Mail:
102 Roadrunner Dr.
Sedona, AZ 86336
Site:
7500 W. SR 89A
Sedona, AZ 86336
(928) 204-2234
sedonaaz.gov
FAX (928) 204-7137

Wastewater Department

March 7, 2023

Bonnie Harbage
HS Development Partners
5777 S. Rural Rd, Suite 4
Tempe, AZ 85283

SUBJECT: WILL SERVE SEWER – 2250 Shelby Drive
APN 408-28-103C

This letter is in response to your request regarding sewer service availability for the property referenced above.

This parcel has sewer availability, due to sewer being available adjacent to the point of access to the property, as defined in City Code section 13.15. Currently, the property is being billed the sewer standby fee.

Assuming adequate capacity is available at the time of development approval, sewer will be served by the city of Sedona. If you have any questions or concerns, please contact me at (928) 203-5069.

Sincerely,

Roxanne Holland, PE
Director of Wastewater

RH:ms
cc: J. Andy Dickey, Assistant City Manager/City Engineer (e-copy)
Sandra Phillips, Assistant Director of Public Works (e-copy)
Hanako Ueda, Assistant Engineer (e-copy)
Sal Valenzuela, Chief Public Works Inspector (e-copy)
Denise Breland, Accountant I (e-copy)
Marsha Beckwith, Accounting Tech II, (e-copy)
Streets file: Shelby Drive

P.O. Box 308
Cottonwood, AZ 86326

3/1/2023

Bonnie Harbage
HS Development Partners

Re: 2250 Shelby Dr Sedona, AZ 86336

Dear Bonnie,

The above referenced project is located in Arizona Public Service Company's electric service area. The Company extends its lines in accordance with the "Conditions Governing Extensions of Electric Distribution Lines and Services," Schedule 3, and the "Terms and Conditions for the Sale of Electric Service," Schedule 1, on file with the Arizona Corporation Commission at the time we begin installation of the electric facilities.

Application for the Company's electric service often involves construction of new facilities for various distances and costs depending upon customer's location, load size and load characteristics. With such variations, it is necessary to establish conditions under which Arizona Public Service will extend its facilities.

The enclosed Schedule 3 policy governs the extension of overhead and underground electric facilities to customers whose requirements are deemed by Arizona Public Service to be usual and reasonable in nature.

Please give me a call at 928-274-9659 so that we may set up an appointment to discuss the details necessary for your project.

Sincerely,

Matthew Herrera
Customer Project Representative
Verde Service Planning – Arizona Public Service

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, AZ 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

March 16, 2023

Bonnie Harbage
HS Development Partners, LLC
30 S. Oak Street
London, OH 43140

Re: Domestic Water Service to APN 408-28-103C

Dear Ms. Harbage:

Arizona Water Company (the "Company") certifies that the above-described property is located within its Sedona Certificate of Convenience and Necessity in Sedona, Arizona, and that it will provide water service to the property in accordance with the Company's tariffs and the Arizona Corporation Commission's rules and regulations. It will be the responsibility of the developer to provide the funds to install the necessary water facilities, and the Company assumes no liability to install those facilities if the funds are not advanced by the developer.

The design of the water distribution system must comply with the Company's standard specifications that are on file at the Yavapai County Development Services. Both preliminary and final water system designs must be approved by the Company.

It will also be the responsibility of the developer to comply with all of the requirements of regulatory agencies having jurisdiction over Arizona subdivisions and of Arizona statutes applicable to subdivided or unsubdivided land, including, but not limited to, requirements relating to a Certificate of Assured Water Supply, as set forth in the Arizona Groundwater Management Act, A.R.S. §45-576.

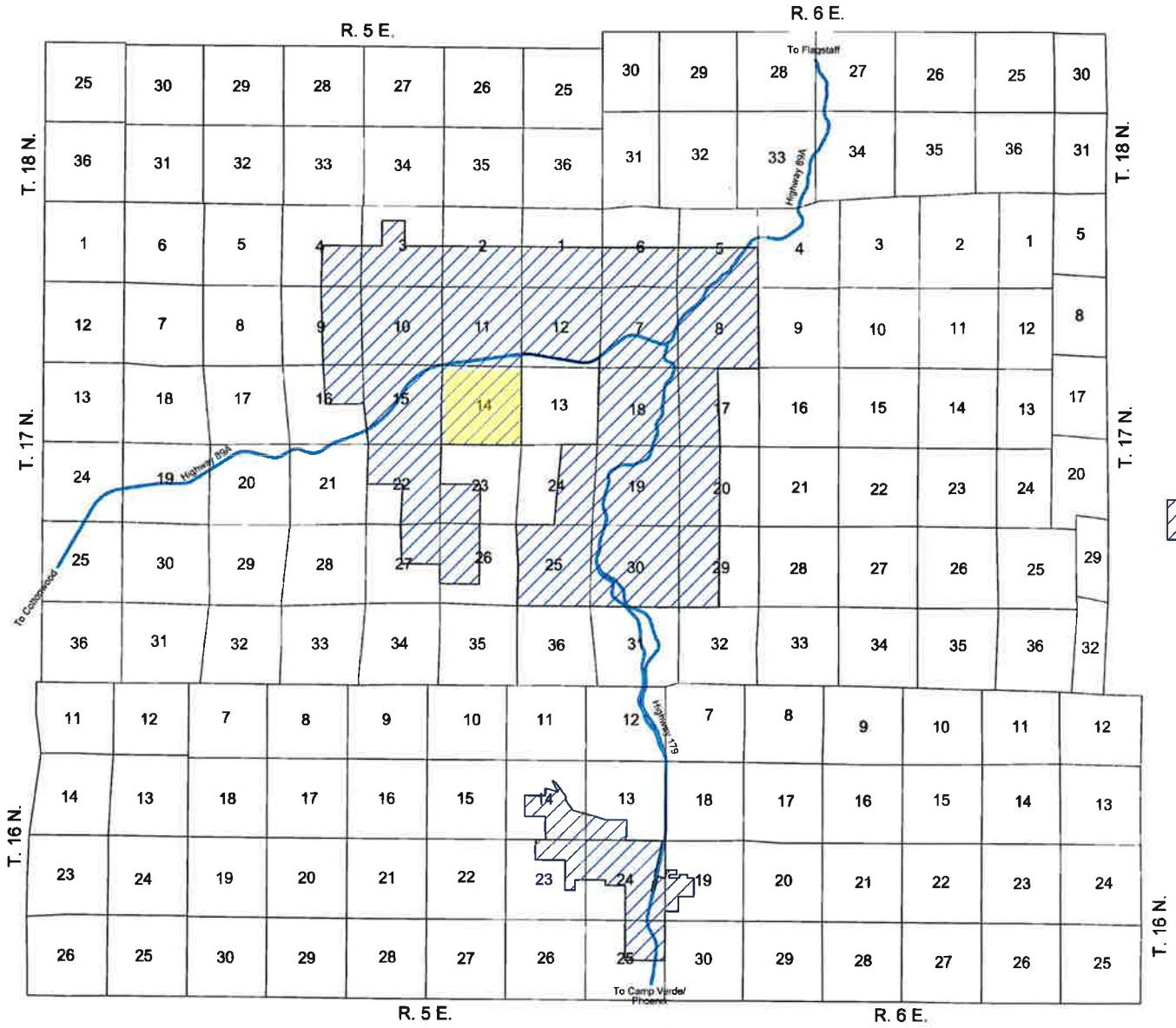
Please notify the Company if you will be proceeding with development of the property so the Company can prepare the necessary Agreement.

Very truly yours,

Andrew J. Haas

Andrew J. Haas, PE
Vice President - Engineering
developmentservices@azwater.com

sla



Area Covered By Present CCN

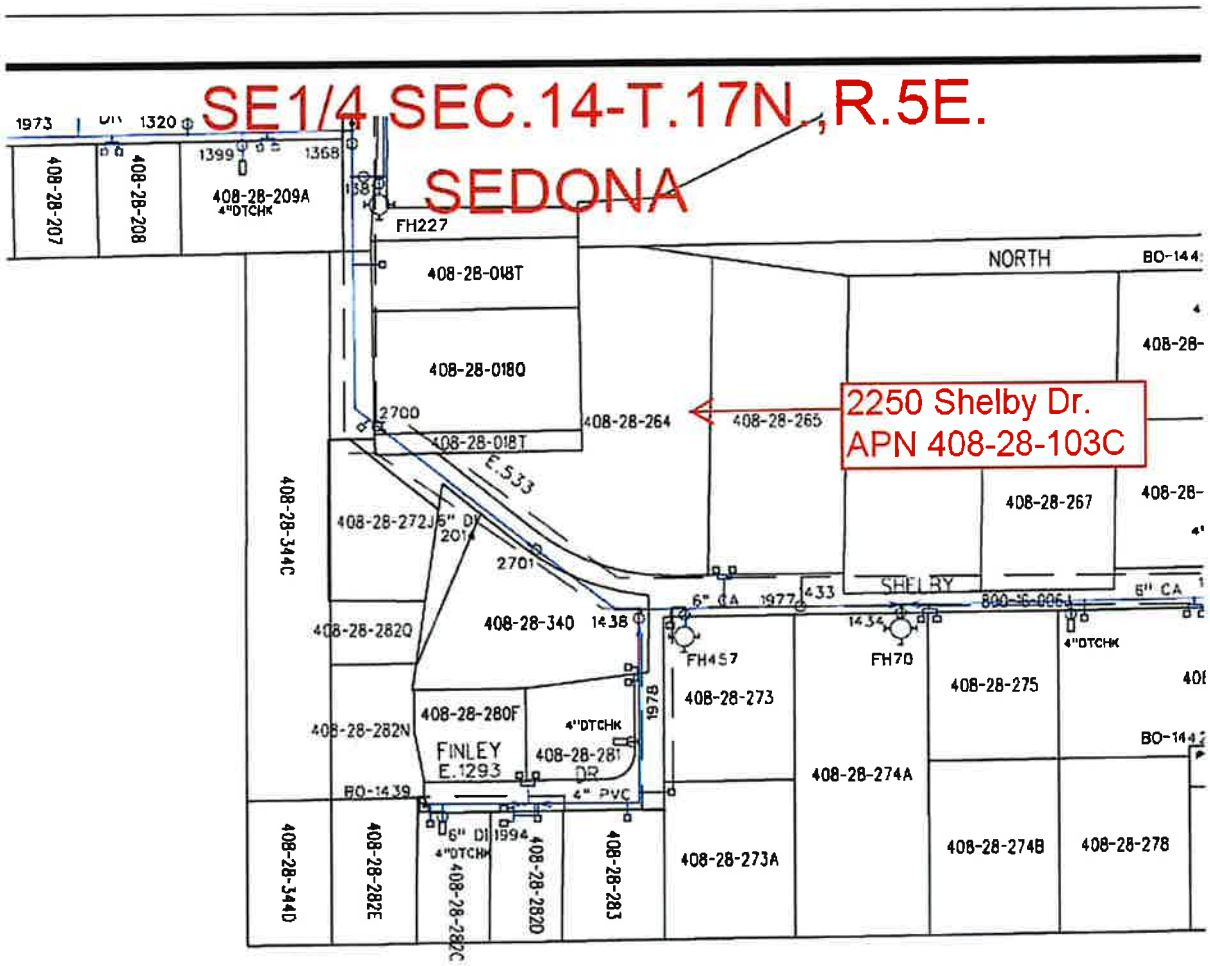
No.	Decision Date	Revision	By	Date
28				
27				
26				
25				
24				
23	11/05	Decision No. 68309 (VOC)	CS	1/06
22	4/04	Decision No. 66992	CS	4/04
21	7/99	Decision No. 61849 (VOC)	CS	4/00
20	3/98	Decision No. 60717 (VOC)	GRS	5/99
19	7/97	Decision No. 60265	GRS	5/99
18	1/95	Decision No. 59398 (VOC)	GRS	12/95
17	8/88	Decision No. 56108 (Trnsfr/VOC)	GRS	1/89
16	9/86	Decision No. 55163 (DEL-VOC)	GRS	1/88
15	9/83	Decision No. 53757 (Trnsfr VOC)	GRS	10/83
14	1/74	Decision No. 43913	RWH	1/74
13	8/73	Decision No. 43593 (+VOC)	MS	8/73
12	10/69	Decision No. 40253 (Trnsfr)	CB	12/17
11	2/67	Decision No. 38825	RB	11/68
10	10/66	Decision No. 38577 (Trnsfr)	RB	11/68
9	1/66	Decision No. 38009	RB	11/68
8	12/65	Decision No. 38226 (Trnsfr)	RB	11/68
7	12/64	Decision No. 35087 (Trnsfr)	RB	11/68
6	9/63	Decision No. 34756 (VOC)	RB	11/68
5	6/63	Decision No. 34510 (Trnsfr)	RB	11/68
4	5/63	Decision No. 34532	RB	11/68
3	4/63	Decision No. 34162 (Trnsfr)	RB	11/68
2	9/62	Decision No. 34382 (Trnsfr)	RB	11/68
1	8/60	Decision No. 32356 (VOC)		11/68

ARIZONA WATER COMPANY

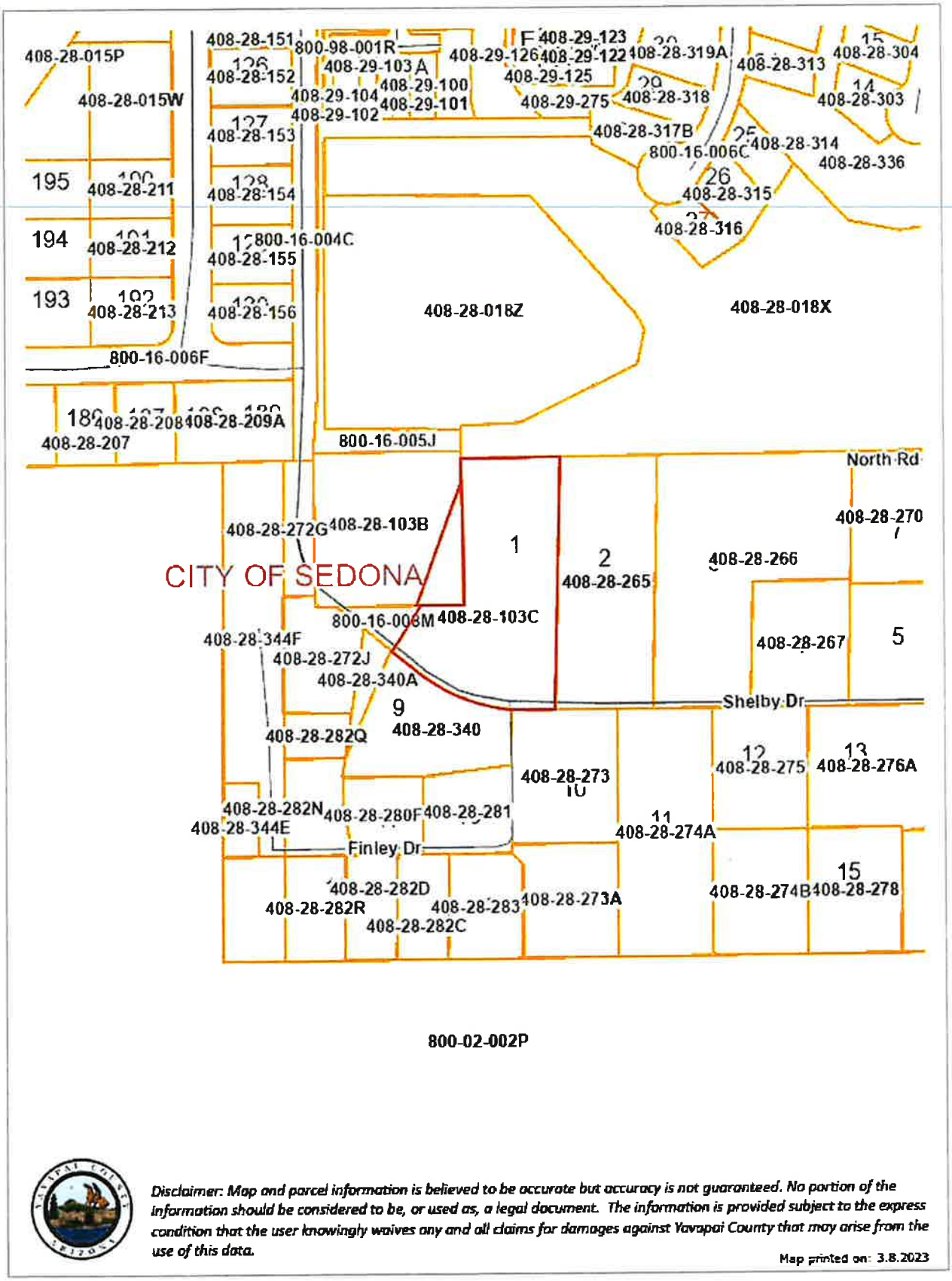
AREA COVERED BY PRESENT C.C.N.
AT
SEDONA

DATE: August 1960 | SCALE: 1" = 1 Mile

Sedona, Arizona – APN 408-28-103C



Map Disclaimer: This map is for general reference only. It does not replace a land survey and Arizona Water Company does not guarantee its thematic or spatial accuracy.



Disclaimer: Map and parcel information is believed to be accurate but accuracy is not guaranteed. No portion of the information should be considered to be, or used as, a legal document. The information is provided subject to the express condition that the user knowingly waives any and all claims for damages against Yavapai County that may arise from the use of this data.

Map printed on: 3.8.2023

Cc: Casey Goff <cgoff@azwater.com>; Shawna Arnold <sarnold@azwater.com>
Subject: WILL SERVE LETTER REQUEST RE: Request RE: Water Access - 2250 Shelby Drive

Casey, will serve letter request for this property, can you send over maps for this and Shawna will prepare the letter.

From: bharbage@hsdevpartners.com <bharbage@hsdevpartners.com>
Sent: Tuesday, March 7, 2023 6:55 AM
To: Amy Cunningham <acunningham@azwater.com>
Subject: Water Access - 2250 Shelby Drive

Good morning Amy,

I am working on a project located at:

2250 Shelby Drive
Sedona, AZ 86336

And need to get service availability letter for water, I am not sure if water for this site is serviced by Arizona Water Company or Oak Creek Water Company; can you confirm that you service this site and if so, how can I request a service letter for this site?

Thank you,

HS DEVELOPMENT PARTNERS

Bonnie Harbage
Partner
bharbage@hsdevpartners.com
614-610-4628 | 937-607-9755
HS Development Partners

Gloria Sesmas | Arizona Water Company
Development Services Supervisor
3805 N. Black Canyon Hwy.| Phoenix, AZ 85015

D: 602.240.6860 ext. 1136| **developmentservices@azwater.com**
Visit us at www.azwater.com

From: bharbage@hsdevpartners.com <bharbage@hsdevpartners.com>
Sent: Wednesday, March 8, 2023 11:03 AM
To: Gloria Sesmas <gsesmas@azwater.com>
Cc: Casey Goff <cgoff@azwater.com>
Subject: RE: Request RE: Water Access - 2250 Shelby Drive

I just need a letter indicating that this is in the service area and accessible to water we don't need a cost estimate at this time.

Thank you,
Bonnie

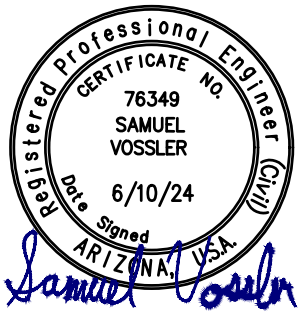
From: Gloria Sesmas <gsesmas@azwater.com>
Sent: Wednesday, March 8, 2023 1:01 PM
To: 'bharbage@hsdevpartners.com' <bharbage@hsdevpartners.com>
Cc: Casey Goff <cgoff@azwater.com>
Subject: Request RE: Water Access - 2250 Shelby Drive

Bonnie, are you requesting a letter just confirming the property is in our service area, or do you need a preliminary cost estimate for water facilities to the property?

Please confirm so we can better assist you.

Villas on Shelby
2250 Shelby Drive
Sedona, AZ 86336

Basis of Sewer Design Report



Date June 10, 2024

Prepared for: **HS Development Partners, LLC**
Matt Shoemacher
30 South Oak St
London, Ohio 43140
P: 216-406-3683

Prepared By: **Burgess & Niple, Inc.**
Sam Vossler PE
2201 North Gemini Drive
Flagstaff, Arizona 86001
P: 928-395-1988

Table of Contents

List of Appendices

100 INTRODUCTION

The purpose of this report is to provide the basis of design for the sewer service to the proposed Villas on Shelby Project. This report will evaluate the existing infrastructure and determine if the proposed design will adequately support the calculated demands for the proposed development. The Project will be designed and developed in accordance with the 2020 City of Sedona Design Review, Engineering and Administrative Manual (DREAM), Sedona Current adopted Building Code, Arizona Administrative Code Title 18 Chapter 9, and Yavapai County's current requirements.

100.1 Site Description

The Villas on Shelby Project is proposed on a parcel containing 1.1+/- acres (APN 408-28-103F) and is currently undeveloped. The site is located at 2250 Shelby Drive in City of Sedona (see ***Figure 1*** below). The current project zoning is IN (Light Industrial). No phasing is proposed for the construction of the development's improvements.

Figure 1 – Project Location Map

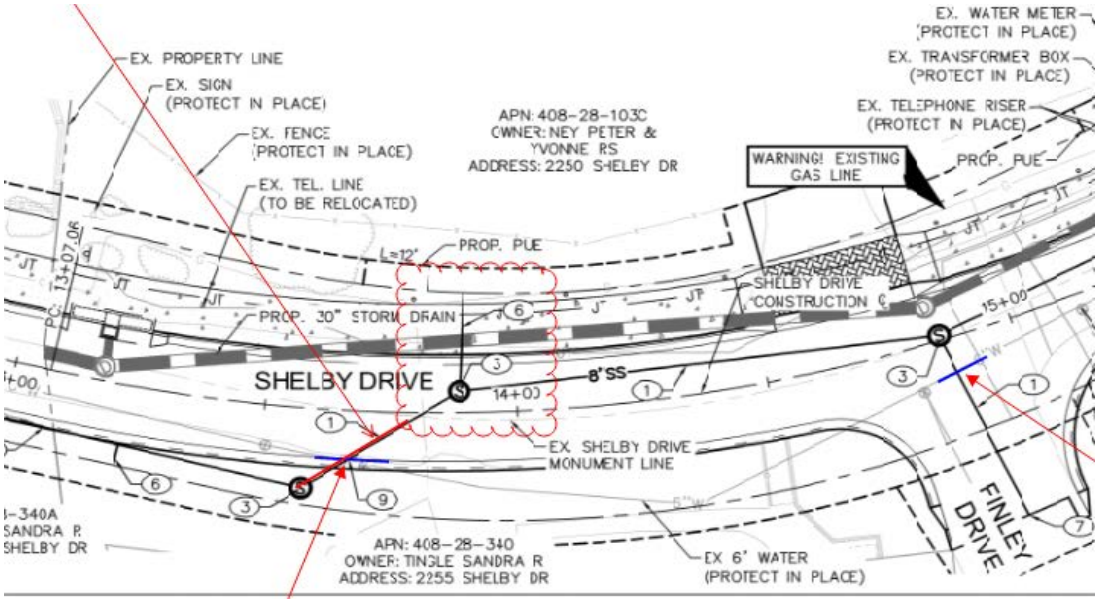
The Project is a proposed multi-family development to be composed of 1 three-story building with 30 Housing Units, leasing office, common area and a gym. The site will contain 42 parking spaces, with an access drive connecting to the south on Shelby Drive.

200 SEWER SYSTEM

The Site is currently vacant and there is an existing 8" PVC sewer main in Shelby Drive as park of the City of Sedona collection facilities system. As-built drawings from the recent *Shelby Drive Roadway Improvement Project (8/24/2022)* shows an existing 6" sewer service line extended to the site (See ***Figure 2***). The exact depth of this service invert is unknown and will need to be verified prior to construction.

Based on discussions with the City of Sedona, the downstream sewer main and wastewater treatment plant has sufficient capacity to support the Project's sewer proposed flows at this time and a Will Serve Letter for the project has been obtained.

Figure 2 – Excerpt from As-builts of Sewer Service Stub



300 SEWER ANALYSIS

300.1 Jurisdictional Design Criteria

No new sewer mains will be installed with this project, instead an existing service will be connected to. Design of the service will be in accordance with According to the International Plumbing Code (2018 IPC), cleanouts are located at any direction change greater than 45° or at the end of the line. All buildings are required to have a two-way cleanout at the building per IPC. Intermediate cleanouts will be placed every 100 feet or less.

300.2 Proposed Wastewater Flows

The Project will include 24 1-bedroom units and 6 3-bedroom units. It was conservatively estimated that the 1-bedroom units will have 2 persons per a dwelling unit and the 3- bedroom units will have 4 persons per a unit. Per Arizona Administrative Code Title 18 Chapter 9 Tabel 1. Unit Design Flows, the Sewage Design Flow is 80 Gallons per a day per a Person. A peaking factor of 3.62 was selected per R18-9-E301 for a population of 100.

Calculate Population: 24 1-bedroom x 2 persons + 6 3-bedrrom x 4 persons = 72 persons

Average Day Demand : 80 Gallons per person per day x 72 persons = **5,760 gallons per day (or 4 gpm)**

Dry Weather Peak Daily Flow: 5,760 gallons per day x 3.62 PF = **20,851 gallons per day (or 14.5 gpm)**

300.3 Sewer Calculations

Flow capacity per Manning's formula for uniform pipe flow:

$$Q = \frac{1.49}{n} * A * R^{\frac{2}{3}} * S^{\frac{1}{2}}$$

Where:

Q = Pipe capacity (cfs)
n = Manning's roughness coefficient (0.013 for PVC)
A = Cross sectional area (ft2)
R = Hydraulic radius (ft.)
S = Minimum slope (ft/ft)

The flowing full (d/D=1) capacity for the 6" sewer service line stubbed to the site with a minimum slope of 0.77%: Q=220 gpm (Check > 14.5 gpm good) and a velocity of 2.50 ft/sec (Check > 2.5 ft/sec good)

400 CONCLUSION

As demonstrated, the proposed sewer service for the multi-family development of Villas on Shelby will be designed in accordance with local City and County codes and have the capacity to service the Site. The project demand is less than the 6" sewer line capacity and an acceptable velocity is achieved with a minimum slope of 0.77% although the service will be constructed at steeper slope. The City of Sedona has determined that the downstream collection system and treatment facility has capacity for the Project currently.

Appendix A
Will Serve Letter

Mail:
102 Roadrunner Dr.
Sedona, AZ 86336
Site:
7500 W. SR 89A
Sedona, AZ 86336
(928) 204-2234
sedonaaz.gov
FAX (928) 204-7137

Wastewater Department

March 7, 2023

Bonnie Harbage
HS Development Partners
5777 S. Rural Rd, Suite 4
Tempe, AZ 85283

SUBJECT: WILL SERVE SEWER – 2250 Shelby Drive
APN 408-28-103C

This letter is in response to your request regarding sewer service availability for the property referenced above.

This parcel has sewer availability, due to sewer being available adjacent to the point of access to the property, as defined in City Code section 13.15. Currently, the property is being billed the sewer standby fee.

Assuming adequate capacity is available at the time of development approval, sewer will be served by the city of Sedona. If you have any questions or concerns, please contact me at (928) 203-5069.

Sincerely,

Roxanne Holland, PE
Director of Wastewater

RH:ms
cc: J. Andy Dickey, Assistant City Manager/City Engineer (e-copy)
Sandra Phillips, Assistant Director of Public Works (e-copy)
Hanako Ueda, Assistant Engineer (e-copy)
Sal Valenzuela, Chief Public Works Inspector (e-copy)
Denise Breland, Accountant I (e-copy)
Marsha Beckwith, Accounting Tech II, (e-copy)
Streets file: Shelby Drive

Western Technologies
An RMA Company

GEOTECHNICAL EVALUATION REPORT

MULTI-FAMILY APARTMENTS

APN: 408-28-103F
2250 Shelby Drive
Sedona, Arizona
WT Job No. 25-224023-0

PREPARED FOR:

The Villas on Shelby, LLC
30 South Oak Street
London, Ohio 43140
Attn: Ms. Bonnie Harbage

March 26, 2024

Gregory L. E. Burr, P.E, R.G.
Geotechnical Department Manager

Craig P. Wiedeman, P.E.
Senior Geotechnical Engineer

2400 East Huntington Drive
Flagstaff, Arizona 86004
(928)-774-8700
rma-western.com

Western Technologies
An RMA Company

March 26, 2022

The Villas on Shelby, LLC
30 South Oak Street
London, Ohio 43140

Attn: Ms. Bonnie Harbage

Re: Geotechnical Evaluation
Multi-Family Apartments
APN: 408-28-103F
2250 Shelby Drive
Sedona, Arizona

Job No. 25-224023-0

Western Technologies Inc. has completed the geotechnical evaluation for the proposed multi-family apartment complex to be located in Sedona, Arizona. This study was performed in general accordance with our proposal number 25-224023-P dated January 22, 2024. The results of our study, including the boring location diagram, laboratory test results, boring logs, and the geotechnical recommendations are attached.

We have appreciated being of service to you in the geotechnical engineering phase of this project and are prepared to assist you during the construction phases as well. If design conditions change, or if you have any questions concerning this report or any of our testing, inspection, design and consulting services, please do not hesitate to contact us. We look forward to working with you on future projects.

Sincerely,
WESTERN TECHNOLOGIES, INC.
Geotechnical Engineering Services

Gregory L. E. Burr, P.E., R.G.
Geotechnical Department Manager

Copies to: Addressee (emailed)

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GEOTECHNICAL EVALUATION
MULTI-FAMILY APARTMENTS
APN# 408-28-103F
2250 SHELBY DRIVE
SEDONA, ARIZONA
JOB NO. 25-224023-0

1.0 PURPOSE

This report contains the results of our geotechnical evaluation for the proposed multi-family apartment complex to be located at 2250 Shelby Drive in Sedona, Arizona. The purpose of these services is to provide information and recommendations regarding:

- foundation design parameters
- floor slab support
- lateral earth pressures
- earthwork
- on-site pavements
- drainage
- corrosivity to concrete

Results of the field exploration, field tests, and laboratory testing program are presented in the Appendices.

2.0 PROJECT DESCRIPTION

Based on information provided by Ms. Bonnie Harbage, the proposed project will consist of a three-story apartment building with an assumed plan area of approximately 6,500 square feet to be constructed on a 1.14-acre lot. The structure will use wood frame and masonry construction with a slab-on-grade first floor. Maximum wall and column loads for the structure are assumed to be 3 kips per linear foot and 45 kips, respectively. We anticipate no extraordinary slab-on-grade criteria and that the finished first floor level will be within about 2 to 3 feet of the existing site grade. On-site pavements will be included as part of the development. Should any of our information or assumptions not be correct, we request that the Client notify Western Technologies (WT) immediately.

3.0 SCOPE OF SERVICES

3.1 Field Exploration

Five borings were auger drilled to depths of about 4 to 7 feet below existing site grades at the approximate locations shown on the attached Boring Location Diagram. Logs of the borings are presented in Appendix A. Subsoils encountered during drilling were examined visually and sampled at selected depth intervals. A field log was prepared for each boring. These logs contain visual classifications of the materials encountered during excavation as well as interpolation of the subsurface conditions between samples. Final logs, included in Appendix A, represent our interpretation of the field logs and include modifications based on laboratory observations and tests of the field samples. The final logs describe the materials encountered, their thicknesses, and the locations where samples were obtained. The Unified Soil Classification System was used to classify soils. The soil classification symbols appear on the boring logs and are briefly described in Appendix A. Local and regional geologic characteristics were used to estimate the seismic design criteria and liquefaction potential.

3.2 Laboratory Analyses

Laboratory analyses were performed on representative soil samples to aid in material classification and to estimate pertinent engineering properties of the on-site soils for preparation of this report. Testing was performed in general accordance with applicable standard test methods. The following tests were performed and the results are presented in Appendix B.

- Water content
- Dry density
- Compression
- Sieve analysis
- Maximum density/optimum moisture (proctor)
- Remolded expansion potential
- Plasticity
- Soluble salts, sulfates and chlorides

Test results were utilized in the development of the recommendations contained in this report.

3.3 Analyses and Report

This geotechnical engineering report includes a description of the project, a discussion of the field and laboratory testing programs, a discussion of the subsurface conditions, and design recommendations as appropriate to the purpose. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site, discovery of underground storage tanks or other underground structures, or identification of contaminated or hazardous materials or conditions. If there is concern about the potential for such contamination, other studies should be undertaken. We are available to discuss the scope of such studies with you.

4.0 SITE CONDITIONS

4.1 Surface

At the time of our field exploration, the site was generally vacant land. The site was bordered on the north and west by a wash about 20 feet wide and 5 to 10 feet deep that directs flow to the south, on the east by a developed commercial lot, and on the south by Shelby Drive. The ground surface consisted of about 1 to 2 feet of spread fill, and exhibited a gentle slope down to the south-southwest. Site surface drainage appeared to be fair by means of sheet flow to the south-southwest into the existing wash. Evidence of previous surface water ponding was observed in some portions of the site at the time of our field exploration. No water was present in the wash at the time of our field exploration. Sandstone was exposed in the bottom of the wash. Vegetation on the site consisted of a sparse growth of native weeds and grasses.

4.2 Subsurface

As presented on the borings logs, surface fill soils and native subsoils extending to the full depth of exploration included medium dense to dense, medium plasticity Clayey SANDS; medium dense to very dense, medium plasticity Silty, Clayey SANDS; and hard, medium to near-high plasticity Sandy CLAYS. All soils encountered contained random amounts of gravel, cobbles, and boulders. Refusal to auger penetration occurred in all borings at depths of about 4 to 7 feet on SANDSTONE. Groundwater was not encountered in any boring at the time of exploration. The logs in Appendix A show details of the subsurface conditions encountered during the field exploration.

The boring logs included in this report are indicators of subsurface conditions only at the specific location and date noted. Variations from the field conditions represented by the borings may become evident during construction. If variations appear, we should be contacted to re-evaluate our recommendations.

5.0 GEOTECHNICAL PROPERTIES AND ANALYSIS

5.1 Laboratory Tests

Laboratory test results (see Appendix B) indicate that on-site subsoils located near and below anticipated shallow foundation level exhibit low to high compressibility at existing water contents. Either high expansive pressure develops or low to high additional compression occurs when the water content is increased.

Near-surface soils contain medium to near-high plasticity fines. The higher plasticity soils exhibit moderate expansion potential when recompacted, confined by loads approximating floor loads and saturated in accordance with standard Arizona test methods. Slabs-on-grade supported on recompacted higher plasticity native soils have a moderate to high potential for heaving if the water content of the soil increases.

5.2 Field Tests

On-site native subsoils located near and below anticipated shallow foundation level exhibited moderate to high resistance to penetration using a ring-lined barrel sampler (ASTM D3550). Penetration resistance values exhibited some variability between test locations. This represents a potential for differential movement within a structure supported on existing soils in their present condition.

6.0 RECOMMENDATIONS

6.1 General

Recommendations contained in this report are based on our understanding of the project criteria described in Section 2.0 and the assumption that the soil and subsurface conditions are those disclosed by the explorations. Others may change the plans, final

elevations, number and type of structures, foundation loads, and floor levels during design or construction. Substantially different subsurface conditions from those described herein may be encountered or become known. Any changes in the project criteria or subsurface conditions shall be brought to our attention in writing.

6.2 Design Considerations

Existing spread fill was encountered on the site. We understand that no documentation is available regarding any field density testing that may have been performed during fill construction. Based on this lack of documentation and the overall condition of the fill observed, we consider the fill to be uncontrolled and recommend removal of the existing fill in all structural and pavement areas.

The borings indicate the presence of some near-high plasticity soils on the site. These soils will expand or swell with an increase in moisture content. The structure and related improvements situated on expansive soils will be subject to movements if the foundation soils experience an increase in moisture content. It should be understood that if moisture penetrates expansive soils, there will likely be heave and resultant cracking/distress of the proposed structure and related improvements. It should be noted that shallow foundation systems are not designed to resist soil movements resulting from sewer or plumbing leaks, excessive or leaking irrigation systems, poor drainage, or water ponding near the structure. Construction of site fences, screen walls and other miscellaneous improvements such as exterior slabs-on-grade that typically fall under building code guidelines will be susceptible to heave as well.

In addition, laboratory test results indicate that the site soils become weaker and more compressible with an increase in moisture content under typical foundation loading conditions. These soils are not considered suitable for support of foundations and concrete slabs in their present state and should be over-excavated as recommended in the **EARTHWORK** section of this report. Proper drainage should be provided to help prevent infiltration of moisture below the foundations and concrete slabs.

Cobbles and some boulders were encountered in some of the boring. These oversized materials, greater than 3 inches, could present construction difficulties for foundation, utility trenches and other excavations. In cut areas and excavations, exposed oversized materials should be removed.

6.3 Structure Foundations

The proposed structure can be supported by conventional shallow spread footings bearing on a minimum thickness of 2 feet of lean mix (2-sack) concrete backfill. If areas of shallow rock are encountered, provide a minimum thickness of 1 foot of lean mix concrete backfill below the bottom of the footing.

The above recommendations are provided assuming that all existing fill will be removed within the building areas down to the underlying native soils.

Total and differential settlement of foundation elements bearing on lean mix concrete backfill underlain by soils are estimated to be 1 inch and ¾ inch, respectively. Total and differential settlement of foundation elements bearing on lean mix concrete backfill underlain by rock are estimated to be nominal.

Footings should bear at least 2 feet below the lowest adjacent finished grade. Footings may be designed to impose a maximum dead plus live-load pressure of up to 3000 pounds per square foot.

Finished grade is the lowest adjacent grade for perimeter footings and floor level for interior footings. The design bearing capacity applies to dead loads plus design live load conditions. Recommended minimum widths of column and wall footings are 24 inches and 16 inches, respectively. The bearing value given is a net bearing value and the weight of the concrete in the footings may be ignored. All footings, stem walls and masonry walls should be reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in masonry walls is recommended.

We recommend that the geotechnical engineer or his representative observe the footing excavations before lean mix concrete backfill, reinforcing steel and concrete are placed. It should be determined whether the materials exposed are similar to those anticipated for support of the footings. Any soft, loose or unacceptable materials should be undercut to suitable materials and backfilled with either lean mix or structural concrete.

6.4 Lateral Design Criteria

For retaining walls located above any free water surface with no surcharge loads, recommended equivalent fluid pressures and coefficients of base friction for unrestrained elements are:

- Active:
  Undisturbed subsoil .....40 psf/ft
  Compacted granular backfill .....30 psf/ft
  Compacted site soils (low expansive potential) .....38 psf/ft
  Compacted clay/clayey site soils ..... not recommended for use

- Passive:
  Shallow wall footings .....220 psf/ft
  Shallow column footings.....350 psf/ft

- Coefficient of base friction.....0.30*

  * The coefficient of base friction should be reduced to 0.20 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

- At-rest:
  Undisturbed subsoil .....68 psf/ft
  Compacted granular backfill .....55 psf/ft

These lateral earth pressures are not applicable for submerged soils. We should be consulted for additional recommendations if such conditions are to be included in the design. Any surcharge from adjacent loadings must also be considered. Walls below grade should be waterproofed.

We recommend a free-draining soil layer or manufactured geocomposite material, be constructed adjacent to the back of the retaining wall. A filter may be required between the soil backfill and drainage layer. This drainage zone should help prevent hydrostatic pressure buildup. This vertical drain should be tied into a gravity drainage system at the

base of the retaining wall. It is important that all backfill be properly placed and compacted. Backfill should be mechanically compacted in layers. Flooding or jetting should not be permitted. Care should be taken not to damage the walls when placing the backfill. Backfills should be inspected and tested during placement.

Fill against footings, stem walls and retaining walls should be compacted to densities specified in **EARTHWORK**. Medium to high plasticity clay soils should not be used as backfill against retaining walls. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors. Overcompaction may cause excessive lateral earth pressures which could result in wall movements.

6.5 Seismic Considerations

Structures should be designed in accordance with applicable building codes. The seismic design parameters presented in the following table, in accordance with the 2018 International Building Code and ASCE 7-16, are applicable to the project site:

Seismic Design Parameters International Building Code 2018, ASCE 7-16	
Soil Site Class	C
Mapped Spectral Response Acceleration at 0.2 sec period (S_s)	0.295g
Mapped Spectral Response Acceleration at 1.0 sec period (S_1)	0.093g
Site Coefficient for 0.2 sec period (F_a)	1.3
Site Coefficient for 1.0 sec period (F_v)	1.5
Design Spectral Response Acceleration at 0.2 sec period (S_{DS})	0.255g
Design Spectral Response Acceleration at 1.0 sec period (S_{D1})	0.093g

The soil site class is based upon conditions identified in shallow exploratory borings and local knowledge of the geotechnical conditions in the vicinity of the site. Conditions extending beyond the depth of our borings to a depth of 100 feet were assumed for the purposes of providing the information presented in the table. Based upon the density of the on-site soils, the relatively shallow rock conditions and lack of groundwater, the potential settlement and lateral spread due to liquefaction is not considered to be a significant concern on this site.

6.6 Slab-on-Grade Support

Following removal of all existing fill soils, slabs-on-grade should be supported on a minimum thickness of 2 feet of properly placed and compacted, imported, low expansive, engineered fill. For design of interior slabs-on-grade, we recommend using a modulus of subgrade reaction (k) of 200 pounds per cubic inch (pci) for the on-site soils and 225 pci for imported fill material, based on a 30-inch diameter plate. The slab subgrade should be prepared by the procedures outlined in this report. A minimum 4-inch thick layer of base course should be provided beneath all slabs to help prevent capillary rise and a damp slab. The use of vapor retarders is desirable for any slab-on-grade where the floor will be covered by products using water-based adhesives, wood, vinyl backed carpet, impermeable floor coatings (urethane, epoxy, acrylic terrazzo, etc.) or where the floor will be in contact with moisture sensitive equipment or product. When used, the design and installation should be in accordance with the guidance provided in ACI 302.1R and 302.2R. Final determination on the use of a vapor retarder should be left to the slab designer.

All concrete placement and curing operations should follow the American Concrete Institute manual recommendations. Improper curing techniques and/or high slump (water-cement ratio) could cause excessive shrinkage, cracking or curling. The plastic properties of the concrete should be documented at the time of placement and specimens should also be prepared for strength testing to verify compliance with project specifications. Concrete slabs should be allowed to cure adequately before placing vinyl or other moisture sensitive floor covering.

6.7 Drainage

The major cause of soil-related foundation and slab-on-ground problems is moisture increase in soils below structures. Properly functioning foundations and floor slabs-on-ground require appropriately constructed and maintained site drainage conditions. Therefore, it is extremely important that positive drainage be provided during construction and maintained throughout the life of the structure. It is also important that proper planning and control of landscape and irrigation practices be performed.

Infiltration of water into utility or foundation excavations must be prevented during construction. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to minimize the

possibility of moisture infiltration. If utility line trenches are backfilled with a granular material, then a clay or concrete plug should be placed in the trench adjacent to the structure to prevent water from following the trench back under the structure.

In areas where sidewalks, patios or driveways do not immediately adjoin the structure, protective slopes should be provided with an outfall of about 5 percent for at least 10 feet from perimeter walls. Scuppers and/or gutters and drain pipes should be designed to provide drainage away from the structure for a minimum distance of 10 feet. Planters or other surface features that could retain water adjacent to the structure should be avoided if at all possible. If planters and/or landscaping are adjacent to or near the structure, there will be a greater potential for moisture infiltration, soil movement and structure distress. As a minimum, we recommend the following:

- Grades should slope away from the structure.
- Planters should slope away from the structure and should not pond water. Drains should be installed in enclosed planters to facilitate flow out of the planters.
- Only shallow rooted landscaping should be used.
- Watering should be kept to a minimum. Irrigation systems should be situated on the far side of any planting and away from the structure to minimize infiltration beneath foundations from possible leaks.
- For areas with highly expansive soils, a minimum of 5 feet should be maintained between building foundations and the shallow rooted plants. In like manner, for deeper-rooted plants, a minimum of 10 feet should be maintained. These deeper-rooted plants should still have a low moisture requirement.
- Trees should be planted no closer than a distance equal to three-quarters of their mature height or 15 feet, whichever is greater.

It should be understood that these recommendations will help minimize the potential for soil movement and resulting distress, but will not eliminate this potential.

6.8 Corrosivity to Concrete

The chemical test results indicate that the site soils are negligibly corrosive to concrete. However, in order to be consistent with standard local practice and for reasons of material availability, we recommend that Type II portland cement be used for all concrete on and below grade.

6.9 Pavements

Based on existing subgrade conditions, the following pavement sections are recommended for the areas indicated:

Traffic Area	Asphalt Concrete Pavement (inches)	Base Course (inches)
Passenger car parking and drives (low traffic frequency)	3	6
Major access drives (medium traffic frequency)	4	4

Bituminous surfacing should be constructed of dense-graded, central plant-mix, asphalt concrete. Base course and asphalt concrete should conform with City of Sedona specifications.

Material and compaction requirements should conform to the recommendations presented under **EARTHWORK**. The gradient of paved surfaces should ensure positive drainage. Water should not pond in areas directly adjoining paved sections. The native subgrade soils will soften and lose stability if subjected to conditions which result in an increase in water content.

Due to the high static loads imposed by parked trucks in loading and unloading areas and at dumpster locations, we recommend that a rigid pavement section be considered for these areas. A minimum 6-inch thick concrete pavement over 4 inches of aggregate base course material is recommended.

6.9.1 Pavement Analyses

The recommended pavement sections are based on the following conditions. This firm should be contacted if any of these conditions change so that revised recommendations can be provided, if necessary.

a. A correlated R-value of 21 for the on-site soils which corresponds to a resilient modulus of approximately 7,500 pounds per square inch. Any required fills should be constructed using on-site or imported materials with subgrade support characteristics equal to or greater than the subgrade soils in the area being filled.

b. Structural coefficients of 0.40 for asphalt concrete and 0.12 for aggregate base course material.

c. A present serviceability index of 4.5, a terminal serviceability index of 2.5, an overall standard deviation of 0.35, a reliability factor of 85 percent, a drainage coefficient of 0.85, a seasonal variation factor of 2.4, and a design life of 20 years.

d. Assumed total 18-kip equivalent single axle loads (ESAL) of 25,000 for the passenger car parking/drive areas and 50,000 for the major access drives.

6.9.2 Pavements on Expansive Soils

Pavement design methods are intended to provide an adequate thickness of structural materials over a particular subgrade such that wheel loads are reduced to a level the subgrade can support. The support characteristics of the subgrade for pavement design do not account for shrink and swell movements of an expansive clayey subgrade such as the soils encountered on this project. Consequently, the pavement may be adequate from a structural standpoint, yet still experience cracking and deformation due to shrink/swell movement of the subgrade. It is therefore important to minimize moisture changes in the subgrade in order to reduce shrink/swell movements. The pavement surface, subbase surface, and adjacent areas should be well drained. Excessive watering of landscaped areas adjacent to pavements should be avoided. Proper maintenance should be performed on cracks in the pavement surface to prevent water from penetrating

through to the base or subbase material. Even with these precautions, some movement and related cracking may still occur, requiring periodic maintenance.

7.0 EARTHWORK

7.1 General

The conclusions contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section. Any excavating, trenching, or disturbance that occurs after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. It is not reasonable to rely upon our conclusions and recommendations if any future unobserved and untested trenching, earthwork activities or backfilling occurs.

7.2 Site Clearing

Strip and remove all existing fill material, vegetation, debris, trees, and any other deleterious materials from the building and pavement areas. The building area is defined as that area within the building footprint plus 5 feet beyond the perimeter of that footprint. All exposed surfaces should be free of mounds and depressions that could prevent uniform compaction.

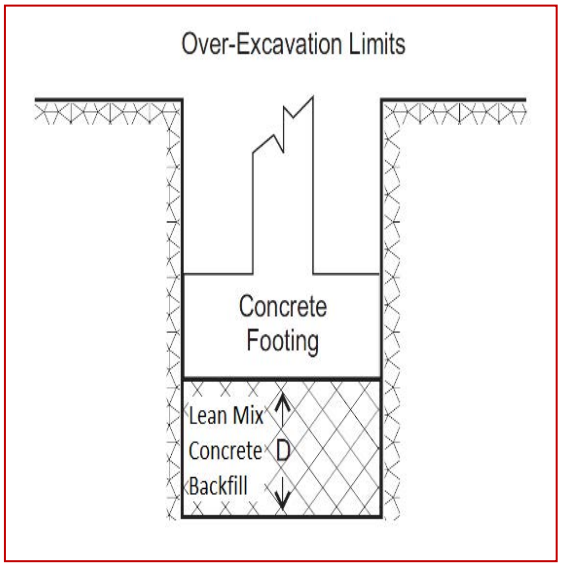
7.3 Excavation

We anticipate that excavations into the site soils for the proposed construction can be accomplished with conventional equipment. Any excavations penetrating the underlying sandstone will require the use of heavy-duty, specialized equipment, likely together with the use of large pneumatic hammers, to facilitate rock break-up and removal.

On-site soils will pump or become unworkable at high water contents. Workability may be improved by scarifying and drying. Overexcavation of wet zones and replacement with imported granular materials may be necessary. The use of lightweight excavation and compaction equipment may be required to minimize subgrade pumping.

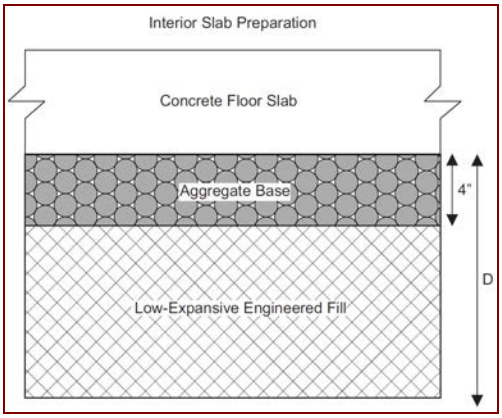
7.4 Foundation Preparation

Following removal of all existing fill material, remove existing soils to a minimum depth of 2 feet below the bottom of the footing (depth D in the diagram to the right). In any areas where both deeper soils and shallow rock conditions are encountered, provide a minimum thickness of 1 foot of lean mix concrete backfill below the bottom of the footings in the shallow rock areas. Removal should extend straight down along the sides of the footing. Replace the removed soils with properly consolidated, lean mix (2-sack) concrete backfill material.



7.5 Slab-on-Grade Preparation

Following removal of all existing fill material, slabs-on-grade should be founded on a minimum thickness of 2 feet of imported, low expansive, engineered fill material. Remove native soils, as necessary, to a minimum depth of 2 feet below the bottom of the slab (depth D in the diagram below). Following the removal, scarify, moisten or dry as required, and compact all subgrade soils to a minimum depth of 8 inches. Replace the removed soils with properly compacted, imported, low to non-expansive, engineered fill material. The aggregate base course below the slab may be included as part of the low to non-expansive engineered fill. In areas were dense sandstone is encountered, scarification and recompaction is not required.



The subgrade preparation should be accomplished in a manner that will result in uniform water contents and densities after compaction.

7.6 Exterior Slab Preparation

Some of the soils on this site have the potential to expand and shrink with changes in moisture content. In addition, frost penetration in the upper soils may cause surface heaving. Therefore, relatively lightweight exterior concrete flatwork such as sidewalks and patios may experience movements resulting in cracking or vertical offsets. To reduce the potential for damage, we recommend:

- Use of fill with low expansion potential
- Use of fill with low to negligible frost susceptibility
- Placement of effective control joints on relatively close centers
- Moisture-density control during placement of subbase fills
- Provision for adequate drainage in areas adjoining the slabs
- Use of designs which allow vertical movement between the exterior slabs and adjoining structural elements

It should be understood that these recommendations will help reduce the potential for soil movement and resulting distress, but will not eliminate this potential. Furthermore, the use of municipal specifications and details may not mitigate the potential for movements of the expansive or frost susceptible on-site soils.

7.7 Pavement Preparation

Prior to placement of fill and/or pavement materials, the exposed subgrade soils should be proof-rolled and observed by the geotechnical engineer or his qualified representative to verify that stable subgrade conditions exist. Any loose, soft, disturbed, or otherwise unsuitable materials should be over-excavated and replaced with engineered fill. The subgrade should then be scarified, moisture conditioned as required, and recompacted for a minimum depth of 8 inches. Scarification and recompaction is not required in areas where dense basalt is encountered at subgrade elevation.

7.8 Materials

a. Clean on-site soils with low expansive potentials and a maximum dimension of 6 inches or imported materials may be used as fill material for the following:

- Pavement areas
- Backfill
- Landscape areas

b. On-site clay/clayey soils are not recommended for use as subbase fill or structural backfill in the building areas or behind site retaining walls. Imported, low expansive, engineered fill should be used in these areas.

c. Frozen soils should not be used as fill or backfill.

d. Imported soils should conform to the following:

- Gradation (ASTM C136): percent finer by weight

6"	100
4"	85-100
¾"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	40 (max)

- Maximum expansive potential (%)[1] 1.5

- Maximum soluble sulfates (%) 0.10

e. Base course should conform to current City of Sedona specifications.

[1] Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 100 psf surcharge and submerged.

7.9 Placement and Compaction

a. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended water contents and densities throughout the lift.

b. Uncompacted lift thickness should not exceed 8 inches.

c. No fill should be placed over frozen ground.

d. Materials should be compacted to the following:

Material	Minimum Percent Compaction (ASTM D698)
• On-site soil, reworked:	
Below slabs-on-grade	90
Pavement areas	95
• All on-site soil, fill:	
Pavement areas	95
Landscape areas	85
• Imported soil, fill:	
Below slabs-on-grade	95
Pavement areas	95
• Aggregate base:	
Below slabs-on-grade	95
Pavement areas	100
• Structural backfill	95
• Nonstructural backfill	90

e. On-site clay and clayey soils should be compacted with a moisture content in the range of 1 percent below to 3 percent above optimum. On-site and imported soils with low expansive potential and aggregate base course materials should be

compacted with a moisture content in the range of 3 percent below to 3 percent above optimum.

7.10 Compliance

Recommendations for foundations, slabs-on-grade and pavements supported on compacted fills or prepared subgrade depend upon compliance with the **EARTHWORK** recommendations. To assess compliance, observation and testing should be performed under the direction of a WT geotechnical engineer. Please contact us to provide these observation and testing services.

8.0 ADDITIONAL SERVICES

The recommendations provided in this report are based on the assumption that a sufficient schedule of tests and observations will be performed during construction to verify compliance. At a minimum, these tests and observations should be comprised of the following:

- Observations and testing during site preparation and earthwork,
- Observation of foundation excavations, and
- Consultation as may be required during construction.

Retaining the geotechnical engineer who developed your report to provide construction observation is the best way to verify compliance and to help you manage the risks associated with unanticipated conditions.

9.0 LIMITATIONS

This report has been prepared assuming the project criteria described in **2.0 PROJECT DESCRIPTION**. If changes in the project criteria occur, or if different subsurface conditions are encountered or become known, the conclusions and recommendations presented herein shall become invalid. In any such event, WT should be contacted in order to assess the effect that such variations may have on our conclusions and recommendations. If WT is not retained for the construction observation and testing services to determine compliance with this report, our professional responsibility is accordingly limited.

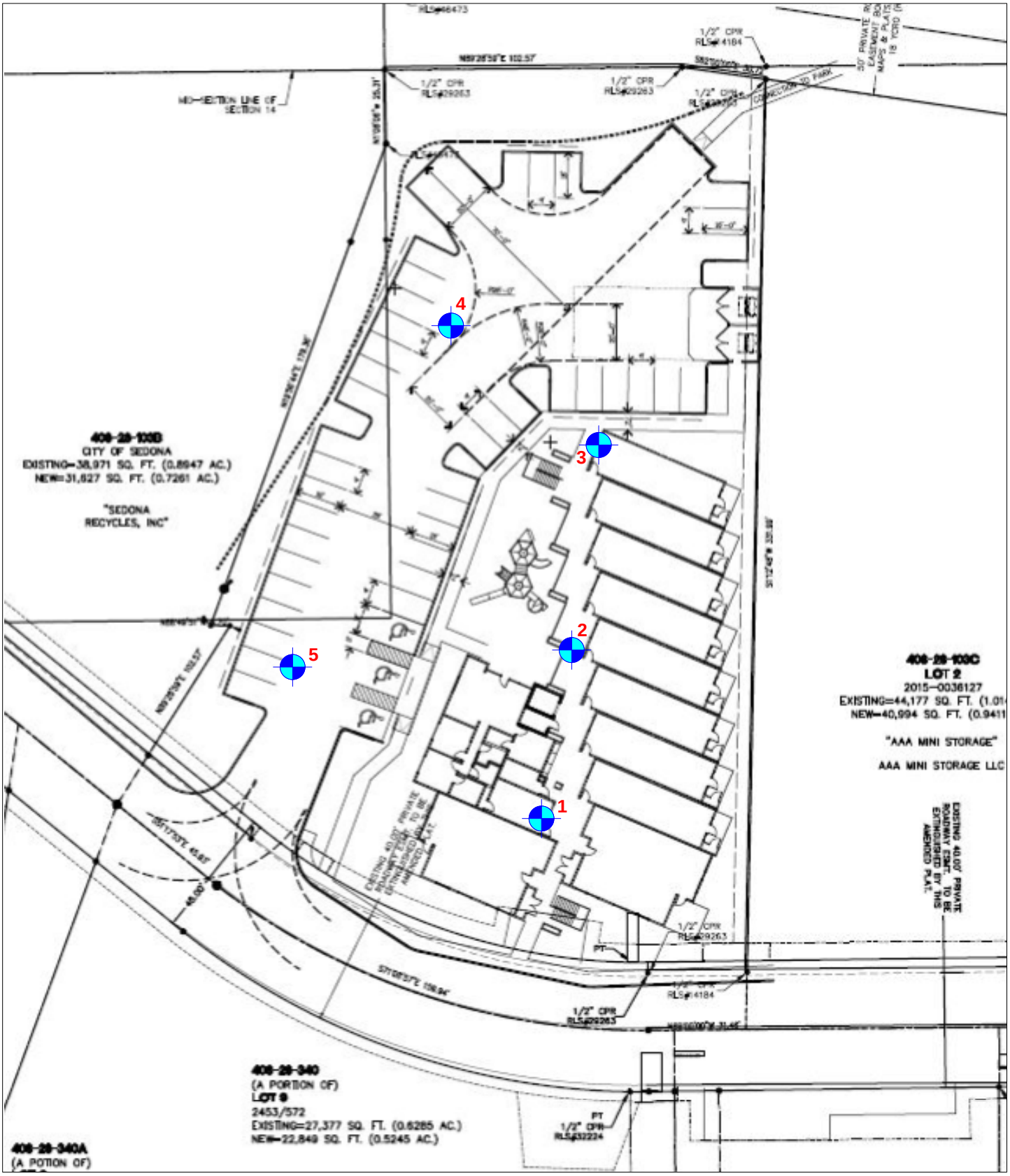
The recommendations presented are based entirely upon data derived from a limited number of samples obtained from widely spaced explorations. The attached logs are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the uniformity of the geology and soil structure between explorations, however variations can and often do exist. Whenever any deviation, difference, or change is encountered or becomes known, WT should be contacted.

This report is for the exclusive benefit of our client alone. There are no intended third-party beneficiaries of our contract with the client or this report, and nothing contained in the contract or this report shall create any express or implied contractual or any other relationship with, or claim or cause of action for, any third party against WT.

This report is valid for the earlier of one year from the date of issuance, a change in circumstances, or discovered variations. After expiration, no person or entity shall rely on this report without the express written authorization of WT.

10.0 CLOSURE

We prepared this report as an aid to the designers of the proposed project. The comments, statements, recommendations and conclusions set forth in this report reflect the opinions of the authors. These opinions are based upon data obtained at the location of the explorations, and from laboratory tests. Work on your project was performed in accordance with generally accepted standards and practices utilized by professionals providing similar services in this locality. No other warranty, express or implied, is made.



Not to Scale

Approximate Test Boring Location

MULTI-FAMILY APARTMENTS

Boring Location Diagram

Western Technologies Inc.

Job No.: 25-224023-0

Plate: 1

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Backfill	A specified material placed and compacted in a confined area.
Base Course	A layer of specified aggregate material placed on a subgrade or subbase.
Base Course Grade	Top of base course.
Bench	A horizontal surface in a sloped deposit.
Caisson/Drilled Shaft	A concrete foundation element cast in a circular excavation which may have an enlarged base (or belled caisson).
Concrete Slabs-On-Grade	A concrete surface layer cast directly upon base course, subbase or subgrade.
Crushed Rock Base Course	A base course composed of crushed rock of a specified gradation.
Differential Settlement	Unequal settlement between or within foundation elements of a structure.
Engineered Fill	Specified soil or aggregate material placed and compacted to specified density and/or moisture conditions under observations of a representative of a soil engineer.
Existing Fill	Materials deposited through the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.
Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Fill	Materials deposited by the actions of man.
Finished Grade	The final grade created as a part of the project.
Gravel Base Course	A base course composed of naturally occurring gravel with a specified gradation.
Heave	Upward movement.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil.
Rock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Sand and Gravel Base Course	A base course of sand and gravel of a specified gradation.
Sand Base Course	A base course composed primarily of sand of a specified gradation.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Soil	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
Strip	To remove from present location.
Subbase	A layer of specified material placed to form a layer between the subgrade and base course.
Subbase Grade	Top of subbase.
Subgrade	Prepared native soil surface.

COARSE-GRAINED SOILS

LESS THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVEL OR WELL-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE
GP	POORLY-GRADED GRAVEL OR POORLY-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	
GM	SILTY GRAVEL OR SILTY GRAVEL WITH SAND, MORE THAN 12% FINES	
GC	CLAYEY GRAVEL OR CLAYEY GRAVEL WITH SAND, MORE THAN 12% FINES	
SW	WELL-GRADED SAND OR WELL-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE
SP	POORLY-GRADED SAND OR POORLY-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	
SM	SILTY SAND OR SILTY SAND WITH GRAVEL, MORE THAN 12% FINES	
SC	CLAYEY SAND OR CLAYEY SAND WITH GRAVEL, MORE THAN 12% FINES	

NOTE: Coarse-grained soils receive dual symbols if they contain 5% to 12% fines (e.g., SW-SM, GP-GC).

FINE-GRAINED SOILS

MORE THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	SILT, SILT WITH SAND OR GRAVEL, SANDY SILT, OR GRAVELLY SILT	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50
CL	LEAN CLAY OF LOW TO MEDIUM PLASTICITY, SANDY CLAY, OR GRAVELLY CLAY	
OL	ORGANIC SILT OR ORGANIC CLAY OF LOW TO MEDIUM PLASTICITY	
MH	ELASTIC SILT, SANDY ELASTIC SILT, OR GRAVELLY ELASTIC SILT	SILTS AND CLAYS LIQUID LIMIT MORE THAN 50
CH	FAT CLAY OF HIGH PLASTICITY, SANDY FAT CLAY, OR GRAVELLY FAT CLAY	
OH	ORGANIC SILT OR ORGANIC CLAY OF HIGH PLASTICITY	
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics (e.g. CL-ML).

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	Above 12 in.
COBBLES	3 in. – 12 in.
GRAVEL	No. 4 – 3 in.
Coarse	¾ in. – 3 in.
Fine	No. 4 – ¾ in.
SAND	No. 200 – No. 4
Coarse	No. 10 – No. 4
Medium	No. 40 – No. 10
Fine	No. 200 – No. 40
Fines (Silt or Clay)	Below No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

CONSISTENCY

CLAYS & SILTS	BLOWS PER FOOT
VERY SOFT	0 – 2
SOFT	3 – 4
FIRM	5 – 8
STIFF	9 – 15
VERY STIFF	16 – 30
HARD	OVER 30

RELATIVE DENSITY

SANDS & GRAVELS	BLOWS PER FOOT
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	OVER 50

NOTE: Number of blows using 140-pound hammer falling 30 inches to drive a 2-inch-OD (1⅜-inch ID) split-barrel sampler (ASTM D1586).

PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	TERM
0	NON-PLASTIC
1 – 7	LOW
8 – 20	MEDIUM
Over 20	HIGH

DEFINITION OF WATER CONTENT

DRY
SLIGHTLY DAMP
DAMP
MOIST
WET
SATURATED

Western Technologies
An RMA Company

METHOD OF CLASSIFICATION

PLATE

A-2

The number shown in **"BORING NO."** refers to the approximate location of the same number indicated on the "Boring Location Diagram" as positioned in the field by pacing or measurement from property lines and/or existing features.

"DRILLING TYPE" refers to the exploratory equipment used in the boring wherein **HSA = hollow stem auger**, and the dimension presented is the outside diameter of the HSA used.

"R" in "BLOW COUNTS" refers to a 3-inch outside diameter ring-lined split barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 12 inches is achieved or until refusal. The number of blows required to advance the sampler 12 inches is defined as the "**R**" blow count. The "**R**" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows per foot. An **X** within the symbol indicates no sample recovery. A half-filled **X** within the symbol indicates sample disturbance.

"SAMPLE TYPE" refers to the form of sample recovery, in which **R** = Ring-lined sample and **G** = Grab sample.

"DRY DENSITY (LBS/CU FT)" refers to the laboratory-determined dry density in pounds per cubic foot.

"WATER (MOISTURE) CONTENT" (% of Dry Wt.) refers to the laboratory-determined water content in percent using the standard test method ASTM D2216.

"USCS" refers to the "Unified Soil Classification System" Group Symbol for the soil type as defined by ASTM D2487 and D2488. The soils were classified visually in the field, and where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate tests.

These notes and boring logs are intended for use in conjunction with the purposes of our services defined in the text. Boring log data should not be construed as part of the construction plans nor as defining construction conditions.

Boring logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and characteristics may occur between borings. Groundwater levels may fluctuate due to seasonal variations and other factors.

The stratification lines shown on the boring logs represent our interpretation of the approximate boundary between soil or rock types based upon visual field classification at the boring location. The transition between materials is approximate and may be more or less gradual than indicated.

Project: Multi-Family Apartments Project Number: 25-224023-0	**BORING NO. 1**	Western Technologies An RMA Company

Date(s) Drilled **3/4/24**	Logged By **E. Martinez**	Checked By **J. Quinlan**
Drilling Method **HSA**	Drill Bit Size/Type **7 In.**	Approximate Surface Elevation **Not Determined**
Drill Rig Type **CME-75**	Drilling Contractor **EDI**	
Groundwater Level and Date Measured **Not Encountered**	Location **See Location Diagram**	

Water Content, %	Dry Unit Weight, pcf	Sample Type	Sample	Sampling Resistance, blows/ft	Depth (feet)	Soil Type	Graphic Log	MATERIAL DESCRIPTION
			G		0	CL		Sandy Lean CLAY (FILL); some gravel, red, slightly damp
						CL		Sandy Lean CLAY; some gravel, cobbles and boulders, red, hard, slightly damp to damp
7.9	93		R	41				
					5			
12.6	96		R	50/7"				
								Auger Refusal at 7 Feet on SANDSTONE
					10			

Figure A-4

Project: Multi-Family Apartments Project Number: 25-224023-0	**BORING NO. 2**	Western Technologies An RMA Company

Date(s) Drilled **3/4/24**	Logged By **E. Martinez**	Checked By **J. Quinlan**
Drilling Method **HSA**	Drill Bit Size/Type **7 In.**	Approximate Surface Elevation **Not Determined**
Drill Rig Type **CME-75**	Drilling Contractor **EDI**	
Groundwater Level and Date Measured **Not Encountered**	Location **See Location Diagram**	

Water Content, %	Dry Unit Weight, pcf	Sample Type	Sample	Sampling Resistance, blows/ft	Depth (feet)	Soil Type	Graphic Log	MATERIAL DESCRIPTION
			G		0	SC		Clayey SAND (FILL); with gravel, red, damp
						SC		Clayey SAND; with gravel, cobbles and boulders, red, medium dense to dense, moist to damp
20.0	108		R	16				
					5			
16.4	112		R	41				
								Auger Refusal at 7 Feet on SANDSTONE
					10			

Figure A-5

Project: Multi-Family Apartments Project Number: 25-224023-0	**BORING NO. 3**	Western Technologies An RMA Company

Date(s) Drilled **3/4/24**	Logged By **E. Martinez**	Checked By **J. Quinlan**
Drilling Method **HSA**	Drill Bit Size/Type **7 In.**	Approximate Surface Elevation **Not Determined**
Drill Rig Type **CME-75**	Drilling Contractor **EDI**	
Groundwater Level and Date Measured **Not Encountered**	Location **See Location Diagram**	

Water Content, %	Dry Unit Weight, pcf	Sample Type	Sample	Sampling Resistance, blows/ft	Depth (feet)	Soil Type	Graphic Log	MATERIAL DESCRIPTION
			G		0	SC-SM		Silty, Clayey SAND (FILL); with gravel, red, damp
						SC-SM		Silty, Clayey SAND; with gravel, cobbles and boulders, red, very dense, damp
16.5	107		R	50/9"				
								Auger Refusal at 4 Feet on SANDSTONE
					5			
					10			

Figure A-6

Project: Multi-Family Apartments Project Number: 25-224023-0	**BORING NO. 4**	Western Technologies An RMA Company

Date(s) Drilled **3/4/24**	Logged By **E. Martinez**	Checked By **J. Quinlan**
Drilling Method **HSA**	Drill Bit Size/Type **7 In.**	Approximate Surface Elevation **Not Determined**
Drill Rig Type **CME-75**	Drilling Contractor **EDI**	
Groundwater Level and Date Measured **Not Encountered**	Location **See Location Diagram**	

Water Content, %	Dry Unit Weight, pcf	Sample Type	Sample	Sampling Resistance, blows/ft	Depth (feet)	Soil Type	Graphic Log	MATERIAL DESCRIPTION
			G		0	SC-SM		Silty, Clayey SAND (FILL); with gravel, red/brown, damp
15.6	113		R	50		SC-SM		Silty, Clayey SAND; with gravel, cobbles and boulders, red/brown, very dense, damp
								Auger Refusal at 4 Feet on SANDSTONE
					5			
					10			

Figure A-7

Project: Multi-Family Apartments Project Number: 25-224023-0	**BORING NO. 5**	Western Technologies An RMA Company

Date(s) Drilled **3/4/24**	Logged By **E. Martinez**	Checked By **J. Quinlan**
Drilling Method **HSA**	Drill Bit Size/Type **7 In.**	Approximate Surface Elevation **Not Determined**
Drill Rig Type **CME-75**	Drilling Contractor **EDI**	
Groundwater Level and Date Measured **Not Encountered**	Location **See Location Diagram**	

Water Content, %	Dry Unit Weight, pcf	Sample Type	Sample	Sampling Resistance, blows/ft	Depth (feet)	Soil Type	Graphic Log	MATERIAL DESCRIPTION
			G		0	SC-SM		Silty, Clayey SAND (FILL); with gravel, red/brown, damp
9.9	113		R	22		SC-SM		Silty, Clayey SAND; with gravel, cobbles and boulders, red/brown, medium dense, damp
					5			Boring Stopped at 5 Feet
					10			

Figure A-8

Boring No.	Depth (ft)	USCS Class.	Particle Size Distribution (%) Passing by Weight							Atterberg Limits		Laboratory Compaction Characteristics			Remarks
			3"	¾"	#4	#10	#40	#200	2µ	LL	PI	Dry Density (pcf)	Optimum Moisture (%)	Method	
1	0-5	CL		100	93	90	84	61.5		27	12				2
2	0-5	SC	100	93	76	72	66	49.2		35	22				2
4	0-5	SC-SM	100	97	75	65	54	33.3		21	6				2

NOTE: NP = Non-plastic
µ = microns (2µ = 0.002mm)

REMARKS

Classification / Particle Size / Moisture-Density Relationship

1. Visual
2. Laboratory Tested
3. Minus #200 Only
4. Test Method ASTM D698/AASHTO T99
5. Test Method ASTM D1557/AASHTO T180
6. From the ADOT Family of Curves

Western Technologies
An RMA Company

PROJECT: MULTI-FAMILY APARTMENT

JOB NO.: 25-224023-0

PLATE

B-1

SOIL PROPERTIES

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Laboratory Compaction Characteristics			Expansion Properties		Plasticity		Soluble		Remarks
					Dry Density(pcf)	Optimum Moisture(%)	Method	Surcharge (ksf)	Expansion (%)	LL	PI	Salts (ppm)	Sulfate (ppm)	
2	0-5	SC	106.6	11.5	116.2	14.2	A	0.1	2.4					1,2,3

Notes: Initial Dry Density and Initial Water Content are remolded.

Remarks

1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Test Method ASTM D698/AASHTO T99
4. Test Method ASTM D1557/AASHTO T180
5. From the ADOT Family of Curves

Western Technologies
An RMA Company

PROJECT: MULTI-FAMILY APARTMENTS
JOB NO.: 25-224023-0

SOIL PROPERTIES

PLATE

B-2

Nortest Analytical
An RMA Company

Reported: 3/8/2024
Received: 3/5/2024

LABORATORY ANALYSIS REPORT

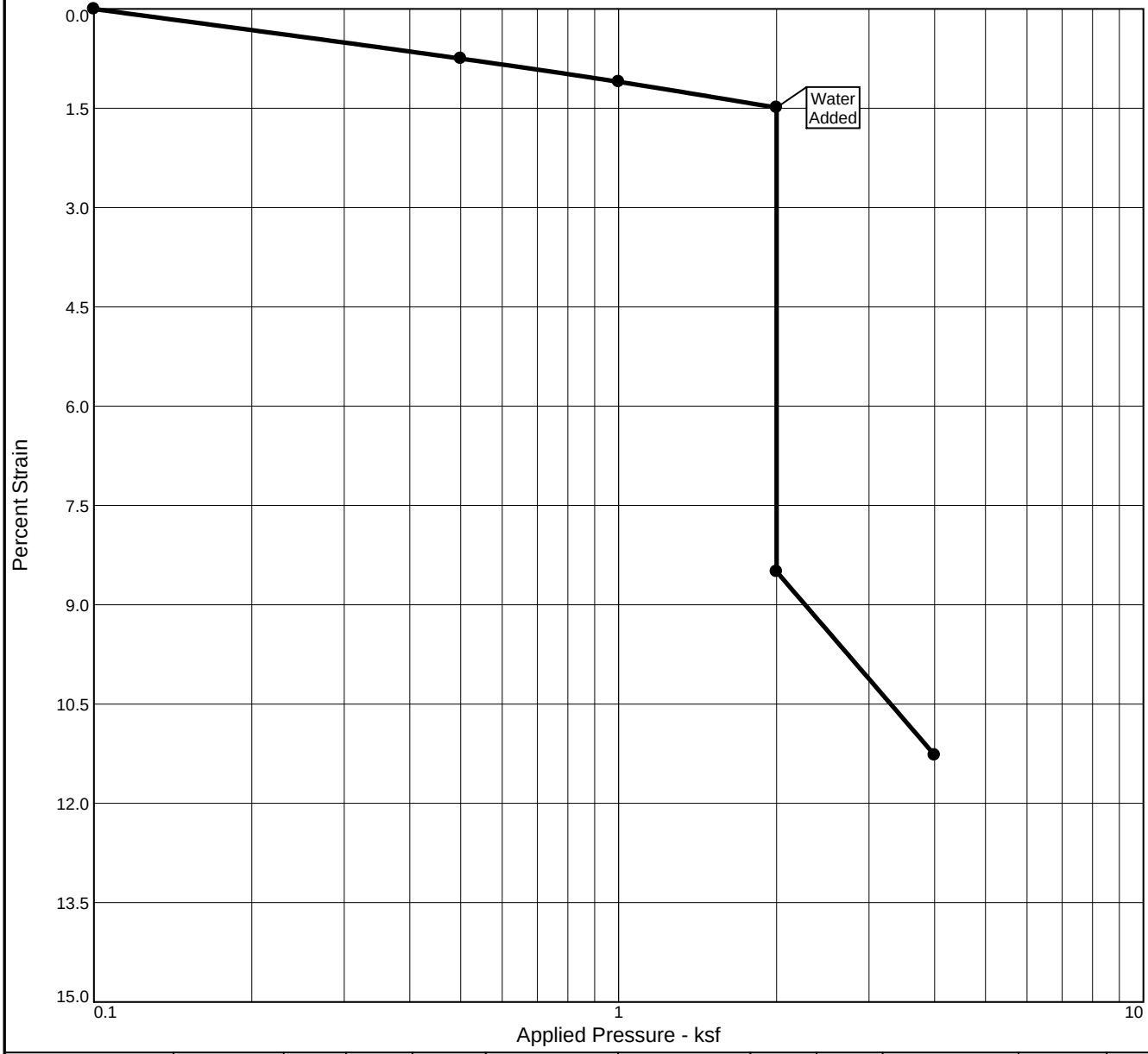
Project: 25-224023-0

Lab Number	Sample ID
24S0031	2(0-5)

Test Parameter

Test	*Method*	*Result*	*Units*
Soluble Salts	ARIZ 237b	391	ppm
Sulfate	ARIZ 733b	2	ppm
Chloride	ARIZ 736b	84	ppm

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Clpse. %	e_o
Sat.	Moist.											
29.3 %	7.9 %	96.4			2.65						7.0	0.716

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY LEAN CLAY	CL	

Project No. 25-224023-0 **Client:** THE VILLAS ON SHELBY, LLC

Project: MULTI-FAMILY APARTMENTS

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 1

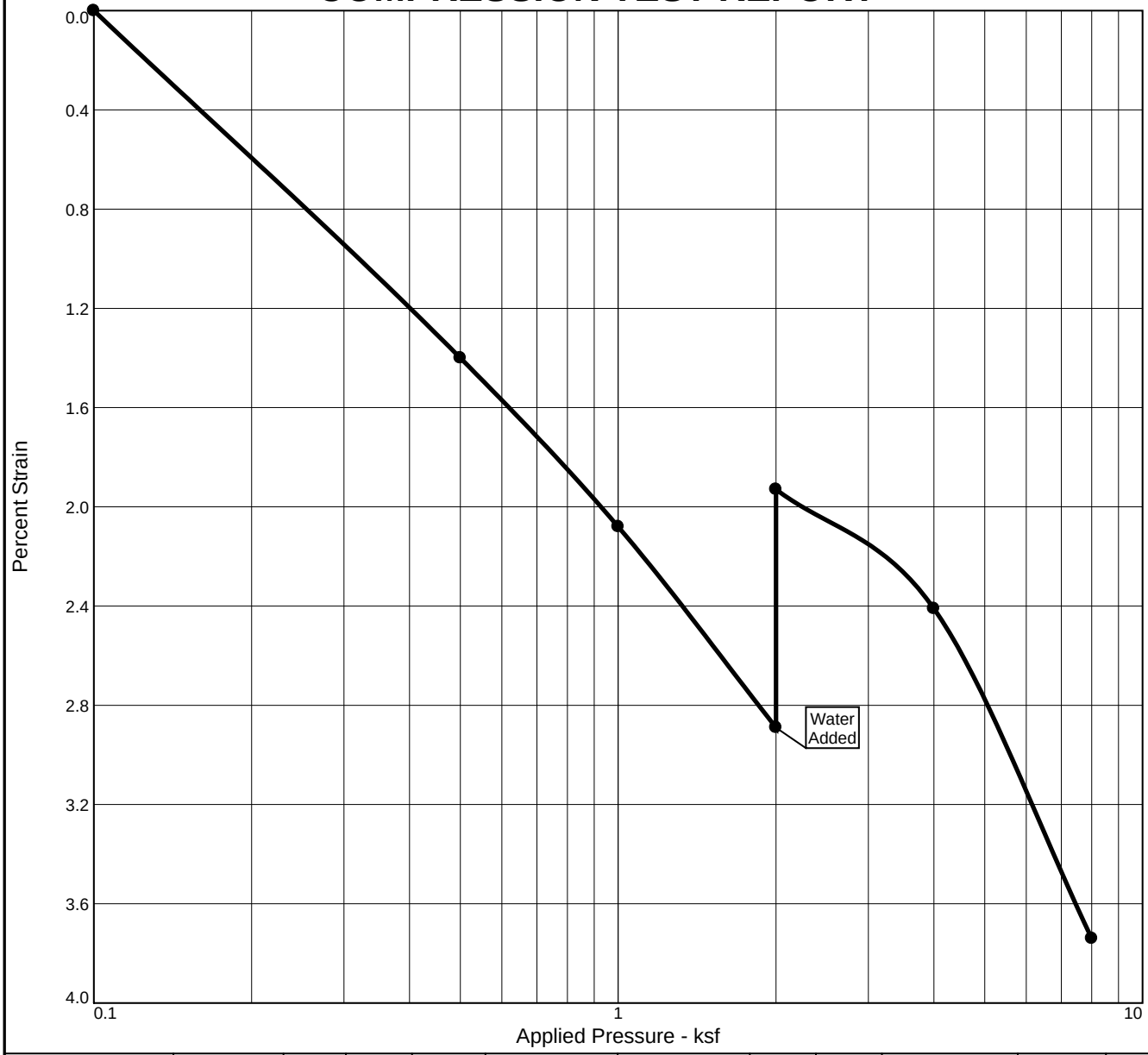
Remarks:

Western Technologies, Inc.

Flagstaff, AZ

Figure B-4

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Swell %	e_o
Sat.	Moist.											
98.5 %	20.0 %	107.5			2.65		3.9	0.07		5.3	1.0	0.539

MATERIAL DESCRIPTION	USCS	AASHTO
CLAYEY SAND WITH GRAVEL	SC	

Project No. 25-224023-0 **Client:** THE VILLAS ON SHELBY, LLC

Project: MULTI-FAMILY APARTMENTS

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 2

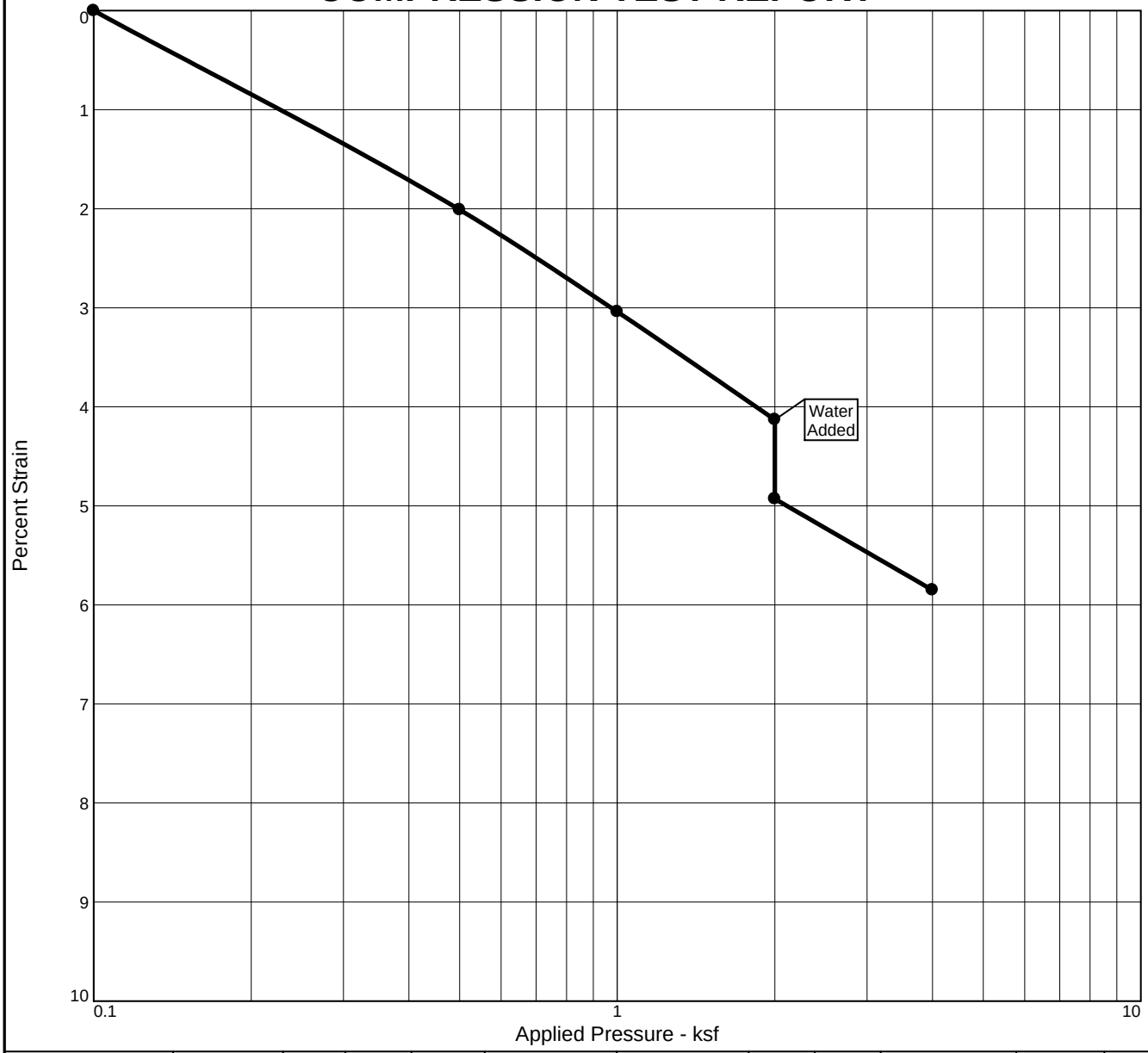
Remarks:

Western Technologies, Inc.

Flagstaff, AZ

Figure B-5

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Clpse. %	e_o
Sat.	Moist.											
92.3 %	16.4 %	112.4			2.65						0.8	0.472

MATERIAL DESCRIPTION	USCS	AASHTO
CLAYEY SAND WITH GRAVEL	SC	

Project No. 25-224023-0 **Client:** THE VILLAS ON SHELBY, LLC

Project: MULTI-FAMILY APARTMENTS

Source: RING SAMPLE **Depth:** 5-6 FEET **Sample No.:** BORING 2

Remarks:

Western Technologies, Inc.

Flagstaff, AZ

Figure B-6

COMPRESSION TEST REPORT

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Clpse. %	e_o
Sat.	Moist.											
81.6 %	16.5 %	106.8			2.65						0.1	0.536

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY, CLAYEY SAND WITH GRAVEL	SC-SM	

Project No. 25-224023-0 **Client:** THE VILLAS ON SHELBY, LLC

Project: MULTI-FAMILY APARTMENTS

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 3

Remarks:

Western Technologies, Inc.

Flagstaff, AZ

Figure B-7

Exterior Lighting Application
Commercial and Multi-Family
See LDC Section 5.8: Exterior Lighting

City Of Sedona
Community Development Department
102 Roadrunner Drive Sedona, AZ 86336
(928) 282-1154 · www.sedonaaz.gov/cd

Applicant and Permit Information

Applicant Name:	Rose Rubo	Permit #:	
Phone:	630-270-9501	Date Rec'd:	
Email Address:	Rose@athenastudio.net	Initials:	
Action/Staff Initials:	☐ Approved ☐ Denied	Date:	

Site Identification

Property Address/Location:	2250 Shelby Dr
Parcel Number	APN 408-26-103C
Business Name (If applicable):	Villas on Shelby

Lumen Information

Gross acres of entire site:	1.28	Acres for Public Right-of-Way:	.11
Net Acreage of Site:	1.17	x 70,000 = Total initial lumens permitted*	81,900

**Total outdoor light output shall not exceed 70,000 initial lumens per net acre for all development except single-family residential uses. This cap is not intended to be achieved in all cases or as a design goal. Design goals should be the lowest level of lumens necessary to meet the lighting requirements of the site. Partially shielded light fixtures are limited to a maximum of 3,850 initial lumens per net acre and are counted towards the 70,000 initial lumens per net acre cap.*

Type of Shielding and Lumens Proposed (See Lumen Calculation Table – page 2)

Lumens: Fully Shielded Fixtures:	72147
Lumens: Partially Shielded Fixtures:	0
Total Lumens Proposed:	72147

Applicant Signature

Signature:		Date:	

Exterior Lighting Application
Commercial and Multi-Family
See LDC Section 5.8: Exterior Lighting

Lighting Inventory and Lumen Calculation Table

- Include a Site Plan identifying all lighting fixtures, keyed to the inventory table.
- Include all new/proposed lighting and all existing lighting.
- Include any lighting proposed for external illumination of signs.
- Attach cut sheets or manufacturer's product description for all lights. If not available for existing fixtures, include photographs of the fixtures and any additional information to demonstrate compliance with code requirements.
- Attach additional sheets if necessary

Lighting Classes (See LDC Section 5.8.D(1) for a complete explanation):

- Class 1: High Activity Areas
- Class 2: Security and Public Safety
- Class 3: Decorative and Accent

Correlated Color Temperature(CCT)/Kelvin Rating: A maximum of 4,000K is permitted for all lighting; Class 2 Lighting is limited to a maximum of 2,700K

Shielding:

- F: Fully Shielded: Required for most lighting
- P: Partially Shielded: Limited to 3,850 lumens per acre
- U: Unshielded: Only permitted for existing, legal nonconforming lighting

Site Plan: ☐ Attached ■ Provided with plans (Sheet S.3)

Plan Key (ID)*	New or Existing (N or E)	Lighting Class (1, 2, or 3)	CCT/Kelvin Rating	Shielding (F, P, or U)	Initial Lumens	No. of Units	Total Lumens
A	N	2	2700	F	402	62	24924
B	N	1	3000	F	2757	6	16542
C	N	1	3000	F	2300	2	4600
D	N	2	2700	F	600	12	7200
E	N	1	3000	F	3449	5	17245
F	N	3	3000	F	818	2	1636
						Total Lumens Proposed:	72147

**Plan key identification in first column must correspond to labeling on site plan*

Invue

DESCRIPTION

The Entri LED luminaire features a classic and stylish design with the added benefits of solid state lighting technology, offering outstanding uniformity and energy savings. Using Cooper Lighting Solutions' proprietary LED LightSquare technology and AccuLED Optics™ system, the Entri LED luminaire offers designers vast versatility in system design, function and performance. Use Entri LED for wall mount architectural lighting applications and egress lighting requirements. UL/cUL listed for use in wet locations.

Catalog #		**Type**
Project		
Comments	Fixture A: Patio light	**Date**
Prepared by		

SPECIFICATION FEATURES

Construction

HOUSING: Heavy wall, one-piece, die-cast aluminum construction for precise tolerance control and repeatability in manufacturing. Integral extruded aluminum heat sink provides superior thermal heat transfer in +40°C ambient environments. FACEPLATE / DOOR: One-piece, die-cast aluminum construction. Captive, side hinged faceplate swings open via release of one flush mount die-cast aluminum latch on housing side panel. GASKET: One-piece molded silicone gasket mates perfectly between the door and housing for repeatable seal. LENS: Uplight lens is impact-resistant, 5/32" thick tempered frosted glass sealed to housing with continuous bead silicone gasket. Downlight lens is an LED LightSquare with integral optics sealed for IP66 rating. HARDWARE: Stainless steel mounting screws and latch hardware allow access to electrical components for installation and servicing.

Optics

Choice of 9 patented, high efficiency AccuLED Optics™ distributions. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optics technology creates consistent distributions with the scalability to meet customized application requirements. CRI and CCT offering includes 2200K, 2700K, 3000K, 3500K, 4000K, 5000K, and 5700K with minimum 70CRI and 2700K and 3000K with minimum 80CRI all within 5-step MacAdam ellipse.

Electrical

LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments and optional 50C construction available. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightSquare feature an IP66 enclosure rating and maintain greater than 98% lumen maintenance at 60,000 hours per IESNA TM-21. Emergency egress options for -20°C ambient environments, WaveLinx™, occupancy sensor, and dimming options available.

Mounting

JUNCTION BOX: Standard with zinc-plated, quick-mount junction box plate that mounts directly to 4" J-Box. LightSquare mounts facing downward. Fixture slides over mounting plate and is secured with two stainless steel fasteners. Mounting plate features a one-piece EPDM gasket on back side of plate to firmly seal fixture to wall surface, forbidding entry of moisture and particulates. Optional mounting arrangements utilize a die-cast mounting adaptor box to allow for LED battery pack, surface conduit and trough branch wiring. The Entri LED luminaire is approved for mounting on combustible surfaces.

Finish

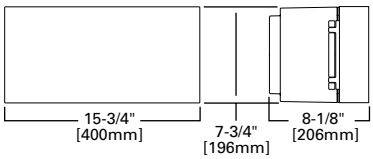
Housing is finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightSquare cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.

Warranty

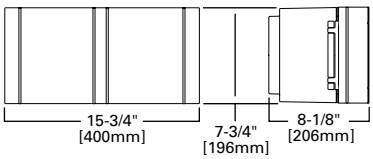
Five year limited warranty, consult website for details.
www.cooperlighting.com/legal

DIMENSIONS

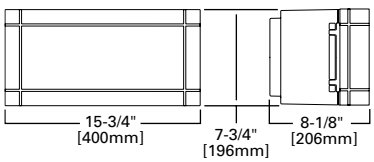
ENC (Round Clean)



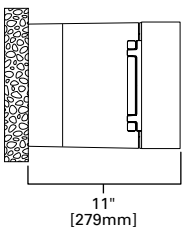
ENT (Triangle Reveals)



ENV (Round Reveals)



CONDUIT MOUNT / BATTERY BACK BOX



ENC/ENT/ENV
ENTRI LED

LightSquare
Solid State LED

ARCHITECTURAL WALL LUMINAIRE

CERTIFICATION DATA

DesignLights Consortium® Qualified*
UL/cUL Listed
ISO 9001
IP66 LightSquares
LM79 / LM80 Compliant

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating (Optional)

SHIPPING DATA

Approximate Net Weight:
15.2 lbs. (6.9 kgs.) - Without backbox
29.1 lbs. (13.2 kgs.) - With backbox

ORDERING INFORMATION

Sample Number: ENC-SA1C-740-U-T4W-GM-ULG-HA-WPS2BK

Domestic Preferences [24]	Product Family [1]	Light Engine		Color Temperature	Voltage	Distribution	Finish
		Configuration	Drive Current				
[Blank]=Standard **BAA**=Buy American Act **TAA**=Trade Agreements Act	**ENC**=Entri Round Clean **ENT**=Entri Triangle Reveals **ENV**=Entri Round Reveals	**SA1**=1 Square	**A**=350mA **B**=450mA **C**=600mA **D**=800mA **E**=1000mA **F**=1200mA	**722**=70CRI, 2200K [3] **727**=70CRI, 2700K [3] **730**=70CRI, 3000K [3] **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K [3] **760**=70CRI, 5700K [3] **827**=80CRI, 2700K [3] **830**=80CRI, 3000K [3] **835**=80CRI, 3500K [3]	**U**=UNV (120-277) **1**=120 **2**=208 **3**=240 **4**=277 **8**=480 **9**=347	**T2**=Type II **T3**=Type III **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right	**BZ**=Bronze **AP**=Grey **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)

F=Singled fused (Must specify voltage, fused on single hot leg of 120, 277, or 347)
FF=Doubled fused (Must specify voltage, fused on both hot legs of 208, 240, or 480)
X=Driver Surge Protection (6kV) Only
20K=Series 20kV UL 1449 Surge Protective Device
2L=Two-Circuit Light Engine [23]
DIM=0-10V Dimming Driver [5, 6]
EBP=Battery Pack with Back Box (Must specify voltage, available in 120V or 277V) [2, 4, 9]
CBP=Battery Pack with Back Box, Cold Weather Rated (Must specify voltage, available in 120V or 277V) [2, 4, 10]
CBP-CEC=Battery Pack with Back Box, Cold Weather Rated, CEC compliant (Must specify voltage, available in 120V or 277V) [2, 4, 10]
R90=Rotated Right 90˚
L90=Rotated Left 90˚
HSS=Factory Installed House Side Shield [16]
LCF=LightSquare Trim Plate Matches Housing Finish [15]
ULG=Uplight Glow [7]
HA=50°C High Ambient [8]
WG=Wire Guard
TR=Tamper Resistant Hardware
BOX=Empty back box (1/2" NPT, each side with plugs installed
BPC=Button Type Photocontrol (Must specify voltage, available in 120, 208, 240, 277V, 347, and 480)
AHD145=After Hours Dim, 5 Hours, 50% [17]
AHD245=After Hours Dim, 6 Hours, 50% [17]
AHD255=After Hours Dim, 7 Hours, 50% [17]
AHD355=After Hours Dim, 8 Hours, 50% [17]
SPB1=Dimming Occupancy Sensor with Bluetooth Interface, <8' Mounting [13, 21]
SPB2=Dimming Occupancy Sensor with Bluetooth Interface, 8'-20' Mounting [13, 21]
SPB4=Dimming Occupancy Sensor with Bluetooth Interface, 21'-40' Mounting [13, 21]
MS-L08=Motion Sensor for ON/OFF Operation, Up to 8' Mounting Height [11, 12, 13]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [11, 12, 13]
MS/DIM-L08=Motion Sensor for Dimming Operation, Up to 8' Mounting Height [11, 12, 13]
MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [11, 12, 13]
WPS2XX=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19,20]
WPS4XX=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19,20]
CC=Coastal Construction [22]

Accessories (Order Separately) [25]

MA1253=10kV Circuit Module Replacement
MA1253-480V=10kV Circuit Module Replacement (480V only)
FSIR-100-PK=Wireless Configuration Tool for Occupancy Sensor [11]
VA6172SA=Wireguard Accessory
VA6173=Tamper-Resistant Driver Bit
VA6174=Vandal Shield Accessory
VA2001-XX=Thru-Way Conduit Box
LS/HSS=House Side Shield (Works with all distributions listed for Entri)
WOLC-7P-10A=WaveLinx Outdoor Control Module (7-pin)

NOTES:
1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. DLC Family Code: MMMSPQ
2. EBP or CBP options limited to 25°C. Control option limited to BPC=Button Type Photocontrol (must specify voltage).
3. Extended lead times apply. Use dedicated IES files when performing layouts.
4. Not available with HA option.
5. Cannot be used with other control options.
6. Low voltage control lead brought out 18" outside fixture.
7. ULG only available in 740
8. Not available with ULG option
9. EBP is rated for minimum operating temperature of 0°C (32°F). Operates downlight for 90-minutes.
10. CBP is rated for minimum operating temperature of -20°C (-4°F). Operates downlight for 90-minutes.
11. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting
12. Replace LXX with the available mounting height options: L08, L20, L40 or L40W are the only choices.
13. Includes integral photosensor.
14. Bronze sensor is shipped with Bronze fixtures. White sensor shipped on all other housing color options.
15. Not available with HSS option.
16. Only for use with SL2, SL3 and SL4 distributions. The light square trim plate is painted black when the HSS option is selected.
17. Requires the use of BPC photocontrol. See After Hours Dim supplemental guide for additional information.
18. Control option limited to BPC=Button Type Photocontrol (must specify voltage).
19. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
20. Replace XX with sensor color (WH, BZ, or BK).
21. Smart device with mobile application required to change system defaults. See controls section for details.
22. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654.
23. 2L not available with FF, ULG or AHD options. Controls and/or battery packs operate only one of the two circuits when 2L is specified.
24. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
25. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
722 CCT	**T2 (Type II)**	Lumens	565	2,000	2,508	3,300	4,131	5,147	5,696
		Lumens per Watt‡	33.0	99.5	98.7	99.1	95.8	90.0	86.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	429	1,521	1,907	2,509	3,141	3,913	4,331
		Lumens per Watt‡	43.5	75.7	75.1	75.3	72.9	68.4	65.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	578	2,046	2,566	3,376	4,226	5,265	5,827
		Lumens per Watt‡	44.5	101.8	101.0	101.4	4,226	92.0	88.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	436	1,544	1,936	2,548	3,189	3,973	4,398
		Lumens per Watt‡	33.5	76.8	76.2	76.5	74.0	69.5	66.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	543	1,924	2,413	3,175	3,974	4,951	5,480
		Lumens per Watt‡	41.8	95.7	95.0	95.3	92.2	86.6	82.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	402	1,423	1,785	2,349	2,939	3,662	4,054
		Lumens per Watt‡	30.9	70.8	70.3	70.5	68.2	64.0	61.3
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4W (Type IV Wide)	Lumens	567	2,009	2,520	3,316	4,150	5,171	5,723
		Lumens per Watt‡	43.6	100.0	99.2	99.6	96.3	90.4	86.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	423	1,499	1,879	2,473	3,095	3,856	4,268
		Lumens per Watt‡	32.5	74.6	74.0	74.3	71.8	67.4	64.6
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1
	SL2 (Type II w/ Spill Control)	Lumens	560	1,985	2,489	3,275	4,099	5,108	5,653
		Lumens per Watt‡	43.1	98.8	98.0	98.3	95.1	89.3	85.5
		BUG Rating	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/ Spill Control, House Side Shield)	Lumens	459	1,624	2,037	2,680	3,355	4,180	4,626
		Lumens per Watt‡	35.3	80.8	80.2	80.5	77.8	73.1	70.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL3 (Type III w/ Spill Control)	Lumens	557	1,971	2,472	3,253	4,072	5,073	5,615
		Lumens per Watt‡	42.8	98.1	97.3	97.7	94.5	88.7	84.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/ Spill Control, House Side Shield)	Lumens	475	1,684	2,111	2,779	3,478	4,333	4,796
		Lumens per Watt‡	36.5	83.8	83.1	83.5	80.7	75.8	72.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL4 (Type IV w/ Spill Control)	Lumens	538	1,905	2,389	3,144	3,935	4,903	5,427
		Lumens per Watt‡	41.4	94.8	94.1	94.4	91.3	85.7	82.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/ Spill Control, House Side Shield)	Lumens	466	1,649	2,068	2,721	3,406	4,243	4,696
		Lumens per Watt‡	35.8	82.0	81.4	81.7	79.0	74.2	71.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
722 CCT	**SLR (90° Spill Light Eliminator Right)**	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
727 CCT	**T2 (Type II)**	Lumens	642	2,275	2,853	3,755	4,699	5,855	6,481
		Lumens per Watt‡	49.4	113.2	112.3	112.8	109.0	102.4	98.0
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	488	1,730	2,169	2,855	3,573	4,452	4,927
		Lumens per Watt‡	37.5	86.1	85.4	85.7	82.9	77.8	74.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	657	2,328	2,919	3,841	4,807	5,990	6,630
		Lumens per Watt‡	50.5	115.8	114.9	115.3	111.5	104.7	100.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	496	1,757	2,203	2,899	3,628	4,520	5,003
		Lumens per Watt‡	38.2	87.4	86.7	87.1	84.2	79.0	75.7
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	618	2,189	2,745	3,612	4,521	5,633	6,234
		Lumens per Watt‡	47.5	108.9	108.1	108.5	104.9	98.5	94.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	457	1,619	2,030	2,672	3,344	4,166	4,612
		Lumens per Watt‡	35.2	80.5	79.9	80.2	77.6	72.8	69.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	645	2,286	2,867	3,772	4,721	5,883	6,511
		Lumens per Watt‡	49.6	113.7	112.9	113.3	109.5	102.8	98.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	481	1,705	2,138	2,813	3,521	4,387	4,856
		Lumens per Watt‡	37.0	84.8	84.2	84.5	81.7	76.7	73.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	638	2,258	2,832	3,726	4,664	5,811	6,431
		Lumens per Watt‡	49.1	112.3	111.5	111.9	108.2	101.6	97.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	522	1,848	2,317	3,049	3,817	4,755	5,263
		Lumens per Watt‡	40.2	91.9	91.2	91.6	88.6	83.1	79.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

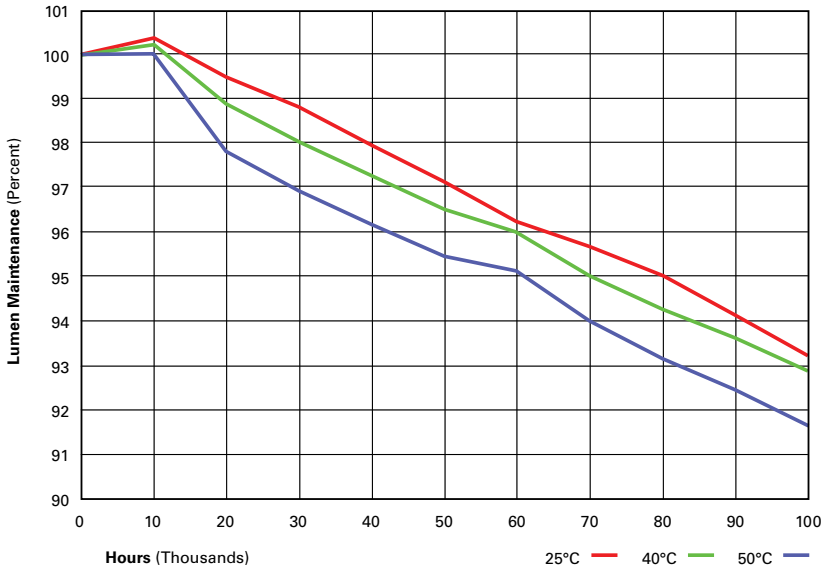
LUMEN MAINTENACE

SA1 (All Drive Currents)					
Hours	**25,000 hours***	**50,000 hours***	**60,000 hours***	**100,000 hours****	**Theoretical L70 (Hours)****
25˚C	99.4%	99.0%	98.9%	98.3%	2,471,000
40˚C	99.4%	99.0%	98.9%	98.3%	2,471,000
50˚C	99.4%	99.0%	98.9%	98.3%	2,471,000

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IES TM-21 and LM-80.

LUMEN MULTIPLIER

Ambient Temperature	SA1 (All Drive Currents)
0˚C	1.02
10˚C	1.01
25˚C	1.00
40˚C	0.99
50˚C	0.97



CONTROL OPTIONS

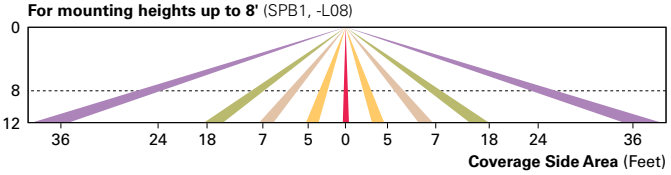
0-10V
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

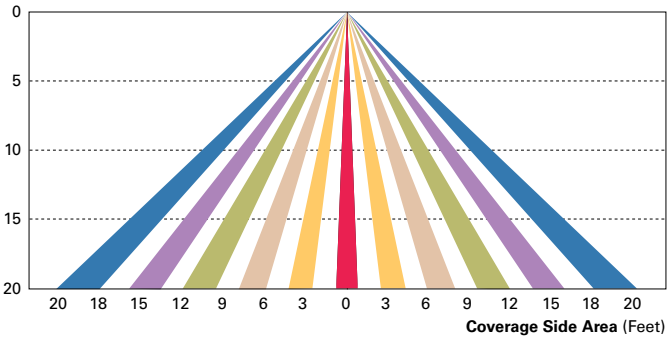
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a “dusk-to-dawn” period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (MS/DIM-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

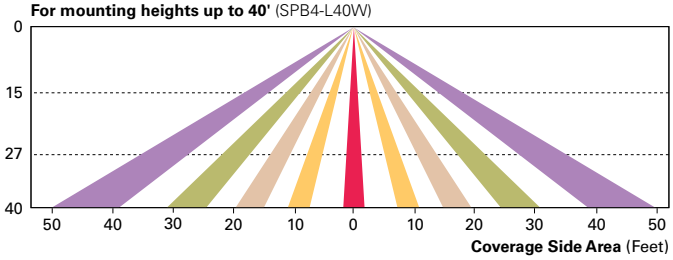
For mounting heights up to 8' (SPB1, -L08)



For mounting heights up to 20' (SPB2, -L20)



For mounting heights up to 40' (SPB4-L40W)



WaveLinx Wireless Control and Monitoring System
Available in 7-PIN or 4-PIN configurations, the WaveLinx Outdoor control platform operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. Use the WaveLinx Mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Outdoor Control Module (WOLC-7P-10A) A photocontrol that enables astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn. WaveLinx Wireless Sensor (WPS2 and WPS4) These outdoor sensors offer passive infrared (PIR) occupancy and a photocell for closed loop daylight sensing. These sensors are factory preset to dim down to approximately 50 percent power after 15 minutes of no activity detected. These occupancy sensors include an integral photocell for "dusk-to-dawn" control or daylight harvesting that is factory-enabled. A variety of sensor lenses areavailable to optimize the coverage pattern for mounting heights from 7'-20', only applies for typical wall packs.

Project	Villas on Shelby	**Catalog #**		**Type**	
Prepared by		**Notes**		**Date**	

TopTier (D1-D6)

TopTier (D7-D10)

McGraw-Edison

TT TopTier

Parking Garage Luminaire

Product Features

Light ARchitect™

BAA

Interactive Menu

Product Certifications

ISTI CERTIFIED · UL CERTIFIED · FC CLASS A · RoHS COMPLIANT · IP66 · ida DARK SKY APPROVED [2] · DLC LISTED [1] · DLC LISTED PREMIUM [1] · 5 YEAR LIMITED WARRANTY

Quick Facts

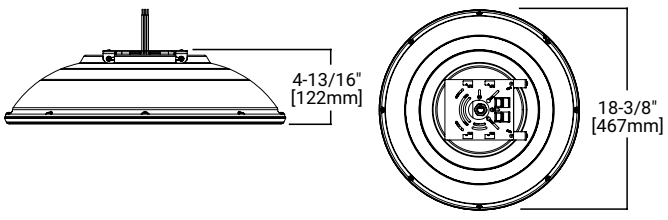
- Lumen packages range from 2,757 - 22,831
- Efficacies up to 146 lumens per watt
- Utilizes patented waveguide technology for maximum visual comfort
- Surface, pendant, trunnion, wall and direct conduit mount options

Connected Systems

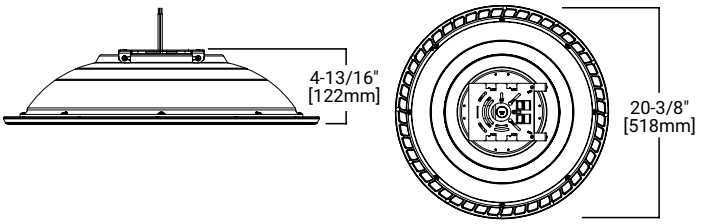
- WaveLinx Lite
- Synapse

Dimensional Details

SURFACE MOUNT
CQ, MQ, WQ and RW: D1-D6
DL: D1-D4
Base luminaire weight: 18.2 lbs (8.3 kg)



SURFACE MOUNT
CQ, MQ, WQ and RW: D7+
DL: D5+
Base luminaire weight: 20.1 lbs (9.1 kg)



NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **TT-D3-740-U-WQ-STM-30L-AP**

Product Family	Configuration	Color Temperature	Voltage	Distribution	Mounting [30]	Lead Length [7]	Finish
TT=TopTier [1] **BAA-TT**=TopTier, Buy American Act Compliant [26] **TAA-TT**=TopTier, Trade Agreements Act Compliant [26]	**D1**=4,000 Nominal Lumens **D2**=5,500 Nominal Lumens **D3**=6,500 Nominal Lumens **D4**=8,000 Nominal Lumens **D5**=10,000 Nominal Lumens **D6**=13,000 Nominal Lumens **D7**=15,000 Nominal Lumens **D8**=18,000 Nominal Lumens **D9**=20,000 Nominal Lumens **D10**=22,000 Nominal Lumens	**735**=70 CRI, 3500K CCT **740**=70 CRI, 4000K CCT **750**=70 CRI, 5000K CCT **830**=80 CRI, 3000K CCT **AMB**=Amber 590nm [28]	**U**=120-277V **H**=347-480V [21, 25] **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V **9**=347V	**CQ**=Concentrated **MQ**=Medium **WQ**=Wide **RW**=Rectangular Wide [29] **DL**=Drive Lane / Type 4 [29]	**[Blank]**=Surface Mount [16] **TMB**=Trunnion Mount with Connection Box **DPM**=Decorative Pendant Mount [4] **WM**=Wall Mount **STM**=Stem Mount to 1/2" conduit [16]	**[Blank]**=6" **30L**=30" **36L**=36" **48L**=48" **72L**=72" **108L**=108" **120L**=120" **144L**=144"	**NW**=White **AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic

Options (Add as Suffix)

F=Single Fuse (120, 277 or 347V Specify Voltage)
FF=Double Fuse (208, 240 or 480V Specify Voltage)
IBP=Integral Battery Pack [5, 23]
IBP-CEC=Integral Battery Pack, CEC compliant [5]
ITS=Integral Transfer Switch [3]
924=UL924 listed luminaire [19]
CG=Clear Glass [8]
SG=Solite® Glass [9]
UPL=Uplight [6]
TR=Tamper Resistant Hardware
NAT=Natatorium finish
DALI=DALI Driver [15]
MS/DIM-L08=Dimming Occupancy Sensor (<9' Mounting) [11, 17]
MS/DIM-L20=Dimming Occupancy Sensor (9' - 20' Mounting) [11, 17]
SPB1=Dimming Motion and Daylight Sensor, Bluetooth Programmable, < 8' Mounting [11, 20]
SPB2=Dimming Motion and Daylight Sensor, Bluetooth Programmable, 8' - 20' Mounting [11, 20]
WLS2WH=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [21, 22]
WLS4WH=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [21, 22]
WPS2WH=WaveLinx Pro, Dimming Motion, SR Driver and Daylight, WAC Programmable, 7' - 15' Mounting [21, 22]
WPS4WH=WaveLinx Pro, Dimming Motion, SR Driver and Daylight, WAC Programmable, 15' - 40' Mounting [21, 22]
LWR-LW=Enlighted Wireless Sensor, Wide Lens 8' - 16' Mounting Height [11, 18]
LWR-LN=Enlighted Wireless Sensor, Narrow Lens 16' - 40' Mounting Height [11, 18]
DIM10-L08=Synapse occupancy sensor (<8' Mounting) [21]
DIM10-L20=Synapse occupancy sensor (8'-20' Mounting) [21]

Accessories (Order Separately) [27]

MA1252=Replacement 10kV Surge Module
TT/WG=Wire Guard [24]
TT/BG-UP-XX=Bird Guard [12, 13]
TT/HSS-XX=House Side Shield [24]
DPMS36-XX=36" Pendant Mount Stem [12, 14]
DPMS48-XX=48" Pendant Mount Stem [12, 14]
DPMS96-XX=96" Pendant Mount Stem [12, 14]
DPMST36-XX=36" Pendant Mount Stem with Tether [12, 14, 30]
DPMST48-XX=48" Pendant Mount Stem with Tether [12, 14, 30]
DPMST96-XX=96" Pendant Mount Stem with Tether [12, 14, 30]
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [17]
SPB4=Dimming Motion and Daylight Sensor, Bluetooth Programmable, 20' - 40' Mounting [11, 20]

NOTES:

1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
3. Not available with D7 - D10 configurations.
4. Order Pendant Mount Stem accessory.
5. IBP ambient operating temperature -20°C to 35°C (D1-D3), -20°C to 25°C (D4-D6). Not available with D7-D10 configurations or DALI options.
6. Additional 8.0W. Provides 920 lumens. Not available with D10 configuration.
7. Choose lead length for Surface Mount and Stem Mount only. TMB, DPM and WM lengths predetermined.
8. Not available with CQ.
9. Standard with CQ, option available with WQ only.
10. U voltage only. Ambient operating temperature -20°C to 50°C (D1-D4) or -20°C to 40°C (D5-D6). UL924 listed component.
11. Includes integral photocell.
12. Specify color in place of XX.
13. Designed for use with Stem Mount and Decorative Pendant Mount only.
14. Designed for use with Decorative Pendant Mount only.
15. Not available with H voltage or IBP. Not compatible with MS/DIM or LWR sensors.
16. Specify Lead Length for wire harness length.
17. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay and more.
18. Enlighted wireless sensors are factory installed only, and require network components in appropriate quantities.
19. 924 option provides luminaire UL924 listing, used in conjunction with ITS or IBP-CEC.
20. Sensor configuration mobile application required for configuration. See controls page for details.
21. Cannot be used with other control options.
22. For WaveLinx applications, WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. Not required for WaveLinx Lite Commercial (LC) applications.
23. Specify 120V or 277V.
24. TT/WG and TT/HSS cannot be installed together. TT/HSS & TT/WG not available on D7-D10 configurations.
25. D4-D10 only. Not compatible with battery.
26. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
27. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
28. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose lumen package D1.
29. Not available in D10 configuration.
30. For installations in locations such as gymnasiums, arenas, sports complexes, multi-purpose rooms, and any other locations where the fixture potentially will be subject to impacts from external sources, DPM mounting is required, utilizing the stem kit with tether (DPMST*). Surface Mount, Trunnion Mount (TMB), Wall Mount (WM) and Stem Mount (STM) are prohibited in these applications.

Product Specifications

Construction

- Low profile, die-cast aluminum housing provides a clean, symmetric aesthetic

Optics

- Five optical distributions utilizing visual comfort waveguide technology
- 10 lumen packages, ranging from 2,757 to 22,831
- Integral uplight option utilizes a dedicated, 8W light engine, producing 920 lumens for reduced visual contrast and cave effect
- IDA Certified for 3000k CCT and warmer only. Not available with uplight option.

Electrical

- D1-D6: -40C - 50C operating temperature
- D7-D10: -40C - 40C operating temperature
- Greater than 90% lumen maintenance at 50,000 hours
- IP66 rated
- 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation
- 10kV surge module standard
- 0-10V dimming standard

Mounting

- Surface mount directly to square or octagonal 4" surface or recessed junction box using quick mount bracket
- Optional stem mount bracket with set screw for direct 1/2" NPS conduit mounting
- Trunnion, decorative pendant, and wall mount options also available
- For installations in locations such as gymnasiums, arenas, sports complexes, multipurpose rooms, and any other locations where the fixture potentially will be subject to impacts from external sources, the stem kit with tether (DPMST*) is required.

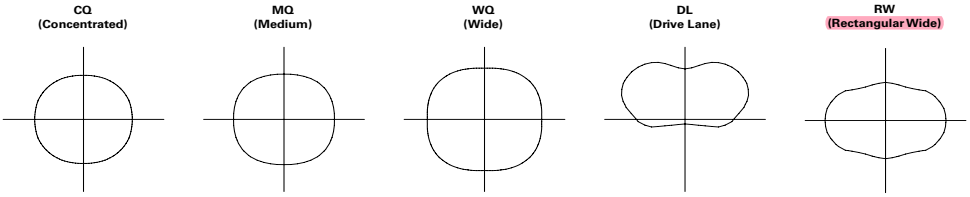
Finish

- 2.5 mil nominal TGIC powder coat thickness
- Finishes include white, black, bronze, gray, dark platinum and graphite metallic
- RAL and custom color matches available
- Natatorium option (NAT) available, providing 5,000 hour salt spray rating per ASTM B117, with a scribe rating of 9 per ASTM D1654

Warranty

- Five-year warranty

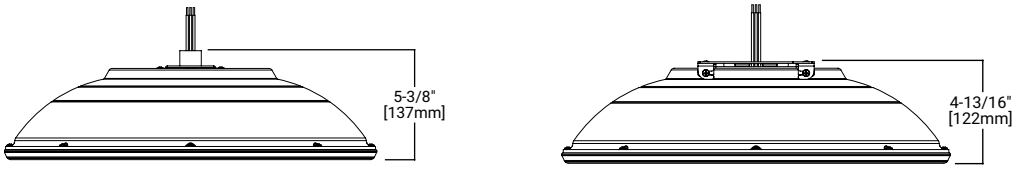
Optical Distributions



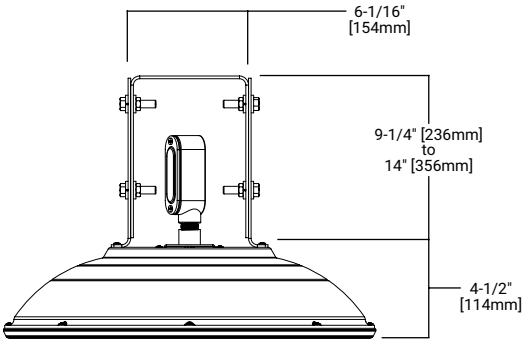
Mounting Details

***D1-D6 configuration shown (D1-D4 for DL distribution)**

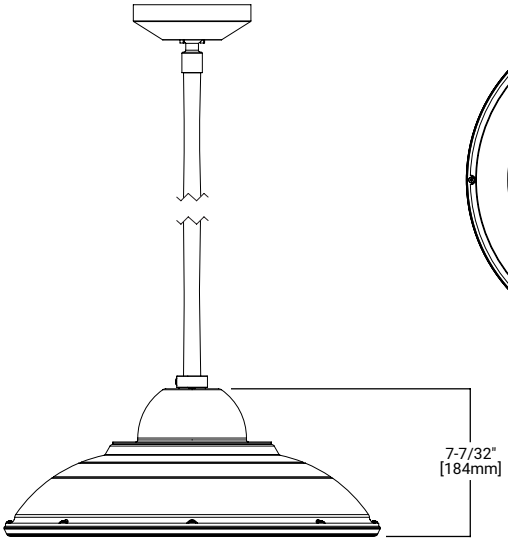
Stem Mount



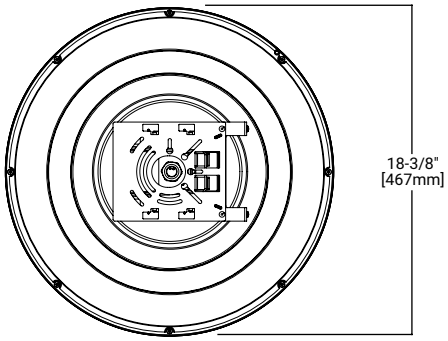
Trunnion Mount



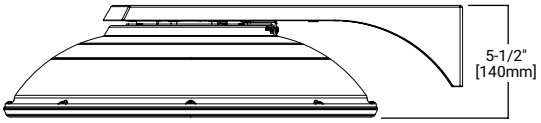
Decorative Pendant Mount



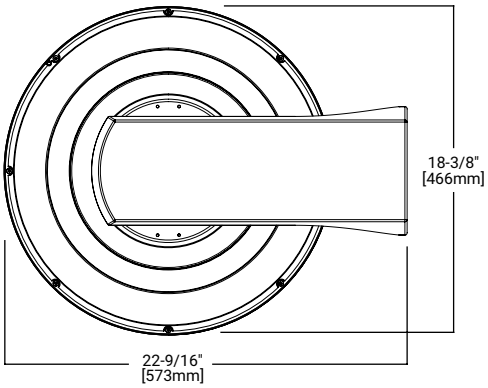
Top View



Wall Mount

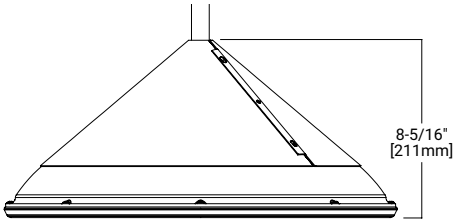


Top View - Wall Mount

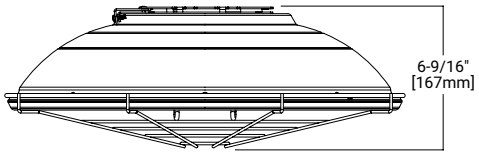


Accessories

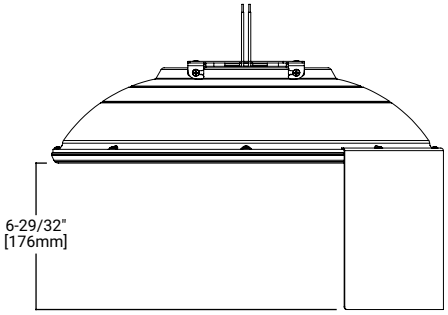
Bird Guard (TT/BG-UP-XX)



Wire Guard (TT/WG)



House Side Shield (TT/HSS-XX)



Energy and Performance Data

View TopTier IES files

Power and Lumens (3000K/3500K/4000K/5000K)

Lumen Package			D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Power (Wattage) CQ, MQ, WQ			28.0	39.2	47.2	57.6	74.7	105.2	124.7	148.7	173.1	193.8
Power (Wattage) RW Only			28.0	39.2	47.2	57.6	74.7	105.2	127.1	152.6	178.0	--
Power (Wattage) DL Only			28.8	40.5	48.8	59.8	62.3	97.4	127.1	152.6	178.0	--
Distribution												
3000K CCT 80 CRI	CQ Concentrated	Lumens	3,409	4,640	5,595	6,660	8,383	11,030	12,307	14,411	16,430	18,001
		BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2
		Lumens per Watt	122	118	119	116	112	105	99	97	95	93
	MQ Medium	Lumens	3,647	4,964	5,986	7,125	8,969	11,800	12,854	15,053	17,161	18,802
		BUG Rating	B2-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	130	127	127	124	120	112	103	101	99	97
	WQ Wide	Lumens	3,449	4,695	5,662	6,740	8,483	11,161	12,350	14,463	16,489	18,065
		BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	123	120	120	117	114	106	99	97	95	93
	RW Rectangular Wide	Lumens	2,757	3,753	4,526	5,387	6,781	8,922	11,977	13,619	15,122	--
		BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	--
		Lumens per Watt	98	96	96	94	91	85	94	89	85	--
	DL Drive Lane / Type 4	Lumens	2,959	3,985	4,762	5,622	6,537	8,771	11,834	13,337	14,768	--
		BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	--
		Lumens per Watt	103	98	98	94	105	90	93	87	83	--
3500K CCT 70 CRI	CQ Concentrated	Lumens	3,618	4,925	5,940	7,070	8,899	11,708	14,944	17,500	19,951	21,858
		BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2
		Lumens per Watt	129	126	126	123	119	111	120	118	115	113
	MQ Medium	Lumens	3,872	5,270	6,355	7,564	9,520	12,527	15,609	18,279	20,839	22,831
		BUG Rating	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	138	134	135	131	127	119	125	123	120	118
	WQ Wide	Lumens	3,662	4,984	6,011	7,154	9,005	11,848	14,997	17,562	20,022	21,936
		BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G4
		Lumens per Watt	131	127	127	124	121	113	120	118	116	113
	RW Rectangular Wide	Lumens	2,927	3,984	4,805	5,719	7,198	9,471	14,544	16,537	18,363	--
		BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	--
		Lumens per Watt	105	102	102	99	96	90	114	108	103	--
	DL Drive Lane / Type 4	Lumens	3,141	4,230	5,055	5,968	7,938	10,650	14,370	16,195	17,933	--
		BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	--
		Lumens per Watt	109	104	104	100	127	109	113	106	101	--
4000K/ 5000K CCT 70 CRI	CQ Concentrated	Lumens	3,828	5,211	6,284	7,480	9,415	12,387	14,944	17,500	19,951	21,858
		BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2
		Lumens per Watt	137	133	133	130	126	118	120	118	115	113
	MQ Medium	Lumens	4,096	5,575	6,723	8,002	10,072	13,253	15,609	18,279	20,839	22,831
		BUG Rating	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	146	142	142	139	135	126	125	123	120	118
	WQ Wide	Lumens	3,874	5,273	6,359	7,569	9,527	12,535	14,997	17,562	20,022	21,936
		BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G4
		Lumens per Watt	138	135	135	131	128	119	120	118	116	113
	RW Rectangular Wide	Lumens	3,097	4,215	5,083	6,050	7,615	10,020	14,544	16,537	18,363	--
		BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	--
		Lumens per Watt	111	108	108	105	102	95	114	108	103	--
	DL Drive Lane / Type 4	Lumens	3,323	4,475	5,348	6,314	7,938	10,650	14,370	16,195	17,933	--
		BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	--
		Lumens per Watt	115	110	110	106	127	109	113	106	101	--

Energy and Performance Data

CQ, MQ and WQ Distributions

Lumen Package	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Power (Wattage)	28.0	39.2	47.2	57.6	74.7	105.2	124.7	148.7	173.1	193.8
Input Current @ 120V (A)	0.23	0.33	0.39	0.48	0.62	0.88	1.09	1.31	1.53	1.72
Input Current @ 208V (A)	0.13	0.19	0.23	0.28	0.36	0.51	0.57	0.67	0.78	0.88
Input Current @ 240V (A)	0.12	0.16	0.20	0.24	0.31	0.44	0.56	0.66	0.76	0.85
Input Current @ 277V (A)	0.10	0.14	0.17	0.21	0.27	0.38	0.49	0.58	0.67	0.74
Input Current @ 347V (A)	0.08	0.11	0.14	0.17	0.22	0.30	0.40	0.47	0.55	0.62
Input Current @ 480V (A)	0.06	0.08	0.10	0.12	0.16	0.22	0.30	0.35	0.41	0.45

RW Distribution

Lumen Package	D1	D2	D3	D4	D5	D6	D7	D8	D9
Power (Wattage)	28.0	39.2	47.2	57.6	74.7	105.2	127.1	152.6	178.0
Input Current @ 120V (A)	0.23	0.33	0.39	0.48	0.62	0.88	1.11	1.34	1.58
Input Current @ 208V (A)	0.13	0.19	0.23	0.28	0.36	0.51	0.58	0.69	0.81
Input Current @ 240V (A)	0.12	0.16	0.20	0.24	0.31	0.44	0.56	0.67	0.78
Input Current @ 277V (A)	0.10	0.14	0.17	0.21	0.27	0.38	0.50	0.59	0.68
Input Current @ 347V (A)	0.08	0.11	0.14	0.17	0.22	0.30	0.41	0.48	0.57
Input Current @ 480V (A)	0.06	0.08	0.10	0.12	0.16	0.22	0.30	0.36	0.42

DL Distribution

Lumen Package	D1	D2	D3	D4	D5	D6	D7	D8	D9
Power (Wattage)	28.8	40.5	48.8	59.8	62.3	97.4	127.1	152.6	178.0
Input Current @ 120V (A)	0.24	0.34	0.41	0.50	0.55	0.86	1.11	1.34	1.58
Input Current @ 208V (A)	0.14	0.19	0.23	0.29	0.28	0.44	0.58	0.69	0.81
Input Current @ 240V (A)	0.12	0.17	0.20	0.25	0.28	0.43	0.56	0.67	0.78
Input Current @ 277V (A)	0.10	0.15	0.18	0.22	0.24	0.37	0.50	0.59	0.68
Input Current @ 347V (A)	0.08	0.12	0.14	0.17	0.21	0.31	0.41	0.48	0.57
Input Current @ 480V (A)	0.06	0.08	0.10	0.12	0.15	0.23	0.30	0.36	0.42

Lumen Maintenance

Lumen Package	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
D1-D6 (D1 - D4 DL/T4)	25°C	98.0%	95.2%	94.1%	89.8%	> 300,000
	40°C	97.9%	94.8%	93.6%	89.0%	> 290,000
	50°C	97.7%	94.5%	93.2%	88.4%	> 270,000
D7 - D10 (D5+ DL/T4)	25°C	95.8%	93.2%	92.2%	88.2%	> 300,000
	40°C	93.9%	89.7%	88.1%	81.9%	> 180,000

* Supported by IES TM-21 standards
**Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

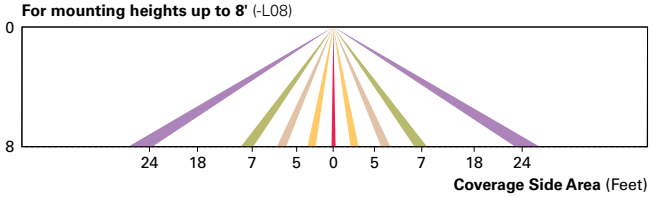
Ambient Temperature	Multiplier
0°C	1.03
10C	1.02
25°C	1.00
40°C	0.98
50°C	0.97

Control Options

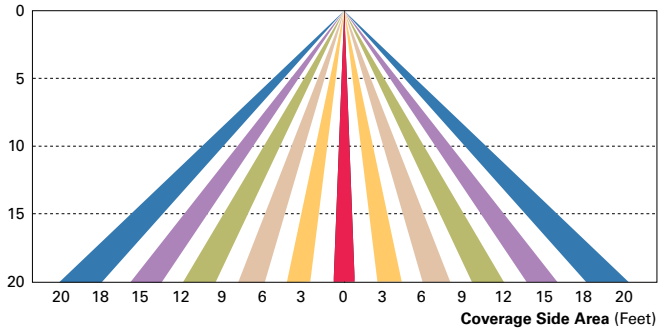
0-10V (D) 0-10V dimming comes standard on all TopTier configurations for use with integrated or external lighting controls.

Dimming Occupancy Sensor (MS/DIM) These sensors are factory installed in the luminaire, dimming to 50% after five minutes of no motion detected. When motion is detected, the luminaire output is 100%. Includes an integral photocell that can be programmed for "dusk-to-dawn" operation. The FSIR-100 programming tool can be utilized to adjust dimming level, time delay, sensitivity and other parameters. Two lens options provide optimal coverage patterns up to 20' mounting height.

For mounting heights up to 8' (-L08)



For mounting heights up to 20' (-L20)



Dimming Occupancy Sensor (SPB)

These passive infrared (PIR) sensors are factory installed in the luminaire housing. When the SPB sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when no motion is detected. After a period of time, the luminaire turns off, and when motion is detected, the luminaire returns to full light output. The SPB sensor default parameters are listed in the table below, and can be configured utilizing the Sensor Configuration mobile application for iOS and Android devices. The SPB/X is configured to control only the specified number of light squares. An integral photocontrol can be activated with the app for "dusk-to-dawn" control or daylight harvesting - the factory default is off. Three sensor lenses are available to optimize the coverage pattern for mounting heights from 8'-40'. Four sensor colors are available; Bronze, Black, Gray and White, and are automatically selected based on the luminaire finish as indicated by the table below.

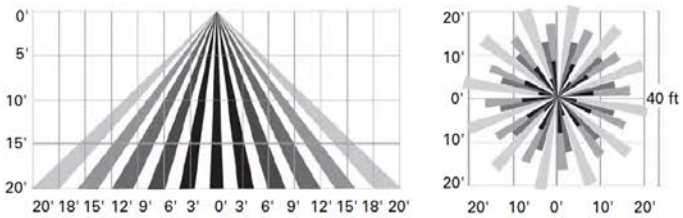
SPB sensor finish matched to luminaire finish		
Luminaire Finish		SPB Sensor Finish
WH	White	White
BK	Black	Black
GM	Graphite Metallic	Black
BZ	Bronze	Bronze
AP	Gray	Gray
DP	Dark Platinum	Gray

SPB/X Availability Table	
Fixture Square Count	Available SPB/X Square Count
1	Not Available
2	Not Available
3	Not Available
4	2
5	2 or 3
6	3
7	2, 3, 4 or 5
8	2, 3, 5 or 6
9	3 or 6

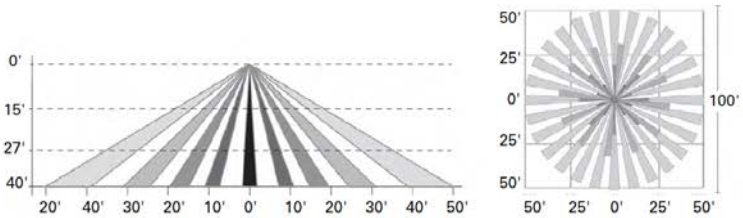
WaveLinx Wireless Control and Monitoring System

Operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. WaveLinx (WPS2 to WPS4) outdoor wireless sensors offer passive infrared (PIR) occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Lite (WLS4 and WLS2) outdoor wireless sensors provide PIR occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx Lite mobile application for set-up and configuration. WAC not required. WaveLinx Outdoor Control Module (WOLC-7P-10A) accessory provides a photocontrol enabling astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn.

For mounting heights up to 15' (WPS2 and WLS2)

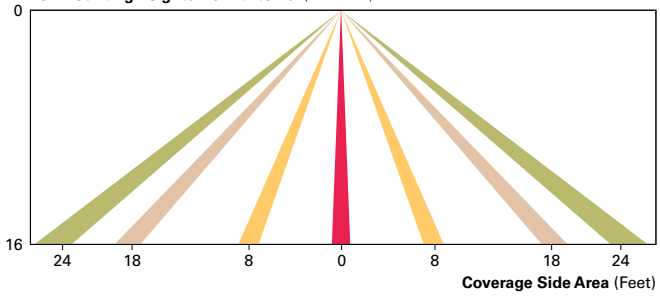


For mounting heights up to 40' (WPS4 and WLS4)

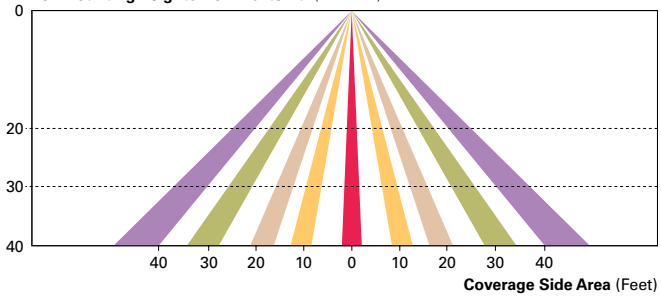


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN) The Enlighted control system is a connected lighting solution, combining LED luminaires with an integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes while collecting valuable data about building performance and use. Software applications utilizing energy dashboards maximize data inputs to help optimize the use of other resources beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)

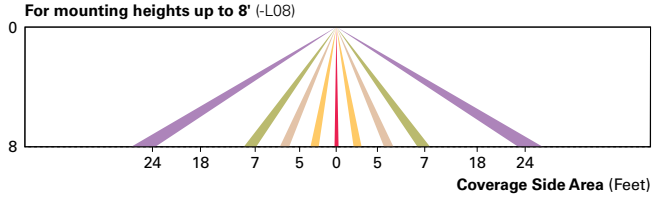


For mounting heights from 16' to 40' (LWR-LN)

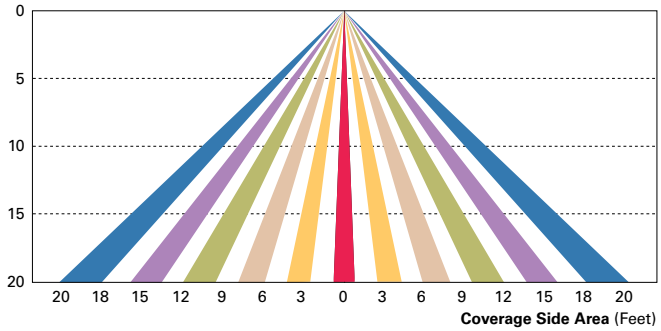


Synapse (DIM10) SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 control module and FSP-20 motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty, and terms and conditions.

For mounting heights up to 8' (-L08)



For mounting heights up to 20' (-L20)



Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Invue

DESCRIPTION

The LuxeScape Collection presents a contemporary, architectural dayform providing superior uniformity and efficient illumination. Designed to enhance urban spaces with beautiful visual appearances and integral control solutions, LuxeScape integrates into any environment while providing high visibility by utilizing industry-leading WaveStream™ LED optics.

Catalog #		**Type**
Project	Villas On Shelby	
Comments	Light C-Parking Lot light	**Date**
Prepared by		

SPECIFICATION FEATURES

Construction
Housing assembly is IP66 rated and cast from low copper content corrosion resistant aluminum, maintaining strength and precision to sustain long term dayform appearance. 3G rated construction avoids damages from installation generated vibration. Corrosion-resistant color matching hardware are minimized to enhance appearance.

Optics
Designed for complex site or pedestrian applications, WaveStream™ LED optical waveguide technology produces both symmetric NEMA Type V and asymmetric NEMA II, III, IV distributions. The waveguide is manufactured from precision injection molded acrylic delivering visual comfort and optically controlled illumination for improved glare control. Luminaire efficacy measures in excess of 100 lm/W for 4000K (+/- 275K) CCT at 70 CRI (min). Optional 3000K CCT at 70 CRI or 3000K CCT at 80 CRI also available.

Electrical
LED drivers are uniquely positioned and mounted for maximum thermal performance and extended life. Standard 0-10V dimming drivers and surge protection module are designed to withstand 10kV of transient line surge. Drivers operate at 120-277V 50/60Hz with 347V 60Hz or 480V 60Hz operation optional. Suitable for ambient temperature applications as low as -40°C (40°F) to 40°C (104°F). High ambient options available allow for 50°C operation.

Controls
Control options are designed to be simple, cost-effective, energy code, and regulation compliant solutions featuring WaveLinx. See control options page for more details.

Mounting
Invue's aluminum round decorative pole (ARP) offering provides a seamless transition and compliments the contemporary design architecture with its unique sleek taper and base design. The tenon mount pole comes standard with an access door feature integrated into the base.

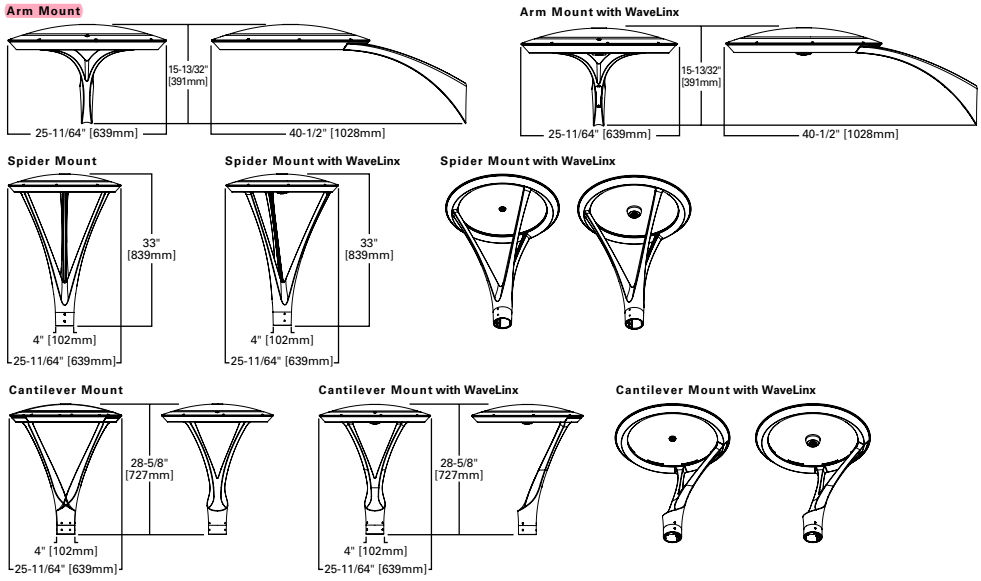
Arm Mount
The integrated aluminum contemporary upsweep arm is bolted directly to the pole using an "N" drill pattern. Provides a seamless transition to a 4" or 5" round pole.

Spider & Cantilever Mount
Fitter assembly mounts over 3" O.D. tenon and can be adapted to a 2-3/8" tenon. It is secured via concealed, corrosion resistant set screw and jam screw pairs in six inconspicuous locations.
Fitter design provides seamless transition to 4" O.D. round pole top. Optional mounting accessories include a twin arm mount and wall mount arm.

Finish
Cooper Lighting Solutions utilizes premium ultra-weatherable TGIC based polyester powder coatings specifically formulated to withstand extended outdoor exposure while providing decorative appeal. Finish is compliant to 3,000 hour salt spray standard (per ASTM B117). RAL and custom color matches available. Options to meet Buy American Act requirements.

Warranty
Five year limited warranty, consult website for details.
www.cooperlighting.com/legal

DIMENSIONS



LXS LUXESCAPE COLLECTION

DECORATIVE LUMINAIRE

CERTIFICATION DATA
UL/cUL Listed
FCC Class A
IEC 60529 IP66 Housing
ANSI C136.31 3G Vibration
ASTM A356.0 Low Copper Alloy
ASTM B117 Salt Spray Tested
RoHS
ISO 9001
DesignLights Consortium® Qualified*
Dark Sky Approved (3000K CCT and warmer only)

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V 50/60Hz, 347V 60Hz, 480V 60Hz
40°C Ambient Temperature Rating
As low as -40°C (-40°F) minimum temperature
*See MINIMUM TEMPERATURE table

EPA
Effective Projected Area: (Sq. Ft.)
Arm Mount: 1.0
Cantilever Mount: 1.3
Spider Mount: 1.6

SHIPPING DATA
Approximate Net Weight:
Arm Mount Weight: 41 lbs. [18.6 kgs.]
Cantilever Mount Weight: 46 lbs. [20.8 kgs.]
Spider Mount Weight: 53 lbs. [24 kgs.]

COOPER Lighting Solutions

*www.designlights.org

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June 1, 2024 4:26 AM

ORDERING INFORMATION

Sample Number: LXS-VA3-LED-D1-T2-GM-S

Product Family [1, 2]	Optic Type	Lumen Package [3]	CRI/CCT	Voltage	Distribution	Mounting	Finish
LXS=LuxeScape Collection **BAA-LXS**=LuxeScape Collection Buy American Act Compliant [34]	**VA**=Visual Comfort / WaveStream	**1**=Nominal 2,300 Lumens **2**=Nominal 4,500 Lumens **3**=Nominal 8,500 Lumens **4**=Nominal 9,500 Lumens [4]	**730**=70 CRI / 3000K **735**=70 CRI / 3500K **740**=70 CRI / 4000K **830**=80 CRI / 3000K **835**=80 CRI / 3500K **AMB**=Amber 590nm [21, 33]	**U**=120- 277 **1**=120 **2**=208 **3**=240 **4**=277 **8**=480 [5, 6] **9**=347 [5]	**ASC**=Asymmetric Curbline [7] **ASW**=Asymmetric Wide [8] **AST**=Asymmetric Transverse [9] **SYM**=Symmetric Round [10]	**A**=Arm Mount **S**=Spider Mount **C**=Cantilever Mount	**AP**=Grey **BK**=Black **BZ**=Bronze **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color [11]

Options (Add as Suffix)

F=Single Fuse [12]
FF=Double Fuse [13]
X=Driver Surge only
10MSP=10K MOV Surge Protective Device
20MSP=20kV MOV Surge Protective Device
20K=20kV UL 1449 Fused Surge Protective Device
DIM=External 0-10V Dimming Leads [14]
HA=50°C High Ambient Temperature [15]
VS=Vandal Shield [16]
CC=Coastal Construction [17]
DALI=DALI Driver [18]
BPC=Button Type Photocontrol [19]
PR=NEMA 3-PIN Twistlock Photocontrol Receptacle [20]
PR7=NEMA 7-PIN Twistlock Photocontrol Receptacle [20]
PC=Twistlock NEMA Photocontrol
LLPC=Long Life Twistlock NEMA Photocontrol [32]
SC=Shorting Cap
MS-L08=Motion Sensor for ON/OFF Operation, Up to 8' Mounting Height [21, 22, 23]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [21, 22, 23]
MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [21, 22, 23]
MS/DIM-L08=Motion Sensor for Dimming Operation, Up to 8' Mounting Height [21, 22, 23]
MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [21, 22, 24]
MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [21, 22, 25]
DIM10=Synapse Integrated Control Module
WLS2WH=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting
WLS4WH=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting
WPS2WH=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [26,27,36]
WPS4WH=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [26,27,36]

Accessories (Order Separately) [19, 35]

FSIR-100=Wireless Configuration Tool for Occupancy Sensor [28]
ARPA2=2-3/8" O.D. Tenon Sleeve Adapter [30]
VA6028-XX=Twin Mount Arm (EPA 1.36 sq./ft.) [30, 31]
VA6029-XX=Wall Mount Arm [30, 31]
MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1037-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1191-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon [31]
MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon [31]
MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon [31]
MA1192-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon [31]
MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon [31]
MA1194-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon [31]
MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon [31]
WOLC-7P-10A=WaveLinx Outdoor Control Module (7-PIN) [29]

NOTES:
1. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information. **2.** DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. **3.** Lumens are nominal. See lumen table for more information. **4.**9,500 Lumen package available only on SYM distribution **5.** Requires the use of a step-down transformer. **6.** Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems). **7.** IESNA Type III typical. **8.** IESNA Type IV typical. **9.** IESNA Type IV typical. **10.** IESNA Type V typical. **11.** Specify RAL number for Custom Color. Custom color matching available upon request. Consult your lighting representative at Cooper Lighting Solutions for more information. **12.** Must specify voltage (120V, 277V, or 347V) to fuse the single hot leg. **13.** Must specify voltage (208V, 240V, or 480V) to fuse the both hot legs. **14.** Low voltage control leads brought out 18" outside fixture. Not available with control options. **15.** Not available in VA3 with Type ASC, ASW and AST distributions. **16.** Reduce total lumens by a 0.95 multiplier to accommodate losses. **17.** Post-coating over the primary finish providing 7,000+ salt spray hours. Extended lead-times can be 4 -10 additional weeks. **18.** Only available with VA3 and VA4 lumen packages. **19.** Not available with MS-LXX, MS/DIM-LXX, LWR-LW, LWR-LN or 347V or 480V options. **20.** Not available with MS-LXX, MS/DIM-LXX, LWR-LW, LWR-LN or 347V or 480V options. **21.** Not available with HA option. **22.** The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult you lighting representative at Cooper Lighting Solutions for more information. **23.** Approximately 22' detection diameter at 8' mounting height. **24.** Approximately 40' detection diameter at 20' mounting height. **25.** Approximately 100' detection diameter at 40' mounting height. **26.** Cannot be used in conjunction with photocontrol or other controls systems (BPC, PR, PR7, MS). **27.** WAC Gateway required to enable field-configurability. Order WAC-POE and WPOE-120 (10V to POE injector) power supply if needed. Only compatible with WaveLinx system and software and requires system components to be installed for operation. See website for more WaveLinx application information. **28.** This tool enables adjustment of parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting Solutions for more information. **29.** Requires 7-PIN NEMA twistlock photocontrol receptacle. WOLC-7P-10A cannot be used in conjunction with additional sensors or controls. **30.** Not vibration rated at this time. Consult your lighting representative at Cooper Lighting Solutions for more information. **31.** Replace XX with color designation. **32.** Requires photocontrol receptacle PR or PR7. **33.** Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose Lumen Package 1. See IES files for photometric performance. **34.** Only product configurations with this designated prefix are built to be compliant with the Buy American Act of 1933 (BAA). Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements. **35.** Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information. **36.** Not available with 5LTD option. **37.** Not available with 2300 or 9500 lumen package.

ARP ORDERING INFORMATION (ALUMINUM DECORATIVE POLE)

SAMPLE NUMBER: ARP5L310ABZ2

Product Family	Shaft Size (Inches) [1]	Wall Thickness (Inches)	Pole Top Diameter (Inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Options (Add as Suffix)
ARP=Aluminum Round Tapered Decorative **BAA-ARP=Aluminum Round Tapered Decorative Buy American Act Compliant [36]**	**5=5"**	**L**=0.156" **M**=0.188"	**3**=3" O.D. [2] **6**=4" O.D. [3]	**10**=10' **12**=12' **14**=14' **16**=16' **18**=18' [4] **22**=22' [4]	**A**=Aluminum (Round 4-Bolt Pole)	**AP**=Grey **BA**=Anodized Bronze **BK**=Black **BZ**=Bronze **CA**=Anodized Clear **DA**=Anodized Black **DP**=Dark Platinum **GM**=Graphite Metallic **GN**=Hartford Green **WH**=White	**2**=2-3/8" O.D. Tenon (4" Long) **5**=3" O.D. Tenon (4" Long)	**X**=None	**C**=Convenience Outlet [5] **E**=GFCI Convenience Outlet [5] **G**=Ground Lug **V**=Vibration Dampener [4]

NOTES 1 All shaft sizes nominal. 2 Provides 3" O.D. pole top suited for Arbor Post Top. 3 Provides 4" O.D. pole top suited for LuxeScape post tops. 4 Vibration damper recommended over 18 feet add suffix "V" to catalog number. 5 Specify outlet location. Receptacle not included, provision only.

POWER AND LUMENS

Lumen Package				**VA1**	**VA2**	**VA3**	**VA4**
Drive Current							
Power Wattage (Watts)*				24W	48W	96W	99W
Input Current (mA) @ 120V				200	400	800	830
Input Current (mA) @ 277V				90	180	350	360
Power Wattage (Watts)*				28W	55W	114W	108W
Input Current (mA) @ 347V				79	161	325	328
Input Current (mA) @ 480V				58	117	235	237
CRI/CCT (Nominal)	**Mounting**	**Distribution**					
730: 70CRI/3000K	A: Arm	ASC: Asymmetric Curbline	Lumens	1,949	3,740	6,730	--
			Lumens per Watt	81.2	77.9	68.0	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,323	4,458	8,022	--
			Lumens per Watt	96.8	92.9	81.0	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,400	4,607	8,291	--
			Lumens per Watt	100.0	96.0	83.7	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,485	4,958	9,111	10,571
			Lumens per Watt	118.3	120.9	105.9	110.1
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G3
			IESNA Type	V	V	V	V
	S: Spider Mount	ASC: Asymmetric Curbline	Lumens	1,780	3,417	6,148	--
			Lumens per Watt	74.2	71.2	62.1	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,097	4,024	7,242	--
			Lumens per Watt	87.4	83.8	73.2	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,198	4,218	7,590	--
			Lumens per Watt	91.6	87.9	76.7	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,305	4,600	8,452	9,807
			Lumens per Watt	109.8	112.2	98.3	102.2
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G3
			IESNA Type	V	V	V	V

POWER AND LUMENS

Lumen Package				VA1	VA2	VA3	VA4
CRI/CCT (Nominal)	**Mounting**	**Distribution**					
730: 70CRI/3000K	C: Cantilever Mount	ASC: Asymmetric Curbline	Lumens	1,857	3,564	6,414	--
			Lumens per Watt	77.4	74.3	64.8	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,213	4,248	7,645	--
			Lumens per Watt	92.2	88.5	77.2	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,324	4,460	8,025	--
			Lumens per Watt	96.8	92.9	81.1	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,342	4,674	8,588	9,965
			Lumens per Watt	111.5	114.0	99.9	103.8
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G3
			IESNA Type	V	V	V	V
740: 70CRI/4000K	A: Arm	ASC: Asymmetric Curbline	Lumens	2,105	4,040	7,270	--
			Lumens per Watt	87.7	84.2	73.4	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,509	4,816	8,666	--
			Lumens per Watt	104.5	100.3	87.5	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,593	4,977	8,956	--
			Lumens per Watt	108.0	103.7	90.5	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,684	5,356	9,842	11,420
			Lumens per Watt	127.8	130.6	114.4	119.0
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G3	B4-U0-G3
			IESNA Type	V	V	V	V

POWER AND LUMENS

Lumen Package				VA1	VA2	VA3	VA4
CRI/CCT (Nominal)	**Mounting**	**Distribution**					
740: 70CRI/4000K	S: Spider Mount	ASC: Asymmetric Curbline	Lumens	1,923	3,691	6,642	--
			Lumens per Watt	80.1	76.9	67.1	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,265	4,347	7,823	--
			Lumens per Watt	94.4	90.6	79.0	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,374	4,557	8,200	--
			Lumens per Watt	98.9	94.9	82.8	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,490	4,969	9,131	10,595
			Lumens per Watt	118.6	121.2	106.2	110.4
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G3	B4-U0-G3
			IESNA Type	V	V	V	V
	C: Cantilever Mount	ASC: Asymmetric Curbline	Lumens	2,006	3,850	6,929	--
			Lumens per Watt	83.6	80.2	70.0	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,391	4,589	8,258	--
			Lumens per Watt	99.6	95.6	83.4	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,510	4,818	8,669	--
			Lumens per Watt	104.6	100.4	87.6	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,530	5,049	9,277	10,765
			Lumens per Watt	120.5	123.1	107.9	112.1
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G3	B4-U0-G3
			IESNA Type	V	V	V	V

POWER AND LUMENS

Lumen Package				VA1	VA2	VA3	VA4
CRI/CCT (Nominal)	**Mounting**	**Distribution**					
830: 80CRI/3000K	A: Arm	ASC: Asymmetric Curbline	Lumens	1,758	3,374	6,072	--
			Lumens per Watt	73.2	70.3	61.3	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	2,096	4,022	7,238	--
			Lumens per Watt	87.3	83.8	73.1	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,166	4,157	7,480	--
			Lumens per Watt	90.2	86.6	75.6	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,242	4,473	8,220	9,538
			Lumens per Watt	106.8	109.1	95.6	99.4
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2
			IESNA Type	V	V	V	V
	S: Spider Mount	ASC: Asymmetric Curbline	Lumens	1,606	3,083	5,547	--
			Lumens per Watt	66.9	64.2	56.0	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	1,892	3,631	6,534	--
			Lumens per Watt	78.8	75.6	66.0	--
			BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	1,983	3,806	6,848	--
			Lumens per Watt	82.6	79.3	69.2	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,080	4,150	7,626	8,849
			Lumens per Watt	99.0	101.2	88.7	92.2
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G3
			IESNA Type	V	V	V	V

POWER AND LUMENS

Lumen Package				VA1	VA2	VA3	VA4
CRI/CCT (Nominal)	**Mounting**	**Distribution**					
830: 80CRI/3000K	C: Cantilever Mount	ASC: Asymmetric Curbline	Lumens	1,675	3,216	5,787	--
			Lumens per Watt	69.8	67.0	58.5	--
			BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	--
			IESNA Type	III	III	III	--
		ASW: Asymmetric Wide	Lumens	1,997	3,833	6,897	--
			Lumens per Watt	83.2	79.9	69.7	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	--
			IESNA Type	IV	IV	IV	--
		AST: Asymmetric Transverse	Lumens	2,096	4,024	7,241	--
			Lumens per Watt	87.3	83.8	73.1	--
			BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	--
			IESNA Type	IV	IV	IV	--
		SYM: Symmetric Round	Lumens	2,113	4,217	7,748	8,991
			Lumens per Watt	100.6	102.9	90.1	93.7
			BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G3
			IESNA Type	V	V	V	V

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

MINIMUM AMBIENT TEMPERATURE

Lumen Package	Temperature
VA1	-40°C
VA2	-35°C
VA3	-35°C
VA4	-40°C
All DALI powered lumen packages	-20°C

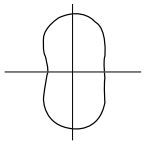
LUMEN MAINTENANCE (TM-21)

Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 (Hours)**
25°C	94.4%	90.4%	89.0%	83.0%	>199,000
40°C	94.6%	90.9%	89.4%	83.9%	>212,000
50°C	91.8%	87.0%	85.2%	78.2%	>151,000

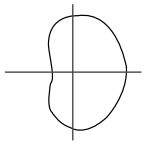
NOTES:
* Supported by IESTM-21 standards
**Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IESTM-21 and LM-80.

OPTICAL DISTRIBUTIONS (Arm mount shown, distribution dependent on mounting)

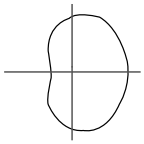
ASC
(Type III typical)



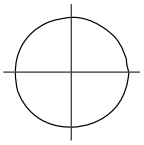
ASW
(Type IV typical)



AST
(Type IV typical)

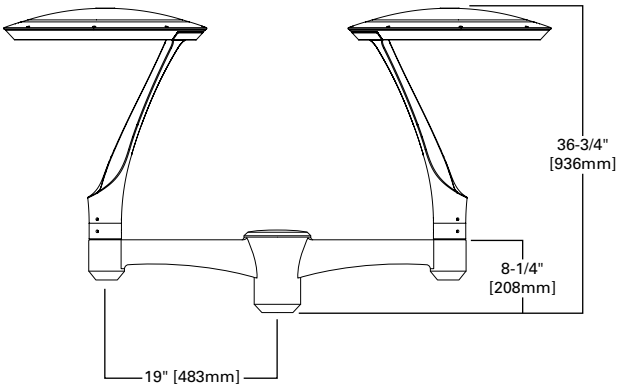


SYM
(Type V typical)

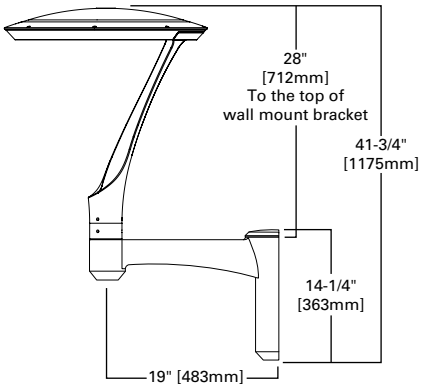


MOUNTING CONFIGURATIONS (EPAS INCLUDES FIXTURE)

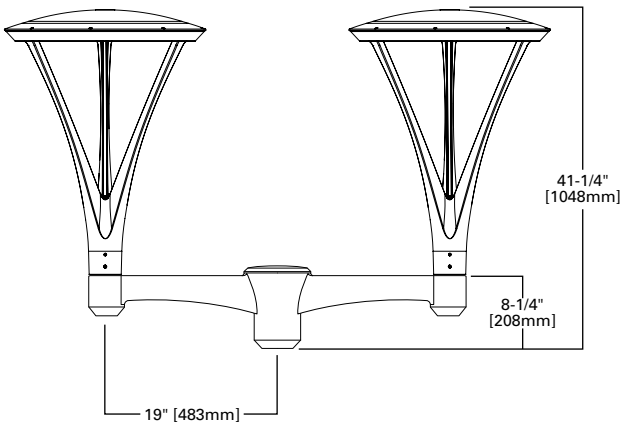
Twin mount arm (shown with Cantilever mount)



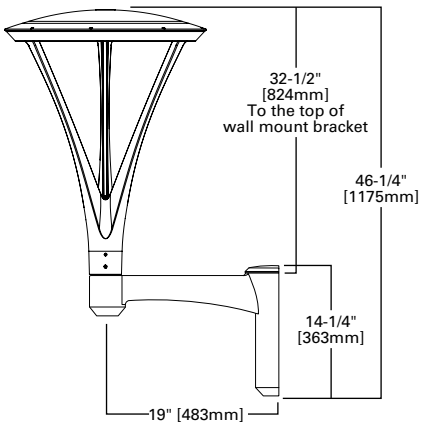
Wall mount arm (shown with Cantilever mount)



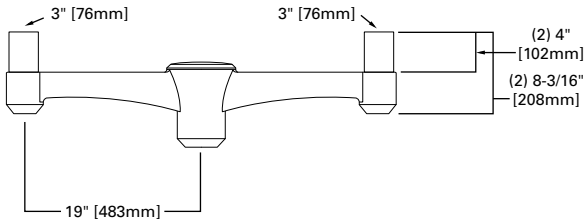
Twin mount arm (shown with Spider mount)



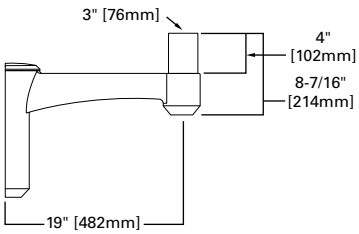
Wall mount arm (shown with Spider mount)



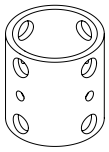
Twin mount arm (EPA 1.36)



Wall Mount Arm



MOUNTING REQUIREMENTS CHART

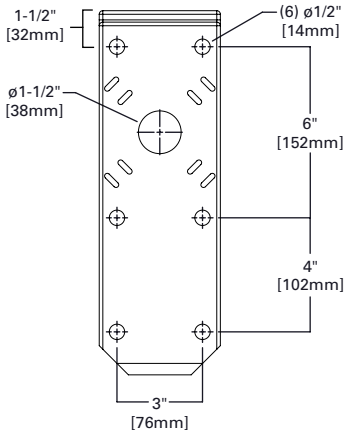


ARP2*

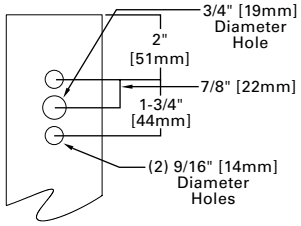
Pole Top O.D. (Inches)	**4"**	
Tenon O.D. (Inches)	**2-3/8" Tenon**	**3" Tenon**
Post Top	ARPA2*	Standard
Twin Mount Arm	ARPA2*	Standard

* Required for stability. Order separately.

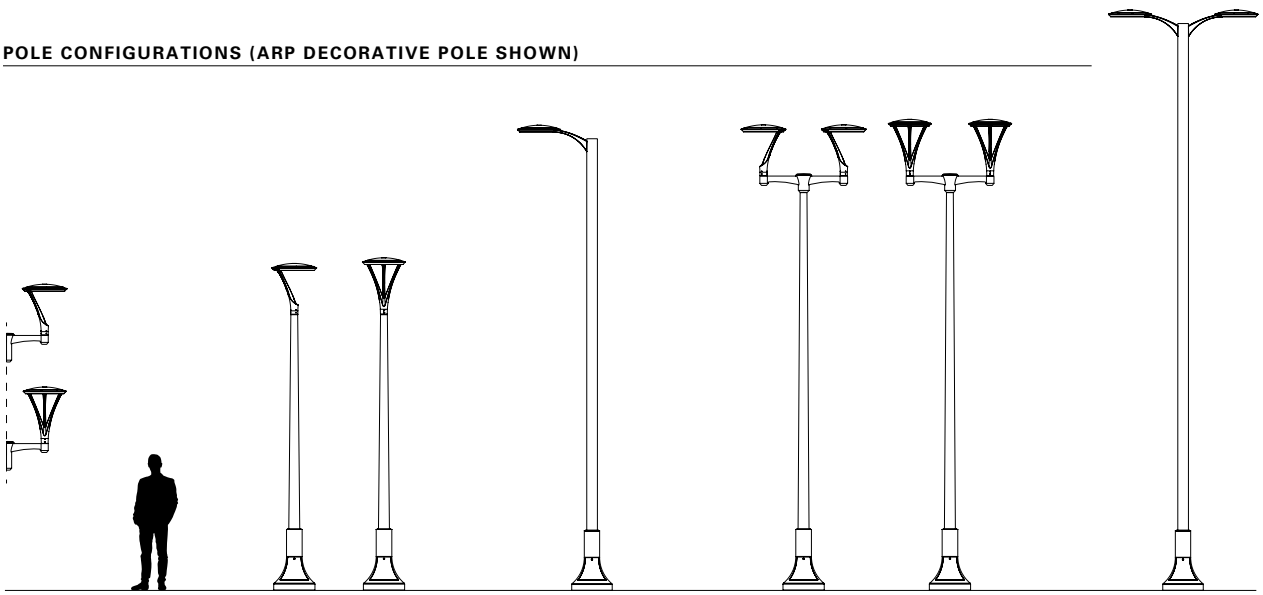
WALL MOUNT ARM DRILL PATTERN



TYPE "N"



POLE CONFIGURATIONS (ARP DECORATIVE POLE SHOWN)



Wall mount arm
8-10 ft. Mounting heights
(Spider / Cantilever mount only)

Single post top
10-18 ft. Mounting heights
(Spider / Cantilever mount only)

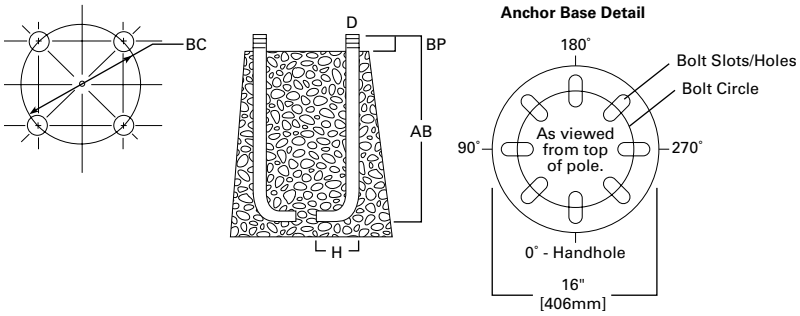
Single mount arm
18-22 ft. Mounting heights

Twin mount arm
18-22 ft. Mounting heights
(Spider / Cantilever mount only)

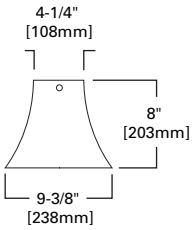
Twin mount arm
18-25 ft. Mounting heights

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

ANCHORAGE DATA



ACCESS DOOR



Pole	Anchor Bolt and Template Package	Shaft Diameter (inches)	Bolt Circle (inches)	Number of Bolts	Bolt Size (inches)	Template Only
Aluminum Round Decorative Pole (ARP)	317AVE30	**4 x 5**	**9**	**4**	3/4 x 17	407040D

Effective Projected Area (At Pole Top)

Mounting Height (Feet)	**Catalog Number**	**Wall Thickness** (Inches)	**Bolt Circle Diameter** (Inches)	**Anchor Bolt Projection** (Inches)	**Shaft Taper** (Inches)	**Anchor Bolt Diameter x Length x Hook** (Inches)	**Net Weight** (Pounds)	**Maximum Effective Projected Area** (Square Feet) (1.3 gust factor)			**Max. Load** (Pounds)
MH			**BC**	**BP**	**B**	**AB** [1]		**80 mph**	**90 mph**	**100 mph**	
10	ARP5L310A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	57	**20.0**	**17.5**	**14.1**	**120**
10	ARP5L610A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	57	**17.0**	**13.3**	**10.7**	**120**
12	ARP5L312A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	62	**18.2**	**14.1**	**11.2**	**120**
12	ARP5L612A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	62	**14.1**	**10.9**	**8.7**	**120**
14	ARP5L314A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	67	**14.8**	**11.4**	**9.0**	**120**
14	ARP5L614A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	67	**11.7**	**9.0**	**7.1**	**120**
16	ARP5L316A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	72	**12.0**	**9.1**	**7.0**	**120**
16	ARP5L616A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	72	**9.4**	**7.1**	**5.6**	**120**
18	ARP5L318A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	77	**9.5**	**7.1**	**5.4**	**120**
18	ARP5L618A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	77	**7.6**	**5.6**	**4.3**	**120**
18	ARP5M618A	0.188	9.0	3.5	5 X 4	3/4 x 17 x 3	83	**9.5**	**7.1**	**5.6**	**120**

Effective Projected Area (18" Above Pole Top)

Mounting Height (Feet)	**Catalog Number**	**Wall Thickness** (Inches)	**Bolt Circle Diameter** (Inches)	**Anchor Bolt Projection** (Inches)	**Shaft Taper** (Inches)	**Anchor Bolt Diameter x Length x Hook** (Inches)	**Net Weight** (Pounds)	**Maximum Effective Projected Area** (Square Feet) (1.3 gust factor)			**Max. Load** (Pounds)
MH			**BC**	**BP**	**B**	**AB** [1]		**80 mph**	**90 mph**	**100 mph**	
10	ARP5L310A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	57	**19.6**	**15.3**	**12.3**	**120**
10	ARP5L610A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	57	**17.0**	**13.3**	**10.7**	**120**
12	ARP5L312A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	62	**16.1**	**12.5**	**9.9**	**120**
12	ARP5L612A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	62	**14.1**	**10.9**	**8.7**	**120**
14	ARP5L314A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	67	**13.2**	**10.1**	**8.0**	**120**
14	ARP5L614A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	67	**11.7**	**9.0**	**7.1**	**120**
16	ARP5L316A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	72	**10.6**	**8.0**	**6.2**	**120**
16	ARP5L616A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	72	**9.4**	**7.1**	**5.6**	**120**
18	ARP5L318A	0.156	9.0	3.5	5 x 3	3/4 x 17 x 3	77	**8.5**	**6.4**	**4.8**	**120**
18	ARP5L618A	0.156	9.0	3.5	5 X 4	3/4 x 17 x 3	77	**7.6**	**5.6**	**4.3**	**120**
18	ARP5M618A	0.188	9.0	3.5	5 X 4	3/4 x 17 x 3	83	**9.5**	**7.1**	**5.6**	**120**

CONTROL OPTIONS

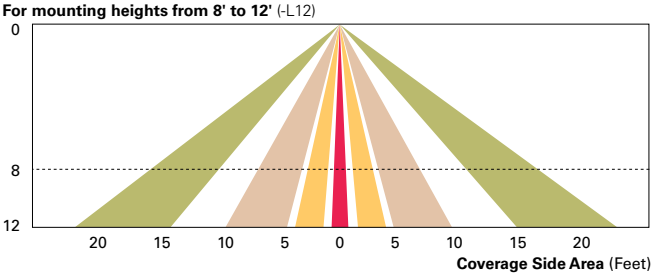
0-10V (D) The dimming option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (PER and PER7) Photocontrol receptacles provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

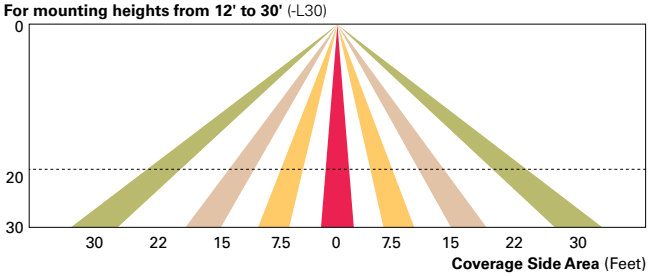
Dimming Occupancy Sensor (MS) These sensors are factory installed in the luminaire housing. When a sensor for dimming operation (/DIM) option is selected, the luminaire will dim down to approximately 50 percent power after five minutes of no activity detected. When activity is detected, the luminaire returns to full light output. When a sensor for ON/OFF operation is selected, the luminaire will turn off after five minutes of no activity.

These occupancy sensors include an integral photocell that can be activated or inactivated with the programming remote / configuration tool for "dusk-to-dawn" control or "daylight harvesting". Note: For MS sensors, the factory preset is OFF (Disabled). The programming remote / tool is a wireless tool that can be utilized to change the dimming level, time delay, sensitivity and other parameters. A variety of sensor lenses are available to optimize the coverage pattern for mounting heights from 8'-40'.

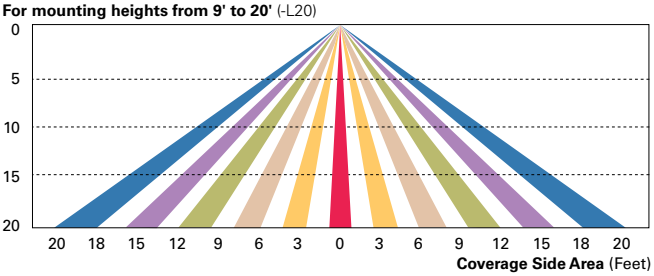
For mounting heights from 8' to 12' (-L12)



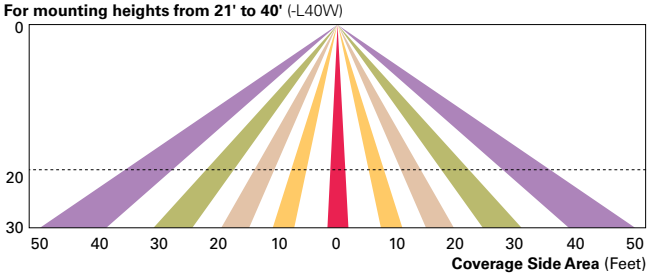
For mounting heights from 12' to 30' (-L30)



For mounting heights from 9' to 20' (-L20)



For mounting heights from 21' to 40' (-L40W)

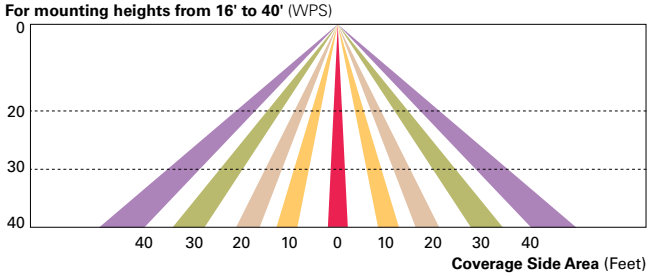


WaveLinx Wireless Control and Monitoring System Available in 7-PIN or 4-PIN configurations, the WaveLinx Outdoor control platform operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. Use the WaveLinx Mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets).

WaveLinx Outdoor Control Module (WOLC-7P-10A) A photocontrol that enables astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn.

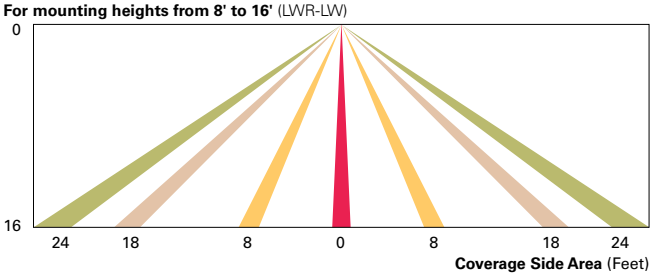
WaveLinx Wireless Sensor (WPS2 and WPS4) These outdoor sensors offer passive infrared (PIR) occupancy and a photocell for closed loop daylight sensing. These sensors are factory preset to dim down to approximately 50 percent power after 15 minutes of no activity detected. These occupancy sensors include an integral photocell for "dusk-to-dawn" control or daylight harvesting that is factory-enabled. A variety of sensor lenses are available to optimize the coverage pattern for mounting heights from 7'-40'.

For mounting heights from 16' to 40' (WPS)

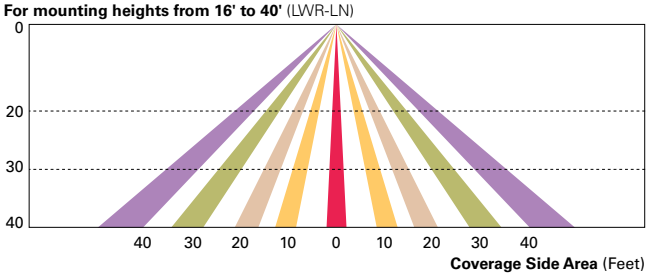


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN) Enlighted is a connected lighting solution that combines LED luminaires with an integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of other resources beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



Project	Villas on Shelby	**Catalog #**		**Type**	
Prepared by		**Notes**	Light D-Ceiling Mount Corridor Lighting	**Date**	

HALO

SMD6 Series

6" Round and Square Surface Mount Downlight

SMD6R & SMD6S

Typical Applications

Residential

Interactive Menu

Product Certification

Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
Certified to California Appliance Efficiency Database under JA8.

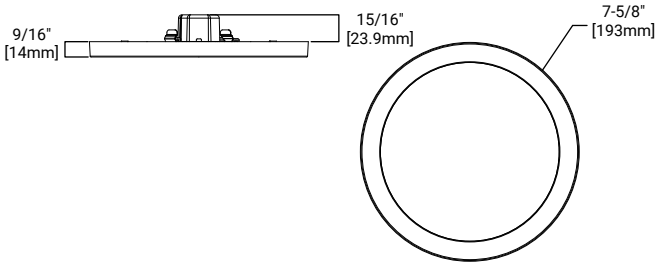
Product Features

Top Product Features

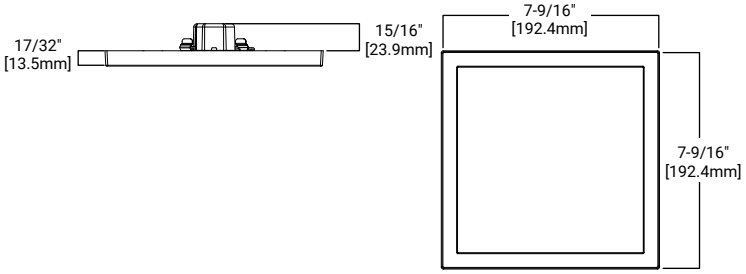
- Ultra-low profile surface luminaire with wide distribution
- Ceiling or wall mounting in compatible junction boxes
- 600 & 1200 lumen; 2700K, 3000K, 3500K, 4000K or 5000K field selectable CCT; 90 CRI
- 120V only and Universal Voltage 120V – 277V options
- Dimmable with 120V dimmers

Dimensional and Mounting Details

SMD6RXXXWH



SMD6SXXXWH



additional product diagrams

Ordering Information

SAMPLE NUMBER: **SMD6R69SWH** = 6" Round Surface Mount Downlight, 600 lumen, 90CRI, Selectable CCT, White, 120V
Junction Box Installation: Order junction box separately, as supplied by others, to complete installation.
Recessed Installation: Order HALO recessed housing and SMD6ACCKIT separately to complete installation.

Models	Lumens	CRI/CCT	Finish	Voltage
SMD6R = 6" Round Surface Mount Downlight **SMD6S** = 6" Square Surface Mount Downlight	**6** = 600 lumen series (120V only) **12** = 1200 lumen series	**9S** = 90CRI, 2700K - 5000K Field Selectable CCT	**WH** = Matte White	**Blank** = 120V standard **E** = UNV Universal 120-277V(1)
Notes	**Notes**	**Notes**	**Notes**	**Notes** (1) UNV voltage configuration is offered only in the 1200 lumen series

Accessories

Accessories
Designer Trims **SMD6RTRMSN** = 6" Round SMD Satin Nickel **SMD6RTRMTBZ** = 6" Round SMD Tuscan Bronze **SMD6RTRMWH** = 6" Round SMD White (paintable) **SMD6STRMSN** = 6" Square SMD Satin Nickel **SMD6STRMTBZ** = 6" Square SMD Tuscan Bronze **SMD6STRMWH** = 6" Square SMD White (paintable) **T24HWKIT** = Title 24 Cable harness kit used to convert incandescent and low voltage housings to LED **SMD6ACCKIT =** SMD6 accessory kit includes friction clips, torsion sprigs and a Edison screwbase adapter for recessed housing installation.
Notes

Accessories

Designer Trims

SMD6RTRMWH
round, white (paintable)

SMD6RTRMSN
round, satin nickel

SMD6RTRMTBZ
round, tuscan bronze

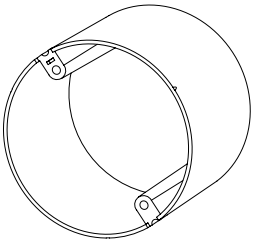
SMD6STRMWH
square, white (paintable)

SMD6STRMSN
square, satin nickel

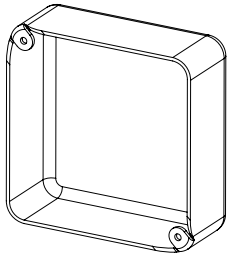
SMD6STRMTBZ
square, tuscan bronze

Junction Box Compatibility

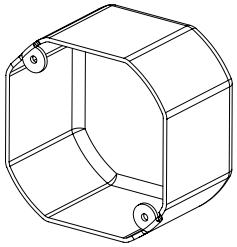
NOTE: The SMD6 1200LM Series has a taller driver. The 4inch x 2-1/8 deep Square junction box is recommended for installation. The depth of the junction box must be a MINIMUM 2-1/8inch deep. The 4inch x 2-1/8 deep Octagon junction box can be used with limited number of wires or smaller gauge wires and wire caps.



Round
Recommend 2" depth
(1-1/2" minimum)



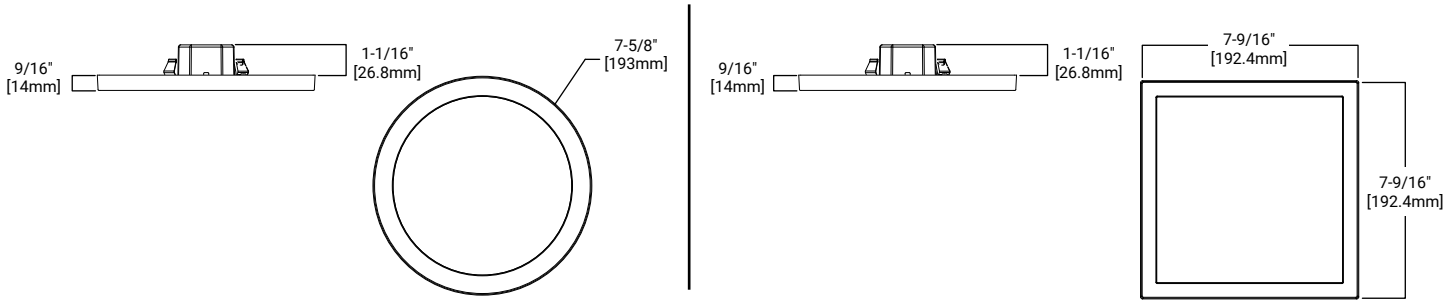
Square
1-1/2" minimum depth



Octagonal
Recommend 4" depth
(2-1/8" minimum)

This is a representative list of compatible junction boxes only. Information contained in this literature about other manufacturers' products is from published information made available by the manufacturer and is deemed to be reliable, but has not been verified. Cooper Lighting Solutions makes no specific recommendation on product selection and there are no warranties of performance or compatibility implied. Installer must determine that site conditions are suitable to allow proper installation of the mounting bracket in the box.

Dimensional and Mounting Details Continued



Product Specifications

Housing
- Non-electrically conductive polycarbonate frame.
- High impact diffuse polystyrene lens provides shielding to the light guide with no pixilation
- Stamped aluminum housing provides thermal cooling achieving L70 at 50,000 hours in IC and non-IC applications

Gaskets
- Closed cell gasket achieves restrictive airflow and wet location requirements without additional caulking

Optics
- Precision acrylic light guide organizes source flux into wide distribution with 1.2 – 1.4 spacing criteria useful for general area illumination

LED
- Mid power LED array provide a uniform source with high efficiency and long life
- Available in 90 CRI minimum, R9 greater than 50 and color accuracy within 3 SDCM provide color accuracy and uniformity

Driver
SMD 120V
- Integral 120V 50/60Hz constant current driver provides noise free operation
- Continuous, flicker-free dimming from 100% to 5% with select leading or trailing edge 120V phase cut dimmers
- Dimming to 5% is best assured using dimmers with low end trim adjustment. Consult dimmer manufacturer for compatibility and conditions of use. (Note some dimmers require a neutral in the wallbox.)
- Inline electrical quick connect and E26 adapter (provided) provides mains connections

SMD 120-277V
- Integrated 120-277V 60Hz constant current driver provides noise free operation
- SMD Universal Voltage (120-277V) configurations are recommended for use with compatible 0-10V DC
- low voltage dimmers only

Mounting/Retention
- Adjustable spider plate allows for quick installation into both junction boxes and recessed housings
- Torsion springs and friction blades included

Electrical Junction Box Mounting
- The SMD may be used in compatible electrical junction boxes in direct contact with insulation including spray foam insulation
- Suitable for installation in many 3-1/2" and 4" square, octagon, and round electrical junction boxes **Note:** SMD120-277V UNV is only compatible with junction boxes that provide minimum depth of 2-1/8"
- Installer must ensure compatibility of fit, wiring and proper mounting in the electrical junction box. This includes all applicable national and local electrical and building coded

Recessed Housing Mounting
Note: Use the SMDACCKIT which includes torsion springs and Edison base adapter. (SOLD SEPERATELY)
- May be installed in IC recessed housings in direct contact with insulation
  Note: Not for use in recessed housing in direct contact with spray foam insulation. Refer to NEMA LSD 57-2013

Designer Skins (Sold Separately)
- SMD skins are accessory rings in both round and square. These skins attach to the SMD for a permanent finish. Refer to the SMD accessories specification sheet for details
  - Matte White (Paintable)
  - Satin Nickel
  - Tuscan Bronze

Compliance
- cULus Certified for use with Halo housings and for use with other's housings, , when used with SMDACCKIT (Sold Seperately) see instruction sheet for conditions of acceptability
- Wet and Damp Location listed, airtight per ASTM-E283
- Suitable for use in closets, compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5)
- EMI/RFI emissions per FCC 47CFR Part 15B
- Contains no mercury or lead and RoHS compliant.
- Photometric testing in accordance with IES LM-79-08
- Lumen maintenance projections in accordance with IES LM-80-08 and TM-21-11
- Can be used for State of California Title 24 high efficacy luminaire compliance, reference the California Energy Commission Title 20 Appliance Efficiency Database for current listings
- Can be used for International Energy Conservation Code (IECC) and high efficiency luminaire compliance
- ENERGY STAR® listed, reference database for current listings

Warranty
- Five year limited warranty, consult website for details. www.cooperlighting.com/legal

Energy Data

SMD6R6 / SMD6S6

	Round	Square
Lumens (5000K models)	777	800
Input Power	9 W	9 W
Input Current	0.085 A	0.085 A
Efficiency	86 lm/W	85 lm/W
THDi	8	8
Input Voltage	120V	
Frequency	60 Hz	
CRI	90 CRI	
Power Factor	0.98	
T Ambient	-30 - +40°C	
Sound Rating	Class A	

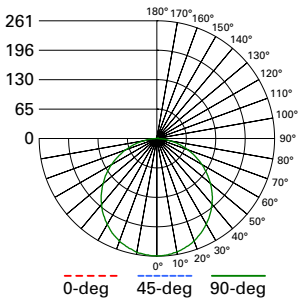
SMD6R12 / SMD6S12

	Round	Square
Lumens (5000K models)	1271	1345
Input Power	15	15
Input Current	0.129 A	0.129 A
Efficiency	85 lm/W	88 lm/W
THDi	12.6	12.6
Input Voltage	120V	
Frequency	60 Hz	
CRI	90 CRI	
Power Factor	0.98	
T Ambient	-30 - +40°C	
Sound Rating	Class A	

SMD6R12-E / SMD6S12-E

	Round	Square
Lumens (5000K models)	1357	1364
Input Power	14.5	14.5
Input Current	0.125 A (120V) 0.058 A (277V)	0.125 A (120V) 0.058 A (277V)
Efficiency	94 lm/W	94 lm/W
THDi	12.8	12.8
Input Voltage	120 - 277V	
Frequency	60 Hz	
CRI	90 CRI	
Power Factor	0.99 (120V) 0.94 (277V)	
T Ambient	-30 - +40°C	
Sound Rating	Class A	

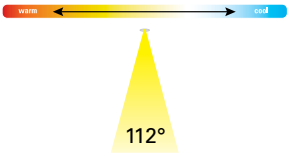
Photometric Data



SMD6R69SWH - 3000K.IES
Spacing criterion: (0-180) 1.26
(90-270) 1.26
(Diagonal) 1.38
Beam Angle: 112°
Lumens: 757
Input Watts: 8.9 W
Efficacy: 85 LPW
Test Report:
SMD6R69SWH - 3000K.IES

Zonal Lumen	Lumens	% Lumens
0-30	201	26.6
0-40	330	43.6
0-60	585	77.4
0-90	752	99.4

CCT - Range of 2700K- 5000K

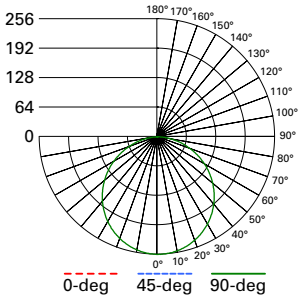


SMD6R69SWH	CCT	Watts	Lumens	LPW	CRI
600 Lumen 6" Round Selectable CCT	2700K	9.2	704	76.6	93
	3000K	9.2	716	77.8	93
	3500K	9.2	729	79.2	94
	4000K	9.2	742	80.5	94
	5000K	9.2	756	82.0	93

PRODUCT SPECIFICATIONS

Lumens	716
Watts	9.2
Lumens Per Watt (Efficacy)	77.8
Color Accuracy (CRI)	93
Light Color (CCT)	3000K

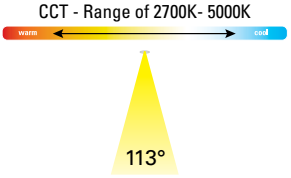
Correlated Color Temperature (CCT)



SMD6S69SWH - 3000K.IES
Spacing criterion: (0-180) 1.28
(90-270) 1.28
(Diagonal) 1.40
Beam Angle: 113°
Lumens: 752
Input Watts: 9.2 W
Efficacy: 82 LPW
Test Report:
SMD6S69SWH - 3000K.IES

Zonal Lumen	Lumens	% Lumens
0-30	199	26.4
0-40	326	43.4
0-60	580	77.2
0-90	748	99.5

CCT - Range of 2700K- 5000K



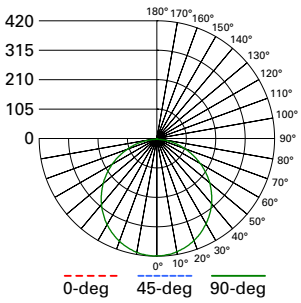
SMD6S69SWH	CCT	Watts	Lumens	LPW	CRI
600 Lumen 6" Square Selectable CCT	2700K	9.6	720	75.3	93
	3000K	9.6	735	76.7	93
	3500K	9.6	750	78.2	94
	4000K	9.6	764	79.5	94
	5000K	9.6	774	80.7	92

PRODUCT SPECIFICATIONS

Lumens	735
Watts	9.6
Lumens Per Watt (Efficacy)	76.6
Color Accuracy (CRI)	93
Light Color (CCT)	3000K

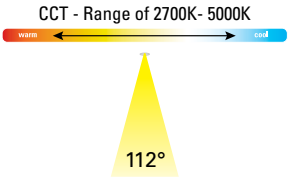
Correlated Color Temperature (CCT)

Photometric Data

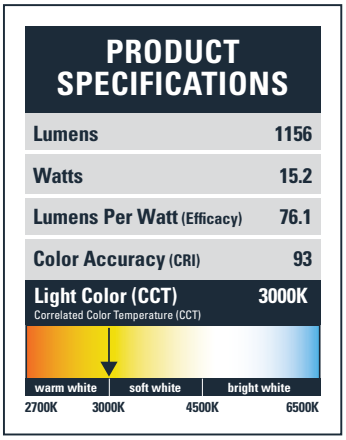


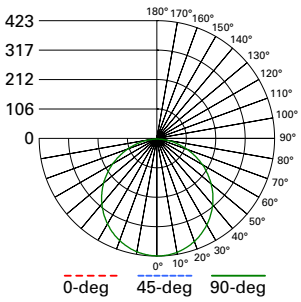
SMD6R129SWH - 3000K.IES
Spacing criterion: (0-180) 1.26
(90-270) 1.26
(Diagonal) 1.38
Beam Angle: 112°
Lumens: 1221
Input Watts: 14.9 W
Efficacy: 82 LPW
Test Report:
SMD6R129SWH - 3000K.IES

Zonal Lumen	Lumens	% Lumens
0-30	325	26.6
0-40	533	43.6
0-60	945	77.4
0-90	1215	99.5



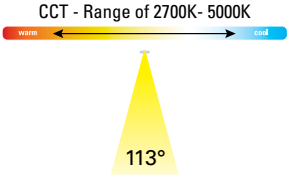
SMD6R129SWH	CCT	Watts	Lumens	LPW	CRI
1200 Lumen 6" Round Selectable CCT	2700K	15.2	1135	74.7	92
	3000K	15.2	1156	76.1	93
	3500K	15.2	1178	77.5	94
	4000K	15.2	1198	78.8	95
	5000K	15.2	1226	80.7	93



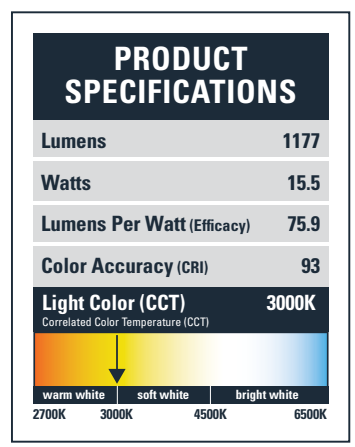


SMD6S129SWH - 3000K.IES
Spacing criterion: (0-180) 1.26
(90-270) 1.26
(Diagonal) 1.40
Beam Angle: 113°
Lumens: 1241
Input Watts: 14.9 W
Efficacy: 83 LPW
Test Report:
SMD6S129SWH - 3000K.IES

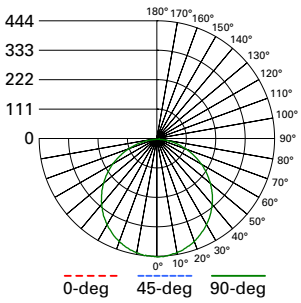
Zonal Lumen	Lumens	% Lumens
0-30	329	26.5
0-40	539	43.5
0-60	960	77.3
0-90	1237	99.6



SMD6S129SWH	CCT	Watts	Lumens	LPW	CRI
1200 Lumen 6" Square Selectable CCT	2700K	15.5	1153	74.4	92
	3000K	15.5	1177	75.9	93
	3500K	15.5	1206	77.8	95
	4000K	15.5	1224	79.0	95
	5000K	15.4	1256	81.6	93



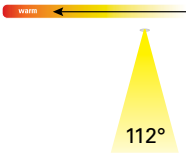
Photometric Data



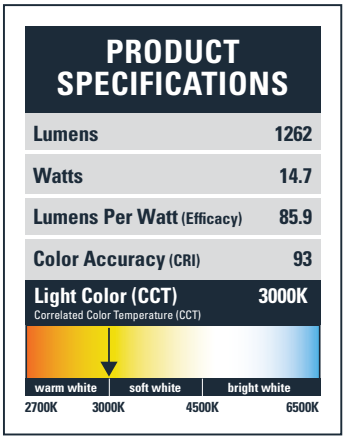
SMD6R129SWHE - 3000K.IES
Spacing criterion: (0-180) 1.24
(90-270) 1.24
(Diagonal) 1.38
Beam Angle: 112°
Lumens: 1289
Input Watts: 14.5 W
Efficacy: 89 LPW
Test Report:
SMD6R129SWHE - 3000K.IES

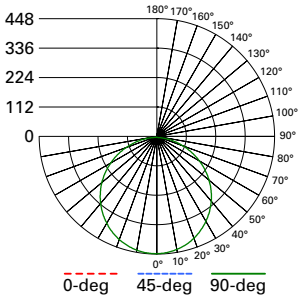
Zonal Lumen	Lumens	% Lumens
0-30	343	26.6
0-40	562	43.6
0-60	997	77.3
0-90	1282	99.5

CCT - Range of 2700K- 5000K



SMD6R129SWHE	CCT	Watts	Lumens	LPW	CRI
1200 Lumen 6" Round Selectable CCT 120-277V	2700K	14.7	1237	84.1	92
	3000K	14.7	1262	85.9	93
	3500K	14.7	1289	87.7	95
	4000K	14.7	1311	89.2	95
	5000K	14.7	1306	88.8	93

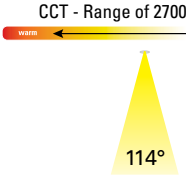




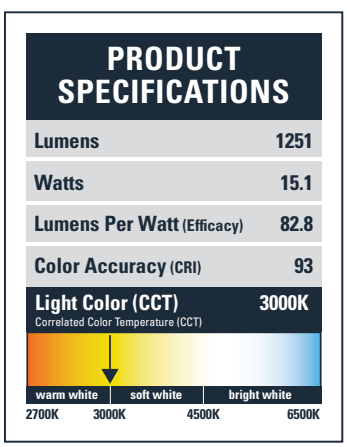
SMD6S129SWHE - 3000K.IES
Spacing criterion: (0-180) 1.26
(90-270) 1.26
(Diagonal) 1.40
Beam Angle: 114°
Lumens: 1312
Input Watts: 14.7 W
Efficacy: 89 LPW
Test Report:
SMD6S129SWHE - 3000K.IES

Zonal Lumen	Lumens	% Lumens
0-30	348	26.5
0-40	570	43.5
0-60	1014	77.3
0-90	1307	99.6

CCT - Range of 2700K- 5000K



SMD6S129SWHE	CCT	Watts	Lumens	LPW	CRI
1200 Lumen 6" Square Selectable CCT 120-277V	2700K	15.1	1225	81.1	92
	3000K	15.1	1251	82.8	93
	3500K	15.1	1277	84.6	95
	4000K	15.1	1299	86.0	95
	5000K	15.1	1327	87.9	93



Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Project	Villas on Shelby	**Catalog #**		**Type**	
Prepared by		**Notes**		**Date**	

light E-wall mount lighting

TopTier (D1-D6)

TopTier (D7-D10)

McGraw-Edison

TT TopTier

Parking Garage Luminaire

Product Features

Light ARchitect™

BAA

Interactive Menu

Product Certifications

IP66

Quick Facts

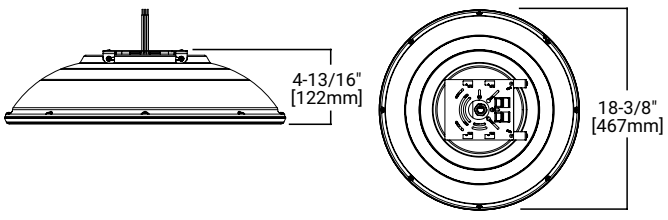
- Lumen packages range from 2,757 - 22,831
- Efficacies up to 146 lumens per watt
- Utilizes patented waveguide technology for maximum visual comfort
- Surface, pendant, trunnion, wall and direct conduit mount options

Connected Systems

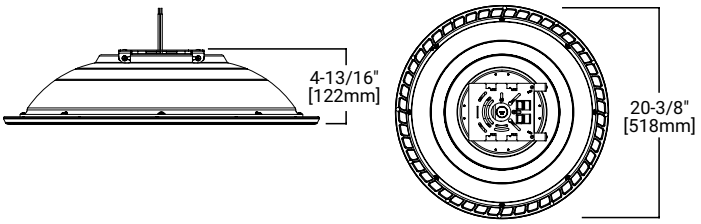
- WaveLinx Lite
- Synapse

Dimensional Details

SURFACE MOUNT
CQ, MQ, WQ and RW: D1-D6
DL: D1-D4
Base luminaire weight: 18.2 lbs (8.3 kg)



SURFACE MOUNT
CQ, MQ, WQ and RW: D7+
DL: D5+
Base luminaire weight: 20.1 lbs (9.1 kg)



NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **TT-D3-740-U-WQ-STM-30L-AP**

Product Family	Configuration	Color Temperature	Voltage	Distribution	Mounting [30]	Lead Length [7]	Finish
TT=TopTier [1] **BAA-TT**=TopTier, Buy American Act Compliant [26] **TAA-TT**=TopTier, Trade Agreements Act Compliant [26]	**D1**=4,000 Nominal Lumens **D2**=5,500 Nominal Lumens **D3**=6,500 Nominal Lumens **D4**=8,000 Nominal Lumens **D5**=10,000 Nominal Lumens **D6**=13,000 Nominal Lumens **D7**=15,000 Nominal Lumens **D8**=18,000 Nominal Lumens **D9**=20,000 Nominal Lumens **D10**=22,000 Nominal Lumens	**735**=70 CRI, 3500K CCT **740**=70 CRI, 4000K CCT **750**=70 CRI, 5000K CCT **830**=80 CRI, 3000K CCT **AMB**=Amber 590nm [28]	**U**=120-277V **H**=347-480V [21, 25] **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V **9**=347V	**CQ**=Concentrated **MQ**=Medium **WQ**=Wide **RW**=Rectangular Wide [29] **DL**=Drive Lane / Type 4 [29]	**[Blank]**=Surface Mount [16] **TMB**=Trunnion Mount with Connection Box **DPM**=Decorative Pendant Mount [4] **WM**=Wall Mount **STM**=Stem Mount to 1/2" conduit [16]	**[Blank]**=6" **30L**=30" **36L**=36" **48L**=48" **72L**=72" **108L**=108" **120L**=120" **144L**=144"	**NW**=White **AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic

Options (Add as Suffix)

F=Single Fuse (120, 277 or 347V Specify Voltage)
FF=Double Fuse (208, 240 or 480V Specify Voltage)
IBP=Integral Battery Pack [5, 23]
IBP-CEC=Integral Battery Pack, CEC compliant [5]
ITS=Integral Transfer Switch [3]
924=UL924 listed luminaire [19]
CG=Clear Glass [8]
SG=Solite® Glass [9]
UPL=Uplight [6]
TR=Tamper Resistant Hardware
NAT=Natatorium finish
DALI=DALI Driver [15]
MS/DIM-L08=Dimming Occupancy Sensor (<9' Mounting) [11, 17]
MS/DIM-L20=Dimming Occupancy Sensor (9' - 20' Mounting) [11, 17]
SPB1=Dimming Motion and Daylight Sensor, Bluetooth Programmable, < 8' Mounting [11, 20]
SPB2=Dimming Motion and Daylight Sensor, Bluetooth Programmable, 8' - 20' Mounting [11, 20]
WLS2WH=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [21, 22]
WLS4WH=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [21, 22]
WPS2WH=WaveLinx Pro, Dimming Motion, SR Driver and Daylight, WAC Programmable, 7' - 15' Mounting [21, 22]
WPS4WH=WaveLinx Pro, Dimming Motion, SR Driver and Daylight, WAC Programmable, 15' - 40' Mounting [21, 22]
LWR-LW=Enlighted Wireless Sensor, Wide Lens 8' - 16' Mounting Height [11, 18]
LWR-LN=Enlighted Wireless Sensor, Narrow Lens 16' - 40' Mounting Height [11, 18]
DIM10-L08=Synapse occupancy sensor (<8' Mounting) [21]
DIM10-L20=Synapse occupancy sensor (8'-20' Mounting) [21]

Accessories (Order Separately) [27]

MA1252=Replacement 10kV Surge Module
TT/WG=Wire Guard [24]
TT/BG-UP-XX=Bird Guard [12, 13]
TT/HSS-XX=House Side Shield [24]
DPMS36-XX=36" Pendant Mount Stem [12, 14]
DPMS48-XX=48" Pendant Mount Stem [12, 14]
DPMS96-XX=96" Pendant Mount Stem [12, 14]
DPMST36-XX=36" Pendant Mount Stem with Tether [12, 14, 30]
DPMST48-XX=48" Pendant Mount Stem with Tether [12, 14, 30]
DPMST96-XX=96" Pendant Mount Stem with Tether [12, 14, 30]
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [17]
SPB4=Dimming Motion and Daylight Sensor, Bluetooth Programmable, 20' - 40' Mounting [11, 20]

NOTES:

1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
3. Not available with D7 - D10 configurations.
4. Order Pendant Mount Stem accessory.
5. IBP ambient operating temperature -20°C to 35°C (D1-D3), -20°C to 25°C (D4-D6). Not available with D7-D10 configurations or DALI options.
6. Additional 8.0W. Provides 920 lumens. Not available with D10 configuration.
7. Choose lead length for Surface Mount and Stem Mount only. TMB, DPM and WM lengths predetermined.
8. Not available with CQ.
9. Standard with CQ, option available with WQ only.
10. U voltage only. Ambient operating temperature -20°C to 50°C (D1-D4) or -20°C to 40°C (D5-D6). UL924 listed component.
11. Includes integral photocell.
12. Specify color in place of XX.
13. Designed for use with Stem Mount and Decorative Pendant Mount only.
14. Designed for use with Decorative Pendant Mount only.
15. Not available with H voltage or IBP. Not compatible with MS/DIM or LWR sensors.
16. Specify Lead Length for wire harness length.
17. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay and more.
18. Enlighted wireless sensors are factory installed only, and require network components in appropriate quantities.
19. 924 option provides luminaire UL924 listing, used in conjunction with ITS or IBP-CEC.
20. Sensor configuration mobile application required for configuration. See controls page for details.
21. Cannot be used with other control options.
22. For WaveLinx applications, WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. Not required for WaveLinx Lite Commercial (LC) applications.
23. Specify 120V or 277V.
24. TT/WG and TT/HSS cannot be installed together. TT/HSS & TT/WG not available on D7-D10 configurations.
25. D4-D10 only. Not compatible with battery.
26. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
27. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
28. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose lumen package D1.
29. Not available in D10 configuration.
30. For installations in locations such as gymnasiums, arenas, sports complexes, multi-purpose rooms, and any other locations where the fixture potentially will be subject to impacts from external sources, DPM mounting is required, utilizing the stem kit with tether (DPMST*). Surface Mount, Trunnion Mount (TMB), Wall Mount (WM) and Stem Mount (STM) are prohibited in these applications.

Product Specifications

Construction

- Low profile, die-cast aluminum housing provides a clean, symmetric aesthetic

Optics

- Five optical distributions utilizing visual comfort waveguide technology
- 10 lumen packages, ranging from 2,757 to 22,831
- Integral uplight option utilizes a dedicated, 8W light engine, producing 920 lumens for reduced visual contrast and cave effect
- IDA Certified for 3000k CCT and warmer only. Not available with uplight option.

Electrical

- D1-D6: -40C - 50C operating temperature
- D7-D10: -40C - 40C operating temperature
- Greater than 90% lumen maintenance at 50,000 hours
- IP66 rated
- 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation
- 10kV surge module standard
- 0-10V dimming standard

Mounting

- Surface mount directly to square or octagonal 4" surface or recessed junction box using quick mount bracket
- Optional stem mount bracket with set screw for direct 1/2" NPS conduit mounting
- Trunnion, decorative pendant, and wall mount options also available
- For installations in locations such as gymnasiums, arenas, sports complexes, multipurpose rooms, and any other locations where the fixture potentially will be subject to impacts from external sources, the stem kit with tether (DPMST*) is required.

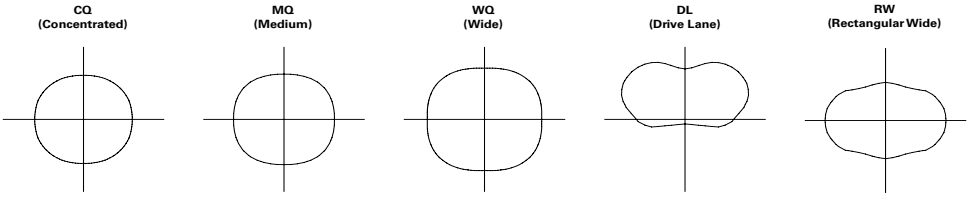
Finish

- 2.5 mil nominal TGIC powder coat thickness
- Finishes include white, black, bronze, gray, dark platinum and graphite metallic
- RAL and custom color matches available
- Natatorium option (NAT) available, providing 5,000 hour salt spray rating per ASTM B117, with a scribe rating of 9 per ASTM D1654

Warranty

- Five-year warranty

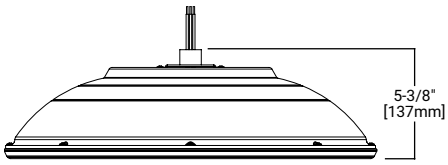
Optical Distributions

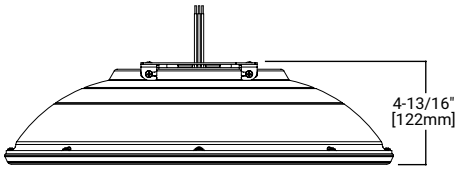


Mounting Details

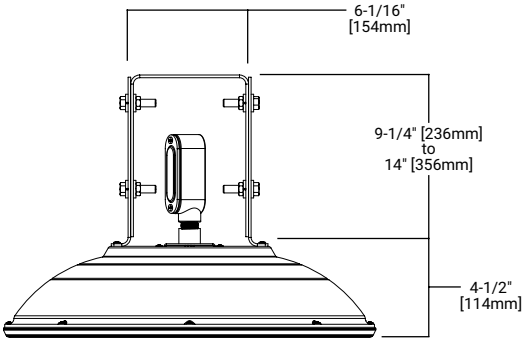
***D1-D6 configuration shown (D1-D4 for DL distribution)**

Stem Mount

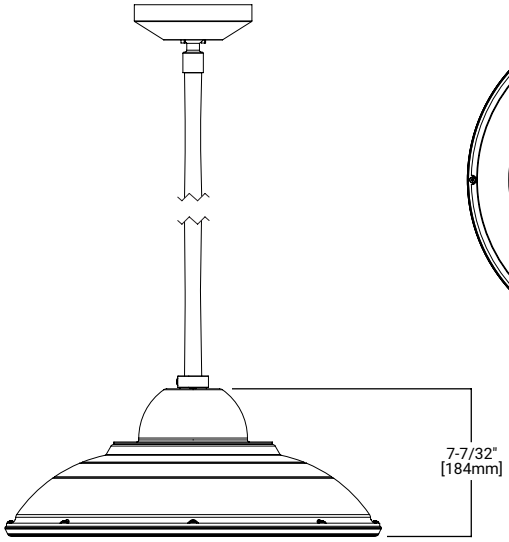




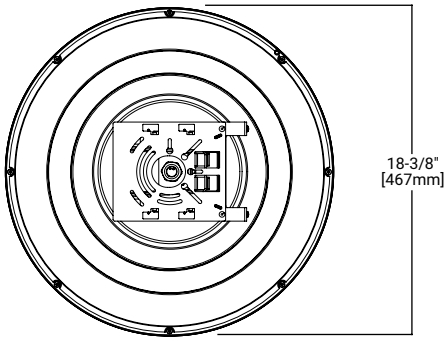
Trunnion Mount



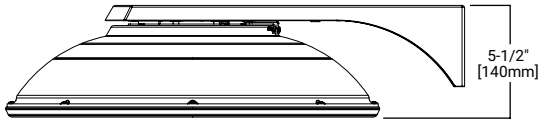
Decorative Pendant Mount



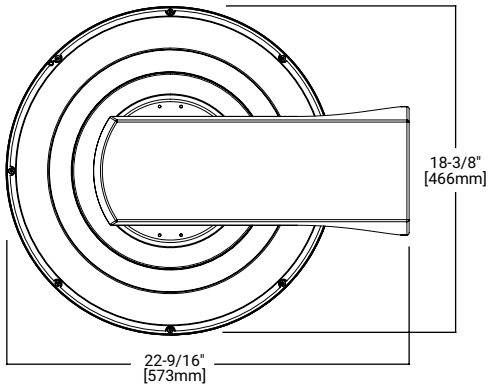
Top View



Wall Mount

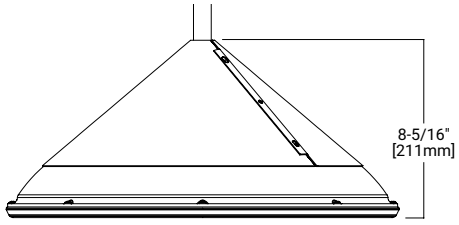


Top View - Wall Mount

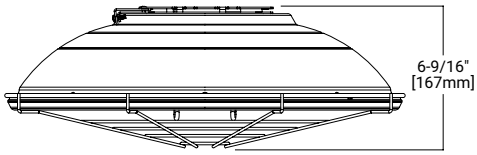


Accessories

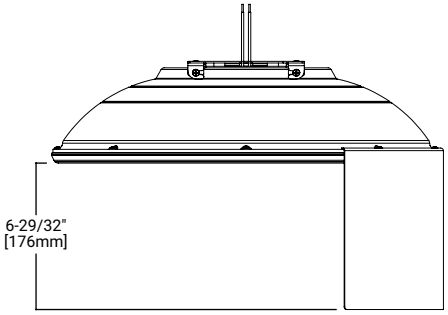
Bird Guard (TT/BG-UP-XX)



Wire Guard (TT/WG)



House Side Shield (TT/HSS-XX)



Energy and Performance Data

View TopTier IES files

Power and Lumens (3000K/3500K/4000K/5000K)

Lumen Package			D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Power (Wattage) CQ, MQ, WQ			28.0	39.2	47.2	57.6	74.7	105.2	124.7	148.7	173.1	193.8
Power (Wattage) RW Only			28.0	39.2	47.2	57.6	74.7	105.2	127.1	152.6	178.0	--
Power (Wattage) DL Only			28.8	40.5	48.8	59.8	62.3	97.4	127.1	152.6	178.0	--
Distribution												
3000K CCT 80 CRI	CQ Concentrated	Lumens	3,409	4,640	5,595	6,660	8,383	11,030	12,307	14,411	16,430	18,001
		BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2
		Lumens per Watt	122	118	119	116	112	105	99	97	95	93
	MQ Medium	Lumens	3,647	4,964	5,986	7,125	8,969	11,800	12,854	15,053	17,161	18,802
		BUG Rating	B2-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	130	127	127	124	120	112	103	101	99	97
	WQ Wide	Lumens	3,449	4,695	5,662	6,740	8,483	11,161	12,350	14,463	16,489	18,065
		BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	123	120	120	117	114	106	99	97	95	93
	RW Rectangular Wide	Lumens	2,757	3,753	4,526	5,387	6,781	8,922	11,977	13,619	15,122	--
		BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	--
		Lumens per Watt	98	96	96	94	91	85	94	89	85	--
	DL Drive Lane / Type 4	Lumens	2,959	3,985	4,762	5,622	6,537	8,771	11,834	13,337	14,768	--
		BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	--
		Lumens per Watt	103	98	98	94	105	90	93	87	83	--
3500K CCT 70 CRI	CQ Concentrated	Lumens	3,618	4,925	5,940	7,070	8,899	11,708	14,944	17,500	19,951	21,858
		BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2
		Lumens per Watt	129	126	126	123	119	111	120	118	115	113
	MQ Medium	Lumens	3,872	5,270	6,355	7,564	9,520	12,527	15,609	18,279	20,839	22,831
		BUG Rating	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	138	134	135	131	127	119	125	123	120	118
	WQ Wide	Lumens	3,662	4,984	6,011	7,154	9,005	11,848	14,997	17,562	20,022	21,936
		BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G4
		Lumens per Watt	131	127	127	124	121	113	120	118	116	113
	RW Rectangular Wide	Lumens	2,927	3,984	4,805	5,719	7,198	9,471	14,544	16,537	18,363	--
		BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	--
		Lumens per Watt	105	102	102	99	96	90	114	108	103	--
	DL Drive Lane / Type 4	Lumens	3,141	4,230	5,055	5,968	7,938	10,650	14,370	16,195	17,933	--
		BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	--
		Lumens per Watt	109	104	104	100	127	109	113	106	101	--
4000K/ 5000K CCT 70 CRI	CQ Concentrated	Lumens	3,828	5,211	6,284	7,480	9,415	12,387	14,944	17,500	19,951	21,858
		BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2
		Lumens per Watt	137	133	133	130	126	118	120	118	115	113
	MQ Medium	Lumens	4,096	5,575	6,723	8,002	10,072	13,253	15,609	18,279	20,839	22,831
		BUG Rating	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3
		Lumens per Watt	146	142	142	139	135	126	125	123	120	118
	WQ Wide	Lumens	3,874	5,273	6,359	7,569	9,527	12,535	14,997	17,562	20,022	21,936
		BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G4
		Lumens per Watt	138	135	135	131	128	119	120	118	116	113
	RW Rectangular Wide	Lumens	3,097	4,215	5,083	6,050	7,615	10,020	14,544	16,537	18,363	--
		BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3	--
		Lumens per Watt	111	108	108	105	102	95	114	108	103	--
	DL Drive Lane / Type 4	Lumens	3,323	4,475	5,348	6,314	7,938	10,650	14,370	16,195	17,933	--
		BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	--
		Lumens per Watt	115	110	110	106	127	109	113	106	101	--

Energy and Performance Data

CQ, MQ and WQ Distributions

Lumen Package	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Power (Wattage)	28.0	39.2	47.2	57.6	74.7	105.2	124.7	148.7	173.1	193.8
Input Current @ 120V (A)	0.23	0.33	0.39	0.48	0.62	0.88	1.09	1.31	1.53	1.72
Input Current @ 208V (A)	0.13	0.19	0.23	0.28	0.36	0.51	0.57	0.67	0.78	0.88
Input Current @ 240V (A)	0.12	0.16	0.20	0.24	0.31	0.44	0.56	0.66	0.76	0.85
Input Current @ 277V (A)	0.10	0.14	0.17	0.21	0.27	0.38	0.49	0.58	0.67	0.74
Input Current @ 347V (A)	0.08	0.11	0.14	0.17	0.22	0.30	0.40	0.47	0.55	0.62
Input Current @ 480V (A)	0.06	0.08	0.10	0.12	0.16	0.22	0.30	0.35	0.41	0.45

RW Distribution

Lumen Package	D1	D2	D3	D4	D5	D6	D7	D8	D9
Power (Wattage)	28.0	39.2	47.2	57.6	74.7	105.2	127.1	152.6	178.0
Input Current @ 120V (A)	0.23	0.33	0.39	0.48	0.62	0.88	1.11	1.34	1.58
Input Current @ 208V (A)	0.13	0.19	0.23	0.28	0.36	0.51	0.58	0.69	0.81
Input Current @ 240V (A)	0.12	0.16	0.20	0.24	0.31	0.44	0.56	0.67	0.78
Input Current @ 277V (A)	0.10	0.14	0.17	0.21	0.27	0.38	0.50	0.59	0.68
Input Current @ 347V (A)	0.08	0.11	0.14	0.17	0.22	0.30	0.41	0.48	0.57
Input Current @ 480V (A)	0.06	0.08	0.10	0.12	0.16	0.22	0.30	0.36	0.42

DL Distribution

Lumen Package	D1	D2	D3	D4	D5	D6	D7	D8	D9
Power (Wattage)	28.8	40.5	48.8	59.8	62.3	97.4	127.1	152.6	178.0
Input Current @ 120V (A)	0.24	0.34	0.41	0.50	0.55	0.86	1.11	1.34	1.58
Input Current @ 208V (A)	0.14	0.19	0.23	0.29	0.28	0.44	0.58	0.69	0.81
Input Current @ 240V (A)	0.12	0.17	0.20	0.25	0.28	0.43	0.56	0.67	0.78
Input Current @ 277V (A)	0.10	0.15	0.18	0.22	0.24	0.37	0.50	0.59	0.68
Input Current @ 347V (A)	0.08	0.12	0.14	0.17	0.21	0.31	0.41	0.48	0.57
Input Current @ 480V (A)	0.06	0.08	0.10	0.12	0.15	0.23	0.30	0.36	0.42

Lumen Maintenance

Lumen Package	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
D1-D6 (D1 - D4 DL/T4)	25°C	98.0%	95.2%	94.1%	89.8%	> 300,000
	40°C	97.9%	94.8%	93.6%	89.0%	> 290,000
	50°C	97.7%	94.5%	93.2%	88.4%	> 270,000
D7 - D10 (D5+ DL/T4)	25°C	95.8%	93.2%	92.2%	88.2%	> 300,000
	40°C	93.9%	89.7%	88.1%	81.9%	> 180,000

* Supported by IES TM-21 standards
**Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

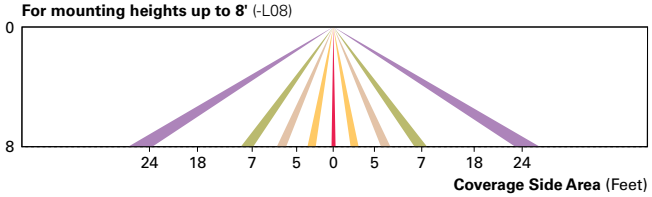
Ambient Temperature	Multiplier
0°C	1.03
10C	1.02
25°C	1.00
40°C	0.98
50°C	0.97

Control Options

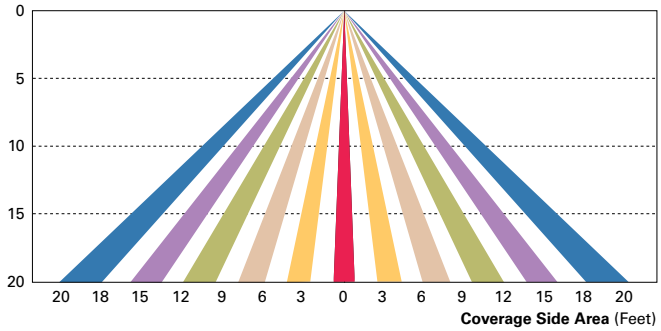
0-10V (D) 0-10V dimming comes standard on all TopTier configurations for use with integrated or external lighting controls.

Dimming Occupancy Sensor (MS/DIM) These sensors are factory installed in the luminaire, dimming to 50% after five minutes of no motion detected. When motion is detected, the luminaire output is 100%. Includes an integral photocell that can be programmed for "dusk-to-dawn" operation. The FSIR-100 programming tool can be utilized to adjust dimming level, time delay, sensitivity and other parameters. Two lens options provide optimal coverage patterns up to 20' mounting height.

For mounting heights up to 8' (-L08)



For mounting heights up to 20' (-L20)



Dimming Occupancy Sensor (SPB)

These passive infrared (PIR) sensors are factory installed in the luminaire housing. When the SPB sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when no motion is detected. After a period of time, the luminaire turns off, and when motion is detected, the luminaire returns to full light output. The SPB sensor default parameters are listed in the table below, and can be configured utilizing the Sensor Configuration mobile application for iOS and Android devices. The SPB/X is configured to control only the specified number of light squares. An integral photocontrol can be activated with the app for "dusk-to-dawn" control or daylight harvesting - the factory default is off. Three sensor lenses are available to optimize the coverage pattern for mounting heights from 8'-40'. Four sensor colors are available; Bronze, Black, Gray and White, and are automatically selected based on the luminaire finish as indicated by the table below.

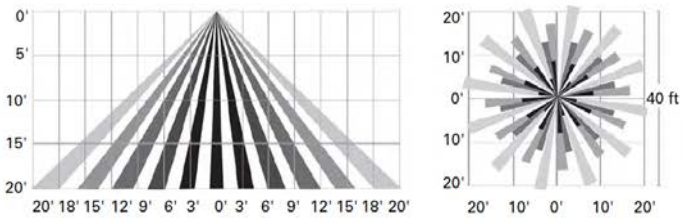
SPB sensor finish matched to luminaire finish		
Luminaire Finish		SPB Sensor Finish
WH	White	White
BK	Black	Black
GM	Graphite Metallic	Black
BZ	Bronze	Bronze
AP	Gray	Gray
DP	Dark Platinum	Gray

SPB/X Availability Table	
Fixture Square Count	Available SPB/X Square Count
1	Not Available
2	Not Available
3	Not Available
4	2
5	2 or 3
6	3
7	2, 3, 4 or 5
8	2, 3, 5 or 6
9	3 or 6

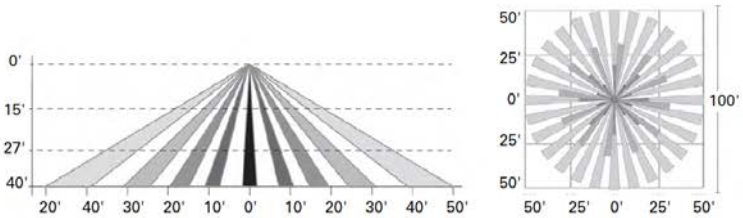
WaveLinx Wireless Control and Monitoring System

Operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. WaveLinx (WPS2 to WPS4) outdoor wireless sensors offer passive infrared (PIR) occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Lite (WLS4 and WLS2) outdoor wireless sensors provide PIR occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx Lite mobile application for set-up and configuration. WAC not required. WaveLinx Outdoor Control Module (WOLC-7P-10A) accessory provides a photocontrol enabling astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn.

For mounting heights up to 15' (WPS2 and WLS2)

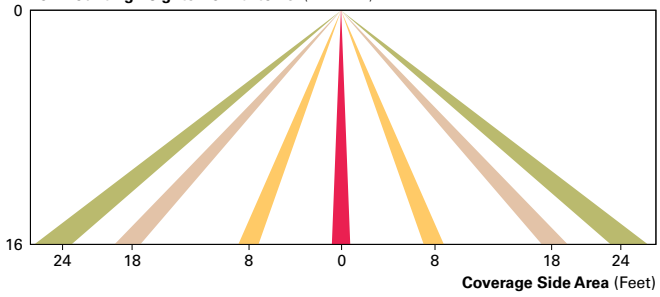


For mounting heights up to 40' (WPS4 and WLS4)

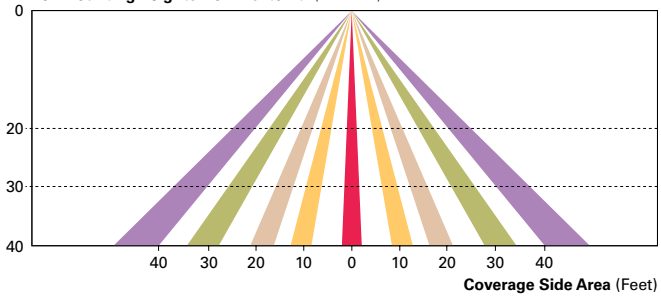


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN) The Enlighted control system is a connected lighting solution, combining LED luminaires with an integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes while collecting valuable data about building performance and use. Software applications utilizing energy dashboards maximize data inputs to help optimize the use of other resources beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)

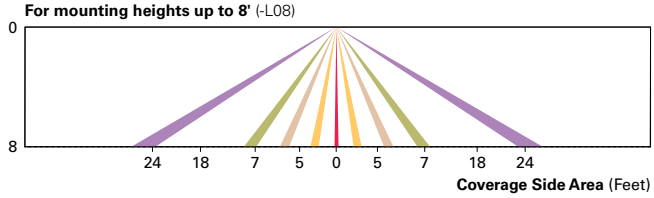


For mounting heights from 16' to 40' (LWR-LN)

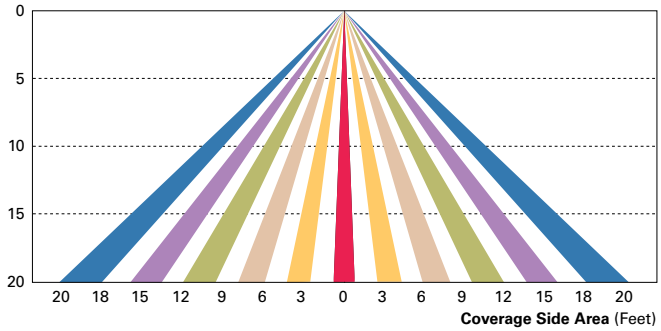


Synapse (DIM10) SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 control module and FSP-20 motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty, and terms and conditions.

For mounting heights up to 8' (-L08)



For mounting heights up to 20' (-L20)



Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Lumark

DESCRIPTION

Combining value and performance in a unique, patent-pending durable design, the Tracer LED floodlight luminaire delivers superior uniformity and excellent illumination to the targeted application. The rugged, die-cast housing is IP66 rated for exceptional durability and long-term reliability. The Tracer floodlight provides design flexibility for applications such as landscape, accent, facade, or sign lighting.

Catalog #		**Type**
Project	Villas on Shelby	
Comments	Light F-Landscape Spot light	**Date**
Prepared by		

SPECIFICATION FEATURES

Construction
Heavy-duty, die-cast aluminum housing provides durability and an IP66 rating to protect against moisture and contaminants. Clear tempered glass lens protects optics and encloses the front cover of the luminaire.

Optics
The discrete LED optics provide illumination that has been precisely designed to shape the distribution as spot, medium, or wide. Multiple lumen packages ranging from 550 up to 2,900 lumens. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 5000K CCT or 3000K CCT available. Removable, pre-installed standard symmetric snoot as well included and field-replaceable with included extended visor for more cut-off applications.

Electrical
LED driver is internally mounted for optimal heat sinking. 120-277V 50/60Hz standard operation. Integral 4kV surge is standard. 0-10V dimming is standard with external purple and grey leads. Suitable for ambient temperatures from -40°C to 40°C. 90% lumen maintenance greater than 60,000 hours per IESNA TM-21.

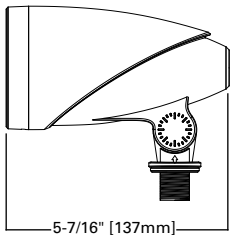
Mounting
Heavy-duty, die-cast aluminum knuckle base utilizes tooth-lock adjustment with visual 15° adjustment indicators that allow for precise rotation of the luminaire. Knuckle fits 1/2" NPS available mounting junction box cover (supplied by others) and is secured with supplied locking nut.

Finish
Housing and cast parts finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard color is carbon bronze. Additional colors available in summit white, black, and verde green. Consult your lighting representitive at Cooper Lighting Solutions for a complete selection of standard colors.

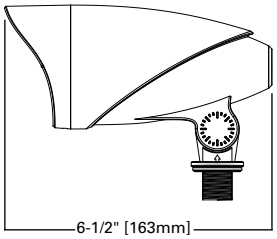
Warranty
Five-year warranty.

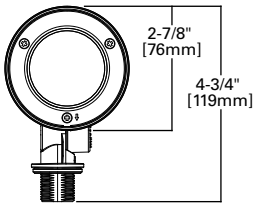
DIMENSIONS

Tracer Small
(Standard symmetric snoot)

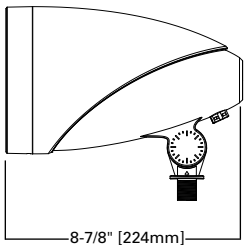


Tracer Small
(Optional extended visor)

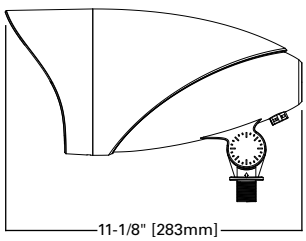


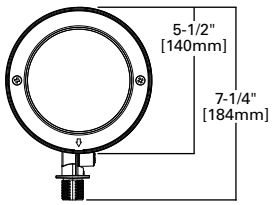


Tracer Large
(Standard symmetric snoot)



Tracer Large
(Optional extended visor)





TCRS / TCRL
TRACER

Solid State LED

FLOODLIGHT

CERTIFICATION DATA
UL/cUL Wet Location Listed
DesignLights Consortium® Qualified*
IP66 Fixture and Optical Chamber
LM79/LM80 Compliant
FCC Class A
1.5G Vibration Rated
RoHS Compliant

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V 50/60Hz
-40°C Min. Ambient Temperature Rating
+40°C Max. Ambient Temperature Rating

EPA
Effective Projected Area (Sq. Ft.): 0.55

SHIPPING DATA
Approximate Net Weight:
Small fixture=2 lbs. (0.91kgs.)
Large fixture=5 lbs. (2.27kgs.)

COOPER Lighting Solutions

*www.designlights.org

POWER AND LUMENS

Light Engine		TCRS5	TCRS8	TCRL15	TCRL20	TCRL26
Power (Watts)		5.0	8.0	12.0	17.6	25.1
Input Current @ 120V (A)		0.04	0.07	0.10	0.15	0.22
Input Current @ 277V (A)		0.02	0.03	0.05	0.07	0.10
Configuration						
Spot (20°)	4000K/5000K Lumens	530	812	1,500	2,039	2,718
	3000K Lumens	512	785	1,450	1,971	2,628
Medium (30°)	4000K/5000K Lumens	552	846	1,630	2,215	2,953
	3000K Lumens	533	818	1,575	2,141	2,854
Wide (50°)	4000K/5000K Lumens	561	860	1,657	2,251	3,002
	3000K Lumens	542	831	1,602	2,176	2,902

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Theoretical L70 (Hours)
Up to 40°C	90%	153,000

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.97

ORDERING INFORMATION

Sample Number: TCRS5S-WH-7050

Product Family [1]	Light Engine	Distribution
TCRS=Tracer Flood Small LED **TCRL=**Tracer Flood Large LED	**TCRS** **5=**5W, 550 Nominal Lumens **8=**8W, 850 Nominal Lumens **TCRL** **15=**15W, 1,600 Nominal Lumens **20=**20W, 2,200 Nominal Lumens **26=**26W, 2,900 Nominal Lumens	**S=**Spot **M=**Medium **W=**Wide

Options (Add as Suffix) [2]
[blank]=Carbon Bronze (Standard) **BK=**Black **VG=**Verde Green **WH=**White **7030=**70 CRI / 3000K CCT **7050=**70 CRI / 5000K CCT

NOTES: 1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. 2. Extended lead times apply to any options selected.

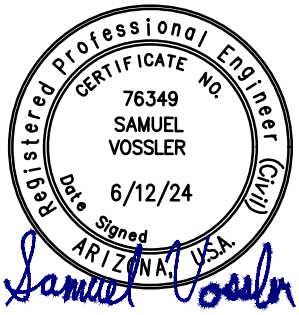
STOCK ORDERING INFORMATION

Stock SKUs	
Small	**Large**
TCRS5S=Tracer Small 5W, 550 lumens, Spot Distribution	**TCRL15S**=Tracer Large 15W, 1,600 lumens, Spot Distribution
TCRS5M=Tracer Small 5W, 550 lumens, Medium Distribution	**TCRL15M**=Tracer Large 15W, 1,600 lumens, Medium Distribution
TCRS5W=Tracer Small 5W, 550 lumens, Wide Distribution	**TCRL20M**=Tracer Large 20W, 2,200 lumens, Medium Distribution
TCRS8S=Tracer Small 8W, 850 lumens, Spot Distribution	**TCRL26S**=Tracer Large 26W, 2,900 lumens, Spot Distribution
TCRS8M=Tracer Small 8W, 850 lumens, Medium Distribution	**TCRL26M**=Tracer Large 26W, 2,900 lumens, Medium Distribution
TCRS8W=Tracer Small 8W, 850 lumens, Wide Distribution	

NOTES: Options not available with stock products. Refer to standard ordering information to add options. Stock fixture is 4000K, dimming, 120-277V, carbon bronze only.

Villas on Shelby
2250 Shelby Drive
Sedona, AZ 86336

Preliminary Water Design Report



Date: June 11, 2024

Prepared for: **HS Development Partners, LLC**
Matt Shoemacher
30 South Oak St
London, Ohio 43140
P: 216-406-3683

Prepared By: **Burgess & Niple, Inc.**
Sam Vossler P.E.
2201 North Gemini Drive
Flagstaff, Arizona 86001
P: 928-395-1988

Table of Contents

List of Appendices

Abbreviations

AC – Asbestos Cement

ADD – Average Day Demand

APN – Assessor Parcel Number

AWC - Arizona Water Company

CA – Cement Asbestos

DIP – Ductile Iron Pipe

DREAM - Sedona Design Review, Engineering and Administrative Manual

GPD - Gallons Per Day

GPM - Gallons Per Minute

HGL – Hydraulic Grade Line

MMD – Maximum Daily Demand

PHD – Peak Hour Demmand

PSI – Pounds per Square Inch

100 INTRODUCTION

The purpose of this preliminary report is to provide preliminary engineering justification for domestic water and fire service to the proposed Villas on Shelby project site. This report will evaluate the existing infrastructure and outline methods that will be used in the final drainage report to determine if the proposed design will adequately support the calculated demands for the proposed development. A final water report and final modeling will be produced after fire flow testing has been completed. The Project will be designed and developed in accordance with the 2020 City of Sedona Design Review, Engineering and Administrative Manual (DREAM), Arizona Water Companies Standards and Specifications, and Yavapai County's current requirements.

The Villas on Shelby (Project) is on a parcel containing 1.1+/- acres (APN 408-28-103F) and is currently undeveloped. The Project site is located at 2250 Shelby Drive in City of Sedona (see ***Figure - 1 Vicinity Map*** *and* ***Figure - 2 Site Map below***). More Specifically Lot 1 within AAA Industrial Park located in section 14, township 17 north, range 5 east Gila and Salt River Meridian, Yavapai County, Arizona. The current project zoning is IN (Light Industrial). The Project is a proposed multi-family site to be composed of 1 three-story building with 30 Housing Units along with a leasing office area and gym. The site will contain 42 parking spaces, with an access drive connecting to the south on Shelby Drive. No phasing is proposed for the construction of the development's improvements. The Project is with Arizona Water Company's (AWC) Sedona service area. A Pressure Zone could not be provided by AWC when requested.

Figure 1 – Vicinity Map

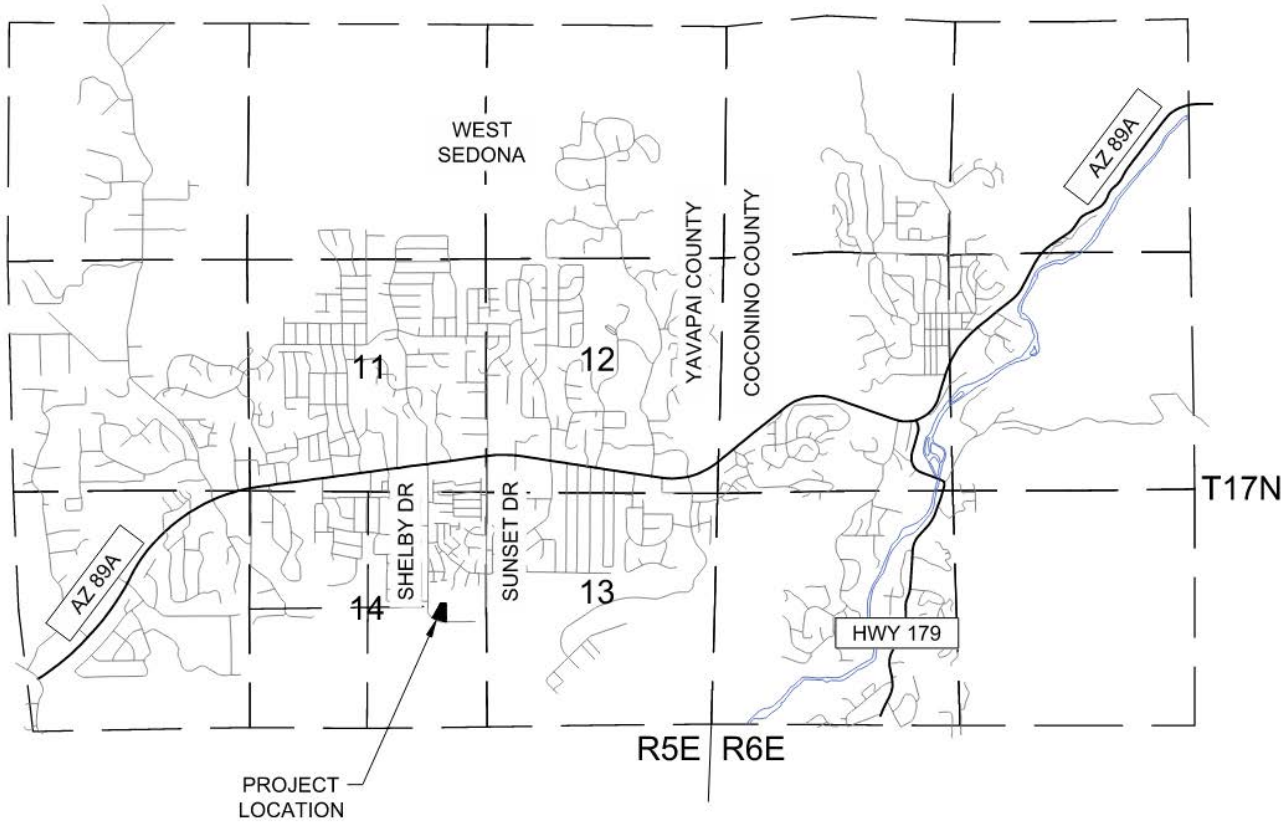


Figure 2 – Site Map

200 EXISTING WATER SYSTEM

The Site is currently vacant and there is an existing 6" CA (Asbestos Cement) water main in Shelby Drive as part of the Arizona Water Companies (AWC) facilities. GIS data from AWC along with As-built drawings by AWC dated 9/9/2013 titled *Replace 90 LF of 6" CA with 90 LF of DIP along Shelby Drive* verify this info. There were no found records of services or stubs to the project site. There is currently an existing dual service located on the adjacent property APN 408-28-265 with one unused connection, but this is assumed to not be available to our site and is undersized for the required demand of the project. Based on discussions with AWC, the property is located within the Sedona Certificate of Convenience and Necessity and a Will Serve Letter for the project has been obtained from AWC.

300 WATER ANALYSIS

300.1 Demand Calculation

The Project will include 24 1-bedroom units and 6 3-bedroom units. Per AWC use based generation requirements the usage is 240 Gallons Per Day Per Unit, therefore:

Average Day Demand : 240 GPD/Unit x 30 Unit = **7,200 GPD (or 5 GPM)**

Maximum Day Demand: Average Day Demand x 2.0 = **14,400 GPD (or 10 GPM)**

Peak Hour Demand: Average Day Demand x 3.0 = **21,600 GPD (or 15 GPM)**

300.2 Fire Flow Requirements

The Fire Flow Requirements for the site as required by the fire authority are 2,275 GPM for 3-hours with a minimum residual pressure of 20 PSI. An email documenting the requirements is in Appendix A. The Project proposes a new fire hydrant and new 6" fire service line to serve the building.

300.3 System Pressure

The Pressure Zone Hydraulic Grade Line (HGL) in the AWC Master Plan was not able to be provided by AWC.

300.4 Water Model

A water model will be prepared for the final report utilizing WaterGems Software and calibrated using a new Fire Flow Test for the project to be conducted by Wicked Fire Protection. The Project proposes a new fire hydrant, a new fire service and two new 1-1/2" services and meters.

The model will be built to analyze three demand scenarios:

- Average Day
- Maximum Day
- Peak Hour

Specific Criterion to be achieved in the modeling results include:

- Minimum Static Pressure is 55 PSI
- Pressure for all junctions for average day, maximum day, and peak hour scenarios are between 40 and 80 PSI.
- Minimum pressure during MMD plus fire flow is 20 PSI.
- Velocities for all water mains during MDD plus fire flow and PHD do not exceed 8-feet per second.
- Maximum headloss in transmission main does not exceed 6-feet per 1,000 feet.
- Maximum headloss in distribution main does not exceed 10-feet per 1,000 feet.
- Hazen Willams roughness coefficient for new water main is C=120

300.5 Fire Flow Model

Fire Flow Requirements: The model to be prepared with the final report will summarize results showing the fire flow requirements have been met.

400 CONCLUSION

This Preliminary Report is in support of the proposed Villas on Shelby Project. A final report will be prepared before final approval of the building plans and final approval from AWC.

Appendix A

Fire Flow Requirements and Will Serve Letter

Sam Vossler

From: Dori Booth <dbooth@sedonafire.org>
Sent: Tuesday, May 21, 2024 3:30 PM
To: Sam Vossler; Hanako Ueda; Kirk Riddell
Cc: Cari Meyer
Subject: RE: Villas on Shelby - Fire Flow Required by Fire Authority Letter

Sam,

Arizona Water usually provides you the form for us to sign in terms of Fire Flow; ADEQ is going to want to see it too. That being said, based on your description you will need the following at a minimum per Table B105.1 of the International Fire Code:
3500GPM for 3 hours with a minimum residual pressure of 20psi. That being said, this building is required to have Fire Sprinklers installed throughout which can reduce the Fire flow down to 2,275 gpm for 3 hours.

Respectfully,

Chief Booth

Dori Booth
Division Chief
Community Risk Reduction
Sedona Fire District
Office (928) 204-8926

From: Sam Vossler <sam.vossler@burgessniple.com>
Sent: Monday, May 20, 2024 2:30 PM
To: Hanako Ueda <HUeda@sedonaaz.gov>; Dori Booth <dbooth@sedonafire.org>; Kirk Riddell <KRiddell@sedonafire.org>
Cc: Cari Meyer <CMeyer@sedonaaz.gov>
Subject: RE: Villas on Shelby - Fire Flow Required by Fire Authority Letter

Dori,

It is a Type V-A construction type
It is 3 stories and 39'-0" in height and 37,274 SF

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, AZ 85015-5351 • P.O. BOX 29006, PHOENIX, AZ 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6874 • TOLL FREE: (800) 533-6023 • www.azwater.com

March 16, 2023

Bonnie Harbage
HS Development Partners, LLC
30 S. Oak Street
London, OH 43140

Re: Domestic Water Service to APN 408-28-103C

Dear Ms. Harbage:

Arizona Water Company (the "Company") certifies that the above-described property is located within its Sedona Certificate of Convenience and Necessity in Sedona, Arizona, and that it will provide water service to the property in accordance with the Company's tariffs and the Arizona Corporation Commission's rules and regulations. It will be the responsibility of the developer to provide the funds to install the necessary water facilities, and the Company assumes no liability to install those facilities if the funds are not advanced by the developer.

The design of the water distribution system must comply with the Company's standard specifications that are on file at the Yavapai County Development Services. Both preliminary and final water system designs must be approved by the Company.

It will also be the responsibility of the developer to comply with all of the requirements of regulatory agencies having jurisdiction over Arizona subdivisions and of Arizona statutes applicable to subdivided or unsubdivided land, including, but not limited to, requirements relating to a Certificate of Assured Water Supply, as set forth in the Arizona Groundwater Management Act, A.R.S. §45-576.

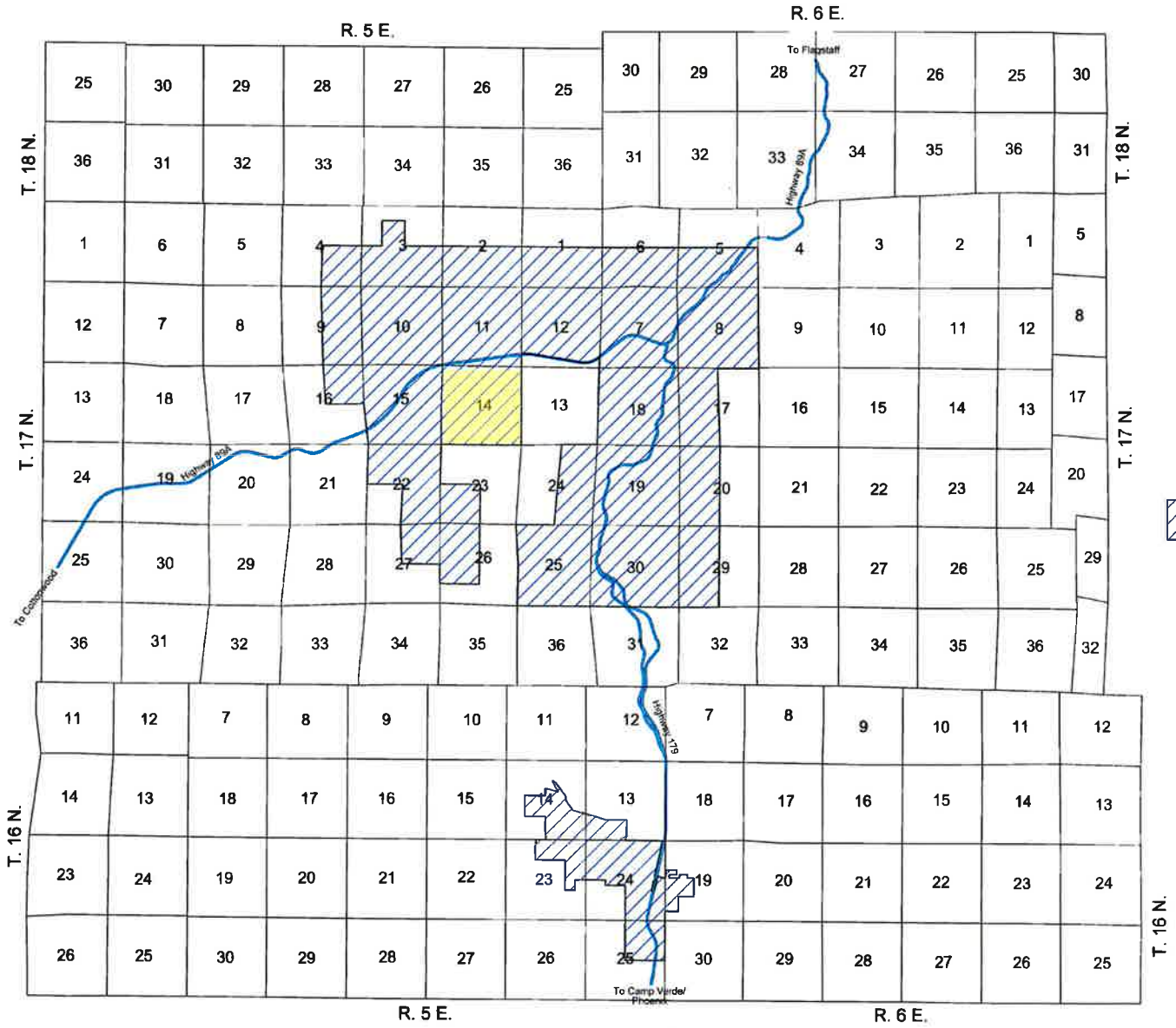
Please notify the Company if you will be proceeding with development of the property so the Company can prepare the necessary Agreement.

Very truly yours,

Andrew J. Haas

Andrew J. Haas, PE
Vice President - Engineering
developmentservices@azwater.com

sla



Area Covered By Present CCN

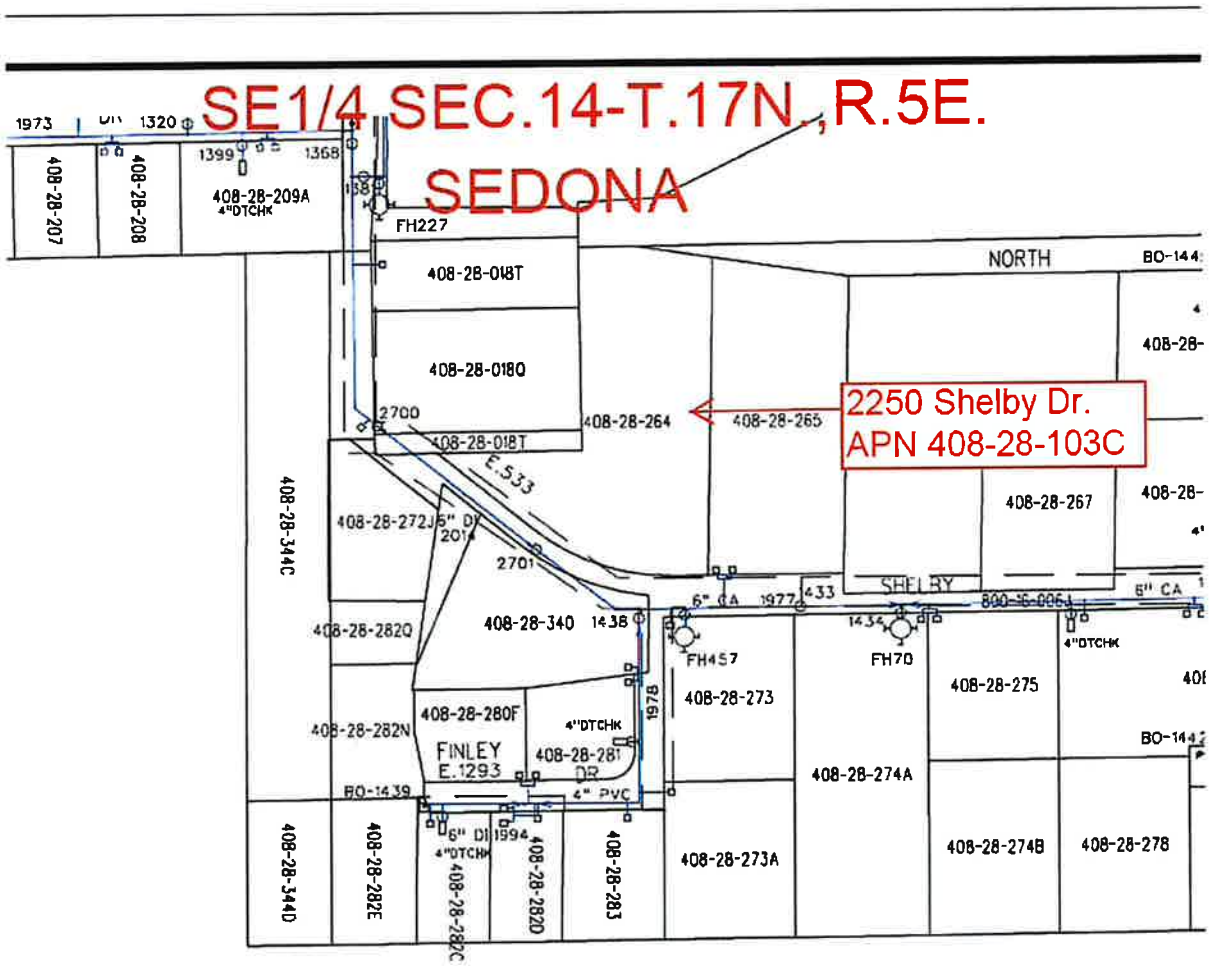
No.	Decision Date	Revision	By	Date
28				
27				
26				
25				
24				
23	11/05	Decision No. 68309 (VOC)	CS	1/06
22	4/04	Decision No. 66992	CS	4/04
21	7/99	Decision No. 61849 (VOC)	CS	4/00
20	3/98	Decision No. 60717 (VOC)	GRS	5/99
19	7/97	Decision No. 60265	GRS	5/99
18	1/95	Decision No. 59398 (VOC)	GRS	12/95
17	8/88	Decision No. 56108 (Trnsfr/VOC)	GRS	1/89
16	9/86	Decision No. 55163 (DEL-VOC)	GRS	1/88
15	9/83	Decision No. 53757 (Trnsfr VOC)	GRS	10/83
14	1/74	Decision No. 43913	RWH	1/74
13	8/73	Decision No. 43593 (+VOC)	MS	8/73
12	10/69	Decision No. 40253 (Trnsfr)	CB	12/17
11	2/67	Decision No. 38825	RB	11/68
10	10/66	Decision No. 38577 (Trnsfr)	RB	11/68
9	1/66	Decision No. 38009	RB	11/68
8	12/65	Decision No. 38226 (Trnsfr)	RB	11/68
7	12/64	Decision No. 35087 (Trnsfr)	RB	11/68
6	9/63	Decision No. 34756 (VOC)	RB	11/68
5	6/63	Decision No. 34510 (Trnsfr)	RB	11/68
4	5/63	Decision No. 34532	RB	11/68
3	4/63	Decision No. 34162 (Trnsfr)	RB	11/68
2	9/62	Decision No. 34382 (Trnsfr)	RB	11/68
1	8/60	Decision No. 32356 (VOC)		11/68

ARIZONA WATER COMPANY

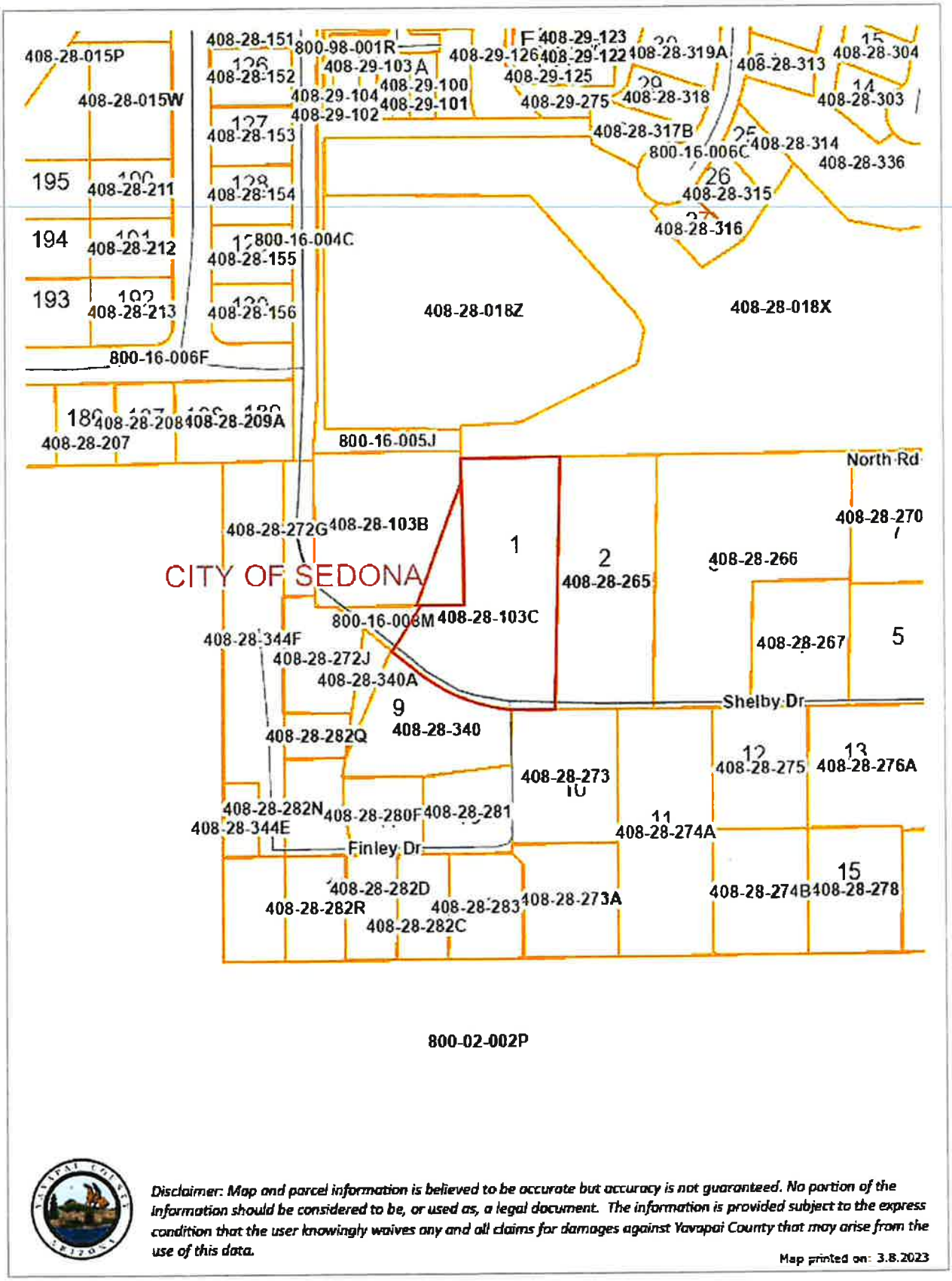
AREA COVERED BY PRESENT C.C.N.
AT
SEDONA

DATE: August 1960 | SCALE: 1" = 1 Mile

Sedona, Arizona – APN 408-28-103C



Map Disclaimer: This map is for general reference only. It does not replace a land survey and Arizona Water Company does not guarantee its thematic or spatial accuracy.



Disclaimer: Map and parcel information is believed to be accurate but accuracy is not guaranteed. No portion of the information should be considered to be, or used as, a legal document. The information is provided subject to the express condition that the user knowingly waives any and all claims for damages against Yavapai County that may arise from the use of this data.

Map printed on: 3.8.2023

BURGESS & NIPLE
2201 N. Gemini Drive
Suite 116
Flagstaff, AZ 86001

Exp. 6/30/26

May 20, 2024

Sedona Public Works Department
Building 104
102 Roadrunner Drive
Sedona, AZ 86336

Subject: Traffic Impact Statement for Villas on Shelby in Sedona, Arizona

Villas on Shelby is an approximate 1.14-acre proposed residential development in the City of Sedona, Arizona. The purpose of this Traffic Impact Statement (TIS) was to determine the impact of the site to the proposed site access driveway and surrounding area.

1.0 Existing Conditions

The site is located on the south end of Shelby Drive at address 2250 Shelby Drive, Sedona, Arizona 86336. The parcel number is APN 408-26-103F. A vicinity map showing the location of the proposed development and surrounding area is included as **Figure 1**.

1.1. Existing/Future Land Use

The parcel is currently zoned as light industrial. The surrounding area is light industrial, community services, vacant land, storage rentals, and a hotel. Sunset Park and residential neighborhoods are located just north of the site. The existing land use is shown in **Figure 2**. The parcel is a part of Sedona's Sunset Community Focus Area (CFA). The objectives of the Sunset Live/Work Community Focus Area Plan include affordable housing, economic diversification, mixed use development, and public lands access.

1.2. Existing Roadway Characteristics

Shelby Drive is a two-lane asphalt road functionally classified as a major collector per the 2014 Arizona Department of Transportation (ADOT) Sedona Functionally Classified Roads Map with a posted speed limit of 25 mph. There is curb, gutter, and sidewalk present on the east/north side of Shelby Drive. Curb, gutter, and sidewalk is discontinuous on the west/south side. There are no bike lanes or lighting present. Traffic control generally consists of minor street stop control. There are turn lanes and crosswalks present intermittently and a traffic signal at the intersection with State Route 89A (SR-89A). Shelby Drive between Sedona Recycles and Sunset Drive was previously a private roadway but is now owned and maintained by the city with dedicated 45' right-of-way.

Sunset Drive is a two-lane asphalt road functionally classified as a major collector per the 2014 ADOT Sedona Functionally Classified Roads Map with a posted speed limit of 25 mph. In general, there is curb, gutter, and sidewalk present on the west side of Sunset Drive. There are bike lanes present from Tanager Lane to approximately 300 feet south of SR-89A. There is no lighting present. Traffic control generally consists of minor street stop control, with a traffic signal at the intersection with SR-89A.

1.3. Existing Traffic Counts

Average annual daily traffic (AADT) was obtained from the ADOT Traffic Data Management System (TDMS); the available AADT of the existing roadway network is depicted in **Figure 3**.

Figure 1: Vicinity Map

Figure 2: Existing Land Use

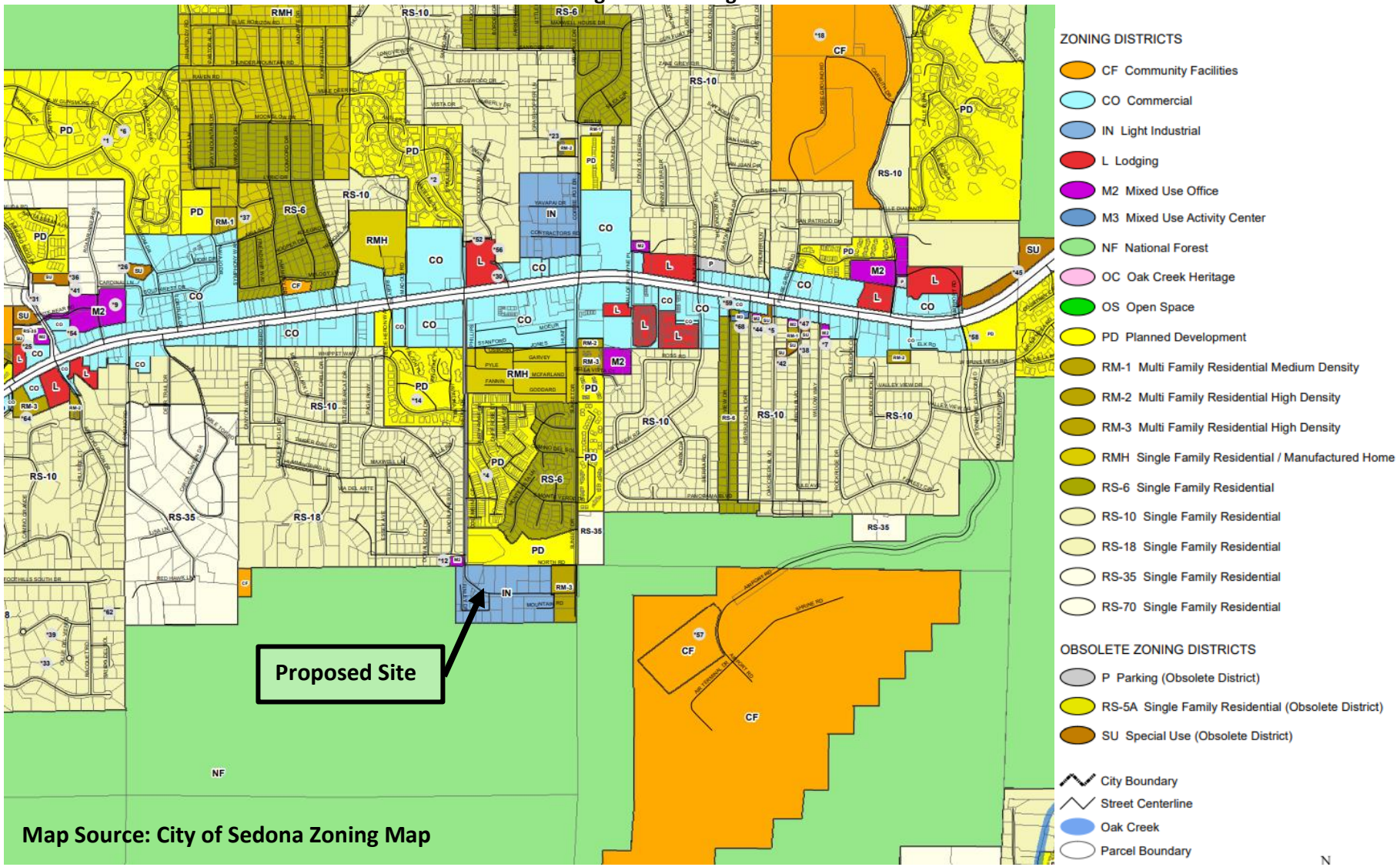


Figure 3: Existing AADT

XX 2022 AADT

XX 2023 AADT

2.0 Proposed Conditions

2.1. Proposed Land Use

Villas on Shelby is a proposed 3-story affordable housing development that aligns with the Sunset CFA plan. The development includes 24 single bedroom units and six three-bedroom units for a total of 30 units. The site plan is included in **Appendix A**.

2.2. Site Access

Primary access to the site is Shelby Drive. A full access private driveway is proposed.

2.3. Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition was used to estimate the number of vehicle trips the development is expected to generate. The manual contains average rates and best fit equations for calculating the number of trips expected for various land uses, tabulated by Land Use Code (LUC). The LUC selected for this development was LUC223: Affordable Housing with income limits. Trip generation by generator or adjacent street traffic was considered, and the larger calculated trip generation was utilized for a conservative estimate. Fitted curve equations are provided for LUC223; however, due to the limited data available for the selected code, the ITE Trip Generation Handbook 3rd Edition recommends using the average rate. The trip generation rates are summarized in **Table 1**. ITE Trip Generation data sheets LUC223 are included in **Appendix B**.

Table 1: Trip Generation Rates/Equations

Land Use Description (LUC)	AM Peak Hour		PM Peak Hour		Daily	
	Average Rate	In/Out (%)	Average Rate	In/Out (%)	Average Rate	In/Out (%)
Affordable Housing (223)	0.5	26/74	0.5	58/42	4.81	50/50

Daily (typical weekday), morning peak hour, and evening peak hour trips were estimated for the development are presented in **Table 2**. A total of 144 daily, 15 morning peak hour, and 15 evening peak hour trips were estimated.

Table 2: Expected Trip Generation

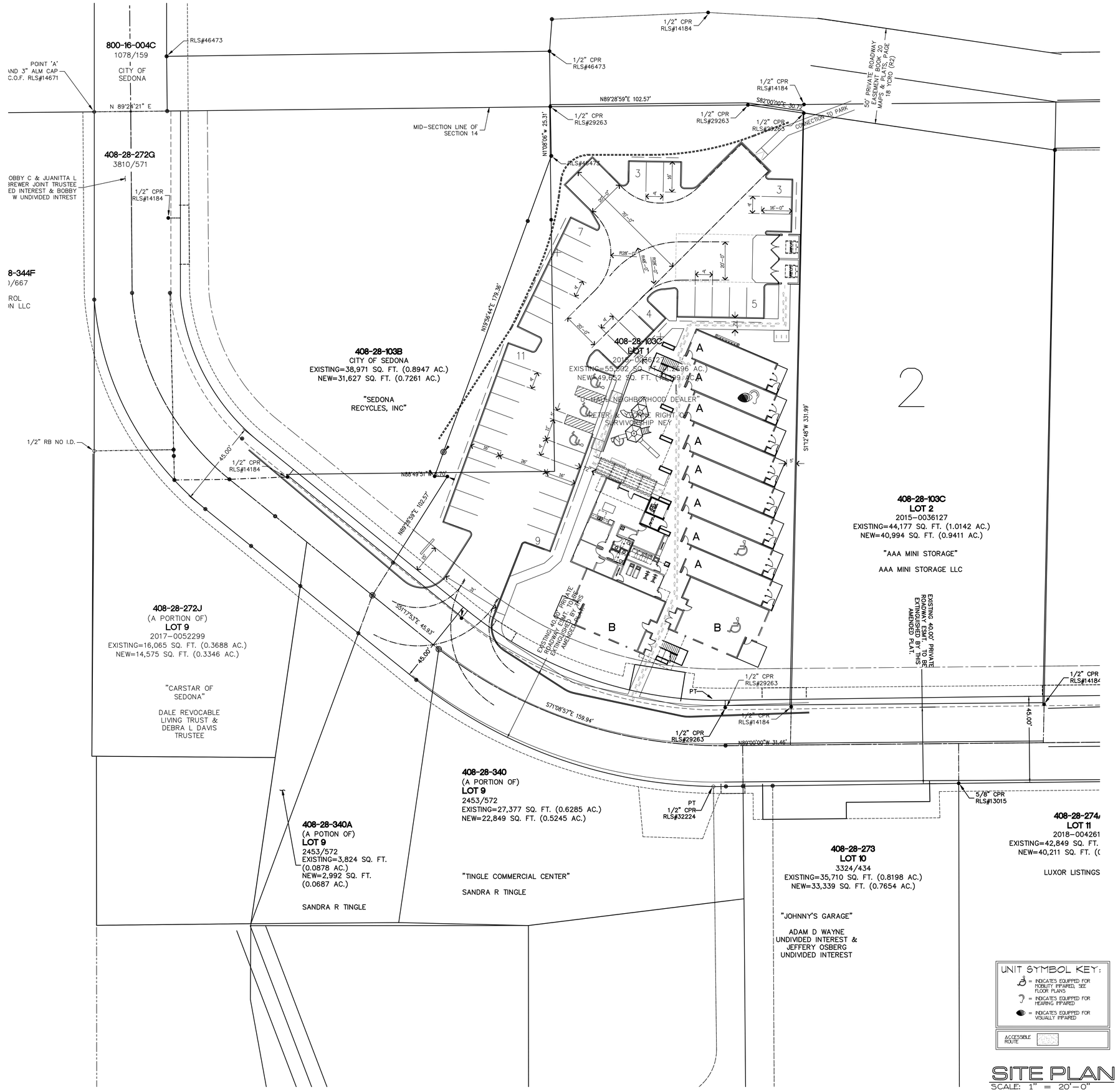
Land Use Description (LUC)	Size	AM Peak Hour			PM Peak Hour			Daily		
		Total	In	Out	Total	In	Out	Total	In	Out
Affordable Housing (223)	30 DU	15	4	11	15	9	6	144	72	72

3.0 Conclusion

Villas on Shelby is a proposed 30-unit affordable housing development in Sedona, Arizona. It is expected to generate 144 daily, 15 morning peak hour, and 15 evening peak hour trips. Due to the low expected trip generation, impacts to the surrounding roadway network are anticipated to be minimal. No traffic improvements are recommended as part of the development.

Appendix A

Site Plan



Address
South End of Shelby Drive
approx 2250 Shelby Drive
Sedona Arizona 86336

APN 408-26-103C

Site Area

Gross	55740 SF	Acres
Net	51037 SF	Acres

building Setbacks

Required	Required	Provided
Front	15 ft	15 ft
Side	0	5
Rear	0	0

unit count

Unit A (1-Bed)	24	SF Each
Unit B (3-Bed)	6	SF Each
Total	30	

density

Provided	30 units
/	0 acres
	#DIV/0! units/acre

Parking

Required		
1.25 x	24 =	30
1.75 x	6 =	10.5
Required		40.5
Provided		42

Bicycle Parking

Required	1 per 10 parking stalls	
	42 / 10	4.2
provided		5

ATHENA STUDIO, LLC
2801 E. Camelback 200
Phoenix, AZ 85016
602-274-5000

REGISTERED ARCHITECT
49779
PETER J. SWINGLE
ARIZONA U.S.A.
EXPIRES: 06/30/25

PRELIMINARY DRAWING
Not For Construction

Villas on Shelby
2250 Shelby Drive
Sedona, AZ 86336
HS Development Partners

Issue Date:
MARCH 2024

Revisions:

PROJECT NUMBER 2315.1
DRAWN BY PS
REVIEWED BY PS
START DATE FEB 7, 2024
DATE PLOTTED 04/25/24
CAD FILE NAME 2315.1-SITE

SITE PLAN

S.1

0 5 20 50 NORTH
1"=20'

Appendix B

ITE Trip Generation Sheets

Land Use: 223
Affordable Housing

Description

Affordable housing includes all multifamily housing that is rented at below market rate to households that include at least one employed member. Eligibility to live in affordable housing can be a function of limited household income and resident age. Multifamily housing (low-rise) (Land Use 220), multifamily housing (mid-rise) (Land Use 221), and multifamily housing (high-rise) (Land Use 222) are related land uses.

Land Use Subcategory

Data are presented for three subcategories for this land use: (1) sites with income limitations for its tenants (denoted as income limits in the data plots), (2) sites with both minimum age thresholds and income limitations for its tenants (denoted as senior in the data plots), and (3) sites designed for and occupied by residents with special needs, such as persons with physical and mental impairments, single mothers, recovering addicts and others living in a group setting.

Additional Data

For most study sites contained in this land use, all dwelling units in the development are classified as affordable units. For residential study sites that provide a mix of market value and affordable units, the study sites with at least 75 percent of the dwelling units designated as affordable are also included in this land use database.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s and 2010s in California, Ontario (CAN), and New Jersey.

Source Numbers

237, 918, 1003, 1004, 1046, 1057

Affordable Housing - Income Limits (223)

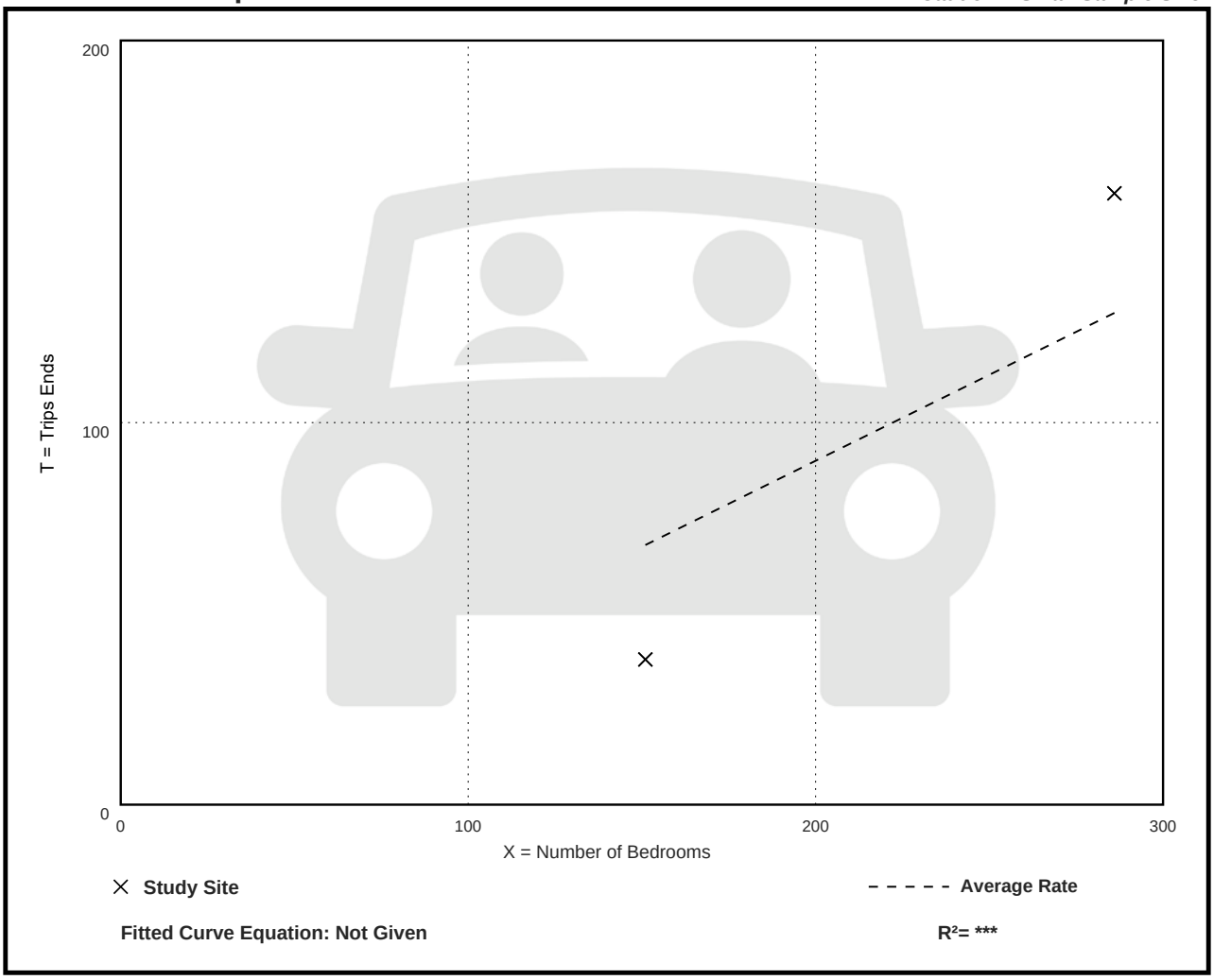
Vehicle Trip Ends vs: Bedrooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Bedrooms: 219
Directional Distribution: 37% entering, 63% exiting

Vehicle Trip Generation per Bedroom

Average Rate	Range of Rates	Standard Deviation
0.45	0.25 - 0.56	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Bedrooms
On a: Weekday,
AM Peak Hour of Generator

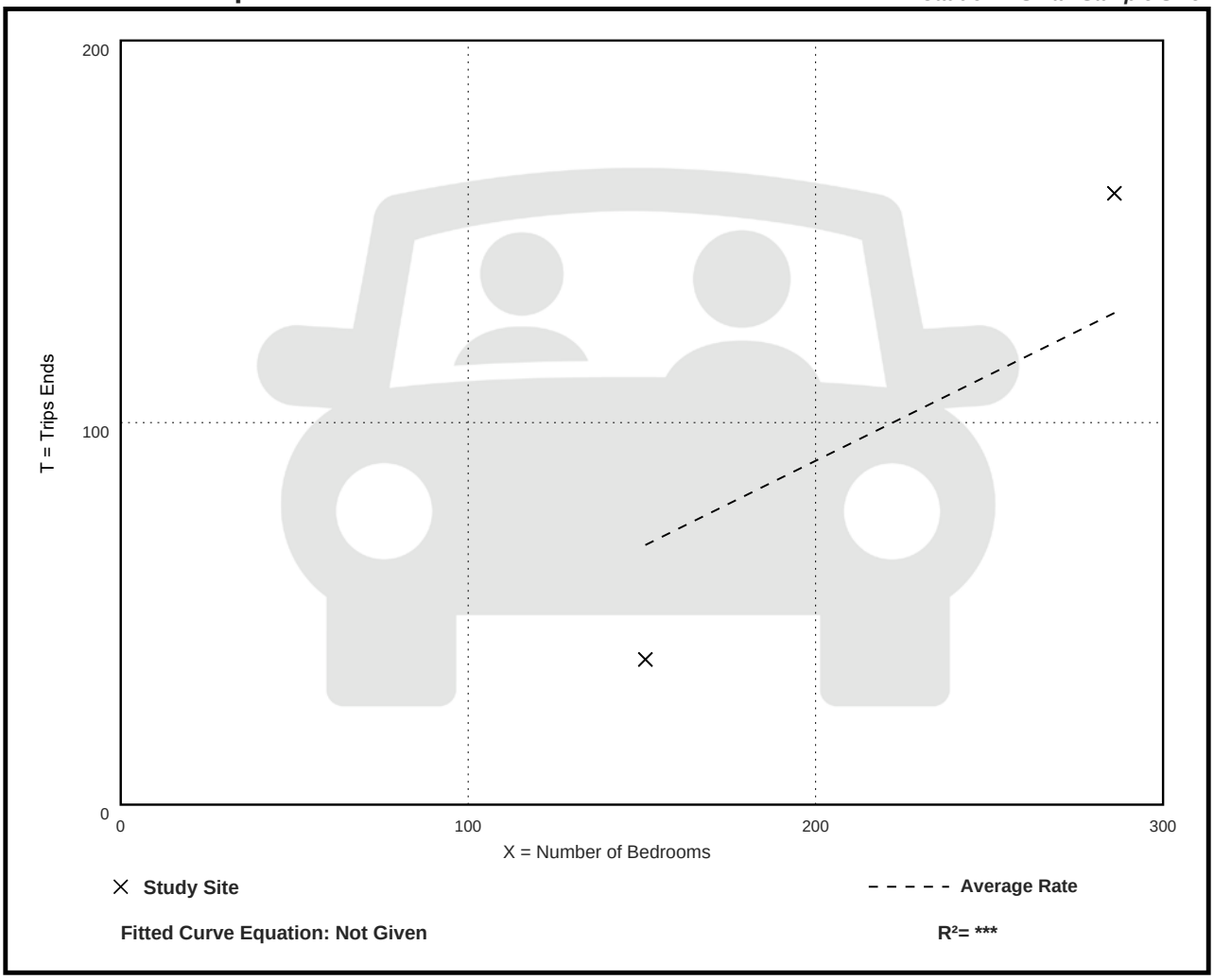
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Bedrooms: 219
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Bedroom

Average Rate	Range of Rates	Standard Deviation
0.45	0.25 - 0.56	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Bedrooms
On a: Weekday,
PM Peak Hour of Generator

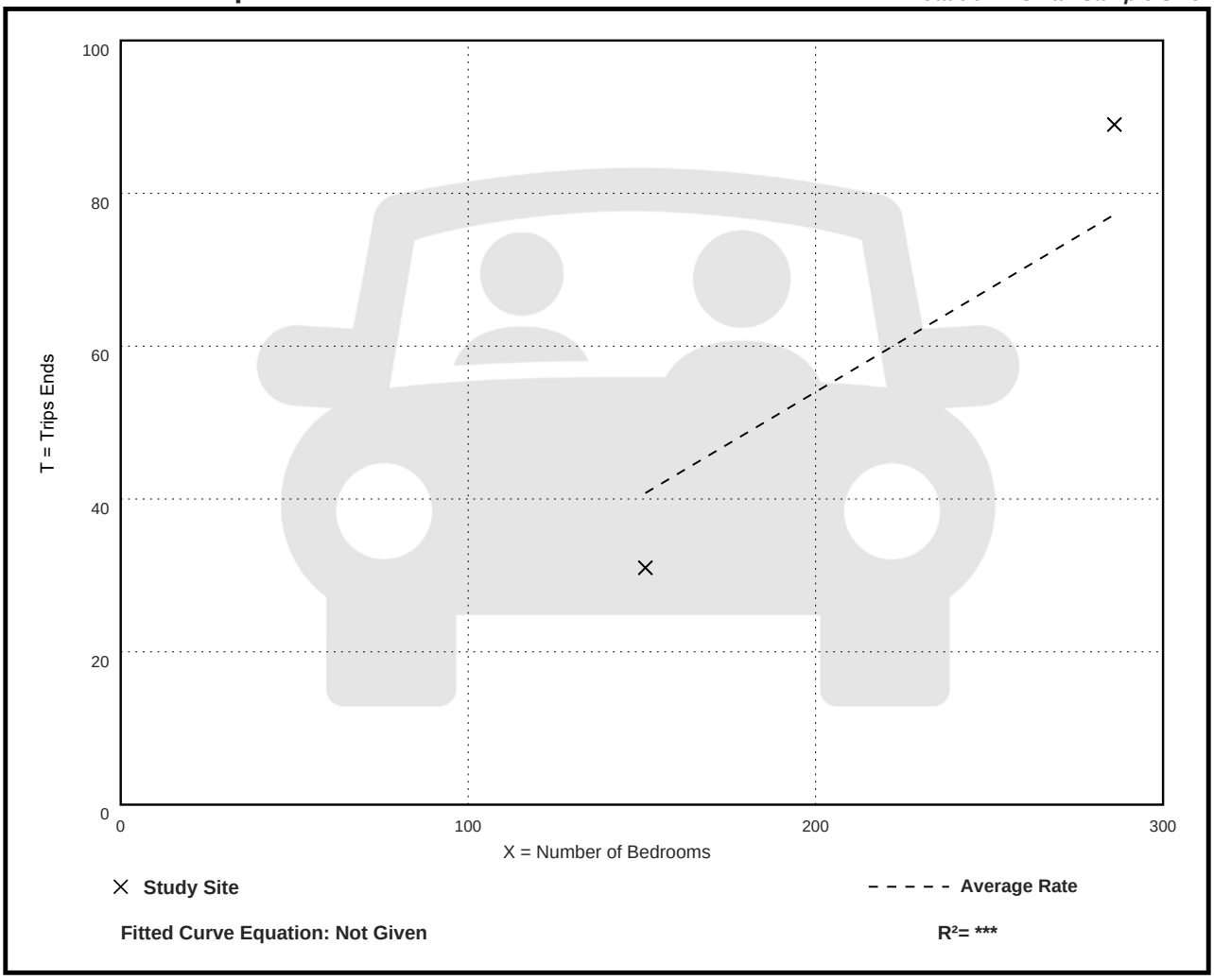
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Bedrooms: 219
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Bedroom

Average Rate	Range of Rates	Standard Deviation
0.27	0.21 - 0.31	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

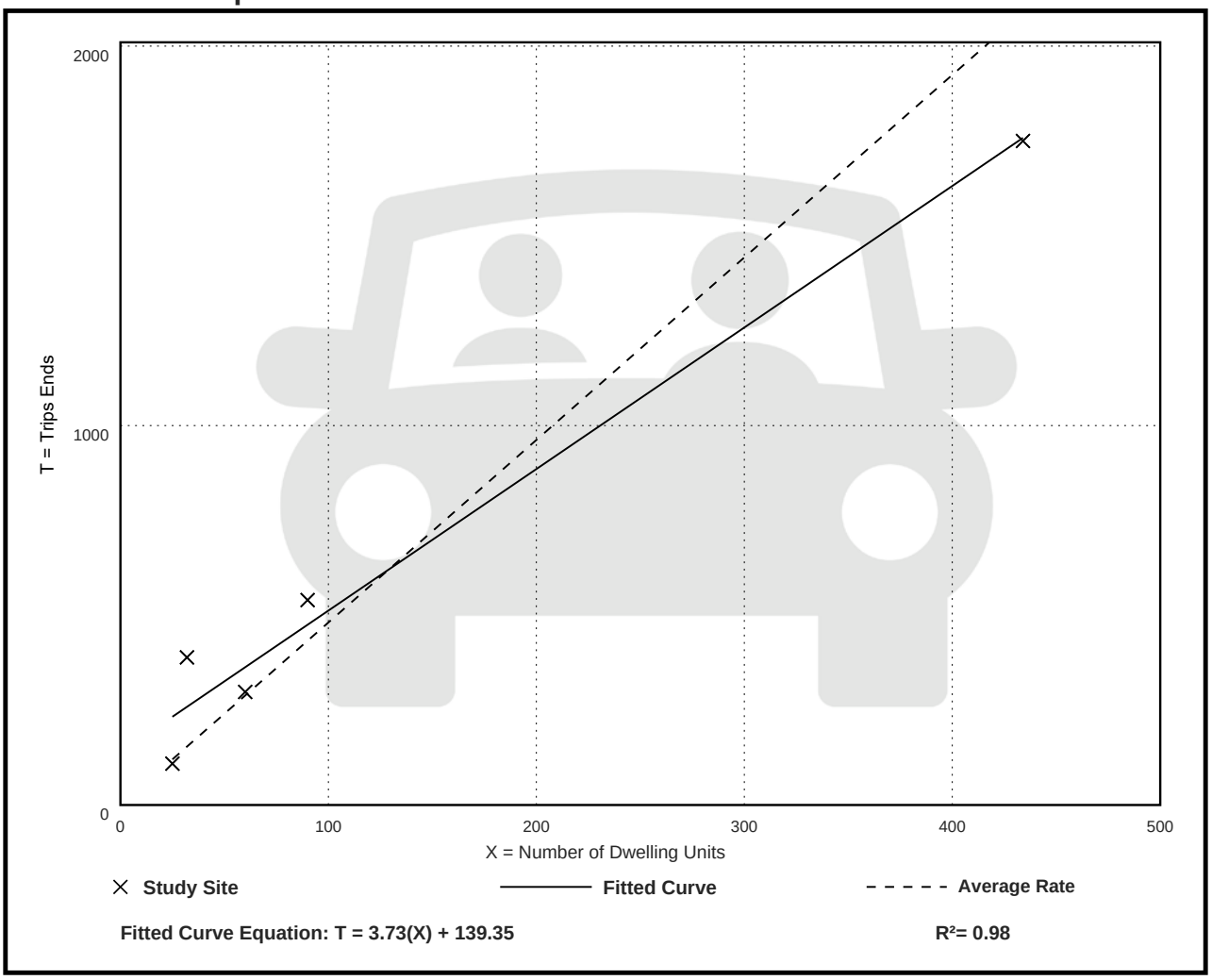
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. Num. of Dwelling Units: 128
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.81	4.03 - 12.16	2.03

Data Plot and Equation



Fitted Curve Equation: T = 3.73(X) + 139.35

R^2= 0.98

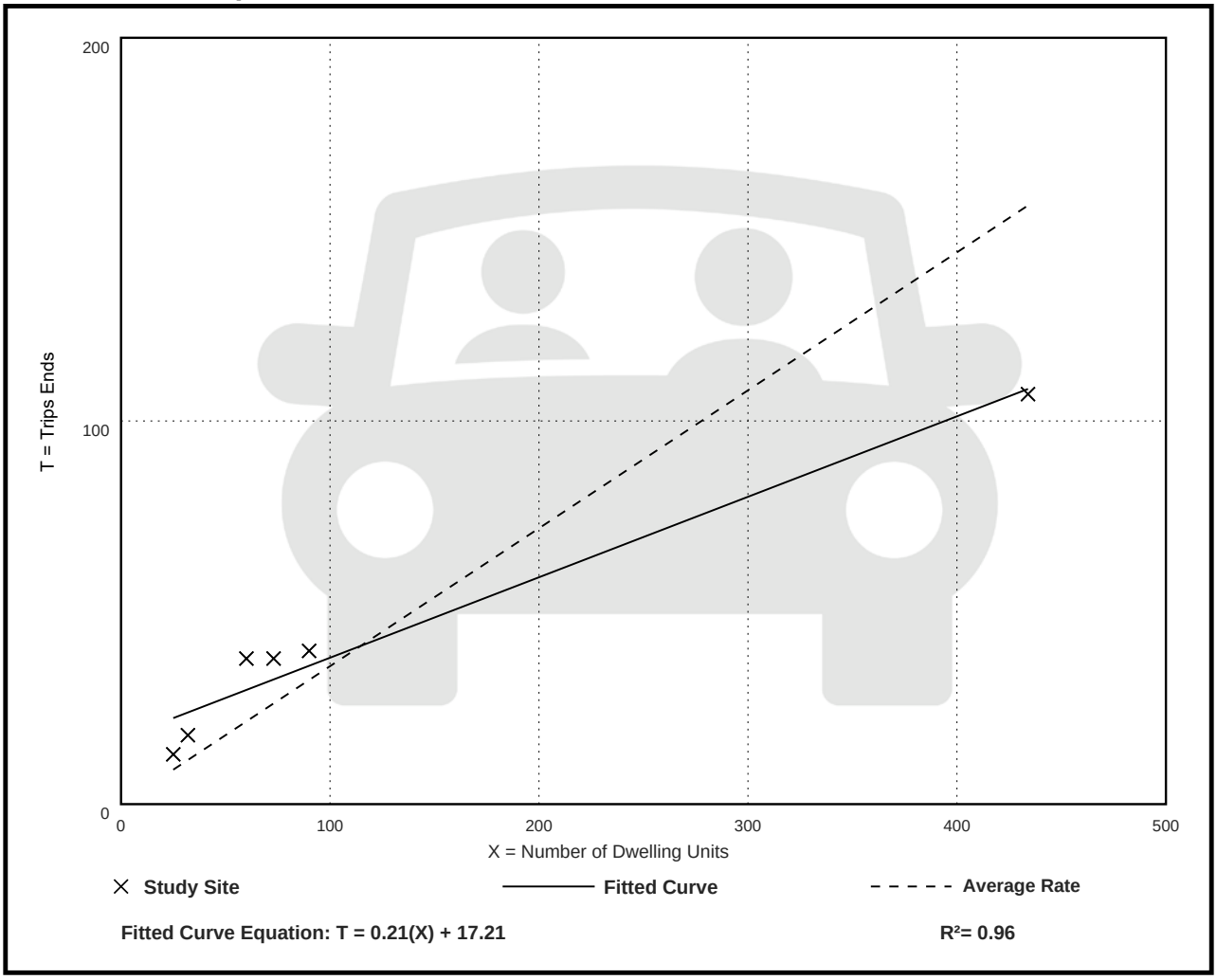
Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 119
Directional Distribution: 29% entering, 71% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.25 - 0.63	0.16

Data Plot and Equation



Fitted Curve Equation: T = 0.21(X) + 17.21

R^2= 0.96

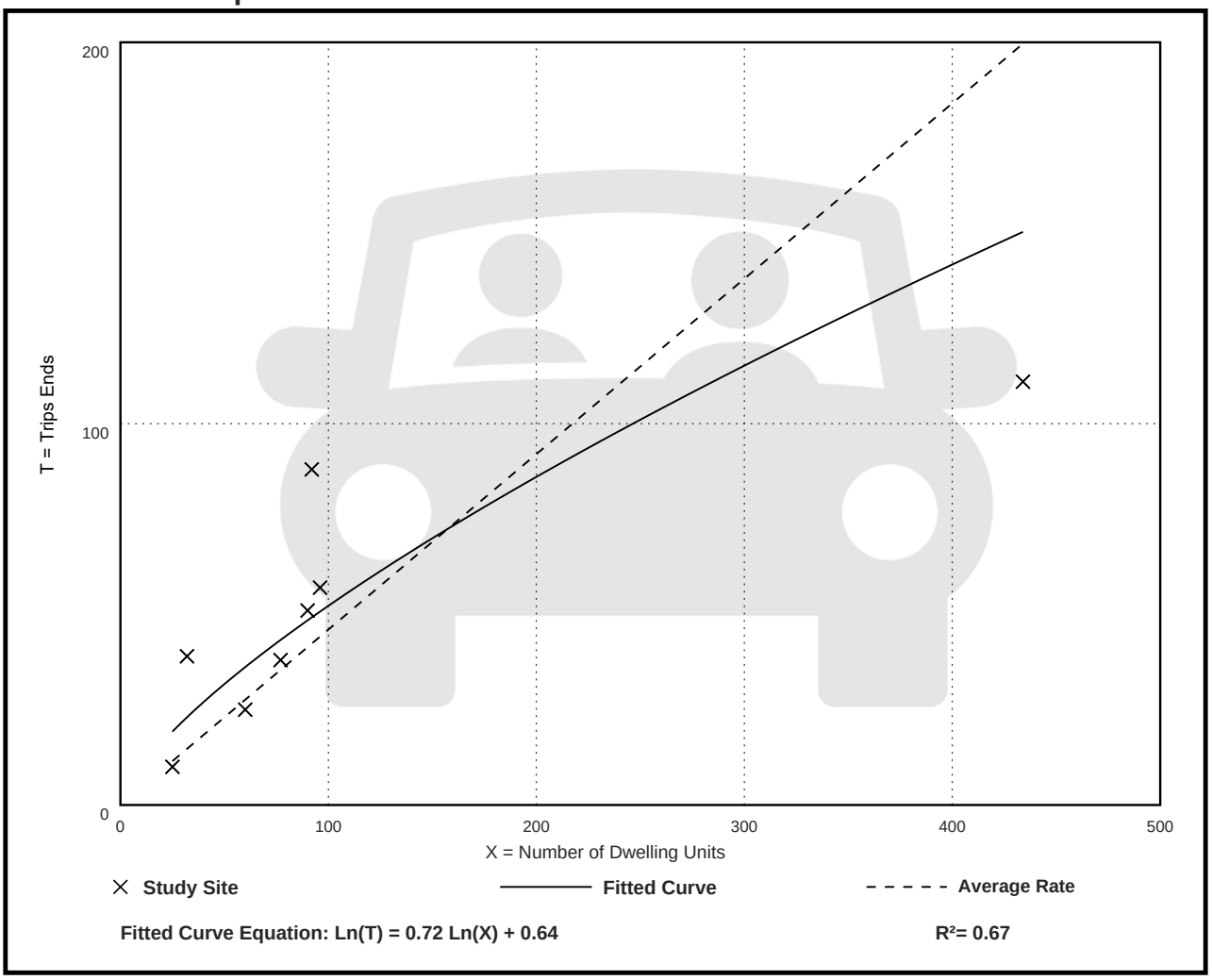
Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 8
Avg. Num. of Dwelling Units: 113
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.26 - 1.22	0.28

Data Plot and Equation



Affordable Housing - Income Limits (223)

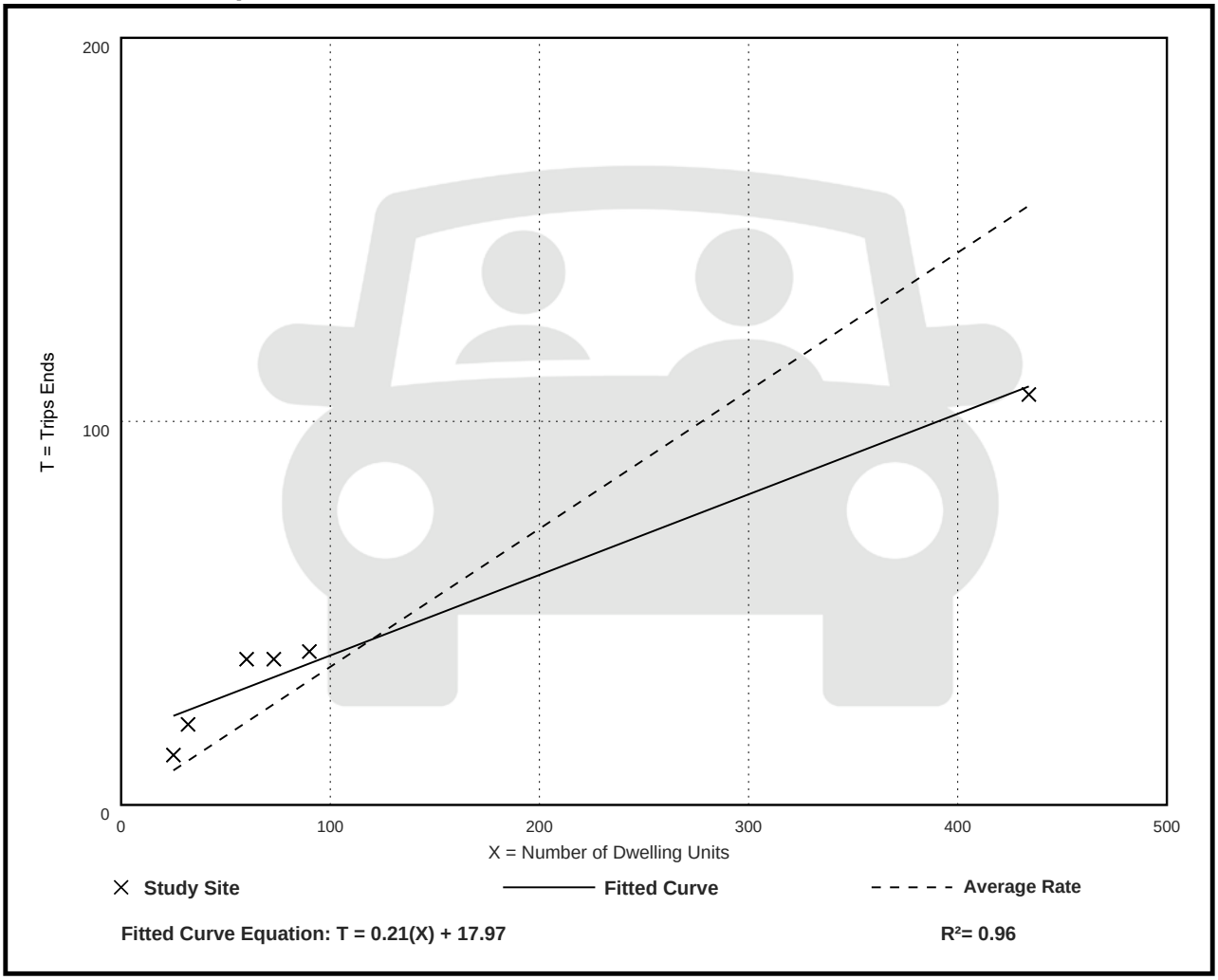
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 119
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.25 - 0.66	0.16

Data Plot and Equation



Fitted Curve Equation: T = 0.21(X) + 17.97

R^2= 0.96

Affordable Housing - Income Limits (223)

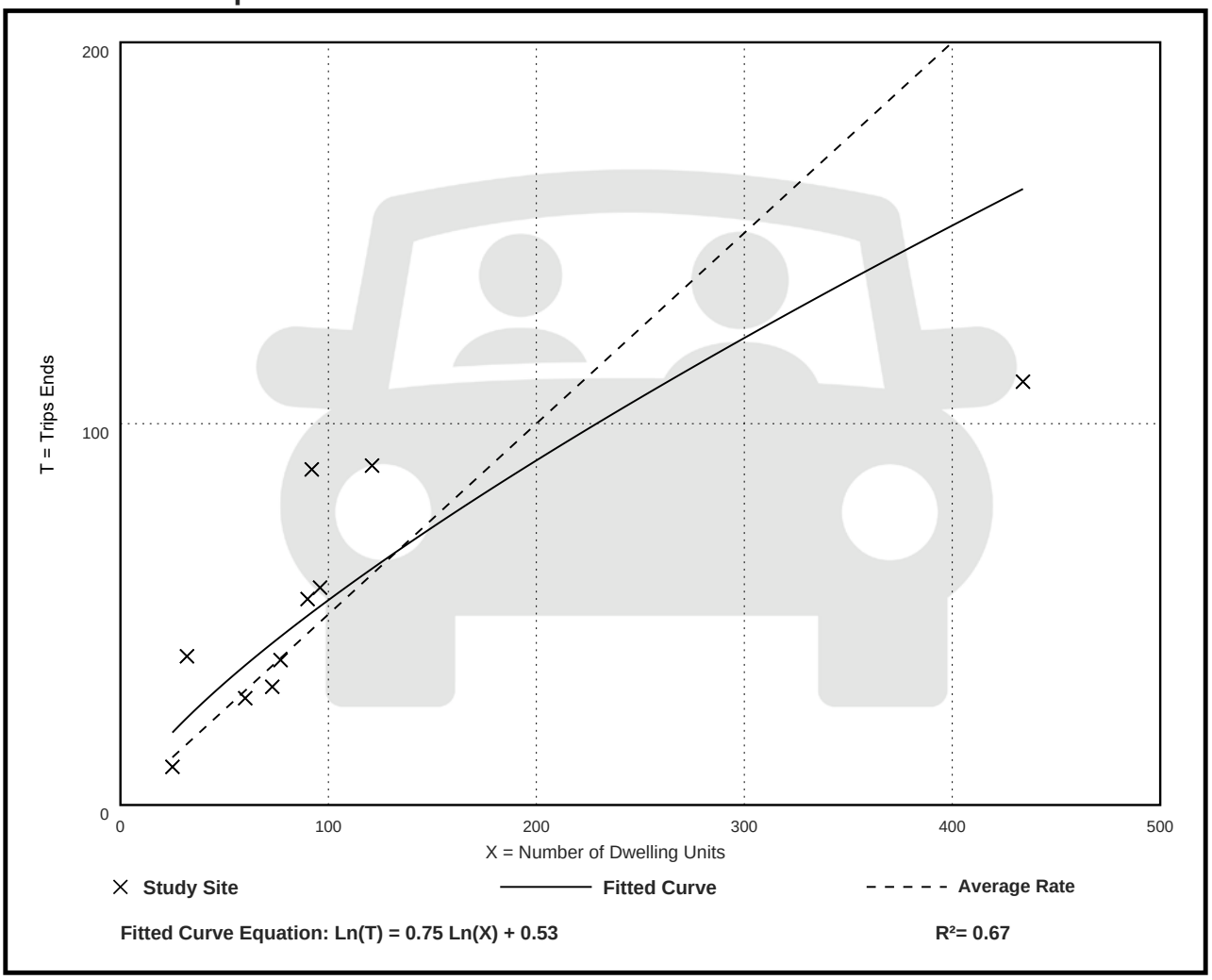
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. Num. of Dwelling Units: 110
Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.50	0.26 - 1.22	0.27

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.75 Ln(X) + 0.53

R^2= 0.67

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday

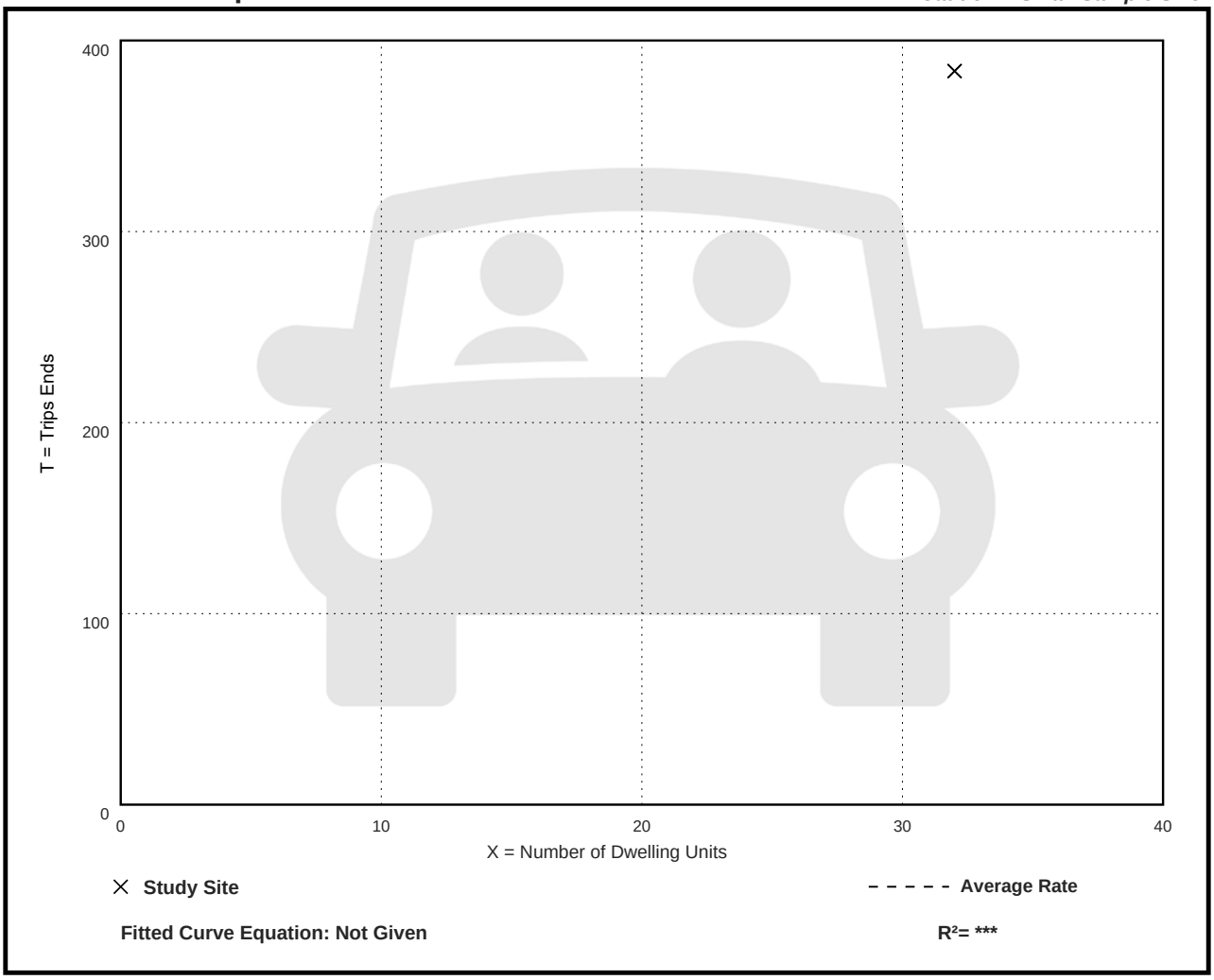
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 32
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
12.00	12.00 - 12.00	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

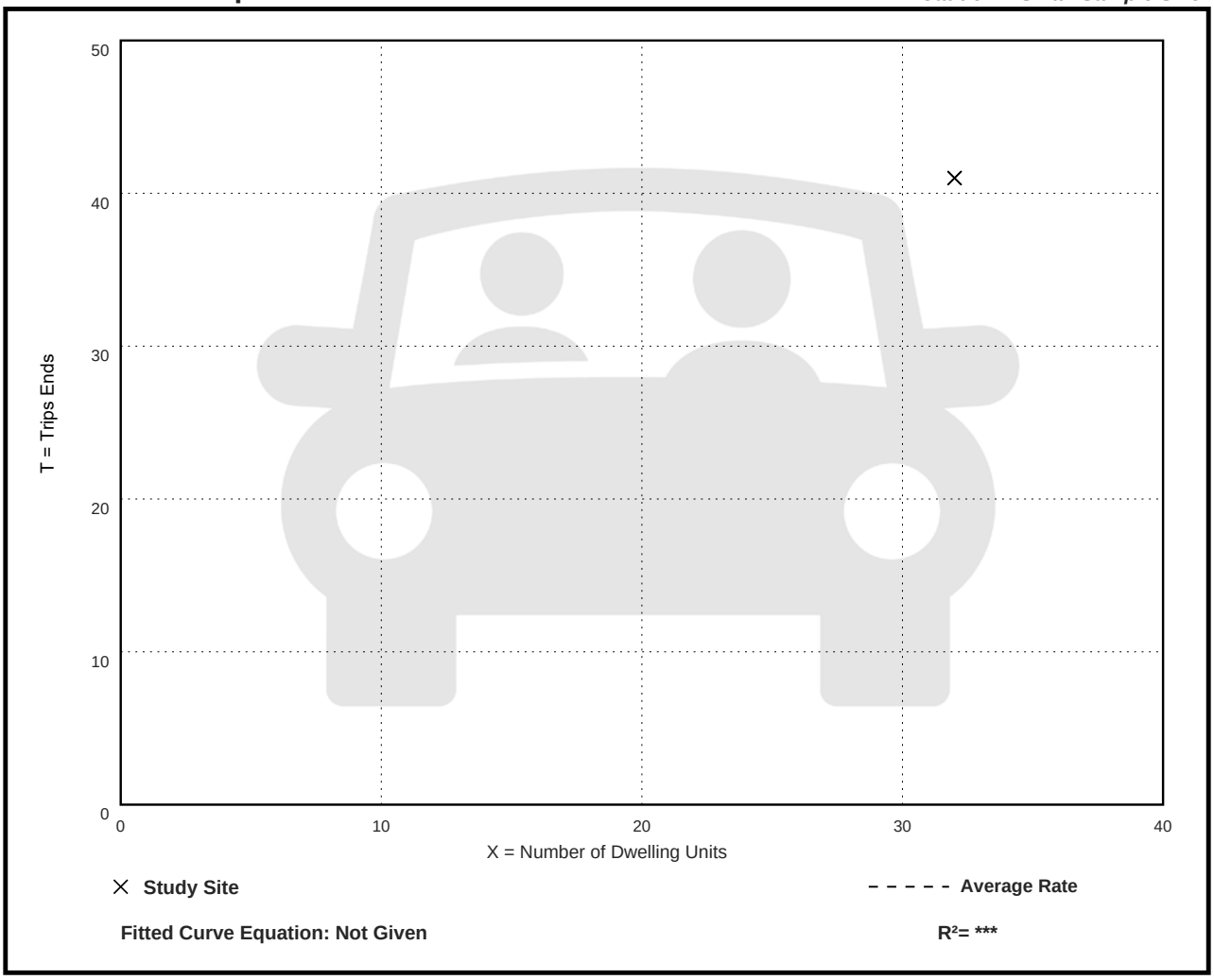
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 32
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.28	1.28 - 1.28	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Sunday

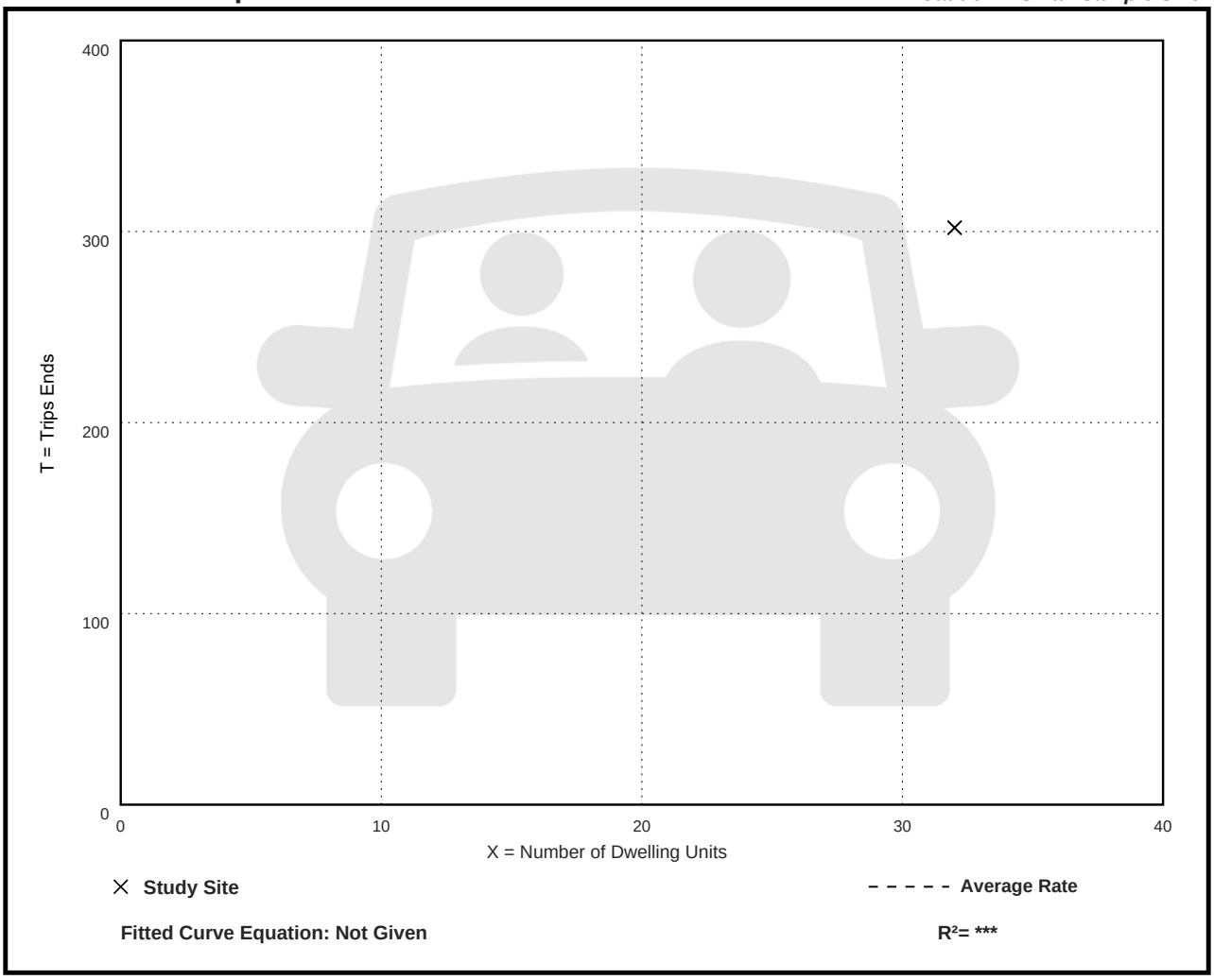
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 32
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	9.44 - 9.44	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Sunday, Peak Hour of Generator

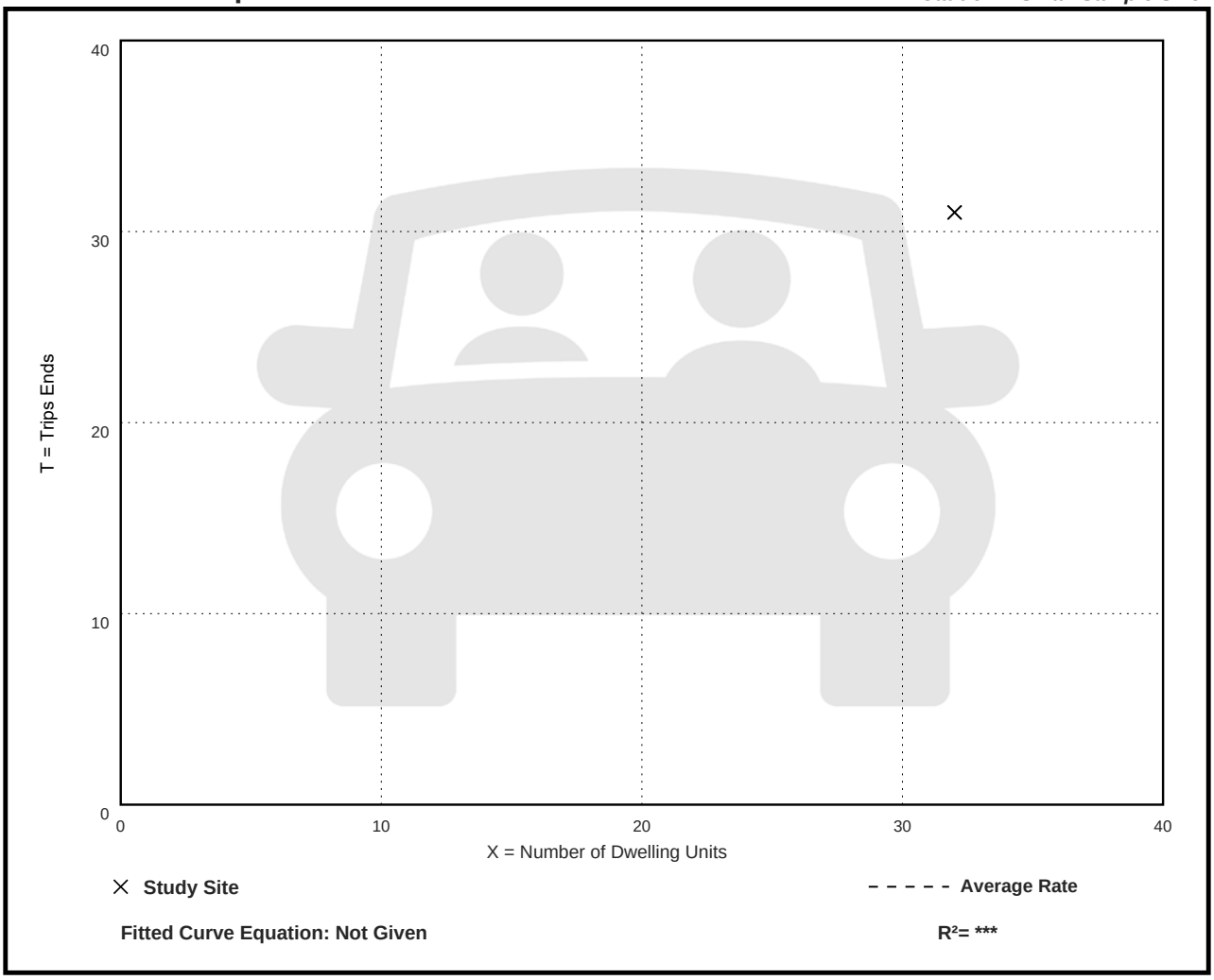
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 32
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.97	0.97 - 0.97	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Residents
On a: Weekday

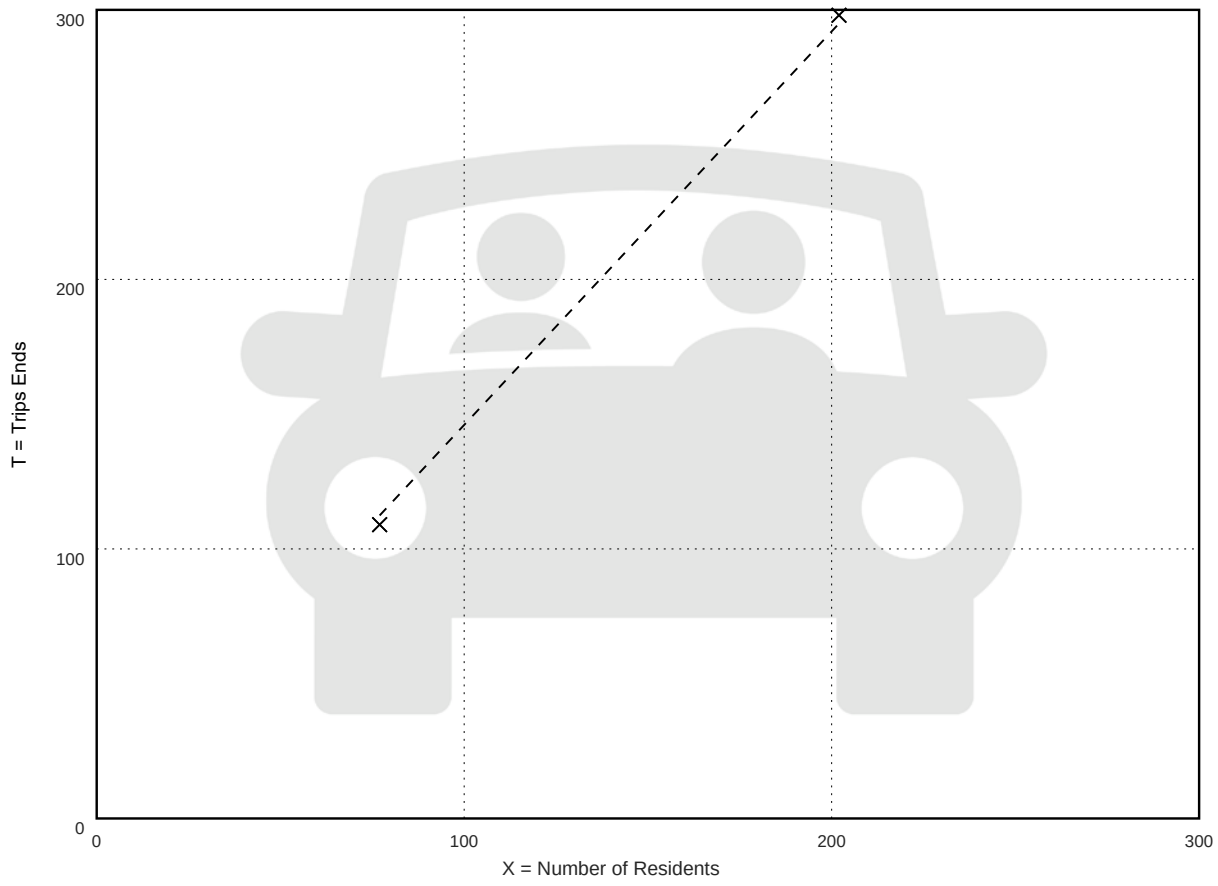
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Residents: 140
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
1.46	1.42 - 1.48	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

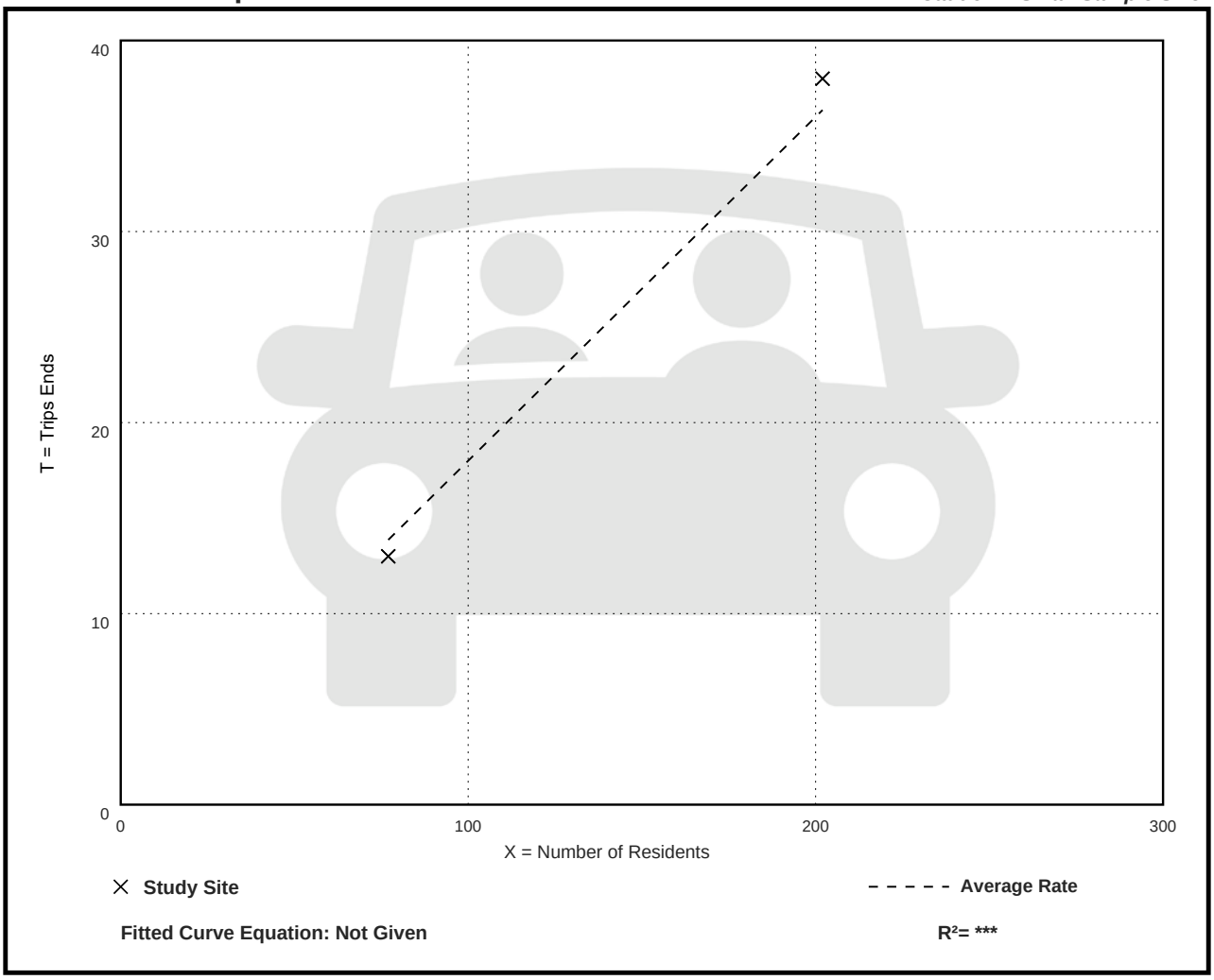
Vehicle Trip Ends vs: Residents
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Residents: 140
Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.18	0.17 - 0.19	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

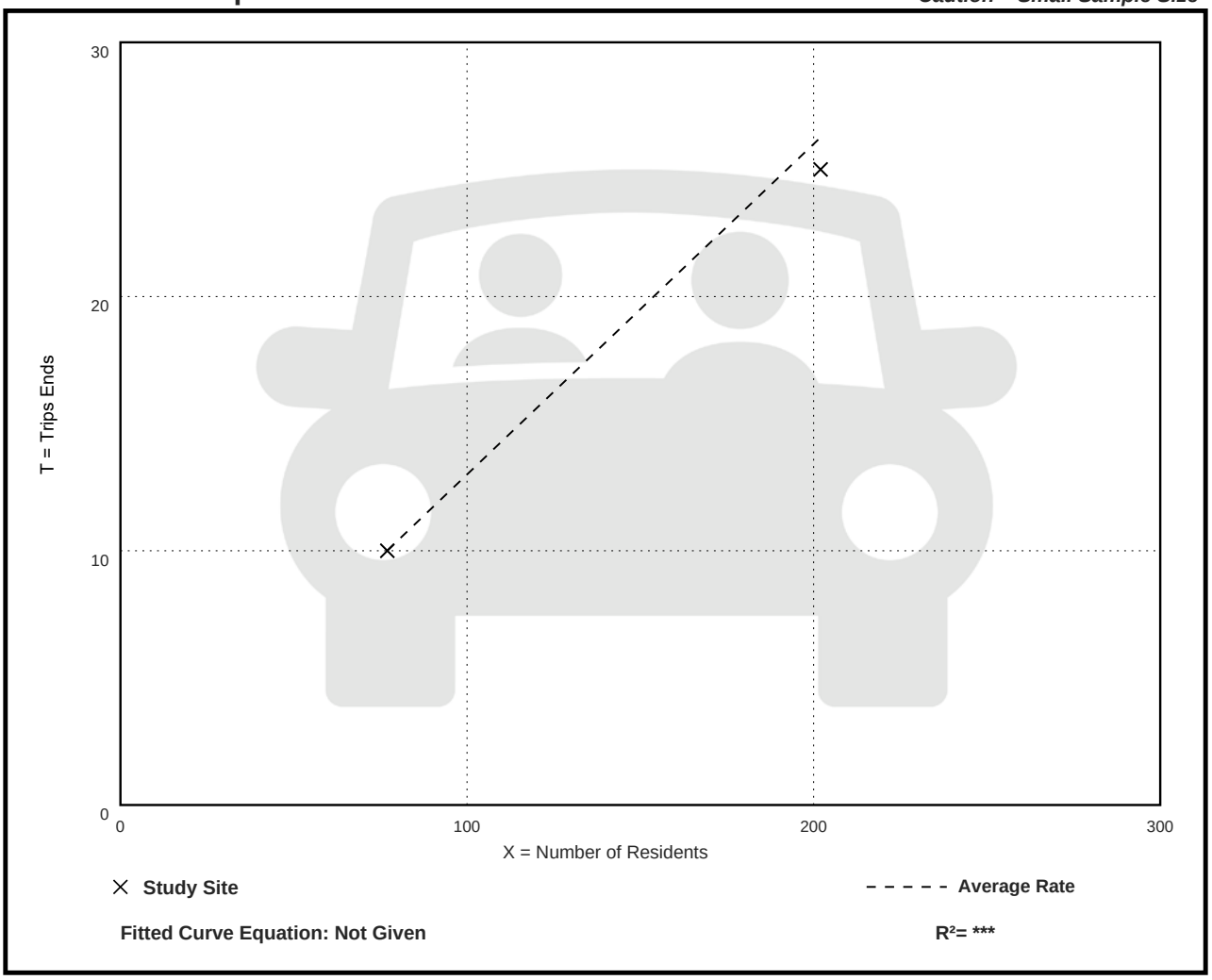
Vehicle Trip Ends vs: **Residents**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Residents: 140
Directional Distribution: 71% entering, 29% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.13	0.12 - 0.13	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Residents
On a: Weekday,
AM Peak Hour of Generator

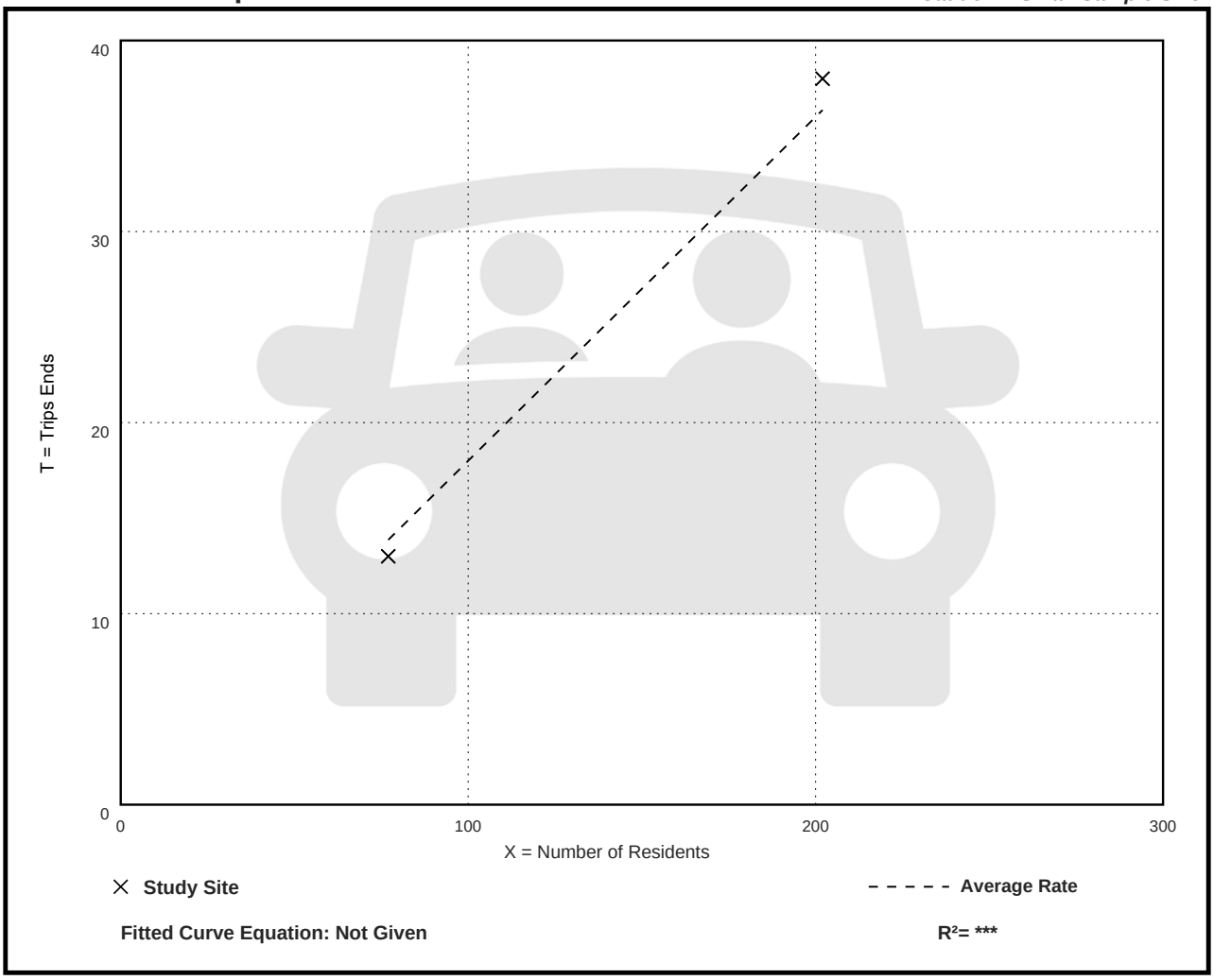
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Residents: 140
Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.18	0.17 - 0.19	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Residents
On a: Weekday,
PM Peak Hour of Generator

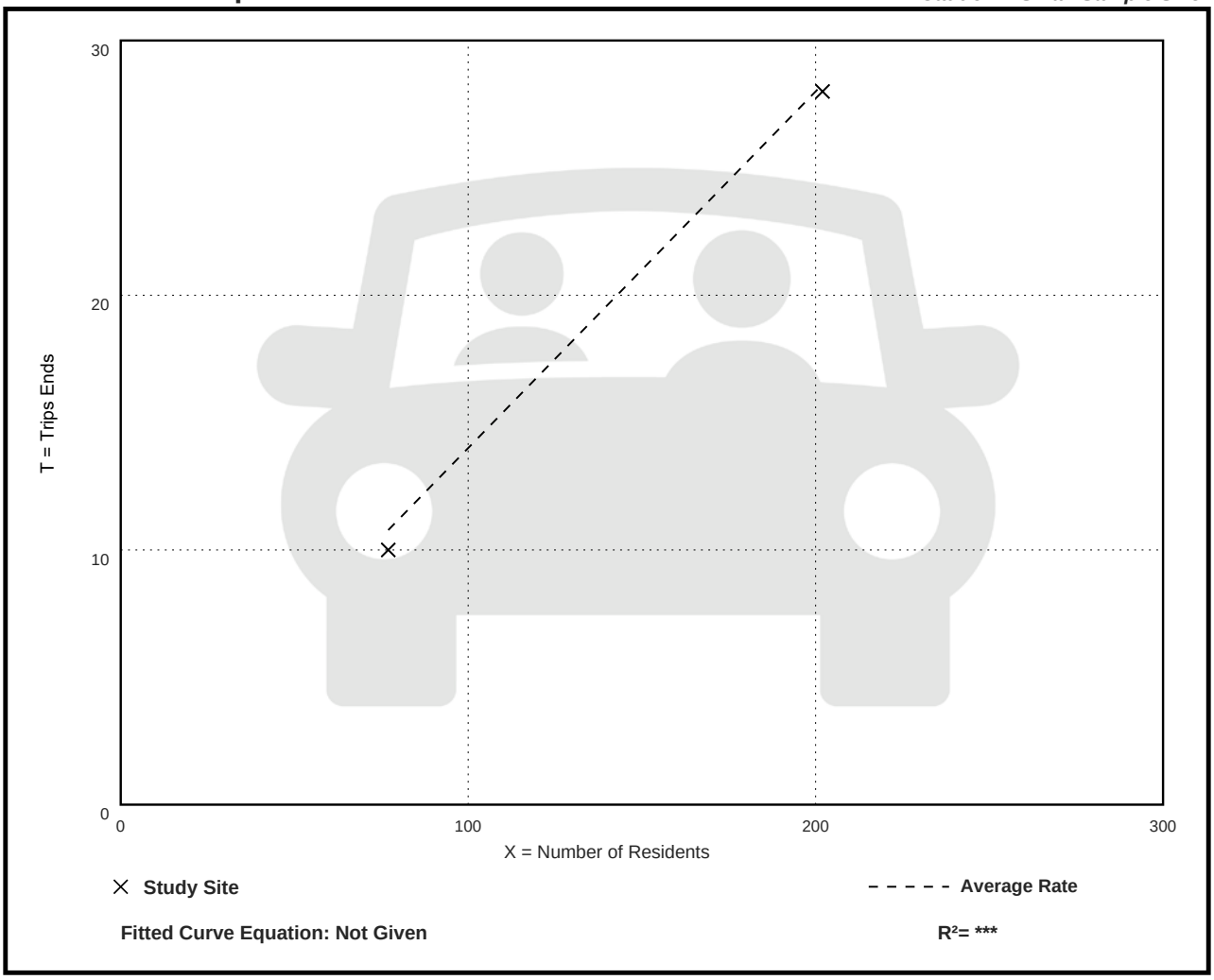
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Residents: 140
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.14	0.13 - 0.14	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

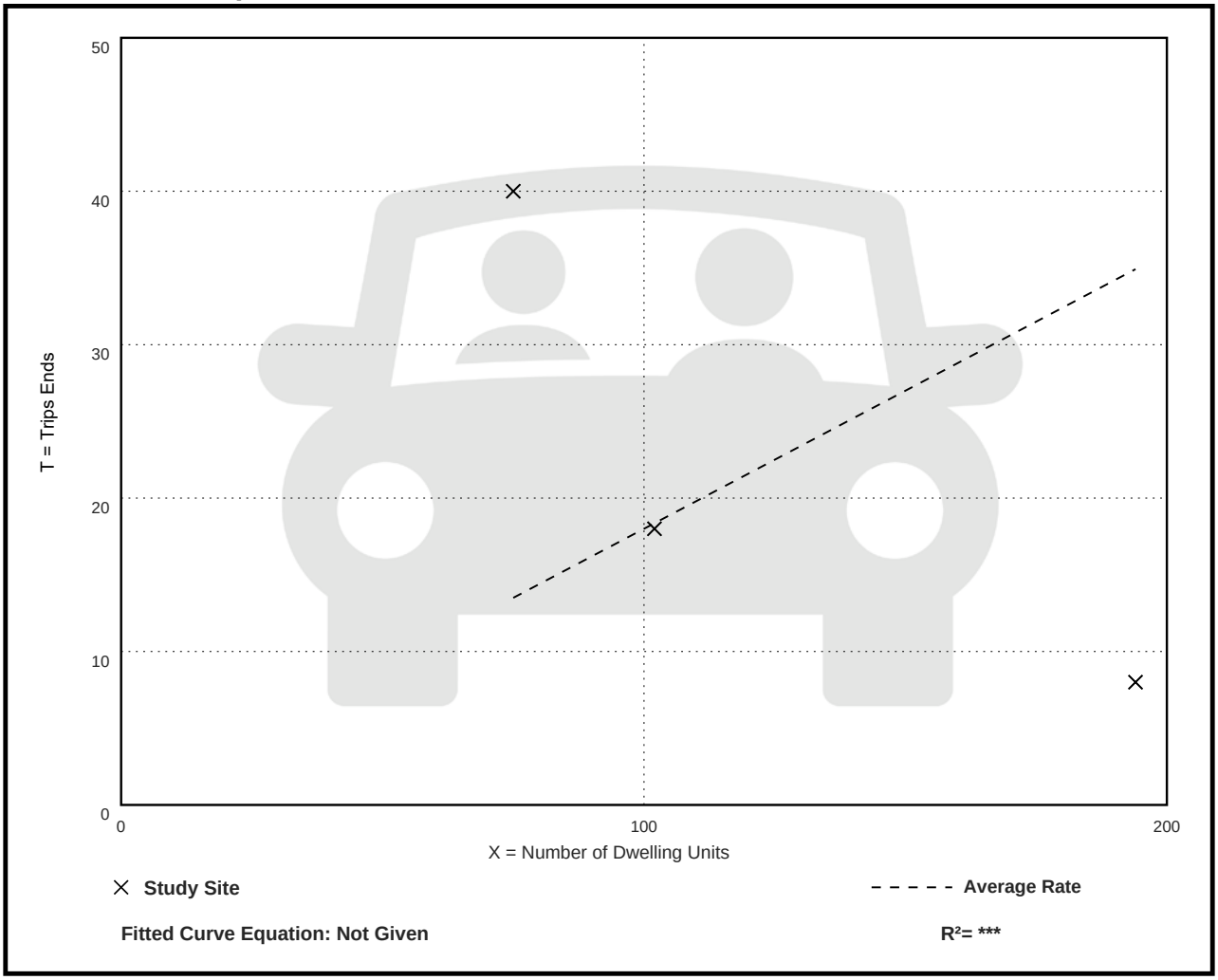
Affordable Housing - Senior
(223)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Dwelling Units: 124
Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.18	0.04 - 0.53	0.23

Data Plot and Equation



Affordable Housing - Senior
(223)

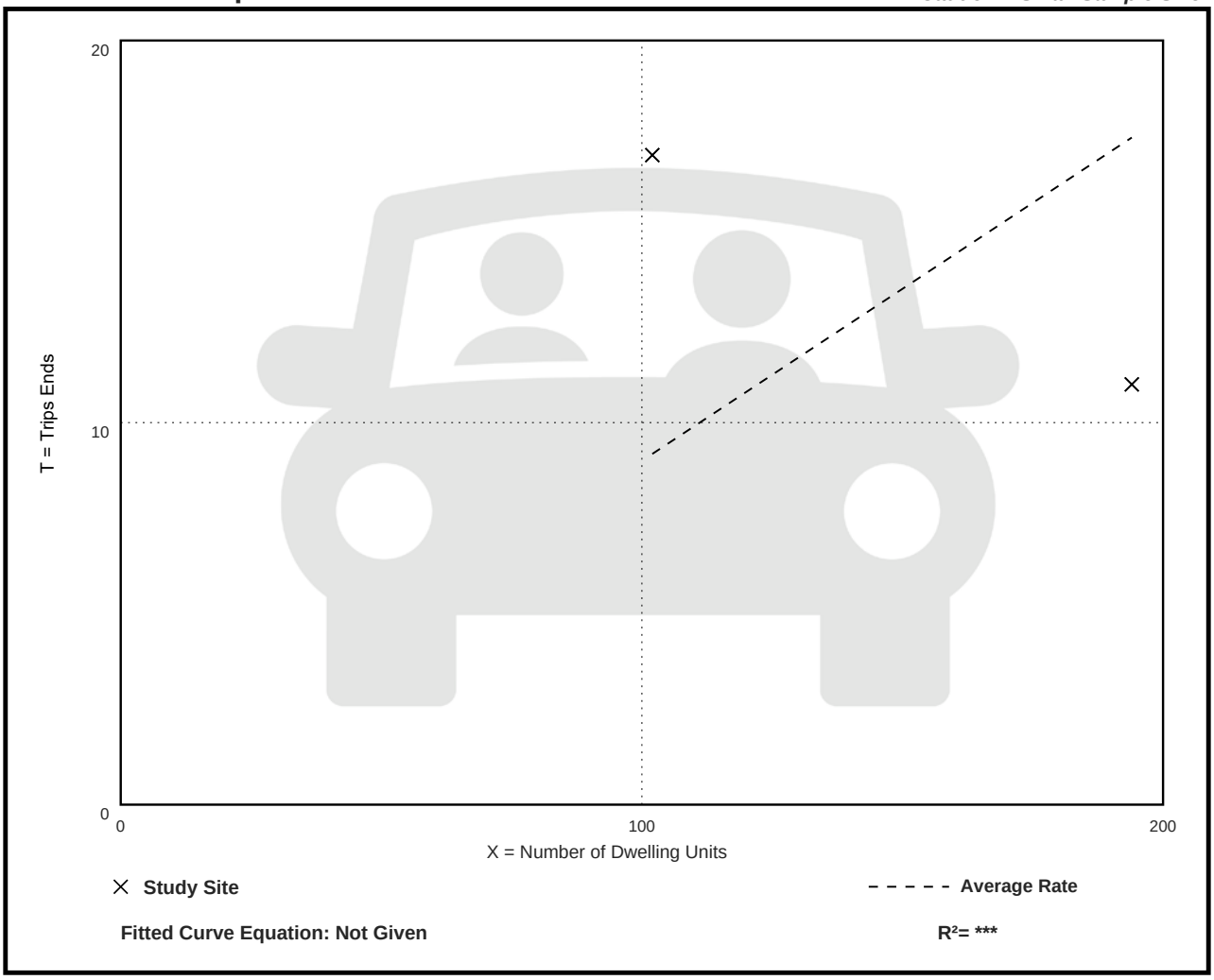
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 148
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.09	0.06 - 0.17	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Affordable Housing - Senior
(223)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

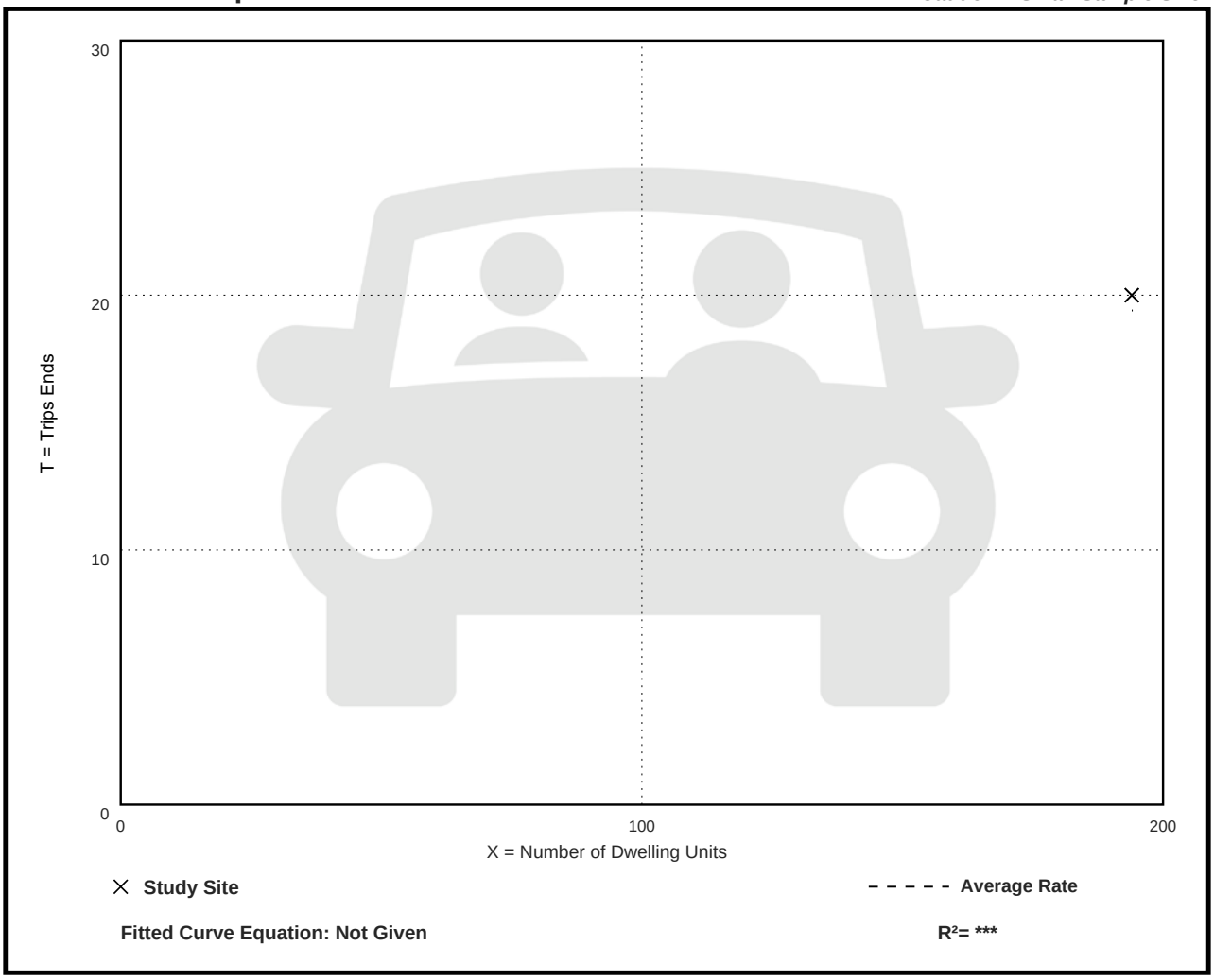
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 194
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.10	0.10 - 0.10	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *