

February 3, 2025

NORTHWEST FIRE DISTRICT  
13535 N. Marana Main Street  
Marana, AZ 85653

Subject: Northwest Fire District Stations 330 and 332-Solar/Heating Improvements  
City of Tucson Open End Contract #212817  
**GLHN # 22035.03**

Dear David,

**GLHN** Architects & Engineers, Inc. (**GLHN**) appreciates this opportunity to assist the Northwest Fire District (NWFD) with professional engineering design improvements to the domestic water and space heating systems at Fire Stations 330 (located at 1520 W. Orange Grove Road in Tucson Arizona) and 332 (located at 4151 E. El Camino Del Cerro Road in Tucson Arizona). This scope of work was developed from the NWFD Narrative that was provided to **GLHN** on December 12<sup>th</sup>, 2024, as well as our onsite walkthroughs occurring on January 17<sup>th</sup>, 2025.

### **Background**

Both stations were constructed in 2010 and utilize similar mechanical/plumbing systems to support the domestic water and truck bay heating needs of the facilities. They utilize a roof mounted thermal solar generating system to support both the domestic water and truck bay heating systems. The Station 330 water heaters contain a natural gas backup. Station 332 utilizes a similar solar arrangement but exercise electric domestic water heating backup, as natural gas is not supplied to the facility as in the case in the 330 Station. Both locations are reported to have systems that are unable to maintain adequate domestic hot water generation nor truck bay heating capability.

For this effort we anticipate the design team will be comprised of:

- **GLHN** Mechanical Engineering
- **GLHN** Plumbing Engineering
- **GLHN** Electrical Engineering
- **GLHN** Civil Engineering

### **Scope of Work**

The purpose of this effort will be to provide a design for each Fire Station that addresses the current operational issues experienced. NWFD has noted that they would like to maintain some solar use of the existing collection system, perhaps as a water preheating means. They would prefer to separate the domestic water system from the bay heating system as well as provide adequate maintenance access to all new equipment. It was preferred by NWFD to be able to monitor solar production with the use of energy meters. Also suggested by NWFD was the installation of natural gas fired unit heaters at both locations. This would require the installation of a gas service at Station 332.

The general process and phases proposed to achieve these goals and included within this proposal are as follows:

- I. Project Initiation and Feasibility Analysis (for each location)
  - A. **GLHN** will review current site conditions at both locations and document our findings.
  - B. Develop at least two, but no more than four potential solutions to the identified issues. Potential solutions may include:
    - a. The separation of domestic and heating systems with the integration of solar as a pre-heating source of energy for the domestic system. The primary domestic heating source would be through new natural gas water heaters. The heating system would be comprised of new gas unit heaters located within the truck bay. This means that a gas service will be established at the Station 332 site.
    - b. The installation of a natural gas boiler with solar preheating capability which supports both the domestic water and heating systems of the buildings. Domestic water would be a separate loop isolated by a plate and frame heat exchanger.



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- C. Generate sketches for each potential solution and develop rough order of magnitude (ROM) costs for each potential solution.
  - D. Narratives of each potential solution will be developed alongside sketches and corresponding calculations. These narratives along with a recommended path forward will be provided to NWFD for review and comment.
  - E. A meeting will be held to review the report and solicit owner feedback for incorporation into the next phase of work.
- II. Design Phase (for each location)
- A. Once a path forward is established and agreed upon at the conclusion of the Phase I work, **GLHN** will proceed with the Phase II design effort. We will develop drawings and specifications sealed by professional engineers licensed in the state of Arizona to be used for permitting and contractor bidding/construction.
  - B. Develop drawing backgrounds for each site.
  - C. For Station 332, a topographical and utility survey will be conducted by a **GLHN** sub-consultant for use in the gas line extension portion of the project. It is assumed that the contractor will obtain all required permitting within the Right of Way and prepare all traffic control plans should the gas service cross El Camino Del Cerro Road.
  - D. **GLHN** will coordinate with SW Gas for the gas line extension. It is anticipated that the overall length of gas line extension will not exceed 100 yards.
  - E. Engineering calculations will be performed for water, gas, and electricity as required.
  - F. Specifications will be provided on drawing sheets for incorporation into the documents.
  - G. A 95% Construction Document submittal will be provided to NWFD for review and comment.
  - H. Sealed Construction documents will be provided to NWFD.

Note that this proposal assumes that additional power (as compared to existing max demand) will not be required for this project. If it is determined that load will be added to any electric panel(s), a load study will be required (by code) involving the logging of the panels impacted. This logging is not currently included within this proposal. If determined during the course of design that logging will be required, either NWFD can contract with an electrician to perform the work and gather the data to provide to **GLHN**, or **GLHN** can perform this work for additional services.

#### Sub-Consultants

Included within this proposal and scope of work are allowances for the following sub-consultants:

- Topographical and Utility Survey

<b>DETAILED GLHN SUBCONSULTANT BUDGETS</b>	
2025-02-05	
NW Fire District	
Fire Stations 330 and 332 Improvements	
22035.030	
REV 0	
<b>STATION 330 DESIGN</b>	<b>\$0.00</b>
1 Project Initiation and Feasibility Analysis	\$0.00
a. Project Initiation and Feasibility Analysis Consultant Fees	
b. With GLHN Management Fee, 5%	
<b>STATION 332 DESIGN</b>	<b>\$5,250.00</b>
1 Project Initiation and Feasibility Analysis	\$5,250.00
a. Project Initiation and Feasibility Analysis Consultant Fees	
b. With GLHN Management Fee, 5%	
	fee
GLHN Sub-Consultant Subtotal \$5,250.00	



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### Summary of Design Deliverables

It is **GLHN**'s understanding that this effort will consist of one (2) document packages with one (1) base bid arrangement. Each design package will be unique for each Fire Station. Beyond that, these drawing sets will not be delivered in phases, nor will they include additional additive or deductive alternates.

Design Document Submittals			
Deliverable	Format	Predecessor(s)	Anticipated Scheduling
Feasibility Study	Electronic only in .PDF Format	Signed Contract NWFD	Within 6 weeks of predecessor(s) receipt
95% CD Drawings and Sheet Specifications	Electronic only in .PDF Format	Agreement on path forward by <b>GLHN</b> and NWFD as outlined within the Feasibility Study	Within 6 weeks of predecessor(s) receipt
100%, Sealed CD with Sheet Specifications	Electronic only in .PDF Format	Receipt of all 95% CD Owner Review comments	Within 2 weeks of predecessor(s) receipt

### Professional Fees

This scope of work is being proposed as we believe it will provide the best value for your project. We are open to adding to or deleting various components of the proposed services. This Lump Sum proposal is based on **GLHN** hourly rates applied against our estimates of time required by task. Given the above work elements, scheduling, and conditions, our proposed fees to accomplish this scope of work is summarized as follows:

#### Fire Stations 330 and 332 Improvements

2025-02-05

GLHN #: 22035.03

REV 0

#### SUMMARY OF FEE

Phase	Subphase	Civil	M&P	Elect.	Sub-consult	Task Total	Phase Total
STATION 330 DESIGN	Project Initiation and Feasibility Analysis	\$0.00	\$15,827.94	\$6,194.87	\$0.00	\$22,022.81	\$54,177.47
	Domestic Water Improvements	\$0.00	\$7,347.73	\$6,877.98	\$0.00	\$14,225.71	
	Truck Bay Heating Improvements	\$0.00	\$11,050.97	\$6,877.98	\$0.00	\$17,928.95	
STATION 332 DESIGN	Project Initiation and Feasibility Analysis	\$14,240.58	\$15,827.94	\$6,194.87	\$5,250.00	\$41,513.39	\$104,382.47
	Natural Gas Extension	\$24,124.76	\$0.00	\$0.00	\$0.00	\$24,124.76	
	Domestic Water Improvements	\$0.00	\$12,721.03	\$6,877.98	\$0.00	\$19,599.01	
	Truck Bay Heating Improvements	\$0.00	\$12,267.33	\$6,877.98	\$0.00	\$19,145.31	

Subtotal \$158,559.94

GLHN Internal Direct Expenses \$0.00

GLHN Subtotal \$158,559.94

**Total Fee \$158,559.94**

#### Fire Stations 330 and 332 Improvements

2025-02-05

GLHN #: 22035.030

REV 0

#### SUMMARY OF HOURS

Phase	Subphase	Civil	M&P	Elect.	Sub-consult	Total	Subphase Total
STATION 330 DESIGN	Project Initiation and Feasibility Analysis	0.0	100.0	42.0	N/A	142.0	365.0
	Domestic Water Improvements	0.0	57.0	47.0	N/A	104.0	
	Truck Bay Heating Improvements	0.0	72.0	47.0	N/A	119.0	
STATION 332 DESIGN	Project Initiation and Feasibility Analysis	94.0	100.0	42.0	N/A	236.0	654.0
	Natural Gas Extension	155.0	0.0	0.0	N/A	155.0	
	Domestic Water Improvements	0.0	87.0	47.0	N/A	134.0	
	Truck Bay Heating Improvements	0.0	82.0	47.0	N/A	129.0	

**Total GLHN Hours 1,019.0**

**GLHN** reserves the right to amend this fee proposal if a signed contract is not received within 60 days of its receipt of this proposal.



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**Additional Clarifications, Assumption, and Exclusions**

The following Assumptions and Exclusions are reflective of the proposed fee:

- Architectural, Structural Engineering, Geotechnical Engineering/Surveys, Fire Alarm/Fire Protection, Landscape Design, and any other disciplines not explicitly stated within this scope of work are specifically excluded.
- Permitting support, Construction Period Services, and Commissioning services are excluded from this scope of work.
- Adequate access to the areas of work must be provided to **GLHN** throughout the design period.
- Any LEED certification or documentation services are specifically excluded from this scope of work.
- Phasing of the project requiring multiple design packages other than stated above is specifically excluded.
- Any design services or efforts related to hazardous materials are specifically excluded from this scope of work.
- Design Deliverables in addition to those previously stated within this proposal are specifically excluded from this scope of work.
- Special inspections are specifically excluded from this scope of work.
- It is assumed that all available As-Built documentation, proposed layouts, and complete proposed equipment cut sheets will be provided to **GLHN** at the start of design.
- All design submittals will be in electronic PDF format. Any paper copies will require reimbursed fees.
- Permit fees or efforts are specifically excluded from this scope of work.
- Attendance of additional meeting quantities, be they remote, or in-person, is excluded.
- Site visits in addition to those stated are excluded.
- New easements associated with the new natural gas service is excluded from this proposal.

We appreciate the ongoing opportunity to provide services to the Northwest Fire District. Should you have any questions, please do not hesitate to contact us.

Sincerely,  
**GLHN Architects & Engineers, Inc.**



Bill Koller, P.E.  
Director of Mechanical Engineering  
Vice President  
[bkoller@glhn.com](mailto:bkoller@glhn.com)

BMK: ba

Attachment

xc: SY, JCM, DM, Docs



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**DETAILED GLHN CIVIL BUDGET HOURS**

**2025-02-03**

**NW Fire District**

**Fire Stations 330 and 332 Improvements**

**22035.030**

**REV 0**

		Civil		
		Principal	Project Engineer (P.E.) II	BIM/CADD Technician I
<b>STATION 330 DESIGN</b>				
	<b>\$0.00</b>			
<b>STATION 332 DESIGN</b>				
	<b>\$38,365.34</b>			
1	Project Initiation and Feasibility Analysis	8 hrs total	54 hrs total	32 hrs total
a.	General file and budget setup (by PM)			
b.	Project Management			
c.	Project Kickoff Meeting with Client (1)	1	1	
d.	GLHN Internal Kickoff Meeting	1	1	1
e.	Onsite Field Investigations		6	
f.	Initial as-built document review		4	
g.	Background Generation		8	18
h.	Life Cycle Costing Exercise			
i.	Design Option Generation			
j.	Code Review		4	
k.	Client Coordination Meetings (2 Virtual)		4	
l.	Opinion of Probable Construction Costs		6	
m.	Narrative Generation		6	
n.	Modeling/Drawings/Diagrams		6	9
o.	Internal Project Coordination Meetings	2	2	2
p.	Internal QA/QC	4		
q.	Report Generation		6	2
r.	Submittal Package Preparations			
t.				
2	Natural Gas Extension	18 hrs total	88 hrs total	49 hrs total
a.	Project Management	12		
b.	Internal Project Coordination Meetings (2)	2	2	2
c.	Code Review		2	
d.	Specifications		6	
e.	Design		18	4
f.	Calculations		4	
g.	Drawings		8	24
h.	Survey Coordination		6	
i.	Gas Company Coordination		2	
j.	Internal QA/QC	2		
k.	Draft Submittal for Review		4	4
l.	Owner Review meetings (4 Virtual) and meeting notes		4	
m.	Gas Company Submittal		20	
n.	Final Submittal	2	12	15
t.				
	hrs	26	142	81
	rate	\$237.80	\$179.11	\$83.32
	fee	\$6,182.80	\$25,433.62	\$6,748.92
GLHN Civil Labor Subtotal		\$38,365.34		

**DETAILED GLHN MECH. & PLUMBING BUDGET HOURS****2025-02-03****NW Fire District****Fire Stations 330 and 332 Improvements****22035.03****REV 0**

			Mech. & Plumb.		
			Principal	Project Engineer (P.E.) II	BIM/CADD Technician I
<b>STATION 330 DESIGN</b>		<b>\$34,226.64</b>			
1	Project Initiation and Feasibility Analysis	\$15,827.94	20 hrs total	46 hrs total	34 hrs total
	a. General file and budget setup (by PM)		2		
	b. Project Management		6		
	c. Project Kickoff Meeting with Client (1)		1	1	
	d. GLHN Internal Kickoff Meeting		1	1	1
	e. Onsite Field Investigations			4	
	f. Initial as-built document review			2	
	g. Background Generation				10
	h. Life Cycle Costing Exercise			8	
	i. Design Option Generation		2	10	6
	j. Code Review			2	
	k. Client Coordination Meetings (2 Virtual)		4	4	
	l. Opinion of Probable Construction Costs		1	4	
	m. Narrative Generation			4	
	n. Modeling/Drawings/Diagrams			2	12
	o. Internal Project Coordination Meetings		1	1	1
	p. Internal QA/QC		2		
	q. Report Generation			2	2
	r. Submittal Package Preparations			1	2
	s.				
2	Domestic Water Improvements	\$7,347.73	10 hrs total	11 hrs total	36 hrs total
	a. Project Management		3		
	b. Internal Project Coordination Meetings (2)		2	2	
	c. Code Review				
	d. Specifications			2	
	e. Design				4
	f. Calculations				
	g. Drawings				12
	h. Modeling/Diagrams				8
	i. Vendor Coordination			2	
	j. Internal QA/QC		3		
	k. Draft Submittal for Review			2	4
	l. Owner Review meeting (1 Virtual) and meeting notes		1	1	
	m. Final Submittal		1	2	8
	n.				
3	Truck Bay Heating Improvements	\$11,050.97	11 hrs total	35 hrs total	26 hrs total
	a. Project Management		4		
	b. Internal Project Coordination Meetings (2)		2	2	
	c. Code Review			2	
	d. Specifications			6	
	e. Design			6	4

**DETAILED GLHN MECH. & PLUMBING BUDGET HOURS**

**2025-02-03**

**NW Fire District**

**Fire Stations 330 and 332 Improvements**

**22035.03**

**REV 0**

			Mech. & Plumb.		
			Principal	Project Engineer (P.E.) II	BIM/CADD Technician I
f. Calculations				4	
g. Drawings				2	8
h. Modeling/Diagrams					4
i. Vendor Coordination				2	
j. Internal QA/QC			3		
k. Draft Submittal for Review				4	4
l. Owner Review meeting (1 Virtual) and meeting notes			1	1	
m. Final Submittal			1	6	6
n.					
<b>STATION 332 DESIGN</b>	<b>\$40,816.30</b>				
1 Project Initiation and Feasibility Anlys	\$15,827.94	20 hrs total		46 hrs total	34 hrs total
a. General file and budget setup (by PM)		2			
b. Project Management		6			
c. Project Kickoff Meeting with Client (1)		1		1	
d. GLHN Internal Kickoff Meeting		1		1	1
e. Onsite Field Investigations				4	
f. Initial as-built document review				2	
g. Background Generation					10
h. Life Cycle Costing Exercise				8	
i. Design Option Generation		2		10	6
j. Code Review				2	
k. Client Coordination Meetings (2 Virtual)		4		4	
l. Opinion of Probable Construction Costs		1		4	
m. Narrative Generation				4	
n. Modeling/Drawings/Diagrams				2	12
o. Internal Project Coordination Meetings		1		1	1
p. Internal QA/QC		2			
q. Report Generation				2	2
r. Submittal Package Preparations				1	2
s.					
2 Domestic Water Improvements	\$12,721.03	10 hrs total		41 hrs total	36 hrs total
a. Project Management		3			
b. Internal Project Coordination Meetings (2)		2		2	
c. Code Review				2	
d. Specifications				2	
e. Design				12	4
f. Calculations				6	
g. Drawings				2	12
h. Modeling/Diagrams					8
i. Vendor Coordination				2	
j. Internal QA/QC		3			

**DETAILED GLHN MECH. & PLUMBING BUDGET HOURS**

**2025-02-03**

**NW Fire District**

**Fire Stations 330 and 332 Improvements**

**22035.03**

**REV 0**

		Mech. & Plumb.		
		Principal	Project Engineer (P.E.) II	BIM/CADD Technician I
k. Draft Submittal for Review			4	4
l. Owner Review meeting (1 Virtual) and meeting notes		1	1	
m. Final Submittal		1	8	8
n.				
3	Truck Bay Heating Improvements \$12,267.33	11 hrs total	39 hrs total	32 hrs total
a. Project Management		4		
b. Internal Project Coordination Meetings (2)		2	2	
c. Code Review			2	
d. Specifications			6	
e. Design			8	4
f. Calculations			2	
g. Drawings			4	10
h. Modeling/Diagrams				6
i. Vendor Coordination			2	
j. Internal QA/QC		3		
k. Draft Submittal for Review			4	4
l. Owner Review meeting (1 Virtual) and meeting notes		1	1	
m. Final Submittal		1	8	8
n.				
	hrs	82	218	198
	rate	\$237.80	\$179.11	\$83.32
	fee	\$19,499.60	\$39,045.98	\$16,497.36

GLHN Mech. & Plumb Labor Subtotal \$75,042.94



**DETAILED GLHN ELECTRICAL BUDGET HOURS****2025-02-03****NW Fire District****Fire Stations 330 and 332 Improvements****22035.03****REV 0**

		Elect.	
		Project Engineer (P.E.) II	Engineering Designer I
<b>STATION 330 DESIGN</b>			
1	Project Initiation and Feasibility Analysis	17 hrs total	25 hrs total
a.	General file and budget setup (by PM)		
b.	Project Management		
c.	Project Kickoff Meeting with Client (1)	1	
d.	GLHN Internal Kickoff Meeting	1	1
e.	Onsite Field Investigations	4	
f.	Initial as-built document review	2	
g.	Background Generation		10
h.	Life Cycle Costing Exercise		
i.	Design Option Generation	2	2
j.	Code Review		
k.	Client Coordination Meetings (2 Virtual)		
l.	Opinion of Probable Construction Costs		
m.	Narrative Generation	2	
n.	Modeling/Drawings/Diagrams	2	8
o.	Internal Project Coordination Meetings	1	1
p.	Internal QA/QC		
q.	Report Generation	2	2
r.	Submittal Package Preparations		1
s.			
2	Domestic Water Improvements	18 hrs total	29 hrs total
a.	Project Management		
b.	Internal Project Coordination Meetings (2)		
c.	Code Review		
d.	Specifications	1	
e.	Design	4	2
f.	Calculations	1	2
g.	Drawings	2	8
h.	Modeling/Diagrams		4
i.	Vendor Coordination		
j.	Internal QA/QC	1	1
k.	Draft Submittal for Review	2	4
l.	Owner Review meeting (1 Virtual) and meeting notes	1	
m.	Final Submittal	6	8
n.			
3	Truck Bay Heating Improvements	18 hrs total	29 hrs total
a.	Project Management		
b.	Internal Project Coordination Meetings (2)		
c.	Code Review		
d.	Specifications	1	
e.	Design	4	2

**DETAILED GLHN ELECTRICAL BUDGET HOURS**  
**2025-02-03**  
**NW Fire District**  
**Fire Stations 330 and 332 Improvements**  
**22035.03**  
**REV 0**

		Elect.	
		Project Engineer (P.E.) II	Engineering Designer I
f. Calculations		1	2
g. Drawings		2	8
h. Modeling/Diagrams			4
i. Vendor Coordination			
j. Internal QA/QC		1	1
k. Draft Submittal for Review		2	4
l. Owner Review meeting (1 Virtual) and meeting notes		1	
m. Final Submittal		6	8
n.			
<b>STATION 332 DESIGN</b>	<b>\$19,950.83</b>		
1 Project Initiation and Feasibility Analysis	\$6,194.87	17 hrs total	25 hrs total
a. General file and budget setup (by PM)			
b. Project Management			
c. Project Kickoff Meeting with Client (1)		1	
d. GLHN Internal Kickoff Meeting		1	1
e. Onsite Field Investigations		4	
f. Initial as-built document review		2	
g. Background Generation			10
h. Life Cycle Costing Exercise			
i. Design Option Generation		2	2
j. Code Review			
k. Client Coordination Meetings (2 Virtual)			
l. Opinion of Probable Construction Costs			
m. Narrative Generation		2	
n. Modeling/Drawings/Diagrams		2	8
o. Internal Project Coordination Meetings		1	1
p. Internal QA/QC			
q. Report Generation		2	2
r. Submittal Package Preparations			1
s.			
t.			
2 Domestic Water Improvements	\$6,877.98	18 hrs total	29 hrs total
a. Project Management			
b. Internal Project Coordination Meetings (2)			
c. Code Review			
d. Specifications		1	
e. Design		4	2
f. Calculations		1	2
g. Drawings		2	8
h. Modeling/Diagrams			4
i. Vendor Coordination			

**DETAILED GLHN ELECTRICAL BUDGET HOURS**  
**2025-02-03**  
**NW Fire District**  
**Fire Stations 330 and 332 Improvements**  
**22035.03**  
**REV 0**

		Elect.	
		Project Engineer (P.E.) II	Engineering Designer I
j. Internal QA/QC		1	1
k. Draft Submittal for Review		2	4
l. Owner Review meeting (1 Virtual) and meeting notes		1	
m. Final Submittal		6	8
n.			
3 Truck Bay Heating Improvements	\$6,877.98	18 hrs total	29 hrs total
a. Project Management			
b. Internal Project Coordination Meetings (2)			
c. Code Review			
d. Specifications		1	
e. Design		4	2
f. Calculations		1	2
g. Drawings		2	8
h. Modeling/Diagrams			4
i. Vendor Coordination			
j. Internal QA/QC		1	1
k. Draft Submittal for Review		2	4
l. Owner Review meeting (1 Virtual) and meeting notes		1	
m. Final Submittal		6	8
n.			
		hrs	106
		rate	\$179.11
		fee	\$18,985.66
			166
			\$126.00
			\$20,916.00

GLHN Electrical Labor Subtotal \$39,901.66