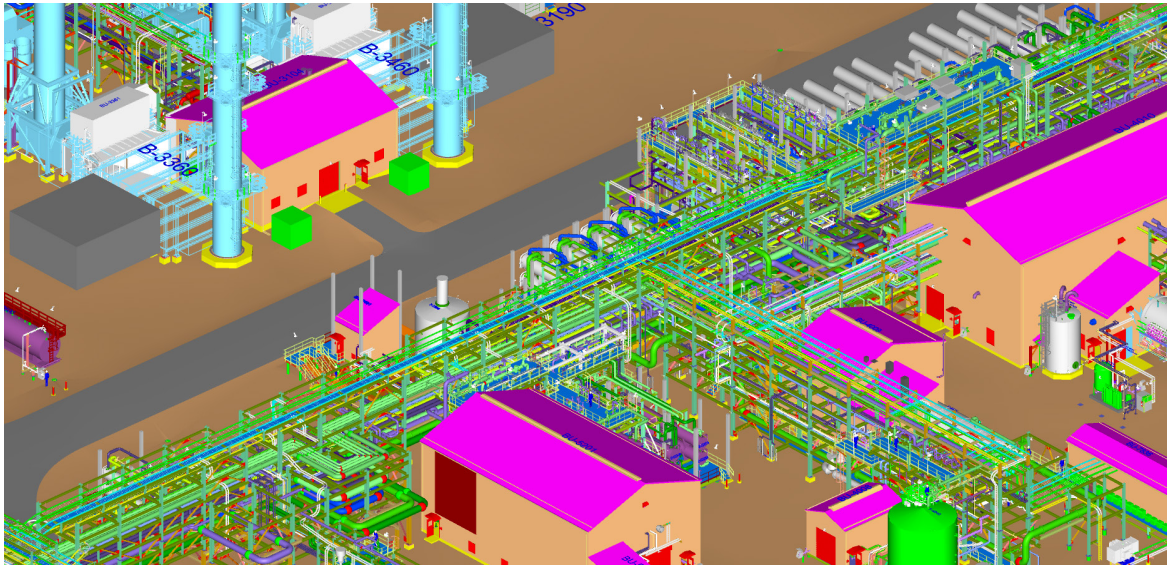


# LIGHTING DESIGN



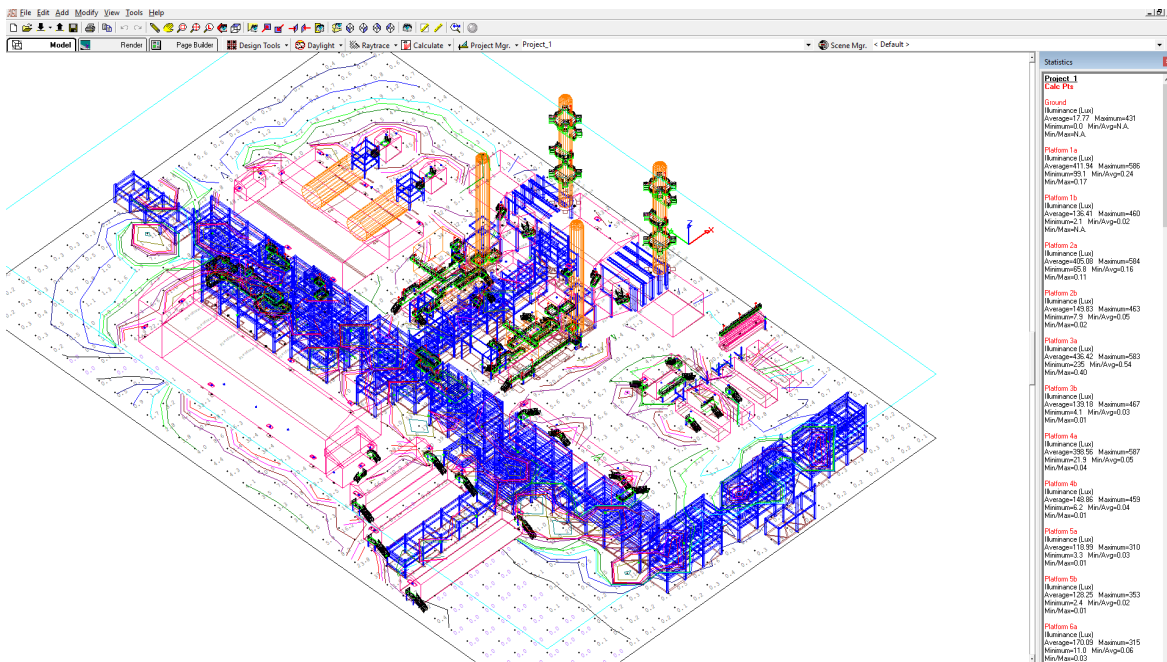
## PRELIMINARY REVIEW



*Engineering Provided 3D Site Renderings*

Working closely with various EPCs over the years, Lumisave has provided extensive lighting design assistance for various large scale industrial projects. When provided with the site NavisWorks or SP3D drawings, site specific lighting requirements & lighting target levels, Lumisave can provide detailed 3D lighting design & rendering services to ensure our products performance for any industrial project.

## PRELIMINARY LIGHTING DESIGN

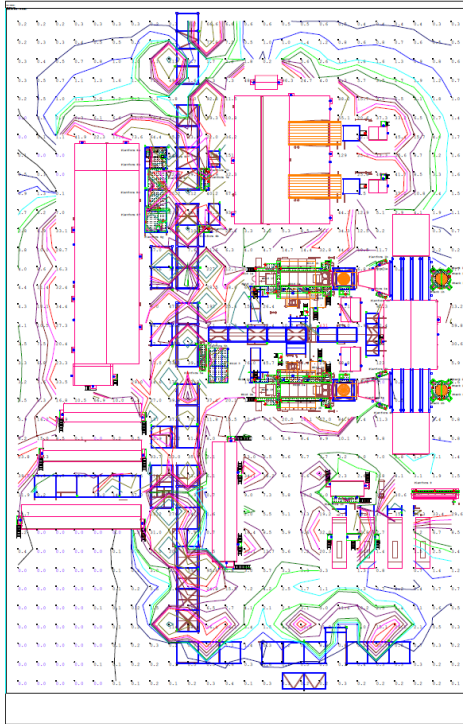


*Preliminary Lighting Design in AGI32*

With site specifications (target lighting levels, site drawings) in place, our team will recreate site specific conditions within our lighting design software. With the recreated site in place, lighting placement and design begins to achieve target lighting levels.

# LIGHTING DESIGN

## DESIGN REVIEW



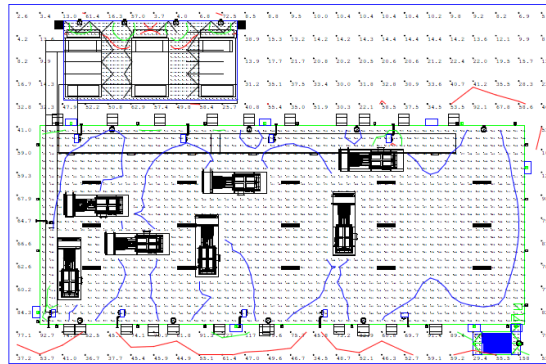
Luminaire Schedule					
Symbol	Qty	Label	LLF	Description	Watts
●	79	S7	0.950	LS-SM420-30-LD-RC	30
●	46	S3	0.950	LS-FL360-80	80
●	72	S11	0.950	LS-BL420-30-LD-RC-MW	30
				Total Watts	2370
					3680
					2160

LPD Area Summary			
Area	Total Watts	LPD	LPD Units
22058	8210	0.372	Watts/Sq.M

Calculation Summary										
Label	Units	Avg	Max	Min	Elev (m)	Label	Units	Avg	Max	Elev (m)
Ground	Lux	17.63	431	0.0	0.15	Skid 1a	Lux	140.3	818	6.1
Platform 1a	Lux	411.9	586	99.1	8	Skid 1b	Lux	221.1	359	20.5
Platform 1b	Lux	136.4	460	2.1	5	Skid 1c	Lux	195.6	383	21.1
Platform 2a	Lux	405.0	584	65.8	8	Skid 1d	Lux	135.8	330	9.4
Platform 2b	Lux	149.8	463	7.9	5	Skid 1e	Lux	81.85	643	0.3
Platform 3a	Lux	436.4	583	235	8	Skid 1f	Lux	94.55	389	2.1
Platform 3b	Lux	139.1	467	4.1	5	Skid 1g	Lux	174.4	415	4.1
Platform 4a	Lux	398.5	587	21.9	8	Skid 2a	Lux	140.8	833	6.8
Platform 4b	Lux	148.8	459	6.2	5	Skid 2b	Lux	209.2	312	27.7
Platform 5a	Lux	118.9	310	3.3	8	Skid 2c	Lux	176.3	398	19.6
Platform 5b	Lux	128.2	353	2.4	11.5	Skid 2d	Lux	128.6	370	12.8
Platform 6a	Lux	170.0	315	11.0	7	Skid 2e	Lux	93.75	666	0.3
Platform 6b	Lux	197.6	456	4.1	11.5	Skid 2f	Lux	116.7	360	2.2
Platform 7a	Lux	221.2	470	7.8	8	Skid 2g	Lux	157.0	343	8.6
Platform 7b	Lux	191.4	391	3.3	11.5	Skid 3	Lux	109.0	460	5.8
Platform 8a	Lux	158.7	350	4.0	7	Stack 1a	Lux	139.5	551	3.7
Platform 8b	Lux	110.8	416	2.1	10.5	Stack 1b	Lux	199.1	556	0.3
Platform 8c	Lux	374.3	421	298	12	Stack 1c	Lux	180.6	521	11.6
Platform 8d	Lux	134.1	470	3.3	12	Stack 1d	Lux	180.3	648	3.4
Platform 8e	Lux	138.5	352	0.9	13.5	Stack 2a	Lux	161.1	549	1.4
Platform 8f	Lux	93.63	369	2.9	10.5	Stack 2b	Lux	197.6	541	10.2
Platform 8g	Lux	376.0	412	321	12	Stack 2c	Lux	172.7	519	11.8
Platform 9	Lux	189.3	362	11.0	4.5	Stack 2d	Lux	173.9	645	0.5
Platform 10	Lux	153.2	314	1.3	3	Stack 3a	Lux	175.2	335	8.6
						Stack 4a	Lux	172.6	347	19.7

### Design Summary

With the proposed lighting design in place, Lumisave provides a summary report on the various locations on site with the corresponding lighting levels.



Luminaire Schedule					
Symbol	Qty	Label	Description	Total Watts	LLF
●	5	BL420-30W-UMS	LS-BL420-30-MV-DC-RC-UMS	146	0.950
●	22	FL290-50W	LS-FL290-50-MV-LT	1097.8	0.950
●	12	FL225-30W	LS-FL225-30	360	0.950
●	8	BL420-30W-UMS-MW	LS-BL420-30-MV-DC-RC-UMS	233.6	0.950
●	15	LL380-420W	LS-LL380-420W-MV	6363	0.950

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Ground	Illuminance	Lux	43.25	158	2.6	16.63	60.65
Platform 1	Illuminance	Lux	59.69	178	4.6	12.98	38.74
Pump House	Illuminance	Lux	350.19	639	51.0	7.45	12.53
Stair Tower Landing	Illuminance	Lux	238.22	357	148	1.61	2.42
Stair Tower Top Platform	Illuminance	Lux	168.36	194	117	1.45	1.67

Notes:  
Pump House Fixtures Ceiling Mounted @ 14.2m AFF  
Platform Fixtures Stanchion Mounted @ 3m AFF  
Exterior Flood Lights Mounted @ 6m  
Exterior Door Fixtures Mounted @ 3m

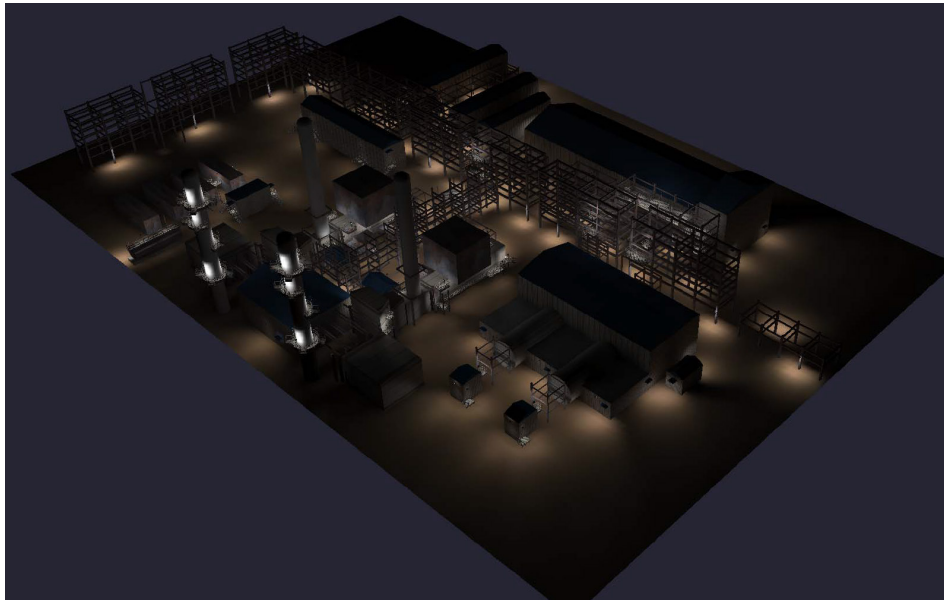
Notes:  
Minimum Average Maintained Lighting Levels:  
Pump House Interior : 30fc (330lux) Average (Blue)  
Exterior Platforms : 10fc (110lux) Average (Green)  
Outdoor Process Areas : 5fc (55lux) Average (Red)



# LIGHTING DESIGN

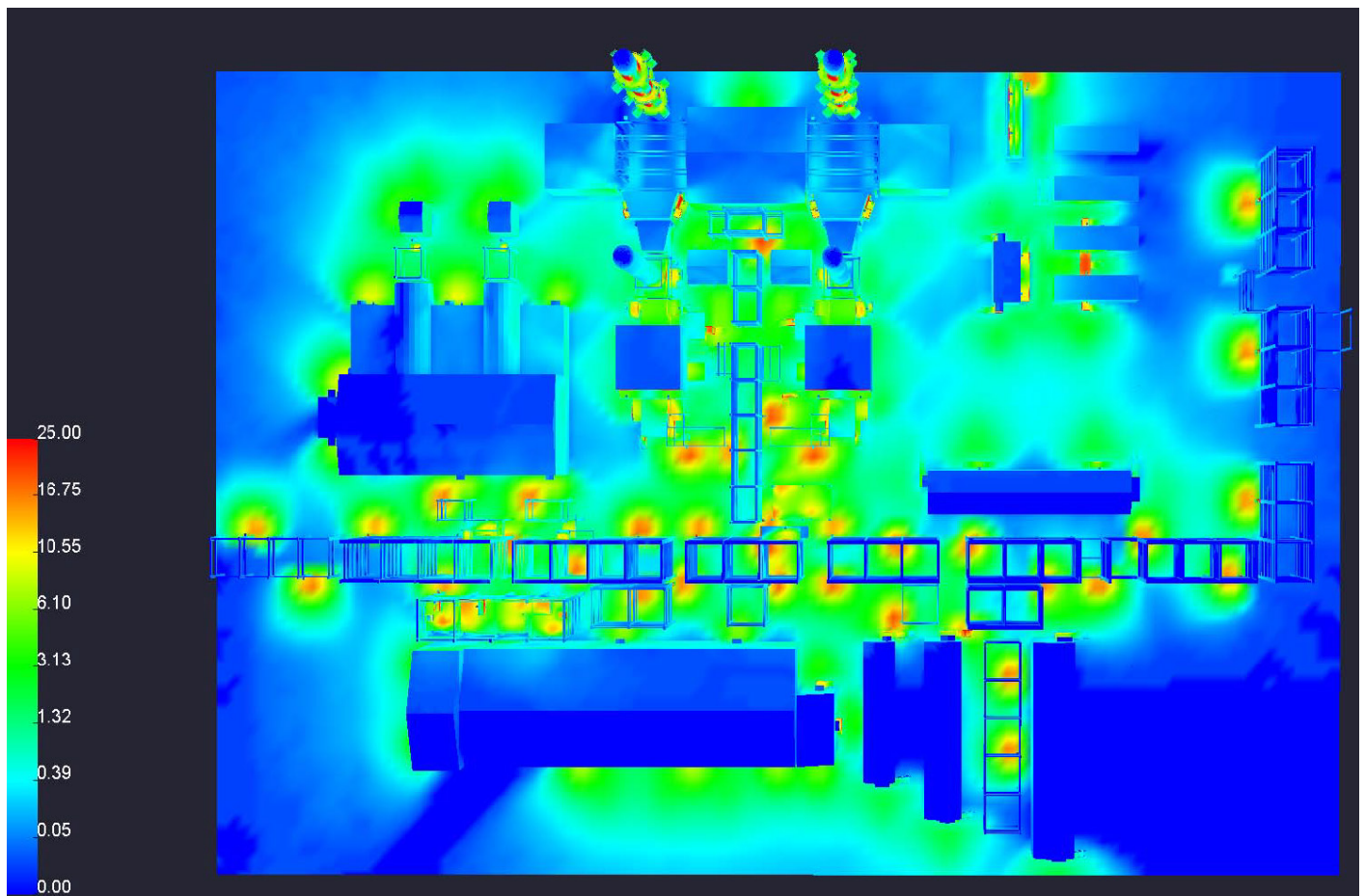


## RENDERINGS



*3D Rendering*

*With designs in place, AGI32 is able to produce 3D lighting renderings for further review.*



*Pseudo Colour Rendering detailing lighting intensity*