October 16, 2014

Attn: T.C. Selman
Aspen Heights
1301 S. Capital of Texas Hwy, Suite B-201
Austin, TX 78746

Re: Aspen Crossing – Flagstaff, AZ
Proposed Site Lighting Plan - Summary

Dear T.C.,

In consideration for the site lighting at Aspen Crossing in Flagstaff, Arizona, current zoning parameters were adhered to and resulted in the following:

Current classification: Rural Residential (RR)
Max Allowed Lumens per Acre: 10,000
Net Site Area: 30.9 acres
Total Allowed Lumens: 309,000
Total Calculated Lumens (see breakout below): 305,013
Available Lumens*: 3,987 (* allowed for signage or other)

Site: 113 pole assemblies: Narrow-Band Amber LED module installed in VRS series housing by U.S. Architectural Lighting, mounted at 18' above grade. Lumens vary per head depending on distribution type. (See Luminaire Schedule, Exhibit A.) (Total: 260,023lm)

Residences: 448 recessed cans (2 per unit x 224 units): 4" recessed can located directly in front of each exterior door, lamped with 7watt PAR20 Amber LED; mounted so distance from fixture to canopy edge is no less than 5'-0" - 25% of lumen output used in calculations (340lm x 25% = 85lm each). (Total: 38,080lm)

Clubhouse: Various Dark-sky compliant fixtures mounted on building exterior and columns, utilizing Amber LED MR16 or Amber LED PAR20 lamp; recessed cans mounted under porch so distance from fixture to canopy edge is no less than 5'-0". (Total: 6,910lm)

It is in my professional opinion that using Narrow-Band Amber LED site lighting is the only acceptable option to provide the most uniform distribution of light. (See Exhibit B.) Low Pressure Sodium (LPS) fixtures would leave immense areas of darkness, creating an unsafe environment for the student residents. (See Exhibit C.) Due to the amber light's monochromatic characteristics, I would ask the council to consider approving the supplemental use of Non-LPS light sources – up to 10% (as allowed in MR classified parcels) at strategically placed locations on the site to enhance security.

Please let me know if you need any additional information.

Kindest regards,

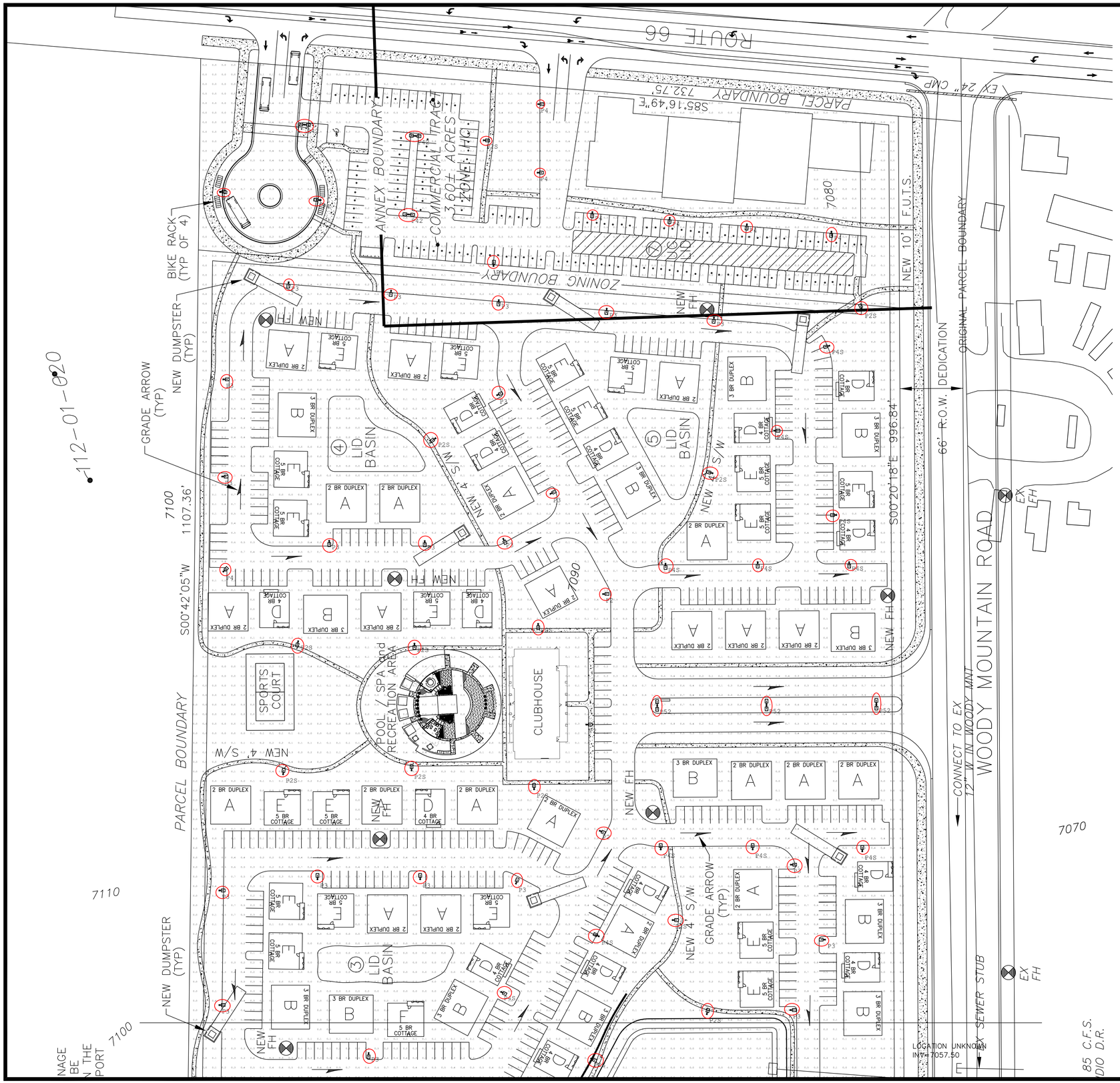
Christina Solomon
Independent Contractor
Value Lighting, Inc.

Enclosures

LUMINAIRE SCHEDULE

Type	Symbol	Manufacturer / Catalog #	Description	Lamp Description	LLF	# of Type
P2		U.S. ARCHITECTURAL LIGHTING (1)VRS-II-64VLED-*AMBER-525	Pole Mounted, 18'0" Above Grade Type II LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2582 Lumens	0.95	3 Tot.
P2S		U.S. ARCHITECTURAL LIGHTING (1)VRS-II-64VLED-*AMBER-525-HS	Pole Mounted, 18'0" Above Grade Type II LED / Refractor Array Module (VLED). Clear, Flat Glass Lens, House-Side Shield. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 1656 Lumens	0.95	28 Tot.
P3		U.S. ARCHITECTURAL LIGHTING (1)VRS-III-64VLED-*AMBER-525	Pole Mounted, 18'0" Above Grade Type III LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2594 Lumens	0.95	49 Tot.
P4		U.S. ARCHITECTURAL LIGHTING (1)VRS-IV-64VLED-*AMBER-525	Pole Mounted, 18'0" Above Grade Type IV LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2614 Lumens	0.95	13 Tot.
P4S		U.S. ARCHITECTURAL LIGHTING (1)VRS-IV-64VLED-*AMBER-525-HS	Pole Mounted, 18'0" Above Grade Type IV LED / Refractor Array Module (VLED). Clear, Flat Glass Lens, House-Side Shield. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 1957 Lumens	0.95	12 Tot.
P5		U.S. ARCHITECTURAL LIGHTING (1)VRS-V-SQ-64VLED-*AMBER-525	Pole Mounted, 18'0" Above Grade Type V-SQ LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2699 Lumens	0.95	2 Tot.
P42		U.S. ARCHITECTURAL LIGHTING (2)VRS-IV-64VLED-*AMBER-525	Pole Mounted, 18'0" Above Grade Type IV LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Twin Luminairs @ 180°. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) (2) @ 100 Input Watts - 2614 Lumens	0.95	3 Tot.
P52		U.S. ARCHITECTURAL LIGHTING (2)VRS-V-SQ-64VLED-*AMBER-525	Pole Mounted, 18'0" Above Grade Type V-SQ LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Twin Luminairs @ 180°. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) (2) @ 100 Input Watts - 2699 Lumens	0.95	3 Tot.

*Narrow Band Amber LED from Philips - Lumileds



JOB NAME / AGENCY

ASPEN HEIGHTS
Traffic & Lighting Corp.

POINT-BY POINT CALCULATION

Illuminance at Grade (Footcandles)
SCALE: 1" = 50'0"

NOTES:

See schedule for luminaire specifications.
Luminaire Symbols are not to scale.
Varying the position, mounting height, or orientation from what is specified in this drawing will invalidate the calculation performed.

U.S. ARCHITECTURAL LIGHTING
Applications Department
660 West Avenue O
Palmdale, CA 93551
(661) 233-2000, Fax: (661)-233-2001
EMAIL: applications@usaltg.com

DATA SUMMARY

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
MAIN EAST ENTRANCE	Illuminance	Fc	0.61	3.3	0.1	6.10	33.00
NW ENTRANCE LOOP	Illuminance	Fc	0.44	2.1	0.1	4.40	21.00
PARKING & DRIVE_NORTH	Illuminance	Fc	0.39	2.6	0.1	3.90	26.00
PARKING & DRIVE_SOUTH	Illuminance	Fc	0.38	1.8	0.1	3.80	18.00

LUMINAIRE SCHEDULE

Type	*Symbol*	*Manufacturer / Catalog #*	*Description*	*Lamp Description*	*LLF*	*# of Type*
P2		U.S. ARCHITECTURAL LIGHTING (1)VRS-II-64VLED-^AMBER-525	Pole Mounted, 18'0" Above Grade Type II LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2582 Lumens	0.95	3 Tot.
P2S		U.S. ARCHITECTURAL LIGHTING (1)VRS-II-64VLED-^AMBER-525-HS	Pole Mounted, 18'0" Above Grade Type II LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. House-Side Shield. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 1656 Lumens	0.95	28 Tot.
P3		U.S. ARCHITECTURAL LIGHTING (1)VRS-III-64VLED-^AMBER-525	Pole Mounted, 18'0" Above Grade Type III LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2594 Lumens	0.95	49 Tot.
P4		U.S. ARCHITECTURAL LIGHTING (1)VRS-IV-64VLED-^AMBER-525	Pole Mounted, 18'0" Above Grade Type IV LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2614 Lumens	0.95	13 Tot.
P4S		U.S. ARCHITECTURAL LIGHTING (1)VRS-IV-64VLED-^AMBER-525-HS	Pole Mounted, 18'0" Above Grade Type IV LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. House-Side Shield. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 1957 Lumens	0.95	12 Tot.
P5		U.S. ARCHITECTURAL LIGHTING (1)VRS-V-SQ-64VLED-^AMBER-525	Pole Mounted, 18'0" Above Grade Type V-SQ LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) 100 Input Watts - 2699 Lumens	0.95	2 Tot.
P42		U.S. ARCHITECTURAL LIGHTING (2)VRS-IV-64VLED-^AMBER-525	Pole Mounted, 18'0" Above Grade Type IV LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Twin Luminaire @ 180°. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) (2) @ 100 Input Watts - 2614 Lumens	0.95	3 Tot.
P52		U.S. ARCHITECTURAL LIGHTING (2)VRS-V-SQ-64VLED-^AMBER-525	Pole Mounted, 18'0" Above Grade Type V-SQ LED / Refractor Array Module (VLED). Clear, Flat Glass Lens. Twin Luminaire @ 180°. Orient as Shown In Plan.	64 Luxeon T LED Emitters at 525mA Amber (Narrow Band) (2) @ 100 Input Watts - 2699 Lumens	0.95	3 Tot.

*Narrow Band Amber LED from Philips - Lumileds

0' 25' 50' 100'
SCALE: 1" = 50'0"

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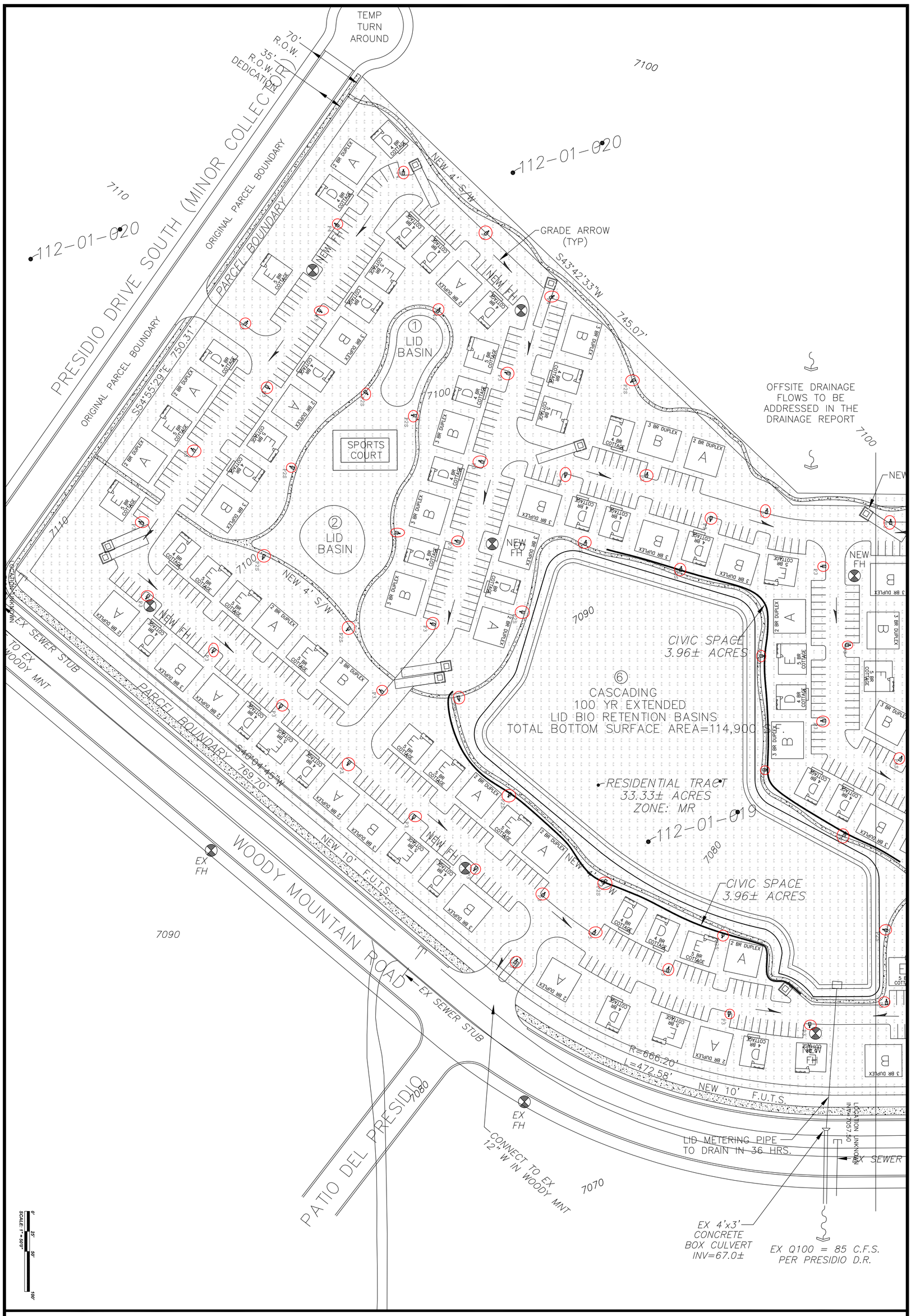
U.S. ARCHITECTURAL LIGHTING

Drawing: **Point-By-Point Illuminance Calculation (At Grade)**
Job: ***ASPEN HEIGHTS***
Agency: **Traffic & Lighting Corp.**

LCP 10/14/14
1" = 50'

L1



L2

LCP 10/14/14
1" = 50'

Drawing: **Point-By-Point Illuminance Calculation (At Grade)**

Job: ***ASPEN HEIGHTS***

Agency: **Traffic & Lighting Corp.**

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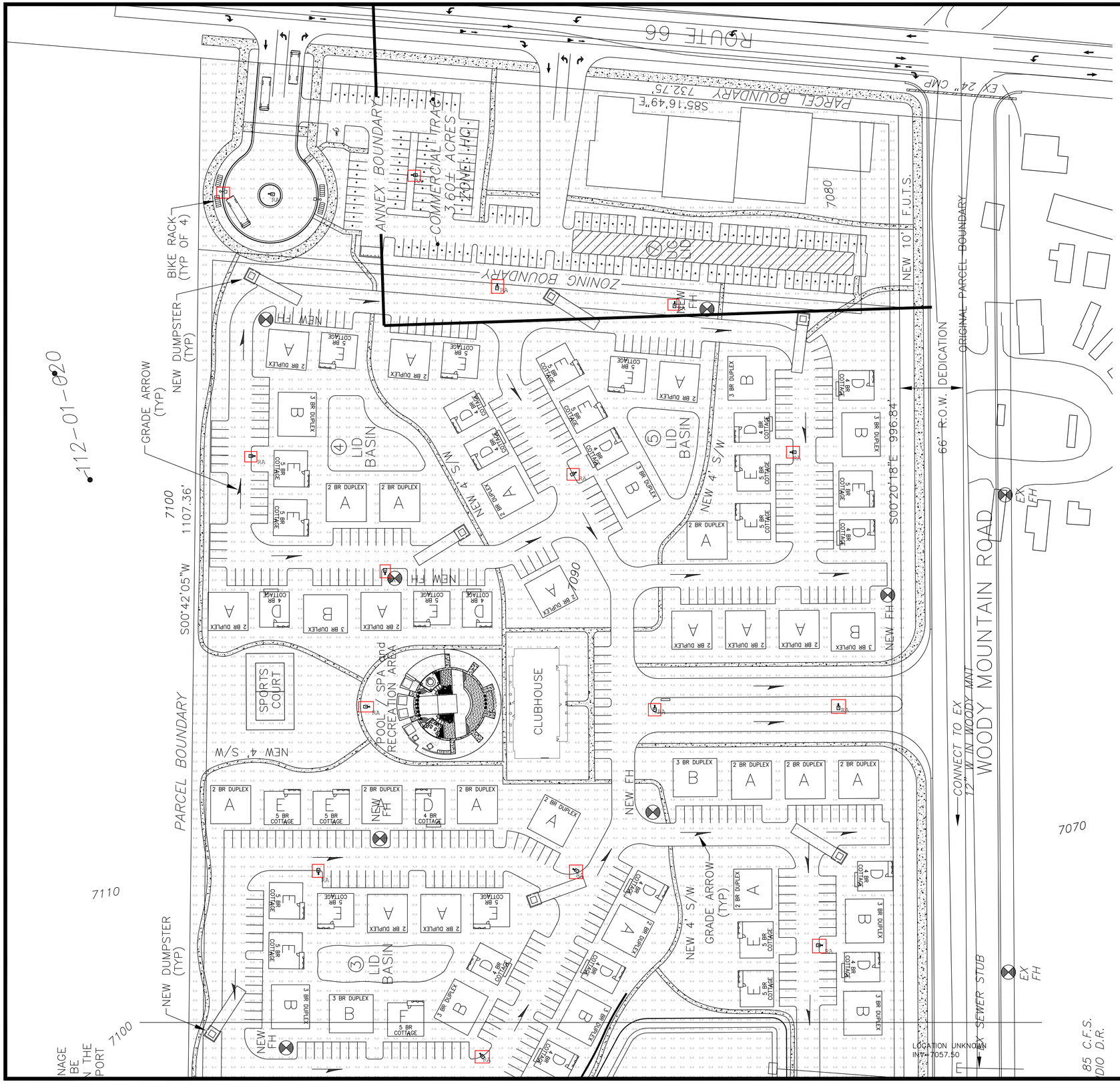

JOB NAME / AGENCY

ASPEN HEIGHTS - 90w LPS

Traffic & Lighting Corp.

POINT-BY POINT CALCULATION

Illuminance at Grade (Footcandles)
SCALE: 1" = 50'0"

NOTES:

See schedule for luminaire specifications.
Luminaire Symbols are not to scale.
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DATA SUMMARY

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
MAIN EAST ENTRANCE	Illuminance	Fc	0.46	2.3	0.0	N.A.	N.A.
N/W ENTRANCE LOOP	Illuminance	Fc	0.42	2.3	0.0	N.A.	N.A.
PARKING & DRIVE_NORTH	Illuminance	Fc	0.19	2.3	0.0	N.A.	N.A.
PARKING & DRIVE_SOUTH	Illuminance	Fc	0.25	2.4	0.0	N.A.	N.A.

LUMINAIRE SCHEDULE

Type	*Symbol*	*Manufacturer / Catalog #*	*Description*	*Lamp Description*	*LLF*	*# of Type*
RA		U.S. ARCHITECTURAL LIGHTING RLPS-ASY-I-90LPS	Pole Mounted, 25'0" Above Grade Type ASY Reflector. Clear, Flat Glass Lens. Single Luminaire Pole. Orient as Shown In Plan.	90 Watt Low Pressure Sodium 13,500 Initial Lamp Lumens 116 Input Watts	0.80	26 Tot.

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U.S. ARCHITECTURAL LIGHTING

Drawing: **Point-By-Point Illuminance Calculation (At Grade)**

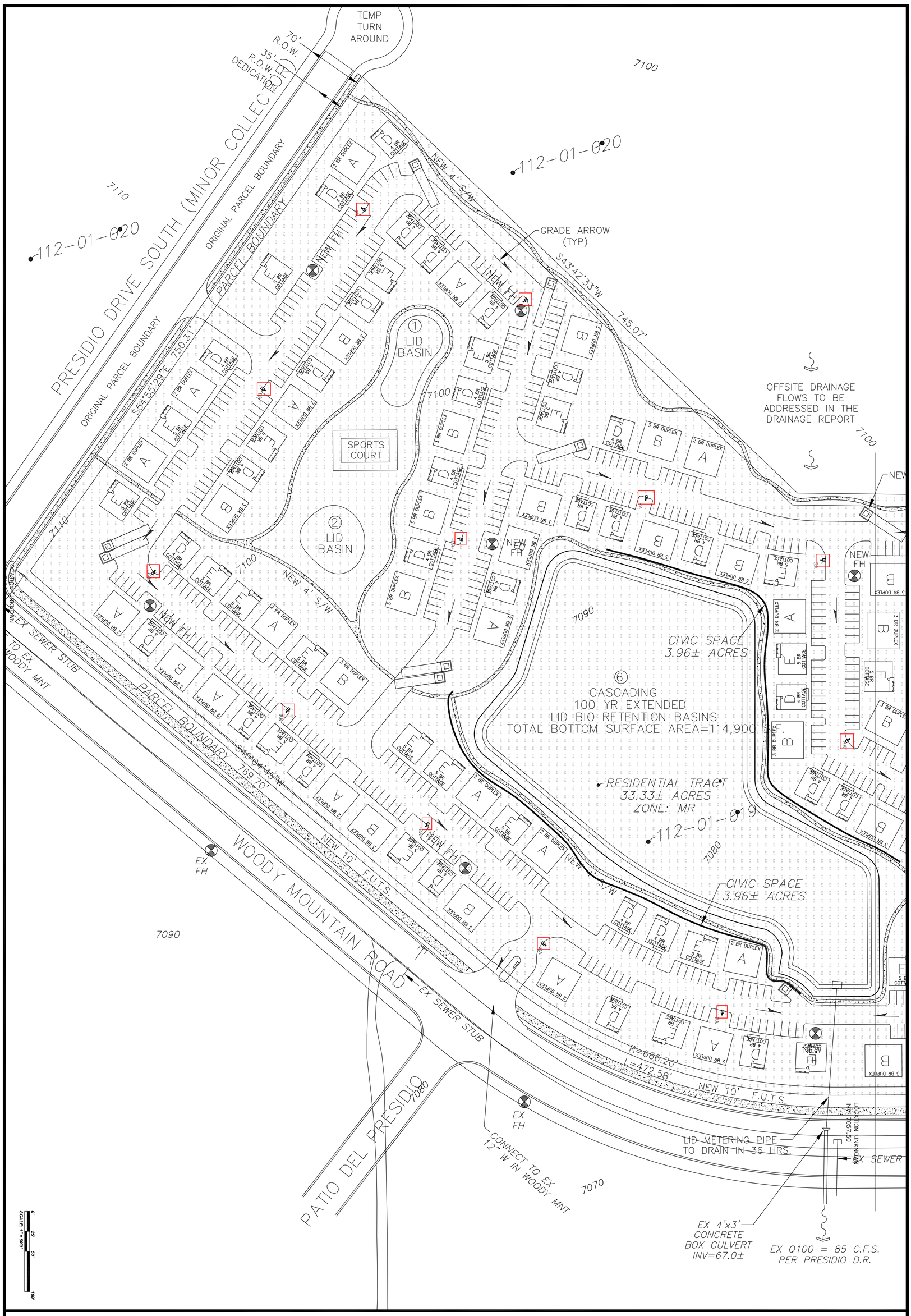
Job: ***ASPEN HEIGHTS - 90w LPS***

Agency: **Traffic & Lighting Corp.**

LCP 10/14/14

1" = 50'

L1



L2

LCP 10/14/14
1" = 50'

Drawing: **Point-By-Point Illuminance Calculation (At Grade)**

Job: ***ASPEN HEIGHTS - 90w LPS***

Agency: **Traffic & Lighting Corp.**

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