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Trail Bridge Support Unit

Bid Document For Procurement of Fabricated Steel Parts for Trail Bridges

**Bridge Name: Daduwa Khola Suspension Bridge /
Banke**

April, 2015

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1. INVITATION FOR BIDS

HELVETAS Swiss Intercooperation Nepal

Invitation of Bids for Procurement of Fabricated Steel Parts for Trail Bridges

Bridge Name: Daduwa Khola Bridge

1. On behalf of the Government of Switzerland, Trail Bridge Support Unit (TBSU)/HELVETAS Swiss Intercooperation Nepal, provides technical assistance to the Government of Nepal for implementation of trail bridge programme under Sector-Wide Approach (SWAp). It intends to contribute its fund for re-construction of the recently flood damaged trail bridge of Banke.
2. Sealed Bids are invited for supply and delivery of fabricated steel parts from the registered Fabricators fulfilling the eligibility requirements.
3. The Fabricators with experience of successfully completing fabrication and supply of steel parts for minimum ten (10) trail bridges within last three years and enlisted by TBSU are eligible for bidding. New fabricators may also apply in joint venture with an eligible firm having the required experience. However, bids of such fabricators shall be considered responsive only in case fabricators fulfill the requirements.
4. Fabricators interested in bid shall submit photocopy of firm registration, tax clearance certificate, VAT/ PAN certificates, along with bid document
5. Bidding documents can be downloaded from the Purchaser's web page [www.helvetas.org.np/about us/job & notices](http://www.helvetas.org.np/about_us/job_&_notices) by eligible Bidders, from the next day of publication of this notice.
6. All sealed bids/offers must be submitted on or before **13:00 hours, 23rd April, 2015**. Documents received after this deadline shall not be accepted.
7. The signed hard copy of bids/offers has to be submitted in a sealed envelope and addressed to :

Trail Bridge Support Unit
HELVETAS Swiss Intercooperation Nepal
Shreemahal, Pulchowk, Lalitpur
G.P.O. Box - 688, Kathmandu, Nepal
Fax : 977-1-5526829, Ph.No.977-1-5527828
8. Bids will be opened in the presence or absence of Bidders' representatives who choose to attend **at 15:00 on 23rd April, 2015** at the office as indicated in (7) above. Bids must be valid for a period of **45 days** after bid opening and must be accompanied by bid security, amounting to **2.5 % of the quoted Bid amount (inclusive of VAT)**, which shall be **valid for 90 days** from the date of the bid opening.
9. The quoted rates must be valid for a period of 45 days after bid opening.
10. If the last date of purchasing, submission and opening falls on a government holiday then the next working day shall be considered as the last day.
11. This office reserves the right to accept or reject, wholly or partly any or all bids without assigning any reasons, whatsoever.

2. IMPORTANT INFORMATION

1. Only fabricators who fulfil the eligibility requirements are eligible for bidding.
2. The bidders shall quote the unit rates and total amount both in figures and words.
3. In case of difference in the rates quoted in figures and in words, the rates quoted in words shall prevail.
4. While quoting rates, the fabricator shall not be allowed to use correcting fluid or other erasing materials; neither the fabricator shall be allowed to over write the quoted rates. It may result into rejection of the bid document. In case of mistakes in rates, the fabricator is to simply cross the rates and shall re-write the rates and shall bear the initials of authorized signatories.
5. Acceptance or rejection of bid documents and award of the job in full or in part to a single or different bidders or cancellation of bid notice shall remain within the jurisdiction of THE PURCHASER.
6. THE PURCHASER may make changes (increase or decrease) in the quantity within 10 days after the opening of the bids and the fabricator shall have to abide by such changes without any change in the quoted rates.
7. Prices shall be quoted in Nepalese Rupees and payment shall be made in local currency.
8. Bids received after expiry of submission date shall not be considered as valid.
9. The financial proposals of only those bidders who fulfil the eligibility requirements shall be opened.
10. Bidding cost shall be for the bidders' account.
11. The following document shall form an integral part of the contract agreement:
 - a) Invitation for Bids
 - b) Important Information
 - c) Terms of References
 - d) Technical Specifications
 - e) Quality Assurances
 - f) Schedule of Requirements
 - g) General Conditions of Contract
 - h) Detailed Drawings
 - i) Bill of Quantities
 - j) Future correspondences in regard to the contract
 - k) Instructions issued by the Purchaser's Inspector
12. The successful bidder shall have to provide a Performance Bank Guarantee of 5% of the contract value at the time of signing the contract agreement in the sample format of bank guarantee prescribed by THE PURCHASER. Such performance bank guarantee must be valid at least for a warrantee period from the date of signing the contract agreement.
13. Bank guarantee of finance company shall not be accepted.
14. Fabricator must provide sample of raw materials within 7 days after signing the agreement with the PURCHASER.

15. THE PURCHASER will inform fabricator within one week about acceptance or rejection of raw materials.
16. In case sample of raw materials is rejected, fabricators shall have to provide another sample of raw materials procured from alternative rolling mill within three days after the information of rejection of first sample is communicated to the fabricator.
17. In case second sample of raw materials is also rejected, THE PURCHASER may terminate contract agreement.
18. The fabricator must adhere to Quality Assurance.
19. THE PURCHASER shall have the privilege to carry out random inspection without pre-information to the fabricator.
20. In case THE PURCHASER is not satisfied with the work quality and progress, it shall have the privilege to terminate contract agreement at any point of work execution and bank guarantee(s) may be forfeited.
21. THE PURCHASER shall not be liable to compensate the fabricator in case of termination of contract due to rejection of raw materials, poor work quality, sample of Jig/ Template not as per design and drawings, poor work progress etc.
22. In case the fabricator fails to complete the job in the given time, THE PURCHASER may levy penalty as per conditions of the contract agreement.
23. In case steel parts are not acceptable, the inspecting engineer of THE PURCHASER shall issue instructions to the fabricator for rectification of works in a given time period in writing.
24. After rectification the fabricator shall inform in writing to the PURCHASER, for second inspection of the fabricated and galvanized steel parts.
25. In case the works are not acceptable during second inspection, the PURCHASER shall have the privilege to get the works fabricated and galvanized by another workshop and the fabricator shall not be paid for such rejected works.

3. TERMS OF REFERENCE

1. OBJECTIVE

The Employer intends to implement and supervise the execution of fabrication, transportation, construction and erection of LSTB bridges on main trails and strategic crossings. The work is intended to be procured by utilising the services of private eligible Contractors with support of Fabricators.

2. SCOPE of WORKs

2.1 GENERAL

The Contractor / Fabricator shall perform the above mentioned and herein described job professionally with accepted level of accuracy, existing engineering practice, and sound judgement based on experience and professional ethics.

2.2 Fabrication of Steel Parts

It consists of followings:

- * *Procurement of raw materials as per specification for fabricating steel parts,*
- * *Procurement of fixtures, i.e. nuts & bolts, thimbles etc. according to the specifications;*
- * *Provide samples of raw material to the Employer for lab testing*
- * *Fabrication of steel parts according to specification and drawings;*
- * *Galvanisation of fabricated steel parts according to the specification;*
- * *Galvanization of steel parts (refer to specification for galvanization) is permitted only at the plants, which have complete process and setup (enlisted by Trail Bridge Section, DoLIDAR);*
- * *Transportation of fabricated bridge parts from workshop to galvanisation plant and back to workshop or to the specified point of delivery;*

2.2.1 QUALITY MANAGEMENT AND QUALITY ASSURANCE

- * *Maintain in- built quality management quality assurance system with necessary equipment/tools and measuring instruments. This system should cover from quality of raw material up to galvanization and the final product;*
- * *Continuous supervision and quality management during fabrication and galvanization according to the specification for steel works by a competent personnel;*
- * *Maintain quality assurance documentation as per given format in Annex C: Quality Assurance Document;*
- * *Arrange inspection of completed bridge parts by Authorised Inspecting Engineer appointed by the Employer.*

2.3 CONSTRUCTION

2.3.1 TRANSPORTATION AND CONSTRUCTION

- * *Construction (or acquiring by hiring it) of the camp, its operation & maintenance;*
- * *Layout of bridge;*
- * *Transportation of bridge parts, and procurement and transportation of materials such as cement, gabion etc. up to bridge construction site;*
- * *Collection of materials such as sand, gravel, boulders etc.;*
- * *Acquire wire rope from the Employer and blasting materials and transport to sites;*
- * *Civil construction works of anchorage blocks and bridge foundations, protection work, consisting of concrete, masonry, retaining wall (gabion crates/ block stone masonry), etc.;*
- * *Mechanical works such as tower erection, cable hoisting, walkway and fitting of other parts, windguy arrangements,;*
- * *Finishing works such as, rust prevention by putting coaltar on saddles, cables near saddles, and all non-galvanised threads, and environmental restoration of the construction scar by sowing grass, turfing, afforestation, construction of wicker work fences etc.*

- * *Continuous supervision and quality management during transportation, construction and bridge erection according to the specification for these works by a competent personnel (see below 2.3.2);*
- * *Arrange inspection at pre-defined critical stages of construction and bridge erection (1. Bridge Layout & Foundation Excavation, 2. Masonry / Concrete Works and placing of Anchorage Parts, 3. Tower Erection, cable hoisting, 4. Final Check) by Authorised Inspecting Engineer appointed by the Employer.*

2.3.2 Supervision and Quality Assurance

- * *Employ and manage all necessary staff for continuous site supervision; Supervising staff should be at least civil overseer with required qualification;*
- * *Layout of bridge (within 7 days after receiving work order from the Employer);*
- * *Supervise all civil construction work including quality control according to technical specification;*
- * *Supervise all mechanical/erection and finishing works including its quality control / assurance;*
- * *Inspect all material and workmanship including testing of materials, wherever necessary, by an engineer;*
- * *Provide test certificates of steel sections intended to use for fabrication, G.I. Wire for wire mesh, gabion works and cement;*
- * *Maintain quality assurance documentation strictly as per given format and instructions as per Annex C: Quality Assurance Document.*

2.4 REPORTS

Following reports for different phases have to be submitted to the Employer by the Contractor/Fabricator, besides those already specified and provided with standard formats. They shall be concise and transparent with photographic evidence of the completed quality work.

2.4.1 FABRICATION

- a) Procurement and stock of raw materials for fabricating bridge parts;
- b) Test Certificates of raw materials (steel sections, zinc purity), fixtures (nuts/bolts, bulldoggrrips etc)
- c) Progress in fabrication of bridge parts (i.e. anchorage parts, tower parts, walkway and steel deck);
- d) Progress in galvanisation of fabricated bridge parts;
- e) Completion of fabrication and galvanisation work, inspection of the completed works by the Authorised Inspecting Engineer appointed by the Employer;
- f) A final report detailing the experience of the Firm during this phase including problems encountered in liaison with the Employer (its critical review).
All above mentioned reports shall be submitted in a monthly basis.

2.4.2 CONSTRUCTION

- a) General impressions of the bridge location/site, its surrounding environment, and others, including problems encountered;
- b) Technical aspects and problems encountered during layout and a statement of whether the survey and design components of the bridge fits with real site conditions;
- c) Progress of works (i.e., 1. Transportation of materials, 2. Bridge Layout & Foundation Excavation, 2. Masonry/Concrete Works and Placing of Anchorage Parts, 3. Tower Erection, Cable hoisting, 4. Hoisting of Windguy Arrangements etc.);
- d) Completion of construction and bridge erection works, inspection at different stages of the completed works by the Authorised Inspecting Engineer appointed by the Employer;
- e) A final report detailing the experience of the Contractor/Fabricator including problems encountered in liaison with the Employer (critical review).
All above mentioned reports are to be submitted in a monthly basis.

2.5 COMMUNICATION

- a) The reports shall be sent to the Employer either by :
 - i) Firm's staff travelling from site to Kathmandu

- ii) Employer's staff on inspection tours
 - iii) By registered mail or fax
- b) Notice or report will be deemed to be effective as follows :
- i) In case of personal delivery and registered mail, on their delivery
 - ii) In case of fax, 24 hours following confirmed transmission
- c) The quality control is inherently associated with Employer's Engineer (authorized Inspecting Engineer appointed by the Employer). Communication plays a vital role in systematic execution and timely completion of work.
- i) Copies of monthly report has to be provided to Employer's Engineer
 - ii) Employer's Engineer has to forward with timely comments any communications to the Employer's office.
 - iii) Key supervisions, timely checks and approvals shall be duly communicated.
The whole communication framework shall be according to the Quality Control/Assurance Manual.

3. SERVICES AND FACILITIES PROVIDED BY THE EMPLOYER

The Employer provides free of cost one copy each of the following documents and materials:

- a) **Fabrication Drawings**
- 1 set of steel drawings
 - 1 set of Schedule of Works (SoW)

4. TECHNICAL SPECIFICATIONS (TS)

1. Steel Work

Bid and actual fabrication of the bridge parts shall be based on the "Terms of Steel works" given below in addition to relevant ISI Codes. In case of discrepancies between the two the "Terms of Steelworks" shall prevail.

Safety and health provisions shall be made according to IS: 818-1968, and shall entirely be the Supplier/ Fabricator's responsibility.

The following "Terms of steel works" has to be strictly followed while performing the steel parts fabrication work.

a) Straightening

All materials shall be straight and if necessary, before being worked shall be straightened and/or flattened by pressure, unless required to be of curvilinear form and shall be free from twists.

b) Cutting

Cutting may be affected by shearing cropping or sawing. Gas cutting by mechanically controlled torch is permitted for mild steel only. Gas cutting of high tensile steel is also permitted provided special care is taken to leave sufficient metal to be removed by machining so that all metal that has been hardened by flame is removed. No loads shall be transmitted into metal (except welded joints) through a gas cut surface.

c) Holing and Punching

Holes for bolts or pins shall be drilled (not to be formed by gas cutting). Punching may be permitted for materials with thickness < 14mm, provided the holes are punched 3 mm less in diameter than the required size and reamed after punching to the full diameter. When holes are drilled or punched in one operation through two or more separable parts, these parts shall be separated after drilling or punching and the burrs removed. To obtain uniformity the use of templates and jigs is mandatory for holing. **All cut edges should be smoothed by grinding.**

d) Templates (jigs) for steel decks and cross beams

Templates for steel decks and cross beams shall be made accurately and complete as per the assembly drawings. Both the ends of the templates should be flushed (no free ends) to control the alignment of the crossbeams and steel deck ends. The template should have pins of sufficient height (thickness of cross beams or steel deck + minimum 2mm) for all the holes as per assembly drawings. Welding of the component should be done only after inserting all the holes into the pins as assembly drawings.

Fabrication can be continued only after the inspection and acceptance of the templates.

e) Assembly

The component parts shall be assembled in such a manner that they are neither twisted nor otherwise damaged and shall be so prepared that the specified cambers, if any, are provided.

f) Bolting

Where necessary washers shall be tapered or otherwise suitably shaped to give the heads of nuts and bolts a satisfactory bearing. The threaded portion of each bolt shall project through the nut at least two threads. In all cases where the full bearing areas of the bolt is to be developed,

the bolt shall be provided with a washer of sufficient thickness under the nut to avoid any threaded portion of the bolt being within the thickness of the parts bolted together. Threading of rods and holes shall be done by machines.

g) Welding

Welding shall be in accordance with any of the following standards as appropriate, and shall be conducted by appropriately qualified welders:

- IS: 816-1989 : Code of practice for use of metal arc welding for general construction in mild steel.
- IS: 823-1964 & : Code of practice for use of welding in bridges and structures subject to dynamic loading.
- IS: 1024-1979 :

If there are any new editions of Indian Standard those should be used as references. The use of templates and jigs is mandatory for welding of assembly. Following special requirement in conjunction with galvanization has to be made. Sections should have ¹corners cropped to allow free flow of zinc during galvanization.

Avoid narrow gaps between plates. Overlapping surfaces and back to back angles and channels should be avoided. Where small areas are unavoidable edges should be sealed by a continuous **pore free weld** to prevent penetration of pickle acids.

h) Designs

The Designs and Drawings are integral parts of these technical specifications. Details for the steel works can be found in the set of Steel Drawings, which will be made available to the Fabricator after the contract is signed / awarded.

i) Quality Requirements, Quality Control and Quality Assurance (Guarantee)

The quality control of the raw materials acquired, fabrication process, and that of ready made product is the responsibility of the prime Supplier/fabricator, who should guarantee that all raw materials are of standard quality according to Indian Standards Institution and to the specifications given in the "Terms of Steel works" and fabrication of the bridge parts are correct according to Design and Drawings. The cost for all damages due to use of low quality materials has to be borne by the Supplier/fabricator. At the time of delivery the parts and materials shall have to be free from any defects in material or workmanship in all respects and shall remain reasonably perfect till the end of maintenance period when a final check shall be carried out.

If any mistakes in the Standard Designs and Drawings are found by the workshop, the Purchaser has to be informed immediately in writing. The changes in steel profile have to be done only with written permission from the Purchaser in case of proven non-availability of certain profiles in the market.

The cost of other materials thus proposed and used will be fixed according to their respective weight and the lower among the bid price and official cost of the Purchaser.

j) Inspection, Tests and Final Check

The Supplier/Fabricator shall coordinate to provide access and other facilities for the inspection and, if required, tests of the works at any/or all stages during fabrication of the steel parts. Unless otherwise agreed this inspection should be carried out at the place of fabrication. The inspection shall be facilitated by a properly accredited person (quality control manager) available at the

fabricator's floor during all working hours together with a complete set of drawings and any further instructions which may have been issued.

Following steel parts have to be in assembled form during such inspection: The parts shall be assembled after completion of the galvanization, on a flat, level and hard top place. Once dismantled, any damage to the galvanization of the steel parts has to be rectified before delivery.

- All anchorage parts (100% assembly)
- Walkway deck with cross-beams (100% assembly)
- Both towers, complete (100% assembly)
- Windguy stay strut (100% assembly)
- Complete truss (100% assembly)
- Clamps and turnbuckles (100% assembly)

Such inspection shall be made prior to delivery and shall be conducted so as not to interfere unnecessarily with the operation of other work. Such inspections are supplementary and intended to clear the delivery only, and shall not be considered as a final acceptance.

The final check of all steel parts will be conducted along with the final check of the bridge and the discrepancies found during such final check have to be rectified by the Fabricator at its own cost. On a default situation, such works shall be conducted by the Purchaser and the cost incurred for such works shall be made a liability in the Fabricator's account (either from its retention money or from other payments and/or their property according to the prevailing rules and regulations).

All gauges and templates, measuring instruments (minimum: veneer calliper, hydrometer, PH-meter, adhesion testing hammer, zinc coat measuring instrument etc.) necessary to satisfy the inspector shall be supplied by the Fabricator. The inspector may at his/her discretion check the test results obtained at the Fabricator's works by independent tests and should the material so tested be found to be unsatisfactory, the costs of such tests shall be borne by the Fabricator, and, if satisfactory, the costs shall be borne by the Purchaser. In any case the quality assurance by the Fabricator has to be made available, whenever required by the Purchaser.

k) Storing, handling and protection of steel parts (specially Threads)

All structural and reinforcement steel shall be stored and handled without subjecting them to excessive stresses and damage. The threaded parts including anchorage rods, clamps, suspenders etc. have to be protected with grease and jute immediately after completion.

l) Labelling, Packing and delivery

Each member (or set of members) has to be labelled clearly indicating both the drawing number and the part number corresponding to the steel-part list and the drawing number provided by the Purchaser, ***but only after galvanization.***

Straight bars and plates shall be bundled. All bolts, nuts, washers and other small and loose parts shall be packed in cases or strong bags and labelled in order to prevent damage or distortion during transportation. The costs of packing and labelling shall be included in the bids. The Wire mesh netting has to be delivered in bundles. Each transport unit shall not exceed 45 kg in weight. For each delivery the workshop has to prepare a detailed list of the bridge parts to be delivered, containing the drawing numbers, part numbers, and description of parts, quantities and weights.

2. Supply and Fabrication of Steel Parts

2.2.1 Structural Steel

Structural steel supplied by the workshop shall comply with the requirements of IS: 226-1975, specification for Structural Steel (Standard Quality). The dimensions for hot rolled materials are specified in IS: 800-1984 & 808-1989 (General construction in steel). Steel grade shall be standard quality FE 410, and should have following properties:

Yield stress $\geq 250 \text{ N/mm}^2$
 Tensile strength $\geq 410 \text{ N/mm}^2$
 Elongation $\geq 23\%$
 Permissible tolerance of physical dimension = $\pm 2.5\%$

2.2.2 Reinforcement Steel

Reinforcement steel supplied by the workshop shall be *ribbed torsteel* with high yield strength deformed bar of grade FE 415 conforming to IS: 1786-1985. All reinforcement shall be clean and free from loose mill-scales, dust, loose rust and coats of paint, oil or other coatings, which may destroy or reduce bond. All reinforcement steel shall be cold bent. Points for anchor rods shall be formed by grinding. ***Joining of reinforcement steel bars by welding is prohibited.***

2.2.3 Supply of Thimbles

Thimbles supplied by the workshop shall conform to the standard specifications of Thimbles (IS: 2315-1978). The workshop is responsible that all thimbles can be fitted to the provided pins, steel parts etc. Thimbles should be hot dip galvanized with minimum zinc coat of $40\mu\text{m}$.

2.2.4 Bolts, Nuts & Washers

Bolts, nuts, & washers shall confirm the standard specification of bolts, screws, nuts & washers (IS: 1363-1984 for hexagon head bolts) / (IS: 1367-1979/1980 conditions for threaded fasteners) / (IS: 6610-1972 for heavy washers) / (IS: 5369-1975 for plane & lock washers) / (IS: 5372-1975 for taper washers). Type and strength grade of the nuts / bolts shall be as specified in the respective drawings. Nuts/bolts for walkway deck shall be of ordinary type of 4.6 grade and for truss and towers shall be high strength friction nuts/bolts of 8.8 grade.

Bolts, nuts & washers shall be hot dip galvanized with minimum zinc coating of 40 um.

2.2.5 Miscellaneous Supply

2.2.5.1 Miscellaneous Supply

The wire used for weaving of wire mesh netting shall be of 10 SWG (3.25mm), conforming to IS: 280-1978, heavy coat galvanized according to IS: 4826-1979 (hot dip galvanized, minimum zinc coating of 270 gm/m^2 and should pass uniformity of zinc coat and adhesion test). In addition, G.I. wire should have tensile strength of $380\text{-}500\text{N/mm}^2$. The wire mesh shall be chain linked with mesh size of $60\text{x}60\text{mm}$ and width of 1.25m.

2.2.5.2 Miscellaneous Supply

The gabion boxes shall be machine woven rectangular units made from double twist hexagonal mesh of heavy galvanized mild steel wire. All edges of the standard gabion including the diaphragms, if any, should be mechanically selvedged in such way as to prevent unravelling of the mesh and to develop the full strength of the mesh.

The wire used for manufacturing of the gabions shall be annealed mild steel complying with BS 1052:1990 or NS 169:2045 with an average strength of $380\text{-}500 \text{ N/mm}^2$ and shall be galvanized before weaving as specified in BS 443:1982 of NS 163:2045.

The adhesion of the zinc coating shall be such that, when the wire is wrapped six turns around a mandrel of four times the diameter to the wire, it does not flake or crack to such an extent that any flakes of zinc can be removed by rubbing with the bare fingers. Further, the G.I. wire also should pass the uniformity test.

The combination of the mesh type and mesh wire diameter and ultimate failure load shall be as the table below:

Mesh type (cm X cm)	Mesh wire diameter (mm)	Selvedged wire diameter (mm)	Ultimate tensile strength (kN/m ²)
10 x 12	3.0	3.9	43.00
6 x 8	2.2	2.7	35.00

The tightness of the twisted joints should be such that a force of not less than 1.7 kN is required to pull one and separate it from other wire provided that each wire is prevented from turning and the whole process is done in one plane. All the gabions of lengths more than 2.00 m should contain diaphragms spaced at a distance of not more than 1.00 m.

The fundamental technical specification of the gabion boxes of the required size should be as follows :

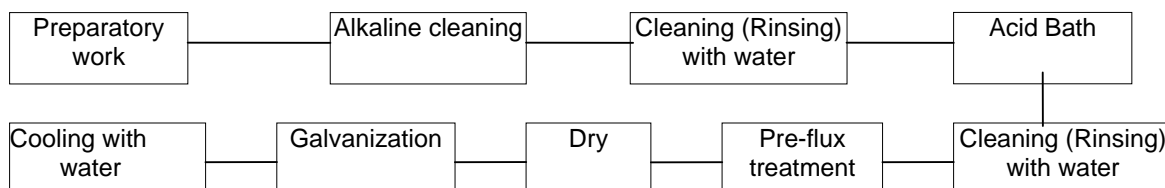
Box size	Mesh type (cm X cm)	Mesh wire	Selvedge wire	Lacing wire	Zinc coating	No. of diaphragms
2 x 1 x 1	10 x 12 hexagonal	3.0 mm	3.9 mm	2.4 mm	275 gm/m ²	1
3 x 1 x 1	10 x 12 hexagonal	3.0 mm	3.9 mm	2.4 mm	275 gm/m ²	2
3 x 2 x 0.3	6 x 8 hexagonal	2.2 mm	2.7 mm	2.2 mm	240 gm/m ²	2
4 x 2 x 0.3	6 x 8 hexagonal	2.2 mm	2.7 mm	2.2 mm	240 gm/m ²	3
5 x 2 x 0.3	6 x 8 hexagonal	2.2 mm	2.7 mm	2.2 mm	240 gm/m ²	4

3. Hot Dip Galvanization of Steel Parts

Galvanizing of steel parts shall be executed in accordance with IS: 2629-1966 (Recommended Practice for Hot-Dip Galvanizing of Iron & Steel) and IS 4759-1984 (specification for hot-dip zinc coating on structural steel).

3.1 Galvanization Process

Galvanizing should follow the process as below:



- **Preparatory work**

All welding slag should be removed from the steel parts to be galvanized. Acid traps should be avoided.

- **Alkaline cleaning**

Rust, oil and other contaminants should be removed from the steel by preliminary treatment with Alkaline cleaning in Sodium Hydroxide Solution of 10 ~ 15% concentration.

The concentration of the solution should be monitored at regular intervals and adjusted accordingly to have good cleaning effect.

- **Rinsing**

After Alkaline cleaning, steel should be flushed with running water.

- **Acid Bath**

The preliminary treated steel is then cleaned by Acid Bath in Hydrochloric Acid Solution of 50% concentration.

During the operation, close control of acid content in the solution is necessary. It is done by testing for acid (PH value = 1 to 3, measured by PH meter) and iron contents at regular intervals. The strength of the solution should be maintained by periodic addition of fresh concentrated acid. If the iron content in the solution is more than 100g/liter (density measured by hydrometer, maximum permissible value = 1.2), it should be changed by the new fresh solution.

- **Rinsing**

After Acid Bath steel should be flushed with running water.

- **Pre-flux treatment**

Acid bathed steel is dipped in a solution of Zinc Ammonium Chloride ($ZnCl_2 \cdot 3NH_4Cl$) of 20 ~ 40% concentration. This solution is prepared by mixing 45% of Zinc Chloride ($ZnCl_2$) + 55% of Ammonium Chloride (NH_4Cl).

The concentration of solution should be controlled at regular intervals. For this specific gravity of the solution is maintained (Hydrometer reading in range of 1.1 to 1.15) by adding required quantities of pre-flux chemicals in proportions.

- **Dry**

After pre-flux treatment, steel is dried for galvanization.

- **Galvanization**

The treated steel is dipped into the molted Zinc (zinc bath). Temperature of the molted Zinc should be maintained within the range of 450⁰ C to 470⁰ C. Appropriate dipping time also should be maintained.

- **Cooling**

After the hot dip, steel is cooled with water.

3.2 **Quality Checking of Galvanization**

- **Galvanizing Process**

CHECK THE GALVANIZING PLANT AND ITS SET UP TO BE ENSURED THAT ALL THE GALVANIZING PROCESS IS AVAILABLE AND MAINTAINED.

- **Quality of Zinc**

This can be checked by chemical testing of raw zinc used for the galvanization. Zinc content should not be less than 98.5%.

- **Quality of galvanization**

By visual check the following:

- **GALVANIZED STEEL SHOULD BE FREE FROM RUST AND BLACK SPOTS, ACID TRAPS, WELDING SLAGS.**
- Galvanized coating should be free from ash, pimple and bulky deposition.
- Galvanized coating should be continuous, smooth and evenly distributed as far as possible.
- Zinc coat should be adherent. This can be checked by hammering or scratching.
- No zinc paint or ammonium paint is applied to hide rust spots. This is very unhealthy practice, which frequently applied by the galvanisers.
- Zinc thickness can be measured by Delta scope (electromagnetic instrument for measuring coating thickness over ferrous material). In our case zinc coat should not be less than 80 μm in any steel parts.
- **Treatment of Threads:** Extra zinc on threads should be removed with a rotating wire brush immediately after galvanizing or with gas blow and cleaning with rotating brush if galvanization is already hardened. Re-threading of the galvanized parts is not permitted
- **Sampling:** 100% of the steel parts shall be checked.

4. Assurance

The Supplier / Fabricator shall have in built quality management system and ensure that the above technical specifications are met as per the requirement of the Purchaser through submission of quality assurance document.

5. Transportation

It is the responsibility of the Supplier/ Fabricator to control transportation activities and quality/quantity of any materials, loading and off-loading of the same, and the delivery at designated point.

Steel parts should be transported with due attention so as not to incur any damage to them either due to exposure to excessive moisture or mishandling. The Supplier shall entirely be responsible for the quality and quantity of materials received at the point of origin and their delivery at designated point in the same quantity and quality. No reasons whatsoever will be accepted for materials not reaching to site in proper condition and in required quantity. Loss during transportation, if any is entirely on the Supplier's account.

Work being delayed because of steel parts and other materials being damaged during transportation is Supplier's concern, which shall not be considered a reason for time extension.

5. QUALITY ASSURANCE

1. Quality Assurance by the Fabricator and Galvanizing Plant

Fabricators/Galvanizing Plant should provide the quality assurance on their part. For this, Fabricators/Galvanizing Plant should maintain the in-process inspection and make QC logging. In-process inspection and QC logging should include from raw material up to the final product including all production process. In-process inspection and QC logging should be at following stages:

- Raw material
- Material preparation
- Assembly
- Welding
- Galvanizing

The Fabricator and Galvanizing Plant have to assure the quality of their products. That shall be done as per below. **Failing to provide the quality assurance, the fabricated and galvanized steel parts shall be rejected, even if the final product looks to be acceptable.** It is near to impossible to check the quality of works only by inspecting the final product.

1.1 Fabrication

1.1.1 Raw Material

Test certificate should be provided by the manufacturer/supplier. All steel sections (steel grade Fe 410) should comply with the following requirement.

- Yield stress $\geq 250 \text{ N/mm}^2$
- Tensile strength $\geq 410 \text{ N/mm}^2$
- Elongation $\geq 23\%$

In-process Inspection Form should include the information as in table below:

1.1.2 Material Preparation

S.no.	Date	Time	Particular	Section Size		Uniformity of Shape	Signature of QC Manager
				Thickness	Width		

* Permissible tolerance = $\pm 2.5\%$

1.1.2 Assembly

S.N.	Date	Time	Drawing No	Particular	Conformity with Drawing	Finishing	Signature of QC Manager

1.1.4 Welding

S.N	Date	Time	Drawing No	Particular	Welding quality	Distortion	Size	Post Welding preparation	Signature of QC Manager

1.1.5 Assembly Test

S.N	Date	Time	Drawing No	Particular	Assembly test	Remarks	Signature of QC Manager

1.2 Galvanizing

1.2.1 Pickling (Acid Treatment)

S. N	Date	Time	Observed (Required: PH Value =1 to 3, Density = Max 1.2)						Remarks	Signature of QC Manager
			PH Value (PH Meter reading)			Density (Hydrometer reading)				
			Tank 1	Tank 2	Tank 3	Tank 1	Tank 2	Tank 3		

1.2.2 Pre-flux (Fluzing)

S. N	Date	Time	Observed (Required Density = 1.10 to 1.15)			Remarks	Signature of QC Manager
			Density (Hydrometer reading)				

1.2.3 Temperature of Zinc Bath

S. N	Date	Time	Observed (Required = 450 to 470°C)	Remarks	Signature of QC Manager

1.2.4 Zinc Coating

S. N	Date	Time	Observed (Required = = 80 µm)	Remarks	Signature of QC Manager

1.2.5 Quality Assurance

The Supplier shall ensure that the quality of work conforms to the Quality Assurance Document. The quality assurance of the fabricated steel parts including raw materials all complete is the sole responsibility of the respective Supplier following the **“Quality Assurance Document”** and must meet the required standards and fulfil the technical specifications and design drawings and quality requirements.

However, from Purchaser’s side supervision and quality control of fabrication of bridge steel parts may be **performed by the project personnel or consultants by the Purchaser following the standard and format as per the “Quality Control Manual for Trail Bridge Construction”**.

The respective Supplier shall submit the ‘Work Completion Report’ (WCR to the Purchaser after completion of fabrication and galvanization work. The Purchaser shall initiate final inspection of the fabricated and galvanized bridge steel parts.

The Purchaser’s inspector may make suggestions/recommendations, if required, for improvement of work quality.

Final acceptance of the fabrication and galvanization of the steel parts shall be issued by the Inspecting Engineer/ Sub-Engineer of the Purchaser.

1.2.6 Final Acceptance

Inspection certificate issued after inspection of steel parts at factory is only for payment purpose and not the final acceptance. Final acceptance will be issued only after successful completion of maintenance works at bridge sites.

6. SCHEDULE OF REQUIREMENTS (SOR)

THE PURCHASER WILL STRICTLY MONITOR THAT THE SCHEDULE OF REQUIREMENTS ARE FULLY HONOURED BY THE SUPPLIER AND SHALL ASSESS THE PERFORMANCE OF THE SUPPLIER IN VIEW OF ADHERENCE TO IT.

1. DELIVERY SCHEDULE

The delivery of all the fabricated and galvanized steel parts including nuts, bolts and washers is to be made **within two months** at designated delivery points as indicated in the respective BoQ.

Delivery Schedule is effective from the date of signing the Contract.

The Quantity of the Goods required is as per **Bill of Quantities and Detailed Drawings.**

2. NOTICE OF DELAY

In the event that the Supplier encounters a delay in fabrication and galvanization of the goods, the Supplier shall promptly notify the Purchaser of such delay with proper evidence and may request for time extension before expiry of the time given in the contract.

3. TIME EXTENSION

Time extension request shall be considered by the Purchaser only in exceptional case if the reasons are acceptable to the Purchaser.

4. PENALTIES FOR DELAY

In case of delay in the delivery of the goods, due to Supplier's default, beyond the time specified in the contract, the penalty will be determined as per the conditions of contract.

5. EMPLOYMENT

The Supplier shall employ exclusively local skilled/unskilled labours.

6. GENDER

No discrimination for wage payment will be made on the basis of gender or caste or ethnicity.

7. EQUITY

The Supplier shall pay equal wage for equal work.

8. INSURANCE

The supplier shall procure insurance policy for all the personnel working in fabrication and galvanization.

7. GENERAL CONDITIONS OF CONTRACT (GCC)

1. Definitions

1.1 In this contract, the following terms shall be interpreted as indicated:

1. "The Contract" means the agreement entered into between the Purchaser and the Supplier and signed by both the parties and it includes all attachments and appendices thereto and all documents incorporated by reference therein;
2. "The Contract Price" means the price payable to the Supplier under the contract for the full and proper performance of its contractual obligation;
3. "The Goods" means the work package of fabrication, galvanization and supply of steel parts and its fixtures including transportation up to the destination points.
4. "The Services" means the works described in the Terms of References to be performed by the supplier including modification, alteration and additions of works and other obligations of the supplier covered under the Contract.
5. "The Purchaser" means the organisation purchasing the goods, i.e. TBSU/Helvetas Swiss Intercooperation Nepal.
6. "The Supplier" means the fabricator whose service according to proposal has been accepted by the purchaser for supplying the goods and services under this contract. The word "Fabricator" shall be used as synonymous to "Supplier".
7. "Engineer " or " The purchaser's representative" means the engineer appointed by the purchaser from time to time for inspection of goods and services..
8. "The Delivery Site" means the place or places where delivery of the goods is to be made. It is also to be referred as "destination point".
9. "Day" means calendar day.
10. "Terms of Reference" means the schedule of works and duties, defined by the bidding document and to be executed by the supplier under this contract.

2. Application

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the contract.

3. Standards

- 3.1 The Goods supplied under this Contract shall conform to the standards mentioned in the **Technical Specifications**.
- 3.2 Wherever reference is made in the **Technical Specifications** to specific standards and codes to be complied with, the specified standards and codes shall apply and the provisions of the latest edition or revision of the standards or codes shall apply only with the pre-consent of the Purchaser.

4. Use of Contract Documents and Information

- 4.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Purchaser to any person other than a person employed by the Supplier for performing the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 4.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information except for purposes of performing the Contract.
- 4.3 Any document, other than the Contract itself, shall remain the property of the Purchaser and shall be returned (all copies) to the Purchaser on completion of the Supplier's performance under the Contract, if so required by the Purchaser.

5. Patent Rights

The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.

6. Inspections and Tests

- 6.1 The Purchaser or its Representative shall have the right to inspect and/or to test the goods at its own costs. The **Technical Specifications** shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing of the identity of any representatives retained for these purposes.
- 6.2 The inspections and tests may be conducted on the premises of the Supplier or its sub-Supplier(s) and/or at the Goods' final destination. If conducted on the premises of the Supplier or its sub-Suppliers(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.
- 6.3 Any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject the Goods, and the Supplier shall either replace the rejected Goods or make alternations necessary to meet specification requirements, free of cost to the Purchaser.
- 6.4 Nothing in GCC shall in any way release the Supplier from any warranty or other obligations under this Contract.
- 6.5 A Certificate of Acceptance shall be issued by the Purchaser after necessary inspection and tests of the Goods, in case the goods conform to the specifications and drawings.

7. Packing

- 7.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.
- 7.2 The packing, marking and documentation inside and outside the packages shall comply strictly with such special requirements as delineated in the Contract and in any subsequent instructions issued by the Purchaser.
- 7.3 Nuts/Bolts/Washers shall be packed in individual bags as per sizes. The bags shall be marked with part no, size and quantity.

8. Insurance

The goods supplied under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the **Technical Specifications**. Such insurance shall be arranged and paid for by the supplier.

9. Transportation

- 9.1 The Supplier shall be required to meet all transport and storage expenses until delivery.
- 9.2 Transportation of the goods after delivery at the destination point shall be the responsibility of the Purchaser

10. Incidental Services

The Supplier may be required to provide incidental services, including additional services, if any.

11. Warranty

- 11.1 The Supplier warrants that the Goods supplied under the Contract are new and unused. The Supplier further warrants that all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship or from any act or omission of the Supplier.
- 11.2 The warranty shall remain valid for (12) months after the delivery of the goods at the destination point indicated in the Contract to the satisfaction of the Purchaser.
In case any defect is observed or found in the goods at the bridge site, the supplier shall be liable to bring back the defective goods and shall replace them with proper ones at his/her own costs.
- 11.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.
- 11.4 Upon receipt of such notice, the Supplier shall, within the period specified and with all reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Purchaser.
- 11.5 If the Supplier, having been notified, fails to take remedial action within fifteen (15) days from date of receipt of notice, the Purchaser may proceed to take such action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

- 12. Payment and Taxes**
- 12.1 After acceptance of the goods by the purchaser and their delivery at the destination point, payments shall be made by the Purchaser, within 15 days. The full and final payment shall be made only after completion of delivery. The purchaser may consider part payment based on delivery upon request of the supplier and if deemed essential on mutual understanding.
- 12.2 All taxes applicable will be for the Supplier's account.
- 12.3 VAT shall be explicitly mentioned on the invoice and shall be for the Purchaser's account.
- 13. Prices**
- Prices charged by the Supplier for goods under the Contract shall not vary from the prices quoted by the Supplier in its bid.
- 14. Change Orders**
- 14.1 The Purchaser may at any time, by a written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:
- a. drawing, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
 - b. the place of delivery; and/or
 - c. the Services to be provided by the Supplier.
- 14.2 If any such change causes an increase or decrease in the cost or time required for the Supplier's performance, an equitable adjustment may be made, with mutual consent, in the Contract Price or delivery schedule, or both, and the Contract may be accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within 15 days from the date of the Supplier's receipt of the Purchaser's change order.
- 15. Contract Amendments**
- No variation in or modification of the terms of the Contract shall be made, except by written amendment signed by the parties.
- 16. Assignment**
- The Supplier shall not assign to a third party, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.
- 17. Subcontracts**
- The Goods/Services shall be fully fabricated/performed by the Supplier and shall strictly abstain from sub-contracting in whole or any portion of the goods/services to any other supplier **other than the galvanizing work.**

18. Delays in the Supplier's Performance

18.1 Delivery of the goods and performance of services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser in the **Schedule of Requirement**.

18.2 An unexcused delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to any or all of the following sanctions: imposition of liquidated damages, termination of the Contract and /or disqualification up to a period of two years.

18.3 If at any time during performance of the Contract, the Supplier should encounter conditions impeding timely delivery of the goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may, at its discretion, extend the Supplier's time for performance, with or without liquidated damages.

19. Liquidated Damages

If the Supplier fails to deliver any or all of the goods or to perform within the time period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to 0.25% of the contract price of the delayed goods for each day of delay until actual delivery, up to a maximum deduction of (10%) percent of the Contract Price. Once the maximum is reached, the Purchaser may consider termination of the Contract.

20. Termination for Default

20.1 The Purchaser may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, terminate the Contract in whole or in part:

- a) if the Supplier fails to deliver any or all of the goods within the time period(s) specified in the Contract, or any extension thereof granted by the Purchaser; or
- b) if the Supplier fails to perform any other obligation(s) under the Contract; or
- c) if the Purchaser is of opinion that the goods does not conform to the specification and/or drawings

20.2 In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, goods or services similar to those undelivered or unacceptable, However, the Supplier shall continue performance of the Contract to the extent not terminated.

- 21. Force Majeure**
- 21.1 For purposes of this Contract, "Force Majeure" means an event beyond the control of the parties to the Contract and not involving either party's fault or negligence and not foreseeable.
- 21.2 If, at any time during the existence of the Contract, either party is unable to perform in whole or part any obligation under this Contract because of such events which include, but are not restricted to, acts of God, acts of Government in its sovereign capacity, war, revolutions, hostility, civil commotions, strikes, fires, floods, epidemics, quarantine restrictions, freight embargoes, explosions, then the date of fulfillment of Contract shall be postponed during the period when such circumstances are operative.
- 21.3 The party which is unable to perform its obligations under the present Contract shall, within fourteen (14) days of occurrence of the Force Majeure event, inform the other party with suitable documentary evidence. Non-availability of raw materials from regular sources or disruption of power supply shall not be an excuse for the Supplier for not performing its obligations under this clause.
- 21.4 Any waiver/extension of time in respect of the delivery/ acceptance of any installment or part of the goods shall not be deemed to be a waiver/extension of time in respect of the remaining deliveries.
- 21.5 If such inability to perform continues for a period of more than three (3) months, each party shall have the right to be released from further performance of the Contract, in which case, neither party shall have the right to claim damages from the other. All prior performance shall be subject to Contract terms.
- 21.6 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

22. Termination for Insolvency

The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, without compensation to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

- 23. Termination for Convenience**
- 23.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time convenient to it. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.
- 23.2 The Goods that are complete and ready for delivery within 15 days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:
- a) to have any portion completed and delivered at the Contract terms and prices; and/or
 - b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Suppliers.
- 24. Resolution of Disputes**
- 24.1 The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 24.2 If, after twenty eight (28) days from the commencement of such informal negotiations, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms. These mechanisms may include, but are not restricted to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and/or national and international arbitration.
- 25. Governing Language**
- The Contract shall be written in the English language. The English version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchanged by the parties may be written in Nepali and/or English language.
- 26. Applicable Law**
- The Contract shall be interpreted in accordance with the laws of Nepal.
- 27. Notices**
- 27.1 Any notice given by one party to the other pursuant to the Contract shall be sent to the other party in writing and confirmed in writing to the other party's address. Notice sent by facsimile or by email does not need confirmation of the receiver.
- 27.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.
- 28. Taxes and Duties**
- The Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the final destination.

8. ELIGIBILITY REQUIREMENT

1. PRODUCTION CAPACITY

The Fabricator shall have **minimum Monthly production capacity of 50 tons** of steel parts.

2. Past Production

The Fabricator shall have proven **annual production of 200 tons** of steel parts during the recent three years.

3. Liquid Asset

The Fabricator shall have liquid asset of minimum NRs 5.0 Million.

4. Past Performance

The Fabricator should have records of acceptable performance in the past. The purchaser may disqualify any Fabricator, who has record of unsatisfactory performance within last three years.

3.1 EXPERIENCE

Description	Minimum required no.of work
Fabrication Work	10 Bridges within last three years

3.1.1 A Supplier's should have work experience in fabrication of steel parts of minimum 10 Trail Bridges Works (fabrication of steel parts) within last 3 years and should not be disqualified in the past due to bad performance within last 3 years.

3.1.2 **BIDDER SHALL SUBMIT RECENTLY SIGNED CVS OF PROPOSED PERSONNEL WITH DETAILED COMPANY PROFILE.**

3.1.3 **THE SUCCESSFUL BIDDERS ARE NOT ALLOWED TO SUBSTITUTE THE PROPOSED PERSONNEL AND /OR PARTNERS WITHOUT PRIOR WRITTEN APPROVAL OF THE EMPLOYER, WHICH CAN BE ISSUED ONLY IN CASE IF THE PROPOSED REPLACEMENT WILL BE WITH EQUAL OR HIGHER EXPERIENCE AND REPUTATION.**

3.2 PERSONNEL

Designation	Minimum required no. of persons
Foreman/Overseer/Mechanics	4
Trained Welders	6
Skilled/Semi-skilled labourers	20
Bridge Fitter	2

3.2.1 All of these personnel should have relevant qualification and minimum 3 years work experience in the fabrication related work.

3.2.2 The Services shall be carried out by the leading Supplier in conjunction with the personnel specified by the Supplier in Manning Schedule (hereinafter called the Personnel) at the time of bidding with the Supplier singularly being responsible for any works carried out by its personnel and partners.

3.2.3 Except as the Purchaser may otherwise agree, no changes shall be made in the Personnel. If for any reason beyond the reasonable control of the Supplier it becomes necessary to replace any of the Personnel, the Supplier shall provide as replacement, a personnel of equivalent qualifications with prior written approval of the Purchaser.

- 3.2.4 In the event that any personnel specified in the manning schedule is found to be inadequately qualified or incompetent in discharging his assigned duties, the Purchaser may request the Supplier to provide as a replacement, a personnel with qualifications and experience acceptable to the Purchaser.
- 3.2.5 In respect of any personnel provided as a replacement, all additional costs arising out of or incidental to such replacement shall be borne by the Supplier.
- 3.2.6 The Supplier shall employ exclusively local skilled/unskilled labours. No discrimination for wage payment will be made on the basis of gender or caste or ethnicity. The Supplier shall pay equal wage for equal work. The Purchaser will strictly monitor the above during the inspection.

3.3 TOOLS AND EQUIPMENTS

Description	Minimum required number
Power Saws	5
Drilling Machine	5
Welding Machine with Auto Voltage Stabilizer	10
Grinders	4
Lathe Machine	2
Gas cutting equipment	2
Blacksmith Shop	2
Galvanizing Plant	Own/Sub-letting

The following minimum Measuring Instruments should be available at Galvanizing Plant:

Description	Minimum required number
Installed Temperature Meter	1
Hydrometer	1
PH-Meter	1
Adhesion Testing Hammer	1
Zinc Coat Measuring Instrument	1
Weighting Machine	1

- 3.3.1 It is mandatory to make physical verification by the evaluation team to confirm the actual availability of above manpower and equipments with the supplier prior to evaluation. The "own" or proposed "sub-letting" Galvanizing plant should have complete galvanizing process and accordingly the complete set-up.

3.4 FINANCIAL STATUS

Description	Minimum average required Amount for three years
Net Worth	10 million
Liquid Assets	5 million
Profit after tax	Shall not be negative for continuous three years

- 3.4.1 Supplier should have to present its latest Audited Financial Statements and other relevant documents certified by the bank to prove bonding capacity.

Sample of Contract Agreement

9. CONTRACT AGREEMENT

This Contract Agreement is made on day of (month), (year) between TBSU/HELVETAS SWISS INTERCOOPERATION NEPAL (hereinafter called “the purchaser”) and M/s (name and address) (hereinafter called “the supplier”).

Whereas the purchaser invited bids for supply of steel parts and nuts & bolts for Duduwa Khola Suspension Bridge of Banke and has accepted the bid submitted by the supplier for the same and both the parties to this contract agree to the terms and conditions given hereunder.

TERMS AND CONDITIONS

1. **Documents:** The following documents shall form to be integral part of the contract agreement.
 - a) Bid Notice (Invitation for Bids)
 - b) BOQ
 - c) Technical Specifications
 - d) Detailed Drawings
 - e) Quality Assurance
 - f) Terms of Reference
 - g) Important Information
 - h) Schedule of Requirements
 - i) General Conditions of Contract
 - j) Notification of Award
 - k) Future correspondences between the purchaser and the supplier
 - l) Instructions in writing from the purchaser to the supplier

2. **Contract amount:** The total value for the supply and delivery of the said goods is NRs. (Including VAT)

3. **Performance guarantee:** Supplier has to submitted a bank guarantee of equivalent to 5% of contract amount and the validity of the bank guarantee shall be not less than nine months. Performance guarantee will be released after maintenance period of six months after delivery of the goods.

4. **Change in quantities:** The purchaser may increase or decrease the quantities of the ordered goods within 30days after opening of the bids and the quoted rates shall remain applicable. The total value of the goods supplied will be adjusted at a pro rata basis.

5. **Modifications / amendments in design and drawings:** The purchaser shall have the privilege to make modifications/ amendments in design and drawings and shall inform the supplier of the same. In case of its repercussion on the total value of the contract, the supplier shall inform the purchaser within 7 days of receiving information for modifications/amendments.

6. Specifications and quality:

- A) The supplier shall assure the purchaser that the goods conform to the technical specifications and standards and fulfil the requirements of the suppliers. The supplier is to abide by the Quality Assurance procedures. The supplier is to furnish required documents to the purchaser to assure the quality of the goods.
- b) The purchaser reserves the right to inspect the quality of the goods at any time and any place at its own cost.
- c) The purchaser may hire a third party of its confidence for inspection of quality of the goods.
- d) The purchaser shall reject the goods in case the goods do not fulfil the quality requirements.
- e) The purchaser shall not be liable to make payment for rejected goods.
- f) The liability for loss and/or damages in transit remains solely with the supplier.
- g) In case the goods delivered do not conform to the specifications, standards and design/drawing, the supplier shall replace all such goods at its own cost.

7. Delivery:

- a) The supplier shall complete the full and final delivery of the goods latest by **two months** from date of signing of the contract.
- b) The goods shall be delivered at the destination points as stipulated in respective BoQ.

8. Time extension:

- c) If the supplier foresees that delivery cannot be completed within the agreed period, s/he may request the purchaser for extension of delivery period provided there are justifiable reasons.
- d) The purchaser may consider time extension only if the supplier informs of such events to the supplier within one week of happening with substantiating evidences.
- e) Request for time extension made in the last two weeks of contract period will not be considered.
- f) Time extension will normally not be granted for a period of more than one month.
- g) Time extension may be granted with or without penalty.
- h) The purchaser shall make final decision regarding extension of time.

9. Liquidated damages:

- a) In case the supplier fails to complete the delivery within the agreed period, the purchaser may charge liquidated damage of 0.25% of contract value per day. The total amount of liquidated damage shall not exceed 10% of contract value. Liquidated damage will remain unchanged even if part delivery is made.
- b) If the delivery is not complete till the liquidated damage amounts to 10% of contract value, the purchaser shall have the privilege to terminate the remaining order and

the supplier shall be disqualified for bidding to the purchaser for a period of two years.

10. Payment:

- a) After completion of delivery of all the goods to the satisfaction of the purchaser, the purchaser shall be liable to make payment to the supplier within 15 days of submission of invoices and required documents.
- b) The supplier shall submit the following documents to the purchaser with the letter of request for payment.
 - i. Invoice
 - ii. Inspection Report
 - iii. Quality Assurance Document
 - iv. Letter of changes/modifications/amendments (if applicable)
 - v. Handing over Note

11. Tax: Tax applicable as per prevailing rules of the land shall be for the account of the supplier. The purchaser shall pay for VAT at the applicable rate.

12. ~~12.~~ Force Majeure: This contract agreement may be terminated by either party to the contract in case of Force Majeure. "Force Majeure" means an event beyond the control of the parties to the contract and not involving either party's fault or negligence. If, at any time during the existence of the contract, either party is unable to perform in whole or part any obligation under this contract because of such events which include, but are not restricted to, natural calamities, war, revolutions, hostility, civil commotions, strikes, fires, epidemics, freight embargoes, then the date of fulfilment of contract shall be postponed during the period when such circumstances are operative. If such inability to perform continues for a period of more than three months, each party shall have the right to be released from further performance of the contract, in which case, neither party shall have the right claim damages from the other. All prior performances shall be subject to contract terms and conditions.

***On behalf of
TBSU/HELVETAS Swiss Intercooperation NepalNepal***

On behalf of the supplier

Signature:

Signature:

Name:

Name:

Date:

Date:

Seal:

Seal:

10. SAMPLE FORMAT FOR BANK GUARANTEE

Whereas M/s having their office at herein after called "the Supplier" have undertaken to supply fabricated and galvanized steel parts to M/s herein after call "the Purchaser" in pursuance of the contract dated herein after called "the Contract" and whereas it has been stipulated by M/s in the contract that the Supplier shall furnish the Purchaser with a bank guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's Performance obligations in accordance with the Contract and/or as security for advance(s) to the Supplier for compliance with the Supplier's Performance obligations in accordance with the contract.

And whereas we have agreed to give the Supplier a Guarantee, therefore, we hereby affirm that we are the Guarantors and responsible to M/s on behalf of the Supplier M/s up to a total amount of NRs. (NRs.) and we undertake to pay M/s upon their first written demand declaring the Supplier to be in default under the Contract and without cavil or argument any sum or sums specified within the limit of NRs. (NRs.) aforesaid, without needing M/s to prove or to show grounds or reasons for their demand of the sum or sums specified therein.

The Guarantee is valid up to and claim, if any, should be lodged with us not later than this date.

Name of Guarantor

Authorized Signature

Designation(s)

Date

Seal

Address:

Date:

Place:

11. FIRM'S CAPACITY & EXPERIENCE

1. Production Capacity:
(Attach supporting document)

2. Past Experience

Client	Job	Volume, tones	Value	Completion date

Please provide copies of job order or job completion certificate from the client.

3. Liquid Asset:
(Attach supporting document)

3.2 PERSONNEL

Designation	no. of persons
Foreman/Overseer/Mechanics	
Trained Welders	
Skilled/Semi-skilled labourers	
Bridge Fitter	

3.3 TOOLS AND EQUIPMENTS

Description	number
Power Saws	
Drilling Machine	
Welding Machine with Auto Voltage Stabilizer	
Grinders	
Lathe Machine	
Gas cutting equipment	
Blacksmith Shop	
Galvanizing Plant	

Description	number
Installed Temperature Meter	
Hydrometer	
PH-Meter	
Adhesion Testing Hammer	
Zinc Coat Measuring Instrument	
Weighting Machine	

3.4 FINANCIAL STATUS

Description	Amount for three years
Net Worth	
Liquid Assets	
Profit after tax	Shall not be negative for continuous three years

Date:

M/s

.....
.....

Sub: Notification of Award

Dear Sirs/Madams,

This refers to your bid for supply of fabricated steel parts and galvanization including supply of nuts, bolts and washers.

We are glad to inform you that we have accepted your offer. Please come to our office for signing the contract agreement latest by

Thanks a lot.

Yours sincerely,

Signature:

Name:

Designation:

12. BILL OF QUANTITIES & PRICE SCHEDULE

The bid amount includes all cost for procurement of all raw materials, fabrication and supply of steel parts and its fixtures, transportation up to designated points, all complete. It also includes cost of equipments, tools, labor, travel, cost for supervision, cost of bridge fitter for supporting User's Committee in bridge erection, insurance, and allocation for uncertainties, overhead and taxes.

The total amount, derived from the attached Bill of Quantity (BoQ), shall be quoted according to the below given Summary Price Schedule for the whole job.

12.1 Summary Price Schedule

S. No	Bridge		Amount in NRs.
	No.	Name	
1.	1.	Daduwa Khola Suspension Bridge, Banke	
TOTAL			
VAT			
Total including VAT			

(In words:)

Authorized Signature : _____

Name : _____

Designation : _____

Date : _____

Firm's Name : _____

Official Seal : _____

12.2 BILL OF QUANTITIES, LIST AND WEIGHT LIST OF STEEL PARTS

- a) The Bill of Quantities (BoQ) shall be read in conjunction with the List and Weight List of Steel Parts, Instruction to Bidders, Condition of Contract, Terms of Reference, Technical Specification and Design Drawings, and Work Schedule.
- b) The method of measurement of work for payment shall be in accordance with the "**as per completed**" work which should be according to the drawings and BoQ. Unit of measurement shall be in metric system.

12.2.1 PRICE SCHEDULE (BILL OF QUANTITIES)**Bridge No. 1****Bridge Name: Daduwa Khola Suspension Bridge, Banke****Bill of Quantity (BoQ) of Steel Parts****11 STEEL PARTS & FIXTURES**

Description		Unit	Quantity	Rate	Cost
Supply & Fabrication	Structural Steel	kg	10,980		
	Reinforcement Steel	kg	1,292		
Bolts, Nut and Washers	Ordinary Bolts, Nut and Washers of 4.6 Grade	kg	260		
	High Strength Friction Grip Bolts, Nut and Washers of 8.6 Grade	kg	172		
Rust Prevention	Hot Dip Galvanization	kg	9,883		
Wiremesh Net (width: 1.2m, mesh size 60x60mm, chain link made of SWG 10 G.I.Wire)	Wiremesh Netting	m	225		
12 SWG G.I. Wire	12 SWG G.I binding Wire	kg	10		
Binding wire	Binding wire	kg	12		
2" GI Pipe medium class R/B	2" GI Pipe medium class R/B	m	24		
2" GI Pipe medium class L/B	2" GI Pipe medium class L/B	m	19.00		
Hot Dip Galvanized Thimbles	13mm	Nos	4		
	32mm	Nos	8		
Total on Steel Parts & Fixtures					

B. TRANSPORTATION up to delivery point (Roadhead): Chatar Band/Banke

Description		Unit	Qty	Rate (Rs./kg)	Cost (Rs.)
Transportation	Steel Parts & Fixtures	kg	14,748		
Total on Steel parts / Fixtures and Transportation					

Authorized Signature :

Name :

Designation :

Firm's Name :

Official Seal :

Date :

LSIT AND WEIGHT LIST OF STEEL PARTS

Bridge No. 1

Bridge Name: Daduwa Khola Suspension Bridge, Banke

STEEL PARTS

Drawing		Unit	Structural Steel (kg)	Reinforcement Steel (kg)	Nuts, Bolts, Washers (kg)		Galvanizing (kg)	Transport Weight (kg)
No.	Name				Grade:4.6	Grade:8.8		
7N	Steel Cross Beams	108	1609.20		165.24		1609.20	2937.60
08A / 10A	Steel Deck	Standard Panel	161	3909.08			3909.08	4062.03
		Special Panel	6	171.90			171.90	177.60
32N	Suspenders	210	769.41		6.30		769.41	798.20
DA4	Main cable Anchorage R/B	1.	900.68	226.85	55.44		172.08	1187.18
DA8	Main cable Anchorage L/B	1		186.25				188.25
TF8	Walkway/Tower Foundation R/B	1	390.61	300.78	16.54		208.41	709.93
TF8	Walkway/Tower Foundation L/B	1	390.61	300.78	16.54		205.28	709.93
144N	Tower	2	2837.92			171.70	2837.92	3072.98
	Staircase R/B	1		150.46				150.46
	Staircase L/B	1		126.33				126.33
TOTAL			10,979.41	1291.45	260.06	171.70	9883.28	14,120.49