

Annex 1.1

PROJECT BRIEF

Project ID and title	23455 Afghanistan Community Resilience and Livelihood Project
Sub Project Name	Upgrading of Dawlatzai Plum Concrete Surface Street with a Total Length of 600m, Gozar #2, District #5, Gardez City
Sub Project ID	GDZ/DIS#5/SP02
Date	September 2024

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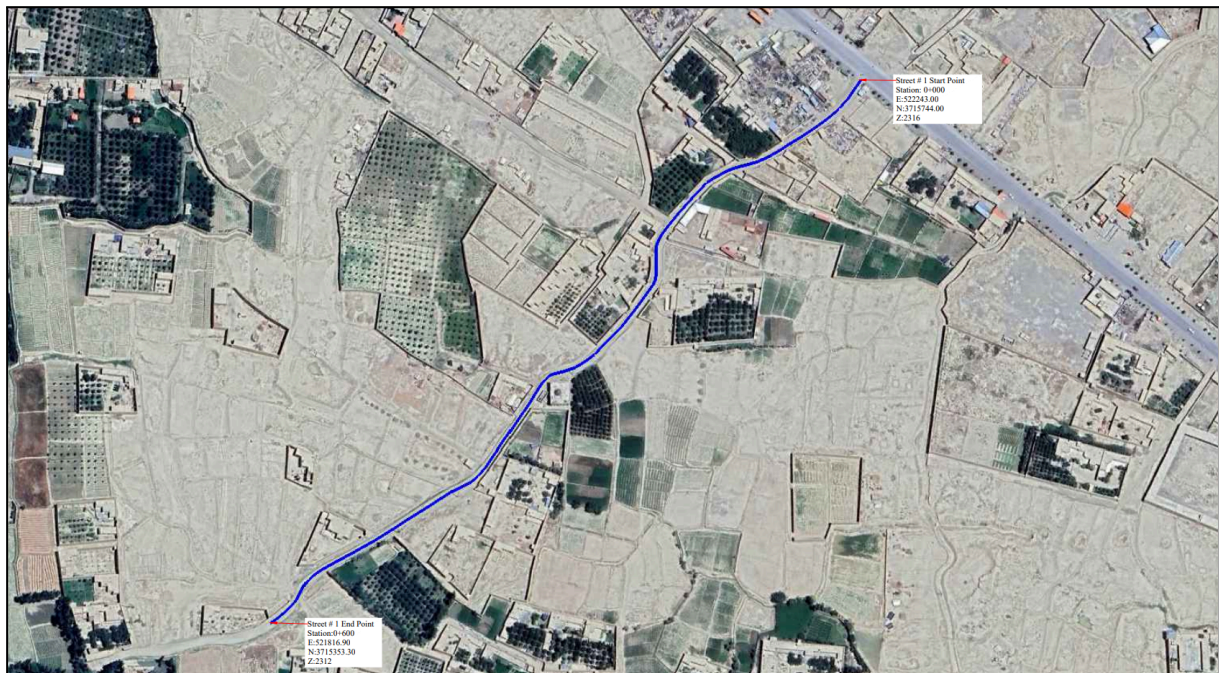
1 INTRODUCTION

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

Upgrading of Dawlatzai Plum Concrete Surface Street with a Total Length of 600m, Gozar #2, District #5, Gardez City. The project scope of work is Rehabilitation of a residential street with a total length of 1063m. 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 600 linear metre of stone masonry drain, and furnishing and installation of 5 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 is 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
- 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: GDZ/DIS#5/SP02
- Province: Paktia
- District: 5
- Total length of street: 600m
- 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's 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.

Paktia province is located in a moderate seismic risk zone, the Peak Ground Acceleration for Paktia province is 0.18 - 0.34g as per the USGS Open-File Report 2007-1137 Preliminary Earthquake Hazard Map for Afghanistan. For design purposes a PGA of 0.25 has been considered for Gardez city, as it is the maximum PGA for the area around Gardez city.

2.1 PAVEMENT DESIGN

According to the community-based asking information and site observation, around 30 - 40 light vehicles are passing from the street 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.

Overall the proposed street has problems from a drainage point of view, as some portions of the street has no drain at all, and some portions of the drain has existing unlined earthen drain, the size of which is not consistent and varies from 30 - 60cm in width and around 25 - 40 cm in depth.

According to information from the local community no flooding occurs during the rainy season in the area, however, due to lack of a proper and functional drainage system in the area, water ponds on the street surface, creating muddy streets surface, resulting in inconvenience to the 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 (which absorbs most of the precipitation water), a rectangular section of drain of size 50cm x 50cm 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, sizes of existing drain, and based on our own engineering judgement, experience, and information gathered at the walk around survey, it is our understanding that the proposed drain sizes are enough large to accommodate the expected discharges of the streets.

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.

2.3 DESIGN OF DRAIN WALL

The project scope includes construction of 600 linear metre of stone masonry drain, the design calculations for the drain wall has been performed and is provided as Appendix-1, structural Calculations with this project brief report.

The design of the drain 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 flat terrain with a relief of around 1 - 1.5%. The maximum & minimum altitude along the proposed street's alignment are 2316m & 2312m 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 and/or agricultural lands on one or both sides 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 underground utilities (electrical cables) along the project site which are located at a depth of 80 - 100 cm below the ground surface, and as such is not expected to be disturbed by the construction and doesn'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, (Street-1, 0+090)

3.2 CLIMATE STUDY

In Gardez, the summers are long, warm, and clear and the winters are short, very cold, snowy, and mostly clear. Over the course of the year, the temperature typically varies from -5°C to 32°C and is rarely below -11°C or above 35°C. The working season is generally from March to November.

Gardez experiences some seasonal variation in monthly rainfall. The rainy period of the year lasts for 9 months, from February 8 to November 8, with a sliding 31-day rainfall of at least 13mm. The month with the most rain in Gardez is April, with an average rainfall of 45 millimetres. The rainless period of the year lasts for 3 months, from November 8 to February 8. The month with the least rain in Gardez is December, with an average rainfall of 4 millimetres. The average rainfall intensity for Gardez is 23.5 millimetres per month. the below table shows the average monthly rainfall intensity for Gardez city:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	4.0mm	16.9mm	44.4mm	<u>44.6mm</u>	26.0mm	20.8mm	31.4mm	37.7mm	25.2mm	17.3mm	10.1mm	<u>3.7mm</u>

Table No.1: Monthly Average rainfall data for Gardez

The snowy period of the year lasts for 4.3 months, from November 19 to March 28, with a sliding 31-day snowfall of at least 35 millimetres. The month with the most snow in Gardez is February, with an average snowfall of 179 millimetres. The snowless period of the year lasts for 7.7 months, from March 28 to November 19. The least snow falls around July 21, with an average total accumulation of 0.0 millimetres. The below table presents the average snowfall data for Gardez city.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Snowfall	126.3mm	<u>179.2mm</u>	59.3mm	3.3mm	<u>0.0mm</u>	<u>0.0mm</u>	<u>0.0mm</u>	<u>0.0mm</u>	<u>0.0mm</u>	1.2mm	19.9mm	56.4mm

Table No.2: Monthly Average snowfall data for Gardez

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

3.3 TRAFFIC ASSESSMENT

According to the local community the streets have a traffic of around 30 - 40 light vehicles such as, Sedans, SUVs, Vans, Pickup per day along the proposed streets' alignment.

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 proposed to be implemented is flat area. As per visual inspection, the street material consists of moist, light brown, medium dense silty sand with gravel.



Picture No.3: Existing street surface, (Street-1, 0+330)

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:

- Gravel, Sand and stone for masonry are available at a distance of around 25 Km of the project site.
- Cement is available nearby 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 a plum concrete surface street; the number of traffic is around 30 - 40 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 the 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 flat terrain.

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 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 - 2 Points

The project is located in a moderate-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 – 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.