Association of Universities for Research in Astronomy, Inc. ("AURA")

RFP-N84914C

"WIYN Facility Upgrade for the NEID Spectrometer"

AMENDMENT NO. 1

August 1, 2017

A. There is a change/extension to the Bid Due Date. The Proposal documents must be received by Friday, August 4, 10:00 a.m. MST.

B. There are changes and clarifications to the Statement of Work (SOW). These changes are specified in the attached documents.
   - Document 1) Q&A document
   - Document 2) Structural SK – 1 & 2 (called out in item #19 on the above Q&A document).
   - Document 3) Detail Bill of Material ("cut sheet") for owner provided Switchboard equipment.
   - Document 4) HVAC Q&A

This Amendment #1 ("Amendment #1") modifies the original Bid Documents dated July 13, 2017 and shall become part of the Bid Documents and the Contract Documents. This Amendment #1 shall supersede and supplement all portions of the Bid Documents with which it conflicts. All other provisions of the Bid Documents shall remain the same.

_____

Regina "Gina" Logan, Sr. Contracts Officer

_____

Date

Questions and *Answers* for RFB N84914C, "WIYN Renovation"

1. Warranty period is stated once as one (1) year and then again as two (2) years. Which is correct?
   Warranty required is two (2) years.

2. Specs call for sealing existing ducts?
   No, you will only be required to seal the new ducts you install, and the end panel at the duct removed on sheet MD1.1, note 9.

3. Will exterior wall panels need to be removed?
   No, only interior wall panels at work area will be removed to allow for additional insulation. Only penetrations through panel are for duct supply and return.

4. Will there be a staging area provided?
   A small interior and exterior staging area will be made available at the site.

5. Restroom facilities available at the site?
   No restroom facilities will be available at the site. Public restrooms at the Visitor Center (near the public parking) are available. Contractor may bring a portable toilet for use near the site. Note: The portable toilet MUST BE ANCHORED TO THE GROUND for safety purposes due to possible high winds.

6. Will "cut sheet" be provided for the SES being purchased by owner?
   Amendment #1 to the RFB states that the SES equipment will be purchased by the owner and contractor will need only install the equipment. Owner has requested the cut sheet and will provide to the winning bidder. See attached.

7. What about water lines?
   Small insulated humidifier water line to run external to concrete pier, either above or below door. See sheet M1.1.

8. What are the current Davis Bacon requirements?
   Updated 7/21/17 Davis Bacon information is now loaded onto our website: http://auracas.aura-astronomy.org/sites/default/files/Davis%20Bacon%20Pima%20County%207-2017.pdf

9. Phase 2, exterior work spray on insulation, exterior wall and ceiling. Plan shows wall but not ceiling? If spraying ceiling, should a thermal barrier paint be used on the material for fire?

Yes, provide a fireproofing paint for passive fire protection at roof deck, prior to spray foam. Deck will require 2" of closed cell sprayfoam at all ceiling cavities

10. Base on the thickness of the spray foam, should we figure open cell spray foam?
    Due to temperature requirements, please figure closed cell foam.

11. In the plans, the rigid boards show a 2" and 4" thickness. Is this a polyiso type material? And does it need to be a type that can be left exposed (vent side might be considered exposed)?
    Polyiso is acceptable. Rigid Insulation would need an FRP style face per wall types.

12. Considering the HVAC for this project: will the owner furnish the glycol solution for the new chiller and piping?
    Vendor will fill new system (owner will provide specification on the glycol mixture). Owner will provide water only and vendor will be responsible for startup.

13. HVAC: where will the gas cylinders be re-located? And is there a diagram for piping and manifold referred to (MD1.1, note 4)?
    Placement of cylinders is not yet determined and piping is not involved. Vendor is only installing piping shown and owner provided connection items (as shown on sheet M2.1).

14. What is the anticipated completion date needed for the project?
    End of December 2017 or early January 2018.

15. Provide information on dorm rooms at the site that can be made available for crew overnighting.
    A dorm room is $90/night for a single occupant (which includes 3 meals, breakfast, lunch and dinner). $60/night per person for a double occupant room (also includes meals for each person). Number of rooms available varies. Contractor staff may also obtain lunches in dining facility for $8/meal (soup, sandwich, salad) without staying in dorm rooms.

16. Please clarify working hours and notes in RFB re: day sleepers.
    Normal daylight work hours are preferred, no work or travel to/from the site in non-daylight hours.

17. Clarify "thoroughly prepare" noted in reference Plan Sheet AD-2.1-Demo General Notes, Note D. Is the area to be isolated with dust barriers, floors covered with "hard surface protection tape," enveloped, inclusive of negative air machines and HEPA filters, etc…? Is there airborne particulate matter index that has to be maintained during construction? Please provide some guidelines to clarify "thoroughly prepared".

During Phase 1 (demolition) – particulate matter will need to be cleaned up each day to reduce particles in other areas of the observatory. Vendor to provide dust barrier to protect instrument during modifications of bench spectrograph wall.
During Phase 2 (construction) – outside activities will not be a problem, inside construction particulates will need to be contained within construction area and bay.
During Phase 3 (demolition and reconstruction of removable spectrometer wall, Detail 9, page A2.2) – During the work, a barrier will need to be added to keep the two rooms at their specified clean room criteria
Dust barriers are required to/from adjacent rooms, floor covers are not required as it is exposed concrete. Concrete does need to be prepared for epoxy flooring as indicated on plans. No hepa filtration system or negative air machines are required during initial construction. However, both will be required after monitoring phase is complete and Spectrograph has been installed.

18. Reference Door Schedule on sheet A2.2., a. Door #103, provide spec for insulated door and b. Door #104, provide manf. and spec for the "cooler/freezer style barn door".

Door 103 to be a standard 3'x7' Hollow metal insulated door. Door hardware to include door bottoms and Pemko seals. Door #104 to be cooler style, bases of design: (Paylon PC-2000 Series Sliding cooler door, non-motorized, with Embossed white galvnized finish, Internal PVC Frame, Foam Core, and Heavy duty Track w/ Sealed rollers) or equal.

19. Hoist: Reference Sheet A-2.3 – RCP Keynote 9: provide manf, model # and/or complete criteria for the hoists and their support assembly. Indicate if installation is design/build. Provide structural context on existing beams from which the hoist(s) will be supported so as to allow design/building if such is the choice.

Please see the attached SK-1 for structural attachment detail of the connections of our trolley support beam to the existing structure.*
Contractor to provide and install (2) low headroom trollies with (2) low profile hoist capable of 1/2 total lifting capacity each. Refer to sections for hoist length requirements. Basis of Design: CM Manguard Electric Chain Hoist with 1/2 ton capacity.
This attachment will be sent on Monday, 7/31.

20. Do we need to worry about the fire sprinkler system?

There is no fire sprinkler system in the facility.

21. Regarding accuracy readings required for Lakeshore sensors, are these provided by owner?

Vendor to provide all sensors and control equipment (Lakeshore and Jace) as noted on sheet M7.4.

22. On the above sensors, what accuracy is required?

A. Full calibration has an absolute accuracy of +/- 0.025C
B. Uncalibrated sensors have an absolute accuracy of +/- 0.5C (+/- 0.9F)
C. 3 point "soft calibration" has an absolute accuracy of +/- 0.25C

Sensors should be capable of ensuring room control criteria as noted on sheets M7.1 and M7.2 in AHU diagrams. The full calibration sensors are what is needed to have Nyquist rate to measure incursions in the spectrometer room.

23. Clarify the plan for purchasing the SES equipment.

The SES will be purchased by the owner and delivered to the site for Contractor to install. "Cut Sheet" for the equipment will be provided (see attachment to this document).

23. Generator and building power questions:

The building will be shutdown and all instrumentation turned off for the scheduled SES replacement period (8/21/17 to 8/3rc1/17). The only power need is what the vendor deems necessary for their work so they will need to provide a small work generator to meet their work requirements.

24. Keynote 1, sheet M1.2 requires "complete" service on existing Legacy Chiller. Please provide more definition of service required, model and serial number of existing chiller.

Contractor to provide a typical preventive maintenance on the unit once it has been relocated per plans. Contractor is to assure the unit is in full working order with refrigerant, oils, system controllers, checked for leaks and all other components for a fully functional unit as it stands prior to the move
If the existing lines need to be extended and/or terminated the glycol in the system will need to be drained into a hazardous container and disposed. After relocation is complete, new glycol will be added to system as appropriate.

Legacy Chiller Systems
Model No. PACT36S3-T4-Z
Serial No D12D0368

25. Are there any low voltage Specs available for this Project Or do I just use the UofA cabling Specs?

Drawing # E1.2 Note #2 references Fiber to the Pier. Are we installing the fiber and is there any more information on the fiber?

Contractor to install standard "plenum rated" Cat 6 cable with terminations from 4 identified locations in new area to location identified inside pier on sheet E1.2. Quantity of data jacks/cables at locations noted by number. Cat 6 cables to penetrate pier at one of existing

*holes. Contract*or shall also provide cat 6 cable (with terminations) for any bacnet connections to chiller and air handling units.
Contractor will not be installing telescope fiber, that is the responsibility of WIYN instrumentation.

26. Installation change:
Sheet E1.1 Power Plan Drawing 1 : Exterior duplex GFCI receptacle shown at air handler location, circuit LC-16.
Contractor can omit new receptacle and conduit installation and replace existing exterior receptacle with GFCI receptacle, no panel circuit change required.

27. Epoxy Flooring: Basis of Design?
Key Resin Company – Key thin Film coating systems, Polyurethane coating or equal

GENERAL STRUCTURAL NOTES

(APPLY UNLESS NOTED OTHERWISE)

1. ALL WORK SHALL CONFORM TO THE 2012 INTERNATIONAL BUILDING CODE.

2. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT.

3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF CONSTRUCTION – RESOLVE ANY DISCREPANCY WITH ARCHITECT. DO NOT SCALE DRAWINGS.

4. CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOF. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT.

5. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, BRACING, SHORING, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL SCAFFOLDING, BRACING, AND SHORING. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS. THE STRUCTURAL ENGINEER WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION. NOR WILL THE STRUCTURAL ENGINEER BE RESPONSIBLE FOR CONSTRUCTION SITE SAFETY, OR THE SAFETY PRECAUTIONS AND THE PROGRAMS INCIDENT THERETO.

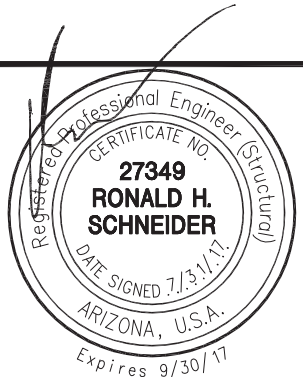
6. THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION.

7. DESIGN LOADS:
   CRANE LOAD = 1 TON PER CRANE (2 CRANES MAX)

8. MATERIALS OF CONSTRUCTION:

   STRUCTURAL STEEL – ASTM A992 (Fy = 50 KSI) FOR W–SHAPE
   ASTM A500, GRADE B (Fy = 46 KSI) FOR RECTANGULAR HSS
   ASTM A500, GRADE B (Fy = 42 KSI) FOR ROUND HSS
   ASTM A36 (Fy = 36 KSI) FOR ALL OTHER SHAPES AND PLATES

   BOLTS – ASTM A307



THIS ELECTRONIC SIGNATURE HAS BEEN AUTHORIZED BY ME THIS 31st DAY OF JULY 2017

SCHNEIDER
STRUCTURAL ENGINEERS
CREATING ELEGANT SOLUTIONS
435 E. 9th St. | Tucson, AZ 85705 | 520.512.8183 | www.sastructural.com

revisions

#	date	comment

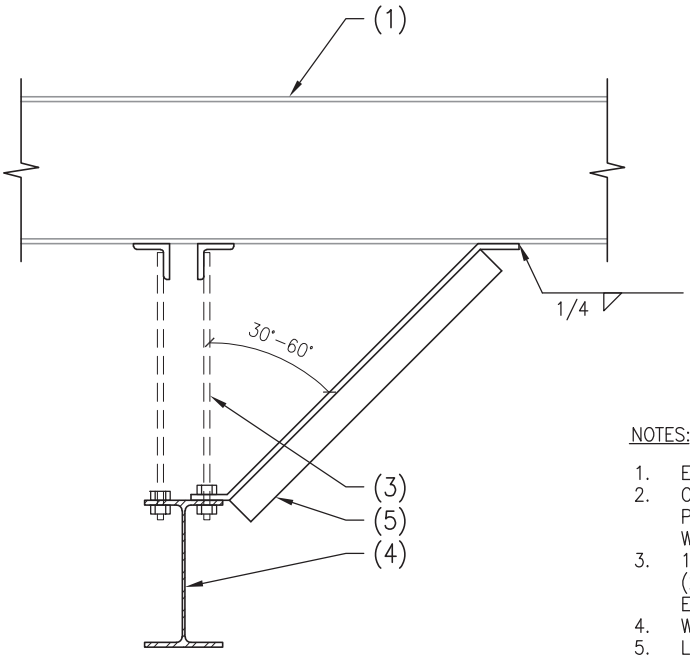
WIYN Telescope
Crane Rail
Kit Peak, AZ

project	project number
engineer	RHS
drafter	SL
date	7/31/17

SK1

sheet

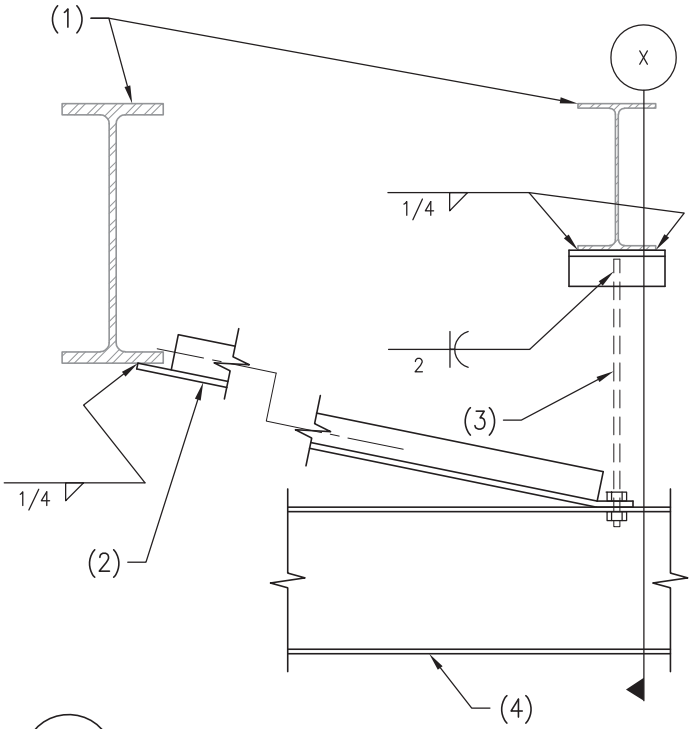
reference -



X SECTION

NOTES:

1. EXISTING STEEL BEAM.
2. ONE L3x3x1/4 BRACE PARALLEL CRANE BEAM WHERE WILL BEST FIT.
3. 1/2" DIA. THREADED ROD (2) ON BEAM GAGE AT EACH EXISTING BEAM.
4. W6x12 STEEL CRANE RAIL.
5. L3x3x1/4 BRACE AT EACH EXISTING BEAM.



NOTE:
MAXIMUM POINT LOAD ON RAIL/BEAM IS 5,000 LBS

1 CRANE HANGER SUPPORT DETAIL

SCALE: NOT TO SCALE

117214–DETAIL 1–1

Registered Professional Engineer (Structural)
CERTIFICATE NO. 27349
RONALD H. SCHNEIDER
DATE SIGNED 7/31/17
ARIZONA, U.S.A.
Expires 9/30/17

THIS ELECTRONIC SIGNATURE HAS BEEN AUTHORIZED BY ME THIS 31st DAY OF JULY 2017

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revisions

#	date	comment

WIYN Telescope Crane Rail Kit Peak, AZ

project	117214
engineer	RHS
drafter	SL
date	7/31/17

SK2

sheet

reference -

Powering Business Worldwide

Detail Bill of Material

Project Name: NOAO Kitt Peak
General Order No:
Negotiation No: PXIE0609X7K1
Alternate No: 0000

Item No.	Qty	Product	Description
	1	Switchboards	Pow-R-Line CSwitchboard, Front Access/ Front and Rear Align, Type 1, 208Y/120V 3-Phase 4-Wire, 800 Aluminum, Minimum Interrupting Rating: 35kA, Bus Bracing Rating: 65kA

Designation

Qty	List of Materials
1	Pow-R-Line C
1	Seismic Freestanding Label (IBC/CBC Seismic Qualified)
1	800 Amp AL Distribution Structure
1	Main Lugs
1	SPD Series 250kA SPD, Standard w/ Surge Counter (Disconnect Included)
16	Padlockable lockoff device
16	Thermal Mag Trip - Standard
17	Ground Lugs(s)
2	200A 3P [EDS 225A Frame], Trip 200 A, Thermal Mag, (1) #4-4/0, Mechanical
1	150A 3P [EDS 225A Frame], Trip 150 A, Thermal Mag, (1) #4-4/0, Mechanical
4	60A 3P [FD 225A Frame], Trip 60 A, Thermal Mag, (1) #14-1/0, Mechanical
3	100A 3P [FD 225A Frame], Trip 100 A, Thermal Mag, (1) #14-1/0, Mechanical
1	100A 2P [FD 225A Frame], Trip 100 A, Thermal Mag, (1) #14-1/0, Mechanical
1	80A 2P [FD 225A Frame], Trip 80 A, Thermal Mag, (1) #14-1/0, Mechanical
1	60A 2P [FD 225A Frame], Trip 60 A, Thermal Mag, (1) #14-1/0, Mechanical
2	30A 2P [FD 225A Frame], Trip 30 A, Thermal Mag, (1) #14-1/0, Mechanical
1	20A 2P [FD 225A Frame], Trip 20 A, Thermal Mag, (1) #14-1/0, Mechanical

Eaton Selling Policy 25-000 applies.

All orders must be released for manufacture within 90 days of date of order entry. If approval drawings are required, drawings must be returned approved for release within 60 days of mailing. If drawings are not returned accordingly, and/or if shipment is delayed for any reason, the price of the order will increase by 1.0% per month or fraction there of for the time the shipment is delayed.

Switchboard General Information

Pow-R-Line C - Specifications

Quantity: 1

Alignment: Front Access/ Front and Rear Align

Service: 208Y/120V 3-Phase 4-Wire

Minimum Interrupt Rating: 35 kA

Bus Specifications

Bus Amps: 800

Bus Bracing Rating: 65kA

Neutral Amps: 800

Bus Material: Aluminum

Heat Test

Ground Bus Material: Aluminum .25 X 2.0 Ground Bus Bolted To Frame, (1) #6-350 kcmil Ground Lug

Incoming Information

Terminals, Mechanical, Bottom, (3) #4-500 kcmil

Incoming Entry: Bottom

Incoming Location: Left

Incoming Qty & Size: Terminals, Mechanical, Bottom, (3) #4-500 kcmil

Structure Specifications

Non Service Entrance

Enclosure Type: Type 1

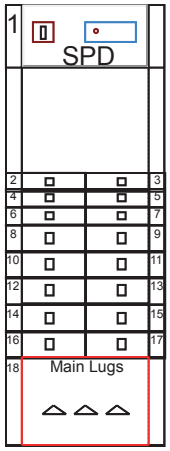
Seismic Label (IBC/CBC Seismic Qualified) - Freestanding

Refer to seismic installation data sheet TD01508002E and drawing 1A32496 for details.

Enclosure properties

Struct #	Description/Modifications
1	Bottom incoming main lugs on 50x chassis (Incoming Main Device/ MLO Section) Groundlugs: 17

PREPARED BY: MIKE BECKER	DATE: 6/9/2017		**Eaton**	SumterSC	
APPROVED BY	DATE		JOB NAME	NOAO Kitt Peak	
			DESIGNATION		
	VERSION: 8.0.19.0		TYPE: Switchboards	DRAWING TYPE: CustAppr	
NEG-ALT Number: PXIE0609X7K1-0000	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 1 of 4

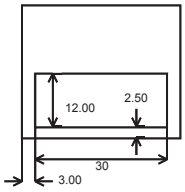


Front View

Struct	1 *
Depth	30
Width	36

Power Flow

Floor Plan
Rear



Total of 1 Structures, Total Weight of 495 Weight-Lbs.
Total of 1 Structures, Total Width of 36 Inches

Structure	1					
Ship-Inches **Ship-MM**	36.00 914					
Wdth-Inches **Wdth-MM**	36.00 914					
Depth(Inner)-In. **Depth(Inner)-MM**	30.00 762					
Depth(Outer)-In. **Depth(Outer)-MM**	30.00 762					
Height-Inches **Height-MM**	90.00 2286					
Weight-Lbs.(Est.) **Weight-Kg.(Est.)**	495 224					

PREPARED BY: MIKE BECKER	DATE: 6/9/2017	**Eaton**	SumterSC		
APPROVED BY	DATE	JOB NAME	NOAO Kitt Peak		
		DESIGNATION			
VERSION: 8.0.19.0		TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: PXIE0609X7K1-0000	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 2 of 4

Switchboard Units Information

Str#	Unit	Description/Modifications	Nameplate
1			
	1	Surge Protective Device -SPD Series 250kA SPD, Standard w/ Surge Counter (Disconnect Included)	
	2	Feeder Breaker - Chassis Mtd-30A 2P [FD 225A Frame], Trip 30A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	3	Feeder Breaker - Chassis Mtd-20A 2P [FD 225A Frame], Trip 20A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	4	Feeder Breaker - Chassis Mtd-60A 2P [FD 225A Frame], Trip 60A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	5	Feeder Breaker - Chassis Mtd-30A 2P [FD 225A Frame], Trip 30A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	6	Feeder Breaker - Chassis Mtd-100A 2P [FD 225A Frame], Trip 100A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	7	Feeder Breaker - Chassis Mtd-80A 2P [FD 225A Frame], Trip 80A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	8	Feeder Breaker - Chassis Mtd-100A 3P [FD 225A Frame], Trip 100A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	
	9	Feeder Breaker - Chassis Mtd-100A 3P [FD 225A Frame], Trip 100A., Thermal Mag Terminals, Mechanical, (1) #14-1/0 Lockoff devices: Padlockable Hasp Neutral Terminal, (1) #14-1/0	

PREPARED BY: MIKE BECKER	DATE: 6/9/2017	**Eaton**	SumterSC		
APPROVED BY:	DATE:	JOB NAME: NOAO Kitt Peak			
		DESIGNATION:			
	VERSION: 8.0.19.0	TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: PXIE0609X7K1-0000	REVISION: 0	DWG SIZE: DwgA	G.O.:	ITEM:	SHEET: 3 of 4

10 Feeder Breaker - Chassis Mtd-60A 3P [FD 225A Frame], Trip 60A., Thermal Mag
Terminals, Mechanical, (1) #14-1/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #14-1/0

11 Feeder Breaker - Chassis Mtd-100A 3P [FD 225A Frame], Trip 100A., Thermal Mag
Terminals, Mechanical, (1) #14-1/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #14-1/0

12 Feeder Breaker - Chassis Mtd-60A 3P [FD 225A Frame], Trip 60A., Thermal Mag
Terminals, Mechanical, (1) #14-1/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #14-1/0

13 Feeder Breaker - Chassis Mtd-60A 3P [FD 225A Frame], Trip 60A., Thermal Mag
Terminals, Mechanical, (1) #14-1/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #14-1/0

14 Feeder Breaker - Chassis Mtd-150A 3P [EDS 225A Frame], Trip 150A., Thermal Mag
Terminals, Mechanical, (1) #4-4/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #6-350 kcmil

15 Feeder Breaker - Chassis Mtd-60A 3P [FD 225A Frame], Trip 60A., Thermal Mag
Terminals, Mechanical, (1) #14-1/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #14-1/0

16 Feeder Breaker - Chassis Mtd-200A 3P [EDS 225A Frame], Trip 200A., Thermal Mag
Terminals, Mechanical, (1) #4-4/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #6-350 kcmil

17 Feeder Breaker - Chassis Mtd-200A 3P [EDS 225A Frame], Trip 200A., Thermal Mag
Terminals, Mechanical, (1) #4-4/0
Lockoff devices: Padlockable Hasp
Neutral Terminal, (1) #6-350 kcmil

18 Main Lugs -Incoming

	PREPARED BY: MIKE BECKER	DATE: 6/9/2017	**Eaton**	SumterSC	
	APPROVED BY:	DATE:	JOB NAME: NOAO Kitt Peak		
			DESIGNATION:		
	VERSION: 8.0.19.0		TYPE: Switchboards	DRAWING TYPE: CustAppr	
NEG-ALT Number: PXIE0609X7K1-0000	REVISION: 0	DWG SIZE: DwgA	G.O.:	ITEM:	SHEET: 4 of 4

Kitt Peak WIYN Renovations

Request for Clarification

Date	Number	Scope	Question
7/20/2017	1 ✓TAB is acceptable	Test & Balance	General Air Control is proposing only the following clean room testing be performed: 1) Temperature and relative humidity. 2) Room pressurization/cascade. 3) The HEPA filter will be challenged using POA, not PSL (DOP not to be used). HEPA filter challenge will be done once, after installation. 4) Particle count will be completed per IES-RP-006. Testing will only be done in an as-built mode. A Lighthouse Solair 3100 will be used for particle counting. It receives an annual certification. Please see attached information. The following procedures are consistently used by GAC on certification of previous class 100K clean room designed by Advantech Facility Design.
7/20/2017	2	HVAC Insulation	The specification book calls out for 1-1/2" inside, 2" outside on ductwork. Sheet M9.3 (Duct Insulation) calls out for the same inside but 4" outside. ✓Outside HVAC insulation shall be 4" with sealed seams
7/20/2017	3	Guarantee Time Period	Sheet G1.0 Note 14 requires Two (2) year guarantee from the time of substantial completion. Sheet M0.0 Note 27 requires One (1) year guarantee from date of final acceptance. ✓Two year guarantee
7/20/2017	4	AHU ✓ As long as performance meets or exceeds requirements	For AHU-1 & 2 we request to bid Trane 3" foam double walled units with an R Value of 19. These units meet or exceed the casing deflection and leakage ratesof the specified 4" units plus have a no thru metal design which the specified unit does no have. Trane units are acceptable.
7/20/2017	TO COME 5	Ductwork Supports	Are the new exterior duct supports to match the existing which appear to be welded steel channels and angle stands which are welded and painted? Detail 6 on M5.2 calls out for the pipe supports to have 12" deep concrete footers. Is there a detail or requirements for the ductwork?
7/20/2017	7	Duct Insulation	Sheet M9.3 states that rectangular duct islined but note #3 says all interior duct wrapped. Please advise. ✓No lined ductwork. All externally wrapped
7/20/2017	8	Duct Insulation	Sheet M9.3 Note 4 states exterior insulation shall be 4" wrap. Spec section 15080 3.15A Schedules shows 2". Please advise. ✓Exterior ductwork shall be insulated with 4" wrap.