INVITATION FOR FORMAL BIDS

ADDENDUM # 1

Questions and Clarifications

Transit Center Dome Roof Repair
IFB# FED2020-06

TO: Prospective Bidders
FROM: Jamie Arbogast, Director of Procurement
DATE: June 05, 2020
SUBJECT: Addendum No. 1 – Questions and Clarifications

The following is included as part of Addendum No.1 and supersedes the language/requirements set forth in the original "Request For Proposals".

ADDENDUM # 1 – Questions and Clarifications

#	Questions submitted or asked	Response from GPMTD
1	Can you provide the standard roof specs provided by the Solar Contractor?	*Yes, see ATTACHMENT A below*
2	Pg 20 Section 2-3 (1) Clarify warranty period 10 or 20 years? Do the solar roof specs require a 15 year?	*20 years, the warranty for the solar units will be provided by the contractor*
3	Does the new roof require a layer of insulation?	*It is the responsibility of the bidder to bring all aspects of the roof to the standards of a 20-year warranty, including patch, repair, or replacement.*
4	How will parking be coordinated? If insufficient parking is provided how will additional parking be obtained?	*By permit through the city at the contractor's expense. The GPMTD will do it best to have a spot or two available.*
5	Clarify? Are you requesting to patch and repair or recover the entire roof?	*Patch, repair, or replace to support the standards of a 20-year warranty.*
6	What if our solution is different than the one in the scope of work?	*Complete Attachment D on page 64 of the IFB*

ATTACHMENT A

ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

CityLink Bus Terminal
407 SW Adams Street
Peoria, IL 61602

Solar Array
Structural Calculations

Prepared for:

Mr. Keirvan Davidson
Hawk Energy Solutions
1301 Hampton Road
Washington, IL 61571

Project # 20.250

April 2020

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

ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

Mr. Kiervan Davidson
Hawk Energy Solutions
1301 Hampton Road
Washington, IL 61571

April 20, 2020

RE: CityLink Bus Terminal – 407 SW Adams Street, Peoria, IL 61602
Project #: 20.250

Mr. Davidson:

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

Based on our review, we have determined that the existing roof structure is capable of supporting the additional loading of the solar array. The condition and capability of the structure is sufficient for all loading conditions in accordance with the requirements of ASCE 7-10 and IBC 2012.

In addition, the total weight of the proposed arrays in the proposed locations does not cause a greater than 10% increase in lateral seismic forces experienced by any of the lateral load resisting elements that this weight is tributary to, in accordance with the 2012 International Building Code.

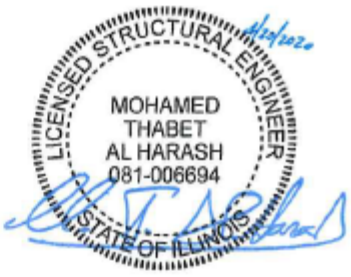
Please feel free to contact me if you have any comments or questions.

Respectfully yours,

Mohamed T. AL HARASH

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

cc: Matthew Boyce, PE
Principal



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

Calculation Sheet

ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

Project #:	20.250	Date:	4/6/20
Project Name:	**CityLink Bus Terminal**	Calc Type:	Gravity

Building Information		
Building Length	365	ft
Building Width	200	ft
Building Height	24	ft
Array L	300	ft
Array W	42	ft
Array Unit Weight	5	psf
Number of Panels	576	ea

Code Information	
S_1	0.087
Ss	0.16
Occupancy	II
Site Class	D
ASCE 7-10	

Building Construction Type:		Metal Building
Unit Weight	40	psf

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

Building Wall Area	8760		
Solar Area (surface)	300		
Area Increase	3.42%	<	10%

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

ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

Calculation Sheet

Project #:	20.250	Date:	4/6/20
Project Name	**CityLink Bus Terminal**	Calc Type:	Seismic

Seismic Weight

Roof DL	30	psf		
Roof Weight	2190.0	k		
Wall Weight	350.0	k		
Total Weight	2540.0	k		
Solar Weight	63.0	k		
W = Solar/Total	2.48%	<	10%	OK

Horizontal Seismic Force

$$Fp = \frac{(0.4 \times ap \times Sds \times Wp) \times (1 + 2 \times z/h)}{(Rp/Ip)}$$ (13.3-1)

Sds = 2/3 Sms (11.4-3)

Sms = Fa x Ss (11.4-1)

Fa =	1.37		(from Table 11.4-1)
Sms =	0.2192		
Sds =	0.146133333		
Rp=	1.5		(Table 13.5-1)
Ip=	1		(13.1.3)
ap=	1		(Table 13.5-1)
z/h=	1		Difference in height between roof & solar array
Wp=	63000	lbs	
Fp =	7365	lbs	
Fp = a x Wp			
a =	12%		
For one panel, Fp =	13	lbs	
# of supports	4	ea	
Fp (per support) =	3	lbs	

The lateral force resisting elements (ext. shear walls) experience an increase of
7365 lbs total ultimate load for the entire array.
These elements experience an increase of 3 lbs locally and are more than adequate.

ENGINEERED SOLUTIONS, LLC
DESIGN - ENGINEERING - CONSULTING

Calculation Sheet

Project #:	20.250	Date:	4/6/20
Project Name:	CityLink Bus Terminal	Calc Type:	Bar Joist ASCE 7-10

Building Information			Code Information		
Joist Span	64	ft	DL	25.00	psf
Joist Designation	52DLH13		Wind	19.00	psf
Joist Spacing	10	ft o.c.	Roof Snow	17.00	psf
Array Unit Weight	6	psf	Exposure	B	

Load Combinations

D	31	psf
D + L	48	psf
D + W	50	psf
D + 0.75(W + L)	58	psf
Max Load =	58	psf

Total Joist Capacity Check

Joist Load =	(Total Load x Effective Area)			
Joist Load =	580	lb/ft		
Joist Capacity:	643	lb/ft	OK	From attached table
Load/Capacity:	110.9%		OK	Demand/Capacity Ratio > 95%

ASD

STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists only)	Depth in inches	Max Load plf	SAFE LOAD* in Lbs. Between	SPAN IN FEET														
			< 62	62-89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
52DLH10	25	52	432	26800	298 171	291 165	285 159	279 154	273 150	267 145	261 140	256 136	251 132	246 128	241 124	236 120	231 116	227 114	223 110
52DLH11	26	52	475	29420	327 187	320 181	313 174	306 169	299 164	293 158	287 153	281 149	275 144	270 140	264 135	259 132	254 128	249 124	244 120
52DLH12	29	52	529	32820	365 204	357 197	349 191	342 185	334 179	327 173	320 168	314 163	307 158	301 153	295 149	289 144	284 140	278 135	273 132
52DLH13	34	52	643	39840	443 247	433 239	424 231	414 224	406 216	397 209	389 203	381 197	373 191	366 185	358 180	351 174	344 170	338 164	331 159
52DLH14	39	52	735	45580	507 276	497 266	486 258	476 249	466 242	457 234	447 227	438 220	430 213	421 207	413 201	405 194	397 189	390 184	382 178
52DLH15	42	52	826	51200	569 311	557 301	545 291	533 282	522 272	511 264	500 256	490 247	480 240	470 233	461 226	451 219	443 213	434 207	426 201
52DLH16	45	52	890	55200	614 346	601 335	588 324	575 314	563 304	551 294	540 285	528 276	518 267	507 260	497 252	487 245	478 237	468 230	459 224
52DLH17	52	52	1025	63540	706 395	691 381	676 369	661 357	647 346	634 335	620 324	608 315	595 304	583 296	572 286	560 279	549 270	539 263	528 255
			<67	67-97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
56DLH11	26	56	421	28200	288 169	283 163	277 158	272 153	267 149	262 145	257 140	253 136	248 133	244 129	239 125	235 122	231 118	227 115	223 113
56DLH12	30	56	484	32400	331 184	324 178	318 173	312 168	306 163	300 158	295 153	289 150	284 145	278 141	273 137	268 133	263 130	259 126	254 123
56DLH13	34	56	586	39240	401 223	394 216	386 209	379 204	372 197	365 191	358 186	351 181	344 175	338 171	331 166	325 161	319 157	314 152	308 149
56DLH14	39	56	662	44360	453 249	444 242	435 234	427 228	419 221	411 214	403 209	396 202	388 196	381 190	375 185	368 181	361 175	355 171	349 167
56DLH15	42	56	756	50660	518 281	508 272	498 264	488 256	478 248	469 242	460 234	451 228	443 221	434 215	426 209	419 204	411 198	403 192	396 188
56DLH16	46	56	816	54680	559 313	548 304	537 294	526 285	516 277	506 269	496 262	487 254	478 247	469 240	460 233	452 227	444 221	436 214	428 209
56DLH17	51	56	941	63020	643 356	630 345	618 335	605 325	594 316	582 306	571 298	560 289	549 281	539 273	529 266	520 258	510 251	501 245	492 238
			<71	71-99	100-105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
60DLH12	29	60	439	31200	31200	295 168	289 163	284 158	279 154	274 150	270 146	265 142	261 138	256 134	252 131	248 128	244 124	240 121	236 118	232 116
60DLH13	35	60	534	37020	37020	358 203	351 197	345 191	339 187	333 181	327 176	322 171	316 167	311 163	306 158	301 154	296 151	291 147	286 143	282 139
60DLH14	40	60	594	42140	42140	398 218	391 210	383 205	376 199	370 193	363 188	356 183	350 178	344 173	338 170	332 165	327 161	321 156	316 152	310 149
60DLH15	43	60	697	49460	49460	467 255	458 248	450 242	442 235	434 228	427 223	419 216	412 210	405 205	398 200	392 194	385 190	379 185	373 180	367 175
60DLH16	46	60	766	54360	54360	513 285	504 277	494 269	485 262	476 255	468 247	460 241	451 235	444 228	436 223	428 217	421 211	414 205	407 201	400 196
60DLH17	52	60	880	62500	62500	590 324	579 315	569 306	558 298	548 290	538 283	529 275	519 267	510 261	501 254	493 247	484 241	476 235	468 228	460 223
60DLH18	59	60	1016	72120	72120	681 366	668 357	656 346	644 337	632 327	621 319	610 310	599 303	589 294	578 286	568 279	559 272	549 265	540 259	531 252
			<76	76-99	100-113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
64DLH12	31	64	396	30080	30080	264 153	259 150	255 146	251 142	247 138	243 135	239 132	235 129	231 125	228 122	224 119	221 116	218 114	214 111	211 109
64DLH13	34	64	480	36500	36500	321 186	315 181	310 176	305 171	300 168	295 163	291 159	286 155	281 152	277 148	273 144	269 141	264 137	260 134	257 131
64DLH14	40	64	550	41820	41820	367 199	360 193	354 189	349 184	343 179	337 174	332 171	326 166	321 162	316 158	311 154	306 151	301 147	296 143	292 140
64DLH15	43	64	631	47940	47940	421 234	414 228	407 223	400 217	394 211	387 206	381 201	375 196	369 191	363 187	358 182	352 177	347 173	341 170	336 165
64DLH16	46	64	710	53960	53960	474 262	466 254	458 248	450 242	443 235	435 229	428 224	421 218	414 213	407 208	401 203	394 198	388 193	382 189	376 184
64DLH17	52	64	818	62180	62180	546 298	536 290	527 283	518 275	509 268	501 262	492 255	484 248	476 243	468 237	461 231	454 226	446 220	439 215	432 210
64DLH18	59	64	945	71800	71800	630 337	619 328	608 320	598 311	587 304	578 296	568 288	559 282	549 274	540 267	532 261	523 255	515 249	507 243	499 237
			< 81	81-99	100-121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
68DLH13	37	68	433	35100	35100	288 171	284 168	279 164	275 159	271 155	267 152	263 149	259 145	255 142	252 139	248 135	244 133	241 130	237 127	234 124
68DLH14	40	68	499	40420	40420	332 184	327 179	322 175	317 171	312 167	308 163	303 159	299 155	294 152	290 148	286 145	281 141	277 138	273 135	269 133
68DLH15	44	68	560	45320	45320	372 206	365 201	360 196	354 191	348 187	343 182	337 178	332 174	327 170	322 166	317 162	312 158	308 155	303 152	299 148
68DLH16	49	68	663	53740	53740	441 242	433 236	427 230	420 225	413 219	407 214	400 209	394 204	388 199	382 195	376 190	371 186	365 182	360 178	354 174
68DLH17	55	68	748	60500	60500	497 275	489 269	481 262	474 256	467 249	460 244	453 238	446 232	439 226	433 222	427 217	420 212	414 208	408 203	403 198
68DLH18	61	68	865	70100	70100	575 311	566 304	557 297	549 289	540 283	532 276	524 269	516 263	508 257	501 251	493 246	486 240	479 234	472 230	465 225
68DLH19	67	68	997	80720	80720	662 353	651 344	641 336	631 328	621 320	611 313	601 305	592 298	583 291	574 285	565 278	557 272	548 266	540 260	532 254
			< 85	85-99	100-129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
72DLH14	41	72	462	39300	39300	303 171	298 167	294 163	290 159	285 155	281 152	277 149	274 146	270 143	266 139	262 136	259 133	255 131	252 128	248 125
72DLH15	44	72	530	45020	45020	347 191	342 187	336 183	331 178	326 174	322 171	317 167	312 163	308 160	303 156	299 152	295 150	291 147	286 143	282 140
72DLH16	50	72	612	52040	52040	401 225	395 219	390 214	384 209	378 205	373 200	368 196	363 191	358 188	353 183	348 179	343 175	338 171	334 169	329 165
72DLH17	56	72	689	58540	58540	451 256	445 250	438 245	432 239	426 233	420 228	414 224	408 218	402 213	397 209	391 205	386 200	381 196	376 191	371 188
72DLH18	59	72	807	68580	68580	528 289	520 283	512 276	505 270	497 265	490 258	483 252	479 247	470 242	463 236	457 231	450 227	444 222	438 217	432 212
72DLH19	70	72	946	80400	80400	619 328	609 321	600 313	591 305	582 300	573 293	565 286	557 280	549 274	541 268	533 263	526 257	518 251	511 247	504 241