

Annex 1.1

PROJECT BRIEF

Project ID and title	23455 Afghanistan Community Resilience and Livelihood Project
Sub Project Name	Construction of Gilan Plum Concrete Surface Street with Total Length of 410m in Gozar #1, District #8, Kandahar City
Sub Project ID	KDR/DIS#8/SP02
Date	September 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 Gilan Plum Concrete Surface Street with Total Length of 410m in Gozar #1, District #8, Kandahar City. The project scope of work is Rehabilitation of a residential street with plum concrete surface with a total length of 410m. The rehabilitation work will include: placement and construction of 17 cm thick plum concrete surface layer, placing and compaction of 20 cm thick sub base layer, subgrade preparation and compaction, construction of 393 linear metre of PCC drain, construction of 9 linear metre of stone masonry retaining wall with total height of 2.3m, construction of 379 linear metre of stone masonry guardwall over existing stone masonry wall, construction of a slab culvert of size 1.5m x 1m with stone masonry abutments, and furnishing and installation of 40 linear metre of steel grill.

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 & end Point 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
- Filling
- Subgrade preparation

- Sub Base Course
- Plum concrete work
- PCC Work
- RCC Work
- Stone Masonry Work
- Furnishing and installation of steel grill
- 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: KDR/DIS#8/SP02
- Province: Kandahar
- District: 8
- Total length of Street: 410m
- Start point & end Point coordinates refer to the location map in the drawing package.

2 TECHNICAL DETAILS

The sub project scope is to construct a plum concrete surface street along with side drain, the purpose of this sub project is to improve the existing street surface for the user.

The standard used in the design of the sub-project includes AASHTO Publications, and International Labour Organization (ILO) Construction guidelines. It should be noted that it is not the design of new streets, but we are only improving the existing infrastructure, hence some of the standard requirements may not be applicable in the design of these streets, for instance:

The Design speed for these sub-streets is considered from 30 - 40 Km/hr, whenever possible it will be considered in the design, however, since we are dealing with existing streets with no free space for more improvement, so for some of the streets it may not be applicable.

The sight distance recommendation would be considered in the design streets and road, whenever possible, however, since we are dealing with existing streets with no free space for more improvement, we may not be able to apply and/or consider these recommendations.

Kandahar province is located in a relatively low seismic risk zone, as per the USGS Open-File Report 2007-1137 Preliminary Earthquake Hazard Map for Afghanistan, the Peak Ground Acceleration for Kandahar province with a probability of 2% of exceedance in 50 years is 0.13g.

2.1 PAVEMENT DESIGN

According to the community-based asking information and site observation, around 100 light vehicles are passing from the streets on a daily basis, the pavement design calculation has been performed for the street based on which the thickness of the pavement layer has been selected, for more information refer to the plum concrete pavement design report in the design package.

2.2 DRAINAGE

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

There is an irrigation canal along the left side of the road to which the surface water is directed, but due to blockage of drain pipes the water doesn't easily flow to the canal, and thus the water flows on the road surface, there is no other drain along the road.

According to information from the local community no flooding occurs during the rainy season in the area, however, due to lack of a continuous functional drainage system, water ponds on the street surface, creating muddy street surface, resulting in inconvenience to pedestrians and passing vehicles.

Considering the non-occurrence of flood, consultation of the local community, small and limited catchment area due to built upness and flatness of the area, existence of agricultural lands around the area (which absorbs most of the precipitation water), a rectangular section of drain of size 40cm x 40cm has been considered for the street.

Considering the non-occurrence of flood, small and limited catchment area due to built upness and flatness of the area, existence of agricultural lands around the area, consultation of local communities, and based on our own engineering judgement, experience, and information gathered at the walk around survey, it is our understanding that the proposed drain size is enough large to accommodate the expected discharges of the street.

2.3 STEEL GRILL

The steel grating is to be installed on the top of drains of tertiary streets and roads, expected to experience light traffic, and is considered as a non-engineering structure in terms of the structural calculation since the structure is supposed to be built as a localise and the span of the structure is only 30-50cm. Please note that similar steel grating has been used around the City in other projects, which are functioning quite well. The details are attached with the drawing package.

2.4 DESIGN OF CULVERT

The project scope of work includes construction of an RCC slab culvert of size 1.5m x 1m with stone masonry abutments, the design calculations for the culvert has been performed and is provided as Appendix-1, Structural Calculations with this project brief report.

2.5 DESIGN OF RETAINING WALL

The project scope of work also includes construction of 9 linear metre of stone masonry retaining wall with total height of 2.3m, the design calculations for the culverts has been performed and is provided as Appendix-1, Structural Calculations with this project brief report.

The design of the Retaining 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:

TABLE 3-1

Angle of Internal Friction of Sands, ϕ'

a. Relative Density and Gradation
(Data from Schmertmann 1978)

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 is 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 project consists of Rehabilitation of a residential street, located in a flat terrain with a relief of around 0.5%. The maximum & minimum altitude along the proposed street alignment are 1003.7m & 1001.8m 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 private houses on the right and an irrigation canal on the left side of the proposed street, but there are no private infrastructures (e.g. irregular stores, street selling, etc.) in the street to be refurbished and/or removed.

According to community information from the local community, there are no underground utilities along the project site, there are some electric poles that exist adjacent to the boundry walls, which aren't considered as obstruction and don't need any relocation.

The 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 the landmines and UXO refer to section 1123 of Technical Specification.

The existing site shown in the below pictures:



Picture No.2 : Existing site, Left side pic (Street-1, 0+155), Right side pic (Street-1, 0+190)

3.2 CLIMATE STUDY

The climate of Kandahar city is arid or desert climate. The weather in summer is very hot, reaching up to 45°C in June and July. The winter season is not very cold but at some points it may get as cold as -5°C. Kandahar city rarely witnesses snowfall but it has little to medium amount of rainfall in the winter. Though the climate does not force stoppage of normal construction works throughout the year, still we might have a winter break for a couple of weeks in January which is negligible.

Kandahar experiences some seasonal variation in monthly rainfall. The rainy period of the year lasts for 4.4 months, from December 5 to April 19, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Kandahar is February, with an average rainfall of 1.1 inches. The rainless period of the year lasts for 7.6 months, from April 19 to December 5. The month with the least rain in Kandahar is June, with an average rainfall of 0.1 inches. The average rainfall intensity for the Kandahar province is 0.49 inch per month. The below table shows the average monthly rainfall data for Kandahar province.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	1.1"	1.1"	1.1"	0.6"	0.2"	0.1"	0.2"	0.3"	0.2"	0.2"	0.2"	0.6"

Table No.1: Monthly average rainfall data for Kandahar province

The source for the weather data is www.weatherspark.com.

3.3 TRAFFIC ASSESSMENT

According to the site observations and community elders, light vehicles are going to have movement on the tertiary road located just above the proposed protection wall with low traffic volume of around 100 light vehicles/day.

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 concreting the residents could access their houses through other interconnected streets, and it is agreed with the community that they will park their vehicles in parking areas during the course of the construction, without any charging and claims. The access to houses will be guaranteed through use of metal plates.

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 terrain. The strata on which foundation is to be based on medium dense, moist, light brown silty sand with gravel.



Picture No.3: Existing surface of street, Left side pic (Street-1, 0+235), Right side pic (Street-1, 0+320)

5 ACCESSIBILITY TO THE PROJECT SITE

There is no limitation of the access to the project site, both skilled and unskilled labour are available in the project site. All kinds of construction materials, tools, and equipment are available at the vicinity of the project site at Kandahar City.

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 construction of a plum concrete surface street, the number of traffic is around 100 vehicles/day.

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 a plum concrete surface street for the urban area with no complexity involved in terms of structure and geometric designing of the sub project.

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 a flat terrain area.

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 sub-project work is the construction of a plum concrete surface street, therefore there would be positive impact on the local population, no displacement, ethnic impact and negative social impact involved in the sub project.

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 the plum concrete surface street will leave a positive impact on the area specially during winter and spring season.

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 - 1 Point

The project is located in a low-level seismic risk zone.

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.

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 – 8 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.