

FEE PROPOSAL FOR THE STRUCTURAL INVESTIGATION AND RETROFIT DESIGN OF THE EXISTING GREGORIAN ROTATING FEED FLOOR AT THE NATIONAL ASTRONOMY AND IONOSPHERE CENTER ARECIBO RADIO TELESCOPE

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SECTION A: TECHNICAL

This fee proposal is to provide engineering services to perform a structural investigation and retrofit design of the existing Gregorian rotating feed floor and the supporting feed module structure. The investigation will consist of the following:

1. Reviewing the original calculations and contract drawings
2. Performing a site visit (a site visit is recommended but could be eliminated to reduce cost)
3. Reviewing available shop drawings and as-built conditions
4. Performing any required additional structural analysis to the rotating floor and the feed module itself
5. Designing and detailing any reinforcements or retrofits deemed necessary
6. Providing construction support during the retrofit
7. Provide a new retrofit upset loading limit for the rotating floor

The final deliverable to the observatory will consist of a letter report documenting the investigation findings and if required, a set of Puerto Rico Professional Engineer signed and sealed structural retrofit drawings of the upgraded rotating feed floor and feed module with its new load capacity.

SECTION B: COST

Cost estimate and associated man-hours are as follows:

1.) Structural Investigation					
- Structural Engineer	40 hrs	x \$90/hr	=		\$3,600
- Senior Associate	40 hrs	x \$176/hr	=		\$7,040
- Vice President	8 hrs	x\$176/hr	=		<u>\$1,408</u>
					\$12,048
2.) Site Visit (recommended)					
- Senior Associate	24 hrs	x \$176/hr	=		\$4,224
- Estimated Expenses (will be billed at cost)					<u>\$1,500</u>
					\$5,724
3.) Retrofit Design and Drawings (required only if determined by the structural investigation)					
- Structural Engineer	32 hrs	x\$90/hr	=		\$2,880
- Senior Associate	32 hrs	x \$176/hr	=		\$5,632
- CAD Operator	24 hrs	x \$90/hr	=		\$2,160
- Vice President	2 hrs	x\$176/hr	=		<u>\$352</u>
					\$11,024
4.) Quality Control					
- Vice President	4 hrs	x\$176/hr	=		\$704
Total Proposal Cost				=	\$29,500 (Not to Exceed)