REQUEST FOR BID

RFB Posted:	Oct 3, 2018
Question Posted:	Oct 12, 2018 2:00 P.M.
Bid Due Date:	Oct 19, 2018 2:00 P.M.

The South Dakota Science and Technology Authority (SDSTA) is seeking bids for the visual inspection of all welded structural washers and some designated accessory welds in the Ross shaft by a certified welding inspector to AWS D1.1 at the Sanford Underground Research Facility (SURF) located in Lead, South Dakota.

Documents included in this Request for Bid include:

A. This Request for Bid

B. Supporting Attachments:

- Weld Inspection Plan Presentation – Weld Inspection Plan V6.pdf
- Ross Shaft Field Weld Inspection – UGI-H9-2S005D_C.pdf
- Bearing Bracket Drawings – Bearing Brackets Section 2.1.pdf
- 2450 Level Drawings – 2450L Section 2.2.pdf
- Special Blocking Drawings – Special Blocking Section 2.3.pdf
- Inspection Sheets – QA Sheets.pdf

Acronyms used in this Request for Bid:

AWS	–	American Welding Society
CWI	–	Certified Welding Inspector
HMC	–	Homestake Mining Company
RFB	–	Request for Bid
SDSTA	–	South Dakota Science and Technology Authority
SURF	–	Sanford Underground Research Facility

1.0 Scope

All field welds within the Ross shaft are required to be performed by certified welders. However, during the rehabilitation project, some of these welds were performed by non-certified welders. All the field welds must either pass inspection or be corrected by certified welders to meet the original specification.

The scope for this project will be the complete visual inspection, by a certified welding inspector to AWS D1.1, of all welded structural washers and accessory welds that took place during the Ross shaft rehabilitation. A substantial amount of this inspection will focus on the 60-70 welded structural washers found at each of the 33 bearings beams in the Ross shaft. The inspection process will be a phased approach consisting of:

1. Top down visual inspection of all field welds in the Ross shaft (Phase 1):
    a. Welded structural washers on saddles 1-6 at bearing beams 1-24
    b. Welded structural washers on saddles 1-7 at bearing beams 25-33
    c. Field welds at the 2450 level station
    d. Field welds associated with the 4850 brow sets
    e. Field welds associated with the 4850 loading pocket
    f. Inspection report documenting the inspection

2. Weld inspection to the shaft designers specification (Phase 2):
    a. Reinspect the corrected failed welds from Phase 1. The combination of the Phase I inspection and this Phase 2 inspection will meet the shaft designer specification requirements for 10% visual inspection of the 60-70 welded structural washers at the 33 bearing beams**.**
    b. Non-destructive testing using dye penetrant on saddle #6 at sets 35, 53, 85, 128, 149, 185, 201.
    c. A final inspection report that documents the shaft inspection along with the inspection methods used.

Upon completion of Phase 1 inspection the deficient welds will be corrected based on the shaft designer's direction before proceeding to Phase 2. Phase 2 inspections should be broken out as a separate bid option that can be awarded as a follow-on to the Phase 1 Base Bid. SDSTA reserves the right to accept or reject any or all Bids. Acceptance of a Bid does not imply acceptance of any proposed options or alternatives. If a Bid has contingencies on other aspects of this project these contingencies must be clearly stated on the bid. Bids must include all costs associated with the Phase 1 and Phase 2 inspection including travel, time, & supplies/equipment needed.

2.0 Background Information

The Ross shaft was originally constructed in the 1930s at the Homestake Mine in Lead, SD. and will be one of the two main entrances to the Sanford Lab at Homestake once it is completed. The Ross shaft has undergone an extensive multiyear rehabilitation with all its original steel structure being replaced with a newly designed one.

The shaft extends from the surface to a depth of 5000 ft. There are drifts (tunnels) that extend out horizontally from the shaft at the Tramway, 300, 800 and the 1200 ft levels. From the 1200 ft level down to the 5000 ft level drifts are spaced every 150 ft. The Ross shaft acts as the conduit that supports all electrical, fiber-optic/IT services to the lab, and pump columns that provide water removal from deep underground. Once the Ross is completed it will also provide for personal transport from the surface to the underground as well as waste rock removal.

The shaft is rectangular with a rough cross section of 20 ft x 15 ft. Within this footprint hangs a steel structure that is comprised of standard sets, correction sets and bearing sets. Each standard set is separated in distance by no more than 18 ft. The individual standard sets are connected vertically by studdles located at numerous points within a set. Throughout the shaft, the standard steel sets are broken into six compartments; 1) cage, 2) North Skip, 3) South Skip, 4) pipe, 5) ladder/man way, 6) counter balance (Figure 1).

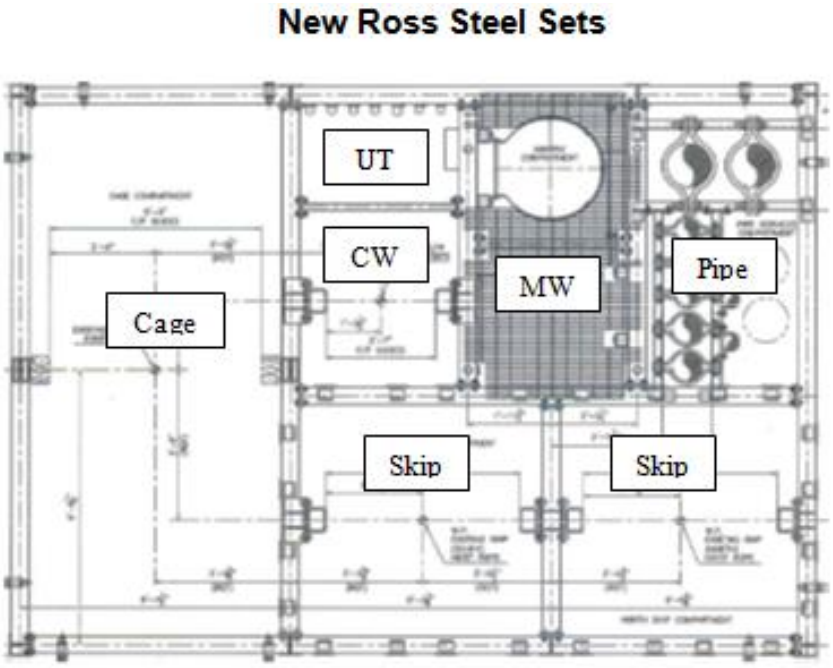

Figure 1: New steel set compartment identification

The shaft is designed to be in tension (each set "hangs" off the set above). The full weight of the hanging sets is supported by bearing beams that sit on steel supports anchored into the rock throughout the shaft. Generally, there will be 10 standard sets (approximately 150') "hanging" off one bearing beam. Each bearing beam is supported by 6-7 steel supports called saddles. Each saddle is secured with ten 1" diameter Williams bolts with lengths up to 11 ft. The Williams bolts are installed through oversized holes for installation. Structural washers are welded over the oversized holes to complete the installation. Most of work for this bid will focus around the visual inspection of the structural washers.

3.0 Additional Information

The shaft designer has provided SDSTA with a weld inspection plan. The plan (Ross Shaft Field Weld Inspection) documents the welds that need to be inspected and references the associated drawings (drawings sections 2.1-2.3) as well as inspection requirements. The complete plan and referenced drawings are included in this SOW as attachments for the bidders review.

However, this plan does not provide information on how the inspection will be performed or how access will be provided during the inspection. To help address these issues and more, SDSTA created a presentation that is referenced within this RFB. The Weld Inspection Plan Presentation (Weld Inspection Plan V6.pdf) should be reviewed by the bidder in addition to this RFB.

3.1 Weld Access

All welds for this scope of work will require the inspector to travel in the Ross shaft to the various locations listed in the Weld Inspection Pan PPT on Slides 4-13. This will require the inspector to be trained in the use of a fall harness and follow SDSTA's 100% tie off policy (among others) while in the shaft.

While in the shaft, the weld inspectors will be accompanied by a shaft crew that will include two SDSTA certified welders and two helpers. All movement of the shaft conveyances and communications to the hoist operator will be handled by the SDSTA shaft crew.

The inspection of welds on saddles 1-4 will be accessed from the skips or cage directly (purple area in slide 14). Weld inspections on saddles 1-4 will require the inspector to travel across the different conveyances to see the desired weld.

A second set of welds on saddles saddles 5-7 can't be accessed from the cage and skips. These welds occupy the Northwest corner of the shaft (purple area in slide 15).

Welds in the Northwest corner will require inspection platforms to be built so the welds can be inspected from the set below (slide 15 & 16). Accessing the welds that are approximately 18 ft above the inspection platform will be accomplished using the JLG Liftpod FT140 (slide 17) provided by SDSTA. SDSTA requires that the inspector will be trained in the use of the JLG FT140 (by SDSTA staff) and follow SDSTA procedures before the inspection can begin.

The inspector should assume that SDSTA will install all platforms before the inspector's arrival. During welding inspections, the setup/teardown/transportation of the JLG Liftpod will be handled by the SDSTA shaft crew.

3.2 Inspection Plan

The overall inspection process will be a top down approach. Meaning that all welds will be inspected at the desired set before moving down to the next set (slide 18). SDSTA requires that the weld inspector complete the inspection sheets provided by SDSTA to track inspected welds (slides 20-23) along with any internal company inspection forms. All welds must be visually inspected to AWS D1.1.

SDSTA estimates that 6 bearing beams could be inspected per 10-hour work shift. The inspection rate is limited by the setup/teardown/transportation time of the JLG lift. An inspection schedule is provided in Appendix A based on the inspection rate of 6 bearing beams per day. For fair bidding purposes, Phase 1 bids should use the schedule in Appendix A and the Phase 2 Option should anticipate one less day for inspections. This will be adjusted once Phase 1 results are known.

3.3 Inspector Requirements

The inspection must be performed by a Certified Welding Inspector (CWI) with the American Welding Society (AWS).

3.4 Submittal & Reporting Requirements

The following are the pre-inspection submittal and post inspection reporting requirements.

Submittals:

1. Inspection plan to include an overall summary of the inspection process, equipment to be used, and grading criteria per AWS D1.1.

2. Certified inspector and assistant inspection qualification and certifications.

Reports:

SDSTA requires that a report be prepared by the welding inspector after the completion of the Phase 1 visual inspection. At a minimum the report must include:

1. Overall summary of the inspection process.
2. Total number of welds inspected & number of passing welds
3. Number of failed welds and corresponding locations

In addition to the above report SDSTA requires that all the completed inspection sheets (slides 20-23) for all welds inspected be electronically scanned (pdf format) and stored on a USB memory stick. The inspection sheets and electronic copies stored on the USB memory stick must be submitted to SDSTA with the inspection report. A similar final reporting requirement should be included in the Phase 2 Option.

4.0 Submission Requirements

Bidders should submit an electronic copy (pdf format) of the bid no later than 2:00 p.m. on October 26, 2018, to mbaumann@sanfordlab.org. Late submissions will not be accepted.

Questions need to be submitted by October 18, 2018

Questions/Answers will be emailed to all prospective bids and posted to the sanfordlab.org website no later than October 19, 2018.

Both the Phase 1 base bid and Phase 2 option should be broken down for mobilization on a per day cost based on the estimated inspection schedule in Appendix A (with Phase 2 taking one less day). This per day breakdown will be used should the number of days in the inspection schedule need to be reduced or increased based on actual inspections rates.

The bid period may be extended at the discretion of SDSTA based on the quantity and/or complexity of questions. Any notices of extension of time to respond will be distributed to all prospective bidders by SDSTA.

All communications regarding this procurement between RFB release and award shall be directed by email to mbaumann@sanfordlab.org. Communications with other SDSTA staff regarding this procurement in advance of the award are not allowed.

APPENDIX A – Number of Welds Requiring Visual Inspection in the Ross Shaft

Line	Time	Set#	Inspection	# of Welds	Daily Totals
1	Start D1	4	Saddles 1-6	60	
2		14	Saddles 1-6	60	
3		24	Saddles 1-6	60	
4		35	Saddles 1-6	60	
5		45	Saddles 1-6	60	
6	End D1	53	Saddles 1-6	60	360
7	Start D2	64	Saddles 1-6	60	
8		74	Saddles 1-6	60	
9		85	Saddles 1-6	60	
10		95	Saddles 1-6	60	
11		106	Saddles 1-6	60	
12	End D2	115	Saddles 1-6	60	360
13	Start D3	124	Saddles 1-6	60	
14		128	Saddles 1-6	60	
15		139	Saddles 1-6	60	
16		149	Saddles 1-6	60	
17		154	2450L Welds	6	
18	End D3	159	Saddles 1-6	60	306
19	Start D4	165	Saddles 1-6	60	
20		175	Saddles 1-6	60	
21		185	Saddles 1-6	60	
22		195	Saddles 1-6	60	
23		201	Saddles 1-6	60	
24	End D4	211	Saddles 1-6	60	360
25	Start D5	221	Saddles 1-6	60	
26		231	Saddles 1-7	70	
27		241	Saddles 1-7	70	
28		246	Saddles 1-7	70	
29		256	Saddles 1-7	70	
30	End D5	266	Saddles 1-7	70	410
31	Start D6	275	Saddles 1-7	70	
32		282	Saddles 1-7	70	
33		291	Saddles 1-7	70	
34		297	Saddles 1-7	70	
35		302	Blocking & Misc	24	
36		303	Blocking & Misc	24	
37	End D6	304	Blocking & Misc	24	352
Total Welds Needing Inspection				**2148**	