



AGENDA
ARCHITECTURAL REVIEW BOARD MEETING
Public Meeting Room, Village Hall
Tuesday, March 19, 2019
7:00 p.m.

Reasonable accommodations or auxiliary aids will be provided to enable persons with disabilities to effectively participate in any public meetings. Please contact the Village Administrative Office (847.883.8600) 48 hours in advance if you need any special services or accommodations. The Architectural Review Board will not proceed past 10:30 p.m. unless a motion is made and approved by a majority of the Architectural Review Board members to extend the meeting one-half hour to 11:00 p.m. Any agenda items or other business that are not addressed within this time frame will be continued to the next regularly scheduled Architectural Review Board Meeting.

CALL TO ORDER

1.0 ROLL CALL

2.0 APPROVAL OF MINUTES

- 2.1 Approval of the Minutes of the Architectural Review Board Meeting Held on Tuesday, February 19, 2019

3.0 ITEMS OF GENERAL BUSINESS

- 3.1 Consideration of an Amendment to Existing Master Sign Plans (Ordinance #11-3191-13A) to Revise Existing Ground Monument and Directional Signs for the Marriott Lincolnshire Resort, 10 Marriott Drive (Marriott Lincolnshire Resort)
- 3.2 Consideration of Roof-Mounted Solar Panel Installation for Building C of Extra Space Storage Facility, 200 Parkway Drive (Rethink Electric LLC)
- 3.3 Approval of Parking Lot Design, Fence, Landscaping, and Lighting Plans for Ravinia Plumbing, 575 Bond Street (Ravinia Plumbing)

4.0 UNFINISHED BUSINESS

5.0 NEW BUSINESS

6.0 CITIZEN COMMENTS

7.0 ADJOURNMENT



UNAPPROVED Minutes of the regularly scheduled **ARCHITECTURAL REVIEW BOARD** held on Tuesday, February 19, 2019 in the Public Meeting Room of the Village Hall, One Olde Half Day Road, Lincolnshire, IL

PRESENT: Chair Kennerley and Members McCall, Baskin, and Santosuosso

ABSENT: Members Tapia and Orzeske; Trustee-Liaison Hancock

ALSO PRESENT: Ben Gilbertson, Assistant Village Manager/Director of Community and Economic Development (AVM/CED) and Tonya Zozulya, Planning and Development Manager (PDM)

CALL TO ORDER

1.0 ROLL CALL

The roll was called by **PDM Zozulya**, **Chair Kennerley** declared a quorum to be present.

2.0 APPROVAL OF MINUTES

2.1 Approval of the Minutes of the Architectural Review Board held on Tuesday, January 15, 2019.

Member Baskin moved and **Member Santosuosso** seconded the motion to approve the minutes as written for the January 15, 2019 Architectural Review Board.

The motion passed unanimously by voice vote.

3.0 ITEMS OF GENERAL BUSINESS

3.1 Approval of a Minor Amendment to an Existing Special Use Permit for Adlai E. Stevenson High School District 125 (**SHS**) to Permit Construction of a New Parking Lot, 1 Stevenson Drive (Adlai E. Stevenson High School District 125).

George Dreger of Eriksson Engineering representing SHS provided an overview of the proposed 100-space parking lot over an existing unused tennis court. The parking lot will have two entrances accessible only through the SHS property. Design, lighting, and landscape requirements comply with all Village and accessibility codes. In addition, there will be a retaining wall on the north side of the lot with landscape screening to include deciduous plantings. In response to **Chair Kennerley's** question, **George Dreger** stated the parking lot retaining wall is not intended to serve as a barrier to the soccer field, but provide separation between the soccer field and the parking lot.



Member McCall inquired about the use of this lot and whether it would provide the needs of the growing student population or if there would be a parking deck planned in the future. **George Dreger** stated SHS did consider a parking deck but decided not to pursue it as the costs are substantially higher at approximately \$40,000 per space, which they felt would not be the best use of tax payer money. He further added SHS is LEED Certified (Leadership in Energy and Environment Design) and the school constantly strives to maintain a balance between school needs and environmental consideration.

Member Baskin inquired about the caliper of the trees, impact of winter conditions, and if evergreens are included to soften the plan. **George Dreger** stated the landscape plan calls for 4" diameter-at-breast-height deciduous trees; no evergreens are proposed due to concerns about security camera visibility. **Member Baskin** stated he has had no issues including evergreens or addressing camera visibility when working with his school clients. He added it has been a challenge in Lincolnshire to provide more year-round variety in landscape plans and believes SHS should consider adding evergreens to this plan if there is an opportunity to do so.

Member Santosuosso inquired about drainage, design elements, and why storm inlets are not under the parking lot. **George Dreger** stated there are cost concerns with trenching and backfill, and they opted for storm traps in the grass versus the lot. In regards to drainage and grading comments noted by **Member Santosuosso**, it was noted SHS is working with Lake County Storm Water Management Commission (SMC) for permits.

PDM Zozulya noted this petition is for a minor amendment to the SHS Special Use Permit and does not require Village Board approval. Any decision made by the Architectural Review Board will be final. **George Dreger** stated the parking lot conceptual plan was included in the 2017 amendment to the Special Use for the addition.

Member Santosuosso moved, seconded by **Member McCall**, the Architectural Review Board to approve a minor amendment to the existing Special Use to permit a new parking lot for Adlai E. Stevenson High School District 125, as presented in the packet submitted by Eriksson Engineering Associates, date stamped received February 7, 2019, and further subject to consideration of adding coniferous trees to the landscape plan for wintergreen.

Motion passed unanimously by voice vote.

- 3.2** Public Hearing regarding Amendments to Chapter 13, Temporary Signs, of Title 12, Sign Control, of the Village Code to Revise Temporary Sign Regulations in the Residential Sign District (Village of Lincolnshire)

Chair Kennerley recessed the Architectural Review Board (ARB) meeting and convened the Public Hearing.



PDM Zozulya provided background on the deliberations and code changes related to temporary signs in the Residential Sign District. She stated in September and November 2017, staff presented amendments to the sign code to bring the Village into compliance with *Reed v. Town of Gilbert* Supreme Court case ruling regarding content neutrality for commercial and non-commercial signs. She added over the course of a public hearing and several meetings, it was the recommendation of the ARB for the VB adopt the new sign code, which included reducing the height and square footage sizes for residential real estate signs, as well as implementing a time duration of 91 days in the Residential Sign District. Following adoption of the new code, staff sent notifications to local businesses and realtors regarding the new requirements. Staff then received concerns from several local brokerages, indicating they were concerned about the revised size requirements as being too small and having to take sign down after 91 duration period, as the non-continuous display would add to the cost of hiring sign companies to put up and take down signs. Responding to brokers' concern, **PDM Zozulya** stated the VB did not want temporary signs becoming permanent in nature, such as membership drive signs that could be up indefinitely. The VB also expressed concern over the condition of these signs, and sought temporary signs be replaced after one year.

Member Baskin inquired about duration of temporary signs in Lake Forest and Lake Bluff. **PDM Zozulya** stated she has not yet seen time limits imposed on residential real estate signs in other communities, where residential real estate signs do not have a display time limit. **Chair Kennerley** added another item to consider is whether the VB would consider giving staff the administrative authority to extend sign duration deadlines.

Chair Kennerley opened the floor to members of the audience. Joseph Roth, Edie Love, Steve Grunyk, and Julianne Spilotro came to the podium and were sworn in.

Joseph Roth, Illinois Realtors Association, discussed statistics regarding Lincolnshire and Lake Forest: the Lincolnshire average market time is 123 days, whereas the average market time in Lake Forest is 207 days and the price of a home is nearly double. For further comparison, **Mr. Roth** stated the market conditions in the communities of Riverwoods and Deerfield are similar to Lincolnshire, but those communities allow larger real estate signs. He added signs are a very important part of their marketing, with 10% of buyers locating new homes via signage. He added signs are taken down shortly after the closing.

Member McCall inquired about sign installation. **Edie Love**, Koennig Rubloff, stated they hire sign companies to install signs. She added the number of days on the market fluctuates widely and to put a time limitation would be difficult. She questioned the Village's ability to monitor and enforce the code requirements.

Steve Grunyk stated the recent market has been tough with declines in recent years, and that additional restrictions could cause home sales to lose momentum.



Winfield Cohen, Keller Williams, stated the purpose of the sign is to not keep a sale a secret, adding the industry is on the front end of a market decline. Larger signs are utilized nationwide as they convey a stronger message and provide room for additional 'riders' on the sign. He also stated he preferred the time duration should be until the property sells.

Julianne Spilotro, CB Exchange, requested clarification on what prompted the sign code changes and whether the Village asked the sellers or local agents about the changes in advance. The changes create an undue burden on the realtors.

Chair Kennerley thanked the realtors for their comments. She added the Village has to consider the impact of the code changes to all temporary signs, not only real estate signs.

Steve Grunyk stated he has not seen dilapidated signs in Lincolnshire. **Joseph Roth** noted the property maintenance code should cover any issues with conditions of signs and the vast majority of brokers should not be penalized due to some brokers not maintaining signs well. **Winfield Cohen** stated they have accountability with their clients to maintain their signs.

Discussion ensued regarding a separate category for real estate signs. **PDM Zozulya** stated the content neutrality premise would prohibit this; the only differentiation between sizes and display periods would be based on the sign district. **PDM Zozulya** read the draft ordinance as prepared by the Village Attorney in regards to the time duration which would allow signs to be installed and continuously displayed until 5 days after the conclusion of an event. She added the draft ordinance stipulates that signs displayed for more than one year must be replaced to ensure they remain in good condition.

Member Baskin asked if there are particular instances of signs that are problematic. Discussion ensued regarding membership enrollment signs for area clubs that can become "permanent" due to the ongoing recruitment. **Member Baskin** added the Village is requiring local realtors to deal with the smaller signs and would not be in favor of putting more encumbrances on them. He inquired who would be monitoring sign conditions. **PDM Zozulya** stated the Village's Code Enforcement staff would enforce it either through observation or in response to complaints. **Member Santosuosso** noted Section 5 of the proposed code covers conditions and maintenance of signs. Therefore, he does not see the need for mandatory sign replacement after one year of display. **Member McCall** concurred.

PDM Zozulya read the proposed language regarding removal of the sign within 5 days of various conditions, including the conclusion of an event/project, permit expiration, product sale/lease, or removal of a product from the market. **Chair Kennerley** asked the realtors present if this was acceptable in which they appeared to concur. She also reviewed the current code definitions of permanent and temporary signs.



Edie Love asked how they can get the Village to reconsider the size of the sign. **PDM Zozulya** said this would have to be discussed and the Village Board level and that she will notify all interested parties when this goes back to the Board.

Chair Kennerley closed the public hearing and reconvened the Architectural Review Board meeting.

Member McCall moved, seconded by **Member Baskin**, to approve and recommend amendments to Title 12 of the Lincolnshire Village Code regarding the permitted display period for temporary signs in the Residential Sign District, as presented in the draft Sign Ordinance prepared by the Village Attorney but striking the proposed language regarding sign removal and replacement after one year of display.

Roll Call Vote:

Ayes: Chair Kennerley, Members Baskin, McCall, and Santosuosso

Nays: None

Chair Kennerley noted the ARB recommendation will now move forward to the Committee of the Whole for discussion and consideration. The public can check the Village's website, under Meeting Agenda's and Minutes, for the meeting date at which this agenda item will be heard.

3.3 Continued Workshop regarding Text Amendments to Title 12, Sign Control, of the Lincolnshire Village Code, to Consolidate and Revise Regulations in the Downtown and Corridor Commercial Sign Districts for Permanent Signs (Village of Lincolnshire)

PDM Zozulya provided background on the continued workshop and recapped previous direction from the ARB from the December 18, 2018 meeting to combine the Downtown and Corridor Commercial sign districts into one district and noted the following areas for staff to further research:

1. Apply current Corridor Commercial wall and ground sign dimensions.
2. Apply current Downtown District monument sign design requirements to include the following design items: base, sign area and cap.
3. Add flexibility in ground sign materials while complementing building architecture.
4. Consider more stringent ground sign landscape regulations.

Member Baskin reiterated his concerns about the design cap requirement as it may not be appropriate in all cases depending on the architecture of the building. **Member Santosuosso** suggested any sign not adhering to base, sign area, and cap requirements would need approval of the ARB. **PDM Zozulya** clarified new sign or structural alteration proposals, which do not require variations, are currently reviewed by staff. When a new PUD or development is proposed, the signage is reviewed by the ARB as part of an overall development package. **Member Baskin** recommended new ground signs and structural alterations to existing ground signs be reviewed by the ARB, while simple ground sign face



changes could be approved administratively. **Chair Kennerley** said this would result in more signs coming before the ARB. She had concerns the sign conversation could require design changes to an existing building. **Member Baskin** clarified it would not be his intent to require a change to the existing building design, but to take the proposed sign changes within the context of the building. There was consensus that ARB should make the final determination on brand new ground signs or ground sign structural alterations. The sign cap be considered as an option but not a code requirement.

In regards to landscape regulations, **Member Baskin** asked why evergreens are an exception when located within 15 feet of a roadway. **PDM Zozulya** stated in the past, properties were required to install evergreen species within ground sign beds adjacent to a roadway. However, after property owners expressed concerns due to road salt impacts, the requirement was eliminated for sign beds within 15' of the road. She further reviewed the landscape requirements with the ARB, noting Lincolnshire has one of the most comprehensive landscape requirements of other area communities. **Member Santosuosso** recommended combining bullet points 3 and 4 in the Ground Sign Landscape Regulations sections. All other ARB members concurred.

Member Baskin inquired if the intent of the code will meet the expectations of staff, adding the sign size and landscape should be in scale with one another and create a unified and aesthetically pleasing look.

PDM Zozulya reiterated the section of the proposed code which states "to achieve both height variation and color interest throughout the four seasons". She said staff would provide recommended language to incorporate the landscape/sign scale.

AVM/CED Gilbertson stated staff would be proactive in communicating with businesses to remind them of code requirements, approved plans, and proper maintenance. ARB members agreed, indicating property owners should be reminded of this on an annual basis.

PDM Zozulya requested ARB comments on commercial wall sign illumination. The ARB decided to eliminate frontlit illumination restrictions in the proposed Commercial District. **PDM Zozulya** also inquired whether the ARB was also interested in removing the same frontlit wall sign illumination conditions from the Office/Industrial Sign District. **Member McCall** noted the use differences between those districts are significant. Therefore, the Village decided to create separate requirements for the Office/Industrial Sign District. The ARB decided to leave the Office/Industrial frontlit conditions unchanged and revisit them in the future when the Office/Industrial Sign District is scheduled for review.

PDM Zozulya noted the proposed changes will require a public hearing. Staff will incorporate the ARB comments and move forward with the public hearing process at a future ARB meeting.



4.0 UNFINISHED BUSINESS (None)

5.0 NEW BUSINESS (None)

6.0 CITIZEN COMMENTS (None)

7.0 ADJOURNMENT

There being no further business, **Member Baskin** moved, seconded by **Member Santosuosso**, to adjourn the meeting.

Motion passed unanimously by voice vote.

Chair Kennerley adjourned the meeting at 9:08 p.m.

Respectfully Submitted,
Carol Lustig
Administrative Assistant, Community & Economic Development Dept.

**REQUEST FOR BOARD ACTION
Architectural Review Board
March 19, 2019**

Subject: Marriott Lincolnshire Resort Master Sign Plans Amendment

Action Requested: Consideration of an Amendment to Existing Master Sign Plans (Ordinance #11-3191-13A) to Revise Existing Ground Monument and Directional Signs for the Marriott Lincolnshire Resort

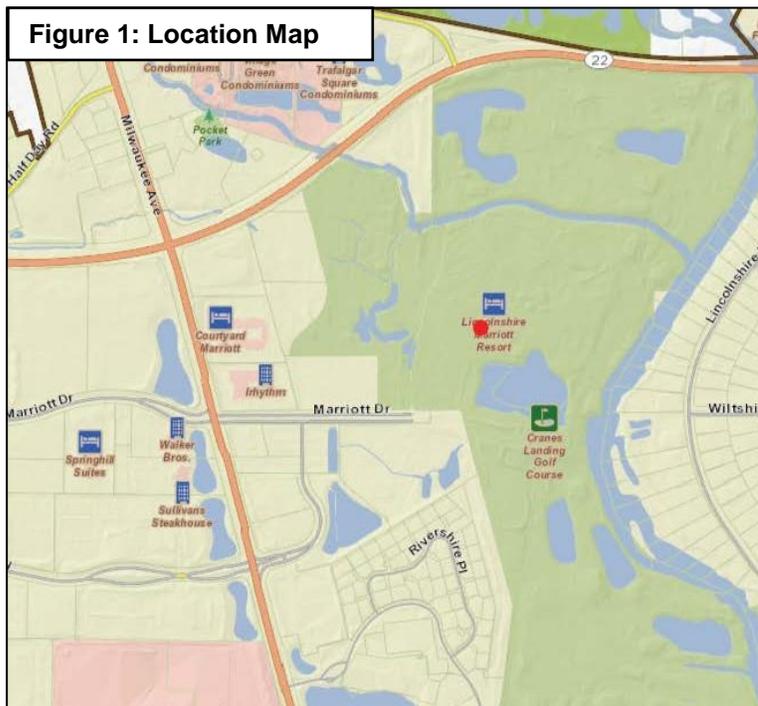
Petitioner: Marriott Lincolnshire Resort

Originated By/Contact: Tonya Zozulya, Planning & Development Manager

Advisory Board Review: Architectural Review Board

Background:

- Marriott Lincolnshire Resort (resort) seeks an amendment to its Master Sign Plans to revise an existing ground monument and directional signs on the resort property. The property is located at 10 Marriott Drive, as marked with a red dot in Figure 1 and attached location map (see Document 1).
- The 175-acre resort is one of the largest developments within the Village offering a variety of destination uses, including a hotel, live theater, golf course, restaurants, sports facilities, meeting spaces, and banquet facilities.
- The property was granted its initial Special Use permit in 1973 for a live theater and golf course (Ordinance #73-286-1).
- In 2011, the Village Board approved the resort's Master Sign Plans (Ordinance #11-3191-13A) to permit two new ground monument signs on Milwaukee Avenue/Marriott Drive and Half Day Road and six directional signs throughout the resort campus. The Master Sign Plans included variations for sign dimensions, items of information, and an electronic display screen for the Milwaukee Avenue ground monument sign.



- Subsequent to initial approval, the Village Board has approved three amendments to the Master Sign Plans:
 - 2016: the Village Board approved an amendment to the Master Sign Plans to permit two new Marriott identification wall signs adjacent to the hotel entrance as part of a renovation to the main entrance of the resort (Ordinance #16-3416-143).
 - 2017: the Village Board approved an amendment to the Master Sign Plans to permit an electronic display screen for a new marquee sign for the Marriott Theater (Ordinance #17-3742-170).
 - 2018: the Village Board approved an amendment to the Master Sign Plans to permit a new wall sign and revised directional signs for the College Park Athletic Club (Ordinance #18-3767-195).

Proposal & Staff Comments:

- Ground Signs – The applicant is proposing revisions to the two existing ground signs on Half Day Road and at Milwaukee Avenue/Marriott Drive.

Milwaukee Avenue/Marriott Drive

The 20' tall by 12'-8" wide ground sign at Milwaukee Avenue/Marriott Drive is proposed to be updated with a new Marriott logo at the top as well as two new panels. The number of panels, sign structure/panel dimensions, and lettering/illumination type will not change. The existing and proposed panels are shown below:

Existing Panels (from top to bottom)	Proposed Panels (from top to bottom)
Marriott Theatre	Three Embers
Crane's Landing Golf Club	Wright's Brew & Bistro

Half Day Road

The 17' tall by 12' wide ground monument sign on Half Day Road is proposed to be updated with a new Marriott logo and four new tenant panels. The number of tenant panels, sign structure/panel dimensions, and lettering/illumination type will not change. The applicant will reinstall previously approved landscaping at the base of the sign. The existing and proposed panels are shown below:

Existing Panels (from top to bottom)	Proposed Panels (from top to bottom)
Marriott Theatre	Marriott Theatre
Crane's Landing Golf Club	Three Embers
Season Golf Memberships craneslandinggolf.com	The Spa at Lincolnshire
Left on Milwaukee	Crane's Landing Golf Course

- Directional Sign - One 6'-8" tall by 5'-7" wide double-sided existing directional sign that reads "Thanks for Visiting" and "Straight Ahead" (shown as Directional Sign #1 on the attached Site Plan) is proposed to be repainted white from its current tan color and updated with the new Marriott logo, without altering the sign structure. **Staff requests the ARB's**

consideration whether the new color of the directional sign should match the cream color of the Milwaukee Avenue ground monument sign (rather than the white color proposed), given the adjacency of the two signs. No changes are proposed to the other directional signs.

Approval Process:

Marriott's Master Sign Plans require ARB review and recommendation and a final approval by the Village Board for the current request. No preliminary evaluation or public hearing is required, per Section 6 of the original Master Sign Plans Ordinance (Ordinance #11-3191-13A). The ordinance provides the Director of Community Development with the authority to determine if any modifications to the signs alter their architecture, intensity, and purposes. Based on the petitioner's current request, these proposed modifications do not alter any of the aforementioned sign qualities.

Motion:

The Architectural Review Board moves to recommend approval to the Village Board of the amendment to the Marriott Master Sign Plan amendment to permit revisions to the existing ground monument and directional signs for the Marriott Lincolnshire Resort located at 10 Marriott Drive, as presented in the petitioner's cover letter and presentation packet date stamped received March 8, 2019, and further subject to . . .

{Insert any additional conditions or modification desired by the Architectural Review Board}

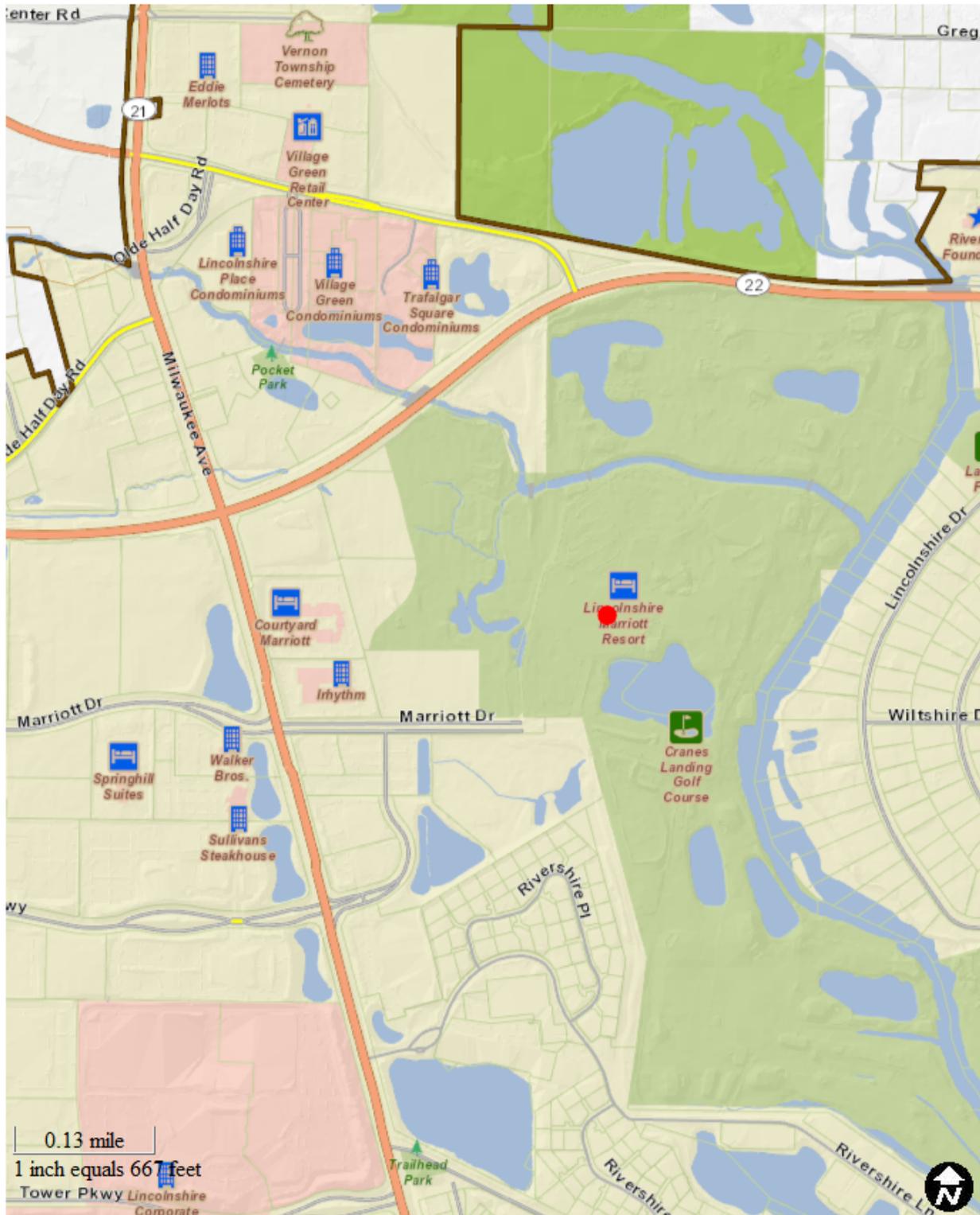
Reports and Documents Attached:

- Document 1: Location map, prepared by MGP GIS Consortium.
- Document 2: Petitioner's cover letter and presentation packet, with the cover letter date stamped received March 8, 2019.
- Document 3: Marriott's Master Sign Plan (Ordinance #11-3191-13A).

Meeting History	
Architectural Review Board (current):	March 19, 2019



10 Marriott Drive



Map created on March 12, 2019.
© 2019 GIS Consortium and MGP Inc. All Rights Reserved.
The GIS Consortium and MGP Inc. are not liable for any use, misuse, modification or disclosure of any map provided under applicable law.
Disclaimer: This map is for general information purposes only. Although the information is believed to be generally accurate, errors may exist and the user should independently confirm for accuracy. The map does not constitute a regulatory determination and is not a base for engineering design. A Registered Land Surveyor should be consulted to determine precise location boundaries on the ground.

RE
DEC - 1 2010
VILLAGE OF LINCOLNSHIRE
COMMUNITY DEVELOPMENT

W Riverside Dr

21

22

MILWAUKEE AVE

10 Marriott Dr, Lincolnshire, IL 60069

Lincolnshire Dr

WILKINSON DR

Half Day Rd Sign

Milwaukee Ave Sign

1 Directional Sign

Directional Sign 4

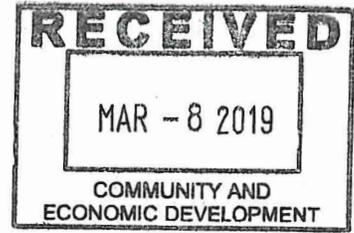
5 Directional Sign

6 Directional Sign

2 Directional Sign

3 Directional Sign





Architectural Review Board

Dear Cherise,

I am writing to you today to propose our plans to update our current monument signs at the Marriott Lincolnshire Resort. Our existing signs are not currently displaying the updated amenities within the resort and also the logo on top is not approved brand standard by Marriott International.

Our plans are to switch out the existing panels with the new logoed panels. The monument sign, height, shape, and location will not be altered. Everything will remain the same, just updating the names of the outlets.

The sign on Rte 22 currently has four panels of signs. The new sign will also have 4 panels of signs. All 4 current panels will be refaced with new lettering and logos. No existing lettering will remain. The top of the sign will also be refaced with the current Marriott brand standard logo.

The sign on Milwaukee Ave currently has 2 panels. The new sign will also have 2 full panels. Both panels will be refaced with new lettering and logos. No existing lettering will remain. There will be no change to the existing digital display. The top lettering will also change with the new Marriott logo.

From our first submission there was a concern over the Marriott sign panel only on the Rte 22 sign. This is correct since the digital display on the Milwaukee sign is mostly theater advertisements and serves as directional guidance for guests to use that entrance.

The landscaping area around the monument sign will not be altered at all. New greenery will be added come spring time 2019. If you have any questions please do not hesitate to contact me.

Brad Lajoie

A handwritten signature in black ink, appearing to read 'Brad Lajoie', written over a white background.

General Manager



Lincolnshire Marriott Resort
10 Blarney Drive
Lincolnshire, IL 60069

BRAD LAJOIE
General Manager

Brad.Lajoie@chicagomariottlincolnshire.com
marriott.com/CHLN
t 847.634.0100 • f 847.634.5900



MARRIOTT DRIVE ENTRANCE LOCATION
 REFACE EXISTING D/FACE ILLUMINATED DISPLAY
 3/8" = 1'-0"

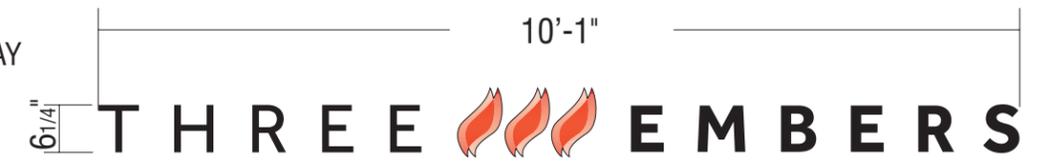
FLAT ALUMINUM PANELS
 WHITE FINISH / ROUTED-OUT
 BACKED-UP WHITE PLEXIGLAS COPY
 3/4" THICK CLEAR PUSH-THRU
 PLEXIGLAS COPY & LOGO
 TRANSLUCENT RED APPLIED VINYL 1ST SURFACE
 OPAQUE BLACK APPLIED VINYL 1ST SURFACE COPY

REPAINT EXISTING CABINET WHITE

EXISTING MESSAGE CENTER

(2) FLAT ALUMINUM PANELS
 WHITE FINISH / ROUTED-OUT
 BACKED-UP WHITE PLEXIGLAS COPY
 3/4" THICK CLEAR PUSH-THRU
 PLEXIGLAS COPY & LOGO

"THREE EMBERS" COPY / OPAQUE BLACK VINYL APPLIED TO 1ST SURFACE OF PLEXIGLAS
 TRANSLUCENT DIGITAL PRINTED "FLAMES" APPLIED TO PLEXIGLAS SURFACE



"WRIGHT'S BREW & BISTRO" COPY / OPAQUE BLACK VINYL APPLIED TO 1ST SURFACE OF PLEXIGLAS



ENLARGED LOGO DETAILS
 1/2" = 1'-0"

NORTH SHORE SIGN
 1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020
"Quality Signage Since 1930"

This design is the exclusive property of North Shore Sign Company Inc., and is the result of the original and creative work of its employees. This drawing is submitted to the respective customer for the sole purpose of consideration of whether or not to purchase this design, or a sign manufactured to this design from North Shore Sign Co. Distribution, use of, or exhibition of this drawing to anyone outside customers organization, in order to secure quotation, design work, or purchase of a sign either to this design or similar to this design, is expressly forbidden. In the event that such distribution, use or exhibition occurs, North Shore Sign is to be compensated \$1500.00 for time, effort and creative service entailed in creating these plans, as well as any and all legal fees and expenses to enforce its rights. Copyright 2010 North Shore Sign Company Inc.

REVISED	COMMENTS	
E	3/13/19	CHANGE LAYOUT VIEW
MARRIOTT LINCOLNSHIRE RESORT LINCOLNSHIRE, IL.		
SCALE	NOTED	DRAW BY: ART
DATE	6/27/18	REVISED
SALESPERSON	AS	DRAWING # 11471 PG. 1



MARRIOTT **RESORT**
LINCOLNSHIRE



THREE  EMBERS

WRIGHT'S BREW & BISTRO

NIGHT VIEW



EXISTING SIGN PHOTO



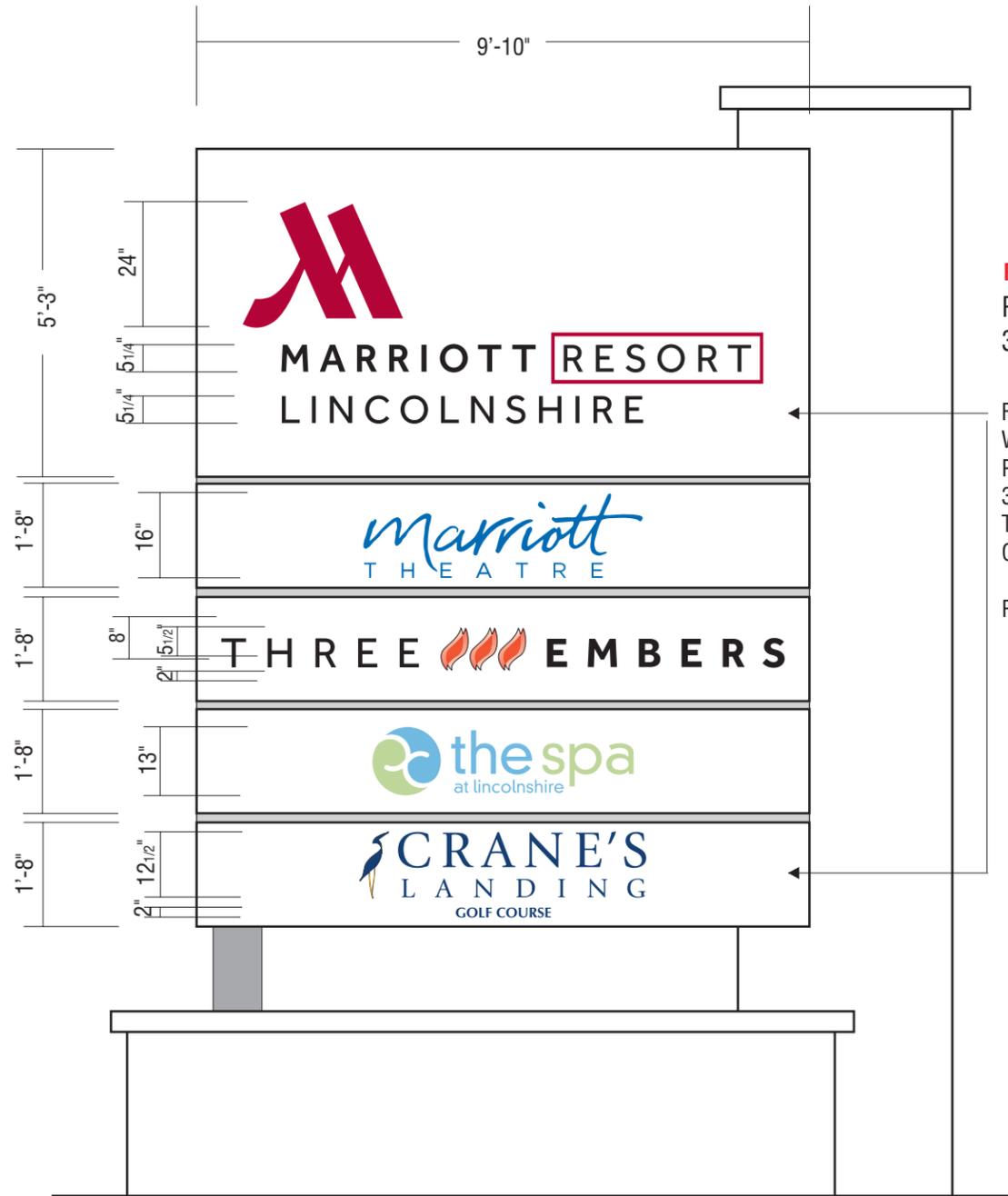
NORTH SHORE SIGN

1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

"Quality Signage Since 1930"

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E	3/13/19	CHANGE LAYOUT VIEW
MARRIOTT LINCOLNSHIRE RESORT LINCOLNSHIRE, IL.		
SCALE	NOTED	DRAW BY: ART
DATE	6/27/18	REVISED
SALESPERSON	AS	DRAWING # 11471 PG. 2



ROUTE 22 LOCATION

REFACE EXISTING D/FACE ILLUMINATED DISPLAY
3/8" = 1'-0"

FLAT ALUMINUM PANELS
WHITE FINISH / ROUTED-OUT BACKED-UP WHITE
PLEXIGLAS COPY
3/4" THICK CLEAR PUSH-THRU PLEXIGLAS COPY & LOGO
TRANSLUCENT RED APPLIED VINYL 1ST SURFACE
OPAQUE BLACK APPLIED VINYL 1ST SURFACE COPY

REPAINT EXISTING CABINET WHITE



TRANSLUCENT BLUE VINYL
APPLIED 1ST SURFACE



TRANSLUCENT BLUE & GREEN
VINYL APPLIED 1ST SURFACE

"AT LINCOLNSHIRE"
OPAQUE BLUE VINYL COPY



TRANSLUCENT BLUE VINYL
APPLIED 1ST SURFACE

"GOLF COURSE"
OPAQUE BLUE VINYL

ENLARGED LOGO DETAILS
1/2" = 1'-0"



1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

"Quality Signage Since 1930"

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REVISED	COMMENTS	
E	3/13/19	CHANGE LAYOUT VIEW
MARRIOTT LINCOLNSHIRE RESORT LINCOLNSHIRE, IL.		
SCALE	NOTED	DRAW BY: ART
DATE	6/27/18	REVISED
SALESPERSON	AS	DRAWING # 11471 PG. 3



NIGHT VIEW



EXISTING SIGN PHOTO



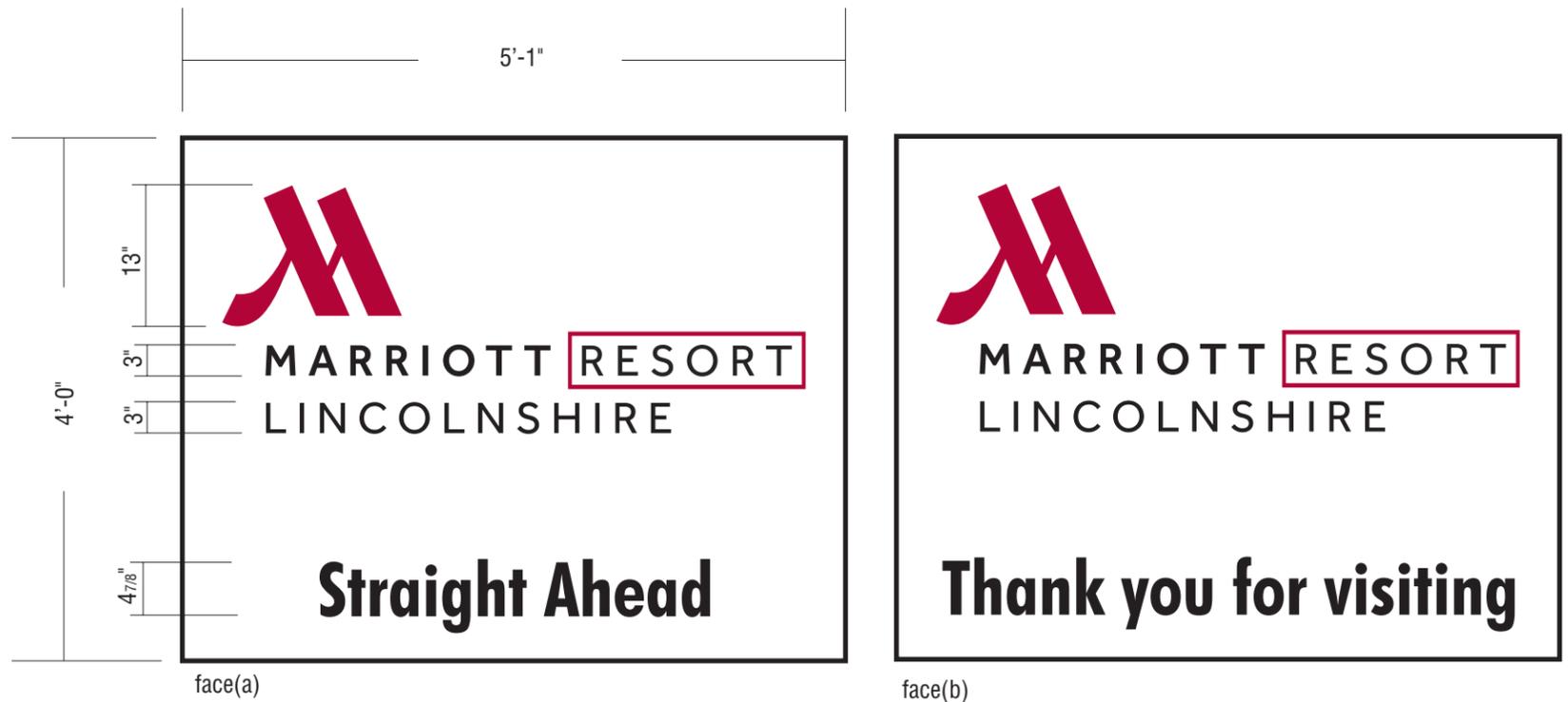
1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020
"Quality Signage Since 1930"

This design is the exclusive property of North Shore Sign Company Inc., and is the result of the original and creative work of its employees. This drawing is submitted to the respective customer for the sole purpose of consideration of whether or not to purchase this design, or a sign manufactured to this design from North Shore Sign Co. Distribution, use of, or exhibition of this drawing to anyone outside customers organization, in order to secure quotation, design work, or purchase of a sign either to this design or similar to this design, is expressly forbidden. In the event that such distribution, use or exhibition occurs, North Shore Sign is to be compensated \$1500.00 for time, effort and creative service entailed in creating these plans, as well as any and all legal fees and expenses to enforce its rights. Copyright 2010 North Shore Sign Company Inc.

REVISED	COMMENTS
E 3/13/19	CHANGE LAYOUT VIEW

MARRIOTT LINCOLNSHIRE RESORT
 LINCOLNSHIRE, IL.

SCALE	NOTED	DRAW BY:	ART
DATE	6/27/18	REVISED	
SALESPERSON	AS	DRAWING #	11471
			PG. 4

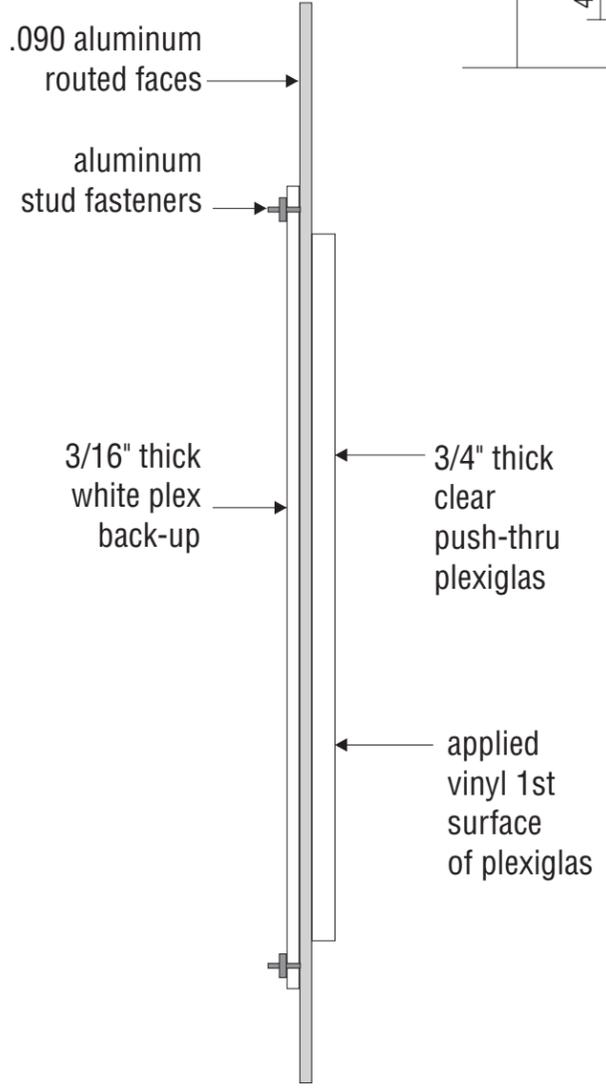


MARRIOTT DRIVE LOCATION
 REFACE EXISTING D/FACE ILLUMINATED DISPLAY
 3/4" = 1'-0"

FLANGED ALUMINUM PANELS 1-1/2" DEEP
 WHITE FINISH / ROUTED-OUT BACKED-UP WHITE PLEXIGLAS COPY
 3/4" THICK CLEAR PUSH-THRU PLEXIGLAS COPY & LOGO
 TRANSLUCENT RED APPLIED VINYL 1ST SURFACE
 OPAQUE BLACK APPLIED VINYL 1ST SURFACE COPY
 REPAINT EXISTING CABINET WHITE



EXISTING SIGN PHOTO



SECTIONAL DETAIL VIEW
(nts)



NIGHT VIEW

NORTH SHORE SIGN
 1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020
"Quality Signage Since 1930"

This design is the exclusive property of North Shore Sign Company Inc., and is the result of the original and creative work of its employees. This drawing is submitted to the respective customer for the sole purpose of consideration of whether or not to purchase this design, or a sign manufactured to this design from North Shore Sign Co. Distribution, use of, or exhibition of this drawing to anyone outside customers organization, in order to secure quotation, design work, or purchase of a sign either to this design or similar to this design, is expressly forbidden. In the event that such distribution, use or exhibition occurs, North Shore Sign is to be compensated \$1500.00 for time, effort and creative service entailed in creating these plans, as well as any and all legal fees and expenses to enforce its rights. Copyright 2010 North Shore Sign Company Inc.

REVISED	COMMENTS	
D	3/7/19	CHANGE LAYOUT VIEW
MARRIOTT LINCOLNSHIRE RESORT LINCOLNSHIRE, IL.		
SCALE	NOTED	DRAW BY: ART
DATE	6/27/18	REVISED
SALESPERSON	AS	DRAWING # 11471 PG. 5

STATE OF ILLINOIS)
) SS.
COUNTY OF L A K E)

CLERK'S CERTIFICATE

I, **BARBARA MASTANDREA**, do hereby certify that I am the duly appointed and qualified Village Clerk for the Village of Lincolnshire, Lake County, Illinois.

I do further certify that the above and attached is a true and correct copy of an Ordinance entitled:

**AN ORDINANCE
GRANTING VARIANCES FROM
TITLE 12 OF THE VILLAGE CODE
RELATED TO MARRIOTT'S LINCOLNSHIRE RESORT
MASTER SIGN PLANS
(10 Marriott Drive)**

I do further certify that the aforesaid Ordinance was entrusted to my care and custody, that the same is duly spread upon the record of proceedings of said Village, and that I am the custodian of all Village records, including the journal of proceedings, ordinances, and resolutions of said Village.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 28th day of February, 2011.


Village Clerk
Village of Lincolnshire
Lake County

Prepared by and Mail to:
Village of Lincolnshire
One Olde Half Day Road
Lincolnshire, IL 60069

ORDINANCE NO. 11-3191-13A

**AN ORDINANCE
GRANTING VARIANCES FROM
TITLE 12 OF THE VILLAGE CODE
RELATED TO MARRIOTT'S LINCOLNSHIRE RESORT
MASTER SIGN PLANS
(10 Marriott Drive)**

WHEREAS, application has been made by White Way Sign, Inc., as authorized by Strategic Hotel Capital, Inc. d/b/a Marriott's Lincolnshire Resort ("Owner")(collectively, the "Petitioner"), for approval of a Master Sign Plan for the replacement of the existing resort signage at Marriott's Lincolnshire Resort, with variations to Sections 12-9-1(A)(1), 12-9-1(A)(13), 12-8-1(H)(1), 12-11-1(T) , and 12-9-1(G)(1) of the Lincolnshire Sign Control Ordinance (collectively, the "Variances"), to permit the installation of two monument ground signs and six directional signs on property commonly known as 10 Marriott Drive, Lincolnshire, Illinois (the "Subject Property"); and

WHEREAS, a public hearing was duly advertised on October 28, 2010, in the Daily Herald and was convened by the Architectural Review Board on November 16, 2010, and continued until finally adjourned on January 18, 2011, on which date the Architectural Review Board voted in favor of recommending approval of the Petitioner's application for said Variances; and

WHEREAS, the Architectural Review Board has heretofore submitted to the Mayor and Board of Trustees of the Village of Lincolnshire, Lake County, Illinois, its findings of fact and recommendations related thereto, including that the Variance satisfies the standards to qualify for a sign variance set forth in Section 12-17-1 of the Village Code, attached hereto as Exhibit D;

WHEREAS, the Corporate Authorities of the Village of Lincolnshire, Lake County, Illinois, have duly considered said finding and recommendations of said Architectural Review Board; and

WHEREAS, the Corporate Authorities desire to address in this ordinance only that part of the Petitioner's application relating to the Marriott Drive Monument Sign and the internal Directional Signs, and wish to save that part of the Petitioner's application related to the Illinois Route 22 Monument Sign for a second and separate ordinance to be adopted hereafter.

NOW, THEREFORE, BE IT ORDAINED by the Mayor and Board of Trustees of the Village of Lincolnshire, Lake County, Illinois, in exercise of its home rule authority, as follows:

SECTION 1: FINDINGS:

- A. The findings and recommendations of the Architectural Review Board of the Village of Lincolnshire, Lake County, Illinois, are herein incorporated by reference as the findings of this Board to the same effect as if fully recited herein at length. All references in the findings and recommendations are made the references of the Mayor and Board of Trustees of the Village of Lincolnshire.

- B. The Mayor and Board of Trustees hereby further find and declare that the Marriott's Lincolnshire Resort is a unique development within the Village insofar as it provides a singular mix of products and services which contribute to the welfare of the Village and, as a result of such characteristics, its special contributions to the Village make it uniquely eligible for special relief from the strict application of the Sign Code, including the opportunity to use Electronic Signs to advertise the variety of products and services available at the resort.

SECTION 2: That the property which is the subject of this Ordinance is legally described as set forth in **Exhibit A**, attached hereto and incorporated as though fully set forth herein.

SECTION 3: Subject to the conditions described in Section 4 below, variances from Sections 12-9-1(A)(1), 12-9-1(A)(13), 12-8-1(H)(1), 12-11-1(T) , and 12-9-1(G)(1) are hereby granted and issued to the Subject Property at 10 Marriott Drive, as herein more specifically described and as depicted on the sign plans attached hereto in **Exhibit B**, for the purpose of permitting the following relief:

Monument Ground Sign (Marriott Drive)

1. A variation to Section 12-9-1(A)(1), Ground Signs, to increase the height of a monument sign to 20'-6", rather than the code permitted 6' maximum sign height.
2. A variation to Section 12-9-1(A)(1), Ground Signs, to increase the length of a monument sign to 12'-8", rather than the code permitted 10' maximum sign length.
3. A variation to Section 12-9-1(A)(1), Ground Signs, to increase the sign area of a monument sign to 260 square feet, rather than the code permitted 60-square foot maximum sign area.
4. A variation to Section 12-9-1(A)(13), Ground Signs, to locate the copy area of a monument sign less than six inches from the perimeter of the sign face, rather than the code permitted six inch minimum separation from the perimeter of the sign face.
5. A variation to Section 12-8-1(H)(1), Items of Information, to increase the items of information on a single sign face to four, rather than the code limitation of not more than two items of information.
6. A variation to Section 12-11-1(T), Prohibited Signs, to permit the use of an electronic display screen, not permitted.

Directional Signs

1. Variations to Section 12-9-1(G)(1), Directional Signs, to increase the height of Directional Sign 1 to 6'-8", Directional Sign 2 to 7'-8", Directional Sign 3 to 5'-8", Directional Sign 4 to 6'-2", Directional Sign 5 to 5'-8", and Directional Sign 6 to 4'-8", rather than the code permitted 4' maximum sign height.
2. Variations to Section 12-9-1(G)(1), Directional Signs, to increase the sign area of Directional Sign 1 to 20 square feet, Directional Sign 2 to 25 square feet, Directional Sign 3 to 15 square feet, Directional Sign 4

to 17.5 square feet, Directional Sign 5 to 17.5 square feet, and Directional Sign 6 to 12.5 square feet, rather than the code permitted three-square foot maximum sign area.

SECTION 4: The variances herein described shall not become effective unless and until the Petitioner causes the Master Sign Plan to comply with these conditions:

- A. The Marriott Drive Monument Sign location shall be no closer west (towards the Marriott Drive and Milwaukee Avenue intersection) than the existing resort sign.
- B. A minimum time limit/interval of no less than 10 seconds between images or text shall be required for the electronic display screen.
- C. The electronic display screen shall not display any (i) advertising related to the price, rate or cost for any merchandise, services, or activities, and (ii) personal messages directed at or for the benefit of individuals or groups.
- D. The content displayed on the electronic display screen and the transition between messages and/or images shall not involve any flashing, blinking, scrolling, rotation, animation or similar effects.
- E. The brightness level of the electronic display screen shall be limited to 5,000 nits during the day and 1,000 nits at night, with the L.E.D. panel equipped with a light sensor to automatically adjust brightness based on ambient light levels, provided that the brightness level of the electronic (L.E.D.) sign components shall be subject to the final acceptance of the Community Development Department.
- F. The landscape plans shall be revised to add more grasses and evergreens, where appropriate, and shall be determined in the field by Staff and the Petitioner to achieve four-season interest and verticality.
- G. The Marriott Lincolnshire Resort commitments, as contained in the letter dated December 1, 2010.

SECTION 5: Review.

The Village Board shall review the criteria in which the electronic display screen displays content (as described in Section 4 above), within 120 days from the date of this Ordinance, which may be extended by resolution of the Village Board. At such time, the Village Board may without further public hearing amend this ordinance to adjust the

means by which content may be displayed on the electronic display screen of the Marriott Drive Monument Sign.

- A. The Village Board expressly reserves and retains jurisdiction of Petitioner's application for the purpose of (i) granting, denying or granting with conditions that portion of the application related to the proposed Monument Sign located on Illinois Route 22; and (ii) amending the authority hereby granted as described in paragraph A above; each or all without need for further hearing.

SECTION 6: In the event the Petitioner, or its successor and assigns, elects to maintain the signs described herein in a manner providing for the same intensity and purposes approved by this Ordinance, any future sign face changes may be made only with the recommendation of the Architectural Review Board and approval of the Village Board. The decision whether future modifications alter the architecture or preserve or expand the intensity and purposes for which the approved signs are used shall be made in the sole discretion of the Director of Community Development.

SECTION 7: The specific terms and conditions of this Ordinance shall prevail against other existing ordinances of the Village to the extent that there might be any conflict. Except for the foregoing limitation, the development of the Subject Property is subject to all terms and conditions of applicable ordinances and regulations of the Village of Lincolnshire.

SECTION 8: The following exhibits shall be attached to and made a part of this Ordinance and, except as expressly modified by this Ordinance, all covenants, standards, requirements, designs or specifications in such exhibits shall be binding on the Petitioner:

- A. Sign Packet, prepared by White Way Sign, Inc., date stamp received December 1, 2010, attached hereto in **Exhibit B**;
- B. Owner's Letter, dated December 1, 2010, regarding Electronic Sign (L.E.D.) brightness and limiting off-site advertising, attached hereto in **Exhibit C**.

SECTION 9: Any person violating the terms and conditions of this Ordinance shall be subject to a penalty not exceeding Five Hundred Dollars (\$500.00) with each and every day that the violation of the Ordinance is allowed to remain in effect being deemed a complete and separate offense. In addition, the appropriate authorities of the Village may take such other action as they deem proper to enforce the terms and conditions of this Ordinance, including, without limitation, an action in equity to compel compliance with its terms. Any person violating the terms of this Ordinance shall be subject, in addition to the foregoing penalties, to the payment of court costs and reasonable attorneys' fees. This section shall not apply to the Village of Lincolnshire, its officials, agents or employees.

SECTION 10: The premises shall be made available for inspection by any department of the Village at all reasonable times for compliance with this Ordinance and any other laws or regulations.

SECTION 11: This Ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form as provided by law. Provided, however, that this Ordinance shall not take effect until a true and correct copy of this Ordinance is executed by the Owner of the Subject Property or such other parties in interest consenting to and agreeing to be bound by the terms and conditions contained within this Ordinance. Such execution shall take place within sixty (60) days after the passage and approval of this Ordinance or within such extension of time as may be granted by the Corporate Authorities by motion.

PASSED this 28th day of February, 2011, by the Corporate Authorities of the Village of Lincolnshire on a roll call vote as follows:

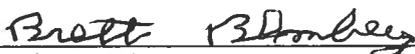
AYES: Brandt, Feldman, McDonough, Saltiel, Servi

NAYS: None

ABSTAIN: None

ABSENT: Walder

APPROVED this 28th day of February, 2011.



Brett Blomberg, Mayor

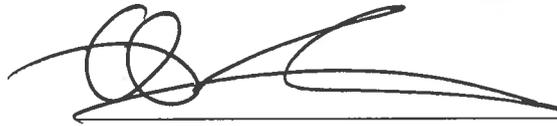
ATTEST:



Barbara Mastandrea, Village Clerk

ACKNOWLEDGED and ACCEPTED
this 30th day of March, 2011.

**STRATEGIC HOTEL CAPITAL, INC.
D/B/A MARRIOTT LINCOLNSHIRE
RESORT**

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

By:

General Manager

Its:

**REQUEST FOR BOARD ACTION
Architectural Review Board
March 19, 2019**

Subject: Solar Panel Installation Extra Space Storage - 200 Parkway Drive – CityPark Center

Action Requested: Consideration of Roof-Mounted Solar Panel Installation for Building C of Extra Space Storage Facility

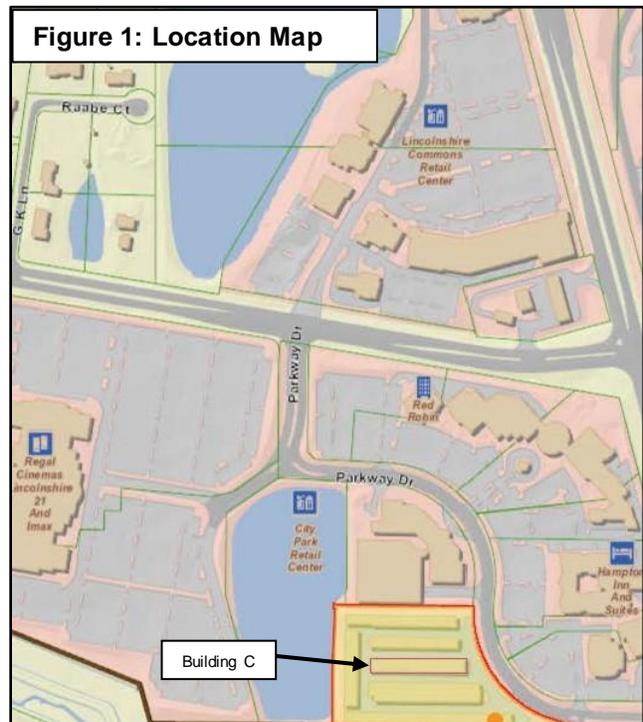
Petitioner: Rethink Electric LLC

Originated By/Contact: Tonya Zozulya, Planning & Development Manager
Mike Jesse, Building Official

Advisory Board Review: Architectural Review Board

Background:

- Rethink Electric LLC, the petitioner representing Extra Space Storage, seeks to install roof-mounted solar panels on Building C of the storage facility at 200 Parkway Drive, as shown on Figure 1 and attached location map. The request is supported by Extra Space Properties Ninety Seven LLC, the property owner.
- The 4-acre Extra Space Storage property is part of the 46.5-acre CityPark Center, located at the southwest corner of Milwaukee Avenue and Aptakisic Road. It is located in the southern portion of the Center, west of the Wildfire and Big Bowl restaurants, along the internal Parkway Drive road. The property is accessible from Aptakisic Road and Milwaukee Avenue.
- In 1996, the property received rezoning from R1 Single-Family Residence to B2 General Business and Final Planned Unit Development approvals (Ordinance #96-1453-37).
- The storage facility was constructed in 1998 and has been operated by U.S. Storage, Metro Storage and recently by Extra Space Storage. The facility is comprised of six one-story buildings.



Project Overview & Staff Comments:

- The proposal is to install a 57.1 kilowatt, 168-panel solar system on the south side of the 9.5' tall Building C standing seam roof to generate power for the entire storage facility (see Document 2). The building roof is silver in color, and the solar panels will be silver-framed, with black/blue glass. The panels would be shielded from Parkway Drive by the existing Extra Space Storage buildings and evergreen trees, as shown in the attached Document 2 photographs.
- Section 6-17-6 of the Zoning Code (see attached Document 3) regulates the approval process and installation of solar panels in the Village. This is the first commercial solar proposal received by the Village. Staff expects these requests to grow as solar projects become more accessible and prevalent.

Approval Process:

Solar panel proposals for B2-zoned properties are subject to review by the Architectural Review Board and final approval by the Village Board. No preliminary evaluation at the Village Board is required.

Motion:

The Architectural Review Board moves to approve and recommend approval to the Village Board the installation of the proposed solar panels on Building C for Extra Space Storage, as presented in the packet submitted by Rethink Electric LLC, date stamped received March 11, 2019, and further subject to. . .

{Insert any additional conditions or modification desired by the Architectural Review Board}

Reports and Documents Attached:

- Document 1: Location Map.
- Document 2: Petitioner's cover letter and presentation packet, prepared by Rethink Electric LLC, date stamped received March 11, 2019.
- Document 3: Solar Energy Systems Code.

Meeting History	
Architectural Review Board (current):	March 19, 2019



200 Parkway Dr.



Map created on March 11, 2019.
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Disclaimer: This map is for general information purposes only. Although the information is believed to be generally accurate, errors may exist and the user should independently confirm for accuracy. The map does not constitute a regulatory determination and is not a base for engineering design. A Registered Land Surveyor should be consulted to determine precise location boundaries on the ground.



Village of Lincolnshire
Building Division
1 Olde Half Day Rd
Lincolnshire, IL 60069

Attn: Tonya Zozulya, Planning & Development Manager

Hello Tonya,

Below are our responses to the requests from the Planning and Building staff. We are also attaching the requested documents and images.

Cover Letter

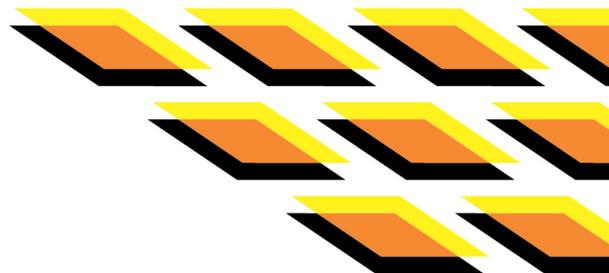
1. *Please state the only building that the solar system is proposed for is Building C. Please describe the proposed material and color.*
 - a. The solar modules will be installed on building C only.
 - b. The roof of building C is a standing seam metal roof that is silver in color (see attached photo).
 - c. The solar modules are silver-framed, with the glass area in the middle being black/blue (see attached datasheet).
2. *Please state whether the solar panels will be visible from Parkway Drive*
 - a. The solar modules will be obscured from view by trees or the other buildings in the ESS facility from most angles from Parkway Drive. Please see the attached images for reference.
3. *State whether the Building C panels will be designed to provide energy for the entire Extra Space Storage property.*
 - a. The solar energy system will be connected to the main service panel of the facility, and will provide power to all buildings in the facility in parallel with the utility feed.
 - b. In addition to disconnects being at each location where there is solar equipment, there will also be a main solar disconnect at the utility meter.

Building Elevations

1. *The Village Code requires solar panels depicted on the building. We recommend taking photos of Building C and the adjacent buildings*

630.747.4587

RethinkElectric.com



and superimposing the proposed solar panels to show how they will be viewed from several points along Parkway Drive.

- a. Please find the requested images attached.

General

1. *All work shall comply with the 2017 NEC*
 - a. Correct. Per the title page of our plan set, all work will comply with 2017 NEC including the requirement for rapid shutdown devices (RSD).
2. *Village may perform periodic and/or final inspection by remote operated aerial vehicle (drone). Photographs and/or video imagery shall only be used for inspectional purposes.*
 - a. Rethink Electric does not have any issue with this.
3. *Disconnection instructions shall be provided at inverter/meter location for first responders to disconnect feed to home in the event of emergency.*
 - a. Labels and sticker will be applied to all required locations per the NEC. These labels will provide disconnection instructions as well as warnings in the relevant locations. Please see page PV-06 in the plan set for additional details.

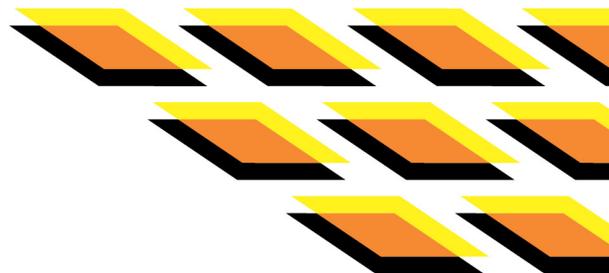
Additional Notes

1. The solar modules will be flush-mounted on the roof. This means that they will be parallel with the roof surface, and will be less than 6" above the roof surface.
2. At no point will the solar modules be higher than the building height.

Please let me know if your department has any questions, or if anything further is needed for review of this application. Thank you, and we look forward to bringing this solar energy system to your Village.

Respectfully,

Tim Guth
tguth@rethinkelectric.com
630-747-4587



February 15, 2019



Village of Lincolnshire
One Olde Half Day Rd
Lincolnshire, IL 60069

Subject: Letter of Consent for PV System Installation

To Whom It May Concern,

Let it be known that Extra Space Storage consents to having a photovoltaic solar array installed on the roof top of our facility located at 200 Parkway Dr. Lincolnshire, IL 60069. This letter authorizes Rethink Electric, Inc. to permit the photovoltaic system with the Village of Lincolnshire.

Sincerely,

DocuSigned by:
Byron Harris
6B68CB220A5E4A0...

Byron Harris

Solar Project Manager

Extra Space Storage

SCOPE OF WORK

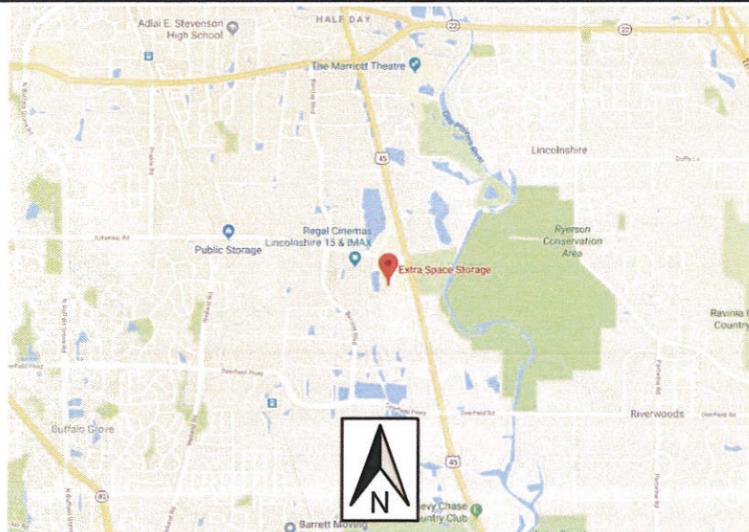
OVERVIEW:
SUMMARY: ROOF-MOUNTED, GRID-TIED PV SYSTEM
DC SYSTEM SIZE: 57.12 kW
AC SYSTEM SIZE: 43.2 kW

EQUIPMENT
MODULES: (168) TRINA SOLAR 340W TSM-340DE14A(II)
INVERTER(S): (1) SOLAREEDGE SE43.2KUS

OPTIMIZERS: (87) SOLAREEDGE P730
RAIL: ECOLIBRIUM ECOX
ATTACHMENT: STANDING SEAM CLAMPS

BUILDING
ROOF MATERIAL: STANDING SEAM
BUILDING HEIGHT: 9' 6"
ROOF PITCH: 5°
ARRAY AZIMUTH: 180°

VICINITY MAP



AERIAL VIEW



GENERAL NOTES

- THIS PROJECT HAS BEEN DESIGNED IN COMPLIANCE WITH THE 2017 NEC AND THE VILLAGE OF LINCOLNSHIRE AND ASSOCIATED COUNTY BUILDING AND FIRE CODES.
- ALL EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY, AND INSTALLED PER THE MANUFACTURER INSTRUCTIONS AND LISTING REQUIREMENTS.
- THE INSTALLATION OF EQUIPMENT AND ASSOCIATED WIRING AND INTERCONNECTIONS SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS.
- SOLAR ARRAY SHALL NOT OBSTRUCT ANY PLUMBING VENTS, SKYLIGHTS, VENTILATION INTAKES OR EXHAUST OUTLETS.
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R MINIMUM.
- ALL CONDUCTORS SHALL BE MARKED ON EACH END FOR UNIQUE IDENTIFICATION.
- ALL CONDUIT EXPOSED TO WEATHER SHALL BE RATED FOR USE IN DIRECT SUNLIGHT.
- CONDUIT FROM ARRAY TO INVERTER AND FROM INVERTER TO POINT OF INTERCONNECTION SHALL BE ELECTRICAL METAL TUBING (EMT).
- RAINTIGHT FITTINGS SHALL BE USED FOR ALL OUTDOOR CONDUIT CONNECTIONS.
- ALL MODULE WIRING SHALL BE UL4703 LISTED PV WIRE WHERE EXPOSED, AND PV WIRE OR THWN-2 WHERE IN CONDUIT.
- MEANS SHALL BE PROVIDED TO DISCONNECT ALL UNGROUNDED DC CONDUCTORS FROM ALL OTHER CONDUCTORS IN THE BUILDING.
- MEANS SHALL BE PROVIDED TO DISCONNECT PV SYSTEM WITHIN 5 FT OF LENGTH INSIDE THE BUILDING OR WITHIN 10' FROM THE ARRAY PER THE REQUIREMENTS OF NEC ART. 690.12 WHERE APPLICABLE.
- PV MODULES, RACKING, INVERTERS, AND ASSOCIATED EQUIPMENT SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH NEC ART. 250.
- EQUIPMENT GROUNDING CONDUCTOR SHALL BE MINIMUM 6 AWG WHERE EXPOSED TO PHYSICAL DAMAGE.
- SWITCH AND CIRCUIT BREAKER REQUIREMENTS OF NEC ART. 690.17, AND ALL OTHER APPLICABLE REQUIREMENTS OF SECTION 690 SHALL BE MET.

CODE VERSIONS

APPLICABLE CODES, LAWS AND REGULATIONS

2009 INTERNATIONAL BUILDING CODE (IBC)
 2009 INTERNATIONAL RESIDENTIAL CODE (IRC)
 2009 INTERNATIONAL FIRE CODE (IFC)
 2017 NATIONAL ELECTRICAL CODE (NEC)

LEGEND

-  DRAIN
-  HVAC UNIT
-  VENT
-  SKY LIGHT
-  VENT FAN

TABLE OF CONTENTS

SHEET	DESCRIPTION
PV-01	TITLE SHEET
A-01	PROPERTY PLAN
PV-02	SITE PLAN
PV-03	ELECTRICAL EQUIPMENT LAYOUTS
PV-04	ARRAY LAYOUT
PV-05	ELECTRICAL SCHEMATIC
PV-06	SAFETY LABELING
DS-01	INVERTER DATASHEET
DS-02	OPTIMIZER DATASHEET
DS-03	PV MODULE DATASHEET
DS-04	AC DISCONNECT DATASHEET
DS-05	RACKING DATASHEET
DS-06	PV METER DATASHEET



850 N Central Ave
 Wood Dale, IL 60191
 www.RethinkElectric.com
 (630) 747-4587

Client Name & Address

PIVOT ENERGY
 224 N 7TH ST
 ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
 STORE 8132
 200 PARKWAY DR
 LINCOLNSHIRE, IL 60069



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
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---	---	---
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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019 Revision: A.1

Scale: NTS

Sheet Number: PV-01

Sheet Description: TITLE SHEET

Client Name & Address

PIVOT ENERGY
224 N 7TH ST
ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
STORE 8132
200 PARKWAY DR
LINCOLNSHIRE, IL 60069

Professional Engineer Stamp



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---

Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019

Revision

A.1

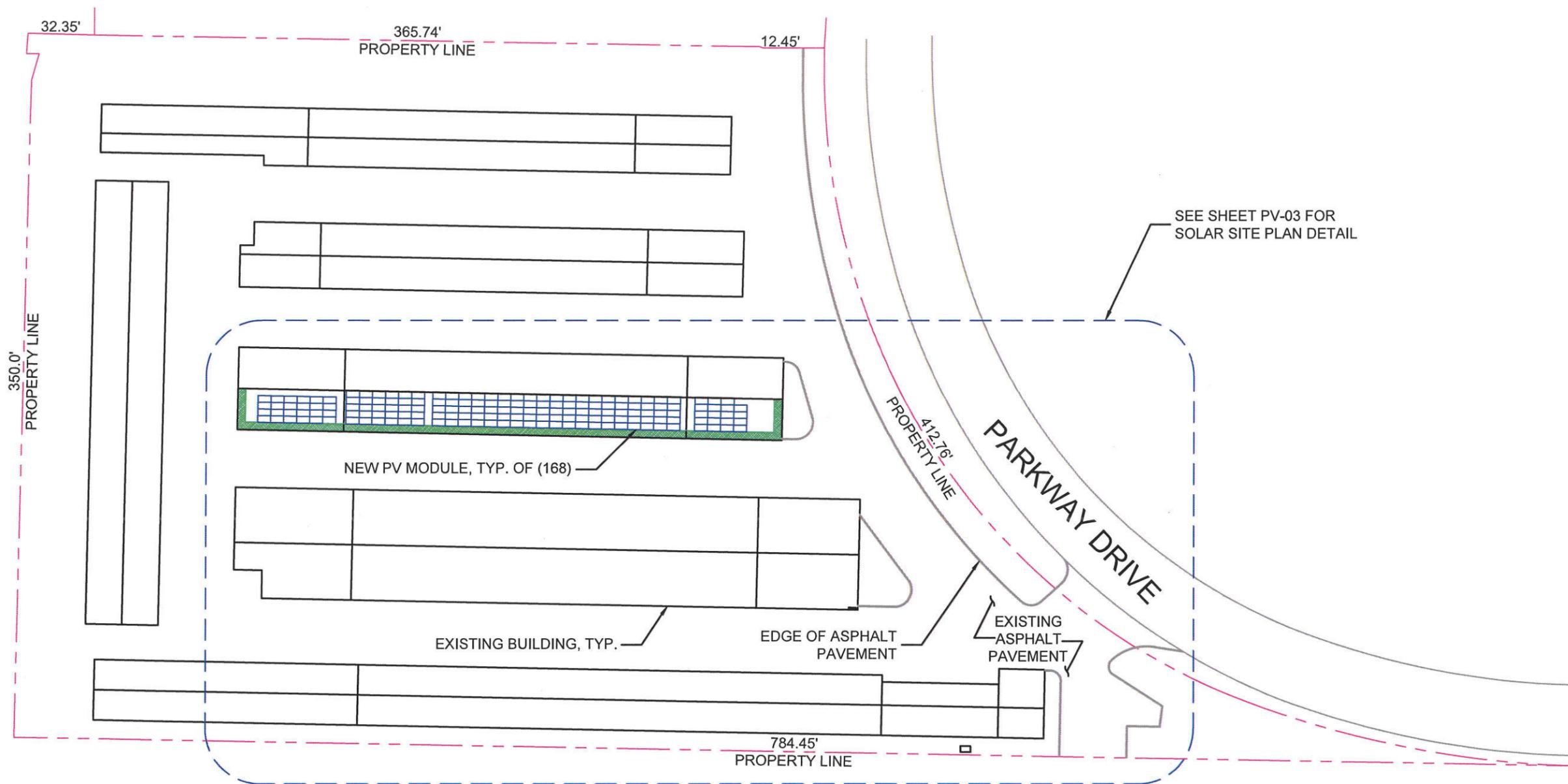
Scale: NTS

Sheet Number

A-01

Sheet Description

PROPERTY PLAN



1 PROPERTY PLAN
NOT TO SCALE

SCOPE OF WORK

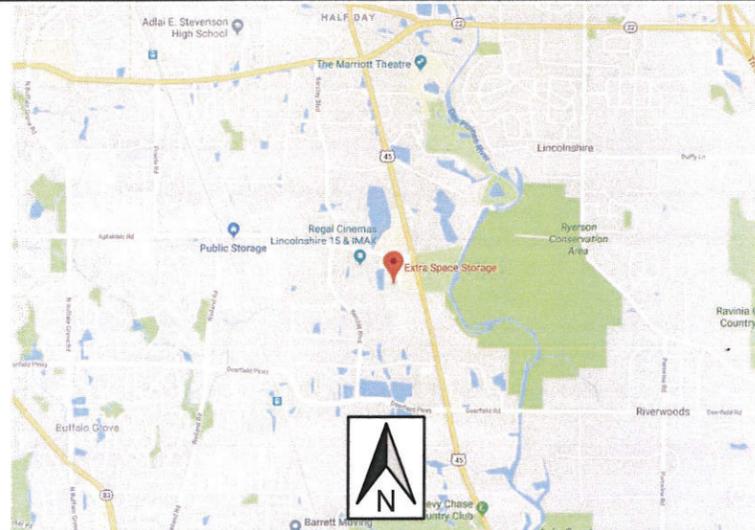
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AERIAL VIEW



GENERAL NOTES

1. THIS PROJECT HAS BEEN DESIGNED IN COMPLIANCE WITH THE 2017 NEC AND THE VILLAGE OF LINCOLNSHIRE AND ASSOCIATED COUNTY BUILDING AND FIRE CODES.
2. ALL EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY, AND INSTALLED PER THE MANUFACTURER INSTRUCTIONS AND LISTING REQUIREMENTS.
3. THE INSTALLATION OF EQUIPMENT AND ASSOCIATED WIRING AND INTERCONNECTIONS SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS.
4. SOLAR ARRAY SHALL NOT OBSTRUCT ANY PLUMBING VENTS, SKYLIGHTS, VENTILATION INTAKES OR EXHAUST OUTLETS.
5. ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R MINIMUM.
6. ALL CONDUCTORS SHALL BE MARKED ON EACH END FOR UNIQUE IDENTIFICATION.
7. ALL CONDUIT EXPOSED TO WEATHER SHALL BE RATED FOR USE IN DIRECT SUNLIGHT.
8. CONDUIT FROM ARRAY TO INVERTER AND FROM INVERTER TO POINT OF INTERCONNECTION SHALL BE ELECTRICAL METAL TUBING (EMT).
9. RAIN-TIGHT FITTINGS SHALL BE USED FOR ALL OUTDOOR CONDUIT CONNECTIONS.
10. ALL MODULE WIRING SHALL BE UL4703 LISTED PV WIRE WHERE EXPOSED, AND PV WIRE OR THWN-2 WHERE IN CONDUIT.
11. MEANS SHALL BE PROVIDED TO DISCONNECT ALL UNGROUNDED DC CONDUCTORS FROM ALL OTHER CONDUCTORS IN THE BUILDING.
12. MEANS SHALL BE PROVIDED TO DISCONNECT PV SYSTEM WITHIN 5 FT OF LENGTH INSIDE THE BUILDING OR WITHIN 10' FROM THE ARRAY PER THE REQUIREMENTS OF NEC ART. 690.12 WHERE APPLICABLE.
13. PV MODULES, RACKING, INVERTERS, AND ASSOCIATED EQUIPMENT SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH NEC ART. 250.
14. EQUIPMENT GROUNDING CONDUCTOR SHALL BE MINIMUM 6 AWG WHERE EXPOSED TO PHYSICAL DAMAGE.
15. SWITCH AND CIRCUIT BREAKER REQUIREMENTS OF NEC ART. 690.17, AND ALL OTHER APPLICABLE REQUIREMENTS OF SECTION 690 SHALL BE MET.

CODE VERSIONS

APPLICABLE CODES, LAWS AND REGULATIONS

2009 INTERNATIONAL BUILDING CODE (IBC)
 2009 INTERNATIONAL RESIDENTIAL CODE (IRC)
 2009 INTERNATIONAL FIRE CODE (IFC)
 2017 NATIONAL ELECTRICAL CODE (NEC)

LEGEND

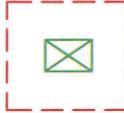
-  DRAIN
-  HVAC UNIT
-  VENT
-  SKY LIGHT
-  VENT FAN

TABLE OF CONTENTS

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PV-01	TITLE SHEET
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DS-01	INVERTER DATASHEET
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DS-03	PV MODULE DATASHEET
DS-04	AC DISCONNECT DATASHEET
DS-05	RACKING DATASHEET
DS-06	PV METER DATASHEET



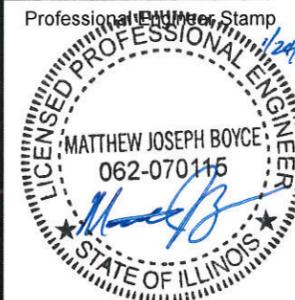
850 N Central Ave
 Wood Dale, IL 60191
 www.RethinkElectric.com
 (630) 747-4587

Client Name & Address

PIVOT ENERGY
 224 N 7TH ST
 ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
 STORE 8132
 200 PARKWAY DR
 LINCOLNSHIRE, IL 60069



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
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Project: ESS-8132-LINCOLNSHIRE	
Designed By: POLINA KOSEVA	
Reviewed By: GARRISON RIEGEL	
Date: 1/14/2019	Revision: A.1
Scale: NTS	
Sheet Number: PV-01	
Sheet Description: TITLE SHEET	

Client Name & Address

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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019

Revision:

Scale: NTS

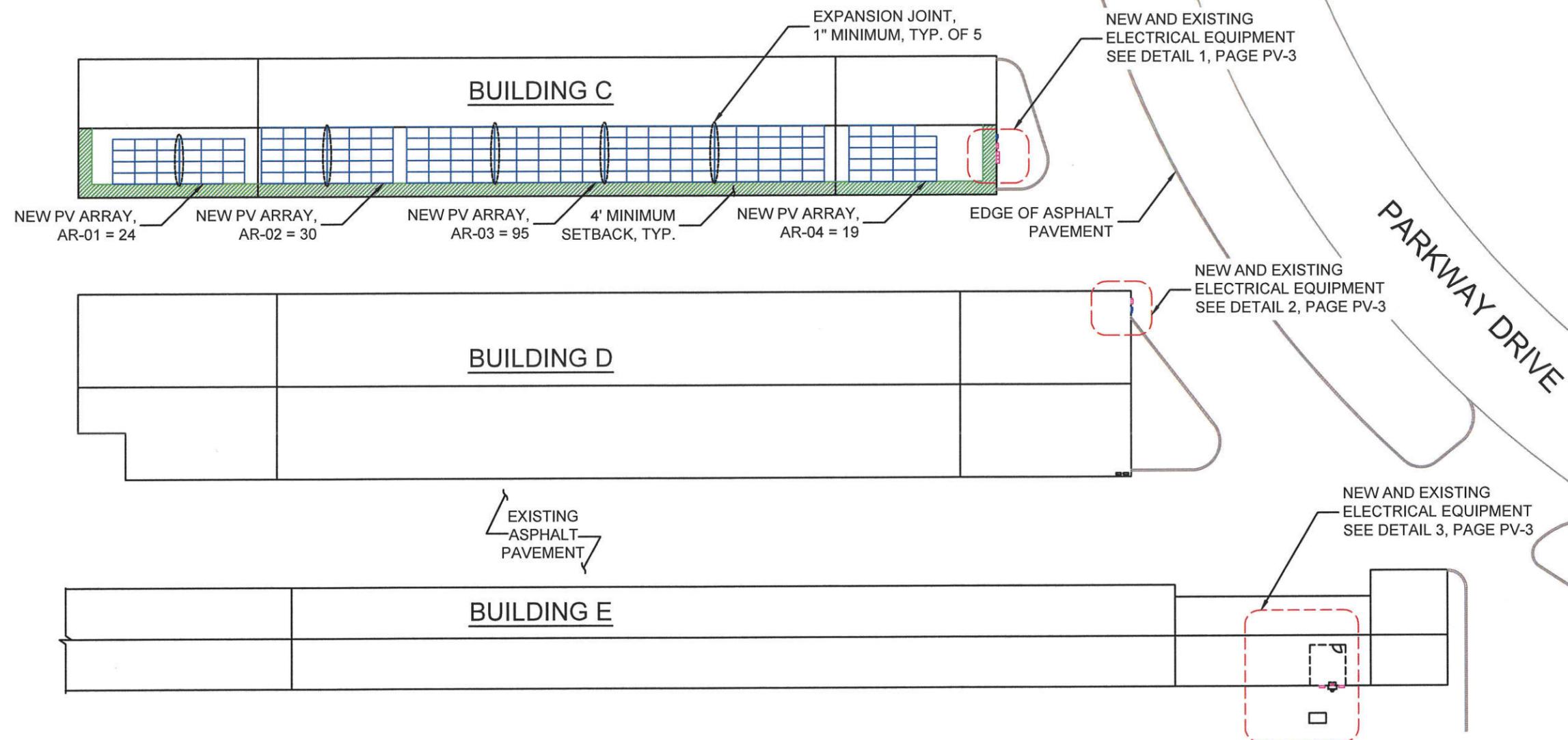
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Sheet Number:

PV-02

Sheet Description:

SITE PLAN



Client Name & Address

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Project
ESS-8132-LINCOLNSHIRE

Designed By
POLINA KOSEVA

Reviewed By
GARRISON RIEGEL

Date
1/14/2019

Scale
NTS

Revision
A.1

Sheet Number

PV-03

Sheet Description

ELECTRICAL EQUIPMENT LAYOUTS

EXISTING JUNCTION BOX
EXISTING SPARE BELOW GRADE
CONDUIT TO BE UTILIZED
NEW AC DISCONNECT, ACD-01
NEW INVERTER, INV-01

EDGE OF ASPHALT
PAVEMENT

BUILDING C

NEW AC DISCONNECT, ACD-02
EXISTING JUNCTION BOX, POINT
OF INTERCONNECTION
EXISTING SPARE BELOW GRADE
CONDUIT TO BE UTILIZED

EDGE OF ASPHALT
PAVEMENT

BUILDING D

EXISTING AC DISCONNECT
EXISTING SUBPANEL

1

ELEC. EQUIPMENT LAYOUT - BLDG C

NOT TO SCALE



2

ELEC. EQUIPMENT LAYOUT - BLDG D

NOT TO SCALE



BUILDING E

EXISTING ELECTRICAL ROOM
EXISTING MAIN
DISTRIBUTION PANEL, MDP
NEW JUNCTION BOX

NEW AC DISCONNECT, ACD-03
EXISTING PAD MOUNTED
UTILITY TRANSFORMER

NEW AC DISCONNECT, ACD-04
EXISTING UTILITY METER

3

ELEC. EQUIPMENT LAYOUT - BLDG E

NOT TO SCALE



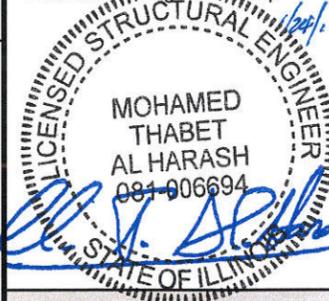
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Project
ESS-8132-LINCOLNSHIRE

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Reviewed By
GARRISON RIEGEL

Date
1/14/2019

Scale
NTS

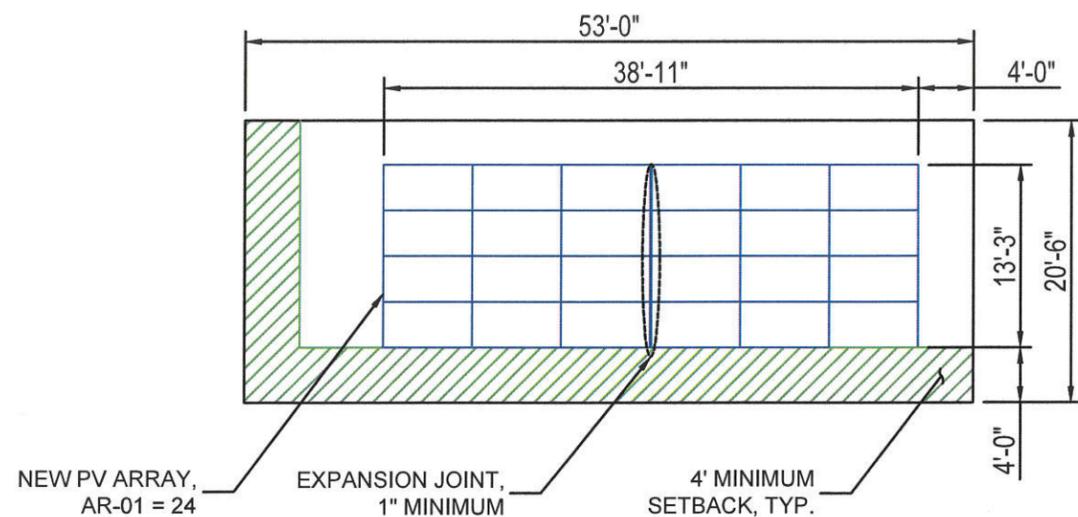
Revision
A.1

Sheet Number

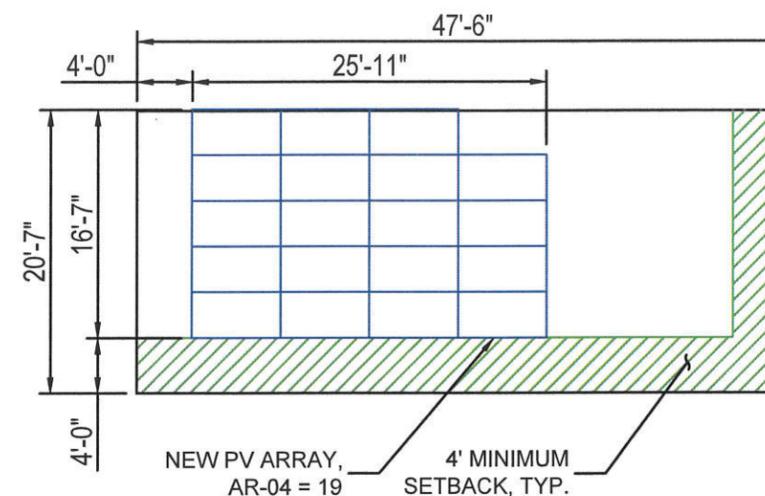
PV-04

Sheet Description

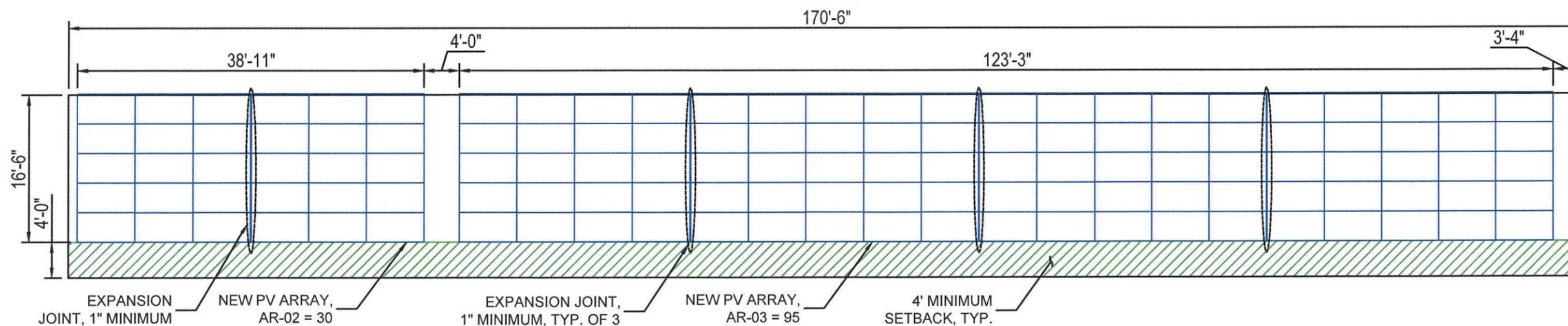
ARRAY LAYOUT



1 ARRAY LAYOUT- AR-01
NOT TO SCALE



3 ARRAY LAYOUT- AR-04
NOT TO SCALE



2 ARRAY LAYOUT- AR-02 & AR-03
NOT TO SCALE

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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

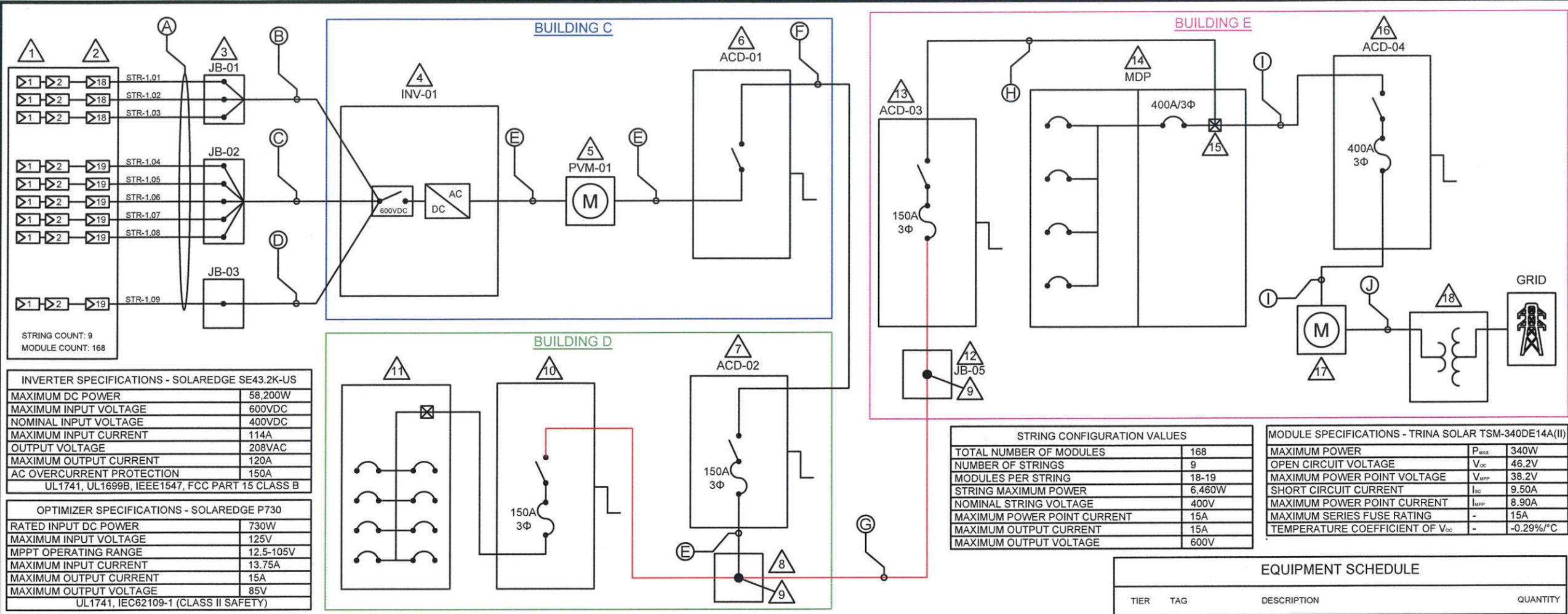
Date: 1/14/2019

Scale: NTS

Revision: A.1

PV-05

Sheet Description: ELECTRICAL SCHEMATIC



INVERTER SPECIFICATIONS - SOLAREEDGE SE43.2K-US

MAXIMUM DC POWER	58,200W
MAXIMUM INPUT VOLTAGE	600VDC
NOMINAL INPUT VOLTAGE	400VDC
MAXIMUM INPUT CURRENT	114A
OUTPUT VOLTAGE	208VAC
MAXIMUM OUTPUT CURRENT	120A
AC OVERCURRENT PROTECTION	150A
UL1741, UL1699B, IEEE1547, FCC PART 15 CLASS B	

OPTIMIZER SPECIFICATIONS - SOLAREEDGE P730

RATED INPUT DC POWER	730W
MAXIMUM INPUT VOLTAGE	125V
MPPT OPERATING RANGE	12.5-105V
MAXIMUM INPUT CURRENT	13.75A
MAXIMUM OUTPUT CURRENT	15A
MAXIMUM OUTPUT VOLTAGE	85V
UL1741, IEC62109-1 (CLASS II SAFETY)	

DESIGN CRITERIA

HIGH TEMP (2% AVG.)	33°C
EXTREME MIN	-24°C
LOCATION/SOURCE	CHICAGO O'HARE INTL AIRPORT / ASHRAE

CONDUIT SCHEDULE

TIER	CONDUIT TYPE	CONDUIT SIZE	CONDUIT LENGTH	CONDUCTORS	CONDUIT FILL	MAXIMUM CURRENT	OCPD WHEN REQUIRED	MAXIMUM VOLTAGE DROP	AMBIENT TEMP. CORRECTION FACTOR	CCC ADJUSTMENT FACTOR
A	FREE AIR	N/A	160'	18 x 10 AWG PV WIRE 1 x 10 AWG EGC	N/A	15.0A	---	1.20%	0.96	N/A
B	EMT	3/4"	160'	6 x 10 AWG THWN-2 1 x 10 AWG EGC	27.78%	15.0A	---	1.20%	0.96	0.80
C	EMT	1"	70'	10 x 10 AWG THWN-2 1 x 10 AWG EGC	26.93%	15.0A	---	0.52%	0.96	0.50
D	EMT	3/4"	45'	2 x 10 AWG THWN-2 1 x 10 AWG EGC	27.78%	15.0A	---	0.34%	0.96	1.00
E	EMT	2"	15'	3 x 3/0 AWG THWN-2 1 x 3/0 AWG THWN-2 (N) 1 x 6 AWG EGC	33.44%	120.0A	150.0A	0.09%	0.96	1.00
F	PVC (EXIST. CONDUIT)	2"	55'	3 x 3/0 AWG THWN-2 1 x 3/0 AWG THWN-2 (N) 1 x 6 AWG EGC	33.44%	120.0A	150.0A	0.34%	0.96	1.00
G**	---	---	---	EXISTING CONDUCTORS 3 x 3/0 AWG THWN-2 1 x 3/0 AWG THWN-2 (N) 1 x 6 AWG EGC	---	---	---	---	---	---
H	EMT	2"	15'	3 x 3/0 AWG THWN-2 1 x 3/0 AWG THWN-2 (N) 1 x 6 AWG EGC	33.44%	150.0A	150.0A	0.12%	0.96	1.00
I	EMT	3"	15'	3 x 500 KCMIL THWN-2 1 x 500 KCMIL THWN-2 (N) 1 x 3 AWG EGC	33.12%	400.0A	400.0A	0.10%	0.96	1.00
J	---	---	---	EXISTING CONDUCTORS 3 x 500 KCMIL THWN-2 3 x 500 KCMIL THWN-2 (N) 1 x 3 AWG EGC	---	---	---	---	---	---

STRING CONFIGURATION VALUES

TOTAL NUMBER OF MODULES	168
NUMBER OF STRINGS	9
MODULES PER STRING	18-19
STRING MAXIMUM POWER	6,460W
NOMINAL STRING VOLTAGE	400V
MAXIMUM POWER POINT CURRENT	15A
MAXIMUM OUTPUT CURRENT	15A
MAXIMUM OUTPUT VOLTAGE	600V

MODULE SPECIFICATIONS - TRINA SOLAR TSM-340DE14A(II)

MAXIMUM POWER	P _{max}	340W
OPEN CIRCUIT VOLTAGE	V _{oc}	46.2V
MAXIMUM POWER POINT VOLTAGE	V _{MPP}	38.2V
SHORT CIRCUIT CURRENT	I _{sc}	9.50A
MAXIMUM POWER POINT CURRENT	I _{MPP}	8.90A
MAXIMUM SERIES FUSE RATING	-	15A
TEMPERATURE COEFFICIENT OF V _{oc}	-	-0.29%/°C

EQUIPMENT SCHEDULE

TIER	TAG	DESCRIPTION	QUANTITY
1	MOD-001 ... MOD-168	SOLAR MODULES, TRINA SOLAR, 340W, TSM-340DE14A(II)	168
2	OPT-001 ... OPT-87	POWER OPTIMIZERS, SOLAREEDGE, P730	87
3	JB-01... JB-03	JUNCTION BOX, NEMA 3R TRANSITION FROM PV WIRE TO THWN-2 WIRE	3
4	INV-01	INVERTERS, 600VDC, 208VAC, 3Φ/4W, NEMA 3R, SOLAREEDGE SE43.2KUS (1)	1
5	PVM-01	PHOTOVOLTAIC PRODUCTION METER, LGATE 320, 208/120V, 3Φ/4W, NEMA 3R	1
6	ACD-01	AC DISCONNECT, 240VAC/VDC, 200A, 3Φ/4W, NEMA 3R, NON-FUSIBLE	1
7	ACD-02	AC DISCONNECT, 240VAC/VDC, 200A, 3Φ/4W, NEMA 3R, FUSED AT 150A	1
8	---	EXISTING JUNCTION BOX, NEMA 3R	1
9	---	TAP EXISTING CONDUCTORS IN JUNCTION BOX	3
10	---	EXISTING AC DISCONNECT, 208/120VAC/VDC, 200A, 3Φ/4W, NEMA 3R, FUSED AT 150A	1
11	---	EXISTING SUBPANEL, 208/120V, 200A, 3Φ/4W, MLO	1
12	JB-05	JUNCTION BOX, NEMA 1	1
13	ACD-03	AC DISCONNECT, 240VAC/VDC, 150A, 3Φ/4W, NEMA 3R, FUSED AT 150A	1
14	MDP	EXISTING MAIN DISTRIBUTION PANEL, 208/120V, 400A, 3Φ/4W	1
15	---	FEEDER TAP AT EXISTING SPARE LUGS/TERMINALS IN MDP	1
16	ACD-04	AC DISCONNECT, 240VAC/VDC, 400A, 3Φ/4W, NEMA 3R, FUSED AT 400A	1
17	---	EXISTING UTILITY METER, 208/120V, 3Φ/4W SERVICE, # 230 258 558	1
18	---	EXISTING COMED TRANSFORMER, PAD MOUNTED	1

NOTES AND CALCULATIONS

- NEC ART. 690.7(A) MAXIMUM PHOTOVOLTAIC SYSTEM VOLTAGE
 $V_{ADJ} = 46.2V \times \{ 100\% + [(-24 - 25°C) \times -0.29\%/°C] \}$
 $= 46.2V \times \{ 100\% + [(-49°C) \times -0.29\%/°C] \}$
 $= 46.2V \times \{ 100\% + 14.21\% \}$
 $= 46.2V \times 114.21\%$
 $= 52.8V$
- NEC ART. 690.8(A)(1) PHOTOVOLTAIC SOURCE CIRCUIT CURRENT:
 $I = 9.50A \times 1.25 = 11.88A$
- NEC ART. 690.8(A)(2) PHOTOVOLTAIC OUTPUT CIRCUIT CURRENT:
 $I = 11.88A \times 1 \text{ PV SOURCE CIRCUIT} = 11.88A$
- NEC ART. 690.8(B) PHOTOVOLTAIC AMPACITY AND OVERCURRENT DEVICE RATING:
 $I = 11.88A \times 1.25 = 14.84A$
 OCPD WHERE REQUIRED = 15A
- NEC ART. 690.72(C) MAXIMUM DC CONVERTER OUTPUT CIRCUIT CURRENT:
 $I = 15A \text{ MAX PER OPTIMIZER OUTPUT CIRCUIT}$
- NEC ART. 690.8(A)(3) INVERTER OUTPUT CIRCUIT CURRENT (EACH):
 INV-01 (SE43.2KUS)
 $I = 120A$
 $120 \times 1.25 = 150A$
 OCPD REQUIRED = 150A
 MINIMUM WIRE SIZE = 1/0 AWG
- AMBIENT TEMPERATURE CORRECTION FACTORS ARE DETERMINED USING NEC ART. 310.15(B)(2)(a)
- ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT CARRYING CONDUCTORS ARE DETERMINED USING NEC ART. 310.15(B)(3)(a)

Client Name & Address

PIVOT ENERGY
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ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
STORE 8132
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Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
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Project: ESS-8132-LINCOLNSHIRE

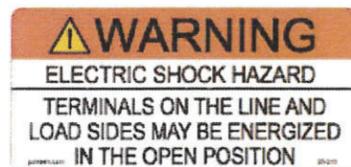
Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

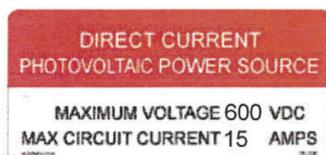
Date: 1/14/2019
Scale: NTS
Revision: A.1

Sheet Number: PV-06

Sheet Description: SAFETY LABELING



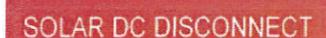
TO BE LOCATED ON DC DISCONNECT



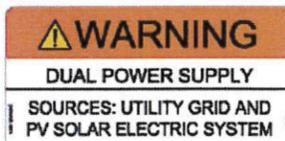
TO BE LOCATED ON DC DISCONNECT



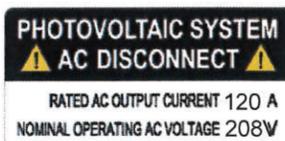
TO BE LOCATED ON JUNCTION BOX



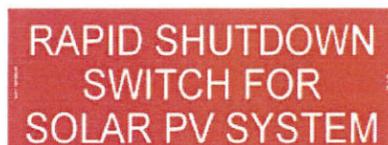
TO BE LOCATED ON DC DISCONNECT



TO BE LOCATED ON EXTERIOR OF MAIN ELECTRICAL PANEL AND METER



TO BE LOCATED ON AC DISCONNECT, AC BREAKER



EXTERIOR AC DISCONNECT OR INVERTER IF OUTSIDE



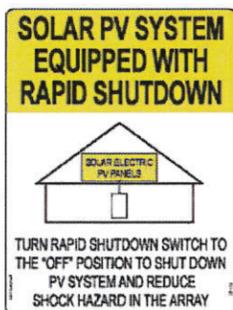
TO BE LOCATED AT BACKFED BREAKER



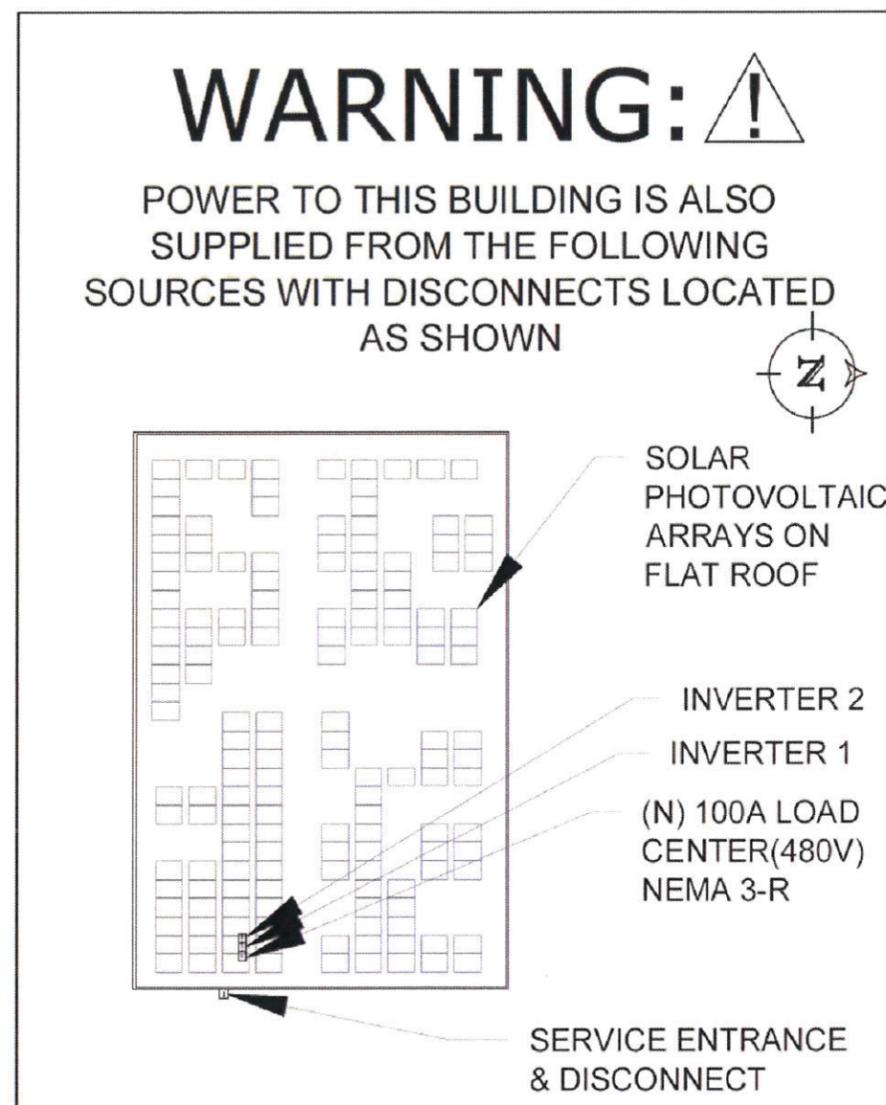
TO BE LOCATED AT MAIN SERVICE PANEL



TO BE APPLIED TO ALL INTERIOR AND/OR EXTERIOR CONDUIT AND RACEWAYS EVERY 10 FEET, AT TURNS AND ABOVE AND OR/BELOW ALL PENETRATIONS



TO BE LOCATED ON METER, OR 3' FROM SERVICE DISCONNECTING MEANS METER



EXAMPLE PLACARD

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.

PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE FASTENERS APPROVED BY THE LOCAL JURISDICTION



Three Phase Inverter
with Synergy Technology for the 208V Grid
For North America
SE43.2KUS

INVERTERS



Specifically designed to work with power optimizers

- Easy two-person installation – each unit mounted separately, equipped with cables for simple connection between units
- Balance of System and labor reduction compared to using multiple smaller string inverters
- Independent operation of each unit enables higher uptime and easy serviceability
- No wasted ground area: wall/rail mounted, or horizontally mounted under the modules (10° inclination)
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet or cellular GSM
- Fixed voltage inverter for superior efficiency (97%) and longer strings
- Integrated DC Safety Switch and optional surge protection & DC fuses (plus & minus)
- Built-in RS485 Surge Protection, to better withstand lightning events

www.solaredge.us

solar edge Three Phase Inverter with Synergy Technology
for the 208V Grid for North America SE43.2KUS

SE43.2KUS		
OUTPUT		
Rated AC Power Output	43200	VA
Maximum AC Power Output	43200	VA
AC Output Line Connections	4-wire WYE (L1-L2-L3-N) plus PE or 3 wire Delta	
AC Output Voltage Minimum-Nominal-Maximum ⁽¹⁾ (L-N)	105-120-132.5	Vac
AC Output Voltage Minimum-Nominal-Maximum ⁽¹⁾ (L-L)	183-208-229	Vac
AC Frequency Min-Nom-Max ⁽¹⁾	59.3 - 60 - 60.5	Hz
Maximum Continuous Output Current (per Phase) @208V	120	A
GFDI Threshold	1	A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes	
INPUT		
Maximum DC Power (Module STC), Inverter / Unit	58200 / 19400	W
Transformer-less, Ungrounded	Yes	
Maximum Input Voltage DC to Gnd	300	Vdc
Maximum Input Voltage DC+ to DC-	600	Vdc
Nominal Input Voltage DC to Gnd	200	Vdc
Nominal Input Voltage DC+ to DC-	400	Vdc
Maximum Input Current	114	Adc
Maximum Input Short Circuit Current	135	Adc
Reverse-Polarity Protection	Yes	
Ground-Fault Isolation Detection	350kΩ Sensitivity per Unit	
CEC Weighted Efficiency	97	%
Nighttime Power Consumption	< 12	W
ADDITIONAL FEATURES		
Supported Communication Interfaces	RS485, Ethernet, Cellular GSM (optional)	
Rapid Shutdown	NEC2014 and NEC2017 compliant/certified, upon AC Grid Disconnect	
RS485 Surge Protection	Built-in	
DC SAFETY SWITCH		
DC Disconnect	1000V / 3 x 40A	
DC Surge Protection	Optional, Type II, field replaceable	
DC Fuses on Plus & Minus	Optional, 25A	
STANDARD COMPLIANCE⁽²⁾		
Safety	UL1741, UL1741 SA, UL1699B, UL1998, CSA 2.22	
Grid Connection Standards	IEEE 1547, Rule 21, Rule 14 (H1)	
Emissions	FCC part15 class A	
INSTALLATION SPECIFICATIONS		
Number of units	3	
AC Output Conduit Size / Max AWG / Max PE AWG	2" / 4/0 / 4	
DC Output Conduit Size / Terminal Block AWG Range /	2 x 1.25" / 6-14 / 9 strings	
Number of Strings ⁽³⁾	Primary Unit: 37 x 12.5 x 10.5 / 940 x 315 x 260; Secondary Unit: 21 x 12.5 x 10.5 / 540 x 315 x 260	in / mm
Dimensions (H x W x D)	Primary Unit: 105.8 / 48; Secondary Unit 99.2 / 45	lb / kg
Weight	-40 to +140 / -40 to +60 ⁽⁴⁾	°F / °C
Operating Temperature Range	Fan (user replaceable)	
Cooling	< 60	dBA
Noise	NEMA 3R	
Protection Rating		
Bracket Mounted (Brackets Provided)		

⁽¹⁾ For other regional settings please contact SolarEdge support

⁽²⁾ Pending

⁽³⁾ Single input option per unit (up to 3AWG) available

⁽⁴⁾ For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>



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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019 Revision: A.1

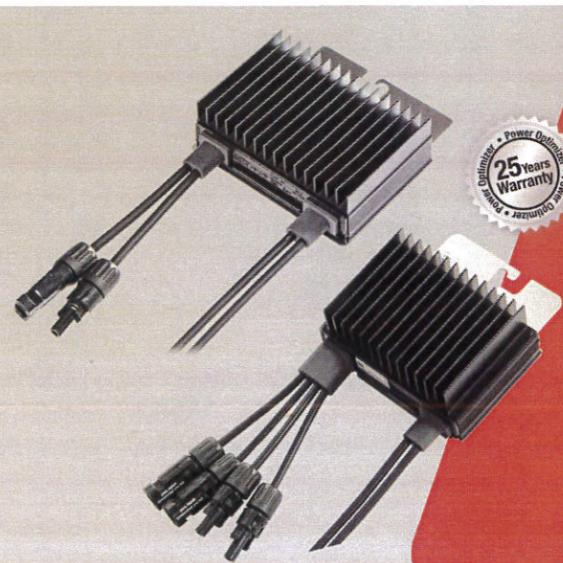
Scale: NTS

Sheet Number: DS-01

Sheet Description: INVERTER DATASHEET



SolarEdge Power Optimizer
Module Add-On for Commercial Installations
for North America P600 / P700 / P730 /
P800p / P800s



POWER OPTIMIZER

PV power optimization at the module-level
The most cost effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses and combiner boxes, over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Use with two PV modules connected in series or in parallel

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SolarEdge Power Optimizer Module Add-On For
Commercial Installations for North America P600 / P700 /
P730 / P800p / P800s

	P600 (for 2 x 60-cell PV modules)	P700 (for 2 x 72-cell PV modules)	P730 (for 2 x high power 72-cell PV modules)	P800p (for parallel connection of 2x 96-cell 5" PV modules)	P800s (for series connection of 2x high power or bi-facial modules)	
INPUT						
Rated Input DC Power ⁽¹⁾	600	700	730	800		W
Absolute Maximum Input Voltage (Voc at lowest temperature)	96	125		83	120	Vdc
MPPT Operating Range	12.5 - 80	12.5 - 105		12.5 - 83	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	10.1		11	14	12.5	Adc
Maximum DC Input Current	12.65		13.75	17.5	15.63	Adc
Maximum Efficiency				99.5		%
Weighted Efficiency				98.6		%
Oversvoltage Category	II					
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)						
Maximum Output Current	15			18		Adc
Maximum Output Voltage				85		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)						
Safety Output Voltage per Power Optimizer				1		Vdc
STANDARD COMPLIANCE						
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3					
Safety	IEC62109-1 (class II safety), UL1741					
Material	UL-94 (5-VA), UV Resistant					
RoHS	Yes					
INSTALLATION SPECIFICATIONS						
Compatible SolarEdge inverters	Three phase inverters					
Maximum Allowed System Voltage	1000					
Dimensions (W x L x H)	128 x 152 x 43 / 5 x 5.97 x 1.69	128 x 152 x 50 / 5 x 5.97 x 1.96		128 x 152 x 50 / 5 x 5.97 x 1.93		mm / in
Weight (including cables)	994 / 2.2	1064 / 2.34		1090 / 2.4	1064 / 2.34	gr / lb
Input Connector	MC4 Compatible			MC4 Compatible (Single or Dual Input) ⁽⁴⁾	MC4 Compatible	
Output Wire Type / Connector	Double Insulated; MC4 Compatible					
Output Wire Length	1.8 / 5.9	2.1 / 6.9		1.8 / 5.9	2.1 / 6.9	m / ft
Operating Temperature Range ⁽²⁾	-40 - +85 / -40 - +185					
Protection Rating	IP68 / NEMA6P					
Relative Humidity	0 - 100					

⁽¹⁾ Rated STC power of the module. Module of up to +5% power tolerance allowed.
⁽²⁾ For ambient temperature above +70 °C / +158 °F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Application Note for more details.

PV SYSTEM DESIGN USING A SOLAREEDGE INVERTER ⁽³⁾⁽⁴⁾		THREE PHASE 208V		THREE PHASE 480V	
Compatible Power Optimizers		P600, P700 & P730 ⁽⁵⁾	P800 ⁽⁶⁾	P600, P700 & P730	P800
Minimum String Length	Power Optimizers	8		13	
	PV Modules	16		26	
Maximum String Length	Power Optimizers	30		30	
	PV Modules	60		60	
Maximum Power per String		6000 ⁽⁶⁾	7200	12750 ⁽⁷⁾	15300
Parallel Strings of Different Lengths or Orientations		Yes			

⁽³⁾ P600, P700 and P730 can be mixed in one string. It is not allowed to mix P600/P700/P730/P800 with P300/P320/P400/P405 in one string.
⁽⁴⁾ In a case of odd number of PV modules in one string it is allowed to install one P600/P700 /P800 power optimizer connected to one PV module. When connecting a single module to the P800p the single input version should be used.
⁽⁵⁾ P730/P730/P800 design with three phase 208V inverters is limited. Use the SolarEdge Site Designer for verification.
⁽⁶⁾ For SE14 4kUS: It is allowed to install up to 6,500W per string when 3 strings are connected to the inverter and when the maximum power difference between the strings is up to 1,000W.
⁽⁷⁾ For SE33.3KUS: It is allowed to install up to 15,000W per string when 3 strings are connected to the inverter and when the maximum power difference between the strings is up to 2,000W.



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Client Name & Address

PIVOT ENERGY
224 N 7TH ST
ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
STORE 8132
200 PARKWAY DR
LINCOLNSHIRE, IL 60069

Professional Engineer Stamp



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019

Scale: NTS

Revision: A.1

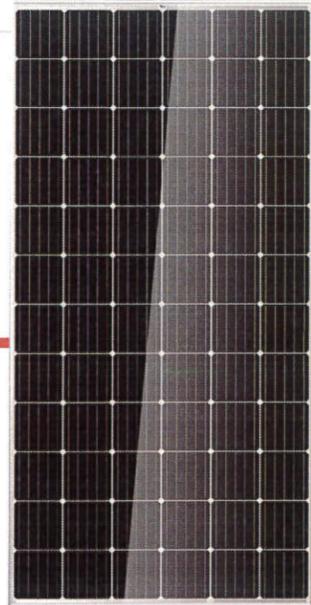
Sheet Number: DS-02

Sheet Description: OPTIMIZER DATASHEET

Mono Multi Solutions

THE TALLMAX^M plus⁺

FRAMED 72-CELL MODULE(1500V)



72 CELL
MONOCRYSTALLINE MODULE

340-375W
POWER OUTPUT RANGE

19.3%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading comprehensive solutions provider for solar energy. We believe close cooperation with our partners is critical to success. Trina Solar now distributes its PV products to over 60 countries all over the world. Trina is able to provide exceptional service to each customer in each market and supplement our innovative, reliable products with the backing of Trina as a strong, bankable partner. We are committed to building strategic, mutually beneficial collaboration with installers, developers, distributors and other partners.

Comprehensive Products And System Certificates

IEC61215/IEC61730/UL1703/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse gases Emissions Verification
OHSAS 18001: Occupation Health and Safety Management System



Trinasolar



Ideal for large scale installations

- Reduce BOS cost by connecting more modules in a string
- 1500V UL/1500V IEC certified



Maximize limited space with top-end efficiency

- Up to 193 W/m² power density
- Low thermal coefficients for greater energy production at high operating temperatures



Highly reliable due to stringent quality control

- Over 30 in-house tests (UV, TC, HF, and many more)
- In-house testing goes well beyond certification requirements
- 100% EL double inspection



Certified to withstand the most challenging environmental conditions

- 2400 Pa wind load
- 5400 Pa snow load

LINEAR PERFORMANCE WARRANTY

10 Year Product Warranty · 25 Year Linear Power Warranty

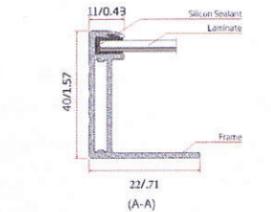
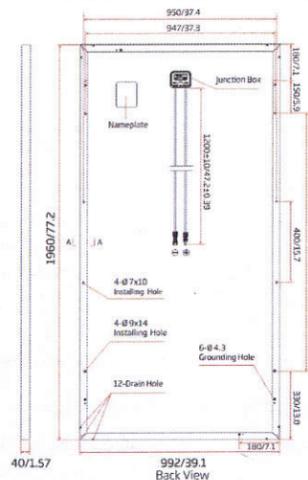


TALLMAX^M plus⁺

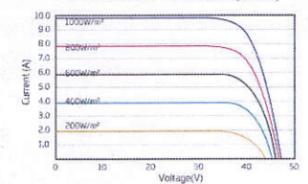
FRAMED 72-CELL MODULE(1500V)

PRODUCTS	POWER RANGE
TSM-DE14A(I) STD MONO	340-350W
TSM-DE14A(II) PERC MONO	355-375W

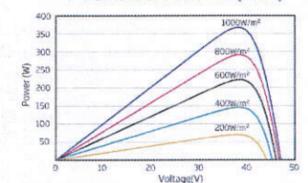
DIMENSIONS OF PV MODULE(mm/inches)



I-V CURVES OF PV MODULE(365W)



P-V CURVES OF PV MODULE(365W)



Trinasolar

ELECTRICAL DATA (STC)

	340	345	350	355	360	365	370	375
Peak Power Watts-P _{MAX} (Wp)*	340	345	350	355	360	365	370	375
Power Output Tolerance-P _{MAX} (W)	0 ~ +5							
Maximum Power Voltage-V _{MPP} (V)	38.2	38.5	38.7	38.8	39.0	39.3	39.7	40.0
Maximum Power Current-I _{MPP} (A)	8.90	8.96	9.04	9.14	9.24	9.30	9.33	9.37
Open Circuit Voltage-V _{OC} (V)	46.2	46.7	47.0	47.4	47.7	48.0	48.3	48.5
Short Circuit Current-I _{SC} (A)	9.50	9.55	9.60	9.65	9.70	9.77	9.83	9.88
Module Efficiency η _M (%)	17.5	17.7	18.0	18.3	18.5	18.8	19.0	19.3

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5
*Measuring tolerance: ±3%

ELECTRICAL DATA (NOCT)

	253	257	261	264	268	272	276	279
Maximum Power-P _{MAX} (Wp)	253	257	261	264	268	272	276	279
Maximum Power Voltage-V _{MPP} (V)	35.4	35.7	35.9	36.0	36.2	36.4	36.8	37.1
Maximum Power Current-I _{MPP} (A)	7.15	7.20	7.26	7.34	7.42	7.47	7.50	7.53
Open Circuit Voltage-V _{OC} (V)	42.9	43.4	43.7	44.1	44.3	44.6	44.9	45.1
Short Circuit Current-I _{SC} (A)	7.67	7.71	7.75	7.79	7.83	7.89	7.94	7.98

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

MECHANICAL DATA

Solar Cells	Monocrystalline 156.75 × 156.75 mm (6 inches)
Cell Orientation	72 cells (6 × 12)
Module Dimensions	1960 × 992 × 40 mm (77.2 × 39.1 × 1.57 inches)
Weight	22.5 kg (49.6 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Tempered Glass
Backsheet	White
Frame	Silver Anodized Aluminium Alloy
J-Box	IP 67 or IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²), 1200 mm (47.2 inches)
Connector	Trina TS4
Fire Type	Type 1 or Type 2

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	44°C (±2°C)
Temperature Coefficient of P _{MAX}	-0.39%/°C
Temperature Coefficient of V _{OC}	-0.29%/°C
Temperature Coefficient of I _{SC}	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40 ~ +85°C
Maximum System Voltage	1500V DC (IEC)
	1500V DC (UL)
Max Series Fuse Rating	15A (Power ≤ 350W)
	20A (Power ≥ 355W)

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

- 10 year Product Workmanship Warranty
- 25 year Linear Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

- Modules per box: 27 pieces
- Modules per 40' container: 648 pieces

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

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Client Name & Address

PIVOT ENERGY
224 N 7TH ST
ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
STORE 8132
200 PARKWAY DR
LINCOLNSHIRE, IL 60069

Professional Engineer Stamp



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019

Revision: A.1

Scale: NTS

Sheet Number:

DS-03

Sheet Description:

PV MODULE DATASHEET

Client Name & Address

PIVOT ENERGY
224 N 7TH ST
ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
STORE 8132
200 PARKWAY DR
LINCOLNSHIRE, IL 60069

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A.1	INITIAL PLAN SET CREATED	1/14/2019
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Project
ESS-8132-LINCOLNSHIRE

Designed By
POLINA KOSEVA

Reviewed By
GARRISON RIEGEL

Date
1/14/2019

Scale
NTS

Revision
A.1

Sheet Number

DS-04

Sheet Description

AC DISCONNECT DATASHEET

8-18 Switching Devices
Safety Switches

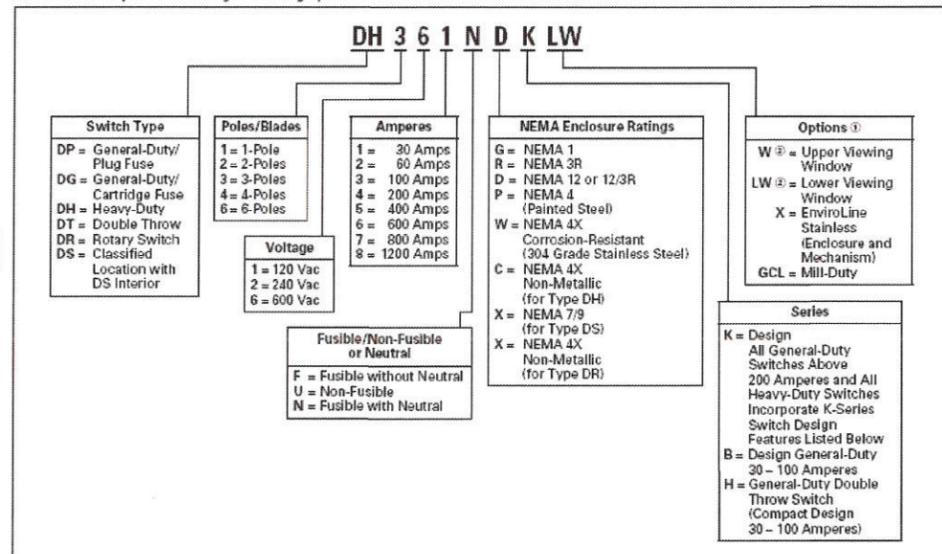


February 2007

Product Selection

Product Selection

Table 8-38. Safety Switch Catalog Numbering System



1 See Pages 8-8 through 8-11 for additional Flex Center options.

2 Effective August 2003, 30 - 100 ampere window switches are replaced by a full view window which allows blade position verification and blown fuse indication. See Page 8-37 for catalog numbers.

Note: This table is intended for use in breaking down existing catalog numbers. It is not intended for building new catalog numbers.



February 2007

Switching Devices
Safety Switches

8-15

Technical Data and Specifications

Dimensions

Note: Dimensions are for estimating purposes only.

Table 8-31. Heavy-Duty, Non-Fusible, 600 Volt, 3-Pole, Single Throw

Ampere Rating	NEMA 1, 3R					NEMA 12, 4X Stainless Steel, 4				
	Dimensions in Inches (mm)				Weight	Dimensions in Inches (mm)				Weight
	Width (W)	Height (H)	Depth (D)	Depth (D2)	Lbs (kg)	Width (W)	Height (H)	Depth (D)	Depth (D2)	Lbs (kg)
30	8.13 (206.5)	15.88 (403.4)	10.00 (254.0)	5.25 (133.3)	16 (7.264)	8.13 (206.5)	12.13 (308.1)	10.00 (254.0)	5.50 (139.7)	17 (7.718)
60	8.13 (206.5)	15.88 (403.4)	10.00 (254.0)	5.25 (133.3)	16 (7.264)	8.13 (206.5)	12.13 (308.1)	10.00 (254.0)	5.50 (139.7)	17 (7.718)
100	11.13 (282.7)	21.69 (550.9)	10.00 (254.0)	5.25 (133.3)	22 (9.988)	11.13 (282.7)	24.00 (609.6)	10.25 (260.4)	5.50 (139.7)	28 (12.712)
200	16.00 (406.4)	27.63 (701.8)	11.25 (285.8)	6.14 (156.0)	46 (20.884)	16.00 (406.4)	34.38 (873.3)	11.50 (292.1)	6.44 (163.6)	55 (24.97)
400	23.00 (584.2)	45.19 (1147.8)	12.63 (320.8)	7.27 (184.7)	110 (49.94)	23.00 (584.2)	57.63 (1463.8)	12.63 (320.8)	7.19 (182.6)	125 (56.75)
600	24.00 (609.6)	52.70 (1338.6)	14.25 (362.0)	8.95 (227.3)	135 (61.29)	24.00 (609.6)	63.00 (1600.2)	14.25 (362.0)	8.88 (225.6)	167 (75.818)
800	25.38 (644.7)	56.69 (1439.9)	14.25 (362.0)	8.95 (227.3)	158 (71.732)	25.38 (644.7)	71.75 (1822.5)	14.25 (362.0)	8.88 (225.6)	175 (79.45)
1200	41.47 (1053.3)	70.31 (1785.9)	19.94 (506.5)	12.44 (316.0)	430 (195.22)	41.47 (1053.3)	70.31 (1785.9)	19.94 (506.5)	13.51 (343.2)	475 (215.65)

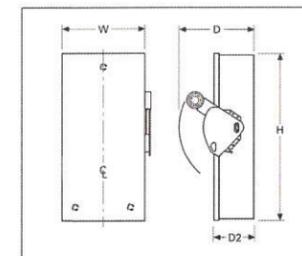


Figure 8-4. NEMA 1-3R Heavy-Duty 30 - 1200 Amperes

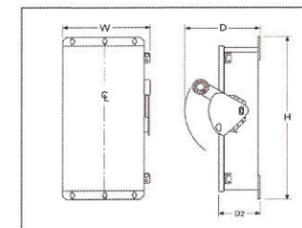


Figure 8-5. NEMA 4, 4X and 12 Heavy-Duty 30 - 1200 Amperes

Table 8-32. Heavy-Duty, Fusible, 240 Volt and 600 Volt, 3-Pole Solid Neutral, Single Throw

Ampere Rating	NEMA 1, 3R					NEMA 12, 4X Stainless Steel, 4				
	Dimensions in Inches (mm)				Weight	Dimensions in Inches (mm)				Weight
	Width (W)	Height (H)	Depth (D)	Depth (D2)	Lbs (kg)	Width (W)	Height (H)	Depth (D)	Depth (D2)	Lbs (kg)
30	8.13 (206.5)	15.88 (403.4)	10.00 (254.0)	5.25 (133.3)	20 (9.08)	8.13 (206.5)	17.88 (454.2)	10.00 (254.0)	5.50 (139.7)	22 (9.988)
60	8.13 (206.5)	15.88 (403.4)	10.00 (254.0)	5.25 (133.3)	20 (9.08)	8.13 (206.5)	17.88 (454.2)	10.00 (254.0)	5.50 (139.7)	22 (9.988)
100	11.13 (282.7)	21.69 (550.9)	10.00 (254.0)	5.25 (133.3)	27 (12.258)	11.13 (282.7)	24.00 (609.6)	10.25 (260.4)	5.50 (139.7)	30 (13.62)
200	16.00 (406.4)	27.63 (701.8)	11.25 (285.8)	6.14 (156.0)	52 (23.608)	16.00 (406.4)	34.38 (873.3)	11.50 (292.1)	6.44 (163.6)	61 (27.694)
400	23.00 (584.2)	45.19 (1147.8)	12.63 (320.8)	7.27 (184.7)	120 (54.48)	23.00 (584.2)	57.63 (1463.8)	12.63 (320.8)	7.19 (182.6)	135 (61.29)
600	24.00 (609.6)	52.70 (1338.6)	14.25 (362.0)	8.95 (227.3)	153 (69.462)	24.00 (609.6)	63.00 (1600.2)	14.25 (362.0)	8.88 (225.6)	203 (92.162)
800	25.38 (644.7)	56.69 (1439.9)	14.25 (362.0)	8.95 (227.3)	168 (76.272)	25.38 (644.7)	71.75 (1822.5)	14.25 (362.0)	8.88 (225.6)	213 (96.702)
1200	41.47 (1053.3)	70.31 (1785.9)	19.94 (506.5)	12.44 (316.0)	465 (211.11)	41.47 (1053.3)	70.31 (1785.9)	19.94 (506.5)	13.51 (343.2)	510 (231.54)

CA08101001E

For more information visit: www.eaton.com

EcoX

The new EcoX is an innovative, rail-less racking system, proven to organize the installation process. The flexible design offers a clean aesthetic, simplified logistics, and delivers a higher quality installation at a lower cost per watt.



Fast.

Modules drop in from above and there is never a need to reach over or walk on modules. Pre-assembled components and quick connections make EcoX easy to install.

Simple.

Universal components mount to standard framed modules. With a single socket size and a wide range of adjustment, it is quick and easy to install any array with a clean, finished look.

Supported.

The Ecolibrium field support team offers on-site installation training and ongoing technical support. And from project planning to logistics to installation, we are dedicated to customer service.



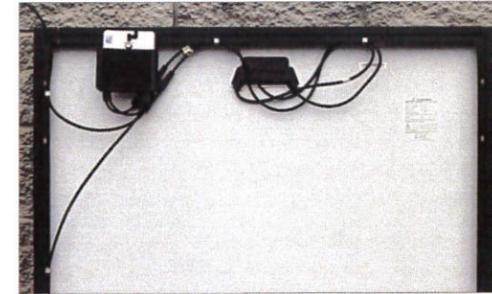
EcolibriumSolar

sales@ecolibrumsolar.com | US: 740-249-1877 | www.ecolibrumsolar.com



Aesthetic Design

A wide range of adjustment makes it easy to install a straight, level system. Components are designed to blend into the array, and the aesthetic skirt creates a finished look. Alternatively, a skirt free option is available to provide a more traditional look.



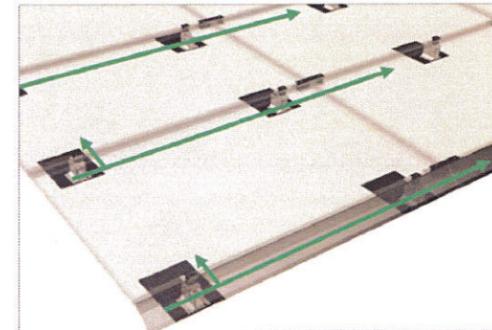
Cable Management

Whether installing with Microinverters, Power Optimizers, or String Inverters, EcoX provides wire management provisions to both prep the modules, and to route homerun or trunk cables throughout the array.



Flexible System Design

The EcoX Estimator is a powerful racking system design tool. The user inputs all site conditions and can layout multiple roof surfaces. The EcoX Estimator outputs a site specific design package with engineering specs and bill of materials.



Single Point Grounding

EcoX and approved modules create a continuously bonded system. The installer can connect a finished array to ground with a single bonding lug.

Technical Specifications

Technical Specifications	
Materials	Racking components: Aluminum, stainless hardware, dark bronze anodized upper surface, mill finish lower surfaces Flashings: Aluminum, black powder coated finish
Grounding/Bonding Validation	UL2703 - see installation manual for specific module approvals
Fire Resistance Validation	UL2703 - Class A, Type 1 and Type 2 modules
Mechanical Load Validation	UL2703 - see installation manual for specific module approvals
Flashing Validation	ICC-ES AC208/UL441 Rain Test for Roof Flashing
Adjustability	1" vertical range, 3.5" North/South range, connect anywhere in East/West direction
Warranty	15 years

sales@ecolibrumsolar.com | US: 740-249-1877 | www.ecolibrumsolar.com



RE.THINK
ELECTRIC

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Wood Dale, IL 60191
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Client Name & Address

PIVOT ENERGY
224 N 7TH ST
ST. LOUIS, MO 63101

Project Name & Address

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Professional Engineer Stamp



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
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Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019
Scale: NTS
Revision: A.1

Sheet Number: DS-05

Sheet Description: RACKING DATASHEET



COMMERCIAL SOLAR MONITORING SOLUTION

LGate 320



The LGate 320 is a three-phase electronic watt-hour meter for remote monitoring of solar photovoltaic systems. It features a smart communications module to automatically transmit meter data over cellular or Ethernet networks allowing system owners and operators to easily manage distributed solar assets.

The LGate 320 combines a revenue-grade, solid-state power meter with an advanced communications gateway. These components work in conjunction to remotely monitor the performance of commercial solar energy installation regardless of panel or inverter type. The LGate 320 is a one-piece completely under glass meter which installs easily using a standard socket base. Performance data is uploaded in near real-time to the Locus Energy SolarNOC monitoring platforms which provides a suite of tools and analytics for asset managers.

DATA COLLECTION

AC energy data is collected by the meter and passed to the communications module. Additional system performance data can be collected directly from meteorological sensors and supported inverters via RS-485 connections. All data is stored in non-volatile memory and then automatically uploaded to the SolarNOC platforms.

NETWORK CONNECTIVITY

The communications gateway inside the LGate 320 supports plug and play connectivity through a cellular network connection. Once the unit is installed and powered on, it will immediately begin transmitting data without any configuration. If cellular reception is weak or inconsistent, then communication via Ethernet cable may be used as an alternative option.

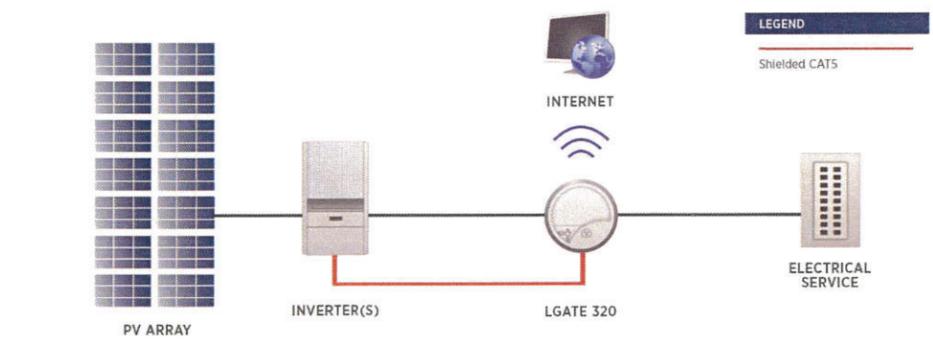
FEATURES:

- ANSI C12.20 power meter
- RS-485 inputs
- GSM cellular or Ethernet connectivity
- Over the air firmware updates
- Easy, low-cost installation
- Plug-and-play activation
- LCD display

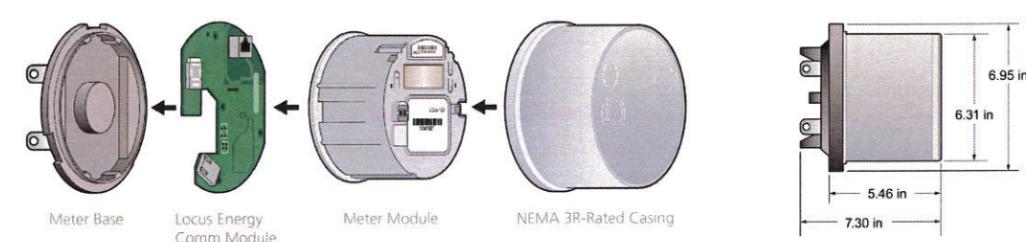
Learn more about the LGate 320 at:
www.locusenergy.com

LGATE 320 | WWW.LOCUSENERGY.COM

DIAGRAM – TYPICAL CONFIGURATION



DIMENSIONS



SPECIFICATIONS

DATALOGGER		POWER	
Processor	ARM9 embedded CPU	Accuracy	ANSI 12.20 (Class 0.2%)
OS	Custom version of Linux 2.6, OTA firmware updates	Voltage Inputs	120 - 480 VAC
Memory	128 MB RAM	Max. Current Input	320 A
Display	LCD screen	Service Type	Three phase, Wye or 4-wire Delta
		Socket Type	16S
I/O		COMPLIANCE	
RS485	2 wire and 4 wire	ANSI 12.20 class 0.2%	
Modbus		FCC Part 15B	
Zigbee		PTCRB	
		AT&T Carrier Compliance	
COMMUNICATIONS		PHYSICAL	
LAN	RJ45 10/100 Ethernet, full half duplex, auto polarity	Enclosure	NEMA 3R Type
Cellular	3G GSM	Weight	2 lbs 2 oz
Networking	DHCP or static	Dimensions	6.95" x 6.5" x 7.3"
		Environment	-20 to 60C, all-weather
		Warranty	5 year limited warranty

LOCUS ENERGY
A GENSCAPE COMPANY

www.locusenergy.com

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850 N Central Ave
Wood Dale, IL 60191
www.RethinkElectric.com
(630) 747-4587

Client Name & Address

PIVOT ENERGY
224 N 7TH ST
ST. LOUIS, MO 63101

Project Name & Address

EXTRA SPACE STORAGE
STORE 8132
200 PARKWAY DR
LINCOLNSHIRE, IL 60069

Professional Engineer Stamp



Revision	Description	Date
A.1	INITIAL PLAN SET CREATED	1/14/2019
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---

Project: ESS-8132-LINCOLNSHIRE

Designed By: POLINA KOSEVA

Reviewed By: GARRISON RIEGEL

Date: 1/14/2019

Revision:

A.1

Scale: NTS

Sheet Number:

DS-06

Sheet Description:

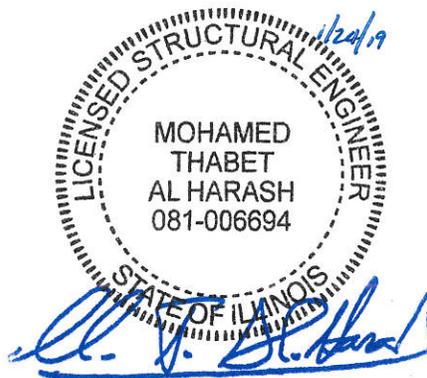
PV METER DATASHEET



ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

ESS – Lincolnshire
200 Parkway Drive
Lincolnshire, IL 60069

Solar Array
Structural Calculations



Prepared for:

Mr. Garrison Riegel
Rethink Electric
850 N. Central Avenue
Wood Dale, IL 60191

Project # 19.131
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January 2019

Engineered Solutions, LLC
3368 Carriage Crossing
Saint Charles, MO 63301



Mr. Garrison Riegel
Rethink Electric
850 N. Central Avenue
Wood Dale, IL 60191

January 24, 2019

RE: 8132 ESS Lincolnshire – 200 Parkway Drive, Lincolnshire, IL 60069
Project #: 19.131

Mr. Riegel:

Pursuant to your request, we have reviewed your drawings and the building for the installation of the solar array at the above-referenced address.

Based on our review, we have determined that the existing roof structure is capable of supporting the additional loading of the solar array. The condition and capability of the structure is sufficient for all loading conditions in accordance with the requirements of ASCE 7-05 and IBC 2009.

In addition, the total weight of the proposed arrays in the proposed locations does not cause a greater than 10% increase in lateral seismic forces experienced by any of the lateral load resisting elements that this weight is tributary to, in accordance with the 2009 International Building Code.

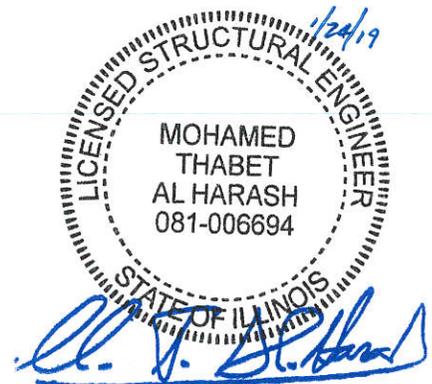
Please feel free to contact me if you have any comments or questions.

Respectfully yours,

Mohamed T. AL HARASH

Dr. Mohamed T. AL HARASH, Sc.D., P.E., S.E. - NCEES
Director of Operations

cc: Matthew Boyce, PE
Principal





Calculation Sheet

Project #: 19.131 Date: 1/24/19
 Project Name: **ESS - Lincolnshire** Calc Type: Gravity

Building Information

Building Length	272 ft
Building Width	30 ft
Building Height	12 ft
Array L	226 ft
Array W	16 ft
Array Unit Weight	2.8 psf
Number of Panels	168 ea

Code Information

S ₁	0.18
S _s	0.54
Occupancy	II
Site Class	D
ASCE 7-05	

Building Construction Type: Metal Frame
 Unit Weight 40 psf

Increased Wind Loads Due to the addition of Solar Panels (AREA ABOVE PARAPET)

Building Wall Area	3264
Solar Area (surface)	226
Area Increase	< 10% n/a - pitched roof

Gravity loads are checked for the individual load carrying member - critical case. (see attached)



Calculation Sheet

Project #: 19.131
 Project Name **ESS - Lincolnshire**

Date: 1/24/19
 Calc Type: Seismic

Seismic Weight

Roof DL	8 psf		
Roof Weight	65.3 k		
Wall Weight	289.9 k		
Total Weight	355.2 k		
Solar Weight	10.1 k		
W = Solar/Total	2.85%	<	10% OK

Horizontal Seismic Force

$$F_p = \frac{(0.4 \times a_p \times S_{ds} \times W_p) \times (1 + 2 \times z/h)}{(R_p/I_p)} \quad (13.3-1)$$

$$S_{ds} = 2/3 S_{ms} \quad (11.4-3)$$

$$S_{ms} = F_a \times S_s \quad (11.4-1)$$

$$F_a = 1.37 \quad (\text{from Table 11.4-1})$$

$$S_{ms} = 0.7398$$

$$S_{ds} = 0.4932$$

$$R_p = 1.5 \quad (\text{Table 13.5-1})$$

$$I_p = 1 \quad (13.1.3)$$

$$a_p = 1 \quad (\text{Table 13.5-1})$$

$$z/h = 1$$

Difference in height between roof & solar array

$$W_p = 10125 \quad \text{lbs}$$

$$F_p = 3995 \quad \text{lbs}$$

$$F_p = a \times W_p$$

$$a = 39\%$$

$$\text{For one panel, } F_p = 24 \quad \text{lbs}$$

$$\# \text{ of supports} = 4 \quad \text{ea}$$

$$F_p \text{ (per support)} = 6 \quad \text{lbs}$$

The lateral force resisting elements (ext. shear walls) experience an increase of 3995 lbs total ultimate load for the entire array.

These elements experience an increase of 6 lbs locally and are more than adequate.

Project: ESS 8132 LINCOLNSHIRE
Sheet: 1/1
Date: 1/24/19 By: MSB



ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

CHECK EXISTING ROOF PURLINS

$D = 8 \text{ psf}$
 $SNOW = 2.5 \text{ psf}$ $ROOF SNOW = 17.5$
 $SOLAR = 3.0 \text{ psf}$

PURLIN INFO:

$4 \times 2\frac{1}{2} \times 16 \text{ GA}$ $I_x = 1.377$
 $10' \text{ SPAN}$ $S_x = 0.688$
 $5' \text{ SPACING}$

FOR Z SECTION

$$\begin{aligned} M_{ALLOW} &= 0.6 \times S_x \times f_y \\ &= 0.6 \times 0.688 \times 55,000/12 \\ &= 1892 \text{ FT-LB} \end{aligned}$$

MAX (+) MOMENT @ MIDSPAN

$$\begin{aligned} M &= wL^2/24 = 28.5 \times 5 \times 10^2/24 \\ &= 594 \text{ FT-LB} \end{aligned} \quad \underline{\underline{OK}}$$

MAX (-) MOMENT @ SUPPORT

$$M = wL^2/12 = 1188 \text{ FT-LB} \quad \underline{\underline{OK}}$$

∴ EXISTING ROOF IS ADEQUATE
TO SUPPORT PV PANEL ARRAY









Solar modules
will be obscured
by existing trees



Solar modules
will be obscured
by existing trees



Solar modules will be located on this building behind the existing trees

Solar modules
will be obscured
by existing trees



Solar modules
will be obscured
by existing trees





Solar modules will be obscured by existing building facade

Solar modules will be obscured by existing building facade



- b. A wildlife study shall be conducted by a qualified professional not in the employ of the Applicant, such as an ornithologist or wildlife biologist, to determine if there is any potential impact the SWES may present to migratory birds and wildlife species. In cases where the wildlife study indicates that a protected natural resource will be adversely affected by an SWES, the Village shall consult with the Illinois Department of Natural Resources (IDNR), in accordance with Title 17 of the Illinois Administrative Code Part 1075, to determine whether the protective measures outlined in the study are deemed acceptable. A final decision on the application shall not be made until such consultation with IDNR is resolved.
- G. **COMPLIANCE:** Every SWES must maintain compliance with the plans and specifications approved by the Village Board of Trustees. If a SWES becomes non-compliant with approved plans and specifications due to, but not limited to: discoloration, cracking, missing components, rusting, settling, damage or general disrepair; then the owner/operator of the SWES and the owner of the building or lot on which the SWES is located will be jointly and severally responsible for remedying the specific non-conformities. These non-conformities must be remedied within forty-five (45) days after receipt of written notice sent by the Village to the owner/operator of the SWES and the owner of the building or lot. Failure to remedy all of the cited non-conformities, within the forty-five (45) day time period, shall be punishable by a fine not exceeding the amount described per day that the violation continues, pursuant to Chapter 4 of Title 1 of the Village Code.
- H. **ENGINEERING CERTIFICATION:** No SWES may be located within the Village unless the Applicant has provided to the Village the written certification of a professional engineer licensed by the State of Illinois that the structure upon which the facility is located is sufficient from a structure engineering standpoint to bear the load. In instances of free-standing structures, this shall include a certificate that the foundation on which the structure is built, is constructed and engineered to take into account the existing soil conditions. A licensed professional engineer shall also certify that in the event of a fall or collapse, that the facility is designed and manufactured to fall entirely within the boundary lines of the lot on which it is located, and that installation meets or exceeds the maximum construction and installation standards set forth by the manufacturer.

6-17-6: SOLAR ENERGY SYSTEMS (SES)

- A. GENERAL REGULATIONS: A Solar Energy System (SES), as referenced in Section 6-17-2, may be erected or installed only in accordance with this Title 6, Chapter 17 of the Village Code. Any SES shall conform to all Federal laws and regulations concerning its use and operation, and may be installed only in the following zoning districts and standards:
1. Shall be permitted in the R1, R2, R2A, and R3 Zoning Districts. Any attached single-family residential development and mixed-use development which contains residential housing units shall require review by the Architectural Review Board prior to being approved or denied by the Village Board.
 2. Shall be permitted in the R4, R5, R6, B1, B2, E, and O/I Zoning Districts, subject to review by the Architectural Review Board prior to being approved or denied by the Village Board.
- B. PERMITS: No such Solar Energy System (SES), as referenced in Section 6-17-2, shall be erected, constructed, altered or relocated without first obtaining a building permit from the Department of Community Development. An application for a building permit shall be made upon forms provided by the Department of Community Development, signed by the Applicant, and contain or have attached thereto the following information:
1. Name of person, firm, corporation or association constructing and erecting the solar energy system.
 2. Site plan showing the location of the solar energy system upon the lot and copies of the manufacturer's specification for the solar energy system.
 3. Name, address, and telephone number of the applicant, and the name of a responsible party in the case of corporate applications.
 4. Written consent of the owner of the building structure or land on which the solar energy system is to be erected.
 5. Elevation(s) of the existing structural improvements and the proposed solar energy system showing the size and design details.
 6. Four (4) sets of plans and specifications showing the method of construction, location, support, and attachment to the structure.
 7. If required by the Department of Community Development, a copy of stress sheets and calculations prepared by a licensed professional

engineer showing that the solar energy system is designed for the deadload, in the amount required by the manufacturer and all other laws and ordinances of the Village.

8. A line drawing of the electrical components, as supplied by the manufacturer, in sufficient detail to allow for a determination that the manner of installation conforms to the Village Code.
9. Such other information that the Department of Community Development shall require to show full compliance with this and all other ordinances of the Village.

C. PLACEMENT OF SES:

1. Shall be limited to roof-mounted installations on a permitted structure, provided that the installation method shall be compatible and harmonious with the aesthetic qualities of the structure to which the device is attached so as to not abruptly alter the architectural character of the structure.
 - a. Shall be attached directly to the exterior of the roof structure to ensure the lowest profile permissible. All components of the SES shall not extend above the maximum building height permitted by the zoning district and beyond the existing limits of the roof.
 - c. No component of the SES, including mounting racks, shall be permitted to tilt or rotate at a slope greater or less than the roof to which the device is attached.
 - d. Shall be designed and installed to prohibit Sun Reflection towards vehicular traffic and any habitable portion of an adjacent structure. Sun Reflection onto an adjacent roof shall be acceptable.
 - e. Shall occupy not more than fifty-percent (50%) of the outside roof area to which the device is attached. If an SES is installed on multiple roofs on a single structure, the SES shall occupy not more than thirty-percent (30%) of each outside roof area to which the device is attached.
 - f. With the exception of Solar Panels, mounting racks, pipe runs, and electrical wire connections, no portion of an SES shall be installed on the outside of the roof.

- g. No trees or vegetation shall be removed or pruned to reduce or eliminate shading from the sun, unless warranted for good forestry practices, as determined by the Village Forester.

6-17-7: DECOMMISSIONING AND RESTORATION PLAN:

- A. **MICRO WIND ENERGY SYSTEMS (MWES) AND SOLAR ENERGY SYSTEMS (SES):** When a MWES or SES is not operated for a continuous period of at least nine (9) months, such Alternative Energy Collection System and all related equipment shall be deemed abandoned by the Village. The owner of such Alternative Energy Collection System shall remove all items within forty-five (45) days following receipt of written notification that removal is required. Such notice shall be sent by registered or certified mail, return receipt requested, by the Village to such owner at the last known address of such owner. A principal structure or lot for sale, lease, or in foreclosure may be exempt, provided that the MWES and/or SES are maintained pursuant to this Title 6, Chapter 17 of the Village Code.
- B. **SMALL WIND ENERGY SYSTEM (SWES)**
 - 1. Prior to receiving a Special Use Permit for the installation of a SWES, the owner and/or operator must include a Decommissioning and Restoration Plan with the application request to ensure such Alternative Energy Collection System and all related equipment is properly decommissioned. The owner of the SWES and the underlying property owner(s) shall be jointly liable for the removal of all equipment associated with the SWES at the end of the Special Use permit period, if any, the useful life of the facility, or when the facility is abandoned or otherwise out of operation for continuous period of at least nine (9) months. The Decommissioning and Restoration Plan shall state how the facility will be decommissioned and how the site will be restored, and shall further provide:
 - a. Provisions for removal of the SWES and all related equipment, including those below the soil surface.
 - b. Provisions for the restoration of the property and improvements upon completion of the decommissioning of the Alternative Energy Collection System and all related equipment.

**REQUEST FOR BOARD ACTION
Architectural Review Board
March 19, 2019**

Subject: Ravinia Plumbing - 575 Bond Street

Action Requested: Approval of Parking Lot Design, Fence, Landscaping, and Lighting Plans

Petitioner: Ravinia Plumbing

Originated By/Contact: Tonya Zozulya, Planning & Development Manager

Advisory Board Review: Architectural Review Board

Background:

- Ravinia Plumbing, petitioner and contract purchaser, seeks to construct a new parking lot on the existing office/industrial property at 575 Bond Street, as shown on Figure 1 and attached location map. The request is supported by current property owner 575 Bond Street Venture LLC.
- The 4-acre property in the Lincolnshire Business Center was developed in 1989 with an office/warehouse building for Pacific Fasteners, and later occupied by Agie Limited and Faxitron X-Ray. The current user is 3L Corporation (3L). 3L plans to relocate into a smaller facility once Ravinia Plumbing moves in. The property is zoned O/ld Office-Industrial.

Project Overview & Staff Comments:

- The petitioner proposes to add 85 new parking spaces to the existing 17-space lot, for a total of 102 spaces along the east side of the building to accommodate its growing business. Ravinia Plumbing currently has 78 employees and a fleet of 62 vehicles (see attached Document 2).
- The new parking lot is proposed to be built east of the existing building. The new lot will be accessed via an existing curb cut off Margate Drive.



- The landscape plan shows a number of new deciduous and evergreen trees will be planted, including Red Maple, Hackberry, and Honey Locust trees, which are considered “significant” trees by the Lincolnshire Village Code (code), as well as several evergreen tree species, totaling 98.5 caliper inches. According to the tree survey performed by a certified arborist, the proposed parking expansion will result in the removal of a number of unhealthy, dead, or dying trees as well as healthy trees (which include Red Maple and Black Walnut “significant” species, totaling 143 caliper inches). Trees that are unhealthy, dead, or dying are not required to be replaced per Ordinance #18-3787-215, which temporarily suspends tree replacement requirements for commercial properties until December 31, 2020. Removal of healthy trees must either be (1) replaced on-site where feasible (i.e., not necessarily in the same location as the trees to be removed) without causing overcrowding, or (2) offset by a monetary payment to the Village’s Tree Bank to be used by the Village for tree/park-related purposes on other Village properties. The value of replacement trees is calculated per code requirements of \$150 per caliper inch of “significant” trees and \$50 per inch of “non-significant” trees. The petitioner opted to provide a \$29,525 payment into the Tree Bank, due at permitting, based on the difference in value between the trees proposed to be removed and the trees proposed to be planted.
- The petitioner is proposing to install a new 6’ vinyl fence of an open style (at least 40% open) surrounding the new parking lot, with a gate along Margate Drive. The proposed fence color is almond to coordinate with building materials. The petitioner indicated a fence is required for security purposes to protect their service vehicles, which will be parked outside overnight, from theft and vandalism. The fence will be screened with a variety of trees and bushes. The fence location, height, opacity, design, and landscaping meets code. **Staff requests the ARB’s determination whether additional trees should be planted on-site in suitable locations as a condition of the ARB’s approval.**
- Ravinia Plumbing proposes to replace one existing light pole and install four new light poles on the property. All five poles will have a uniform design and pole height of 20’. The photometric plan indicates lighting intensity at the property line meets code.
- The petitioner has obtained preliminary approvals from the Lake County Stormwater Management Commission (SMC) regarding on-site detention. A final SMC permit will be required prior to permit issuance.

Approval Process:

The Architectural Review Board has the final authority to review code-compliant site plan improvements per Code Section 6-14-5.

Motion:

The Architectural Review Board moves to approve the proposed parking, fence, landscaping, and lighting plans for Ravinia Plumbing at 575 Bond Street, as presented in the packet submitted by Ravinia Plumbing, with the cover letter dated March 13, 2019, and further subject to. . .

{Insert any additional conditions or modification desired by the Architectural Review Board}

Reports and Documents Attached:

- Document 1: Location Map.
- Document 2: Petitioner's cover letter and presentation packet, prepared by Ravinia Plumbing, with the cover letter dated March 13, 2019.

Meeting History

Architectural Review Board (current):	March 19, 2019
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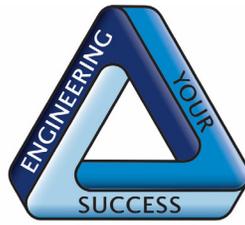


Map created on February 8, 2019.

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Disclaimer: This map is for general information purposes only. Although the information is believed to be generally accurate, errors may exist and the user should independently confirm for accuracy. The map does not constitute a regulatory determination and is not a base for engineering design. A Registered Land Surveyor should be consulted to determine precise location boundaries on the ground.



J. CONDON & ASSOCIATES, INC.
CONSULTING ENGINEERS

March 13, 2019

Ms. Cherise Kennerley
ARB Chairman
Village of Lincolnshire
One Olde Half Day Road
Lincolnshire, IL 60069

Re: 575 Bond Street – Parking Improvements
ARB Petition
RAVI-18077-3

Dear Ms. Kennerley:

On behalf of the applicant, Ravinia Plumbing, our office would like to request ARB review and approval of the proposed parking lot improvements at 575 Bond Street. Ravinia Plumbing & Heating is a 3rd generation family owned business started 90 years ago in 1928. When Mr. David Ariano, the current owner, joined his father in the business 24 years ago, they had 16 employees. Today they have 78 employees and continue to grow. While they have been happy in their current Highland Park location for the last 10 years, they have outgrown their parking needs which has led them to the building at 575 Bond St. They currently have 62 vehicles in their fleet with another 9 vehicles on order.

The existing north lot contains 17 parking stalls that will be used by the office staff. The proposed 85 stall parking lot expansion will be used solely by the field technicians who will pull their car into a space in the proposed lot and get into their assigned vehicle that will be stored in the lot overnight. There will be very little traffic in and out of the proposed lot during the day as the technicians are in the field working all day. Please refer to the calculations below for required parking stalls.

Office Space	3,500 sf	1 space/250 sf = 14 spaces required
Warehouse	18,160 sf	1 space/2,000 sf = (9.08) 10 spaces required

Total Stalls Required = 24 Stalls

Existing parking 17 Stalls
Proposed parking 85 Stalls
Total Parking 102 Stalls (4 ADA Accessible Stalls included)

The parking lot improvement plans, landscaping plans and lighting plans have been forwarded to the Village for review and approval. The project includes a 6' tall fence with 2" pickets around the perimeter of the proposed parking lot with gate access near the southeast corner of the building. The owner met with a representative of the police department and incorporated his suggestions on the appropriate landscaping to deter intruders (material 3' tall spaced 4' apart). Four new light poles are proposed in the parking lot area.

A tree survey has been performed and the Village Arborist has provided calculations for the required tree replacement. At the time of permitting, Mr. Ariano will be supplying the \$29,525.00 required for the Village Tree Bank or will work with the Village to plant additional trees at the site and supply a check for the deficit balance.

We have been working with Mr. Robert Gardiner at the Lake County SMC. He has confirmed by email that additional detention will be required, however we believe it will be provided within the limits of the existing basin. I have included a copy of his review email and will continue to supply review and approval information from his office.

I trust this is all you need to complete your review. Please let me know if you have any questions or if you require additional information.

Sincerely,

J. CONDON & ASSOCIATES, INC.



Meghan A. Michel, P.E.
Project Manager

cc: Mr. David Ariano
Ms. Tonya Zozulya

Design Special Provisions

The Standard Specifications for Road and Bridge Construction prepared by the Department of Transportation of the State of Illinois (latest edition), Supplemental Specifications, the Standard Specifications for Water and Sewer Main Construction in Illinois (latest edition) and the Illinois Urban Manual (blue book) as published by the IEPA shall govern the construction of this project.

In addition, the following special provisions supplement the said specifications, and in case of conflict with any part or parts of said specifications, these special provisions shall take precedence and shall govern.

1. Scope of Work

The proposed improvement consists of supplying all the necessary labor, material and equipment to satisfactorily construct and install all improvements according to the plans designated "575 Bond Street."

2. Construction Of Underground Utilities

A. Excavation: Where working conditions and right-of-way permit, pipe line trenches with sloping sides may be used.

The slopes shall not extend below the top of the pipe, and the trench excavations below this point shall be made with vertical sides with widths not exceeding those specified herein for the various sizes of pipe.

Open-cut trenches shall be sheeted and braced as required by the governing state, federal laws and municipal ordinances, and as may be necessary to protect life, property or the work.

Where firm foundation is not encountered at the grade established, due to unsuitable soil, all such unsuitable material shall be removed and replaced with approved compacted granular material.

B. Width of Trenches: The maximum width of the trench at the top of the pipe shall be as follows:

Nominal Pipe Sizes (inches)	Trench Widths (inches)
12 or smaller	30
14-18	36
20-24	42
27-30	48
33 and larger	1-1/3 times pipe O.D.

C. Removal of Water: Contractors shall, at all times during construction, provide and maintain ample means and devices with which to remove and properly dispose of all water entering the excavations. No sanitary sewer shall be used for disposal of trench water, unless specifically approved by the Village Engineer and then only if the trench water does not ultimately arrive at existing pumping or sewage treatment facilities.

D. Bedding of Pipe: All pipe shall be installed on a bedding of approved, compacted granular material unless otherwise approved by the Village Engineer. The bedding material shall be installed as per the typical trench backfill detail.

E. Trench Backfill: Whenever the excavation is in or within 2 feet of existing or proposed streets, parking areas, driveways, sidewalks or other paved areas, the trench shall be backfilled with approved selected granular material compacted in place. The granular material shall consist of CA-6 and extend away from the back of curb or any edge of pavement at a 1 to 1 slope. The top 12 inches of the backfill shall be filled with road gravel or crushed stone and maintained as a temporary surface for the normal use of the area when the trench is in existing pavements.

F. Restoration of Drainage: As soon as possible after backfilling the trench, all ditching, grading and shaping necessary to restore the original drainage in the area of work shall be performed. Culverts removed during the course of the work shall be replaced as soon as practical after backfilling is complete.

G. Utilities: The contractor shall notify all utilities prior to the installation of any pipelines. Where conflicts exist between underground utilities and the proposed underground pipeline requiring a revision to the plans, such construction shall not be undertaken until such changes are approved by the Village Engineer in writing.

3. Inspection

All improvements shall be subject to inspection by a duly authorized and qualified Owner's Representative both during the course of construction and after construction is complete. The inspector shall have authority over materials of construction, methods of construction and workmanship to ensure compliance with working drawings and specifications. The contractor shall provide for reasonable tests and proof of quality of materials as requested by the inspector. Upon due cause, which shall include weather conditions, workmanship or non-adherence to the approved plans and specifications, the inspector shall have the authority to stop construction.

4. Storm Sewers

Storm sewers shall be of reinforced concrete pipe meeting the requirements of ASTM C-76. Pipe shall be Class III for depths less than or equal to 14 feet and Class IV for depths exceeding 14 feet or less than 3 feet under paved surfaces. All joints shall be completed with mastic joint materials.

OR

Corrugated Polyethylene (HDPE) Pipe with Smooth Interior. Pipes and fittings shall meet the requirements of AASHTO M-294 (12" and larger), Type S (corrugated

outside smooth inside, 4" -48"). The joints shall be bell and spigot having a factory installed Elastomeric rubber "O-ring" gasket which meets ASTM F-477.

PVC storm sewer shall be SDR 26 ASTM D3034 with ASTM D3212 joints.

5. Storm Sewer Frames And Grates

All frames and grates not falling in the flow line of the curb and gutter in paved areas shall be R-1713 or approved equal with the word "Storm" cast in the lid for closed lid structures and R-2504 for open lid structures. All frames and grates in the curb shall be R-3502-A or approved equal. All frame and grates not located in paved areas shall be R-4340-B for open lid structures and R-1713 for closed lid.

6. Earth Excavation

This item shall include stripping and stockpiling of all topsoil in areas designated by the Owner. All material deposited in embankment areas shall be compacted under the direction of the municipal inspector. Topsoil shall be stripped in all fill areas before placement of material. All excess material shall be disposed of off-site at an approved facility by the contractor unless otherwise directed by the Owner.

7. Topsoil Placement

The contractor shall place topsoil to a minimum depth of 6 inches over all unpaved disturbed areas ready for landscaping. The surface of the topsoil shall be free from clods, stones, sticks and debris. Placement shall include spreading, cultivating, lightly compacting, dragging and grading. Topsoil, when placed, shall be dry enough so as not to puddle or bond. Topsoil shall not be placed when the subgrade is frozen, excessively wet, or in any other condition detrimental to proper grading. Remove all foreign matter and soil clods larger than 1" in diameter. If undesirable vegetation is present prior to seeding, the topsoil shall be disked until all vegetation has been removed.

8. Seeding

All disturbed unpaved areas outside of detention basins shall be seeded or sodded with Kentucky Bluegrass mixture or with another mixture approved by the owner's representative. All seeded areas shall be covered with the specified erosion control matting. All seeded areas shall have an adequate growth of grass before work is accepted. All seeded areas shall be stabilized within 24 hours after seeding operations have been completed. The owner's representative shall provide the seed bed prior to sowing any seeds. Prior to starting seed work, contractor shall submit the name of seed supplier for the project and labels from the bags. The seed shall be sown with a machine that mechanically places the seed in direct contact with the soil, packs, and covers the seed in one continuous operation. Broadcasting will be allowed as approved by owner's representative in inaccessible areas where the use of the equipment specified is physically impossible. Adequate growth will be defined as root depth into topsoil a minimum of 2" and dense, green, consistent turf void of any bare or patchy areas of more than 9 square inches. The contractor shall maintain the turf grass until final acceptance. Maintenance to include grade repair, reseeding, mowing, insect & weed control, trimming & edging. Each mowing shall occur when the grass has reached a height of 4 inches. Mow to a height of 3 inches, turf shall be mowed so as not to remove more than 1/3 of the total height. The cost of such maintenance shall be included in the turf grass installation cost. All seeded areas shall have an adequate growth of grass before work is accepted.

9. Bituminous Materials (Prime Coat)

Prime shall be MC-30 applied at a rate of 0.35 GAL/SY of pavement for all aggregate areas. Prime shall be SS-1 applied at a rate of 0.1 GAL/SY of pavement on all bituminous surfaces.

10. Traffic Control

The contractor shall obtain, erect, maintain and remove all signs, barricades, flagman, and other traffic control devices as may be necessary for the purpose of regulating, warning or guiding traffic. Placement and maintenance of all traffic control devices shall be as directed by the municipal inspector and in accordance with the applicable parts of Article 701 of the Standard Specifications for Road and Bridge Construction. All traffic protection will be considered incidental to the contract.

11. Engineer's Responsibility

The engineer shall be responsible for the following:

A. To visit the construction site in order to better carry out the duties and responsibilities assigned by the Owner and undertaken by the engineer;

B. The engineer shall not, during such visits or as a result of such observations of the contractor's work in progress, supervise, direct, have control over the contractor's work, nor shall the engineer have the authority over the responsibility for the means, methods, techniques, sequences, or procedures of construction selected by the contractor for safety precautions and programs incidental to the work of the contractor, or for any failure of the contractor to comply with the laws, rules, regulations, ordinances, codes or orders applicable to the contractor furnishing and performing his work. Accordingly, the engineer can neither guarantee the performance of the construction contracts by the contractor nor assume responsibility for the contractor's failure to furnish and perform his work in accordance with the contract documents.

12. Construction Drawings/Contractor's Responsibility

No construction plans shall be used for construction unless specifically marked "For Construction." Prior to commencement of construction, the contractor shall verify all dimensions and conditions affecting their work with the actual conditions at the job site. In addition, the contractor must verify the engineer's line and grade stakes. If there are any discrepancies from what is shown on the construction plans, he must immediately report same to the engineer before doing any work, otherwise, the contractor assumes full responsibility. In the event of disagreement between the construction plans, Standard Specifications and/or special details, the contractor shall secure written instructions from the engineer prior to proceeding with any part of the work effected by omissions or discrepancies. Failing to secure such instructions, the contractor will be considered to have proceeded at his own risk and expense. In the event of any doubt or question arising with respect to specifications, the decision of the engineer shall be final and conclusive.

13. Indemnification

The contractor shall indemnify and hold harmless the Owner and J. Condon & Associates, Inc. from and against all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from the performance of the contractor's work. In any and all claims against the owner or J. Condon & Associates, Inc., by any employee of the contractor, or anyone directly or indirectly employed by the contractor, or anyone for whose acts the contractor may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount of damages, compensation or benefits payable by or for the contractor under Worker's Compensation acts, disability benefit acts or other employee benefit acts.

14. Preconstruction Conference

A preconstruction conference for representatives of the developer, municipality and contractor will be held before the contractor proceeds with construction, at a time and place convenient for all parties, for review of the contractor's construction schedules, to establish procedures for handling shop drawing and other submittals and to establish a working understanding among the parties to the contract work.

15. Project Quantities

The quantities given by the engineer are intended as a guide for the contractor in determining the scope of the completed project. It is the contractor's responsibility to determine all material quantities and appraise himself of all site conditions. The contract price submitted by the contractor shall be considered as lump sum for the completed project. No claims for extra work will be recognized unless ordered in writing by the Owner.

16. Insurance Requirements

The contractor shall purchase and maintain Comprehensive General Liability and other insurance set forth below which will provide protection from claims which may arise out of or resulting from the performance of work by anyone directly or indirectly employed by the contractor or by anyone for whose acts the contractor may be liable.

A. Worker's Compensation and Employer's Liability insurance in any amount not less than statutory limits required by law.

B. Comprehensive General Liability insurance including coverage in the amount of \$500,000 per accident for property damage and \$1,000,000 per person and \$2,000,000 aggregate per accident for bodily injury, sickness or disease, or death of any person.

C. Comprehensive Automobile Liability insurance covering all automobiles, trucks, trailers and any other motorized equipment owned or leased by the contractor.

17. Certificate of Insurance

The contractor shall not commence work until he has filed with the municipality and its inspector a certificate of insurance showing complete coverage of all insurance required, signed by the insurance companies or their authorized agents. Each certificate shall provide that coverage shall not be terminated or reduced without 30 days advance written notice to the municipality and its inspector. The contractor shall name the Owner and J. Condon & Associates, Inc. as additional insureds on the Comprehensive General Liability and Automobile Liability policies.

18. Erosion Control

It shall be the contractor's responsibility to properly control erosion on the job site through the use of siltation ponds, filter fabrics, etc. Any siltation of conduits, structures, or ditches shall be cleaned and maintained by the contractor until the seeding has taken hold. All washouts, gullies, etc. will be regraded and reseeded by the contractor.

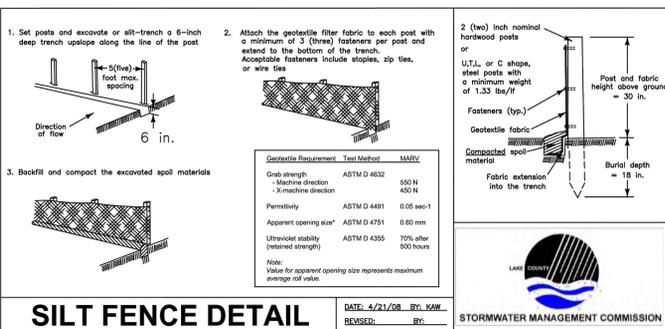
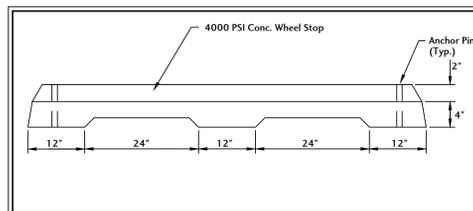
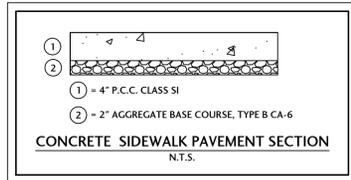
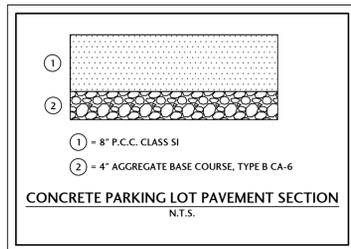
The contractor's responsibility for erosion control shall extend throughout the construction process. The contractor shall be responsible for clean-up of paved surfaces within and outside of the project.

All erosion control practices shall comply with the latest

revision of the Illinois Urban Manual (Blue Book) as published by the IEPA.

19. Development Inspector

The developer shall supply a duly authorized and qualified inspector who shall provide the Village with daily inspection logs of all public improvements being completed at the construction site.



BENCHMARKS

SITE BENCHMARK:
BURY BOLT ON FIRE HYDRANT
ELEVATION = 679.78 NAVD88

PROJECT BENCHMARK:
NGS MARK "LD016"
ELEVATION = 647.45 NAVD88

SHEET INDEX:

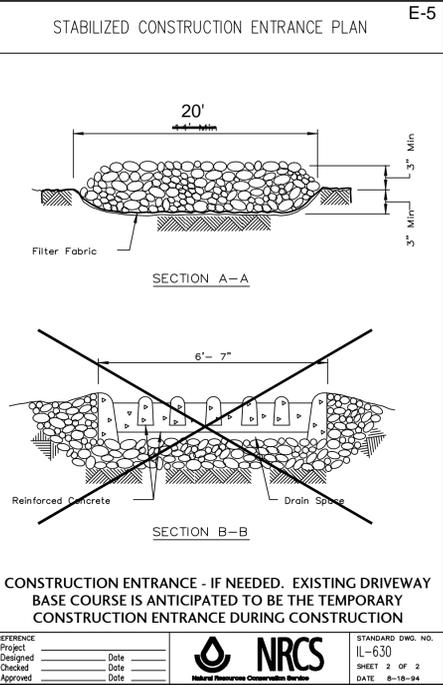
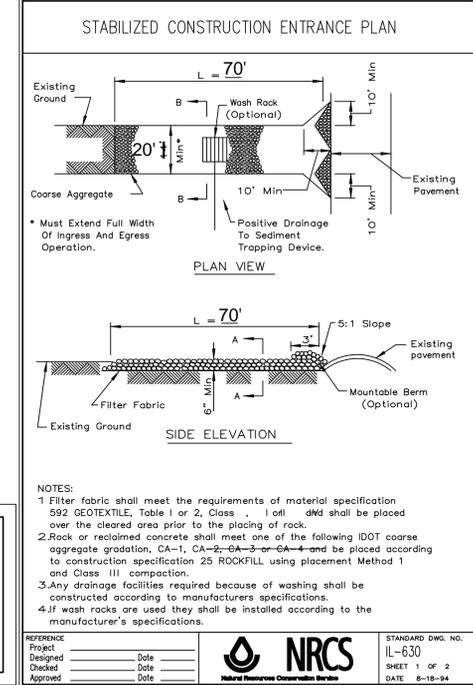
C0.1 SPECIFICATIONS, NOTES AND DETAILS
C0.2 SITE DETAILS
C0.3 SITE DETAILS
C1.0 EXISTING CONDITIONS AND DEMOLITION PLAN
C2.0 OVERALL SITE PLAN
C3.0 GRADING & EROSION CONTROL PLAN



TYPICAL CONSTRUCTION SEQUENCING

- 1.) Installation of soil erosion and sediment control SE/SC measures
 - a.) Selective vegetation removal for silt fence installation
 - b.) Silt fence installation
 - c.) Construction fencing around areas not to be disturbed
 - d.) Stabilized construction entrance
 - 2.) Tree removal where necessary (clear & grub)
 - 3.) Construct sediment trapping devices (sediment traps, basins...)
 - 4.) Construct detention facilities and outlet control structure with restrictor & temporary perforated riser
 - 5.) Strip topsoil, stockpile topsoil and grade site
 - 6.) Temporarily stabilize topsoil stockpiles (seed and silt fence around toe of slope)
 - 7.) Install storm sewer, sanitary sewer, water and associated inlet & outlet protection
 - 8.) Permanently stabilize detention basins with seed and erosion control blanket
 - 9.) Temporarily stabilize all areas including lots that have reached temporary grade
 - 10.) Install roadways
 - 11.) Permanently stabilize all outlot areas
 - 12.) Install structures and grade individual lots
 - 13.) Permanently stabilize lots
 - 14.) Remove all temporary SE/SC measures after the site is stabilized with vegetation
- * Soil erosion and sediment control maintenance must occur every two weeks and after every 1/2 or greater rainfall event

U:\Regulatory Program\SESC handouts\TYPICAL CONSTRUCTION SEQUENCING.dwg



J. CONDON & ASSOCIATES, INC.
CONSULTING ENGINEERS
3415 BUSINESS PARKWAY
RINGWOOD, ILLINOIS 60072
815.728.0068
ILL. DESIGN FIRM # 184-006759

RAVINIA PLUMBING
HIGHLAND PARK, ILLINOIS

SCALE: N/A
ISSUE DATE: 1/29/2019
PROJECT MANAGER: MAM
DESIGNER: MAM
QUALITY CONTROL: JEC

575 BOND STREET
LINCOLNSHIRE, ILLINOIS

NO.	DATE	DESCRIPTION
1	2/28/19	PER VILLAGE REVIEW
2	3/7/19	ADD EX TREES, COLOR LIGHT POLES

LIMITATION OF WARRANTY OF ENGINEER'S INSTRUMENTS OF SERVICE
THE ENGINEER AND HIS CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE DELIVERABLES HEREIN BEYOND A REASONABLE DILIGENCE. IF ANY MISTAKES, OMISSIONS OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE DELIVERABLES, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH FAILURE. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT TO THE ENGINEER, OR IN CONTRADICTION TO THE ENGINEER'S DELIVERABLES FOR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER, BUT OF THE PARTIES RESPONSIBLE FOR TAKING SUCH ACTION.

PROJECT NUMBER: RAVI-18077-3
SHEET TITLE: SPECIFICATIONS, NOTES, AND DETAILS
SHEET NUMBER: C0.1

I HEREBY CERTIFY THAT THE PLANS WITH THE FIRM'S NAME LISTED BELOW WERE PREPARED UNDER MY DIRECT SUPERVISION. FURTHERMORE, THE PROPOSED PROJECT WILL NOT RESULT IN DRAINAGE, EROSION OR RUNOFF WHICH ADVERSELY IMPACTS ADJACENT PROPERTIES OR THE PUBLIC RIGHT-OF-WAY.

DATED AT RINGWOOD, ILLINOIS THIS 7TH DAY OF MARCH, 2019

MEGHAN A. MICHEL, P. E., J. CONDON & ASSOCIATES, INC.
ILLINOIS REG. PROF. ENGINEER No. 062-057170 EXPIRATION DATE 11-30-2019
ILLINOIS DEPARTMENT OF PROFESSIONAL REGULATION FIRM NUMBER: 184-006759

OPERATES 24 Hours 365 Days

CALL JULIE 1-800-892-0123 WITH THE FOLLOWING: COUNTY LAKE CITY-TOWNSHIP LINCOLNSHIRE SEC. & 1/2 SEC. NO. # SE 1/4 SEC 21, T43N, R11E

48 Hours Before You Dig. EXCLUDING SAT., SUN., & HOLIDAYS

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

MEGHAN A. MICHEL
062-057170
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

Dirbag® Specification:
Control of Sediment In Pumped Water
1.0 Description

Dirbag® is a geotextile fabric bag used to control sediment in pumped water. It is made of a high strength fabric and is designed to be used in a pump discharge line. The bag is filled with aggregate material and is used to filter the water as it passes through the bag.

2.0 Materials

Dirbag®

Dirbag® is made of a high strength fabric and is designed to be used in a pump discharge line. The bag is filled with aggregate material and is used to filter the water as it passes through the bag.

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All properties are Minimum Average Roll Value (MARV) except the weight of the fabric which is given for information only. Depending on soil conditions and filtration requirements, additional geotextile options are available. Please call our engineering staff for solutions.

3.0 Construction Sequence

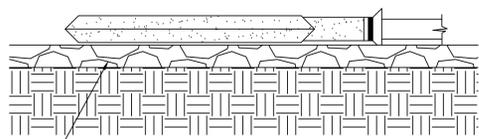
1. Prepare the site and install the Dirbag® in the pump discharge line. The bag is filled with aggregate material and is used to filter the water as it passes through the bag.

2. The Dirbag® is made of a high strength fabric and is designed to be used in a pump discharge line. The bag is filled with aggregate material and is used to filter the water as it passes through the bag.

3. The Dirbag® is made of a high strength fabric and is designed to be used in a pump discharge line. The bag is filled with aggregate material and is used to filter the water as it passes through the bag.

4.0 Basis of Payment

The Dirbag® is made of a high strength fabric and is designed to be used in a pump discharge line. The bag is filled with aggregate material and is used to filter the water as it passes through the bag.

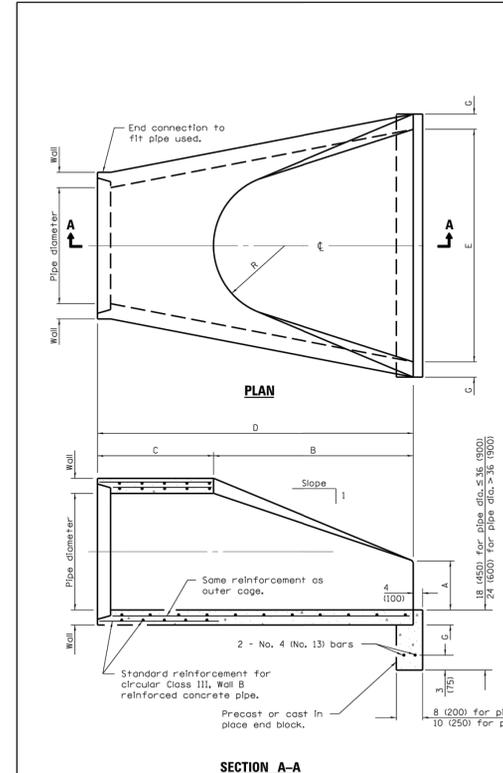
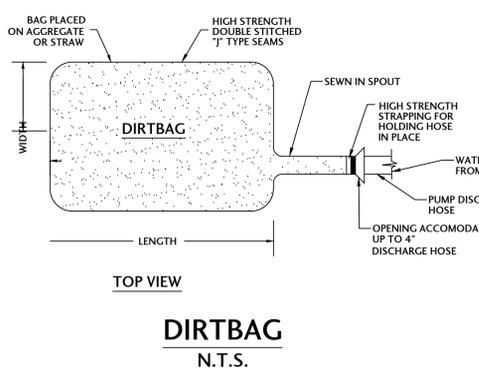


WOOD PALLETTE, AGGREGATE, OR STRAW UNDERLAYMENT

SIDE VIEW

Dirbag Style	Test Method	Test Method
Dirbag 55	ASTM D-4884	60 lbs/in
Dirbag 55	ASTM D-4884	100 lbs/in

Property	Test Method	Units	Test Results
Weight	ASTM D-3776	oz/yd	8 10
Grab Tensile	ASTM D-4632	lbs.	205 250
Puncture	ASTM D-4833	lbs.	110 150
Flow Rate	ASTM D-4491	gal/min/ft ²	110 85
Permeability	ASTM D-4491	sec/ft(-1)	1.5 1.2
Mullen Burst	ASTM D-3786	lbs.	350 460
UV Resistant	ASTM D-4355	%	70 70
AOS % Retained	ASTM D-4751	US Sieve	80 100



PIPE DIA.	APPROX. WT., lbs. (kg)	WALL	A	B	C	D	E	G	R	APPROX. SLOPE
12 (300)	530 (240)	2 (51)	4 (102)	24 (610)	4'-0 1/4" (1.241 m)	6'-0 1/4" (1.851 m)	24 (610)	2 (51)	9 (229)	1:2.4
15 (375)	740 (335)	2 1/2 (64)	6 (152)	27 (686)	3'-10" (1.168 m)	6'-1" (1.854 m)	30 (762)	2 1/2 (64)	11 (280)	1:2.4
18 (450)	990 (450)	3 (76)	9 (229)	30 (762)	3'-10" (1.168 m)	6'-1" (1.854 m)	36 (914)	3 (76)	12 (305)	1:2.4
21 (525)	1280 (580)	3 1/2 (91)	12 (305)	33 (843)	3'-10" (1.168 m)	6'-1" (1.854 m)	39 (991)	3 1/2 (91)	13 (330)	1:2.4
24 (600)	1520 (690)	4 (102)	15 (381)	36 (914)	3'-10" (1.168 m)	6'-1" (1.854 m)	42 (1067)	4 (102)	14 (356)	1:2.5
27 (675)	1930 (875)	4 1/2 (114)	18 (457)	39 (991)	4'-0" (1.219 m)	6'-1 1/2" (1.867 m)	45 (1143)	4 1/2 (114)	15 (381)	1:2.4
30 (750)	2190 (995)	5 (127)	21 (533)	42 (1067)	4'-0" (1.219 m)	6'-1 1/2" (1.867 m)	48 (1219)	5 (127)	16 (406)	1:2.5
33 (825)	3200 (1450)	5 1/2 (140)	24 (610)	45 (1143)	4'-10 1/2" (1.486 m)	6'-1 1/2" (1.867 m)	51 (1295)	5 1/2 (140)	17 (430)	1:2.5
36 (900)	4100 (1860)	6 (152)	27 (686)	48 (1219)	5'-0" (1.524 m)	6'-1 1/2" (1.867 m)	54 (1371)	6 (152)	18 (457)	1:2.5
42 (1050)	5380 (2440)	7 (178)	33 (843)	54 (1371)	5'-0" (1.524 m)	6'-2" (1.878 m)	60 (1524)	7 (178)	22 (559)	1:2.5
48 (1200)	6550 (2970)	8 (203)	36 (914)	60 (1524)	5'-0" (1.524 m)	6'-2" (1.878 m)	66 (1676)	8 (203)	24 (610)	1:2.0
54 (1350)	8240 (3740)	9 (229)	39 (991)	66 (1676)	5'-0" (1.524 m)	6'-2" (1.878 m)	72 (1828)	9 (229)	24 (610)	1:1.9
60 (1500)	8730 (3960)	10 (254)	42 (1067)	72 (1828)	5'-0" (1.524 m)	6'-2" (1.878 m)	78 (1980)	10 (254)	24 (610)	1:1.9
66 (1650)	10710 (4860)	11 (279)	45 (1143)	78 (1980)	5'-0" (1.524 m)	6'-2" (1.878 m)	84 (2132)	11 (279)	24 (610)	1:1.7
72 (1800)	12520 (5680)	12 (305)	48 (1219)	84 (2132)	5'-0" (1.524 m)	6'-2" (1.878 m)	90 (2284)	12 (305)	24 (610)	1:1.8
78 (1950)	14710 (6700)	13 (330)	51 (1295)	90 (2284)	5'-0" (1.524 m)	6'-2" (1.878 m)	96 (2436)	13 (330)	24 (610)	1:1.8
84 (2100)	18160 (8240)	14 (356)	54 (1371)	96 (2436)	5'-0" (1.524 m)	6'-2" (1.878 m)	102 (2588)	14 (356)	24 (610)	1:1.6

GENERAL NOTES

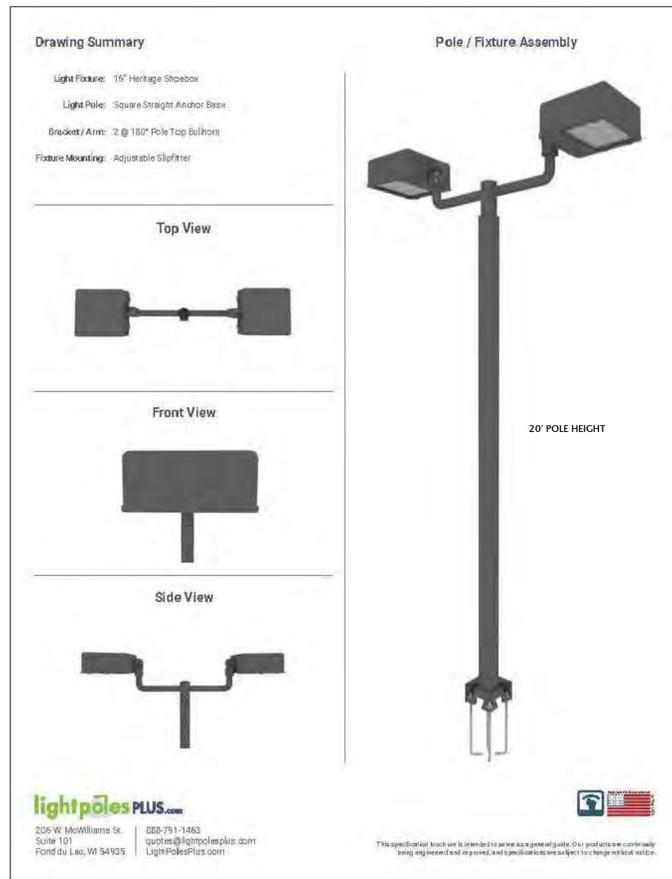
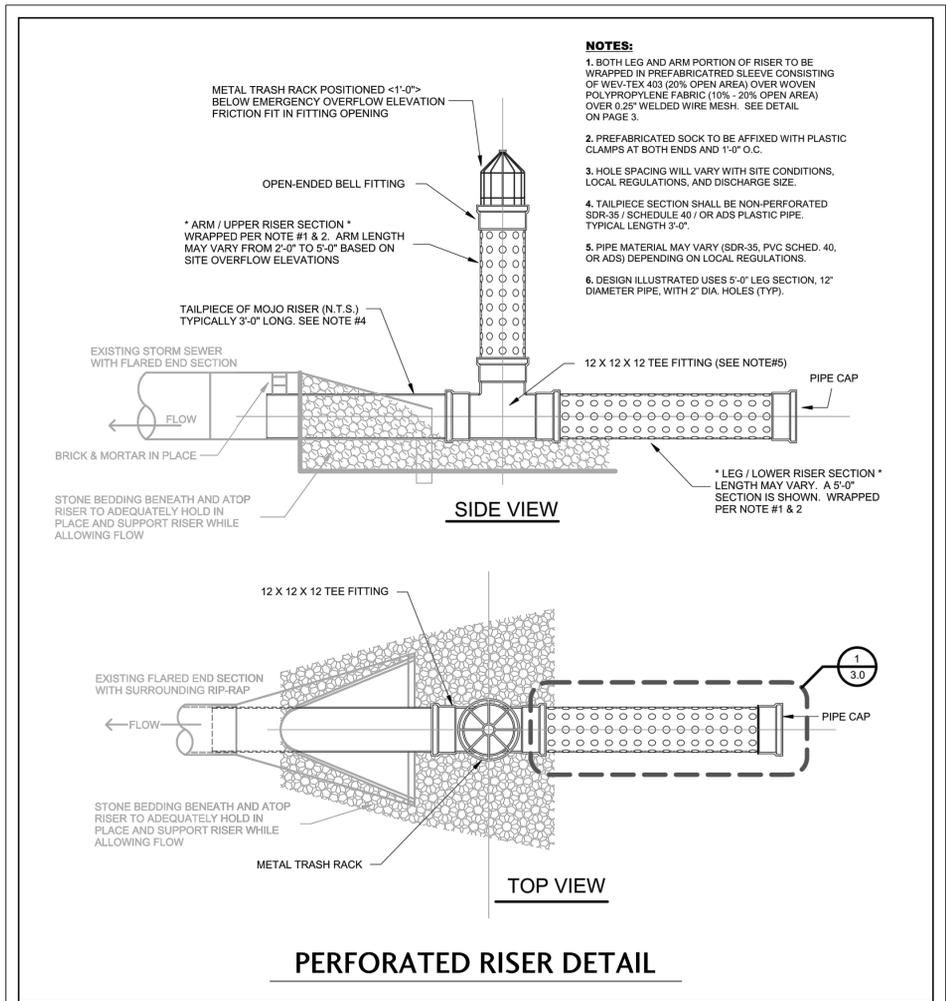
All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

* Radius as furnished by manufacturer

DATE	REVISIONS
1-1-11	Clarified ref. to pipe dia. on Section A-A. Changed "inner" to "outer" cage ref.
1-1-09	Switched units to English (metric).

PRECAST REINFORCED CONCRETE FLARED END SECTION
STANDARD 542301-03



NO.	DATE	DESCRIPTION
1	2/28/19	PER VILLAGE REVIEW
2	3/7/19	ADD EX TREES, COLOR LIGHT POLES

PROJECT NUMBER
RAVI-18077-3

SHEET TITLE
SITE DETAILS

SHEET NUMBER
C0.3



- ### DEMOLITION NOTES
- CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITY LOCATIONS AND ELEVATIONS PRIOR TO DEMOLITION. SOME UTILITIES MAY NOT BE SHOWN.
 - COORDINATE WITH LOCAL AUTHORITIES AND UTILITY PURVEYORS FOR THE REMOVAL/RELOCATION OF EXISTING UTILITIES.
 - SAWCUTTING OF EXISTING PAVEMENT SHALL BE FULL DEPTH TO PROVIDE A CLEAN VERTICAL FACE TO MATCH PROPOSED PAVEMENT.
 - KEEP ALL VILLAGES OF LINCOLNSHIRE AND PRIVATE STREETS CLEAR OF CONSTRUCTION DEBRIS, TRASH, AND MATERIALS. ALL ADJOINING PUBLIC AND PRIVATE PROPERTIES SHALL BE PROTECTED FROM DAMAGED CAUSED BY CONSTRUCTION.
 - ALL WASTE MATERIALS SHALL BE DISPOSED OF OFFSITE IN AN APPROVED FACILITY.
 - ALL WASTE MATERIALS SHALL BE REMOVED IN A MANNER THAT PREVENTS INJURY OR DAMAGE TO PERSONS, ADJOINING PROPERTIES AND/OR RIGHT-OF-WAY.
 - ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO DEMOLITION OPERATIONS.
 - THE SITE SHALL BE GRADED TO MINIMIZE ACCUMULATION OF WATER OR DAMAGE TO ANY FOUNDATIONS ON THE PREMISES OF ADJOINING PROPERTY.

- ### LEGEND
- [Cross-hatched] = EXISTING BITUMINOUS PAVEMENT
 - [Stippled] = EXISTING CONCRETE PAVEMENT
 - [Hatched] = EXISTING BUILDING
 - [Dotted] = CONCRETE PAVEMENT TO BE REMOVED
 - [Dashed] = FULL DEPTH SAWCUT
 - [---] = UTILITY PIPE REMOVAL
 - [x x x x] = CURB REMOVAL
 - [X] = TREE REMOVAL
 - [x] = STRUCTURE REMOVAL

SITE DATA TABLE

EXISTING IMPERVIOUS AREA:	1.45 ACRES
EXISTING PERVIOUS AREA:	2.37 ACRES
PROPERTY AREA:	3.82 ACRES

J. CONDON & ASSOCIATES, INC.
 CONSULTING ENGINEERS
 5415 BUSINESS PARKWAY
 RINGWOOD, ILLINOIS 60072
 815.228.0068
 IL DESIGN FIRM # 184-006759

RAVINA PLUMBING
 HIGHLAND PARK, ILLINOIS

SCALE
1" = 20'
 ISSUE DATE
 1/29/2019
 PROJECT MANAGER
 MM
 DESIGNER
 CF
 QUALITY CONTROL
 MM

575 BOND STREET

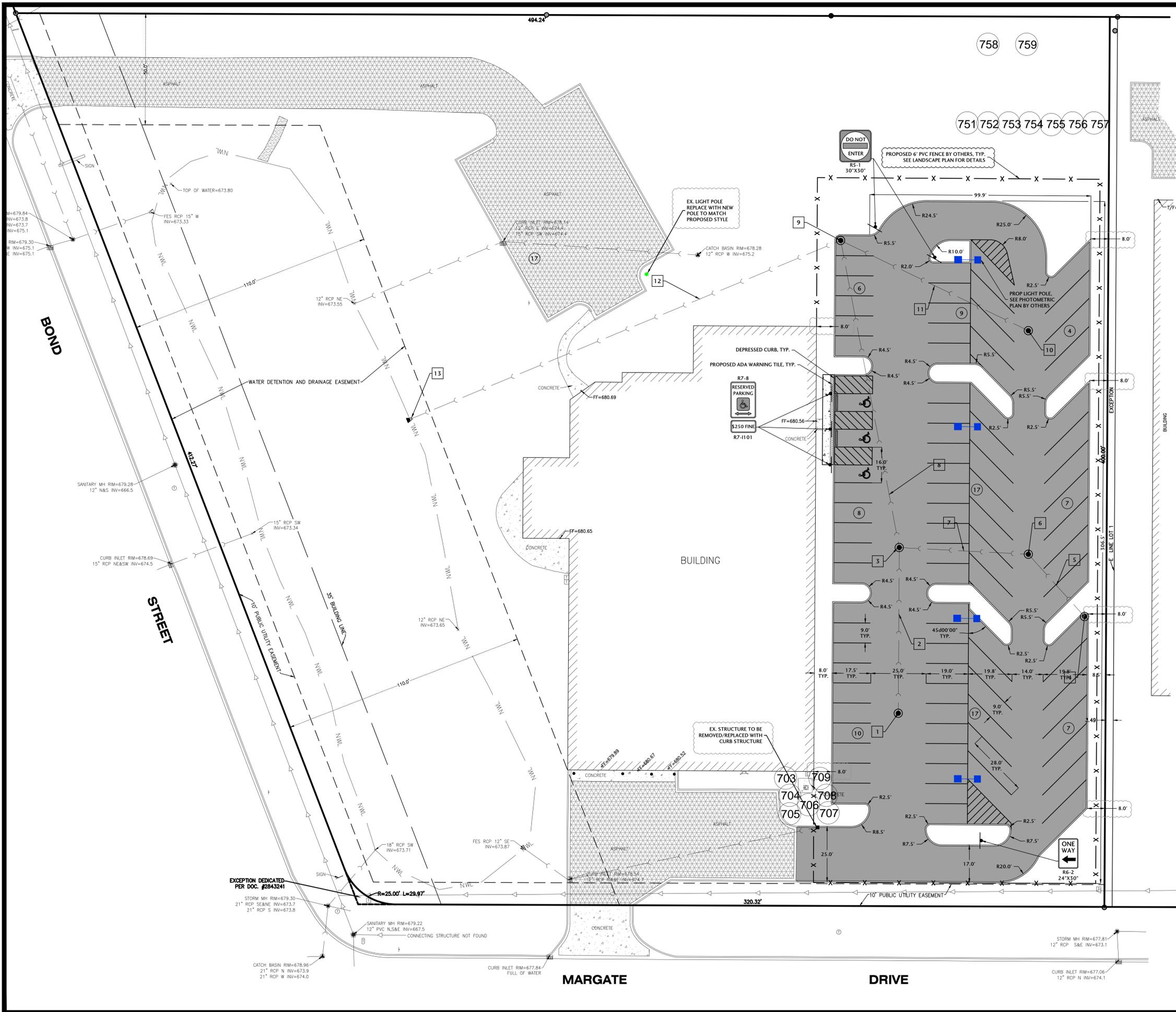
LINCOLNSHIRE, ILLINOIS

NO.	DATE	DESCRIPTION
1	2/28/19	PER VILLAGE REVIEW
2	3/7/2019	ADD EX TREES, COLOR LIGHT POLES

PROJECT NUMBER
RAVI-18077-3

SHEET TITLE
EXISTING CONDITIONS AND DEMOLITION PLAN

SHEET NUMBER
C1.0



- OVERALL NOTES**
1. ALL SIGNING AND PAVEMENT MARKINGS SHALL MEET MUTCD STANDARDS.
 2. PAVEMENT MARKINGS TO BE 4" WIDE PAINT UNLESS OTHERWISE NOTED.
 3. ALL ACCESSIBLE PARKING SIGNS (R7-8) SHALL BE PLACED AT THE CENTER OR THE PARKING SPACE AND WITHIN 5' OF THE SPACE.
 4. ALL DIMENSIONS ARE TO FACE OF CURB, EDGE OF PAVEMENT, AND OUTSIDE OF BUILDING FOUNDATION UNLESS OTHERWISE NOTED.
 5. STRIPING DIMENSIONS ARE FROM CENTER TO CENTER OF PAVEMENT MARKING.
 6. ALL ON-SITE CURBS SHOWN IS BARRIER CURB UNLESS OTHERWISE NOTED.

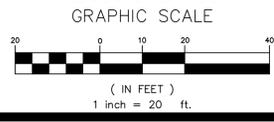
- LEGEND**
- [Pattern] = EXISTING BITUMINOUS PAVEMENT
 - [Pattern] = EXISTING CONCRETE PAVEMENT
 - [Pattern] = EXISTING BUILDING
 - [Pattern] = PROPOSED PARKING LOT PAVEMENT
 - [Pattern] = PROPOSED CONCRETE SIDEWALK
 - [Line] = BARRIER CURB
 - [Line] = DEPRESSED CURB

- EX NORTH PARKING LOT - 17 STALLS**
 16 STANDARD STALLS
 1 ADA ACCESSIBLE STALL
- PROPOSED PARKING - 85 STALLS**
 82 STANDARD STALLS
 3 ADA ACCESSIBLE STALLS
- TOTAL PARKING - 102 STALLS**
 98 STANDARD STALLS
 4 ADA ACCESSIBLE STALLS

SITE DATA TABLE

EXISTING IMPERVIOUS AREA:	1.45 ACRES
PROPOSED IMPERVIOUS AREA:	0.75 ACRES
PERVIOUS AREA TO REMAIN:	1.62 ACRES
PROPERTY AREA:	3.82 ACRES

- PROPOSED STORM SEWER**
1. PROP INLET TA 2' DIA T1&G
RIM = 678.70
INV = 676.20
 2. PROP 75 LF 12" ST SEWER @ 1.00%
 3. PROP CB TA 4' DIA T1&G
RIM = 678.45
INV = 675.45
 4. PROP INLET TA 2' DIA T1&G
RIM = 679.25
INV = 676.75
 5. PROP 38 LF 12" ST SEWER @ 2.11%
 6. PROP CB TA 4' DIA T1&G
RIM = 678.45
INV = 675.45
 7. PROP 58 LF 12" ST SEWER @ 0.86%
 8. PROP 141 LF 12" ST SEWER @ 0.25%
 9. PROP CB TA 4' DIA T1&G
W/DEBRIS HOOD
RIM = 678.60
INV = 674.95
 10. PROP INLET TA 2' DIA T1&G
RIM = 678.80
INV = 676.30
 11. PROP 94 LF 12" ST SEWER @ 1.28%
 12. PROP 210 LF 15" ST SEWER @ 0.45%
 13. PROP 15' FES W/GRATE
INV = 674.00



J. CONDON & ASSOCIATES, INC.
 CONSULTING ENGINEERS
 5415 BUSINESS PARKWAY
 RINGWOOD, ILLINOIS 60072
 815.728.0068
 IL DESIGN FIRM # 184-006759

RAVANIA PLUMBING
 HIGHLAND PARK, ILLINOIS

SCALE
1" = 20'

ISSUE DATE
1/29/2019

PROJECT MANAGER
 MM

DESIGNER
 CF

QUALITY CONTROL
 MM

575 BOND STREET
 LINCOLNSHIRE, ILLINOIS

NO.	DATE	DESCRIPTION
1	2/28/19	PER VILLAGE REVIEW
2	3/7/2019	ADD EX TREES, COLOR LIGHT POLES

PROJECT NUMBER
RAVI-18077-3

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
C2.0



- NOTES:**
- ALL DISTURBED AREAS SHALL BE STABILIZED WITH NA GREEN S75BN EROSION BLANKET OR APPROVED EQUAL UNLESS OTHERWISE NOTED WITHIN THE PLAN SET.
 - CONTRACTOR RESPONSIBLE FOR MAINTENANCE/REPAIR OF EROSION CONTROL MEASURES UNTIL ADEQUATE VEGETATION GROWTH HAS OCCURRED. MAINTENANCE/REPAIR WORK SHALL BE INCIDENTAL TO THE INSTALLATION COSTS.
 - CONTRACTOR RESPONSIBLE FOR ADDITIONAL EROSION CONTROL MEASURES AS RECOMMENDED BY THE ENFORCEMENT OFFICER OR THE DESIGNATED EROSION INSPECTOR AS SITE CONDITIONS WARRANT.
 - ALL TRAPPED SEDIMENT IS TO BE PROPERLY STABILIZED OR DISPOSED
 - IF CONTRACTOR NEEDS TO DEWATER WHEN EXCAVATING, THEY MUST PUMP TO A "DIRT BAG" OR APPROVED EQUAL.
 - WHERE THE USE OF TREE PROTECTION FENCING DOES NOT PROVIDE AMPLE ROOM FOR CONSTRUCTION, TREE TRUNK PROTECTION SHALL BE USED.
 - TEMPORARY SEEDING SHALL BE REQUIRED TO TEMPORARILY STABILIZE DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE OR ON WHICH CONSTRUCTION WILL BE STOPPED FOR A PERIOD OF MORE THAN 14 DAYS. THE COVER CROP SEED MIX SHALL BE UTILIZED FOR TEMPORARY SEEDING.
 - CONTRACTOR IS RESPONSIBLE TO EMPLOY DUST CONTROL METHODS TO REDUCE & PREVENT THE SURFACE AND AIR TRANSPORT OF DUST DURING CONSTRUCTION. IN ADDITION TO MINIMIZATION OF SOIL DISTURBANCE, CONTRACTOR SHALL UTILIZE MULCHING METHODS (IDOT 251.03 OR 251.04), IRRIGATION AND BARRIERS.

GRADING & EROSION CONTROL LEGEND

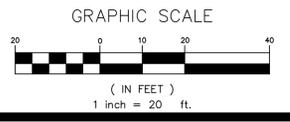
DRAINAGE ARROW	X.XX%
OVERLAND OVERFLOW ROUTE	
SILT FENCE	SF
TEMPORARY TYPE II / TYPE III TRAFFIC BARRICADES	(TB)
OPEN-LID INLET PROTECTION	(IP)
RIP RAP PROTECTION	(RR)
SEDIMENT LOG (CUREX SEDIMENT LOG 6')	(SL)
STABILIZED CONSTRUCTION ENTRANCE W = 20.0', L = 70.0'	(CE)
PERMIT DISPLAY BOARD	(DB)
PORTABLE CONCRETE WASHOUT AREA	(CW)
ONSITE TRASH DUMPSTER	(TD)
DEBRIS HOOD	(DH)

PROPOSED ELEVATIONS:

TOP OF CONCRETE CURB	X.CXXX.XX
CONCRETE CURB GUTTER	C.CXXX.XX
EDGE OF CONCRETE/BITUMINOUS PAVEMENT	P.CXXX.XX
EDGE OF CONCRETE SIDEWALK	W.CXXX.XX
FINISHED GRADE	XXX.XX

PROPOSED STORM SEWER

1.	PROP INLET TA 2' DIA T1&G RIM = 678.70 INV = 676.20
2.	PROP 75 LF 12" ST SEWER @ 1.00%
3.	PROP CB TA 4' DIA T1&G RIM = 678.45 INV = 675.45
4.	PROP INLET TA 2' DIA T1&G RIM = 679.25 INV = 676.75
5.	PROP 38 LF 12" ST SEWER @ 2.11%
6.	PROP CB TA 4' DIA T1&G RIM = 678.45 INV = 675.45
7.	PROP 58 LF 12" ST SEWER @ 0.86%
8.	PROP 141 LF 12" ST SEWER @ 0.25%
9.	PROP CB TA 4' DIA T1&G W/DEBRIS HOOD RIM = 678.60 INV = 674.95
10.	PROP INLET TA 2' DIA T1&G RIM = 678.80 INV = 676.30
11.	PROP 94 LF 12" ST SEWER @ 1.28%
12.	PROP 210 LF 15" ST SEWER @ 0.45%
13.	PROP 15' FES W/GRADE INV = 674.00



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CONSULTING ENGINEERS
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RAVANIA PLUMBING
HIGHLAND PARK, ILLINOIS

SCALE
1" = 20'

ISSUE DATE
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PROJECT MANAGER
MM

DESIGNER
CF

QUALITY CONTROL
MM

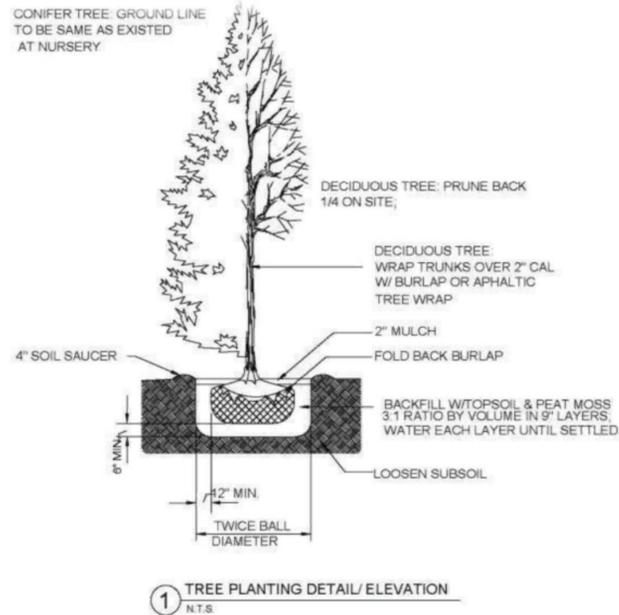
575 BOND STREET
LINCOLNSHIRE, ILLINOIS

NO.	DATE	DESCRIPTION
1	2/28/19	PER VILLAGE REVIEW
2	3/7/2019	ADD EX TREES, COLOR LIGHT POLES

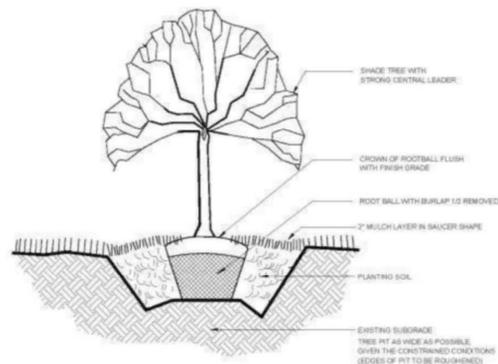
PROJECT NUMBER
RAVI-18077-3

SHEET TITLE
GRADING AND EROSION CONTROL PLAN

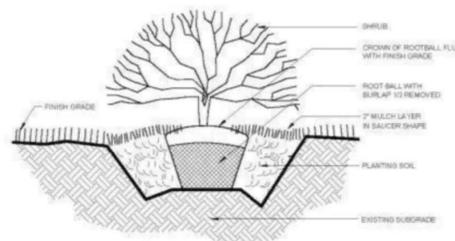
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C3.0



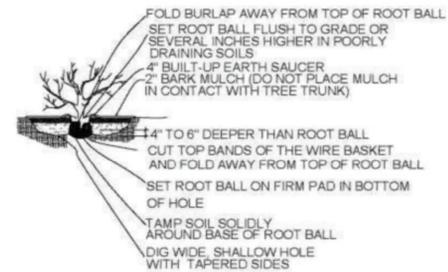
1 TREE PLANTING DETAIL/ ELEVATION
N.T.S.



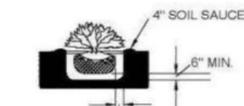
2 TREE DETAIL
N.T.S.



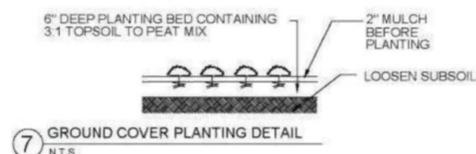
3 SHRUB DETAIL
N.T.S.



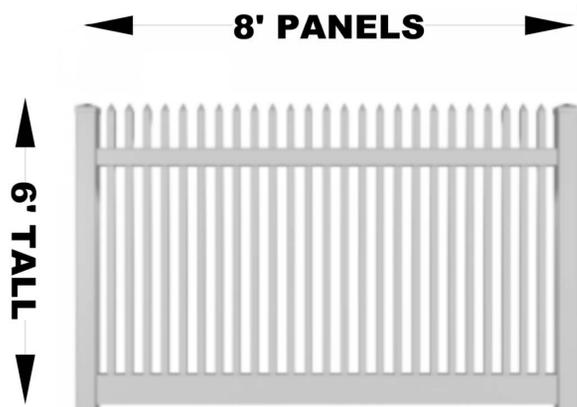
4 SHRUB PLANTING DETAIL
N.T.S.



5 SHRUB PLANTING DETAIL
N.T.S.



7 GROUND COVER PLANTING DETAIL
N.T.S.



6 FENCE DETAIL
N.T.S.

VEKA's Open style Fence features:
6' Tall
Quality thick wall PVC profiles
Commercial grade application
Through routed top and bottom rail
Pyramid caps
5" post
2" pickets 2" gaps 40% OPEN
Color to be Almond
finished side to face outward as required by code



Plant Legend

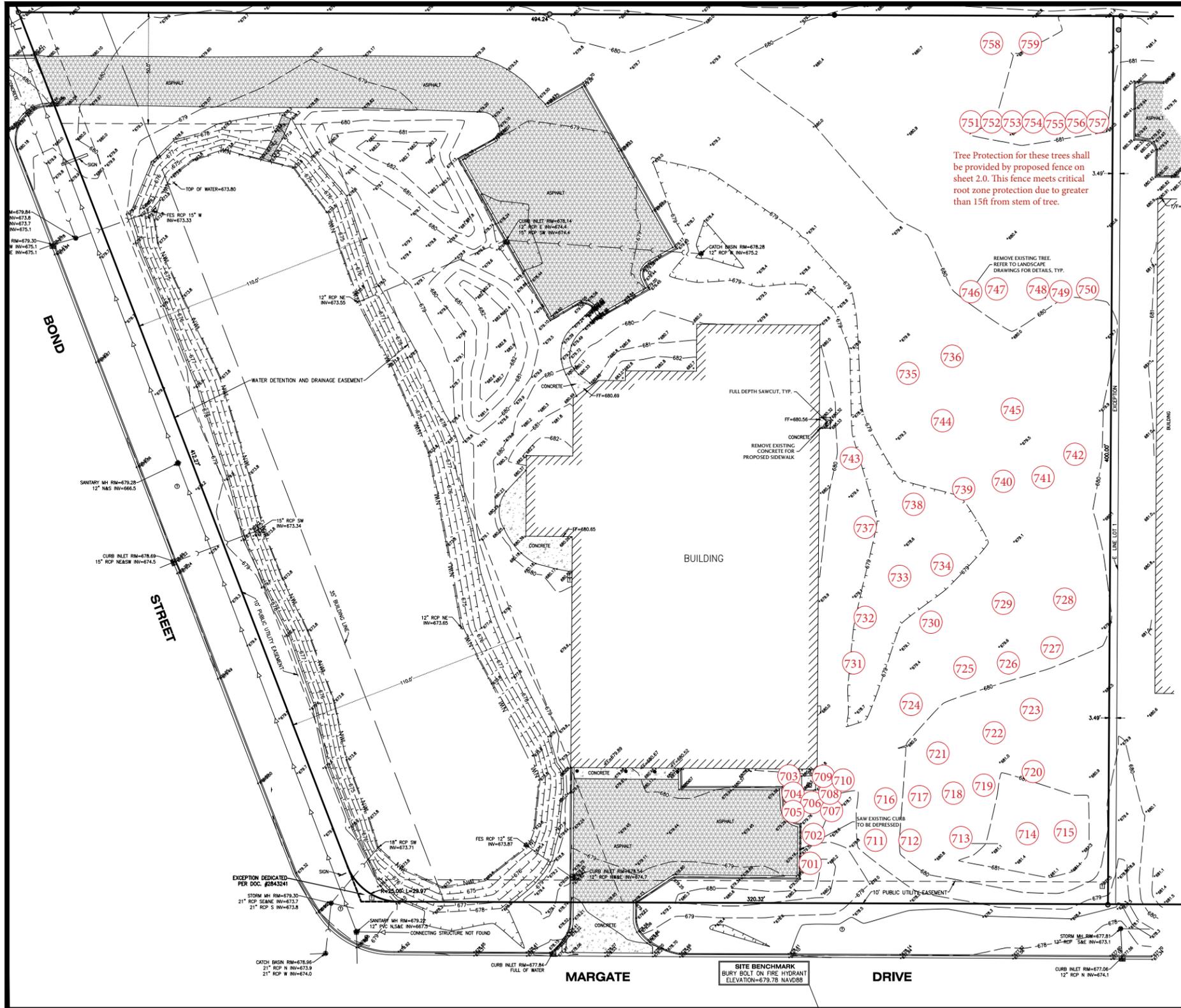
Symbol	Qty	Common	Botanical	Size	Symbol	Qty	Common	Botanical	Size
	3	Red Maple	Acer rubrum 'Northwood'	2.5 DBH Deciduous		3	Colorado Green Spruce	Picea pungens	7' Evergreen
	4	Hackberry	Celtis occidentalis	2.5 DBH Deciduous		58	Goldflame spirea	Spiraea japonica 'Goldflame'	3' Deciduous
	7	Honey Locust	Gleditsia triacanthos 'Shademaster'	2.5 DBH Deciduous		11	Techny Arborvitae	Thuja occidentalis 'Techny'	7' Evergreen
	11	Sargent Crabapple Tree	Malus sargentii	2.5 DBH Deciduous		39	Fragrant viburnum	Viburnum carlesii	4' Deciduous
	43	Maiden Grass	Miscanthus sinensis	4' Deciduous		43	Arrowwood Viburnum	Viburnum dentatum	4' Deciduous
	9	Black Hills Spruce	Picea glauca var. densata	7' Evergreen		256	Euonymus fortunei 'Coloratus'	Wintercreeper euonymus	3" pot Semi-evergreen

Damiano Marchiafava
Registered Landscape Architect

575 Bond St.
Lincolnshire, IL 60069
Parking lot addition

Date	11/26/2018
	02/23/2019

Joe and Tony Landscaping LLC
P.O. Box 474
Highland Park II 60035



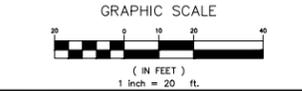
- DEMOLITION NOTES**
- CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITY LOCATIONS AND ELEVATIONS PRIOR TO DEMOLITION. SOME UTILITIES MAY NOT BE SHOWN.
 - COORDINATE WITH LOCAL AUTHORITIES AND UTILITY PURVEYORS FOR THE REMOVAL/RELOCATION OF EXISTING UTILITIES.
 - SAWCUTTING OF EXISTING PAVEMENT SHALL BE FULL DEPTH TO PROVIDE A CLEAN VERTICAL FACE TO MATCH PROPOSED PAVEMENT.
 - KEEP ALL VILLAGES OF LINCOLNSHIRE AND PRIVATE STREETS CLEAR OF CONSTRUCTION DEBRIS, TRASH, AND MATERIALS. ALL ADJOINING PUBLIC AND PRIVATE PROPERTIES SHALL BE PROTECTED FROM DAMAGE CAUSED BY CONSTRUCTION.
 - ALL WASTE MATERIALS SHALL BE DISPOSED OF OFFSITE IN AN APPROVED FACILITY.
 - ALL WASTE MATERIALS SHALL BE REMOVED IN A MANNER THAT PREVENTS INJURY OR DAMAGE TO PERSONS, ADJOINING PROPERTIES AND/OR RIGHT-OF-WAY.
 - ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO DEMOLITION OPERATIONS.
 - THE SITE SHALL BE GRADED TO MINIMIZE ACCUMULATION OF WATER OR DAMAGE TO ANY FOUNDATIONS ON THE PREMISES OF ADJOINING PROPERTY.

- LEGEND**
- [Pattern] = EXISTING BITUMINOUS PAVEMENT
 - [Pattern] = EXISTING CONCRETE PAVEMENT
 - [Pattern] = EXISTING BUILDING
 - [Pattern] = CONCRETE PAVEMENT TO BE REMOVED
 - [Line] = FULL DEPTH SAWCUT
 - [Line] = UTILITY PIPE REMOVAL
 - [Line] = CURB REMOVAL
 - [X] = TREE REMOVAL
 - [x] = STRUCTURE REMOVAL

SITE DATA TABLE

EXISTING IMPERVIOUS AREA:	1.45 ACRES
EXISTING PERVIOUS AREA:	2.37 ACRES
PROPERTY AREA:	3.82 ACRES

- PROPOSED STORM SEWER**
- PROP INLET TA 2' DIA T1&G
RM = 678.70
INV = 676.20
 - PROP 75 LF 12" ST SEWER @ 1.00%
 - PROP CB TA 4' DIA T1&G
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J. CONDON & ASSOCIATES, INC.
1111 BOND STREET, BARRINGTON, ILLINOIS 60015
RNG-0000, ILLINOIS 60072
815.728.0068
ILLINOIS FIRM # 184-006739

RAVINIA PLUMBING
HIGHLAND PARK, ILLINOIS

SCALE
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MM

DESIGNER
CF

QUALITY CONTROL
MM

575 BOND STREET
LINCOLNSHIRE, ILLINOIS

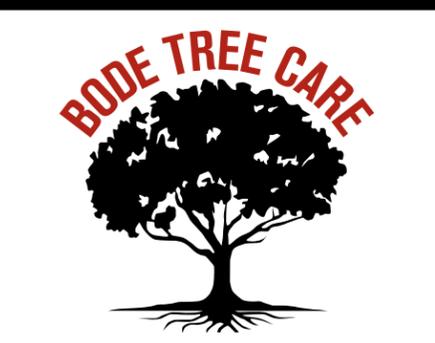
NO.	DATE	DESCRIPTION

PROJECT NUMBER
RAVI-18077-3

SHEET TITLE
EXISTING CONDITIONS AND DEMOLITION PLAN

SHEET NUMBER
C1.0

ALL TREE LOCATIONS ARE APPROXIMATE



BodeTreeCare.com | 847-909-2100
P.O. Box 612 Barrington, IL 60011
Bode@BodeTreeCare.com

Eric Bode
Certified Arborist IL-4572A

Client: Meghan A. Michel, P.E. : J. Condon & Associates, Inc.	Date: 3/4/2019
Site Address: 575 Bond St.	Phone: (815) 728-0068
City, State: Lincolnshire, IL 60069	Email: mmichel@jcondoninc.com



BODE TREE CARE

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Eric Bode

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Client: Meghan A. Michel, P.E. : J. Condon & Associates, Inc.	Date: 3/4/19
Site Address: 575 Bond St.	Phone: (815) 728-0068
City, State, Zip: Lincolnshire, IL 60069	Email: mmichel@jcondoninc.com

TREE SURVEY

TAG NUMBER	SPECIES	DBH	CONDITION
701	GREEN ASH : FRAXINUS PENNSYLVANICA	13	DEAD
702	RED MAPLE : ACER RUBRUM	17	GOOD
703	ARBORVAITIE : THUJA	CLUMP	GOOD
704	ARBORVAITIE : THUJA	CLUMP	GOOD
705	ARBORVAITIE : THUJA	CLUMP	GOOD
706	ARBORVAITIE : THUJA	CLUMP	GOOD
707	ARBORVAITIE : THUJA	CLUMP	GOOD
708	ARBORVAITIE : THUJA	CLUMP	GOOD
709	ARBORVAITIE : THUJA	CLUMP	GOOD
710	ARBORVAITIE : THUJA	CLUMP	GOOD
711	SIBERIAN ELM : ULMUS PUMILA	11	POOR
712	SILVER MAPLE : ACER SACCHARINUM	20	POOR
713	SILVER MAPLE : ACER SACCHARINUM	34 CLUMP	POOR
714	BOX ELDER : ACER NEGUNDO	20	POOR
715	BOX ELDER : ACER NEGUNDO	22	POOR
716	SILVER MAPLE : ACER SACCHARINUM	20	POOR
717	BUCKTHORN : RHAMNUS	10	POOR
718	CRAB APPLE : MALUS SYLVESTRIS	14	GOOD
719	SILVER MAPLE : ACER SACCHARINUM	28	POOR
720	EASTER RED CEDAR : JUNIPERUS VIRGINIANA	11	GOOD
721	SILVER MAPLE : ACER SACCHARINUM	33	POOR
722	HONEYSUCKLE : LONICERA	CLUMP	GOOD
723	SILVER MAPLE : ACER SACCHARINUM	16	GOOD
724	SILVER MAPLE : ACER SACCHARINUM	8	POOR
725	BOX ELDER : ACER NEGUNDO	8	POOR

BODE TREE CARE

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TREE SURVEY

TAG NUMBER	SPECIES	DBH	CONDITION
726	BOX ELDER : ACER NEGUNDO	7	POOR
727	BOX ELDER : ACER NEGUNDO	12	POOR
728	BOX ELDER : ACER NEGUNDO	10	POOR
729	BLACK WALNUT : JUGLANS NIGRA	7	POOR
730	BOX ELDER : ACER NEGUNDO	12	POOR
731	MULBERRY : MORUS RUBRA	33	POOR
732	MULBERRY : MORUS RUBRA	16	POOR
733	BOX ELDER : ACER NEGUNDO	22	POOR
734	BOX ELDER : ACER NEGUNDO	8	POOR
735	COTTONWOOD : POPULUS	42	POOR
736	SILVER MAPLE : ACER SACCHARINUM	26	POOR
737	COTTONWOOD : POPULUS	38	DEAD
738	BUCKTHORN : RHAMNUS	7	DEAD
739	BUCKTHORN : RHAMNUS	10	POOR
740	SILVER MAPLE : ACER SACCHARINUM	26	POOR
741	HACKBERRY : CELTIS OCCIDENTALIS	7	POOR
742	BUCKTHORN : RHAMNUS	9	POOR
743	MULBERRY : MORUS RUBRA	8	POOR
744	BLACK WALNUT : JUGLANS NIGRA	14	GOOD
745	BOX ELDER : ACER NEGUNDO	7	POOR
746	BLACK WALNUT : JUGLANS NIGRA	14	GOOD
747	BLACK WALNUT : JUGLANS NIGRA	62 MULTI STEM	GOOD
748	BLACK WALNUT : JUGLANS NIGRA	32	GOOD
749	BLACK WALNUT : JUGLANS NIGRA	29	GOOD
750	BLACK WALNUT : JUGLANS NIGRA	32	GOOD
751	BLACK WALNUT : JUGLANS NIGRA	20	GOOD
752	BLACK WALNUT : JUGLANS NIGRA	18	GOOD
753	BLACK WALNUT : JUGLANS NIGRA	10	GOOD
754	BLACK WALNUT : JUGLANS NIGRA	19	GOOD
755	BLACK WALNUT : JUGLANS NIGRA	37	GOOD
756	BLACK WALNUT : JUGLANS NIGRA	10	POOR
757	BLACK WALNUT : JUGLANS NIGRA	16	GOOD
758	BOX ELDER : ACER NEGUNDO	10	DEAD
759	BOX ELDER : ACER NEGUNDO	7	POOR

BODE TREE CARE

TREE SURVEY

HEALTH CONDITION RATING SYSTEM

RATING	DESCRIPTION	GENERAL CRITERIA
1	EXCELENT	THE TREE IS TYPICAL OF THE SPECIES, HAS LESS THAN 10 PERCENT DEADWOOD IN THE CROWN THAT IS ATTRIBUTABLE TO NORMAL CAUSES, HAS NO OTHER OBSERVED PROBLEMS, AND REQUIRES NO REMEDIAL ACTION.
2	GOOD	THE TREE IS TYPICAL OF THE SPECIES AND/OR HAS LESS THAN 20 PERCENT DEADWOOD IN THE CROWN, ONLY 1 OR 2 MINOR PROBLEMS THAT ARE EASILY CORRECTED WITH NORMAL CARE.
3	FAIR	THE TREE IS TYPICAL OF THE SPECIES AND/OR HAS LESS THAN 30 PERCENT DEADWOOD IN THE CROWN, 1 OR 2 MINOR PROBLEMS THAT ARE NOT IMMINENTLY LETHAL TO THE TREE AND NO SIGNIFICANT DECAY OR STRUCTURAL PROBLEMS, BUT THE TREE MUST HAVE REMEDIAL CARE ABOVE NORMAL CARE IN ORDER TO MINIMIZE THE IMPACT OF FUTURE STRESS AND TO ENSURE CONTINUED HEALTH.
4	FAIR TO POOR	THE TREE IS NOT TYPICAL OF THE SPECIES AND/OR HAS SIGNIFICANT PROBLEMS SUCH AS 30 TO 50 PERCENT DEADWOOD IN THE CROWN, SERIOUS DECAY OR STRUCTURAL DEFECT, INSECTS, DISEASE OR OTHER PROBLEMS THAT CAN BE IMMINENTLY LETHAL TO THE TREE OR CREATE A HAZARDOUS TREE IF NOT CORRECTED IN A SHORT PERIOD OF TIME OR IF THE TREE IS SUBJECTED TO ADDITIONAL STRESS.
5	POOR	THE TREE IS NOT TYPICAL OF THE SPECIES AND/OR HAS OVER 50 PERCENT DEADWOOD IN THE CROWN, MAJOR DECAY OR STRUCTURAL PROBLEMS, IS HAZARDOUS OR IS SEVERELY INVOLVED WITH INSECTS, DISEASE, OR OTHER PROBLEMS THAT EVEN IF AGGRESSIVELY CORRECTED WOULD NOT RESULT IN THE LONG TERM SURVIVAL OF THE TREE.
6	DEAD	LESS THAN 10 PERCENT OF THE TREE SHOWS SIGNS OF LIFE.

BODE TREE CARE



Ravina Plumbing Parking lot project



Table of Contents

- Product Specifications
- Supplied Project Documents
- Photometric Lighting Layouts



Product Specifications

Drawing Summary

Light Fixture: 16" Heritage Shoebox

Light Pole: Square Straight Anchor Base

Bracket / Arm: 2 @ 180° Pole Top Bullhorn

Fixture Mounting: Adjustable Slipfitter

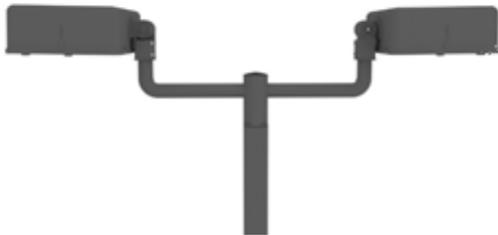
Top View



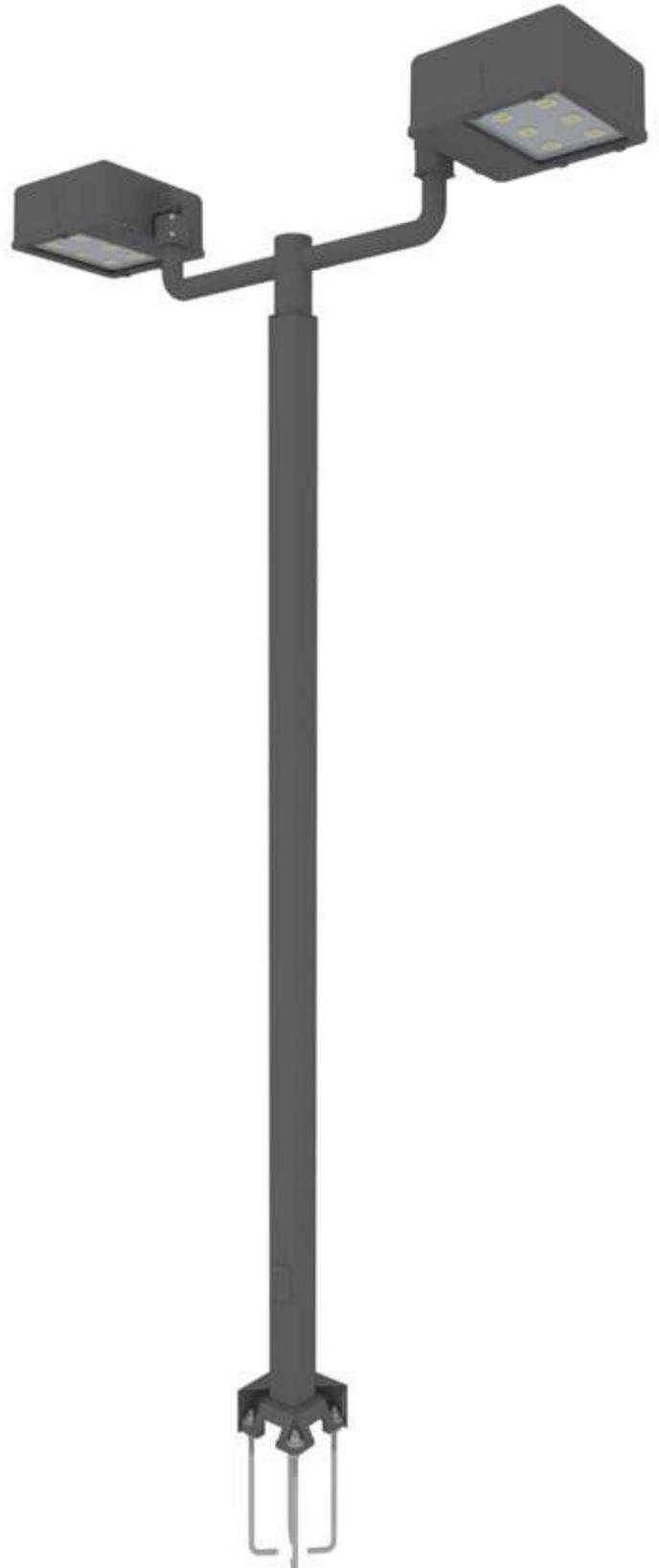
Front View



Side View



Pole / Fixture Assembly



lightpoles PLUS.com

206 W. McWilliams St.
Suite 101
Fond du Lac, WI 54935

888-791-1463
quotes@lightpolesplus.com
LightPolesPlus.com



This specification brochure is intended to serve as a general guide. Our products are continually being engineered and improved, and specifications are subject to change without notice.



12" & 16" LED Shoebox Area & Flood Lights, Heritage Series

Advanced light engine technology in a traditional housing design.
Wisconsin engineering and craftsmanship utilizing premium components.

Our LED lights, light poles and brackets are proudly engineered and manufactured in the USA. We use only the highest quality components, and our LED Shoebox fixtures deliver unmatched light output and efficiency for any area or flood lighting project. Precision engineered for performance and energy savings, these products dramatically reduce energy consumption by up to 80% and virtually eliminate ongoing maintenance expenses for a variety of customers and applications.

Product Overview

Highlights:

- Engineered and manufactured in Wisconsin, USA from domestic and imported components
- ETL Certified: Conforms to UL STD 1598 & CSA STD C22.2 # 250.0 for wet locations
- L70 calculated LED life over 300,000+ hours
- Drivers are 0-10v dimming standard
- Six light engine options from 5,622 – 31,849 lumens for 75-1000w HID replacements
- Premium high-output Chip-On-Board (COB) LEDs in 5000K, 4000K and 3000K options, custom color temps available upon request
- Minimum CRI of 70, custom CRI available
- DLC qualified models available. Please refer to www.designlights.org for the most current information.

Common Applications:

- Parking lots, ramps, walkways and roadways
- General area and site lighting
- Car dealerships, schools, hospitals, hotels and gas stations
- Retail stores and commercial buildings
- Sports lighting and ball fields

Light Engine Warranty:

- 5-year standard limited warranty on all light engine components
- Accessories and adders covered by separate OEM supplier warranties



lightpoles PLUS.com

206 W. McWilliams St.
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Fond du Lac, WI 54935

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quotes@lightpolesplus.com
LightPolesPlus.com

Search www.designlights.org
for qualifying models.



Rev. V07302018

This specification brochure is intended to serve as a general guide. Our products are continually being engineered and improved, and specifications are subject to change without notice.

Product Specifications

Housing Construction, Finish & Mounting:

- Rugged, die-cast, soft square aluminum housing
- Impact-resistant, tempered glass lens and durable silicone gasket
- Durable, multi-layer, polyester powder coat or industrial grade liquid paint
- Available in a variety of colors such as dark bronze, black, white, light gray, dark green and natural aluminum (custom colors available upon request)
- 6" pole mount, 10" pole mount, adjustable slipfitter and trunnion yolk brackets available as standard mounting accessories

Optics & Lighting Distribution:

- Innovative silicone optics assembly with precision light control and cutoff
- Standard photometric distributions include V-WIDE, 30° NARROW SPOT and 70° MEDIUM SPOT
- No secondary optics used for base model
- IES files, photometric reports and simulations available upon request

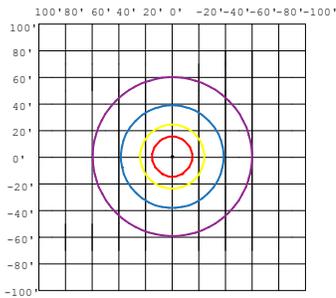
Automotive Dealership Optics:

- Left and right optical rotation available for applications like car dealership front lines (optics are not field-rotatable, must be done at factory)
- Delivers enhanced lighting and proper photometric control of auto dealership merchandise
- Allows for simple 2@180 pole mount while rotating forward throw light patterns toward dealership merchandise

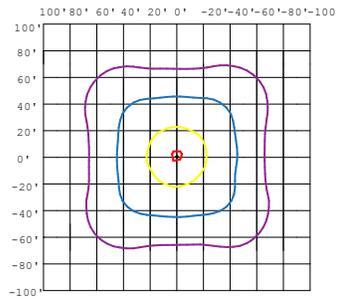
LEGEND

- 0.1 fc
- 0.5 fc
- 2.0 fc
- 5.0 fc

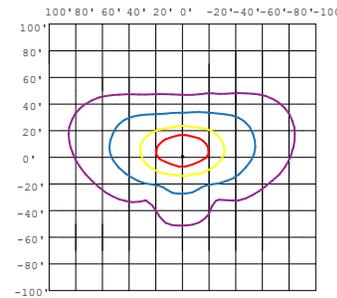
Created & Simulated per IESNA LM-63-1995



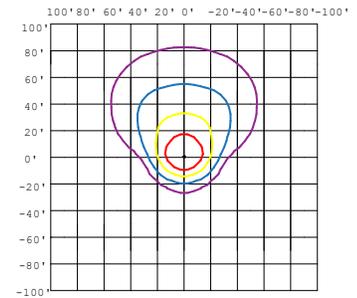
160w Shoebox, Type V, 25' Height



160w Shoebox, Type V Square, 25' Height



160w Shoebox, Type III, 25' Height



160w Shoebox, Type IV 25' Height

Electrical:

- Operating temp: -40 °C to +45 °C
- Standard AC input of 120-277v VAC, up to 480v available
- EMI filter: 47CFR, part 2, part 15
- Power factor: >0.9
- Total harmonic distortion: <20%
- Surge protection: IEC/EN 61000-4-5 EMC test standard
- Licensed electrician required for installation

Energy Control Options:

- Daylight harvesting and photo controls
- Motion control and dimming
- Surge protection
- CA Title 24 compliance options available upon request

Effective Projected Area (EPA) & Weight:

12" Housing (15 LBS)

- 0.75 EPA at 0°
- 1.3 EPA at 45°

16" Housing (25 LBS)

- 1.2 EPA at 0°
- 2.0 EPA at 45°

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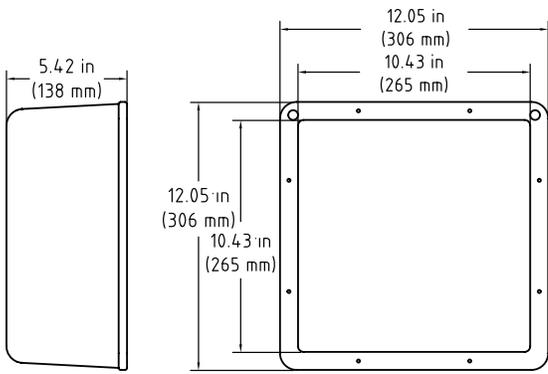
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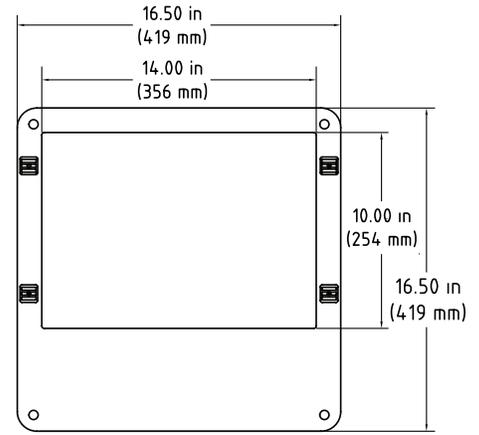
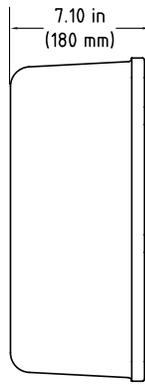
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12"



16"



Light Engine Specifications (Values Listed for Type V, 5000K)

Base Model	System Watts	LED Watts	HID Replacement ¹	Number of COBs	Drive Current	Nominal Lumens ²	Delivered Lumens ³	L70 EnergySTAR LED Life ⁴
12-SBHC-40-50-MV-5	40w	36w	75-175w	1	1,050 mA	5,622	4,854	300,000+ Hrs
12-SBHC-80-50-MV-5	79w	71w	125-300w	2	1,050 mA	11,119	10,007	300,000+ Hrs
12-SBHC-120-50-MV-5*	118w	106w	200-400w	3	1,050 mA	16,490	14,841	300,000+ Hrs
16-SBHC-160-50-MV-5*	157w	142w	300-525w	4	1,050 mA	21,735	19,562	300,000+ Hrs
16-SBHC-200-50-MV-5	196w	177w	400-650w	5	1,050 mA	26,855	24,169	300,000+ Hrs
16-SBHC-240-50-MV-5*	235w	211w	750-1000w	6	1,050 mA	31,849	28,664	300,000+ Hrs

* 120w: DLC qualified model in 3000K, 4000K and 5000K. - 160w: DLC qualified model in MV and HV voltage. - 240w: DLC qualified model.

Amperage Load

Wattage	Total Amps Per Fixture							
	110v	120v	208v	220v	240v	277v	347v	480v
40w	0.36A	0.33A	0.19A	0.18A	0.17A	0.14A	0.12A	0.08A
79w	0.72A	0.66A	0.38A	0.36A	0.33A	0.29A	0.23A	0.16A
118w	1.07A	0.98A	0.57A	0.54A	0.49A	0.43A	0.34A	0.25A
157w	1.43A	1.31A	0.75A	0.71A	0.65A	0.57A	0.45A	0.33A
196w	1.78A	1.63A	0.94A	0.89A	0.82A	0.71A	0.56A	0.41A
235w	2.14A	1.96A	1.13A	1.07A	0.98A	0.85A	0.68A	0.49A

Lumen Maintenance Factor (LMF)⁴

Type	Ambient	Initial LMF	25K Hour Projected LMF ⁵	50K Hour Projected LMF ⁵	75K Hour Projected LMF ⁶	100K Hour Projected LMF ⁶
COB	25 °C (77 °F)	100%	96%	94%	92%	90%

1. Considered to be a typical HID equivalent. Specific HID wattage equivalents will depend on things like environmental and application characteristics, distribution type and design criteria.
2. Considered initial nominal value of the LED light engine as specified by the LED chip manufacturer. Fixture efficacy and lumen output will depend on things like color temperature, distribution type and environmental characteristics.
3. Considered the typical initial delivered lumens of the LED light engine. Specific lumens for an application will depend on things like color temperature, distribution type and environmental characteristics.
4. Lumen maintenance values at 25 °C are calculated per TM-21 based on LM-80 data and in-house luminaire testing.
5. In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip.
6. In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip.

Note: Additional wattages and configurations available upon request. Specifications are subject to change without notice.



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Ordering Information

Ex. 12-SBHC-120-50-MV-5-DB-6S-BPC1

Designation	Color Temp.	Distribution Type	Color	Accessories
12-SBHC = 12" Shoebox COB	50 = 5000K	5 = Type V Round	DB = Dark Bronze	Mounting
16-SBHC = 16" Shoebox COB	40 = 4000K	5W = Type V Square	BK = Black	6S = 6" Arm (Square Pole)
	30 = 3000K	4 = Type IV FWD	WH = White	6R = 6" Arm (Round Pole)
	CT = Custom	3 = Type III Wide	SG = Slate Gray	10S = 10" Arm (Square Pole), For @90° Shoebox Configurations
		2 = Type II Wide	LG = Light Gray	10R = 10" Arm (Round Pole), For @90° Shoebox Configurations
		70 = 70° Medium Spot	DG = Dark Green	SF = 2.38" OD Slipfitter
		30 = 30° Narrow Spot	NA = Nat. Alum. Paint	TR = Trunnion Yoke
		CD = Custom	SC = Custom Color	TCAA = Tennis Court Davit Arm Adapter For Slipfitter Mount
				TA238D1 = Drill Single Tenon Adapter For 2.38" OD Existing Tenon (Painted To Match Fixture, Other Sizes Avail)
				TA238D2 = Drill 2@180 Tenon Adapter For 2.38" OD Existing Tenon (Painted To Match Fixture, Other Sizes Avail)
				TA238D4 = Drill 4@90 Tenon Adapter For 2.38" OD Existing Tenon (Painted To Match Fixture, Other Sizes Avail)
				TA238D5 = Drill 2@90 Tenon Adapter For 2.38" OD Existing Tenon (Painted To Match Fixture, Other Sizes Avail)
				TA238D6 = Drill 3@90 Tenon Adapter For 2.38" OD Existing Tenon (Painted To Match Fixture, Other Sizes Avail)
				Housing
				WG12 = 12" Wire Guard
				WG16 = 16" Wire Guard
				VS12 = 12" House Side Visor
				VS16 = 16" House Side Visor
				Controls
				BPC1 = Button Photocontrol, 120 VAC
				BPC2 = Button Photocontrol, 208 to 277 VAC
				BPC3 = Button Photocontrol, 347 VAC
				BPC4 = Button Photocontrol, 480 VAC
				SPC1 = Swivel Photocontrol, 120 VAC
				SPC2 = Swivel Photocontrol, 208 to 277 VAC
				SPC3 = Swivel Photocontrol, 347 VAC
				SPC4 = Swivel Photocontrol, 480 VAC
				MPS1 = Motion/Photo Sensor, 0-8' mounting heights, 48" diameter @ 8', 100-347VAC (single phase) or 208/230/480VAC (phase-to-phase) (Installed In Fixture)
				MPS2 = Motion/Photo Sensor, 8-40' mounting heights, 100" diameter @ 40', 100-347VAC (single phase) or 208/230/480VAC (phase-to-phase) (Installed In Fixture)
				RMT1 = Optional Remote For Motion/Photo Sensor, One Remote Controls Multiple Units
				SRG1 = Surge Protector, 120v - 277v
				SRG4 = Surge Protector, 347v - 480v
				F10 = 10 Amp Fuse Kit, 120-480 VAC
				Other
				WHP11NP = 11' Cord w/o Plug, Stripped Pigtail Both Ends (Not Installed)
				WHP7NP = 7' Cord w/o Plug, Stripped Pigtail Both Ends (Not Installed)
				WHP11P1 = 11' Cord w/ NEMA 5-15P, Stripped Pigtail One End (Not Installed)
				WHP7P1 = 7' Cord w/ NEMA 5-15P, Stripped Pigtail One End (Not Installed)
				WHP3NP = 3' Cord w/o Plug, Stripped Pigtail Both Ends (Not Installed)
				WHP3P1 = 3' Cord w/ NEMA 5-15P, Stripped Pigtail One End (Not Installed)
				CG1 = 1/2" NPT Cord Grip, 0.180-0.400" Cord OD Range (Not Installed)

Wattage
40 = 40 Watt
80 = 80 Watt
120 = 120 Watt
160 = 160 Watt
200 = 200 Watt
240 = 240 Watt

Input Voltage
MV = 100-277v
HV = 347-480v
CV = Custom

Mounting Accessories



Arm Mount Trunnion Mount **Slipfitter Mount** Tennis Court Davit Arm Adapter Tenon Adapter

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* Many lens options available, contact us for more options

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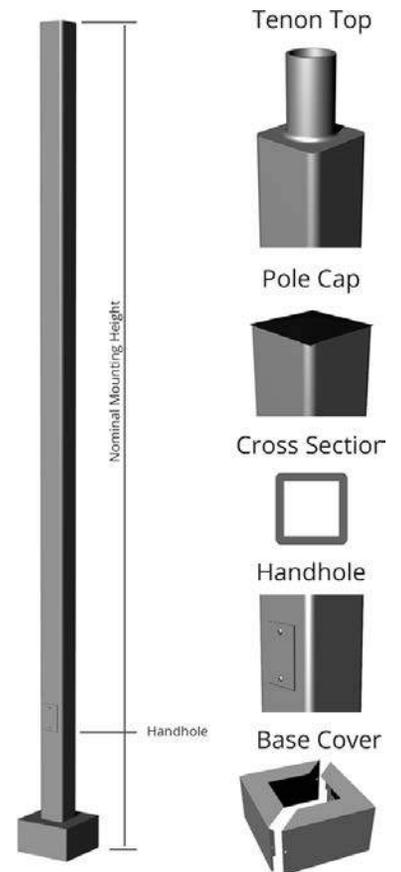
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Square Straight Aluminum Light Poles, Anchor Base

Product Overview

- **Pole Shaft** - The pole shaft is extruded from seamless 6063-T6 aluminum.
- **Pole Top** - A removable top cap is provided for poles receiving drilling patterns for side-mount luminaire arm assemblies. Other pole top options include Tenon Top, Top Cap Only or Open Top which is typical when the pole top diameter matches the necessary slip-fit dimensions.
- **Hand Hole** - 2" x 4" oval hand hole and grounding provision are provided (dimensions are nominal). Cover and cover attachment hardware also included.
- **Anchor Base & Cover** - The anchor base is cast from 356 alloy aluminum and supplied with an aluminum two-piece base cover. The completed pole assembly is heat-treated to a T6 temper. Optional decorative base covers available as special order.
- **Anchor Bolts** - Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an "L" bend on one end and are galvanized a minimum of 12" on the threaded end.
- **Hardware** - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.
- **Finish** - Finishes include anodized or painted. Please consult factory for special finishing colors and fixture matching options. When storing light poles outside, remove all protective wrapping immediately upon delivery to prevent finish damage.
- **Design Criteria** - Standard EPA (Effective Projected Area) and weight values are based on Standard Commercial and AASHTO Criteria (with 3 second gust factor) for side and top mounted fixtures only. Satisfactory performance of light poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.



EPA Load Information

BASE MODEL	80 MPH w/3sec Gust		90 MPH w/3sec Gust		100 MPH w/3sec Gust		110 MPH w/3sec Gust		120 MPH w/3sec Gust	
	MAX EPA (SQ FT)	MAX WEIGHT (LBS)	MAX EPA (SQ FT)	MAX WEIGHT (LBS)	MAX EPA (SQ FT)	MAX WEIGHT (LBS)	MAX EPA (SQ FT)	MAX WEIGHT (LBS)	MAX EPA (SQ FT)	MAX WEIGHT (LBS)
NP-SSAA-08-4040-C	17.5	100	13.8	100	10.8	100	9.5	100	7.7	100
NP-SSAA-10-4040-C	13.5	100	10.2	100	7.9	100	6.9	100	5.4	100
NP-SSAA-12-4040-C	10.5	100	7.8	100	5.8	100	5	100	3.8	100
NP-SSAA-14-4040-C	8.2	100	5.9	100	4.2	100	3.5	100	2.4	100
NP-SSAA-15-4040-C	7.2	100	5.1	100	3.5	100	2.8	100	1.9	100
NP-SSAA-15-4040-D	12.2	100	9	100	6.7	100	5.7	100	4.3	100
NP-SSAA-15-5050-D	21.2	125	15.5	125	12	125	10.3	125	7.9	125
NP-SSAA-16-4040-C	6.3	100	4.3	100	2.8	100	2.2	100	1.3	100
NP-SSAA-16-4040-D	11	100	8	100	5.8	100	4.9	100	3.6	100
NP-SSAA-16-5050-D	19.3	125	14.2	125	10.6	125	9.1	125	6.9	125
NP-SSAA-18-4040-C	4.6	100	2.9	100	1.6	100	1	100	N/A	N/A
NP-SSAA-18-4040-D	8.6	100	6	100	4.2	100	3.4	100	2.2	100
NP-SSAA-18-4040-E	12.3	100	8.9	100	6.5	100	5.5	100	2.9	75
NP-SSAA-18-5050-D	15.6	125	11.2	125	8.1	125	6.7	125	4.8	125
NP-SSAA-20-4040-C	3.1	100	1.6	100	0.5	100	N/A	N/A	N/A	N/A
NP-SSAA-20-4040-D	6.7	100	4.4	100	2.7	100	2	100	1	100
NP-SSAA-20-4040-E	9.9	100	6.9	100	4.8	100	3.9	100	2.6	100
NP-SSAA-20-5050-D	12.4	125	8.6	125	5.8	125	4.6	125	3	125
NP-SSAA-20-5050-E	17.9	125	12.9	125	9.4	125	7.8	125	5.6	125
NP-SSAA-20-6060-E	27.5	150	20	150	15	150	12.7	150	9.5	150
NP-SSAA-22-5050-D	9.7	125	6.3	125	3.9	125	2.9	125	1.4	125
NP-SSAA-22-5050-E	14.6	125	10.2	125	7	125	5.7	125	3.7	125
NP-SSAA-22-6060-E	23	150	16.5	150	11.8	150	9.7	150	6.9	150
NP-SSAA-24-5050-D	7.5	125	4.4	125	2.2	125	1.3	125	N/A	N/A
NP-SSAA-24-5050-E	11.8	125	7.9	125	5	125	3.8	125	2.1	125
NP-SSAA-24-6060-E	19.2	150	13.2	150	9	150	7.2	150	4.6	150
NP-SSAA-25-5050-D	6.4	125	3.5	125	1.5	125	0.6	125	N/A	N/A
NP-SSAA-25-5050-E	10.6	125	6.8	125	4.1	125	3	125	1.3	125
NP-SSAA-25-6060-E	17.4	150	11.8	150	7.8	150	6	150	3.6	150
NP-SSAA-26-6060-E +	15.8	150	10.4	150	6.6	150	4.9	150	2.6	150
NP-SSAA-28-6060-E +	12.9	150	7.9	150	4.4	150	2.9	150	0.8	150
NP-SSAA-30-6060-E +	10.9	150	6.3	150	3	150	1.5	150	N/A	N/A

1. The total combined EPA and weight of all fixtures, brackets and attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
2. Standard EPA (Effective Projected Area) and weight values are based on Standard Commercial Criteria (with 3 second gust factor) for side and top mounted fixtures only.
3. Satisfactory performance of light poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.

Note: Additional sizes and configurations are available upon request.

+ Indicates a vibration dampener is standard

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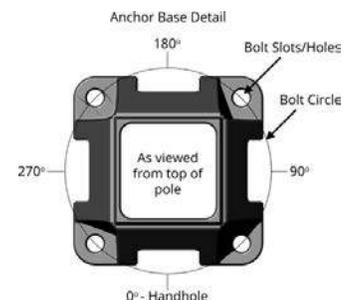
Designation & Dimensional Information

BASE MODEL	POLE DIMENSIONS					BASE PLATE		ANCHOR BOLTS	
	NOMINAL MOUNTING HEIGHT	TOP SQ (IN)	BASE SQ (IN)	WALL THK (IN)	STRUCTURE WEIGHT (LBS)	BOLT CIRCLE DIA (IN)	SQ (IN) x THK (IN)	DIA x LENGTH x HOOK (IN)	PROJECTION (IN)
NP-SSAA-08-4040-C	8'-0"	4	4	0.125	39	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-10-4040-C	10'-0"	4	4	0.125	43	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-12-4040-C	12'-0"	4	4	0.125	48	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-14-4040-C	14'-0"	4	4	0.125	52	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-15-4040-C	15'-0"	4	4	0.125	54	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-15-4040-D	15'-0"	4	4	0.188	71	9.25	8.625 x 8.625 x 0.75	0.75 x 17.00 x 2.00	2.75
NP-SSAA-15-5050-D	15'-0"	5	5	0.188	84	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-16-4040-C	16'-0"	4	4	0.125	57	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-16-4040-D	16'-0"	4	4	0.188	74	9.25	8.625 x 8.625 x 0.75	0.75 x 17.00 x 2.00	2.75
NP-SSAA-16-5050-D	16'-0"	5	5	0.188	88	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-18-4040-C	18'-0"	4	4	0.125	61	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-18-4040-D	18'-0"	4	4	0.188	81	9.25	8.625 x 8.625 x 0.75	0.75 x 17.00 x 2.00	2.75
NP-SSAA-18-4040-E	18'-0"	4	4	0.250	100	9.25	8.625 x 8.625 x 0.75	0.75 x 17.00 x 2.00	2.75
NP-SSAA-18-5050-D	18'-0"	5	5	0.188	97	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-20-4040-C	20'-0"	4	4	0.125	65	9.25	8.625 x 8.625 x 0.75	0.625 x 16.00 x 2.00	2.75
NP-SSAA-20-4040-D	20'-0"	4	4	0.188	88	9.25	8.625 x 8.625 x 0.75	0.75 x 17.00 x 2.00	2.75
NP-SSAA-20-4040-E	20'-0"	4	4	0.250	109	9.25	8.625 x 8.625 x 0.75	0.75 x 17.00 x 2.00	2.75
NP-SSAA-20-5050-D	20'-0"	5	5	0.188	105	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-20-5050-E	20'-0"	5	5	0.250	133	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-20-6060-E	20'-0"	6	6	0.250	157	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5
NP-SSAA-22-5050-D	22'-0"	5	5	0.188	114	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-22-5050-E	22'-0"	5	5	0.250	144	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-22-6060-E	22'-0"	6	6	0.250	170	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5
NP-SSAA-24-5050-D	24'-0"	5	5	0.188	122	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-24-5050-E	24'-0"	5	5	0.250	155	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-24-6060-E	24'-0"	6	6	0.250	183	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5
NP-SSAA-25-5050-D	25'-0"	5	5	0.188	126	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-25-5050-E	25'-0"	5	5	0.250	160	11.00 - 12.750	11.625 x 11.625 x 1	1.00 x 36.00 x 4.00	3.5
NP-SSAA-25-6060-E	25'-0"	6	6	0.250	190	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5
NP-SSAA-26-6060-E +	26'-0"	6	6	0.250	197	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5
NP-SSAA-28-6060-E +	28'-0"	6	6	0.250	210	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5
NP-SSAA-30-6060-E +	30'-0"	6	6	0.250	221	12.00 - 14.750	12.625 x 12.625 x 0.875	1.00 x 36.00 x 4.00	3.5

- The total combined EPA and weight of all fixtures, brackets and attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole.
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Ordering Information

Ex. NP-SSAA-10-4040-C-AB-SB-FP-DB-D1

Designation	Length*	Base OD*	Top OD*	Thickness*	Anchor Bolts	Base Type	Finish Type	Color	Fixture Mounting
Square NP-SSAA = Straight Alum.	8 to 30	40 = 4" 50 = 5" 60 = 6"	40 = 4" 50 = 5" 60 = 6"	C = 0.125" D = 0.188" E = 0.250"	AB = Incl. LAB = Not Incl.	SB = Std. Base CB = Custom Base	AN = Anod. FP = Finish Painted	DB = Dark Bronze MB = Medium Bronze LG = Light Gray DG = Dark Green HG = Hunter Green SG = Slate Gray SM = Silver Metallic BK = Black WH = White SL = Silver SC = Custom NA = Natural Alum. Paint SA = Satin Silver Anod. BA = Bronze Anod. BKA = Black Anod.	Drill Mounting (includes cap) D1 = Single D2 = 2@180 deg. D4 = 4@90 deg. D5 = 2@90 deg. D6 = 3@90 deg. Tenon Mounting P1 = 4" OD x 5" Long Tenon P2 = 2.38" OD x 4" Long Tenon P3 = 3.50" OD x 6" Long Tenon P4 = 4" OD x 6" Long Tenon P5 = 2.88" OD x 4" Long Tenon P6 = 2.88" OD x 5" Long Tenon P7 = 2.38" OD x 5" Long Tenon PQ = 2.38" OD x 12" Long Tenon PD = 3" OD x 3" Long Tenon P9 = Custom Size Tenon Other Options PC = Cap Only, No Side Drilling PL = Open Top, No Cap or Side Drilling

* See previous pages for base model configurations.
 Consult factory or your sales rep for deviations from base models. Additional sizes and configurations available upon request.

Options & Accessories

Description
SPL = Special Cut Length (Please Specify)
VDA = Internal Vibration Dampener, Factory Installed
VDF = Internal Vibration Dampener, Field Installable
PXDX = Side Drill + Tenon w/ Additional Hand Hole (Specify Tenon OD & Length)
BCSPCL = Special Base Plate to Match Existing Bolt Circle (May Add 2 Weeks to Production Lead Time, May Require Special Base Cover)

Description
HHU = Additional Unreinforced Hand Hole Opening w/ Cover Assembly
HHR = Additional Reinforced Hand Hole Opening w/ Cover Assembly
FSTS = Festoon Provision, Electrical by Others (Specify Pole Height & Orientation)
CPL = NPT Pipe Coupling (Specify Pole Height, Orientation & NPT Size)

Description
STAMP = Engineering Services, Signed & Sealed Calcs
STAMPCA = Engineering Services, CA Signed & Sealed Calcs
PRE063 = Pre-Ship Anchor Bolts - 0.625" x 16" x 2"
PRE075 = Pre-Ship Anchor Bolts - 0.75" x 17" x 2"
PRE100 = Pre-Ship Anchor Bolts - 1.0" x 36" x 4"

Note: Please consult factory or your sales representative to verify options and accessories will work with your light pole part number.

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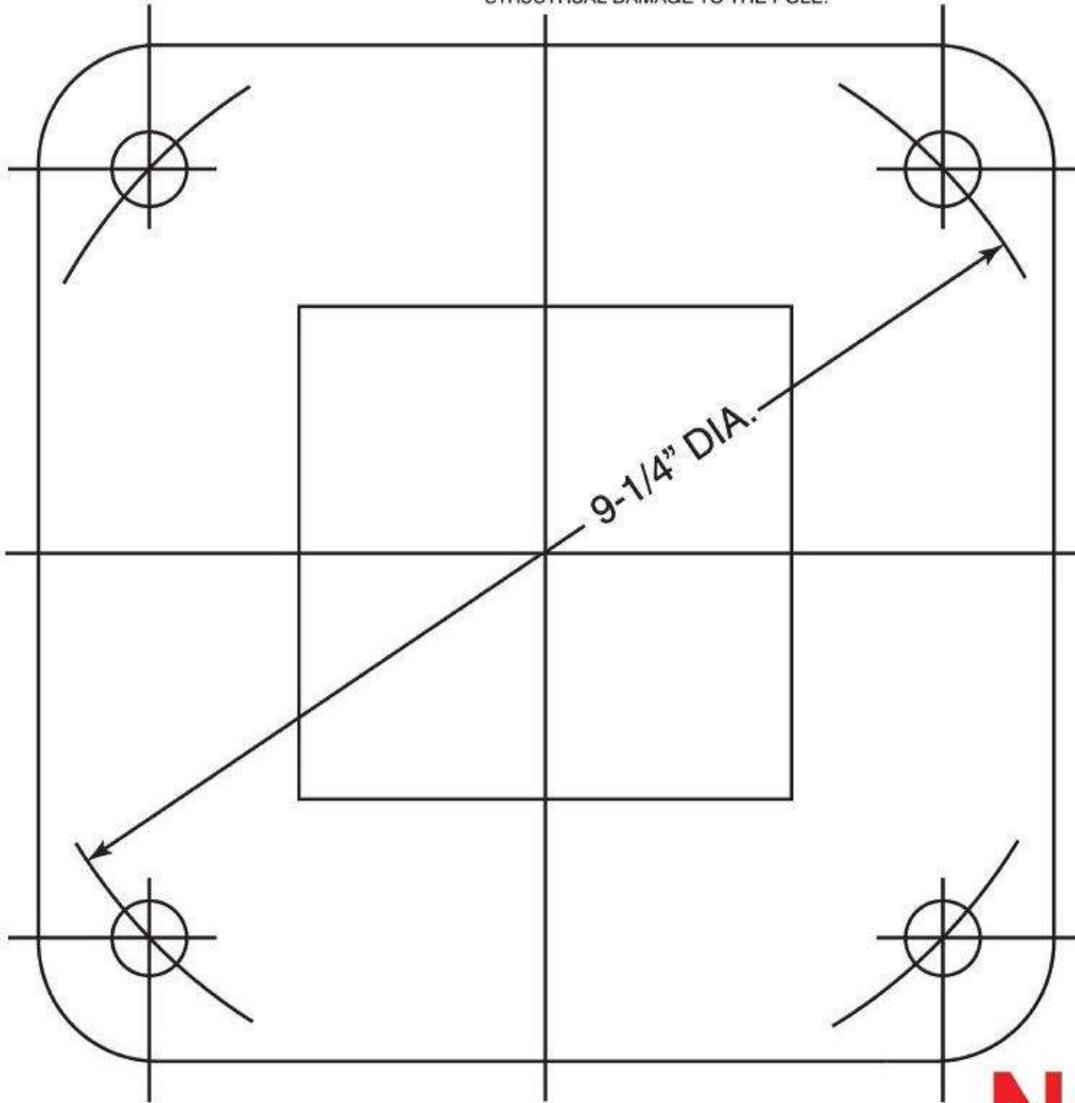
This specification brochure is intended to serve as a general guide. Our products are continually being engineered and improved, and specifications are subject to change without notice.

CAUTION

SEVERE STRUCTURAL DAMAGE CAN OCCUR TO THIS POLE IF THE LIGHTING EQUIPMENT IS NOT INSTALLED IMMEDIATELY AFTER THE POLE IS ERECTED!

CAUTION

POLE BASES ARE DESIGNED TO BE IN DIRECT CONTACT WITH THE CONCRETE FOUNDATION. SHOULD A LEVELING NUT BE USED, IT IS IMPERATIVE THAT THE SPACE BETWEEN THE BASE AND FOUNDATION BE COMPLETELY FILLED WITH GROUT TO PREVENT SEVERE STRUCTURAL DAMAGE TO THE POLE.



ANCHOR BOLT INFORMATION
FOR 4" ROUND & SQUARE STRAIGHT
ALUMINUM POLES

SIZE:	5/8" X 16"	3/4" X 18"
	4"R X .125	4"R X .250
	4"R X .188	4"S X .188
	4"S X .125	4"S X .250

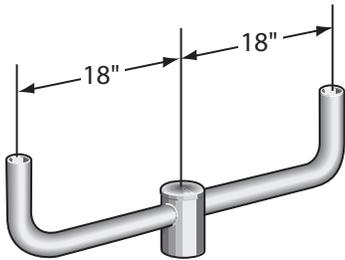
BOLT PROJECTION: 2-3/4"
 BOLT CIRCLE: 9-1/4"

NOT TO SCALE!

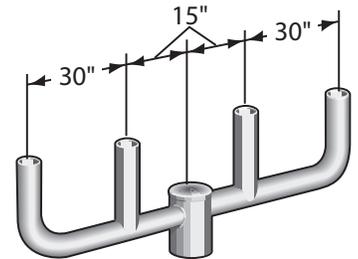
Aluminum Bullhorn Brackets, Round Pole Mount

Product Overview

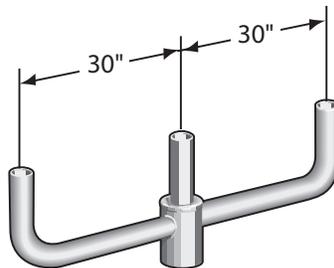
- **Center Hub** - Bracket hubs slipfit 2-3/8", 3", 4", 4 - 1/2" and 6" O.D. pole tops or tenons.
- **Tenons & Arms** - 2- 3/8" O.D. tenons and mounting arms - other sizes available upon request.
- **Hardware** - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.
- **Finish** - Finishes include anodized or painted. Please consult factory for special finishing colors and fixture matching options. When storing brackets outside, remove all protective wrapping immediately upon delivery to prevent finish damage.
- **Design Criteria** - Tenon loading is calculated for weights based on a 100 M.P.H. constant wind with a 1.3 gust factor located 30' above grade. When loading requirements exceed these limits contact the factory.



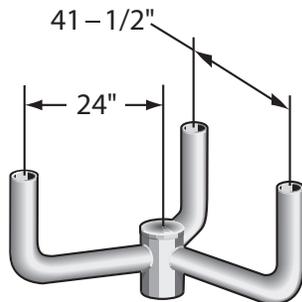
VA-A-BLH-RXX-2-180-FP



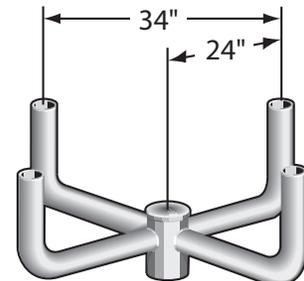
VA-A-BLH-RXX-4-180-FP



VA-A-BLH-RXX-3-180-FP



VA-A-BLH-RXX-3-120-FP



VA-A-BLH-RXX-4-090-FP

Designation, Load & Dimensional Information

MODEL #	MAX QTY OF LUMINAIRES	FITTURE ORIENTATION	MAX LUMINAIRE SPACING	100 MPH w/ 1.3 GUST		BRACKET SIZE	
				MAX LUMINAIRE EPA (SQ FT) ¹	MAX LUMINAIRE WEIGHT (LBS) ¹	EPA (SQ FT)	WEIGHT (LBS)
VA-A-BLH-RXX-2-180-FP	2	180°	1'-6"	5.3	100	0.78	9
VA-A-BLH-RXX-3-180-FP	3	180°	2'-6"	4.4	100	1.21	12
VA-A-BLH-RXX-4-180-FP	4	180°	2'-6"	2.2	100	1.76	17
VA-A-BLH-RXX-3-120-FP	3	120°	3'-5"	4.8	100	0.88	13
VA-A-BLH-RXX-4-090-FP	4	90°	2'-10"	4.8	100	1.00	17

Pole Top Bracket Attachment



1. Maximum EPA (Effective Projected Area) and weight values are based on luminaires having a centroid 1'-0" above the bracket top and a maximum mounting height of 30'-0". Variations from sizes above are available upon inquiry at the factory.
2. Total combined weight and EPA of brackets and luminaires cannot exceed Design Information of specified pole.

Note: Additional sizes and configurations are available upon request.

Ordering Information

Ex. VA-A-BLH-R24-4-090-FP

Designation	Mounting	Mounting Points	Orientation*	Finish Type	Color
VA-A-BLH = Aluminum Bullhorn	R24 = 2-3/8" Round Pole/Tenon Top Mount	2	090 = 90°	FP = Finish Painted	DB = Dark Bronze
	R30 = 3" Round Pole/Tenon Top Mount	3		SBF = Satin Brushed	MB = Medium Bronze
	R40 = 4" Round Pole/Tenon Top Mount	4	180 = 180°		LG = Light Gray
	R45 = 4-1/2" Round Pole/Tenon Top Mount		120 = 120°		DG = Dark Green
	R60 = 6" Round Pole/Tenon Top Mount				HG = Hunter Green
					SG = Slate Gray
					SM = Silver Metallic
					BK = Black
					WH = White
					SL = Silver
					SC = Custom
					NA = Natural Alum. Paint
					SA = Satin Silver Anod.
					BA = Bronze Anod.
					BA = Bronze Anod.
					BKA = Black Anod.

* See previous pages for base model configurations.
Consult factory or your sales rep for deviations from base models.
Additional sizes and configurations available upon request.

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Wisconsin manufacturing. Second to none.

- 10,000+ Wisconsin manufacturers employ 470,000+ workers and contributed \$56 billion to economic growth in 2016.
- Wisconsin's manufacturing concentration is 87 percent higher than the national average.
- Industrial machinery ranks first among Wisconsin manufacturing jobs.
- Increasing international recognition of Wisconsin manufacturing expertise through Haribo and Foxconn investments.

WHY LPP MATTERS

- In the highly competitive manufacturing hotbed of Wisconsin, LPP's history of success dates to the 1970s.
- Our experience spans aluminum castings, metal fabrication and machining, electrical design and assembly, industrial finishing, and thermal testing.

Sources:

- (1) <http://reliableplant.com/Read/30986/wisconsin-manufacturing-jobs>
- (2) <https://www.wmc.org/news/manufacturing-is-strong-in-wisconsin/>
- (3) BizTimes Media, LLC (October 20, 2016)

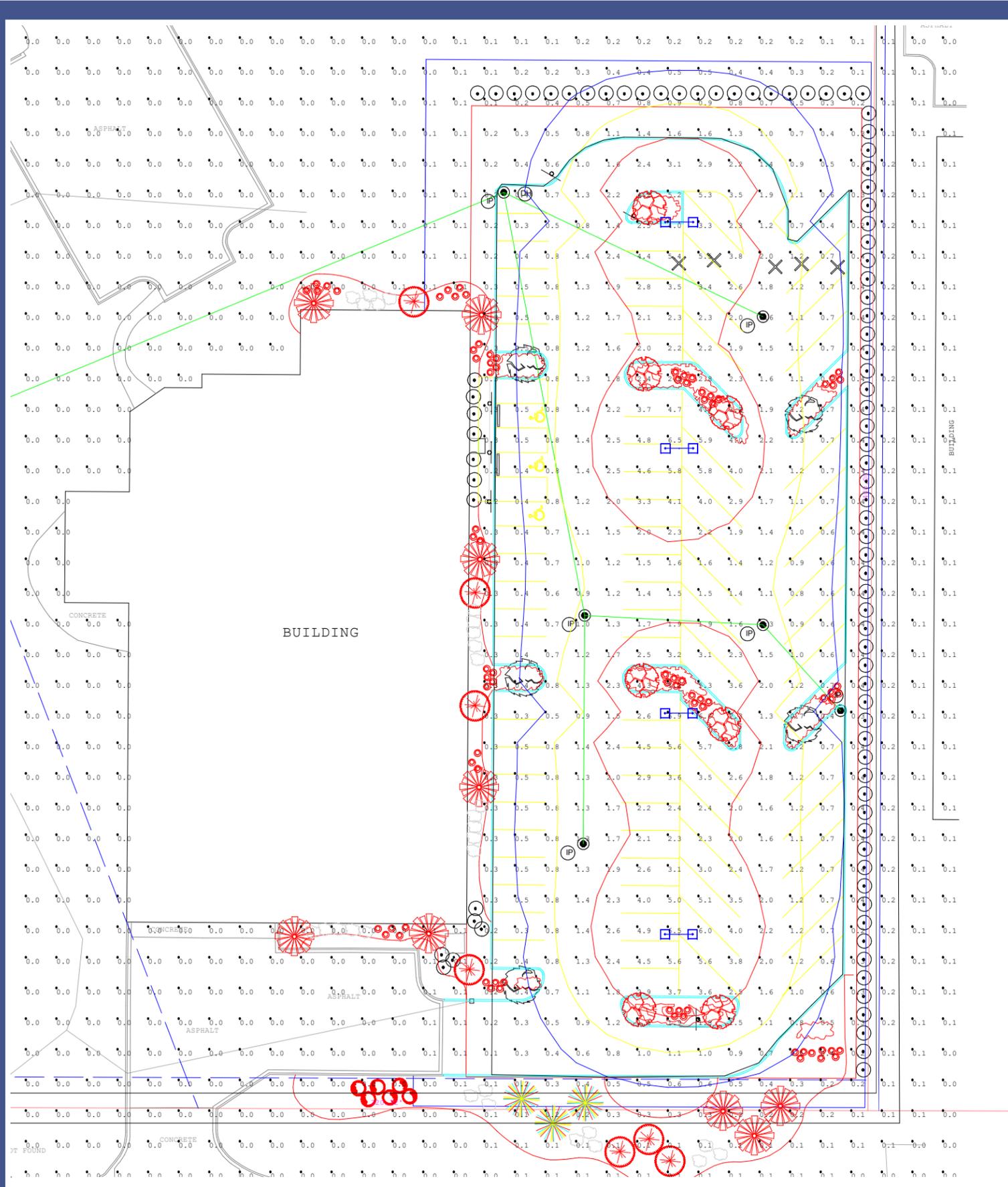
“What is it with Wisconsin? You guys are like the Silicon Valley of Lighting!”
- Valued Customer



Supplied Project Documents



Photometric Lighting Layouts



Scale: 1 inch= 40 Ft.

Ravinia Plumbing Parking lot

Drawn By: JO
 Checked By:
 Scale:
 Date:3/1/2019
 Notes:

*Luminaire testing data is based on Illuminating Engineering Society (IES) standards under simulated and laboratory conditions. This design is based on information supplied by others, and individual field measurements may vary from computer-simulated calculations due to variables like (but not limited to) variation in electrical voltage, environmental conditions and other variable field characteristics. Typical field foot candle measurements may vary +/- 10%. For sports lighting, field measurements should be taken in accordance with IESNA RP-6-15. Conformance to facility and local codes is the responsibility of the owner and their representatives. This layout may not meet CA Title 24 and/or other local energy codes. If specific compliance is required, those details must be provided to your factory design representative.

**Satisfactory performance and safe use of LED sports lighting fixtures is dependent upon light poles, brackets, anchorage and other structural components being of adequate design and condition. The total combined Effective Projected Area (EPA) and weight of all fixtures, brackets and attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole. For sports lighting retrofit applications, it is the customer's responsibility to have a qualified inspector and/or engineer confirm the structural adequacy of the existing light poles assemblies. We are happy to quote new light poles and brackets if you have concerns about your existing materials.

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Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Watts	Lum. Lumens
	4	NF-12-SBHC-80-50-MV-5W	BACK-BACK	640	18550

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Site Lighting	Illuminance	Fc	0.36	6.9	0.0	N.A.	N.A.
New Lot	Illuminance	Fc	1.90	6.9	0.3	6.33	23.00
Property Line	Illuminance	Fc	0.08	0.3	0.0	N.A.	N.A.

Isoline Legend

Illuminance (Fc)

Color Value

	0.5
	1
	2

Ravinia Plumbing
Parking lot

Drawn By: JO
Checked By:
Scale:
Date:3/1/2019
Notes:

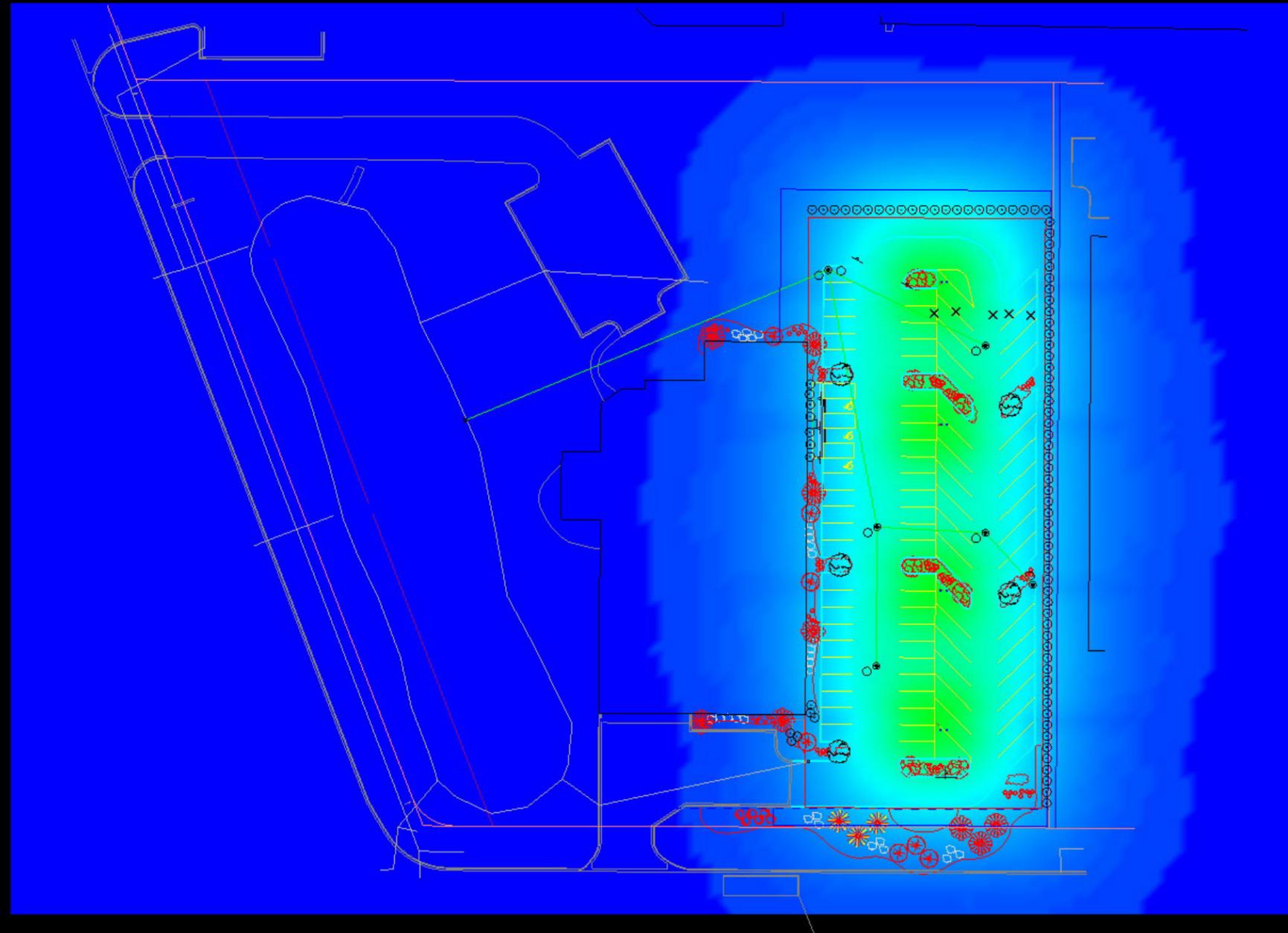
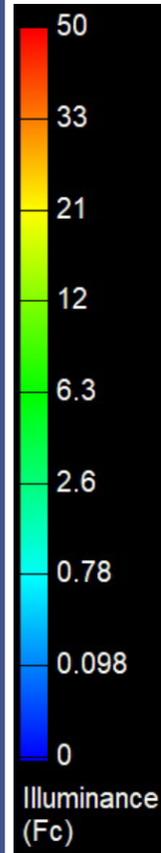
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Ravinia Plumbing Parking lot

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