

Annex 1.1

PROJECT BRIEF

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| Project ID and title | 23455 | Afghanistan Community Resilience and Livelihood Project |
| Sub Project Name | Construction of Abu Talib Gozar Protection Walls with a Total Length of 600m in Gozar #11, District #5, Mazar-e-Sharif City | |
| Sub Project ID | MZR/DIS#5/SP03 | |
| Date | August 2024 | |

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1 INTRODUCTION

This project was initiated by the UNOPS after consultation with the local community and developed through bottom up sub project planning which has resulted in the current Design. The basis of the design document has been prepared by the UNOPS in order to define the basic design requirements for all sub project works to be carried out within urban environments under component-2 of the project.

1.1 Contract Description and Scope of Work

Construction of Abu Talib Gozar Protection Walls with a Total Length of 600m in Gozar #11, District #5, Mazar-e-Sharif City. The project scope of work is construction of an existing unlined earthen canal, through construction of both sides stone masonry protection walls, and laying of boulders in the canal bed. The total length of the canal proposed for rehabilitation is 300m, and thus the total length of protection walls considering both sides protection walls is 600m. The rehabilitation work will include construction of protection walls with total height of 2.3m, placing of 7cm thick top PCC coping, laying of the 10cm gravel layer, and 7cm PCC at the bed of the protection walls, construction of 600 linear metre of intermittent stone masonry parapet walls, and laying of boulders at the bed of canal with dimensions of 1.5m x 0.2m for the full length of canal.

The project scope doesn't include site remediation, the affected sites will be refurbished as stated above and the facilities will be handed over to the local community. Full description of the project works are available in the project documents.



Picture No.1: Site Plan, for start & endpoint coordinates refer to the location map in the drawing package

1.2 Major Activities

The major activities included within the scope of works include:

- General Excavation
- Foundation Preparation
- Stone Masonry
- PCC work
- Dry stone pitching (Laying of boulders)

- Carry out any additional labour intensive works as may be instructed by the UNOPS Representative on site utilising any labour not engaged on the scope of works described in the Design and quantified within the Bills of Quantities. Such additional works may include ditch cleaning, street cleaning, litter picking etc.

1.3 Project Information

- Contract ID: MZR/DIS#5/SP03
- Province: Balkh
- District: 5
- Total length of Canal: 300m
- Start point & end Point coordinates refer to the location map in the drawing package.

2 TECHNICAL DETAILS

The sub project scope is to construct protection walls along both sides of an existing unlined earthen canal which serves as storm water canal, due to unlined nature and lack of bank protection, the drain causes the erosion of the adjacent houses, the purpose of this sub project is to protect the adjacent houses from the possible erosion damages of the canal.

The standard used in the design of the sub-project includes AASHTO Publications, and International Labour Organization (ILO) Construction guidelines.

Balkh province is located in a moderate seismic risk zone, as per the USGS Open-File Report 2007-1137 Preliminary Earthquake Hazard Map for Afghanistan, the Peak Ground Acceleration for Balkh province is 0.33g considering a 2% probability of exceedance in 50 years.

2.1 CANAL SIZE

During the project scoping, the Project team has assessed the site in order to assume the runoff/discharge for the designing of Canal.

Currently, the existing canal is unlined earthen drains, the size of which are not consistent, however the average dimension is around 120 - 250 cm in width and around 130 cm in depth. The canal at the end point joins to an existing RCC canal of size 1.5m x 1.5m.

According to the local community no flooding occurs during the rainy season, however the water flow causes the erosion of the adjacent houses, lands, and properties.

Considering the non-occurrence of flood, consultation of the local community, size of existing drain, a rectangular section of canal with a size of 1.5m x 1.5m has been considered.

Considering the non-occurrence of flood, size of existing unlined canal, and size of existing RCC lined canal, consultation of the community, and based on our engineering judgement, experience, and information gathered at the walk around survey, it is our understanding that the proposed section of canal is large enough to accommodate the expected discharge of water.

2.2 DESIGN OF PROTECTION WALLS

Since the project scope of work is construction of stone masonry protection walls with a total length of 600m, the design calculations has been performed for the protection walls and is provided as Appendix-1, Structural Calculations with the project brief report.

The design of the Protection wall has been performed in accordance with AASHTO Bridge Design Specification, for the backfill of the wall sandy & gravelly material will be used, which will be compacted as well. Engineer Manual (EM 1110-1-1905) Bearing Capacity of Soils, Table 3-1, presents the angle of internal friction based on the gradation of the soils which is presented below:

| Relative Density D_r , Percent | Fine Grained | | Medium Grained | | Coarse Grained | |
|-------------------------------------|--------------|-------------|----------------|-------------|----------------|-------------|
| | Uniform | Well-graded | Uniform | Well-graded | Uniform | Well-graded |
| 40 | 34 | 36 | 36 | 38 | 38 | 41 |
| 60 | 36 | 38 | 38 | 41 | 41 | 43 |
| 80 | 39 | 41 | 41 | 43 | 43 | 44 |
| 100 | 42 | 43 | 43 | 44 | 44 | 46 |

The above table si for sandy soils, while the soil we will use as backfill will have gravel particles as well, which significantly increase the angle of internal friction, in addition the backfill will be compacted as well which also improves and increases the friction angle, however, in order to be conservative an internal friction angle of 35 degrees has been assumed in the calculations.

3 SUB-PROJECT SURVEY INFORMATION

3.1 SITE INITIAL SURVEY

The UNOPS site team has done the initial survey from the site. The proposed canal is laid in a flat area with a relief of around 2%. The maximum & minimum altitude along the proposed canal alignments are 410m & 404m respectively.

The land on which the project is implemented belongs to the public, and it has been confirmed with local communities and local authorities. There are no private infrastructures (e.g. irregular stores, street selling, etc.) along the protection walls to be refurbished and/or removed.

According to the local community there are no underground utilities along the project site.

Since project sites are located within congested residential areas in the cities, therefore the existence of unexploded ordnance (UXO) and landmines issues are not considered to pose a risk for the projects, however for complete information about landmines and UXO kindly refer to the Technical Specification Section 1123.

The existing site shown in the below pictures:



Picture No.2 : Existing site, Left side pic (proposed canal Section at 0+085), Right side pic (Existing RCC canal)

3.2 CLIMATE STUDY

The climate of Mazar-e-Sharif in summer is hot, reaching up to 45°C. The winter season is very cold and it will snow and rain during winter. The temperature gets as cold as -16°C. The working season is from February to December.

Balkh experiences some seasonal variation in monthly rainfall. The rainy period of the year lasts for 2.8 months, from February 3 to April 29, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Balkh is March, with an average rainfall of 0.9 inches. The rainless period of the year lasts for 9.1 months, from April 29 to February 3. The month with the least rain in Balkh is August, with an average rainfall of 0.0 inches. The average rainfall intensity for the Balkh is 0.32 inch per month. the below table shows the average monthly rainfall intensity for the Balkh province:

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Rainfall | 0.4" | 0.6" | 0.9" | 0.7" | 0.3" | 0.1" | 0.0" | 0.0" | 0.0" | 0.1" | 0.3" | 0.4" |

Table No.1: Monthly Average rainfall data for Balkh

The snowy period of the year lasts for 2.4 months, from December 6 to February 19, with a sliding 31-day snowfall of at least 1.0 inches. The month with the most snow in Balkh is January, with an average snowfall of 1.5 inches. The snowless period of the year lasts for 9.6 months, from February 19 to December 6. The least snow falls around July 12, with an average total accumulation of 0.0 inches. The below table presents the average snowfall data for Balkh province.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Snowfall | 1.5" | 1.2" | 0.2" | 0.0" | 0.0" | 0.0" | 0.0" | 0.0" | 0.0" | 0.1" | 0.7" | 1.0" |

Table No.2: Monthly Average snowfall data for Balkh

3.3 TRAFFIC ASSESSMENT

As the project scope of work is construction of protection walls, with no adjacent road, hence, the traffic data is not required for the project.

3.4 TEMPORARY WORKS

As the nature of the project is labour intensive, and the sizes of the project are small, hence no significant temporary works which need design are expected. During the construction the residents could access their houses using the same street.

4 MATERIAL INFORMATION

This information has been compiled based on visual visits and also through interviews with local authorities and their interventions in the area. The area where the project is implemented is flat. The strata on which foundation is to be based on Stiff, moist, light brown, sandy silty clay.



Picture No.3: Existing surface of canal (0+170)

5 ACCESSIBILITY TO THE PROJECT SITE

There is no crucial access limitation during the construction phase of the project. No detour is required for the proposed project. All kinds of construction materials, tools, equipment and skilled labourers are available to the project site. The proposed materials are available in the site as follow:

- A natural gravel source in Gor-e-Mar village and Marmol about 7 - 10 Km from the project site is considered a suitable source for filling and embankment of the proposed road project.
- All natural material resources such as gravel, sand, stone and soil are available at a radius of 3 - 5 Km of the project site.
- The other manufactured and prefabricated materials can be found within a radius of 5 - 7 Km of the project site.

6 HAND OVER OF SITE

The project site shall be handed over in full to the contractor after issuing of Notice to Proceed (NTP).

7 RISK ASSESSMENT

ER 1: Effect of failure on direct population served– 1 Point

The sub project scope is the construction of stone masonry protection walls, the effect of its failure on direct population would be less than 500 users/days

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| No impact and/or affecting less than 250 vehicles or 500 users/day | 1 Point |
| Minor impact and/or affecting 250-2500 vehicles/day or 501- 5,000 users/day | 2 Points |
| Moderate impact and/or affecting 2500-5000 vehicles/day or 5,001-10,000 users/day | 3 Points |
| Severe impact and/or affecting more than 5000 vehicles/day or 10,000 users/day | 4 Points |

ER 2: Complexity of design 2a: Complexity with Design Traffic – 1 Point

The sub project is construction of stone masonry protection walls along an existing unlined earthen canal with no complexity involved in terms of structure and geometric designing of the sub project.

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| Simple Design (Single lane road paved or unpaved) | 1 point |
| Average Design (Double lane road paved or unpaved primary or secondary roads with simple intersections) | 2 points |
| Complex Design (Multi lane paved primary roads with substantial intersections) | 3 points |
| Very Complex (Multi lane paved highway standard) | 4 points |

ER3: Element 2b: Complexity of Terrain - 1 Point

The project is located in the flat terrain area.

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| Simple Design (Flat terrain with sweeping curves) | 1 point |
| Average Design (Flat or undulating with medium radius curves) | 2 points |
| Complex Design (Undulating to hilly with medium ascent/descent slopes and tight radius curves) | 3 points |
| Very Complex (Mountainous with steep ascent/descent and sharp radius curves) | 4 points |

ER 4: Social Impact Assessment - 1 Point

Since the project works is the construction of stone masonry protection walls along an existing unlined earthen canal, therefore there would be positive impact on the local population no displacement, ethnic impact and negative social impact involved in the sub project.

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| Positive, little or no impact on local population, no threat to ethnic minorities or cultural aspects, historic or archaeological features | 1 point |
| Some displacement, loss of livelihood and impact on future employment, disproportionate ethnic impact, gender equality impact | 2 points |
| Moderate negative social impact, loss of livelihood, displacement and other negative factors, some loss of cultural heritage | 3 points |
| Substantial to severe negative social impact, loss of livelihood for substantial population, loss of cultural heritage, displacement of substantial population | 4 points |

ER 5: Environmental Impact Assessment - 2 Points

Construction of stone masonry protection walls along an unlined earthen canal will leave a positive impact on the area specially during rainy seasons.

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| Minor impact, acceptable risk to ecosystems | 2 points |
| Moderate impact with moderate risk to ecosystems | 3 points |
| Substantial to severe negative environmental impact | 4 points |

ER 6: Natural Phenomena - 2 Points

The project site is located in a moderate seismic-risk area.

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| Minimal natural phenomena and/or comprehensive relevant design codes in place; low-level seismic risk zone | 1 point |
| Moderate natural phenomena and/or some relevant design codes in place; moderate-level seismic risk zone | 2 points |
| Some natural hazards acting together and/or very limited relevant design codes; moderate to severe level seismic risk zone | 3 points |
| Severe natural hazards acting together and/or no design codes in place; severe level seismic risk zone | 4 points |

ER 7: Estimated total construction cost - 1 Point *

The total estimated construction cost is less than US\$ 500,000.

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|-----------------------------------|----------|
| Up to US\$500,000 | 1 point |
| From US\$500,001 to US\$2,500,000 | 2 points |
| From US\$2,500,001 to \$5,000,000 | 3 points |
| More than US\$5,000,001 | 4 points |

Total Number of Points – 9 Points

Classification of Risk Level

Project classification – **Low Risk**

Since the nature of the project is cash for work (CFW), therefore the type of the design and construction is so simple, the new infrastructure project is supposed to be design or constructed with no significant issues of the design complexity, environmental, and no natural vulnerability have been involved in this sub project, base on the assessment the sub project has been classified as Low Risk.