP-110MD 24 VDC	<b>№</b> 626	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	626	SCH
2	EA	FINAL CORE	23-030 EV29 S	626	SCH
2	EA	LONG DOOR PULL	9264F 36" O	630-	IVE
				316	
2	EA	CLOSER W/STOP ARM	4040XP SCUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	MULLION SEAL	8780NBK PSA	BK	ZER
1	EA	MEETING ASTRAGAL	8194AA	AA	ZER
			(ONE SET)		
2	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THERMAL BREAK THRESHOLD	626A-223	Α	ZER
2	EA	WIRE HARNESS	CON-26P (FROM EPT TO ELECTRIFIED HARDWARE- VERIFY LENGTH BEFORE ORDERING)		SCH
2	EA	WIRE HARNESS	CON-6W (FROM EPT OR STRIKE TO POWER)	<b>M</b>	SCH
1	EA	POWER SUPPLY	PS902 900-2RS 120/240 VAC	×	VON
1	EA	ACCESS CONTROL	PROVIDED BY DIV 28		

POWER SUPPLY REQUIRES 120VAC.

ADD-02

100B	101

PROVIDE EACH SGL	DOOR(S) W	ITH THE	FOLLOWING:
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QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	ALX70T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	CLOSER W/STOP ARM	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
			(FOR SOUND)		

#### HARDWARE GROUP NO. 03

100C

#### PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QT	Y	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80TD ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	ELECTRIC STRIKE	6210 FSE CON 24VDC	<b>№</b> 630	VON
1	EA	LOCK GUARD	LG14	630	IVE
1	EA	CLOSER W/STOP ARM	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA (FOR SOUND)	ВК	ZER
1	EA	WIRE HARNESS	CON-6W (FROM EPT OR STRIKE TO POWER)	M	SCH
1	EA	ACCESS CONTROL	PROVIDED BY DIV 28		

#### HARDWARE GROUP NO. 04

102

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	ALX80T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

1	03	1	0	1
_	U.S	1	v	-

PROVIDE EACH SGI	DOOR(S)	WITH THE	<b>FOLLOWING:</b>
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QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY W/OCCUP. INDIC.	ND50TD ATH OS-OCC	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	SURFACE CLOSER	4040XP REG	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
			(FOR SOUND)		

#### HARDWARE GROUP NO. 06

105 106B 106C

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD ATH		626	SCH
1	EA	FINAL CORE	23-030 EV29 S		626	SCH
1	EA	ELECTRIC STRIKE	6210 FSE CON 24VDC	×	630	VON
1	EA	LOCK GUARD	LG14		630	IVE
1	EA	CLOSER W/STOP ARM	4040XP SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	188SBK PSA		ВК	ZER
1	EA	DOOR SWEEP	8197AA		AA	ZER
1	EA	THERMAL BREAK	626A-223		Α	ZER
		THRESHOLD				
1	EA	WIRE HARNESS	CON-6W	N		SCH
			(FROM EPT OR STRIKE TO			
			POWER)			
1	EA	ACCESS CONTROL	PROVIDED BY DIV 28			

106A

#### PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

		` '				
QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80TD ATH		626	SCH
1	EA	FINAL CORE	23-030 EV29 S		626	SCH
1	EA	ELECTRIC STRIKE	6210 FSE CON 24VDC	N	630	VON
1	EA	SURFACE CLOSER	4040XP REG		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		ВК	ZER
			(FOR SOUND)	,		
1	EA	WIRE HARNESS	CON-6W	N		SCH
			(FROM EPT OR STRIKE TO			
			POWER)			
1	EA	ACCESS CONTROL	PROVIDED BY DIV 28			

#### HARDWARE GROUP NO. 08

107

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	488SBK PSA (FOR SOUND)	ВК	ZER

108

PROVIDE EACH PR DOOR(S) WI	TH THE FOLLOWING:

		• •			
QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	ALX80T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
2	EA	OH STOP	90\$	630	GLY
1	EA	FLAT ASTRAGAL	44STST	STST	ZER
2	EA	SILENCER	SR64	GRY	IVE

#### HARDWARE GROUP NO. 10

109 110

#### PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80T ATH	626	SCH
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

#### HARDWARE GROUP NO. 11

111B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	4040XP REG	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
			(FOR SOUND)		

112

#### PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	ВК	ZER
			(FOR SOUND)		

#### HARDWARE GROUP NO. 13

111A

#### PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50T ATH	626	SCH
1	EA	FINAL CORE	23-030 EV29 S	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	488SBK PSA (FOR SOUND)	ВК	ZER

END OF SECTION 087100

#### SECTION 210000 - FIRE PROTECTION DESIGN-BUILD CRITERIA

#### FIRE PROTECTION DESIGN-BUILD CRITERIA

#### 1.01 GENERAL

- A. The work installed under this section shall conform to all applicable local codes, regulations, and standards.
- B. Do not construe anything contained in these specifications or drawings to permit work to be installed that does not conform to code.
- C. Consider interpretations and rulings of the enforcing agencies as part of these specifications.
- D. Comply with specifications showing work exceeding minimum code requirements.
- E. The Contractor shall furnish without any extra charge additional materials and labor required for the compliance with any rules and regulations.
- F. Current State Building, Fire, Mechanical, Plumbing and energy codes shall apply.
- G. The Design/Build Entity shall have responsibility for the following:
  - 1. Engineer-of-Record
  - 2. All calculations
  - 3. Final equipment sizing
  - 4. Equipment selection
  - 5. Construction details
  - 6. Seismic restraints
  - 7. Coordination with other trades
  - 8. Preparation of 100% Construction Documents
  - 9. Shop drawings and submittals
  - 10. Project construction management
  - 11. Construction and all field work
  - 12. Construction quality control
  - 13. Start-up & testing
  - 14. Training
- H. The Design/Build Entity shall be the Engineer-of-Record for the project, stamping and signing the drawings for permit submission and approval.

#### 1.02 GUARANTEES AND WARRANTIES

- A. Prior to final application for payment, submit to the Owner/Architect, all guarantees in duplicate, bound and indexed in two separate, complete files. Include each Subcontractor's guarantee for his own work and all manufacturers extended guarantees for equipment. The delivery of said guarantees shall not relieve Contractor from any obligations assumed under any other provisions of the contract.
- B. All materials, parts, equipment, modifications made, and workmanship shall be guaranteed for a period of one year from date of acceptance of work, not when the Subcontractor has completed his work nor when the equipment is turned on.
- C. Should such parts, materials, or workmanship be found to be defective during this period, they will be rectified at no cost to the Owner. All labor required to rectify such defects will be performed during the normal working hours of the trade involved. Overtime charges will be considered on work requested during other than normal working hours.
- D. This guarantee is contingent upon the system being properly maintained by a qualified mechanic familiar with this equipment and that the equipment is not abused. Excluded is normal wear and tear, replacement of filters and belts and chemical treatment.
- E. A written guarantee to this effect shall be submitted prior to final payment and acceptance.
- F. If the equipment manufacturers provide for a longer guarantee period, they shall also be submitted.

#### 1.03 SUBMITTALS

- A. After completion of design, six (6) complete (construction ready) and organized sets of submittals will be required. No equipment or material shall be ordered without prior review of the Owner. Submittals shall be provided in a timely manner to allow sufficient time to review information without delaying work. Included in the submittals shall be the following:
  - 1. Complete plans and specifications showing equipment locations, pipe layout and sizing, wiring and control diagrams, equipment schedules, details, notes, and all other items necessary for proper checking, construction permits, etc.
  - 2. Submittals and cut sheets on all fixtures, equipment, materials and products.
  - 3. Provide pump curves, operation characteristics, capacities, ambient noise criteria, etc., for all equipment.
  - 4. Sizing calculations for all equipment and pumps.
  - 5. Submittals will be reviewed for general conformance with this specification, but review in no manner is meant to verify that dimensions, quantities, or location of services are as necessary to meet the job requirements nor relieve the Contractor of any design, installation, or performance requirements.

#### 1.04 FEES

- A. Provide, procure, and pay for all permits, services, meters, licenses, fees, etc., required for performance or work of this section.
- B. Upon completion of the work, deliver to the Architect, all certificates of approval signed by the controlling authorities.

#### 1.05 RECORD DRAWINGS

- A. Record of Job Progress: Keep an accurate, dimensional record of the as-built locations of all work. Keep records up-to-date on blue line prints as the job progresses and before any portion of the work is covered up. This print set shall be maintained at the job site and shall be available for inspection at all times.
- B. Final as-built reproducible drawings (electronic and hard copy media) shall be submitted prior to final acceptance and shall include the following:
  - 1. Location of piping and equipment.
  - 2. Ceiling access panel locations.

#### 1.06 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Furnish three (3) complete sets of operating and maintenance instructions for all equipment of all types bound in a hardboard binder and indexed. Submit no later than thirty (30) calendar days prior to substantial completion.
- B. Incorporate the following:
  - 1. Exact model numbers for each piece of equipment.
  - 2. Complete operating instructions for each item of equipment.
  - Test data and other reports.
  - 4. Typewritten maintenance instructions for each item of equipment, listing in detail, the lubricants to be used, frequency of lubrication, inspections required, adjustments, etc.

#### 1.07 SITE CLEAN UP

- A. After all other work has been accomplished, clean all exposed piping, fixtures, equipment, and supports.
- See General Conditions regarding clean up. Leave all areas involving plumbing work clean.

#### 1.08 UL LABEL

A. Furnish UL labeled and listed materials and equipment except when equipment is of a type for which labeling or listing services are not available from UL.

#### 1.09 CURRENT MODELS

A. Materials and equipment shall be new, current models by each manufacturer and shall bear complete identification by the manufacturer. Materials and equipment shall be guaranteed by the manufacturer to equal or exceed specified, submitted, and published specifications such as pressure ratings, capacities, etc.

#### 1.10 SERVICE CAPABILITY

A. Provide materials and equipment of major and reputable manufacturers with ability to render competent and thorough technical services through local organizations and to expeditiously furnish spare parts.

#### 1.11 FINISHES AND PAINTING

- A. Provide all equipment with a factory finish. All other painting will be done under another section.
- B. Touch up scratches in factory finished surfaces to match original. Obtain touch-up paint from the manufacturer of the piece of equipment.

#### 1.12 COORDINATION

- A. Coordinate with work performed by other sections in order to accommodate the requirements of this section and to assure adequate space and proper location of all necessary work on this project whether or not the work is under this section. This coordination shall include, but not be limited to, the following:
  - Layout support pads, curbs, sleepers, anchor bolts, etc., for all fire protection equipment
    and materials so as to be in the proper location for the equipment actually ordered. These
    pads shall be of adequate dimension to provide for proper mounting of equipment
    isolators and equipment mounting so that anchor bolts meet all seismic criteria.
    Contractor shall allow for proper service clearances.
  - 2. Provide templates, information, and instructions to other divisions as necessary to properly locate holes and openings to be cut or provided for plumbing work.
  - Layout piping, and other fire protection systems and confirm all sizes of systems and components to be sure they fit the space available prior to ordering and manufacturing of components.
  - 4. Be certain to allow for proper pipe slopes.
  - 5. Provide proper clearances for access to and service of all equipment and items requiring adjustment including shutoff valves.

#### B. Coordination Drawings:

- 1. Extra charges shall not be allowed due to lack of coordination prior to or during construction.
- Prepare large scale coordination drawings of any congested areas and areas where conflicts occur. Distribute and review with the General Contractor and any other trades that are affected.

#### 1.13 WORKMANSHIP

A. Workmanship shall be first class throughout, performed only by competent and experienced workmen. Replace work falling below these standards. Constant supervision of the work either by the Contractor or his competent representative shall be maintained. Welding shall be done by certified pipe welders.

#### 1.14 NOISE AND VIBRATION

A. Quietness is a requirement. Eliminate noise, other than that caused by specific equipment operating at optimum conditions and at design noise criteria.

B. The limiting of transmission of noise and vibration is very important. The Contractor is to pay particular attention that piping, equipment, and ductwork is installed so as not to chatter or rub against other materials, equipment, and the building structure. Provide isomode pads, insulation, or other suitable materials to avoid direct contact and noise conditions unacceptable to the Owner. Consider, in particular, pipe clamps at risers where they contact the slab, proper shields at pipe hangers, and pipe and duct penetrations of walls and floors.

#### 1.15 SEISMIC RESTRAINTS

A. General: All equipment, piping, and materials shall be fastened to the structure with properly sized and structurally engineered anchors, bolts, and restraints to prevent permanent displacement in any direction caused by lateral motion, overturning, or uplift.

#### B. Calculations:

- 1. Submit drawings, calculations, and specifications that clearly indicate the furnished systems for support of equipment, piping, and materials.
- 2. Calculations shall be in a form that can be readily reviewed by the Architect. All engineering designs for the restraining systems shall bear the seal of a Structural or Civil Engineer registered in the state of the project's location.
- C. Provide specifications of anchor bolt size and loads with installation instructions for each item.
- D. All isolators shall be fastened to the structure and to the equipment with properly sized and structurally engineered anchors and bolts. The isolator manufacturers shall submit seismic calculations confirming that such bolts and anchors can handle the specified seismic requirements.
- E. Provide for attachment to portions of the building structure capable of bearing the loads imposed. Design systems to not overstress the building structure. (Coordinate with the Structural Engineer.)
- F. The Engineer providing the required calculations shall inspect all supports and attachments designed by him and provide a letter certifying that they have been installed as designed.

#### 1.16 FIRE PROTECTION SYSTEM LAYOUT

#### A. General:

- 1. Layout the fire protection system in careful coordination with the contract and approved shop drawings, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system.
- 2. Follow the general layout shown on the approved shop drawings in all cases except where other work may interfere. Size any section of pipe for which size is not indicated or any intermediate section erroneously shown undersized the same size as the largest pipe connecting to it.
- 3. Cut pipe accurately to job measurements and install without springing or forcing, true to line and grade, generally square with building, and adequately supported to prevent sagging or undue stress on pipe, fittings, and accessories.
- 4. Provide unions at connections to equipment, on service side of valves, and elsewhere as required to facilitate maintenance.
- 5. Provide chrome plated, split ring type escutcheons where pipe penetrations through wall or ceiling are exposed to view.
- 6. Arrange pipe and hangers to allow for expansion, contraction, and structural settlement. No pipe shall contact structure.
- 7. Make changes of size or direction with manufactured fittings. Bushings, reducing flanges, and bending of pipe is not allowed.
- 8. Change pipe size within three pipe size diameters of final connection to fixtures and equipment.
- 9. Enclosure of Pipes:
  - a. Except where specifically permitted by the Architect, layout all pipes to fall within partition, ceiling, or roof cavities and not to require furring other than that shown on the contract documents.

#### 1.17 INSTALLATION OF FIRE PROTECTION EQUIPMENT

#### A. General:

- 1. Install all piping promptly capping or plugging all open ends and making pipe generally level and plumb, free from traps, and in a manner to conserve space for other work.
- 2. Firmly anchor all pipes in position; provide complete isolation of dissimilar metals.
- 3. Inspect each piece of pipe, tube fittings, and equipment for defects and obstructions; promptly remove all defective materials from the job site.
- 4. Install pipes to clear all beams and obstructions. Do not cut structural members without the approval of the Architect.

#### B. Joints and Connections:

1. Smoothly ream all cut pipe; cut all threads straight and true.

#### 1.18 CLOSING IN UNINSPECTED WORK

- A. General: Do not cover up or enclose work until it has been properly and completely inspected and approved.
- B. Noncompliance: Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and, after it has been completely inspected and approved, make all repairs and replacements with such materials as are necessary to the approval of the Architect.

#### 1.19 TESTS AND ADJUSTMENTS

- A. Test the installations in accordance with the following requirements and all applicable codes.
  - 1. Notify the Architect at least seven (7) days in advance of any test.
  - All piping shall be tested at completion of roughing-in, or at any other times as directed by the Architect.
  - 3. Furnish all necessary materials, test pumps, gases, instruments, and labor required for testing. Tests shall be witnessed by the Architect.
- B. Protect valves and equipment from damage during tests. Include connection to previously tested sections if the systems are tested in sections.
- C. Test all piping with no leaks or loss in pressure. Repair or replace defective piping until tests are accomplished successfully.
- D. Perform operational test under simulated or actual service conditions, including one test of complete plumbing installation with all fixtures and other appliances connected and operating.
- E. Should any material or work fail in any of these tests, it shall be immediately removed and replaced by new materials, and portion of the work replaced shall again be tested.
- F. Instruct Owner's operating personnel during operating adjustment period. Lubricate each item of equipment, including motors, before operation.

#### 1.20 CLEANING PIPING SYSTEMS

A. After the piping systems have been tested and proved tight, clean piping systems of dirt, scale, oil, grease, waste, and other foreign substances which may have accumulated during the process of installation.

#### 1.21 FINAL CLEAN UP

A. Prior to acceptance of the buildings, thoroughly clean all exposed portions of the plumbing installation, removing all labels and all traces of foreign substance, using only a cleaning solution approved by the manufacturer of the plumbing item and being careful to avoid all damage to finished surfaces.

#### 1.22 PIPING PENETRATIONS OF FIRE WALLS

A. Bare Pipe: All steel pipe or copper tubing penetrating fire walls or decks shall be encircled by sheet metal sleeves sized for maximum one inch annular spacing between pipe and sleeve. Spacing shall be packed on each end with UL rated ceramic fiber strip insulation.

- B. Sleeve and packing shall have the same fire rating as the partition construction in which they are installed. Any substitutions must have passed the ASTM E-119 test, per UBC 43-1 for pipe penetrations.
- C. Fire barrier kits shall be Pipe Shields, Inc., Model "F" series.
- D. Caulking shall be applied additionally for 4-hour wall penetrations. Caulking shall be 3-M fire barrier caulking, CP-25, with 3-hour rating.

#### 1.23 IDENTIFICATION

- A. Identification of New Material:
  - 1. Provide pipe with manufacturer's identification and service on each length of pipe as required by ASTM Specifications.

#### B. Piping:

- 1. Identify all pipelines with adhesive markers indicating the contents and direction of flow.
- 2. Markers to be Seton type Setmark, Brady, or Perma-Color.
- 3. Provide pipe marking as follows:
  - a. Apply "Plastic Pipe Marker" at each valve to show identification of pipe contents.
  - b. Use an "Arrow Marker" with each "Pipe Content Marker" and in direction of flow.
  - c. Apply "Pipe Marker" and "Arrow Marker" at every point of pipe entry and exit where line goes through wall, floor, or roof.
  - d. Apply "Pipe Marker" and "Arrow Marker" every 50' on long continuous lines.
  - Identify branch runs from mains with "Pipe Marker" and "Arrow Marker" at point takeoff.
  - f. Apply "Markers" on two lower quarters of pipe and where view is unobstructed. In this position, "Markers" are read at a glance from ground floor level and dust will not obscure "Marker." Locate roof-mounted piping "Markers" so that they can be read from a standing position on the roof.
  - g. Provide at each end of each marker, Brady or equal, 2-1/4" wide self-sticking clear tape around the periphery of pipe or insulation to further secure the marker.
  - h. All markers shall be installed after finish painting is complete. Coat full marker with clear lacquer after installation.
  - i. Guarantee that "Pipe Markers" will stay on pipe systems for a period of not less than 5 years.
  - j. Identify piping 2-1/2" and smaller with 1" minimum height lettering every 20' where exposed to view and at valves where concealed.
  - k. Identify piping 3" and larger with 2" minimum height lettering every 30' where exposed to view and at valves where concealed.
  - I. Where piping is provided with insulation, provide the size letters scheduled above in accordance with the outside dimensions of insulation.
  - m. Use markers and adhesive suitable for the humidity and for surface temperatures ranging from –40 degrees F to 150 degrees F.

#### **END OF SECTION**

# BAKER EMERGENCY OPERATIONS CENTER BID DOCUMENTS

1000 NW Wall St, Ste 205 Bend, OR 97703 541.383.1898 colearchitects.com Copyright © 2025 Cole Architects, PLLC

STAMP



CONSTRUCTION DOCUMENTS AND THE SITE CONDITIONS INFORMATION REGARDING THE COMPLETE WORK OF SPECIFIC TRADES IS DISPERSED THROUGHOUT TH DETERMINED BY REFERENCE TO OTHER THAN COMPLETE DOCUMENT SET.

**CONSULTANT** 

**PROJECT INFORMATION** 

BAKER EMERGENCY **OPERATIONS** CENTER

3410 K STREET BAKER CITY, OR 97814

**ISSUES** PHASE BID DOCUMENTS DATE ISSUE DATE: 05/16/2025 COLE PROJECT: 23-105-OR

JOB NUMBER MARK DATE DESCRIPTION

ADD-02 07/28/2025 ADDENDUM #2

**SHEET NAME** 

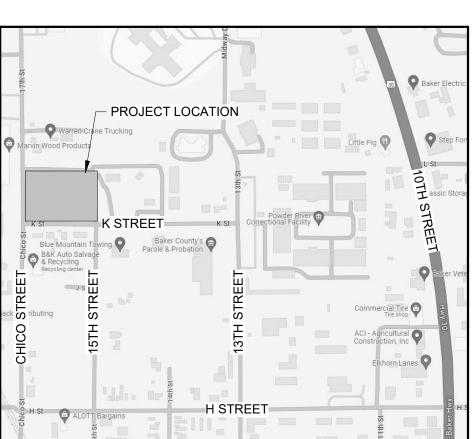
**COVER SHEET** 

**SHEET NUMBER** 

**AREA MAP** 

**VICINITY MAP** 





OCCUPANCY: A-3, B

**APPLICABLE CODES** 

(OMSC) (OESC) (OPSC) ICC A117.1-2017 ACCESSIBLE AND USABLE BUILDING AND FACILITIES

FIRE SPRINKLERS

PROJECT SUMMARY

THE PROJECT INVOLVES THE ADDITION OF A NEW, APPROXIMATELY 3,863 SQUARE FOOT OPERATIONS CENTER TO THE EXISTING BAKER COUNTY SHERIFF'S OFFICE. THIS NEW ADDITION WILL INCLUDE A NEW COMMUNICATIONS ROOM, AN EXPANDED 911 DISPATCH CENTER, AND A 50-PERSON CONFERENCE ROOM FOR MEETINGS AND TRAINING SESSIONS. THE GOAL IS TO ENHANCE THE OPERATIONAL CAPABILITY OF THE SHERIFF'S OFFICE. IMPROVE EMERGENCY SERVICE RESPONSE. AND PROVIDE MODERN FACILITIES FOR STAFF AND COMMUNITY USE

PROJECT INFORMATION

ADDRESS: 3410 K STREET BAKER CITY, OR 97814

PROPERTY DESCRIPTION: SW1/4 SW1/4 SEC.8 T.9S R.40E WM

PARCEL NUMBER: 09S40E08CC

LOT SIZE: Lot 200 - 1.97 Acres Lot 201 - 1.46 Acres

NUMBER OF STORIES:

**SQUARE FOOTAGE**: (E) 13,110 (N) 3,863 = 16,157 SF

**CONSTRUCTION TYPE:** VB

LAND USE CODE: GENERAL COMMERCIAL (C-G)

FIRE SPRINKLERS: YES

2022 OREGON STRUCTURAL SPECIALTY CODE 2022 OREGON MECHANICAL SPECIALTY CODE 2023 OREGON ELECTRICAL SPECIALTY CODE 2023 OREGON PLUMBING SPECIALTY CODE 2022 OREGON FIRE CODE 2021 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC)

## **DEFERRED SUBMITTALS**

FIRE ALARM

## **DESIGN-BUILD BY GC**

LANDSCAPING

**SHEET INDEX** 

General

G000

G001

G002

G010

C0.0 NOTES AND DETAILS C1.0 EXISTING CONDITIONS AND SITE DEMOLITION PLAN C2.0 SITE IMPROVEMENT PLAN C3.0 PRECISE GRADING PLAN C4.0

ACCESIBILITY CLEARANCE AND REQUIREMENTS

SURFACE WATER RETENTION PLAN **EROSION AND SEDIMENT CONTROL PLAN** 

ESC1 Architectural A001 DEMOLITION PLAN

**COVER SHEET** 

CODE ANALYSIS

PROJECT INFORMATION

**OVERALL FLOOR PLAN** A100 A101 FLOOR PLAN A111 REFLECTED CEILING PLAN A121 **ROOF PLAN** A301 **BUILDING SECTIONS** A201 **EXTERIOR ELEVATIONS** WALL SECTIONS A401 **ENLARGED PLANS** A511 FOUNDATION DETAILS A521 FLOOR/WALL DETAILS A531 ROOF DETAILS A541 WINDOW/DOOR DETAILS

A571 **CEILING DETAILS** A601 ROOF/CEILING/FLOOR ASSEMBLIES A611 WINDOW/DOOR TYPES AND SCHEDULES

FINISH SCHEDULE A651 **INTERIOR DETAILS** 

S1.0 **GENERAL STRUCTURAL NOTES** S1.1 **GENERAL STRUCTURAL NOTES** FOUNDATION PLAN S2.0 ROOF FRAMING PLAN S2.1 S3.0 TYPICAL CONCRETE DETAILS

S3.1 FOUNDATION DETAILS S5.0 STEEL FRAMING DETAILS

Mechanical GENERAL NOTES. ABBREVIATIONS AND SHEET INDEX M0.01 M0.02 MECHANICAL LEGEND M1.01 MECHANICAL - LEVEL 1 PLAN

M1.21 MECHANICAL - ROOF PLAN M5.01 MECHANICAL DETAILS M6.01 MECHANICAL SCHEDULES M6.02 MECHANICAL DIAGRAMS Plumbing GENERAL NOTES, ABBREVIATIONS AND SHEET INDEX P0.01

P1.00 PLUMBING - UNDERGROUND PLAN P1.01 PLUMBING - LEVEL 1 PLAN P1.21 PLUMBING - ROOF PLAN P4.01 PLUMBING - LEVEL 1 ENLARGED PLAN P6.01 PLUMBING SCHEDULES P7.00 PLUMBING DETAILS

Electrical E0.01 GENERAL NOTES, ABBREVIATIONS AND SHEET INDEX E0.02 ELECTRICAL LEGEND E0.03 ELECTRICAL LEGEND ED1.01 ELECTRICAL DEMOLITION - LEVEL 1 PLAN EL1.01 ELECTRICAL LIGHTING - LEVEL 1 PLAN EP1.01 ELECTRICAL POWER - LEVEL 1 PLAN EP1.21 ELECTRICAL - ROOF PLAN ELECTRICAL DETAILS E5.01 E5.02 **ELECTRICAL DETAILS** E6.01 ELECTRICAL LIGHTING SCHEDULE E6.02 **ELECTRICAL SCHEDULES** E6.03 **ELECTRICAL ONE-LINE DIAGRAM** 

Telecom. T0.01 TELECOM. GENERAL NOTES AND LEGEND T1.01 SYSTEM COMMUNICATION - LEVEL 1 PLAN T5.01 SYSTEMS DETAILS T5.02 SYSTEMS DETAILS

## PROJECT CONTACT INFORMATION

CLIENT\_ BAKER COUNTY 3410 K ST. **BAKER**, OR 97814

DAN MCQUISTEN

541-523-6416

ISSUE DATE: 05/16/2025

COLE PROJECT: 23-105-OR

COLE ARCHITECTS 1000 NW WALL ST. STE 205 BEND, OR 97701

NASLAND ENGINEERS 1109 W. MAIN ST. STE 660 BOISE, ID 83702

**STRUCTURAL** CBSE, LLC. 1202 ADAMS AVE LA GRANDE, OR 97850

**MECHANICAL** SAZAN ENGINEERS BEND. OR 97703

**PLUMBING ELECTRICAL** SAZAN ENGINEERS SAZAN ENGINEERS (ADD-02) 1030 NW BOND ST. STE 202 BEND, OR 97703 BEND, OR 97703

**BRUCE JESSUP** 

**LORENA RUIZ** 541-229-2839

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503-416-2077 JTIJERINA@SAZAN.COM

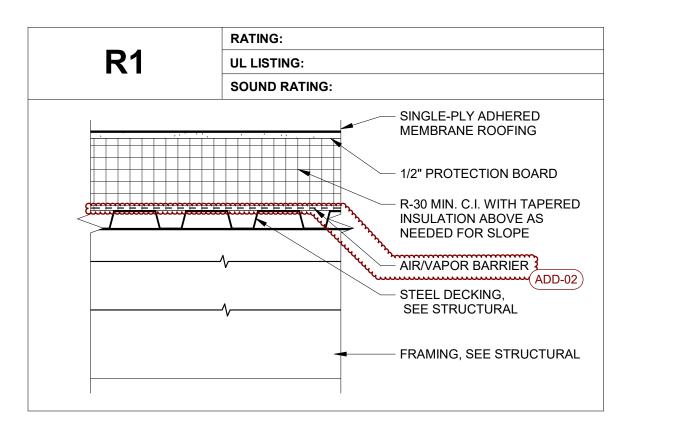
**JOHN TIJERINA** 

541-229-2839 bjessup@sazan.com

lruiz@sazan.com

<u>LIGHTING</u>

SAZAN ENGINEERS



**ROOF TYPES** 

SCALE: 1 1/2" = 1'-0"

S6A

RATING: 2 HR

WALL HEIGHT: SEE NOTE A | SOUND RATING: 45-49 STC

**UL LISTING**: U411

(2) LAYERS 5/8" TYPE "X"

GYP. BOARD, CONT. TO

(2) LAYERS 5/8" TYPE "X"

GYP. BOARD, CONT. TO

ROOF DECKING TYP.

NON-RATED INTERIOR WALL

NON-RATED INTERIOR WALL

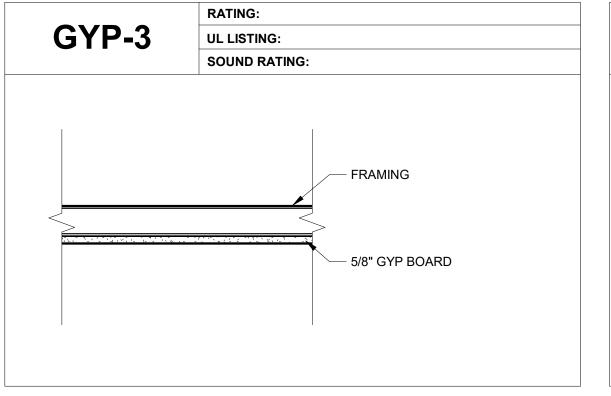
1 LAYER GYP. @ INTERIOR SIDE

1 LAYER GYP. PER SIDE

ROOF DECKING TYP.

2x STEEL FRAMING.

SEE STRUCTURAL

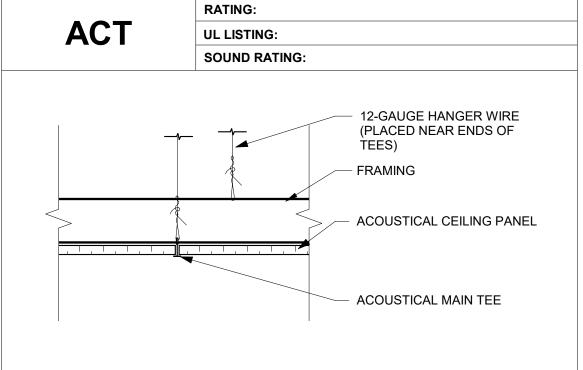


**RATING**: 2 HR

NON-RATED INTERIOR WALL

1 LAYER GYP. INTERIOR W/

2 LAYER GYP. EXTERIOR



# 2 CEILING TYPES SCALE: 1 1/2" = 1'-0"

S8C

WP 1616: RATED ASSEMBLY INSTALL INFORMATION

BASE: LAYER 5/8" TYPE X GYPSUM

WALLBOARD OR GYPSUM VENEER BASE

DRYWALL SCREWS 8" O.C. AT VERTICAL

APPLIED PARALLEL TO EACH SIDE OF 6", 18 MIL

(25GA.), STEEL STUDS 24" O.C. WITH 1" TYPE S

JOINTS AND 12" O.C. AT INTERMEDIATE STUDS.

FACE: LAYER 5/8" PLAIN OR PREDECORATED

TYPE X GYPSUM WALLBOARD OR GYPSUM

OVER ENTIRE SURFACE. METAL BASE AND

JOINTS STAGGERED 24" EACH LAYER AND

SINGLE LAYER 5/8"

2x STEEL FRAMING,

2x STEEL FRAMING,

SINGLE LAYER 5/8" TYPE "X"

SEE STRUCTURAL

GYP. BOARD

SEE STRUCTURAL

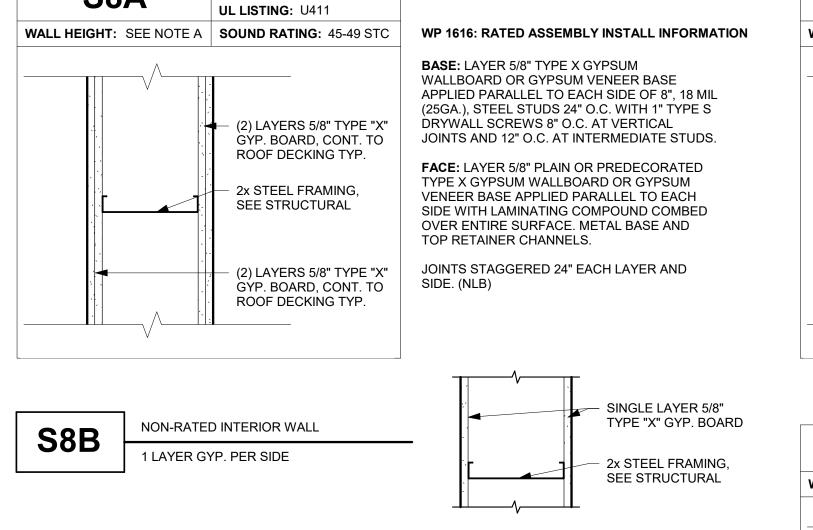
TYPE "X" GYP. BOARD

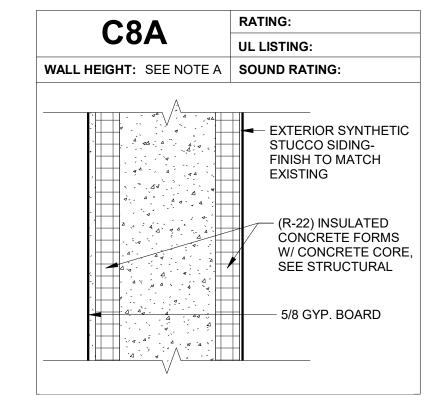
TOP RETAINER CHANNELS.

SIDE. (NLB)

VENEER BASE APPLIED PARALLEL TO EACH

SIDE WITH LAMINATING COMPOUND COMBED





C8B	RATING:
COD	UL LISTING:
WALL HEIGHT: SEE NOTE A	SOUND RATING:
	EXTERIOR SYNTHETIC STUCCO SIDING-FINISH TO MATCH EXISTING  1" RIGID INSULATION  (R-22) INSULATED CONCRETE FORMS W/CONCRETE CORE, SEE STRUCTURAL  5/8" GYP. BOARD

SINGLE LAYER 5/8"

2x STEEL FRAMING,

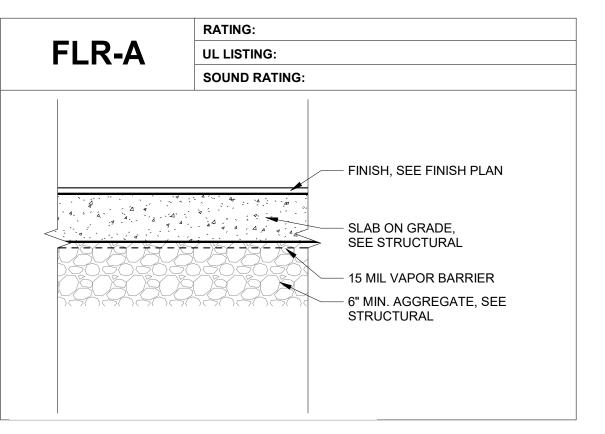
SEE STRUCTURAL

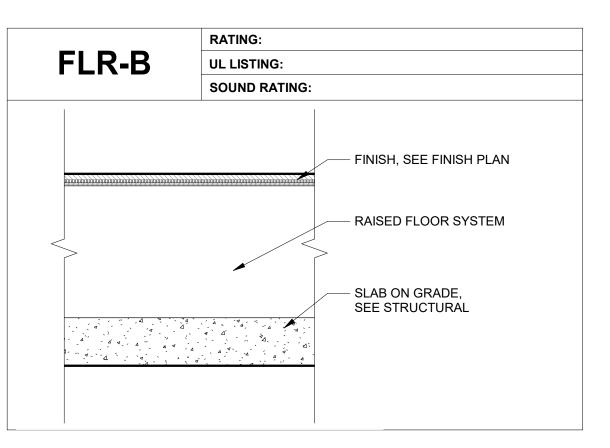
DOUBLE LAYER 5/8"

TYPE "X" GYP. BOARD

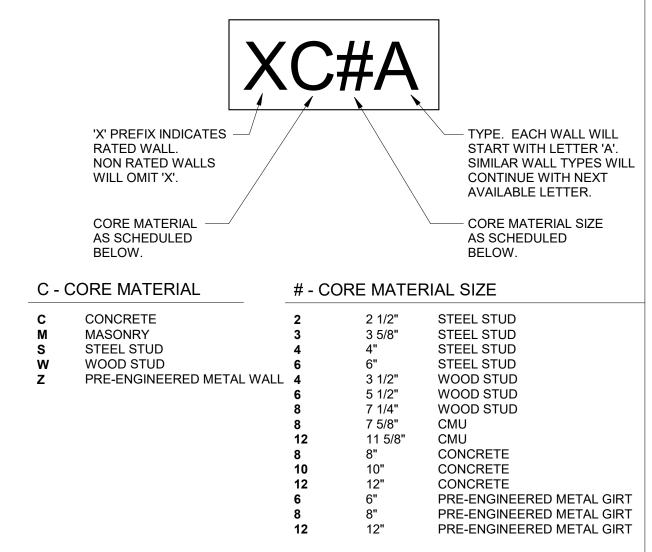
TYPE "X" GYP. BOARD

## **WALL TYPES**SCALE: 1 1/2" = 1'-0"





## **WALL TAG LEGEND**



## **GENERAL NOTES**

- A. ALL WALLS WILL BE TO DECK ABOVE UNLESS OTHERWISE NOTED.
- B. WALL TYPES DO NOT ACCOUNT FOR REQUIRED BACKING OR SUPPORT FOR WALL MOUNTED ELEMENTS. COORDINATE WITH FLOOR PLANS OR INTERIOR ELEVATIONS PRIOR TO COVERING STUDS.
- C. PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE SEALED PER MANUFACTURERS REQUIREMENTS. REFER TO ASSOCIATED UL LISTING FOR MORE INFORMATION.
- D. WALL THICKNESS ARE SHOWN NOMINALLY.
- E. AT WALLS WITH SOUND ATTENUATION, SEAL TOP AND BOTTOM OF WALL AT STRUCTURE.
- F. FOR WALLS WITH TILE IN DRY AREAS, INSTALL TYPE 'X' GLASS-MAT GYPSUM BOARD. FOR WALLS WITH TILE IN WET AREAS, (I.E. TUBS AND SHOWERS), INSTALL WATER RESISTANT BACKER BOARDS. AT ALL OTHER TILED BATHROOM AREAS, USE WATER RESISTANT GREEN BOARD.

# COLE /ARCHITECTS

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CONSULTANT

PROJECT INFORMATION

# BAKER EMERGENCY OPERATIONS CENTER

3410 K STREET BAKER CITY, OR 97814

ISSUES

PHASE	BID DOCUMENT
DATE	ISSUE DATE: 05/16/202
JOB NUMBER	COLE PROJECT: 23-105-0
	,

MARKDATEDESCRIPTIONADD-0207/28/2025ADDENDUM #2

SHEET NAME

ROOF/CEILING/FLOOR ASSEMBLIES

SHEET NUMBER

A601

FLOOR TYPES

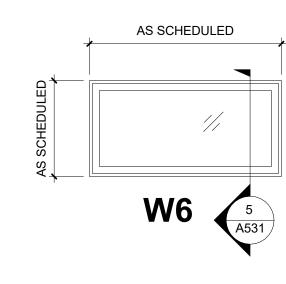
SCALE: 1 1/2" = 1'-0"

Wir	ndov	w Sc	hed	ule					
TYPE	COUNT	HEIGHT	WIDTH	Sill Height	Head Height	Operation	on	Materials	Comments
W1	3	2'-0"	4'-0"	5'-2"	7'-2"	FIXED	ADD	ALUM	FRAME TO MATCH EXISTING
W2	2	4'-0"	4'-8"	3'-0"	7'-0"	FIXED	ADD-	HM	FRAME TO MATCH EXISTING
W3	1	4'-0"	5'-0"	3'-0"	7'-0"	SLIDING		ALUM	3
W4	1	4'-0"	7'-1"	3'-0"	7'-0"	FIXED		HM	FRAME TO MATCH EXISTING
W6	2	4'-0"	2'-0"			SKYLIGHT		НМ	

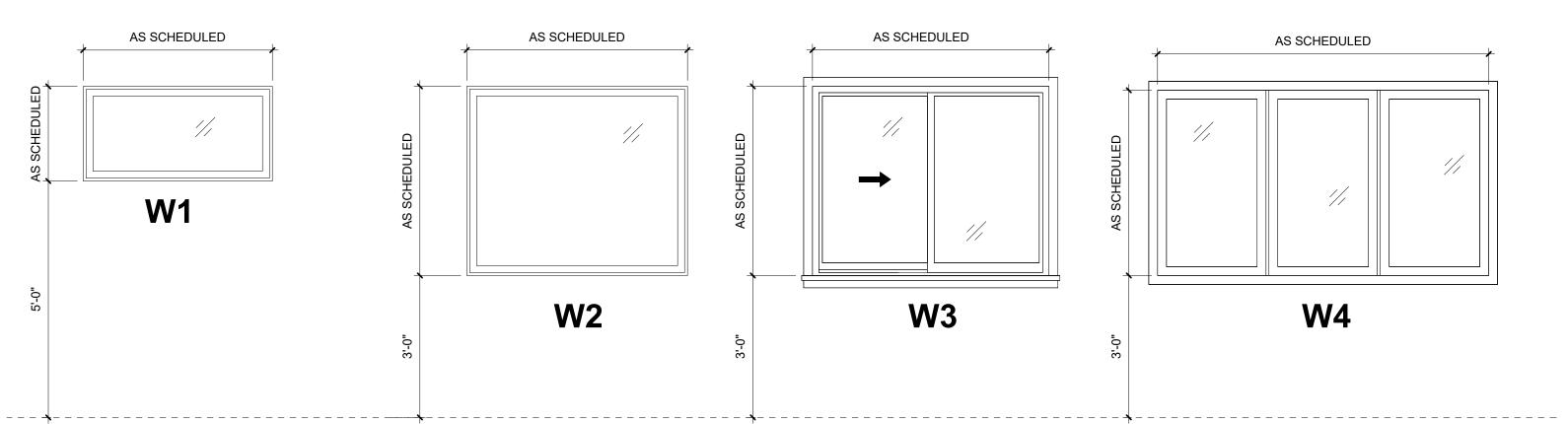
DOO	R SCHE	DULE												
	IDENTIFICATION				DOOR				FRAME FIRE					
			DIMEN	ISIONS	ı	DENTITY		GLASS		IDENTITY		RATIN	HARDWARE	
DOOR NO.	FROM ROOM	TO ROOM	W	HT	TYPE	MATL	FINISH	TYPE	TYPE	MATL	FINISH	G	SET NO.	REMARKS
100A	SECURE VESTIBULE		6'-0"	7'-0"	FG 2	ALUM	M/E	GL-4, T		ALUM	M/E	0	01	
100B	(E) TRAINING	SECURE VESTIBULE	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	02	
100C	HALLWAY	SECURE VESTIBULE	3'-0"	7'-0"	FG, W5	HM	M/E	GL-4, T		HM	M/E	0	03	
101	CONFERENCE	HALLWAY	3'-0"	7'-0"	FG, W5	HM	M/E	GL-4, T		HM	M/E	0	02	
102	JANITOR	HALLWAY	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	04	
103	RR 2	HALLWAY	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	05	
104	RR 1	HALLWAY	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	05	
105	CONFERENCE		3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	06	
106A	HALLWAY	MAIN OPERATIONS	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	07	
106B	MAIN OPERATIONS		3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	06	
106C	MAIN OPERATIONS		3'-6"	7'-0"	FG	HM	M/E	GL-4, T		HM	M/E	0	06	
107	HAM RADIO/COMM	MAIN OPERATIONS	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	08	
108	STORAGE	MAIN OPERATIONS	6'-0"	7'-0"	F 2	HM	M/E	-		HM	M/E	0	09	
109	IDF	MAIN OPERATIONS	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	10 }	
110	MAIN OPERATIONS	UTILITIES	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	10	
111A	911 CALL CENTER	(E) TRAINING	3'-0"	7'-0"	FG	HM	M/E	GL-4, T		HM	M/E	0	13	
111B	MAIN OPERATIONS	911 CALL CENTER	3'-0"	7'-0"	F	HM	M/E	-		HM	M/E	0	[11]	
112	(E) TRAINING	DISPATCH SUPERVISOR	3'-0"	7'-0"	F	HM	M/E			HM	M/E	Q	12	
							AL	DD-02			AL	DD-02	ADD-02	

## **WINDOW TYPES**

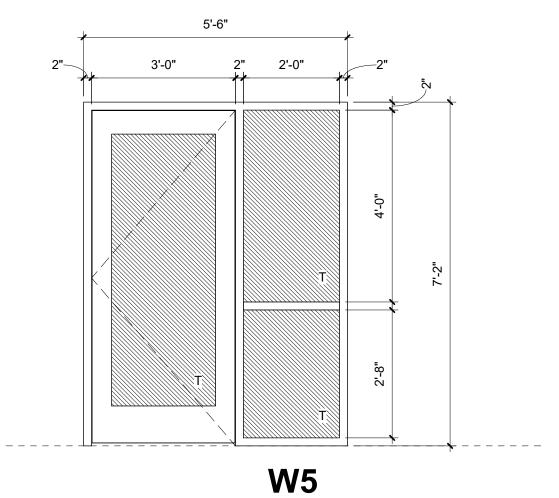
## **SKYLIGHT**



### **INTERIOR EXTERIOR**



## **STOREFRONT**



## **GENERAL NOTES**

A. REFER TO FINISH SCHEDULE FOR ABBREVIATIONS.

B. INSTALL EXTERIOR WINDOWS, DOORS AND SKYLIGHTS PER GUIDELINES IN ASTM E 2112-01

A WALL MOUNTED STOP WITH APPLICABLE BACKING.

- C. ALL DOORS ARE TO BE PROVIDED WITH FLOOR MOUNTED DOOR STOPS. WHERE A FLOOR MOUNTED STOP IS NOT APPLICABLE PROVIDE
- D. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO STARTING WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF ARCHITECT

#### **DOOR AND WINDOW SCHEDULE ABBREVIATIONS:**

ALSF ALUMINUM STOREFRONT ALUM ALUMINUM EXT **EXTERIOR FACTORY FINISH** GLASS HM **HOLLOW METAL** INS KDS INSULATED KNOCK-DOWN STEEL KDA PT KNOCK-DOWN ALUMINUM PAINT STL STEEL TEMPERED GLASS WOOD AL:WD ALUMINUM CLAD WOOD

(ADD-02) M/E MATCH EXISTING)

\* RE: SPECIFICATIONS FOR GLAZING AND ENERGY REQUIREMENTS

#### **GLAZING TYPES:**

1/4" SINGLE PANE, CLEAR GLASS GL-2 1/4" TINTED GLASS GL-3 1" INSULATED, CLEAR GLASS 1" INSULATED, TINTED GLASS GL-5 FIRE-RATED GLASS

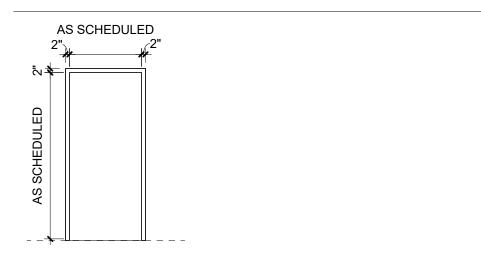
\* ALL EXTERIOR GLAZING TO BE **GL-4** AND ALL INTERIOR GLAZING TO BE **GL-1** UNLESS NOTED OTHERWISE.

## WINDOW LEGEND

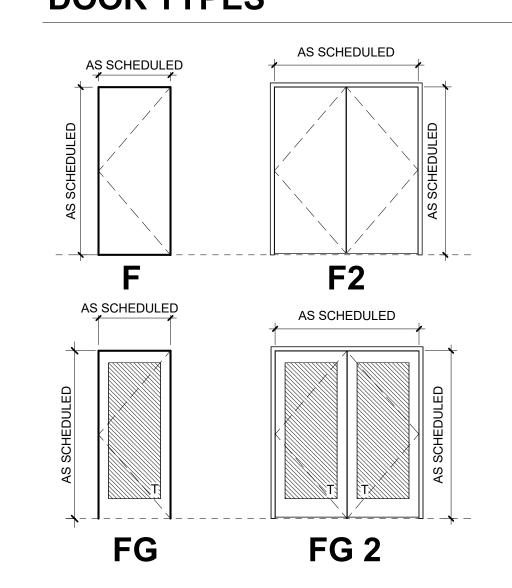


TEMPERED GLASS

## **DOOR FRAME TYPES**



## **DOOR TYPES**





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PROJECT INFORMATION

## BAKER EMERGENCY OPERATIONS CENTER

3410 K STREET BAKER CITY, OR 97814

BID DOCUMENTS ISSUE DATE: 05/16/2025 JOB NUMBER COLE PROJECT: 23-105-OR

DESCRIPTION

MARKDATEDESCRIPADD-0207/28/2025ADDENDUM #2

SHEET NAME

WINDOW/DOOR TYPES AND SCHEDULES

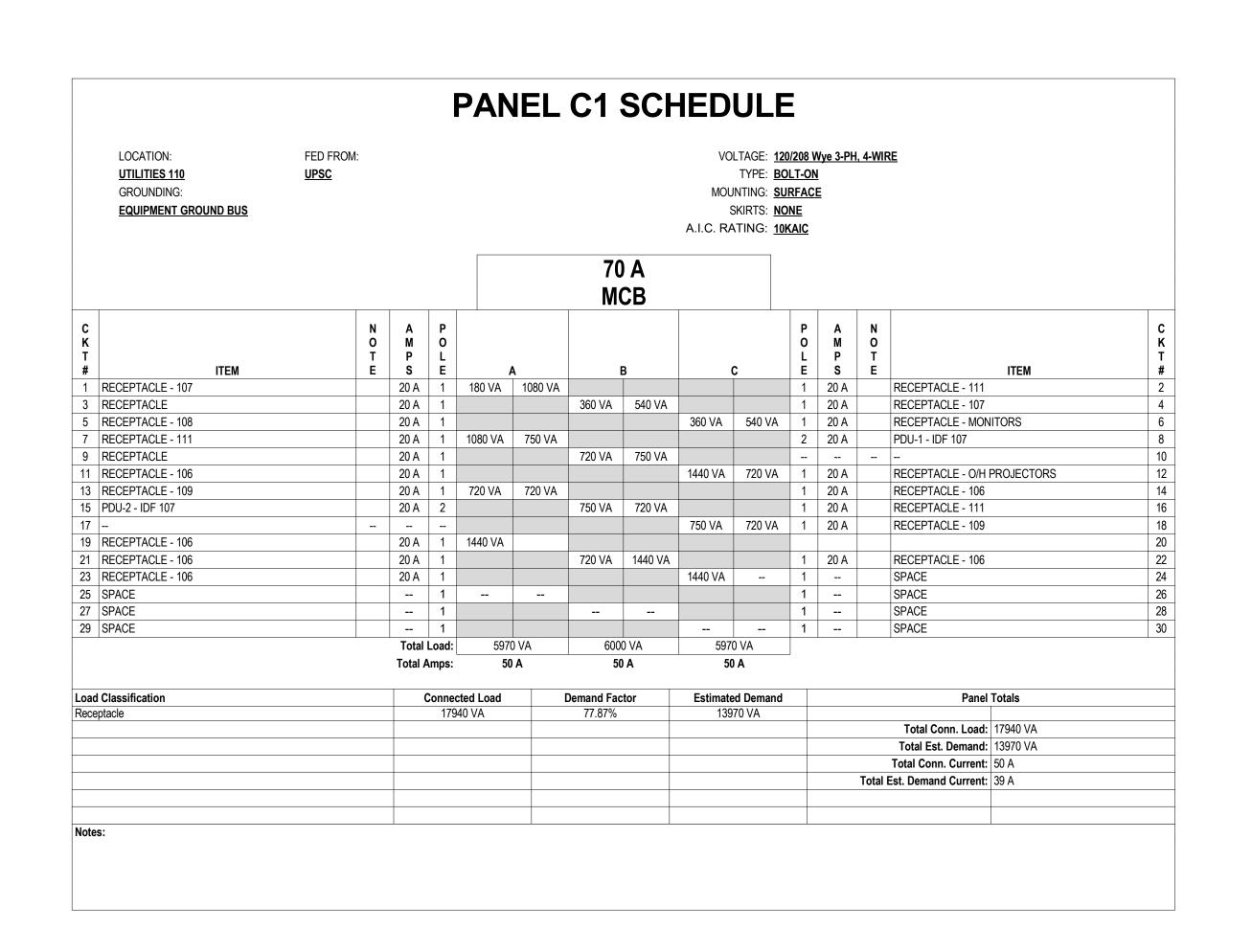
SHEET NUMBER

A611

			MEC	CHA	NIC	;AL	EQI	JIPN	MENT	CONN	IECTIC	N SCHE	DULE		
SCHEDULE N	OTES:						ABBR	EVIATION	<b>l</b> :			SCHED	ULE GENERAL NOTES		
2) PROVIDE I 3) PROVIDE I 4) EXHAUST	USED DISCONNECT SWITCH. MOTOR-RATED SWITCH, WITH WP CO MOTOR-RATED SWITCH AS DISCONN FAN SHARES CIRCUIT WITH OTHER I CATER SHARES CIRCUIT WITH OTHEI	IECT. EXHAUST FANS.					K K MC MCC OF OF	HP: HORS VA: KILOV (W: KILOV CA: MININ CP: MAXI OI: OWN W: WATT VP: WEAT	MUM CIRCUIT MUM OVERCU ER-FURNISHE ER-FURNISHE	ES	ALLED	2) PRO MORE. 3) ALL	COORDINATE WITH FIRE AL	ORS FOR ALL HVAC L LARM CONTRACTOR. ACLES AND/OR EQUIF	E SIZE. JNITS SUPPLYING 2,000 CFM OR PMENT CIRCUITS SHALL BE GFCI
NO.	EQUIPMENT DESCRIPTION	LOCATION	VA	HP	KW	KVA	MCA	MOCP	VOLTAGE	PHASES	CONDUIT SIZE	WIRE SIZE	DISC/FUSE/POLES	CIRCUIT NUMBER	NOTES
CU-1	CONDENSING UNIT	ROOFTOP	1602	0	1.0	1.6	7.7	15 A	208	1	3/4"	3#12, 1#12 GND	30//2	C - 13,15	
CU-2	CONDENSING UNIT	ROOFTOP	2766		1.0	2.8	13.3	15 A	208	1	3/4"	3#12, 1#12 GND	30//2	C - 25,27	
EF-01	EXHAUST FAN	ROOFTOP	60			0.1	0.5	20 A	120	1	3/4"	2#12, 1#12 GND	MRSS	C - 4	
ERV-01	ENERGY RECOVERY VENTILATOR	CALL CENTER 109	360			0.4	3.0	10 A	120	1	3/4"	2#12, 1#12 GND	MRSS	C - 5	
EWH-1	ELECTRIC WALL HEATER	RR1	1000		1.0	1.0	8.4	20 A	120	1	3/4"	2#12, 1#12 GND	-	C - 21	
EWH-2	ELECTRIC WALL HEATER	RR2	1000		1.0	1.0	8.4	20 A	120	1	3/4"	2#12, 1#12 GND	-	C - 23	
FCU-1	FAN COIL UNIT	CALL CENTER 109	2766			2.8	13.3	20 A	208	1	3/4"	2#12, 1#12 GND	MRSS	C - 28,30	
FCU-2	FAN COIL UNIT	IDF 114	2766			2.8	13.3	20 A	208	1	3/4"	2#12, 1#12 GND	MRSS	C - 24,26	
RTU-01	ROOFTOP UNIT	ROOFTOP	11880			11.9	33.0	45 A	208	3	1"	4#6, 1#10 GND	60/45/3	C - 29,31,33	
RTU-02	ROOFTOP UNIT	ROOFTOP	8640			8.6	24.0	30 A	208	3	1"	4#10, 1#10 GND	30/30/3	C - 32,34,36	
WH-1	ELECTRIC WATER HEATER	JANITOR 107	6000		6.0	6.0	28.8	40 A	208	1	3/4"	3#8, 1#8 GND	MRSS	C - 17,19	

LOCATION: <u>UTILITIES 110</u> GROUNDING: <u>EQUIPMENT GROUND BUS</u>	FED FROM: MDA						(	MOU	LTAGE: <u>120</u> TYPE: <u>BO</u> INTING: <u>SUI</u> SKIRTS: NO	RFACI	<u></u>		<u>RE</u>	
							0 A CB							
C K T # ITEM	N C T E	M P S	P O L E		Ą	ı	В		c	P O L E	A M P S	N O T E		ITEM
1 DOOR POWER		20 A	1	0 VA	90 VA					1	20 A		EXTERIOR LIGHTING	
RECEPTACLE - EXTERIOR (GENSET)  ERV-01		20 A	1			180 VA	606 VA	260 \/4	640 \ / ^	1	20 A			ENCE REC, EF-01, &
ERV-01 RECEPTACLE - RR1, RR2, JANITOR		20 A 20 A	1	720 VA	1000 VA			360 VA	648 VA	1	20 A 20 A		LTG INV UTILITIES 1 CONFERENCE ROO	
GENSET BATTERY CHARGER		20 A	1	120 VA	1000 VA	900 VA	900 VA			1	20 A			L AND DRINKING FOUNTAIN
1 INTERIOR LIGHTING		20 A	1			300 VA	300 VA	611 VA	1800 VA	1	20 A		RECEPTACLE - CON	
3 CU-1		15 A	2	801 VA	2500 VA					2	40 A		GENSET BLOCK HEA	
5						801 VA	2500 VA							
WH-1 - JANITOR 107		40 A	2					3000 VA	5970 VA	3	70 A		PANEL 'C1' VIA UPS	- UTILITIES 110
9				3000 VA	6000 VA									
EWH-1		20 A	1			1000 VA	5970 VA							
3 EWH-2		20 A	1					1000 VA	1383 VA	2	20 A		FCU-2	
5 CU-2		15 A	2	1383 VA	1383 VA	4000 \ / 4	4000.144							
7	<u>-</u> -					1383 VA	1383 VA	2000 ) / 4	4000 \ / 4	2	20 A		FCU-1	
9 RTU-01 1		45 A		3960 VA	2880 VA			3960 VA	1383 VA	3	30 A		RTU-02	
3				3900 VA	2000 VA	3960 VA	2880 VA				30 A		K10-02	
5 RECEPTACLE - UTILITIES 110		20 A	1			3300 VA	2000 VA	180 VA	2880 VA				 	
7 SPARE		20 A	1	0 VA	0 VA			100 171	2000 171	1	20 A		SPARE	
9 SPARE		20 A	1		0 171	0 VA	0 VA			1	20 A		SPARE	
1 SPARE		20 A					•	0 VA	0 VA	1	20 A		SPARE	
3 SPARE		20 A	1	0 VA	0 VA					1	20 A		SPARE	
5 SPARE		20 A	1			0 VA	0 VA			1	20 A		SPARE	
7 (F) INSTAHOT		20 A	1					0 VA	0 VA	1	20 A		(F) GARBAGE DISPO	SAL
9 (F) MICROWAVE	1	20 A	1	0 VA	0 VA					1	20 A	1	(F) COUNTERTOP	
1 (F) RANGE CIRCUIT	1	40 A	2			0 VA	0 VA			1	20 A	1	(F) REFRIGERATOR	
3			<u> </u>		7.74		7.11	0 VA	0 VA	1	20 A	1	(F) DISHWASHER	
			l Load Amps		7 VA <b>9 A</b>		7 <b>A</b>		'5 VA <b>4 A</b>					
ad Classification				ected Load 00 VA	l	Demand Fac 100.00%			ed Demand				Panel	Totals
/AC				420 VA		100.00%			20 VA				Total Conn. Load:	69349 VA
eating			70	000 VA		100.00%		700	00 VA				Total Est. Demand:	63731 VA
phting				349 VA		125.00%			36 VA				Total Conn. Current:	192 A
hting - Exterior				00 VA		125.00%			0 VA			Total	Est. Demand Current:	177 A
echanical				000 VA		100.00%			00 VA					
otor				20 VA		121.43%			0 VA	_				
her				00 VA		100.00%			0 VA	_				
ower				0 VA		0.00%			VA	_				
eceptacle			22	180 VA		72.54%		160	90 VA					

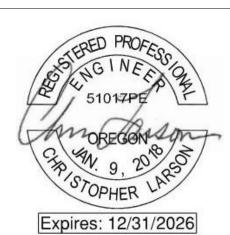
	LOCATION: <u>UTILITIES 110</u> GROUNDING: <u>EQUIPMENT GROUND BUS</u>	FED FROM: CC						MOL	LTAGE: 120/ TYPE: BOL INTING: SUR SKIRTS: NON ATING: 10K	T-ON FACE IE	2-WIRE	
						20 ML						
C K T #	ITEM		N O T E	A M P S	P O L E	С		P O L E	A M P S	N O T E	ITEM	(   H   T
1	EGRESS LIGHTING			20 A	1	140 VA	219 VA	1	20 A	_	EGRESS LIGHTING	2
3	EGRESS LIGHTING			20 A	1	289 VA	0 VA	1	20 A		SPARE	
					otal Load: tal Amps:	648 Y						
oad C	assification		I	nected Load		Demand Factor	or		ed Demand		Panel Totals	
ighting				648 VA		125.00%		810 VA			Total Conn. Load: 648 VA	
											Total Est. Demand: 810 VA	
											Total Conn. Current: 5 A	
											Total Est. Demand Current: 7 A	





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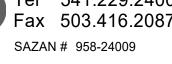


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CONSULTANT



Bend, Oregon 97703 Tel 541.229.2400 Fax 503.416.2087



PROJECT INFORMATION

### BAKER EMERGENCY **OPERATIONS** CENTER

3410 K STREET BAKER CITY, OR 97814

ISSUES

BID DOCUMENTS ISSUE DATE: 05/16/2025 JOB NUMBER COLE PROJECT: 23-105-OR

MARK DATE DESCRIPTION ADD-02 07/28/2025 ADDENDUM #2

SHEET NAME

ELECTRICAL SCHEDULES

SHEET NUMBER

E6.02

	3-P	HASE FEED	ER SCHEDULI	Ē					
	COPPER CONDUCTORS								
CON	CONDUCTORS #1 AWG OR SMALLER ARE SIZED BASED ON 60 DEGREE TABLES								
ODE	PARALLEL SETS	CONDUIT SIZE	CONDUCTOR SIZE	GROUND CONDUCTOR					
20	1	3/4"	3#12	#12					
20N	1	3/4"	3#12, #12N	#12					
30	1	3/4"	3#10	#10					
30N	1	3/4"	3#10, #10N	#10					
40	1	1"	3#8	#10					
40N	1	1"	3#8, #8N	#10					
50	1	1"	3#6	#10					
50N	1	1"	3#6, #6N	#10					
60	1	1-1/4"	3#4	#10					
60N	1	1-1/4"	3#4, #4N	#10					
70	1	1-1/4"	3#4	#8					
70N	1	1-1/4"	3#4, #4N	#8					
80	1	1-1/4"	3#2	#8					
80N	1	1-1/4"	3#2, #2N	#8					
90	1	1-1/4"	3#2	#8					
90N	1	1-1/4"	3#2, #2N	#8					
100	1	1-1/2"	3#1	#8					
100N	1	1-1/2"	3#1, #1N	#8					
125	1	1-1/2"	3#1	#6					
125N	1	1-1/2"	3#1, #1N	#6					
150	1	2"	3#1/0	#6					
150N	1	2"	3#1/0, #1/0N	#6					
175	1	2"	3#2/0	#6					
175N	1	2"	3#2/0, #2/0N	#6					
200	1	2"	3#3/0	#6					
200N	1	2"	3#3/0, #3/0N	#6					
225	1	2"	3#4/0	#4					
225N	1	2"	3#4/0, #4/0N	#4					
400	2	2"	3#3/0	#2					
	1		1						

EXIST EXISTING FEEDER TO REMAIN

	1-PHASE FEEDER SCHEDULE								
	COPPER CONDUCTORS								
COI	CONDUCTORS #1 AWG OR SMALLER ARE SIZED BASED ON 60 DEGREE TABLES								
CODE	PARALLEL SETS	CONDUIT SIZE	CONDUCTOR SIZE	GROUND CONDUCTOR					
20	1	3/4"	2#12	#12					
20N	1	3/4"	2#12, #12N	#12					
30	1	3/4"	2#10	#10					
30N	1	3/4"	2#10, #10N	#10					
40	1	1"	2#8	#10					
40N	1	1"	2#8, #8N	#10					
50	1	1"	2#6	#10					
50N	1	1"	2#6, #6N	#10					
60	1	1-1/4"	2#4	#10					
60N	1	1-1/4"	2#4, #4N	#10					
70	1	1-1/4"	2#4	#8					
70N	1	1-1/4"	2#4, #4N	#8					
80	1	1-1/4"	2#2	#8					
80N	1	1-1/4"	2#2, #2N	#8					
90	1	1-1/4"	2#2	#8					
90N	1	1-1/4"	2#2, #2N	#8					
100	1	1-1/2"	2#1	#8					
100N	1	1-1/2"	2#1, #1N	#8					

### (E) DETENTION AREA (E) SHERIFF/ADMIN. AREA (N) EMERGENCY OPERATIONS CENTER \_-----225A MLO (E) 200A MLO (E) 225A MLO (E) 225A MLO (E) 150A MLO (E) 400N 225A 9 3P SPACE 9 150 3P 400A o 3P 400A BUS (E) 400A ATS 400A ATS (E) SUB DISTRIBUTION ASSEMBLY 'SDA-EM' 120V/208Y, 3PH, 4W W/ MAINTENANCY BY-PASS E) MAIN DISTRIBUTION ASSEMBLY 'MDA' 120V/208Y, 3PH, 4W (E) NEMA1 100KW GENERATOR 120V/208Y 3PH, 4W (N) NEMA 3R 100KW GENERATOR 120V/208Y 3PH, 4W (400N) 250A 3P PORTABLE GENSET 400A MTS One Line Diagram SCALE: NTS

### SHEET NOTES

A. SEE EP1.01 ELECTRICAL POWER LEVEL 1 FOR NEW EMERGENCY OPERATIONS CENTER FLOORPLAN.

### FLAG NOTES #>>

- 1. PER OREGON TRAIL ELECTRIC COOPERATIVE, THE PEAK POWER DEMAND OVER THE PAST TWELVE MONTHS WAS 49kW. PER 220.87, MAX DEMAND @ 125% IS 61.25kW @ 208V 3PH = 170A. THE EXISTING SERVICE HAS CAPACITY FOR THE PROJECT'S ADDED LOADS.
- 2. PROVIDE MINIMUM OF 2" OF CONCRET ENCASEMENT FOR GENERATOR FEEDER TO ATS PER NEC 708.10(C)(2)(4).
- 3. PROVIDE MINIMUM OF 2" OF CONCRETE ENCASEMENT FOR NORMAL POWER FEEDER PER 708.10(C)(2).
- PROVIDE NEW 4-POLE 400A ATS RATED FOR EMERGENCY USE WITH A MAINTENANCE BY-PASS ISOLATION SWITCH PER 708.24.
- PROVIDE LSIG TYPE MAIN BREAKER IN PANEL C TO COMPLY WITH NEC 708.54. MUST SELECTIVELY COORDINATE WITH FUSED DISCONNECT OCP IN 'MDA'.
- 6. PANEL 'C1' MB WILL NEED TO SELECTIVELY COORDINATE WITH PANEL 'C' FEEDER BREAKER AND MAIN.
- 7. PANEL 'C' SHALL HAVE INTEGRAL SURGE PROTECTIVE DEVICE.
- 8. SEE DETAIL #1 E5.02 FOR GENERATOR GROUNDING REQUIREMENTS.

9. SEE EP1.01 FLAG NOTE 7 FOR UPS BOD.

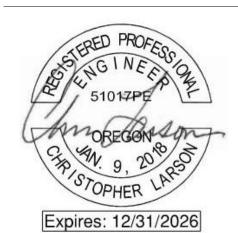
10. PER OREGON TRAIL ELECTRIC COOPERATIVE, THE AVAILABLE FAULT CURRENT AT THEIR (E) TRANSFORMER IS 46,267A. THE AVAILABLE FAULT CURRENT AT THE (E) 'MDA' IS 28,551A.

11. THE AVAILABLE FAULT CURRENT AT PANEL 'C' IS 14,492A.



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CONSULTANT



1030 NW Bond St., Ste. 202 Bend, Oregon 97703



PROJECT INFORMATION

# BAKER EMERGENCY OPERATIONS CENTER

3410 K STREET BAKER CITY, OR 97814

ISSUES

PHASE	BID DOCUMENT
DATE	ISSUE DATE: 05/16/202
JOB NUMBER	COLE PROJECT: 23-105-0

 MARK
 DATE
 DESCRIPTION

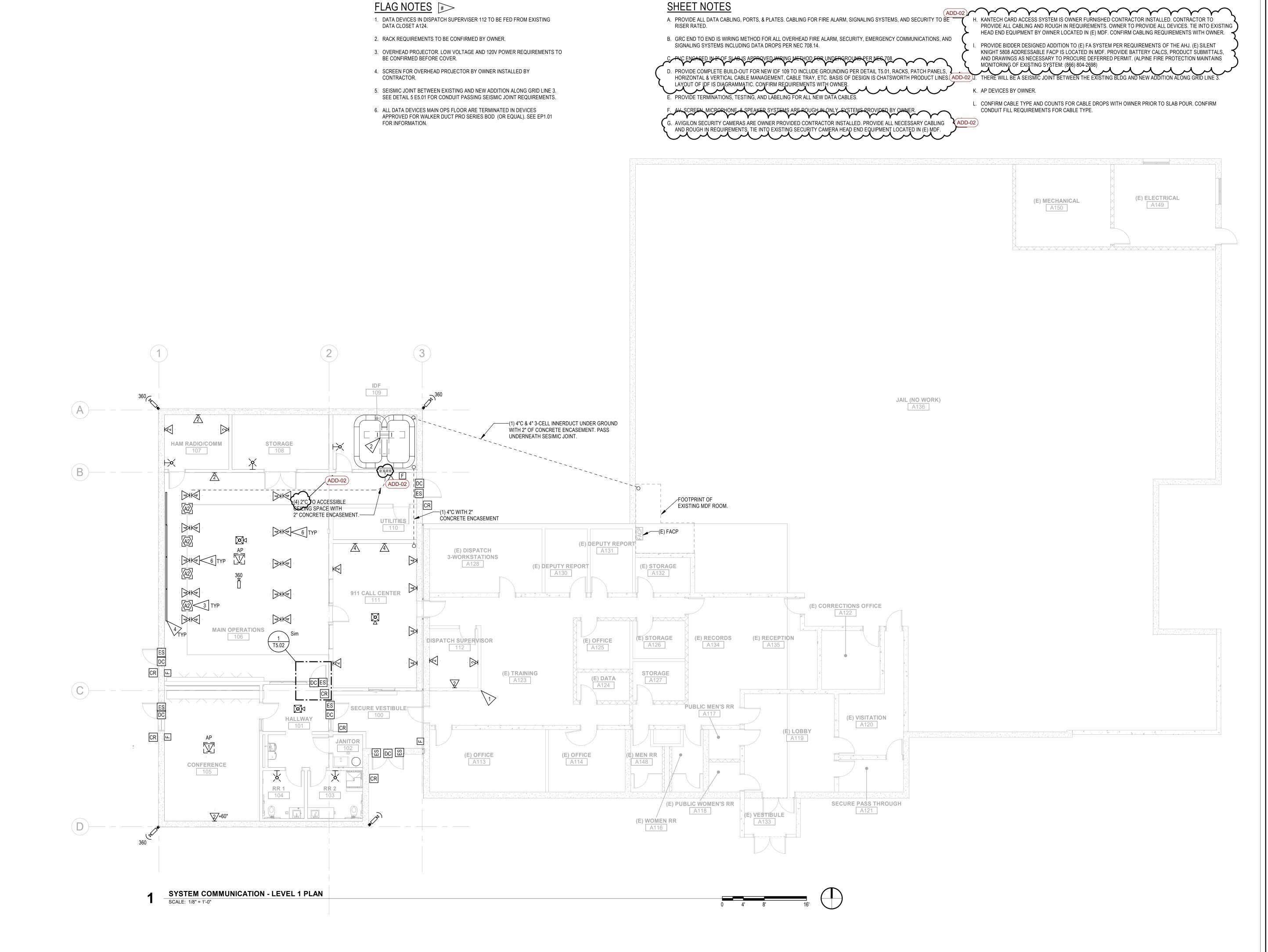
 ADD-02
 07/28/2025
 ADDENDUM #2

SHEET NAME

ELECTRICAL
ONE-LINE DIAGRAM

SHEET NUMBER

E6.03





1000 NW Wall St, Ste 205 Bend, OR 97703 541.383.1898 colearchitects.com Copyright © 2025 Cole Architects, PLLC

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CONSULTANT



1030 NW Bond St., Ste. 202 Bend, Oregon 97703

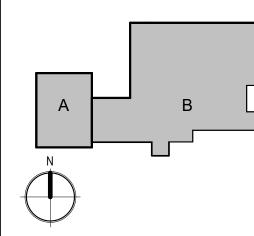


PROJECT INFORMATION

# BAKER EMERGENCY OPERATIONS CENTER

3410 K STREET BAKER CITY, OR 97814

KEY PLAN



ISSUES

PHASE	BID DOCUME
DATE	ISSUE DATE: 05/16/2
JOB NUMBER	COLE PROJECT: 23-105

 MARK
 DATE
 DESCRIPTION

 ADD-02
 07/28/2025
 ADDENDUM #2

SHEET NAME

SYSTEM COMMUNICATION -LEVEL 1 PLAN

SHEET NUMBER

T1.01

TO. **Cole Architects** 1000 NW Wall St, Suite 205 Bend, OR 97703

#### PROJECT NAME: BAKER COUNTY EMERGENCY OPERATIONS CENTER

We hereby submit for consideration the following product instead of the specified item for the above project:

Section: 03 10 00 Part 2 Product Baragraph: 2.1, 2.2, 2.3, 3.4 Specified Item Fox Blooks; Airlitae Plastics Co. Stronghold ICF; FMI-FPS Proposed Substitution:

Attach complete dimensional information and technical data including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or specifications, which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to provide equal quality, performance, and appearance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance. Differences in quality of materials and construction shall be indicated.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

- 1. The proposed substitutions do not affect dimensions shown on drawings.
- 2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
- The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified 3. warranty requirements.
- Maintenance and service parts will be locally available for the proposed substitution. 4.
- The proposed substitution will have no affect on applicable codes. 5.
- The manufacturer's guarantee or warranties of proposed product is equivalent to; or exceeds that of the 6. specified product.
- Proposed substituted item will match all sizes, profiles, specifications and colors of item originally specified. 7.

List of names and location of three similar projects on which product was used, date of installation, and Architect's name and phone number.

Project No. 1: Jolyon, Vital Ink Environmental, Hailey Id 208-720-6315

Project No. 2: Rigo Rangel, Tri Cities 509-539-7120

Project No. 3: Andrew, Galloway Architecture 208-946-1395

# 1. Mountain Rides - Bus Galage 2024

# 2. Riverwalk apartments 2022-2023

# 3. Schwitzer Sisters 2025

**CERTIFICATION OF EQUAL** PERFORMANCE AND **ASSUMPTION OF LIABILITY** FOR EQUAL PERFORMANCE

Address: 9456 McGuire RD.

Telephone: 208 618 1668

Date:

PERFORMANCE AND	
ASSUMPTION OF LIABILITY	AcceptedAccepted as Noted
FOR EQUAL PERFORMANCE	Not AcceptedReceived Too Late
UNDERSIGNED ATTESTS THAT	By: Aaron Buckman, Project Architect
FUNCTION AND QUALITY ARE	Date: 7/28/2025
EQUAL TO OR SUPERIOR TO	Remarks:
SPECIFIED ITEMS.	
Submitted By: Jeffrey Schultz  Signature:  Title: Technical Sales	
Title: /chnical Jales	
Firm: Stronghold ICF/FMI-E	EPS

FOR USE BY ARCHITECT:

Above signature must be by person having authority to legally bind his firm to the above terms.

Post Falls ID 83854

7 22 2025

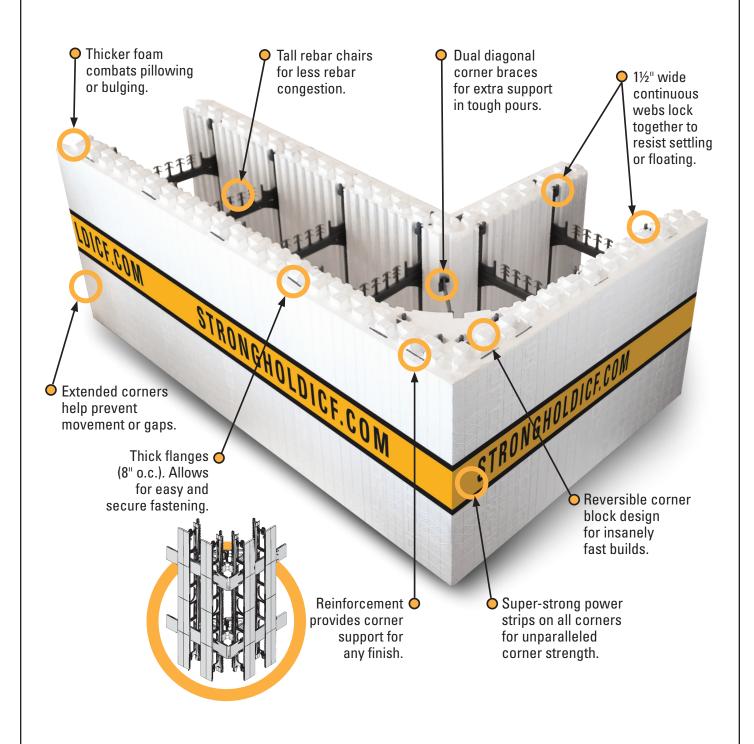
**END OF SECTION** 





- Vertical locking webs keep blocks locked together.
- Standard 2.75" (70 mm) panels provide minimum R-Value of 25.
- Reversible interlock equals less waste.
- No left or right corners to track.
- Horizontal and vertical cut lines make cutting easier.
- Tall rebar holders allow for stacked contact splicing.

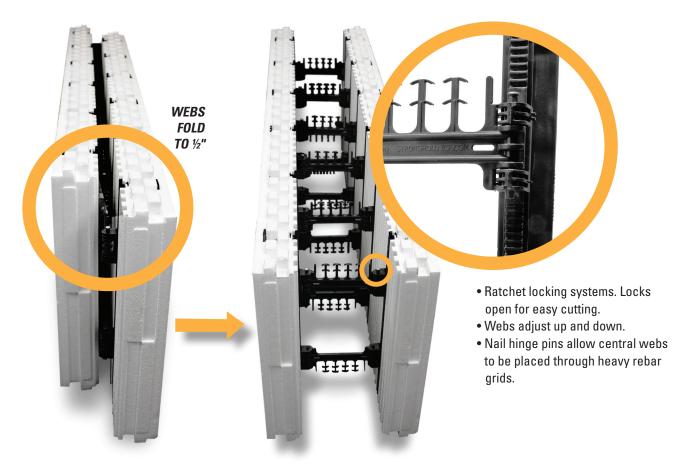
# DESIGNED TO BUILD STRAIGHT, TROUBLE FREE WALLS





Contractors are expected to make things work even with products that have deficiencies. Stronghold fixes deficiencies so you don't have to.

- Strongest corners in the industry. Internal and external built-in support.
- Built in web locks that lock the courses together for straighter walls—eliminating the requirement for vertical wires or ties.
- No wall truss wire straighteners required to keep walls straight.
- Full height webs that touch plastic to plastic to stop irritating settling of walls during concrete pours.

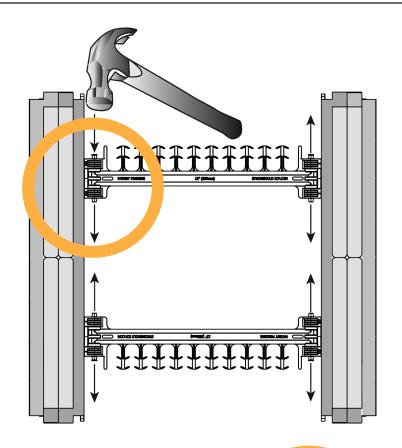


# PREMIUM FOLDABLE BLOCKS

Stronghold developed foldable blocks because that's what contractors want. Stronghold fixes deficiencies so you don't have to.

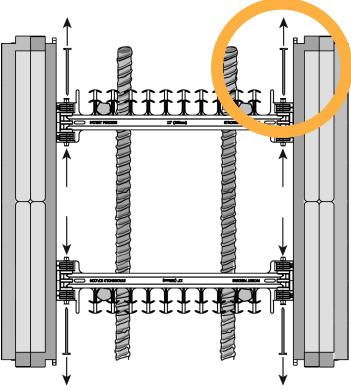
- Easy to adjust height of center webs.
- Foldable block(s) means more per truck load.
- Removable nail hinge pins allow for the adjustment of central webs for placement through heavy rebar grids.





# ADJUSTABLE CENTER WEBS

 With a hammer, webs can be moved up or down in 2" increments and then locked.



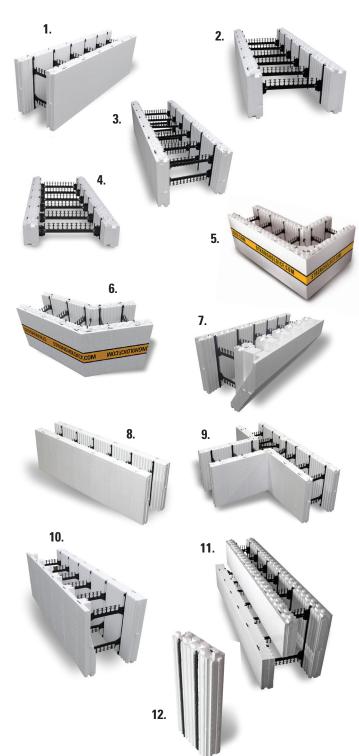
# ADAPTABLE CENTER WEBS

 Stronghold can adapt to fit your specific project.
 No matter where your rebar is positioned, webs can be removed and inserted through heavy rebar mats.

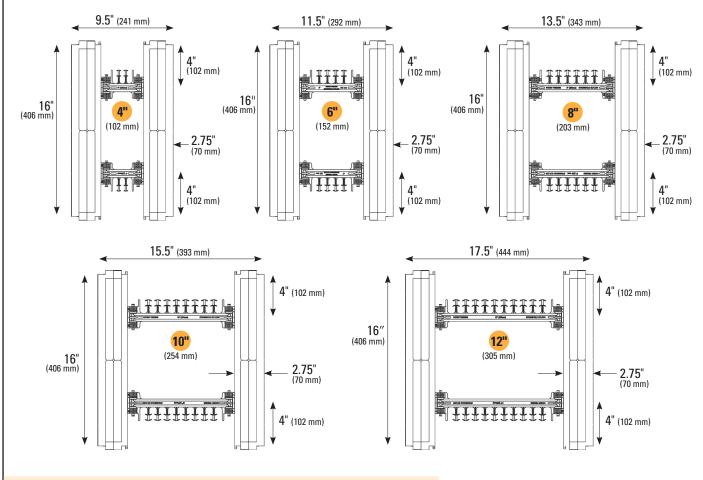
# STRONGHOLD BLOCKS IN THE SIZE AND SHAPES MOST NEEDED

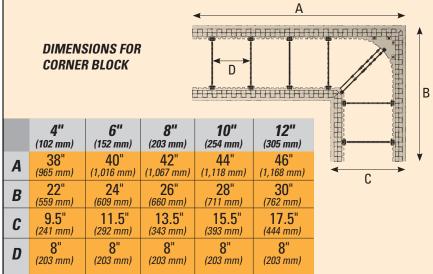
# DESIGNED BY ARCHITECTS AND CONTRACTORS TO MEET YOUR NEEDS.

- 1. Straight Blocks (16" tall)
  Fixed (FX) available in 6" and 8"
  Folding (FD) available in 4"–12"
- 2. Straight ½ Height Blocks (8" tall) Folding (FD) available in 4 "–12"
- 3. Straight ¾ Height Blocks (12" tall) Folding (FD) available in 4 "-12"
- **4.** 4" Height Adjuster Blocks (with or without center webs) 48" long
- 5. 90° Corner Blocks (16" tall) Fixed (FX) available in 6" and 8" Folding (FD) available in 4"–12"
- 6. 45° Corner Blocks (16" tall) Fixed (FX) available in 6" and 8" Folding (FD) available in 6", and 8"
- 7. Brickledge Blocks and Double Brickledge Blocks (16" tall) Folding (FD) available in 4"-12"
- 8. Flat Top Blocks and Double Flat Top Blocks Fixed (FX) available in 6" and 8" Folding (FD) available in 4"-12"
- 9. T-Blocks (16" tall) Available in 6" to 6" and 8" to 8"
- 10. Taper Top Blocks and
  Double Taper Top Blocks (16" tall)
  Fixed (FX) available in 6" and 8"
  Folding (FD) available in 4 "–12"
- **11.** Transition Blocks (16", 12", 8", and 4" tall) Folding (FD) available in 4 "–12"
- **12.** End Caps (with webs) Available in 6" and 8"



# STRONGHOLD SIZING SPECS FOR STRAIGHT AND 90° CORNER BLOCKS





# **NOTES: FOR TYPICAL BLOCKS**

- Block Heights 16" (406 mm).
- Block Lengths 48" (1,219 mm).
- Block Panel Thickness 2.75" (70 mm).
- All blocks are reversible.
- Rebar holders accommodate stacked contact splicing.
- Rebar holders designed to hold horizontal bar up to .75" (20 mm) diameter.
- Furring strips 8" (203 mm) on center.



STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

# INTERNATIONAL BUILDING CODE ENGINEERING EVALUATION REPORT

Date Nov 30, 2020 File No. 0068-1-4

For Stronghold Insulation Systems, Inc.
Address P.O. Box 351, Pelican Rapids, MN 56572

# **Subject**

Stronghold Insulated Concrete Form (ICF) System

# **Evaluation Scope**

This report is provided to assist registered design professionals and building officials in the United States with determining compliance to the performance objectives in the named building codes.

The product(s) described herein have been evaluated to 2018 and 2015 International Building Code (IBC) and International Residential Code (IRC).

**CSI DIVISION:** 03 00 00 CONCRETE

**SUBDIVISION:** 03 11 19 Insulating Concrete Forming

# **CODE SECTIONS AND STANDARDS:**

IBC Section	Property	Referenced Standard or Code Section	<u>Year</u> ('18 Ed.)
703.2	Fire Resistance Ratings	ASTM E119	2016
703.3	Fire Resistance Ratings	IBC Section 721	2018
803.1.2	Room Corner Fire Test	NFPA 286	2015
1403.3	Exterior Cladding Strength Attachment	IBC Ch 16	2018
Ch 16	Structural Design	ASCE 7	2016
Ch 19	Concrete Construction	ACI 318	2014
1903.4	Standard Specification for ICF	ASTM E2634	11(2015)
2603.2	Labelling, Foam Plastic Insulation	-	-
2603.3	Surface Burning Characteristics	UL 723	2008
2603.4	Thermal Barrier	-	-
2606.4	Self-Ignition Temperature, Thermoplastic ties	ASTM D1929	2016
2606.4	Rate of Burn, Thermoplastic ties	ASTM D635	2014
Ch 35	Physical Properties of Foam Plastic Insulation	ASTM C578	2015



STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

IRC Section	<u>Property</u>	Referenced Standard or Code Section	<u>Year</u> ('18 Ed.)
R302	Fire Resistance Ratings	ASTM E119	2016
R302	Fire Resistance Ratings	IBC Section 721	2018
R302.9.4	Room Corner Fire Test	NFPA 286	2015
R316.2	Labelling, Foam Plastic Insulation	-	-
R316.3	Surface Burning Characteristics	UL 723	2008
R404	Concrete Foundation Walls, Prescriptive Installation	Tables R404.1.2(1) – R404.1.2(4), R404.1.2(8)	2018
R404.1.3.3.6.1.5	Standard Specification for ICF	ASTM E2634	11(2015)
R608	Concrete Exterior Walls, Prescriptive Installation	Tables R608.3, R608.6(1), R608.6(4)	2018
R608.4.4	Standard Specification for ICF	ASTM E2634	11(2015)
R702.3.4	Thermal Barrier	-	-
R703.3.2	Exterior Cladding Strength Attachment	Table R301.2(3)	2018
Ch 44	Physical Properties of Foam Plastic Insulation	ASTM C578	2015

<sup>1.</sup> Only the applicable reference standards and code sections cited in the main body text are listed. (-) indicates that the main body text covers the full explanation of the objective.

**Compliance Statement:** Stronghold ICF, installed as described in this report, has demonstrated compliance with the listed sections of the 2018 and 2015 International Building Code (IBC) and International Residential Code (IRC). Design and performance information can be found in Section 2 of this report.

This report has been prepared and reviewed on behalf of Boca Engineering Co. by:

Christopher Bowness, P.Eng., P.E.

Date

# **Evaluation**

# 1.0 PRODUCT DESCRIPTION:

- 1.1 **Stronghold ICF FX and KD Series** are permanent concrete forms for preparing above or below grade concrete walls, consisting of two panels of expanded polystyrene (EPS) foam plastic joined by thermoplastic cross ties, leaving an open cavity for placing reinforcing and concrete. Foam plastic panels are 1.45 pcf nominal density, 2.75-in thick, and the concrete wall thickness is 4, 6, 8, 10 or 12 inches.
- 1.2 **Stronghold ICF FX Series** are with fixed end cross tie webs and a fixed open cavity.
- 1.3 **Stronghold ICF KD Series** are with hinged cross tie webs where the cavity folds the EPS panels flat for shipping and at installation folds open and locks to make the open cavity for concrete.

# 2.0 TECHNICAL EVALUATION:



STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

#### 2.1 INSTALLATION

- 2.1.1 Stronghold ICF shall be installed in accordance with the jurisdictional Building Code and manufacturer's installation instructions, subject to the Limitations in Section 3, and as described in Section 4 of this report.
- 2.1.2 Materials integral to this building system as supplied on jobsites are to comply with the respective Code sections and materials and installation standards. Those materials as described in this report include concrete, reinforcing steel, interior ½" gypsum, and fasteners for interior and exterior finishes.
- 2.1.3 In areas of heavy termite presence, Termite Protection may be required by the local jurisdiction in accordance with IBC 2603.8 or IRC R318.4.
- 2.1.4 Footings for foundation walls are required as prepared in accordance with IBC Ch 18 or IRC R403.
- 2.1.5 Foundation site preparation, damproofing and backfill are to comply with IBC Ch 18 or IRC Ch 4.
- 2.1.6 Exterior wall water-resistive barrier, penetrations, flashings, and claddings are to comply with IBC Ch 14 or IRC R703.

# 2.2 CODE SECTIONS REVIEW:

IBC Section	<u>Description</u>
703.2	<b>Fire Resistance Ratings</b> See section 4 of this report.
703.3	<b>Fire Resistance Ratings</b> See section 4 of this report.

#### 803.1.2 Room Corner Fire test

A representative room assembly constructed with Stronghold ICF, covered with interior finish of ½-inch Gypsum board of materials and installation in accordance with IBC 2603.4 and 2508 and IRC 702.3, was tested to NFPA 286 and found to meet the Code requirements.

# 1403.3 Exterior Cladding Strength Attachment

The cladding design pressures for respective building applications are calculated by IBC 1609, or found in IRC Table R301.2(2).

Cladding attachment with fasteners through the EPS into the solid concrete wall are designed by IBC 1609 or installed in accordance with IRC R703.17.

Cladding attachments in to the ICF Plastic Cross Tie Flange have the following strength values:

Fastener Type <sup>1</sup>	Allowable Lateral Force (lbs) <sup>2</sup>	Allowable Withdrawal Force (lbs) <sup>3</sup>
#6 coarse thread drywall screw	53	40
#10 Wood Screw	76	43

- 1. Fasteners must be of sufficient length to pass through the cladding and any backing, and 1-inch past the outside surface of the EPS which provides for the tip of the fastener to penetrate a minimum ¼-inch through the back of the plastic web flange, with minimum edge distance of ½-inch.
- 2. Allowable Lateral Force is the ASD design resistance force of the individual fastener after safety factor of 6 applied per ASTM E2634. Lateral forces are in the direction perpendicular to the fastener, also referred to as fastener shear forces.



# STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

3. Allowable Withdrawal Force is the ASD design resistance force of the individual fastener after safety factor of 5 applied per ASTM E2634. Withdrawal forces are in the direction parallel to the fastener, typically from wind pressure acting on the cladding.

# Ch 16 / Ch 19 Structural Design, Concrete Construction

For building applications where the IBC presides, the design, materials, and installation provisions of IBC Ch 16 and Ch 19 in accordance with ASCE 7 and ACI 318 are to be applied to Stronghold ICF Concrete Construction of foundation and above grade walls.

Also refer to Boca Engineering Co. report 0068-2-4 "Stronghold ICF Structural Guideline (USA)" for recommended design and installation methods in compliance with ACI 318.

# 1903.4 Standard Specification for ICF

Stronghold ICF has been tested to and complies with ASTM E2634, Standard Specification for Flat Wall Insulating Concrete Form (ICF) Systems.

# 2603.2 Labelling, Foam Plastic Insulation

See section 5.0 and 7.0 of this report.

# **2603.3** Surface Burning Characteristics

IBC 2603.3 and IRC316.6 require that foam plastic insulation tested to UL 723 achieve a maximum Flame Spread Index of 75 and Smoke Development Index of 450. Stronghold ICF produced of EPS was tested to UL 723 and achieved the ceiling Flame Spread Index of 0 and Smoke Development Index of 5, meeting the IBC and IRC requirements.

# 2603.4 Thermal Barrier

An interior finish thermal barrier of ½-inch gypsum is to be installed over Stronghold ICF and fastened to the flange of the plastic web ties with No. 6 drywall screws minimum 1-5/8-inch at 16-inch o/c horizontally and 12-inch o/c vertically. A representative interior room assembly was tested to NFPA 286 to validate that the ½-inch gypsum thermal barrier stays in place for 15-minutes under fire conditions and that the criteria of IBC 803.1.2 and IRC R302.9.4 is satisfied. Gypsum board materials and installation must adhere to IBC 2603.4 and 2508 and IRC 702.3. In attics and crawlspaces where entry is made only for service of utilities, under IBC 2603.4.1.6, the gypsum thickness may be reduced to 3/8-inch.

# 2606.4 Self-Ignition Temperature

Stronghold ICF thermoplastic web ties have been tested to ASTM D1929 and have a self-ignition temperature of greater than 650°F.

# 2606.4 Rate of Burn

Stronghold ICF thermoplastic web ties have been tested to ASTM D635 and are a Class CC2.

# Ch 35 Physical Properties of Foam Plastic Insulation

As referenced in IBC CH 35 and IRC Ch 44, Stronghold ICF has been tested to ASTM C578 standard specification for foam plastic and is classified as Type II EPS.



# STRUCTURAL TECHNOLOGIES - DESIGN - TESTING - CODE EVALUATION

**IRC Section** Description

R302 Fire Resistance Ratings

Same as this report commentary to IBC 703.2.

R302.9.4 Room Corner Fire Test

Same as this report commentary to IBC 803.1.2.

316.2 Labelling, Foam Plastic Insulation

Same as this report commentary to IBC 2603.2.

**R316.3** Surface Burning Characteristics

Same as this report commentary to IBC 2603.3.

R404 Concrete Foundation Walls, Prescriptive Installation

For building applications where the IRC applies, Stronghold ICF concrete walls are to be installed in accordance with Tables R404.1.2(1) – R404.1.2(4) or R404.1.2(8) for foundation walls, and Tables R608.3, R608.6(1), R608.6(4) for above-grade exterior walls.

Also refer to Boca Engineering Co. report 0068-2-4 "Stronghold ICF Structural Guideline (USA)" for recommended design and installation methods in compliance with R404 and R608.

**R404.1.3.** Standard Specification for ICF

**3.6.1.7** Stronghold ICF has been tested to and complies with ASTM E2634, Standard Specification for Flat

Wall Insulating Concrete Form (ICF) Systems.

R608 Concrete Exterior Walls, Prescriptive Installation

See commentary to IRC R404.

608.4.4 Standard Specification for ICF

See commentary to IRC R404.1.3.3.6.1.7.

R702.3.4 Thermal Barrier

Same as this report commentary to IBC 2603.4.

**R703.3.2** Exterior Cladding Strength Attachment

Same as this report commentary to IBC 1403.3.

Ch 44 Physical Properties of Foam Plastic Insulation

Same as this report commentary to IBC Ch 35.

#### 3.0 LIMITATIONS:

3.1 This Evaluation is for the base code requirements of the building system as addressed in this report. In some building applications, additional performance objectives may be required by Code which must be addressed in the building design for those specific cases.



# STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

- 3.2 Design calculations, drawings, and special inspections are to be furnished for building projects by registered professionals as required by the respective jurisdictional authorities and Codes.
- 3.3 Fire Blocking and draftstopping shall be installed in concealed locations as specified in IBC 718 and IRC 302.

# 4.0 FIRE CLASSIFICATIONS AND RATINGS:

# 4.1 IBC 703.2, IBC 703.3, IRC R302: Fire Resistance Ratings

IBC 703.2 and IRC 302 specify that walls required to be of Fire-Resistance construction (1 hr, 2 hr, etc.) are to be qualified by assembly testing to ASTM E119, or, by any of six ways listed in IBC 703.3. Stronghold ICF walls may be designed and installed by three of the code-conforming methods:

a. Stronghold ICF has been tested to ASTM E119 for a custom fire-resistance rating construction detail:

Concrete thickness: Min. 6-inch (may substitute with 8-inch, 10-inch, 12-inch ICF form)

Concrete Weight: Normal, Nominal 150 lb/ft<sup>3</sup> Concrete Compressive Strength: Min. 3000 psi

Steel Reinforcing: Optional, to structural design requirements Load-bearing: Applies to non-bearing and load-bearing walls

Duration: 3-hr rating

b. Design professionals and Code officials may use standard details for fire-resistant rated concrete walls formed with Stronghold ICF by following IBC 703.3(2): Prescriptive designs of fire-resistance-rated building elements, components or assemblies as prescribed in Section 721, reference Table 721.1(2) item 4-1.1 Solid Concrete. Quick reference for use of this table with the applicable Stronghold ICF Forms,

Construction <sup>1,2</sup>		Minimum ICF Core Cavity Thickness (in)			
		3	2	1	
	hrs	hrs	hrs	hr	
Siliceous aggregate concrete.	8"	8"	6"	4"	
Carbonate aggregate concrete.	8"	6"	6"	4"	
Sand-lightweight concrete.	6"	6"	4"	4"	
Lightweight concrete.	6"	6"	4"	4"	

<sup>1.</sup> Based on IBC Table 721.1(2) item 4-1.1.

or,

c. IBC 703.3(3): Calculations in accordance with Section 722.

# 4.2 Summary of flammability classifications found by testing to code referenced standards:

UL 723: Ceiling value Flame Spread Index (FSI): < 25, Smoke Developed Index (SDI): < 450

ASTM D635: Burning Rate: < 2.5 in/min, Class CC2 ASTM D1929: Self-Ignition Temperature: > 650 °F

<sup>2.</sup> Concrete wall construction, with horizontal and vertical reinforcement as required, shall be in accordance with IBC Ch 19.



STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

# 5.0 QUALITY ASSURANCE ENTITY:

The products evaluated in this report are surveyed at the approved manufacturing locations with third-party quality assurance inspections and product certification labeling by Intertek.

# 6.0 MANUFACTURING PLANTS:

Manufacturing and labeling location(s): Watertown SD, Ottawa OH, Post Falls ID, Jerome ID, Edmonton AB.

# 7.0 LABELING:

Labeling shall be in accordance with the requirements of IBC 2603.2 and IRC R316.2, and the Accredited Quality Assurance Agency.

#### 8.0 EVALUATION RENEWALS:

This Evaluation Report expires Dec 31, 2021, subject to renewal. Up to the renewal date, the report is valid until such time as the named product(s) changes, the Quality Assurance Agency changes, or provisions of the Code that relate to the product change.

#### 9.0 REFERENCE TESTING AND EVALUATION DOCUMENTS:

<b>Entity</b>	<b>Entity</b>	<u>Standards</u>	Report No.	Issue Date
	Accreditation <sup>1</sup>			
Intertek	TL-274	NFPA 286	103802777COQ-009R2	2019-05-14
Intertek	TL-274	UL 723	103802777COQ-007	2019-03-13
Intertek	TL-274	ASTM D635	103802777COQ-004a	2019-05-01
Intertek	TL-274	ASTM C578	103802777COQ-003REV	2019-05-10
Intertek	TL-274	ASTM D1929	103802777COQ-004b	2019-06-11
Intertek	TL-274	ASTM E2634	103802777COQ-004	2019-08-28
Intertek	TL-143	ASTM E119	g103851054-sat-001r0	2020-02-19
Intertek	AA-647	QA Inspections	51355	2020-09-24
Intertek	PCA-101	Certification	51355	2020-09-24

Testing, certification, evaluation, and inspection agencies referenced have been verified to be accredited by the International Accreditation Service (www.iasonline.org) for the applicable scope, in good standing on the date of the evaluation, in accordance with ISO 17025 and ISO 17020 international standards for testing and inspection bodies.

#### 10.0 CERTIFICATION OF INDEPENDENCE:

- 1. Boca Engineering Co., it's employees and shareholders, do not have, nor do they intend to or will acquire, a financial interest in any company manufacturing or distributing products that they evaluate.
- 2. Boca Engineering Co. is not owned, operated, or controlled by any company manufacturing or distributing products that they evaluate.

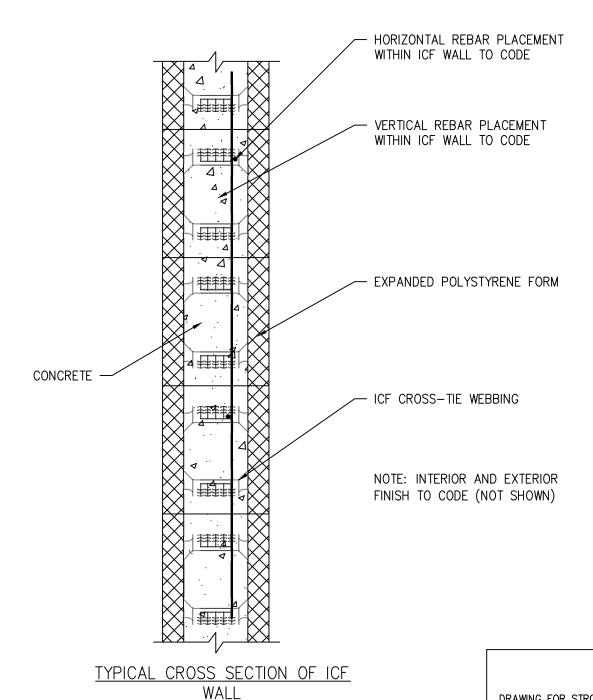
#### 11.0 EVALUATION REPORT TERMS:

This report is a general evaluation of the building code section requirements as identified and applies only to the samples that were evaluated. The evaluation report, including any drawings, do not imply that the signatory Engineer is the Designer of Record of any project for which this Evaluation Report is used.

# **ATTACHMENTS:**

- 1. Typical Cross Section Diagram (pg 8)
- 2. Stronghold ICF Materials Properties (pg 9)







DRAWING FOR STRONGHOLD
INSULATED CONCRETE FORMS
ENGINEERING EVALUATION
REPORT — NOT FOR USE AS
CONSTRUCTION DESIGN
DOCUMENTS

COPYRIGHT © 2020 RESERVED. THESE PLANS AND DESIGNS ARE AT ALL TIMES THE PROPERTY OF BOCA ENGINEERING TO BE USED FOR THE PROJECT SHOWN. WRITTEN CONSENT IS REQUIRED FROM THE ENGINEER BEFORE ANY REPRODUCTION.

CLIENT:

STRONGHOLD INSULATION SYSTEMS INC.

PROJECT:
STRONGHOLD INSULATED
CONCRETE FORM (ICF) IBC
2018 EVALUATION REPORT

TYPICAL ICF WALL DETAIL

TITLE:

 0
 2020/11/23
 FOR PUBLICATION
 CB

 REV
 DATE
 ISSUE
 APP

 DRAWING NO.
 0068-01-04-S1
 DES
 CB

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DATE NOVEMBER 23, 2020

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CB



STRUCTURAL TECHNOLOGIES · DESIGN · TESTING · CODE EVALUATION

# ATTACHMENT 2: STRONGHOLD ICF MATERIALS PROPERTIES TESTING VALUES

	Table 1: Stronghold ICF Phy	ysical Property Values as per AS	TM E2634 and ASTM C578	
Standard	Properties		Test Requirement <sup>1</sup>	Compliance
		ICF Block (EPS)		
UL723	Surface Burning	Flame Spread Index	≤ 75	Pass
UL723	Characteristics (Ceiling only)	Smoke Development Index	≤ 450	Pass
ASTM C578	Specification for Rigid, Cellula Insulation	r Polystyrene Thermal	Type II	Pass
ASTM D1621	Compressive resistance at yie	ld or 10 % deformation (psi)	≥ 15 psi	Pass
ASTM C518	Thermal resistance per 1.00-i	n., F·ft²·h/Btu @ 75 ± 2°F	≥ R4/inch (5.5-in EPS = R22)	Pass
ASTM C203	Flexural strength (psi)		≥ 35 psi	Pass
ASTM E96	Water vapor permeance of 1. max, perm (ng/Pa·s·m²)	00-in. (25.4-mm) thickness,	≤ 3.5 perm	Pass
ASTM C272	Water absorption by total im	mersion, max, volume %	≤ 3 %	Pass
ASTM D2126	Dimensional stability (change	in dimensions), max %	≤ 2 %	Pass
ASTM D2863	Oxygen index, min volume %		≥ 24 %	Pass
ASTM D1622	Density (lb/ft³)		≥ 1.35 lb/ft <sup>3</sup>	Pass
		Cross Tie Web and Flange		
ASTM D635 Burn Rate (in/min)		≤ 2.5 in/min	Pass	
ASTM D1929	Ignition Temperature		≥ 650 F	Pass
ASTM D1761	Fastener Allowable Shear <sup>2</sup>	#6 coarse thread drywall screw	53 lbs	Pass
A31101 D1761	rasteller Allowable Silear	#10 Wood Screw	76 lbs	Pass
ASTM D1761	Fastener Allowable	#6 coarse thread drywall screw	40 lbs	Pass
ASTIVI D1701	Withdrawal <sup>2</sup>	#10 Wood Screw	43 lbs	Pass
ASTM E2634	Gypsum Wallboard	Time to seat	≤ 2 s	Pass
ASTIVI LZ034	Attachment	Observation	No screw spinout	Pass
ASTM D638 Cross Tie Tensile Strength		≥ 675 psf of tributary wall area pressure	Pass	
ASTM D732	732 Cross Tie Shear Strength		≥ 1206 psi	Pass
	-	ICF Concrete Wall <sup>3</sup>		
NFPA 286	Fire Test, 15-minute Room Co	rner	Pass	Pass
ASTM E119	Fire Resistance		3 HR, Load-Bearing	Pass

- 1. Where the specification standard lists a required property value, testing has met or exceeded that value, and table lists the specification. Where the specification standard has no set value limit for a property test, the test result is shown.
- 2. ASD allowable design values of fastener test after safety factor applied are shown. See evaluation report for further description.
- 3. Wall assembly tests results are dependent on installation components and environmental conditions consistent with tested details. See Stronghold's document library of Engineering and Certifications reports for further details.

TO: Cole Architects
1000 NW Wall St, Suite 205

Bend, OR 97703

#### PROJECT NAME: BAKER COUNTY EMERGENCY OPERATIONS CENTER

We hereby submit for consid	leration the following product instead of the specified item for the above project:
Section: 7	Paragraph: <u>2.1-2.12</u>
Specified Item	plastic Polyolefin (TPO) Roofing
Proposed Substitution:	Everguard TPO Roofing System

Attach complete dimensional information and technical data including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or specifications, which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to provide equal quality, performance, and appearance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance. Differences in quality of materials and construction shall be indicated.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

- 1. The proposed substitutions do not affect dimensions shown on drawings.
- 2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
- 3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
- 4. Maintenance and service parts will be locally available for the proposed substitution.
- 5. The proposed substitution will have no affect on applicable codes.
- 6. The manufacturer's guarantee or warranties of proposed product is equivalent to; or exceeds that of the specified product.
- 7. Proposed substituted item will match all sizes, profiles, specifications and colors of item originally specified.

List of names and location of three similar projects on which product was used, date of installation, and Architect's name and phone number.

	Wenatchee School District Softball and Support Fields Project #23-09-204
Project No. 1:	Bernardo Wills Architects, PC (BWA) 509-838-4511
Project No. 2:	Cannon Beach City Hall & Police Station, CIDA - lesliej@cidainc.com
Project No. 3:	Lot 6 Commercial Shell

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY	FOR USE BY ARCHITECT: AcceptedAccepted as Noted
FOR EQUAL PERFORMANCE	Not AcceptedReceived Too Late
·	
UNDERSIGNED ATTESTS THAT	By: Aaron Buckman, Project Architect
FUNCTION AND QUALITY ARE	Date: <u>7/28/2025</u>
EQUAL TO OR SUPERIOR TO	Remarks:
SPECIFIED ITEMS.	
Submitted By: Shyne Buenconsejo	
Signature : <u>Shyne Buenconsejo</u>	
Title: Estimator Admin Assistant	
Firm: J.R.Swigart Company., Inc	
Address: 104 NE 194th St, Ridgefield, WA 98642	
Telephone: 360-727-7154 ext 1011	
Date : 07/22/25	
Above signature must be by person having aut	uthority
to legally bind his firm to the above terms.	

**END OF SECTION** 



We protect what matters most™

protect July 17, 2025

**Subject: Substitution Request** 

Project: Baker County Emergency Operations Center

Baker City, OR

Project Identifier: PD-00060538

To Whom It May Concern:

We respectfully request consideration of the following on the above referenced project.

**PROPOSED ALTERNATE:** GAF® Specification: T-FA-N-I-60.

# Products include:

- GAF SA Vapor Retarder XL
- EnergyGuard™ Polyiso
- Dens Deck® Prime Roof Board
- EverGuard® TPO 60 mil
- EverGuard® TPO Accessories
- EverGuard® #1121 Bonding Adhesive
- Drill-Tec™ Fasteners and Plates
- Diamond Pledge™ NDL Roof Guarantee

The attached data includes product description, specification performance, test data, and specimen Guarantee as necessary for the evaluation of the request; applicable portions of the data are clearly identified. The undersigned states that the following paragraphs, unless modified on attachments, are correct:

- 1. This proposed alternate can perform equal to or better than the architect's specified system.
- 2. Maintenance and service products will be available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equal or superior to the specified item. If you have any further questions, please contact GAF Territory Manager Deanna House at deanna.house@gaf.com. Thank you for your consideration, and we look forward to your acknowledgment via email for acceptance.

Sincerely, Shelby Davis Shelby Davis Design Services Specialist



# Baker County Emergency Operations Center 3410 K Street Baker City, OR 97814

Prepared for: JR Swigart Co Inc 1203 S Grey Avenue Pasco, WA 99301

GAF Design Services Project # PD-00060538



We protect what matters About Us most"

As a Standard Industry Company, GAF is part of the largest roofing and waterproofing business in the world. Standard Industries is a global organization focused on building materials with businesses that range from roofing and waterproofing to industry changing solar solutions, business real estate and investment platforms. Other Standard brands include GAF Energy, BMI, Schiedel, SGI, Siplast, 40 North and Winter Properties.

# We Protect What Matters Most

GAF manufactures and sells roofing materials for residential and commercial roofing applications. We began as The Standard Paint Company in 1886 and innovation is deeply rooted in our history:

- In 1892, we introduced the first asphaltic roll roofing product.
- In 1967, we created the first laminated shingle, the Timberline® Shingle which went on to become North America's best-selling shingle.
- In 2010, we developed the first solar grade TPO membrane to drive performance, as roofing membranes became expected to do more than just shed water.
- In 2011, we were the first roofing manufacturer to offer a Lifetime Limited Warranty on all of its laminated shingles.

These are just a few examples of the innovation GAF has contributed to the roofing industry. The GAF culture is driven through innovation and commitment to our customers.

# A Leader in the Roofing Industry

GAF's annual revenues exceed \$3 billion dollars. The company employs over 3,700 people and has 34 plants domestically. Corporate headquarters is located in Parsippany, NJ, with numerous regional sales offices across the county. GAF Canada is headquartered in Toronto.

# In Choosing GAF

- Know that 1 in 4 homes in the US are protected by a GAF roof.
- With a deep, broad range of product offerings we have technology options that assure the best choice for your application. Whether it's low slope, steep slope, new construction, tear off, recover or restoration, talk to GAF first.
- We are committed partners in the communities where we live and work.
  - We leverage our people, products and funds in three key social impact priorities.
    - Disaster Resiliency, Helping Neighbors and Building Communities

#### Thank You!

The entire team is dedicated to supporting your needs, with Territory Managers and Field Services Inspectors based locally and centralized Technical and Submittal Support teams in place. Questions?

**Design Services** 877-423-7663 option 4, option 3 designservices@gaf.com





# **Product Description:**

GAF SA Vapor Retarder XL is a self-adhered, vapor-inhibiting membrane designed for use in approved roofing membrane assemblies. It's composed of a tri-laminated woven polyethylene facer combined with an advanced, high-tack butyl rubber adhesive. The under-face is applied with a split silicone release film that is removed during installation. This uniquely durable product exhibiting high-tensile strength can be left exposed for up to 180 days when installed in accordance with published GAF specifications and details.\*

# **Features and Benefits:**

- ASTM E108 Class A and FM 4470 Class 1
   Fire Ratings directly over steel deck.\*\*\*\*
- Designed to be self-sealing.
- Increased adhesion performance provides three times the peel strength compared to self-adhered modified bitumen vapor barriers.
- Use of a primer prior to installation is NOT required.
- Slip-resistant embossed walking surface.
- Extra-large roll size (603 square feet) results in fewer rolls and fewer field seams per job.

# Product Specifications (approximate\*\*)

	STANDARD XL ROLL	XL (41 MILS)	
THICKNESS	31 mils	41 mils	
ROLL WEIGHT	97 lb.	129 lb.	
ROLLS SIZE	6 squares		
ROLL LENGTH	105'		
ROLL WIDTH	69"		
SHELF LIFE	18 months from the date of manufacture when stored properly		

#### Product Specifications (approximate\*\*)

PROPERTY	MD VALUE	XMD VALUE	TEST METHOD
Thickness, mils (mm)	31	(.79)	ASTM D1970
Thickness***, mils (mm)	41 (	(1.04)	ASTM D1970
Tensile strength, min. lbf/in (kN/m)	70 (12.3)	70 (12.3)	ASTM D5147
Ultimate elongation @ 73.4°F (23°C), min. %	31	31	ASTM D5147
Tear resistance, min. lbf (N)	95 (423)	110 (489)	ASTM D5147
Static puncture, min. lbf (N)	90 (400)	90 (400)	ASTM E154
Lap adhesion, min. lbf/ft (N/m)	24 (350)	24 (350)	ASTM D1876
Water absorption, min. %	0.01	0.01	ASTM D5147
Peel resistance on steel, min. lbf/in (N/m)	25 (4,378)		ASTM D903
Cold bending, max. °F (°C)	-30 (-34.4)		ASTM D5147
Water vapor permeance, max. perm (ng/Pa.s.m²)	0.03 (1.7)		ASTM E96
Air permeability, max. L/s•m²	0.001		ASTM E2178

- Easy-to-peel, split-release film speeds the application process.
- Standard thickness is 31 mils; also available in 41 mils (contact your local GAF representative for details).
- Direct attachment at curbs and walls on TPO applications (refer to application instructions for approved adhesives).

# **Applicable Substrates:**

GAF SA Vapor Retarder XL is designed to be applied to a variety of properly prepared decks or substrates:

- Steel
- Plywood/OSB
- Gypsum Roof Boards
- Concrete

# **Application:**

GAF SA Vapor Retarder XL can be applied at temperatures as low as 25°F (-3.9°C) provided that the product has been stored in a heated area to ensure it is between 50°F – 100°F (10°C – 37.7°C) at time of installation. It is recommended that GAF SA Vapor Retarder XL be installed with minimum 3" (76.2 mm) side laps and 3" (76.2 mm) end laps.

# **Applicable Standards:**

ASTM D5147, ASTM E2178, ASTM E96

- \* Refer to the appropriate application and specifications manual for the system being installed. Available at gaf.com.
- \*\* Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide.
- \*\*\* Thicker/heavier product available by special request only and sold as SA Vapor Retarder XL40.





<sup>\*\*\*\*</sup> Refer to www.RoofNav.com for actual assemblies.

# INSTRUCTIONS

# Introduction

This guide addresses proper installation of the GAF Self-Adhered Vapor Retarder XL (SA VR XL), including around curb/wall areas and penetrations. This guideline does not address how to tie the vapor retarder into an air barrier system, such as the exterior wall. Determining whether or not to apply a vapor retarder is a matter dictated by roof design, which makes that question outside the scope of this guide.

# **Preparation**

- Ensure substrates are dry, smooth, free of contaminants, and in sound condition to receive SA VR XL application.
- · Conducting an adhesion test is required:
  - Prepare five 2" x 12" sections of the SA VR XL.
  - Remove 8" of the silicone release film, leaving 4" intact and unadhered.
  - Place the exposed side onto the roof deck and roll into place with uniform pressure using a 2" silicone hand roller.
  - Let the samples remain in place for a minimum of 2 hours.
  - Use a handheld measuring scale, connected to the middle of the 4" unadhered portion, to pull up on the sample slowly and continuously, lifting 90 degrees from the roof surface until the sample is completely separated from the substrate.
  - Record the weight in pounds, as well as the mode of failure.
  - Favorable adhesion will result in separation within the butyl, which will leave deposits on the substrate and possibly remnants of the substrate.
  - A peel strength minimum of 9 lb. per 2" should be achieved on all installed deck types. If not, contact designservices@gaf.com or 877-423-7663.

# **Substrate Considerations**

Concrete	Structural concrete should cure for at least 28 days prior to installation of the vapor retarder.
	Contact GAF Design Services for additional information for lightweight concrete.
Steel Deck	Minimum 22 ga. sheet metal plates (6" x 66") must be securely fastened to the steel deck at all SA VR XL end lap locations to ensure support and uniform sealing of the vapor retarder lap.
	All side laps need to rest directly on a flute.
Discussed /	Decks must have solid blocking (no H clips) when applying SA VR XL directly to ply/osb roof deck.
Plywood / OSB	Where seismic bracing is present, considerations must be made to protect application of SA VR XL where seismic straps may create potential for damage.
Gypsum / Cement Boards / GAF EnergyGuard™ HD Iso	Products must be purchased through GAF and acceptable for self-adhered roofing membranes.
Coverboard	Securement of gypsum/cement boards must be with acceptable LRF (low-rise foam) purchased through GAF or with appropriate fasteners and flat insulation plates purchased through GAF.

# Installation

#### Field

- Starting at the low point of the roof, unroll GAF SA VR XL over the prepared substrate and align the material with the correct placement along the roof perimeter. Maintain 3" side laps and 3" end laps. For steel decks, install SA VR XL parallel to flutes, and install a steel plate at all end lap areas. Side laps should be positioned on top of steel flutes.
- While maintaining placement of the SA VR XL material, carefully remove the silicone release film from the backside, keeping the film low and at a 45-degree angle to the length of the sheet. The SA VR XL must lay flat to the substrate and be free of wrinkles or "fishmouth" bubbles.
- Use a soft bristle broom to apply light pressure over the installed SA VR XL and follow up with a minimum 50-lb. weighted roller to firmly secure it to the substrate.
- At curb/wall intersections, carry the SA VR XL up the curb/wall a minimum 3" or to the planned finish height of roof insulation. NOTE: fully wrapping curb/ walls may be required by the designer of record.
- Detail areas such as T laps, roof to curb/wall transitions, and penetration areas will require rolling into place with a silicone or steel hand roller. Apply a bead of GAF FlexSeal™ Caulk Grade to the top of all finished T laps and feather into place.
- Ensure the finished application is free of wrinkles, bubbles, or punctures. Cut out any wrinkles or bubbles, clean the SA VR XL surface with EverGuard® TPO Seam Cleaner, and apply an SA VR XL patch for a minimum 3" extension past the damaged area in all directions. Apply a bead of GAF FlexSeal™ Caulk Grade to any cut edges.

# Curb/Wall

- All laps should create a minimum 3" overlap, including curb/walls. All curb/wall bases and corners must create a minimum 3" overlap.
- Ensure the finished application is free of wrinkles, bubbles, or punctures. Cut out any wrinkles or bubbles, clean the SA VR XL surface with appropriate GAF TPO Cleaner, and apply an SA VR XL patch for a minimum 3" extension past the damaged area in all directions. Apply a bead of GAF FlexSeal™ Caulk Grade to any cut edges.

# **Penetrations**

• Carry the SA VR XL a minimum 3" up the penetration.

#### **Best Practices for Extended Exposure**

- GAF SA VR XL may be left in place during construction for a maximum period of 180 days. If SA VR XL is being exposed, considerations need to be made in regards to foot traffic, weather, drainage, and other variables that might affect the SA VR XL prior to installation of the final roof assembly. The GAF SA VR XL must be evaluated for any damage and properly cleaned prior to installation of the roofing assembly. Undertaking such evaluation and repair is extremely important for the product to perform as a vapor retarder.
- Repair a physical items must be identified and marked for repair. Clean the SA VR XL surface with appropriate GAF TPO Cleaner, permit time to flash

off/dry, and apply a minimum 3" overlapping patch repair of SA VR XL overlapping damaged areas in all directions. If damage is extensive in an area, installation of a new SA VR XL sheet staggered from existing sheet laps may be required.

- Once all repairs have been made, clean the entire roof surface prior to installation of one of the following manners of roofing system:
  - Base layer of roofing system or insulation mechanically fastened through SA VR XL to deck
  - Adhered base layer of roofing system or insulation (Shovel method adhesion test required if using LRF adhesives)

# Compatible Adhesives for Field of Roof Insulation Installation

- Only LRF adhesives distributed by GAF and noted as acceptable for insulation attachment may be applied over the SA VR XL surfacing. They include:
  - Olybond500® Roofing System Equipment-Free Canister System
  - GAF LRF Adhesive
  - GAF LRF Adhesive XF
  - Olybond500® Spot Shot

**Note:** Refer to the appropriate GAF Roofing Systems Overview and General Requirements Manual for adhesive application rate and installation procedures.

 Only insulation may be adhered directly to the GAF SA VR XL surfacing. Attachment of roofing plies/membrane with hot asphalt, SBS adhesive, solvent, or water-based bonding adhesive is not acceptable.

# Compatible Adhesives for Curb/Wall Flashing

- GAF Everguard® TPO smooth and fleeceback membranes may be installed directly over SA VR XL at curbs/walls using the bonding adhesives located in the table below.
- GAF Everguard® PVC smooth and fleeceback membranes over SA VR XL at curbs/walls is not acceptable. An approved substrate(HD Polyiso, Gypsum/Cement Board, Plywood/OSB) must be mechanically fastened prior to adhesion of PVC/PVC KEE Membrane.

Everguard® TPO	Everguard® TPO Quick-Spray Bonding Adhesive
	Everguard® TPO Quick-Spray Bonding Adhesive LV50
(Smooth)	Everguard® TPO SBA 1121 Bonding Adhesive
	Everguard® Low VOC Bonding Adhesive
	Everguard® 3sq Low VOC Bonding Adhesive
Everguard® TPO (Fleeceback)	Olybond 500® Canisters
Asphaltic Roofing Systems	Requires installation of acceptable substrate fastened through SA VR XL prior to installation of asphaltic flashing

Note: Refer to the appropriate GAF Roofing Systems Overview and General Requirements Manual for adhesive application rate and installation procedures. Positive Slope is required on Extended Exposure installations. Contact GAF Design Services at designservices@gaf.com for code requirement assistance if necessary.



# Flat Polyiso with GRF Facers







# **Description:**

EnergyGuard™ Polyiso Insulation made of glass fiber reinforced cellulosic facers (GRF) bonded to a core of polyisocyanurate foam.

# Features and Benefits:

- Versatile approved component in single ply, BUR and modified bitumen systems, with a variety of attachment methods: mechanically attached, fully adhered, loose laid and ballasted
- Approved for direct application to steel decks
- High insulation value polyiso insulation has the highest R-value per inch compared to any other type of non-polyiso insulation of equivalent thickness
- Because of its light weight, this material is easy to handle on the jobsite and installs quickly. Easy cutting in the field provides the installer with simplified fabricating on the roof deck
- Excellent dimensional stability, high moisture resistance and low water permeability

# **Panel Characteristics:**

- Available in a variety of thicknesses from 1.0" (25.4 mm) to 4.6" (116 mm) to best suit your specifications
- Available in 4' x 4' (1.22 m x 1.22 m) and 4' x 8' (1.22 m x 2.44 m) boards
- Flute Fill and other special sizes are available upon request
- Other EnergyGuard™ products available – tapered, CGF facer and non-halogenated. See individual data sheets for more information

# Codes & Compliance:

- Meets the requirements of ASTM C1289 Type II, Class 1, Grade 2 (20 psi) and also available in Grade 3 (25 psi)
- FM Approved refer to RoofNav.com for approved assemblies
- Classified by UL in accordance with ANSI/UL 1256, 790 and 263. Refer to UL Product iQ for specific assemblies
- UL Evaluation Report UL ER1306-03
- Miami-Dade County Product Control Approved
- State of Florida Approved
- Meets the requirements of CAN/ULC 704.1, Type 2, Class 3 or Type 3, Class 3<sup>†</sup>
- UL (Canada) Evaluation Report ULC ER 1306<sup>†</sup>
- For additional information, contact GAF at 1-800-766-3411 or designservices@gaf.com









<sup>&</sup>lt;sup>†</sup> GAF manufacturing locations in UT and PA.

# EnergyGuard<sup>™</sup> Polyiso Insulation Thermal Values:

Size*	R-Value**	Max Flute Span (in)
1.0" (25.4 mm)	5.7	2 5/8" (66.7 mm)
1.2" (30.5 mm)	6.8	2 5/8" (66.7 mm)
1.5" (38.1 mm)	8.6	43/8" (111 mm)
1.75" (44.5 mm)	10.0	4 3/8" (111 mm)
2.0" (51 mm)	11.4	4 3/8" (111 mm)
2.2" (59 mm)	12.6	4 3/8" (111 mm)
2.3" (58 mm)	13.2	43/8" (111 mm)
2.5" (64 mm)	14.4	4 3/8" (111 mm)
2.6" (66 mm)	15.0	4 3/8" (111 mm)
2.8" (71 mm)	16.2	43/8" (111 mm)
3.0" (76 mm)	17.4	43/8" (111 mm)
3.2" (81 mm)	18.6	43/8" (111 mm)
3.5" (89 mm)	20.5	4 3/8" (111 mm)
3.7" (94 mm)	21.7	4 3/8" (111 mm)
4.0" (102 mm)	23.6	43/8" (111 mm)
4.3" (109 mm)	25.4	43/8" (111 mm)
4.5" (114 mm)	26.6	43/8" (111 mm)
4.6" (117 mm)	27.1	4 3/8" (111 mm)

- \* Other thicknesses available upon request.
- \*\* Long Term Thermal Resistance Values provide a 15-year time weighted average in accordance with CAN/ULC 770.

For optimal roof performance and to prevent thermal bridging GAF recommends installing two layers of Polyiso with staggered joints.









# Sustainability:

- Manufactured with EPA-compliant blowing agents containing no CFCs or HCFCs; has zero ozone depletion potential (ODP) and negligible global warming potential (GWP)
- GREENGUARD Gold
- Green Circle Certified® for recycled content
- Potential LEED® Credits for Polyiso Use
- Environmental Product Declaration (EPD)







# **Typical Physical Property Data:**

Property	Test Method	Values
Compressive Strength	ASTM D1621	Grade 2 - 20 psi min (138 kPa) Grade 3 - 25 psi min (172 kPa)
Dimensional Stability Change (length + width) <sup>2</sup>	ASTM D2126	< 2% linear change
Flexural Strength	ASTM C203	40 psi min (275 kPa)
Tensile Strength	ASTM C209	500 psf min (24 kPa)
Water Absorption (percent by volume)	ASTM C209	1.5% max
Water Vapor Permeance	ASTM E96 Procedure A	< 1.5 perm max (85.8ng/Pa·s·m²)
Service Temperature		-100° to 250 °F (-73.3° to 121.1 °C)
Flame Spread Index <sup>3</sup>	ASTM E84	< 75 <sup>1</sup>
Smoke Developed Index	ASTM E84	< 200 1

<sup>&</sup>lt;sup>1</sup> Foam Core

# Warnings and Limitations:

- EnergyGuard™ Polyiso Insulation is a non-structural, non load-bearing material. It is not designed for direct traffic usage unless adequately protected.
- EnergyGuard™ Polyiso Insulation should be stored protected from the elements. Bundle wrap is not for use as waterproofing for boards. No more insulation should be installed than can be completely covered with roofing on the same day.
- As unprotected polyisocyanurate will burn, fire safety precautions should be observed wherever insulation products are used.
- Direct mopping or torching of modified bitumen roofing or direct mopping of built-up roofing (BUR) to EnergyGuard™ Polyiso Insulation is not approved. A properly installed cover board or base sheet must be used.
- Refer to PIMA Technical Bulletin No. 109 Storage and Handling Recommendations for Polyiso Roof Insulation at www.polyiso.org
- Refer to the application specifications in the current membrane manufacturer's application and specifications manual for proper installation procedures.



32023 GAF • COMGT318-PDF-0824

<sup>&</sup>lt;sup>2</sup> Stated dimensional stability tolerance: Board thickness shall not diminish by more than 4% max.

<sup>&</sup>lt;sup>3</sup> These numerical ratings are not intended to reflect hazards presented by these or any other material under actual fire conditions.



# Dens Deck

Prime Roof Board 

#### Description

DensDeck® Prime Roof Board is a reinforced gypsum panel with a moisture-resistant core and coated glass mat facers. DensDeck® Prime Roof Board face and back mat provide compatibility, uniform application, and consistent performance with most roofing adhesives. DensDeck® Prime Roof Board provides a high level of moisture resistance through the use of GP's patented EONIC™ Technology, and enhances the overall wind resistance<sup>2</sup> of an assembly while also increasing the hail and puncture resistance of the membrane as compared with systems with no cover board.<sup>2</sup> For full application instructions, please consult the applicable specification manual for the system being installed (available at gaf.com).

#### **Primary Uses**

DensDeck® Prime Roof Board is compatible with many types of roofing products, including: modified asphalt, single-ply, metal systems, re-cover board, polyisocyanurate, and polystyrene insulation. DensDeck® Prime Roof Board can also be used as a form board for poured gypsum concrete decks in roof applications as well as a substrate for spray foam roofing systems.

DensDeck® Prime Roof Board with thicknesses of  $\frac{1}{2}$ " (12.7 mm) and  $\frac{5}{8}$ " (15.9 mm) may also be used in vertical applications as a backer-board or liner for the roof side of parapet walls.

DensDeck® Prime Roof Board may also allow the bonding of hot-mopped, cold mastic, and torched modified bitumen directly to the surface. For information on this application, contact GAF Technical Support at 1-877-GAF-ROOF or technical questions@gaf.com.

Standards and Codes Approvals DensDeck® Prime Roof Boards are manufactured to meet ASTM C1177 and have the following approvals:

- State of Florida Approved
- Miami-Dade County Product Control Approved

**Recommendations and Limitations** DensDeck® Prime Roof Boards are manufactured for use in a properly designed roof system installed in accordance with good roofing practices. The selection of DensDeck® Prime Roof Board as a roofing component in any system or assembly is the responsibility of the design professional. For full application instructions, please visit gaf.com for the applicable specification manual for the system being installed.

The need for a separator sheet between the DensDeck® Prime Roof Board and the roofing membrane must also be determined by the design professional.

Confirm any priming requirements with GAF prior to installation. When applying solvent-based adhesives or primers, allow sufficient time for the solvent to flash off to avoid damage to roofing components. DensDeck® Prime Roof Boards should not be subjected to abnormal or excessive loads or foot traffic, such as, but not limited to, use on plaza decks or under steel-wheeled equipment that may fracture or damage the panels. Take appropriate measures to protect the roofing system from physical damage (for example, laying plywood or OSB when heavy equipment will be moved across the roof).

When using DensDeck® Prime Roof Boards for hotmopped applications, a maximum asphalt application temperature of 425°F (218°C) - 450°F (232°C) is recommended. Application temperatures above these recommended temperatures may adversely affect roof system performance. For full application instructions, please consult the applicable specification manual for the system being installed, available at gaf.com. When using DensDeck® Prime Roof Board as a substrate for torch applications, ensure that the product is dry and that the proper torching and safety requirements are followed by professionals experienced in torch applications. Limit the heat to the DensDeck® Prime Roof Board. Maintain a majority of the torch flame directly on the roll.

Installaton conditions such as inclement weather conditions, dew, application temperatures outside of the designated installation temperature range, and improper installation techniques may cause adverse effects in roofing systems.

#### Handling and Use - CAUTION

WARNING: Provide appropriate exhaust ventilation at places where dust is formed. Minimize dust generation and accumulation. Do not breathe dust. Do not get this material in contact with eyes. Do not taste or swallow. Avoid prolonged exposure. Observe good industrial hygiene practices. Use only in well-ventilated areas. Wear appropriate NIOSH/MSHA approved dust mask or filtering facepiece if dust is generated. Do not eat or drink while using the product. Wash hands before eating, drinking, or smoking. See the product Safety Data Sheet for more information.

# Moisture Management

DensDeck® Prime Roof Boards, like other components used in roofing systems, must be protected from exposure to moisture before, during, and after installation.

Remove the plastic packaging from all DensDeck® Prime Roof Board immediately upon receipt of delivery. Failure to remove the plastic packaging may result in entrapment of condensation or moisture inside the packaging. DensDeck® Prime Roof Board stored outside must be stored level and off the ground and protected by a breathable waterproof covering. DensDeck® Prime Roof Board must be covered with roofing material the same day it's installed.

Although DensDeck® Prime Roof Boards are engineered with fiberglass facings and high-density gypsum cores, the presence of free moisture can have a detrimental effect on the performance of the product and the installation of roofing membranes.

For example, hot asphalt applications can blister; torched modified bitumen may not properly bond; and adhesives for single-ply membranes may not dry and bond properly. Moisture accumulation may also significantly decrease wind uplift and vertical pull resistance in the system or assembly.

(continued on next page)



GAF warranties and guarantees provide coverage for wind speeds up to 55 miles per hour only. See applicable guarantee or warranty, available at gaf.com, for complete coverage and restrictions. Enhanced wind coverage may be available for purchase for legible systems. Contact GAF for more information.

<sup>2</sup> GAF warranties and guarantees do not provide coverage against hail except where additional hail or puncture resistance coverage is purchased on eligible jobs.

Refer to gaf.com for more information on warranty and guarantee coverage and restrictions





Fire Resistance Classifications

Dens Deck® Prime Roof Boards are excellent

DensDeck® Prime Roof Boards are excellent fire barriers over combustible and noncombustible roof decks, including steel decks.

UL 790 Classification. DensDeck® Prime Roof Boards have been classified by Underwriters Laboratories LLC (UL) for use as a fire barrier over combustible and noncombustible decks in accordance with the ANSI/UL 790 and ULC CAN-S114 test standard. The UL classification includes a comprehensive Class A, B, or C rating. For additional information concerning the UL 790 classification, see UL Product IQ at productiq.ulprospector.com/.

UL 1256 Classification. DensDeck® Prime Roof Boards have also been classified by UL in roof deck constructions for internal (under deck) fire exposure in accordance with the ANSI/UL1256 Steiner Tunnel test. For additional information concerning the UL1256 classification, consult UL Product IQ at productiq.ulprospector.com/.

FM Class 1 Approvals. DensDeck® Prime Roof Boards are included in numerous roofing assemblies with a Factory Mutual (FM) Class 1 fire rating. ½" ( (6.4 mm) DensDeck® Prime Roof Boards have passed testing under the FM Calorimeter Standard 4450 and have been approved by FM as such for insulated steel

deck roofs when installed according to the conditions identified by FM. For more information concerning FM Approvals and FM Class 1 assemblies with DensDeck® Prime Roof Boards, consult FM or see roofnav.com for specific assemblies.

*Type X.*  $^{5}$ /<sub>8</sub>" (15.9 mm) DensDeck® Prime Roof Boards are manufactured to meet the "Type X" requirements of ASTM C1177 for increased fire resistance beyond regular gypsum board.

UL Fire Resistance Ratings.  $^5/8$ " (15.9 mm) DensDeck® Prime Roof Boards are designated as Type DD by UL and included in assembly designs investigated by UL for hourly fire resistance ratings.  $^5/8$ " (15.9 mm) DensDeck® Prime Roof Boards may also replace any unclassified  $^5/8$ " (15.9 mm) gypsum board in an assembly in the UL Fire Resistance Directory under the prefix "P."

Flame spread and smoke developed. When tested in accordance with ASTM E84, DensDeck® Prime Roof Boards had Flame Spread 0, Smoke Developed 0.

#### Wind Uplift

DensDeck® Prime Roof Boards are included in numerous assemblies evaluated by FM or other independent laboratories for wind uplift performance. For information concerning such assemblies, please visit roofnav.com.

PHYSICAL PROPERTIES					
PROPERTIES	¹/₄" (6.4 mm)	¹/₂" (12.7 mm)	<sup>5</sup> /8" (15.9 mm)		
Thickness, nominal	1/4" (6.4 mm) ± 1/16" (1.6 mm)	1/2" (12.7 mm) ± 1/32" (0.8 mm)	<sup>5</sup> / <sub>8</sub> " (15.9 mm) ± <sup>1</sup> / <sub>32</sub> " (0.8 mm)		
Width, standard	4' (1,219 mm) ± 1/8" (3 mm)	4' (1,219 mm) ± 1/8" (3 mm)	4' (1,219 mm) ± 1/8" (3 mm)		
Length, standard	4' (1,219 mm) & 8' (2,438 mm) ± <sup>1</sup> / <sub>4</sub> " (6.4 mm)	4' (1,219 mm) & 8' (2,438 mm) ± 1/4" (6.4 mm)	4' (1,219 mm) 8' (2,438 mm) ± <sup>1</sup> / <sub>4</sub> " (6.4 mm)		
Weight nominal, lb./sq. ft. (kg/m²)	1.2 (5.9)	2.0 (9.8)	2.5 (12.2)		
Surfacing	Fiberglass mat with non-asphaltic coating	Fiberglass mat with non-asphaltic coating	Fiberglass mat with non-asphaltic coating		
Flexural Strength <sup>1</sup> , parallel, lbf. min. (N)	≥40 (178)	≥80 (356)	≥100 (444)		
Flute Spanability <sup>2</sup>	2 <sup>5</sup> / <sub>8</sub> " (66.7 mm)	5" (127 mm)	8" (203 mm)		
Permeance <sup>3</sup> , Perms (ng/Pa•S•m <sup>2</sup> )	>30 (>1710)	>23 (>1300)	>17 (>970)		
R-Value <sup>4</sup> , ft <sup>2</sup> •°F•hr/BTU (m <sup>2</sup> •K/W)	.28	.56	.67		
Lineal Variation with Change in Temp.,					
in/in °F (mm/mm/°C)	8.5 x 10 <sup>5</sup> (15.3 x 10 <sup>6</sup> )	8.5 x 10⁵ (15.3 x 10⁵)	8.5 x 10 <sup>5</sup> (15.3 x 10 <sup>6</sup> )		
Lineal Variation with Change in Moisture	6.25 x 10 <sup>6</sup>	6.25 x 10 <sup>6</sup>	6.25 x 10 <sup>6</sup>		
Water Absorption⁵, % max	5	5	5		
Compressive Strength⁵, psi nominal	900	900	900		
Surface Water Absorption, grams, nominal <sup>1</sup>	1.0	1.0	1.0		
Flame Spread, Smoke Developed					
(ASTM E84, UL 723, CAN/ULC-S102)	0/0	0/0	0/0		
Bending Radius	4' (1,219 mm)	6' (1,829 mm)	8' (2,438 mm)		

<sup>&</sup>lt;sup>1</sup> Tested in accordance with ASTM C473 method B. <sup>2</sup> Tested in accordance with ASTM E661.

<sup>6</sup> Tested in accordance with ASTM C473.

<sup>&</sup>lt;sup>3</sup> Tested in accordance with ASTM E96 (dry cup method).

<sup>&</sup>lt;sup>4</sup> Tested in accordance with ASTM C518 (heat flow meter).

<sup>&</sup>lt;sup>5</sup> Specified values per ASTM C1177.

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45, 60, 80 mil



# Durable, Efficient, Proven.

GAF knows thermoplastic polyolefin (TPO). Our EverGuard® TPO membrane construction has remained unchanged for decades. It's just one of the reasons we've sold more than 6 billion square feet. EverGuard® TPO offers flexibility, durability, UV reflectivity, and heat-sealable properties. It's inherently fungal resistant\* and flexible without using plasticizers. Available in nominal and minimum thicknesses.

Competitive pricing and a 20-plus-year track record for performance make TPO the most popular option in the commercial roofing industry and specialized training from GAF Roofing It Right videos and CARE classes add to GAF's unmatched technical support.

# Durable, Efficient, Proven.

EverGuard® TPO is suitable for all types of single-ply systems:

- Mechanically Attached for a quick and cost-effective system that can be installed practically year-round.
- Induction Welded can be applied without using adhesives and installed practically year round. Qualifies for the same guarantee length as an adhered system.<sup>†</sup>
- Adhered can be installed with EverGuard® TPO Quick Spray, EverGuard® TPO Quick Spray LV50, EverGuard® TPO Low VOC Bonding Adhesive, EverGuard® TPO 3 Square Low VOC Bonding Adhesive, EverGuard® TPO SBA 1121 Bonding Adhesive, or EverGuard® WB 181 Bonding Adhesive for the smoothest appearance.

# **Features:**

EverGuard® TPO offers the following:

- Endures 2 to 2.5 times the industry standard, depending on thickness (ASTM D6878 weather resistance test).
- Offers guarantees for eligible systems up to 20 years for 45 mil, 25 years for 60 mil, and 30 years for 80 mil.<sup>†</sup>
- Available in 12' rolls to cover more area with fewer rolls and seams
- Allows for heat-welded seams that provide greater seam strength to taped and other seams
- Creates a highly reflective and emissive white roof that can help reduce cooling costs<sup>‡</sup> and urban heat island effect. (white, energy tan and energy gray only)

#### TPO Field Study:

As a relatively new roof technology, TPO performance was proven mostly in lab studies. So when real-world TPO systems started approaching 20-year marks, GAF acquired and analyzed EverGuard® TPO samples across the United States. We found 8-to 16-year-old TPO roofs to be performing well and in most instances, meeting the current ASTM D 6878-19 requirements for new membranes. Download the study from GAF.com.



- \* Meets ASTM G21. GAF warranties and guarantees do not provide coverage against fungi or other biological growth. Refer to gaf.com for more information on warranty and guarantee coverage and restrictions.
- † Additional requirements apply. Contact GAF for more information. Refer to sample guarantees, available at gaf.com, for complete coverage and restrictions.
- ‡ Energy cost savings are not guaranteed and the amount of sovings may vary based on climate zone, utility rates, radiative properties of roofing products, insulation levels, HVAC equipment, efficiency and other factors.

# **Accessories:**

EverGuard® TPO prefabricated accessories deliver consistent quality and eliminate the worry and problems often associated with field fabrication. They can also boost productivity while reducing labor.

- Coated Speedtite™ and Hercules® Drain TPO-coated flange for direct hot-air welding of TPO roof membranes.
- Corner Curb Wrap Four standard sizes to flash 24", 36", 48", and 60" curbs.
- Fluted Corner For use in flashing outside corners of base and curb flashing.
- Inside Corner Manufactured to accommodate inside corners of base or curb flashing.
- Preformed Split Pipe Boot Three standard sizes accommodate most pipes and conduits.
- Preformed Vent Boot Accommodates most common pipes and conduits from 1" (25.4 mm) to 6" (152 mm).
- Scupper Heat-welds to the scupper for a strong, secure installation.
- Split Pourable Sealant Pocket Cuts to size and offers a low profile to help seal varying penetrations with less sealant.
- Square Tube Wrap Tube wraps are split with overlaps to wrap around square or rectangular tubing.
- T-Joint Cover Patches Conforming seal for use over T-joints in 60- and 80-mil membrane applications.
- **TPO Cover Tape** Self-adhered TPO ideal for stripping-in TPO and edge metal.
- Universal Corner Accommodates both inside and outside corners of base and curb flashings.
- Vent For use in venting low-slope mechanically attached roofs.
- Walkway Roll Heat-welds directly to TPO membrane or installs with seam tape. Available in gray and yellow.





45, 60, 80 mil

# **Physical Properties (ASTM D6878)**

Torre	ASTM Test	ACTM D 4070 Minimum	EverGuard® TPO Test Values (approx.)*			
Туре	Method	ASTM D 6878 Minimum	45 mil	60 mil <sup>3</sup>	80 mil	
TPO Nominal Thickness	ASTM D751	0.039"	0.045" (1.14 mm)	0.060" (1.52 mm)	0.080" (2.03 mm)	
Thickness Over Scrim	ASTM 7635	0.015"	15.8 mil (nominal)	24.1 mil (nominal)	31.4 mil (nominal)	
Breaking Strength	ASTM D751 Grab Method MD	220 lbf	375 lbf x 330 lbf (559 x 492 kg/m)	400 lbf x 360 lbf (596 x 536 kg/m)	440 lbf x 390 lbf (656 x 581 kg/m)	
Elongation at Break	ASTM D751	15%	30%	30%	30%	
Tear Strength	ASTM D751 (8" x 8" sample)	55 lbf	90 lbf x 120 lbf (134 x 179 kg/m)	70 lbf x 130 lbf (104 x 194 kg/m)	100 lbf x 180 lbf (149 x 268 kg/m)	
Brittleness Point	ASTM D2137	-40 °F	-40 °F	-40 °F	-40 °F	
Ozone Resistance	ASTM D1149	No cracks @ 7x magnification	No visible deterioration @ 7x magnification	No visible deterioration @ 7x magnification	No visible deterioration @ 7x magnification	
Properties after Heat Aging	ASTM D573	≤1.5% weight change after 8 weeks @ 275° F, No cracks @ 7x magnification	after leks @ 275° F, No Pass cracks		Pass	
Properties after Heat Aging, UAWS		Total radiation @ 8400 MJ/m² UV, no cracking	Pass	Pass	Pass	
Linear Dimensional Change	ASTM D1204	±1%	0.2%	0.4%	0.4%	
Water Absorption	ASTM D471	±3%	0.7%	0.7%	0.7%	
Factory Seam Strength	ASTM D751	66 lbf	115 lbf (membrane failure) (171 kg/m)	145 lbf (membrane failure) (216 kg/m)	155 lbf (membrane failure) (231 kg/m)	
Weather Resistance	ASTM G155	10,080 kJ(m²•nm) at 340 nm, No cracks @ 7x magnification	>20,000 kJ(m²•nm) at 340 nm	>25,000 kJ(m²•nm) at 340 nm	>25,000 kJ(m²•nm) at 340 nm	
Air Permeance	ASTM E2178		<0.02 L/(s • m²)	<0.02 L/(s • m²)	<0.02 L/(s • m²)	

# **Additional Physical Properties**

Puncture Resistance	FTM 101 C Method 2031	Not established	>350 lb. (159 kg)	>380 lb. (172 kg)	>380 lb. (172 kg)
Permeance	ASTM E96	Not established	<0.08 Perms	<0.08 Perms	<0.08 Perms
Guarantee		Up to 20 years	Up to 25 years	Up to 30 years	

# **Sustainability Ratings/Certifications**

Cool Roof Rating Council (CRRC)							
		Initial			Aged		
Color	Rated Product ID#	Solar Reflectance (ASTM C 1549)	Thermal Emittance (ASTM C 1371)	Solar Reflectance Index (ASTM E 1980)	Solar Reflectance (ASTM C 1549)	Thermal Emittance (ASTM C 1371)	Solar Reflectance Index (ASTM E 1980)
White	0676-0001	0.76	0.90	94	0.68	0.83	81
Energy Gray	0676-0045	0.72	0.87	88	0.67	0.90	82
Energy Tan	0676-0039	0.72	0.89	89	0.66	0.89	80

LEED	Information	
LEED	mormanon	

Manufacturing Location	Mount Vernon, IN, New Columbia, PA, Cedar City, UT, Gainesville, TX



Note 1: Certain data is provided in MD (machine direction) x CMD (cross machine direction) format.

Note 2: Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide.

Note 3: Also available in minimum 60 mil thickness.



45, 60, 80 mil

# Applicable Standards/Approvals

(MIAMHDADE COUNTY) APPROVED	Miami Dade County Product Control Approved	UL Evaluation Report UL ER1306-01	ICC-ES Evaluation Report ESR-4676 (Cedar City, UT only)
FM	FM Approved (Refer to FM RoofNav.com for actual assemblies)	Meets or exceeds the requirements of ASTM D6878.	State of Florida Approved
CLASSIFICE	Classified by UL in accordance with ANSI/UL 790. (Refer to UL Product iQ for actual assemblies).	Meets or exceeds the requirements of the Texas Department of Insurance.	CRRC Rated — Can be used to comply with 2022 Title 24, Part 6, Cool Roof Requirements of the California Code of Regulations (White, Energy Tan, and Energy Gray only)

# **Product Data**

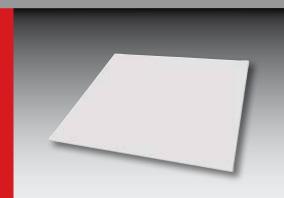
Roll Size	EverGuard® TPO 45	EverGuard® TPO 60	EverGuard® TPO 80
12' Roll Size	12' x 100' (3.66 x 30.5 m) 1,200 sq. ft. (111.5 sq.m)	12' x 100' (3.66 x 30.5 m) 1,200 sq. ft. (111.5 sq.m)	12' x 100' (3.66 x 30.5 m) 1,200 sq. ft. (111.5 sq.m)
12' Roll Weight (Average)	307 lb. (139 kg)	386 lb. (175 kg)	504 lb. (228 kg)
10' Roll Size	10' x 100' (3.05 x 30.5 m) 1,000 sq. ft. (92.9 sq.m)	10' x 100' (3.05 x 30.5 m) 1,000 sq. ft. (92.9 sq.m)	10' x 100' (3.05 x 30.5 m) 1,000 sq. ft. (92.9 sq.m)
10' Roll Weight (Average)	256 lb. (116 kg)	322 lb. (146 kg)	420 lb. (191 kg)
8' Roll Size	8' x 100' (2.43 x 30.5 m) 800 sq. ft. (74.3 sq.m)	8' x 100' (2.43 x 30.5 m) 800 sq. ft. (74.3 sq.m)	8' x 100' (2.43 x 30.5 m) (800 sq. ft. (74.3 sq.m)
8' Roll Weight (Average)	204 lb. (93 kg)	257 lb. (117 kg)	336 lb. (152 kg)
6' Roll Size	6' x 100' (1.83 x 30.5 m) 600 sq. ft. (55.7 sq.m)	6' x 100' (1.83 x 30.5 m) 600 sq. ft. (55.7 sq.m)	6' x 100' (1.83 x 30.5 m) 600 sq. ft. (55.7 sq.m)
6' Roll Weight (Average)	153 lb. (70 kg)	194 lb. (88 kg)	252 lb. (114 kg)
5' Roll Size	5' x 100' (1.52 x 30.5 m) 500 sq. ft. (46.5 sq.m)	5' x 100' (1.52 x 30.5 m) 500 sq. ft. (46.5 sq.m)	5' x 100' (1.52 x 30.5 m) 500 sq. ft. (46.5 sq.m)
5' Roll Weight (Average)	128 lb. (58 kg)	162 lb. (74 kg)	210 lb. (95 kg)

# **Product Data Cont.**

Colors	White, Gray, Energy Gray, Slate Gray, Tan, Energy Tan, Desert Tan, Dark Bronze, Dark Brown, Goldenrod, Sky Blue, Regal Blue, Electric Blue, Hartford Green, Patina Green, Regal Red, Terra Cotta.	
Storage	Store on pallets in a clean, dry area at temperatures below 100°F (38°C).	
Safety Warning	Membrane rolls are heavy. Employ at least two people to position and install.	







# **Description:**

Increase efficiency when creating edges, flashing, and other sheet metal details with EverGuard® and EverGuard® Extreme TPO-Coated Metal Sheets. This accessory cuts and forms like standard sheet metal. GAF manufactures these and other accessories from its proven, durable EverGuard® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

# **Application:**

Use for metal gravel stop and drip edges, metal base and curb flashing, sealant pans, and scupper sleeves. Field and flashing TPO membrane heat welds directly to coated metal.

# **Product Information:**

Metal sheets measure 4' (1.21 m) x 10' (3.05 m) and are constructed from 24 ga. steel with 25-mil EverGuard® or EverGuard Extreme® TPO membrane. Metal sheets are also available in aluminum, stainless, and 20 ga. galvanized with a 2-4 week lead time.

Specifications					
Size	4' (1.21 m) x 10' (3.05 m)				
Membrane thickness	0.025" (0.64 mm)				
Weight per sheet	40 lb. (18.14 kg)				
Shipping Specifications					
Sheets per pallet	5	10	30		
EverGuard® TPO	760A	7600920	7603920		
EverGuard® Extreme TPO	-	7600776	7603776		



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32023 GAF • COMEG852-PDF-0123





# **Description:**

Increase efficiency when stripping-in coated metal flanges and areas that require a reinforced membrane for flashing with factory-built EverGuard® and EverGuard Extreme® TPO Utility Flashing Membrane. This single-ply roofing system accessory provides roofing contractors with an effective, easy-to-install component. GAF manufactures these and other accessories from its proven, durable EverGuard® and EverGuard Extreme® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

# **Application:**

EverGuard® and EverGuard Extreme® TPO 45-Mil and 60-Mil Utility Flashing Membrane can be installed on EverGuard® and EverGuard Extreme® TPO (any thickness) mechanically attached or fully adhered roofing systems. See published application and specifications manual for detailed instructions.

# **Product Information:**

EverGuard® and EverGuard Extreme® 45-Mil and 60-Mil Utility Flashing Membrane is available in white.

Specifications					
Roll size	8" x 100' (203 mm x 30.5 m) rolls				
Material	Reinforced TPO membrane				
Shipping Specifications					
Weight per roll	18 lb. / 8.2 kg (45-mil), 22 lb. / 10 kg (60-mil)				
Product SKU	EverGuard® TPO	EverGuard Extreme® TPO			
45-mil	7608920	7608776			
60-mil	7614920	_			



Visit gaf.com



# EverGuard® and EverGuard Extreme® TPO **GAF** Detailing **Membrane**



# **Description:**

Increase efficiency with the EverGuard® and EverGuard Extreme® TPO UN-55 Detailing Membrane. This single-ply roofing system accessory provides roofing contractors with an effective, easy-to-install component, especially when preformed boots, corners, and other preformed details cannot be used. GAF manufactures these and other accessories from its proven, durable EverGuard® and EverGuard Extreme® TPO single-ply unreinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

# **Application:**

EverGuard® and EverGuard Extreme® TPO UN-55 Detailing Membrane may be installed on EverGuard® and EverGuard Extreme® TPO (any thickness) mechanically attached or fully adhered roofing systems. See published application and specifications manual for detailed instructions.

# **Product Information:**

EverGuard® and EverGuard Extreme® TPO UN-55 Detailing Membrane is available in white. Talk to your representative about additional available colors. The unreinforced membrane makes installation easier at difficult flashing details.

Specifications					
Roll size	24" x 50' rolls (610 mm x 15.24 m)				
Material	55-mil unreinforced TPO membrane				
Shipping Specifications					
Weight per roll	28 lb. / 12.7 kg				
Product SKUs	EverGuard® TPO	EverGuard Extreme® TPO			
White	7631920	7624776			



32024 GAF • COMEG196-PDF-0424



# ated Accesso



# Coated Accessories

# **Description**

EverGuard® TPO single-ply roofing system coated metal drain accessory provides roofing contractors an easy-to-install, factory-built detail. EverGuard® TPO coated drains are constructed using GAF's proven, durable EverGuard® TPO coated onto a durable drain unit.

- Cost effective... Reduces installed costs by up to 25%
- Improved Reliability... Factory built accessories reduce risk of leaks and callbacks
- Improved Aesthetics... Uniform look

# **Application**

EverGuard® TPO coated accessories are designed for use with GAF EverGuard® TPO single-ply membranes and EverGuard® Freedom™ TPO self-adhering membranes. The factory-coated accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® TPO roofing systems. See current application and specifications manual for detailed instructions.

# **Product Information**

EverGuard® TPO coated drains are constructed from aluminum and coated with a weldable TPO compound. TPO membrane can be heat welded directly to the drain body, resulting in a strong, secure installation. Each drain is fitted with a BlueSeal® mechanical drain seal for a secure, tight seal into the building drain system.



# TPO Coated Metal Drain

# **Available Sizes**

EverGuard® TPO Coated Metal Drains are available in two sizes:

- 3" drain will fit into a 3" ID pipe
- 4" drain will fit into a 4" ID pipe

# Also Available...

Quality You Can Trust...From North America's Largest Roofing Manufacturer!™

gaf.com











#### **TPO Accessories RTA Strip**







#### **Description:**

EverGuard® TPO Roof Transition Anchor (RTA) Strip provides roofing contractors with an easy-to-install prefabricated detail. EverGuard® TPO RTA Strip is constructed from durable GAF EverGuard® TPO.

#### **Application:**

The 6" x 100' (152 mm x 30.5 m) 45mil reinforced TPO membrane with pressure-sensitive adhesive can be installed on horizontal surfaces, using plates and fasteners as a base attachment in adhered systems.

#### **Features and Benefits:**

- Helps reduce installed costs
- Prefabricated accessories can help reduce the risk of installation errors
- Constructed with GAF TPO for a uniform look

#### **Product Details:**

#### **Specifications**

- Roll Length 100' (30.5 m)
- Roll Width 6" (152 mm)

#### **Shipping Specifications**

- Rolls per Case: 2
- Weight per Case: 34.9 lb. (15.83 kg)
- Cases per Pallet: 27

#### Product SKUs

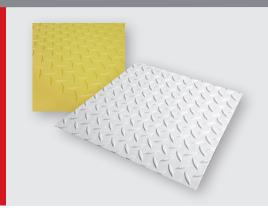
■ White: 8585920





32022 GAF 7/22 • #468 • COMEG828-PDF





Protect rooftop membranes exposed to repeated foot traffic with EverGuard® TPO Walkway Roll. Used around HVAC areas, hatches, doors, and other access points, it features a raised diamond pattern for enhanced traction and smooth edges for better welding. Factory-built accessories reduce risk of leaks and callbacks, and help create a uniform aesthetic. This easy-to-install accessory saves time and labor costs, and creates a uniform aesthetic.

#### **Application:**

- Heat weld EverGuard® TPO Walkway Roll to the roof membrane surface continuously around the walkway roll perimeter. Rolls must be spaced at least six inches (152 mm) apart to allow for drainage.
- EverGuard® TPO Walkway Roll is designed for use with EverGuard® TPO single-ply membranes and with EverGuard Extreme® and EverGuard® TPO self-adhering membranes.
- The factory-coated accessories may be installed on mechanically attached, fully adhered, or selfadhered EverGuard® TPO roofing and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® TPO Walkway Roll is made from EverGuard® and recycled TPO. The roll measures 34" x 50' (864 mm x 15.24 m), and the diamond pattern measures 30" (762 mm) with 2" smooth sides for welding. Rolls provide 140-mil thickness and are available in standard gray or safety yellow.



32024 GAF • COMEG844-PDF-0824

# EverGuard® TPO 6"CoverTape



#### **Description:**

Save time and labor costs with factorybuilt, easy-to-install EverGuard® TPO 6" Cover Tape. Used for stripping-in TPO end laps and edge metal, this factorybuilt accessory reduces risk of leaks and callbacks, and helps create a uniform aesthetic.

#### **Application:**

Use soap and water to clean the membrane end lap area or edge metal surface to be covered. Dry the area then wipe it down with a white cloth moistened with EverGuard® TPO Seam Cleaner. Brush or roll EverGuard® TPO Primer onto each surface, carrying approximately three inches (76 mm) past the ends. Ensure the primer has properly dried or "flashed off" before applying EverGuard® TPO 6" Cover Tape with a silicone roller.

#### **Product Information:**

Self-adhering EverGuard® TPO 6" Cover Tape is non-reinforced TPO membrane that is six inches (152 mm) wide and backed with a butyl tape adhesive.

Store material in original unopened packaging at temperatures between 40°F - 110°F (4°C - 43°C). Product shelf life is 24 months when stored as recommended.

SPECIFICATIONS		
Roll Length	100' (30.5)	
Roll Width	6" (152 mm)	
SHIPPING SPECIFICATION	NS	
Rolls per case	2	
Weight per case	37.4 lb. (16.96 kg)	
Cases per pallet	36	
PRODUCT SKU		
White	755A920	
Tan	755A820	
Gray	755A345	



32024 GAF • COMEG843-PDF-0424

# EverGuard® TPO and EverGuard Extreme® TPO Heat-Weldable CoverTape



#### **Description:**

Increase efficiency when covering metal edges with factory-built EverGuard® and EverGuard Extreme® TPO Heat-Weldable Cover Tape. This single-ply roofing system accessory provides roofing contractors with an effective, easy-to-install component. GAF manufactures these and other accessories from its proven, durable EverGuard® and EverGuard Extreme® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Clean and prime metal with EverGuard® TPO Primer. Allow primer to dry or flash off. Apply the self-adhering side to the metal and the heat-weldable side to the roofing membrane. See published application and specifications manual for detailed instructions.

Specifications	TPO Heat-Weldable Cover Tape		
Roll length	100'	100'	
Roll width	6"	6"	
Shipping Specifications			
Rolls per box	2		
Weight per box	34 lb. / 15.42 kg		
Boxes per pallet	27		
Product SKUs	EverGuard® TPO	EverGuard Extreme® TPO	
White	85P8920	85P8776	

#### **Codes and Compliance:**

- Texas Department of Insurance
- ICC-ES
- State of Florida Approved\*
- UL Listed Accessory



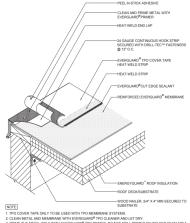
Miami-Dade County Product Control Approved



\*EverGuard® TPO only

#### **Product Information:**

EverGuard® and EverGuard
Extreme® TPO Heat-Weldable Cover
Tape is constructed from EverGuard®
or EverGuard Extreme® reinforced
45-mil membrane. One package
contains two 100' long, 6" wide rolls
with a 3" self-adhered area and a 3"
heat-weldable area.



CLEAN MEI'AL AND MEMBRANE WITH EVERGUARDY PLO CLEANER AND LET DRY. PRIME THE METAL ONLY WITH EVERGUARDY TOP RRIMER DO NOT SPILL PRIMER ON WELDED SEAM AREA HOT-AIR WELD THE MEMBRANE TO MEMBRANE AREA USING EITHER A ROBOTIC OR HAND WELDER TO SPE



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32024 GAF • COMEG846-PDF-0424





Increase efficiency when flashing irregular penetrations with factory-built EverGuard® and EverGuard Extreme® TPO Split Pourable Sealer Pockets. These single-ply roofing system preformed accessories provide roofing contractors with an effective, easyto-install detail. GAF manufactures these accessories from a proprietary formulation designed for use with GAF EverGuard® and EverGuard Extreme® TPO single-ply membranes. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Preformed accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard Extreme® TPO roofing systems, using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® and EverGuard Extreme® TPO Split Pourable Sealer Pockets are engineered for use with GAF EverGuard® and EverGuard Extreme® TPO single-ply membranes. They eliminate the need for contractors to fabricate a pitch pocket in the field. The split design lets you cut the pocket to better fit irregular penetrations, therefore requiring less sealant. Fill these right-sized pockets with EverGuard® TPO One-Part Pourable Sealant.

Specifications		
Total width of pocket	19" (483 mm)	
Total length of pocket	25" (635 mm), can be cut	to 19" (483mm)
Height of pocket walls	2" (51 mm)	
Shipping Specifications		
Box size	24" (610 mm) x 19.5" (405 r	mm) x 13.5" (343 mm)
Pieces per box	6 complete pockets	
Weight per box	6 lb. (2.72 kg)	
Boxes per pallet	12	
Pallet size	48" (1,219 mm) x 48" (1,219 mm)	
Product SKU	EverGuard®	EverGuard Extreme®
White	800B920NC	800C776NC



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#### Installation:

- Establish 2" (52 mm) clearance around the projection. For areas with multiple projections, allow 1" (25.4 mm) between projection and pocket.
- Clean all dust and debris from the projection area.
- Install four Drill-Tec<sup>™</sup> plates and screws surrounding the projection.
- If the two-piece pocket doesn't fit tightly, cut each piece along one of their marked lines for a better fit, which also reduces the amount of EverGuard® One-Part Pourable Sealant required.
- Heat-weld the entire flange (preferred).
- When not welding the entire flange (optional), weld a minimum 2" perimeter along the outside of the flange and ensure sealant does not migrate by either applying a bead of GAF FlexSeal™ Caulk Grade Sealant along the inside seam where the pocket meets the roof or a thin layer of non-shrink quick-set grout across the entire roof area inside the pocket.
- Heat-weld the upright portion of the two pocket sections together with a minimum 2" weld.
- Prime every surface of the pocket (inside and out) that will contact the sealant, as well as pipes, concrete, etc. within the pocket, with EverGuard® TPO Seam Cleaner or EverGuard® TPO Cleanweld Conditioner.
- Fill the pocket with the pourable sealant, slightly overflowing to ensure a complete fill.

Note: Pourable sealant is considered a maintenance item, therefore is excluded from guarantee coverage.



32023 GAF • COMEG845-PDF-0823

# EverGuard®TPO and EverGuard Extreme®TPO GAF SplitPipeBoot



#### **Description:**

Increase efficiency when covering pipes with factory-built EverGuard® and EverGuard Extreme® TPO Split Pipe Boots. These single-ply roofing system preformed accessories provide roofing contractors with an effective, easy-toinstall detail. GAF manufactures these and other accessories from its proven, durable EverGuard® and EverGuard Extreme® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Preformed accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard Extreme® TPO roofing systems, using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information:**

Extreme® TPO Split Pipe Boots are constructed from EverGuard® or EverGuard Extreme® reinforced 45-mil membrane. Three standard sizes are available, and you can contact your local GAF representative for custom sizes. The split design lets you wrap them around pipes and conduit where closed boots cannot be used.

Specifications			
	1" (25 mm) – 2" (51 mm)		
Diameter	3" (76 mm) – 5" (	(127 mm)	
	6" (152 mm) – 8" (203 mm)		
Shipping Specifications	1" - 2"	3" - 5"	6" - 8"
Boots per box	6		
Weight per bpx	7.5 lb.	7.5 lb.	11 lb.
Boxes per pallet	36	36	24
Product SKUs			
EverGuard® TPO	85G6920	85G7920	85G8920
EverGuard Extreme® TPO	81E1776	85G2776	81E3776



32024 GAF • COMEG166-PDF-0424

## EverGuard® TPO and EverGuard Extreme® TPO Square Tube Wrap



#### **Description:**

Increase efficiency when covering square or rectangular pipes with factory-built EverGuard® and EverGuard Extreme® TPO Square Tube Wraps. These single-ply roofing system preformed accessories provide roofing contractors with an effective, easy-to-install detail. GAF manufactures these and other accessories from its proven, durable EverGuard® and EverGuard Extreme® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Preformed accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard Extreme® TPO roofing systems, using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® and EverGuard Extreme® TPO Square Tube Wraps are constructed from EverGuard® or EverGuard Extreme® reinforced 45-mil membrane. Three standard sizes are available and you can contact your representative for custom sizes. Wraps include stainless steel clamping rings for the top of the penetration.

Specifications				
	4" (102 mm) x 4'	4" (102 mm) x 4" (102 mm)		
Size	4" (102 mm) x 6'	4" (102 mm) x 6" (152 mm)		
	6" (152 mm) x 6"	6" (152 mm) x 6" (152 mm)		
Pieces per box	6	6		
Weight per box	4" x 4" (6 lb)	4" x 6" (6.5 lb)	6" x 6" (7 lb)	
Boxes per pallet	24			

<b>Product SKUs</b>	EverGuard® TPO	EverGuard Extreme® TPO
4" x 4"	8506920	81E06776
4" x 6"	8508920	81E08776
6" x 6"	8507920	81E07776



32024 GAF • COMEG165-PDF-0424



# etorme



### Preformed Accessories

#### **Description**

EverGuard® TPO single-ply roofing system preformed accessories provide roofing contractors an easy-to-install, factory-built detail. EverGuard® preformed accessories are constructed from GAF's proven, durable EverGuard® TPO single-ply reinforced membrane.

- Cost effective... Reduces installed costs
- Improved reliability...
   Factory-built accessories reduce risk of leaks and callbacks
- Improved aesthetics... Uniform look

#### **Application**

EverGuard® TPO Corner Curb Wraps are designed for use with GAF EverGuard® TPO single-ply membranes. Corner Curb Wraps may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® TPO roofing systems. Corner Curb Wraps are installed using conventional heat-welding techniques.

#### **Product Information**

EverGuard® Corner Curb Wraps are constructed from EverGuard® reinforced 45 mil TPO membrane. Four standard sizes of Corner Curb Wraps are available. Each Corner Curb Wrap is 12" in height and has a 6" base area for welding to field membrane.

# Corner Curb Wrap

- Available in 4 standard sizes
- Available in white, gray, and tan
- Custom sizes also available\*

SPECIFICATIONS	
Height:	12"
Base:	6"
Length:	13.5", 19.5", 25.5", 31.5"
SHIPPING SPECIFICATIONS	
Curbs per box:	4
Weight per box:	
13.5"	5.6 lbs.
19.5"	7.4 lbs.
25.5"	10.7 lbs.
31.5"	12.5 lbs.
Boxes per pallet:	32
PRODUCT SKUs	
White 13.5"	85F2920
White 19.5"	85F3920
White 25.5"	85F4920
White 31.5"	85F5920

\*Contact your local representative for details.

#### Also Available...











Quality You Can Trust...From North America's Largest Roofing Manufacturer!™

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# EverGuard® and EverGuard® Extreme TPO GAF EVERGUARD® AND EVERGUARD® Extreme TPO GAF EVERGUARD® AND EVERGUARD® Extreme TPO GAF EVERGUARD® AND EVERGUARD® Extreme TPO



#### **Description:**

Increase efficiency when covering outside corners with factory-built EverGuard® and EverGuard® Extreme TPO Fluted Corners. These single-ply roofing system molded accessories provide roofing contractors with an effective, easy-to-install detail. GAF manufactures these and other molded accessories using a proprietary formulation designed for use with GAF's EverGuard® and EverGuard® Extreme TPO single-ply membranes. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Molded accessories may be installed on mechanically attached, fully adhered or, self-adhered EverGuard® and EverGuard® Extreme TPO roofing systems, using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® and EverGuard® Extreme TPO Fluted Corners are molded from a proprietary TPO formulation engineered to work with EverGuard® and EverGuard® Extreme TPO single-ply membranes. Fluted Corners are manufactured with a nominal thickness of 50 mils, and they allow for ease of welding in tight areas, as well as flashing of non-uniform corners.

Specifications			
Diameter	8" (203 mm)		
Nominal thickness	.050" (1.3 m)	.050" (1.3 m)	
Shipping Specifications			
Qty per box	20		
Weight per box	2.5 lb. / 1.1 kg		
Boxes per pallet	250		
Product SKUs	EverGuard®	EverGuard® Extreme	
TPO Fluted Corner White	8A00920WA	8A00776GA	
TPO Fluted Corner Tan	8A00820WA	N/A	
TPO Fluted Corner Grey	8A00345WA	N/A	





# GAF Universal Exerguard Extreme® TPO GAF Universal Corner



#### **Description:**

Increase efficiency when covering corners with factory-built EverGuard® and EverGuard Extreme® TPO Universal Corners. These single-ply roofing system molded accessories provide roofing contractors with an effective, easy-to-install detail. GAF manufactures these and other molded accessories using a proprietary formulation designed for use with GAF EverGuard® and EverGuard Extreme® TPO single-ply membranes. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks while helping you create a uniform look.

#### **Application:**

Molded accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard Extreme® TPO roofing systems using conventional techniques. Simply cut the standard size at markings to produce either inside or outside corner reinforcements. See published application and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® and EverGuard Extreme® TPO Universal Corners accommodate inside and outside corners of base and curb flashings. Universal Corners are manufactured with a thickness of 55 mils.

Specifications			
Dimensions	3" x 3" (76 mm x 76 mr	3" x 3" (76 mm x 76 mm) with 6" (152 mm) flange	
Thickness	.055 (1.40mm)	.055 (1.40mm)	
Shipping Specifications			
Qty per box	20		
Weight per box	9 lb. / 4.08 kg	9 lb. / 4.08 kg	
Boxes per pallet	232		
Product SKUs	EverGuard® TPO	EverGuard Extreme® TPO	
White	7730920NC	7733776CU	
	·		









Increase efficiency when covering
T-joints with factory-built EverGuard® and
EverGuard® Extreme TPO T-Joint Cover
Patches. These single-ply roofing system
preformed accessories provide roofing
contractors with an effective, easy-toinstall detail. GAF manufactures these
and other accessories from its proven,
durable EverGuard® and EverGuard®
Extreme TPO single-ply reinforced
membrane. GAF TPO accessories can
help you reduce installation costs, risk of
leaks, and callbacks, while helping you
create a uniform look.

#### **Application:**

T-Joint Cover Patches can be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard® Extreme TPO roofing systems, using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® T-Joint Cover Patches are created from a proprietary TPO formulation engineered for ease of welding over all EverGuard® TPO single-ply membranes. Manufactured to 55-mil thickness, EverGuard® TPO T-Joint Cover Patches create a membrane seal over T-joints that arise when installing a 60-, 70-, or 80-mil EverGuard® TPO system.

Specifications		
Membrane thickness	.055" (1.40 mm)	
Unit size	4" x 4" (102 mm x 102 mm)	
Shipping Specifications		
Patches per carton	100	
Weight per carton	3.3 lb. (1.5 kg)	
Cartons per pallet	196	
Product SKUs	EverGuard® TPO	EverGuard® Extreme TPO
T-Joint Cover Patch White	7712920	771277GA
T-Joint Cover Patch Gray	7712345	N/A
T-Joint Cover Patch Tan	7712820	N/A









Increase efficiency when covering pipes and conduits with factory-built EverGuard® Self-Adhered TPO Vent Boots. These single-ply roofing system preformed accessories provide roofing contractors with an effective, easy-to-install detail. GAF manufactures these and other accessories from its proven, durable EverGuard® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation labor, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Preformed accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard Extreme® TPO roofing systems.

#### **Benefits:**

GAF Self-Adhered TPO Accessories can be installed without welding, which means:

- Easier installation
- Lower experience level required
- Great for repairs
- Time savings

#### **Product Information:**

EverGuard® Self-Adhered TPO Vent Boots are constructed from EverGuard® reinforced membrane. One standard size accommodates 1" – 6" (25.4 mm – 152.4 mm) pipes and conduits. Vent Boots come with stainless steel clamping rings for the top of the penetration.

Specifications		
Membrane thickness	.075" (1.9 mm)	
For pipe sizes	1" – 6" (25.4 mm – 152.4 mm)	
Shipping Specification	ns	
Boots per carton	6	
Weight per carton	9 lb. (4.1 kg)	
Cartons per pallet	EverGuard® (54)	
Shelf Life	18 months from the date of manufacture when stored properly	
Product SKUs	·	
Vent Boot White	77B01920NC	



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#### **Installation Instructions:**

- Roof membrane must be mechanically attached at the base of each penetration with four fasteners and plates.
- 2. If plates and fasteners intrude into boot flange area, a TPO target must FIRST be installed over plates and fasteners
- 3. TPO must be cleaned with EverGuard®
  TPO Seam Cleaner or EverGuard® TPO Low
  VOC Seam Cleaner and allowed to fully
  flash off. Note: Aged membrane with visible
  contaminants may need to be cleaned first
  with a household cleaner.
- 4. Prime the TPO field membrane with EverGuard® TPO Primer and allow it to fully flash off.
- 5. Remove release liner on the Self-Adhered Vent Boot to expose adhesive.
- Install EverGuard® Water-Block on the penetration where it will meet the top of the pipe boot.
- 7. Install the Self-Adhered Vent Boot over the vent pipe.
- 8. Using a silicone hand roller, adhere the flange onto the membrane. Where the Self-Adhered Vent Boot is installed over field seams, slightly heat the pipe boot flange while firmly rolling the flange. Take care to "crease-in" the Self-Adhered Vent Boot over the seams. Note: Do not cut the side of the pre-molded Self-Adhered Vent Boot. It must be pulled over the vent pipe.
- 9. Install a bead of FlexSeal™ Caulk Grade Sealant around entire perimeter lap of the Self-Adhered Vent Boot for 20 year coverage under the GAF EverGuard Diamond Pledge NDL Roof Guarantees; 15 year guarantee coverage available otherwise.\*
- 10. Install the stainless steel draw band around the top of the Self-Adhered Vent Boot, then add FlexSeal™ Caulk Grade Sealant around the top of the draw band.

Read full application instructions at gaf.com before using or installing this product.

\* Additional requirements apply. Contact GAF for more information.







Increase efficiency when covering pipes and conduits with factory-built EverGuard® and EverGuard Extreme® TPO Vent Boots. These single-ply roofing system preformed accessories provide roofing contractors with an effective, easy-to-install detail. GAF manufactures these and other accessories from its proven, durable EverGuard® and EverGuard Extreme® TPO single-ply reinforced membrane. GAF TPO accessories can help you reduce installation costs, risk of leaks, and callbacks, while helping you create a uniform look.

#### **Application:**

Preformed accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® and EverGuard Extreme® TPO roofing systems, using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information:**

EverGuard® and EverGuard Extreme® TPO Vent Boots are constructed from EverGuard® or EverGuard Extreme® reinforced membrane. One standard size accommodates 1" – 6" (25.4 mm – 152.4 mm) pipes and conduits. Vent Boots come with stainless steel clamping rings for the top of the penetration.

Specifications	EverGuard® TPO	EverGuard Extreme® TPO	
Membrane thickness	.075" (1.9 mm)	.065" (1.7 mm)	
For pipe sizes	1" x 6" (25.4 mm x 152.4 mi	m)	
<b>Shipping Specifications</b>			
Boots per carton	6		
Weight per carton	9 lb. (4.1 kg)		
Cartons per pallet	EverGuard® (54)	EverGuard® Extreme (48)	
Product SKUs	EverGuard® TPO	EverGuard Extreme® TPO	
Vent Boot White	7710920CU	7710776CU	









#### Molded Accessories

#### **Description**

EverGuard® TPO single-ply roofing system molded accessories provide roofing contractors an easy-to-install, factory-built detail. EverGuard® molded accessories are manufactured using a proprietary formulation designed for use with GAF's EverGuard® TPO single-ply membranes.

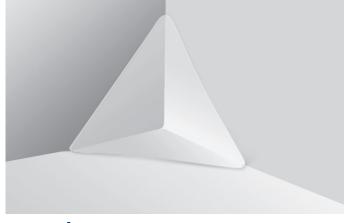
- Cost effective... Reduces installed costs
- Improved reliability...
   Factory-built accessories reduce risk of leaks and callbacks
- Improved aesthetics... Uniform look

#### **Application**

EverGuard® TPO molded accessories are designed for use with GAF EverGuard® TPO single-ply membranes and EverGuard® Freedom™ TPO self-adhering membranes. The molded accessories may be installed on mechanically attached, fully adhered, or self-adhered EverGuard® TPO roofing systems. EverGuard® molded accessories are installed using conventional techniques. See published application and specifications manual for detailed instructions.

#### **Product Information**

EverGuard® Inside Corners are molded from a proprietary TPO formulation engineered to work with EverGuard® TPO single-ply membranes. Inside Corners allow for fast flashing of base and curb corners.



# Inside Corner

- Manufactured to accommodate inside corners of base and curb flashings
- Designed for ease of welding in tight areas
- Inside Corners are formed using unreinforced membrane to a nominal 50 mil thickness

050"
.050"
6" x 6" x 5 1/4"
3.5 lbs./carton
54
8509920WA
8509345WA
8509820WA

#### Also Available...



















Use this low-VOC product to help prepare TPO for heat-welding by cleaning exposed or contaminated seams, removing any residual soap or other cleaners, and revitalizing aged or weathered membranes. The VOC content is 50 grams/liter.

#### **Application:**

Minimal contamination: Membrane that has been exposed overnight or for only a few days to airborne debris, foot traffic, dew, or light precipitation can usually be cleaned with a white cloth moistened with EverGuard® TPO Cleanweld Membrane Conditioner. Be sure to wait for the cleaner to properly dry or flash off before welding.

Dirt contamination: Membrane that is dirt-encrusted should first be cleaned with a mildly abrasive scrubbing pad and a non-abrasive, non-bleach, low-residue cleaner. After the dirt has been removed, the membrane must be cleaned with a white cloth moistened with EverGuard® TPO Cleanweld Membrane Conditioner. Be sure to wait for the solvent to properly dry or flash off before welding.

Weathering: Membrane that is weathered or oxidized should first be cleaned with a mildly abrasive scrubbing pad and EverGuard® TPO Cleanweld Membrane Conditioner. After the weathered or oxidized top layer is removed, the membrane must be cleaned with a white cloth moistened with EverGuard® TPO Cleanweld Membrane Conditioner. Be sure to wait for the solvent to properly dry or flash off before welding. Note: The same procedure may be needed for unexposed membrane left in inventory for a year or longer.

Bag fresh: Do not use EverGuard® TPO Cleanweld Membrane Conditioner on recently opened or "bag fresh" material that has been exposed for less than 12 hours, unless that material has been otherwise contaminated.

Specifications		
Can size	1 gallon	
Shipping Specifications		
Cans per carton	6	
Weight per case	52.6 lb. (23.8 kg)	
Cases per pallet	48	
Product SKU		
	7789000WP	

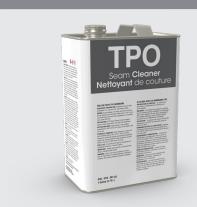


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# Seam Cleaner



#### **Description:**

Help prepare TPO for heat-welding by cleaning exposed or contaminated seams, removing any residual soap or other cleaners, and revitalizing aged or weathered membranes.

#### **Application:**

Minimal contamination: Membrane that has been exposed overnight or for only a few days to airborne debris, foot traffic, dew, or light precipitation can usually be cleaned with a white cloth moistened with EverGuard® TPO Seam Cleaner. Be sure to wait for the cleaner to properly dry or flash off before welding.

**Dirt contamination:** Membrane that is dirt-encrusted should first be cleaned with a mildly abrasive scrubbing pad and a non-abrasive, non-bleach, low-residue cleaner. After the dirt has been removed, the membrane must be

cleaned with a white cloth moistened with EverGuard® TPO Seam Cleaner. Be sure to wait for the cleaner to properly dry or flash off before welding.

Weathering: Membrane that is weathered or oxidized should first be cleaned with a mildly abrasive scrubbing pad and EverGuard® TPO Cleaner. After the weathered or oxidized top layer is removed, the membrane must be cleaned with a white cloth moistened with EverGuard® TPO Seam Cleaner. Be sure to wait for the cleaner to properly dry or flash off before welding. Note: The same procedure may be needed for unexposed membrane left in inventory for a year or longer.

Bag fresh: Do not use EverGuard® TPO Seam Cleaner on recently opened or "bag fresh" material that has been exposed for less than 12 hours, unless that material has been otherwise contaminated.

#### Storage Notes:

Apply EverGuard® TPO Seam Cleaner where the ambient temperature is 40°F (4°C) and rising. Store in a clean and well-ventilated area where the ambient temperature is 40°F (4°C) – 90°F (32.2°C). Do not allow to freeze. The cleaner shelf life is 12 months from date of manufacture when properly stored. The VOC content is 861 grams/liter.

SPECIFICATIONS		
Can size	1 Gallon	
Cans per carton	4	
Weight per case	33 lb. (14.96 kg)	
Cases per pallet	48	
Product SKU	7793	



32024 GAF • COMEG840-PDF-0424





EverGuard® TPO Primer and EverGuard® TPO Low VOC Primer are vital to surface preparation. Rely on GAF EverGuard® Primer and Low VOC Primer to help prepare metal and membrane for application of cover tape, and to help prepare membrane and pourable sealer pockets to apply EverGuard® One-Part Pourable Sealant.

#### **Temperature:**

Apply the primer at an ambient air temperature of  $40^{\circ}$  F ( $4^{\circ}$  C) and rising.

#### **Application:**

#### **Cover Tape**

When installing cover tape, apply the primer with a 3" roller to both the metal and membrane. Allow the primer to flash off before applying the tape.

#### **HW Cover Tape**

When installing heat weld cover tape, apply the primer with a 3" roller to the metal only. Allow the primer to flash off before applying heat weld cover tape.

#### Pourable Sealant Pocket

Prior to filling the TPO Pourable Sealant Pocket, you must prime all areas that the one-part pourable sealant will come in contact with.

SPECIFICATIONS	TPO Primer	Low VOC TPO Primer*
Can size	1 gallon	1 gallon
Cans per carton	6	6
Coverage Rates	200 - 250 sq. ft. per gallon (18.6 - 23.2 m² per liter)	200 - 225 sq. ft. per gallon (18.6 - 20.9 m² per liter)
Product SKUs	755B	755D

<sup>\*</sup> Maximum VOC <250g/L

#### **Codes and Compliance:**

 Miami-Dade County Product Control Approved



#### Storage and Handling:

When not in use, ensure covers are securely in place. Store primers in a clean, well-ventilated space at 40°F (4°C) – 90°F (32.2°C). Improper sealing or storage for continued periods outside of this temperature range may shorten shelf life.

#### **Shelf Life:**

Primer shelf life is 12 months (18 months for Low VOC) from date of manufacture if unopened and properly stored.







EverGuard® TPO Yellow Safety Tape helps make a roof safer for everyone who needs to access it. It provides a highly visible warning to take caution around a variety of potential hazards:

- Edges
- Skylights
- Expansion joints
- Solar panels
- Other rooftop features

EverGuard® TPO Yellow Safety Tape is easy to install and lasts for years while requiring less maintenance than many paint coatings that perform the same function.

#### **Application:**

Clean the entire surface to be covered with soap and water, and dry thoroughly. Wipe the area to be primed with a white cloth moistened with of EverGuard® TPO Seam Cleaner. Apply EverGuard® TPO Primer on surfaces mating with the butyl tape — only on the surfaces receiving the tape. After the primer has dried, pull a portion of the release paper on the back of the tape, exposing the butyl adhesive, and mate the two surfaces. Roll the tape portion of the cover strip at a 45-degree angle to ensure a good bond.\*

\* See EverGuard® Application and Specifications Manual for detailed application instructions and additional information on Yellow Safety Tape and Cover Tape.

#### **Product Information:**

EverGuard® TPO Yellow Safety Tape is a 6"- (152 mm) wide by 100'- (30.48 m) long cover tape made from nominal 30 mil unreinforced TPO. It can be used in conjunction with EverGuard® Yellow Walkway Rolls.

#### Also Available:



SPECIFICATIONS		
SHIPPING SPECIFICATIONS		
PRODUCT SKU		



32024 GAF • COMEG841-PDF-0424

# GAF Single-Ply Membrane Sealants

The GAF line of single-ply roofing systems includes a full line of sealants.

GAF single-ply membrane sealants are specially formulated for TPO and PVC applications. Be sure to use GAF single-ply membrane sealants for your TPO and PVC jobs.





#### **GAF Water Block**

One-part butyl-based high-viscosity sealant for use on TPO and PVC membranes.

#### **Uses:**

A one-part, butyl-based, high-viscosity sealant suitable for sealing between flashing membrane and substrate surfaces, behind exposed termination bars, and between roofing membrane and drain flanges. Install only where it will be concealed from UV exposure, otherwise choose FlexSeal™ Caulk Sealant.

#### **GAF Cut Edge Sealant**

Engineered for sealing non-factory edges of TPO and PVC membrane.

#### Uses:

Designed to seal the non-factory edges (cut edges) of the TPO or PVC membrane as a final step to reinforce membrane installation and inhibit water from traveling through the center scrim.

#### **TPO and PVC One-Part Pourable**





#### **Description:**

EverGuard® One-Part Pourable Sealant is a one-part, moisture-cure, self-levelling sealant designed for use in sealant pockets on single-ply roof systems. Since moisture-cure sealants cure with moisture in the air, it is suitable for application in damp and cold climates, as well as in dry climates. EverGuard® One-Part Pourable Sealant is formulated without solvents, contains no isocyanates, and will not shrink upon curing. It does not "outgas" or bubble on damp surfaces, EverGuard® One-Part Pourable Sealant is elastomeric and has excellent adhesion to most roofing materials and penetrations. It has a low durometer, which accommodates greater movement in penetration seals.

#### **Advantages:**

- Formulated without solvents less than 25 g/L VOC
- 100% solids by volume will not shrink
- No outgassing on damp surfaces
- Self-levelling provides a smooth, professional finished look
- UV stable
- 20-minute skinover time at 70°F (22°C) and 50% relative humidity.
- Typically paintable within 24 hours.
   High humidity or cold temperatures may slow dry time.
- No special tools or mixing required
- Application at temperatures as low as 30°F (-1°C)

Typical Properties		
VOC (max)	<25 grams/liter	
Service Temperature	-40°F (-40°C) to 200°F (93.3°C)	
Full Cure	Rate of cure is dependent on atmospheric conditions. Curing proceeds at a rate of ¼" (6.35 mm) a week at 70°F (22°C) and 50% relative humidity. Lower temperature and humidity will slow the rate of cure. Higher temperature and humidity will accelerate rate of cure. Depths of more than 2" (51 mm) will cure through in 2 to 3 months.	
Skin Time	Approximately 20 minutes at 70°F (22°C) and 50% relative humidity.	
Shrinkage	0%	
Tensile Strength	146 lbf (217 kg/m)	
Elongation	300% ± 25%	
Density	8.9 ± .2 lb. per gallon (1.068 g/ml)	

#### **Product Information:**

#### LEED® 4.1 BD+C: New Construction:

 Contributes to Low-Emitting Materials Credit

#### **VOC Content:**

 Less than 25 grams/liter ASTM D2369 EPA Method 24 (tested at 240°F [115°C])

#### Uses:

EverGuard® One-Part Pourable Sealant is designed for use with the EverGuard® Pourable Sealer Pocket on new and existing TPO, PVC, and PVC KEE roofs to seal irregular penetrations, such as metal frames, wires, and pipes.

Note: EverGuard® TPO Primer is required to prime the TPO surface before use. No primer is necessary for PVC or PVC KEE.

#### **VOC Compliance:**

- Meets requirements of OTC rule for sealants and caulks
- Meets requirements of California's SCAQMD rule, the most stringent in the state







#### **Application Instructions:**

Surface should be clean, dry, and free of any loose materials. Remove all previously applied caulk, mastic, cement, and other contaminants from penetrations with a cleaner. All roof deck voids are to be filled with FlexSeal™ Sealant. Prime all surfaces (except Everguard® PVC or EverGuard® PVC KEE) with EverGuard® TPO Primer, Allow primer to dry prior to applying EverGuard® One-Part Pourable Sealant, Fill the EverGuard® Pourable Sealer Pocket with EverGuard® One-Part Pourable Sealant to the top of the pocket, ensuring that all voids are filled. See GAF's published application and specifications manual for complete details.

#### **Application Temperature:**

EverGuard® One-Part Pourable Sealant can be applied at temperatures as low as 30°F (-1°C). In these colder temperatures, it is recommended to keep the material stored inside or in a truck before using.

#### Clean-up:

Wet adhesive can be removed using a solvent, such as alcohol. Cured EverGuard® One-Part Pourable Sealant can be removed by abrading or scraping the substrate.

#### **Cure Time:**

EverGuard® One-Part Pourable Sealant is a moisture-cure sealant. Rate of cure is dependent on atmospheric conditions. Curing proceeds at a rate of ¼" (6 mm)a week at 70°F (22°C) and 50% relative humidity. Lower temperature and humidity will slow the rate of cure. Higher temperature and humidity will accelerate rate of cure. Depths of more than 2" (51 mm) will cure through in 2 to 3 months.

#### Packaging:

- 0.53 gallon (2 L) pouch
- 4 pouches/case
- 48 cases/pallet
- Color: White Storage
- Recommended storage is between 40°F-90°F (4°C-32.2°C). Store unopened containers in a cool, dry area. Protect unopened containers from water, heat, and direct sunlight. Although EverGuard® One-Part Pourable Sealant will not freeze, it is recommended to store indoors before using to ensure easy gunning and levelling.

#### Shelf Life:

One year from date of manufacture when stored in recommended conditions. Elevated temperature and high relative humidity may significantly reduce shelf life.

#### **Precautions:**

- Do not apply at temperatures below 30°F (-1°C).
- Do not use on TPO without EverGuard® TPO Primer.
- Do not use on Hypalon® membranes.
- Do not install if rain is anticipated within four hours.
- Do not use in areas subject to continuous water immersion.
- Do not use in areas where prolonged chemical exposure is anticipated.
- Do not prime bonding surfaces with asphalt primer.
- Use GAF FlexSeal™ Caulk Grade Sealant as a "night sealant" around the base of the penetration. Do not use petroleum-based solvents, such as mineral spirits, for cleaning purposes.
- Maintain sealant at room temperature before applying to ensure easy pouring and levelling.
- Test and evaluate to ensure adequate adhesion.
- Dry all visible and standing water prior to applying sealant.





32024 GAF • COMEG181-PDF-0424



#### FlexSeal™ Caulk Grade Sealant

Product Data Sheet

#### **BASIC USES**

FlexSeal\* Caulk Grade Sealant is designed for use on metal, copper, concrete, wood, asphalt shingles, SBS, APP, EPDM, BUR, TPO and PVC substrates. Especially designed for use where elastomeric caulks are required; like term bar applications, or around clamping rings at penetrations. FlexSeal\* Caulk Grade Sealant may be used for cold weather applications provided that the material is stored properly and the substrate is dry prior to application.

#### **Advantages**

- Extremely flexible and durable
- Ideal for termination bar, railing, step flashings, or edge metal
- Durable and UV resistant; will not chalk, crack or peel
- Joint movement capability maximum ± 25%
- Bonds to multiple substrates including; metal, copper, concrete, wood, asphalt shingles, SBS, APP, EPDM, BUR, TPO, and PVC.
- Paintable

#### PRODUCT DESCRIPTION

FlexSeal™ Caulk Grade Sealant is a white solvent-based synthetic elastomeric sealant. FlexSeal is extremely flexible and durable, but with a higher viscosity formulation than Standard FlexSeal. Like all solvent-based products, the surface must be clean, completely free of moisture and residual contaminants before application. FlexSeal™ Caulk Grade Sealant is especially suited for use in any application where caulk is typically used.

#### WARRANTY

See applicable warranties and guarantees for complete coverage and restrictions.

#### **PACKAGING & SHELF LIFE**

10 oz. cartridge

Shelf life 12 months if unopened containers stored between 50°F and 80°F. Storage outside this temperature range may shorten shelf life.

# PHYSICAL PROPERTIES

FLEXSEAL™ CAULK GRADE SEALANT	
Application Rate	Approximately 1/4 -3/8 inch (6 – 10 mm) bead
Application Method	Caulk Gun
Application Temp (air, surface)	32°F - 120°F (0°C – 48.9°C)
Drying Time (75°F, 50% RH)	24 – 48 hrs; Skins in less than 1 hour; Full Cure - approx. 48 hours

Total Solids (by weight	77% ± 2%
Specific Gravity	1.24 ± 0.1
Weight per Gallon	$10.3 \pm 0.5$ lbs.
Viscosity (75°F)	1,200,000 cps ± 10%
Tensile Strength	>250 psi (>1.72 N/sq mm)

#### **APPLICATION INSTRUCTIONS**

For application questions, please contact GAFMC Contractor Services at 1-800-766-3411.

Applicable Standards: FlexSeal™ Caulk Grade Sealant meets ASTM. D-412 and D-920; and is tested in accordance with D-2196 and D-1475.

Application Considerations: FlexSeal\* Caulk Grade Sealant is not a structural component and it is not intended to bridge large voids. Joint depth should not exceed 1/2" wide by 1/2" deep (13 mm x 13 mm).

If joint exceeds 1/2" (13 mm) deep, the sealant depth should be controlled by a closed cell backer rod. The number of joints and width of joints should be designed to accommodate a maximum of 25% movement. Note: Apply only as directed. Over-application may result in slumping, dripping, or unsightly appearance.

Note: Repair leaks promptly to avoid adverse effects, including mold growth.

#### **LIMITATIONS & PRECAUTIONS**

Store in well-ventilated area at 50°F to 90°F. This product is easiest to apply at temperatures above 32°F (0°C). Substrate temperatures must be below 120°F (48.9°C) when applying product.

#### **SAFETY & HANDLING**

For specific information regarding safe handling of this material please refer to OSHA guidelines and product Safety Data Sheet (SDS).

#### **CLEAN UP**

Clean-Up: Mineral Spirits, Toluene, Xylene

#### **GAF**

1 Campus Drive Parsippany, NJ 07054 1-800-R00F-411 gaf.com

GAF Liquid-Applied

January 2016

See applicable warranties and guarantees for complete coverage and restrictions.

# 32023 GAF 1/05 · COMCO308

# GAF

#### FlexSeal<sup>TM</sup> Sealant - Data Sheet

#### PRODUCT DESCRIPTION

FlexSeal™ Sealant is a solvent-based synthetic, flowable, elastomeric sealant that can be applied to many low-slope roof surfaces. It is durable and helps protect the substrate against damaging UV exposure.

#### **APPROVED SUBSTRATES**

FlexSeal<sup>TM</sup> Sealant can be used on metal, structural concrete, copper, SBS, APP, EPDM, BUR, PVC and TPO. It can also be used with GAF Premium Fabric on penetrations, curbs, and seams. Do not use over silicone substrates.

#### **PACKAGING SIZES**

10 oz (0.3 liter) tube 1-gallon (3.8 liter) bucket 5-gallon (18.9 liter) pail

#### STORAGE & SHELF LIFE

PRODUCT STORAGE TEMPERATURE: 50°F - 90°F (10°C - 32°C) Do NOT allow coating to freeze.

SHELF LIFE: 24 months from date of manufacture in unopened containers, if stored properly in a clean and well-ventilated area.

# APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION: Roof must have positive drainage, and be clean and dry with no trapped moisture. Priming of substrate is recommended and may be required. See *Liquid-Applied Roofing Manual* at gaf.com.

MIXING: Mix prior to use as required. Do NOT attempt to thin or self-tint.

APPLICATION: Apply evenly by trowel or brush. Apply 2.0 gallons per 200 linear feet with a 6-inch width (7.6 L/61 lm with a 152 mm width). If fabric embedment is required, apply an additional top layer of flashing at 2.0 gallons per 200 linear feet (7.6 L/61 lm). Total finished dry mil thickness must be at least 21 mils without fabric and 48 mils with fabric.

Application Note: Cool temperatures and high humidity will slow cure. It is not a structural component and it is not intended to bridge large voids.

Overapplication may result in slumping, dripping, or unsightly appearance. For Application Questions: Contact GAF Technical Services at 1-877-423-7663 or visit gaf.com

# LIMITATIONS & PRECAUTIONS

APPLICATION AIR TEMPERATURE: Min. 50°F (10°C). Do NOT heat containers.

APPLICATION SURFACE
TEMPERATURE: 50°F (10°C) and
rising. Care should be taken when
coating surfaces above 120°F.
Contact GAF Design Services if you
have application questions.

Do NOT apply if rain, dew, fog, heavy moisture, condensation, or freezing temperatures are in the 8-hour forecast to ensure proper cure. Cool temperatures/high humidity may slow curing.

#### **SAFETY & HANDLING**

For specific information regarding safe handling of this material, please refer to the Safety Data Sheet (SDS).

#### **CLEAN UP**

Use mineral spirits or xylene to thoroughly flush equipment.



# FlexSeal<sup>TM</sup> Sealant - Data Sheet

#### PHYSICAL PROPERTIES (TAS 139-95)

able 1 : Physical Property Requirements			
Туре	ASTM Test Method	ASTM Minimum Values	Test Values <sup>1</sup>
Volume Solids	ASTM D2697	≥50%	66%
Weight Solids	ASTM D1644	≥60%	77%
Initial Percent Elongation	ASTM D412	Min. 100% @73°F	300%
Initial Tensile Strength	ASTM D412	Min. 200 psi @73°F	485 psi (3344 kPa)
Weight per Gallon/Liter	ASTM D1475	-	7.9 lbs (0.94 kg)
VOC	-	-	<300 g/L
Dry Time	ASTM D 5895	-	Approximately 24 hours
Flash Point	-	103°F (39°C)	Flash Point
Standard Colors	-		Black and White

<sup>1.</sup> Values are approximate and subject to normal manufacturing variations. These values are not guaranteed and are provided solely as a guide.

#### **APPROVALS**

State of Florida Approved	
Miami-Dade Product Control Approved	





EverGuard® TPO 1121 Bonding Adhesive is a general purpose, contact-type, solvent-based bonding adhesive specially designed for attaching TPO single-ply roofing membranes and flashings to various roofing substrates, including polyisocyanurate insulation and gypsum-based cover boards.

#### Features and Benefits:

- Excellent coverage of 50 sq. ft. 70 sq.
   ft. per gallon of bonded membrane
- Fast-drying solvent system
- Easy application using roller (apply adhesive to substrate as well as back of the membrane)
- High initial tack
- Can be applied at an ambient temperature of 40°F (4.4°C) and above for cold-weather application
- Buckets must be kept between 60°F (15.5°C) and 80°F (27°C)
- 1-year shelf life from date of manufacture

Specifications	EverGuard® TPO 1121 Bonding Adhesive	
Weight	37 – 42 lb. gross	
Viscosity (ASTM D2196)	1,000 - 2,000 cps	
VOC	< 650 g/L	
Dry time	15 – 30 minutes	
Ordering Information		
Item number	7780OOm	
Packaging	5 gal. pails	
Shipping	45 pails per pallet	

#### **Codes and Compliance:**

 FM Approved (Refer to RoofNav.com for actual assemblies)



 Classified by UL in accordance with ANSI/UL 790. (Refer to UL Product iQ for actual assemblies.)



Product labeled EverGuard® TPO #1121 Bonding Adhesive produced in Ashland, OH — only:

 Miami-Dade County Product Control Approved





32024 GAF • COMEG142-PDF-0224



# DRILL-TEC™ #12 FASTENER

#### Description

Drill-Tec™ #12 Fastener is designed to secure insulation to steel (18 ga. – 24 ga.) and wood. It is available in lengths from 1-5/8" – 8" (41.3 mm – 203 mm). The Drill-Tec™ Standard #12 Roofing Fastener is Factory Mutual and Miami-Dade County Product Control approved.

**Application** 

The Drill-Tec™ #12 Fastener must penetrate steel decks a minimum of ¾" (19.1 mm), wood plank decks a minimum of 1" (25.4 mm), and ½" (12.7 mm) through the underside for plywood decks. Using a screw gun, drive the fastener until the screw head is seated securely; with very rigid insulation boards, watch for the plate to dimple.

**Note:** Be careful not to overdrive the fastener and fracture the skin of the insulation. Fastener must be tight enough so that the plate doesn't turn.

For steel decks, Factory Mutual requires that the fastener penetrate the deck at the top flute.

To speed installation, this fastener is also available as a labor saving assembled screw and plate. See Drill-Tec ASAP® 3S.

#### **Code Approvals**





#### Advantages

- Heavier shank & thread diameters than most "standard" roofing fasteners.
- Deep buttress thread for high pull-out resistance.
- Extra sharp drill point for quick installation in new or reroof applications.
- Available with Hex Head or #3 Phillips Truss Head.

#### **Plates & Accessories**

- Use 3" (76 mm) steel or plastic plates, depending upon the application.
- For best installation results, use a variable speed 0-2500 rpm screw gun.

#### **Specifications**

The fastener will be a Drill-Tec™ #12 Fastener with a thread diameter of .220"

(5.58 mm). The fastener must have 12.5 buttress threads per inch (per 25.4 mm) and a 30° drill point. Also, the fastener must be heat treated per specification OMG-1. The Drill-Tec™ #12 Fastener will be used with a Factory Mutual-approved, Drill-Tec™ Round Pressure Plate or Pressure Bar. The fastener must be Factory Mutual approved.

#### **Coating Requirement**

The fastener will be coated with the Drill-Tec™ CR-10 corrosion-resistant coating. When subjected to 30 Kesternich cycles (DIN 50018), the fastener must show less than 15% red rust and surpass Factory Mutual Approval Standard 4470.

Note: ASAP® is a registered trademark of OMG.

Product Data	
Thread Diameter	.220" (5.58 mm)
Head Diameter	
Truss Head	.435" (11.04 mm)
Hex Head	.390" (9.91 mm)
Head Style	#3 Phillips Truss Head* 1/4" (6.35 mm) Hex Head*
Coating	CR-10

\*#3 Phillips bit or Hex Head drive included in each bucket.

Length	Thread Length	Packaging (Bucket)	Weight
1 <sup>5</sup> /8" (41.3mm)	Full	1,000	12 lb (5.44 kg)
2 <sup>1</sup> / <sub>4</sub> " (57.1 mm)	Full	1,000	15 lb (7.71 kg)
3" (76 mm)	Full	1,000	24 lb (10.89 kg)
4" (102 mm)	3" (76 mm)	1,000	28 lb (12.70 kg)
5" (127 mm)	3" (76 mm)	1,000	35 lb (15.88 kg)
6" (152 mm)	4" (102 mm)	1,000	40 lb (18.14 kg)
7" (178 mm)	4" (102 mm)	1,000	48 lb (21.77 kg)
8" (203 mm)	4" (102 mm)	1,000	50 lb (22.68 kg)

Note: All sizes are nominal.

#### Drill-Tec<sup>™</sup> #12 Fastener



#### Example: Drill-Tec™#12 Fastener Length Selection Procedure

- 1. If applicable, determine thickness of existing roofing material.
- 2. Add thickness of new insulation.
- 3. Add 3/4" (19.1 mm) minimum fastener penetration.
  - 4. If odd size requirement, always size up in length, not down. See example below.

#### Example

Existing Roofing: 1 3/4" (44.4 mm)

New Insulation: + 1/2" (12.7 mm)

Min. Embedment: + 3/4" (19.1 mm)

Total Fastening Range: = 3" (76 mm)

The proper #12 Fastener for the example is 3 1/4" (82.6 mm).

#### Use this format to calculate correct fastener size:

Existing Roof:

New Insulation:

Min. Embedment: + 3/4" (19.1 mm)

Total Fastening Range:

The proper #12 Fastener is:



# DRILL-TEC™ #14 FASTENER

#### Description

Drill-Tec™ #14 Fastener is designed to secure insulation to heavy steel decks (18 ga.– 20 ga.), wood decks, and structural concrete. It is available in lengths from 1-1/4" – 16" (31.8 – 406 mm). The Drill-Tec™ #14 Fastener is Factory Mutual and Miami-Dade County Product Control approved.

#### **Application**

The Drill-Tec™ #14 Fastener must penetrate steel decks a minimum of 3/4" (19.1 mm), wood plank decks a minimum of 1" (25.4 mm), and  $\frac{1}{2}$ " (12.7 mm) through the underside for plywood decks. The Drill-Tec™ #14 Fastener requires a minimum embedment of 1" (25.4 mm) penetration into structural concrete. Predrill a 3/16" (4.76 mm) pilot hole using a carbide-tip SDS bit. The predrilled pilot hole must be a minimum of ½" (12.7 mm) deeper than the fastener embedment (at least a 2" [51 mm] deep pilot hole recommended). Using a screwshooter, drive the fastener until the screw head is seated securely; with very rigid insulation boards, watch for the plate to dimple.

**Note:** Be careful not to overdrive the fastener and fracture the skin of the insulation. Fastener must be tight enough so that the plate doesn't turn.

#### **Code Approvals**





#### **Advantages**

- Heavier shank & thread diameters than most "heavy duty" roofing fasteners.
- Deep thread for high pull-out resistance.
- Extra sharp drill point for quick installation in new or reroof applications.

#### **Plates & Accessories**

- Use 3" (76 mm) steel or plastic plates, depending upon the application.
- For best installation results, use a variable speed 0-2500 rpm screw gun.

#### **Specifications**

The fastener will be a Drill-Tec™ #14
Fastener with a shank diameter of .190
(.423 mm) and a thread diameter of
.245 (6.22 mm). The fastener must have
10 threads per inch (per 25.4 mm) and
have a 30° drill point. Also, the fastener
must be heat treated per specification
OMG-1. The Drill-Tec™ #14 Fastener
will be used with a Factory Mutualapproved, Drill-Tec™ Round Pressure
Plate. The fastener must be Factory
Mutual approved.

#### **Coating Requirement**

The fastener will be coated with the Drill-Tec™ CR-10 corrosion-resistant coating. When subjected to 30 Kesternich cycles (DIN 50018), the fastener must show less than 15% red rust and surpass Factory Mutual Approval Standard 4470.

Product Data		
Thread Diameter	.245" (6.22 mm)	
Shank Diameter	.190" (.423 mm)	
Head Diameter	.435" (11.04 mm)	
Head Style	#3 Phillips Truss Head*	
Coating	CR-10	
*#3 Phillips bit included in each carton or bucket		

Length	Thread Length	Packaging	Weight	
1 1/4" (31.8 mm)	Full	1,000*	13 lb (5.90 kg)	
1 <sup>3</sup> / <sub>4</sub> " (44.4 mm)	Full	1,000*	17 lb (7.71 kg)	
2" (51 mm)	Full	1,000*	19 lb (8.62 kg)	
3" (76 mm)	Full	1,000*	27 lb (12.25 kg)	
4" (102 mm)	3" (76 mm)	1,000*	35 lb (15.88 kg)	
5" (127 mm)	4" (102 mm)	500*	23 lb (10.43 kg)	
6" (152 mm)	4" (102 mm)	500*	26 lb (11.79 kg)	
7" (178 mm)	4" (102 mm)	500*	30 lb (13.61 kg)	
8" (203 mm)	4" (102 mm)	500*	34 lb (15.42 kg)	
9" (227 mm)	4" (102 mm)	500**	37 lb (16.78 kg)	
10" (254 mm)	4" (102 mm)	500**	40 lb (18.14 kg)	
11" (279 mm)	4" (102 mm)	500**	44 lb (19.96 kg)	
12" (305 mm)	4" (102 mm)	250**	25 lb (11.34 kg)	
14" (357 mm)	4" (102 mm)	250**	29 lb (13.15 kg)	
16" (406 mm)	4" (102 mm)	250**	38 lb (17.24 kg)	
18" (457 mm)	4" (102 mm)	250**	41 lb (18.6 kg)	
20" (508 mm)	4" (102 mm)	250**	47 lb (21.32 kg)	
22" (558.8 mm)	4" (102 mm)	250**	51 lb (23.13 kg)	
24" (609 mm)	4" (102 mm)	250**	56 lb (24.4 kg)	
*Bucket **Box Longer Lengths Available Upon Request.				

Drill-Tec<sup>™</sup> #14 Fastener



#### Example: Drill-Tec™#14 Fastener Length Selection Procedure

- 1. If applicable, determine thickness of existing roofing material.
- 2. Add thickness of new insulation.
- 3. Add  $\frac{3}{4}$ " (19.1 mm) minimum fastener penetration.
- 4. If odd size requirement, always size up in length, not down. See example below.

#### Example

Existing Roofing: 1 ¾" (44.4 mm)

New Insulation: + ½" (12.7 mm)

Min. Embedment: + ¾" (19.1 mm)

Total Fastening Range: = 3" (76 mm)

The proper #14 Fastener for the example is 3" (76 mm).

#### Use this format to calculate correct fastener size:

Existing Roof:

New Insulation:

Call GAF For Information.

Min. Embedment:  $+\frac{3}{4}$ " (19.1 mm)

Total Fastening Range: =

The proper #14 Fastener is:



Drill-Tec™ 3" (76 mm) Ribbed Galvalume® Plate (Flat)



Drill-Tec™ 3" (76 mm) Standard Steel Plate



Drill-Tec™ 3" (76 mm) Plastic Locking Plate



Drill-Tec™ 3" (76 mm) AccuTrac® Flat Plate



Drill-Tec™ 3" (76 mm)



Drill-Tec™ 3" (76 mm) AccuTrac® Recessed Plate

Drill-Tec™ insulation plates are made of Galvalume®-coated steel for excellent corrosion protection. Also available in a 3" Plastic Locking Plate made of durable polypropylene to be used with the Drill-Tec™ #12 or Drill-Tec™ #14 fasteners. The plates meet the requirements of ASTM D6294, FM Approval Standard 4470, and DIN 50018. They are ideal for attaching both insulation and cover boards.

Round Plates: The round design distributes loads evenly, eliminates sharp corners that can damage the insulation or cover board, and are available in a flat profile, which is ideal for cover boards, as well as recessed profile. These plates are designed to be used with appropriate Drill-Tec™ fasteners, depending on the substrate type. For details on fasteners and substrates

please see the GAF attachment tables for TPO and PVC.

**Square Plates:** AccuTrac® Plates are designed to be used in the AccuTrac® Stand Up Tool, offering an ergonomic fastening solution for attaching insulation and cover boards. They are available in two designs, recessed and flat. Please refer to GAF-published application instructions for approved substrates and additional information requirements at gaf.com.

For applications not listed or for additional information, contact GAF at 877-423-7663 or designservices@gaf.com.

Galvalume® is a registered trademark of BIEC International Inc. and some of its licensed producers.

AccuTrac® is a registered trademark of OMG.

#### **Codes and Standards:**

 FM Approved per Approval Standard 4470.
 Refer to RoofNav.com for specific assemblies.





State of Florida Approved



GAF Attachment Tables for TPO and PVC

Product Data	Product Data					
Plate	Drill-Tec™ 3" (76 mm) Standard Steel Plate	Drill-Tec™ 3" (76 mm) Steel Plate	Drill-Tec™ 3" (76 mm) Ribbed Galvalume® Plate (Flat)	Drill-Tec™ 3" (76 mm) AccuTrac® Flat Plate	Drill-Tec™ 3" (76 mm) AccuTrac® Recessed Plate	Drill-Tec™ 3" (76 mm) Plastic Locking Plate
Plate Profile		~~~	~~~~	~~~~~	~~~~	
Material/ Coating			AZ-55 Galvalume®			Polypropylene
Dimensions (Diam./Width)	3" (76 mm)					
Packaging	500 per box	1,000 per bucket	1,000 per bucket	1,000 per bucket	1,000 per bucket	1,000 per box
Weight	37 lb. (16.7 kg)	37 lb. (16.7 kg)	37 lb. (16.7 kg)	43 lb. (19.5 kg)	43 lb. (19.5 kg)	25 lb. (11.34 kg)
FM Approved	/	✓	✓	✓	✓	✓
Miami-Dade County Product Control Approved	✓	/	/	/	/	/
State of Florida Approved	1	1	1	1	1	✓



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32024 GAF • COMDT235-PDF-1024



#### EverGuard® Diamond Pledge™ **NDL Roof Guarantee**



OWNER OF BUILDING	GUARANTEE NUMBER
NAME OF BUILDING	PERIOD OF COVERAGE
ADDRESS OF BUILDING	DATE OF COMPLETION
AREA OF ROOF (SQUARES)	GUARANTEE EXPIRATION DATE
APPLIED BY	ROOF SPECIFICATION

#### THE GUARANTEE/SOLE AND EXCLUSIVE REMEDY

GAF Warranty Company LLC ("GAF") guarantees to you, the owner of the building described above, that GAF will provide "Edge To Edge" protection by repairing leaks through the GAF roofing membrane, liquid-applied membrane or coating, base flashing, high-wall waterproofing flashing, insulation, expansion joint covers, preflashed accessories, and metal flashings used by the contractor of record that were designed and installed in accordance with an appropriate ES-1 certified edge detail (the "GAF Roofing Materials") resulting from a manufacturing defect, ordinary wear and tear, or workmanship in applying the GAF Roofing Materials. There is no dollar limit on covered repairs. Leaks caused by any non-GAF materials, such as the roof deck or non-GAF insulation, are not covered.

#### **GUARANTEE PERIOD**

This augrantee ends on the expiration date listed above.

#### **OWNER RESPONSIBILITIES**

#### Notification of Leaks

In the event of a leak through the GAF Roofing Materials, you **MUST** make sure that GAF is notified directly about the leak, in writing, within **30 days** either online at leakreporting.gaf.com, by email at guaranteeleak@gaf.com, or by postal mail to GAF Warranty Claims Department, 1 Campus Drive, Parsippany, NJ 07054, or GAF will have no responsibility for making repairs. **NOTE:** The roofing contractor is **NOT** an agent of GAF; notice to the roofing contractor is **NOT** notice to GAF.

By notifying GAF, you authorize GAF to investigate the cause of the leak. If the investigation reveals that the leak is not covered by this guarantee, you agree to pay an investigation cost of \$500. This guarantee will be cancelled if you fail to pay this cost within 30 days of receipt of an invoice for it.

#### Preventative Maintenance and Repairs

- A. You must perform regular inspections and maintenance and keep records of this work.
- B. To keep this guarantee in effect, you must repair any conditions in the building structure or roofing system that are not covered by this guarantee but that GAF concludes may be threatening the integrity of the GAF Roofing Materials. Any such repairs must be performed by a GAF-certified roofing contractor. Failure to make timely repairs may jeopardize
- guarantee coverage.

  C. You may make temporary repairs to minimize damage to the building or its contents in an emergency, at your sole expense. These repairs will not result in cancellation of the guarantee as long as they are reasonable and customary and do not result in permanent damage to the GAF Roofing Materials.

  D. Any equipment or material that impedes any inspection or repair must be removed at your expense so that GAF can perform inspections or repairs.

#### **EXCLUSIONS FROM COVERAGE**

(e.g., items that are not "ordinary wear and tear" or are beyond the control of GAF)

This guarantee does NOT cover conditions other than leaks. This guarantee also does NOT cover leaks caused by any of the following:

- 1. Inadequate roof maintenance, that is, the failure to follow the Scheduled Maintenance Checklists provided with this guarantee (extra copies available by calling Guarantee Services at 1-877-GAF-ROOF) or the failure to repair owner responsibility items.
- 2. Unusual weather conditions or natural disasters including, but not limited to, winds in excess of 55 miles per hour, hail, floods, hurricanes, lightning, tornados, and earthquakes, unless specifically covered by an addendum to this guarantee.
- 3. Impact of foreign objects or physical damage caused by any intentional or negligent acts, accidents, misuse, abuse, or the like.
- 4. Damage to the roof constructed of the GAF Roofing Materials due to:

  (a) movement, cracking, or other failure of the roof deck or building; (b) improper installation or failure of any non-GAF insulation or materials; (c) condensation or infiltration of moisture through or around the walls, copings, building structure, or surrounding materials except where high-wall GAF waterproofing flashings are installed; (d) chemical attack on the membrane, including, but
- not limited to, exposure to grease or oil; (e) the failure of wood nailers to remain attached to the structure; (f) moisture migration from the building interior or any building component other than the GAF Roofing Materials; (g) use of materials that are incompatible with the GAF Roofing Materials; or (h) architectural, engineering, or design defects or flaws
- 5. Traffic of any nature on the roof unless using GAF walkways applied in accordance with GAF published application instructions.
- 6. Blisters in the GAF Roofing Materials that have not resulted in leaks.
- 7. Changes in the use of the building or any repairs, installation of any overburden, modifications, or additions to the GAF Roofing Materials after the roof is completed, unless prior written approval is obtained from GAF.
- 8. Exposure to sustained high-temperature conditions; however, for systems utilizing EverGuard Extreme® TPO membrane, exposure in excess of 195°F

No representative, employee, or agent of GAF, or any other person, has the authority to assume any additional or other liability or responsibility for GAF, unless it is in writing and signed by an authorized GAF Field Services Manager or Director. GAF does not practice engineering or architecture. Neither the issuance of this guarantee, nor any review of the roof constructed of the GAF Roofing Materials (or the plans for the roof), by GAF shall constitute any warranty of such plans, specifications or construction, or the suitability or code compliance of the GAF Roofing Materials for any particular structure. **NOTE:** Any inspections made by GAF are limited to a surface inspection only, are for the sole benefit of GAF, and do not constitute a waiver or extension of any of the terms and conditions of this guarantee.

This guarantee MAY BE SUSPENDED OR CANCELLED IF THE ROOF IS DAMAGED BY any cause listed above as AN EXCLUSION FROM COVERAGE that may affect the integrity or watertightness of the roof

#### TRANSFERABILITY

You may transfer or assign this guarantee to a subsequent owner of this building for the remaining term only if: 1) the request is in writing to GAF at the address listed below within 60 days after ownership transfer; 2) you make any repairs to the GAF Roofing Materials or other roofing or building components that are identified by GAF after an inspection as necessary to preserve the integrity of the GAF Roofing Materials; and 3) you pay an assignment fee of \$500. This guarantee is NOT otherwise transferable or assignable by contract or operation of law, either directly or indirectly.

#### LIMITATION OF DAMAGES; MEDIATION; JURISDICTION; CHOICE OF LAW

THIS GUARANTEE IS EXPRESSLY IN LIEU OF ANY OTHER GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, and of any other obligations or liability of GAF, whether any claim against it is based upon negligence, breach of warranty, or any other theory. In NO event shall GAF be liable for any CONSEQUENTIAL OR INCIDENTAL DAMAGES of any kind, including, but not limited to, interior or exterior damages and/or mold growth.

The parties agree that, as a condition precedent to litigation, any controversy or claim relating to this guarantee shall be first submitted to mediation before a mutually acceptable mediator unless GAF, at its sole option, elects to waive said requirement. In the event that mediation is unsuccessful, or is waived by GAF, the parties agree that neither one will commence or prosecute any lawsuit or proceedings other than before the appropriate state or federal court in the State of New Jersey. This guarantee shall be governed by the laws of the State of New Jersey, without regard to principles of conflicts of laws. Each party irrevocably consents to the jurisdiction and venue of the above identified courts

**NOTE:** GAF shall have no obligation under this guarantee unless and until all bills for installation and supplies have been paid in full to the roofing contractor and materials suppliers, and the guarantee charge has been paid to GAF.

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GAF	
Authorized Signature	
By:	

ARSIPPANY, NJ 07054 Visit gaf.com

1 CAMPUS DRIVE





# SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: Bak	er County EMS Bldg	Substitu	tion Request Number:		
		From:	Custom Mechanical S	Solutions, Inc. (C	CMS)
To: Cole	e Architects	Date:	7/22/2025		
<u> </u>	- Traintee	A/E Pro	oject Number:		
Re:			t For:		
Title: Split S	system	De	escription: N/A		
Section: N/A	Page: N/A	Aı	ticle/Paragraph: N/A		
Proposed Sul	bstitution: <u>Lennox</u>				
	r: <u>Lennox</u> Address: <u>140 Lake Park Blvd</u>				
	<u>Lennox Powered</u>	•	-		
Attached dat request; appl	a includes product description, specifications, drawings, icable portions of the data are clearly identified.	, photograph	s, and performance and	test data adequa	te for evaluation of the
Attached dat installation.	a also includes a description of changes to the Contract	Documents	that the proposed substit	tution will requir	re for its proper
Paymen	d substitution does not affect dimensions and functional t will be made for changes to building design, including	g A/E design			
	7: Brett Daniels				
Signed by:	Brett Daniels				
Firm:	Custom Mechanical Solutions, Inc. (CMS)				
Address:					<u> </u>
	West Linn, OR 97068				
Telephone:	971-386-4818				
A/E's REVII	EW AND ACTION				_
approved rejected - Substituti	on approved - Make submittals in accordance with Specias noted - Make submittals in accordance with Specifical Use specified materials.  On Request received too late - Use specified materials.  Ramin Nabipour - Sazan Group	ation Sectio Sa: Or		Procedures. Subseption to manufact provided. Full re	stitution cturer. view
Supporting D	Data Attached: Drawings Product Data	Samp	oles Tests	Reports	X Cutsheets



SINGLE ZONE MINI-SPLIT HEAT PUMP

Job:	Engineer:
Location:	Architect:
Schedule No.:	Date:
System Designation:	For: ☐ Reference ☐ Approval ☐ Review ☐ Construction

#### **FEATURES**

- The indoor unit shall feature WindFree<sup>TM\*</sup> mode. When activated in cooling
  mode the unit will close its louver and will disperse air into the space through
  thousands of micro-holes on the front of the indoor unit preventing cold air drafts
  on occupants.
- The system shall have a built-in Wi-Fi adapter as standard to allow control and monitoring using the Samsung SmartThings app.
- Outdoor unit shall provide 208/230V power to the indoor unit via 14 AWG X 3 interconnect power cable.

#### Construction

- Indoor unit chassis shall be UL94 V0 with a galvanized steel mounting bracket
- The indoor unit shall have easy access to wire, pipe, and drain connections via the access panel on the bottom of the unit for simple installation and service
- The outdoor unit shall be galvanized steel with a baked-on powder coated finish for durability

#### **Heat Exchanger**

· The heat exchangers shall be mechanically bonded fin to copper tube

#### Refrigerant System

- The system shall utilize low-GWP R-32 refrigerant
- The compressor shall be hermetically sealed, inverter controlled, BLDC Rotary
- Refrigerant flow shall be controlled by an electronic expansion valve at the outdoor unit

#### Indoor Fan

- The indoor fan shall be a single cross-flow type
- Three fan speed settings and auto setting
- Automatic (motorized) vertical swing (up/down) and horizontal swing (left/right) louvers

#### Controls

- The indoor unit shall ship with a rechargeable, solar-cell wireless controller and holder. The wireless controller battery shall be charged with a USB C cable or the integral solar panel.
- The included wireless controller shall have a pixel display that is visible in low light conditions.
- Dual set temperature support when connected to supported wired controllers.
- The indoor unit shall include an integral humidity sensor for improved humidity control functions.
- The indoor unit shall have a simple connection for condensate overflow detection devices or any normally closed contact for simple unit shutdown.
- Samsung central control compatible (accessory required)
- Interconnect control wire between the outdoor and indoor unit shall be 16AWG
   Y 2

#### **External Heat Control**

- External heat control functionality allows for configuration of fan operation during auxiliary heat operation, defrost, and emergency heat (VSTAT10P-1 accessory required).
- External heat control configuration settings includes outside ambient external heat lockout, outside ambient compressor lockout, and time delay options (VSTAT10P-1 accessory required).
- Emergency heat functionality allows the system to continue controlling the exter-nal heat source even when system errors prevent the heat pump from operating (VSTAT10P-1 accessory required).

#### Convenience

 7-segment digital display on the front of the unit to display temperature and unit status

- · Washable main filter as standard accessible from the top of the unit
- System energy consumption can be viewed using the Samsung SmartThings mobile app or on the indoor unit display using the included wireless controller (conditions apply).
- Al (artificial intelligence) Auto Mode technology monitors factors such as indoor temperature, outdoor temperature, set temperature, and operating time to learn the patterns within your home to automatically adjust system operation to maximize occupant comfort and efficiency (Wi-Fi connection required).
- Al Energy mode technology enhances energy saving operation using advanced compressor control techniques
- Eco Mode to reduce energy consumption during low demand operation
- Smart install mode Startup system diagnostics operation to ensure system readiness during initial operation
- · Auto restart after power loss
- Other Features and functions: Auto changeover, Auto Clean Function, Freeze Wash Function, MAX mode to quickly reach set temperature, Good'sleep mode, Quiet mode, Dry mode, Simple ON/OFF time function (activated with wireless controller), Filter cleaning reminder



Outdoor Unit: MWHD024S6S-1P



Indoor Unit: MWHD024S6-1P

#### PRODUCT WARRANTY

Compressor – Seven year warranty
All other covered components - Five year warranty

ACCESSORIES	
VSTAT02P-1 Touch Screen Wired Controller*	37P79
VSTAT04P-1 Programmable Wired Controller*	37Y74
VSTAT09P-1 24V Thermostat Adapter	37Y96
VSTAT06P-1 Wall Mnt Mini-Splt Wired Cntrlr Sub PCB	37Y83
VCTRL06P-1 Interface Module Comm Adaptor ERV Kits	37Y82
VCTRL11P-1 External Room Temp. Sensor	37Y77
VSTAT10P-1 External Contact Control	37Y69

\*VSTAT06P-1 (37Y83) is REQUIRED with the selection of this accessory

NOTE – Due to Lennox' ongoing commitment to quality, Specifications, Ratings, and Dimensions are subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.



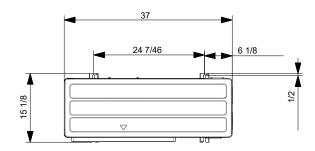
SINGLE ZONE MINI-SPLIT HEAT PUMP

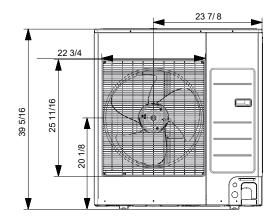
SPECIFICATIONS		SINGLE	ZONE MINI-SPLIT HEAT PUMP	
SPECIFICATIONS	Naminal Canadity	Casting (Hasting (Divita)	22 000 / 24 000	
	Nominal Capacity	Cooling / Heating (Btu/h)	22,000 / 24,000	
	Capacity Range	Cooling (Btu/h)	8,200 - 29,000	
		Heating (Btu/h)	6,500 - 40,000	
Performance		SEER2	20.00	
	AHRI 210-240 2023	EER2	12.20	
		HSPF2 (region IV)	8.00	
		5°F COP	1.92	
	Voltage	ø/V/Hz	1 / 208-230 / 60	
	Working Voltage Range (VAC)		187 - 253	
Power	Operating Current	Cooling (A)	2.5 / 8 / 13.5	
OWCI	(min. / standard / max.)	Heating (A)	2.6 / 10.5 / 17.9	
	Max. Breaker	Amps	30.0	
	Min. Circuit Ampacity	Amps	20.0	
	W X H X D (in.)	Indoor Unit	41 9/16 X 11 3/4 X 8 7/16	
limonolono	W A FI A D (III.)	Outdoor Unit	37 X 39 5/16 X 13	
Dimensions	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Indoor Unit	25.40	
	Weight (lbs.)	Outdoor Unit	150.40	
	Indoor Unit dB(A)	Silent / High	30 / 45	
Sound Pressure Level	Outdoor Unit dB(A)	Cooling (high)	54	
		Cooling	14 - 115°F (-10 - 46°C)	
	Outdoor	Heating	-5 - 75°F (-20.6 - 24°C)	
Operating Temperatures		Cooling	64 ~ 90°F (16 ~ 32°C)	
	Indoor	Heating	T ≤ 86°F (30°C)	
		High side (In.)	1/4	
	Indoor & Outdoor	Low side (In.)	5/8	
ipe Connections	Maximum (ft.)		98	
,	Maximum Vertical Separation (ft.)		66	
	Condensate Connection	,	11/16" OD	
	Туре		R-32	
	A2L Leak Detection		Not Included	
Refrigerant	Factory Charge	OZ.	70.6	
	Charged for		24.6 ft.	
	Туре		Inverter Driven, Twin BLDC Rotary	
Compressor	RLA	Amps	7.8	
	Туре	Tunps	BLDC motor with cross-flow fan	
vaporator Fan	FLA	Amps	0.12	
ναροιαιοι ι απ	Output	Watts	27.0	
	Output	Cooling (CFM)	445 / 516 / 586 / 657	
irflow	Air Volume (L/M/H/Turbo)			
	Tuno	Heating (CFM)	445 / 516 / 586 / 657	
Condenser Fan	Type		BLDC With Axial Type Fan (1)	
	FLA / Watts / CFM (max.)		1.25 / 125 / 2,825	

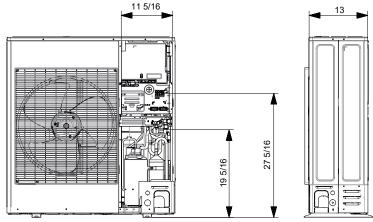


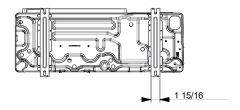
SINGLE ZONE MINI-SPLIT HEAT PUMP

#### **OUTDOOR DIMENSIONS IN.**





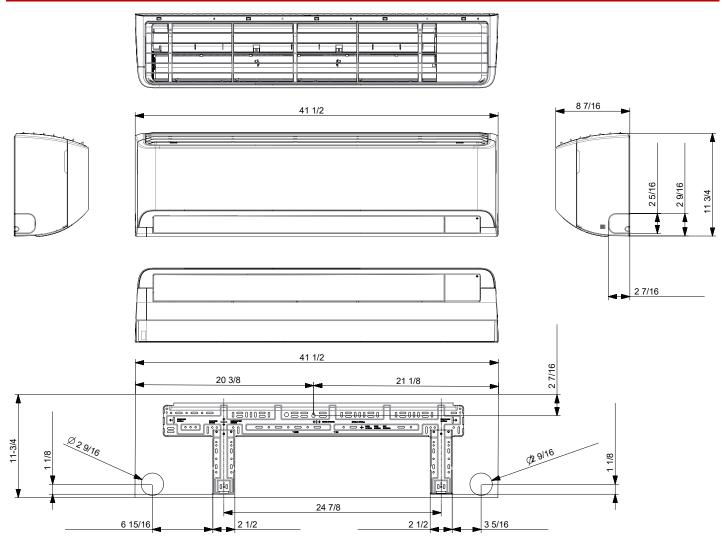






SINGLE ZONE MINI-SPLIT HEAT PUMP

#### INDOOR DIMENSIONS IN.





## **SUBSTITUTION REQUEST** (During the Bidding/Negotiating Stage)

Project: Bake	er County EMS Bldg	Substitution Request Number:
		From: _Custom Mechanical Solutions, Inc. (CMS)
To: Cole	Architects	Date: 7/22/2025
<u> </u>	- Helitetta	A/E Project Number:
Re:		Contract For:
Title: Packag	ged Outdoor Central-Station Air-Handling Units	Description: Products
Section: <u>237</u>	Page: <u>1</u>	Article/Paragraph: Manufacturers
Proposed Sub	ostitution: <u>Lennox</u>	
		l. Richardson, TX 75080 Phone: 972-497-5000
	Lennox Model No: Xion	nhatographs and performance and test data adequate for evaluation of the
request; appli	icable portions of the data are clearly identified.	, photographs, and performance and test data adequate for evaluation of the
Attached data installation.	a also includes a description of changes to the Contract I	Documents that the proposed substitution will require for its proper
Propose     Payment		l clearances. g A/E design, detailing, and construction costs caused by the substitution.
_		
Signed by:		
Firm:		
Address:	1750 Blankenship Rd. Suite # 220	
	West Linn, OR 97068	
Telephone:	971-386-4818	
A/E's REVIE	EW AND ACTION	
approved : rejected - Substitution	as noted - Make submittals in accordance with Specifica Use specified materials.  Son Request received too late - Use specified materials.	effication Section 01 25 00 Substitution Procedures. Substitution ation Section 01 25 00 Substitution Procedures. Substitution Sazan Group takes no exception to manufacturer. Only manufacturers cut sheet is provided. Contractor to verify RTU duct drop configuration with structural roof trusses/framing. Full review to occur during the submittal process.  Date: 7/25/2025
Supporting D	Pata Attached: Drawings Product Data	Samples Tests Reports X Cutsheets



# PROVEN RELIABILITY, SUPERIOR SERVICEABILITY.





# THE XION<sup>TM</sup> FAMILY OF ROOFTOP UNITS DELIVERS FROM START TO FINISH.

At Lennox, we know how important reliability and serviceability are for our customers. That's why Xion rooftop units are the smart choice. They're designed for quick field adaptability, making them ideal for fast turnaround commercial applications. Every Xion unit is built with the same high-quality standards and factory tested to ensure reliable performance and year-round comfort. Our serviceable design will make life easy for years to come.



# THE BENCHMARK FOR PERFORMANCE AND RELIABILITY

Designed for seamless rooftop integration,  $Xion^{TM}$  units offer a hassle-free installation process with features that simplify setup and adaptability to various applications. Equipped with the Lennox® CORE Lite Unit Controller, these units optimize maintenance and service operations, helping to lower costs and reduce downtime. Engineered for dependable performance,  $Xion^{TM}$  rooftop units provide reliable, year-round comfort, making them a smart and efficient choice for any commercial HVAC application.



#### ROOF READY

Xion $^{\text{m}}$  rooftop units are designed roof ready to quickly fit your application needs. These units come with a range of convenient features that make installation quick and easy.

- Field flexibility with more than 100 field-installed accessories that allow quick modification of units to fit the application
- Installation made easy with a self-sealing insulated base and minimized plumbing through a convertible drain pan
- Comprehensive product line consisting of 2-25 ton gas-electric and electric-electric, and 2-20 ton heat pump models



#### SIMPLE SERVICE

Xion™ rooftop units featuring the Lennox® CORE Lite Unit Controller maximizes efficiency of maintenance and service operations, reducing operational costs and minimizing downtime.

- Lennox® CORE Service App integrates diagnostic, test, and troubleshooting functionalities, reducing install and service time over traditional interfaces
- Slide-out blower reduces installation and service time
- Isolated compressor compartment allows performance checks without interrupting airflow, reducing service time
- Accessible heating compartment provides quick and convenient access to all gas or electric heating components



#### RELIABLE PERFORMANCE

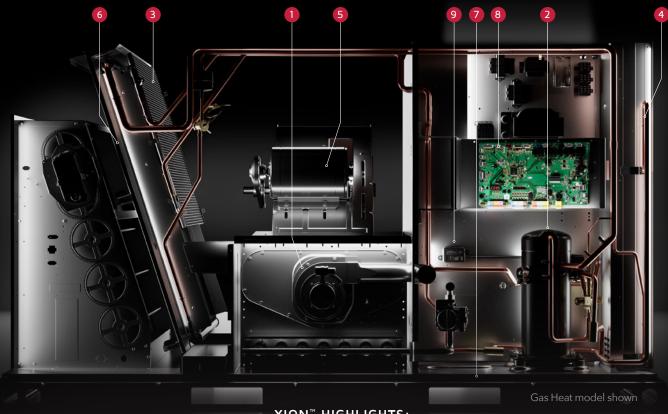
Xion™ rooftop units are engineered to deliver reliable performance and year-round comfort.

- Lennox® CORE Lite Unit Controller increases system reliability by providing 3-strike protection and alerts for critical components
- Environ<sup>™</sup> Coil System contains up to 52% less refrigerant and is up to 59% lighter than traditional coil systems reducing the overall environmental impact
- MSAV® supply fan technology optimizes system performance by staging airflow to provide year-round comfort and power savings of up to 61% over traditional blower systems
- Humiditrol® dehumidification technology offers an optional humidity control system that efficiently removes moisture from the air to create a healthier, more comfortable indoor environment



### **XION™ ROOFTOP UNIT**

- 1 Accessible Heating Compartment 2 Isolated Compressor Compartment 3 Humiditrol® Dehumidification System [optional]
- 4 Environ™ Coil System\*\* 5 Slide-out Blower 6 Easy Filter Access 7 Fully Insulated Base Pan [item is not shown]
- 8 Lennox® CORE Lite Unit Controller 9 Refrigerant Detection System



#### **XION™ HIGHLIGHTS:**

2- to 25-ton gas/electric and electric/electric units • 2- to 20-ton heat pump units

Up to 14.0 SEER2, 15.5 IEER, and 11.5 EER2

More than 100 field-selectable options ensure fast and easy installation MSAV® supply fan technology achieves up to 61% fan power savings\* Environ™ coil system maximizes reliability and sustainability\*\* Improved comfort with the optional Humiditrol® dehumidification system\*\* The Lennox® CORE Lite Controller and Simple Service features minimize maintenance time



<sup>\*</sup>Standard on units 6 tons and up \*\*Available on gas/electric and electric/electric models only.





The Lennox® CORE Control System on Xion $^{TM}$  rooftop units is comprised of the easy-to-use Lennox $^{®}$  CORE Lite Unit Controller and the intuitive CORE Service App.

The CORE Lite Unit Controller openly integrates with multiple control types, extends unit lifetime by reliably operating system components, and optimizes unit efficiency through built-in algorithms, creating ideal space conditions with ease.

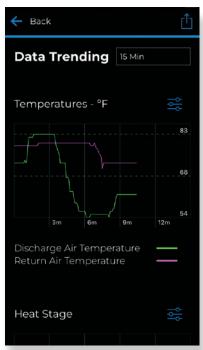
The CORE Service App provides a better installation and service experience through intuitive guided setup, simplified troubleshooting with, and advanced diagnostic capabilities, reducing installation and service costs.



#### THE LENNOX® CORE SERVICE APP

#### MAKES SERVICING SIMPLE

The Lennox® CORE Service App replaces a traditional built-in user interface on the CORE Unit Controllers and provides guided setup means for install, test and balance, and network integration. Reports that detail runtimes and service history can be exported from the app.



#### REAL-TIME DATA READOUTS

Enhanced test functionality provides real-time sensor readings, trending and reports that enable easy troubleshooting.







#### XION™ ROOFTOP UNIT OPTIONS & ACCESSORIES

COOLING	
Drain Pan Overflow Switch	Field
Dirty Filter Switch	Field
Low-Ambient Kit (Down to 0° F)	Field
PVC or Copper Condensate Drain Trap	Field
BLOWER	rielu
Blower - Supply Air Motors and Drive Kits	Factory
Blower Proving Switch	Standard
VFD Bypass Kit (MSAV®)	Field
HEATING	rielu
Electric Heat	Field
Gas Heat	Factory
Stainless Steel Heat Exchanger	·
	Factory
Bottom Gas Piping Kit	Field
Combustion Air Intake Extensions	Field
Low Temerature Vestibule Heater	Field
LPG/Propane Conversion Kits	Field
Vertical Vent Extension	Field
CABINET  Combination Coil/Hail Guards (2-25 ton)	Factory, Field
	·
Hinged Access Panels  Lloginostal Discharge Kit	Factory
Horizontal Discharge Kit	Field
Return Air Adaptor Plate***	Field
Corrosive Protection (Indoor coil/outdoor coil)	Field
CONTROLS  CORT Life Main Controller	Charles
CORE Lite Unit Controller  Lennox BACnet Module	Standard
	Field
CS3000 and CS7500 Commercial Programmable Thermostats	Field
Smoke Detector Supply and/or Return  DEHUMIDIFICATION	Field
Humiditrol® (HGRH)**	Factory
INDOOR AIR QUALITY	ractory
MERV 8 Filters	Field
MERV 13 Filters	Field
MERV 16 Filters	Field
Replacement Media Filter with Metal Mesh	Field
IAQ (CO2) Sensors	Field
Needlepoint Bipolar Ionizers	Field
UVC Germicidal Light Kit	Field
ELECTRICAL	FICIO
Electrical Voltage (60 Hz, 208/230V 1ph, 208/230V, 460V, or 575V - 3ph)	Factory
Disconnect Switch	Factory, Field
GFI Service Outlets	Factory, Field
Weatherproof Cover for GFI	Field
ECONOMIZER*	1100
Economizer - Downflow or Horizontal	Factory, Field
Economizer - Horizontal Conversion Kit	Field
Economizer Controls - Single Sensible/Enthalpy	Factory, Field
Economizer Controls - Differential Enthalpy	Field
Horizontal Barometric Relief Dampers - Hood Furnished	Field
OUTDOOR AIR	1100
Manual Outdoor Air Dampers	Field
Motorized Outdoor Air Dampers	Field
Power Exhaust Fan Standard Static	Field
ROOF CURBS/CEILING DIFFUSERS	
Roof Curbs (Standard, Clip, Hinged)	Field
Roof Curbs (Standard, Clip, Hinged) Ceiling Diffusers	Field Field

<sup>\*</sup>Only available in High Performance \*\*Only available on G/E, E/E units \*\*\*Applies to 7.5- to 12.5-ton models only.



#### XION™ ROOFTOP UNIT R-454B PERFORMANCE SPECIFICATIONS

				COOLING DATA	HEAT	ING INPUTS (	КВТИН)	PHYSICAL DA	ATA
TYPE	NOMINAL TONNAGE	MODEL	EER (EER2*)	IEER (SEER2*)	STD.	MED.	HIGH	DIMENSIONS H X W X L [INCHES]	BASE WT. [LBS.]
	2	LGX024S5E	(11.5)	(14.0)	65	N/A	N/A	39 x 47 x 86	521
	3	LGX036S5	(11.5)	(14.0)	65	108	N/A	39 x 47 x 86	531
	4	LGX048S5	(11.5)	(14.0)	65	108	150	39 x 47 x 86	532
	5	LGX060S5	(11.5)	(14.0)	65	108	150	39 x 47 x 86	532
SLIS	6	LGX072S5T	11.0	15	65	108	150	47 x 47 x 86	604
GAS/ELECTRIC UNITS	7.5	LGX092S5M	11.0	14.6	130	180	240	47 x 61 x 102	918
CTR	8.5	LGX102S5M	11.0	14.6	130	180	240	47 x 61 x 102	938
/ELE	10	LGX120S5M	11.0	14.6	130	180	240	47 x 61 x 102	1,002
GAS	12.5	LGX150S5M	10.8	14.0	130	180	240	47 x 61 x 102	1,052
	15	LGX180S5M	10.8	14.0	260	360	480	55 x 92 x 133	1,884
	17.5	LGX210S5M	10.8	14.0	260	360	480	55 x 92 x 133	2,044
	20	LGX240S5M	10.8	14.0	260	360	480	55 x 92 x 133	2,216
	25	LGX300S5M	9.8	13.0	260	360	480	55 x 92 x 133	2,460
					ELEC	CTRIC HEAT SIZES	- [KW]		
	2	LCX024S5D	(11.5)	14.0		5, 7.5, 10		39 x 47 x 86	502
	3	LCX036S5	(11.5)	14.0		7.5, 15		39 x 47 x 86	504
	4	LCX048S5	(11.5)	14.0		7.5, 15		39 x 47 x 86	504
LS	5	LCX060S5	(11.5)	14.0		7.5, 15, 22.5		39 x 47 x 86	504
IN D	6	LCX072S5T	11.2	15.5		7.5, 15, 22.5, 30		47 x 47 x 86	575
TRIC	7.5	LCX092S5M	11.2	14.8		7.5, 15, 22.5, 30, 45	i	47 x 61 x 102	870
ILEC	8.5	LCX102S5M	11.2	14.8		7.5, 15, 22.5, 30, 45	i	47 x 61 x 102	890
SIC/E	10	LCX120S5M	11.2	14.8		15, 22.5, 30, 45, 60		47 x 61 x 102	954
ELECTRIC/ELECTRIC UNITS	12.5	LCX150S5M	11.0	14.2		15, 22.5, 30, 45, 60		47 x 61 x 102	1,004
	15	LCX180S5M	11.0	14.2		15, 30, 45, 60		55 x 92 x 133	1,724
	17.5	LCX210S5M	11.0	14.2		15, 30, 45, 60, 90		55 x 92 x 133	1,884
	20	LCX240S5M	11.0	14.2		15, 30, 45, 60, 90		55 x 92 x 133	2,056
	25	LCX300S5M	10.0	13.2		15, 30, 45, 60, 90		55 x 92 x 133	2,300

#### XION™ ROOFTOP UNIT R-454B PERFORMANCE SPECIFICATIONS

				COOLING DATA	HE	ATING PE	RFORMA	NCE	PHYSICAL DATA		
ТҮРЕ	NOMINAL TONNAGE	MODEL	EER (EER2*)	SEER2 OR IEER	(HSPF2*)	COP 47°F	COP 17°F	ELECTRIC HEAT [KW RANGE]	DIMENSIONS H X W X L [INCHES]	SHIP WT. [LBS.]	
	2	LHX024S5D	(10.6)	(13.4)	(6.7)	N/A	N/A	5 - 10	39 x 47 x 86	566	
	3	LHXO36S5	(10.6)	(13.4)	(6.7)	3.64	2.32	7.5 - 15	39 x 47 x 86	566	
	4	LHXO48S5	(10.6)	(13.4)	{6.7)	3.72	2.4	7.5 - 22.5	47 x 47 x 86	641	
Δ	5	LHX060S5	(10.6)	(13.4)	(6.7)	3.7	2.38	7.5 - 22.5	47 x 47 x 86	686	
AT PUMP	7.5	LHX092S5M	11.0	15.0	N/A	3.4	2.25	7.5 - 45	47 x 61 x 102	1,052	
HEAT	8.5	LHX102S5M	11.0	15.0	N/A	3.4	2.25	7.5 - 45	47 x 61 x 102	1,084	
	10	LHX120S5M	11.0	15.0	N/A	3.4	2.25	15 - 60	47 x 61 x 102	1,150	
	15	LHX180S5M	10.6	13.5	N/A	3.3	2.05	15 - 60	55 x 92 x 133	2,044	
	20	LHX240S5M	10.6	13.5	N/A	3.3	2.05	15 - 90	55 x 92 x 133	2,081	

<sup>\*</sup>EER2, SEER2 and HSPF2 ratings only apply to equipment below 65,000 btuh.



# COMPLETE COMMERCIAL CLIMATE SOLUTIONS

Create your ideal building environment with the comprehensive Lennox Commercial portfolio. Each solution is engineered to optimize performance, energy-efficiency, serviceability and environmental impact. From Varix™ VRF Systems working alongside rooftop units to complete custom turnkey solutions, we'll help you find the perfect system for your needs.



Contact us to discuss your project and request a quote. Lennox.com/Commercial/Connect



#### PACKAGED UNITS

Model L<sup>™</sup>, Enlight, Xion<sup>™</sup>, Raider<sup>®</sup>, LRP



#### VRF

Outdoor and Indoor Units, Controls, Accessories



#### SPLIT SYSTEMS

Elite® Series Large, Merit® Series Small, Air Handlers, Indoor Coils



#### COMMERCIAL CONTROLS

Lennox® CORE Control System, Lennox Commercial Thermostats and Sensors



#### MINI-SPLIT SYSTEMS

Outdoor and Indoor Units, Controls, Accessories



#### HEATING

Unit Heaters, Furnaces, Duct Furnaces



#### INDOOR AIR QUALITY

Dehumidification, Filtration, Purification

#### WITH YOU EVERY STEP OF THE WAY

Get fast, direct access to commercial HVAC expertise and equipment—straight from the source. Your Lennox team is here to help you be more efficient, informed and effective at every stage of your projects.





TO: Cole Architects 1000 NW Wall St, Suite 205 Bend, OR 97703

#### PROJECT NAME: BAKER COUNTY EMERGENCY OPERATIONS CENTER

We hereby submit	for consideration the following product instead of the specified item for the above project:
Section: 01 2	25 00 Paragraph: SUBSTITUTION PROCEDURES
Specified Item	TYPES E1,E2, P1, R1, R2, R3, S1, S3, V AND X1 - PER SHEET E6.01
Proposed Substitu	SEE ATTACHED ALR PRIOR SUBMITTAL PACKAGE
Attach complete d	imensional information and technical data including laboratory tests, if applicable.
Include complete require for its prop	information on changes to Drawings and/or specifications, which proposed substitution wiper installation.
appearance to tha	est all necessary samples and substantiating data to provide equal quality, performance, and which is specified. Clearly mark manufacturer's literature to indicate equality in performance lity of materials and construction shall be indicated.
The undersigned s	tates that the following paragraphs, unless modified on attachments, are correct:
<ul><li>The unders construction</li><li>The propose</li></ul>	ed substitutions do not affect dimensions shown on drawings.  igned will pay for changes to the building design, including engineering design, detailing and costs caused by the requested substitution.  ed substitution will have no adverse affect on other trades, the construction schedule, or specified
<ul><li>5. The propose</li><li>6. The manufact</li></ul>	te and service parts will be locally available for the proposed substitution.  d substitution will have no affect on applicable codes.  cturer's guarantee or warranties of proposed product is equivalent to; or exceeds that of the
specified pro 7. Proposed su	bouct.  bstituted item will match all sizes, profiles, specifications and colors of item originally specified.
List of names and name and phone r	location of three similar projects on which product was used, date of installation, and Architect' number.
Project No. 1:	
Project No. 2:	

Project No. 3:

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE	FOR USE BY ARCHITECT: AcceptedAccepted as NotedNot AcceptedReceived Too Late
UNDERSIGNED ATTESTS THAT FUNCTION AND QUALITY ARE EQUAL TO OR SUPERIOR TO SPECIFIED ITEMS.	By:  Date:  Remarks: REFER TO REVIEW COMMENTS FROM SAZAN GROUP FOR EACH SPECIFIED FIXTURE.
Submitted By: DJ DIAMOND	
Signature : DI DI AMOND  Title: QUOTATIONS	
Firm: ALR - OREGON	
Address: 800 C STREET  VANCOUVER, WA 9866	0
Telephone: _503-894-7500	
Date : 7/21/25	
Above signature must be by person having to legally hind his firm to the above terms	g authority

**END OF SECTION** 

#### **Substitution Request**



Substitution Request: ALR Prior Lighting

Project Name: Baker County Emergency Operations Center

Sazan Project Number: 958-24009

Date Received: 7/22/25 Reviewer: Lorena Ruiz Date Returned: 7/23/25

Review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: Dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of their work with that of all other trades and the satisfactory performance of their work. A copy of this review is attached to and made a part of each copy of the submittal.

The lighting substitution request was reviewed in accordance with specification section 01 substitution procedures to be used in place of the basis of design fixture listed in the construction documents. Acceptance of an alternate manufacturer for bidding purposes does not relieve, alter or change any technical, aesthetic or coordination requirement set forth in the construction documents, nor does it imply adherence to the construction documents. Contractor is responsible to confirm alternate manufacturer product meets all technical, aesthetic and coordination requirements represented in the construction documents prior to submitting alternate product for the formal lighting submittal.

The review of the lighting substitution request does not constitute a lighting submittal review or purchase order approval. Submit formal lighting submittal using the requirements listed in specification section 01, adhering to fixture requirements listed in the contract documents, for review prior to order of fixtures.

Architect to review fixture finish, dimensional or aesthetic variation presented in substituted products.

Reference	Description	No Exceptions Taken	<b>Make Corrections Noted</b>	Revise and Resubmit	Rejected	Comments
	E1 – Gardco by Signify	Х				

600 Stewart Street Suite 1400 Seattle, WA 98101 206.267.1700

111 SW Fifth Avenue Suite 3210 Portland, OR 97204 503.416.2400

311 E Veterans Way Suite 102 Tempe, AZ 85281 480.201.3243

säzän.com

E2 – Lightolier by Signify	Х			
P1 – Finelite	Χ			
R1 – HE Williams			Χ	
R2 – Lightolier by Signify	Х			
R3 – Lightolier by Signify	Х			
S1 – HE Williams	Х			
S3 – Finelite	Х			
V – Evergreen	Х			
 X1 – Even-Lite	Х			

#### **NOTES:**

- All submittal review action, by the reviewer, is included on this "Submittal Review"
   Document. Marks on the reviewed material shall not be considered a part of the
   review unless specifically referenced here. Contractor shall attach a copy of the
   review to all portions extracted from the submittal.
- 2. The purpose of this review is to ensure general conformance with the design concept and contract documents. Review comments shall not be construed to be directives to change the contract requirements and Contractor shall contact reviewer or offer a Change Proposal if it is perceived that the review conflicts with contract requirements. Contractor is responsible to verify suitability of information that pertains to manufacturing processes, interface with job site conditions, means of construction and methods of construction.

#### 3. Definitions:

- No Exceptions Taken: Subject to the qualifications and remarks (if any) in the "Comments" column, the item is considered to be satisfactory for incorporation into the project.
- Make Corrections Noted: Make changes noted in the "Comments" column; resubmittal not required.
- Revise and Resubmit: Reviewer has reviewed the item, and the item is determined to be unsatisfactory for the reason(s) listed in "Comments." Correct & Resubmit item.
- Rejected: Reviewer has rejected the item, and the item is determined unsatisfactory.

#### **END OF SUBMITTAL REVIEW**



Associated Lighting Reps., Inc. 800 C Street Vancouver WA 98660 Phone: (503) 894-7500 Fax:

## Job Name **BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)**ALRORE25-12352

Bid Date Jul 31, 2025

Submittal Date Jul 21, 2025 Date: Jul 21, 2025 Page 1/1



#### **Transmittal**

Associated Lighting Reps., Inc. 800 C Street

Vancouver WA 98660 Phone: (503) 894-7500 **From: Yazmin Cruz** 

**BAKER EMERGENCY OPERATIONS Project CENTER (PRE APPROVAL)** 

Quote# Location

0

X1

**EVEN-LITE** 

ALRORE25-12352

Contact:

☐ Dr	CHED WE AR awings ints ans	□ S □ In	1 COPY OF THE FOLLOWING ITEM: pecifications Other: formation ubmittals
⊠ Pri □ Ap □ Ap	E ARE TRANS ior Approval oproval oproval as Sub oproval as Not	omitted	esubmittal for Approval
Qty	Туре	MFG	Part
0	E1	GARDCO BY SIGNIFY	GMW-A07-830-T3M-UNV-BK
0	E2	LIGHTOLIER BY SIGNIFY	4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH
0	P1	FINELITE	HO-4-P-ID-RO-8'-S-H-835-TG-OPN- 96LG-120-SC-FC-10%
0	R1	H. E. WILLIAMS, INC	. FRM-24-L50/835-DMA-(L30)-DIM-UNV
0	R2	LIGHTOLIER BY SIGNIFY	4R-N + C4L-30-935-N-Z10-Ú + CR-R- DL-FINISH??
0	R3	LIGHTOLIER BY SIGNIFY	4R-N + C4L-30-935-M-Z10-U + C4-R- DL-FINISH?-F + C4RVPWH
0	S1	H. E. WILLIAMS, INC	. 75S-4-L30-835-DIM-UNV
0	S3	FINELITE	HO-4-SM-D-RO-4'-H-835-TG-OPN-
			96LG-120-SC-FC-10%
0	V	EVERGREEN	CYL-WL-24X3-14W-9-A

SOVII-EM-G-1C-BA-RC

						LUMINA	IRE SCHEDUL	E.					۽ [
TYPE	DESCRIPTION	MOUNTING	CCT / CR	WATTS	DELIVERED LUMENS	DRIVER	DIMMING	VOLTAGE	LENS / RELECTOR / BEAM	FINISH	MANUFACTURER SERIES	NOTES	]
E1	IP65 ARCHITECTURAL WEDGE WALL PACK LED LUMINAIRE	WALL	3500K LED, 80+ CRI	10W	3200 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	TYPE 3 DISTRIBUTION	STANDARD PER ARCHITECT	LITHONIA LIGHTING - WIDGEZ SERIES		1
E2	IP65 4* ROUND DOWNLIGHT LED LUMINAIRE	RECESSED	3500K LED, 80+ CRI	9W	1000 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	SEMI SPECULAR, 45 DEGREE DISTRIBUTION	STANDARD PER ARCHITECT	GOTHAM - IVO SERIES		1
Pf	81-01, 40% UP/ 60% DOWN, DIRECTINDIRECT LINEAR LED LUMINAIRE	PENDANT AIRCRAFT CABLE	3500K LED, 80+ CRI	29W/4FT	3500 LW4FT	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	EDGE-LIT REFLECTOR	STANDARD PER ARCHITECT	FLUXWERX - PROFILE SERIES	PROVIDE DUAL CIRCUIT TO CONTROL DIRECTINDIRECT SEPARATELY	
R1	2x4 EDGE LIT TROFFER LED LUMINAIRE	RECESSED	3500K LED, 80+ CRI	23W	2900 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	FROSTED ACRYLIC	STANDARD PER ARCHITECT	FLUXWERX - INBOX 2X4 SERIES		
R2	4" ROUND DOWNLIGHT LED LUMINAIRE	RECESSED	3500K LED, 80+ CRI	8//	2900 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	45 DEGREE DISTRIBUTION	STANDARD PER ARCHITECT	GOTHAM - EVO SERIES		
R3	DEADFRONT RATED, 4" ROUND DOWNLIGHT LED LUMINAIRE	RECESSED	3500K LED, 80+ CRI	8//	2900 LM	INTEGRAL ELECTRONIC	8-10V TO 10%	UNV	FLUSH LENS	STANDARD PER ARCHITECT	GOTHAM - EVO SERIES		
S1	LENGHTS PER DRAWINGS LED STRIP LIGHT	SURFACE	3500K LED, 80+ CR	38W	3000 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	FROSTED ACRYLIC DROP LENS	STANDARD PER ARCHITECT	LITHOMA LIGHTING - ZLID SERIES	CONTRACTOR OPTION TO PROVIDE 4FT LENGTHS SIDE BY SIDE OR SIGULAR 8FT LENGTH LUMINAIRE	
\$3	4"-0" EDGG-LIT LINEAR LED LUMINAIRE	SURFACE	3500K LED, 80+ CR	22W	2550 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	EDGE-UT REFLECTOR	STANDARD PER ARCHITECT	FLUXWERX - PROFILE SERIES		
V1	NOMINAL 24" LINEAR VANITY LIGHT LED LUMINAIRE	WALL	3500K LED, 80+ CR	14W	1292 LM	INTEGRAL ELECTRONIC	0-10V TO 10%	UNV	FROSTED LENS	STANDARD PER ARCHITECT	EUREKA - MOONRISE SERIES	MOUNTING HEIGHT PER ARCHITECTURAL ELEVATIONS	
Х1	SINGLE FACE EXIT SIGN	RECESSED	RED	5W	NA	INTEGRAL ELECTRONIC	NA.	UNV	CLEAR ACRYLIC	BRUSHED ALUMINUM	LITHONIA LIGHTING - EDGR SERIES		

#### SHEET NOTES

- SHEET NOTES

  A PROPER INVESTIGATION AND CONSTRUCTION SITE SUPPLIES

  A PROPER INVESTIGATION AND CONSTRUCTION SITE SUPPLIES

  ENERGISTORY OF PROPERTY CONSTRUCTION SITE SUPPLIES

  ENERGISTORY CONSTRUCTION CONSTRUCTION SITE SUPPLIES

  ENERGISTORY CONSTRUCTION CONSTRUCTION SITE SUPPLIES

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#### LIGHTING CONTROL SEQUENCE OF OPERATIONS: INTERIOR

Responsibility Matrix	Factory Representative	Contractor	Owner/ Facilities	Design team
Startup and Programming	Prime	Assist	Review	
Commissioning and Verification	Prime	Demonstrate		
Hours of operation	Prime	Assist	Provide	
Aesthetic dimming/aiming		Aim/Dim	Onsite review	Onsite Revie

Basis of Design Manufacturer	Alternate Manufacturer(s)
Nlight	Wattstopper DLM, Lutron, Cooper Wavelinx

				ASHRAE 90.1 2019 Table 9.6.1 [h]	ASHRAE 90.1 2019 Table 9.6.1 [i]	ASHRAE 90.1 2019 Table 9.6.1 [a]	ASHRAE 90.1 2019 Table 9.6.1 [b]	ASHRAE 90.1 2019 Table 9.6.1 [c]	2019 Table 9.6.1 [d]	ASHRAE 90.1 2019 Table 9.6.1 [e,f]	ASHRAE 90.1 2019 Table 9.6.1 [g]			
NAME	STANDALONE SYSTEM	NETWORKED SYSTEM	SCHEDULED ON BY TIMECLOCK	AUTOMATIC FULL OFF USING OCCUPANCY SENSORS	SCHEDULED SHUTOFF BY TIMECLOCK	LOCAL CONTROL (P=PLANS, T=TIMECLOCK)	MANUAL ON	PARTIAL AUTOMATIC ON TO 50% MAX OUTPUT USING OCCUPANCY SENSORS.	BILEVEL LIGHTING CONTROL (PROVIDE CONTINUOUS DIMMING, SEE LUMINAIRE SCHEDULE)	PHOTOCELL DAYLIGHT CONTROL	PARTIAL AUTOMATIC OFF TO 50% MAX OUTPUT USING OCCUPANCY SENSORS	AUTO FULL ON	MANUAL OFF	NOTES
CONFERENCE	X			X		x		x	x					
HALLWAY		X		Х		X					X			
IDF/UTILITIES	X					x	x						X	
SECURE VESTIBULE	X			X		X					X			
DISPATCH SUPERVISOR	Х			Х		х		х	х				_	
911 CALL CENTER	Х			Х		х		x	X	х				
HAM RADIO/COMM	х			Х		X		x	X					
MAIN OPERATIONS	Х			Х		х		x	x					
RR 1 AND RR 2	х			х		x						х		
JANITOR	Х			х		х						х		
STORAGE	Х			Х		х		x						

#### GENERAL NOTES

B. DAYLIGHT HARVESTING CONTROLS, AND VACANCY SENSORS IN ALL SPACES WITH ACCESS TO DAYLIGHT AS REQUIRED BY CODE. C. FIXTURES TO BE ZONED PER UNIQUE FIXTURE TYPES IN SPACES UNLESS NOTIFIED OTHERWISE.

D. ALL FIXTURES IN REGULARLY OCCUPIED SPACES TO BE DIMMABLE, REFER TO LUMINAIRE SCHEDULE FOR LOW END DIMMING PERCENTAGE.

E. DIRECTINDIRECT DISTRIBUTION CONTROLLED SEPARATELY UNLESS NOTIFIED OTHERWISE.

F. 20 MINUTE TIMEOUT FOR ALL OCCUPANCY SENSORS UNLESS OTHERWISE NOTED.

LIGHTING CONTROL STATIONS										
CONTROL STATION	ZONES	BUTTON								
DESIGNATION	CONTROLLED	NUMBER	FUNCTION	LABEL	NOTES					
\$OS	ALL	1	ALL ON	ON	- 4					
		2	ALL OFF	OFF	' '					
\$OSD	ALL	1	ALL ONHOLD DIM UP	Λ						
		2	ALL OFF/HOLD DIM DOWN	V	' '					
\$LV#	ALL	1	ALL ON	A						
	After hours network lighting overide - 2 hours only	2	ALL OFF	V	1					
\$LVA	ALL	1	ALL ON	ON						
		2	ALL OFF	OFF	' '					
\$LVB	ALL	- 1	ALL ONHOLD DIM UP	ON						
		2	ALL OFF/HOLD DIM DOWN	OFF	' '					
\$LVC	ALL	- 1	ALL ON	ON						
	ALL	2	ALL OFF	OFF	1					
	a	3	a- HOLD DIM UP	Λ	١.					
	a	4	a- HOLD DIM DOWN	V	'					
	b	5	b - HQLD DIM UP	A	1					
	b	6	b - HOLD DIM DOWN	V	1					



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STAMP



CONSULTANT





PROJECT INFORMATION

BAKER EMERGENCY OPERATIONS CENTER

3410 K STREET BAKER CITY, OR 97814

ISSUES

BID DOCUMENTS ISSUE DATE: 05/16/2025 JOB NUMBER 23-105 MARK DATE DESCRIPTION

SHEET NAME

**ELECTRICAL** LIGHTING SCHEDULE

SHEET NUMBER

E6.01



Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number: GMW-A07-830-T3M-UNV-BK

Notes:

Type:

**E1** 

ALRORE25-12352



#### **Wall Mount**

GeoForm

**GWM LED wall sconce** 



Gardco GeoForm wedge medium LED wall sconce features a geometric wedge shape that will complement a range of architectural styles. GeoForm wedge medium features specialized, highly efficient precision plus optics which balance low glare with excellent performance. Type 2, 3 and 4 optical distributions are available. Emergency battery backup option provides path-of-egress illumination. Multiple control options, including wireless Interact Pro outdoor, further enhance energy savings. Multiple control options, including wireless Interact Pro outdoor, further enhance energy savings.

Project:	
Location:	
Cat.No:	
Туре:	
Lamps:	Qty:
Notes:	

#### Ordering guide

example: GWM-A07-840-T3M-UNV-FAWS-DG

Luminaire GWM	Configuration (nom. lument		Distribution	Voltage	Dimming C	ontrols <sup>2</sup>	Elect	rical	Option	ns	Finish
GWM GeoForm Wedge Medium	A06 2,500 lumen A07 4,000 lumen A08 5,000 lumer A10¹ 7,500 lumer A11¹ 8,500 lumen A12¹ 9,500 lumen A13¹ 11,000 lumer A14¹ 12,501 lumer	840 80CRI 4000K 740 70CRI 4000K 750 70CRI 5000K	T2M Type 2 T3M Type 3 T4M Type 4	120 120V 208 208V 240 240V 277 277V  UNV 120-277V (50/60Hz) 347 347V 480 480V HVU 347-480V (50/60Hz)		Leave blank (10kV kA dimming driver standard) Dimming Leads Externally Accessible (controls by others) Dual Circuit Control (Only available with A06-A09) Field Adjustable Wattage Selector Microwave motion sensor factory set at 30% dimming er: Profile Dimming ed with A08-A13 Safety 50% dimming, 7 hours Median 50% dimming, 8 hours Median 30% dimming, 8 hours	SP2 FS1 FS2 FS3	Leave blank (10kV/kA standard) Surge protector 20kV/10kA (option) Single fuse (120, 277, or 347VAC) Double fuse (208V, 240V, or 480V) Double fuse Canadian double pull (208V, 240V) Photocontrol Button	none EC BAC <sup>6</sup>	Leave blank Emergency battery pack, cold rated (-20°C to 40°C). 120 or 277V only. Meets the requirements of the Buy American Act of 1933 (BAA)	Textured  BK Black WH White BZ Bronze DG Dark Gray MG Medium Gray  Customer specified RAL Specify optional color or RAL, (ex: OC-LGP or OC-RAL7024)  CC Custom Color (must supply cole chip, requires factory quote)

- 1. Emergency Battery Pack not available.
- Only one option can be selected from Dimming Controls column.
- Not available in 480V.
- 4. Only available from 120-277V, or in UNV.
- 5. Only available from 120-277V, must specify voltage.

6. Failure to properly select the "BAC" suffix could result in you receiving product that is not BAA compliant product with no recourse for an RMA or refund. This BAC designation hereunder does not address (i) the applicability of, or availability of a waiver under, the Trade Agreements Act, or (ii) the "Buy America" domestic content requirements imposed on states, localities, and other non-federal entities as a condition of receiving funds administered by the Department of Transportation or other federal agencies.

7. Consult Signify to confirm whether specific accessories are BAA-compliant.

Luminaire Accessories (order separately)<sup>7</sup>

GF-WS-BK Wall Mounted Box for surface conduit, painted black
GF-INV Inversion Mounting kit (required with inverted mounting)

GWM\_GeoForm\_Wedge\_Medium 04/24 page 1 of 5







Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number: GMW-A07-830-T3M-UNV-BK

Notes:

Type:

ALRORE25-12352

**E1** 

#### **GWM** GeoForm wedge medium

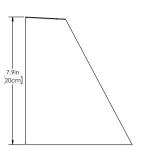
#### Wall sconce

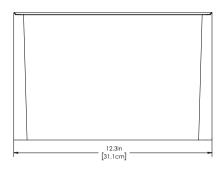
Dimensions

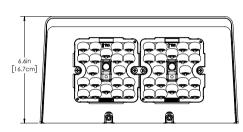
GWM Wedge

Standard

Weight: 7.5 Lbs (3.4kg)





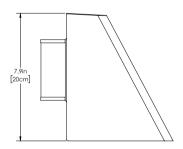


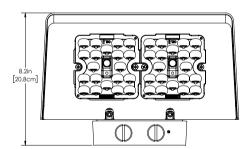
Accessory details

Surface mount conduit box (GF-WS-BK)

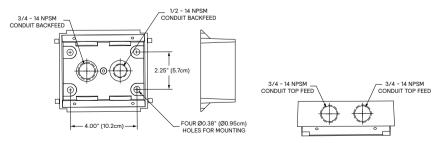
GWM Wedge with surface conduit wall mount box

Weight: 8.1 Lbs (3.7kg)





GF-WS-BK Details



 ${\sf GWM\_GeoForm\_Wedge\_Medium} \quad {\sf O4/24} \quad {\sf page} \ 2 \ {\sf of} \ 5$ 

#### **GWM** GeoForm wedge medium

#### Wall sconce

**GWM Lumen values** 

3000K, 80CRI

		Average			Type 2M			Туре 3М			Туре 4М		
Ordering Code	сст	CRI	System Wattage	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)	
GWM-A06-830	3000	80	16	2506	B1-U0-G1	154	2540	B1-U0-G1	156	2480	B1-U0-G1	152	
GWM-A07-830	3000	80	23	3522	B1-U0-G1	153	3570	B1-U0-G1	155	3485	B1-U0-G1	152	
GWM-A08-830	3000	80	30	4487	B1-U0-G1	150	4548	B1-U0-G1	152	4440	B1-U0-G1	148	
GWM-A09-830	3000	80	39	5700	B2-U0-G2	147	5777	B2-U0-G2	149	5640	B1-U0-G2	146	
GWM-A10-830	3000	80	45	6521	B2-U0-G2	145	6609	B2-U0-G2	147	6452	B1-U0-G2	143	
GWM-A11-830	3000	80	52	7473	B2-U0-G2	145	7575	B2-U0-G2	147	7395	B2-U0-G2	143	
GWM-A12-830	3000	80	59	8506	B2-U0-G2	143	8621	B2-U0-G2	145	8417	B2-U0-G2	142	
GWM-A13-830	3000	80	66	9423	B2-U0-G2	142	9551	B2-U0-G2	144	9324	B2-U0-G2	140	
GWM-A14-830	3000	80	77	10783	B3-U0-G3	139	10929	B3-U0-G3	141	10670	B2-U0-G2	138	

4000K, 80CRI

			Average		Туре 2М			Туре 3М			Type 4M	
Ordering Code	сст	CRI	System Wattage	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)
GWM-A06-840	4000	80	16	2599	B1-U0-G1	159	2634	B1-U0-G1	162	2571	B1-U0-G1	158
GWM-A07-840	4000	80	23	3652	B1-U0-G1	159	3701	B1-U0-G1	161	3614	B1-U0-G1	157
GWM-A08-840	4000	80	30	4653	B1-U0-G1	156	4716	B1-U0-G1	158	4604	B1-U0-G1	154
GWM-A09-840	4000	80	39	5910	B2-U0-G2	153	5990	B2-U0-G2	155	5848	B1-U0-G2	151
GWM-A10-840	4000	80	45	6761	B2-U0-G2	150	6852	B2-U0-G2	152	6690	B1-U0-G2	149
GWM-A11-840	4000	80	52	7749	B2-U0-G2	150	7853	B2-U0-G2	152	7667	B2-U0-G2	149
GWM-A12-840	4000	80	59	8819	B2-U0-G2	149	8939	B2-U0-G2	151	8727	B2-U0-G2	147
GWM-A13-840	4000	80	66	9770	B3-U0-G3	147	9902	B3-U0-G3	149	9668	B2-U0-G2	146
GWM-A14-840	4000	80	77	11180	B3-U0-G3	144	11331	B3-U0-G3	146	11063	B2-U0-G2	143

4000K, 70CRI

			Average		Type 2M			Туре 3М			Type 4M	
Ordering Code	сст	CRI	System Wattage	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)
GWM-A06-740	4000	70	16	2928	B1-U0-G1	180	2968	B1-U0-G1	182	2898	B1-U0-G1	178
GWM-A07-740	4000	70	23	4115	B1-U0-G1	179	4171	B1-U0-G1	181	4072	B1-U0-G1	177
GWM-A08-740	4000	70	30	5243	B2-U0-G2	175	5314	B2-U0-G2	178	5188	B1-U0-G1	174
GWM-A09-740	4000	70	39	6660	B2-U0-G2	172	6750	B2-U0-G2	174	6590	B1-U0-G2	170
GWM-A10-740	4000	70	45	7619	B2-U0-G2	169	7722	B2-U0-G2	172	7539	B2-U0-G2	168
GWM-A11-740	4000	70	52	8732	B2-U0-G2	169	8850	B2-U0-G2	172	8640	B2-U0-G2	167
GWM-A12-740	4000	70	59	9938	B3-U0-G3	168	10073	B3-U0-G3	170	9834	B2-U0-G2	166
GWM-A13-740	4000	70	66	11010	B3-U0-G3	166	11159	B3-U0-G3	168	10894	B2-U0-G2	164
GWM-A14-740	4000	70	77	12598	B3-U0-G3	163	12769	B3-U0-G3	165	12466	B2-U0-G2	161

5000K, 70CRI

			Average		Type 2M			Туре ЗМ		Type 4M		
Ordering Code	сст	CRI	System Wattage	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)	Lumen Output	BUG Rating	Efficacy (LPW)
GWM-A06-750	5000	70	16	2812	B1-U0-G1	173	2850	B1-U0-G1	175	2783	B1-U0-G1	171
GWM-A07-750	5000	70	23	3952	B1-U0-G1	172	4006	B1-U0-G1	174	3911	B1-U0-G1	170
GWM-A08-750	5000	70	30	5035	B2-U0-G2	168	5103	B2-U0-G2	171	4982	B1-U0-G1	167
GWM-A09-750	5000	70	39	6396	B2-U0-G2	165	6482	B2-U0-G2	167	6329	B1-U0-G2	164
GWM-A10-750	5000	70	45	7317	B2-U0-G2	163	7416	B2-U0-G2	165	7240	B2-U0-G2	161
GWM-A11-750	5000	70	52	8385	B2-U0-G2	163	8499	B2-U0-G2	165	8297	B2-U0-G2	161
GWM-A12-750	5000	70	59	9544	B2-U0-G2	161	9673	B3-U0-G3	163	9444	B2-U0-G2	159
GWM-A13-750	5000	70	66	10573	B3-U0-G3	159	10716	B3-U0-G3	161	10462	B2-U0-G2	158
GWM-A14-750	5000	70	77	12099	B3-U0-G3	156	12262	B3-U0-G3	158	11972	B2-U0-G2	155

GWM\_GeoForm\_Wedge\_Medium 04/24 page 3 of 5

Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) **Catalog Number:** GMW-A07-830-T3M-UNV-BK

Type:

F1

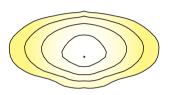
#### GeoForm wedge medium **GWM**

#### Wall sconce

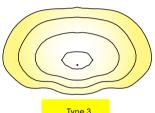
LED Wattage and Lumen Values (Emergency Mode)

				Туре	∍ 2M	Туре	e 3M	Туре 4М	
Ordering Code	сст	CRI	Avg. System Wattage (W)	Lumen Output	BUG Rating	Lumen Output	BUG Rating	Lumen Output	BUG Rating
GWM-A06/7/8/9-740-X-EM	4000	70	6	1000	B0-U0-G0	1014	B0-U0-G1	838	B0-U0-G0
GWM-A06/7/8/9-750-X-EM	5000	70	6	960	B0-U0-G0	973	B0-U0-G1	804	B0-U0-G0
GWM-A06/7/8/9-830-X-EM	3000	80	6	856	B0-U0-G0	868	B0-U0-G1	717	B0-U0-G0
GWM-A06/7/8/9-840-X-EM	4000	80	6	887	B0-U0-G0	899	B0-U0-G1	743	B0-U0-G0

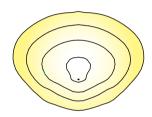
#### **Optical Distributions**



Type 2



Type 3



Type 4

#### **Specifications**

#### Construction

Main body housing and door frame made of low copper die cast aluminum alloy for a high resistance to corrosion. Removable die cast backplate to allow access to driver or other electronic components for servicing. The housing acts as the main heat sinking component, for maximum thermal dissipation. Giving the freedom to have a clean minimalist aesthetic design while allowing it to house emergency battery backup equipment and various other options. Luminaire housing rated to IP65, tested in accordance to Section 9 of IEC 60598-1.

 ${\it IK\,Rating\,IKO8}$  high impact resistance rating for both the housing and optics

IP Rating IP65 rated luminaire with IP66 rated light engine

Electrical components are RoHS compliant, IP66 sealed light engine equipped LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED PCBA made of 20 LEDs populated on aluminum metal clad board for optimal thermal dissipation ensuring long LED life.

Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. Performance tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. 0% uplight and U0 per IESNA TM-15.

#### Mounting

Mounting is achieved through integral back plate that features a hook and lock quick mount plate that secures with two set screws from bottom of luminaire. Mounting plate is located in the center of the luminaire body. Luminaire ships fully assembled, ready to install.

 ${\tt GeoForm}\ features\ an\ integral\ hook\ on\ its\ mounting\ plate\ which\ allows\ a\ single$ installer to perform wiring without assistance. See installation instructions for complete details

GWM\_GeoForm\_Wedge\_Medium 04/24 page 4 of 5

#### Control options

0-10V dimming (DLEA): Access to 0-10V dimming leads supplied through back of luminaire (for secondary dimming controls by others). Cannot be used with other

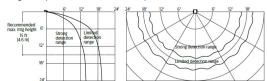
Dual Circuit Control (DUCC): Luminaire equipped with the ability to have two separate circuits controlling drivers and light engines independently. Permits separate switching of separate modules controlled by use of two sets of leads, one for each circuit. Not recommended to be used with other control options, motion response, or photocells

Field Adjustable Wattage Selector (FAWS): Luminaire equipped with the ability to manually adjust the wattage in the field to reduce total luminaire lumen output and light levels. Comes pre-set to the highest position lumen output selected. Use chart below to estimate reduction in lumen output desired. Cannot be used with other control options or motion response.

FAWS Position	Percent of Typical Lumen Output	FAWS Position	Percent of Typical Lumen Output
1	25%	6	80%
2	50%	7	85%
3	55%	8	90%
4	65%	9	95%
5	75%	10	100%

Note: Typical value accuracy +/- 5%

Motion Response (MW30): Motion response luminaires include a high frequency microwave sensor, 5.8GHz+/- 75MHz microwave ISM continuous wave band with 360° coverage area, <0.5 mW transmitting power and <1 W standby power. Factory programmed settings  $\,\dim$  fixture to 30% with time delay of 5 minutes with no stand-by period. When motion is detected, the luminaire returns to 100% full light output and will remain on full power for 5 minutes





BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

GMW-A07-830-T3M-UNV-BK

Notes:

Type:

**E1** 

ALRORE25-12352

#### **GWM** GeoForm wedge medium

#### Wall sconce

#### Specifications (cont'd)

Automatic Profile Dimming (CS/CM): Standard dimming profiles provide flexibility towards energy savings goals while optimizing light levels during specific dark hours. Dimming profiles include two dimming settings including dim to 30% or 50% of the total lumen output. When used in combination with not programmed motion response it overrides the controller's schedule when motion is detected. After 5 minutes with no motion, it will return to the automatic diming profile schedule. Automatic dimming profile scheduled with the following settings:

- CS50/CS30: Security for 7 hours night duration (Ex., 11 PM 6 AM)
- CM50/CM30: Median for 8 hours night duration (Ex., 10 PM 6 AM)

All above profiles are calculated from mid-point of the night. Dimming is set for 6 hours after the mid-point and 2, or 3 hours before depending on the duration of dimming. Cannot be used with other dimming control options.

Emergency Battery Backup (EC): Emergency battery pack included integral to the luminaire, allowing for a consistent look between emergency and non-emergency luminaires. EC is cold weather rated for use in ambient temperature conditions from -20°C (-4°F) to 40°C (104°F) designed to have a secondary driver with relay to immediately detect AC power loss to power luminaire for a minimum of 90 minutes from the time power is lost. Available with 120 or 277V.

#### Electrical

**Driver:** Driver efficiency (>90% standard). 120-480V available (restrictions apply). Open/short circuit protection. 0-10V dimming driver down to 10% standard. RoHS compliant.

Button Photocontrol (PCB): Button style design for internal luminaires mounting applications. The photocontrol is constructed of a high impact UV stabilized polycarbonate housing. Rated voltage of 120V or 208-277V with a load rating of 1000 VA. The photocell will turn on with 1-4Fc of ambient light.

Surge protection (SP2): Each luminaire is provided as standard with surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/5kA waveforms for Line Ground, Line Neutral and Neutral Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid-State Street Lighting Consortium) Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High Test Level 10kV / 5kA. Optional 20kV is available for additional protection.

#### Listings

UL/cUL listed to the UL 1598 standard, suitable for wet locations when mounted downward facing. Also listed for damp locations when inverted upward facing when mounted in covered ceiling application. Suitable for use in ambient temperatures from -40° to 40°C (-40° to 104°F). All GeoForm configurations are qualified under Design Lights Consortium® Premium category. Consult DLC Qualified Products List on Specific Classifications and for more details. CCTs 3000K and warmer are IDA Dark Sky Approved. FCC Compliant.

#### Finish

Each standard color luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powder coat finish. The surface treatment achieves a minimum of 1000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard. Standard colors include bronze (BZ), black (BK), white (WH), dark gray (DGY), and medium gray (MGY). Consult factory for specs on optional or custom colors.

#### Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away. For more details visit: signify.com

#### Warranty

GeoForm luminaires feature a 5-year limited warranty. See signify.com/warranties for complete details and exclusions.

#### **Predicted Lumen Depreciation Data**

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L<sub>70</sub> is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L<sub>70</sub> hours limited to 6 times actual LED test hours

Ambient Temperature °C	Drive current	L <sub>70</sub> per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	up to 1200 mA	>102,000 hours	>91%

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Submitted On: Jul 21, 2025



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

Type:

**E2** 

ALRORE25-12352

#### LIGHTOLIER

#### **Downlighting**

Calculite LED 4" gen 3

C4RDL Round Downlight





Calculite LED 4" generation 3 provides excellent performance coupled with optimized installation flexibility. Industry leading visual comfort and uniform illumination make it an ideal choice for open office, institution, healthcare, and retail applications.

Buy American Act of 1933 (BAA) Compliant luminaire\*: Complete luminaire = Frame-BAC + Engine-BAC + Trim-BAC

\* BAA compliance requires that BAC option be selected for each of frame, engine, and trim. Frame, engine, and trim will be shipped together as a single product. Accessories (optional) are not currently BAA-compliant.

Project:			
Location:			
Cat.No:			
Туре:			
Qty:			
Notes:			

Follow the ordering guidelines below. Each step is a separate order line.

Step 1	Frame: Ordered & shipped separately.		
	Frame 4R		Example: 4RN
Step 2	Engine & Trim: Ordered & shipped as a single product.		
	Engine C4L	-C4R	Example: C4L15935MZ10U-C4RDLCC
Step 3 (optional)	Accessories: Ordered & shipped separately.		

rrame			Standard example: 4KN	BAC example: 4KN-BAC
Series	Installation	Voltage/Options		
4R				

4R						
4R 4" Non-IC Round	1	N New construction	- EM6	Universal 120/277/347V Emergency, 6W Self-Test/Self-Diagnostic <sup>1</sup>	LC BAC	Chicago Plenum <sup>2</sup> Meets the requirements of the Buy American Act of 1933 (BAA) <sup>9</sup>
	F	R Remodeler	-	Universal 120/277/347V	BAC	Meets the requirements of the Buy American Act of 1933 (BAA) <sup>9</sup>

Engine		<u> </u>		Standard example: C4L2093	0MZ10D20UF	BAC example: C4L	_20930MZ10D20U-BAC
Series C4L	Lumens	CRI/CCT	Beam	Dimming	Options	Voltage	Options
C4L Calculite LED 4" gen 3	05 500 lm 10 1000 lm 15 1500 lm 20 2000 lm 25 2500 lm 30 3000 lm*	927 90CRI/2700K 930 90CRI/3000K 935 90CRI/3500K 940 90CRI/4000K 950 90CRI/5000K <sup>3</sup> D2W 90CRI/3000K	N Narrow (43°) <sup>4</sup> M Medium (56°) <sup>4</sup> W Wide (76°)  TBD	Z10 0-10V 1%  L01 Lutron PEQ0 EcoSystem 0.19 L1 Lutron LDE1 EcoSystem (500 RA Integral Interact RF sensor <sup>5</sup> .	lm not available)	U 120/277V 3 347V (210 only) U 120/277V	F Flex install <sup>6</sup> (no frame required)  R Calculite legacy retrofit <sup>7</sup> RH Retrofit for
	* See marked spacings requirements on page 9.	to 1800K <sup>4</sup> (dim-to-warm)		D DALI 0.1%  SOL EldoLED Solo 0-10V 0.1%  DMX Digital Multiplexing w/RDM 0.1%	None LIN Linear None LIN Linear SQR Square	U 120/277V U 120/277V	tall collar frame <sup>7</sup> <b>BAC</b> Meets the requirements of the Buy American Act of 1933 (BAA) <sup>9</sup>

	AC example. 04NDLOOF BAO				
Series C4	Aperture R	Style	Finish (White not available with polished flange)	Flange	Options
C4 Calculite LED 4" gen 3	R Round	<b>DL</b> Downlight	BK Black (anodized) CL Specular clear WH White (matte)  CC Comfort clear CD Comfort clear diffuse TBD CZ Champagne bronze	- White (matte) P Polished (matches aperture) F Flangeless (requires CA4RFT)	IEM6 Trim mounted EM test switch BAC Meets requisites
			WHAMF White (gloss antimicrobial)	- White (matches finish)	of the Buy American Act of 1933 (BAA) <sup>9</sup>
		SL Shower light <sup>8</sup>	WH White (matte) WHAMF White (gloss antimicrobial)	- White (matches finish)	ACCOLISSO (DAA)

See footnotes on page 2.





E Forward & Reverse Phase (up to 2500lm)





1 120V Standard example: C4RDLCCP | L BAC example: C4RDLCCP-BAC







BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

#### Type:

ALRORE25-12352

**E2** 

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

#### Accessories (Not currently BAA-compliant) learn more below

SBA	Interact Ready System Bridge Accessory	

(refer to Philips System Bridge Accessory spec sheet for options and details)

4" round/square non-IC frame with Flex (F) light engine (provides mechanical support for rough-in construction only, no junction box)

LCEM6 Field installable Bodine BSL06 emergency battery pack (for Flex (F) light engine only, includes switch mounting plate)

T347-75VA 347:120V step-down transformer for non-IC (N) frame only (see page 3)

7920 Sloped ceiling 4" adapter for 4RN and 4RA frames (refer to SCA spec sheet for slope options)

CA4RFT Mud-in ring for 4" round flangeless trim installs (ordered with flangeless trim)

CAEVPWH Field-installable Bodine BSL6 6W battery pack with self-test/self-diagnostic (for new construction frames, 120-277V)

Leave the self-diagnostic for new construction frames, 120-277V)

Leave the self-diagnostic for new construction frame only flangeless trims (C4RDLTIF) and new construction frame only

CAEM6TSCP Must be ordered with EM6 frame for remote test switch (see page 3)

#### Round Downlight

#### Photometric - Downlights with CRI of 90+ & R9 of 50+

Lumen		Flux	Efficacy	Beam				IES	TM-30	)-18	
Package	Beam	(lm)	(lm/W)	Angle	СВСР	CRI	R9	R <sub>f</sub>	R <sub>g</sub>	R <sub>cs,h1</sub>	UGR
500 lm	Narrow (N)	609	101	39°	1409	90+	50+	91	100	-6%	0
	Medium (M)	625	102	53°	769	90+	50+	91	99	-6%	0
	Wide (W)	570	93	69°	378	90+	50+	91	99	-6%	0
1000 lm	Narrow (N)	905	104	39°	2094	90+	50+	91	100	-6%	0
	Medium (M)	1056	105	53°	1300	90+	50+	91	99	-6%	0
	Wide (W)	963	95	69°	638	90+	50+	91	99	-6%	0
1500 lm	Narrow (N)	1347	101	39°	3118	90+	50+	91	100	-6%	1
	Medium (M)	1510	108	53°	1859	90+	50+	91	99	-6%	2
	Wide (W)	1385	99	69°	917	90+	50+	91	99	-6%	1
2000 lm	Narrow (N)	1778	101	39°	4115	90+	50+	91	100	-6%	2
	Medium (M)	1937	105	53°	2385	90+	50+	91	99	-6%	6 0 6 0 6 0 6 0 6 0 6 1 6 2 6 1 6 2 6 2 6 2 6 2 6 3 6 3 6 3 6 3
	Wide (W)	1779	97	69°	1178	90+	50+	91	99	-6%	
2500 lm	Narrow (N)	2107	98	39°	4875	90+	50+	91	100	-6%	3
	Medium (M)	2431	103	53°	2992	90+	50+	91	99	-6%	3
	Wide (W)	2233	95	69°	1479	90+	50+	91	99	-6%	3
3000 lm	Narrow (N)	2587	93	39°	5987	90+	50+	91	100	-6%	3
	Medium (M)	2991	101	53°	3682	90+	50+	91	99	-6%	4
	Wide (W)	2702	91	69°	1790	90+	50+	91	99	-6%	4



#### AccuRender Technology (CRI 90+)

The right light brings colors to life. Our new AccuRender technology helps ensure colors are rendered more accurately and consistently, while doing so as efficiently as CRI 80 products.



Standard CRI 80

Good color rendering and high efficacy



#### Standard CRI 90

Better color rendering and low efficacy



#### AccuRender

Best color rendering, color preference and high efficacy

#### Enjoy design flexibility

#### Full range of products and options:

- Available soon in across Lightolier portfolio for application flexibility
- Multiple color temperatures (CCTs) and lumen packages offered

#### **Promote savings**

#### High efficacy, with no penalty:

- Energy efficacy compares well to conventional 80 CRI
- Up to 25% more energy savings vs competitor 90 CRI<sup>1</sup>
- Helps meet Title 24 requirements

#### Show your true colors

#### High color rendering:

- True to life colors that help energize your environment and render better flesh tones critical for healthcare hospitality and retail applications.
- R<sub>a</sub> up to 94 CRI
   R<sub>f</sub> up to 92 TM-30
   R<sub>g</sub> up to 67 CRI
   G<sub>a</sub> up to 99 CRI
   C<sub>g</sub> up to 94 CRI
   R<sub>ca,M</sub> up to -5% TM-30

#### Achieve color balance

#### Best in class color consistency:

 Promote aesthetic harmony in your space with ≤ 2 SDCM

#### Footnotes for page 1

- Emergency (EM6) frame is compatible with reflector mounted test switch when trim is ordered
  with IEM6 option code (not compatible with 347V or Power over Ethernet configurations).
  For remote mount switch, order standard trim and CAEM6TSCP mounting plate accessory.
- 2. Chicago plenum (LC) frame option not available with BAC nor EM6 options.
- 3. Consult factory for 5000K CCT (50)with narrow (N) beam.
- Dim-to-warm (D2W) available only with Z10 dimming up to 2000Im with Narrow (N) and Medium (M) beam engines only.
- b. Linear driver profile (see page 8).
- Flex install option requires light engine (F)/trim only (up to 2500lm).
   For use only with optional 4RNSR new construction frame accessory.
   Not available with Interact (RA) dimming and IEM6 trim options. See page 3 for further details.
- . Retrofits select legacy luminaires (E & Z10 dimming only see pages 2 & 8).
- Non-conductive flush mount lens with pre-installed gasket
   (matte white non-conductive flange with diffuse lens that is flush with the flange).
- 9. Failure to properly select the "BAC" suffix could result in you receiving product that is not BAA compliant product with no recourse for an RMA or refund. This BAC designation hereunder does not address (i) the applicability of, or availability of a waiver under, the Trade Agreements Act, or (ii) the "Buy America" domestic content requirements imposed on states, localities, and other non-federal entities as a condition of receiving funds administered by the Department of Transportation or other federal enepsies.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 2 of 11



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

Type:

**E2** 

ALRORE25-12352

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

#### Frame-in-kits

#### **New Construction:**

Galvanized stamped steel for dry or plaster ceilings. Pre-installed telescoping mounting bars from 13" to 24". For 4' distances, use 1/2" EMT, 1-1/2" x 1/2" U or C channel.

Max ceiling thickness is 2" (51 mm) plenum depth for installation.

#### Patented install Mounting frame:

- Pre-installed mounting bars for fast and tool-less installs into T-grid & hat channel ceilings.
- Close-cut aperture design eliminates possibility of gap between ceiling opening and reflector flange.
- Separate wiring compartment for wiring frame to building allows inspection prior to light engine install.
- Simple plug-and-play connection between frame and light engine from below ceiling.

#### Retrofit

 Easily updates legacy Calculite downlights to the latest LED technology. Includes light engine, trim, and driver mounted on cover plate that mounts to junction box of previous Calculite generations. Order with R or RH option code at end of light engine catalog number (see details on page 6).

#### Compatibility:

Frames	Engines
With CFL	Use Retrofit configuration
S4118_series	C4R_ Trim + C4L_ Engine
With INC	Use Retrofit configuration
AS400_series	C4R_ Trim + C4L_ Engine
With LED C4L_N series C4X4L_N series P4RD N series	Use Retrofit configuration C4R_ Trim + C4L_ Engine C4S_ Trim + C4L_ Engine C4R_ Trim + C4L_ Engine

\* Not available for retrofitting luminaires with integral emergency battery.

#### **Emergency**

Bodine BSL6 6W battery pack with self-test/ diagnostic functionality. Factory or field mounted to frame

- For trim with integral emergency test switch, order trim with IEM6 option (ex: C4RDLCCIEM6).
- For remote ceiling mounted test switch, order standard trim (ex: C4RDLCC). Optional accessory ceiling mounting plate available (CAEM6TSCP) for remote mounted test switch.
- Refer to Calculite-LyteProfile-EasyLyte Emergency Battery Pack specification sheet for more details.

#### **Dimming**

All configurations are FCC Class A unless otherwise specified.

- Advance 0-10V 1% (Z10), logarithmic curve is standard. Specify D2O for factory-set dimto-off function, consult factory for linear dimming curve.
- EldoLED SOLODrive (SOL) 0-10v 0.1%
- Lutron PEQ0 (L) Hi-Lume Premier 0.1% EcoSystem
- · Lutron LDE1 (L01) EcoSystem 1%
- · Lutron LTE (LTE) Hi-Lume 2-wire phase cut 1%
- Electronic low voltage (E) forward or reverse phase dimming, Remodel and AirSeal IC Shallow are FCC Class B
- DALI (D) DT6 DALI 0.1%
- DMX (DMX) Digital Multiplexing with RDM 0.1%

**Dimming Options:** The following are factory-set options for the SOL, D, and DMX driver options (ex. DMXLIN):

- · SOL/D/DMX: Logarithmic (-) standard
- · SOL/D/DMX: Linear (LIN)
- · SOL/DMX: Square (SQR)
- Dim to Warm (D2W): option changes CCT from 3000-1800K gradually as it dims. Use with Z10 dimming only. Fixture-to-fixture consistency of ≤3SDCM at 2700K & 3000K, and ≤5SDCM at 1800K.

#### **Optical systems**

#### Comfort throughout the space:

True 50° physical cutoff and 45° reflected cutoff.

#### Quality of light:

2 SDCM ensures color consistency from fixture to fixture and over the luminaire's long lifetime.

#### MesoOptics PET optical diffusion film:

Provides a smooth beam shape and mitigates color over angle with optimized luminaire efficiency.

#### Light engine

Quick connect power pack allow for easy installation and replacement from below ceiling with no need for additional wiring. This allows for:

- Frame and ceiling installation to be performed while still finalizing details such as lumen packages, CCT and control type.
- Easy replacement of electronics at end of life with minimal wasted material and labor required.
- Ease and upgradability of technology.
- 347V light engines are Z10 dimming only and include dedicated 347V driver. For 347V non-Z10 dimming, order T347-75VA field-installed stepdown transformer accessory.

#### Flex engine (F)

- Frame-optional engine suited for new construction, remodel, and retrofit applications
- 4RNSR new construction frame accessory available as required to support ceiling construction.
- All wiring is done on the integral j-box to the engine.

#### **Options and Accessories**

Flangeless mud-in ring: Use CA4RFT
For use with flangless plaster installations.

**Sloped ceilings:** Compatible with sloped ceiling adapters (see **SCA** spec sheet).

C4RVPWH: Includes machined aluminum ring painted white, gasketed for IP65 protection, and impact resistant polycarbonate lens (IK10). Locks in place with discrete setscrew (key included). Available also with antimicrobial finish (C4RVPWHAMF).

**CAEM6TSCP:** Ceiling cover plate for remote mounted EM6 test switch. 1/2" (25mm) hole, 4 3/8" (109mm) x 2 3/4" (69mm) rectangular. Includes two mounting screws.

Field install EM6 kit with Bodine BSL6 6W battery pack with self-test/self-diagnostic: Includes remote ceiling plate for test switch. To mount test switch to trim for new construction frame, order trim with IEM6 option code (e.g. C4RDLCCIEM6). Refer to Calculite-LyteProfile-EasyLyte Emergency Battery Pack specification sheet for more details.

CAEM6: For use with UniFrame frame in kits.

LCEM6: For use with Flex intall (F) light engines.

SBA: Interact Ready System Bridge Accessory Requires IRT9015 IR remote and Interact Pro App for commissioning.

T347-75VA: Field installable 347:120V 75VA stepdown transformer, attaches to knock out on frame junction box, for use with non-IC (N) frames. Not for use with emergency options.

#### **ENERGY STAR® exceptions**

- 500lm & 90 CRI configurations
- Champagne Bronze & Black finishes
- 347V & Emergency voltage/options
- Dali, EldoLED Solo drivers

#### Title 24 exceptions

- 1000lm configurations
- Champagne Bronze & Black finishes

#### **Labels and Listings**

- cULus listed for wet locations
- ENERGY STAR® certified
- RoHS certified
- CEC Title 24 JA8 certified
- CCEA (frames with \*LC suffix)
- IP65 rated with vandal proof accessory

#### Warranty



5 year limited warranty Visit Signify.com/warranties for more information on Signify's standard 5-year limited warranty on complete luminaire systems.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 3 of 11



Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) **Catalog Number:** 

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

Type:

**E2** 

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

### interact



	Standalone	Option 1	Option 2	
Dimming, grouping, and zoning	<b>~</b>	<b>✓</b>	<b>✓</b>	
Bluetooth and ZigBee enabled	<b>~</b>	<b>✓</b>	<b>~</b>	
Motion sensing and daylight harvesting	<b>~</b>	<b>✓</b>	<b>✓</b>	
Integration with 0-10V and phase dimming fixtures	<b>~</b>	<b>✓</b>	<b>✓</b>	
Code compliance	<b>~</b>	<b>✓</b>	<b>~</b>	
Granular dimming and dwell time	<b>~</b>	<b>✓</b>	<b>✓</b>	
Correlated color temperature (CCT) tuning by switch New	<b>~</b>	<b>✓</b>	<b>✓</b>	
Support for sensor-based Tunable White luminaires New	<b>~</b>	<b>✓</b>	<b>✓</b>	
Energy reporting and monitoring		<b>✓</b>	<b>✓</b>	
Scheduling		<b>✓</b>	<b>✓</b>	
Demand response		<b>✓</b>	<b>✓</b>	
BMS integration (BACnet)			<b>✓</b>	
Floor plan visualization			<b>✓</b>	
IoT sensors for wellness			<b>✓</b>	
IoT Apps for productivity			<b>✓</b>	

#### Currently supported maximum system size

To be able to design the lighting system correctly for the customer, it is important to know the prime characteristics of the system, its possibilities and limitations.

System level						
Total number of gateways	Unlimited					
Total number of devices	200 per network					
Luminaires with integrated sensors	150					
Smart TLEDS	150					
· Zones + groups	64					
Total number of ZGP devices (sensors and switches)	50					
· Sensors	30					
· Switches	50					

Group level					
Recommended number of lights	40 (maximum 150)				
Number of ZGP devices	5				
Number of scenes	16				

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CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 4 of 11



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

Type:

ALRORE25-12352

#### Calculite LED 4" gen 3 C4RDL

#### Round Downlight

#### Wireless controls options

- · SWZCS is a connected sensor with integral occupancy and daylight sensing and supports wireless mesh connectivity.
- · The sensor works in the standalone mode (similar to SpaceWise) when configured without a gateway or in a cloud connected mode if a compatible gateway is used.
- Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- · Startup is implemented via Interact Pro App (Android or iPhone) & BlueTooth connectivity. The App provides flexibility to choose between a gateway or non gateway mode for setup
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely and use IRT9015 remote on-site to identify and group devices together.

#### Compatible with:

- SWS200 & UID8465 wireless scene switch
- Battery powered IP42 presence sensor OCC sensor IA CM WH 10/1
- Battery powered IP42 presence & daylight sensor OCC-DL sensor IA CM IP42 WH
- LCN3110: battery powered IP65 presence sensor, OCC sensor IA CM IP65W
- LCN3120: battery powered IP65 presence & daylight sensor, OCC-DL sensor IA CM IP65 WH
- For more information on Interact visit: interact-lighting.com/interactproscalablesystem

#### Radio only sensor (RA or RADIO)

- · Integral RA or RADIO only sensor simply enables wireless mesh connectivity to the luminaire without any occupancy or daylight sensing.
- Ideal for applications where sensing functionality is managed by other Interact devices and the luminaire only needs to have wireless connectivity
- · Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system
- · Startup is implemented via Interact Pro App (Android or iPhone) & Bluetooth connectivity. The App provides flexibility to choose between a gateway or non-gateway mode for setup.
- · Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely, identify and group devices together onsite
- Compatible with SWS200 and UID8465 wireless scene switch, wireless Occ sensor (OCC SENSOR IA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1)
- · For more information on Interact visit: interact-lighting.com/interactproscalablesystem

#### Sensor bundle (IAOSB or SB)

- A wireless IoT connected lighting solution for large enterprises that span across multiple floors, buildings and require multiple gateways
- View all your projects under one dashboard and easily compare insights from multiple projects in one view.
- · Compatible with SWS200 wireless scene switch, wireless Occ sensor (OCC SENSORIA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1) and wireless Occupancy or Daylight & Occupancy sensors available. Use Interact software and insights to increase building efficiency, achieve building wide integration and optimize space through occupancy analytics.
- · IAOSB or SB option in addition to occupancy and daylights sensing supports advanced IoT capabilities, such as people estimation analysis, desk level temperature & humidity sensing, noise classification, and BLE beacon.
- · Requires compatible Gateway and internet connectivity for commissioning
- For more information, visit: interact-lighting.com/interactproscalablesystem

#### **Emergency Options (ER100)**

- Power Sensing (factory default) -Recommended UL924 option requires unswitched power sense line, absence of voltage on the normal circuit triggers luminaire to 100% output.
- Power Interruption Detection (field option) -Detects AC power interruption >30ms triggers 90 minute emergency mode with luminaire at 100% output.

#### Interact supported sensor option codes across Genlyte product lines

	Evokit	Day-Brite	Ledalite	Lightolier
ZigBee + Bluetooth + Sensing	SWZCS	SWZCS	CS	SBA accessory (external)
ZigBee + Bluetooth	RADIO	RADIO	RA	RA
ZigBee + Bluetooth + Sensing + Environmental data	IAOSB	IAOSB	SB	SB
ZigBee + Highbay + Sensing	-	SWZCSH	-	-

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 5 of 11



#### Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

Catalog Number: 4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH Type:

**E2** 

ALRORE25-12352

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

#### **Polished Reflectors**



Specular clear (CL): Most specular and most efficient finish, delivers maximum photometric performance but can produce a mirror image effect of the interior space.



Comfort clear (CC): Semi-specular finish that softens the light at the source of the reflector and creates a subtle, even luminance from the reflector cone.



Comfort clear diffuse (CD): Slightly diffuse clear finish, that eliminates iridescence and reduces the mirror image effect inherent with specular finishes.



Vandal proof (VP): Provides an elegant solution for vandal resistant needs. One piece machined aluminum ring with impact resistant clear lens. Flangeless (F) flange must be ordered. Provides the luminaire with an IK10 impact and IP65 rating.



Champagne bronze (CZ): Semi-specular finish that softens light at the source of the reflector while providing a warmer reflector appearance (slightly warmer).



White (WH): (matte) Brightest illuminated aperture and provides the smoothest transition to most ceilings when off (white is only available with a white flange).



Black (BK): (anodized) Specular finish that provides the lowest aperture brightness possible and significantly reduces source identification in a ceiling.



Shower light (SL): Wet location rated shower light with clear acrylic lens applicable in any installation requiring dead front trims, interior or exterior non-corrosive applications, or where a diffused lens at the ceiling is required (non-conductive).

#### **Flanges**



White (-): (matte) Provides the smoothest transition to ceilings when off.



Polished (P): (matches aperture) Produces a continuous look throughout the reflector (aperture matching)



Flangeless (F): (flush-mount)Creates a flush, virtually seamless transition from aperture to ceiling.



Mud-in ring (FT): Low profile, machined aluminum mud-in ring provides a raised rib to plaster up to and a 3/16" flange thickness. The ring is attached to the ceiling material as opposed to the frame-in kit to avoid conduction of heat and vibration which can cause yellowing or cracking of the plaster.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

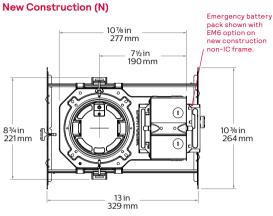
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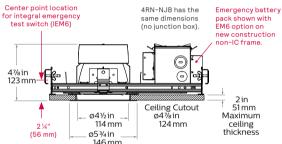
**E2** 

ALRORE25-12352

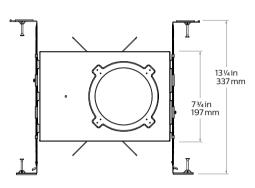
#### C4RDL Calculite LED 4" gen 3

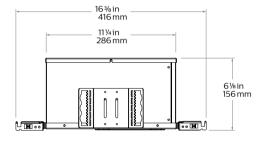
#### Round Downlight



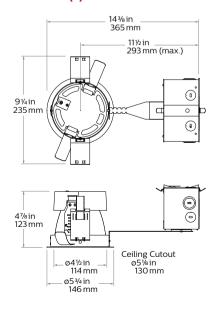


#### Chicago Plenum (LC)

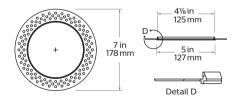




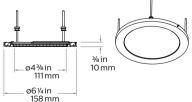
#### Remodeler (R)



#### Flangeless mud-in ring (CA4RFT) accessory



#### Vandal Proof (VP) accessory



CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 7 of 11

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH Type:

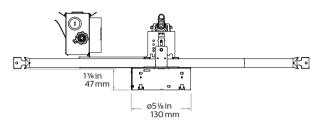
**E2** 

ALRORE25-12352

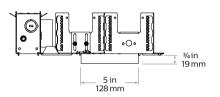
#### C4RDL Calculite LED 4" gen 3

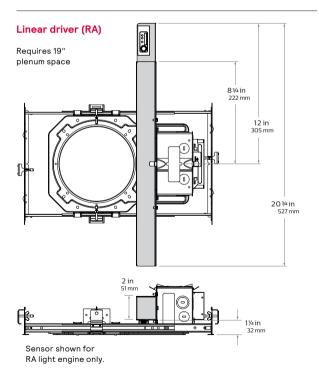
#### Round Downlight

#### Round tall collar frame (RH type light engine required)

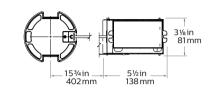


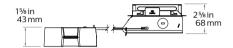
#### Round standard steel frame (R type light engine required)



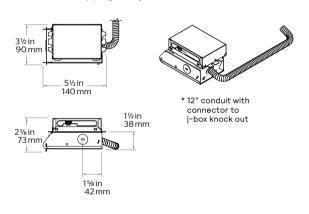


#### Flex Install (F)

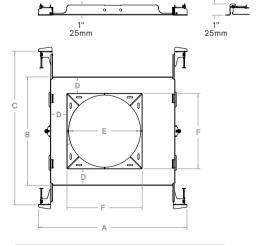




#### LCEM6 Flex install (F) engine only



#### 4RNSR Flex install non-IC frame



Α	В	С	D	E	F
10 1/8"	7¼"	13 %"	1"	4%"	5¼"
276mm	184mm	345mm	25mm	124mm	132mm

 ${\tt CalculiteLEDgen 3-4 in-Downlight-C4RDL} \quad {\tt 05/25} \quad {\tt page 8 of 11}$ 



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

#### Type:

**E2** 

ALRORE25-12352

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

#### Electrical - Narrow

Light	Input	Input	Input	Drive	Input	LED	THD Factor	Power Factor
engine	Volts	Freq.	Current	Current		Power	@ Max Load	
	120V	50/60Hz	0.050A	0.15A	6.0W	4.8W	<10%	>0.9
500lm	277V	50/60Hz	0.023A	0.15A	6.3W	4.8W	<30%	>0.9
	347V	50/60Hz	0.020A	0.15A	7.0W	4.8W	N/A	>0.9
	120V	50/60Hz	0.072A	0.22A	8.7W	7.1W	<10%	>0.9
1000lm	277V	50/60Hz	0.032A	0.22A	8.9W	7.1W	<20%	>0.9
	347V	50/60Hz	0.029A	0.22A	10.1W	7.1W	<30%	>0.9
	120V	50/60Hz	0.108A	0.33A	12.9W	10.8W	<10%	>0.9
1500lm	277V	50/60Hz	0.047A	0.33A	13.0W	10.8W	<10%	>0.9
	347V	50/60Hz	0.043A	0.33A	14.8W	10.8W	<25%	>0.9
	120V	50/60Hz	0.147A	0.45A	17.6W	14.9W	<10%	>0.9
2000lm	277V	50/60Hz	0.064A	0.45A	17.7W	14.9W	<10%	>0.9
	347V	50/60Hz	0.056A	0.45A	19.6W	14.9W	<20%	>0.9
	120V	50/60Hz	0.180A	0.55A	21.6W	18.3W	<10%	>0.9
2500lm	277V	50/60Hz	0.078A	0.55A	21.7W	18.3W	<10%	>0.9
	347V	50/60Hz	0.066A	0.55A	22.9W	18.3W	<20%	>0.9
3000lm	120V	50/60Hz	0.231A	0.70A	27.7W	23.7W	<10%	>0.9
	277V	50/60Hz	0.100A	0.70A	27.6W	23.7W	<10%	>0.9
	347V	50/60Hz	0.083A	0.70A	28.9W	23.7W	<15%	>0.9

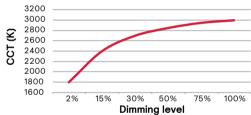
#### Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam		
500lm 1000lm 1500lm	L85 @ 55,000hrs.	L90 @ 60,000hrs.		
2000lm	L85 @ 55,000hrs.	L80 @ 60,000hrs.		

#### **Electrical - Medium & Wide Downlights**

Light	Input	Input	Input	Drive	Input	LED	THD Factor	Power Factor
engine	Volts	Freq.		Current		Power	@ Max Load	
	120V	50/60Hz	0.051A	0.15A	6.1W	4.8W	<10%	>0.9
500lm	277V	50/60Hz	0.023A	0.15A	6.4W	4.8W	<30%	>0.9
	347V	50/60Hz	0.020A	0.15A	7.1W	4.8W	N/A	>0.9
	120V	50/60Hz	0.084A	0.25A	10.1W	8.3W	<10%	>0.9
1000lm	277V	50/60Hz	0.037A	0.25A	10.3W	8.3W	<10%	>0.9
	347V	50/60Hz	0.034A	0.25A	11.7W	8.3W	<30%	>0.9
	120V	50/60Hz	0.117A	0.36A	14.0W	11.8W	<10%	>0.9
1500lm	277V	50/60Hz	0.051A	0.36A	14.1W	11.8W	<10%	>0.9
	347V	50/60Hz	0.046A	0.36A	16.0W	11.8W	<25%	>0.9
	120V	50/60Hz	0.153A	0.47A	18.4W	15.5W	<10%	>0.9
2000lm	277V	50/60Hz	0.067A	0.47A	18.5W	15.5W	<10%	>0.9
	347V	50/60Hz	0.059A	0.47A	20.3W	15.5W	<20%	>0.9
	120V	50/60Hz	0.197A	0.60A	23.6W	20.1W	<10%	>0.9
2500lm	277V	50/60Hz	0.085A	0.60A	23.6W	20.1W	<10%	>0.9
	347V	50/60Hz	0.072A	0.60A	24.9W	20.1W	<20%	>0.9
	120V	50/60Hz	0.247A	0.75A	29.7W	25.5W	<10%	>0.9
3000lm	277V	50/60Hz	0.107A	0.75A	29.7W	25.5W	<10%	>0.9
	347V	50/60Hz	0.087A	0.75A	30.4W	25.5W	<15%	>0.9

#### Dim-to-Warm: CCT vs Dimmed level



#### Lifetime (TM-21 data)

Lumens	Narrow beam	Medium/Wide beam*
500lm 1000lm 1500lm	L90 @ 60,000hrs.	L90 @ 60,000hrs.
2000lm 2500lm 3000lm*	L90 @ 60,000hrs.	L85 @ 60,000hrs.

<sup>\*</sup> Lutron 3000lm with Medium/Wide beam is L80 @ 60,000hrs.

#### Marked spacing applications

Light engine	3000lm
C4L_Z10 series	Х
C4L_L01 series	Х
C4L_L1 series	Х
C4L_LD series	Х
C4L_LTE series	Х
C4L_D series	Х
C4L_DMX series	Х
C4L_RA series	Х

Modules marked with an X require marked spacing:

- Center-to-center of adjacent luminaires: 24" (610mm)
- Luminaire center to side building member: 12" (305mm)

In accordance with CAN ICES-005-A/ NEB-005-A and FCC Part 15-A.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 9 of 11

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH

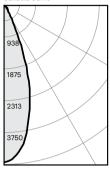
#### Type:

E<sub>2</sub>

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

#### Narrow beam, 1500lm Engine, 117lm/W at 13W



4RN / C4L15935I	N / C4RDLCL
Output lumens:	1492 lms

Input watts: 90 min CCT<sup>1</sup>: Spacing Crit.: 3500K 0.62

Zone	Lumens	%Luminaire
0-30	1322	88.6%
0-40	1437	96.3%
0-60	1490	99.9%
0-90	1492	100.0%

Angle	Mean CP	Lumens
0	3676	
5	3512	
10	3039	320
15	2364	
20	1536	639
25	769	
30	312	363
35	171	
40	135	115
45	64	
50	8	51
55	2	
60	1	2
65	1	
70	0	1
75	0	
80	0	0

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	102	4.8'
6'	80	5.4'
7'	65	6.0'
8'	45	6.6'
9'	19	8.7'

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.					
5'	63.0	0.57					
6'	42.0	0.37					
7'	30.0	0.27					
8'	25.0	0.22					
9'	20.0	0.18					
38' x 38' x 10' Room, Workplane 2.5'							

Efficacy: 116.6 lm/W Report<sup>2</sup>: STMR-2974

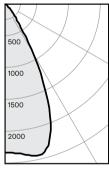
#### Adjustment factors

Finish	ССТ	Lumens			
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%			

#### Coefficients of utilization

Ce	iling		80% 70% 50% 30%		1%	0%						
Wall		70	50	30	10	50	10	50	10	50	10	0
RC	R	Zona	al cav	ity me	ethod	- Eff	ective	e floo	r refl	ectan	ice =	20%
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	114	112	110	108	110	106	106	103	102	100	95
Ě	2	110	106	103	100	104	99	101	96	98	94	91
Room Cavity Ratio	3	106	100	96	93	99	92	97	91	94	89	87
ξ	4	102	96	91	88	94	87	92	86	91	85	83
a S	5	98	91	86	83	90	82	89	82	87	81	79
Ö	6	94	87	82	79	86	78	85	78	84	77	76
0	7	91	83	78	75	83	75	82	74	80	74	73
2	8	88	80	75	72	79	72	78	71	77	71	70
_	9	85	77	72	69	76	69	75	68	75	68	67
	10	82	74	69	66	73	66	73	66	72	66	64

#### Medium beam, 1500lm Engine, 108 lm/W at 14W



#### 4RN / C4L15935M / C4RDLCL

Output lumens: Input watts:	1510 lms 14.0 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	0.92
Beam Angle:	54°

Zone	Lumens	%Luminaire
0-30	1242	82.3%
0-40	1450	96.0%
0-60	1508	99.9%
0-90	1510	100.0%

Angle Mean CP Lumens

0 5	1859	
5	1871	
10	1924	180
15	1910	
20	1677	527
25	1204	
30	661	535
35	307	
40	154	208
45	69	
50	9	55
55	2 1	
60	1	3
65	1	
70	0	1
75	0	
80	0 0	0
85	l 0	

Height to ighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	74	4.6'
6'	52	5.5'
7'	38	6.4'
8'	29	7.4'
9'	23	8.3'

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	70.0	0.62
6'	46.0	0.41
7'	32.0	0.29
8'	27.0	0.24
9'	22.0	0.19
	Room, Workplane 2.5' 0/50/20% Reflectanc	es

Efficacy: 107.9 lm/W Report<sup>2</sup>: STMR-1613

Finish	ССТ	Lumens
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Cei	ling		80	)%		70	1%	50	)%	30	)%	0%
Wa	II	70	50	30	10	50	10	50	10	50	10	0
RCI	R	Zona	al cav	ity me	ethod	l – Eff	ectiv	e floo	r refl	ectar	ice =	20%
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	114	111	109	107	109	105	105	102	101	99	94
ij	2	109	104	101	97	103	96	99	94	96	92	89
æ	3	104	98	93	90	97	89	94	88	92	86	83
Ę	4	99	92	87	83	91	83	89	82	87	81	79
ě	5	95	87	82	78	86	77	84	77	83	76	74
Room Cavity Ratio	6	90	82	77	73	81	72	80	72	79	72	70
6	7	86	78	72	68	77	68	76	68	75	67	66
2	8	83	74	68	64	73	64	72	64	71	64	62
	9	79	70	65	61	70	61	69	61	68	60	59
	10	76	67	61	58	66	58	65	57	65	57	56

- 1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.

  2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

4R-N + C4L-10-935-BEAM?-Z10-U + C4-R-DL-FINISH??-F + C4RVPWH Type:

**E2** 

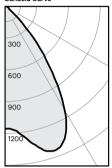
ALRORE25-12352

#### C4RDL Calculite LED 4" gen 3

#### Round Downlight

#### Wide beam, 1500lm Engine, 99 lm/W at 14W

#### andela Curv



#### 4RN / C4L15935W / C4RDLCL

Output lumens:	1385 lms
Input watts:	14.0 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	1.26
Beam Angle:	67°

#### Zonal summary

Zone	Lumens	%Luminaire
0-30 0-40 0-60 0-90	886 1264 1384 1385	64.0% 91.3% 99.9% 100.0%

Mean CP	Lumens
917	
941	
1025	93
1116	
1135	314
1063	
873	479
606	
366	378
134	
15	116
3	
2	4
1	
1	1
0	
0	0
	917 941 1025 1116 1135 1063 873 606 366 134 15 3 2

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	37	6.3'
6'	25	7.6'
7'	19	8.8'
8'	14	10.1'
9'	11	11.3'

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	63.0	0.62
6'	42.0	0.41
7'	29.0	0.29
8'	25.0	0.24
9'	20.0	0.19
	Room, Workplane 2.5' 0/50/20% Reflectanc	es

Efficacy: 98.9Im/W Report<sup>2</sup>: STMR-1641.1

#### Adjustment factors

Finish	ССТ	Lumens
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Ce	ling	80%			70	1%	50	1%	30	1%	0%	
Wa	II	70 50 30 10			10	50	10	50	10	50	10	0
RC	R	Zonal cavity method - Effective floor reflectance					ice =	20%				
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	113	110	108	106	108	104	104	101	100	98	93
Ratio	2	107	102	98	95	101	93	97	91	94	89	86
æ	3	102	95	90	85	93	85	91	83	88	82	79
Room Cavity	4	96	88	82	78	87	77	85	76	83	75	73
à	5	91	82	76	71	81	71	79	70	77	70	67
õ	6	86	76	70	65	75	65	74	65	72	64	62
Ö	7	81	71	65	60	70	60	69	60	68	59	58
8	8	77	66	60	56	66	56	65	55	64	55	53
	9	72	62	56	52	62	52	61	51	60	51	50
	10	69	58	52	48	58	48	57	48	56	48	46

1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.

2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

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Submitted On: Jul 21, 2025



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

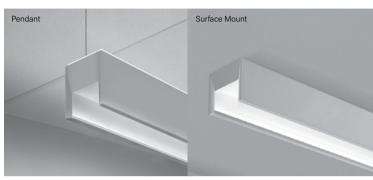
Type:

**P1** 

ALRORE25-12352



# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

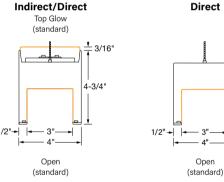


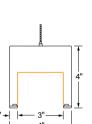
HO4 is a 4" luminaire with open aperture. Uplight Optical distribution options include standard lambertian, widespread and asymmetric patterns enabling more energy efficient building designs. Advanced optical design and mid-power LEDs achieve 90% of initial light output at 100,000+ hours.

This product is enrolled in the International Living Future Institute (ILFI) Declare 2.0 Program and is third-party verified with options achieving Red List Approved and Red List Declared status.

Signal White is standard finish

#### **CROSS SECTIONS**





Open

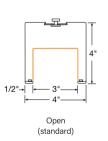
Open (standard)

Uplight/Downlight

Flush

(standard)

#### **Surface Mount**



#### **DIMENSIONS & LIGHT ENGINE**

Mid-powered, mirco LED arrays are tucked into the thin bottom rail and top channel for seamless illumination.



#### **ALSO AVAILABLE IN**



(R)

# 90° CORNERS











BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

Type:

**P1** 

ALRORE25-12352





# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

Ordering Guide Example: HO - 4 - P - ID - RO - 36' - S - S - 835 - TG - OPN - 96LG - 120 - DC - FC-10% - FA50 - C1 - OE - SW - LGD18W - OBO - RLD

BODY TYPE					OUTPUT an	d LED TYPE	
Platform	Series	Luminaire Type	Luminaire Distribution	Luminaire Style	Total Length of Run	Uplight Output ID Only *	Downlight Output (Open)
HO - High Performance Open	4	P - Pendant SM - Surface Mount	ID - Indirect/Direct <sup>1</sup> D - Direct UD - Uplight/ Downlight	RO - Rectilinear Open	8' Minimum 2' section length. 1' Increments. 12' maximum section length.	S - Standard (460 lm/ft) B - Boosted (578 lm/ft) H - High (873 lm/ft) V - Very High (1123 lm/ft) TL - Tailored:  m/ft**  *Lumens provided are for ID on *Specify lm/ft of outputs betwee Consult factory for bailored lum	TL - Tailored:Im/ft** ly. For UD see page 8. en Standard (\$) and Very High (V)

#### **OUTPUT and LED TYPE**

#### MECHANICAL/OPTICAL OPTIONS

#### **ELECTRICAL OPTIONS**

LED CRI/CCT	Uplight (ID and UD Only)	Downlight	Reflector System	Voltage	Circuiting <sup>2</sup>
830 - 80 CRI, 3000K 835 - 80 CRI, 3500K 840 - 80 CRI, 4000K 930 - 90 CRI, 3000K 935 - 90 CRI, 3500K 940 - 90 CRI, 4000K	F - Flush (standard for UD only)  TG - Top Glow (standard) 3  WSO - Widespread Optic 3  WSOTG - Widespread Optic with Top Glow 3  ASY-L - Asymmetric Left Optic 3  ASY-R - Asymmetric Right Optic 3  ASYTG-L - Asymmetric Left Optic with Top Glow 3  ASYTG-R - Asymmetric Right Optic with Top Glow 3	OPN - Open	96LG - 96 Low Gloss White	120 - 120 Voltage 277 - 277 Voltage 347 - 347 Voltage (OTi only)	SC - Single Circuit* One single circuit in a run DC - Dual Circuit* Independent control of up and down separately in an I/D style fixture MC - Multi-Circuit* More than one switch leg or zone Factory shop drawings required  * Battery, Night Light, and Emergency to Generator
935 - 90 CRI, 3500K	ASY-L - Asymmetric Left Optic <sup>3</sup> ASY-R - Asymmetric Right Optic <sup>3</sup> ASYTG-L - Asymmetric Left Optic with Top Glow <sup>3</sup>			(OTi only)	

#### **ELECTRICAL OPTIONS**

#### MOUNTING OPTIONS

D	Driver Selection		Ceiling Hardware Type
0-10V Driver Options  FC-10% - 0-10V 10% (standard)  FC-1% - 0-10V 1%  OTi-10% - EldoLED OTi, 0-10V 10% 5  OTi-1% - EldoLED OTi, 0-10V 1% 5  ELD-10V-0% - EldoLED SOLOdrive, 0-10V 0.1%  DALI Driver Options  FC-DALL-1% - DALI 1%	DMX Driver Options ELD-DMX - EldoLED POWERdrive, 0.1%  Lutron Driver Options LUT-ES1 - Lutron, Ecosystem 1%	FA50 - Fully Adjustable 50" (standard) FA100 - Fully Adjustable 100" FA150 - Fully Adjustable 50" FA200 - Fully Adjustable 200" FA250 - Fully Adjustable 250" FA300 - Fully Adjustable 300" FM - Flexible Mounting *	C1 - 15/16" T-Bar C1T - 15/16" Tegular¹ C2 - 9/16" T-Bar C2T - 9/16" Tegular¹ C3 - Screw Slot C4 - Hard Ceiling
DXL-DALI-1% - EldoLED Dexal, 1% ELD-DALI-0% - EldoLED SOLOdrive, 0.1%	See Page 3 for additional driver options and details		

#### OTHER OPTIONS

Endcap Style	Emergency Style (Optional) See page 4 Backup Battery table	Integrated ( (Option		Special Options (Optional)
OE - Open Endcap <sup>7</sup> SE - Solid Endcap <sup>8</sup> Finish SW - Signal White (standard) FB - Finelite Black SA - Satin Aluminum #### - RAL Color Code <sup>9</sup>	LGD18W - Legrand 18W Brand Battery Back-up LGD10W - Legrand 10W Brand Battery Back-up EM/GEN - Emergency to Generator NL - Night Light BSL310LP - Bodine Battery Back up Low Profile GTD - Generator Transfer Device ALCR - Automatic Load Control Relay	OBO - Occupancy OBD - Daylight W601 - Wattstopper Wireless Sensor  OBE - Enlighted Sensor  REE - Remote Enlighted  CLM-99 - Encelium RF SLM-99 - Encelium Sensor	AOCC-W - Lutron Athena Sensor <sup>12</sup> (Device Color White) AOCC-B - Lutron Athena Sensor <sup>12</sup> (Device Color Black) ARF-W - Lutron Athena RF <sup>12</sup> (Device Color White) ARF-B - Lutron Athena RF <sup>12</sup> (Device Color Black) VOCC - Lutron Vive Sensor <sup>13</sup> VRF - Lutron Vive RF <sup>13</sup>	CP - Chicago Plenum <sup>14</sup> RLA - Red List Approve RLD - Red List Declared

- 2 Contact factory for switching options
  3 Not available with UD
  4 Indirect/Direct only
  5 Add DTO to gain "Dim to Off" functionality (FC-10% DTO, FC-1% DTO)
- 5 Adu Dr O Gam Dim to Oil functionality (PC-1096 2710, PC-196 2710)
  7 Open Endcap (OE) available for HO4 ID with battery packs as test switch is installed on top of fixture 8 Solid Endcap (OE) required at end with sensor

- 9 LMHS-601 w/ 0-10V driver(s) and LMH-111, up to 6 drivers may be connected.
  LMFS-601 w/ Dell driver, only 1 driver can be connected.
  10 Enlighted components installed by Finelite, provided by others
  11 Enlighted Control Unit & Sensor Cable installed for Remote mounting sensor
  12 0-10V Drivers AOCC up to 10 drivers may be connected; ARF up to 40 driver may be connected
  DALI Drivers AOCC se ARF up to 4 drivers can be connected
  12 Lutron Vive Ingrated Sensors require a DALI driver. Contact factory for Indirect Distribution.
  14 Only available with Ct, C2, and C3 mounting hardware with Finelite Gridbox

Page 2 A brand of legrand

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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

#### Type:

ALRORE25-12352



Submitted by:		Date:	FIN
Туре:	Project:		
Ordering Info:			Better



## High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### **SUPPLEMENTARY DRIVER PAGE**

	0-10V Driver Options		
FC-10%	Factory Choice, 0-10V 10% Dimming (Linear)		
FC-10%-DTO	Factory Choice, 0-10V 10% Dimming, Dim-to-Off (Linear)		
FC-1%	Factory Choice, 0-10V 1% Dimming (Linear)		
FC-1%-DTO	Factory Choice, 0-10V 1% Dimming, Dim-to-Off (Linear)		
ELD-10V-0%	EldoLED SOLOdrive, 0-10V 0.1% Dimming (Linear)		
ELD-10V-1%	EldoLED ECOdrive, 0-10V 1% Dimming (Linear)		
OTi-10%	EldoLED OTi, 0-10V 10% Dimming (Linear)		
OTi-10%-DTO	EldoLED OTi, 0-10V 10% Dimming, Dim-to-Off (Linear)		
OTi-1%	EldoLED OTi, 0-10V 1% Dimming (Linear)		
OTi-1%-DTO	EldoLED OTi, 0-10V 1% Dimming, Dim-to-Off (Linear)		

	DALI Driver Options			
FC-DALI-1%	Factory Choice, DALI 1% Dimming (Logarithmic)			
DXL-DALI-1%	EldoLED Dexal, DALI 1% Dimming (Logarithmic)			
ELD-DALI-0%	EldoLED SOLOdrive, DALI 0.1% Dimming (Logarithmic)			
ELD-DALI-1%	EldoLED ECOdrive, DALI 1% Dimming (Logarithmic)			

	DMX Driver Options
ELD-DMX	EldoLED POWERdrive, DMX 0.1% Dimming (8 Bit, 1CH) (Linear)
ELD-DMX-16	EldoLED POWERdrive, DMX 0.1% Dimming (16 Bit, 2CH) (Linear)

	Lutron Driver Options
LUT-ES1	Lutron, Ecosystem 1% Dimming

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**Index Page** 



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10% Notes: Type:

**P1** 

ALRORE25-12352

Submitted by:		Date:	FINFI
Type:	Project:		
Ordering Info:			Better Lig

# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

### **SPECIFICATIONS**

#### **BODY TYPE**

**CONSTRUCTION:** Precision-cut 6063-T6 extruded aluminum body. Internal joiner system and plug-together wiring are standard.

LENGTHS: Any length, 2' minimum; in 1' increments. 12' maximum section length.

**MITERED CORNERS:** Corners are secured with joining brackets for tight connection. Square and rectangular configurations are available. Minimum 4' length for each leg of configurations. Each corner is made up of two reflector sections 2' long.

#### **OUTPUT and LED TYPE**

**LIGHT OUTPUT:** Four lumen packages available, Standard ( $\mathbf{S}$ ), Boosted Standard ( $\mathbf{B}$ ), High ( $\mathbf{H}$ ), and Very High ( $\mathbf{V}$ ). For lengths 3' and greater, the uplight and downlight can be specified with different lumen packages and dual controls. For Tailored Outputs outside of range from Standard ( $\mathbf{S}$ ) to Very High ( $\mathbf{V}$ ), consult factory. Light engines are replaceable.

### **MECHANICAL/OPTICAL OPTIONS**

**UPLIGHT OPTION**: Patented Top Glow frost white diffuser standard. 12 ft. maximum diffuser length. 73% transmissive, 99% diffusion. Internal secondary diffusers at corners ensure visually seamless, uniform, continuous illumination options include: Flush frost white snap-in diffuser, 73% transmissive, 99% diffusion; Widespread Optic (**WSO**) and Widespread Optic with Top Glow (**WSOTG**); WSO enables increased luminaire spacing with improved ceiling uniformity. Asymmetric optic directs light in a specific direction. **ASY-L** distributes light to the left, **ASY-R** distributed light to the right of the luminaire. Consult factory for more tailored lumen outputs.

**DOWNLIGHT OPTION:** Direct distribution is totally open with unique polymer reflector material that helps define the rectilinear form.

**LUMEN MAINTENANCE:** 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

**REFLECTORS:** High diffuse polymer reflector with matte white finish. UV stable, abrasion resistant, and anti-static.

#### **ELECTRICAL OPTIONS**

**STATIC WHITE FEED:** Standard with one 18-gauge/5-conductor single-circuit feed controlling uplight and downlight together (power and dimming). Specify dual feeds for independent control of uplight and downlight. 14-gauge feed used when luminaire current exceeds 5 amps.

**STATIC WHITE DRIVER:** Replaceable 120V, 277V, and 347V constant current reduction dimming driver standard. Can be wired dimming or non-dimming. 0-10V dimming controls with a range of 100%-10% standard. Dimming to 1% available. Separate dimming for uplight and downlight available. Driver is fully accessible from below the ceiling.

- Power Factor: ≥ 0.9
- Total Harmonic Distortion (THD): <20%
- Expected driver lifetime: 100,000 hours

#### **LUTRON STATIC DRIVER OPTIONS:**

**LUT-ES1** - Hi-lume 1% EcoSystem with Soft-On, Fade-to-Black dimming (LDE1 series).

#### **MOUNTING OPTIONS**

#### HANGING HARDWARE:

- Pendant: 50" Fully Adjustable (FA) plated steel aircraft cable with safety stop hardware standard. The Flexible Mounting Bracket (FM) adjusts the suspension points to accommodate existing architecture. Suspension points adjust up to 2' in from the end of 8' or 12' fixture lengths and up to 1' in on shorter lengths. Consult factory for tailored lighting options.
- Surface Mount: Lay-in ceiling types: caddy clip with 1/4" 20 stud and nut.
   Drywall or concrete surfaces (walls or ceilings): 1/4" 20 stud and nut (provided by others).
- Stem Mount: Contact factory for reigid stems.

#### **OTHER OPTIONS**

**ENDCAPS:** Sculpted open endcap extends the look of the open luminaire and adds 1/4" each end of luminaire. Solid diecast aluminum endcap adds 1/4" to each end of luminaire.

**EMERGENCY STYLE:** Optional emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring, step-dimming driver, backup battery.

Backup Battery		
	Legrand 18W	Legrand 10W/ Bodine BSL310LP
HO4-ID, D, and SM		
Min. Housing Length	8'*	4'*
EM Lumen Output	2030	1208
EM Section Illuminated	2'	2' or 4'

<sup>\*</sup> Minimum fixture housing length for battery pack approved without sensor
The lumens are based on 835. For other CCT/CRI, refer to the Lumen Adjustment Factor table on page 6.

Bodine GTD and Legrand ALCR Min. Length			
Configuration	Min. Length		
Generator	D-2'; ID-3'		
Generator + OCC	D-2'; ID-3'		
Daylight	D-2'; ID-3'		
Generator + Daylight	D-2'; ID-3'		

INTEGRATED SENSORS: Integrated PIR (Passive Infrared) Occupancy (OBO) or Daylight Sensors (OBD) available. Solid Endcap (SE) required at end with sensor. PIR sensors not recommended for stairwell applications. Refer to Occupancy Sensor & Daylight Sensor tech sheet and the Embedded Intelligence landing page for more information and additional sensor options.

**FINISHES:** Finelite Signal White (**SW**) powder coat, Finelite Black (RAL 9005) with semi gloss fine texture (**FB**), and Satin Aluminum (**SA**) are standard. Optional Adder: 179 RAL colors <sup>2</sup> are available.

Continued

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Indirect/Direct and Uplight/Downlight only
 20 business days lead time for color

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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

### Catalog Number:

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

Type:

**P1** 

Submitted by:		Date:	FINFI ITF®
Туре:	Project:		
Ordering Info:			Better Lighting

## **High Performance Open 4" Aperture (HO4)** Pendant and Surface Mount

### **SPECIFICATIONS**

LABELS: Luminaire and electrical components are ETL-listed conforming to UL WEIGHT3: 2.8 lb/ft 1598 in the U.S.A. and CAN/CSA C22.2 No. 250.0 in Canada. In accordance with NEC Code 410.130 (G), this luminaire contains an internal driver disconnect. UL 924 and UL 2108 - PoE options available on request. These fixtures are rated for Damp Location. Chicago Plenum options available for C1, C2, or C3 suspension using our GridBox. HO4 can be used to comply with 2016 Title 24, Part 6 (JA8); high efficacy LED light source requirements. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2015/863. Consult factory for tailored lighting options. Finelite makes the specification process easy when putting healthier products on your projects. Simply add - RLA (Red List Approved) or - RLD (Red List Declared) to your part number.

WARRANTY: 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.

3 Excludes Battery Back up and Generator Transfer Device weight

Configurations

#### LENGTH SPECIFICATIONS FOR CONFIGURATIONS

Measurements are made to the outside of the luminous area as shown above for configurations. Minimum length of any section (X) is 4!

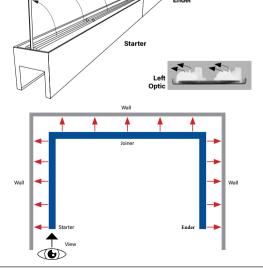
Corner

Measurements are made to the outside of the luminous area as shown above for single corner. Minimum length of any section (X) is 2!

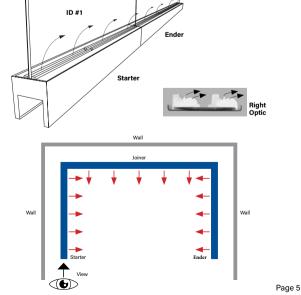
### **ASYMMETRIC OPTIONS**

The diagrams below show a linear run from power feed to ender. Specifing ASY-L distributes light to the left or ASY-R distributes light to the right. For proper orientation: view luminaire from starter end when specifying the direction of the Asymmetric optic.

### Asymmetric Left Optic (ASY-L)



#### Asymmetric Right Optic (ASY-R)



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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10%

Notes:

Type:

ALRORE25-12352





# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### Indirect/Direct Photometry - 4' Luminaire 3500K

HO4-ID-RO-V-V-835-TG-OPN Uplight: Top Glow (Standard) Downlight: Open (Standard)

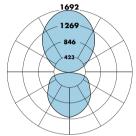
**Distribution:** 53% Up (**V**) / 47% Down (**V**)

Efficacy: 117 lm/W

Uplight: 491 lumens (1123 lumens/foot) Downlight: 3928 lumens (982 lumens/foot) Total luminaire output: 8419 lumens (2105 lm/ft) 71.8 watts (18 W/ft)

Peak Candela Value: 1692 @ 180°

CRI: 80 / CCT: 3500K ITL LM79 Report 90233.001



HO4-ID-RO-V-V-835-WSOTG-OPN

Uplight: Widespread Optic with Top Glow

Downlight: Open (standard)

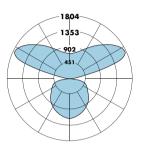
**Distribution:** 55% Up (**V**) / 45% Down (**V**)

Efficacy: 117 lm/W

Uplight: 4562 lumens (1141 lumens/foot) Downlight: 3810 lumens (953 lumens/foot) Total luminaire output: 8372 lumens (2093 lm/ft)

71.4 watts (17.9 W/ft)

Peak Candela Value: 1804 @ 116° CRI: 80 / CCT: 3500K ITL LM79 Report 90232,001



	Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire			
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S ¹	3446 [†53%   47%1]	3919 [↑59% I 41%↓]	5101 [†69% l 31%↓]	6099 [†74% l 26%l]
↓B¹	3860 [†48% l 52%↓]	433 [†53%   47%↓]	5514 [†63%   37%↓]	6512 [†69%   31%‡]
↓H¹	4894 [†38% l 62%‡]	5366 [†43% I 57%↓]	6548 [†53% I 47%↓]	7546 [160% I 40%]
↓V²	5766 [132%   68%1]	6239 [†37%   63%1]	7421 [†47%   53%↓]	8419 [†53% I 47%↓]

	Light Output, 3500K, 80 CRI (Lumens Per Foot)			
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S¹	862	980	1275	1525
↓B¹	965	1083	1379	1628
↓H¹	1223	1342	1637	1887
↓ <b>V</b> ²	1442	1560	1855	2105

	Power, 3500K (Watts Per Foot)			
	↑ <b>S</b> ¹	↑B ¹	†H ¹	↑ <b>V</b> ²
↓S¹	7.0	8.0	10.4	12.5
↓B¹	8.0	8.9	11.3	13.4
↓H¹	10.4	11.3	13.8	15.9
↓V²	12.5	13.4	15.9	18.0

Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
	↑S ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S¹	123	123	123	122
↓B¹	121	121	121	121
↓H¹	118	118	119	119
↓V ²	115	116	117	117

- S Standard Output, B Boosted Standard Output, H High Output, V Very High Output
- <sup>1</sup> Family Correlation based on 4<sup>1</sup> luminaire 3500K Very High Output (**V**) test 120V. <sup>2</sup> Based on ITL reports: 90233

	Total Light Out	tput, 3500K, 80 C	RI (Lumens) - 4'	Luminaire
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S¹	3427 [†55% I 45%↓]	3907 [160%   40%1]	5108 [†70%   30%↓]	6122 [†75% l 25%↓]
↓B¹	3828 [†49%   51%↓]	4308 [†55% I 45%↓]	5509 [164% I 36%]	6523 [†70%   30%↓]
↓H¹	4831 [†39%   61%↓]	5311 [†44%   56%↓]	6512 [†55% l 45%‡]	7525 [†61%   39%↓]
↓V ²	5677 [†33% I 67%↓]	6158 [†38%   62%↓]	7358 [148%   52%1]	8372 [155%   45%1]

	Light Output, 3500K, 80 CRI (Lumens Per Foot)			
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S¹	857	977	1277	1530
↓B¹	957	1077	1377	1631
↓H¹	1208	1328	1628	1881
↓V ²	1419	1539	1840	2093

Power, 3500K (Watts Per Foot)				
	↑ <b>S</b> ¹	↑B ¹	1H 1	↑ <b>V</b> ²
↓S¹	7.0	7.9	10.3	12.4
↓B¹	8.0	9.0	11.3	13.4
↓H¹	10.3	11.3	13.7	15.8
↓V²	12.4	13.4	15.8	17.9

Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
	† <b>S</b> 1	↑B ¹	1H 1	↑ <b>V</b> ²
↓S¹	123	123	123	123
↓B¹	121	121	122	122
↓H¹	117	118	119	119
↓V ²	114	115	117	117

- S Standard Output, B Boosted Standard Output, H High Output, V Very High Output
- <sup>1</sup> Family Correlation based on 4' luminaire 3500K Very High Output (**V**) test 120V. <sup>2</sup> Based on ITL reports: 90232

Wattage is Real Power. If you would like additional details to calculate Apparent Power, please contact your local Finelite representative.

#### Sample Lumen Adjustment Calculation

Lumen Adjustment Factors 80 CRI		
<b>3000K</b> 0.985		
3500K	1.000	
4000K	1.032	

Lumen Adjustment Factors 90 CRI		
3000K	0.746	
3500K	0.760	
<b>4000K</b> 0.789		

High Output (H) / Standard Output (S), 4000K, 90 CRI Lumen Adjustment Factor: 0.789

Total Light Output: 5101 lm x 0.789 = 4025 lm

Total Light Output per Foot: 1275 lm/ft x 0.789 = 1006 lm/ft. watts/foot: 10.4 W/ft.

watts/foot: 10.4 W/ft.

Efficacy = 
$$\frac{1006 \frac{\text{lm}}{\text{ft.}}}{10.4 \frac{\text{W}}{\text{ft.}}} = 97 \text{ lm/W}$$

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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10%

Notes:

Type:

ALRORE25-12352



## **FINELITE®** Better Lighting

# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### Indirect/Direct Photometry - 4' Luminaire 3500K

HO4-ID-RO-V-V-835-ASY-L-OPN Uplight: Asymmetric Left Optic Downlight: Open (Standard)

**Distribution:** 52% Up (**V**) / 48% Down (**V**)

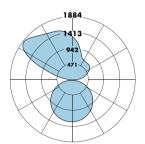
Efficacy: 118 lm/W

Uplight: 4444 lumens (1111 lumens/foot) Downlight: 4054 lumens (1014 lumens/foot) Total luminaire output: 8498 lumens (2125 lm/ft) 71.8 watts (18 W/ft)

Peak Candela Value: 1884 @ 128°

CRI: 80 / CCT: 3500K

ITL LM79 Report 899988, 90233



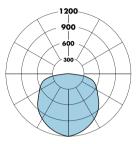
#### Direct Photometry - 4' Luminaire 3500K

HO4-D-RO-V-835-OPN Downlight: Open (Standard)

Efficacy: 116 lm/W

Total luminaire output: 4060 lumens (1015 lm/ft) 35 watts (8.8 W/ft)

Peak Candela Value: 1200 @ 0° CRI: 80 / CCT: 3500K ITL LM79 Report 89348



	Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire				
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S¹	3479 (†52% l 48% l)	3947 (†58%   42%1)	5116 (†68% l 32%↓)	6104 (†73% l 27% l)	
↓B¹	3905 (†55%   45%1)	4373 (†52%   48%1)	5543 (†63% I 37%I)	6530 (†68% I 32%↓)	
↓H¹	4972 (†37% l 63%1)	5440 (†42% l 58% l)	6610 (†52% l 48%1)	7597 (†58% l 42%↓)	
↓V ²	5873 (†31% l 69% l)	6341 (†36% I 64% J)	7510 (†46% l 54%↓)	8498 (†52%   48%1)	

	Light Output, 3500K, 80 CRI (Lumens Per Foot)				
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S¹	870	987	1279	1526	
↓B¹	976	1093	1386	1633	
↓H¹	1243	1360	1652	1899	
↓ <b>V</b> ²	1468	1585	1878	2125	

	Power, 3500K (Watts Per Foot)				
	↑S ¹	↑B ¹	1H 1	↑ <b>V</b> ²	
↓S¹	7.0	8.0	10.4	12.5	
↓B¹	8.0	8.9	11.3	13.4	
↓H¹	10.4	11.3	13.8	15.9	
↓V²	12.5	13.4	15.9	18.0	

	Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S¹	124	124	123	122	
↓B¹	122	122	122	121	
↓H¹	120	120	120	120	
↓V²	118	118	118	118	

Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire				
↓S¹	↓B ¹	↓H ¹	↓ <b>V</b> ²	
1662	2089	3158	4060	

Light Output, 3500K, 80 CRI (Lumens Per Foot)				
↓ <b>S</b> ¹	↓B ¹	↓H ¹	↓ <b>V</b> ²	
415	522	789	1015	

Power, 3500K (Watts Per Foot)				
↓S¹	↓B¹	↓H ¹	↓ <b>V</b> ²	
3.4	4.4	6.7	8.8	

Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
↓S¹	↓B¹	↓H ¹	↓ <b>V</b> ²	
121	120	118	116	

- dard Output, B Boosted Standard Output, H High Output, V Very High Output
- $^{\rm 1}$  Family Correlation based on 4' luminaire 3500K Very High Output (V) test 120V.
- <sup>2</sup> Based on ITL reports: 89348

- Family Correlation based on 4' luminaire 3500K Very High Output (V) test 120V.
- <sup>2</sup> Based on ITL report: 89988, 90233

Wattage is Real Power. If you would like additional details to calculate Apparent Power, please contact your local Finelite representative.

### **Sample Lumen Adjustment Calculation**

Lumen Adjustment Factors 80 CRI		
<b>3000K</b> 0.985		
3500K	1.000	
4000K	1.032	

Lumen Adjustment Factors 90 CRI		
3000K	0.746	
3500K	0.760	
4000K	0.789	

High Output (H) / Standard Output (S), 4000K, 90 CRI Lumen Adjustment Factor: 0.789

Total Light Output: 5116 lm x 0.789 = 4037 lm

Total Light Output per Foot: 1279 lm/ft x 0.789 = 1009 lm/ft. watts/foot: 10.4 W/ft.

watts/foot: 10.4 W/ft.

Efficacy = 
$$\frac{1009 \frac{\text{lm}}{\text{ft.}}}{10.4 \frac{\text{W}}{\text{ft.}}} = 97 \text{ lm/W}$$

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S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

HO-4-P-ID-RO-8'-S-H-835-TG-OPN-96LG-120-SC-FC-10%

Notes:

Type:

**P1** 

Submitted by: Type:



ALRORE25-12352

# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### Uplight/Downlight Photometry - 4' Luminaire 3500K

HO4-UD-RO-V-V-835-OPN Uplight: Flush (Standard) Downlight: Open (Standard)

**Distribution:** 61% Up (**V**) / 39% Down (**V**)

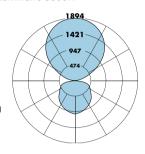
Efficacy: 122 lm/W

Uplight: 5195 lumens (1299 lumens/foot) Downlight: 3374 lumens (844 lumens/foot) Total luminaire output: 8570 lumens (2143 lm/ft)

70 watts (17.5 W/ft)

Peak Candela Value: 1894 @ 180º

CRI: 80 / CCT: 3500K ITL LM79 Report 89462



	Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire					
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²		
↓ <b>S</b> ¹	3508 (†61% l 39%↓)	4055 (†66% l 34%‡)	5422 (†75% l 25%1)	6576 (†79% l 21%↓)		
↓B¹	3863 (†55% l 45%‡)	4410 (†61% l 39%↓)	5777 (†70% l 30%↓)	6931 (†75% l 25%↓)		
↓H ¹	4751 (†45% l 55% l)	5298 (†51% l 49%↓)	6665 (†61% l 39%1)	7819 (†66% l 34%↓)		
↓V²	5501 (†39% l 61% l)	6047 (†44% I 56%↓)	7415 (†55% I 45% J)	8570 (†61% l 39% l)		

Light Output, 3500K, 80 CRI (Lumens Per Foot)					
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S¹	877	1014	1355	1644	
↓B¹	966	1102	1444	1733	
↓H¹	1188	1324	1666	1955	
↓ <b>V</b> ²	1375	1512	1854	2143	

Power, 3500K (Watts Per Foot)					
	↑S ¹	↑B ¹	†H ¹	↑ <b>V</b> ²	
↓S¹	6.9	7.8	10.1	12.2	
↓B¹	7.8	8.7	11.1	13.1	
↓H¹	10.1	11.1	13.4	15.5	
↓V²	12,2	13.1	15.5	17.5	

Efficacy, 3500K, 80 CRI (Lumens Per Watt)					
	↑S ¹	↑B ¹	↑H ¹	↑ <b>V</b> ²	
↓S¹	128	130	134	135	
↓B¹	124	127	131	132	
↓H¹	117	120	124	126	
↓V²	113	115	120	122	

S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output

Wattage is Real Power. If you would like additional details to calculate Apparent Power, please contact your local Finelite representative.

#### **Sample Lumen Adjustment Calculation**

Lumen Adjustment Factors 80 CRI				
<b>3000K</b> 0.985				
3500K	1.000			
4000K	1.032			

Lumen Adjustment Factors 90 CRI				
<b>3000K</b> 0.746				
3500K	0.760			
4000K	0.789			

High Output (H) / Standard Output (S), 4000K, 90 CRI Lumen Adjustment Factor: 0.789

Total Light Output: 5422 lm x 0.789 = 4278 lm

Total Light Output per Foot: 1355 lm/ft x 0.789 = 1069 lm/ft. watts/foot: 10.1 W/ft.

**Efficacy** = 
$$\frac{1069 \frac{\text{lm}}{\text{ft.}}}{1011 \frac{\text{W}}{\text{ft.}}} = 106 \text{ lm/W}$$

Page 8

A brand of Lilegrand

<sup>&</sup>lt;sup>1</sup> Family Correlation based on 4' luminaire 3500K Very High Output (**V**) test - 120V. <sup>2</sup> Based on ITL report: 89462



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

## **Catalog Number:**

FRM-24-L50/835-DMA-(L30)-DIM-UNV Notes:

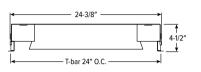
Type: R1

ALRORE25-12352

# FRM LED Recessed Architectural Frame







CATALOG # PROJECT:

SHIELDING



DMA Diffuse matte acrylic lens, .080" thick





#### **FEATURES**

- Developed for workplaces, learning centers and healthcare campuses
- Square shape and regressed design complement the MX2 continuous series
- Diffuse lens provides enhanced visual comfort
- Low UGR meets LEED and WELL requirements
- Support human-centric design with adaptive, individualized lighting using tunable white light
- Fully room-side accessible with hinged center panel simplifies maintenance
- Wireless in-fixture control solutions available
- Made Right Here® in the USA

### **SPECIFICATIONS**

- HOUSING Precision die-formed 22-gauge C.R.S. SHIELDING Diffuse acrylic lens
- FINISH 95% reflective white polyester powder coat bonded to phosphate-free, multi-stage pretreated metal. All parts painted after fabrication to facilitate installation, increase efficiency, and inhibit corrosion.
- ELECTRICAL High-quality mid-power LED boards. L70 >60,000 hours per IES TM-21. 50/60 Hz constant current driver Tunable White products use LEDs of multiple shade of white from single-CCT products at the same CCT. All CCTs are within 3 MacAdam ellipses.
- MOUNTING NEMA Type "G" 15/16" or 1" grid standard. For NEMA Type "NFG" and "SG" 9/16" grid installations, specify EQCLIPS option. Drywall kit accessories available, shipped separately, see options.
- LISTINGS -
- cCSAus certified as luminaire suitable for dry or damp locations.
- IC-rated for direct contact with insulation.
- City of Chicago Environmental Air approved when specified with CP option.
   Build America, Buy America (BABA)
- and Buy American Act (BAA) compliant. Request certification at
- WARRANTY 5-year limited fixture warranty, see hew.com/warrar

#### ORDERING EXAMPLE: FRM - 22 - L25/835 - DMA - OPTIONS - CONTROL/DIM - UNV

CRI

8 80

9 90

#### ORDERING INFO

SERIES WIDTH **2** 2'

4 4'

LENGTH LUMENS [1]

2×2 125 2 500lm **L50** 5,000lm

2x4 **L25** 2,500lm **L50** 5,000lm L78 7.800lm

L30 3000LM

CCT 27 2700K 30 3000K 3500K

4000K 5000K TW Tunable white (3000K-5000K)

TW2 Tunable white (2700K-6500K)

See page 3 for FLEXIBLE WHIP OPTIONS. See page 3 for DRYWALL KIT (DFK) DETAILS.

FM/10W 10-watt emergency battery Earthquake clips <sup>[2]</sup> EQCLIPS

(L\_\_)

Additional lower lumen packages available [3]

Example: 6,000 nominal lumens FRM-24-L80/835-DMA-(L60) Drywall kit, 24" x 24", white Drywall kit, 24" x 48", white

DFK-2424W DFK-2448W Chicago Plenum (CCEA)

#### CONTROL

Click HERE for control and sensor options

- None

#### DRIVER

**OPTIONS** 

#### Static White

See page 3 for ADDITIONAL STATIC WHITE DRIVER OPTIONS.

**DIM** Driver with external 0-10V dimming wires DIM1 1% Driver with external 0-10V dimming wires **DRV** Driver without external dimming wires

#### Tunable White

DALI Driver prewired for DALI applications

DIM Dimming driver with (1) 0-10V signal to control dimming and (1) 0-10V signal to control CCT

DMX Driver prewired for DMX applications LD2 Lutron DALI-2 digital driver, 1%

#### VOLTAGE

120 120V **277** 277V UNV 120-277V 347 347V [4]

#### NOTES

- Lumens based on DMA Shielding, 80 CRI, 3500K for static white and 4000K for tunable white. Actual performance may vary +/-5%, see page 2 for FIXTURE PERFORMANCE DATA. Additional lumen packages available, see Options.
- 4 per fixture. Optional for 1" grid installations. Required for 9/16" grid mounting.
- Specify in increments of 100 nominal lumens. Option must be
- specified with next higher lumen package.

  Not available with Tunable White or EM batteries.

Information contained herein is subject to change without notice

H.E. Williams, Inc. 

Carthage, Missouri 

www.hew.com 
417-358-4065 

Designed and Manufactured in the USA

Recessed Page 1 of 3



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

Catalog Number:

FRM-24-L50/835-DMA-(L30)-DIM-UNV Notes:

Type:

ALRORE25-12352

**R1** 

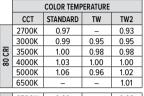


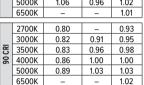
#### **FIXTURE PERFORMANCE DATA**

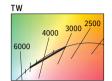
	LED	DELIVERED	WATTAGE	EFFICACY		UNIFIED GLARE	RATING (UGR) [1]
	PACKAGE	LUMENS	WATTAGE	(Im/W)		CROSSWISE	ENDWISE
2x2	L25	2467	25.4	97		17.6	17.6
2	L50	5047	53.9	94		20.1	20.1
	L25	2453	25.3	97	l	15.6	14.7
2×4	L50	5022	52.8	95		18.1	17.2
	L78	7866	85.6	92		19.7	18.8

- UGR reference values based on 4H x 8H room size with 70%, 50%, and 20% reflectance.
- OGK Telefence values based on 14 x 541 room size with 70%, 50%, and 20% reflectance. Actual values vary based on luminaire options and application specifications. Photometrics tested in accordance with IESNA LM-79. Results based on DMA, 80 CRI, 3500K for single CCT and 4000K for tunable white, average wattage for 120V through 277V input, and 25°C ambient temperature. Actual performance may vary +1-5%.
- To calculate lumen output in emergency mode, multiply the battery wattage by the efficacy. Use multiplier tables to calculate additional options.

#### MULTIPLIER TABLE



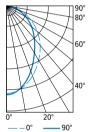






#### **PHOTOMETRY**

#### FRM-24-L78/835-DMA Total Luminaire Output: 7866 lumens; 85.6 Watts | Efficacy: 91.9 lm/W | 80 CRI; 3500K CCT



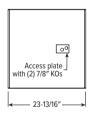
	VERTICAL ANGLE	HORIZONTAL ANGLE			ZONAL LUMENS
	VERTICAL ANGLE	0°	45°	90°	ZUNAL LUMENS
8	0	4215	4215	4215	
15	5	4113	4155	4147	289
DISTRIBUTION	15	3744	3664	3601	576
三	25	3188	2919	2850	705
1 2	35	2604	2172	2191	709
18	45	2029	1566	1665	634
CANDLEPOWER	55	1460	1100	1188	501
를	65	929	695	753	332
8	75	460	353	384	160
	85	114	85	101	29
	90	0	0	0	

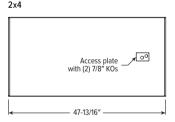
LUMEN SUMMARY	ZONE	LUMENS	% FIXTURE
S	0 - 40	4209	54
S	0 - 60	6598	84
뿔	0 - 90	7866	100
3	0 - 180	7866	100

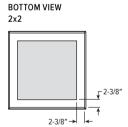
#### **FIXTURE DETAILS**

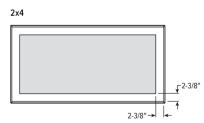
#### **BACK VIEW**

2x2

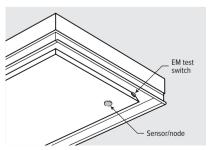








#### **OPTIONS PLACEMENT**



Information contained herein is subject to change without notice.

H.E. Williams, Inc. 
Carthage, Missouri www.hew.com 417-358-4065

Designed and Manufactured in the USA REV.05/22/25.JL

Recessed Page 2 of 3



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

Catalog Number: FRM-24-L50/835-DMA-(L30)-DIM-

UNV

Notes:

Type:

**R1** 

ALRORE25-12352



#### **FLEXIBLE WHIP OPTIONS**

All Williams recessed troffers are available with a flexible metallic wiring harness, factory-attached and hard-wired to the luminaire.

Straight connectors are a snap-in type. Consult factory for wiring harness utilizing connectors secured by lock nuts, optional flex size, lengths, and other wire sizes or circuitry. Three-wire flex utilizes black, white, and green wire. Four-wire flex utilizes black, white, red, and green wire. Adding an emergency option requires an additional wire.

Williams fixtures are UL listed to provide factory-installation of several manufacturers' modular wiring devices, consult factory for availability and ordering information.

DESIGNATION	DESCRIPTION	DRIVER
F338	6' of 3/8" flex, (3) No. 18 AWG wires with (2) straight connectors	DRV, LTE LINE
F348	6' of 3/8" flex, (4) No. 18 AWG wires with (2) straight connectors	DRV + EM, SD40
F334	6' of 3/8" flex, (3) No. 14 AWG wires with (2) straight connectors	DRV, LTE LINE
F344	6' of 3/8" flex, (4) No. 14 AWG wires with (2) straight connectors	SD40
F358	6' of 3/8" flex, (5) No. 18 AWG wires with (2) straight connectors	DIM, DALI
F368Y	6' of 3/8" flex, (6) No. 18 AWG wires with (2) straight connectors	DIM, DIM + EM, DALI

### DRYWALL KIT (DFK) DETAILS

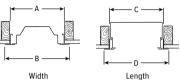
#### ORDERING INFO

EXAMPLE: DFK - 24 48 W						
SERIES WIDTH LENGTH FINISH						
DFK Drywall	<b>24</b> 2′	<b>24</b> 2′	W White			
kit	<b>24</b> 2′	48 4'	AMW Anti-microbial white			

#### INSTALLATION DIMENSIONS

NOMINAL	ROUG	GH-IN	FINISH T	RIM SIZE
SIZE	WIDTH (A)	LENGTH (C)	WIDTH (B)	LENGTH (D)
2' x 2'	24-3/8"	24-3/8"	25-5/16"	25-5/16"
2' x 4'	24-3/8"	48-3/8"	25-5/16"	49-5/16"

#### TYPICAL INSTALLATION



#### ADDITIONAL STATIC WHITE DRIVER OPTIONS

Note: Restrictions may apply, consult product builder at hew.com/product-builder

CATALOG NUMBER	DESCRIPTION
DRV	Driver without external dimming wires prewired for non-dimming applications
DIM	Driver with external dimming wires prewired for 0-10V low voltage applications
DIM1	1% driver with external dimming wires prewired for 0-10V low voltage applications
DIM LINE	Line voltage dimming driver (TRIAC and ELV compatible, 120V only)
DIM TRC	Line voltage dimming driver (TRIAC compatible, 120V only)
DA	Driver with 12V auxiliary power, without external dimming wires (not available with 347V)
D4I	DALI-2 sensor-ready driver without external dimming wires (not available with 347V)
DSR	Sensor-ready driver without external dimming wires (not available with 347V)
DALI	DALI dimming driver
SD40	40% step-dimming driver
SD50	50% step-dimming driver
LDE1	Lutron Hi-lume 1% EcoSystem dimming driver
PoE PR	Power over Ethernet-ready Note: PoE-ready luminaires are connected to building power systems through network integration and require other components for complete PoE lighting system

#### **TUNABLE WHITE DRIVER DETAILS**

DIM	DALI	DMX	LD2
DIM (Int) + Fixture 1	DALI + Fixture 1	RJ45 Ports Fixture (Master)	DA + Fixture 1



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

4R-N + C4L-30-935-N-Z10-U + CR-R-**DL-FINISH??** 

Notes:

Type:

R2

ALRORE25-12352

## LIGHTOLIER

### **Downlighting**

Calculite LED 4" gen 3

C4RDL Round Downlight





Calculite LED 4" generation 3 provides excellent performance coupled with optimized installation flexibility. Industry leading visual comfort and uniform illumination make

Buy American Act of 1933 (BAA) Compliant luminaire\*: Complete luminaire = Frame-BAC + Engine-BAC + Trim-BAC

it an ideal choice for open office, institution, healthcare, and retail applications.

\* BAA compliance requires that BAC option be selected for each of frame, engine, and trim. Frame, engine, and trim will be shipped together as a single product. Accessories (optional) are not currently BAA-compliant.

Project:		
Location:		
Cat.No:		
Туре:		
Qty:		
Notes:		

Follow the ordering guidelines below. Each step is a separate order line.

Step 1	Frame: Ordered & shipped separately.				
	Frame 4R		Example: 4RN		
Step 2	Engine & Trim: Ordered & shipped as a single product.				
	Engine C4L	-C4R	Example: C4L15935MZ10U-C4RDLCC		
Stop 3 (optional)	Acceptation: Ordered & chipped congretaly				

Frame			Standard example: 4RN   BAC example: 4RN-BAC		
Series 4R	Installation	Voltage/Options			
4R 4" Non-IC Round	N New construction	Universal 120/277/347V     EM6    Emergency, 6W Self-Test/Self-Diagnostic <sup>1</sup>	LC Chicago Plenum <sup>2</sup> BAC Meets the requirements of the Buy American Act of 1933 (BAA) <sup>9</sup>		
	R Remodeler	- Universal 120/277/3/7V	BAC Meets the requirements of the Ruy American Act of 1933 (RAA)9		

Engine				Standard example: C4L2093	OMZ10D20UF	BAC example: C4L	.20930MZ10D20U-BAC
Series C4L	Lumens	CRI/CCT	Beam	Dimming	Options	Voltage	Options
C4L Calculite LED 4"	<b>05</b> 500 lm <b>10</b> 1000 lm	927 90CRI/2700K 930 90CRI/3000K	N Narrow (43°) <sup>4</sup> M Medium (56°) <sup>4</sup>	<b>Z10</b> 0-10 V 1%	None D2O Dim to Off	U 120/277V 3 347V (Z10 only)	F Flex install <sup>6</sup> (no frame required)
gen 3	15 1500lm 20 2000lm 25 2500lm 30 3000lm*	935 90CRI/3500K 940 90CRI/4000K 950 90CRI/5000K <sup>3</sup> D2W 90CRI/3000K	CRI/4000K CRI/5000K <sup>3</sup> CRI/3000K	L1 Lutron LDE1 EcoSystem (500	Lutron LDE1 EcoSystem (500lm not available)		R Calculite legacy retrofit <sup>7</sup> RH Retrofit for
	* See marked	to 1800K <sup>4</sup> (dim-to-warm)	TBD	D DALI 0.1%	None LIN Linear	U 120/277V	tall collar frame <sup>7</sup> BAC Meets the
	spacings requirements on page 9.			SOL EldoLED Solo 0-10 V 0.1% DMX Digital Multiplexing w/RDM 0.1%	None LIN Linear SQR Square	U 120/277V	requirements of the Buy American Act of 1933 (BAA)
				E Forward & Reverse Phase (up	p to 2500lm)	1 120V	

Trim	Trim Standard example: C4RDLCCP   BAC example: C4RDLCCP-BA						
Series C4	Aperture R	Style	Finish (White not available with polished flange)	Flange	Options		
C4 Calculite LED 4" gen 3	R Round	DL Downlight	BK Black (anodized) CL Specular clear WH White (matte) CC Comfort clear diffuse CC Comfort clear diffuse CC Champagne bronze CC Champagne bronze	White (matte)     P Polished (matches aperture)     F Flangeless (requires CA4RFT)	IEM6 Trim mounted EM test switch BAC Meets requisites		
		SL Shower light <sup>8</sup>	WHAMF White (gloss antimicrobial) WH White (matte) WHAMF White (gloss antimicrobial)	- White (matches finish) - White (matches finish)	of the Buy American Act of 1933 (BAA) <sup>9</sup>		

See footnotes on page 2.



1/11













BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

### Catalog Number:

4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH??

Notes:

Type:

ALDODESE ASSES

R2

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Accessories (Not currently BAA-compliant) learn more below

SBA	Interact Ready System Bridge Accessory
	(refer to Philips System Bridge Accessory spec sheet for options an

(refer to Philips System Bridge Accessory spec sheet for options and details)

4RNSR 4" round/square non-IC frame with Flex (F) light engine
(provides mechanical support for rough-in construction only, no junction box)

LCEM6 Field installable Bodine BSL06 emergency battery pack (for Flex (F) light engine only, includes switch mounting plate)

T347-75VA 347:120V step-down transformer for non-IC (N) frame only (see page 3)

7920 Sloped ceiling 4" adapter for 4RN and 4RA frames (refer to SCA spec sheet for slope options)

CA4RFT Mud-in ring for 4" round flangeless trim installs (ordered with flangeless trim)
CAEM6 Field-installable Bodine BSL6 6W battery pack with self-test/

CAEVPWH Field-installable Bodine BSL6 6W battery pack with self-test/self-diagnostic (for new construction frames, 120-277V)
IP65 Rated vandal proof matte white accessory mounts onto flangeless trims (C4RDL[]F) and new construction frame only

CAEM6TSCP Must be ordered with EM6 frame for remote test switch (see page 3)

#### **Round Downlight**

#### Photometric - Downlights with CRI of 90+ & R9 of 50+

Lumen		Flux	Efficacy	Beam				IES	TM-30	)-18	
Package	Beam	(lm)	(lm/W)	Angle	СВСР	CRI	R9	R <sub>f</sub>	R <sub>g</sub>	R <sub>cs,h1</sub>	UGR
500 lm	Narrow (N)	609	101	39°	1409	90+	50+	91	100	-6%	0
	Medium (M)	625	102	53°	769	90+	50+	91	99	-6%	0
	Wide (W)	570	93	69°	378	90+	50+	91	99	-6%	0
1000 lm	Narrow (N)	905	104	39°	2094	90+	50+	91	100	-6%	0
	Medium (M)	1056	105	53°	1300	90+	50+	91	99	-6%	0
	Wide (W)	963	95	69°	638	90+	50+	91	99	-6%	0
1500 lm	Narrow (N)	1347	101	39°	3118	90+	50+	91	100	-6%	1
	Medium (M)	1510	108	53°	1859	90+	50+	91	99	-6%	2
	Wide (W)	1385	99	69°	917	90+	50+	91	99	-6%	1
2000 lm	Narrow (N)	1778	101	39°	4115	90+	50+	91	100	-6%	2
	Medium (M)	1937	105	53°	2385	90+	50+	91	99	-6%	2
	Wide (W)	1779	97	69°	1178	90+	50+	91	99	-6%	2
2500 lm	Narrow (N)	2107	98	39°	4875	90+	50+	91	100	-6%	3
	Medium (M)	2431	103	53°	2992	90+	50+	91	99	-6%	3
	Wide (W)	2233	95	69°	1479	90+	50+	91	99	-6%	3
3000 lm	Narrow (N)	2587	93	39°	5987	90+	50+	91	100	-6%	3
	Medium (M)	2991	101	53°	3682	90+	50+	91	99	-6%	4
	Wide (W)	2702	91	69°	1790	90+	50+	91	99	-6%	4



## AccuRender Technology (CRI 90+)

The right light brings colors to life. Our new AccuRender technology helps ensure colors are rendered more accurately and consistently, while doing so as efficiently as CRI 80 products.



Standard CRI 80

Good color rendering and high efficacy



#### Standard CRI 90

Better color rendering and low efficacy



#### AccuRender

Best color rendering, color preference and high efficacy

#### Enjoy design flexibility

#### Full range of products and options:

- Available soon in across Lightolier portfolio for application flexibility
- Multiple color temperatures (CCTs) and lumen packages offered

#### Promote savings

#### High efficacy, with no penalty:

- Energy efficacy compares well to conventional 80 CRI
- Up to 25% more energy savings vs competitor 90 CRI<sup>1</sup>
- Helps meet Title 24 requirements

#### Show your true colors

#### High color rendering:

- True to life colors that help energize your environment and render better flesh tones critical for healthcare hospitality and retail applications.
- R<sub>a</sub> up to 94 CRI
   R<sub>f</sub> up to 92 TM-30
   R<sub>b</sub> up to 67 CRI
   G<sub>a</sub> up to 99 CRI
   C<sub>9</sub> up to 94 CRI
   R<sub>cs,M</sub> up to -5% TM-30

#### Achieve color balance

#### Best in class color consistency:

 Promote aesthetic harmony in your space with ≤ 2 SDCM

#### Footnotes for page 1

- Emergency (EM6) frame is compatible with reflector mounted test switch when trim is ordered with IEM6 option code (not compatible with 347V or Power over Ethernet configurations). For remote mount switch, order standard trim and CAEM6TSCP mounting plate accessory.
- Chicago plenum (LC) frame option not available with BAC nor EM6 options.
- 3. Consult factory for 5000K CCT (50)with narrow (N) beam.
- Dim-to-warm (D2W) available only with Z10 dimming up to 2000lm with Narrow (N) and Medium (M) beam engines only.
- butth Narrow (N) and Medium (M) b
   Linear driver profile (see page 8).
- Flex install option requires light engine (F)/trim only (up to 2500lm).
   For use only with optional 4RNSR new construction frame accessory.
   Not available with Interact (RA) dimming and IEM6 trim options. See page 3 for further details.
- . Retrofits select legacy luminaires (E & Z10 dimming only see pages 2 & 8).
- Non-conductive flush mount lens with pre-installed gasket
   (matte white non-conductive flange with diffuse lens that is flush with the flange).
- 9. Failure to properly select the "BAC" suffix could result in you receiving product that is not BAA compliant product with no recourse for an RMA or refund. This BAC designation hereunder does not address (i) the applicability of, or availability of a waiver under, the Trade Agreements Act, or (ii) the "Buy America" domestic content requirements imposed on states, localities, and other non-federal entities as a condition of receiving funds administered by the Department of Transportation or other federal agencies.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 2 of 11

Catalog Number: 4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH?? Notes: Type:

R2

ALRORE25-12352

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Frame-in-kits

#### **New Construction:**

Galvanized stamped steel for dry or plaster ceilings. Pre-installed telescoping mounting bars from 13" to 24". For 4' distances, use 1/2" EMT, 1-1/2" x 1/2" U or C channel.

Max ceiling thickness is 2" (51 mm) plenum depth for installation.

#### Patented install Mounting frame:

- Pre-installed mounting bars for fast and tool-less installs into T-grid & hat channel ceilings.
- Close-cut aperture design eliminates possibility of gap between ceiling opening and reflector flange.
- Separate wiring compartment for wiring frame to building allows inspection prior to light engine install.
- Simple plug-and-play connection between frame and light engine from below ceiling.

#### Retrofit

 Easily updates legacy Calculite downlights to the latest LED technology. Includes light engine, trim, and driver mounted on cover plate that mounts to junction box of previous Calculite generations. Order with R or RH option code at end of light engine catalog number (see details on page 6).

#### Compatibility:

Frames	Engines	
With CFL S4118_series	Use Retrofit configuration C4R_Trim + C4L_Engine	
With INC AS400_series	Use Retrofit configuration C4R_ Trim + C4L_ Engine	
With LED C4L_N series C4X4L_N series P4RD N series	Use Retrofit configuration C4R_Trim + C4L_Engine C4S_Trim + C4L_Engine C4R_Trim + C4L_Engine	

\* Not available for retrofitting luminaires with integral emergency battery.

#### **Emergency**

Bodine BSL6 6W battery pack with self-test/ diagnostic functionality. Factory or field mounted to frame

- For trim with integral emergency test switch, order trim with IEM6 option (ex: C4RDLCCIEM6).
- For remote ceiling mounted test switch, order standard trim (ex: C4RDLCC). Optional accessory ceiling mounting plate available (CAEM6TSCP) for remote mounted test switch.
- Refer to Calculite-LyteProfile-EasyLyte Emergency Battery Pack specification sheet for more details.

#### **Dimming**

All configurations are FCC Class A unless otherwise specified.

- Advance 0-10V 1% (Z10), logarithmic curve is standard. Specify D2O for factory-set dimto-off function, consult factory for linear dimming curve.
- EldoLED SOLODrive (SOL) 0-10v 0.1%
- Lutron PEQ0 (L) Hi-Lume Premier 0.1% EcoSystem
- · Lutron LDE1 (LO1) EcoSystem 1%
- · Lutron LTE (LTE) Hi-Lume 2-wire phase cut 1%
- Electronic low voltage (E) forward or reverse phase dimming, Remodel and AirSeal IC Shallow are FCC Class B
- DALI (D) DT6 DALI 0.1%
- DMX (DMX) Digital Multiplexing with RDM 0.1%

**Dimming Options:** The following are factory-set options for the SOL, D, and DMX driver options (ex. DMXLIN):

- · SOL/D/DMX: Logarithmic (-) standard
- · SOL/D/DMX: Linear (LIN)
- · SOL/DMX: Square (SQR)
- Dim to Warm (D2W): option changes CCT from 3000-1800K gradually as it dims. Use with Z10 dimming only. Fixture-to-fixture consistency of ≤3SDCM at 2700K & 3000K, and ≤5SDCM at 1800K.

#### **Optical systems**

#### Comfort throughout the space:

True 50° physical cutoff and 45° reflected cutoff.

#### Quality of light:

2 SDCM ensures color consistency from fixture to fixture and over the luminaire's long lifetime.

#### MesoOptics PET optical diffusion film:

Provides a smooth beam shape and mitigates color over angle with optimized luminaire efficiency.

#### Light engine

Quick connect power pack allow for easy installation and replacement from below ceiling with no need for additional wiring. This allows for:

- Frame and ceiling installation to be performed while still finalizing details such as lumen packages, CCT and control type.
- Easy replacement of electronics at end of life with minimal wasted material and labor required.
- Ease and upgradability of technology.
- 347V light engines are Z10 dimming only and include dedicated 347V driver. For 347V non-Z10 dimming, order T347-75VA field-installed stepdown transformer accessory.

#### Flex engine (F)

- Frame-optional engine suited for new construction, remodel, and retrofit applications
- 4RNSR new construction frame accessory available as required to support ceiling construction.
- All wiring is done on the integral j-box to the engine.

#### **Options and Accessories**

Flangeless mud-in ring: Use CA4RFT
For use with flangless plaster installations.

**Sloped ceilings:** Compatible with sloped ceiling adapters (see **SCA** spec sheet).

C4RVPWH: Includes machined aluminum ring painted white, gasketed for IP65 protection, and impact resistant polycarbonate lens (IK10). Locks in place with discrete setscrew (key included). Available also with antimicrobial finish (CARVPWHAME)

**CAEM6TSCP:** Ceiling cover plate for remote mounted EM6 test switch. 1/2" (25mm) hole, 4 3/8" (109mm) x 2 3/4" (69mm) rectangular. Includes two mounting screws.

Field install EM6 kit with Bodine BSL6 6W battery pack with self-test/self-diagnostic: Includes remote ceiling plate for test switch. To mount test switch to trim for new construction frame, order trim with IEM6 option code (e.g. C4RDLCCIEM6). Refer to Calculite-LyteProfile-EasyLyte Emergency Battery Pack specification sheet for more details.

CAEM6: For use with UniFrame frame in kits.

LCEM6: For use with Flex intall (F) light engines.

SBA: Interact Ready System Bridge Accessory Requires IRT9015 IR remote and Interact Pro App for commissioning.

T347-75VA: Field installable 347:120V 75VA stepdown transformer, attaches to knock out on frame junction box, for use with non-IC (N) frames. Not for use with emergency options.

### **ENERGY STAR® exceptions**

- 500lm & 90 CRI configurations
- Champagne Bronze & Black finishes
- 347V & Emergency voltage/options
- Dali, EldoLED Solo drivers

#### Title 24 exceptions

- 1000lm configurations
- Champagne Bronze & Black finishes

#### **Labels and Listings**

- cULus listed for wet locations
- ENERGY STAR® certified
- RoHS certified
- CEC Title 24 JA8 certified
- CCEA (frames with \*LC suffix)
- IP65 rated with vandal proof accessory

#### Warranty



5 year limited warranty Visit Signify.com/warranties for more information on Signify's standard 5-year limited warranty on complete luminaire systems.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 3 of 11

Catalog Number: 4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH?? Notes: Type:

R2

ALRORE25-12352

# C4RDL Calculite LED 4" gen 3

Round Downlight

# interact



	Standalone	Option 1	Option 2
Dimming, grouping, and zoning	<b>✓</b>	<b>✓</b>	<b>✓</b>
Bluetooth and ZigBee enabled	<b>~</b>	<b>✓</b>	<b>✓</b>
Motion sensing and daylight harvesting	<b>~</b>	<b>✓</b>	<b>✓</b>
Integration with 0-10V and phase dimming fixtures	<b>✓</b>	<b>✓</b>	<b>✓</b>
Code compliance	<b>~</b>	<b>✓</b>	<b>✓</b>
Granular dimming and dwell time	<b>✓</b>	<b>✓</b>	<b>✓</b>
Correlated color temperature (CCT) tuning by switch	w 🗸	<b>✓</b>	<b>✓</b>
Support for sensor-based Tunable White luminaires Ne	w 🗸	<b>✓</b>	<b>✓</b>
Energy reporting and monitoring		<b>✓</b>	<b>~</b>
Scheduling		<b>✓</b>	<b>✓</b>
Demand response		<b>✓</b>	<b>✓</b>
BMS integration (BACnet)			<b>✓</b>
Floor plan visualization			<b>✓</b>
IoT sensors for wellness			<b>✓</b>
IoT Apps for productivity			<b>~</b>

### Currently supported maximum system size

To be able to design the lighting system correctly for the customer, it is important to know the prime characteristics of the system, its possibilities and limitations.

System level	
Total number of gateways	Unlimited
Total number of devices	200 per network
Luminaires with integrated sensors	150
Smart TLEDS	150
· Zones + groups	64
Total number of ZGP devices (sensors and switches)	50
• Sensors	30
Switches	50

Group level	
Recommended number of lights	40 (maximum 150)
Number of ZGP devices	5
Number of scenes	16

Wireless gatoway

Wireless switch relay controller integrated sensor

Commissioning Wireless External battery Smart wall switch powered sensor LED lamp

Commissioning Wireless External battery Smart wall switch sensor with sensor with

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 4 of 11



Catalog Number: 4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH?? Notes: Type:

R2

ALRORE25-12352

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Wireless controls options

#### Interact

- SWZCS is a connected sensor with integral occupancy and daylight sensing and supports wireless mesh connectivity.
- The sensor works in the standalone mode (similar to SpaceWise) when configured without a gateway or in a cloud connected mode if a compatible gateway is used.
- Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- Startup is implemented via Interact Pro App (Android or iPhone) & BlueTooth connectivity.
   The App provides flexibility to choose between a gateway or non gateway mode for setup.
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely and use IRT9015 remote on-site to identify and group devices together.

#### Compatible with:

- SWS200 & UID8465 wireless scene switch
- Battery powered IP42 presence sensor OCC sensor IA CM WH 10/1
- Battery powered IP42 presence & daylight sensor OCC-DL sensor IA CM IP42 WH
- LCN3110: battery powered IP65 presence sensor, OCC sensor IA CM IP65W
- LCN3120: battery powered IP65 presence & daylight sensor, OCC-DL sensor IA CM IP65 WH
- For more information on Interact visit: interact-lighting.com/interactproscalablesystem

#### Radio only sensor (RA or RADIO)

- Integral RA or RADIO only sensor simply enables wireless mesh connectivity to the luminaire without any occupancy or daylight sensing.
- Ideal for applications where sensing functionality is managed by other Interact devices and the luminaire only needs to have wireless connectivity.
- Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- Startup is implemented via Interact Pro App (Android or iPhone) & Bluetooth connectivity.
   The App provides flexibility to choose between a gateway or non-gateway mode for setup.
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely, identify and group devices together onsite.
- Compatible with SWS200 and UID8465 wireless scene switch, wireless Occ sensor (OCC SENSOR IA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1).
- For more information on Interact visit: interact-lighting.com/interactproscalablesystem

#### Sensor bundle (IAOSB or SB)

- A wireless IoT connected lighting solution for large enterprises that span across multiple floors, buildings and require multiple gateways.
- View all your projects under one dashboard and easily compare insights from multiple projects in one view.
- Compatible with SWS200 wireless scene switch, wireless Occ sensor (OCC SENSORIA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1) and wireless Occupancy or Daylight & Occupancy sensors available. Use Interact software and insights to increase building efficiency, achieve building wide integration and optimize space through occupancy analytics.
- IAOSB or SB option in addition to occupancy and daylights sensing supports advanced loT capabilities, such as people estimation analysis, desk level temperature & humidity sensing, noise classification, and BLE beacon.
- Requires compatible Gateway and internet connectivity for commissioning.
- For more information, visit: interact-lighting.com/interactproscalablesystem

#### **Emergency Options (ER100)**

- Power Sensing (factory default) –
  Recommended UL924 option requires unswitched
  power sense line, absence of voltage on the
  normal circuit triggers luminaire to 100% output.
- Power Interruption Detection (field option) –
  Detects AC power interruption >30ms triggers
  90 minute emergency mode with luminaire at
  100% output.

### Interact supported sensor option codes across Genlyte product lines

	Evokit	Day-Brite	Ledalite	Lightolier
ZigBee + Bluetooth + Sensing	SWZCS	SWZCS	CS	SBA accessory (external)
ZigBee + Bluetooth	RADIO	RADIO	RA	RA
ZigBee + Bluetooth + Sensing + Environmental data	IAOSB	IAOSB	SB	SB
ZigBee + Highbay + Sensing	-	SWZCSH	-	-

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 5 of 11



Catalog Number: 4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH?? Type:

R2

ALRORE25-12352

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### **Polished Reflectors**



Specular clear (CL): Most specular and most efficient finish, delivers maximum photometric performance but can produce a mirror image effect of the interior space.



Comfort clear (CC): Semi-specular finish that softens the light at the source of the reflector and creates a subtle, even luminance from the reflector cone.



Comfort clear diffuse (CD): Slightly diffuse clear finish, that eliminates iridescence and reduces the mirror image effect inherent with specular finishes.



Vandal proof (VP): Provides an elegant solution for vandal resistant needs. One piece machined aluminum ring with impact resistant clear lens. Flangeless (F) flange must be ordered. Provides the luminaire with an IK10 impact and IP65 rating.



Champagne bronze (CZ): Semi-specular finish that softens light at the source of the reflector while providing a warmer reflector appearance (slightly warmer).



White (WH): (matte) Brightest illuminated aperture and provides the smoothest transition to most ceilings when off (white is only available with a white flange).



Black (BK): (anodized) Specular finish that provides the lowest aperture brightness possible and significantly reduces source identification in a ceiling.



Shower light (SL): Wet location rated shower light with clear acrylic lens applicable in any installation requiring dead front trims, interior or exterior non-corrosive applications, or where a diffused lens at the ceiling is required (non-conductive).

#### **Flanges**



White (-): (matte) Provides the smoothest transition to ceilings when off.



Polished (P): (matches aperture) Produces a continuous look throughout the reflector (aperture matching)



Flangeless (F): (flush-mount)Creates a flush, virtually seamless transition from aperture to ceiling.



Mud-in ring (FT): Low profile, machined aluminum mud-in ring provides a raised rib to plaster up to and a 3/16" flange thickness. The ring is attached to the ceiling material as opposed to the frame-in kit to avoid conduction of heat and vibration which can cause yellowing or cracking of the plaster.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

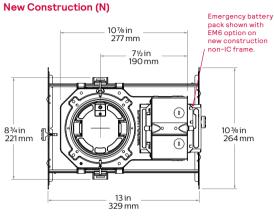
4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH?? Notes: Type:

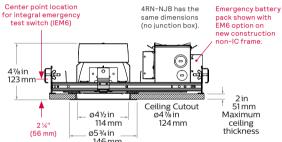
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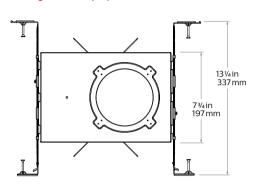
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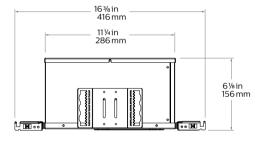
## Round Downlight



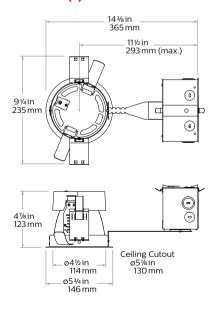


#### Chicago Plenum (LC)

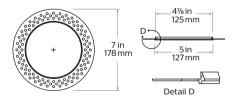




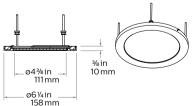
#### Remodeler (R)



#### Flangeless mud-in ring (CA4RFT) accessory



#### Vandal Proof (VP) accessory



CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 7 of 11

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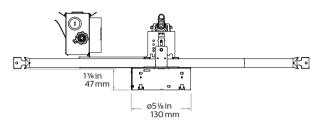
4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH?? Notes: Type:

R2

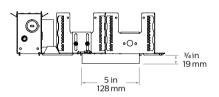
# C4RDL Calculite LED 4" gen 3

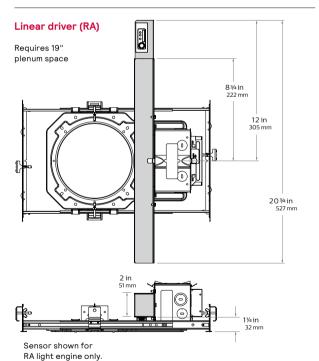
## Round Downlight

#### Round tall collar frame (RH type light engine required)

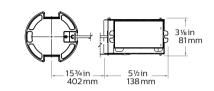


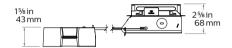
#### Round standard steel frame (R type light engine required)



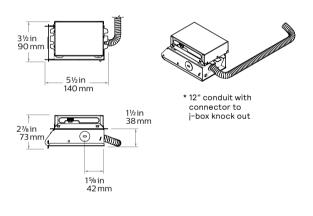


#### Flex Install (F)

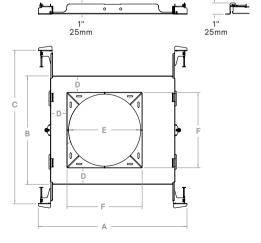




#### LCEM6 Flex install (F) engine only



#### 4RNSR Flex install non-IC frame



Α	В	С	D	E	F
10 ¾"	7¼"	13 %"	1"	4%"	5¼"
276mm	184mm	345mm	25mm	124mm	132mm

 ${\tt CalculiteLEDgen 3-4 in-Downlight-C4RDL} \quad {\tt 05/25} \quad {\tt page 8 of 11}$ 



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

### Catalog Number:

4R-N + C4L-30-935-N-Z10-U + CR-R-DL-FINISH??

Notes:

Type:

R2

ALRORE25-12352

# C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Electrical - Narrow

Light	Input	Input	Input	Drive	Input	LED	THD Factor	Power Factor
engine	Volts	Freq.		Current			@ Max	Load
	120V	50/60Hz	0.050A	0.15A	6.0W	4.8W	<10%	>0.9
500lm	277V	50/60Hz	0.023A	0.15A	6.3W	4.8W	<30%	>0.9
	347V	50/60Hz	0.020A	0.15A	7.0W	4.8W	N/A	>0.9
	120V	50/60Hz	0.072A	0.22A	8.7W	7.1W	<10%	>0.9
1000lm	277V	50/60Hz	0.032A	0.22A	8.9W	7.1W	<20%	>0.9
	347V	50/60Hz	0.029A	0.22A	10.1W	7.1W	<30%	>0.9
	120V	50/60Hz	0.108A	0.33A	12.9W	10.8W	<10%	>0.9
1500lm	277V	50/60Hz	0.047A	0.33A	13.0W	10.8W	<10%	>0.9
	347V	50/60Hz	0.043A	0.33A	14.8W	10.8W	<25%	>0.9
	120V	50/60Hz	0.147A	0.45A	17.6W	14.9W	<10%	>0.9
2000lm	277V	50/60Hz	0.064A	0.45A	17.7W	14.9W	<10%	>0.9
	347V	50/60Hz	0.056A	0.45A	19.6W	14.9W	<20%	>0.9
	120V	50/60Hz	0.180A	0.55A	21.6W	18.3W	<10%	>0.9
2500lm	277V	50/60Hz	0.078A	0.55A	21.7W	18.3W	<10%	>0.9
	347V	50/60Hz	0.066A	0.55A	22.9W	18.3W	<20%	>0.9
	120V	50/60Hz	0.231A	0.70A	27.7W	23.7W	<10%	>0.9
3000lm	277V	50/60Hz	0.100A	0.70A	27.6W	23.7W	<10%	>0.9
	347V	50/60Hz	0.083A	0.70A	28.9W	23.7W	<15%	>0.9

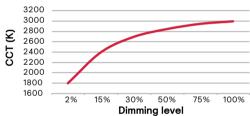
#### Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam
500lm 1000lm 1500lm	L85 @ 55,000hrs.	L90 @ 60,000hrs.
2000lm	L85 @ 55,000hrs.	L80 @ 60,000hrs.

#### **Electrical - Medium & Wide Downlights**

Light	Input	Input	Input	Drive	Input	LED	THD Factor	Power Factor
engine	Volts	Freq.	Current	Current		Power	@ Max	Load
	120V	50/60Hz	0.051A	0.15A	6.1W	4.8W	<10%	>0.9
500lm	277V	50/60Hz	0.023A	0.15A	6.4W	4.8W	<30%	>0.9
	347V	50/60Hz	0.020A	0.15A	7.1W	4.8W	N/A	>0.9
	120V	50/60Hz	0.084A	0.25A	10.1W	8.3W	<10%	>0.9
1000lm	277V	50/60Hz	0.037A	0.25A	10.3W	8.3W	<10%	>0.9
	347V	50/60Hz	0.034A	0.25A	11.7W	8.3W	<30%	>0.9
	120V	50/60Hz	0.117A	0.36A	14.0W	11.8W	<10%	>0.9
1500lm	277V	50/60Hz	0.051A	0.36A	14.1W	11.8W	<10%	>0.9
	347V	50/60Hz	0.046A	0.36A	16.0W	11.8W	<25%	>0.9
	120V	50/60Hz	0.153A	0.47A	18.4W	15.5W	<10%	>0.9
2000lm	277V	50/60Hz	0.067A	0.47A	18.5W	15.5W	<10%	>0.9
	347V	50/60Hz	0.059A	0.47A	20.3W	15.5W	<20%	>0.9
	120V	50/60Hz	0.197A	0.60A	23.6W	20.1W	<10%	>0.9
2500lm	277V	50/60Hz	0.085A	0.60A	23.6W	20.1W	<10%	>0.9
	347V	50/60Hz	0.072A	0.60A	24.9W	20.1W	<20%	>0.9
	120V	50/60Hz	0.247A	0.75A	29.7W	25.5W	<10%	>0.9
3000lm	277V	50/60Hz	0.107A	0.75A	29.7W	25.5W	<10%	>0.9
	347V	50/60Hz	0.087A	0.75A	30.4W	25.5W	<15%	>0.9

#### Dim-to-Warm: CCT vs Dimmed level



#### Lifetime (TM-21 data)

Lumens	Narrow beam	Medium/Wide beam*		
500lm 1000lm 1500lm	L90 @ 60,000hrs.	L90 @ 60,000hrs.		
2000lm 2500lm 3000lm*	L90 @ 60,000hrs.	L85 @ 60,000hrs.		

<sup>\*</sup> Lutron 3000lm with Medium/Wide beam is L80 @ 60,000hrs.

#### Marked spacing applications

Light engine	3000lm
C4L_Z10 series	Х
C4L_L01 series	Х
C4L_L1 series	Х
C4L_LD series	Х
C4L_LTE series	Х
C4L_D series	Х
C4L_DMX series	Х
C4L_RA series	Х

Modules marked with an X require marked spacing:

- Center-to-center of adjacent luminaires: 24" (610mm)
- Luminaire center to side building member: 12" (305mm)

In accordance with CAN ICES-005-A/ NEB-005-A and FCC Part 15-A.

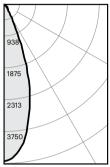
CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 9 of 11

R2

# C4RDL Calculite LED 4" gen 3

## Round Downlight

### Narrow beam, 1500lm Engine, 117lm/W at 13W



4RN / C4L15935I	N / C4RDLCL
Output lumens:	1492 lms

Input watts: 90 min CCT1: Spacing Crit.: 3500K 0.62

Zone	Lumens	%Luminaire
0-30	1322	88.6%
0-40	1437	96.3%
0-60	1490	99.9%
0-90	1492	100.0%

Angle	Mean CP	Lumens
0	3676	
5	3512	
10	3039	320
15	2364	
20	1536	639
25	769	
30	312	363
35	171	
40	135	115
45	64	
50	8	51
55	2 1	
60	1	2
65	1	
70	0	1
75	0	
80	l 0	0

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	102	4.8'
6'	80	5.4'
7'	65	6.0'
8'	45	6.6'
9'	19	8.7'

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.			
5'	63.0	0.57			
6'	42.0	0.37			
7'	30.0	0.27			
8'	25.0	0.22			
9'	20.0	0.18			
38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances					

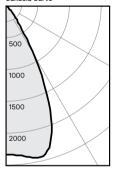
#### Adjustment factors

Finish	CCT	Lumens
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Ceiling			80	)%		70	70%		50%		30%	
Wa	II	70	50	30	10	50	10	50	10	50	10	0
RCR		Zona	al cav	ity me	ethod	l – Eff	ectiv	e floo	r refl	ectar	ice =	20%
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	114	112	110	108	110	106	106	103	102	100	95
Ě	2	110	106	103	100	104	99	101	96	98	94	91
Room Cavity Ratio	3	106	100	96	93	99	92	97	91	94	89	87
Ę	4	102	96	91	88	94	87	92	86	91	85	83
à	5	98	91	86	83	90	82	89	82	87	81	79
ဝ	6	94	87	82	79	86	78	85	78	84	77	76
6	7	91	83	78	75	83	75	82	74	80	74	73
2	8	88	80	75	72	79	72	78	71	77	71	70
	9	85	77	72	69	76	69	75	68	75	68	67
	10	82	74	69	66	73	66	73	66	72	66	64

#### Medium beam, 1500lm Engine, 108 lm/W at 14W



#### 4RN / C4L15935M / C4RDLCL

Output lumens:	1510 lms
Input watts:	14.0 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	0.92
Beam Angle:	54°

Zone	Lumens	%Luminaire
0-30	1242	82.3%
0-40	1450	96.0%
0-60	1508	99.9%
0-90	1510	100.0%

Angle | Mean CP | Lumens

0	1859	
0 5	1871	
10	1924	180
15	1910	
20	1677	527
25	1204	
30	661	535
35	307	
40	154	208
45	69	
50	9	55
55	2	
60		3
65	1	
70	0	1
75	0	
80	0 0 0	0
85	0	
90	l o	0

Initial center beam foot-candles	Beam diameter (ft)*
74	4.6'
52	5.5'
38	6.4'
29	7.4'
23	8.3'
	74 52 38 29

\* Beam diameter is where foot-candles drop to 50% of maximum.

### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.		
5'	70.0	0.62		
6'	46.0	0.41		
7'	32.0	0.29		
8'	27.0	0.24		
9' 22.0 0.19				
38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances				

Efficacy: 107.9 lm/W Report<sup>2</sup>: STMR-1613

Finish	ССТ	Lumens
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Cei	ling		80	)%		70	1%	50	)%	30	)%	0%
Wa	II	70	50	30	10	50	10	50	10	50	10	0
RCI	R	Zona	al cav	ity me	ethod	l – Eff	ectiv	e floo	r refl	ectar	ice =	20%
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	114	111	109	107	109	105	105	102	101	99	94
ij	2	109	104	101	97	103	96	99	94	96	92	89
Room Cavity Ratio	3	104	98	93	90	97	89	94	88	92	86	83
Ę	4	99	92	87	83	91	83	89	82	87	81	79
a	5	95	87	82	78	86	77	84	77	83	76	74
õ	6	90	82	77	73	81	72	80	72	79	72	70
6	7	86	78	72	68	77	68	76	68	75	67	66
2	8	83	74	68	64	73	64	72	64	71	64	62
	9	79	70	65	61	70	61	69	61	68	60	59
	10	76	67	61	58	66	58	65	57	65	57	56

1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.

2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

R2

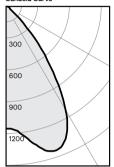
ALRORE25-12352

Type:

# C4RDL Calculite LED 4" gen 3

## Round Downlight

### Wide beam, 1500lm Engine, 99 lm/W at 14W



#### 4RN / C4L15935W / C4RDLCL

Output lumens:	1385 lms
Input watts:	14.0 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	1.26
Beam Angle:	67°

Zone	Lumens	%Luminaire
0-30 0-40 0-60 0-90	886 1264 1384 1385	64.0% 91.3% 99.9% 100.0%

Angle	Mean CP	Lumens
0	917	
5	941	
10	1025	93
15	1116	
20	1135	314
25	1063	
30	873	479
35	606	
40	366	378
45	134	
50	15	116
55	3	
60	2	4
65	1	
70	1	1
75	0	
80	0	C
0.5		

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	37	6.3'
6'	25	7.6'
7'	19	8.8'
8'	14	10.1'
9'	11	11.3'

Notes:

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.			
5'	63.0	0.62			
6'	42.0	0.41			
7'	29.0	0.29			
8'	25.0	0.24			
9'	20.0	0.19			
38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances					

Efficacy: 98.9Im/W Report<sup>2</sup>: STMR-1641.1

#### Adjustment factors

Finish	ССТ	Lumens			
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%			

#### Coefficients of utilization

Ceiling		80%			70	1%	50	1%	30	1%	0%	
Wa	II	70	50	30	10	50	10	50	10	50	10	0
RC	R	Zona	al cav	ity me	ethod	- Eff	ective	e floo	r refl	ectan	ice =	20%
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	113	110	108	106	108	104	104	101	100	98	93
Ratio	2	107	102	98	95	101	93	97	91	94	89	86
æ	3	102	95	90	85	93	85	91	83	88	82	79
Room Cavity	4	96	88	82	78	87	77	85	76	83	75	73
è	5	91	82	76	71	81	71	79	70	77	70	67
ŏ	6	86	76	70	65	75	65	74	65	72	64	62
6	7	81	71	65	60	70	60	69	60	68	59	58
2	8	77	66	60	56	66	56	65	55	64	55	53
	9	72	62	56	52	62	52	61	51	60	51	50
	10	69	58	52	48	58	48	57	48	56	48	46

1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Notes:

Type:

**R3** 

ALRORE25-12352

# LIGHTOLIER

### **Downlighting**

Calculite LED 4" gen 3

C4RDL Round Downlight





Calculite LED 4" generation 3 provides excellent performance coupled with optimized installation flexibility. Industry leading visual comfort and uniform illumination make it an ideal choice for open office, institution, healthcare, and retail applications.

Buy American Act of 1933 (BAA) Compliant luminaire\*: Complete luminaire = Frame-BAC + Engine-BAC + Trim-BAC

\* BAA compliance requires that BAC option be selected for each of frame, engine, and trim. Frame, engine, and trim will be shipped together as a single product. Accessories (optional) are not currently BAA-compliant.

Project:		
Location:		
Cat.No:		
Туре:		
Qty:		
Notes:		

Follow the ordering guidelines below. Each step is a separate order line.

Step 1	Frame: Ordered & shipped separately.						
Step I	rialile. Ordered & shipped separately.						
	Frame 4R		Example: 4RN				
Step 2	Engine & Trim: Ordered & shipped as a single product.						
	Engine C4L	-C4R	Example: C4L15935MZ10U-C4RDLCC				
Stop 3 (optional)	Acceptation: Ordered & shipped congretaly						

	Frame			Standard example: 4RN   BAC example: 4RN-BAC
Series II		Installation	Voltage/Options	
4R				
	4R 4" Non-IC Round	N New construction	- Universal 120/277/347V  EM6 Emergency, 6W Self-Test/Self-Diagnostic <sup>1</sup>	LC Chicago Plenum <sup>2</sup> BAC Meets the requirements of the Buy American Act of 1933 (BAA) <sup>9</sup>

	it itelliodelei		Universal (20/2///34)	7V BAC IVII	eets the requireme	itts of the buy Americ	all ACT OF 1900 (BAA)
Engine				Standard example: C4L2093	OMZ10D20UF	BAC example: C4L	.20930MZ10D20U-BAC
Series C4L	Lumens	CRI/CCT	Beam	Dimming	Options	Voltage	Options
C4L Calculite LED 4" gen 3	05 500 lm 10 1000 lm 15 1500 lm 20 2000 lm 25 2500 lm 30 3000 lm*	927 90CRI/270 930 90CRI/300 935 90CRI/350 940 90CRI/400 950 90CRI/500 D2W 90CRI/300	M Medium (56°) <sup>4</sup> W Wide (76°) DOOK DOOK <sup>3</sup>	Z10 0-10V 1%  L01 Lutron PEQ0 EcoSystem 0.15 L1 Lutron LDE1 EcoSystem (500 RA Integral Interact RF sensor <sup>5</sup>	lm not available)	U 120/277V 3 347V (Z10 only) U 120/277V nected lighting control)	F Flex install <sup>6</sup> (no frame required)  R Calculite legacy retrofit <sup>7</sup> RH Retrofit for
	to 180	to 1800K <sup>4</sup> (dim-to-war	(dim-to-warm)	D DALI 0.1%  SOL EldoLED Solo 0-10V 0.1%  DMX Digital Multiplexing w/RDM 0.1%	None LIN Linear None LIN Linear SQR Square	U 120/277V U 120/277V	tall collar frame?  BAC Meets the requirements of the Buy American Act of 1933 (BAA)
				E Forward & Reverse Phase (u	p to 2500lm)	1 120V	

Trim	Trim Standard example: C4RDLCCP   BAC example: C4RDLCCP-								
Series C4	Aperture R	Style	Finish (White not available with polished flange)	Flange	Options				
C4 Calculite LED 4" gen 3	R Round	DL Downlight	BK Black (anodized) CL Specular clear WH White (matte)  CC Comfort clear CD Comfort clear diffuse TBD CZ Champagne bronze	- White (matte) P Polished (matches aperture) F Flangeless (requires CA4RFT)	IEM6 Trim mounted EM test switch BAC Meets requisites				
		SL Shower light <sup>8</sup>	WHAMF White (gloss antimicrobial) WH White (matte) WHAMF White (gloss antimicrobial)	- White (matches finish) - White (matches finish)	of the Buy American Act of 1933 (BAA) <sup>9</sup>				

See footnotes on page 2.















BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Type:

R3

ALRORE25-12352

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Accessories (Not currently BAA-compliant) learn more below

SBA Interact Ready System Bridge Accessory

(refer to Philips System Bridge Accessory spec sheet for options and details)

4RNSR 4" round/square non-IC frame with Flex (F) light engine

(provides mechanical support for rough-in construction only, no junction box)

LCEM6 Field installable Bodine BSL06 emergency battery pack

(for Flex (F) light engine only, includes switch mounting plate)

T347-75VA 347:120V step-down transformer for non-IC (N) frame only (see page 3)

7920 Sloped ceiling 4" adapter for 4RN and 4RA frames (refer to SCA spec sheet for slope options)

CA4RFT Mud-in ring for 4" round flangeless trim installs (ordered with flangeless trim)

CAEM6 Field-installable Bodine BSL6 6W battery pack with self-test/self-diagnostic (for new construction frames, 120-277V)

Leave the construction frames, 120-277V)

1965 Rated vandal proof matte white accessory mounts onto flangeless trims (C4RDLTIF) and new construction frame only

CAEM6TSCP Must be ordered with EM6 frame for remote test switch (see page 3)

#### **Round Downlight**

#### Photometric - Downlights with CRI of 90+ & R9 of 50+

Lumen		Flux	Efficacy	Beam				IES	TM-30	)-18	
Package	Beam	(lm)	(lm/W)	Angle	СВСР	CRI	R9	R <sub>f</sub>	R <sub>g</sub>	R <sub>cs,h1</sub>	UGR
500 lm	Narrow (N)	609	101	39°	1409	90+	50+	91	100	-6%	0
	Medium (M)	625	102	53°	769	90+	50+	91	99	-6%	0
	Wide (W)	570	93	69°	378	90+	50+	91	99	-6%	0
1000 lm	Narrow (N)	905	104	39°	2094	90+	50+	91	100	-6%	0
	Medium (M)	1056	105	53°	1300	90+	50+	91	99	-6%	0
	Wide (W)	963	95	69°	638	90+	50+	91	99	-6%	0
1500 lm	Narrow (N)	1347	101	39°	3118	90+	50+	91	100	-6%	1
	Medium (M)	1510	108	53°	1859	90+	50+	91	99	-6%	2
	Wide (W)	1385	99	69°	917	90+	50+	91	99	-6%	1
2000 lm	Narrow (N)	1778	101	39°	4115	90+	50+	91	100	-6%	2
	Medium (M)	1937	105	53°	2385	90+	50+	91	99	-6%	2
	Wide (W)	1779	97	69°	1178	90+	50+	91	99	-6%	2
2500 lm	Narrow (N)	2107	98	39°	4875	90+	50+	91	100	-6%	3
	Medium (M)	2431	103	53°	2992	90+	50+	91	99	-6%	3
	Wide (W)	2233	95	69°	1479	90+	50+	91	99	-6%	3
3000 lm	Narrow (N)	2587	93	39°	5987	90+	50+	91	100	-6%	3
	Medium (M)	2991	101	53°	3682	90+	50+	91	99	-6%	4
	Wide (W)	2702	91	69°	1790	90+	50+	91	99	-6%	4



## AccuRender Technology (CRI 90+)

The right light brings colors to life. Our new AccuRender technology helps ensure colors are rendered more accurately and consistently, while doing so as efficiently as CRI 80 products.



Standard CRI 80

Good color rendering and high efficacy



Standard CRI 90

Better color rendering and low efficacy



AccuRender

Best color rendering, color preference and high efficacy

#### Enjoy design flexibility

#### Full range of products and options:

- Available soon in across Lightolier portfolio for application flexibility
- Multiple color temperatures (CCTs) and lumen packages offered

#### **Promote savings**

#### High efficacy, with no penalty:

- Energy efficacy compares well to conventional 80 CRI
- Up to 25% more energy savings vs competitor 90 CRI<sup>1</sup>
- Helps meet Title 24 requirements

#### Show your true colors

#### High color rendering:

- True to life colors that help energize your environment and render better flesh tones critical for healthcare hospitality and retail applications.
- R<sub>a</sub> up to 94 CRI R<sub>f</sub> up to 92 TM-30
  R<sub>9</sub> up to 67 CRI R<sub>f,th</sub> up to 91 TM-30
  G<sub>a</sub> up to 99 CRI R<sub>9</sub> up to 100 TM-30
  C<sub>9</sub> up to 94 CRI R<sub>esht</sub> up to -5% TM-30

#### Achieve color balance

#### Best in class color consistency:

 Promote aesthetic harmony in your space with ≤ 2 SDCM

#### Footnotes for page 1

- Emergency (EM6) frame is compatible with reflector mounted test switch when trim is ordered with IEM6 option code (not compatible with 347V or Power over Ethernet configurations). For remote mount switch, order standard trim and CAEM6TSCP mounting plate accessory.
- Chicago plenum (LC) frame option not available with BAC nor EM6 options.
- 3. Consult factory for 5000K CCT (50)with narrow (N) beam.
- Dim-to-warm (D2W) available only with Z10 dimming up to 2000Im
   with Narrow (N) and Medium (M) beam engines only.
- Linear driver profile (see page 8).
- Flex install option requires light engine (F)/trim only (up to 2500lm).
   For use only with optional 4RNSR new construction frame accessory.
   Not available with Interact (RA) dimming and IEM6 trim options. See page 3 for further details.
- . Retrofits select legacy luminaires (E & Z10 dimming only see pages 2 & 8).
- Non-conductive flush mount lens with pre-installed gasket
   (matte white non-conductive flange with diffuse lens that is flush with the flange).
- 9. Failure to properly select the "BAC" suffix could result in you receiving product that is not BAA compliant product with no recourse for an RMA or refund. This BAC designation hereunder does not address (i) the applicability of, or availability of a waiver under, the Trade Agreements Act, or (ii) the "Buy America" domestic content requirements imposed on states, localities, and other non-federal entities as a condition of receiving funds administered by the Department of Transportation or other federal agencies.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 2 of 11



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

Catalog Number:

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Notes:

Type:

R3

ALRORE25-12352

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Frame-in-kits

#### **New Construction:**

Galvanized stamped steel for dry or plaster ceilings. Pre-installed telescoping mounting bars from 13" to 24". For 4' distances, use 1/2" EMT, 1-1/2" x 1/2" U or C channel.

Max ceiling thickness is 2" (51 mm) plenum depth for installation.

#### Patented install Mounting frame:

- · Pre-installed mounting bars for fast and tool-less installs into T-grid & hat channel ceilings.
- · Close-cut aperture design eliminates possibility of gap between ceiling opening and reflector flange
- · Separate wiring compartment for wiring frame to building allows inspection prior to light engine install.
- Simple plug-and-play connection between frame and light engine from below ceiling.

Easily updates legacy Calculite downlights to the latest LED technology. Includes light engine, trim, and driver mounted on cover plate that mounts to junction box of previous Calculite generations. Order with R or RH option code at end of light engine catalog number (see details on page 6).

#### Compatibility:

Frames	Engines
With CFL S4118_series	Use Retrofit configuration C4R_ Trim + C4L_ Engine
With INC AS400_series	Use Retrofit configuration C4R_ Trim + C4L_ Engine
With LED C4L_N series C4X4L_N series P4RD N series	Use Retrofit configuration C4R_Trim + C4L_Engine C4S_Trim + C4L_Engine C4R_Trim + C4L_Engine

\* Not available for retrofitting luminaires with integral emergency battery

#### **Emergency**

Bodine BSL6 6W battery pack with self-test/ diagnostic functionality. Factory or field mounted

- · For trim with integral emergency test switch, order trim with IEM6 option (ex: C4RDLCCIEM6).
- · For remote ceiling mounted test switch, order standard trim (ex: C4RDLCC). Optional accessory ceiling mounting plate available (CAEM6TSCP) for remote mounted test switch.
- · Refer to Calculite-LyteProfile-EasyLyte Emergency Battery Pack specification sheet

#### Dimmina

All configurations are FCC Class A unless otherwise specified

- Advance 0-10V 1% (Z10), logarithmic curve is standard. Specify D2O for factory-set dimto-off function, consult factory for linear dimmina curve
- · EldoLED SOLODrive (SOL) 0-10v 0.1%
- · Lutron PEQ0 (L) Hi-Lume Premier 0.1% EcoSystem
- · Lutron LDE1 (LO1) EcoSystem 1%
- · Lutron LTE (LTE) Hi-Lume 2-wire phase cut 1%
- Electronic low voltage (E) forward or reverse phase dimming, Remodel and AirSeal IC Shallow are FCC Class B
- DALI (D) DT6 DALI 0.1%
- DMX (DMX) Digital Multiplexing with RDM 0.1%

Dimming Options: The following are factory-set options for the SOL, D, and DMX driver options (ex. DMXLIN):

- · SOL/D/DMX: Logarithmic (-) standard
- · SOL/D/DMX: Linear (LIN)
- · SOL/DMX: Square (SQR)
- · Dim to Warm (D2W): option changes CCT from 3000-1800K gradually as it dims. Use with Z10 dimming only. Fixture-to-fixture consistency of ≤3SDCM at 2700K & 3000K, and ≤5SDCM at 1800K.

#### Optical systems

#### Comfort throughout the space:

True 50° physical cutoff and 45° reflected cutoff.

#### Quality of light:

2 SDCM ensures color consistency from fixture to fixture and over the luminaire's long lifetime.

#### MesoOptics PET optical diffusion film:

Provides a smooth beam shape and mitigates color over angle with optimized luminaire efficiency.

#### Light engine

Quick connect power pack allow for easy installation and replacement from below ceiling with no need for additional wiring. This allows for:

- Frame and ceiling installation to be performed while still finalizing details such as lumen packages, CCT and control type.
- Easy replacement of electronics at end of life with minimal wasted material and labor required.
- · Ease and upgradability of technology.
- · 347V light engines are Z10 dimming only and include dedicated 347V driver. For 347V non-Z10 dimming, order T347-75VA field-installed stepdown transformer accessory.

#### Flex engine (F)

- · Frame-optional engine suited for new construction, remodel, and retrofit applications
- 4RNSR new construction frame accessory available as required to support ceiling construction
- All wiring is done on the integral j-box to the engine.

#### **Options and Accessories**

Flangeless mud-in ring: Use CA4RFT For use with flangless plaster installations.

Sloped ceilings: Compatible with sloped ceiling adapters (see SCA spec sheet).

C4RVPWH: Includes machined aluminum ring painted white, gasketed for IP65 protection, and impact resistant polycarbonate lens (IK10). Locks in place with discrete setscrew (key included). Available also with antimicrobial finish (C4RVPWHAME)

CAEM6TSCP: Ceiling cover plate for remote mounted EM6 test switch. 1/2" (25mm) hole, 4 3/8" (109mm) x 2 3/4" (69mm) rectangular. Includes two mounting screws.

Field install EM6 kit with Bodine BSL6 6W battery pack with self-test/self-diagnostic: Includes remote ceiling plate for test switch. To mount test switch to trim for new construction frame, order trim with IEM6 option code (e.g. C4RDLCCIEM6). Refer to Calculite-LyteProfile-EasyLyte Emergency Battery Pack specification sheet for more details.

CAEM6: For use with UniFrame frame in kits

LCEM6: For use with Flex intall (F) light engines.

SBA: Interact Ready System Bridge Accessory Requires IRT9015 IR remote and Interact Pro App for commissioning

T347-75VA: Field installable 347:120V 75VA stepdown transformer attaches to knock out on frame iunction box, for use with non-IC (N) frames. Not for use with emergency options.

### **ENERGY STAR® exceptions**

- 500lm & 90 CRI configurations
- Champagne Bronze & Black finishes
- 347V & Emergency voltage/options
- Dali, EldoLED Solo drivers

#### Title 24 exceptions

- 1000lm configurations
- Champagne Bronze & Black finishes

#### Labels and Listings

- cULus listed for wet locations
- ENERGY STAR® certified
- CEC Title 24 JA8 certified
- CCEA (frames with \*LC suffix)
- IP65 rated with vandal proof accessory

#### Warranty



5 year limited warranty Visit Signify.com/warranties for more information on Signify's standard 5-year limited warranty on complete luminaire systems.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 3 of 11



Catalog Number: 4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Type:

R3

ALRORE25-12352

# C4RDL Calculite LED 4" gen 3

## Round Downlight

# interact



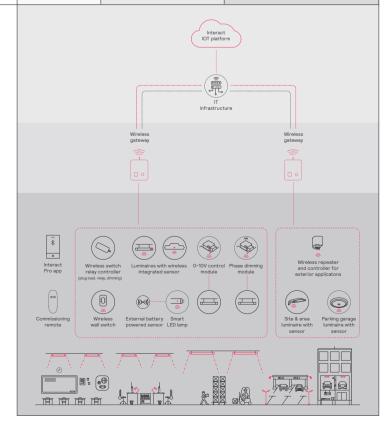
		Oatev	ray Connected
	Standalone	Option 1	Option 2
Dimming, grouping, and zoning	<b>~</b>	<b>✓</b>	<b>~</b>
Bluetooth and ZigBee enabled	<b>~</b>	<b>✓</b>	<b>✓</b>
Motion sensing and daylight harvesting	<b>~</b>	<b>✓</b>	<b>✓</b>
Integration with 0-10V and phase dimming fixtures	<b>~</b>	<b>/</b>	<b>✓</b>
Code compliance	<b>~</b>	<b>✓</b>	<b>✓</b>
Granular dimming and dwell time	<b>~</b>	<b>✓</b>	<b>✓</b>
Correlated color temperature (CCT) tuning by switch New	<b>V</b>	<b>/</b>	<b>✓</b>
Support for sensor-based Tunable White luminaires New	<b>~</b>	<b>✓</b>	<b>✓</b>
Energy reporting and monitoring		<b>✓</b>	<b>✓</b>
Scheduling		<b>✓</b>	<b>✓</b>
Demand response		<b>✓</b>	<b>✓</b>
BMS integration (BACnet)			<b>~</b>
Floor plan visualization			<b>✓</b>
IoT sensors for wellness			<b>✓</b>
IoT Apps for productivity			<b>✓</b>

### Currently supported maximum system size

To be able to design the lighting system correctly for the customer, it is important to know the prime characteristics of the system, its possibilities and limitations.

System level	
Total number of gateways	Unlimited
Total number of devices	200 per network
Luminaires with integrated sensors	150
Smart TLEDS	150
· Zones + groups	64
Total number of ZGP devices (sensors and switches)	50
· Sensors	30
· Switches	50

Group level	
Recommended number of lights	40 (maximum 150)
Number of ZGP devices	5
Number of scenes	16



 ${\tt CalculiteLEDgen 3-4 in-Downlight-C4RDL \ 05/25 \ page \, 4 \, of \, 11}$ 



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

Catalog Number:

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Notes:

Type:

R3

ALRORE25-12352

#### Calculite LED 4" gen 3 C4RDL

## Round Downlight

#### Wireless controls options

- · SWZCS is a connected sensor with integral occupancy and daylight sensing and supports wireless mesh connectivity.
- · The sensor works in the standalone mode (similar to SpaceWise) when configured without a gateway or in a cloud connected mode if a compatible gateway is used.
- Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- · Startup is implemented via Interact Pro App (Android or iPhone) & BlueTooth connectivity. The App provides flexibility to choose between a gateway or non gateway mode for setup
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely and use IRT9015 remote on-site to identify and group devices together.

#### Compatible with:

- SWS200 & UID8465 wireless scene switch
- Battery powered IP42 presence sensor OCC sensor IA CM WH 10/1
- Battery powered IP42 presence & daylight sensor OCC-DL sensor IA CM IP42 WH
- LCN3110: battery powered IP65 presence sensor, OCC sensor IA CM IP65W
- LCN3120: battery powered IP65 presence & daylight sensor, OCC-DL sensor IA CM IP65 WH
- For more information on Interact visit: interact-lighting.com/interactproscalablesystem

#### Radio only sensor (RA or RADIO)

- · Integral RA or RADIO only sensor simply enables wireless mesh connectivity to the luminaire without any occupancy or daylight sensing.
- Ideal for applications where sensing functionality is managed by other Interact devices and the luminaire only needs to have wireless connectivity
- · Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system
- · Startup is implemented via Interact Pro App (Android or iPhone) & Bluetooth connectivity The App provides flexibility to choose between a gateway or non-gateway mode for setup.
- · Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely, identify and group devices together onsite
- Compatible with SWS200 and UID8465 wireless scene switch, wireless Occ sensor (OCC SENSOR IA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1)
- · For more information on Interact visit: interact-lighting.com/interactproscalablesystem

#### Sensor bundle (IAOSB or SB)

- A wireless IoT connected lighting solution for large enterprises that span across multiple floors, buildings and require multiple gateways
- View all your projects under one dashboard and easily compare insights from multiple projects in one view.
- Compatible with SWS200 wireless scene switch, wireless Occ sensor (OCC SENSORIA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1) and wireless Occupancy or Daylight & Occupancy sensors available. Use Interact software and insights to increase building efficiency, achieve building wide integration and optimize space through occupancy analytics.
- · IAOSB or SB option in addition to occupancy and daylights sensing supports advanced IoT capabilities, such as people estimation analysis, desk level temperature & humidity sensing, noise classification, and BLE beacon.
- · Requires compatible Gateway and internet connectivity for commissioning
- For more information, visit: interact-lighting.com/interactproscalablesystem

#### **Emergency Options (ER100)**

- Power Sensing (factory default) -Recommended UL924 option requires unswitched power sense line, absence of voltage on the normal circuit triggers luminaire to 100% output.
- Power Interruption Detection (field option) -Detects AC power interruption >30ms triggers 90 minute emergency mode with luminaire at 100% output.

### Interact supported sensor option codes across Genlyte product lines

	Evokit	Day-Brite	Ledalite	Lightolier
ZigBee + Bluetooth + Sensing	SWZCS	SWZCS	CS	SBA accessory (external)
ZigBee + Bluetooth	RADIO	RADIO	RA	RA
ZigBee + Bluetooth + Sensing + Environmental data	IAOSB	IAOSB	SB	SB
ZigBee + Highbay + Sensing	-	SWZCSH	-	-

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 5 of 11



Catalog Number: 4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Type:

R3

ALRORE25-12352

## C4RDL Calculite LED 4" gen 3

## Round Downlight

#### **Polished Reflectors**



Specular clear (CL): Most specular and most efficient finish, delivers maximum photometric performance but can produce a mirror image effect of the interior space.



Comfort clear (CC): Semi-specular finish that softens the light at the source of the reflector and creates a subtle, even luminance from the reflector cone.



Comfort clear diffuse (CD): Slightly diffuse clear finish, that eliminates iridescence and reduces the mirror image effect inherent with specular finishes.



Vandal proof (VP): Provides an elegant solution for vandal resistant needs. One piece machined aluminum ring with impact resistant clear lens. Flangeless (F) flange must be ordered. Provides the luminaire with an IK10 impact and IP65 rating.



Champagne bronze (CZ): Semi-specular finish that softens light at the source of the reflector while providing a warmer reflector appearance (slightly warmer).



White (WH): (matte) Brightest illuminated aperture and provides the smoothest transition to most ceilings when off (white is only available with a white flange).



Black (BK): (anodized) Specular finish that provides the lowest aperture brightness possible and significantly reduces source identification in a ceiling.



Shower light (SL): Wet location rated shower light with clear acrylic lens applicable in any installation requiring dead front trims, interior or exterior non-corrosive applications, or where a diffused lens at the ceiling is required (non-conductive).

#### **Flanges**



White (-): (matte) Provides the smoothest transition to ceilings when off.



Polished (P): (matches aperture) Produces a continuous look throughout the reflector (aperture matching)



Flangeless (F): (flush-mount)Creates a flush, virtually seamless transition from aperture to ceiling.



Mud-in ring (FT): Low profile, machined aluminum mud-in ring provides a raised rib to plaster up to and a 3/16" flange thickness. The ring is attached to the ceiling material as opposed to the frame-in kit to avoid conduction of heat and vibration which can cause yellowing or cracking of the plaster.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

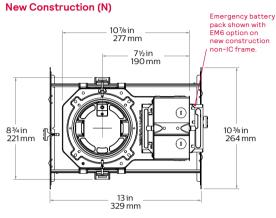
4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Type:

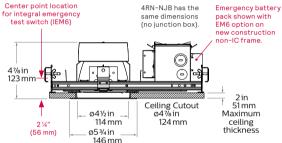
R3

ALRORE25-12352

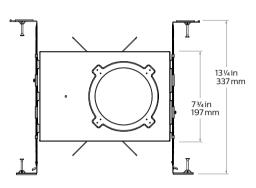
# C4RDL Calculite LED 4" gen 3

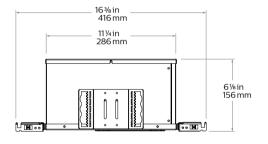
## Round Downlight



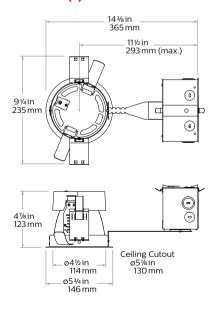


#### Chicago Plenum (LC)

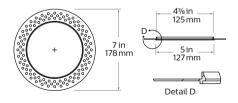




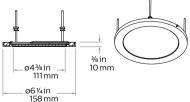
#### Remodeler (R)



#### Flangeless mud-in ring (CA4RFT) accessory



### Vandal Proof (VP) accessory



CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 7 of 11



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Type:

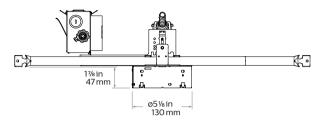
R3

ALRORE25-12352

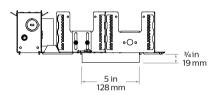
# C4RDL Calculite LED 4" gen 3

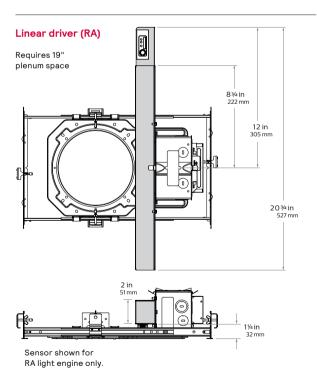
## Round Downlight

#### Round tall collar frame (RH type light engine required)

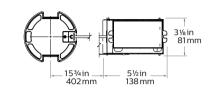


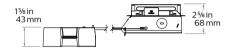
#### Round standard steel frame (R type light engine required)



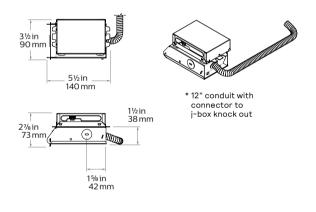


#### Flex Install (F)

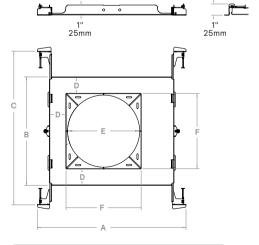




#### LCEM6 Flex install (F) engine only



#### 4RNSR Flex install non-IC frame



Α	В	С	D	E	F
10 1/8"	7¼"	13 %"	1"	4%"	5¼"
276mm	184mm	345mm	25mm	124mm	132mm

 ${\tt CalculiteLEDgen 3-4 in-Downlight-C4RDL} \quad {\tt 05/25} \quad {\tt page 8 of 11}$ 



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number:

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH Type:

R3

ALRORE25-12352

# C4RDL Calculite LED 4" gen 3

## Round Downlight

#### Electrical - Narrow

Light	Input	Input	Input	Drive	Input	LED	THD Factor	Power Factor
engine	Volts	Freq.	Current	Current		Power	@ Max	Load
	120V	50/60Hz	0.050A	0.15A	6.0W	4.8W	<10%	>0.9
500lm	277V	50/60Hz	0.023A	0.15A	6.3W	4.8W	<30%	>0.9
	347V	50/60Hz	0.020A	0.15A	7.0W	4.8W	N/A	>0.9
	120V	50/60Hz	0.072A	0.22A	8.7W	7.1W	<10%	>0.9
1000lm	277V	50/60Hz	0.032A	0.22A	8.9W	7.1W	<20%	>0.9
	347V	50/60Hz	0.029A	0.22A	10.1W	7.1W	<30%	>0.9
	120V	50/60Hz	0.108A	0.33A	12.9W	10.8W	<10%	>0.9
1500lm	277V	50/60Hz	0.047A	0.33A	13.0W	10.8W	<10%	>0.9
	347V	50/60Hz	0.043A	0.33A	14.8W	10.8W	<25%	>0.9
	120V	50/60Hz	0.147A	0.45A	17.6W	14.9W	<10%	>0.9
2000lm	277V	50/60Hz	0.064A	0.45A	17.7W	14.9W	<10%	>0.9
	347V	50/60Hz	0.056A	0.45A	19.6W	14.9W	<20%	>0.9
	120V	50/60Hz	0.180A	0.55A	21.6W	18.3W	<10%	>0.9
2500lm	277V	50/60Hz	0.078A	0.55A	21.7W	18.3W	<10%	>0.9
	347V	50/60Hz	0.066A	0.55A	22.9W	18.3W	<20%	>0.9
	120V	50/60Hz	0.231A	0.70A	27.7W	23.7W	<10%	>0.9
3000lm	277V	50/60Hz	0.100A	0.70A	27.6W	23.7W	<10%	>0.9
	347V	50/60Hz	0.083A	0.70A	28.9W	23.7W	<15%	>0.9

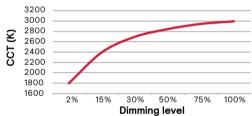
#### Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam
500lm 1000lm 1500lm	L85 @ 55,000hrs.	L90 @ 60,000hrs.
2000lm	L85 @ 55,000hrs.	L80 @ 60,000hrs.

#### **Electrical - Medium & Wide Downlights**

Light	Input	Input	Input	Drive	Input	LED	THD Factor	Power Factor
engine	Volts	Freq.		Current		Power	@ Max	Load
	120V	50/60Hz	0.051A	0.15A	6.1W	4.8W	<10%	>0.9
500lm	277V	50/60Hz	0.023A	0.15A	6.4W	4.8W	<30%	>0.9
	347V	50/60Hz	0.020A	0.15A	7.1W	4.8W	N/A	>0.9
	120V	50/60Hz	0.084A	0.25A	10.1W	8.3W	<10%	>0.9
1000lm	277V	50/60Hz	0.037A	0.25A	10.3W	8.3W	<10%	>0.9
	347V	50/60Hz	0.034A	0.25A	11.7W	8.3W	<30%	>0.9
	120V	50/60Hz	0.117A	0.36A	14.0W	11.8W	<10%	>0.9
1500lm	277V	50/60Hz	0.051A	0.36A	14.1W	11.8W	<10%	>0.9
	347V	50/60Hz	0.046A	0.36A	16.0W	11.8W	<25%	>0.9
	120V	50/60Hz	0.153A	0.47A	18.4W	15.5W	<10%	>0.9
2000lm	277V	50/60Hz	0.067A	0.47A	18.5W	15.5W	<10%	>0.9
	347V	50/60Hz	0.059A	0.47A	20.3W	15.5W	<20%	>0.9
	120V	50/60Hz	0.197A	0.60A	23.6W	20.1W	<10%	>0.9
2500lm	277V	50/60Hz	0.085A	0.60A	23.6W	20.1W	<10%	>0.9
	347V	50/60Hz	0.072A	0.60A	24.9W	20.1W	<20%	>0.9
	120V	50/60Hz	0.247A	0.75A	29.7W	25.5W	<10%	>0.9
3000lm	277V	50/60Hz	0.107A	0.75A	29.7W	25.5W	<10%	>0.9
	347V	50/60Hz	0.087A	0.75A	30.4W	25.5W	<15%	>0.9

#### Dim-to-Warm: CCT vs Dimmed level



#### Lifetime (TM-21 data)

	1	1
Lumens	Narrow beam	Medium/Wide beam*
500lm 1000lm 1500lm	L90 @ 60,000hrs.	L90 @ 60,000hrs.
2000lm 2500lm 3000lm*	L90 @ 60,000hrs.	L85 @ 60,000hrs.

<sup>\*</sup> Lutron 3000lm with Medium/Wide beam is L80 @ 60,000hrs.

#### Marked spacing applications

Light engine	3000lm
C4L_Z10 series	Х
C4L_L01 series	Х
C4L_L1 series	Х
C4L_LD series	Х
C4L_LTE series	Х
C4L_D series	Х
C4L_DMX series	Х
C4L_RA series	Х

Modules marked with an X require marked spacing:

- Center-to-center of adjacent luminaires: 24" (610mm)
- Luminaire center to side building member: 12" (305mm)

In accordance with CAN ICES-005-A/ NEB-005-A and FCC Part 15-A.

CalculiteLEDgen3-4in-Downlight-C4RDL 05/25 page 9 of 11

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

### **Catalog Number:**

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH

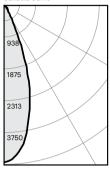
## Type:

**R3** 

# C4RDL Calculite LED 4" gen 3

## Round Downlight

### Narrow beam, 1500lm Engine, 117lm/W at 13W



4RN / C4L15935I	N / C4RDLCL
Output lumono:	1402 lms

Input watts:	12.8 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	0.62
Beam Angle:	36°

Zone	Lumens	%Luminaire
0-30	1322	88.6%
0-40	1437	96.3%
0-60	1490	99.9%
0-90	1492	100.0%

Angle	Mean CP	Lumens
0 5	3676	
5	3512	
10	3039	320
15	2364	
20	1536	639
25	769	
30	312	363
35	171	
40	135	115
45	64	
50	8	51
55	2	
60	1	2
65	1	
70	0	1
75	0 0	
80	0	0

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	102	4.8'
6'	80	5.4'
7'	65	6.0'
8'	45	6.6'
9'	19	8.7'

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.	
5'	63.0	0.57	
6'	42.0	0.37	
7'	30.0	0.27	
8'	25.0	0.22	
9'	20.0	0.18	
38' x 38' x 10' Room, Workplane 2.5'			

Efficacy: 116.6 lm/W Report<sup>2</sup>: STMR-2974

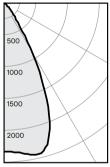
#### Adjustment factors

Finish	CCT	Lumens
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Cei	iling		80	)%		70	)%	50	)%	30	)%	0%
Wa	II	70	50	30	10	50	10	50	10	50	10	0
RCR Zonal cavity method - Effective floor			r refl	ectar	ice =	20%						
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	114	112	110	108	110	106	106	103	102	100	95
Ě	2	110	106	103	100	104	99	101	96	98	94	91
æ	3	106	100	96	93	99	92	97	91	94	89	87
Ę	4	102	96	91	88	94	87	92	86	91	85	83
a S	5	98	91	86	83	90	82	89	82	87	81	79
õ	6	94	87	82	79	86	78	85	78	84	77	76
6	7	91	83	78	75	83	75	82	74	80	74	73
Room Cavity Ratio	8	88	80	75	72	79	72	78	71	77	71	70
	9	85	77	72	69	76	69	75	68	75	68	67
	10	82	74	69	66	73	66	73	66	72	66	64

#### Medium beam, 1500lm Engine, 108 lm/W at 14W



#### 4RN / C4L15935M / C4RDLCL

Output lumens:	1510 lms
nput watts:	14.0 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	0.92
Beam Angle:	54°

Zone	Lumens	%Luminaire
0-30	1242	82.3%
0-40	1450	96.0%
0-60	1508	99.9%
0-90	1510	100.0%

Angle	Mean CP	Lumens
0	1859	
5	1871	
10	1924	180
15	1910	
20	1677	527
25	1204	
30	661	535
35	307	
40	154	208
45	69	
50	9	55
55	2	
60	1	3
65	1	
70	0	1
75	0	
80	0 0	0
85	0	

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	74	4.6'
6'	52	5.5'
7'	38	6.4'
8'	29	7.4'
9'	23	8.3'

\* Beam diameter is where foot-candles drop to 50% of maximum.

### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.	
5'	70.0	0.62	
6'	46.0	0.41	
7'	32.0	0.29	
8'	27.0	0.24	
9'	22.0	0.19	
38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances			

Efficacy: 107.9 lm/W Report<sup>2</sup>: STMR-1613

Finish	CCT	Lumens
CL = 100% CC = 95% CD = 87% CZ = 63% WH = 87% BK = 57%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Ceiling		80%		70%		50%		30%		0%		
Wall		70	50	30	10	50	10	50	10	50	10	0
RCR		Zona	al cav	ity me	ethod	l – Eff	ectiv	e floo	r refl	ectar	ice =	20%
	0	119	119	119	119	116	116	111	111	106	106	100
0	1	114	111	109	107	109	105	105	102	101	99	94
ij	2	109	104	101	97	103	96	99	94	96	92	89
æ	3	104	98	93	90	97	89	94	88	92	86	83
Ę	4	99	92	87	83	91	83	89	82	87	81	79
æ	5	95	87	82	78	86	77	84	77	83	76	74
Room Cavity Ratio	6	90	82	77	73	81	72	80	72	79	72	70
	7	86	78	72	68	77	68	76	68	75	67	66
	8	83	74	68	64	73	64	72	64	71	64	62
	9	79	70	65	61	70	61	69	61	68	60	59
	10	76	67	61	58	66	58	65	57	65	57	56

1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.

2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

4R-N + C4L-30-935-M-Z10-U + C4-R-DL-FINISH?-F + C4RVPWH

Type:

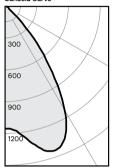
**R3** 

ALRORE25-12352

# C4RDL Calculite LED 4" gen 3

## Round Downlight

### Wide beam, 1500lm Engine, 99 lm/W at 14W



### 4RN / C4L15935W / C4RDLCL

Output lumens:	1385 lms
Input watts:	14.0 W
CRI:	90 min
CCT1:	3500K
Spacing Crit.:	1.26
Beam Angle:	67°

Zone	Lumens	%Luminaire
0-30	886 1264	64.0% 91.3%
0-60	1384	99.9%
0-90	1385	100.0%

Angle	Mean CP	Lumens
0	917	
5	941	
10	1025	93
15	1116	
20	1135	314
25	1063	
30	873	479
35	606	
40	366	378
45	134	
50	15	116
55	3	
60	2	4
65	1	
70	1	1
75	0	
80	0	C
85	l n	

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	37	6.3'
6'	25	7.6'
7'	19	8.8'
8'	14	10.1'
9'	11	11.3'

\* Beam diameter is where foot-candles drop to 50% of maximum.

#### Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.		
5'	63.0	0.62		
6'	42.0	0.41		
7'	29.0	0.29		
8'	25.0	0.24		
9'	20.0	0.19		
38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances				

Efficacy: 98.9Im/W Report<sup>2</sup>: STMR-1641.1

#### Adjustment factors

Finish		CCT	Lumens
CL = 10 CC = 9 CD = 8 CZ = 6 WH = 8 BK = 5	95% 37% 33% 37%	90CRI, 4000K = 102% 90CRI, 3500K = 100% 90CRI, 3000K = 96% 90CRI, 2700K = 92%	3000lm = 200% 2500lm = 167% 2000lm = 133% 1500lm = 100% 1000lm = 67% 500lm = 33%

#### Coefficients of utilization

Ceiling		80%			70	0% 50%		30%		0%		
Wall		70	50	30	10	50	10	50	10	50	10	0
RCR Zonal cavity method - Effective floo				e floo	r refl	ectan	ice =	20%				
	0	119	119	119	119	116	116	111	111	106	106	100
_	1	113	110	108	106	108	104	104	101	100	98	93
Ratio	2	107	102	98	95	101	93	97	91	94	89	86
æ	3	102	95	90	85	93	85	91	83	88	82	79
Ę	4	96	88	82	78	87	77	85	76	83	75	73
a S	5	91	82	76	71	81	71	79	70	77	70	67
Ö	6	86	76	70	65	75	65	74	65	72	64	62
Room Cavity	7	81	71	65	60	70	60	69	60	68	59	58
	8	77	66	60	56	66	56	65	55	64	55	53
	9	72	62	56	52	62	52	61	51	60	51	50
	10	69	58	52	48	58	48	57	48	56	48	46

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Submitted On: Jul 21, 2025

<sup>1.</sup> Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

<mark>75S-4-L30-835-DIM-UNV</mark>

Notes:

Type:

ALRORE25-12352

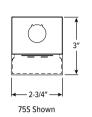
**S1** 

# 75R | 75S LED Narrow Strip

















#### **FEATURES**

- Small fixture profile allows inconspicuous placement in coves or confined spaces
- Round and square lenses provide a clean look for architectural environments
- Row applications produce continuous light with minimal interruption
- Diffuse acrylic lens enhances uniformity and minimizes glare
- Variety of mounting accessories for surface and suspended applications
- Special reflectors are available to provide precise light distribution
- HE option delivers superior efficacies up to 182 lm/W
- Optional wireguard provides added protection
- Six standard finish options and a wide selection of custom colors complement the architectural elements of any space
- 2', 3', 4', and 8' lengths available
- Available on QuickShip
- Wireless in-fixture control solutions
- Made Right Here® in the USA

### **SPECIFICATIONS**

- HOUSING 22-gauge die-formed C.R.S.
- SHIELDING Diffuse acrylic lens. Frosted polycabonate available for 75R, specify FP Option.
- FINISH 92% minimum average reflective white polyester powder coat bonded to phosphate-free, multi-stage pretreated metal. All parts painted after fabrication to facilitate installation, increase efficiency, and inhibit corrosion.
- ELECTRICAL High-quality mid-power LED board. L70 > 72,000 hours per IES TM-21. L80 > 102,000 hours with HE option. 25°C maximum ambient operating temperature. 40°C maximum ambient operating temperature with HA Option, lumen restrictions apply, see fixture performance data. 50/60 Hz constant current driver.
- MOUNTING Surface (ceiling or wall) or suspended (hanging hardware required).
- LISTINGS -
- cETLus conforms to UL STD 1598. Certified to CAN/CSA STD C22.2 No. 250.0. Suitable for damp locations
- UL 924 available, see Options
- DesignLights Consortium qualified product. Not all versions of this product may be DLC qualified, see the DLC Qualified Products List at
- Build America, Buy America (BABA) and Buy American Act (BAA) compliant. Request certification at
- WARRANTY 5-year limited warranty, see

## ORDERING EXAMPLE: 75R - 4 - L85/835 - OPTIONS - CONTROL/DIM - UNV

SERIES	LENGTH	LUMENS [1]				CRI	ССТ
75R Round	<b>2</b> 22-1/2"	2′	3′	4'	8′	<b>8</b> 80	<b>27</b> 2700K
lens	<b>3</b> 33-9/16"	<b>L15</b> 1,500lm	<b>L40</b> 4,000lm	<b>L30</b> 3,000lm	L60 6,000lm	<b>9</b> 90	<b>30</b> 3000K
<b>75S</b> Square	<b>4</b> 44-5/8"	<b>L25</b> 2,500lm	<b>L64</b> 6,400lm	<b>L50</b> 5,000lm	L100 10,000lm		<b>35</b> 3500K
lens	8 89-1/4" <sup>[2]</sup>	L32 3,200lm		<b>L65</b> 6,500lm	L130 13,000lm		<b>40</b> 4000K
		<b>L42</b> 4,200lm		L85 8,500lm	<b>L170</b> 17,000lm		<b>50</b> 5000K
				L100 10,000lm	L20020,000lm		

#### OPTIONS [3]

See page 3 for FINISH OPTIONS. See page 3 for SPECIAL REFLECTOR OPTIONS. See page 3 for QUICK-CONNECT OPTIONS.

EM/10WLP	Low-profile 10-watt emergency battery [4]
EM/10WRM	Remote mount 10-watt emergency battery
EM/10WRM/RTS	Remote mount 10-watt emergency battery
	with regressed test switch

HE	High efficacy lumen package [5]
HA	High ambient operating temperature, 40°C [
WG-75	11-gauge white powder coat wireguard [7]

315	1-1/2" ceiling spacer
VBY	(2) Y-hangers
VRV-2	(2) V-hangers with 2' ch:

(2) Y-hangers with 2' chains Row aligner [8] RA-75 (2) 45° adjustable mounting brackets [9] 45AMB

Frosted polycarbonate lens for 75R

Additional lower lumen packages available [10] Example: 7,000 nominal lumens = 75R-4-L85/835-(L70)

Quick-connect wiring harness

Approved for UL 924 emergency generator circuit through-feed wiring [11] GEN

10kV surge protection, 120 or 277V

10kV surge protection, 208 or 240V SP2 SP3 10kV surge protection, 347V

#### AIRCRAFT CABLES (EXAMPLE: ACF/D48) [12]

Prefix	Туре	Length
ACF/ Feeder	D 1" grid & hardpan	<b>24</b> 24"
ACJ/ Joiner	N 9/16" grid	<b>48</b> 48"
	S Slot arid	<b>96</b> 96"

#### CONTROL [13]

See page 6 for ADDITIONAL CONTROL OPTIONS.

_	None
AVI-LVFA	Avi-on wireless fixture control [14]
AVI-LVFA-PIR	Avi-on wireless fixture control with high bay Pl

motion and daylight sensor, bottom mount [15]

Avi-on wireless future: Avi-on wireless fixture control with PIR motion and daylight sensor, bottom mount [16] AVI-LVFA-CS2-PIR

Lutron Athena wireless node integral fixture control, RF only [17] **AWNR** 

Lutron Athena wireless node integral fixture control, RF with daylight and occupancy sensing [18] **AWNS** 

DRIVER See page 8 for ADDITIONAL DRIVER OPTIONS.

DIM Driver with external 0-10V dimming wires DRV Driver without external dimming wires

Driver with 12V auxiliary power, without external dimming wires [19]

DSR Sensor-ready driver without external dimming wires (D4i DALI-2) [20]

VOLTAGE 120 120V

208 208V **240** 240V **277** 277V UNV 120-277V

347 347V [21]

#### QUICKSHIP

75R-4-L50/835-QS-DIM-UNV 75R-8-L100/835-QS-DIM-UNV 75S-4-L50/835-QS-DIM-UNV 75S-8-L100/835-QS-DIM-UNV 75R-4-L50/840-QS-DIM-UNV 75R-8-L100/840-QS-DIM-UNV 75S-4-L50/840-QS-DIM-UNV 75S-8-L100/840-QS-DIM-UNV

- Lumen output based on 80 CRI/3500K CCT. Actual performance may vary +/-5%, see page 2 for FIXTURE PERFORMANCE DATA. Additional lumen packages available, see options.

  Ships with (2) 4' lenses.
- Ships with (2) 4' lenses. Remote EM batteries: max remote distance 50', including suspension length. Large remote box provided. Specify CEC in the option code when California Energy Commission regulations are required. See page 4 for REMOTE MOUNT BATTERY DETAILS. Not available with 9' CRI, 3' Length, 2' L15, 4' L30, or 8' L60 lumen packages. See page 2 for FIXTURE PERFORMANCE DATA. Lumen restrictions apply. See page 2 for FIXTURE PERFORMANCE DATA. Shipped separately, field-installed. Required when row mounting with aircraft cables.

- Required when row mounting with aircraft cables.
  Cord recommended, ships separately. See page 4 for
  MOUNTING ACCESSORY DETAILS. Field-adjustable up and down in 7-1/2° increments.
- <sup>10</sup> Specify in increments of 100 nominal lumens. Option must be
- Specify in increments of 100 nominal lumens, Option must be specified with next higher lumen package.

  Maximum mounting height is 15.4' (4.7 m). Minimum lumen output is 400 lm/ft. See hew.com/UL924 for details.
  Units specified with aircraft cable require cord and RA-75 row aligner. See page 4 for MOUNTING ACCESSORY DETAILS.
  See page 4 for SENSOR & NODE PLACEMENT DETAILS. See page 5 for AVI-ON BLUETOOTH WIRELESS CONTROL DETAILS.
  DA Driver only.

- 15 DA Driver only.
  16 DA driver only.
  17 DA and DSR Drivers only.
  18 DA and DSR Drivers only.
- DA and DSR Drivers only.
  Avi-on, Lutron Athena, and LV-ZLS05 Controls only.
- Lutron Vive and Athena Controls only.
   Not available with EM batteries, DA, or DSR drivers.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

75S-4-L30-835-DIM-UNV

Notes:

**S1** 

ALRORE25-12352

Type:

# 75R | 75S LED Narrow Strip

#### **FIXTURE PERFORMANCE DATA**

		STANDARD		TANDARD		HE OPTION [1]		AMBIENT TEN	IPERATURE [2]
	LED PACKAGE	DELIVERED LUMENS	WATTAGE	EFFICACY (Im/W)		WATTAGE	EFFICACY (Im/W)	EM	NO EM
	L15	1511	10.8	140		-	-	40	40
7	L25	2470	18.2	136	1	14.8	167	40	40
7	L32	2936	21.3	138	1	17.2	170	40	40
	L42	4124	31.4	132	1	23.0	180	35	40
ň	L40	3885	28.2	138	1	-	_	35	40
m	L64	6259	48.2	130		-	_	30	35
	L30	2916	19.7	148		-	_	40	40
	L50	4867	33.0	148	П	26.7	182	40	40
4	L65	5994	42.3	142	Ш	35.8	168	40	40
	L85	8098	56.2	144	Ш	47.6	170	35	40
	L100	9640	68.3	141	Ш	56.9	169	30	30
	L60	5520	35.3	157	Ш	-	_	40	40
	L100	9568	65.9	145	Ш	54.1	177	35	35
ò	L130	12353	87.9	141		70.8	175	35	35
	L170	16197	112.4	144		94.8	171	35	35
	L200	19281	136.5	141		113.9	169	30	30

- Not available with 90 CRI. Maximum ambient operating temperature (°C) when specified with HA option.

**MULTIPLIER TABLES** 

	COLOR TEMPERATURE					
	CCT	CONVERSION FACTOR				
	2700K	0.97				
≂	3000K	0.99				
80 CRI	3500K	1.00				
00	4000K	1.03				
	5000K	1.06				
	2700K	0.80				
=	3000K	0.82				
90 CRI	3500K	0.83				
6	4000K	0.86				
	5000K	0.89				
_						

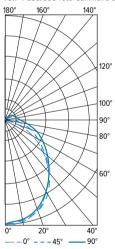
LENS	CONVERSION FACTOR
Standard	1.00
FP Option	0.95

- Photometrics tested in accordance with IESNA LM-79. Results based on 80 CRI/3500K CCT, average wattage for 120V through 277V input, and 25°C ambient temperature. Actual performance may vary +/-5%. To calculate lumen output in emergency mode, multiply the battery wattage by the efficacy.

  Use multiplier tables to calculate additional options.

#### **PHOTOMETRY**

**75R-4-L85/835** Total Luminaire Output: 8098 lumens; 56.2 Watts | Efficacy: 144 lm/W | 80 CRI; 3500K CCT



	VEDTICAL ANCLE	HO	HORIZONTAL ANGLE		
	VERTICAL ANGLE	0°	45°	90°	ZONAL LUMENS
	0	2594	2594	2594	
	5	2622	2585	2553	246
	15	2503	2497	2480	703
	25	2256	2306	2324	1059
	35	1915	2042	2111	1264
8	45	1481	1673	1824	1281
15	55	1003	1296	1488	1135
DISTRIBUTION	65	620	942	1117	891
S	75	267	630	775	613
	85	63	401	501	378
8	90	9	311	407	
CANDLEPOWER	95	1	249	329	225
豆	105	0	150	219	136
8	115	0	94	149	83
	125	0	53	102	47
	135	0	28	63	24
	145	0	12	35	10
	155	0	6	16	3
	165	0	0	4	0
	175	0	0	0	0
	180	0	0	0	

_			
	ZONE	LUMENS	% FIXTURE
ا∡ا	0 - 30	2008	25
Ĭ₩	0 - 40	3272	40
3	0 - 60	5688	70
NS	0 - 90	7570	94
LUMEN SUMMARY	90 - 120	443	6
=	90 - 150	524	7
	90 - 180	527	7
	0 190	8008	100

PHOTOMETRY CONTINUED ON NEXT PAGE.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

75S-4-L30-835-DIM-UNV

Notes:

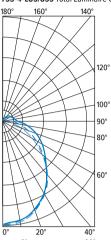
Type:

**S1** 

ALRORE25-12352

# 75R | 75S LED Narrow Strip

75S-4-L85/835 Total Luminaire Output: 8098 lumens; 56.2 Watts | Efficacy: 144 lm/ W | 80 CRI; 3500K CCT



	VERTICAL ANGLE HORIZONTAL ANGLE		GLE	ZONAL LUMENC	
	VERTICAL ANGLE	0°	45°	90°	ZONAL LUMENS
	0	2732	2732	2732	
	5	2756	2720	2682	258
	15	2633	2611	2579	734
	25	2351	2362	2323	1083
	35	1969	2010	1965	1247
S	45	1516	1554	1583	1209
5	55	1053	1160	1291	1051
RE	65	618	840	1022	826
DISTRIBUTION	75	270	542	745	563
	85	47	323	491	332
M	90	0	246	390	
CANDLEPOWER	95	0	230	344	223
ğ	105	0	200	291	185
CAI	115	0	171	256	149
	125	0	139	216	110
	135	0	96	166	71
	145	0	58	113	38
	155	0	36	63	16
	165	0	17	31	4
	175	0	0	0	0
	180	0	0	0	

	ZONE	LUMENS	% FIXTURE
	ZONL	LUMILING	/0 I IX I UKL
≿	0 - 30	2075	26
₹	0 - 40	3321	41
Σ	0 - 60	5581	69
N	0 - 90	7301	90
LUMEN SUMMARY	90 - 120	557	7
ᆲ	90 - 150	777	10
	90 - 180	797	10
	0 - 180	8098	100

#### **SPECIAL REFLECTOR OPTIONS**

#### R1015





- 5-3/16"-

Reflectors ordered and shipped separately. Cannot be used with wireguard accessories. To remove reflector, first remove the lens.

Example: R1172-4-75LED REFL

#### QUICK-CONNECT OPTIONS

Note: Quick-connect wiring required for row mounting. All QC harnesses contain (5) 16ga conductors plus ground.

DESIGNATION	NUMBER OF 16GA WIRES FACTORY CONNECTED (EXCLUDING GROUND)	WIRE COLOR/POWER SUPPLY FACTORY CONNECTIONS	TYPICAL USE
QCBW	2	Black, White	On/off switching (DRV) or line voltage dimming (DIM LINE)
QCRW	2	Red, White	Alternating circuits on/off switching (DRV) or line voltage dimming (DIM LINE)
QCBRW	3	Black, Red, White	On/off switching (DRV) or line voltage dimming when equipped with EM battery packs
QCBW/PK	4	Black, White, Purple, Pink	Single circuit with 0-10V low voltage dimming (DIM)
QCRW/PK	4	Red, White, Purple, Pink	Alternating circuits on/off switching with 0-10V low voltage dimming (DIM)
QCBRW/PK	5	Black, Red, White, Purple, Pink	On/off switching when equipped with EM battery packs and 0-10V dimming (DIM)
QCBW/RPK	5	Black, White, Red, Purple, Pink	On/off switching with 0-10v dimming and 0-10v tunable using shared common
QCUU	N/A	N/A	QC harness passes through fixture, but is not connected to it

#### **FINISH OPTIONS**



For custom color, please specify RAL code or a manufacturer code with description. All custom colors other than RAL require four sample swatches, minimum 1" square.

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

### **Catalog Number:**

75S-4-L30-835-DIM-UNV

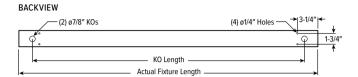
Notes:

Type:

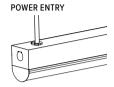
**S1** 

# 75R | 75S LED Narrow Strip

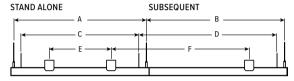
#### **FIXTURE DETAILS**



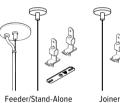
	7/8" KOs	ACTUAL FIXTURE LENGTH
2′	18-3/8"	22-1/2"
3′	29-1/2"	33-9/16"
4′	40-1/2"	44-5/8"
8′	85-1/8"	89-1/4"



#### MOUNTING ACCESSORY DETAILS



#### STANDARD HARDWARE FOR SUSPENDED PRODUCT (Grid and Hardpan)





Notes:

- Fixtures are provided with adjustable length aircraft cables and mounting hardware, must specify.
- Electrical supply is brought into the feeder fixture, either as part of a row or as a standalone unit. Joiner fixtures complete the row.
- The feeder kits are standard with a 5" canopy to cover the junction box and a 2" canopy at the non-feed point. No J-box is required at non-feed points.
- Cable kit provides 10/32 male thread for connection to fixture.

#### MOUNTING LENGTH

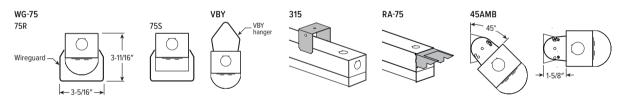
	AIRCRAFT CABLE		VBY HANGER		315 SPACER	
	Α	В	C D		E	F
2′	21-1/2"	22-1/2"	19"	22-1/2"	10"	22-1/2"
3′	32-1/2"	33-9/16"	30-1/16"	33-9/16"	21"	33-9/16"
4′	43-5/8"	44-5/8"	41-1/4"	44-5/8"	32"	44-5/8"
8′	88-3/16"	89-1/4"	85"	89-1/4"	77"	89-1/4"

#### CORD FOR SUSPENDED PRODUCT

Units specified with aircraft cable require cord. Please specify cord type using ordering information below. Long fixture rows may require multiple feed points based on 18ga conductor size.

EXAMPLE: S2438D/W				
CORD TYPE	LENGTH	# OF COND. [1]	WIRE SIZE	COLOR
S	24 24" 48 48" 96 96"	3 4 5 6	<b>8D</b> 18ga	/W White /B Black

<sup>1</sup> Includes (2) 22ga purple & pink dimming conductors



#### REMOTE MOUNT BATTERY DETAILS

#### EM/10WRM/RTS

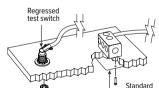


Regressed test switch ø1-3/4"

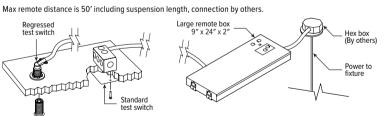
#### EM/10WRM



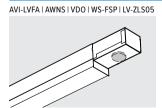
Standard test switch 2-3/4" x 4-1/2"



test switch



#### **SENSOR & NODE PLACEMENT DETAILS**



LV-OSFHU | SS-LSXR

- Information contained herein is subject to change without notice.
- H.E. Williams, Inc. Carthage, Missouri www.hew.com 417-358-4065
- Designed and Manufactured in the USA REV.06/02/25.JL

Strips Page 4 of 8

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

### **Catalog Number:**

75S-4-L30-835-DIM-UNV

Notes:

Type:

**S1** 

ALRORE25-12352

# 75R | 75S LED Narrow Strip

#### **AVI-ON BLUETOOTH WIRELESS CONTROL DETAILS**

#### **FEATURES**

### Simple

- · Gateway-free distributed control
- Contractor friendly installation
- Occupancy/vacancy/daylight sensing

- Virtually unlimited network size
- Spans small areas to large garages
- Flexible control strategies

- Optional cloud connectivity
- UL IoT platinum security rating
- DLC 5.0 compliant

#### **COMMISSIONING & INSTALLATION TOOLS**

Avi-on mobile apps provide intuitive, quick installation and commissioning. Pro tools are available to qualified installers. Live commissioning training and on-site or remote support by Avi-on must be ordered separately through Avi-on.







Zone Scanner



Commissioning Pro App



The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Avi-on is under license. Other trademarks and trade names are those of their respective owners.

#### **ACCESSORIES**

#### WALL STATIONS

AVI-B-2401AC-1 Scene controller - buttons numbered 1-4 and up/down/off, 120-277VAC AVI-B-2402BAT-1 Scene controller - buttons numbered 1-4 and up/down/off, battery powered AVI-B-2401AC-2 Dimmer with presets - buttons with percentages and up/down/off, 120-277VAC AVI-B-2402BAT-2 Dimmer with presets - buttons with percentages and up/down/off, battery powered

AVI-B-2401AC-3 Two button control on/off or hold to dim up/down, 120-277VAC AVI-B-2402BAT-3 Two button control on/off or hold to dim up/down, battery powered

### NETWORK

AVI-RAB-LTE Remote access bridge

AVI-NTM Network time manager with battery backup

#### **CEILING MOUNT SENSORS**

AVI-KIT-SEN-DUCM PIR motion and ultrasonic sensor kit AVI-KIT-SEN-ICM PIR motion and photocell sensor kit

For load controllers and additional accessory info, see hew.com/avi-on

AVI-LVFA-PIR Avi-on wireless fixture control with high bay PIR motion and daylight sensor, bottom mount. DA Driver only.

#### **SPECIFICATIONS**

TYPE PIR Motion + Daylight

MOUNTING HEIGHT 8' - 45'

LENS Single lens detects high and low bay motion.

**DETECTION ANGLE** 360°

TEMPERATURE -30° to 70°C

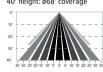
RELATIVE HUMIDITY 90 to 95% at 30°C

COMMISSIONING App (iOS or Android) SYSTEM REQUIREMENTS Avi-On wireless fixture controls plus

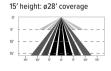
desktop and mobile apps MANUFACTURER

### SENSOR COVERAGE PATTERNS

Large motion 40' height: ø68' coverage









#### SENSOR DETAIL



Dimensions: 2-5/16" x 1-7/16"

Submitted On: Jul 21, 2025

ALRORE25-12352

# 75R | 75S LED Narrow Strip

AVI-LVFA-CS2-PIR Avi-on wireless fixture control with PIR motion and daylight sensor. DA Driver only.

**SPECIFICATIONS** PIR Motion + Daylight MOUNTING HEIGHT **DETECTION ANGLE** 360° TEMPERATURE RANGE -30° to 50°C RELATIVE HUMIDITY 10 to 80% non-condensing IP RATING IP20 MANUFACTURER

Side View 8' height: ø24' coverage

SENSOR COVERAGE PATTERNS



#### SENSOR DETAIL



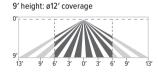
Dimensions: 13/16" x 2-1/4"

#### ADDITIONAL CONTROL OPTIONS

AWNS Lutron Athena wireless node integral fixture control, RF with daylight and occupancy sensing. DA and DSR Drivers only.

**SPECIFICATIONS** Radio Frequency MOUNTING HEIGHT 8' - 12' DETECTION ANGLE 360° TEMPERATURE RANGE 0° to 55°C RELATIVE HUMIDITY 0 to 90%, non-condensing Clear Connect gateway – Type X with app (iOS or Android) COMMISSIONING MANUFACTURER Lutron **\$LUTRON** 

### SENSOR COVERAGE PATTERNS



Motion Sensor Coverage

CEILING HEIGHT	COVERAGE AREA (SQ FT)
8′	114
9'	144
10'	178
12'	256

#### SENSOR DETAIL



Dimensions: ø1-1/8"

#### ATHENA CONTROL OPTIONS

CATALOG NUMBER	DESCRIPTION
AWNR	Lutron Athena wireless node integral fixture control, RF only, for use with D4i DALI-2 or driver with 12V auxiliary power.
AWNS	Lutron Athena wireless node integral fixture control, RF with daylight and occupancy sensing, for use with D4i DALI-2 or driver with 12V auxiliary power.
AWNR-BL	Lutron Athena wireless node integral fixture control, RF only, for use with D4i DALI-2 or driver with 12V auxiliary power, black finish.
AWNS-RI	Lutron Athena wireless node integral fixture control, RF with daylight and occupancy sensing for use with D4I D4I D4

VDO Lutron Vive integral fixture control, RF with daylight and occupancy sensor (DFCSJ-0EM-0CC). DSR or LDE Drivers only. LDE drivers require driver interface

SPECIFICATIONS	
TYPE	PIR Motion + Daylight
MOUNTING HEIGHT	8' - 12'
DETECTION ANGLE	360°
TEMPERATURE RANGE	0° to 55°C
RELATIVE HUMIDITY	0 to 90%, non-condensing
COMMISSIONING	App (iOS or Android)
MANUFACTURER	Lutron

#### SENSOR COVERAGE PATTERNS

9' height: ø12' coverage



Motion Sensor Co	overage
CEILING HEIGHT	COVERAGE AREA (SQ FT)
8′	114

EILING IEIGHT	COVERAGE AREA (SQ FT)
8′	114
9′	144
10′	178
12'	256

#### SENSOR DETAIL



Dimensions: 2-11/16" x 1"

#### **VIVE CONTROL OPTIONS**

CATALOG NUMBER	DESCRIPTION
VRF	Lutron Vive integral fixture control, RF only (DFCSJ-OEM-RF), for use with sensor-ready driver
VDO	Lutron Vive integral fixture control, RF with daylight and occupancy sensor (DFCSJ-OEM-OCC), for use with sensor-ready driver
VRF/DBI	Lutron Vive integral fixture control, RF only (DFCSJ-OEM-RF) and digital link interface, for use with Lutron Hi-lume 1% EcoSystem dimming LED driver
VDO/DBI	Lutron Vive integral fixture control, RF with daylight and occupancy sensor (DFCSJ-OEM-OCC) and digital link interface, for use with Lutron Hi-lume 1% EcoSystem dimming LED driver

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 75S-4-L30-835-DIM-UNV

Notes:

Type:

**S1** 

ALRORE25-12352

## 75R | 75S LED Narrow Strip

OCCWS-FSP-311-L\_-120/277 Wattstopper PIR motion and daylight sensor, 120/277. Must specify lens: L2, L3, or L7. Factory installed. OCCWS-FSP-211-L\_-120/277 Wattstopper PIR motion and daylight sensor, 120/277. Must specify lens: L2, L3, or L7. Factory installed. FSIR-100 Remote controller for 211 sensor. Please specify quantity required per project. Ordered and shipped separately.

#### **SPECIFICATIONS**

TYPE PIR Motion + Daylight

MOUNTING HEIGHT 8' - 40' **DETECTION ANGLE** 360°

TEMPERATURE RANGE -40° to 75°C

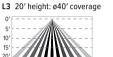
COMMISSIONING 311 Sensor: App (iOS or Android) 211 Sensor: FSIR-100 Remote

#### SENSOR COVERAGE PATTERNS

L2 8' height: ø48' coverage











L7 40' height: ø100' coverage





#### SENSOR DETAIL



Dimensions L2/L3: ø2-3/8" | L7: ø3-1/4"

LV-ZLS05-ILW Leviton PIR motion and daylight sensor. DA Driver only. Adjustable via remote. Optional ZLS0R-RA1 remote controller available. ZLSOR-RA1 Remote controller for ZLSO5 sensor. Please specify quantity required per project. Ordered and shipped separately.

#### **SPECIFICATIONS**

PIR Motion + Daylight

MOUNTING HEIGHT 8'-10' **DETECTION ANGLE** 120°

TEMPERATURE -20° to 70°C

DIP switches or optional remote: ZLSOR-RA1

#### SENSOR COVERAGE PATTERNS

10' height: ø24' coverage





#### SENSOR DETAIL



Dimensions: ø1-5/16"

#### OCCLV-OSFHU-ITW-120-347 Leviton PIR motion sensor, 120-347V.

#### **SPECIFICATIONS**

COMMISSIONING

TYPE PIR Motion

MOUNTING HEIGHT 8' - 40'

Interchangeable high bay, low bay or

DETECTION ANGLE 360°

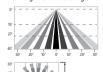
TEMPERATURE

-10° to 71°C

RELATIVE HUMIDITY 20% to 90% non-condensing

#### SENSOR COVERAGE PATTERNS

High bay 40' height: ø60' coverage









#### SENSOR DETAIL





BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

**Catalog Number:** 

75S-4-L30-835-DIM-UNV

Notes:

Type:

**S1** 

ALRORE25-12352

## 75R | 75S LED Narrow Strip

OCCSS LSXR-10-120-277 Sensor Switch PIR motion sensor, 120-277V OCCSS LSXR-10-347/480 Sensor Switch PIR motion sensor, 347/480V

SPECIFICATIONS PIR Motion MOUNTING HEIGHT 7' – 15' DETECTION ANGLE 360° TEMPERATURE RANGE -10° to 60°C RELATIVE HUMIDITY Up to 90% non-condensing

#### SENSOR COVERAGE PATTERNS

9' height: ø56' coverage





#### SENSOR DETAIL



#### ADDITIONAL DRIVER OPTIONS

Note: Lumen restrictions apply, consult product builder at hew.com/product-builder

CATALOG NUMBER	DESCRIPTION
DRV	Driver without external dimming wires prewired for non-dimming applications
DIM	Driver with external dimming wires prewired for 0-10V low voltage applications
DIM1	1% driver with external dimming wires prewired for 0-10V low voltage applications
DIM LINE	Line voltage dimming driver (TRIAC and ELV compatible, 120V only)
DIM TRC	Line voltage dimming driver (TRIAC compatible, 120V only)
DA	Driver with 12V auxiliary power, without external dimming wires
DSR	Sensor-ready driver without external dimming wires (D4i DALI-2)
SD40	40% step-dimming driver
SD50	50% step-dimming driver
DALI	DALI dimming driver
LDE1	Lutron Hi-lume 1% EcoSystem dimming driver

BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

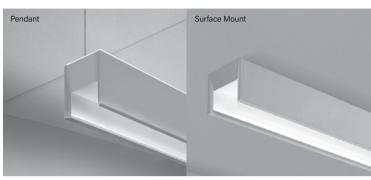
Type:

**S3** 

ALRORE25-12352



## High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

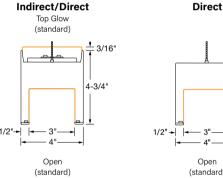


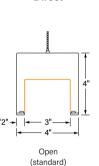
HO4 is a 4" luminaire with open aperture. Uplight Optical distribution options include standard lambertian, widespread and asymmetric patterns enabling more energy efficient building designs. Advanced optical design and mid-power LEDs achieve 90% of initial light output at 100,000+ hours.

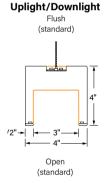
This product is enrolled in the International Living Future Institute (ILFI) Declare 2.0 Program and is third-party verified with options achieving Red List Approved and Red List Declared status.

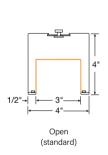
Signal White is standard finish

#### **CROSS SECTIONS**









**Surface Mount** 

#### **DIMENSIONS & LIGHT ENGINE**

Mid-powered, mirco LED arrays are tucked into the thin bottom rail and top channel for seamless illumination.



#### **ALSO AVAILABLE IN**



(R)

1/8

# 90° CORNERS











BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

Type:

**S3** 

ALRORE25-12352

Submitted by: Type: Ordering Info:



# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

Ordering Guide Example: HO - 4 - P - ID - RO - 36' - S - S - 835 - TG - OPN - 96LG - 120 - DC - FC-10% - FA50 - C1 - OE - SW - LGD18W - OBO - RLD

	BODY TYPE			BODY TYPE		OUTPUT and LED TYPE	
Platform Ser	ries	Luminaire Type	Luminaire Distribution	Luminaire Style	Total Length of Run	Uplight Output ID Only *	Downlight Output (Open)
HO - High Performance Open	4	P - Pendant SM - Surface Mount	ID - Indirect/Direct <sup>1</sup> D - Direct UD - Uplight/ Downlight	RO - Rectilinear Open	4' Minimum 2' section length, 1' Increments. 12' maximum section length.	S - Standard (460 lm/ft) B - Boosted (578 lm/ft) H - High (873 lm/ft) V - Very High (1123 lm/ft) TL - Tailored:lm/ft* *Lumens provided are for ID on *Specify lm/ft of outputs betwee	TL - Tailored:  Im/ft**  ly. For UD see page 8. en Standard (\$) and Very High (\$\mathbf{V}\$)

#### **OUTPUT and LED TYPE**

#### MECHANICAL/OPTICAL OPTIONS

#### **ELECTRICAL OPTIONS**

LED CRI/CCT	Uplight (ID and UD Only)	Downlight	Reflector System	Voltage	Circuiting <sup>2</sup>
830 - 80 CRI, 3000K 835 - 80 CRI, 3500K 840 - 80 CRI, 4000K 930 - 90 CRI, 3000K 935 - 90 CRI, 3500K 940 - 90 CRI, 4000K	F - Flush (standard for UD only)  TG - Top Glow (standard) <sup>3</sup> WSO - Widespread Optic <sup>3</sup> WSOTG - Widespread Optic with Top Glow <sup>3</sup> ASY-L - Asymmetric Left Optic <sup>3</sup> ASY-R - Asymmetric Right Optic <sup>3</sup> ASYTG-L - Asymmetric Left Optic with Top Glow <sup>3</sup> ASYTG-R - Asymmetric Right Optic with Top Glow <sup>3</sup>	OPN - Open	96LG - 96 Low Gloss White	120 - 120 Voltage 277 - 277 Voltage 347 - 347 Voltage (OTi only)	SC - Single Circuit* One single circuit in a run DC - Dual Circuit* <sup>4</sup> Independent control of up and down separately in an I/D style fixture MC - Multi-Circuit* More than one switch leg or zone. Factory shop drawings required
					<ul> <li>* Battery, Night Light, and Emergency to Generator circuits are in addition to the normal luminaire circuit(s)</li> </ul>

#### **ELECTRICAL OPTIONS**

#### MOUNTING OPTIONS

	Driver Selection	Mounting Method <sup>1</sup>	Ceiling Hardware Type
0-10V Driver Options  FC-10% - 0-10V 10% (standard)  FC-1% - 0-10V 10%  OTi-10% - EldoLED OTi, 0-10V 10% 5  OTi-1% - EldoLED OTi, 0-10V 10% 5  ELD-10V-0% - EldoLED SOLOdrive, 0-10  DALI Driver Options  FC-DALL-1% - DALI 1%	DMX Driver Options ELD-DMX - EldoLED POWERdrive, 0.1%  Lutron Driver Options LUT-ES1 - Lutron, Ecosystem 1%  V 0.1%	FA50 - Fully Adjustable 50" (standard) FA100 - Fully Adjustable 100" FA150 - Fully Adjustable 50" FA200 - Fully Adjustable 200" FA250 - Fully Adjustable 250" FA300 - Fully Adjustable 300" FM - Flexible Mounting °	C1 - 15/16" T-Bar C1T - 15/16" Tegular¹ C2 - 9/16" T-Bar C2T - 9/16" Tegular¹ C3 - Screw Slot C4 - Hard Ceiling
DXL-DALI-1% - EldoLED Dexal, 1% ELD-DALI-0% - EldoLED SOLOdrive, 0.19	See Page 3 for additional driver options and details		

#### **OTHER OPTIONS**

BO - Occupancy BD - Daylight	AOCC-W - Lutron Athena Sensor 12	CP - Chicago Plenum 14
601 - Watstopper Wireless Sensor  BE - Enlighted Sensor  EE - Remote Enlighted  LM-99 - Encelium RF LM-99 - Encelium Sensor	(Device Color White)  AOCC-B - Lutron Athena Sensor <sup>12</sup> (Device Color Black)  ARF-W - Lutron Athena RF <sup>12</sup> (Device Color White)  ARF-B - Lutron Athena RF <sup>12</sup> (Device Color Black)  VOCC - Lutron Vive Sensor <sup>13</sup> VRF - Lutron Vive RF <sup>13</sup>	RLA - Red List Approver RLD - Red List Declared
	EE - Remote Enlighted <sup>11</sup> LM-99 - Encelium RF	BE - Enlighted Sensor <sup>10</sup> EE - Remote Enlighted <sup>11</sup> LM-99 - Encelium Sensor  ARF-W - Lutron Athena RF <sup>12</sup> (Device Color White)  ARF-B - Lutron Athena RF <sup>12</sup> (Device Color Black)  VOCC - Lutron Vive Sensor <sup>13</sup>

- 3 Not available with UD
- Indirect/Direct only
  Add DTO to gain "Dim to Off" functionality (FC-10% DTO, FC-1% DTO)
- B Add D10 to gain Control Control
   G Direct only
   Copen Endcap (OE) available for HO4 ID with battery packs as test switch is installed on top of fixture
   Solid Endcap (SE) required at end with sensor

- LMFS-601 w/ Dall driver, only 1 driver can be connected.

  10 Enlighted components installed by Finelite, provided by others

  11 Enlighted Control Unit & Sensor Cable installed for Remote mounting sensor

  12 enlighted Control Unit & Sensor Cable installed for Remote mounting sensor

  12 enlighted Control Unit & Sensor Cable installed for Remote mounting sensor

  12 enlighted Control Unit & Sensor Cable installed for Remote mounting sensor

  13 Lutron View Ingrated Sensors require a DALI driver. Contact factory for Indirect Distribution.

  14 Only available with C1, C2, and C3 mounting hardware with Finelite Gridbox

Page 2 A brand of legrand

Finelite, Inc. • 30500 Whipple Road • Union City • CA 94587-1530 • 510-441-1100 • www.finelite.com © 2024 FINELITE, INC. ALL RIGHTS RESERVED. V5 CTK0262. 09/24 Due to continuing product improvements, Finelite reserves the right to change specifications without notice. Please visit www.finelite.com for the most current data. Protected by one or more US Patents: 8915613; D702,391; D702,390; D700,732



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

Catalog Number: HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

Type:

ALRORE25-12352

**S3** 

Submitted by:		Date:
Type:	Project:	
Ordering Info:		



# High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### **SUPPLEMENTARY DRIVER PAGE**

0-10V Driver Options			
FC-10%	Factory Choice, 0-10V 10% Dimming (Linear)		
FC-10%-DTO	Factory Choice, 0-10V 10% Dimming, Dim-to-Off (Linear)		
FC-1%	Factory Choice, 0-10V 1% Dimming (Linear)		
FC-1%-DTO	Factory Choice, 0-10V 1% Dimming, Dim-to-Off (Linear)		
ELD-10V-0%	EldoLED SOLOdrive, 0-10V 0.1% Dimming (Linear)		
ELD-10V-1%	EldoLED ECOdrive, 0-10V 1% Dimming (Linear)		
OTi-10%	EldoLED OTi, 0-10V 10% Dimming (Linear)		
OTi-10%-DTO	EldoLED OTi, 0-10V 10% Dimming, Dim-to-Off (Linear)		
OTi-1%	EldoLED OTi, 0-10V 1% Dimming (Linear)		
OTi-1%-DTO	EldoLED OTi, 0-10V 1% Dimming, Dim-to-Off (Linear)		

DALI Driver Options			
FC-DALI-1%	Factory Choice, DALI 1% Dimming (Logarithmic)		
DXL-DALI-1%	EldoLED Dexal, DALI 1% Dimming (Logarithmic)		
ELD-DALI-0%	EldoLED SOLOdrive, DALI 0.1% Dimming (Logarithmic)		
ELD-DALI-1%	EldoLED ECOdrive, DALI 1% Dimming (Logarithmic)		

DMX Driver Options			
ELD-DMX	EldoLED POWERdrive, DMX 0.1% Dimming (8 Bit, 1CH) (Linear)		
ELD-DMX-16	EldoLED POWERdrive, DMX 0.1% Dimming (16 Bit, 2CH) (Linear)		

Lutron Driver Options			
LUT-ES1 Lutron, Ecosystem 1% Dimming			

**Index Page** 



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10% Notes: Type:

**S**3

ALRORE25-12352

Submitted by:		Date:	FINE
Type:	Project:		
Ordering Info:			Better L

## High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### **SPECIFICATIONS**

#### **BODY TYPE**

**CONSTRUCTION:** Precision-cut 6063-T6 extruded aluminum body. Internal joiner system and plug-together wiring are standard.

LENGTHS: Any length, 2' minimum; in 1' increments. 12' maximum section length.

MITERED CORNERS: Corners are secured with joining brackets for tight connection. Square and rectangular configurations are available. Minimum 4' length for each leg of configurations. Each corner is made up of two reflector sections 2' long.

#### **OUTPUT and LED TYPE**

**LIGHT OUTPUT:** Four lumen packages available, Standard ( $\mathbf{S}$ ), Boosted Standard ( $\mathbf{B}$ ), High ( $\mathbf{H}$ ), and Very High ( $\mathbf{V}$ ). For lengths 3' and greater, the uplight and downlight can be specified with different lumen packages and dual controls. For Tailored Outputs outside of range from Standard ( $\mathbf{S}$ ) to Very High ( $\mathbf{V}$ ), consult factory. Light engines are replaceable.

#### **MECHANICAL/OPTICAL OPTIONS**

**UPLIGHT OPTION**: Patented Top Glow frost white diffuser standard. 12 ft. maximum diffuser length. 73% transmissive, 99% diffusion. Internal secondary diffusers at corners ensure visually seamless, uniform, continuous illumination options include: Flush frost white snap-in diffuser, 73% transmissive, 99% diffusion; Widespread Optic (**WSO**) and Widespread Optic with Top Glow (**WSOTG**); WSO enables increased luminaire spacing with improved ceiling uniformity. Asymmetric optic directs light in a specific direction. **ASY-L** distributes light to the left, **ASY-R** distributed light to the right of the luminaire. Consult factory for more tailored lumen outputs.

**DOWNLIGHT OPTION:** Direct distribution is totally open with unique polymer reflector material that helps define the rectilinear form.

**LUMEN MAINTENANCE:** 90% of initial light output (L90) at 100,000+ hours; 70% of initial light output (L70) at 200,000+ hours.

**REFLECTORS:** High diffuse polymer reflector with matte white finish. UV stable, abrasion resistant, and anti-static.

#### **ELECTRICAL OPTIONS**

**STATIC WHITE FEED:** Standard with one 18-gauge/5-conductor single-circuit feed controlling uplight and downlight together (power and dimming). Specify dual feeds for independent control of uplight and downlight. 14-gauge feed used when luminaire current exceeds 5 amps.

**STATIC WHITE DRIVER:** Replaceable 120V, 277V, and 347V constant current reduction dimming driver standard. Can be wired dimming or non-dimming. 0-10V dimming controls with a range of 100%-10% standard. Dimming to 1% available. Separate dimming for uplight and downlight available. Driver is fully accessible from below the ceiling.

- Power Factor: ≥ 0.9
- Total Harmonic Distortion (THD): <20%
- Expected driver lifetime: 100,000 hours

#### **LUTRON STATIC DRIVER OPTIONS:**

**LUT-ES1** - Hi-lume 1% EcoSystem with Soft-On, Fade-to-Black dimming (LDE1 series).

#### **MOUNTING OPTIONS**

#### HANGING HARDWARE:

- Pendant: 50" Fully Adjustable (FA) plated steel aircraft cable with safety stop hardware standard. The Flexible Mounting Bracket (FM) adjusts the suspension points to accommodate existing architecture. Suspension points adjust up to 2' in from the end of 8' or 12' fixture lengths and up to 1' in on shorter lengths. Consult factory for tailored lighting options.
- Surface Mount: Lay-in ceiling types: caddy clip with 1/4" 20 stud and nut.
   Drywall or concrete surfaces (walls or ceilings): 1/4" 20 stud and nut (provided by others).
- Stem Mount: Contact factory for reigid stems.

#### **OTHER OPTIONS**

**ENDCAPS:** Sculpted open endcap extends the look of the open luminaire and adds 1/4" each end of luminaire. Solid diecast aluminum endcap adds 1/4" to each end of luminaire.

**EMERGENCY STYLE:** Optional emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring, step-dimming driver, backup battery.

Backup Battery					
	Legrand 18W	Legrand 10W/ Bodine BSL310LP			
HO4-ID, D, and SM					
Min. Housing Length	8'*	4'*			
EM Lumen Output	2030	1208			
EM Section Illuminated	2'	2' or 4'			

<sup>\*</sup> Minimum fixture housing length for battery pack approved without sensor The lumens are based on 835. For other CCT/CRI, refer to the Lumen Adjustment Factor table on page 6.

Bodine GTD and Legrand ALCR Min. Length			
Configuration	Min. Length		
Generator	D-2'; ID-3'		
Generator + OCC	D-2'; ID-3'		
Daylight	D-2'; ID-3'		
Generator + Daylight	D-2'; ID-3'		

**INTEGRATED SENSORS:** Integrated PIR (Passive Infrared) Occupancy (**OBO**) or Daylight Sensors (**OBD**) available. Solid Endcap (**SE**) required at end with sensor. PIR sensors not recommended for stairwell applications. Refer to Occupancy Sensor & Daylight Sensor tech sheet and the Embedded Intelligence landing page for more information and additional sensor options.

**FINISHES:** Finelite Signal White (**SW**) powder coat, Finelite Black (RAL 9005) with semi gloss fine texture (**FB**), and Satin Aluminum (**SA**) are standard. Optional Adder: 179 RAL colors<sup>2</sup> are available.

Continued

Page 4



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number:

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10% Notes:

Type:

Submitted by:		Date:	<b>FINELITE</b> ®
Туре:	Project:		
Ordering Info:			Better Lighting

## **High Performance Open 4" Aperture (HO4)** Pendant and Surface Mount

#### **SPECIFICATIONS**

LABELS: Luminaire and electrical components are ETL-listed conforming to UL WEIGHT3: 2.8 lb/ft 1598 in the U.S.A. and CAN/CSA C22.2 No. 250.0 in Canada. In accordance with NEC Code 410.130 (G), this luminaire contains an internal driver disconnect. UL 924 and UL 2108 - PoE options available on request. These fixtures are rated for Damp Location. Chicago Plenum options available for C1, C2, or C3 suspension using our GridBox. HO4 can be used to comply with 2016 Title 24, Part 6 (JA8); high efficacy LED light source requirements. Finelite products use electronic components that are RoHS compliant, and the mechanical components of the luminaire have been verified to not knowingly contain any restricted substances listed per RoHS Directive 2015/863. Consult factory for tailored lighting options. Finelite makes the specification process easy when putting healthier products on your projects. Simply add - RLA (Red List Approved) or - RLD (Red List Declared) to your part number.

WARRANTY: 10-year performance-based warranty on all standard components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.

3 Excludes Battery Back up and Generator Transfer Device weight

Configurations

#### LENGTH SPECIFICATIONS FOR CONFIGURATIONS

Measurements are made to the outside of the luminous area as shown above for configurations. Minimum length of any section (X) is 4!

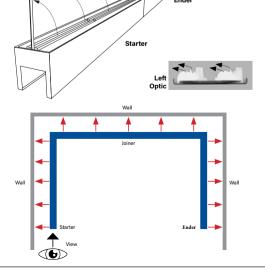


Measurements are made to the outside of the luminous area as shown above for single corner. Minimum length of any section (X) is 2!

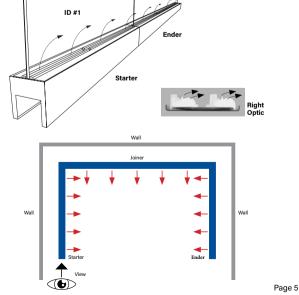
#### **ASYMMETRIC OPTIONS**

The diagrams below show a linear run from power feed to ender. Specifing ASY-L distributes light to the left or ASY-R distributes light to the right. For proper orientation: view luminaire from starter end when specifying the direction of the Asymmetric optic.

#### Asymmetric Left Optic (ASY-L)



#### Asymmetric Right Optic (ASY-R)



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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:**

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10%

Notes:

Type:

ALRORE25-12352





## High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### Indirect/Direct Photometry - 4' Luminaire 3500K

HO4-ID-RO-V-V-835-TG-OPN Uplight: Top Glow (Standard) Downlight: Open (Standard)

**Distribution:** 53% Up (**V**) / 47% Down (**V**)

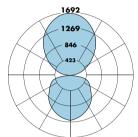
Efficacy: 117 lm/W

Uplight: 491 lumens (1123 lumens/foot) Downlight: 3928 lumens (982 lumens/foot) Total luminaire output: 8419 lumens (2105 lm/ft)

71.8 watts (18 W/ft)

Peak Candela Value: 1692 @ 180°

CRI: 80 / CCT: 3500K ITL LM79 Report 90233.001



HO4-ID-RO-V-V-835-WSOTG-OPN

Uplight: Widespread Optic with Top Glow

Downlight: Open (standard)

**Distribution:** 55% Up (**V**) / 45% Down (**V**)

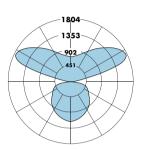
Efficacy: 117 lm/W

Uplight: 4562 lumens (1141 lumens/foot) Downlight: 3810 lumens (953 lumens/foot) Total luminaire output: 8372 lumens (2093 lm/ft)

71.4 watts (17.9 W/ft)

Peak Candela Value: 1804 @ 116°

CRI: 80 / CCT: 3500K ITL LM79 Report 90232.001



	Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire				
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S ¹	3446 [†53%   47%1]	3919 [↑59% I 41%↓]	5101 [†69%   31%‡]	6099 [†74% l 26%‡]	
↓B¹	3860 [†48% I 52%↓]	433 [†53%   47%↓]	5514 [†63% I 37%↓]	6512 [†69%   31%↓]	
↓H¹	4894 [†38% l 62%↓]	5366 [†43% I 57%↓]	6548 [†53% I 47%↓]	7546 [160% I 40%1]	
↓V²	5766 [132%   68% ]	6239 [137%   63%1]	7421 [†47%   53% l]	8419 [153%   47%]	

Light Output, 3500K, 80 CRI (Lumens Per Foot)				
	↑ <b>S</b> ¹	↑ <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S¹	862	980	1275	1525
↓B¹	965	1083	1379	1628
↓H¹	1223	1342	1637	1887
↓ <b>V</b> ²	1442	1560	1855	2105

Power, 3500K (Watts Per Foot)				
	↑ <b>S</b> ¹	↑B ¹	1H 1	↑ <b>V</b> ²
↓S¹	7.0	8.0	10.4	12.5
↓B¹	8.0	8.9	11.3	13.4
↓H¹	10.4	11.3	13.8	15.9
↓V²	12.5	13.4	15.9	18.0

	Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
	† <b>S</b> 1	↑B ¹	1H 1	↑ <b>V</b> ²	
↓S¹	123	123	123	122	
↓B¹	121	121	121	121	
↓H¹	118	118	119	119	
<b>↓V</b> ²	115	116	117	117	

- S Standard Output, B Boosted Standard Output, H High Output, V Very High Output <sup>1</sup> Family Correlation based on 4<sup>th</sup> luminaire 3500K Very High Output (**V**) test - 120V. <sup>2</sup> Based on ITL reports: 90233

	Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire				
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S ¹	3427 [†55% I 45%‡]	3907 [160%   40%1]	5108 [†70%   30%↓]	6122 [†75% l 25%↓]	
↓B¹	3828 [†49%   51%↓]	4308 [†55% I 45%↓]	5509 [164% I 36%]	6523 [†70%   30%↓]	
↓H¹	4831 [†39%   61%↓]	5311 [†44%   56%↓]	6512 [†55% l 45%‡]	7525 [†61%   39%↓]	
↓ <b>V</b> ²	5677 [†33%   67%1]	6158 [†38%   62%↓]	7358 [148%   52%1]	8372 [155%   45%1]	

Light Output, 3500K, 80 CRI (Lumens Per Foot)				
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²
↓S¹	857	977	1277	1530
↓B¹	957	1077	1377	1631
↓H¹	1208	1328	1628	1881
↓ <b>V</b> ²	1419	1539	1840	2093

Power, 3500K (Watts Per Foot)				
	↑ <b>S</b> ¹	↑B ¹	1H 1	↑ <b>V</b> ²
↓S¹	7.0	7.9	10.3	12.4
↓B¹	8.0	9.0	11.3	13.4
↓H¹	10.3	11.3	13.7	15.8
↓V²	12.4	13.4	15.8	17.9

Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
	↑S ¹	↑B ¹	1H 1	↑ <b>V</b> ²
↓S¹	123	123	123	123
↓B¹	121	121	122	122
↓H¹	117	118	119	119
↓V ²	114	115	117	117

- S Standard Output, B Boosted Standard Output, H High Output, V Very High Output
  - <sup>1</sup> Family Correlation based on 4' luminaire 3500K Very High Output (**V**) test 120V. <sup>2</sup> Based on ITL reports: 90232

Wattage is Real Power. If you would like additional details to calculate Apparent Power, please contact your local Finelite representative.

#### Sample Lumen Adjustment Calculation

Lumen Adjustment Factors 80 CRI			
3000K	0.985		
3500K	1.000		
4000K	1.032		

Lumen Adjustment Factors 90 CRI			
3000K	0.746		
3500K	0.760		
4000K	0.789		

High Output (H) / Standard Output (S), 4000K, 90 CRI

Lumen Adjustment Factor: 0.789

Total Light Output: 5101 lm x 0.789 = 4025 lm

Total Light Output per Foot: 1275 lm/ft x 0.789 = 1006 lm/ft. watts/foot: 10.4 W/ft.

watts/foot: 10.4 W/ft.

Efficacy = 
$$\frac{1006 \frac{\text{lm}}{\text{ft.}}}{10.4 \frac{\text{W}}{\text{ft.}}} = 97 \text{ lm/W}$$

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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) **Catalog Number:** 

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10%

Notes:

Type:

**S3** 

ALRORE25-12352





## High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### Indirect/Direct Photometry - 4' Luminaire 3500K

HO4-ID-RO-V-V-835-ASY-L-OPN Uplight: Asymmetric Left Optic Downlight: Open (Standard)

**Distribution:** 52% Up (**V**) / 48% Down (**V**)

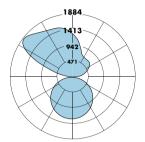
Efficacy: 118 lm/W

Uplight: 4444 lumens (1111 lumens/foot)
Downlight: 4054 lumens (1014 lumens/foot)
Total luminaire output: 8498 lumens (2125 lm/ft)
71.8 watts (18 W/ft)

Peak Candela Value: 1884 @ 128°

CRI: 80 / CCT: 3500K

ITL LM79 Report 899988, 90233



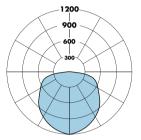
#### Direct Photometry - 4' Luminaire 3500K

HO4-D-RO-V-835-OPN
Downlight: Open (Standard)

Efficacy: 116 lm/W

**Total luminaire output:** 4060 lumens (1015 lm/ft) 35 watts (8.8 W/ft)

Peak Candela Value: 1200 @ 0° CRI: 80 / CCT: 3500K ITL LM79 Report 89348



	Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire					
	↑ <b>S</b> ¹	† <b>B</b> ¹	↑ <b>H</b> ¹	↑ <b>V</b> ²		
↓S¹	3479 (†52% l 48% l)	3947 (†58%   42%1)	5116 (†68% l 32%↓)	6104 (†73% l 27% l)		
↓B¹	3905 (†55%   45%1)	4373 (†52%   48%1)	5543 (†63% I 37%I)	6530 (†68% I 32%↓)		
↓H¹	4972 (†37% l 63%1)	5440 (†42% l 58% l)	6610 (†52% l 48%1)	7597 (†58% l 42%↓)		
↓V ²	5873 (†31% l 69% l)	6341 (†36% I 64% J)	7510 (†46% l 54%↓)	8498 (†52%   48%1)		

	Light Output, 3500K, 80 CRI (Lumens Per Foot)						
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²			
↓S¹	870	987	1279	1526			
↓B¹	976	1093	1386	1633			
↓H¹	1243	1360	1652	1899			
↓ <b>V</b> ²	1468	1585	1878	2125			

Power, 3500K (Watts Per Foot)					
	↑ <b>S</b> ¹	↑B ¹	1H 1	↑ <b>V</b> ²	
↓S¹	7.0	8.0	10.4	12.5	
↓B¹	8.0	8.9	11.3	13.4	
↓H¹	10.4	11.3	13.8	15.9	
↓V²	12,5	13.4	15.9	18.0	

Efficacy, 3500K, 80 CRI (Lumens Per Watt)				
	↑S ¹	↑B ¹	†H ¹	↑ <b>V</b> ²
↓S¹	124	124	123	122
↓B¹	122	122	122	121
↓H¹	120	120	120	120
↓V²	118	118	118	118

Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire						
↓B ¹	↓H ¹	↓ <b>V</b> ²				
2089	3158	4060				
	↓B¹	↓B¹ ↓H¹				

Light Output, 3500K, 80 CRI (Lumens Per Foot)					
↓ <b>S</b> ¹	↓B ¹	↓H ¹	↓ <b>V</b> ²		
415	522	789	1015		

Power, 3500K (Watts Per Foot)					
↓S¹	↓B¹	↓H ¹	↓ <b>V</b> ²		
3.4	4.4	6.7	8.8		

Efficacy, 3500K, 80 CRI (Lumens Per Watt)					
↓S¹	↓B¹	↓H ¹	↓ <b>V</b> ²		
121	120	118	116		

- S Standard Output, B Boosted Standard Output, H High Output, V Very High Output
- $^{\rm 1}$  Family Correlation based on 4' luminaire 3500K Very High Output (V) test 120V.
- <sup>2</sup> Based on ITL reports: 89348

- <sup>1</sup> Family Correlation based on 4' luminaire 3500K Very High Output (V) test 120V.
- <sup>2</sup> Based on ITL report: 89988, 90233

Wattage is Real Power. If you would like additional details to calculate Apparent Power, please contact your local Finelite representative.

#### Sample Lumen Adjustment Calculation

Lumen Adjustment Factors 80 CRI				
3000K	0.985			
3500K	1.000			
4000K	1.032			

Lumen Adjustment Factors 90 CRI				
<b>3000K</b> 0.746				
3500K	0.760			
4000K	0.789			

High Output (H) / Standard Output (S), 4000K, 90 CRI Lumen Adjustment Factor: 0.789

Total Light Output:  $5116 \text{ Im} \times 0.789 = 4037 \text{ Im}$ Total Light Output per Foot:  $1279 \text{ Im/ft} \times 0.789 = 1009 \text{ Im/ft}$ . watts/foot: 10.4 W/ft.

Efficacy =  $\frac{1009 \frac{\text{lm}}{\text{ft.}}}{10.4 \frac{\text{W}}{\text{W}}} = 97 \text{ lm/W}$ 

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S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) **Catalog Number:** 

HO-4-SM-D-RO-4'-H-835-TG-OPN-96LG-120-SC-FC-10%

Notes:

Type:

**S3** 

ALRORE25-12352





## High Performance Open 4" Aperture (HO4) Pendant and Surface Mount

#### Uplight/Downlight Photometry - 4' Luminaire 3500K

HO4-UD-RO-V-V-835-OPN Uplight: Flush (Standard) Downlight: Open (Standard)

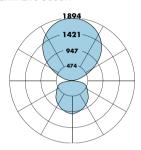
**Distribution:** 61% Up (**V**) / 39% Down (**V**)

Efficacy: 122 lm/W

**Uplight:** 5195 lumens (1299 lumens/foot) **Downlight:** 3374 lumens (844 lumens/foot) **Total luminaire output:** 8570 lumens (2143 lm/ft)

70 watts (17.5 W/ft) **Peak Candela Value:** 1894 @ 180°

CRI: 80 / CCT: 3500K ITL LM79 Report 89462



Total Light Output, 3500K, 80 CRI (Lumens) - 4' Luminaire					
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²	
↓S ¹	3508 (†61% l 39%↓)	4055 (†66% I 34%↓)	5422 (†75% l 25%1)	6576 (†79% l 21%↓)	
$\downarrow\!B^{1}$	3863 (†55%   45%1)	4410 (†61% l 39%↓)	5777 (†70% I 30%↓)	6931 (†75% l 25%↓)	
↓H¹	4751 (†45% l 55% l)	5298 (†51% l 49%↓)	6665 (†61% l 39%1)	7819 (†66% l 34%1)	
↓V ²	5501 (†39%   61% l)	6047 (†44%   56%1)	7415 (†55%   45% l)	8570 (†61% l 39% l)	

	Light Output, 3500K, 80 CRI (Lumens Per Foot)					
	↑ <b>S</b> ¹	†B¹	↑ <b>H</b> ¹	↑ <b>V</b> ²		
↓S¹	877	1014	1355	1644		
↓B¹	966	1102	1444	1733		
↓H ¹	1188	1324	1666	1955		
↓ <b>V</b> ²	1375	1512	1854	2143		

Power, 3500K (Watts Per Foot)					
	↑S ¹	↑B ¹	1H 1	↑ <b>V</b> ²	
↓S¹	6.9	7.8	10.1	12.2	
↓B¹	7.8	8.7	11.1	13.1	
↓H¹	10.1	11.1	13.4	15.5	
↓V²	12.2	13.1	15.5	17.5	

Efficacy, 3500K, 80 CRI (Lumens Per Watt)					
	↑ <b>S</b> ¹	†B¹	1H 1	↑ <b>V</b> ²	
↓S¹	128	130	134	135	
↓B¹	124	127	131	132	
↓H¹	117	120	124	126	
1 <b>V</b> <sup>2</sup>	113	115	120	122	

S - Standard Output, B - Boosted Standard Output, H - High Output, V - Very High Output

<sup>2</sup> Based on ITL report: 89462

Wattage is Real Power. If you would like additional details to calculate Apparent Power, please contact your local Finelite representative.

#### **Sample Lumen Adjustment Calculation**

Lumen Adjustment Factors 80 CRI					
3000K	0.985				
3500K	1.000				
4000K	1.032				

Lumen Adjustment Factors 90 CRI					
3000K	0.746				
3500K	0.760				
4000K	0.789				

High Output (H) / Standard Output (S), 4000K, 90 CRI Lumen Adjustment Factor: 0.789 Total Light Output: 5422 lm x 0.789 = 4278 lm

Total Light Output per Foot: 1355 lm/ft x 0.789 = 1069 lm/ft. watts/foot: 10.1 W/ft.

watts/foot: 10.1 W/ft.

Efficacy = 
$$\frac{1069 \frac{\text{lm}}{\text{ft.}}}{1001 \frac{\text{W}}{\text{ft.}}} = 106 \text{ lm/W}$$

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 $<sup>^{\</sup>rm 1}$  Family Correlation based on 4' luminaire 3500K Very High Output (V) test - 120V.



Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL) Catalog Number: CYL-WL-24X3-14W-9-A

Notes:



J RORE25-12352



## WALL FLUSH MOUNT CYL-WL-24X3-15W-9-A

SPECIFICATION FEATURES	Date
SPECIFICATION FEATURES	07-14-16

Dimensions	24" H x 3" W x 4" D			
Lamps	15 Watts Alta LED - specify K			
Material	Paintlok			
Finish	Standard Powdercoat TBD			
Lens	White Acrylic			
Label	Damp Location			
Voltage	120 / 277			
Description	LED wall			

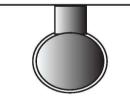
PROJECT:

SPECIFIER:

Open seam top and bottom



top and bottom view





Drawings are not to scale

EVERGREEN LIGHTING WWW.EVERGREENLIGHTING.COM 1379 Ridgeway St. Pomona, CA 91768 PHONE: (909) 865-5599 FAX: (909) 865-5539



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MADE IN USA



BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number: SOVII-EM-G-1C-BA-RC

Notes:

Type:

**X1** 

ALRORE25-12352



Project Name:	Approved By:
Catalog No:	Type No:

### **SOVEREIGN II**

Architectural Edgelit Versatile LED Exit Sign

The Sovereign II edgelit exit sign builds on the timeless design of the original, offering a precise die-cast aluminum housing with soft curves and clean lines. New features include a surface mounting canopy for easy field conversion, a seismic-rated pendant, and a crystal-clear exit legend for uniform lighting. Available in various configurations, the Sovereign II combines superior quality, performance, and aesthetics.









#### CONSTRUCTION

- Recessed ceiling back box features universal adjustable mounting brackets. Optional old work clips available for installation in existing ceilings
- Full size universal, self-adhesive Chevron arrows with template enable on-site configuration
- Lens Panel is "Last-to-Assemble" snap-in for versatility and ease of installation
- Lens panel can easily be changed from single to double face in the field
- Hinged retaining springs eliminate exposed mounting hardware on recessed model
- SU Surface Universal option allows for field configurable surface mount to a standard j-box, and takes the guess work out of surface mounting applications
- Low profile recessed housing is suitable for old or new work installations and is type IC Rated
- Modular design provides ease of installation and matching configurations
- Quality sealed brushed aluminum finish, white, black, painted brass, painted bronze finishes are available, consult factory for custom finishes
- Contoured, crystal clear laser formed edge lit lens
- Custom legends with white LED light source available to order
- Precision pressure die cast aluminum legend holder, trim and surface mount housing
- Available with a range of information signage or custom graphics to order
- Recessed AC Indicator and Test Switch

#### **ELECTRICAL**

- Unique electronic driver circuit provides current control and protection ensuring optimum LED efficiency and life
- Available with Master/Remote combinations

- Zero current LVCO ensures positive charge acceptance following extended discharge
- Brownout sensing assures emergency illumination during periods of low line voltage
- All versions feature fully integrated electronic components
- Universal 120/277 VAC field selectable input
- Battery Diagnostic Circuit monitors battery status, detects cell failure and issues alert of reduced capacity and the need to replace battery
- Diagnostic Battery Monitoring on all "EM" models
- Premium long life high temperature rated, fused Nickel Cadmium battery, operating temperature 10° to 40°C
- Average Power Consumption: <3W</p>
- Additional power consumption details in installation guide

#### ILLUMINATION

- Refractive light guide engineered to optimize LED utilization and illumination uniformity
- Maintenance free LED Light source with 25+ years life expectancy

#### **CERTIFICATION**

- Approved for use in New York City calendar #48851
- UL Listed 3 hour emergency duration standard
- UL listed for damp locations 0° to 40° C
- UL 924 Listed by Underwriters Laboratories and meets or exceeds all performance standards as required by NFPA
- 101, NFPA 70- NEC and OSHA
- California Energy Commission (CEC) Title 20 Compliant
- Buy American Act compliant

#### **WARRANTY**

 5 year limited warranty - view complete warranty terms online at www.evenlite.com/terms-warranty.



EVENLITE.COM | 2575 METROPOLITAN DRIVE TREVOSE, PA 19053 | 0: 1.800.872.0879 | F: 215.244.4208 SPECIFICATIONS AND DETAILS ARE SUBJECT TO CHANGE WITHOUT NOTIFICATION. CONTACT EVENLITE FOR UP TO DATE DETAILS.

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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number: SOVII-EM-G-1C-BA-RC

Notes:

Type:

**X1** 

ALRORE25-12352



### **SOVEREIGN II**

Architectural Edgelit Versatile LED Exit Sign

#### **ORDERING GUIDE**

SOVII-EM-R-1C-BA-RC-AR-SD-FT

MODEL	OPERATION	N	LETTER COLOR	FACE COUNT		HOUSING COLOR	мои	NTING	
SOVII	AC AC Only (120/277 V	/AC)	6" LEGEND SIZE	STANDARI	)	BA Brushed Aluminum	STANDARD	OPTIONAL	
	EM Battery Backup Emergency		R Red	1C Single Face, Clear E	Background Background	BK Black	RC Recessed Ceiling	SU Surface Universal	
			<b>G</b> Green	OPTIONAL		BR Brushed Brass	UP Recessed Mount <sup>3</sup>	PA 12" Swivel Pendant	
			8" LEGEND SIZE	1M Single Face, Mirror I	Background	WH White	SC Surface Ceiling	PB 24" Swivel Pendant	
			NR Red	1W Single Face, White I	Background	CC Custom Color <sup>2</sup>	SW Surface Wall	PC 36" Swivel Pendant	
			NG Green	2M Double Face, Mirror	Background <sup>1</sup>	BZ Painted Bronze	SE Surface End	PD 48" Swivel Pendant	
				2W Double Face, White	Background			PE 60" Swivel Pendant	
								PF 72" Swivel Pendant	
								MU Mullion Mount <sup>2</sup>	
sovii									
CHEVRON OPTIONS				ORDERING NOTES  1 Mirror simulates clear background for					
UC Adhesive Chevron Arrows <sup>4</sup> DK Tw		o Circuit Input <sup>6</sup>		FZ [F] Option	n Including Buzzer	double face exits			
AR Arrov	AR Arrow Right SD Sel		f-Test/Self-Diagnosti	cs	<b>DL</b> Damp Loc	cation Listed	2 Specify preference 3 Preship back box		
AL Arrow Left IR Sel		f-Diagnostics With In	frared Remote Testing <sup>7</sup>	FT Flat Trim f	for Recessed Ceiling Mount	4 Field installed 5 Double face units only 6 AC models only			
AA Double Arrow TLRT Infr		ared Hand Held Tran	smitter <sup>8</sup>	FP Flat Panel	12				
LR Arrov	LR Arrow Left/Arrow Right <sup>5</sup> VA Oth		ner Output Supply Vo	ltage <sup>9</sup>	IN Inverted Legend For Mullion Mount 7 EM models only 8 Order separately				
NA No Ai	FA Flash in AC and Er		ush in Emergency Mode <sup>10</sup> <b>EU</b> Euro		EU Euro Lege	end <sup>9</sup>	9 Consult factory 10 Flash in emergency mode (EM models)		
			sh in AC and Emerge	ncy Mode <sup>11</sup>	<b>ow</b> Old Work	Clips	or continuous fla	sh (AC models).	
			.] Option Including Bu	izzer			11 For 12-24V (AC or alarm signal	DC) normally-off fire	
							12 No curve on botto	om of face panel	

Fill in fields from categories above and complete type and part number.

Type No:

Full Part No:

#### **ADDITIONAL IMAGES**



SURFACE WALL MOUNT White



SURFACE END MOUNT Brushed Aluminum



SURFACE CEILING MOUNT Black





**ARCHITECTURAL** PENDANT MOUNT Painted Brass

ACCENTED TRIM RECESSED **CEILING MOUNT** Painted Brass



FLAT TRIM RECESSED **CEILING MOUNT** 







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BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### Catalog Number: SOVII-EM-G-1C-BA-RC

Notes:



**X1** 

ALRORE25-12352

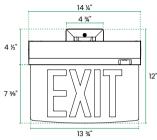


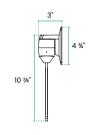
#### **SOVEREIGN II**

Architectural Edgelit Versatile LED Exit Sign

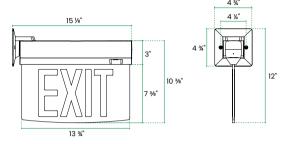
#### **DIMENSIONS**

#### SURFACE WALL MOUNT

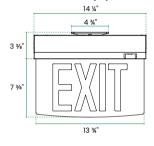


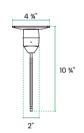


#### SURFACE END MOUNT

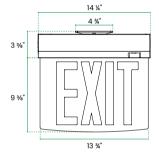


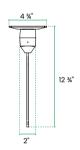
#### SURFACE CEILING MOUNT (6")



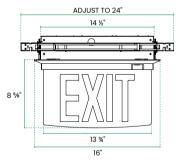


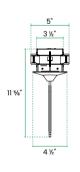
#### SURFACE CEILING MOUNT (8")



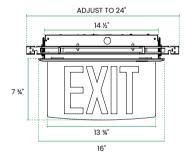


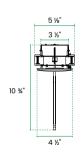
#### **ACCENTED TRIM RECESSED CEILING MOUNT**



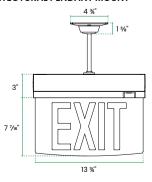


#### FLAT TRIM RECESSED CEILING MOUNT



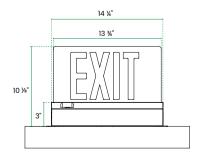


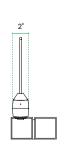
#### ARCHITECTURAL PENDANT MOUNT





#### MULLION MOUNT







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Job Name: BAKER EMERGENCY OPERATIONS CENTER (PRE APPROVAL)

#### **Catalog Number:** SOVII-EM-G-1C-BA-RC

Notes:



**X1** 

ALRORE25-12352

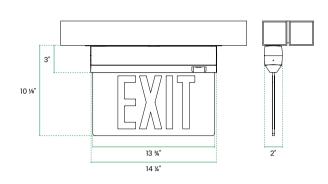


#### **SOVEREIGN II**

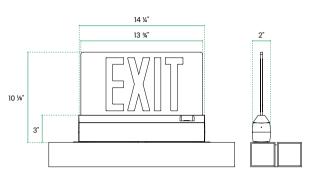
Architectural Edgelit Versatile LED Exit Sign

#### **MULLION MOUNT**

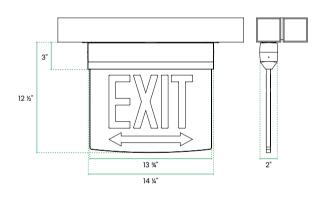
#### SOVII TOP SURFACE MOUNT



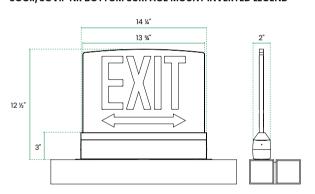
#### SOVII BOTTOM SURFACE MOUNT INVERTED LEGEND



#### SOCII/SOVII-NR TOP SURFACE MOUNT



#### SOCII/SOVII-NR BOTTOM SURFACE MOUNT INVERTED LEGEND



#### MOUNTING BRACKET ASSEMBLY

