

Consultant Terms of Reference (TORs)

Technical Survey, Engineering Design and Cost Estimation of the Resource Center in Broghil Valley, Upper Chitral

Date: _____

Description of Work: Technical Survey, Engineering Design, Details Drawings and Cost Estimation of construction for a Resource Center.

Location: Garrel Broghil

Consultancy Duration: 9 weeks

Project Name: Improved Governance of Natural Parks Across Wakhan Corridor

Project Duration: 2 years (January 2021 – December 2022)

Project Code: PAK-AKDN-CHI-003

Donor: PATRIP Foundation

1 Background

The Resource Center will be constructed under the Project “**Improved Governance of the Natural Parks across the Wakhan Corridor**” funded by PATRIP Foundation at Garrel Broghil Valley Chitral. The building will constitute meeting hall, space for veterinary unit, park management committee office, display center, lodging facilities, kitchen, and toilets which will provide veterinary services, Park information, accommodation, and community interaction hub. The center will facilitate tourists and others (also those from across the border) by providing important information about travel conditions, local settlements, important tourist sites, lodging facilities, markets, and other resources. As a part of this facility, separate partition, managed by women, will be installed for display and sale of local handicraft products to create income generating opportunities. The Park Management Staff will use this premise for routine office operations, record keeping and community meetings which will be undertaken in consultation with cluster organization/Village Conservation Committee (VCC). The veterinary unit, inside the center, will be established in partnership with Livestock Department to provide veterinary services to local communities. The building will become a hub for social activities, trade and businesses and other civic service centers.

The land for resource center will be donated by communities/park authorities and construction activities which will be carried out through contractors, providing maximum labor work opportunities to local communities. The infrastructure will be designed and constructed in a manner to have minimum negative impacts on environmental conditions of the area. Building will incorporate both construction methods applicable to high altitude and hazard prone areas and traditional architectures to make it aesthetically pleasing and easy to maintain in post completion.

2. Description of site:

The building site is located at Garrel, Broghil between Latitude 36.867188 and longitude 73.373765 at 250 kms from Chitral town and 07 kms from Afghanistan border. Elevation of this village is around 3580 meters above sea level. There is no specific study available about geology of the area, however, greater part of the area comprises quartzite, limestone and shale which are folded and metamorphosed. The geological formations are composed of igneous and metamorphic rocks. The soil is porous and fragile and highly susceptible to erosion resulting in shallowness of soil on slopes and frequent rock out-crops. The constant freezing and thawing of soils cause it to become loose and porous and it is dominated by gravel and coarse sand. The area is arid temperate and mostly with snow precipitation from September to April. July and August are two hot months when the night minimum temperature rises above freezing zero. The working season is very limited entailing between June to October. Access to valley is extremely difficult and costly therefore greater emphasis will be given to use local materials for construction which have limited cost implications.

2 Objective

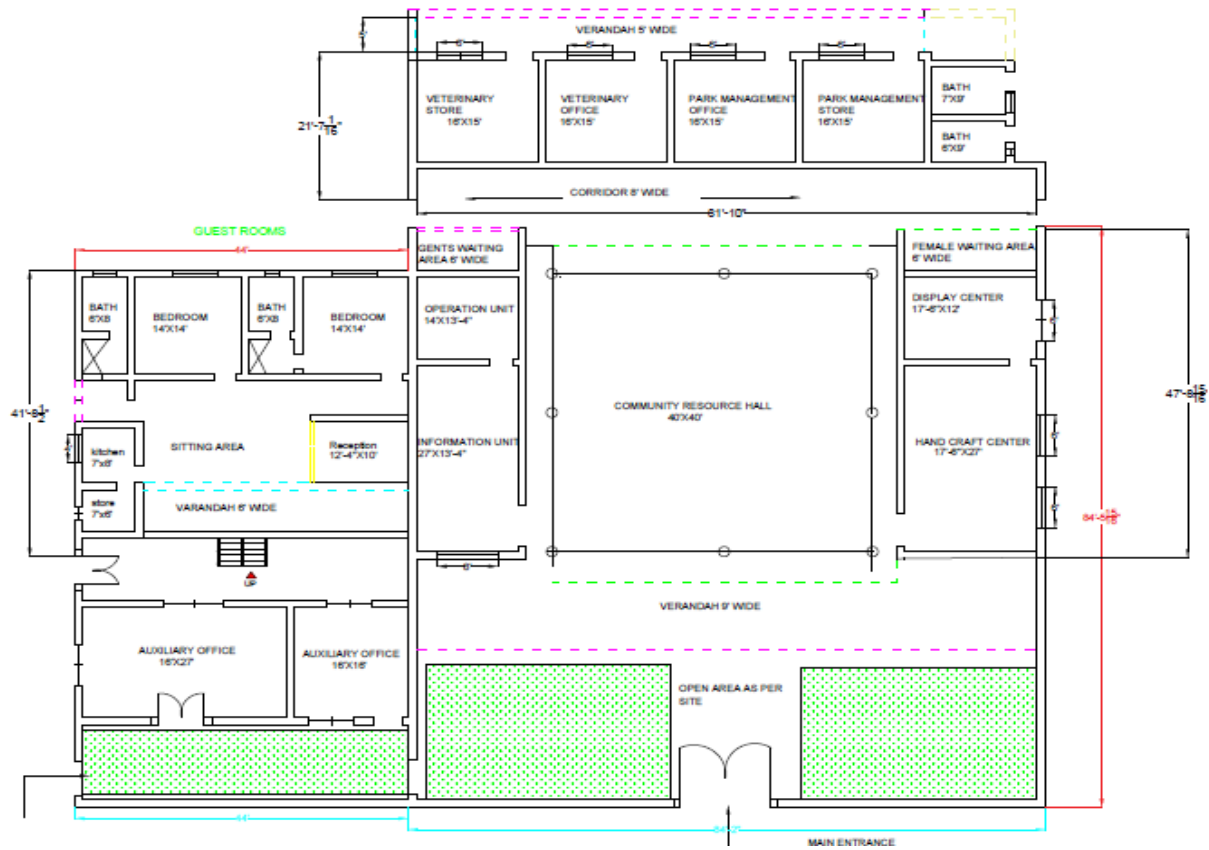
The objective of this consultancy is to prepare master plan, detailed design, drawings and to produce a reliable estimate of the construction for a resource center in Garel Village of Broghil valley by;

- Undertaking a detailed geotechnical assessment and topographical survey of the site providing basis for architectural and structural design process.
- Preparing Engineering design drawings (Architectural, Structural, Electrical, Plumbing & Utilities drawings) while considering the conceptual design provided by GFC, the technical consultants for PATRIP Foundation.
- Preparing Technical Specifications, Bill of Quantities (BoQs) and full set of design reports necessary for the implementation of the project
- Preparing engineer's cost estimates based on current market rates
- Providing supervisory inputs during construction phase.

3 Specific requirements of building

The building site, covering an area of 576 m², is a rocky terrain and compacted gravel which is identified because of its accessibility and less vulnerability to natural disasters. This is a single story building which is divided into three major portions. The **frontal portion** of the center is comprised community resource hall, handicraft /display center and information/ operation units with separate waiting rooms for men and women. On the **back side**, there are two rooms along with stores for veterinary units and park management office and public toilets. There is lodging facility on the **right side** which will have two bed rooms with attached toilets, kitchen with store, dining hall and two auxiliary rooms.

FLOOR PLAN OF COMMUNITY RESOURCE CENTER AT GAREL BOROOGHIL UPPER CHITRAL



4 Scope of the work

The scope of the works to be undertaken by the consultancy firm includes the following:

1. Carry out the physical verification of the site for assessing the scope of work.
2. Undertake geotechnical assessment and topographical survey.
3. Conduct necessary tests to determine the design parameters.
4. Site survey and develop site layout plan for Resource Center.
5. Detailed Engineering drawings including sewerage and plumbing facilities in complete sets.
6. Structural drawings with complete detailing and bar bending schedule.
7. Electrical drawings complete with cable connection from nearby pole.
8. Detailed specifications for the various items of works.
9. Water supply scheme design from the source including reservoir and intake tanks
10. Detailed cost estimate, BOQ and rate analysis wherever necessary.
11. Support in building layout and design of the structure.
12. Field supervision of project activities.

5 Scope of the Consultancy Services

5.1 Geotechnical Assessment of the Site

1. Equipment: Provide list and description of machinery and instruments to be employed during the investigation.

2. The consultant must dig adequate number of pit holes at various sites as per the infrastructure location for obtaining details of the soil conditions adequate for proper design of the buildings.
3. The location & depth of holes may be decided in close coordination with the technical Engineering Staff of AKRSP.
4. Undertake Soil Investigation by using method as described below
 - I. Excavation of pits, hand/auger drilling/boring of at least 2 bore holes of 8' to 15' depth.
 - II. Collection of disturb and undisturbed soil.
 - III. Soil according to ASTM or equivalent applicable and approved standards.
 - IV. Description of ground water and water type if encountered (e.g., saline water, pore water)
 - V. Delivery of soil samples to a laboratory in air-tight bags to retain original moisture content.
1. Conduct laboratory testing of soil of the area and perform tests for;
 - I. Plastic limit
 - II. Liquid limit
 - III. Standard Penetration Test (SPT)/Depth
 - IV. Quick axial test
 - V. Moisture content
 - VI. Gradation test
 - VII. Direct shear test
 - VIII. Unconfined compressive tests
 - IX. Particle size distribution
 - X. Direct shear box strength test- Consolidation and swelling pressure test
 - XI. Discussion on Bore-holes/Test-pit
 - XII. Photographic documentation
2. The consultant shall submit a detail soil tests and investigation report.
2. Presentation of investigation summary, analysis, results and recommendations

The results and study report are to;

 - I. Determine the bearing capacity of the soil and present classification of soil & strata.
 - II. Mention if land is water logged, filled or not.
 - III. Provide a site plan showing the location of boreholes
 - IV. Present relevant calculations and bore logs for each hole
 - V. Provide a brief reference of the seismic status of the region and past records of earth quakes.
 - VI. Define the seismic hazard zone where particular level of hazard might occur due to earth quake.
 - VII. Provide a definition of the mode and medium through which the collected data are to be presented, such as tables, bore-logs, soil classification tables, reports and site photographs in PFD format or any other mediums.
 - VIII. Applied references of national/regional standards and local building codes are to be annexed according to the complexity of the study.
 - IX. The analysis, results and recommendations should provide necessary information for foundation designs, type of cement to be used and specifications for backfilling and compaction density and other prerequisite information for building construction.

5.2 Topographical Survey Work

1. Equipment: Provide list and description of digital instruments and instrumentation method should be provided through which physical data will be collected.
 - I. Site information and documentation: Gather information, i.e. the geographical area to be included, the level of detail, accuracy, and data output.
 - II. Undertake a preliminary or reconnaissance survey of the area for planning and carrying out detailed survey.
 - III. All the physical entities/services and infrastructures should be highlighted/marked on site for digital documentation for detailed survey. These may be all natural and man-made features such as boundaries/property lines, existing buildings within site, adjacent roads, pathways, parking bays, manholes, vegetation, trees, ramps, service infrastructure (reticulated water, sewer lines, underground or overhead power lines), water bodies and any other feature present on the site.
 - IV. The contour plan must illustrate minimum and maximum contour elevation i.e., 0.5m and 1.0m respectively and show spot levels, if available.
 - V. Contour lines should show height above sea level.
 - VI. Levels/elevations should be indicated for all features mentioned in (point III) above.
 - VII. All boundary/property corner points of the subject site are to be shown as GPS coordinates.
 - VIII. Bar scale, legend and direction of North should be illustrated.
 - IX. Covered areas of documented site and buildings should be mentioned.
 - X. Photographic documentation during the survey should be carried out and submitted.
 - XI. All documented entities should be labelled with titles and their covered areas.
 - XII. The consultant must ensure that no areas of high ecological value (e.g., wetlands, forests, nesting sites, presence of protected species) or buffer zones of protected areas are adversely impacted during the survey.
2. Drawings
 - I. Final drawings must illustrate site plan, contour plan, 2 cross-sections and covered area of the plot(s) and all existing buildings contained at site.
 - II. The site plan must show relevant local cadastral registration information, such as lot or registration identification and in line with the relevant land certificate.
 - III. The scale of the drawings should be between 1:50 or 1:2000 as per total covered area of the site
 - IV. Hard copy of drawings should be presented on A3 paper.

5.3 Preparation of Conceptual Design and Cost Estimates

1. Prepare a Detailed Engineering Design, in line with design furnished by GFC (Project Technical Consultant), which shall describe the general idea about initial work structure and identify the scope of physical components and structures, specific outputs and requirements of the structures and propose methods of construction as necessary
2. Determine whether the initial budget estimate prepared by AKRSP engineering team would be sufficient to cover the detailed engineering design, construction supervision and construction of the resource center.
3. Review the space plan/ allocation initially prepared by the AKRSP and prepare a revised/alternate space plan/allocation, as necessary, while taking into consideration the plans for the existing building and at the same time the available budget.
4. Estimate costs for interior design and landscaping.

5.4 Design of the Building/Infrastructure

1. All the pre-requisite studies such as site study, surface study and investigations tests, collection of data, (adequate trial pits) etc. should be carried out (Bearing capacity of soil) and incorporate in the structural design before detail design of building structures.
2. The Consultant will produce design, drawings, with due consideration to energy efficiency and upkeep with local cultural and environment context.
3. The consultant will follow standard building codes of Pakistan applicable to Geographic Zone of Broghil Chiral
4. The infrastructure should be designed over an area of 576m² land area.
5. The lay out plan shall allow provisions for parking facilities for general sized vehicles.
6. Develop drawings for Sanitary system (including water, plumbing etc.), fire protection and heating illustrating both layouts and schematics for kitchens /wall fixtures in conformity with Electrical and Architectural Plans
7. Develop Electrical layouts for ceiling and wall with defined hardware and all other equipment (to be closely coordinated with other drawings/plans), including layout plan, the power installation plan, telephone, fire, the electricity loading norms, single line scheme and a panel view.
8. The drawings should be done in an appropriate style and the scales suitably fixed so that they are easily readable at site by naked eye. Except for the general views, the drawings should preferably be made to the scale of 1:50 and for showing minute details to 1:20 / 1:10 where necessary.
9. Adequate number of drawings should be produced to appropriately represent all the necessary details, views, etc.
10. Detailed Drawings should be provided in digital form AutoCAD 2004 with 1/50 detail and as pdf documents.
11. References of national/regional standards and local building codes may be annexed as per the requirement of the building .
12. The drawings must in readable in all aspect rations. The drafting must be duly layered and colour coded. Standard symbols should be referred and used.
13. The detail reinforcement schedule will be a part of the drawings.
14. All drawings shall be in ISO A3 format (297x420mm) and in conformity with PATRIP requirements.
15. Descriptive reports shall be prepared in A4 format.
16. Except for similar components, each different component shall have separate drawings in cross section, elevation, and plan.
17. Drawings should be printed on A3 sizes and easily readable by naked eye. All drawing dimensions shall be in metric system (i.e., meter, cm and mm) as well Food Pound System (FPS)
18. The design report will sum up all design activities and provide the rationale for the optimal designs made. Standards, norms and regulations used must be referred to in the design report extensively. No conclusions and decision must be made without reference to any standard, norm, or regulation.
19. The detailed design should be in accordance to the requirements of the AKRSP and PATRIP Foundation. The consultants are required to make changes considering the site conditions and feedback of AKRP and PATRIP.

5.5 Bill of Quantities and Rate Analysis

20. The BoQ should be explicit covering all items of work. It should be as exhaustive as possible to avoid changes, additions, deletions, and substitutions during execution and therefore the undesired disputes and claims.

21. The detailed technical and material specifications should be a part of the BoQ. One copy of the Technical Specifications shall be submitted to AKRSP for its comments & suggestions before making the required number of copies.
22. The quantities should be worked out as accurate as possible to avoid unnecessary variations during the execution of the work. Availability of such materials may also be specified which are unique in features. As far as possible, the materials should be readily available in the project site. The materials may be suggested to suit the climatic condition of the office location.
23. The cost estimates should be appropriately worked out to indicate the approximate cost of the entire building. It should be accompanied by analysis of rates where necessary.
24. The cost estimate should be treated as highly confidential.

6 Construction Supervision

1. The consultants should provide technical assistance during ground breaking/excavation works and laying out of centerlines.
2. Consultant will visit the site on quarterly basis or on request of AKRSP to monitor progress, quality of the Works and to determine in general if work is proceeding in accordance to approved design, drawings, standards, specifications and within the provisions of contract agreement/documents.
1. The Consultant shall check that construction materials brought at site by the contractor for use in construction is in accordance with the specification and is got tested as per standard practices laid down in specifications.
2. The Consultant shall recommend and execute corrective measures in accordance with site requirements.
3. The Consultant shall be responsible for design revisions required as per site conditions during the currency of the project in the minimum possible time.
4. The Consultants would provide guidance to the contractors in all matters concerning safety and care of work or on any problem arising in construction work during its execution.
5. Provide visit reports on the progress/status, material inputs, quality of works and timing of the Works and if there is any revision.
6. Organize and attend periodic site meetings and prepare minutes of these meetings. Copies of all site-meeting minutes to be submitted to the AKRSP not later than four (4) days after the meeting.

7 Assistance during construction phase

7 Key Personnel:

The Consulting firm shall engage the following key personnel whose CV and experience shall be evaluated, apart from other support staff to carry out the Services.

- Team leader
- Architect
- Structural/Civil Engineer
- Electrical Engineer
- Geo technical Engineer
- Quantity Surveyor

The key personnel shall meet the following minimum eligibility requirements: -

7.1 Team leader:

1. Must have managed construction projects of about 3 projects of similar type and scale or have about 5 years or more experience in construction project management.
2. Must have at least Bachelors/Diploma Degree in Architecture/civil engineering.
3. Must be fluent in spoken & written English.

7.2 Architect

1. Must have at least Bachelor's Degree in architecture from a reputed University.
2. Must have at least 5 years of experience in building design works
3. Must be fluent in spoken & written English.

7.3 Structural/Civil Engineer

1. Must have at least Bachelor's Degree in relevant field.
2. Must have at least 5 years of experience in Building works.
3. Must be fluent in spoken & written English.

7.4 Electrical Engineer

1. Must have at least Bachelor's Degree in electrical engineering.
2. Must have at least 5 years of experience in Building Electrical works.
3. Must be fluent in spoken & written English.

7.5 Geo technical Engineer

1. Must have at least Masters' degree in Geotechnical engineering.
2. Must have 5-year experience.
3. Must be fluent and in spoken and written English.

7.6 Quantity Surveyor

1. Must have at least Diploma in Civil Engineering.
2. Must have at least 5 years of experience in Quantity Survey.
3. Must be fluent in spoken & written English.

The consulting firm should submit detailed Curriculum Vitae (CV) and qualification experience certificates and the letter of commitment of the proposed consulting engineers.

For uniformity in evaluation, the qualification, experience record, etc. of only the above five key personnel would be evaluated. The firm shall be disqualified if the qualification & experience certificates and letter of commitment of the consulting engineers are not enclosed.

8 Qualification of Consultancy

1. The consultant company should be duly registered with Pakistan Engineering Council
2. The Company needs to demonstrate a high degree of technical expertise in the preparation of documents for the project by referring to previous similar projects completed during last 5 years. The consultant must also furnish performance certificates from 03 partners/clients.
3. The company must submit a list of selected projects from the last 5 years. Presented projects must be on a high level in the field of esthetics, functionality, and flexibility. The consultant must submit consultancy agreement/task completion certification, pictures, or other references/ evidence necessary for verification of the projects.

4. The company should demonstrate sound financial standing and have a turnover of its projects/services provided and paid by clients during the last 3 years.

9 Services and Facilities for the Consultant:

1. The Consultant would be provided the copy of site plan for the purpose of preparation of lay out plans, designs and drawings.
2. For the purpose of detailed design and layout, the consultant will carry out detail survey of the site on its own and shall take full responsibility for accuracy of the data collected.
3. AKRSP field staff will facilitate consultants while surveying the site.

10 Deliverables

1. Geotechnical and topographical surveys reports including soil test results (Deliverable 1)
2. Conceptual Maps of the Resource center (Deliverable 2) with cost estimates.
3. Final report but not limited to following task (Deliverable 3)
 - a. Master plan with complete site development works
 - b. Architectural drawings with complete detail
 - c. Plumbing drawings
 - d. Drainage and sanitation drawings
 - e. Electrical Sanitation drawing
 - f. Telephone and LAN line layout drawings
 - g. Structural drawings with complete details
 - h. Structural analysis and design calculations
 - i. Bill of Quantities separately for each group of works (i.e., architectural & construction works)
 - j. Work schedule

The final report shall also consist of the following documents:

- A flash drive/USB containing the plot files as well as the drawing (.dwg) files.
 - Three sets of BoQ & Materials/Technical specifications printed and bound and also in USB.
 - Three sets of detail design drawings printed on A3 size paper.
 - Cost estimate and rate analysis for all items of work– one hard copy (properly sealed) and soft copy in USB in editable format.
 - Two copies of detail structural analysis and design of the buildings
4. 04 Site visits reports on quarter basis (Deliverable 04)

The submission of the final report does not relieve the consultant from their responsibility to the submitted report. The consultant must bear full responsibility for:

- Authenticity of all the field data including and topographical survey information.
- Correctness of the documentation such as covered areas and all the calculations.
- Correctness of the drawings and documentation
- Correctness of any other details related to topographical survey.

11 Duration of the consultancy

1. Geotechnical and topographical surveys reports including soil test in the first three weeks.
1. Conceptual maps with cost estimates will be submitted in the second three weeks
2. Final report will be submitted in the third three weeks.

3. Four Visits to the project site will be undertaken on quarterly basis or on request of AKRSP,

12 Payment Mode

The consultant will be paid in the following manner.

1. 10% will be paid on submission and approval of Geotechnical and topographical Surveys.
2. 10% will be paid on submission and approval of Detailed Engineering Design of the building along with cost estimates.
3. 40% will be paid on submission of final reports.
4. 10% will be paid for 1st site visit and submission and approval of reports.
5. 10% will be paid for 2nd site visit and submission and approval of reports.
6. 10% will be paid for 3rd site visit and submission and approval of reports.
7. 10% will be paid for 4th site visit and submission and approval of reports.

13 Evaluation Criteria of Consultancy

The evaluation criteria will be based on technical and financial bids submitted by consultant. Moreover the consultant is required to provide signed declaration undertaking with technical documents. Technical bid will be assessed based on the list of criteria/requirements in as given in the TORs. Breakdown of technical evaluation marks are given below.

S#	Marks	Assigned Marks
1	Technical Proposal	25
2	Registration	25
3	05 similar projects (2 Marks for 01 project) completed in the last 05 years	10
4	Staff <ul style="list-style-type: none">• Team leader (12 Marks)• Architect (6 Marks)• Structural/Civil Engineer (6 Marks)• Electrical Engineer (2 Marks)• Geo technical Engineer (2 Marks)• Quantity Surveyor (2 Marks)	30
5	List of Geotechnical/topographical Survey equipment	5
6	Others (performance certificates/high achievement)	5
	Total	100

To qualify technically, bidders must achieve at least 80% of technical scores. Financial bids will be evaluated in the following manner.

- Only responsive financial bids will be considered in the evaluation.
- Lowest bidder will get full 20 points for financial evaluation.
- Others will get as much less percentage of financial points as their bid is higher i.e. 10% higher bid will get 10% lower financial points or 18 points.

In the end, the Technical and Financial Points will be added. Company with highest combined marks will be selected for award of consultancy.

14 Declaration of Undertaking

We underscore the importance of a free, fair and competitive procurement process that precludes fraudulent use. In this respect we have neither offered nor granted, directly or indirectly, any inadmissible advantages to any public servants or other persons in connection with our bid, nor will we offer or grant any such incentives or conditions in the present procurement process or, in the event that we awarded the contract, in the subsequent execution of the contract.

We also underscore the importance of adhering to minimum social standard ("Core Labour Standard") in the implementation of the project. We undertake to comply with the Core Labour Standards ratified by the country of Pakistan.

We will inform our staff about their respective obligations and about their obligation to fulfil this declaration of undertaking and to obey the laws of the country of Pakistan.

We also declare that our company/all members of the consortium has/have not been included in the list of sanctions of the United Nations, nor of the EU, nor of the German Government, nor in any other list of sanctions and affirm that our company/all members of the consortium will immediately inform the client if this situation should occur at a later stage.

We acknowledge that, in the event that our company (or a member of the consortium) is added to a list of sanctions that is legally binding upon the client, the client is entitled to exclude our company/the consortium from the procurement procedure and, if the contract is awarded to our company/the consortium, to terminate the contract immediately if the statements made in the Declaration of Undertaking were objectively false or the reason for exclusion occurs after the Declaration of Undertaking has been issued.

(Place) this ,,,,,,,,,,,,,, day of

Name of company

Signature (s)

