



USAID
FROM THE AMERICAN PEOPLE

WEST BANK/GAZA

FINAL REPORT

TO 13-00005-SWN-SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT & AZ ZAWIEH NETWORK PROJECT (ZWN)

(IQC Basic Contract No.: AID-294-I-00-08-00217)

(Task Order # AID - 294 - TO - 13 - 00005)

Prime Contractor:

International Relief and Development, Inc. (IRD)



December 16, 2014

This publication was produced for review by the United States Agency for International Development. It was prepared by IRD.

FINAL REPORT

IQC BASIC CONTRACT NO.: AID-294-I-00-08-00217

TASK ORDER CONTRACT NO.: AID - 294 - TO - 13 – 00005

PROJECT 1-SOUTHWEST NABLUS VILLAGES WATER SUPPLY
PROJECT (SWN)

PROJECT 2-AZ ZAWIEH NETWORK PROJECT (ZWN)

SUBMITTED BY:

INTERNATIONAL RELIEF & DEVELOPMENT

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Glossary of Terms and List of Abbreviation:

AQN: Asira Al Qibliya Network
BOQ: Bill of Quantities
PD: Program Director
DCL: District Coordination Liaison
IDF: Israeli Defense Forces
MDN: Madama Network
N.G.L: Natural Ground Level
NCR: Non-Compliance Report
NOA: Notice of Award
NTP: Notice to Proceed
NUC: Notice of Unsafe Conditions
PALTEL: Palestinian Telecommunication Group
PM: Project Manager
PPE: Personal Protective Equipment
PPWM: Prepaid Water Meter
PSV: Pressure Sustainable Valve
PVO: Potential Variation Order
PWA: Palestinian Water Authority
P.G.L: Proposed Ground Level
QA/QC: Quality Assurance/Quality Control
RE: Resident Engineer
RFI: Request for Information
RFTOP: Request for Task Order Proposal
ROW: Right of Way
SOW: Scope of Work
SWT: Southwest Transmission Pipeline
VOR: Variation Order Request
SD: Shop Drawing
TO: Task Order
URN: Urif Network
USAID: United States Agency for International Development

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

VO: Variation Order

WBWD: West Bank Water Department

ZWN: AZ Zawieh Network

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

TABLE OF CONTENTS

i.	Task Order description and Data	8
ii.	Task Order Payments	8
iii.	Task Order Variation Orders	8
iv.	Task Order Indicators	33
1.	PROJECT 1 SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT (SWN) DESCRIPTION AND SPECIFIC DATA:	36
2.	PROJECT 1 SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT BACKGROUND	37
2.1.	Project background	37
2.2.	Project Site Location Map	38
2.3.	Project’s construction elements	40
2.4.	Project Typical Cross Sections	47
3.	PROJECT 1 SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT (SWN) PERFORMANCE DETAILS.....	48
3.1	Submittals	48
3.2	Work Progress.....	49
3.3	Project Final CPM Schedule	72
3.4	Cash Flow	73
3.5	Project Indicators:.....	74
3.6	Site Safety.....	76
3.7	Traffic Plan.....	82
3.8	Construction Risk Management	92
3.9	Quality Control Program	93
3.10	Site Facilities	101
3.11	Communication and Correspondence	102
3.12	Coordination.....	105
3.13	Site Visits	113
3.14	Operation, Maintenance, testing, commissioning and Training.....	116
3.15	Construction Challenges.....	119
1.	PROJECT 2 AZ ZAWIEH NETWORK PROJECT (ZWN) DESCRIPTION AND SPECIFIC DATA:.....	121
2.	PROJECT 2 AZ ZAWIEH NETWORK PROJECT (ZWN) BACKGROUND..	122
2.1.	Project background	122
2.2.	Project Site Location Map	123
2.3.	Project’s construction elements	125
2.4.	Project’s Pipeline Typical Cross Sections	125
3.	PROJECT 2 AZ ZAWIEH NETWORK PROJECT (ZWN) PERFORMANCE DETAILS.....	126
3.1	Submittals	126

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.2 Work Progress.....	127
3.3 Project Final CPM Schedule	135
3.4 Cash Flow	139
3.5 Project Indicators:.....	140
3.6 Site Safety.....	142
3.7 Traffic Plan.....	148
3.8 Construction Risk Management	157
3.9 Quality Control Program	159
3.10 Site Facilities	162
3.11 Communication and Correspondence	164
3.12 Coordination.....	166
3.13 Site Visits	167
3.14 Operation, Maintenance, testing, commissioning and Training.....	168
3.15 Construction Challenges.....	171
4. SUBCONTRACTOR BACKGROUND INFORMATION	171
5. GOVERNMENT FURNISHED PROPERTIES	170
6. LESSONS LEARNED	172

5. Attachments:

Annex T: Task Order Level Annexes

- Annex T.1: Task Order Variation Order Log
- Annex T.2: Task Order Progress Payments Log
- Annex T.3: Task Order Organizational Chart
- Annex T.4: As-Built Construction Schedule

Annex A: Project 1 – Southwest Nablus Villages Water Supply Project (SWN)

- Annex A.1: Project Construction Site Hand Over & Final Acceptance Certificate
- Annex A.2: Project Construction Photo Log
- Annex A.3: Project Construction Photos
- Annex A.4: Project Site Visit Log and Site Visit Photos
- Annex A.5: Project Submittals Log
- Annex A.6: Project Request for Information (RFI) Log
- Annex A.7: Project Site Memo & Correspondence Log
- Annex A.8: Project Daily Joint Construction Reports Log
- Annex A.9: Project Laboratory Tests Log
- Annex A.10: Project Inspection Requests (IR) Log

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Annex A.11: Project Non-Compliance Report (NCR) Log
Annex A.12: Project Equipment Log
Annex A.13: Project Materials Log
Annex A.14: Project Workforce Level of Effort (Person-Hours) Log
Annex A.15: Project Notice of Unsafe Conditions (NUC) Log
Annex A.16: Project Incident Log
Annex A.17: Local Councils Clearance Certificates

Annex B: Project 2 –Az Zawieh Network Project (ZWN)

Annex B.1: Project Construction Site Hand Over & Final Acceptance Certificate
Annex B.2: Project Construction Photo Log
Annex B.3: Project Construction Photos
Annex B.4: Project Site Visit Log and Site Visit Photos
Annex B.5: Project Submittals Log
Annex B.6: Project Request for Information (RFI) Log
Annex B.7: Project Site Memo & Correspondence Log
Annex B.8: Project Daily Joint Construction Reports Log
Annex B.9: Project Laboratory Tests Log
Annex B.10: Project Inspection Requests (IR) Log
Annex B.11: Project Non-Compliance Report (NCR) Log
Annex B.12: Project Equipment Log
Annex B.13: Project Materials Log
Annex B.14: Project Workforce Level of Effort (Person-Hours) Log
Annex B.15: Project Notice of Unsafe Conditions (NUC) Log
Annex B.16: Project Incident Log
Annex B.17: Local Council Clearance Certificate

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

i. Task Order description and Data

Task Order Background

Infrastructure in the West Bank and Gaza suffers from years of neglect and lack of investment. The USAID Mission Infrastructure Needs Program focuses on large-scale infrastructural projects including rehabilitating road networks, building major water facilities, constructing water distributing systems, developing wastewater facilities, and constructing schools and other infrastructure. Through the program, USAID constructs and rehabilitates critical infrastructure that promotes economic growth and improves the quality of life for Palestinians in the West Bank.

IRD was awarded TO 13-00005-SWN-Southwest Nablus Villages Water Supply Projects (among INPI Program) on April 10, 2013 (NOA); NTP was received on April 23, 2013. TO-13-00005-SWN consists of two main water projects: Project 1-Southwest Nablus Villages Water Supply Project that consists of a main water transmission pipeline (SWT), three water networks in Asira Al Qibliya, Madama and Urif Villages and three water reservoirs in Asira Al Qibliya, Madama and Urif Villages & Project 2-Az Zawieh Water Network Project. Project 1 is located in Nablus Governorate, and Project 2 is located in Salfet Governorate. Southwest Nablus Villages Water Supply Project (P1) had an original completion date of July 16, 2014 with an original duration of 450 calendar days; final modified completion date for P1-was September 25, 2014 with a final duration of 521calendar days. Az Zawieh Project (P2) had an original completion date of February 16, 2014 with an original duration of 300 calendar days; final modified completion date for P2 was March 31, 2014 with a final duration of 343 calendar days.

ii. Task Order Payments

TO#13-00005 (SWN) project payments submission started on June 24, 2013, and the first payment was received on July 13, 2013. To date, IRD has submitted thirteen invoices; the thirteen invoices corresponding funds in the total net amount of \$7,825,815.36 were received for Project 1-Southwest Nablus Villages Water Supply and \$1,942,387.78 for Project 2-Az Zawieh ZWN

Concerning the exchange rates, during the project duration we encountered fluctuation in the currency rates, however this fluctuation did not have any significant financial impact throughout the progress of the project.

iii. Task Order Variation Orders

The following table summarizes all VOs issued for TO-05-SWN with VO amount, revised day work and revised completion date for each:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

VO No.	DESCRIPTION	Variation Order Amount	Day Work Amount	Modified Task Order Amount	Modified Completion Date	
1	Installation of precast concrete boundary walls, solid boundary fence and solid entrance gates for Asira Al Qibaliya and Urif reservoirs. Supply and furnish rubble concrete for Madama and Asira Al Qibliya Reservoirs. Substitution of concrete new jersey barriers with steel mini guardrails.	(\$167,522.34)	\$332,477.66	\$9,971,709.00	P1-SWN	16-Jul-14
					P2-ZWN	16-Feb-14
2	Change in The Requirements And New In Definitive Quantities	\$453,604.29	\$786,081.95	\$9,971,709.00	P1-SWN	16-Jul-14
					P2-ZWN	16-Feb-14
3	Construction of Reinforced Concrete Pavement for SWN Pipeline at Project 1. Additional Asphalt Works, New In-Definitive Quantities and Time Extension at Project 2	(\$153,404.52)	\$632,677.43	\$9,971,709.00	P1-SWN	16-Jul-14
					P2-ZWN	9-Mar-14
4	Layout Revision to Additional Asphalt Works at Project # 2	\$0.00	\$632,677.43	\$9,971,709.00	P1-SWN	16-Jul-14
					P2-ZWN	23-Mar-14
5	CHANGE IN THE REQUIREMENTS OF FLOW METERS AND INTERNAL COATING MATERIAL OF RESERVOIRS AND NEW IN-DEFINITIVE QUANTITIES AT PROJECT #1. NEW DRAINAGE SYSTEM, NEW SAFETY FEATURES AND PRE-FINAL QUANTITIES AT PROJECT #2	(\$124,364.52)	\$508,312.91	\$9,971,709.00	P1-SWN	15-Aug-14
					P2-ZWN	31-Mar-14
6	FINAL DEFINITIVE QUANTITIES FOR PROJECT 2	\$4,801.07	\$513,113.98	\$9,971,709.00	P1-SWN	15-Aug-14
					P2-ZWN	31-Mar-14

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

VO No.	DESCRIPTION	Variation Order Amount	Day Work Amount	Modified Task Order Amount	Modified Completion Date	
7	Additional Asphalt Works, New Project Definitive Quantities & Time Extension at Project# 1	(\$207,817.66)	\$305,296.32	\$9,971,709.00	P1-SWN	5-Sep-14
					P2-ZWN	31-Mar-14
8	DE-SCOPING OF BURIN MADAMA ROAD, ADDITIONAL ASPHALT WORK, SAFETY FENCE FOR MADAMA RESERVOIR ROAD, INSTALLATION OF PROPELLER WATER METERS AT RESERVOIRS, TRANSPORTATION OF 3" WATER PIPE, NEW PROJECT DEFINITIVE QUANTITIES AND TIME EXTENSION AT PROJECT #1	(\$52,212.10)	\$253,084.22	\$9,971,709.00	P1-SWN	25-Sep-14
					P2-ZWN	31-Mar-14
9	PROJECT 01: NEW ITEMS AND PROJECT PRE-FINAL DEFINITIVE QUANTITIES	(\$139,785.12)	\$113,299.10	\$9,971,709.00	P1-SWN	25-Sep-14
					P2-ZWN	31-Mar-14

- ❖ “A negative Variation Order Amount means that the subject variation order resulted in an increase in cost which was deducted from the Day Work budget line item, while a positive Variation Order Amount means that the subject variation order resulted in a decrease in cost which was added to the Day Work budget line item.”

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

1. Variation Order No. 1:

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

A. Construction of rubble concrete 40 cm thick underneath the base slab of Madama and Asira Al Qalaliyia reservoirs:

The Geotechnical Laboratory conducted a geotechnical inspection and testing at Madama and Asira Al Qibaliya Reservoirs' sites to investigate and validate the actual soil conditions underneath the reservoirs' base slabs. The testing results recommended improving the bearing capacity of the soil by providing a 40 cm rubble concrete layer under the reservoirs' base slabs. This was necessary to provide a uniform support for the reservoirs base slab while improving the soil bearing capacity.

Accordingly, IRD submitted VOR #03B on July 09, 2013. The Engineer reviewed the contractor's prices for the proposed new item and determined that the requested new unit rate was reasonable, fair and within market rates as follows:

Supply and furnish (67 m³ per reservoir) of 400 mm thickness rubble concrete at a unit rate of \$ 113.02 per m³ and a total of \$ 15,144.68

B. Installation of precast concrete boundary walls, solid boundary fence and solid entrance gates for Asira Al Qibaliya and Urif reservoirs' sites:

Following commencement of site works at Asira Al Qibaliya and Urif reservoirs, settlers from a nearby settlement have attacked and vandalized the sites on several occasions; these attacks have placed the project staff at risk and caused damages to the temporary facilities (fence, storage container and project sign). Therefore, and after due consultation between all parties, it was determined to replace the cast in situ retaining wall by a 3m high pre-cast concrete boundary wall (that is faster to erect) and a 1m solid metal fence on top of the concrete wall. Also, the fenced gate specified in the original design was replaced by a solid metal motorized entrance gate. These security modifications aimed at protecting the safety of project staff, material, equipment and ultimately USAID's investment.

Accordingly, IRD submitted the variation via email dated 01 August 2013 and revised via email dated August 04, 2013. The Engineer reviewed the contractor's prices for the proposed new items as follows:

1. Supply and install 197 lm of 3m height precast concrete boundary wall at both sites at a price unit rate of \$ 944.43 per lm and with a total cost of \$ 186,052.71
2. Supply and install 197 lm of solid metal boundary fence at both sites at a price unit rate of \$ 259.20 per lm and with a total cost of \$ 51,062.40

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3. Supply and install of two solid metal motorized entrance gate at a unit price of \$ 7,437.50 each and a total cost of \$ 14,875.00
4. Security System: Supply and install six cameras (three at each site) to capture the entire area of each site. The subject cameras were remotely connected to a computer stationed in the site offices (at Howara).

The cost of the six cameras and computer including the remote connection is \$ 6,840.00, the custody of the cameras and the computer were turned over to PWA upon completion, so that PWA can remotely monitor and safeguard the sites against any attempts to poison the water or damage the facility.

Provide 24 hour/ 7 days per week monitoring and reporting service feed from Asira and Urif site cameras during project implementation for a lump sum Price of \$12,000.00

Subsequently, the installation of prefabricated precast concrete security boundary wall and solid entrance gates for Asira Al Qibliya Qibaliya and Urif Reservoirs' sites cancelled the need the original BOQ items

Accordingly, the net cost impact as a result of the aforementioned enhanced safety site conditions was as follows:

1	Additional Cost for Rubble concrete (40 cm) thick under reservoirs base slab	\$ 15,144.68
2	Cost Impact for Site Security Enhancements	
2.1	Deletion of BOQ item	\$ (118,452.90)
2.2	Additional cost for the enhanced safety site conditions	\$ 270,830.11
	Grand Total for Site Security Enhancements	\$ 152,377.21
3	Net Cost impact (Net Additional Cost)	\$ 167,521.89

The aforementioned additional works including the changing of the sequence of activities did not have any impact of the projects' duration

C. Substitution of Concrete New Jersey Barriers with Steel Mini Guard for Traffic separation during Construction at selected sections of the Transmission line and Networks.

IRD proposed to use steel barriers instead of New Jersey Concrete Barriers (specified in Section C.4.A of the Contract) to separate traffic from working zone along the excavated trenches.

USAID accepted the use of steel barriers as they serve the intended purpose of safely separating traffic; in addition, the proposed barriers are lighter and faster to assemble and disassemble during construction which greatly supported progress of work and lead to minimized disruptions to local residents and business owners at narrow roads in the villages stretched along the pipe line alignment. The use of concrete New Jersey barriers was required at certain sections of the projects such for manhole

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

openings, and other areas as determined by the CMC and/or the Project Safety officer where steel barriers did not serve the intended purpose.

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

A. Substitution of concrete New Jersey barrier with steel mini guardrail for traffic separation during construction at selected section of the network.

The contractor proposed to use steel barriers instead of concrete New Jersey barrier to separate traffic from working zone along the excavated trenches.

USAID accepted the proposed steel barriers as they serve the intended purpose of safety separating traffic in addition the proposed barriers are lighter and faster to assemble and disassemble during construction, which greatly supported progress of work and lead to minimized disruptions to local resident and business owners at narrow roads along the pipeline alignment. The use of concrete New Jersey barrier was still required at certain sections of the projects such for manhole openings and other areas as determined by CMC and/or the project safety officer where steel barriers did not serve the intended purpose.

2. Variation Order No. 2 included the following :

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

A. Substitution of Pipe Zone Backfill material (Bedding Materials) for 250, 200, 150, 100, 80 and 50mm pipes:

The contractor requested through RFI-13-05-SWN-C-E-002 to substitute the originally specified sand bedding material with alternate crushed stone (somsom) bedding material as the latter is more readily available in West Bank. Following review of contractor's request, the CMC concluded the following:

The proposed alternate material met the technical requirements. Accepting the use of alternate material resulted in reducing the risks of delays during transportation between Israel and the West Bank at crossing points.

USAID accepted the use of crushed stone in lieu of sand for use as bedding material for pipe zone backfill.

The aforementioned changes required introducing new BOQ items to the Transmission Pipeline, Madama Network, Asira Al Qibliya Network and Urif Network projects as follows:

Water Project 1.1 -TRANSMISSION PIPELINE

Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.	Unit	Rate	Quantity
Backfill for pipe zone, 250 mm pipes	lm	\$ 8.59	971
Backfill for pipe zone, 200 mm pipes	lm	\$ 7.59	3,500
Backfill for pipe zone, 150 mm pipes	lm	\$ 6.53	3,450
Backfill for pipe zone, 100 mm pipes	lm	\$ 5.16	2,000

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Water Project 1.2 -MADAMA NETWORK

Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.	Unit	Rate	Quantity
Backfill for pipe zone, 100 mm pipes	lm	\$ 7.14	900
Backfill for pipe zone, 80 mm pipes	lm	\$ 7.15	1,050
Backfill for pipe zone, 50 mm pipes	lm	\$ 5.90	2,600

Water Project 1.3 -ASIRA AL QIBLIYA NETWORK

Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.	Unit	Rate	Quantity
Backfill for pipe zone, 150 mm pipes	lm	\$ 8.74	1,100
Backfill for pipe zone, 100 mm pipes	lm	\$ 8.52	180
Backfill for pipe zone, 80 mm pipes	lm	\$ 7.54	1,250
Backfill for pipe zone, 50 mm pipes	lm	\$ 6.99	3,000

Water Project 1.4 -URIF NETWORK

Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.	Unit	Rate	Quantity
Backfill for pipe zone, 150 mm pipes	lm	\$ 9.86	170
Backfill for pipe zone, 100 mm pipes	lm	\$ 7.45	485
Backfill for pipe zone, 80 mm pipes	lm	\$ 6.81	4,540
Backfill for pipe zone, 50 mm pipes	lm	\$ 4.30	4,000

B. Substitution of Pipe Zone Backfill Material (Bedding Materials) for 50 mm Pipes and Change in the Requirement of Trench Typical Cross Section (Minimum Trench bottom width is 50 mm):

The contractor requested through RFI-13-05-SWN-C-E-002 to substitute the originally specified sand bedding material with alternate crushed stone (somsom) bedding material as the latter was more readily available in West Bank. Following review of contractor's request, the CMC concluded the following:

1. The proposed alternate material met the technical requirements.
2. The proposed alternate material was commonly available at the local market in nearby crushers while the sand material was not abundantly available in the West Bank and needed to be imported from Israel. Accepting the use of alternate material resulted in reducing the risks of delays during transportation between Israel and the West Bank at cross points.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

USAID accepted the use of crushed stone (somsom) in lieu of sand bedding material for pipe zone backfill.

Furthermore, the Contractor requested through RFI-13-05-SWN-C-E-005 to reduce the minimum trench bottom width for some of the 50 mm galvanized steel pipes at Project 1 – Southwest Nablus project from 60 cm to 50cm; this change was due to existing confined space limitation generating from the existing narrow roads of the subject three villages. Following review of contractor’s request, the CMC concluded the following:

1. The proposed change was technically acceptable.
2. The proposed change enhanced constructability utilizing trenchers, i.e. uniform trench bottom width.
3. The proposed change minimized public disruption through the immediate and continuous hauling away of the excavated material, which was offered when using the trencher.

Accordingly, USAID accepted the aforementioned change.

The aforementioned changes required introducing new BOQ items to Madama network, Asira Al Qibliya network and Urif network projects as follows:

Water Project 1.2 -MADAMA NETWORK

Trench Excavation and Backfill for 50mm pipes. Minimum Trench bottom width = 50 mm	Unit	Rate	Quantity
Trench excavation for pipelines: Excavation of trenches in all earth types (soil and / or rock) and disposal of excess materials to locations acceptable to the Engineer and local authorities. Minimum Trench Bottom Width is 50 mm(OD+450mm)			
Trench excavation for 50 mm pipes	lm	\$ 7.36	5,100
Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.			
Backfill for pipe zone, 50 mm pipes	lm	\$ 5.35	5,100
Backfill of trench zone and trench reinstatement (excluding item 6): Trench zone backfilling and reinstatement of trenches by using proper material depending on the type of trench as shown on the drawings for different types of trenches. All work shall be completed according to contract documents			
Backfill for trench zone, 50 mm pipe	lm	\$ 7.14	5,100

Water Project 1.3 -ASIRA AL QIBLIYA NETWORK

Trench Excavation and Backfill for 50mm pipes. Minimum Trench bottom width = 50 mm	Unit	Rate	Quantity

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Trench excavation for pipelines: Excavation of trenches in all earth types (soil and / or rock) and disposal of excess materials to locations acceptable to the Engineer and local authorities. Minimum Trench Bottom Width is 50 mm(OD+450mm)			
Trench excavation for 50 mm pipes	lm	\$ 6.24	6,000
Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.			
Backfill for pipe zone, 50 mm pipes	lm	\$ 6.44	6,000
Backfill of trench zone and trench reinstatement (excluding item 6): Trench zone backfilling and reinstatement of trenches by using proper material depending on the type of trench as shown on the drawings for different types of trenches. All work shall be completed according to contract documents			
Backfill for trench zone, 50 mm pipe	lm	\$ 6.84	6,000

Water Project 1.4 -URIF NETWORK

Trench Excavation and Backfill for 50mm pipes. Minimum Trench bottom width = 50 mm	Unit	Rate	Quantity
Trench excavation for pipelines: Excavation of trenches in all earth types (soil and / or rock) and disposal of excess materials to locations acceptable to the Engineer and local authorities. Minimum Trench Bottom Width is 50 mm(OD+450mm)			
Trench excavation for 50 mm pipes	lm	\$ 6.24	7,900
Backfill of pipe zone (Bedding Materials): By using crushed stones (somsom) materials from any approved source.			
Backfill for pipe zone, 50 mm pipes	lm	\$ 3.75	7,900
Backfill of trench zone and trench reinstatement (excluding item 6): Trench zone backfilling and reinstatement of trenches by using proper material depending on the type of trench as shown on the drawings for different types of trenches. All work shall be completed according to contract documents			
Backfill for trench zone, 50 mm pipe	lm	\$ 7.18	7,900

C. Supply and install PN16 bar, DN 50mm flanged gate valve and its precast concrete chamber in lieu of threaded gate valve chamber:

Form the lessons learned in previous water projects it was noticed that bronze threaded gate valves had high leakage rates due to entrapment of solids in the grooved valve seating. The CMC, after due consultation with USAID, PWA and local authorities, requested the Contractor to submit a Variation Order Request capturing the supply and install of heavy duty metal seated 2” gate valve and its concrete hand hole chamber. .

The aforementioned work required introduction of a new BOQ line items to Madama, Asira al Qibliya and Urif network projects as follows:

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Water Project 1.2 -MADAMA NETWORK

Description	Unit	Rate	Quantity
Supply and install PN16 bar, DN 50mm flanged gate valve and its precast concrete chamber as per SM#007 and SM #008 and according to the related clauses of the technical specifications	ea.	\$1,344.88	40

Water Project 1.3 -ASIRA AL QIBLIYA NETWORK

Description	Unit	Rate	Quantity
Supply and install PN16 bar, DN 50mm flanged gate valve and its precast concrete chamber as per SM#007 and SM #008 and according to the related clauses of the technical specifications	ea.	\$ 1,331.88	37

Water Project 1.4 -URIF NETWORK

Description	Unit	Rate	Quantity
Supply and install PN16 bar, DN 50mm flanged gate valve and its precast concrete chamber as per SM#007 and SM #008 and according to the related clauses of the technical specifications	ea.	\$1,326.22	45

D. Supply of Prepaid Water Meters

During preparation of shop drawings for water networks project, it was noticed that several buildings are being built up and could not be connected to the project networks in timely manner.

The CMC, after due consultation with USAID, PWA and local authorities, communicated this change to the Contractor through email dated October 10, 2013 requesting the Contractor to submit a variation order request for supplying only additional prepaid water meters (the prepaid meters were installed by the local council).

For this purpose, IRD had submitted VOR-13-05-SWN-009-B on November 11, 2013 capturing this new item. The proposed unit rate of \$275 per unit was accepted by USAID. The aforementioned work required introduction of new BOQ line items to Madama, Asira Al Qibliya and Urif networks projects in order to capture the aforementioned works. The supply of additional 318 prepaid water meters at Madama network, Asira Al Qibliya network, and Urif network was deemed necessary to ensure the sustainability of the investment and to allow the local council provide water to the people within the local council that were not connected through this project.

E. Construction of Rubble Concrete under Reservoir at Urif Site.:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

The Geotechnical Laboratory conducted a geotechnical inspection and testing at Urif Reservoir’s sites to investigate and validate the actual soil conditions underneath the reservoir. The testing results recommended improving the bearing capacity of the soil by constructing 400 mm rubble concrete layer under the reservoir’s base slab with estimated quantity of 125 cubic meters. This was necessary to improve the bearing capacity and provide a uniform support for the reservoir’s base slab.

The unit price of Madama reservoir as per Variation Order #01 (\$113.02 per cubic meter) was used at Urif Site due to the similarity in scope and nature of the works.

F. Supply and install dry concrete (Mufalfal concrete) under the precast concrete boundary walls at Urif and Asira Al Qibliya reservoirs:

Following commencement of excavation works for precast concrete boundary walls for Asira Al Qibliya Qibaliya and Urif reservoirs’ sites, it was observed that the current soil condition was unsuitable and required the addition of a leveling layer under the precast walls for proper installation.

USAID accepted the proposed new item price of \$186.65 per cubic meter for supplying and installing 19 cubic meters of B200 dry concrete (Mufalfal) and it is reasonable, fair and within market rates. The aforementioned additional work required introducing new BOQ line items to Asira Al Qiblya reservoir and Urif reservoir projects.

New Indefinitive Quantities

New project in definitive quantities to reflect the actual quantities at 80% of shop drawings’ completion, resulting in a decrease in cost of \$ (1,025,897.70)

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

A. Substitution of pipe zone backfill material (bedding materials) for 150, 100, 80, 50 mm pipes:

The contractor requested through RFI-13-05-SWN-C-E-002 to substitute the original specified sand bedding material with alternate crushed stone (somsom) bedding material as the latter was more readily available in West Bank.

USAID accepted the use of crushed stone in lieu of sand bedding material for pipe zone backfill

The aforementioned changes required introducing new BOQ items to Az Zawieh network projects as follows:

Backfill of pipe zone (bedding materials) by using crushed stones (somsom) materials from any approved source.	Unit	Rate	Quantity
Backfill for pipe zone, 150 mm pipes	lm	\$11.30	275
Backfill for pipe zone, 100 mm pipes	lm	\$6.82	830
Backfill for pipe zone, 80 mm pipes	lm	\$6.78	3,350
Backfill for pipe zone, 50 mm pipes	lm	\$5.73	7,500

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

B. Supply and install PN 16 bar, DN 50 mm flanged gate valve and its precast concrete chamber in lieu of threaded gate valve chamber.

From the lessons learned in previous water projects it was noticed that bronze threaded gate valves had high leakage rates due to entrapment of solids in the grooved valve seating. The CMC after due consultation with USAID, PWA and local authorities, requested the contractor to submit a variation order request capturing the supply and install of 60 heavy duty metal seated 2'' gate valve and its concrete hand hole chamber.

The USAID accepted the proposed new item price of \$1,344.88 for supplying and installing PN16 bar, DN 50 mm flanged gate valves and its precast concrete chamber as it found it reasonable, fair and within market rates.

C. Supply of prepaid water meters

During preparation of shop drawings for Az Zawieh network project, it was noticed that the existing water network included postpaid water meter, whereas the new house connections were prepaid water meters as per original scope of work.

The CMC after due construction with USAID, PWA and local authorities, communicated this change to the contractor through email dated October 10,2013 requesting the contractor to submit a variation order request for supplying only additional prepaid water meters which was installed by the local council.

The proposed unit rate of \$275 per unit was accepted by USAID through this VO. The supply of additional 249 prepaid water meters to replace existing postpaid ones was necessary to enhance the sustainability of the investment.

Project new definitive quantities:

New project definitive quantities to reflect the actual quantities at 80% of shop drawings completion resulting in a decrease in cost of \$453,389.19.

3. Variation Order No. 3 included the following

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

A. Construction of reinforced concrete slab inside the existing tunnel at Madama Village

During the construction works for installation of the transmission pipeline from station 1+890 to station 1+927, it was noticed that the depth within the existing tunnel (corrugated sheet) was not sufficient to install the transmission pipeline as per the design drawings without affecting the clearance height of the tunnel.

Following assessment of the aforementioned issue, the CMC recommended construction of a reinforced concrete pavement for subject section in order to maintain the clearance height within the tunnel and to prevent excessive inclination of the road. This change was to assure that the road slope suitable in terms of safety and quality of the road.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

USAID accepted the proposed new item price of \$ 419.96 per cubic meter to furnish complete the reinforced concrete pavement for SWN pipeline section inside the existing tunnel, as it found it reasonable fair and within market rates. The aforementioned work requires introduction of a new BOQ line item to Project 1.

1. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

A. Additional Asphalt works

The Az Zawieh network pipelines run along the majority of the village roads; the scope of work under this task order required the contractor to perform asphalt restoration works for the entire trench along the paved road to a certain width as defined in the requirements. However, after assessing the condition of the subject roads, the CMC noted that they were deteriorated and in poor shape; as a result asphalt restoration works along the pipelines posed a potential quality and sustainability concern.

The CMC recommended to USAID performing further asphalt works including milling and overlay of the existing roads as the additional proposed asphalt works greatly improved the durability and lifetime of the existing roads and contributed to a better and more sustainable project by improving additional protection to the newly installed water network pipelines. USAID COR, the CMC and contractor conducted a joint site visit on January 06, 2014 to assess the existing roads condition and determine the roads that require milling and overlay. The aforementioned joint visit served to facilitate the finalization of the scope of work, allow the contractor to price the proposed new works and submit a variation order request.

To capture the aforementioned additional work, IRD submitted on January 21, 2014 VOR-13-05-ZWN-017A, which included the below proposed new BOQ items:

- a) Milling of the existing asphalt up to 40mm (16,000 square meters) with a unit rate price of \$2.70 per square meter.
- b) Supplying and installing (16,000 square meters) of bituminous tack coat with a unit rate price of \$1.20 per square meter.
- c) Supplying, spreading and compacting (16,000 square meters) of 4 cm thick bituminous wearing course with a unit rate price of \$14.60 per square meter.

The CMC reviewed IRD's unit rates and concluded that they were all reasonable fair and within market rates.

Project new definitive quantities:

New project definitive quantities to reflect the actual quantities at 98% of shop drawings completion resulting in a decrease in cost of \$167,793.08.

Time extension

The contractor requested a twenty one-calendar day of no cost time extension to complete the additional asphalt work and seven-calendar day no cost time extension to allow for weather delays.

The CMC reviewed the requested time extension & recommended approval providing a no cost time extension of 21 CD for the completion of additional asphalt work. While recommending the 21 CD the CMC has taken into account that the asphalt works were on the critical path and that they had to be executed at a slow rate and with extra care due to the nature of the area; narrow roads with residences on both sides. As

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

for the requested 7 CD of time extension due to the weather conditions, they were not merited as the approved baseline schedule factored in 14 non-working days due to rainy weather.

4. Variation Order No. 4 included the following

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

No changes under this variation order.

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

A. Additional Asphalt works:

Variation Order #3 was approved on 13 February 2013, adding additional asphalt milling and overlay works for Az Zawieh village main roads at which the network pipelines ran along. Unfortunately, a tragic accident occurred at Az Zawieh village on 25 January 2014 resulting in the death of a 4-year-old girl. Following stoppage of work pending the accident investigation and the resolution of all legal issues and cultural implications, the Az Zaweih Municipality sent a letter to the CMC on February 11, 2014, noting that work may be resumed on 15 February 2014 and requesting USAID and the CMC to reassess the roads that are designated to receive two layers of asphalt reinstatement above the trench area only.

Following consultation between USAID and CMC, it was agreed that the Municipality requests should be investigated and subsequently considered, if determined feasible and technically sound, as it was in the best interest of the project to reflect sympathy with the local community and intention to adopt changes that are sound and within the scope of works but yet improve the locals' daily lives.

As such, the CMC conducted a detailed assessment of the village roads and recommended introducing certain changes to the current layout and number of layers of asphalt for the village roads.

In summary, the CMC recommended changing the reinstatement layers for certain roads from two layers, 5cm each along the trench width to one layer along the full width of the marked road; ranging from 6cm over the trench to 4 cm along the remainder road width (milled section).

This change did not have any impact of the trench area in terms of settlement, as the trench area was well compacted, besides applying asphalt along the entire road expedited the work, allowed IRD to mobilize and close each road segment only once (i.e. reduce public disruption), reduced the possibilities of any cracks between the old and new asphalt and improved the public satisfaction. The CMC confirmed that this change did not have any adverse impact on the sustainability of the project.

The revised layout was discussed with Municipality representatives and IRD during a joint site visit on February 16, 2014. IRD did not have any reservations and concurred

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

that the new layout and the reduction in number of asphalt layers had no impact on IRD's liability during the defects liability period.

B. Project duration:

On February 26, 2014 the contractor requested a no cost time extension of fourteen CD due to excessive work stoppages by the municipality of Az Zawieh following the accident review of the contractor's request, the CMC notes the following:

The tragic accident occurred at Az Zawieh village on January 25, 2014 and works at Az Zawieh project were stopped immediately therefore waiting for the municipality's concurrence to resume work. The Az Zawieh municipality sent a letter to the CMC on February 11, 2014, noting that works may be resumed on February 15, 2014. The total stoppage days amounted to twenty-one calendar days, while under normal circumstances, the customary amount of stoppage following such accidents is seven days to allow for proper investigation, reconciliation, and mourning.

Under such circumstances, and since this accident was caused solely by the contractor, these initial 7 CD were considered inexcusable. However since the work was stopped in excess of the normal 7 CD and the excessive stoppage of work was beyond the contractor's control, it was determined that IRD was eligible for no cost time extension of fourteen calendar days of excusable delays to compensate for the additional 14 CD of work stop by the municipality of Az Zawieh.

5. Variation Order No. 5 included the following

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

A. Replace the propeller flow meter in the transmission and networks chambers, to GSM/GPRS remotely monitored Electromagnetic Flow Meters with all features and associated works

USAID awarded Task Order AID-294-TO-13-00007 Well Flow Monitoring Project; the Well Flow Monitoring System is a highly computerized monitoring system (SCADA) for 48 potable water wells located throughout the West Bank. The purpose of the project is to improve the ability of the West Bank Water Department to track water usage and flows throughout the regional water system in 365 days benefiting the users and residents' all over West Bank, the project covers the wells distributed among Bethlehem, Hebron, Jenin, Nablus, Qalqilya, Ramallah, Tubas and Tulkarem Governorates.

The Project identified and prioritized areas for additional investigation and worked to reduce unaccounted for water (water losses due to illegal connections or leaking pipes) and increase sustainability for the entire operation.

In an effort to coordinate current work under subject task order, allow for future connections and avoid expenditures on equipment that did not have the capacity to handle the SCADA system, the CMC recommended upgrading the conventional propeller flow meters to electromagnetic types that allow functional remote flow monitoring for main transmission line and localities connections through a GPRS-GSM system. Moreover, the electromagnetic flow meter can easily be expanded to tie in with the SCADA system.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Therefore, and after consultation with USAID, the CMC communicated the above changes to the Contractor through site memorandum SM-13-05-SWN-E-C-018 instructing the Contractor to replace the main propeller flow meter (no changes in on bypasses) in the transmission and networks chambers, as specified in section 17102; paragraph 2.3; to GSM/GPRS remotely monitored electromagnetic flow meters with all features and associated works.

To capture the aforementioned change, IRD submitted VOR-05-SWN-015-C on March 17, 2014. USAID accepted IRD's proposal to supply and install the electromagnetic flow meter with all related system and requirements, including a 30 calendar day testing and commissioning period for the system, and concluded that the proposed cost of \$ 143,511.11 was reasonable, fair and within market rates. The aforementioned work required introduction of new BOQ line items to Project 1 as follows:

Water Project 1.1 -TRANSMISSION PIPELINE				
VO 05	New Items			
	Electro-Magnetic Flow Monitoring Chamber			
	Supply, install and commission a fully functional Electro-Magnetic Flow Water Meter Monitoring Chamber including hardware and software solution via GPRS/GSM network with all features and associated works as specified and described in site memorandum SM-13-00005-SWN-E-C-018. Work includes but is not limited to GSM signal strength and data flow verification of GSM networks at flow meter antenna locations; coordination between manufacturers' representatives, software providers and mobile network companies to assure a comprehensive and compatible system; end users operators training; performance verification tests; operation and maintenance submittals; SMS card & 50 MB Internet for each flow meter, external battery and accessories, Spare parts, Spare Parts to include 4 external batteries and 3 high gain antennas., Testing, training, software upgrading and commissioning (1 month) for the SWN and Burin magnetic flow meter system. Including one-year GSM provider services (SMS and 50MB). And all accessories and services deemed necessary for a complete, SCADA expandable and functional system handover that are subject to CMC approval.			
VO 5.1	Supply and install 150 mm Main Monitoring water meter chamber and altitude valve complete on 250 mm main pipeline at ST.0+020, sheet 1PP-2, as per revised detail GC-02. PN 16 for all Internal fittings.	ea.	1.00	\$ 48,365.24
VO 5.2	Supply and install 150 mm Asir Al Qibliya-Urif Monitoring water meter chamber complete on 200 mm main pile line at ST.3+520, sheet 1PP-10 and as per revised detail drawing GC-03. PN 16 for all internal fittings.	ea.	1.00	\$ 52,893.68
VO 5.3	Supply and install 100 mm flow monitoring water meter chamber at Burin reservoir existing 150 mm discharge line, as per new detail GC-05. PN 16 for all Internal fittings.	ea.	1.00	\$ 42,252.19

B. Change in the requirements of Reservoirs Interior Coating

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

As parts of lessons learned and in an effort continuously assure sustainability and value to USAID projects, the CMC reviewed the current material used for the reservoirs' internal coating and noted that it was prone to hairline cracks and its rigidity prevented crack bridging. This drawback made the reservoirs more susceptible to future leakage that was costly to repair. Accordingly, and following market research, the CMC recommended modifying the technical specifications in section 09800 for the internal coating of concrete reservoirs to include the following:

1. Coating material shall be nontoxic, chemical resistant epoxy and poly supplied based.
2. Coating material shall be approved in contact with potable water NSF 61 or equivalent.
3. Coating material shall be flexible and be able to sustain a crack bridging capacity of 2.5 mm, holding a tensile strength of 5N/mm².
4. Total system shall have a coating coverage thickness of 500 microns DFT

The proposed modification was necessary as it served to add value to USAID's current investment and contributes to a more sustainable project with decrease in future maintenance costs.

USAID reviewed and accepted the proposed new item price of \$ 44.00 per square meter for supply and painting of reservoir interior surface with the alternate epoxy coating material-NITOCOTE EPSW, as it is reasonable fair and within market rates. The aforementioned work required introduction of a new BOQ line items to Project 1 at Madama, Asira Al Qibliya and Urif Reservoirs.

New In-definitive Quantities

New project in-definitive quantities to reflect the actual quantities at 90% of shop drawings' completion, resulting in an increase in cost of \$ (135,981.58).

Time Extension

As noted above in item 1.1.1, thirty (30) calendar days period was required for Testing and Commissioning following installation of the electromagnetic flow meters. Consequently, the Contractor requested in VOR-05-SWN-015-B a thirty (30)-calendar days' time extension to perform the testing and commissioning.

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

A. New drainage system:

Variation order No. 4 was approved on March 03 2014, adding additional asphalt milling and overlay works for Az Zawieh village main roads at which the network pipelines run along. Following the rainstorm that hit the West Bank on March 13, 2014 the CMC conducted an inspection of the newly completed roads and observed an accumulation of water from sta. 0+467 up to sta. 0+390 (line Z3- 018) approximately 70 meters in length. Following further investigation the CMC concluded that this is due to inadequate drainage at the subject location on solving this issue requires installation of new drainage pipe inclusive of the required

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

manholes. This additional work is needed to protect the body of the road from water or any damage that may result from improper drainage and water accumulation. USAID reviewed the proposed new item price of \$ 267.85 per linear meter for supply and install storm water drainage pipe as per SM-13-05-ZWN-E-C-034 including open grill manhole each 20m, and found it reasonable fair and within market rates.

B. Additional safety features at Az Zawieh Network project

Following completion of the asphalt milling and overlay works at Az Zawieh village variation order No. 04 as approved on March 3, 2014, the Az Zawieh municipality sent a letter to USAID thanking them for the asphalt works. However, the letter requested installation of additional traffic signs in order to enhance the road safety for both motorist and pedestrians. The CMC reviewed the municipality request and concluded that traffic signs are actually needed to control and direct the traffic flow and to provide their necessary warnings for the drivers and motorist.

USAID accepted the proposed new item prices of \$ 3636.00 for supply and install the necessary traffic signs at Az Zawieh Network project, as it is reasonable fair and within market rates. The aforementioned work required introduction of a new BOQ line item to Az Zawieh Network project.

Project pre final quantities:

New project re final quantities for Az Zawieh Network project to reflect 99% completion of the project were conducted resulting in an increase in cost of \$48,229.49.

Project time extension:

The aforementioned changes are not within the original design and had been appended following commencement of works; as such, the contractor could have not anticipated such changes and the time impact associated with them. This additional time is beyond the control and without the fault of negligence of the contractor. As such and pursuant to “FAR 52.249-14 excusable delays” the contractor requested an eight CD no cost time extension to allow for the completion of installing the drainage pipe and traffic signs. Furthermore, the requested time extension includes time compensation for delays associated with disruption of work in installation of prepaid water meters by landowners; these delays are concurrent with time required for installation of the above works.

As such, USAID approved eight (8) calendar days of no cost time extension to project 2: Az Zawieh Network Project.

6. Variation Order No. 6 included the following

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

No changes under this variation order.

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

A. Project Final Definitive quantities:

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Final project definitive quantities to reflect actual quantities at project completion were conducted resulting in a decrease in cost of \$ (4,801.07).

7. Variation Order No. 7 included the following

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT

A. Additional Asphalt Works:

The water network pipelines for Madama, Asira Al Qibliya and Urif networks runs along the majority of the villages' roads; the Scope of Work (SOW) under this task order requires the Contractor to perform asphalt restoration works for the entire trench along the paved road to a certain width as defined in the requirements. However, after assessing the condition of the subject roads, the CMC noted that they are deteriorated and in poor shape; as a result, asphalt restoration works along the pipelines posed a potential quality and sustainability concern.

The CMC recommended to USAID performing additional asphalt works including milling and overlay of the existing roads. The original scope of asphalt works was to perform trench reinstatement with two (2) layers of asphalt five (5) centimeter each; the CMC recommended asphaltting the full width of the subject roads with a five (5) centimeter layer along the trench and a four (4) centimeter layer along the remainder width. The CMC confirmed that the change did not compromise the trench in terms of settlement as it has been backfilled and compacted according to specifications. Furthermore, applying asphalt along the entire road allowed the Contractor to close each road segment only once reducing public disruption, reduced the possibilities of any cracks between the old and new asphalt, and improved the public satisfaction. The CMC confirmed that this change did not have any adverse impact on the sustainability of the project. Moreover, IRD did not have any reservations and concurred that the new layout and the reduction in number of asphalt layers shall have no impact on IRD's liability during the defects liability period.

To capture the above, IRD submitted on April 24, 2014 VOR-13-00005-SWN-024-A and VOR-13-00005-SWN-025-A, which include the below proposed new BOQ items:

- a) Milling and asphalt overlay (4 cm) in SWN project (Madama, Asira Alqibliya and Urif networks): Estimated quantity of 25,000 square meters with a unit rate price of \$18.50 per square meter.
- b) Omitting the second 5 cm layer of asphalt under Madama, Asira Alqibliya and Urif networks (MDN, AQN and URN) as per RFI-05-SWN-16-A with a cost saving of 40% of the original unit rate.

USAID accepted IRD's unit rates and concluded that they are all reasonable, fair and within market rates. The aforementioned additional work requires introduction of new BOQ line items to Project 1.

B. Time Extension:

The above-mentioned changes are not within the original design and have been appended following commencement of work; as such, the additional time required doing the subject additional work is not related to the Contractor's fault or negligence. As such and pursuant to "FAR 52.249-14 Excusable Delays" the Contractor requested thirty (30) calendar days of no-cost time extension to complete the additional asphalt

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

works through VOR-13-00005-SWN-024-B. The CMC reviewed the requested time extension and recommended approving a no cost time extension of twenty one (21) calendar days to allow for the completion of additional asphalt works. While recommending the 21 days of time extension, the CMC has taken into account that the asphalt works are on the critical path and that they have to be executed at a slow rate and with extra care due to the nature of the area; narrow roads with residences on both sides. As such, USAID approved an extension of time of 21 CD.

C. New Project Definitive Quantities

New project definitive quantities to reflect the actual quantities at 95% of shop drawings' completion, were conducted resulting in a decrease in cost of \$ (408,459.28).

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

No changes under this variation order.

8. Variation Order No. 8 includes the following

1. PROJECT 1: SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT.

A. De-scoping of New Road between Burin and Madama Reservoirs.

The Contractor sent a Request for Information number RFI-13-0005-SWT-C-E-017 on April 21, 2014 raising concerns with respect to pavement design, soil conditions, and road stability of the new proposed road between Burin and Madama reservoirs, if performed as per the original scope of work.

The CMC have reviewed the above referenced RFI, the existing road conditions, and the design drawings and concluded that the subject proposed road cannot be constructed safely as originally designed.

The subject road required major roadwork activities such as embankment construction, retaining structures, drainage structure and safety features, before to being able to construct the originally proposed pavement layers, such activities were neither included in the original scope of work nor can be considered within the scope of work of this Task Order.

Since the original design was inadequate and did not cope with the actual site conditions, it was decided to de-scope this road for the SOW and to merely restore the existing dirt road to its original site conditions prior to laying the pipes underneath. Restoration activities include grading, shaping, base course works and stone walls restoration to ensure that the road is safety restored to its original conditions.

No new BOQ line items were identified; however, the quantities of the original BOQ line items were revised to capture the aforementioned change.

B. Additional Asphalt Work.

Variation order (VO) number 07 was approved on May 19, 2014 for performing additional asphalt works including milling and overlay of the existing roads along the network pipelines for Madama, Asira Al Qibliya and Urif networks. At the time of VO #7 approval, the quantities associated with milling and asphalt overlay (4 cm) in SWN project (Madama, Asira Al Qibliya and Urif Communities) were an estimated

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

quantity of 25,000 square meters. However, following commencement of work, several roads were in far more deteriorated condition than originally assumed and required milling and overlay along the entire width of the road.

As such, the CMC conducted a revised assessment of the roads based on actual site conditions; the revised assessment resulted in a revision to the original estimated quantities as noted in the table below:

<i>Community</i>	<i>Original Estimated Quantity per VO #7</i>	<i>Revised Quantity</i>
Madama	6,500 Square Meters	7,349.50 Square Meters
Asira Al Qibliya	7,500 Square Meters	19,076.60 Square Meters
Urif	11,000 Square Meters	15,027.90 Square Meters

The aforementioned revised quantities and layout include asphaltting works at the utility yard in the middle of the Village. This work was both requested by Asira Al-Qibliya Village Council through letter number LTR-13-00005-AQN-LA-E-1037 and was necessary in order to protect the Main Connection Chamber located at the yard from any future damage and to allow for ease of service and access to the chamber.

It was negotiated and agreed with the contractor that though the quantities of milling and overlay for the three villages have increased by 16,454.00 square meters, it shall be executed at the original BOQ rates without any future equitable adjustment.

C. Supply and Install of Safety Fence for Madama Reservoir Access Road.

Following construction of the retaining wall at Madama Reservoir Access Road, the CMC noted that the original design overlooked the installation of a Safety Fence along the wall. This oversight poses a potential safety hazard to pedestrian users of the newly constructed road and was necessary in order to avert any fall accidents in the future.

To capture the above, the Contractor submitted variation order request number VOR-13-00005-MDR-022-A dated February 25, 2014. USAID accepted IRD's price of \$70 per linear meter for supply and install safety fence for Madama reservoir access road and found that it is reasonable, fair and within market rates. The aforementioned additional work requires introduction of new BOQ line items to Project 1.

D. Supply and Install Propeller Water Meters at Reservoirs' Inlet/Outlet Chambers.

As part of lessons learned from previous projects and due to continuous power outage in the area, the CMC recommended to USAID supplying and installing propeller water meters at reservoirs inlet/outlet chambers in order to ensure that the water supplied to each community is metered at all times.

Therefore; and after due consultation with USAID, the CMC communicated the above changes to the Contractor through site memorandum number SM-13-05-SWN-E-C-029 dated February 05, 2014, requesting the Contractor to price and submit a variation order request.

Accordingly, IRD submitted variation order number VOR-13-00005-SWN-026-A on May 20, 2014 to capture the aforementioned additional work. USAID accepted IRD's below proposed rates:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Pay Item #	Description	Unit of Measure	New BOQ R08		
			Qty	Unit Rate	Total
Water Project 1.5 -MADAMA RESERVOIR					
VO 8.1	Supply and install 4" propeller water meter at the magnetic flow water meter at Madama reservoir/inlet and outlet chamber including all fittings and accessories.	ls	1	\$ 3,907.91	\$ 3,907.91
Water Project 1.6 -ASIRA AL QIBLYA RESERVOIR					
VO 8.1	Supply and install 4" propeller water meter at the magnetic flow water meter at Asira Al Qibliya Reservoir/inlet and outlet chamber including all fittings and accessories.	ls	1	\$ 3,907.91	\$3,907.91
Water Project 1.7 -URIF RESERVOIR					
VO 8.1	Supply and install 6" propeller water meter at the magnetic flow water meter at Urif Reservoir/inlet and outlet chamber including all fittings and accessories.	ls	1	\$ 4,418.23	\$ 4,418.23

E. Transportation of 746 Lineal Meters of Government Furnished 3” Water Pipes from Madama Storage Yard to Yatta Storage Yard.

A total of 746 Lineal Meters of Government Furnished 3” Pipes exceeded the quantities needed for this project and were required to be transferred from Madama Storage Yard to Yatta Storage Yard for use at another ongoing USAID project named Samu’ - Yatta Road under Task Order AID-294-TO-13-00012.

The Contractor sent the cost of transportation via email; USAID accepted the Contractor’s price of \$2,280.00 and found it reasonable, fair and within market rates.

The aforementioned additional work required introduction of new BOQ line items to Project #1 resulting in an increase of cost in the amount of \$2,280.00 which was deducted from Day work amount.

F. Time Extension.

➤ The CMC has reviewed the time impact analysis of Items 1.1 through 1.4 above and noted the following:

- **Item 1.1: De-scoping of New Road between Burin and Madama Reservoirs.**

As per the original approved time schedule (CPM), Burin-Madama Road and its associated activities do not fall on the critical path of the project and have a total float in excess of 100 calendar days. Accordingly, de-scoping of the subject road has no impact on the period of performance.

- **Item 1.2: Additional Asphalt Works.**

Variation order (VO) number 07 was approved on May 19, 2014 for performing additional asphalt works including milling and overlay of the existing roads along the network pipelines for Madama, Asira Al Qibliya and Urif networks. As per Item 1.2 above the quantity of asphalt has increased from 25,000 meter square to 38,461 square meters; accordingly the CMC performed a time impact analysis on the

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

remaining works and actual progress rates; the time impact of the additional asphalt works is seven (7) calendar days. The CMC has taken into account that the asphalt works are on the critical path and that they have to be executed at a slow rate and with extra care due to the nature of the area; narrow roads with residences on both sides.

- **Item 1.3: Supply and Install of Safety Fence for Madama Reservoir Access Road and Item 1.4 Supply and Install Propeller Water Meters at Reservoirs' Inlet/Outlet Chambers.**

As per the original approved time schedule (CPM) the activities pertinent to items 1.3 and 1.4 do not fall on the critical path of the project. Accordingly, these activities have no impact on the period of performance.

- The CMC has reviewed the time impact associated with Security Situating Delays and noted the following:
 - **Delays in Procurement Activities as a result of Security Situation in Israel.**

The Contractor received delay notification from the suppliers for the level pressure transmitters and for the pressure relief valves (Bermad), noting that due to the security situation in Israel and disruption in operations, the subject materials delivery will be delayed to the end of July 2014. Accordingly; IRD informed the CMC of the delays through email dated July 27, 2014 requesting a 13 Calendar Day of no cost Time Extension. The CMC reviewed the Contractors request and noted the current progress schedule for July 2014 had a planned delivery to site of the aforementioned material by July 16, 2014; however, with the current delays the estimated delivery date is July 30, 2014 resulting in a thirteen (13) calendar days' time impact of current project schedule. Furthermore, the installation of the level pressure transmitters and the pressure relives valves falls on the project critical path and is crucial to the commencement of testing and commissioning.

Hence and pursuant to "FAR 52.249-14 Excusable Delays" USAID approved a no cost time extension of twenty (20) calendar days to allow for the completion of additional asphalt works under Item 1.2 of this Variation Order and account for excusable delays due to security situation as noted above.

New Project Definitive Quantities.

New project definitive quantities were calculated to reflect the actual quantities at 99% of shop drawings' completion and to capture the above mentioned changes in asphalt work and de-scoping of burin –Madama road, resulting in an increase in cost of \$2,721.18.

Correction of Typo Error.

This VO provides corrections of typo error in unit of measure for BOQ line item VO 3.1 at sub-project 1.1 -TRANSMISSION PIPELINE to read cubic meter instead of meter square.

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

No changes under this variation order.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

9. Variation Order No. 9 included the following:

1. Project 1: Southwest Nablus Villages Water Supply Project:

1.1. Changes in the requirements of external ladder and roof handrail at Madama, Asira Al Qibliya and Urif Reservoirs - replace material from Aluminum to hot dip galvanized steel:

As part of lessons learned from previous projects, the original material for the External Ladder and Roof Handrail at Madama, Asira Al Qebliya and Urif Reservoirs was replaced with Hot Dip Galvanized Steel rather than Aluminum. This change was due to the following:

- Hot Dip Galvanized Steel provides better durability and stability than originally specified Aluminum material.
- Hot Dip Galvanized Steel is more readily available in the local market for future maintenance.

IRD submitted the aforementioned change in requirement through Request for Information number RFI-13-00005-SWN-C-E-012. The CMC, after due consultation with USAID, responded to the Contractor through RFI response, concurring with the proposed change in material taking in consideration the following:

- Handrails and ladders shall be hot dip galvanized after fabrication and after preliminary assembly on site in accordance to project specification section 05500, and finish coated with oven backed coating.
- Pipe material shall be schedule 40.

IRD submitted VOR-13-00005-SWN-029-A to capture the aforementioned change in work. USAID approved IRD's new price unit rates and noted the following:

- The price unit rate of **\$101.04** per linear meter for supply and install of hot dip galvanized for reservoir roof perimeter handrail is reasonable, fair and within market rates.
- The price unit rate of **\$2,123.94** per each for supply and install Reservoir access ladder, exterior, Hot Dip Galvanized Steel, with door is reasonable, fair and within market rates.

The aforementioned changes required deletion of the original BOQ line items for handrail and external ladder and introduction of new BOQ line items to Project 1 for each reservoir.

1.2. Supply and install lockable closets for precast concrete shield units:

Variation Order No. 01 was approved on August 19, 2014, providing additional safety measures during construction activities due to settlers of nearby settlement attacks and vandalism; these attacks have placed the project staff at risk and caused damages to the temporary facilities (fence, storage container, cameras and project sign). However, following completion of construction activities at the site and installation of electro-mechanical instruments, and after due consultation between all parties, it was determined to provide additional safety measures to the electromechanical instruments by installing lockable closets for precast concrete shield units at Madama, Asira Al Qibliya and Urif Reservoirs. These security modifications aimed at protecting the safety of project material, equipment and ultimately USAID's investment.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Following consultation with USAID, the CMC, communicated the above to IRD through site memorandum number SM-13-00005-SWN-E-C-042, the aforementioned communication served to allow IRD to price the finalized scope of work and submit a variation order request.

Accordingly; IRD submitted variation order request number VOR-13-00005-SWN-031-A and revised via email to capture the aforementioned additional work. USAID approved the Contractor's new price unit rates for supply and install lockable closets for precast concrete shield units of **\$2,917.29**.

The aforementioned change in requirement required introduction of new BOQ line items to Project 1 for each reservoir.

1.3. Owner furnished material.

As per contract specification section 01610 Government Furnished Material, IRD received Government Furnished Material that consists of pipes and fittings. These pipes and fittings were integrated into execution of transmission pipeline and water distribution networks.

The CMC and Contractor verified jointly the supplied, installed, and waste quantities of all Owner-Furnished Material and concluded that; the Contractor damaged certain amount of supplied quantities during installation of transmission pipelines and water network. The Cost of damaged pipes as a result of the Contractors' operations were reimbursed by the Contractor to USAID. As such; new BOQ line items to capture the cost impact of damaged pipes were added with a price unit rate equal to the price of owner furnished material provided by USAID in the original disposition form, resulting in decrease of cost in the amount of which was added to day work amount.

On the other hand, the remaining Government Furnished Pipes shall be transferred from project storage yard at Madama to PWA storage yard in Awarta. The Contractor sent the cost of transportation via email); USAID approved the Contractor's price of **\$1,200.00**.

The aforementioned additional work required introduction of new BOQ line items to Project #1 resulting in an increase of cost in the amount of **\$1,200.00** which was deducted from day work amount.

1.4. Additional requirement for security system at Asira Al Qibliya and Urif Reservoirs:

Variation Order No. 01 was approved on August 19, 2014, providing additional safety and security measures during construction activities of Asira Al Qibliya and Urif reservoirs due to settler's attacks and vandalism; these safety measures included the installation of security system to monitor construction site. However; after further settler attacks to Asira Al Qibliya site which resulted in damages to the contractor portable site office and after a follow up meeting with the DCL and the Israeli police; the Israeli police requested the contractor to perform changes to the security monitoring system requirements by providing a higher resolution monitoring system and relocation of the originally proposed positions of security cameras. These changes in requirements were not included in the original scope approved under Variation Order#1 and resulted in an increase in quantities and work.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Consequently; IRD submitted cost impact of the above change via email dated September 21, 2014; and a revised via email dated September 23, 2014. USAID approved the Contractor's new prices for the change requested by DCL.

The aforementioned changes required deletion of the new BOQ line items issued under VO # 01 and introduction of new BOQ line items to Project 1 for Asira Al Qibliya and Urif Reservoirs.

1.5. Project Pre-Final Definitive Quantities.

Project Pre-Final definitive quantities were calculated following completion of works and resulted in an increase in cost of **\$100,836.48**

2. PROJECT 2: AZ ZAWIEH NETWORK PROJECT

No changes under this variation order.

Variation Order Overall Summary:

- Task Order Cost:**

The net cost impact of the aforementioned variations on the Task Order's cost is summarized below:

Project 1 Net Change in Cost (Additional Cost)	\$139,785.12
Additional Cost From Pre-Final Definitive Quantities	\$100,836.48
Additional Cost From Additional New Items	\$38,948.64
Project 2 Net Change in Cost	\$0.00
Net Cost impact (Additional Cost)	\$139,785.12

Subsequently, the change in line items resulted in an increase in cost of **\$139,785.12** which was deducted from the Day Work Line Item.

- Task Order Duration:**

No changes in task order duration under this variation order.

iv. Task Order Indicators

Indicator 1: Project Beneficiaries & Quantity of drinking water available as a result of USG assistance:

Project 1: Southwest Nablus Villages Water Supply Project		
Length of water transmission lines (in meters) constructed	9,821 LM	
Length of local water network (2", 3", 4" & 6")	45,200 LM	

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Project 1: Southwest Nablus Villages Water Supply Project			
Length of local water HC Pipe (3/4", 1" and 1 1/2")	15,242.07 LM		
No. of Constructed Reservoir	3		
Capacity/Volume (M3) of constructed water reservoir	1,500		
No. of water household connections made	1,482		
Temporary Job-days (people x days)	19,206		
Temporary Jobs Created (positions)	807		
Total number of Beneficiaries	8,178	Madama	2037
		Urif	3393
		Asira al Qibliya	2748
Number of Male Beneficiaries	4,171	Male = 51%	
Number of Female Beneficiaries	4,007	Female = 49%	
Male Beneficiaries to Age 17	1,970	47.24%	
Female Beneficiaries to Age 17	1,893	47.24%	
Male Beneficiaries 18 to 25	658	15.78%	
Female Beneficiaries 18 to 25	632	15.78%	
Male Beneficiaries 26 and older	1,543	36.98%	
Female Beneficiaries 26 and older	1,482	36.98%	

Project 2: Az Zawieh Water Network Project ZWN			
Length of local water network (2", 3", 4" & 6")	12,534.07 LM		
Length of local water HC Pipe (3/4", 1" and 1 1/2")	7,071.25 LM		
No of water household connections (Prepaid Water Meters)	720		
Temporary Job-days (people x days)	6,200		
Temporary Jobs Created (positions)	260		
Total number of Beneficiaries	5,521		

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Project 2: Az Zawieh Water Network Project ZWN		
Number of Male Beneficiaries	2,816	Male = 51%
Number of Female Beneficiaries	2,705	Female = 49%
Male Beneficiaries to Age 17	1,330	47.24%
Female Beneficiaries to Age 17	1,278	47.24%
Male Beneficiaries 18 to 25	444	15.78%
Female Beneficiaries 18 to 25	427	15.78%
Male Beneficiaries 26 and older	1,041	36.98%
Female Beneficiaries 26 and older	1,001	36.98%

Indicator 2: Person Days of employment generated:

Employment generated in Person days for Task Order 13-00005-P1-SWN:

- Estimated Target Value for P1-SWN, 27,280 person days;
- Total cumulative employment generated for P1-SWN; 19,206 person days;
- Temporary Jobs Created (positions) = 807.

Employment generated in Person days for TO 13-00005-P2-ZWN-Az Zawieh Network Project:

- Estimated Target Value for P2-ZWN, 6,820 person days;
- Total cumulative employment generated for P2-ZWN; 6,200 person days;
- Temporary Jobs Created (positions) = 260.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

1. PROJECT 1 SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT (SWN) DESCRIPTION AND SPECIFIC DATA:

TO 13-00005-SWN- Project 1-SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT (SWN)																	
Project Summary Table																	
Project Name	SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT																
Project Location	Nablus Governorate																
Summary description of Project's Scope of Work	<p>Southwest Nablus Transmission & Villages:</p> <ul style="list-style-type: none"> • Total of 55,020.78 LM of 2", 3", 4", 6", 8" & 10" installed. • Total of 15,242.07 LM of ¾", 1", 1 1/2" LM installed. • Total of 212 concrete chambers constructed with all associated valves and fittings. • Asphalt Restoration of 23,240.04 LM. • Milling & Overlay of 56,549.25 Sqm. • Supply & install 1,482 Prepaid Water Meters. • Supply 318 Prepaid Water Meters. <p>Southwest Nablus Reservoirs:</p> <ul style="list-style-type: none"> • Total of three concrete reservoirs 500 cubic meter each. 																
USAID Project NTP Date	April 23,2013																
Project Construction Activities Start Date	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>Sub-Project Name</u></th> <th style="text-align: center;"><u>Actual Construction Works Start Date</u></th> </tr> </thead> <tbody> <tr> <td>Transmission Pipeline-SWT</td> <td style="text-align: center;">July 21, 2013</td> </tr> <tr> <td>Madama Network-MDN</td> <td style="text-align: center;">July 09, 2013</td> </tr> <tr> <td>Asira Al Qibliya Network (AQN)</td> <td style="text-align: center;">August 22, 2013</td> </tr> <tr> <td>Urif Network (URN)</td> <td style="text-align: center;">July 21, 2013</td> </tr> <tr> <td>Madama Reservoir (MDR)</td> <td style="text-align: center;">June 23, 2013</td> </tr> <tr> <td>Asira Al Qibliya Reservoir (AQR)</td> <td style="text-align: center;">June 19, 2013</td> </tr> <tr> <td>Urif Reservoir (URR)</td> <td style="text-align: center;">July 03, 2013</td> </tr> </tbody> </table>	<u>Sub-Project Name</u>	<u>Actual Construction Works Start Date</u>	Transmission Pipeline-SWT	July 21, 2013	Madama Network-MDN	July 09, 2013	Asira Al Qibliya Network (AQN)	August 22, 2013	Urif Network (URN)	July 21, 2013	Madama Reservoir (MDR)	June 23, 2013	Asira Al Qibliya Reservoir (AQR)	June 19, 2013	Urif Reservoir (URR)	July 03, 2013
<u>Sub-Project Name</u>	<u>Actual Construction Works Start Date</u>																
Transmission Pipeline-SWT	July 21, 2013																
Madama Network-MDN	July 09, 2013																
Asira Al Qibliya Network (AQN)	August 22, 2013																
Urif Network (URN)	July 21, 2013																
Madama Reservoir (MDR)	June 23, 2013																
Asira Al Qibliya Reservoir (AQR)	June 19, 2013																
Urif Reservoir (URR)	July 03, 2013																
Project Original Completion Date	July 16, 2014																
Modified Project Completion Date	September 25, 2014																
Final Acceptance Certificate Date	September 25, 2014																
Original Project Duration	450 Calendar Days																
Final Modified Project Duration	521 Calendar Days																
Total Excusable Delays/Approved Extensions	71 days																
Accumulated Working Days	422 Calendar Days																
Accumulated non-working days (Holidays and weekends)	98 Calendar Days																
Accumulated other non-working days	one Calendar Day																
Original Project Ceiling Amount	\$7,482,628.59																
Final Modified Project Ceiling Amount	\$7,897,078.49																

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2. PROJECT 1 SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT BACKGROUND

2.1. Project background

IRD was awarded TO 13-00005-SWN-Southwest Nablus Villages Water Supply Projects (among INPI Program) on April 10, 2013 (NOA); NTP was received on April 23, 2013. TO-13-00005-SWN consists of two main water projects: P1-Southwest Nablus Villages Water Supply Project that consists of a main water transmission pipeline (SWT), three water networks (AQN, MDN & URN) and three water reservoirs (AQR, MDR, URR). The Projects are located in the southwest villages of Nablus Governorate: Asira Al Qibliya, Madama, and Urif villages.

As USAID's contractor for the project, IRD managed the construction of three 500,000-liter reservoirs in Asira Al-Qibliya, Madama and Urif villages, installed a 10 km transmission pipeline from an existing reservoir in Burin, placed 45 km of distribution networks in the three villages, and rehabilitated 32 km of internal roads in the three villages to enhance road safety and reduce travel time. IRD also installed 1,482 water meters in the three villages to assist the Palestinian Water Authority to collect fees for the water services provided and ensure the project's sustainability. The project generated more than 19,000 days of employment for Palestinians. As a result of this project, residents of the three villages located in Southwest Nablus Governorate now have access to piped water for the first time, and at a significantly lower price than what they have been paying for tankered water. The water comes from a secure source that is tested, and the quality is significantly higher than tankered water.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2.2. Project Site Location Map



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2.3. Project’s construction elements

The following tables present basic project’s construction elements for all the projects under P1-Southwest Nablus Villages Water Supply:

1	Project Name	Transmission Pipeline
	Project Location	Southwest Nablus Villages
	Summary description of Project’s Scope of Work	<p>The Project consists of the following main components:-</p> <ol style="list-style-type: none"> 1-Installation of Pipeline Network with total length of 9,821.05 LM of various sizes of water pipes. 2- Civil and mechanical works for construction of 28 various types of precast and Cast in situ Water Chambers for 250mm,200 mm, 150 mm, 100 mm and 80 size pipes. 3-Asphalt reinstatement along the backfilled trenches in paved roads for a total length of 4.49 km. 4- Hydrostatic pressure testing and disinfection for the newly installed network total for a total length of 9,821.05 km. 5-Milling and asphalt overlay for 9.7 km of the existing asphalted roads. 6-Supplying, placing and compacting of 7,220.00 Sq. m of 50 mm asphalt wearing course. 7-Placing, leveling and compacting 15,974.00 sq. m of base course materials along the excavated road between Burin and Madama reservoirs. 8-Installation of 606.47 m of Road Safeguard Rails. 9-Construction of 1,714.25 cu m of Stone Walls. 10-Construction of reinforced concrete slab inside the existing tunnel at Madama Village. <p>The SOW consisted of trench excavation work, supply and installation of steel pipelines, performing related civil and mechanical works, backfilling the excavated areas, reinstatement, pipe pressure testing, pipe disinfection, installation of Road Safeguard Rails, construction of asphalted access roads to the reservoirs ,cleaning and all other work items needed to complete this project as described in the contract documents. Work also included rehabilitation of existing asphalted roads through milling</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

		and applying an overlay asphalt layer 50 mm thick.
	Original Project Value	US\$ 1,553,603.03
	Final Modified Project Value	US\$ 1,565,482.15

1. SWT Project Construction Elements:

1.	Transmission pipeline	QTY/Unit
	<ul style="list-style-type: none"> Installation of 250 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	854.08 LM
	<ul style="list-style-type: none"> Installation of 200 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	3,381.94 LM
	<ul style="list-style-type: none"> Installation of 150 mm steel pipeline along with its associated fittings. 	3,472.06 LM
	<ul style="list-style-type: none"> Installation of 100 mm galvanized steel pipeline along with its associated chambers and fittings. 	2,112.97 LM
	TOTAL	9,821.05 LM
	<ul style="list-style-type: none"> Trench reinstatement for pipelines trenches 	4.492.30 LM
	<ul style="list-style-type: none"> Milling of existing asphalt up to 40 mm. 	9,704.18 sq. m
	<ul style="list-style-type: none"> Supplying, spreading and compacting 40 mm thick bituminous wearing course. 	7,220.09 sq. m
	<ul style="list-style-type: none"> Pipeline reinforced concrete encasement. 	21.6 sq. m
	<ul style="list-style-type: none"> Furnishing, leveling, watering and compacting 200 mm base course layer 	15,973.78 sq. m
	<ul style="list-style-type: none"> Supply and installation of Road Safeguard Rail 	606.47 lm
	<ul style="list-style-type: none"> Testing and commissioning period: 	30 Calendar Days.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2	Project Name	Madama Network
	Project Location	Madama Village
	Summary description of Project's Scope of Work	<p>The Project consists of the following main components:-</p> <p>1-Installation of Pipeline Network with total length of 15,129.46 LM of various sizes of water pipes. 2,399.25 LM of 100 mm and LM of 80 mm to be installed only and 12,730.21 LM of 50 mm to be supplied and installed.</p> <p>2-Supply and installation of 3,385.59 LM of GI pipes of ¾", 1" and 1.5" diameter and 375 Prepayment Water Meters.</p> <p>3-Supply and delivery of 60 Prepayment Water Meters.</p> <p>4- Civil and mechanical works for construction of 23 various types of precast Water Chambers for 100 mm and 80 mm size pipes.</p> <p>5-Civil and Mechanical works for construction of 40 precast water chambers for 50 mm flanged gate valves.</p> <p>6-Asphalt reinstatement along the backfilled trenches in paved roads for a total length of 1,937.43 lm.</p> <p>7-Milling and asphalt overlay for 7,349.5 sq. m of the existing asphalted roads.</p> <p>8-Concrete protection for the shoulders of the existing asphalted for a total area of 2,482.99 sq. m</p> <p>9- Hydrostatic pressure testing and disinfection for the newly installed network for a total length of 15,129.46 lm.</p> <p>The SOW consisted of trench excavation work, supply and installation of steel pipelines, performing related civil and mechanical works, backfilling the excavated areas, reinstatement, pipe pressure testing, pipe disinfection, cleaning and all other work items needed to complete this project as described in the contract documents. Work also included rehabilitation of existing asphalted roads through milling and applying an overlay asphalt layer 40 mm thick.</p>
	Original Project Value	US\$1,224,361.34
	Final Modified Project Value	US\$1,196,986.27

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2. Madama Network Construction Elements

	Project Name : Madama Network	QTY/Unit
2.	Madama Network	
	<ul style="list-style-type: none"> Installation of 100 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	1,377.97 LM
	<ul style="list-style-type: none"> Installation of 80 mm steel pipeline along with its associated fittings. 	1,021.28 LM
	<ul style="list-style-type: none"> Installation of 50 mm galvanized steel pipeline along with its associated chambers and fittings. 	12,730.21 LM
	<ul style="list-style-type: none"> Installation a total of 1.5'' galvanized Steel pipeline along with its associated fittings. 	123.54 LM
	<ul style="list-style-type: none"> Installation a total of 1'' galvanized Steel pipeline along with its associated fittings. 	1,371.48 LM
	<ul style="list-style-type: none"> Installation a total of ¾'' galvanized Steel pipeline along with its associated fittings. 	1,890.57 LM
	TOTAL	18,515.05 LM
	<ul style="list-style-type: none"> Trench reinstatement for pipelines trenches 	1,937.43 LM
	<ul style="list-style-type: none"> One layer Asphalt reinstatement 	1965.86 LM
	<ul style="list-style-type: none"> Milling of existing asphalt up to 40 mm. 	6,900.99 sq. m
	<ul style="list-style-type: none"> Supplying, spreading and compacting 40 mm thick bituminous wearing course. 	7,349.50 sq. m
	<ul style="list-style-type: none"> Reinforced concrete slab for roads shoulders protection. 	2,482.99 sq. m
	<ul style="list-style-type: none"> Supplying and installation of prepayment water meters. 	375.00 unit
	<ul style="list-style-type: none"> Supplying and delivering of prepayment water meters. 	60.00 unit
	<ul style="list-style-type: none"> Testing and commissioning period: 	30 Calendar Days.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3	Project Name	Asira Al-Qibliyah Network
	Project Location	Asira Al-Qibliyah Village
	Summary description of Project's Scope of Work	<p>The Project consists of the following main components:-</p> <p>1-Installation of Pipeline Network with total length of 12,637.62 LM of various sizes of water pipes. 2,490.11 LM of 150 mm, 100 mm and 80 mm to be installed only and 10,147.51 LM of 50 mm to be supplied and installed.</p> <p>2-Supply and installation of 5,274.74 LM of GI pipes of ¾", 1" and 1.5" diameter and 481 Prepayment Water Meters.</p> <p>3-Supply and delivery of 103 Prepayment Water Meters.</p> <p>4- Civil and mechanical works for construction of 16 various types of precast Water Chambers for 100 mm and 80 mm size pipes.</p> <p>5-Civil and Mechanical works for construction of 37 precast water chambers for 50 mm flanged gate valves.</p> <p>6-Asphalt reinstatement along the backfilled trenches in paved roads for a length of 789.9 lm.</p> <p>7-Milling and asphalt overlay for a total area of 19,076.6 sq. m to the existing asphalted roads.</p> <p>8-Concrete protection for the shoulders of the existing asphalted for a total area of 4,490.5 sq. m.</p> <p>9- Hydrostatic pressure testing and disinfection for the newly installed network for a total length of 12,637.62 lm.</p> <p>The SOW consisted of trench excavation work, supply and installation of steel pipelines, performing related civil and mechanical works, backfilling the excavated areas, reinstatement, pipe pressure testing, pipe disinfection, cleaning and all other work items needed to complete this project as described in the contract documents. Work also included rehabilitation of existing asphalted roads through milling and applying an overlay asphalt layer 40 mm thick, which is additional work to original scope of work.</p>
	Original Project Value	US\$1,231,077.48
	Final Modified Project Value	US\$1,497,727.21

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3. Asira Al-Qibliyah Network Construction Elements

Item No.	Project Name : Asira Al-Qibliyah Network	QTY/Unit
3.	Asira Al-Qibliyah Network	
	<ul style="list-style-type: none"> Installation of 150 mm steel pipeline along with its associated chambers and fittings. 	1,071.38 LM
	<ul style="list-style-type: none"> Installation of 100 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	180.34 LM
	<ul style="list-style-type: none"> Installation of 80 mm steel pipeline along with its associated fittings. 	1,238.39 LM
	<ul style="list-style-type: none"> Installation of 50 mm galvanized steel pipeline along with its associated chambers and fittings. 	10,147.51 LM
	<ul style="list-style-type: none"> Installation a total of 1.5'' galvanized Steel pipeline along with its associated fittings. 	385.60 LM
	<ul style="list-style-type: none"> Installation a total of 1'' galvanized Steel pipeline along with its associated fittings. 	2,194.99 LM
	<ul style="list-style-type: none"> Installation a total of ¾'' galvanized Steel pipeline along with its associated fittings. 	2,694.15 LM
	TOTAL	17,912.36 LM
	<ul style="list-style-type: none"> Trench reinstatement for pipelines trenches 	789.9 LM
	<ul style="list-style-type: none"> One layer Asphalt reinstatement 	4,585.65 LM
	<ul style="list-style-type: none"> Milling of existing asphalt up to 40 mm. 	16,111.11 sq. m
	<ul style="list-style-type: none"> Supplying, spreading and compacting 40 mm thick bituminous wearing course. 	19,076.6 sq. m
	<ul style="list-style-type: none"> Reinforced concrete slab for roads shoulders protection. 	4,490.5 sq. m
	<ul style="list-style-type: none"> Supplying and installation of prepayment water meters. 	482.00 unit
	<ul style="list-style-type: none"> Supplying and delivering of prepayment water meters. 	103.00 unit
	<ul style="list-style-type: none"> Testing and commissioning period: 	30 Calendar Days.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

4	Project Name	Uirf Network
	Project Location	Urif Village
	Summary description of Project's Scope of Work	<p>The Project consists of the following main components:-</p> <ol style="list-style-type: none"> 1-Installation of Pipeline Network with total length of 17,432.65 LM of various sizes of water pipes. 4,750.69 LM of 150 mm, 100 mm and 80 mm to be installed only and 12,681.96 LM of 50 mm to be supplied and installed. 2-Supply and installation of 6,581.74 LM of GI pipes of ¾", 1" and 1.5" diameter and 626 Prepayment Water Meters. 3-Supply and delivery of 155 Prepayment Water Meters. 4- Civil and mechanical works for construction of 23 various types of precast Water Chambers for 150,100 and 80 mm size pipes. 5-Civil and Mechanical works for construction of 45 precast water chambers for 50 mm flanged gate valves. 6- Construction of a new paved access road. 7-Asphalt reinstatement along the backfilled trenches in paved roads. 8-Milling and asphalt overlay for a total area of 20,418.97 sq. m to the existing asphalted roads. 9- Hydrostatic pressure testing and disinfection for the newly installed network. <p>The SOW consisted of trench excavation work, supply and installation of steel pipelines, performing related civil and mechanical works, backfilling the excavated areas, reinstatement, pipe pressure testing, pipe disinfection, cleaning and all other work items needed to complete this project as described in the contract documents. Work also included rehabilitation of existing asphalted roads through milling and applying an overlay asphalt layer 40 mm thick, which is additional work to original scope of work.</p>
	Original Project Value	US\$1,868,738.48
	Final Modified Project Value	US\$1,767,493.82

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

4. Urif network Construction Elements:

Item No.	Project Name : Urif Network	QTY/Unit
4.	Urif Network	
	<ul style="list-style-type: none"> Installation of 150 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	522.42 LM
	<ul style="list-style-type: none"> Installation of 100 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	125.20 LM
	<ul style="list-style-type: none"> Installation of 80 mm steel pipeline along with its associated fittings. 	4,103.07 LM
	<ul style="list-style-type: none"> Installation of 50 mm galvanized steel pipeline along with its associated chambers and fittings. 	12,681.96 LM
	<ul style="list-style-type: none"> Installation a total of 1.5'' galvanized Steel pipeline along with its associated fittings. 	623.25 LM
	<ul style="list-style-type: none"> Installation a total of 1'' galvanized Steel pipeline along with its associated fittings. 	1945.1 LM
	<ul style="list-style-type: none"> Installation a total of ¾'' galvanized Steel pipeline along with its associated fittings. 	4,013.39 LM
	TOTAL	24,014.39 LM
	<ul style="list-style-type: none"> Trench reinstatement for pipelines trenches 	2,488.8 LM
	<ul style="list-style-type: none"> One layer Asphalt reinstatement 	6,980.1 LM
	<ul style="list-style-type: none"> Milling of existing asphalt up to 40 mm. 	16,918.24 sq. m
	<ul style="list-style-type: none"> Supplying, spreading and compacting 40 mm thick bituminous wearing course. 	20,418.97 sq. m
	<ul style="list-style-type: none"> Reinforced concrete slab for roads shoulders protection. 	1,118.00 sq. m
	<ul style="list-style-type: none"> Supplying and installation of prepayment water meters. 	626.00 unit
	<ul style="list-style-type: none"> Supplying and delivering of prepayment water meters. 	155.00 unit
	<ul style="list-style-type: none"> Testing and commissioning period: 	30 Calendar Days.

2.4. Project Typical Cross Sections

Typical cross sections implemented for the various project elements had been submitted and were approved in SWN As-Built Drawings Submittals as follows:

SUB-13-00005-MDN-419-A-As Built Drawings for Madama Internal Network

SUB-13-00005-AQN-421-B-As Built Drawings for Asira Al-Qibliya Internal Network

SUB-13-00005-URN-424-A-As Built Drawings for Urif internal network

SUB-13-00005-SWT-425-B-As Built for Transmission Pipeline

SUB-13-00005-URR-428-B-As Built Drawing Civil, Mechanical and Electrical for Urif Reservoir

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

SUB-13-00005-MDR-429-B-As Built Drawing Civil, Mechanical and Electrical for Madama Reservoir

SUB-13-00005-AQR-430-B-As Built Drawing Civil, Mechanical and Electrical for Asira Al-Qibliya Reservoir

3. PROJECT 1 SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT (SWN) PERFORMANCE DETAILS

3.1 Submittals

During the preconstruction and construction phases, 653 submittals under TO-05-SWN Project were submitted to the CMC/BV.

As built drawings & O & M Manual submission:

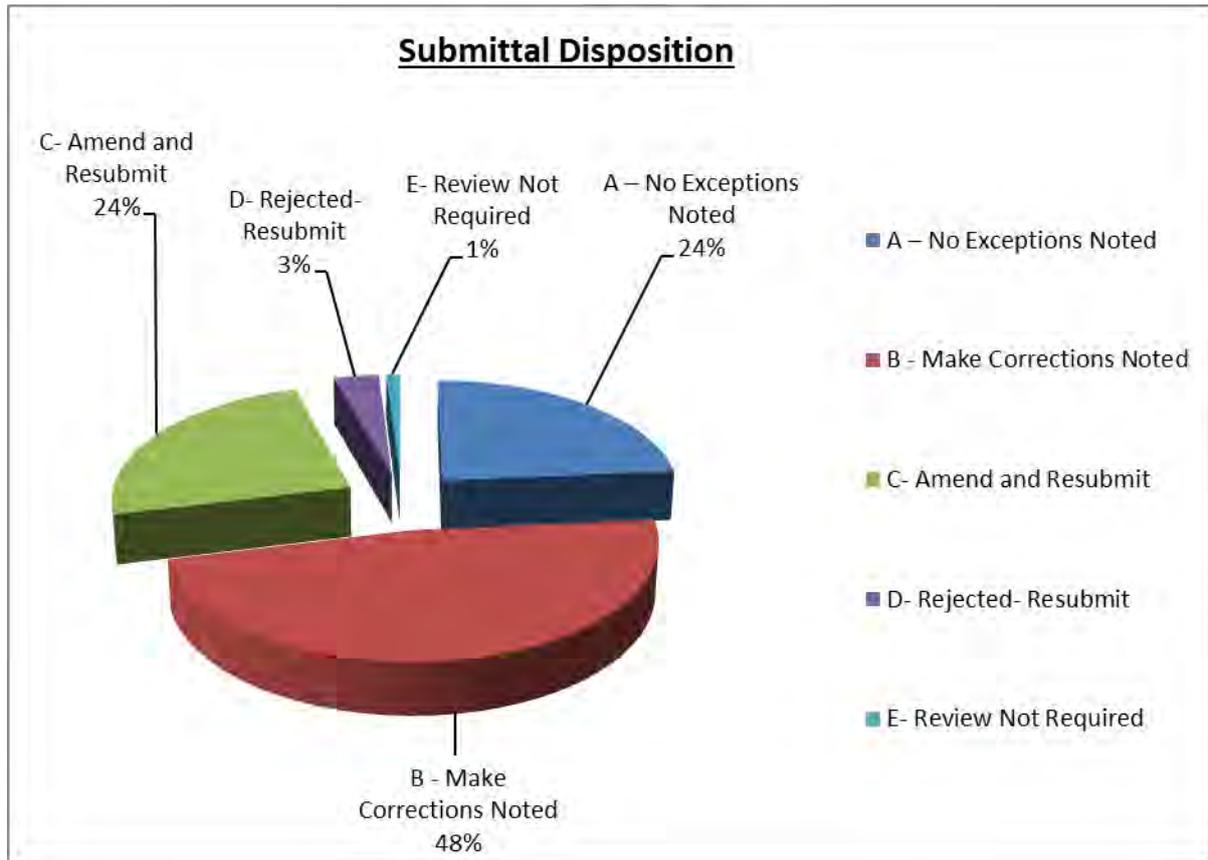
As per the project specifications preparation of as built drawings and O & M manual started immediately after subject work completion with coordination with the CMC in parallel with the achieved progress. After getting the CMC's comments, the full set of as built drawings and O&M manual had been prepared and submitted to the CMC for review & approval. After getting final approval an official submittal was delivered to the CMC of which complied with USAID branding & marking regulations and standards; CMC retracted their approval on the three reservoirs as built drawings (MDR, AQR, URR), the transmission pipeline as built drawing (SWT) and the three networks as built drawings (MDN, AQN, URN); accordingly IRD submitted a revised package for the mentioned as built drawings all as built drawings were approved on March 22, 2015. For more details, please see Annex A.5: Project Submittals Log.

The following table and chart summarize the approval status for submittals for this project:

Submittal Disposition	Total
A – No Exceptions Noted	139
B - Make Corrections Noted	280
C- Amend and Resubmit	144
D- Rejected- Resubmit	20
E- Review Not Required	6
Retracted Submittals	64
Total submittals delivered	653
Total submittals reviewed	653

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



3.2 Work Progress

After obtaining all the required approvals and permissions from the relevant parties and completing the site surveying, walkthroughs, and preparation of the shop drawings, Project construction phases were executed as per approved submittal SUB-13-00005-SWN-028-A-General Construction Method Statement. SWN Project is comprised of seven sub-projects and each sub-project had different actual construction works start date as shown below, taking into account that all required safety and traffic requirements were put into place at site both before and during construction work in accordance with the approved submittals in this respect.

<u>Sub-Project Name</u>	<u>Actual Construction Works Start Date</u>
Transmission Pipeline (SWT)	July 21, 2013
Madama Network (MDN)	July 9, 2013
Asira Al Qibliya Network (AQN)	August 22, 2013
Urif Network (URN)	July 21, 2013
Madama Reservoir (MDR)	June 23, 2013
Asira Al Qibliya Reservoir (AQR)	June 19, 2013
Urif Reservoir (URR)	July 3, 2013

The work was located in Areas B & C. Therefore, IRD was entirely responsible for the proactive performance of all coordination needed with the District Civil Liaison Office (DCL), Civil Administration Departments, Ma'atz (Israeli National Roads Company), the Israeli Police and any other relevant authority or utility that had jurisdiction over any portion of the construction works. Coordination included all works needed to obtain approvals; coordinate the movement of

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

personnel, equipment and materials to and from the project site; and any other coordination required by the relevant authorities to ensure no hindrance of the timely scheduled completion of the project. IRD coordinated its activities as needed prior to, during and after construction was completed.

Sequence of the Work:

The SOW consisted of trench excavation work, supply and installation of steel pipelines and galvanized iron pipes, performing related civil and mechanical works, backfilling the excavated areas, trench reinstatement, pipe pressure testing, supply and installation of pre-payment water meters, pipe disinfection, cleaning and all other work items needed to complete this project as described in the contract documents with respect to transmission pipeline and the three networks. Additional works also included rehabilitation of existing asphalted roads through milling and applying an overlay asphalt layer 40 mm thick.

SOW also included the construction of three concrete reservoirs 500 cubic meter each at Madama, Asira Al Qiblya and Urif villages with all related civil, mechanical, instrumentation and electrical works.

SWN CONSTRUCTION PHASES (Segments/Zones) for SWT, MDN, AQN&URN

- Preparing Detours & Apply Traffic Control Plan: Continuous throughout the construction phases of the Segments /Zones.
- Based on the joint walkthroughs that were conducted during June 2014, in the presence of the CMC, IRD, ABC and the three villages' representatives, shop drawings were prepared accordingly in full coordination with the CMC. The Transmission Pipeline and the three Networks were divided to segment/zones as follows:

Transmission Pipeline (SWT): Eight segments

Madama Network (MDN): Seven Zones

Asira Al Qiblya Network (AQN): Five Zones

Urif Network (URN): Eight Zones

Each zone included a number of different pipe size water lines.

- Actual field activity started on June 9, 2013, by digging , trench opening and 6'' steel pipe installation on segment 8 of the transmission pipeline, on July 9,2013, for the 2'' galvanized steel pipes along line M2-026 on Zone # 5 of Madama network, on July 21,2013, for the 3'' steel pipes along line U3 of Zone 1 of Urif network and on August 22, 2013, for the 2'' galvanized steel pipes along line A2-035 on Zone 4.

Conventional excavation equipment was used in addition to two trenchers where it is applicable. Trencher TRS1085 was used for the trenches of the 3'' size pipe and above, since it has the capacity of excavating 85 cm wide and up to 240 cm deep trench and Trencher TRS 885 was used for 2'' galvanized iron pipes , since it has the capacity 45-50 cm wide and up to 150 cm deep trench. Double pipe and triple pipe trenches were implemented as a result of the existing narrow roads where opening two trenches at the same was impossible.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- House connection started immediately after installation of part of the main pipelines in addition to excavation for the precast manholes and installation, excavation for the cast in place manholes and construction, and installation of the valves and fittings inside the manholes.
- Pressure testing for the installed pipelines started on November 4, 2013 for the 2'' along lines M2-13-2 and M2-14 on Zone#3 of Madama network, on January 27, 2014, for the 2'' along line A2-10 on Zone 3 ,line A2-35 on Zone 4 of AQN,on April 21,2014,for the 8'' steel pipe on transmission pipeline and on March 24,2014, for the 2'' along lines UR2-15 and UR2-31-1 on Zone 2 of URN.

This is to note that pressure testing conducted for mixed of steel pipes and galvanized steel pipes at the same time where they come in the same zone.

Pressure testing completed for the transmission pipelines and the three networks

During June 2014:

- Trench reinstatement, milling and asphalt overlay activities started in the last week of April 2014, at SWT and was completed in July 2014, at URN. The milling and asphalt overlay was additional work. The area of the milled and overlaid at the four sub-projects is 56,549.25 sq. m
- Installation of the prepaid water meters enclosures started on May 26, 2014, at MDN, on June 10, 2014 at AQN and on June 21, 2014, at URN. 1,482 prepaid water meters were installed during July 2014, at the three networks.
- Disinfection and Bacteriological tests for the newly installed pipelines at the four sub-projects started at MDN on July 15, 2014, and ended at URN on August 14, 2014. Birzeit University Testing Laboratories technicians were in charge of samples collections and conducting of the necessary laboratory tests.
- Project Initial walkthrough was conducted on August 19, 2014 in the presence of USAID, PWA, B&V, IRD&ABC representatives.
- Commissioning and Testing for 30 days started on August 25, 2014.
- Project Inauguration Day was on September 9, 2014. USAID Mission Director, Nablus Governor, Head of PWA, Heads of the villages' councils attended the Inauguration.
- Final Walkthrough was conducted on September 22, 2014, in the presence of the USAID COR, B&V, and IRD & ABC representatives.
- The Final Inspection, Project Completion and Handover of the completed works were conducted on September 25, 2014, and the Final Completion Certificate was issued on the same day. The handing over was made for the successful completion of SWN Project. The construction schedule was met and the site work was executed in a timely manner and with high quality. IRD construction managers, together with our local

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

subcontractor and CMC/BV resident engineers, implemented all activities according to the specifications and in accordance with the approved Quality Control Program.

SWN CONSTRUCTION - THREE RESERVOIRS

After preparations of the shop drawings for the reservoirs, field implementation started. Due to the encountered poor soil below the base slabs of the three reservoirs and after conducting soil investigation by Building Center (BC) Laboratory and preparations of the geotechnical reports, it was recommended by BC Laboratory to pour a layer of rubble concrete under the base slabs of the three reservoirs. USAID approved the recommendation of Building Center (BC) and the rubble concrete layer was executed accordingly.

Listed below are the main activities executed at the three reservoirs:-

-Base slab of MDR cast on August 25, 2013, and roof slab cast on December 26, 2013. Walls were cast in two stages, first stage on September 9, 2013, and second stage on October 2, 2013.

-Base slab of AQR cast on September 15, 2013, and roof slab cast on January 31, 2014.

-Base slab of URR cast on October 9, 2013, and roof slab on December 31, 2013.

-Surface repairs for the internal and external walls of the reservoirs were conducted during the months of April & May 2014.

-Yard piping was executed for the three reservoirs during the months of April and May 2014.

-Reservoir water filling for hydrostatic pressure testing was done during the month of May 2014, for the three reservoirs. Due to lack of the pumped water from Nablus to Burin existing water reservoir, which is supposed to fill the three reservoirs from, water tanks were used to assist in filling the reservoirs with water. All reservoirs passed the hydrostatic pressure testing successfully and reservoirs were emptied in the last week of May 2014, for drying prior to start of preparations for internal and external epoxy painting.

-All internal piping, stainless steel ladders and water level indicators were installed inside the reservoirs including the roof hatches for the reservoirs in addition to completion of the internal and external epoxy painting before start of filling the reservoirs with water for disinfection and bacteriological testing on July 22, 2014. Reservoir yards and installation of the lighting poles were executed during July 2014.

-All PLC/RTU Panels, lightening system (pulsar) and electrical power panels were installed during July 2014.

-Disinfection and bacteriological tests were conducted between August 27 and August 31, 2014. Birzeit University Testing Laboratories technicians were in charge of samples collections and conducting of the necessary laboratory tests.

-All project permanent signs were installed in July, 2014.

-Project Initial walkthrough was conducted on August 19, 2014 in the presence of USAID, PWA, B&V, IRD&ABC representatives.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

-Commissioning and testing for 30 days started on August 25, 2014.

-Project Inauguration Day was on September 9, 2014. USAID Mission Director, Nablus Governor, Head of PWA, Heads of the villages' councils attended the Inauguration. The Palestinian Authority and the US Agency for International Development celebrated the completion of the Southwest Nablus Villages Water Supply Project. USAID invested \$7.4 million in this project to improve the water supply and quality to more than 8,500 citizens in the villages of Asira Al-Qibliya, Madama and Urif, for the first time.

-Final Walkthrough was conducted on September 22, 2014, in the presence of the USAID COR, B&V, and IRD & ABC representatives.

-The Final Inspection, Project Completion and Handover of the completed works took place on September 25, 2014, and the Final Completion Certificate was issued on the same day. The handing over was made for the successful completion of SWN Project. The construction schedule was met and the site work was executed in a timely manner and with high quality. IRD construction managers, together with our local subcontractor and CMC/BV resident engineers, implemented all activities according to the specifications and in accordance with the approved Quality Control Program.

Photos showing the different phases of the work:

1- SWT-Southwest nablus Transmission Pipeline Construction Photos:

	
<p>Photo #: 1 - SWT Video Tape Along The Route of Transmission Pipeline May 18 2013</p>	<p>Photo #: 2 - SWT Excavation work for Foundations of the Temporary Project Sign for the Transmission Pipeline June 03 2013</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 3 - SWT Pipe Installation -Transmission Pipeline July 21 2013</p>	<p>Photo #: 4 – SWT Trench Excavation-Transmission Pipeline August 13 2013</p>
	
<p>Photo #: 5 – SWT Transmission Pipeline installation from Bureen Reservoir. September 28 2013</p>	<p>Photo #: 6 – SWT Installation of 4” &6” pipes-Transmission Pipeline October 27 2013</p>
	
<p>Photo #: 7 – SWT Applying & compacting wearing asphalt layer November 17 2013</p>	<p>Photo #: 8 – SWT Installation of 8” steel pipes December 31 2013</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 9 – SWT Installation of 8” & 4” steel pipes (double trench) January 06 2014</p>	<p>Photo #: 10 – SWT Excavation to install a precast manhole February 23 2014</p>
	
<p>Photo #:11– SWT Fixing steel reinforcement for walls of the inlet and outlet connection chamber near Burien reservoir. March 06 2014</p>	<p>Photo #:12– SWT Welding work for 6” steel pipeline in the presence of the CWI April 20 2014</p>
	
<p>Photo #:13– SWT Installed fittings and valves inside Burin flow-monitoring chamber. June 18 2014</p>	<p>Photo #:14– SWT Building of stonewalls along new Bureen-Madama road. July 23 2014</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Photo #:15- SWT
 Installation of the marker post.
 August 09 2014

2- MDN-Madama Network Construction Photos:



Photo #: 1 - MDN
 Video Tape Along The Route of Transmission
 Pipeline
 June 13 2013

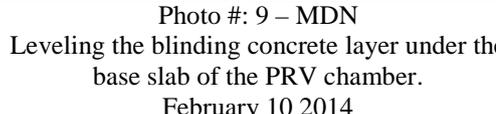
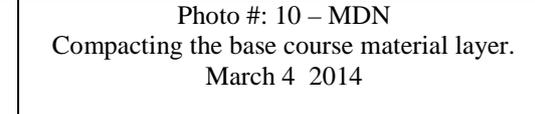


Photo #: 2 - MDN
 Pipe Installation
 July 27 2013



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

<p>Photo #: 3 - MDN Installation of 2" pipes, bedding materials along (M2-001-2) August 13 2013</p>	<p>Photo #: 4 – MDN Pipe Installation September 11 2013</p>
	
<p>Photo #: 5 – MDN Installation of 4" Pipes along M4-032 – MDN October 07 2013</p>	<p>Photo #: 6 – MDN Installation of Manholes and internal valve and fitting November 17 2013</p>
	
<p>Photo #: 7 – MDN Excavation works for future connection December 23 2013</p>	<p>Photo #: 8 – MDN Installation of house connection. January 01 2014</p>
	
<p>Photo #: 9 – MDN Leveling the blinding concrete layer under the base slab of the PRV chamber. February 10 2014</p>	<p>Photo #: 10 – MDN Compacting the base course material layer. March 4 2014</p>
	

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #:11– MDN Compacting the first layer of asphalt using steel roller. April 12 2014</p>	<p>Photo #:12– MDN Residents and children of Madama village raising the USAID leaflets during the asphalt activity. May 17 2014</p>
	
<p>Photo #:13– MDN Installation of prepaid water meters enclosures. June 16 2014</p>	<p>Photo #:14– MDN Filling the water network prior to conducting disinfection. July 16 2014</p>
	
<p>Photo #:15– MDN Paving asphalt layers for trench reinstatement near Madama storage yard. August 23 2014</p>	

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3- AQN-Asira Al Qibliya Network Construction Photos:

	
<p>Photo #: 1 - AQN Field walkthrough at Asira Al Qibliya June 30 2013</p>	<p>Photo #: 2 - AQN Pipe Installation September 23 2013</p>
	
<p>Photo #: 3 - AQN Installation of 2" along (A2-009) October 06 2013</p>	<p>Photo #: 4 - AQN Welding of 4" steel pipes November 10 2013</p>
	
<p>Photo #: 5 - AQN I Excavation works for trench pipeline December 02 2013</p>	<p>Photo #: 6 - AQN Placed bedding material and warning tape. January 12 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 7 – AQN Excavation work for 2’’ galvanized steel pipes by using JCB. February 03 2014</p>	<p>Photo #: 8 – AQN Casting concrete of the roof slab for the precast PRV. March 12 2014</p>
	
<p>Photo #: 9 – AQN L Excavation and installation of Pressure Release Valve. April 07 2014</p>	<p>Photo #: 10 – AQN Welding work for connecting the gate valve manhole with the 3’’ installed steel pipeline. May 4 2014</p>
	
<p>Photo #:11– AQN Installation of prepaid water meters enclosures. June 16 2014</p>	<p>Photo #:12– AQN Casting concrete for the road shoulder at Asira village. July 22 2014</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Photo #:13- AQN
 Placed steel wire mesh along the roads for concrete protection.
 August 04 2014

4- URN-Urif Network Construction Photos:



Photo #: 1 - URN
 Rock breaking using JCB along (UR2-031)
 October 19 2013



Photo #: 2 - URN
 Trench excavation using small trencher and
 installation of 2" galvanized steel pipes
 November 05 2013

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 3 - URN Trench excavation using small trencher December 21 2013</p>	<p>Photo #: 4 – URN Excavation work for the 2” GIPs using the small Trencher January 22 2013</p>
	
<p>Photo #: 5 – URN Welding work for 3” steel pipe February 25 2013</p>	<p>Photo #: 6 – URN Excavation work for house connections March 09 2014</p>
	
<p>Photo #: 7 – URN Excavation for house connection using JCB April 27 2014</p>	<p>Photo #: 8 – URN Excavation for the precast manhole May 18 2014</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 9 – URN Start of milling activity for the internal roads at Urif village June 26 2014</p>	<p>Photo #: 10 – URN Cleaning the road prior to paving asphalt layer using unskilled labor and Bobcat July 05 2014</p>
	
<p>Photo #:11– URN Spreading the asphalt in Urif internal roads using asphalt finisher August 05 2014</p>	

5- MDR-Madama Reservoir Construction Photos:

	
<p>Photo #: 1 - MDR Main Storage Yard May 24 2013</p>	<p>Photo #: 2 - MDR Excavation works for Madama reservoir foundation</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	<p style="text-align: center;">June 24 2013</p> 
<p style="text-align: center;">Photo #: 3 - MDR Pouring of rubble concrete under foundation for Madama reservoir July 24 2013</p>	<p style="text-align: center;">Photo #: 4 – MDR Casting Concrete for the Ground Slab Madama Reservoir August 21 2013</p>
	
<p style="text-align: center;">Photo #: 5 – MDR Casting concrete for part one of the walls September 26 2013</p>	<p style="text-align: center;">Photo #: 6 – MDR Excavation works for retaining wall for Madama Reservoir October 31 2013</p>
	
<p style="text-align: center;">Photo #: 7 – MDR Casting concrete for retaining walls Madama Reservoir November 16 2013</p>	<p style="text-align: center;">Photo #: 8 – MDR HC Installation December 31 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 9 – MDR Placing polyethylene sheets to protect the Nit proof 230 coating prior to backfilling January 25 2014</p>	<p>Photo #: 10 – MDR Fixing steel reinforcement for the base slab of the inlet and outlet connection chamber. February 24 2014</p>
	
<p>Photo #:11– MDR Installation of the inlet & outlet pipelines inside the yard. March 20 2014</p>	<p>Photo #:12– MDR Preparations of steel reinforcement of the electrical duct banks April 22 2014</p>
	
<p>Photo #:13– MDR Preparation of reservoir external wall for insulation. May 24 2014</p>	<p>Photo #:14– MDR Casting concrete of the external steps and the walkway June 11 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #:14- MDR Compacting the asphalt layer at reservoir yard using steel roller July 16 2014</p>	<p>Photo #:14- MDR Epoxy painting for the external wall of the reservoir August 07 2014</p>

6- AQR-Asira Al Qibliya Reservoir Construction Photos:

	
<p>Photo #: 1 - AQR -Black and Veatch Team and IRD Team near by the proposed reservoir April 25 2013</p>	<p>Photo #: 2 - AQR Supplying Electricity & Delivering Caravan June 16 2013</p>
	
<p>Photo #: 3 - AQR Form work erection and steel fixing for washout piping- Asira Al Qibliya Reservoir July 23 2013</p>	<p>Photo #: 4 - AQR Settlers damaged the fence August 11 2013</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 5 – AQR completing installation of precast boundary walls September 23 2013</p>	<p>Photo #: 6 – AQR Fixing steel reinforcement of reservoir wall October 06 2013</p>
	
<p>Photo #: 7 – AQR Second stage of casting of reservoir wall November 07 2013</p>	<p>Photo #: 8 – AQR Installation of external scaffolding December 07 2013</p>
	
<p>Photo #: 9 – AQR Installation of the seismic cans & filling with Combextra HF grout January 05 2014</p>	<p>Photo #: 10 – AQR Installed precast washout chamber inside the reservoir yard February 17 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #:11– AQR Excavation works for inlet and outlet connection chamber March 17 2014</p>	<p>Photo #:12– AQR Casting concrete for the base slab of the inlet and outlet connection chamber April 08 2014</p>
	
<p>Photo #:13– AQR Installation of the formwork for the walls of the internal retaining walls May 17 2014</p>	<p>Photo #:14– AQR casting concrete for the electrical duct banks June 09 2014</p>
	
<p>Photo #:15– AQR Compacting asphalt layer at reservoir yard using steel roller July 17 2014</p>	<p>Photo #:16– AQR Painting the pipes and fittings inside the reservoir yard August 14 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Photo #:17– AQR
 USAID Mission Director making a speech to the attendance at the project opening ceremony
 September 09 2014

7- URR-Urif Reservoir Construction Photos:



Photo #: 1 - URR
 Excavation Works & Taking Soil Sample
 July 24 2013



Photo #: 2 - URR
 rubble concrete completing under base slab
 September 22 2013



Photo #: 3 - URR
 Continue formwork, fixing steel reinforcement
 for reservoir wall
 October 30 2013



Photo #: 4 – URR
 Formwork installation for inner face
 November 13 2013

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #: 5 – URR Fixing steel for reservoir roof slab December 23 2013</p>	<p>Photo #: 6 – URR Fixing steel reinforcement of reservoir wall January 19 2014</p>
	
<p>Photo #: 7 – URR Excavation work to reduced level around the reservoir using JCB February 04 2014</p>	<p>Photo #: 8 – URR Casting concrete for walls of the inlet and outlet connection chamber March 17 2014</p>
	
<p>Photo #:9– URR Unskilled labor spreading bedding material (Somsom) over the installed steel pipes. April 27 2014</p>	<p>Photo #:10– URR Backfilling behind the internal walls at Urif reservoir yard using JC May 25 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #:11– URR Installation of wire mesh reinforcement between the boundary walls and landscaping walls. June 21 2014</p>	<p>Photo #:12– URR Paving the asphalt layer at the reservoir yard using Bobcat. July 12 2014</p>
	
<p>Photo #:13– URR Repair the applied coat of epoxy paint August 10 2014</p>	<p>Photo #:14– URR The USAID COR inspecting the inlet and outlet chamber in URR at the project final handing over & walkthrough September 22 2014</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.3 Project Final CPM Schedule

Final CPM Schedule had been submitted in SUB-05-SWN-431-A on 15-Oct-14 and was approved on 12-Nov-14. Please refer to Annex T.4: As-Built Construction Schedule.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.5 Project Indicators

Indicator 1: Project Beneficiaries: Quantity of drinking water available as a result of USG assistance:

Project 1: Southwest Nablus Villages Water Supply Project			
Length of water transmission lines (in meters) constructed	9,821 LM		
Length of local water network (2", 3", 4" & 6")	45,200 LM		
Length of local water HC Pipe (3/4", 1" and 1 1/2")	15,242.07 LM		
No. of Constructed Reservoir	3		
Capacity/Volume (M3) of constructed water reservoir	1,500		
No. of water household connections made	1,482		
Temporary Job-days (people x days)	19,206		
Temporary Jobs Created (positions)	807		
Total number of Beneficiaries	8,178	Madama	2037
		Urif	3393
		Asira al Qibliya	2748
Number of Male Beneficiaries	4,171	Male = 51%	
Number of Female Beneficiaries	4,007	Female = 49%	
Male Beneficiaries to Age 17	1,970	47.24%	
Female Beneficiaries to Age 17	1,893	47.24%	
Male Beneficiaries 18 to 25	658	15.78%	
Female Beneficiaries 18 to 25	632	15.78%	
Male Beneficiaries 26 and older	1,543	36.98%	
Female Beneficiaries 26 and older	1,482	36.98%	

Indicator 2: Person Days of employment generated

Employment generated in Person days for TO 13-00005-SWN Project:

- Estimated Target Value for P1-SWN, 27,280 person days;
- Total cumulative employment generated for P1-SWN; 19,206 person days.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- Temporary Jobs Created (positions) = 807

TO 13-00005-SWN Project created work opportunities in many different fields, providing an average of 46 labors (19,206 Man-days/ (23.8 avg. working days/month X 17.4 months) and their families ((276 people= (46 laborers× 6 people where average number of members in a Palestinian family=6 according to PCBS) with stable/permanent income from the project for more than 17 months.

IRD mobilized the following required work force to the site to implement the construction tasks, monitor progress, quality control and assurance oversight, safety and environmental compliance and reporting requirements:

- Project Manager
- Quality Control Manager
- Safety and Environmental Compliance Officer
- Project Quantity & Land Surveyor
- Office Engineers
- Project foremen
- Operators
- Skilled and unskilled workers during the project implementation.

The following table provides a summary for both IRD and its subcontractor man-days and man-hours throughout the duration of the project (the bellow man-hours do not include the expat staff or shared staff among the multiple Task Orders):

Month / Year	<i>Man-days</i>	<i>Man-hours</i>
Apr-13	10	80
May-13	176	1410
Jun-13	465	3720
Jul-13	1105	8841
Aug-13	1267	10138
Sep-13	2275	18199
Oct-13	1439	11515
Nov-13	1145	9163
Dec-13	844	6754
Jan-14	718	5744
Feb-14	1305	10443
Mar-14	1294	10351
Apr-14	1307	10455
May-14	1673	13380

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Month / Year	<i>Man-days</i>	<i>Man-hours</i>
June-14	1797	14376
July-14	936	7484
August-14	1254	10034
September-14	195	1559
Total	19,206	153,646

Please see Annex A.14: Project Workforce Level of Effort (Person-Hours) Log and Breakdown of the Manpower Generated.

- ❖ The total “man-days” is equal to the total hours for each category divided by 8 (regular working hours is 8 hours per day)

The project provided excellent job opportunities for the construction trade workers in the local area and the project contributed to the economic growth of the local market since most of the construction materials and equipment were produced and procured locally.

3.6 Site Safety

It is the policy of IRD to provide a safe and healthy project and workplace for all employees, pedestrians and local residence. Throughout the duration of the project, IRD was committed to eliminating injuries, occupational illness and damage to the environment on the job site and construction facilities relative to Safety and Fire Prevention requirements, through the implementation of the following:

- Safety Plan: Preparation of a Safety Plan for the prevention and control of accidents and health hazards on the job site. The basic structure of this safety plan complies with the requirements of the General Contract Safety Standards, USACE EM 385-1-1 Manual, OSHA Regulations, project and owner safety requirements and specifications, applicable provisions of the Construction and General Industry Standards, and local Palestinian laws, requirements, standards, and practices. IRD Subcontractor was committed to the adherence of these requirements and standards and to the safety of all personnel associated with the project.
- Organization Chart: IRD Safety officer directly reported to the IRD PD.
- Providing safety training and orientation for IRD and subcontractor’s Safety Officers: IRD Safety Manager organized a safety training session for both IRD and subcontractor’s safety officers prior to beginning the project, the session included a detailed discussion of the safety plan and manual and aimed towards accomplishing proper understanding and implementation of the safety plan and emphasized the objective “Safety Intention is Accident Prevention”.
- Providing safety training and orientation Onsite: IRD Safety Officer was responsible for verifying that the subcontractor and all personnel associated with the project are provided with the required training orientation a week prior to entering into the work area, in order to accomplish proper understanding and

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

implementation of the safety plan. Additionally, continuous safety planning and training was held on the job site. All employees were required to participate without any exceptions in order to document the safety training and the accidents during the implementation of the project. IRD Safety officer and Project Manager prepared a weekly safety toolbox meeting and a monthly safety report.

- Daily Monitoring of Site Activities: Daily observation was conducted by IRD Safety Officer and Field Supervision Management in conjunction with site supervision in order to enforce compliance with the established plan. Daily observations and inspections included the followings:
 - Personal Protective Equipment (PPEs)
 - Machinery & Mechanized equipment.
 - Housekeeping
 - Fall Protection
 - Excavation & Trenching
 - Hole Covers
 - Safe Scaffolding
 - Traffic signs & Protective Reflective Barricades
 - Dust Control
- Corrective Action: Whenever unsafe conditions and fire hazards are noted, work was stopped immediately to correct any unsafe condition encountered and corrective actions were taken so that work may proceed in a safe manner.
- Fire Fighting, First Aid & Sanitary Facilities: IRD provided the fire extinguishers and distributed them onsite in accordance with the civil defense regulations. Moreover, a medical treatment first aid kit was provided onsite. In addition, sanitation facilities were provided for the workers and employees onsite.

IRD construction management staff, CMC staff and the local authorities coordinated closely throughout project implementation to achieve very good safety measures by following up all the issues on daily basis. Safety arrangements were made on the site on a daily basis during the implementation of all project activities and personal protective equipment, such as hard hats and reflective safety vests, were distributed and used by all IRD and the subcontractor employees on site, as well as any visitors to the construction area. Adequate quantities of the personal protective equipment were available at all times and sufficiently covered the project needs throughout the construction period. Road closures and detours were clearly marked with flagmen directing traffic as required. Active and on-going work areas utilized Steel Mini Guardrail to prevent accidents, and daily dust mitigation measures were implemented to minimize disruption and inconveniences to the local population. The use of steel barriers was required at certain sections of the projects as determined by CMC and/or the project safety officer.

IRD proposed to use steel barriers instead of New Jersey Concrete Barriers (specified in Section C.4.A of the Contract) to separate traffic from working zone along the excavated trenches.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

The CMC reviewed IRD’s request and recommended to USAID accepting the use of steel barriers as they serve the intended purpose of safely separating traffic; in addition, the proposed barriers are lighter and faster to assemble and disassemble during construction which greatly supported progress of work and lead to minimized disruptions to local residents and business owners at narrow roads in the villages stretched along the pipe line alignment. The use of concrete New Jersey barriers was required at certain sections of the projects such for manhole openings, and other areas as determined by the CMC and/or the Project Safety officer where steel barriers did not serve the intended purpose.

IRD actively engaged the surrounding community to keep them aware of planned activities and, in many instances, performed additional work to improve access to residential and commercial settings. The local community and its political leaders were very satisfied with IRD’s “customer” focus and positive attitude to help solve any problem.

During the project implementation two Notices of Unsafe Conditions “NUCs” were issued while no Accident Investigation Reports “AIR” were issued.

Notice of Unsafe Conditions:

On October 23, 2013 NUC-13-00005-SWN-E-C-001 was issued to IRD by the CMC. Unsafe conditions were observed on the project site during CMC's site inspection. Below is a list of the hazard conditions found:

Item No.	Location	Level	Hazardous Condition
1	Asira Al Qibliya Network	A	Left open trench (250 lm) more than 2 days - at night without applying minimum safety measures.
		B	Housekeeping, dust control and trench restoration.
2	Urif Network	A	Left open trench (50 lm) more than 2 days - at night without applying minimum safety measures.
		B	Housekeeping, dust control and trench restoration.
3	Main Transmission Pipeline	A	High trench Settlement (8-15 cm).
4	SWN Reservoirs	B	Housekeeping and open trenches in the reservoirs' sites.

Accordingly IRD took an immediate action on October 27, 2013 to rectify all the issues addressed in the NUC by backfilling around Madama reservoir by single size, housekeeping for the reservoir site and clean all roads by spraying water, backfilling the deep trenches by base coarse, spray water for dust control. The following immediate corrective measures were taken by IRD:

- 1- Spray water for dust control.
- 2- Deep trenches were backfilled with base coarse
- 3- Backfilling around Madama reservoir
- 4- Housekeeping and road cleaning.

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

NUC No. 2 was issued by the CMC on March 02, 2014 due to unsafe conditions observed during site inspection. Below is a list of the hazard conditions observed:

Item No.	Location	Level	Hazardous Condition
1	Main Transmission Pipeline	A	Work in high depth trench without applying minimum safety measures (flagmen, PPEs) in high traffic
		B	High trench settlement (8-12 cm) about 800m
		A	Bobcat operating in high traffic without any safety measures (signs, flagmen)
		A	Hazardous equipment left unattended
2	Asira Al Qibliya Network	A	Excavation of manholes without applying minimum safety measures and without engineer acceptance.
3	Madama Reservoir	B	Working near Tell-Madama road without providing signage for nearby excavation works for Madama reservoir access road.
4	Unloading Pipeline	A	Slippage of 12m 6" pipe pieces at unloading due to the sure of an unsafe movable crane.

On March 05, 2014 IRD took immediate action and all the works were carried out in accordance to the approved construction safety and traffic plans. The following corrective measures were taken by IRD:

1. Provision of New Jersey Barriers for manholes.
2. Provision of Reflective Cones.
3. Stoppage of using the mobile crane for transporting the water pipes to sites of work.
4. Providing traffic signs and flagmen where it is needed.
5. No equipment is allowed to be kept onsite after completion of work and was kept inside the storage yard.

Description of correction:

IRD took immediate actions to rectify all the issues addressed in the NUC by adhering to the approved construction safety plan. All staff and workers are wearing their PPE's, flagmen spread at sites of work and concrete New Jersey barriers are installed around the excavated manholes before backfilling. Furthermore, IRD provided reflective cones along the trench where work is going in preparation of the base coarse before asphalt in addition all the equipment after completing the work were sent to storage yard immediately and no equipment was kept onsite without operator or guard. Finally, the mobile crane stopped transporting the pipes on site. The NUC was closed on March 05, 2014.

The total man-hours worked onsite were 153,646 working hours with reporting one incident of Zero hours lost.

The work site was kept clear of debris and access to exits was free from obstructions. The Safety Plan/Safety Manual was applied and all workers and staff did their utmost to comply with safety regulations; IRD's slogan is "no compromise on safety – safety is first".

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

For more details please see Annex A.15: Project Notice of Unsafe Conditions (NUC) Log and Annex A.16: Project Incident Log.

The following photos illustrate compliance with the safety regulations and measurements:

	
<p>Photo #1: SWT- Follow up the safety at SWT August 15 2013</p>	<p>Photo #2: SWT- Safety Arrangement March 31 2014</p>
	
<p>Photo #3: MDN- Safety arrangement prior to asphalt work for line M3-39. May 11 2014</p>	<p>Photo #4: MDN- Safety and traffic arrangement while working inside the water chambers. July 05 2014</p>
	
<p>Photo #5: URN -</p>	<p>Photo #6: URN-</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

<p>Photo showing safety arrangement. May 06 2014</p>	<p>IRD SECO holding a safety toolbox meeting. June 26 2014</p>
	
<p>Photo #7: AQR- Works of Excavation & Installing Posts of Safety Fence for Asira Al Qibliya Reservoir June 09 2013</p>	<p>Photo #8: AQR- Installation of Temporary Safety Fence at Asira Al Qibliya Reservoir June 16 2013</p>
	
<p>Photo #9: MDN- Safety arrangement along the trench. April 26 2014</p>	<p>Photo #10: AQN- Safety January 30 2014</p>
	
<p>Photo #11: MDR- Installation of the Safety fence at Madama Reservoir. June 23 2013</p>	<p>Photo #12: AQR- Temporary safety fence for Asira Al Qibliya Reservoir June 30 2013</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Photo #13: URR-
Installation of precast washout chamber and safety mini guards around.
February 13 2014

3.7 Traffic Plan

The Traffic Management Plan was proposed and put in conjunction with the Safety Plan, Method Statement and Construction Schedule of the Project. The traffic plan for P1-SWN Project was put in sequence in order to facilitate the traffic movements, and was linked to site. Working Segments, number of working crew and equipment that was used in the construction was based upon an approved time schedule and equipment list submittal. Warning signs, flagmen, and reflective chevron was implemented according to OSHA standards and as detailed in the traffic plan drawings and details. Each sign was written in English and Arabic languages.

The Traffic Management Plan submittal included control for the traffic flow and provided access for all local residents throughout the construction period which was passable for all roads, using the suitable traffic plan for each phase, in order to obtain a maximum efficiency of safety, output and meet the time frame set for this phase of the project.

The traffic plan for SWN Project was basically alienated into two approaches contingent on the construction work space needs:

The width of the road was inappropriate to narrow for one way passable traffic during construction and thus there were no traffic movement in the construction zone and was totally closed from both sides and a detour was provided from other internal roads. Traffic was controlled from both sides following the below traffic plan of the project; at least one flagman at each end of the zone, in addition to one flagman at the end of the road using walkie talkie as a handheld transceiver to communicate between each other's along with the needed traffic signs to direct the traffic.

The traffic plan for SWN Water Supply Project was divided into the following segments:

1- Segment No.1: Transmission Main (st.0+000 to 2+100) as it is a dirt road: totally closed.

2- Segment No.2: Transmission Main and Internal network in Madama (st.2+100 to 2+600): the work was implemented by providing 3m passable lane for traffic directed by two flagmen at both ends of the construction zone

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

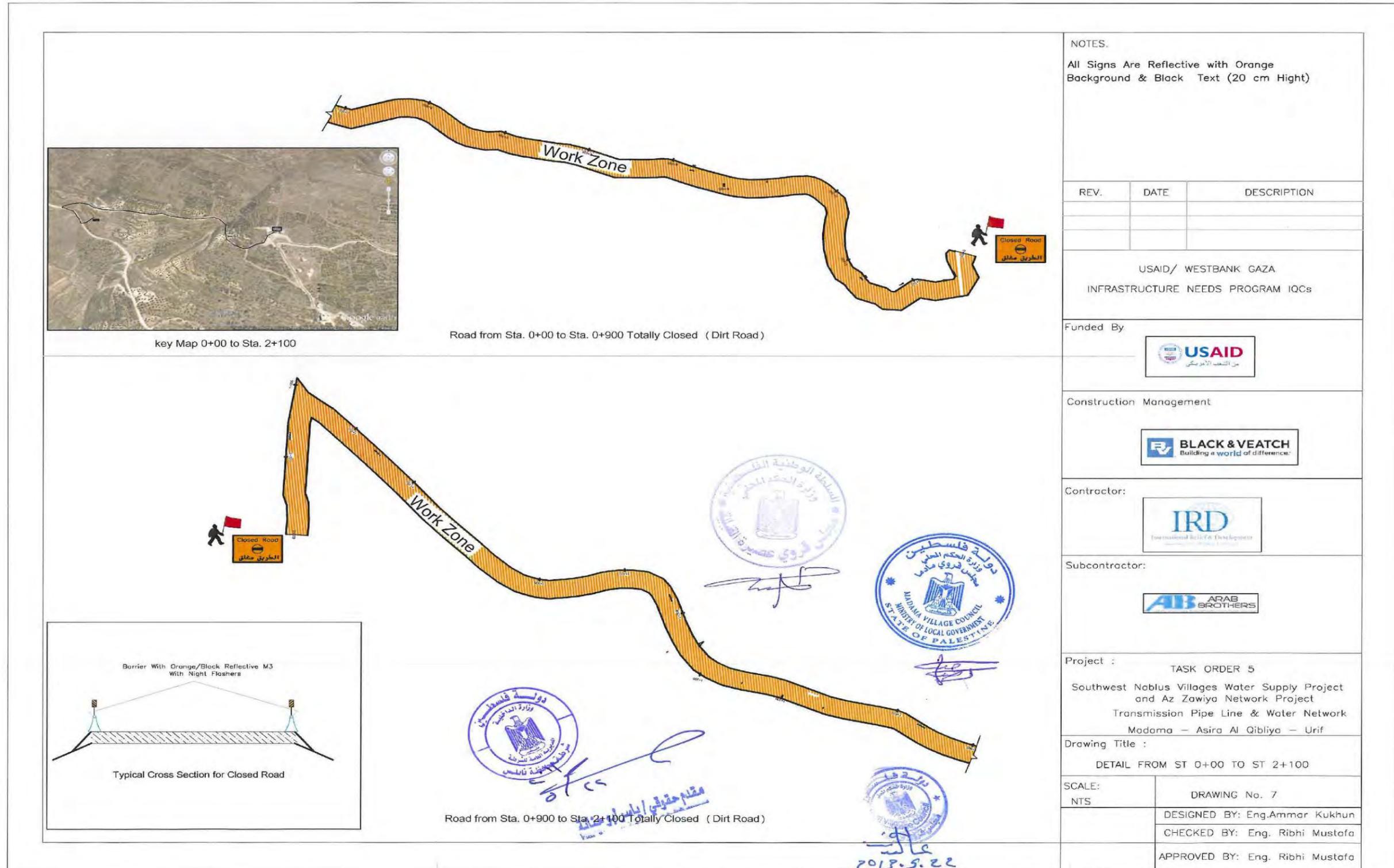
3- Segment No.3: Transmission Main and Internal network in Madama (st.2+600 to 2+850): the section is a dirt road and cross through the culvert and was totally closed during the construction.

4- Segment No.4: Transmission Main (st.2+850 to 8+689) and internal network in Madama, Asira Al Qibliyeh and Urif: the construction zone was totally closed, a detour was provided and all needed traffic signs and directional signs were provided.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Traffic Plan Sections Details:



NOTES:
All Signs Are Reflective with Orange Background & Black Text (20 cm High)

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By:



Construction Management:



Contractor:



Subcontractor:



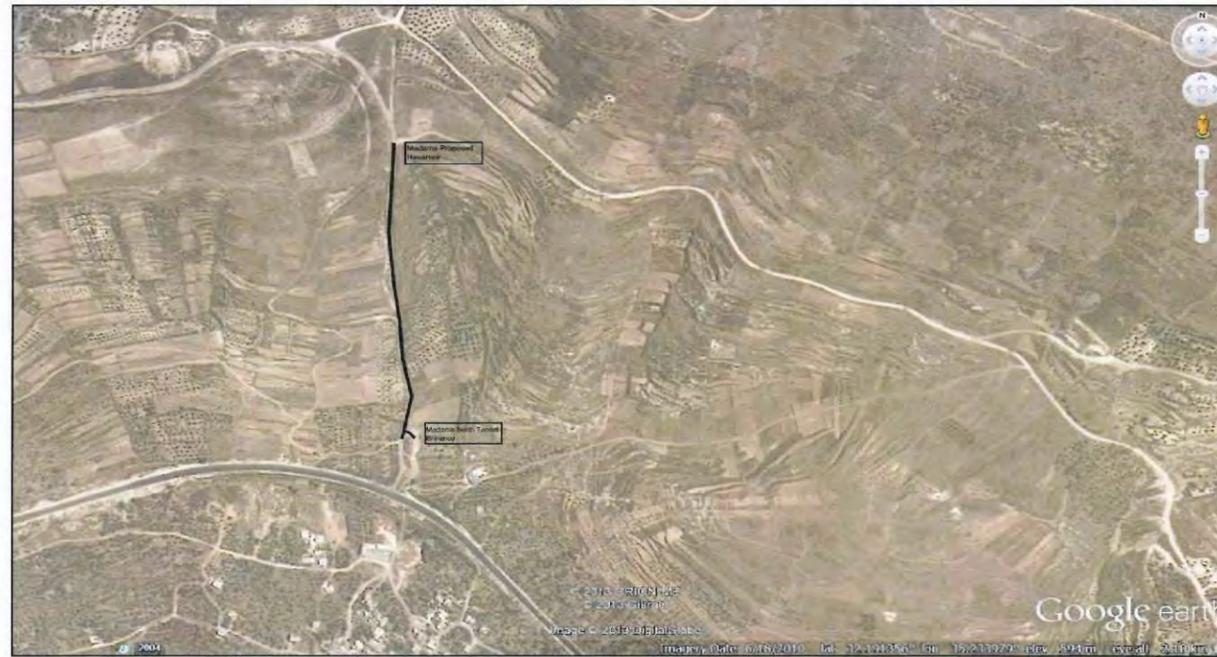
Project :
TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Transmission Pipe Line & Water Network
Madama – Asira Al Qibliya – Urif

Drawing Title :
DETAIL FROM ST 0+00 TO ST 2+100

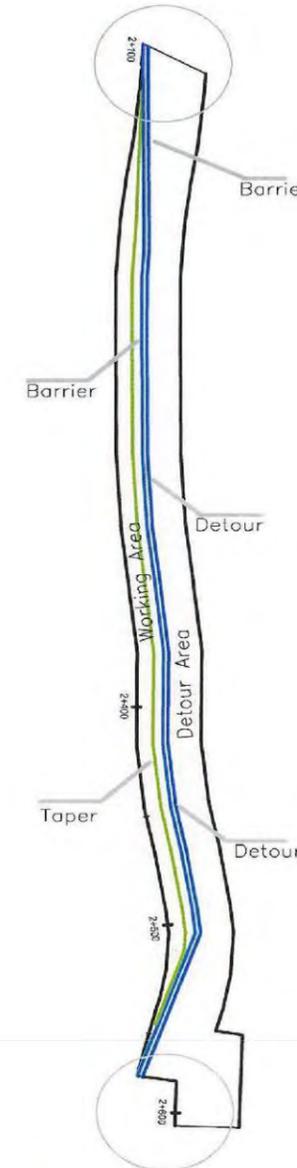
SCALE: NTS	DRAWING No. 7
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



key Map Sta. 2+100 to Sta. 2+600



Road from Sta. 2+100 to Sta. 2+600

NOTES.

All Signs Are Reflective with Orange Background & Black Text (20 cm High)

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By



Construction Management



Contractor:



Subcontractor:



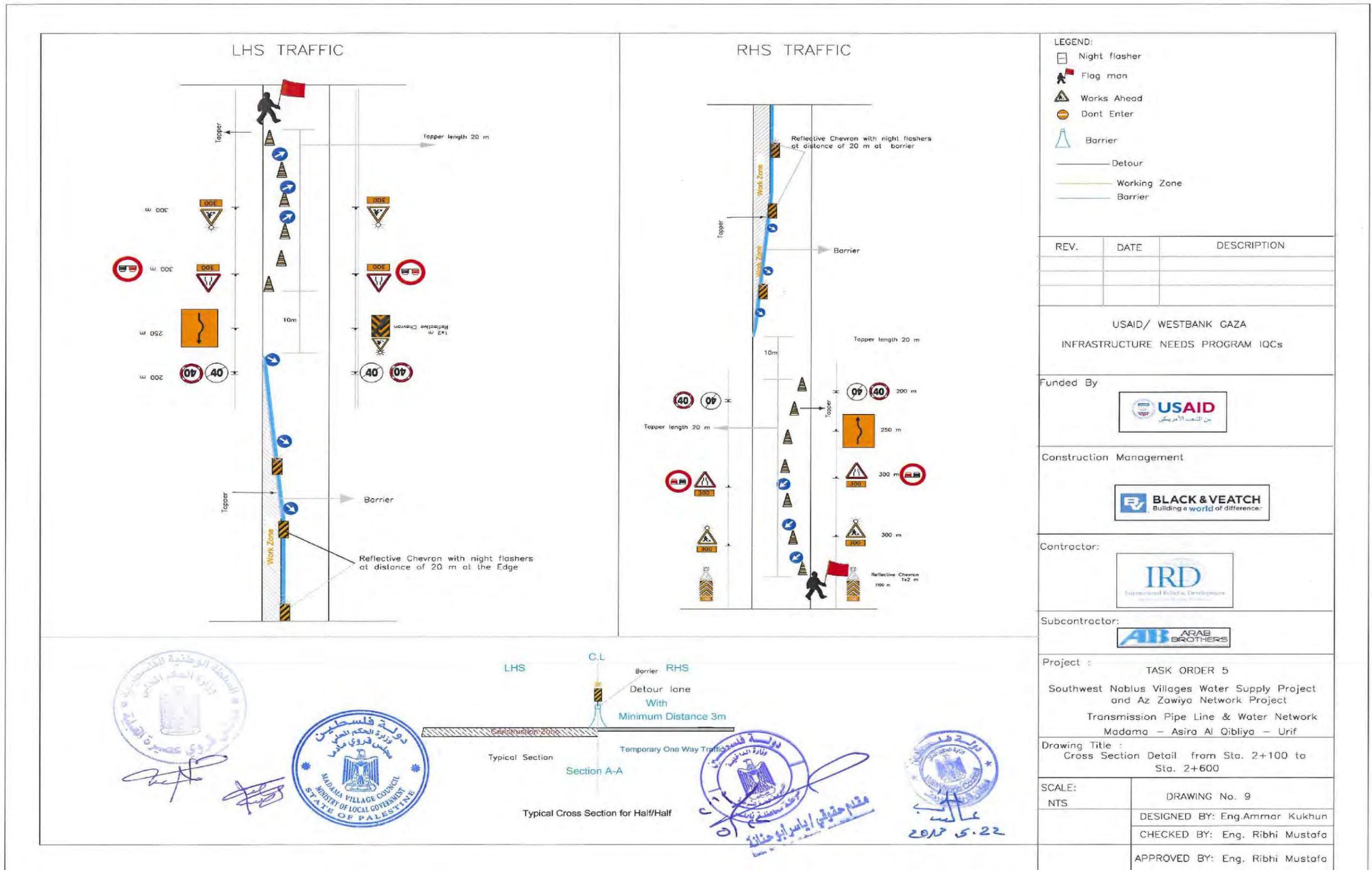
Project :
TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Transmission Pipe Line & Water Network
Madama – Asira Al Qibliya – Urif

Drawing Title :
DETAIL FROM ST 2+100 TO ST 2+600

SCALE:	DRAWING No. 8
NTS	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

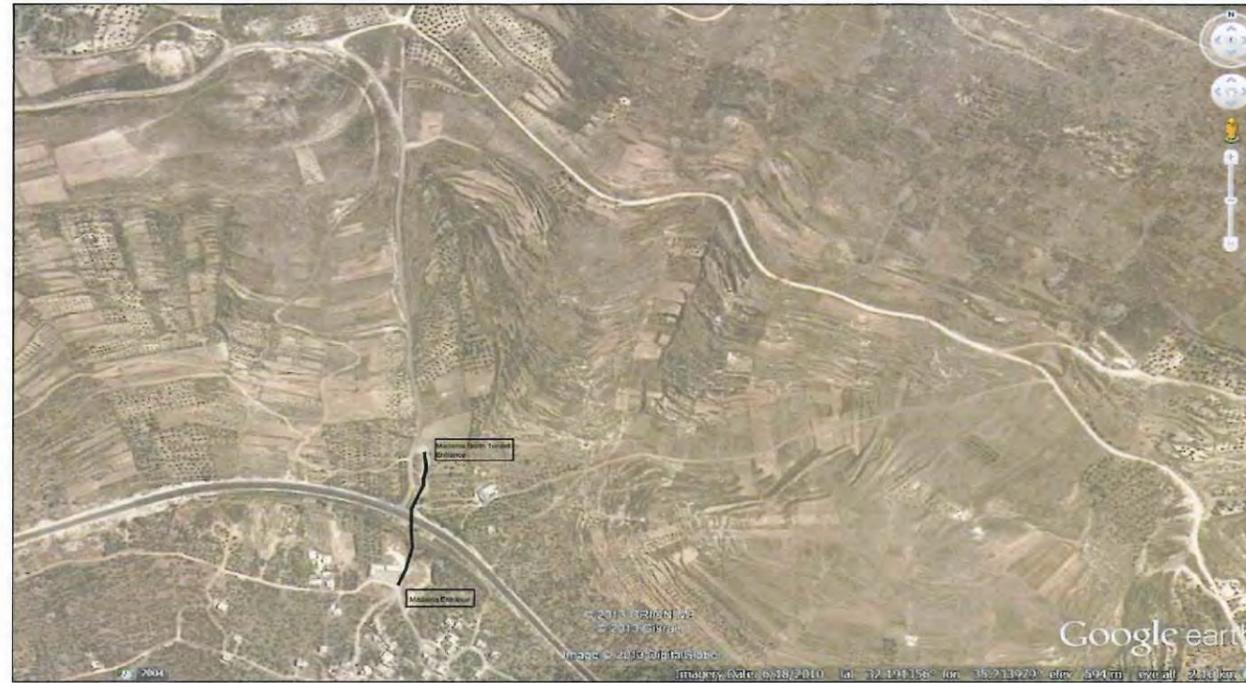
DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

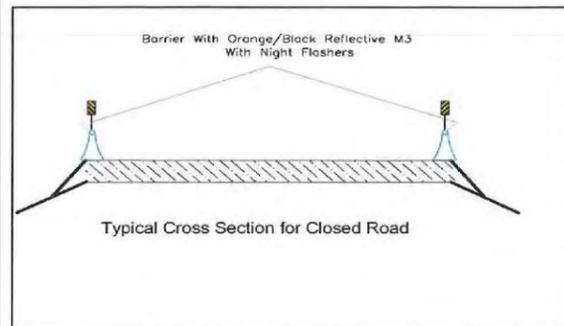


DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



key Map Sta. 2+100 to Sta. 2+600



NOTES:
All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By


Construction Management


Contractor:


Subcontractor:

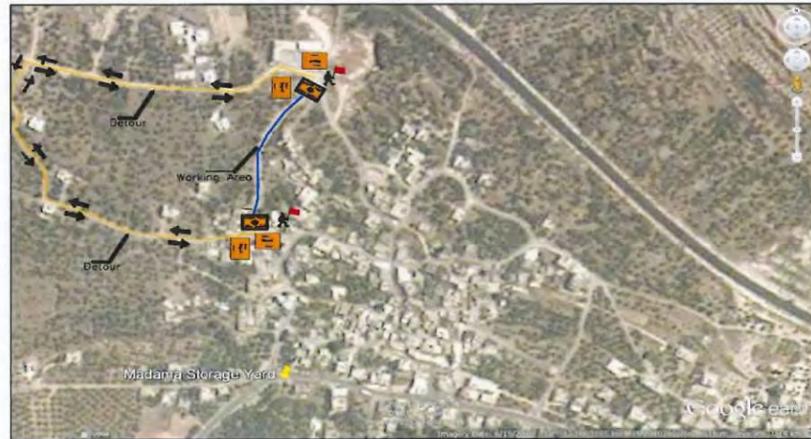

Project : TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Transmission Pipe Line & Water Network
Madama – Asira Al Qibliya – Urif

Drawing Title :
DETAIL FROM ST 2+600 TO ST 2+850

SCALE: NTS	DRAWING No. 10
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

DISCLAIMER:

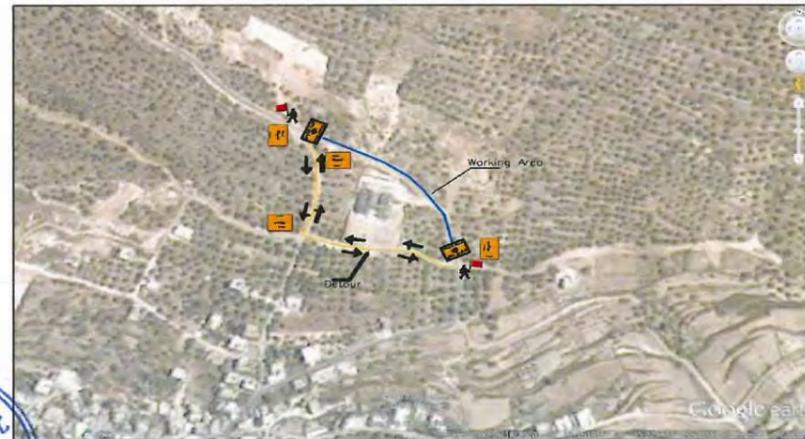
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Typical plan Detour Inside Madama Village
For Transmission Pipeline and Network



Typical plan Detour Inside Asira Qibliya Villiage
For Transmission Pipeline and Network



Typical plan Detour Inside Urif Village
For Transmission Pipeline and Network



NOTES:

All Signs Are Reflective with Orange Background & Black Text (20 cm High)

LEGEND:

-  Flag man
-  Detour
-  Working Zone

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By



Construction Management



Contractor:



Subcontractor:



Project :

TASK ORDER 5

Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Transmission Pipe Line & Water Network
Madama – Asira Al Qibliya – Urif

Drawing Title :
TYPICAL PLAN AND DETAIL FOR DETOUR
OF TRANSMISSION LINE AND NETWORKS

SCALE:

NTS

DRAWING No. 11

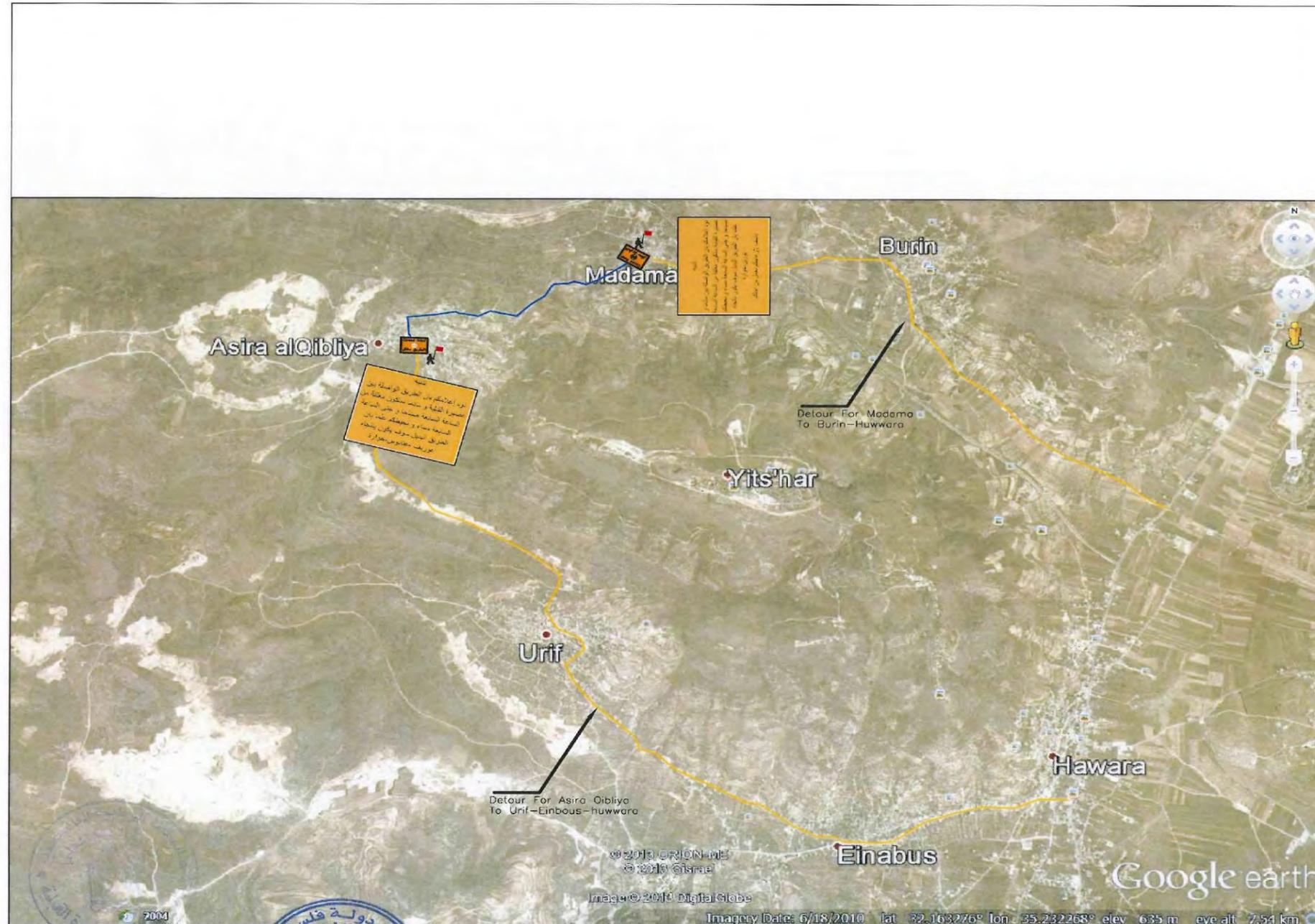
DESIGNED BY: Eng. Ammar Kukhun

CHECKED BY: Eng. Ribhi Mustafa

APPROVED BY: Eng. Ribhi Mustafa

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



NOTES:
All Signs Are Reflective with Orange Background & Black Text (20 cm High)

LEGEND:
 Flag man



REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IOCs

Funded By


Construction Management


Contractor:


Subcontractor:


Project :
TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Transmission Pipe Line & Water Network
Madama – Asira Al Qibliya – Urif

Drawing Title :
Detour Between Madama and Asira Qibliya Villages

SCALE:	DRAWING No. 12
NTS	DESIGNED BY: Eng. Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

© 2013 ORION-MS
© 2013 Google
Image © 2013 DigitalGlobe
Imagery Date: 6/18/2010 lat 32.163276° lon 35.232268° elev 635 m eye alt 7.54 km

دولة فلسطين
وزارة الحكم المحلي
مجلس قروي ماداما
MADAMA VILLAGE COUNCIL
MINISTRY OF LOCAL GOVERNMENT
STATE OF PALESTINE

دولة فلسطين
وزارة الحكم المحلي
مجلس قروي اسيرا
ASIRA VILLAGE COUNCIL
MINISTRY OF LOCAL GOVERNMENT
STATE OF PALESTINE

دولة فلسطين
وزارة الحكم المحلي
مجلس قروي عيراب
AIRAB VILLAGE COUNCIL
MINISTRY OF LOCAL GOVERNMENT
STATE OF PALESTINE

Main Road Between Madama and Asira Qibliya Villages Closed
With the Proposed Detour

2013-5-22

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



NOTES:
All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)

LEGEND:
 Flag man

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IOCs

Funded By

Construction Management

Contractor:

Subcontractor:

Project :
TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Transmission Pipe Line & Water Network
Madama – Asira Al Qibliya – Urif

Drawing Title :
Detour Between Madama and Asira Qibliya Villiages

SCALE: NTS	DRAWING No. 13
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

© 2013 ORION-NE © 2013 GIsrael
Image © 2013 DigitalGlobe
Imagery Date: 6/18/2010 lat 32.163276° lon 35.232268° elev 635 m eye alt 7.54 km

Main Road Between Asira Qibliya and Urif Villages Closed
With the Proposed Detour

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	Sign	Dimension	Description
1		80 cm	speed limit
2		90 cm	Road Narrows
3		80 cm	No Overtaking
4		90 cm	Works Ahead
5		80 cm	Arrow
6		20*80 cm	Reflective Chevron
7		90*90 cm	
8		75	Reflective cone
9		1*2 m	Reflective Chevron

NOTES:
 All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)
 The Barrier to be Continuous Along the Construction Area
 High Flashers With chevrons to be Provided over the barriers at Maximum Distance of 20 l.m.

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
 INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By


Construction Management


Contractor:


Subcontractor:


Project :
 TASK ORDER 5
 Southwest Nablus Villages Water Supply Project and Az Zawiya Network Project
 Transmission Pipe Line & Water Network
 Madama – Asira Al Qibliya – Urif

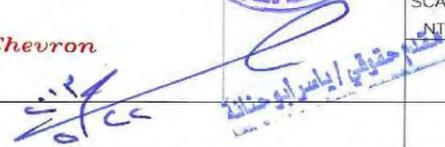
Drawing Title :
 Legend Key

SCALE:
 NTS
 DRAWING No. 14
 DESIGNED BY: Eng.Ammar Kukhun
 CHECKED BY: Eng. Ribhi Mustafa
 APPROVED BY: Eng. Ribhi Mustafa



2013.5.22





DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.8 Construction Risk Management

In the construction industry, risk management involves identifying risks, assessing them and then developing strategies to manage them. The level of risk in construction is due to the uniqueness of every project, the uncertainties introduced by the project stakeholders, regulatory protocols, and many other factors that are known unknown at the start of any project. For SWN Project, IRD engineers have undertaken a comprehensive risk management process using the methodology outlined below:

1. Risk Identification

IRD's project engineers performed a dilapidation survey in conjunction with the selected local subcontractor immediately before the subcontractor commenced their site work. Photographs and detailed journal records were taken as part of the survey for recording the pre-construction condition of properties adjoining the project site, which may be influenced by the subcontractor's work.

2. Risk Impact Assessment

For each risk identified, IRD assessed the risk event in terms of likelihood of occurrence and its impact on project objectives if the risk event occurs. Some construction site risks have to be accepted in order to have an opportunity to take advantage of their positive outcome.

3. Risk Response Planning

For each risk in the Risk Response Plan, the Project Manager (PM) determined the options and actions to reduce the likelihood or consequences of impact to the project's objectives. The PM described the actions taken to mitigate the risk and then had response/action taken when the risk event occurred (contingency plan). Finally, the PM assigned responsibilities for each agreed upon response.

4. Risk Response Tracking

The PM documented the dates and the actions taken to mitigate the risk and the actions taken when the risk event occurred (contingency plan). In addition to documenting the subsequent actions taken and incorporating this information into the Risk Response Plan

5. Monitor Risk

The PM established systematic reviews and scheduled them in the overall construction project schedule. These reviews were to ensure:

- All of the requirements of the Risk Management Plan are being implemented
- Assess currently defined risks
- Evaluate effectiveness of actions taken
- Status of actions to be taken
- Validate previous risk assessment
- Validate previous assumptions
- State new assumptions
- Identify new risks
- Risk Response Tracking
- Communications

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

6. Control Risk

- Take corrective action when actual events occur
- Assess the impact of the actions taken on the project
- Identify new risks resulting from risk mitigation actions
- Ensure the Project Plan (including the Risk Management Plan) was maintained
- Ensure change control addressed risks associated with the proposed change
- Revise Risk Response Plan
- Communications

The risk identification and mitigation for TO-05-SWN project are identified and explained in the approved submittal SUB-13-00005-SWN-013-A-Construction Risk management Plan for SWN Project.

3.9 Quality Control Program

The implemented water project complied with the contract requirements and specifications and throughout the construction period, the approved quality control plan / quality assurance manual was applied and every effort was made to assure compliance with the specifications and drawings. All construction activities were closely monitored to ensure that the plans and specifications of materials were properly identified and conformed to the contract specifications and drawings.

The QC program was managed by the QC Manager. QC Manager reported directly to the Program Director of IRD, Inc. The QC Manager coordinated and cooperated with the Site Project Managers, but had the required freedom to act independently.

The QC Manager was responsible for implementing the Quality Control Program, providing direction for the QC Staff, issuing nonconformance reports and stop work orders, preparing all submissions and reports that are required by the contract documents.

IRD used the various monitoring and reporting forms when conducting required tests. All suppliers were monitored and tested prior to acceptance.

There were two NCNs “Non-Compliance Notice” issued for Madama reservoir Project as follows:

On Oct. 30, 2013, NCR-13-00005-MDR-E-C-001 had been issued by the CMC for 28-Day Concrete Compressive Strength Test- MDR Side Walls (Second Stage). the 28-days compressive concrete strength results of Madama Reservoir walls (second stage) do not conform to the specifications requirements achieved about 26.6 MPa in lieu of 35 MPa,. The specification violated is 03300. Under the provisions of the contract specifications, the requirement is "concrete compressive strength test results at 28-days shall be more than 35 MPa. IRD was requested to submit official test results and a remedy plan for the defected parts.

On Oct. 31, 2013, IRD submitted a test report on concrete compressive strength prepared by Hijjawi Construction Labs, which included the recommendation, for the CMC review and comments in order to make the necessary arrangements with respect to safety and attendance of Hijjawi Labs Technicians to conduct the core tests. IRD conducted the core test as recommended by Hijjawi Laboratory; the test results met the specifications.

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Moreover, on November 13, 2013 IRD received Non Compliance Report # SWN-E-C-002 regarding Field Welding Radiography Testing with respect to the following points:-

- 1- Late Submission of the Radiography Testing Results/Reports.
- 2- Unsatisfactory Radiography Film quality due to unskilled technicians.
- 3- MOREX apology to continue RT services while leaving the project without RT testing agency.
- 4- Covering the 10% of RT testing for the weld joints.

IRD corrective actions were as follows:-

1-All pending Radiography Testing Results/Reports including the films were collected from MOREX by IRD for official submission to B&V.

2-IRD was in contact with MOREX to convince them to resume their services for conducting the RT test; meanwhile IRD communicated with ARC EYES LTD, GABI Shoef LTD & Reuven Etzioni to obtain their offers regarding conducting the RT tests.

3-IRD fulfilled the contract specification requirement with respect to conducting the RT test for 10% of the weld joints.

In Addition, On November 13, 2013, IRD received an email from the CMC notifying IRD of the following non-compliance violations:

1. Backfilling trenches with unsuitable excavated materials. (Backfilling took place at night shift).
2. Working at night without prior acceptance or proper safety measures (despite the engineer's verbal and written instructions in many occasions)
3. Pre-cast manholes: excavation not enough for installation, damage manhole walls, pipe inside manhole not in right position and pour safety measures.
4. Housekeeping at reservoirs, networks and transmission (NUC considered not closed). Remaining surplus materials mixed with base course materials – at all locations and prior restoration work base course layer should be re-evaluated and if found unsuitable should be removed.

IRD sent an email on the same day as a respond to the CMC email as follows:

- 1- Regarding the unsuitable backfilled material for the Line UR2-016, all the unsuitable material have been removed and backfilled with suitable base coarse material, moreover a random sample was taken on Nov.14, 2013 by the laboratory technician for quality assurance, in which BV Quality control manager witnessed the removal and backfilling the trench with the new suitable material; the sample complied to the specifications.
- 2- IRD acknowledged the delay in delivery of the backfilling materials in the last 10 days due to the shortage of the fuel problem within the West Bank which caused extending the working hours during the night time to backfill the opened trenches; IRD took an action by providing area's for stockpiles for initial inspection to be carried out as needed by the Laboratory technicians in the attendance of IRD & BV QCM's, in addition excavation was executed only for the available material onsite without relying on any delivery of materials, accordingly IRD

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

guarantees that no more work would take place during the night unless a full safety plan submitted with prior engineer's approval.

- 3- Regarding precast manholes IRD inspected the four installed manholes at Madama network, IRD assured any corrective action related to the level of the manhole or to the pipe inside the manhole was carried out immediately, moreover regarding filling the hole opened in one of the manholes, a method statement for repair was submitted for the engineer review and comments.
- 4- Regarding the NUC issued on October 23, 2013, IRD closed the NUC on October 27, 2013 and received the close out signed by BV on November 13, 2013, Moreover a full crew for cleaning and housekeeping for the entire project started to clean and remove all the surplus materials at the same day and continued to complete all the needed housekeeping for the entire project. Moreover, while executing reinstatement works for the segment of the transmission line (Asira –Urif) BV quality control manager requested some areas to be removed and replaced; IRD took an immediate action and replaced all the requested areas; IRD assured to continue on the same procedure for the entire project according to the site evaluation.

In total, there were 456 lab tests for different types of installed materials, some test submittals were rejected; samples were taken again and the materials were retested; all remaining tests passed and complied with technical specifications and QA/QC requirements. Regarding failed tests the following summarize failed tests, the reason behind failure and IRD's corrective measures taken:

August 2013: one concrete test was rejected, due to typographical error in dates, which was revised.

October 2013: one compressive strength concrete test failed, the reasons of the failure of the 28-days compressive strength test were not known but IRD enhanced the quality control methods to the concrete to be delivered to sites to avoid any possible quality issues. IRD took the below corrective measures to remedy the situation:-

1-Instructing BC Laboratory to conduct the necessary testing for the fine aggregates and the coarse aggregates through collecting samples from the stockpile at Beit Al Maqdes Concrete Batching Plant in the presence of B&V QE and IRD QCM to insure full compliance with the aggregates used in the Job Mix. Samples were collected on October 24, 2013 and the results showed compliance with the aggregates used in the Job Mix.

2-Monitoring of concrete activities during any concreting activity at the Concrete Batching and at site of work by B&V and IRQ QCMs and BC Technicians.

3-Consulting BC and Hijawi Laboratories for recommendations with respect to the appropriate methods of testing and repairs. Recommendations were to take cores in the hardened concrete in accordance with ACI Code 318-8.

4- Arrangement with BC technicians to take six cores from the hardened concrete on November 06, 2013.

5-Based on the results of the crushing tests for the cores of the hardened concrete, IRD in Coordination with BC submitted a method statement to B&V filling of the core holes.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

November 2013: one base course test failed, CMC comment for the failed Test-05-SWT-12-A-Base Course is:

1- Compaction test results at the station SWT 5+840 (97%) and station SWT 4+920 (97.1%) are not satisfactory. Compaction test results shall be 100% as per contract specifications, therefore for this segment; the contractor shall re-compact and retest base course prior to any asphaltting work. The base course along the failed section were remixed and re-compacted.

December 2013: one concrete test failed, IRD received SM-13-00005-MDR-E-C-019 dated December 19, 2013 concerning the 28-days compressive concrete strength test “TEST-05-MDR-22-A” results for foundation of the eastern and the western retaining walls at Madama Reservoir that show non-compliance with the project’s specification and requested a remedial plan. IRD contacted both BC and Hijjawi Laboratories for their recommendation and necessary corrective actions. Both recommended either the Hammer Test or the Core Tests, but the USAID COR and B&V rejected the Hammer Test and requested conducting the Core Tests. On Tuesday, December 31, 2013 BC technicians took four hard concrete cores in the presence of B&V QE; these cores were crushed in the presence of B&V and IRD QEs and results were submitted officially to B&V for their review.

April 2014: three base course tests failed, reasons beyond failure of the three base course tests was that compaction test results were not satisfactory (less than 100%); IRD took immediate action and requested the subcontractor to replace the base course and re-compact it then re-test the segment again.

May 2014: two base course tests failed, reasons beyond failure of the two base course tests was that compaction test results were not satisfactory (less than 100%); IRD took immediate action and requested the subcontractor to replace the base course, re-compact it then re-test the segment again.

July 2014: four base course tests, since laboratory compaction results were less than 100%; failed areas were reworked, retested and passed

August 2014: seven base course compaction tests failed since laboratory compaction results were less than 100%; failed area were reworked, retested and passed.

The following table and chart summarize the statistical status of the tests conducted for the various types of materials used for the project.

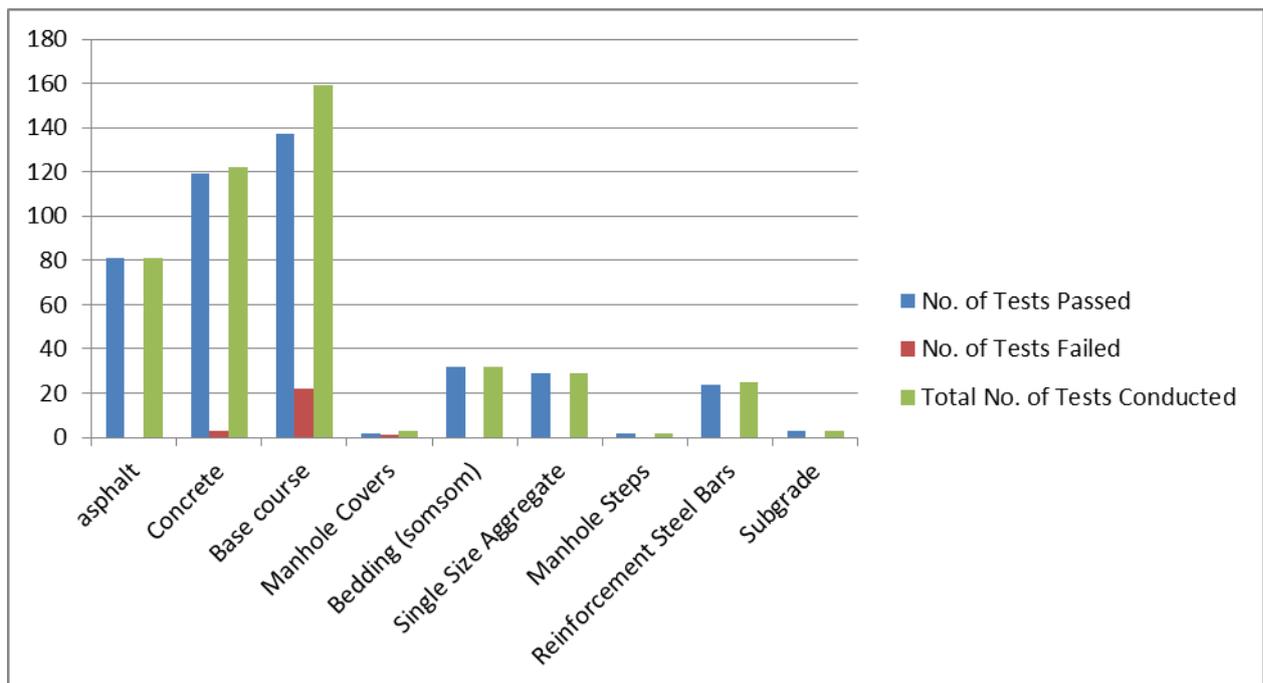
Type of Material Test	No. of Tests Passed	No. of Tests Failed	Total No. of Tests Conducted
asphalt	81	0	81
Concrete	119	3	122
Base course	137	22	159
Manhole Covers	2	1	3
Bedding (somsom)	32	0	32
Single Size Aggregate	29	0	29

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Type of Material Test	No. of Tests Passed	No. of Tests Failed	Total No. of Tests Conducted
Manhole Steps	2	0	2
Reinforcement Steel Bars	24	1	25
Subgrade	3	0	3
Total	430	26	456

Quality Control Testing Statistical Analysis



Please review Annex A.9: Project Laboratory Tests Log for further details.

The photographs below show examples of lab tests taken on site.



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	<p>water line. July 13 2014</p> 
<p>Photo #3:AQN- Conducting of hydrostatic pressure test. January 23 2014</p>	<p>Photo #4: AQN- Flushing of the line in preparation for hydrostatic pressure test. February 26 2014</p>
	
<p>Photo #5: AQN- Conducting pressure and flushing tests along line (A2-22). April 10 2014</p>	<p>Photo #6: AQN- Monitoring of flushing test along line (A3-07). May 08 2014</p>
	
<p>Photo #7:URN- MOREX technician preparing for RT test in Madama storage yard.</p>	<p>Photo #8:URN- Conducting of hydrostatic pressure test. February 12 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

February 11 2014	
	
<p>Photo #9: URN- Flushing of the line in preparation for hydrostatic pressure test. March 24 2014</p>	<p>Photo #10: URN- Testing laboratory (Building Center) technician collecting sample from compacted base course layer. May 31 2014</p>
	
<p>Photo #11: MDR- Pit excavation for taking sample for bearing capacity test at Madama Reservoir June 25 2013</p>	<p>Photo #12: MDR- Checking the water level inside the reservoir for water tightness testing. May 06 2014</p>
	
<p>Photo #13: AQR- Testing laboratory (Building Center) technician taking cubes from the delivered concrete for laboratory testing. May 14 2014</p>	<p>Photo #14: AQR- Checking the water level inside the reservoir for water tightness testing. May 18 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo #15: AQN- Holiday Test for 2” –AQN October 03 2013</p>	<p>Photo #16: AQN- Testing laboratory (Building Center) technician collecting sample from compacted base course layer. May 31 2014</p>
	
<p>Photo #17: AQN- Conducting flushing test along line (A2-06-03). April 09 2014</p>	<p>Photo #18:URN- MOREX technician preparing for RT test. February 27 2014</p>
	
<p>Photo #19: MDR- B&V and IRD conducted qualification welding test at Madama June 18 2013</p>	<p>Photo #20: MDR- Checking the water level inside the reservoir for water tightness testing. May 12 2014</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.10 Site Facilities

In accordance with the contract requirements, IRD furnished and equipped the office for CMC/B&V use throughout the contract period of performance, and was responsible for all utility costs imposed on the CMC/ B&V office. IRD selected to rent an existing structure of 170 m² for the use of the CMC as a primary field office and supplied the office with needed furniture, telecommunications and equipment. The selected facility was suitable for long-term use, and was verified to conform to applicable plumbing, electrical and structural codes in effect. The primary office was located in Nablus; Huwara Main Road at the following coordinates:

32° 8'56.17"N, 35° 15'27.71"E, 487 Elev.

The following table provides a summary of the layout of the Engineer's Primary field office:

No.	Item	Specification Requirement	Actual for Proposed Office
1	Office Area	At least 134 square meters.	Approx. 170 square meters.
2	Conference room	1	1 (minimum 27 sq. m)
3	Reception and file area	1 (30 sq. m)	1 (21 sq. m)
4	Office	3 Offices	4 Offices
5	Kitchen	1	2
6	Bathrooms	2	2
7	Storage Room	1	1

IRD offices: IRD also rented a suitable office to accommodate IRD's project staff. The following map shows the CMC/ B&V and IRD office locations & Emergency locations for SWN Project:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CMC and IRD Office and Emergency locations for SWN Project:



3.11 Communication and Correspondence

Throughout the project duration, IRD maintained excellent communications with USAID, CMC/B&V and local community to maximize project benefits.

In the early phases of the project's implementation IRD's public relations specialist promoted the project and established good relations with the local communities. This was achieved through the delivered flyers and regular contact with the inhabitants. The flyers were prepared in cooperation with CMC/B&V and approved by USAID.

The following flyer was distributed for TO-05-SWN

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



النشاط في تسارع



يتمويل من الوكالة الأمريكية للتنمية الدولية (USAID) وبالتعاون مع سلطة المياه الفلسطينية، تتم هذه الأيام أعمال إنمائية تهدف إلى تزويد قرى جنوب غرب نابلس بمياه الشرب. تشمل أعمال الإنشاء تركيب خط ناقل بطول 10.2 كم يبدأ من خزان بورين لينتقل الى قرى مادما ثم عصيرة القبلية و ينتهي في قرية عوريف، بالإضافة إلى إنشاء شبكات مياه في القرى المذكورة بطول 41.6 كم ومن ثم إعادة المناطق التي استكمل العمل فيها إلى وضعها الطبيعي

سيعمل هذا المشروع على توفير مياه الشرب بشكل دائم لما يزيد عن 9,200 مواطن فلسطيني في المناطق المذكورة لدى الإنتهاء من تنفيذه المتوقع في شهر تموز 2014.

يتم تنفيذ المشروع من خلال مؤسسة الإغاثة والتنمية الدولية (IRD) وبإشراف من شركة بلاك أند فيتش.

نأسف لأي ازعاج قد تتعرضون له أثناء تنفيذ المشروع، فنحن نعمل لخدمتكم.



إذا كانت لديكم أية استفسارات يرجى الإتصال مع وزارة الأشغال العامة والإسكان الفلسطينية.

مع الإحترام،،

الوكالة الأمريكية للتنمية الدولية (USAID)
برنامج البنية التحتية

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

After the completion of the project, a permanent project sign was installed in a visible location to promote the project, and inform the public that the project is funded by the American People. Seven permanent signs were installed for SWT, AQN, MDN, URN, AQR, MDR and URR:

	
<p>SWT permanent Sign</p>	<p>MDN permanent sign</p>
	
<p>AQN permanent sign</p>	<p>URN permanent sign</p>
	
<p>AQR permanent sign</p>	<p>MDR permanent sign</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



URR permanent sign

Daily communication on the site between IRD staff and CMC/B&V RE were conducted through the daily joint construction reports, site instructions and other site communication documents.

3.12 Coordination

IRD had coordinated closely with all concerned parties and held regular meetings with CMC/B&V engineers and staff from the local Village Councils. IRD exerted all efforts in order to ease the construction burden to the surrounding people and worked diligently to open access roads and “smooth” areas for community use. IRD also maintained very close coordination with the PWA and DCL offices during the project implementation.

DCL Coordination

Throughout the duration of the project, IRD maintained regular relations and communications with the District Civilian Liaisons (DCL).

The following table summarizes the meetings held with the DCL during the project implementation:

Date	Attendees	Subject/Description
May 06, 2013	Nablus DCL, IRD	General meeting, briefing about the Project Scope of Work.
April 25, 2013	Nablus DCL, IRD	General meeting, briefing about the Project Scope of Work.
May 21, 2013	Nablus DCL, IRD	Discussing the new traffic control plan.
May 23, 2013	Nablus DCL, IRD	Following up meeting.
May 26, 2013	Nablus DCL, IRD	Inquiries from DCL regarding the project drawings, schedule, guards.
May 28, 2013	Nablus DCL, IRD	Inquiries from DCL regarding the project drawings, schedule, guards.

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
June 03, 2013	Nablus DCL	Calling Nablus DCL commander regarding Israeli settlers disturbing Asira reservoir site location.
June 04, 2013	Nablus DCL	Calling Nablus DCL commander regarding Israeli settlers disturbing Asira reservoir site location and causing damage to the project signs.
June 05, 2013	Nablus DCL	Calling Nablus DCL commander and updating him about the situation in Asira reservoir site location.
June 09, 2013	Nablus DCL	Calling Nablus DCL commander and updating him about the situation at Asira reservoir site location.
June 10, 2013	Nablus DCL	Calling Nablus DCL commander regarding Israeli settlers' trials to obstruct and hinder site construction works.
June 11, 2013	Nablus DCL	Calling Nablus DCL commander regarding Israeli settlers' trials to damage the site fence poles.
June 12, 2013	Nablus DCL & IRD	Progress meeting with Nablus DCL commander to update him about caravan and sanitary facilities installation at Asira Reservoir site.
June 13, 2013	Black & Veatch & IRD	Construction progress meeting at Huwara office.
June 16, 2013	Nablus DCL	Calling Nablus DCL commander regarding Israeli settlers' trials to obstruct and hinder site construction works.
June 18, 2013	Nablus DCL	Calling Nablus DCL commander regarding Israeli settlers' trials to obstruct, hinder site construction by burning the Caravan at Asira reservoir.
June 20, 2013	USAID, Black & Veatch & IRD	Construction progress meeting at Huwara office.
June 20, 2013	Nablus DCL & IRD	Meeting with the Israeli police at Nablus DCL and submitting a claim letter regarding Israeli settlers' several attacks to Asira site location.
June 25, 2013	Nablus DCL	Following up Urif situation with Nablus DCL commander; IRD took official permission to start work at Urif Reservoir.
June 26, 2013	Nablus DCL	Following up Israeli settlers' trials to write racism statements on the caravan, coordination took place and soldiers came to Asira reservoir site and removed the written racism words.
June 27, 2013	Nablus DCL	Meeting with Nablus DCL to update them about Israeli settlers' trials to hamper construction progress and submitting a video that shows the Israeli settlers racism actions.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
July 1, 2013	Nablus DCL	Coordination with Nablus DCL regarding the Israeli settlers at Asira Reservoir
July 2, 2013	Nablus DCL	Site visit with Nablus DCL Commander and Black & Veatch. Meeting with Nablus DCL and Black & Veatch Coordination for moving pipes from Hebron to SWN storage yard. Coordination regarding the Israeli settlers at Asira Reservoir site.
July 3, 2013	Nablus DCL	Coordination regarding the settlers attacks at Urif Reservoir site.
July 7, 2013	Nablus DCL	Meeting with Nablus DCL regarding the incident at Urif, meeting with the sub-contractor to install cameras, guard and alarm system in both sites (Asira and Urif)
July 8, 2013	Site visit	Site visit to Urif to locate the cameras
July 17, 2013	Nablus DCL	Coordination with Nablus DCL regarding Israeli settlers at Asira site
July 21, 2013	Site visit	Site visit to SWN; Israeli settlers came down to Asira site and wrote racism statements on the caravan
July 22, 2013	Nablus DCL	Coordination with Nablus DCL regarding Israeli settlers racism words; soldiers came immediately & removed the racism words.
July 22, 2013	Nablus DCL	Coordination with Nablus DCL regarding settlers coming down to the site and throwing stones on the workers and the JCB (no injuries or damages)
July 24, 2013	Nablus DCL	Coordination with Nablus DCL regarding settlers coming down to the site and causing damage to the locks
July 24, 2013	Nablus Israeli Police	Requesting a claim to the Israeli police regarding the Israeli settlers incidents at the sites
July 25, 2013	Nablus DCL	Coordination with Nablus DCL regarding settlers coming down to the site (no damages)
July 25, 2013	Nablus Israeli Police	Meeting with the Israeli police at Nablus DCL, and explaining all incidents that took place at Asira and Urif.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
July 29, 2013	Nablus DCL	Coordination with Nablus DCL regarding settlers coming down to the site (no damages)
July 30, 2013	Israeli Police	Site visit to Asira with the Israeli Police, briefing them about the settlers` attacks.
July 31, 2013	Nablus DCL	Settlers came down to the site in the morning time (calling the DCL), no damages In the afternoon settlers came again to the site and caused damage to the concrete works
August 1, 2013	Nablus DCL	Coordination with Nablus DCL regarding the settlers at Asira reservoir
August 4, 2013	Nablus Israeli Police	Claim request was sent to Nablus Israeli police regarding the damages caused by settlers
August 3, 2013	Nablus DCL	Coordination regarding the settlers attacks at Urif reservoir site.
August 11, 2013	Nablus DCL	Coordination with Nablus DCL regarding the settlers at Asira reservoir
August 12, 2013	Nablus DCL	Coordination with Nablus DCL regarding the racism statements on the caravan at Asira reservoir
August 20, 2013	Nablus DCL	Coordination with Nablus DCL regarding the damages caused by the settlers at Asira reservoir
August 21, 2013	Site visit	Site visit with the camera technician to show him the installation location
August 25, 2013	Nablus Israeli Police	Meeting with Nablus Israeli police for camera installation clarification
August 28, 2013	Site visit	Site visit to Asira and Urif reservoir and follow up the cameras installation

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
September 12, 2013	Nablu DCL	Coordination with Nablu DCL regarding Israeli settlers coming down to Asira reservoir
September 13, 2013	Nablu DCL	Coordination with Nablu DCL regarding Israeli settlers coming down to Asira reservoir (no damages were reported)
September 15, 2013	Nablu DCL	Coordination with Nablu DCL regarding Israeli settlers coming down to Asira reservoir followed by soldiers (no damages were reported)
September 16, 2013	Nablu DCL	Coordination with Nablu DCL regarding Israeli settlers coming down to Asira reservoir (no damages were reported)
September 17, 2013	Nablu DCL & Nablu Israeli Police	Sending a CD to Nablu DCL and Nablu Israeli Police showing the settlers writing on Asira reservoir on the 12 th of September, 2013.
September 18, 2013	Urif school	Conducting a meeting with teachers and principal of Urif school, to discuss the Israeli settlers' existence in Urif project and explaining to them the status of construction works of the project in addition to urging them to aware the school students not to contact with the settlers neither the soldiers.
September 21, 2013	Nablu DCL	Coordination with Nablu DCL regarding Israeli soldiers disturbing the site staff.
September 22, 2013	Nablu DCL	Coordination with Nablu DCL regarding clashes that took place between the Israeli soldiers and Urif school students in addition to evacuating Urif reservoir site.
September 22, 2013	Nablu DCL	Coordination with Nablu DCL commander regarding Israeli soldiers disturbing the site staff.
September 23, 2013	Site visit	Site visit to Madama, Asira and Urif projects. Settlers came down to Urif and the soldiers moved them back immediately.
September 24, 2013	Clashes at Urif	Coordination with Nablu DCL regarding clashes that took place between the Israeli soldiers and Urif school students in addition to evacuating Urif reservoir site.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
September 25, 2013	Urif reservoir	Site visit to Urif reservoir to control Israeli settlers clash with Urif school students
September 26, 2013	Urif school, Israeli Settlers	Site visit to Urif reservoir to control Israeli settlers clash with Urif school students and conducting another meeting in Urif school. Settlers came down to Urif and the soldiers moved them back immediately.
October 1, 2013	Madama, Asira and Urif projects	Site visit to Madama, Asira and Urif projects with B&V representatives
October 1, 2013	Urif Palestinian Police	Meeting with Urif Palestinian Police regarding avoiding clashes that may take place between the Israeli soldiers and Urif school students in
October 3, 2013	Madama, Asira and Urif projects	Site visit to Madama, Asira and Urif projects with USAID representatives
October 5, 2013	Nablus DCL	Coordination with Nablus DCL; the Israeli soldiers did not let the workers work at Asira reservoir.
October 9, 2013	Nablus DCL	Coordination with Nablus DCL to relocate the caravan at Asira reservoir
October 10, 2013	site visit to Asira reservoir	Site visit with Nablus DCL commanders, asking for more lights and caravan preparation.
October 11, 2013	Nablus DCL	Coordination with Nablus DCL regarding settlers coming down to Asira Reservoir
October 12, 2013	Asira reservoir	Follow up if there are any damages caused by the settlers; no damages were reported
October 13, 2013	Urif reservoir	Installing a gate in Urif reservoir
November 14, 2013	Nablus DCL	Coordination with Nablus DCL; settlers came down to Asira reservoir

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
November 18, 2013	SWT Project	Site visit with USAID to Asira, Urif and Madama reservoirs and networks
December 19, 2013	Site visit (TO-05-SWN)	Site visit to SWN sites
December 22, 2013	Nablus DCL	Coordination with Nablus DCL to work at Madama road
December 22, 2013	Ephraym DCL	Meeting with the new commander and explaining to him the project status
December 23, 2013	Nablus DCL	Follow up the coordination with Nablus DCL regarding Madama road
June 01, 03, 05 and 23, 2014	Site visit/SWN/ IRD security coordinator	Site visit
February 3, 2014	Site visit-SWT site	Site visit with Morex staff company
February 6, 2014	Phone call with Nablus DCL and Palestinian Police	Calling Nablus DCL and the Palestinian Police regarding problems at Urif reservoir between Urif school kids and Israeli soldiers
February 11, 2014	Site visit-SWT site	Site visit with Morex staff
February 23, 2014	Site visit-SWT site	Site visit with Morex staff
February 27, 2014	Site visit-SWT site	Escort Morex staff to the site
March 5, 2014	Nablus DCL/IRD Security Coordinator	Coordination with Nablus DCL regarding the military operation at Madama and Asira

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
March 6, 2014	Site visit to SWN project/IRD Security Coordinator	Follow up the coordination with Nablus DCL with the military existing in the area
March 18, 2014	Site visit to SWN project/IRD Security Coordinator	Site visit to SWN project
March 19, 2014	Site visit to SWN project/IRD Security Coordinator	Site visit to SWN project
March 20, 2014	Site visit to SWN project/IRD Security Coordinator & Morex representative	Escort Morex staff to the site
March 24, 2014	Site visit /IRD Security Coordinator	Site visit to the sites and checkpoints in the sites area, coordination with Nablus DCL to facilitate movement between the sites
March 24, 2014	Nablus DCL/IRD Security Coordinator, Nablus DCL representative	Meeting with Nablus DCL, explaining to them the situation at the site and talking about the checkpoints.
March 25, 2014	Nablus DCL/IRD Security Coordinator	Sending a staff list to the DCL to facilitate the movement between the sites.
April 1, 2014	Nablus DCL/IRD Security Coordinator	Calling Nablus DCL regarding settlers at Madama reservoir (no incidents or damages reported)
April 2, 2014	Site visit to Madama reservoir /IRD Security Coordinator	Site visit to Madama reservoir and the other reservoirs
April 3, 2014	Nablus DCL/IRD Security Coordinator	Coordination with Nablus DCL regarding checkpoints at the site
April 8, 2014	Site visit to SWN project /IRD Security Coordinator	Escort Morex staff to the site
April 9, 2014	Nablus DCL/IRD Security Coordinator	Coordination with Nablus DCL to cut the road near Madama

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
April 20, 2014	Site visit to SWN project /IRD Security Coordinator	Site visit to the project
April 22, 2014	Site visit to SWN project /IRD Security Coordinator	Escort morex staff to the site
April 27, 2014	Nablu DCL/IRD Security Coordinator	Meeting with Nablu DCL, update them about the progress of SWN Project
May 14, 2014	SWN project village councils/IRD security coordinator, SWN local council	Visit to the local councils, updating them about the projects work progress.
May 15, 2014	Site visit/SWN/ IRD security coordinator, Morex	Escort Morex staff to the site
May 20, 2014	Nablu DCL/ IRD security coordinator, Nablu DCL	Coordination with Nablu DCL regarding works at Madama entrance
June 01, 03, 05 and 23, 2014	Site visit/SWN/ IRD security coordinator	Site visit

3.13 Site Visits

During the construction period, there were many different visitors, including:

- **USAID:** Numerous USAID visits had been conducted during construction; this included management, engineering, contracts and administrative staff.
- **Local Authorities:** During construction, IRD coordinated regularly with Southwest Nablu villages' councils.
- **PWA:** Numerous visits had been conducted during construction in order to follow up the progress and help coordinate the efforts of all involved parties.
- **CMC/B&V main Office:** Regular visits from the CMC/B&V main office had been conducted to follow up and check progress and coordination efforts.

Site Visit Photos:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Photo #1: SWT-
 Photo during the initial walkthrough
 August 19 2014



Photo #2: MDN-
 USAID COR inspecting the installed
 prepaid water meter enclosure.
 June 02 2014



Photo #3: MDN-
 Photo during the initial walkthrough
 August 19 2014



Photo #4: MDN-
 USAID COR inspecting the water in
 network at Madama village.
 August 19 2014



Photo #5: AQN-
 USAID COR inspecting the asphalted
 yard near the mosque June 17 2014



Photo #6: URN-
 USAID COR inspecting the water
 chambers in Urif village.
 August 19 2014

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Photo #7: MDR-
Photo during the site visit of the COR and
IRD COP to MDR.
February 24 2014



Photo #8: AQR-
USAID COR listening to the head of
Asira Al Qibliya village council.
May 13 2014



Photo #9: AQR-
USAID COR listening to the head of
Asira Al Qibliya village council.
June 17 2014



Photo #10: AQR-
USAID COR and CMC visiting AQR.
August 5 2014



Photo #11: AQR-
USAID COR inspecting the RTU and
PLC panel in Asira reservoir. August 19
2014



Photo #12: AQR-
USAID Mission Director, Nablus
Governor, Chairman of PWA and Heads
of villages' councils at the project
opening ceremony.
September 09 2014

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

		
<p>Photo #13: AQR- USAID Mission Director making a speech to the attendance at the project opening ceremony September 09 2014</p>	<p>Photo #14: URR- COR visiting Urif reservoir site. July 10 2014</p>	<p>Photo #15: URR- USAID COR inspecting the fittings and valves inside the inlet-outlet connection chamber in Urif reservoir. August 19 2014</p>
		
<p>Photo #16: MDN- The USAID COR inspecting the inlet and outlet chamber in URR at the project final handing over & walkthrough August 05 2014</p>	<p>Photo #17: AQN- USAID COR inspecting the asphalt near Burin Reservoir at the project final handing over & walkthrough September 22 2014</p>	

For more details, please see Annex A.4: Project Site Visit Log and Site Visit Photos.

3.14 Operation, Maintenance, testing, commissioning and Training

Training: training in Southwest Nablus Project had been conducted as the following:

- 1- Training for Prepaid Water Meters PPWM was conducted by Technical Company for Electrical Engineering on Wednesday August 13, 2014 as per the approved submittal: SUB-05-SWN-409-B. The training took place at Al Qibliya Village Council; classroom field trainings were conducted by the relevant specialists on the same day for 6 hours of duration; training topics included:

- Pre-payment system overview
- Pre-payment water meter parts and function
- Settings and system definitions

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- Pre-payment water meter display and messages
- Authority cards types and function
- Pre-payment water meter field trouble shooting
- Tariff, address definitions, new subscriber adding, lost card operation, broken card operation, customer claims, payback operation, Authority cards preparation
- Reporting System



Mr. Islam Shadeed of Technical Company for Electrical Engineering conducting the PPWMs Training at Asira Al Qibliya Village Council

- 2- Training for Bermad valves was conducted by Afif Hawash; Bermad representative on August 17, 2014. The training took place at Asira Al Qibliya Village Council; classroom field trainings were conducted by the relevant specialists on the same day for 6 hours of duration; training topics included:
 - Control valves overview
 - Dismantling and installation process
 - Valves calibration and commissioning
 - Valves preventive maintenance and needed spare parts
 - Valves troubleshooting and solutions
- 3- Training for instrumentation PLC/ RTU was conducted by ICS/ Akram Salah staff on Wednesday September 03, 2014 as per the approved submittal: SUB-05-SWN-427-A. The training took place in Asira Al Qibliya Village Council; classroom field trainings were conducted by the relevant specialists on the same day for 6 hours of duration; training topics included:
 - The RTU panel components.
 - The electrical drawings.
 - The functionality of the system.
 - Operating of the system.
 - Human machine interface HMI.
 - SMS control and monitoring system.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Mr. Mohammad Demeri conducting instrumentation training at Asira Al Qibliya Village Council

Testing & Commissioning:

- Testing & commissioning started on August 25, 2014; first step of testing and commissioning started by filling Burin reservoir with water and discharging the water to the transmission pipeline. The altitude valve, the two electromagnetic water meters near Burin reservoir and the electromagnetic water meter in Asira Al Qibliya were checked and found in order. Two mechanical water meters, the first of 2” size in Burin and the second of 6” size in Urif were found out of order and were replaced.
- The second step was filling of the three reservoirs with water. The float and level control valves were checked and monitored in addition to monitoring of the water meters inside the inlet and outlet chambers. Minor programming issues were encountered and were resolved immediately by the instrumentation specialist.
- The third step was filling of the networks from the water in the reservoirs and then monitoring the installed eleven pressure reducing valves and the installed prepaid water meters. Minor problems were encountered due to programming issues and were resolved by supplier specialist. Village council’s technicians participated and were involved in the monitoring of the installed prepaid water meters during the testing and commissioning period.
- The fourth step was carrying on supervision and monitoring of the whole water system up to completion of the 30 days of testing and commissioning.

In general, testing and commission activities went smoothly and the relevant specialists resolved all encountered minor problems in due course. Fully functional system was delivered to PWA. Total pumped water during testing and commissioning period was 6002 cubic meters of which was distributed to the three reservoirs as follows:-

- MDR: 2462 cubic meters.

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- AQR: 1793 cubic meters.
- URR: 1747 cubic meters.

Connecting SWN RTUs to WBWD SCADA

There are two options for connecting the RTUs of SWN reservoirs to enable the main SCADA in the WBWD in Ramallah to monitor and control the entire reservoir parameters.

Option #1: installing an OPC server (software) at the SCADA server and make the required integration. The following modification will be necessary to make the system operational:

- 1- Configuration and upgrading the RTU Program.
- 2- Installing GSM/GPRS modem at the SCADA center to communicate with the RTUs.
- 3- Installing the OPC server at the WBWD SCADA server.
- 4- Integration between the OPC and the SCADA system.
- 5- Upgrading the SCADA system to display the reservoirs data and the set points.

Option#2: installing new Radio RTU at each reservoir and make the required integration. The following modification will be necessary to make the system operational:

- 1- Installing Radio RTU (ACE 6240) at each reservoir with Internet or Modbus RTU communication.
- 2- Integration between the RTUs at each reservoir.
- 3- Integration between the SCADA and the new RTUs.
- 4- Upgrading the SCADA system to display the reservoirs data and the set points.

3.15 Construction Challenges

During the construction period of Southwest Nablus Villages Water Supply Project (SWN), some issues and problems were encountered but as a result of the continuous cooperation and coordination by all relevant parties involved in the project, the encountered issues and problems were resolved in due course and the project works were completed and handed over on time.

The issues and problems that were encountered can be summarized in the following:-

- 1- Israeli Settlers repeated attacks at Asira Al Qiblya and Urif reservoirs sites at the beginning of the work. This issue was resolved through the continuous coordination with the DCL-Nablus and the higher Israeli authorities, installation of a security system and the use of precast concrete retaining walls instead of cast in place concrete in order to isolate the sites as quick as possible and keep ongoing progress.
- 2- Working in inhibited areas with narrow existing roads made movement of the heavy construction equipment very difficult and the need for specific safety measures especially at Urif Water Network.
- 3- Difficulty in movement of workers between the southern and the northern parts of the West Bank due to the strict measures taken by the Israeli military forces for security reasons especially that most of IRD subcontractor (ABC) staff live in the southern part in addition to the effect of the launched war at Gaza Strip by the Israeli defense forces on procurement of equipment from abroad.
- 4- Shortage of water at the three villages where the project was implemented especially during conducting of the hydrostatic pressure and disinfection tests for the networks and the reservoirs.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

The shortage of water resulted in use of the water tank trucks as a costly alternative source for the supply of water.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

1. PROJECT 2 AZ ZAWIEH NETWORK PROJECT (ZWN) DESCRIPTION AND SPECIFIC DATA:

TO 13-00005-ZWN- Project 2 –Az Zawieh Network Project (ZWN)		
Project Summary Table		
1	Project Name	Az Zawieh Water Network Project
	Project Location	Salfit Governorate
	Summary description of Project's Scope of Work	<p>This project consisted of installation of 12,534.07 LM of 2", 3", 4" & 6" welded and galvanized steel pipelines, in addition to installation of 7,071.25 LM of ¾", 1" & 1½" service house connections. The project also included the construction of 77 concrete chambers with all associated valves and fittings of different sizes including gate valve chambers, air release valve chambers, washout chambers and main connection chamber in addition to the supply and installation of 720 Prepaid Water Meters and the supply of 351 Prepaid Water Meters. Milling and overlay works of 18,307 sq.m and asphalt restoration of 8,092 LM we also executed in the project. The project also consisted the supply and installation of 110 LM storm water drainage pipe.</p> <p>The water source of the installed water network is the existing Mekorot Pipeline that is passing through the village. The total number of beneficiaries is 5,729.</p>
	USAID Project NTP Date	April 23,2013
	Project Construction Activities Start Date	June 26, 2013
	Project Original Completion Date	February 16, 2014
	Modified Project Completion Date	March 31, 2014
	Final Acceptance Certificate Date	March 31, 2014
	Original Project Duration	300 Calendar Days
	Final Modified Project Duration	343 Calendar Days
	Total Excusable Delays/Approved Extensions	43 days
	Accumulated Working Days	257 Calendar Days
	Accumulated non-working days (Holidays and weekends)	69 Calendar Days
	Accumulated other non-working days	17 Calendar Day
	Original Project Value	\$1,989,080.86
	Final Modified Project Value	\$1,961,331.41

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2. PROJECT 2 AZ ZAWIEH NETWORK PROJECT (ZWN) BACKGROUND

2.1. Project background

About 5,521 citizens of Az Zawieh village were provided with water through old rotten network that was installed in 1970s with a water loss percentage that reached 40%. Az Zawieh Project aimed to provide Az Zawieh inhabitants with potable water through a reliable and safe piped water system.

The SOW consisted of installation of 12,534.07 LM of 2", 3", 4" & 6" welded and galvanized steel pipelines, in addition to installation of 7,071.25 LM of ¾", 1" & 1½" service house connections. The project also included the construction of 77 concrete chambers with all associated valves and fittings of different sizes including gate valve chambers, air release valve chambers, washout chambers and main connection chamber in addition to the supply and installation of 720 Prepaid Water Meters and the supply of 351 Prepaid Water Meters. Milling and overlay works of 18,307 sq.m and asphalt restoration of 8,092 LM we also executed in the project. The project also consisted the supply and installation of 110 LM storm water drainage pipe.

The water source of the installed water network is the existing Mekorot Pipeline passing through the village.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2.2. Project Site Location Map



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

2.3. Project's construction elements

The following table presents basic project's construction elements:

Item No.	Project Name	Length (M)
1.	Az Zawieh Network	
	<ul style="list-style-type: none"> Installation of 100 mm steel pipeline along with its associated chambers and fittings. 	229.71 LM
	<ul style="list-style-type: none"> Installation of 100 mm steel pipeline along with its associated chambers, customer flow water meter and fittings. 	794.62 LM
	<ul style="list-style-type: none"> Installation of 80 mm steel pipeline along with its associated fittings. 	3,369.19 LM
	<ul style="list-style-type: none"> Installation of 50 mm galvanized steel pipeline along with its associated chambers and fittings. 	8,140.55 LM
	<ul style="list-style-type: none"> Installation a total of 1.5'' galvanized steel pipeline along with its associated fittings. 	474.08 LM
	<ul style="list-style-type: none"> Installation a total of 1'' galvanized steel pipeline along with its associated fittings. 	2,197.55 LM
	<ul style="list-style-type: none"> Installation a total of ¾'' galvanized steel pipeline along with its associated fittings. 	4,399.62
	TOTAL	19,605.09 LM
	<ul style="list-style-type: none"> Trench reinstatement for pipelines trenches 	8,092.45 LM
	<ul style="list-style-type: none"> Milling of existing asphalt up to 40 mm. 	18,255.86 sq. m
	<ul style="list-style-type: none"> Supplying, spreading and compacting 40 mm thick bituminous wearing course. 	18,307.94 sq. m
	<ul style="list-style-type: none"> Reinforced concrete slab for roads shoulders protection. 	2,022.45 sq. m
	<ul style="list-style-type: none"> Supplying and installation of prepaid water meters. 	720.00 unit
	<ul style="list-style-type: none"> Supplying and delivering of prepaid water meters. 	351.00 unit
	<ul style="list-style-type: none"> Testing and commissioning period: 	14 Calendar Days.
	<ul style="list-style-type: none"> Training: 	3 days

2.4. Project's Pipeline Typical Cross Sections

Typical cross sections implemented for the various project elements had been submitted in Az Zawieh As-Built Drawings Submittal SUB-13-00005-ZWN-307-D; the submittal had been reviewed by the CMC and took revision "A".

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3. PROJECT 2 AZ ZAWIEH NETWORK PROJECT (ZWN) PERFORMANCE DETAILS

3.1 Submittals

During the preconstruction and construction phases, 40 submittals under P2-ZWN Project were submitted to the CMC/BV.

As built drawings & O & M Manual submission:

As per the project specifications preparation of as built drawings and O & M manual started immediately after subject work completion with coordination with the Engineer in parallel with the achieved progress. After getting the Engineer's comments, the full set of as built drawings and O&M manual had been prepared and submitted to the Engineer for his review & approval. After getting final approval an official submittal was delivered to the Engineer of which complies with USAID branding & marking regulations and standards. CMC retracted their approval on As-Built Drawings and accordingly IRD Submitted a revised version; SUB-13-00005-ZWN-307-D was approved on March 22, 2015; O & M manual was approved on May 20, 2014.

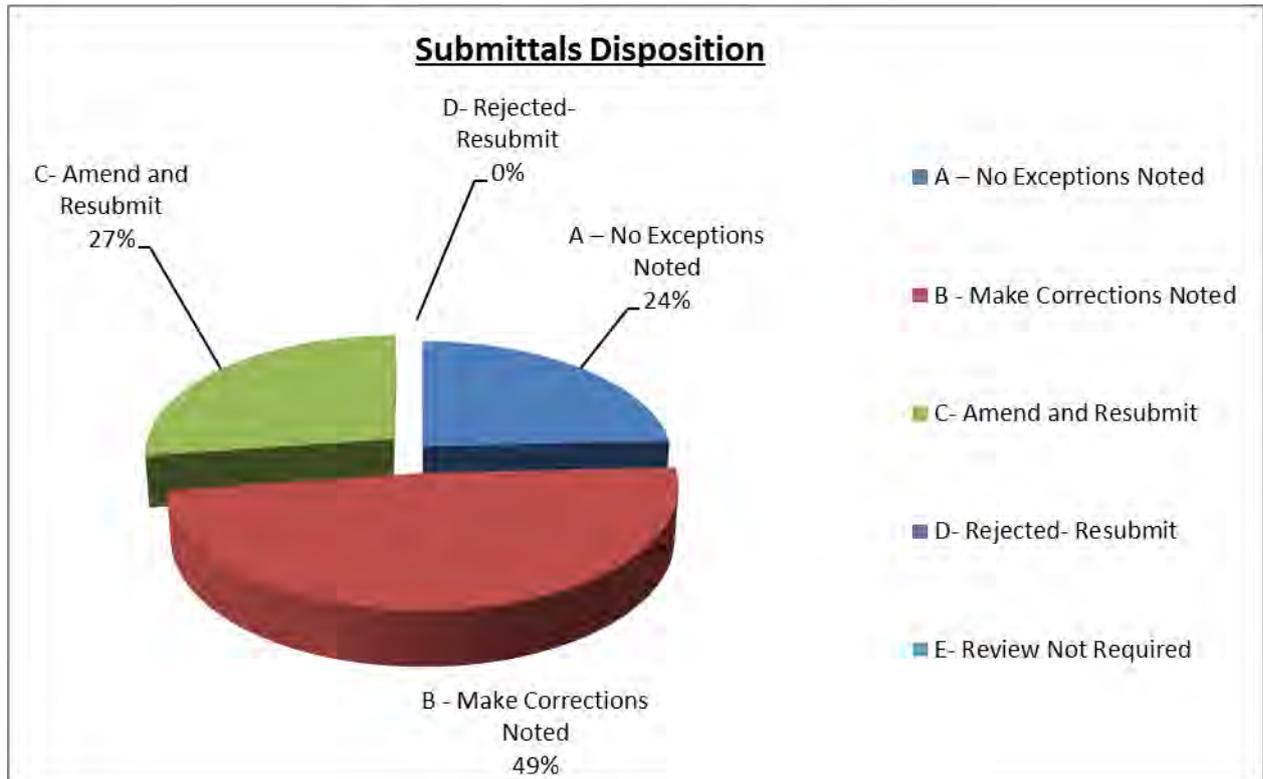
For more details, please see Annex B.5: Project Submittals Log-ZWN.

The following table and chart summarize the approval status for submittals for this project:

Submittal Disposition	Total
A – No Exceptions Noted	8
B - Make Corrections Noted	16
C- Amend and Resubmit	9
D- Rejected- Resubmit	0
E- Review Not Required	0
Retracted Submittals	7
Total submittals delivered	40
Total submittals reviewed	40

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



3.2 Work Progress

After obtaining all the required approvals and permissions and completing the site surveying, Az Zawieh Water Network Project construction phases were executed as per approved submittal SUB-13-00005-SWN-028-A-General Construction Method Statement. Actual construction works started on January 27, 2013, taking into account that all required safety requirements were put into place at site both before and during construction work.

The work was located in Areas B&C. Therefore, IRD was entirely responsible for the proactive performance of all coordination needed with the District Civil Liaison Office (DCL), Civil Administration Departments, Ma'atz (Israeli National Roads Company), the Israeli Police and any other relevant authority or utility that had jurisdiction over any portion of the construction works. Coordination included all works needed to obtain approvals; coordinate the movement of personnel, equipment and materials to and from the project site; and any other coordination required by the relevant authorities to ensure no hindrance of the timely scheduled completion of the project. IRD coordinated its activities as needed prior to, during and after construction was completed.

Sequence of the Work:

The SOW consisted of trench excavation work, supply and installation of steel pipelines, performing related civil and mechanical works, backfilling the excavated areas, reinstatement, pipe pressure testing, pipe disinfection, cleaning and all other work items needed to complete this project as described in the contract documents. Additional works also included rehabilitation of existing asphalted roads through milling and applying an overlay asphalt layer 40 mm thick. Furthermore, additional traffic signs were installed to enhance road safety for drivers and pedestrians.

ZWN CONSTRUCTION PHASES (Zones)

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- Preparing Detours & Apply Traffic Control Plan: Continuous throughout the construction phases of the Zones.
- Based on the joint walkthrough that was conducted on June 15, 2013, shop drawings were prepared accordingly in full coordination with the CMC and Az Zawieh Network was divided to Nine Zones (9 Zones); each zone included a number of different pipe size water lines.
- Actual field activity started on June 26, 2014, by digging and trench opening for the 2'' galvanized steel pipes along line Z2-001 on Zone # 9.
- Pipe installation for the 2'' galvanized steel pipes started on July 20, 2013, along line Z2-001 on Zone #9.
- Pipe installation for Az Zawieh Network was completed on December 26, 2013, and the 2'' galvanized steel pipes for line Z2-024-1 on Zone # 2 was the last to be installed.
- House connection started immediately after installation of part of the main pipelines and the first to be installed was the 1'' galvanized steel pipe along line Z2-001 –Zone # 9 m on September 22, 2013.
- Excavation for precast manholes started on October 24, 2014, and installation started on November 6, 2014. Construction of the civil work for the main connection chamber started on January 19, 2014 and was completed on February 6, 2014; installation of valves and fittings inside all water chambers was performed during the month March 2014.
- Pressure testing for the installed pipelines started on November 4, 2013 for the 2'' along line Z2-029 on Zone#9 and was completed on March 5, 2014 for line Z3-43 on Zone #2.
- Trench reinstatement started on December 29, 2013 along line # Z2-004 on Zone # 8. Milling activity started on February 19, 2014 along lines # Z4-21, Z6-38 & Z3-19 and overlay asphalt layer started on February 20, 2014. The milling and asphalt overlay activity was executed as per approved VO No. 4 by adding additional asphalt milling and overlay for Az Zawieh main roads at which the network pipelines run along. The CMC recommended changing the reinstatement layers from two layers, 5cm each along the trench width to one layer along the full width of the road; ranging from 6cm over the trench to 4 cm along the remainder road width (milled section).
- Installation of the prepaid water meters enclosures started on January 9, 2014; prepaid water meters started on February 22, 2014, connection of the newly installed 3'', 4'' & 6'' steel pipelines with the existing ones was completed on March 15, 2014.
- Disinfection for the newly installed pipelines was conducted between February 28 and March 10, 2014.
- Project permanent signs were installed on March 11, 2014.
- Project Initial walkthrough was conducted on March 25, 2014 in the presence of USAID, CMC, PWA, Az Zawieh Municipality and the subcontractor representatives.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

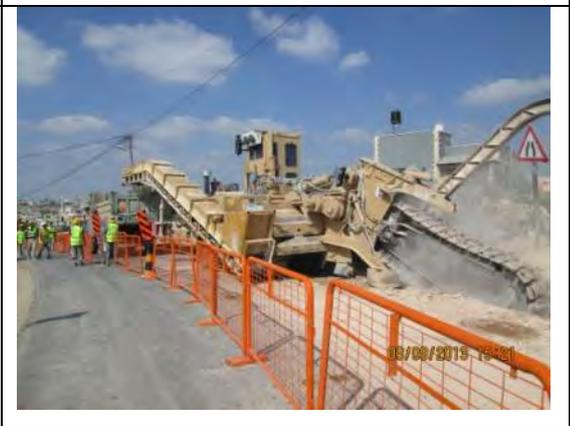
- The Final inspection, acceptance and project handing over of the completed works was organized on March 31, 2014 in the presence of USAID, PWA/WBWD, CMC/BV representatives and Az Zawieh Municipality and the Final Completion Certificate was issued on the same day. The handing over was made for the successful completion of Az Zawieh water network project. The construction schedule was met and the site work was executed in a timely manner and with high quality. IRD construction managers, together with our local subcontractor and CMC/BV resident engineers, implemented all activities according to the specifications and in accordance with the approved Quality Control Program.

Photos showing the different phases of the work:

	
<p>Photo No.1-ZWN: Pre-excavation work in Az Zawieh Photo Date: June 27, 2013</p>	<p>Photo No.2-ZWN: Installation of traffic safety signs Photo Date: June 27, 2013</p>
	
<p>Photo No.3-ZWN: Installation of permanent traffic signs at the main entrance Road to Az Zawieh Photo Date: June 22, 2013</p>	<p>Photo No.4-ZWN: Az Zawieh Network Pipe Installation Photo Date: July 25, 2013</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo No.5-ZWN: Earth breaking At Az Zawieh Photo Date: July 21, 2013</p>	<p>Photo No.6-ZWN: Installation of 2'' Pipes, Bedding Materials Photo Date: 20 August, 2013</p>
	
<p>Photo No.7-ZWN: Installation of 2'' Pipes at Z2-15 Photo Date: 03 September, 2013</p>	<p>Photo No.8-ZWN: Excavation for 3'' Pipes, at Z3-43 Photo Date: 03 September, 2013</p>
	
<p>Photo No.9-ZWN: House Connection Road Z2-004 Photo Date: 29 September, 2013</p>	<p>Photo No.10-ZWN: Installation of 3'' Pipes, Bedding Materials Photo Date: 08 October, 2013</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo No.11-ZWN: Installation of 3" Pipes, Bedding Materials Photo Date: 09 November, 2013</p>	<p>Photo No.12-ZWN: Pressure test along (Z2"-18-1) Photo Date: 24 November, 2013</p>
	
<p>Photo No.13-ZWN: Compacting the base course layer in preparation for applying first layer of asphalt wearing course Photo Date: 28 December, 2013</p>	<p>Photo No.14-ZWN: Welding of 3" steel pipes executed from precast Manholes Photo Date: 01 December, 2013</p>
	
<p>Photo No.15-ZWN: Installation of steel bars for walls of the main connection chamber. Photo Date: 21 January, 2014</p>	<p>Photo No.16-ZWN: Casting concrete for walls of the main connection chamber. Photo Date: 04 February, 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	
<p>Photo No.17-ZWN: Installation of prepaid water meter. Photo Date: 24 February, 2014</p>	<p>Photo No.18-ZWN: Paving the second layer of the asphalt. Photo Date: 27 February, 2014</p>
	
<p>Photo No.19-ZWN: Disinfection works. Photo Date: 28 February, 2014</p>	<p>Photo No.20-ZWN: Installation of fittings inside the main connection chamber. Photo Date: 06 March, 2014</p>
	
<p>Photo No.21-ZWN: Installed permanent project sign. Photo Date: 11 March, 2014</p>	<p>Photo No.22-ZWN: Project Initial walkthrough. Photo Date: 25 March, 2014</p>

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

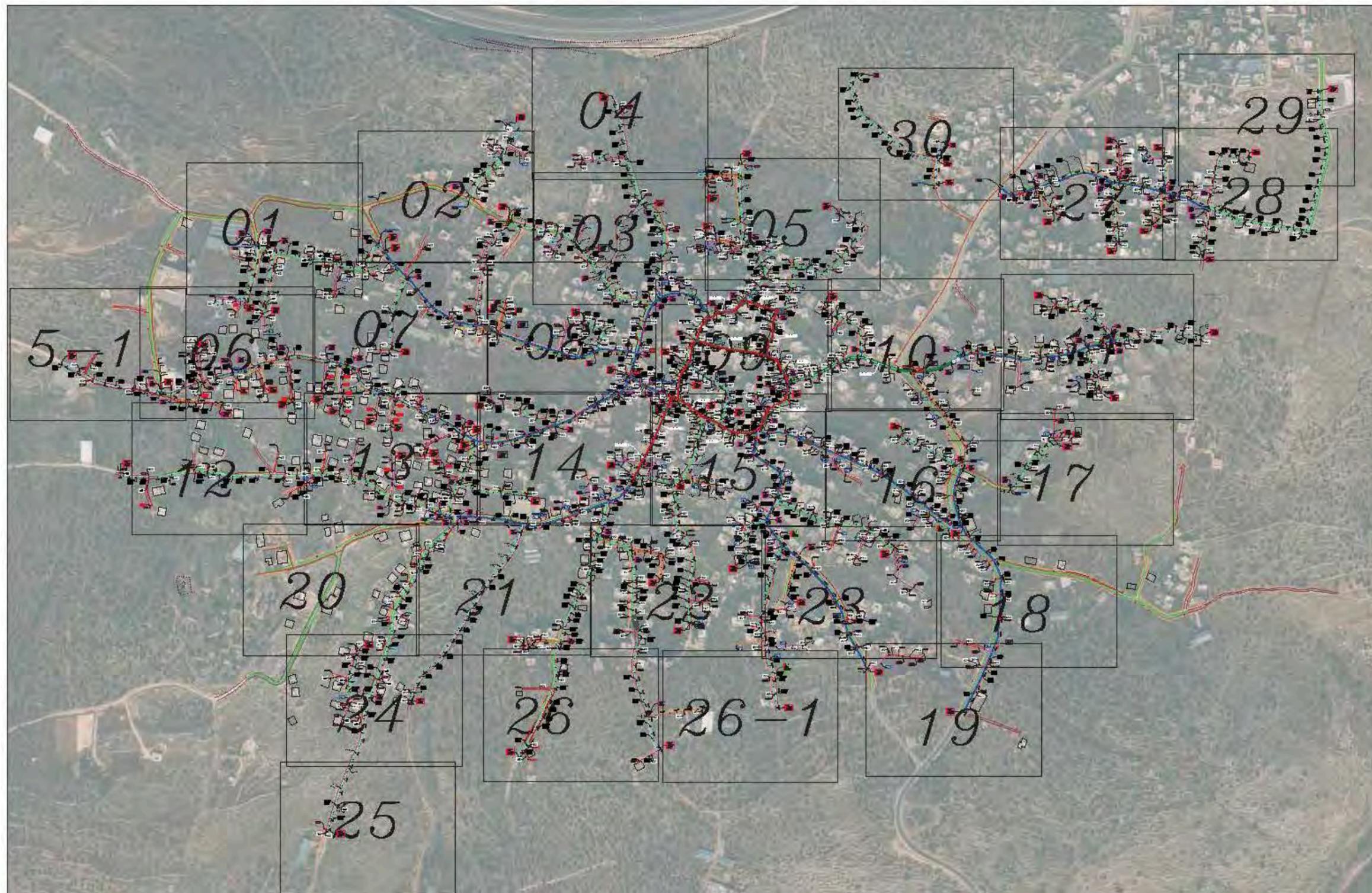
	
<p>Photo No.23-ZWN: Adjusting manholes covers level. Photo Date: 27 March, 2014</p>	<p>Photo No.24-ZWN: Disinfection works. Photo Date: 08 March, 2014</p>
	
<p>Photo No.25-ZWN: Asphalt works Photo Date: March 31, 2014</p>	<p>Photo No.26-ZWN: Adjusting manhole cover level Photo Date: March 31, 2014</p>
	
<p>Photo No.27-ZWN:Final walk through and project handing over Photo Date: March 31, 2014</p>	

The below map demonstrates the construction elements key map:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

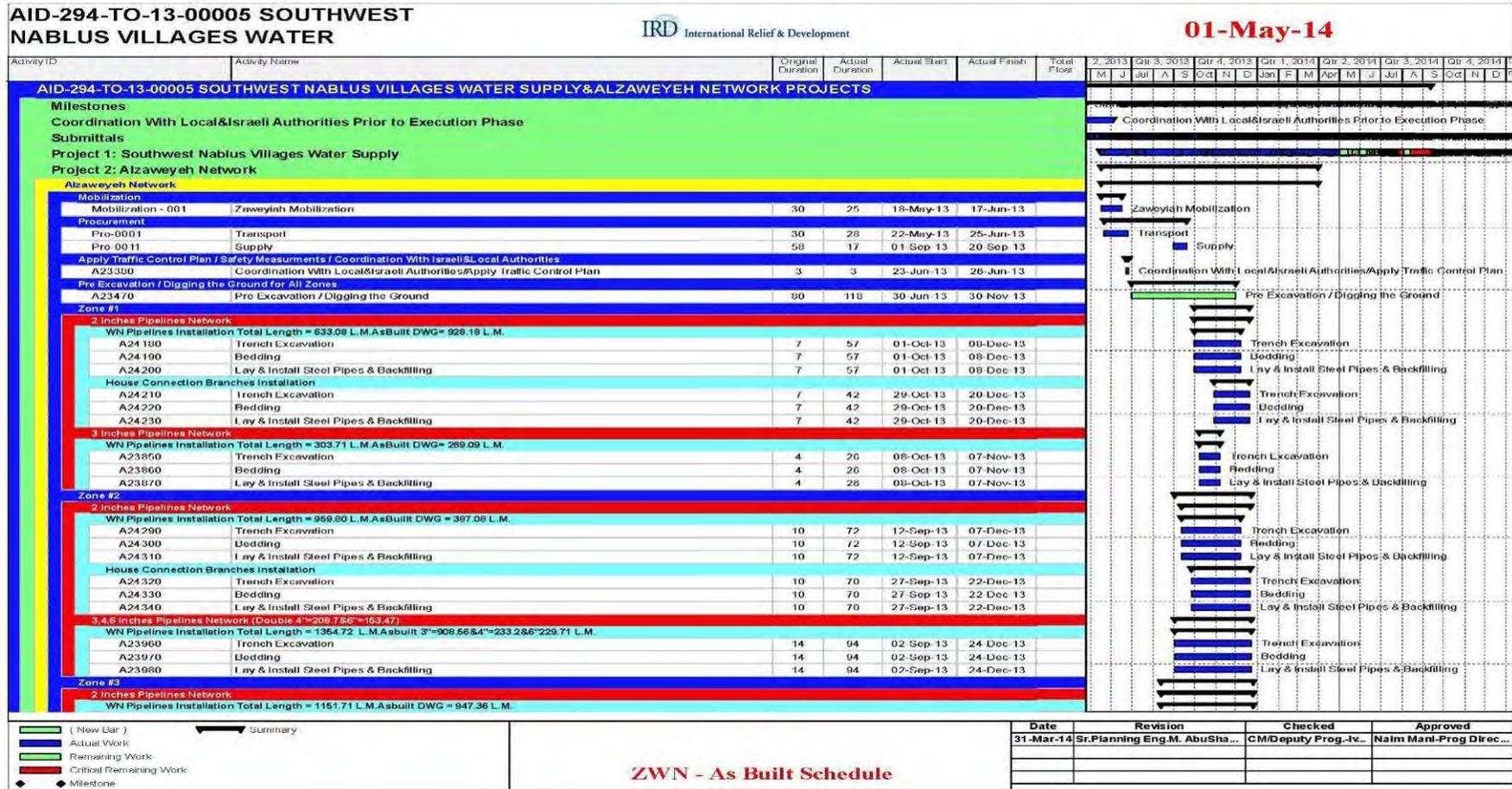
TO-13-00005- Az Zawieh Network Project key map



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.3 Project Final CPM Schedule



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Activity ID	Activity Name	Original Duration	Actual Duration	Actual Start	Actual Finish	Total Float	2013-2014												
							2013	2013	2013	2013	2014	2014	2014	2014	2014	2014	2014	2014	
							Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	
							M	T	W	T	F	S	S	S	S	S	S	S	S
A24400	Trench Excavation	12	112	13-Aug-13	26-Dec-13														
A24410	Bedding	12	112	13-Aug-13	26-Dec-13														
A24420	Lay & Install Steel Pipes & Backfilling	12	112	13-Aug-13	26-Dec-13														
House Connection Branches Installation																			
A24430	Trench Excavation	12	45	30-Oct-13	26-Dec-13														
A24440	Bedding	12	45	30-Oct-13	26-Dec-13														
A24450	Lay & Install Steel Pipes & Backfilling	12	45	30-Oct-13	26-Dec-13														
3.4 Inches Pipelines Network: 2 (Double) 4"= 485.97																			
WN Pipelines Installation Total Length = 543.69 L.M.Asbuilt DWG 3"=120.2,4"=456.92																			
A24070	Trench Excavation	6	65	06-Oct-13	24-Dec-13														
A24080	Bedding	6	65	06-Oct-13	24-Dec-13														
A24090	Lay & Install Steel Pipes & Backfilling	6	65	06-Oct-13	24-Dec-13														
Zone #4																			
2 Inches Pipelines Network																			
WN Pipelines Installation Total Length = 700.33 L.M.Asbuilt = 687.59																			
A24970	Trench Excavation	8	83	10-Sep-13	19-Dec-13														
A24980	Bedding	8	83	10-Sep-13	19-Dec-13														
A24990	Lay & Install Steel Pipes & Backfilling	8	83	10-Sep-13	19-Dec-13														
House Connection Pipes Installation																			
A25000	Trench Excavation	8	66	02-Oct-13	22-Dec-13														
A25010	Bedding	8	66	02-Oct-13	22-Dec-13														
A25020	Lay & Install Steel Pipes & Backfilling	8	66	02-Oct-13	22-Dec-13														
3 Inches Pipelines Network																			
WN Pipelines Installation Total Length = 395.4 L.M.Asbuilt 3"= 411.14																			
A25060	Trench Excavation	4	70	11-Sep-13	02-Dec-13														
A25070	Bedding	4	70	11-Sep-13	02-Dec-13														
A25080	Lay & Install Steel Pipes & Backfilling	4	70	11-Sep-13	02-Dec-13														
Zone #6																			
2 Inches Pipelines Network																			
WN Pipelines Installation Total Length = 470.10 L.M.Asbuilt = 389.89																			
A23430	Trench Excavation	5	73	08-Sep-13	02-Dec-13														
A23440	Bedding	5	73	08-Sep-13	02-Dec-13														
A23450	Lay & Install Steel Pipes & Backfilling	5	73	08-Sep-13	02-Dec-13														
House Connection Pipes Installation																			
A23455	Trench Excavation	5	27	07-Nov-13	10-Dec-13														
A23456	Bedding	5	27	07-Nov-13	10-Dec-13														
A23460	Lay & Install Steel Pipes & Backfilling	5	27	07-Nov-13	10-Dec-13														
3 Inches Pipelines Network																			
WN Pipelines Installation Total Length = 532.42 L.M.Asbuilt 3"= 114.12																			
A23740	Trench Excavation	6	22	23-Nov-13	22-Dec-13														
A23750	Bedding	6	22	23-Nov-13	22-Dec-13														
A23760	Lay & Install Steel Pipes & Backfilling	6	22	23-Nov-13	22-Dec-13														
Zone #6																			
2 Inches Pipelines Network																			
WN Pipelines Installation Total Length = 952.18 L.M.Asbuilt = 714.89																			
A23520	Trench Excavation	10	123	31-Jul-13	25-Dec-13														
A23530	Bedding	10	123	31-Jul-13	25-Dec-13														
A23540	Lay & Install Steel Pipes & Backfilling	10	123	31-Jul-13	25-Dec-13														
House Connection Pipes Installation																			
A23550	Trench Excavation	10	47	29-Oct-13	26-Dec-13														
A23560	Bedding	10	47	29-Oct-13	26-Dec-13														
A23570	Lay & Install Steel Pipes & Backfilling	10	47	29-Oct-13	26-Dec-13														
3 Inches Pipelines Network																			
WN Pipelines Installation Total Length = 291.46 L.M.Asbuilt 3"= 499.43																			
A24620	Trench Excavation	3	60	23-Sep-13	02-Dec-13														

(New Bar)	Summary	
Actual Work		
Remaining Work		
Critical Remaining Work		
Milestone		

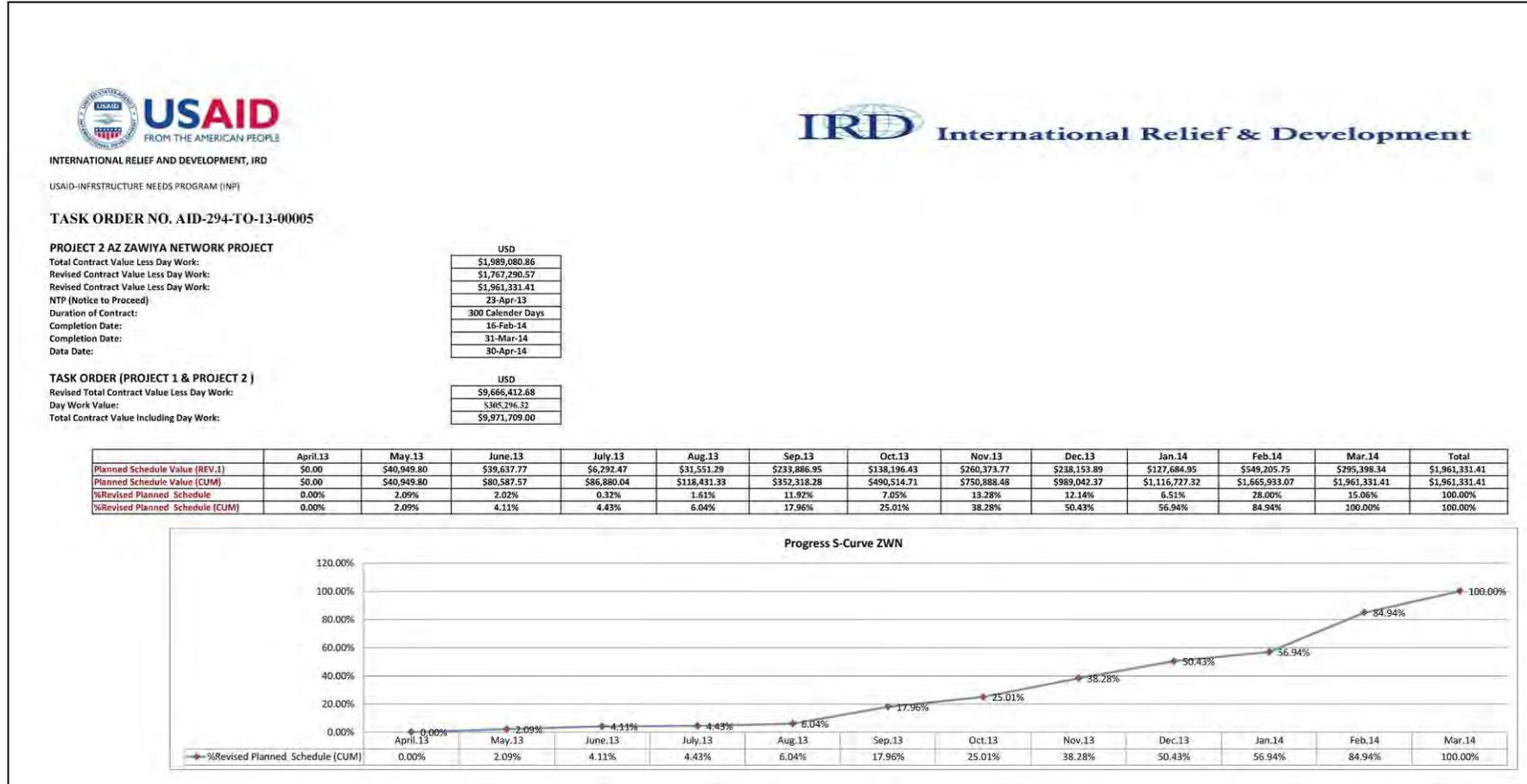
ZWN - As Built Schedule		Date	Revision	Checked	Approved
		31-Mar-14	Sr.Planning Eng.M. AbuSha...	CM/Deputy Prog.-IV...	Naim Mant-Prog Direc...

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.4 Cash Flow

The following Progress S-Curve represents the actual Project cumulative expenditures percentage.



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.5 Project Indicators

Indicator 1: Project Beneficiaries:

Project 2: Az Zawieh Water Network Project ZWN		
Length of local water network (2", 3", 4" & 6")	12,534.07 LM	
Length of local water HC Pipe (3/4", 1" and 1 1/2")	7,071.25 LM	
No of water household connections (Prepaid Water Meters)	720	
Temporary Job-days (people x days)	6,200	
Temporary Jobs Created (positions)	260	
Total number of Beneficiaries	5,521	
Number of Male Beneficiaries	2,816	Male = 51%
Number of Female Beneficiaries	2,705	Female = 49%
Male Beneficiaries to Age 17	1,330	47.24%
Female Beneficiaries to Age 17	1,278	47.24%
Male Beneficiaries 18 to 25	444	15.78%
Female Beneficiaries 18 to 25	427	15.78%
Male Beneficiaries 26 and older	1,041	36.98%
Female Beneficiaries 26 and older	1,001	36.98%

Indicator 2: Person Days of employment generated

Employment generated in Person days for TO 13-00005-ZWN- Az Zawieh Network Project:

- Estimated Target Value, 6,820 person days;
- Total cumulative employment generated to-date 6,200 person days.
- Temporary Jobs Created (positions) = 260

TO 13-00005-ZWN- Az Zawieh Network Project created work opportunities in many different fields, providing an average of 22 labors (6,200 Man-days/ (23.8 avg. working days/month X 11.4 months) and their families ((132 people= (22 laborers× 6 people where average number of members in a Palestinian family=6 according to PCBS) with stable/permanent income from the project for more than 11 months.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

IRD mobilized the following required work force to the site to implement the construction tasks, monitor progress, perform quality control and assurance oversight, safety and environmental compliance, and produce the required reporting:

- Project Manager
- Quality Control Manager
- Safety and Environmental Compliance Officer
- Project Quantity & Land Surveyor
- Office Engineers
- Project foremen
- Operators
- Skilled and unskilled workers during the project implementation.

The following table provides a summary for both IRD's and its subcontractor man-days and man-hours throughout the duration of the project (the below man-hours do not include the expat staff or shared staff among the multiple Task Orders):

Month / Year	<i>Man-days</i>	<i>Man-hours</i>
Apr-13	12	96
May-13	102	812
Jun-13	229	1832
Jul-13	589	4714
Aug-13	389	3111
Sep-13	876	7008
Oct-13	836	6684
Nov-13	831	6646
Dec-13	608	4866
Jan-14	356	2846
Feb-14	456	3648
Mar-14	905	7241
Apr-14	12	95
Total	6,200	49,598

Please see Annex B.14: Project Workforce Level of Effort (Person-Hours) Log and Breakdown of the Manpower Generated.

- ❖ The total “man-days” is equal to the total hours for each category divided by 8 (regular working hours is 8 hours per day)

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

The project provided excellent job opportunities for the construction trade workers in the local area and the project contributed to the economic growth of the local market since most of the construction materials and equipment were produced and procured locally. Procurement of all needed construction material and equipment was divided into two phases: transport, which took place between May 22 and June 25, 2013 and supply, which took place between 01 and 20 September, 2013. Supply and installation of storm water drainage took place between 15 and 22 March, 2014 while supply and installation of traffic signs took place between 10 and 17 March, 2014.

3.6 Site Safety

It is the policy of IRD to provide a safe and healthy project and workplace for all employees, pedestrians and local residence. Throughout the duration of the project, IRD was committed to eliminating injuries, occupational illness and damage to the environment on the job site and construction facilities relative to Safety and Fire Prevention requirements, through the implementation of the following:

- Safety Plan: Preparation of a Safety Plan for the prevention and control of accidents and health hazards on the job site. The basic structure of this safety plan complies with the requirements of the General Contract Safety Standards, USACE EM 385-1-1 Manual, OSHA Regulations, project and owner safety requirements and specifications, applicable provisions of the Construction and General Industry Standards, and local Palestinian laws, requirements, standards, and practices. IRD Subcontractors are committed to the adherence of these requirements and standards and to the safety of all personnel associated with the project.
- Organization Chart: IRD Safety officer directly reported to the IRD PD.
- Providing safety training and orientation for IRD and subcontractor's Safety Officers: IRD Safety Manager organized a safety training session for both IRD and subcontractor's safety officers prior to beginning the project, the session included a detailed discussion of the safety plan and manual and aimed towards accomplishing proper understanding and implementation of the safety plan and emphasized the objective "Safety Intention is Accident Prevention".
- Providing safety training and orientation Onsite: IRD Safety Officer was responsible for verifying that the subcontractor and all personnel associated with the project are provided with the required training orientation a week prior to entering into the work area, in order to accomplish proper understanding and implementation of the safety plan. Additionally, continuous safety planning and training were held on the job site. All employees were required to participate without any exceptions in order to document the safety training and the accidents during the implementation of the project IRD Safety officer and Project Manager prepared a weekly safety toolbox meeting and a monthly safety report.
- Daily Monitoring of Site Activities: Daily observation was conducted by the IRD Safety Officer and Field Supervision Management in conjunction with site

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

supervision in order to enforce compliance with the established plan. Daily observations and inspections include the followings:

- Personal Protective Equipment (PPEs)
- Machinery & Mechanized equipment.
- Housekeeping
- Fall Protection
- Excavation & Trenching
- Hole Covers
- Safe Scaffolding
- Traffic signs & Protective Reflective Barricades
- Dust Control
- Corrective Action: Whenever unsafe conditions and fire hazards are noted, work was stopped immediately to correct any unsafe condition encountered and corrective actions were taken so that work may proceed in a safe manner.
- Fire Fighting, First Aid & Sanitary Facilities: IRD provided the fire extinguishers and distributed them onsite in accordance with the civil defense regulations. Moreover, a medical treatment first aid kit was provided onsite. In addition, sanitation facilities were provided for the workers and employees onsite.

IRD construction management staff, CMC staff and the local authorities coordinated closely throughout project implementation to achieve very good safety measures by following up all the issues on daily basis. Safety arrangements were made on the site on a daily basis during the implementation of all project activities and personal protective equipment, such as hard hats and reflective safety vests, were distributed and used by all IRD and the subcontractor employees on site, as well as any visitors to the construction area. Adequate quantities of the personal protective equipment were available at all times and sufficiently covered the project needs throughout the construction period. Road closures and detours were clearly marked with flagmen directing traffic as required. Active and on-going work areas utilized Steel Mini Guardrail to prevent accidents, and daily dust mitigation measures were implemented to minimize disruption and inconveniences to the local population. The use of concrete New Jersey Barrier was required at certain sections of the projects such for manhole openings and other areas as determined by CMC and/or the project safety officer where steel barriers do not serve the intended purpose.

IRD actively engaged the surrounding community to keep them aware of planned activities and, in many instances, performed additional work to improve access to residential and commercial settings. The local community and its political leaders were very satisfied with IRD's "customer" focus and positive attitude to help solve any problem.

During the project implementation no Notice of Unsafe Conditions "NUCs" were issued while one Accident Investigation Report "AIR" was issued; AIR-13-00005-ZWN-01-A

The following is the summary of the incident:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Az Zawieh Accident Report

On Saturday, January 25, 2014 a crew of three workers and an unauthorized bobcat operator began cleaning the edges of the road, which is called municipality road known according to design drawings line Z3-18 station 0+240 LHS, and placing the cleaned material in the bobcat bucket. The three workers were wearing their PPE's while cleaning in front of the bobcat and requesting the operator to move backward to clean near the existing walls (The bobcat had a backup alarm but the sound was not loud). At 15:30, a girl came rushing out of her house, which lies immediately on the main road where the work was carried out, and without her noticing the bobcat, she slammed her head into the back part of the bobcat. Her brother came after her and shouted asking the bobcat driver to stop, at the same time other workers in the field caught the driver's attention that stopped the bobcat immediately and did not go over the little girl. Her mother rushed and took the girl in private car to Bedia clinic.

Later at 16:10 o'clock, it was announced at Bedia clinic that the girl Aya Mohammad Rawhi Shakoor passed away. The medical report was delivered to IRD on February 9, 2014 and it stated the reason for death is "internal bleeding". AIR-13-00005-ZWN-01-A was issued by the CMC in this regard.

Following the investigation, IRD found that the bobcat operator who made the accident is not the assigned driver for this bobcat and does not even have a driving license; therefore, in reference to the insurance law the insurance company did not compensate the family for this accident.

Internal findings for the accident cause:

On the day of the accident, B&V, IRD and ABC Engineers made a joint inspection for line Z3-18 where the accident occurred after completing of the asphalt paving along lines Z2-12 and Z2-14. The joint inspection was conducted in the same morning of the accident. According to the joint inspection, there were no activities planned along line Z3-18. However, and after the conclusion of the joint inspection, ABC subcontractor (Lubadeh Asphalt Co. from Tulkarem) took the initiative, and without receiving direct instructions from IRD-project team or ABC and without informing the project management team, started making the cleaning for that section where the accident occurred in preparation to carry out the asphalt paving the next day. From the IRD internal investigation, it was found out that ABC subcontractor, did not only commence the cleaning on his own risk, but also brought another equipment (bobcat) that was not approved by the IRD or ABC. In addition, the driver was not officially approved to drive and operate bobcat since he was not licensed and was not designated for the Bobcat. He was assigned to work on the manually operated compactor – small roller. On February 22, 2014 IRD interviewed the bobcat driver Mr. Haitham Fathi Awad Azzam who said that " he mounted the bobcat on his own to remove the rubble from the side of the street, after the engineers: Talal Najjar, Mohammad Bushnaq, Mahmoud Bader and Maher Azazmah, insisted to have the road cleaned before next day paving work. And after the engineers have left the site, where the accident occurred, Haitham mounted the bobcat on his own responsibility and then the accident occurred, and in response to the question if any engineer was on the location, he said" that no engineers were present on location during the accident, but there were 3 workers with him on site". Moreover, the bobcat that was involved in the accident was not inspected by IRD project team since it was its first day on site without the knowledge of IRD and ABC. IRD SECO, Mahmoud Bader, was with the joint inspection team working on other project segments.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Additional Safety measures adopted

Due to the tragic accident occurred at Az Zawieh village on January 25, 2014 IRD has decided to take an immediate action regarding the safety measures in this project. Based on the lesson learned from this accident the following immediate field measures were taken in order to improve the safety during construction through the end of this project:

1. All the workers were subjected to additional and extensive safety measures and re-instructed that no single activity would start prior IRD instructions and approval. In addition, to stress that all instructions and work assignments come from the Project Management Team.
2. During working in narrow roads where all the entrances were directly in the construction area, IRD kept directing its subcontractors that all residence shall receive written notification in the form of flyers prior to commencing work in the respective areas.
3. IRD instructed its subcontractor to introduce and apply inspection of the temporary vehicles/equipment's documents to make sure that they are licensed and insured before deployment onsite.
4. IRD continued to introduce additional toolbox meetings onsite.

Specific Safety Work Plan – Trench Reinstatement/ Road Pavement

In addition to all safety regulations, measures and plans originally submitted, approved and applied during the project execution time, the following are additional safety measures that were applied during the completion of the remaining activities and works at ZWN project at the month of March 2014, especially during the asphalt execution for trenches and roads:

1. Prior to asphaltting, toolbox meeting was held to make sure that all safety regulations and measures were under control and fully understood and applied by all crews, workers and foremen.
2. IRD hired a public relation specialist to be following public relation issues.
3. Fixing signs properly: To prevent signs, lights or guarding equipment being blown over or moved out of position by wind or by passing traffic.
4. Location of signs: Signs were placed at specific locations to make sure that all traffic and pedestrians are aware with the ongoing works at those locations.
5. Regularly, check that signs have not been moved, damaged or have become dirty, especially when the site was left unattended for a period.
6. Make sure that all safety measures were provided along/ across the road where the trench was reinstated.
7. Where trench reinstatement took place, the pedestrian living there were informed through amplifier and quick written messages distributed among houses along the road.
8. Two guards were hired during the asphalt works; one along the right side of the road and the other on the left side. Those guards focused on the movement of people along the road and any probable sudden exit from their homes.
9. The road where the trench was under reinstatement works was closed and detour was used, two flagmen were hired at each end of the road to control and follow up the movement of traffic.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- 10. Before starting the works at each trench, the equipment and drivers were checked for their licenses, insurances and any other required document.
- 11. Prior to start asphaltting, a walkthrough was conducted to check safety requirements, such that home gates were closed and temporary steel guardrail was used to prevent any sudden person existence.
- 13. Instructions were given to all drivers on daily basis to be very careful and have a look into all sides before moving the equipment/ cars. In addition to moving with a slow speed limit.
- 15. Policemen were also involved during asphalt works to provide traffic direction and to assist in organizing traffic movement.
- 16. A municipality staff member was also involved to witness the execution of the asphalt reinstatement works whom as well communicated with people and pedestrians to take utmost care.
- 19. A commitment safety letter from the asphalt contractor was signed and submitted prior to execution.

The work site was kept clear of debris and access to exits was free from obstructions. The Safety Plan/Safety Manual was applied and all workers and staff did their utmost to comply with safety regulations; IRD's slogan is “no compromise on safety – safety is first”.

For more details please see Annex B.14: Project Notice of Unsafe Conditions (NUC) Log and Annex B.15: Project Incident Log.

The following photos illustrate compliance with the safety regulations and measurements:

		
<p>Photo #1: ZWN- Safety temporary traffic signs. July 06 2013</p>	<p>Photo #2: ZWN- Traffic signs. July 07 2013</p>	<p>Photo #3: ZWN- Safety steel barriers and cones before excavation of the trench. July 10 2013</p>

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

		
<p>Photo #4: ZWN- Safety cones. August 18 2013</p>	<p>Photo #5: ZWN- Install safety cones before excavation the trench . August 27 2013</p>	<p>Photo #6: ZWN- Safety cones and traffic sign. September 02 2013</p>
		
<p>Photo #7: ZWN- Safety pedestrian cross over trench. October 20 2013</p>	<p>Photo #8: ZWN- Safety steel barriers December 05 2013</p>	<p>Photo #9: ZWN- Unskilled labor cross the kids. February 23 2014</p>
		
<p>Photo #10: ZWN- Safety Cones. February 24 2014</p>	<p>Photo #11: ZWN- Unskilled labor cross the kids March 11 2014</p>	

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.7 Traffic Plan

The Traffic Management Plan was proposed and put in conjunction with the Safety Plan, Method Statement and Construction Schedule of the Project. The traffic plan for Az Zawiya Network Project was put in sequence in order to facilitate the traffic movements, and was linked with site. Working Segments, number of working crew and equipment that was used in the construction was based upon an approved time schedule and equipment list submittal. Warning signs, flagmen, and reflective chevron was implemented according to OSHA standards and as detailed in the traffic plan drawings and details. Each sign was written in English and Arabic languages.

The Traffic Management Plan submitted included control for the traffic flow and provided access for all local residents through the construction period and of which was passable for all proposed roads, using the suitable traffic plan for each phase, in order to obtain a maximum efficiency of safety, output and meet the time frame set for this phase of the project.

The traffic plan for Az Zawiya Network Project was basically alienated into two approaches contingent on the construction work space needs:

The width of the road was inappropriate to narrow for one way passable traffic during construction and thus there were no traffic movement in the construction zone and was totally closed from both sides and a detour was provided from other internal roads. Traffic during all the project construction phases and traffic was controlled from both sides following the below traffic plan of the project; at least one flagman at each end of the phase, in addition to one flagman at the end of the road using walkie talkie as a handheld transceiver to communicate between each other's along with the needed traffic signs to direct the traffic.

The traffic plan for Az Zawiya Network Water Supply Project was divided into the following phases:

Phase No.1: Internal Network for the Main intersection of Az Zawiya Network to Rafat entrance was constructed half/half.

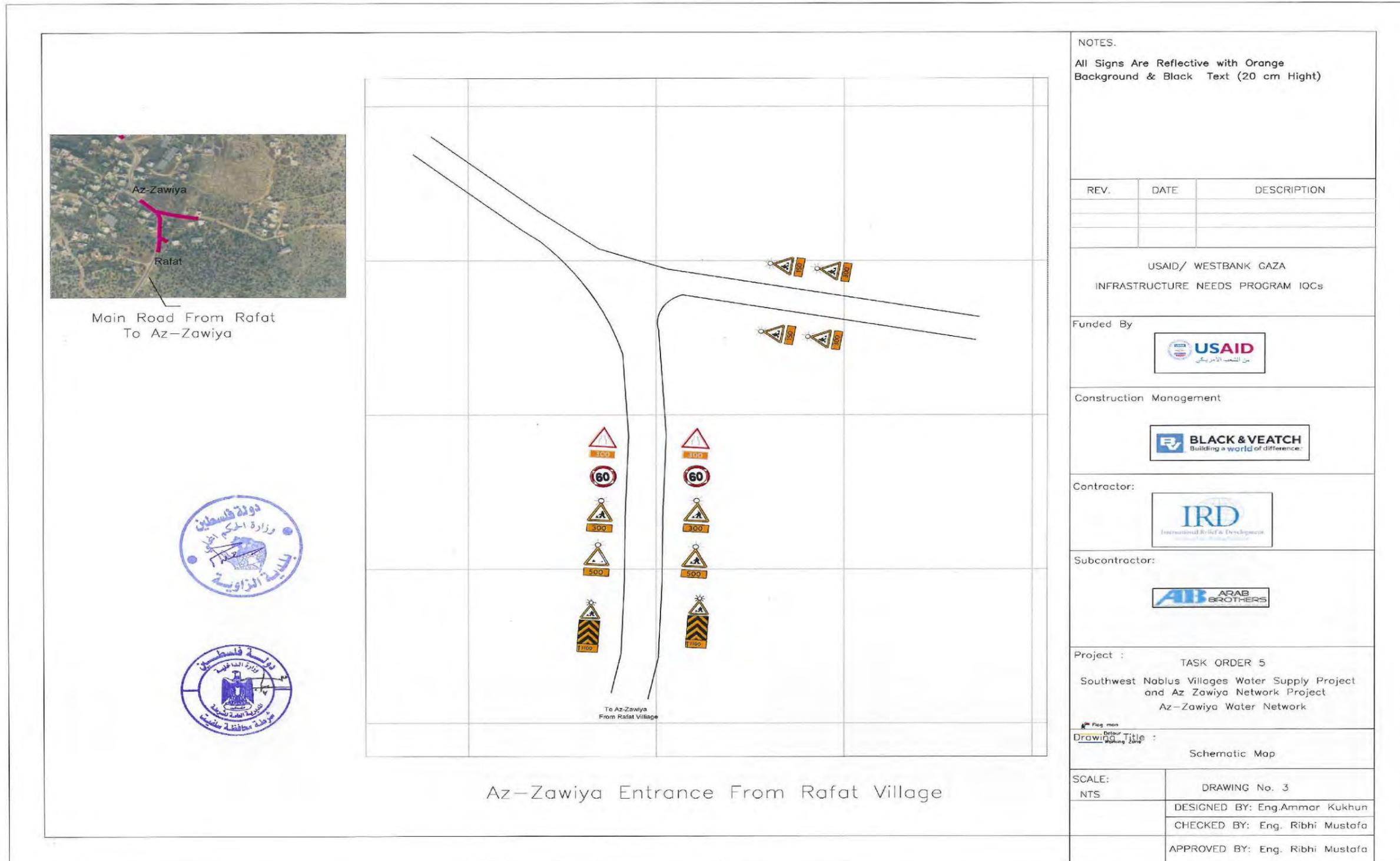
Phase No.2: Internal network in Az Zawiya Network: the construction zone was totally closed, a detour for each segment was proposed and maintained and all needed traffic signs and directional signs were provided.

Passable traffic way was prepared for the residents, emergency cases, ambulance, police, fire fighting trucks & army vehicles to provide safe access to the residence and to obtain a maximum efficiency of safety.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Typical Phase



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Az-Zawiya Main Junction

NOTES.
All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IOCs

Funded By


Construction Management


Contractor:


Subcontractor:

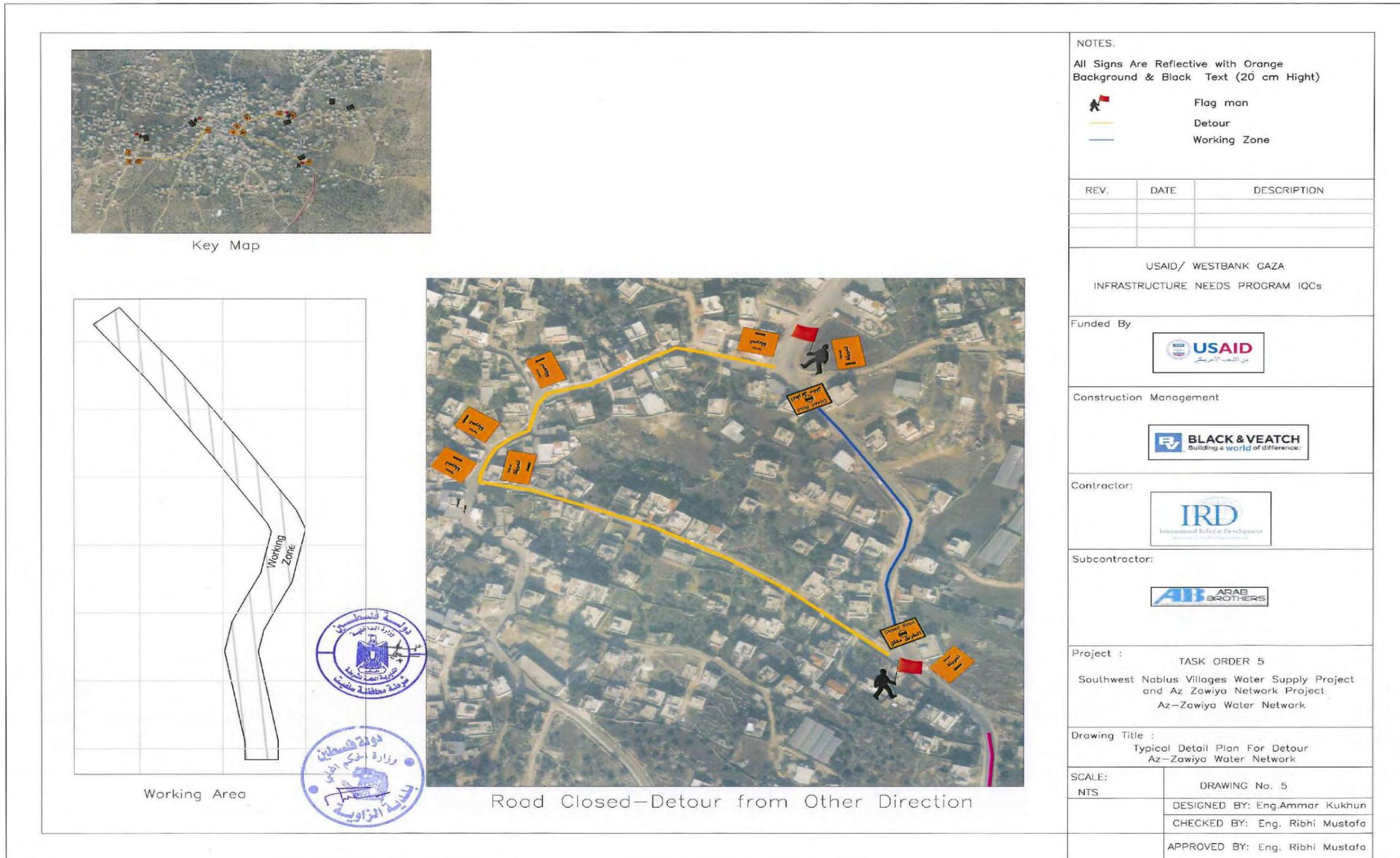

Project :
TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Az-Zawiya Water Network

Drawing Title :
Schematic Map

SCALE: NTS	DRAWING No. 4
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

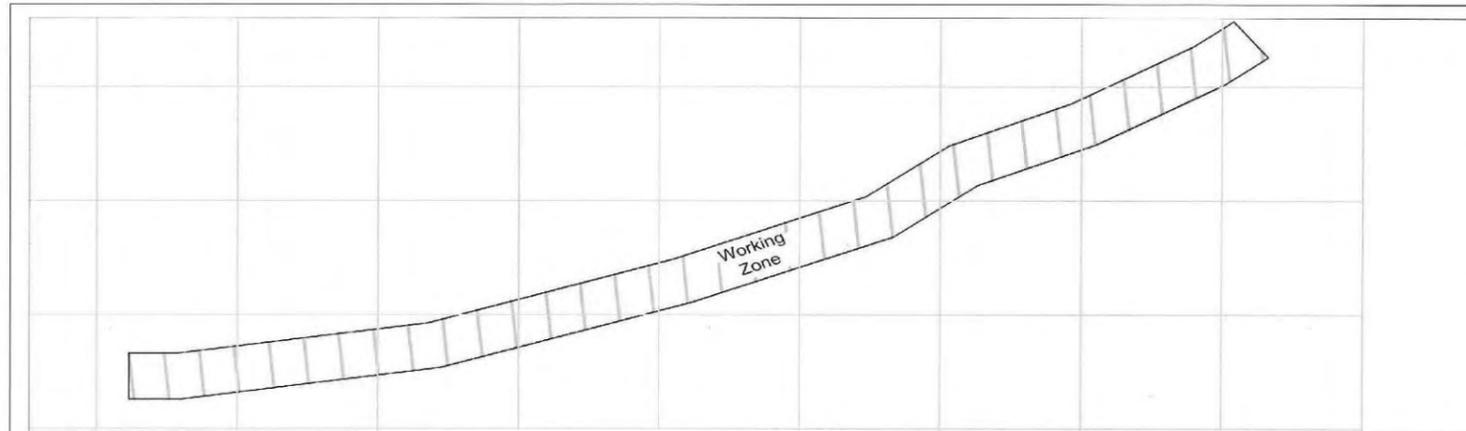
DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Working Area



Key Map



Road Closed—Detour from Other Direction



NOTES:
All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)

-  Flag man
-  Detour
-  Working Zone

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By



Construction Management



Contractor:



Subcontractor:



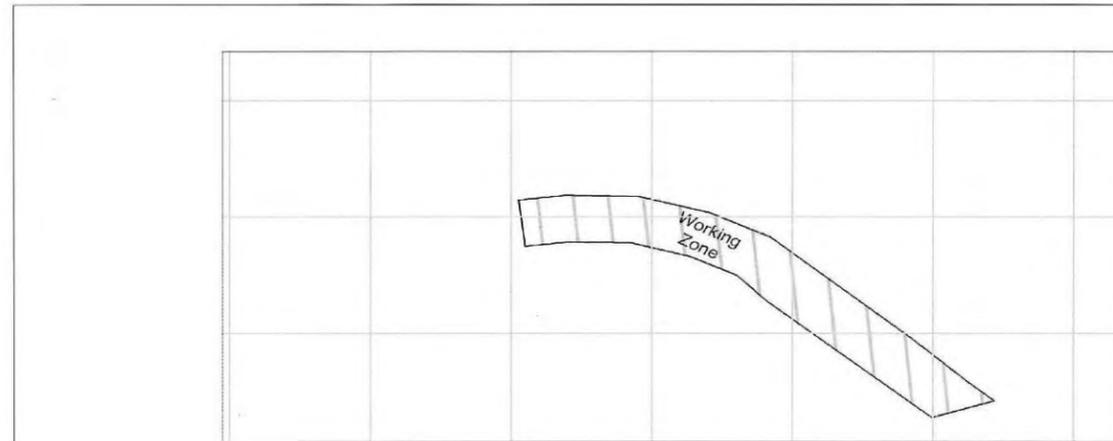
Project : TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Az-Zawiya Water Network

Drawing Title :
Typical Detail Plan For Detour
Az-Zawiya Water Network

SCALE: NTS	DRAWING No. 6
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



Working Area



Key Map



Az-Zawiya Dead End Road
Road Totaly Closed, Only for Pedestrian Walk

NOTES.
All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)

-  Flag man
-  Detour
-  Working Zone

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By



Construction Management



Contractor:



Subcontractor:



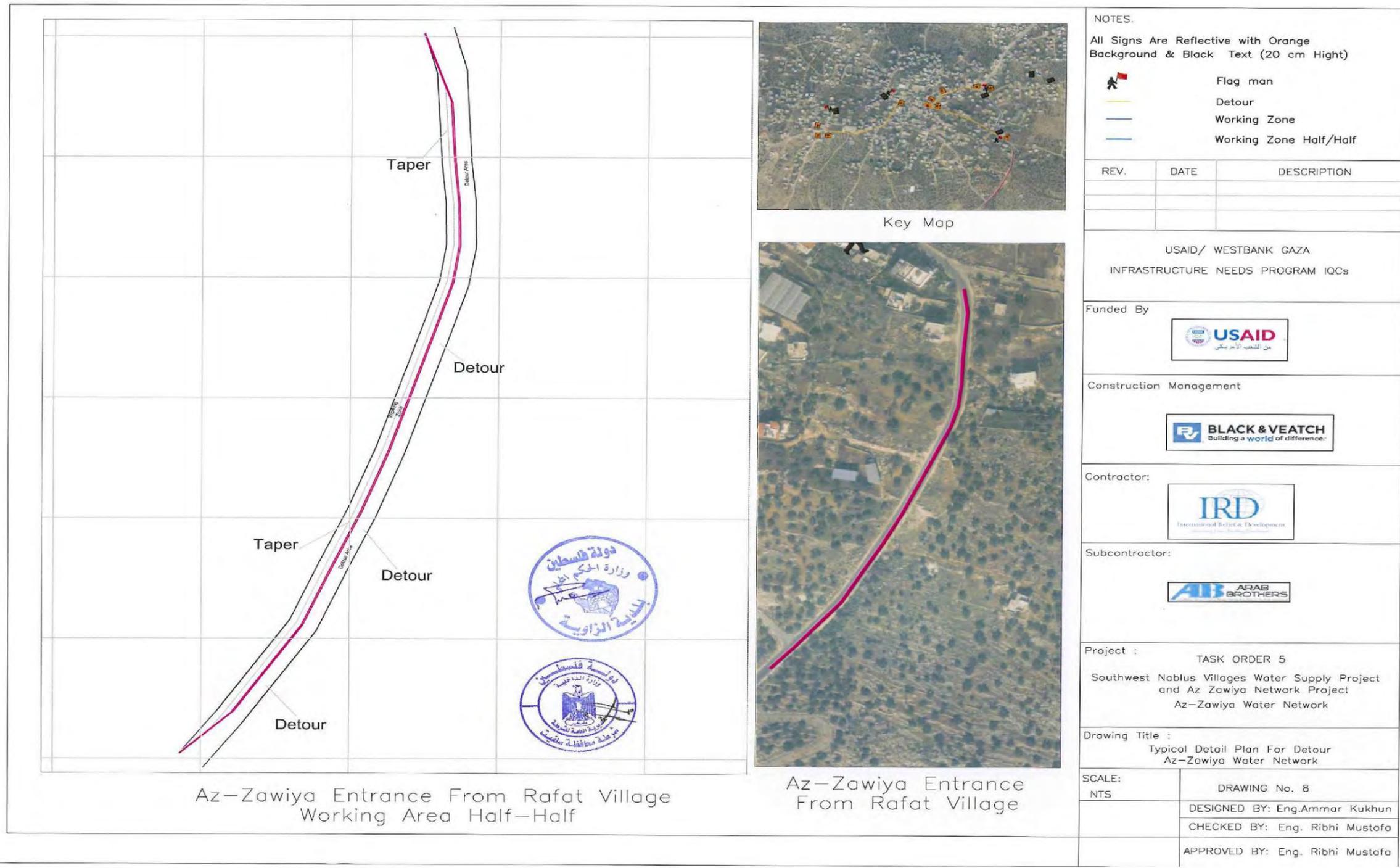
Project : TASK ORDER 5
Southwest Nablus Villages Water Supply Project
and Az Zawiya Network Project
Az-Zawiya Water Network

Drawing Title :
Typical Detail Plan For Detour
Az-Zawiya Water Network

SCALE: NTS	DRAWING No. 7
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

DISCLAIMER:

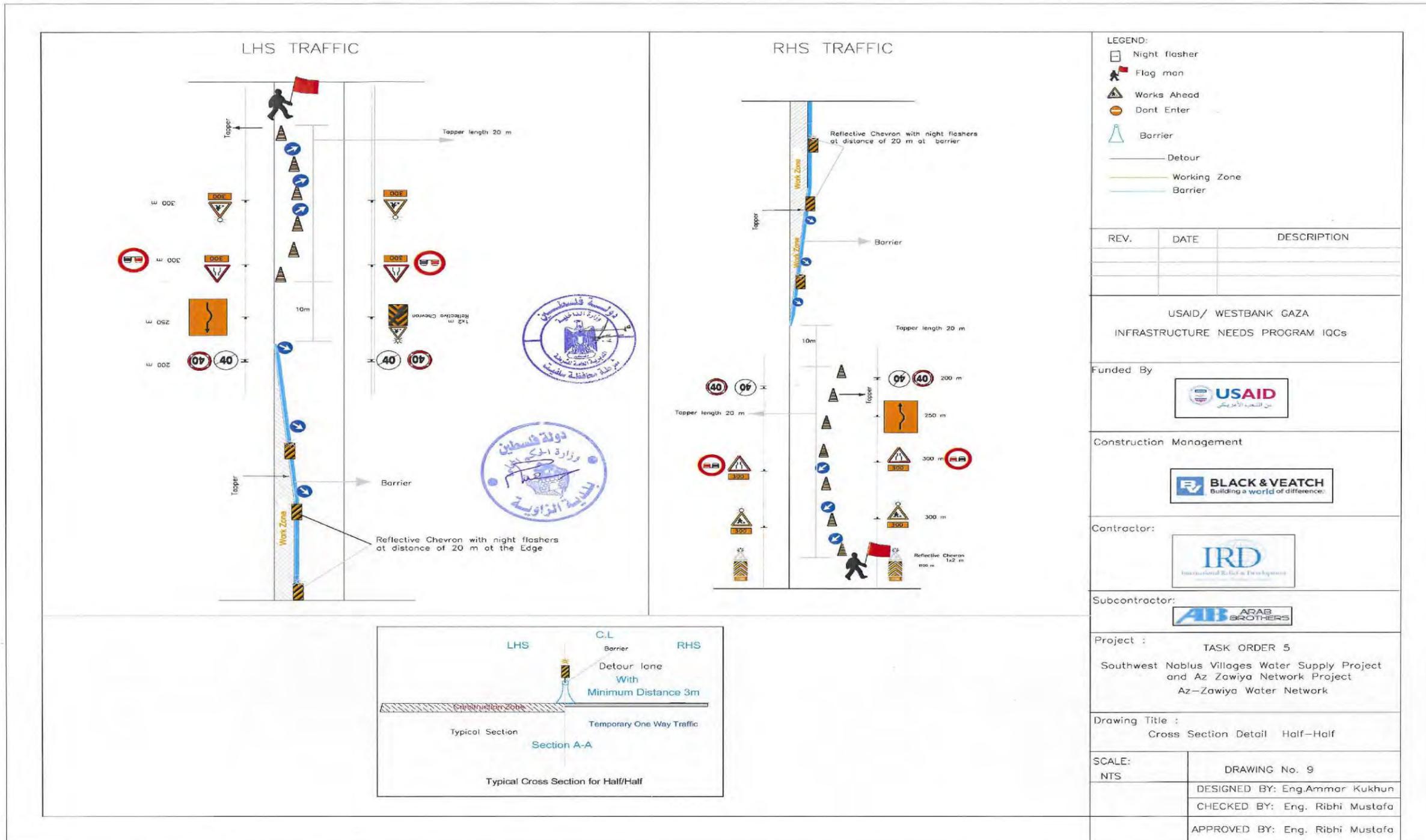
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



DISCLAIMER:

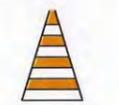
The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Traffic Control Section Details



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

	<i>Sign</i>	<i>Dimension</i>	<i>Description</i>
1		80 cm	speed limit
2		90 cm	Road Narrows
3		80 cm	No Overtaking
4		90 cm	Works Ahead
5		80 cm	Arrow
6		20*80 cm	Reflective Chevron
7		90*90 cm	Reflective Chevron
8		90	Reflective cone
9		1.2*2 m	Reflective Chevron




NOTES:
 All Signs Are Reflective with Orange Background & Black Text (20 cm Hight)
 The Barrier to be Continuous Along the Construction Area
 Nigh Flashers With chevrons to be Provided over the barriers at Maximum Distance of 20 l.m.

REV.	DATE	DESCRIPTION

USAID/ WESTBANK GAZA
 INFRASTRUCTURE NEEDS PROGRAM IQCs

Funded By



Construction Management



Contractor:



Subcontractor:



Project :
 TASK ORDER 5
 Southwest Nablus Villages Water Supply Project
 and Az Zawiya Network Project
 Az-Zawiya Water Network

Drawing Title :
 Legend Key

SCALE: NTS	DRAWING No. 10
	DESIGNED BY: Eng.Ammar Kukhun
	CHECKED BY: Eng. Ribhi Mustafa
	APPROVED BY: Eng. Ribhi Mustafa

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.8 Construction Risk Management

In the construction industry, risk management involves identifying risks, assessing them and then developing strategies to manage them. The level of risk in construction is due to the uniqueness of every project, the uncertainties introduced by the project stakeholders, regulatory protocols, and many other factors that are known unknown at the start of any project. For Az Zawieh Network Project, IRD engineers have undertaken a comprehensive risk management process using the methodology outlined below:

7. Risk Identification

IRD's project engineers performed a dilapidation survey in conjunction with the selected local subcontractor immediately before the subcontractor commenced their site work. Photographs and detailed journal records were taken as part of the survey for recording the pre-construction condition of properties adjoining the project site, which may be influenced by the subcontractor's work.

8. Risk Impact Assessment

For each risk identified, IRD assessed the risk event in terms of likelihood of occurrence and its impact on project objectives if the risk event occurs. Some construction site risks have to be accepted in order to have an opportunity to take advantage of their positive outcome.

9. Risk Response Planning

For each risk in the Risk Response Plan, the Project Manager (PM) determined the options and actions to reduce the likelihood or consequences of impact to the project's objectives. The PM described the actions taken to mitigate the risk and then had response/action taken when the risk event occurred (contingency plan). Finally, the PM assigned responsibilities for each agreed upon response.

10. Risk Response Tracking

The PM documented the dates and the actions taken to mitigate the risk and the actions taken when the risk event occurred (contingency plan). In addition to documenting the subsequent actions taken and incorporating this information into the Risk Response Plan

11. Monitor Risk

The PM established systematic reviews and scheduled them in the overall construction project schedule. These reviews were to ensure:

- All of the requirements of the Risk Management Plan are being implemented
- Assess currently defined risks
- Evaluate effectiveness of actions taken
- Status of actions to be taken
- Validate previous risk assessment
- Validate previous assumptions
- State new assumptions
- Identify new risks
- Risk Response Tracking
- Communications

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

12. Control Risk

- Take corrective action when actual events occur
- Assess the impact of the actions taken on the project
- Identify new risks resulting from risk mitigation actions
- Ensure the Project Plan (including the Risk Management Plan) was maintained
- Ensure change control addressed risks associated with the proposed change
- Revise Risk Response Plan
- Communications

The risk identification and mitigation for TO-05-ZWN project are identified and explained in the approved submittal SUB-13-00005-ZWN-074-A-Construction Risk management Plan for Az Zawieh Network.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

3.9 Quality Control Program

The implemented water project complied with the contract requirements and specifications and throughout the construction period, the approved quality control plan / quality assurance manual was applied and every effort was made to assure compliance with the specifications and drawings. All construction activities were closely monitored to ensure that the plans and specifications of materials were properly identified and conformed to the contract specifications and drawings.

The QC program was managed by the QC Manager. QC Manager reported directly to the Program Director of IRD, Inc. The QC Manager coordinated and cooperated with the Site Project Managers, but had the required freedom to act independently.

The QC Manager was responsible for implementing the Quality Control Program, providing direction for the QC Staff, issuing nonconformance reports and stop work orders, preparing all submissions and reports that are required by the contract documents.

IRD used the various monitoring and reporting forms when conducting required tests. All suppliers were monitored and tested prior to acceptance.

There were no NCNs “Non-Compliance Notice” issued for Az Zawieh Project.

In total, there were 86 lab tests for different types of installed materials, six test submittals were rejected; samples were taken again and the materials were retested; all remaining tests passed and complied with technical specifications and QA/QC requirements. Regarding failed tests the following summarize failed tests, the reason behind failure and IRD’s corrective measures taken:

- 1- TEST-13-00005-ZWN-001-A: Lab Testing Report for Bedding (Somsom) Line Z2-001 ZWN St. 0+000 to St. 0+420. CMC comments: Percentage passing Sieve No. 200 & Sieve No. 4 exceeds the maximum limit. Percentage passing shall be within allowable limits.
- 2- TEST-13-00005-ZWN-002-A: Lab Testing Report for single size aggregate-Line Z2-001 ZWN St. 0+000 to St. 0+420. CMC comments: Percentage passing Sieve No. ½” is below the minimum limit. Percentage passing shall be within allowable limits.
- 3- TEST-13-00005-ZWN-003-A: Lab Testing Report for Base Course-Line Z2-001-ZWN St. 0+000 to St. 0+420. CMC comments: Percentage passing Sieve No. 200 exceeds the maximum limit. The percentage passing shall be within the allowable limit, Plasticity Index PI is at maximum limit.
- 4- TEST-13-00005-ZWN-005-A: Lab Testing Report for Bedding (Somsom) at Az Zawieh Storage Area. CMC comments: Percentage passing Sieve No. 200 & Sieve No. 4 exceeds the maximum limit. The percentage passing shall be within the allowable limit.

IRD took immediate action regarding the failed tests; materials were replaced, retested and complied with technical specifications and QA/QC requirements.

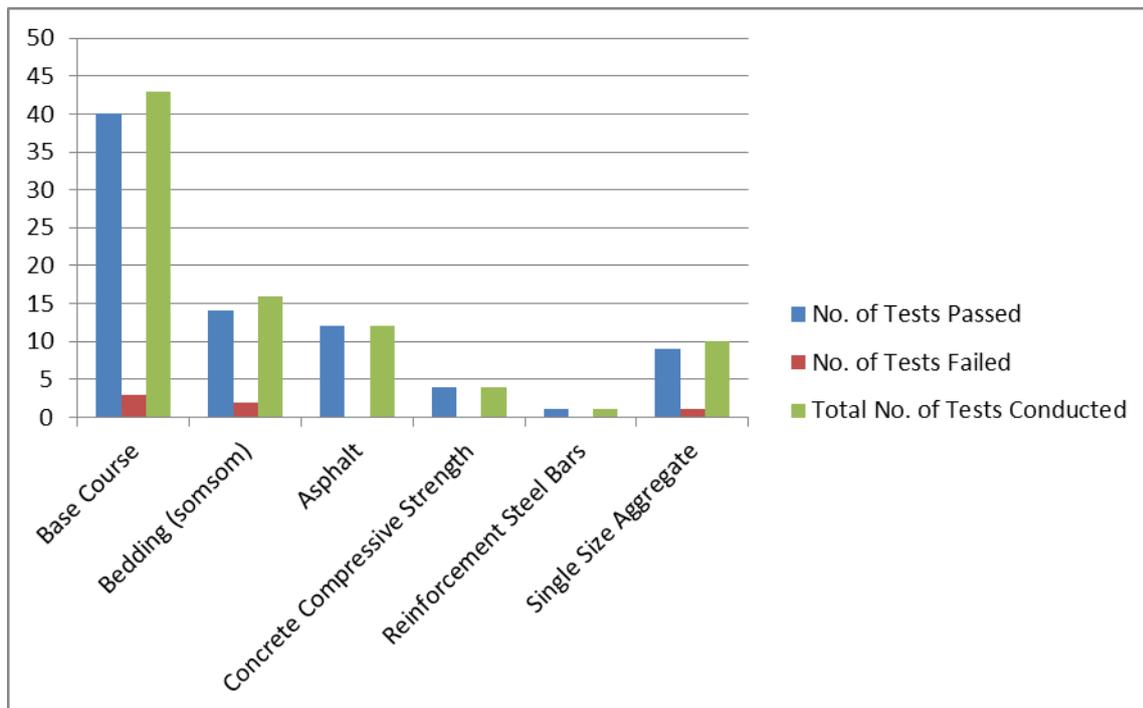
The following table and chart summarize the statistical status of the tests conducted for the various types of materials used for the project.

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Type of Material Test	No. of Tests Passed	No. of Tests Failed	Total No. of Tests Conducted
Base Course/Material & Testing	40	3	43
Bedding (somsom)	14	2	16
Asphalt	12	0	12
Concrete Compressive Strength	4	0	4
Reinforcement Steel Bars	1	0	1
Single Size Aggregate	9	1	10
Total	80	6	86

Quality Control Testing Statistical Analysis



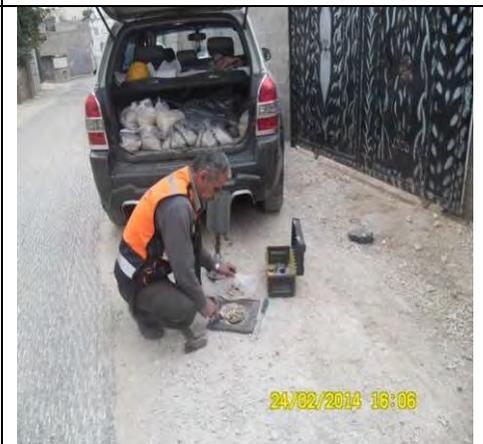
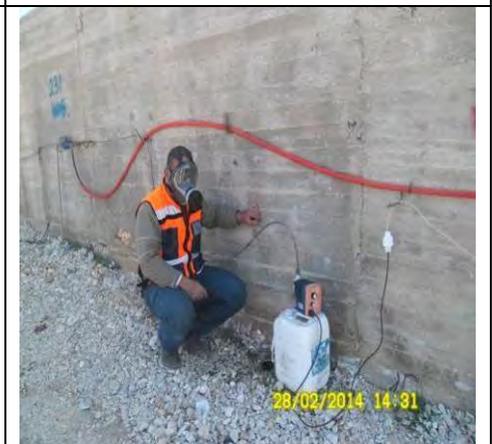
Please review Annex B.9: Project Laboratory Tests Log for further details.

The photographs below show examples of lab tests taken on site.



DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

<p>Photo #1: ZWN- Holiday test. October 08 2013</p>	<p>Photo #2: ZWN- Holiday test. December 03 2013</p>	<p>Photo #3: ZWN- BC Technicians taking a sample from the compacted base course layer for field compaction test. December 28 2013</p>
		
<p>Photo #4: ZWN- BC Technicians taking a sample from the compacted base course layer for field compaction test. January 05 2014</p>	<p>Photo #5: ZWN- Checking thickness of the asphalt layer . January 05 2014</p>	<p>Photo #6: ZWN- Checking top of the placed base course layer to maintain 10 cm of asphalt paving. January 06 2014</p>
		
<p>Photo #7: ZWN- Hydrostatic pressure test. January 19 2014</p>	<p>Photo #8: ZWN- Flushing test. January 21 2014</p>	<p>Photo #9: ZWN- B&V QM checking the temperature of the hot asphalt mix. January 22 2014</p>
		

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

<p>Photo #10: ZWN-IRD QCM checking the temperature of the hot asphalt mix. January 25 2014</p>	<p>Photo #11: ZWN-BC Technicians taking a sample from the compacted base course layer for field compaction test. February 24 2014</p>	<p>Photo #12: ZWN-Disinfection work. February 28 2014</p>
		
<p>Photo #13: ZWN-Chlorine concentration. February 28 2014</p>	<p>Photo #14: ZWN-Hydrostatic pressure test. March 05 2014</p>	<p>Photo #15: ZWN-Disinfection work. March 08 2014</p>
		
<p>Photo #16: ZWN-Disinfection work. March 09 2014</p>	<p>Photo #17: ZWN-BC technician taking asphalt core test. March 17 2014</p>	

3.10 Site Facilities

In accordance with the contract requirements, IRD furnished and equipped the office for CMC/B&V use throughout the contract period of performance, and was responsible for all utility costs imposed on the CMC/ B&V office. IRD selected to rent an existing structure of 100 m² for the use of the CMC as a secondary field office and supplied the office with needed furniture, telecommunications and equipment. The selected facility was suitable for long-term use, and was verified to conform to applicable plumbing, electrical and structural codes in effect. The Secondary office is located in Az Zawieh at the following coordinates:

N: 32° 5'42.62", E: 35° 2'14.54", Elev. 241.

The following table provides a summary of the layout of the engineer secondary field office:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

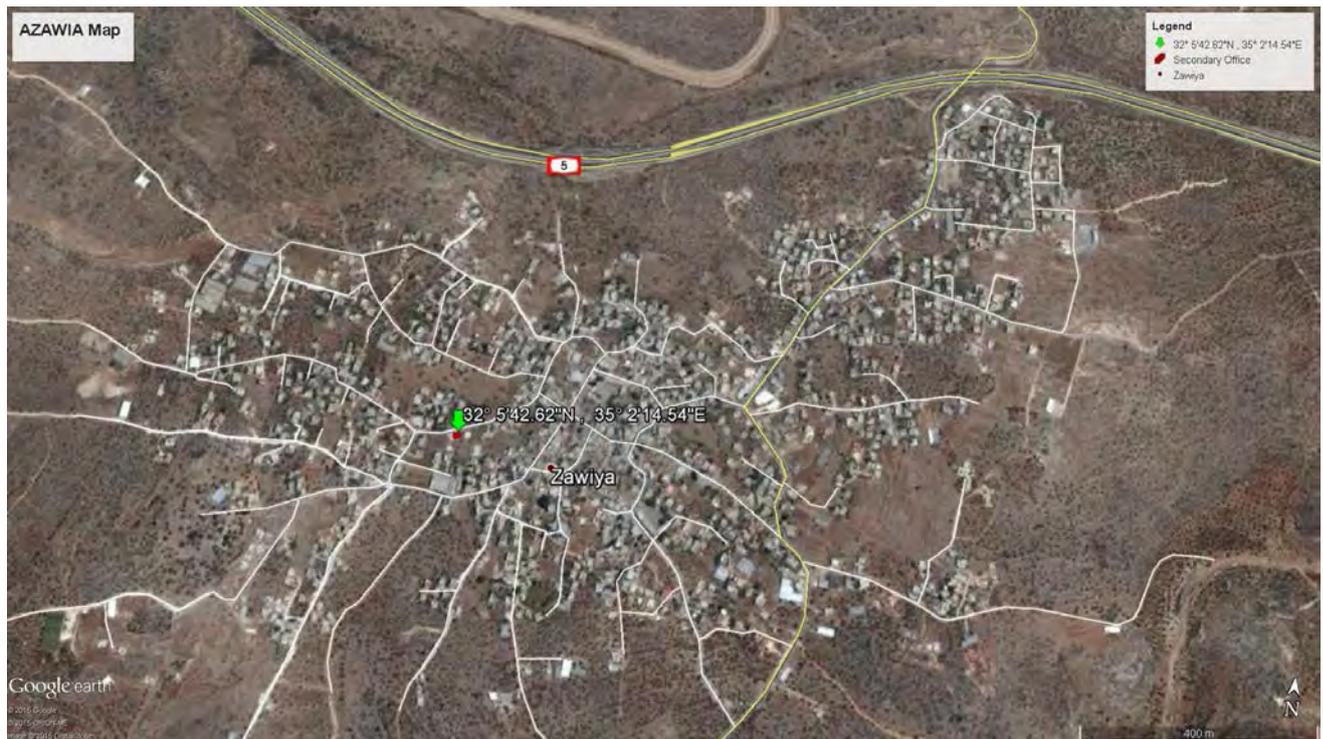
No.	Item	Specification Requirement	Actual for Proposed Office
1.	Total Office Area	N.A.	Approximately 100 m ²
2.	Conference Room	N.A.	1 (50 m ²)
3.	Reception and File Area	N.A.	1 (7m ²)
4.	Offices	2 offices	3 offices
5.	Kitchenette	1	1
6.	Bathroom	1	2
7.	Small Storage Room	1	1

IRD offices: IRD also rented a suitable office to accommodate IRD's project staff. The following map shows the CMC/ B&V and IRD office locations & Emergency locations for ZWN Project:

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Secondary Office for ZWN Project:



3.11 Communication and Correspondence

Throughout the project duration, IRD maintained excellent communications with USAID, CMC/B&V and local community to maximize project benefits.

In the early phases of the project's implementation IRD's public relations specialist promoted the project and established good relations with the local communities. This was achieved through the delivered flyers and regular contact with the inhabitants. The flyers were prepared in cooperation with CMC/B&V and approved by USAID.

The following flyer was distributed for TO-05-ZWN

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



USAID
من الشعب الأمريكي



فلسطين

النشاط في تسارع



بتمويل من الوكالة الأمريكية للتنمية الدولية (USAID) وبالتعاون مع سلطة المياه الفلسطينية، تتم هذه الأيام أعمال إنمائية تهدف إلى تزويد قرية الزاوية شمال نابلس بمياه الشرب. تشمل أعمال الإنشاء تركيب شبكة مياه بطول 14 كم في قرية الزاوية ومن ثم إعادة المناطق التي استكمل العمل فيها إلى وضعها الطبيعي.



سيتم هذا المشروع على توفير مياه الشرب بشكل دائم لما يزيد عن 5,700 مواطن فلسطيني في المناطق المذكورة لدى الإنتهاء من تنفيذه المتوقع في شهر شباط 2014.

يتم تنفيذ المشروع من خلال مؤسسة الإغاثة والتنمية الدولية (IRD) وبإشراف من شركة بلاك أند فيتس. نأسف لأي ازعاج قد تتعرضون له أثناء تنفيذ المشروع،



إذا كانت لديكم أية استفسارات يرجى الإتصال مع وزارة الأشغال العامة والإسكان الفلسطينية. مع الإحترام،

الوكالة الأمريكية للتنمية الدولية (USAID)
برنامج البنية التحتية

After the completion of the project, a permanent project sign was installed in a visible location to promote the project, and inform the public that the project is funded by the American People. The permanent signs was installed in March 11, 2014 at Station 0+105.12 on Line Z6-38, Coordinates: N:166977.24, E:154200.31.



TO-05-ZWN-Permanent project sign installed at St. 0+105.12 on Line Z6-38

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

The following is the final approved permanent sign text for TO-05-ZWN:



Daily communication on the site between IRD staff and CMC/B&V RE were conducted through the daily joint construction reports, site instructions and other site communication documents.

3.12 Coordination

IRD had coordinated closely with all concerned parties and held regular meetings with CMC/B&V engineers and staff from the local Village Councils. IRD exerted all efforts in order to ease the construction burden to the surrounding people and worked diligently to open access roads and “smooth” areas for community use. IRD also maintained very close coordination with the PWA and DCL offices during the project implementation.

DCL Coordination

Throughout the duration of the project, IRD maintained regular relations and communications with the District Civilian Liaisons (DCL).

The following table summarizes the meetings held with the DCL during the project implementation:

Date	Attendees	Subject/Description
May 06, 2013	Nablus DCL, IRD	General meeting, briefing about the Project Scope of Work.
April 25, 2013	Nablus DCL, IRD	General meeting, briefing about the Project Scope of Work.
May 21, 2013	Nablus DCL, IRD	Discussing the new traffic control plan.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Date	Attendees	Subject/Description
May 23, 2013	Nablus DCL, IRD	Following up the projects work progress.
May 26, 2013	Nablus DCL, IRD	Inquiries from DCL regarding the project drawings, schedule, guards.
May 28, 2013	Nablus DCL, IRD	Inquiries from DCL regarding the project drawings, schedule, guards.

3.13 Site Visits

During the construction period, there were many different visitors, including:

- **USAID:** Numerous USAID visits had been conducted during construction; this included management, engineering, contracts and administrative staff.
- **Local Authorities:** During construction, IRD coordinated regularly with Az Zawieh village councils.
- **PWA:** Numerous visits had been conducted during construction in order to follow up the progress and help coordinate the efforts of all involved parties.
- **CMC/B&V main Office:** Regular visits from the CMC/B&V main office had been conducted to follow up and check progress and coordination efforts.

Site Visit Photos:

		
Photo #1: ZWN- USAID visiting Az Zawieh Network. July 02 2013	Photo #2: ZWN- USAID and B&V visiting Az Zawieh Network. January 05 2014	Photo #3: ZWN- USAID visiting Az Zawieh Network. February 24 2014

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

		
<p>Photo #4: ZWN-B&V meeting with the mayor. February 25 2014</p>	<p>Photo #5: ZWN-Photo during the initial walkthrough. March 25 2014</p>	<p>Photo #6: ZWN-Photo during the final walkthrough. March 31 2014</p>

For more details, please see Annex B.4: Project Site Visit Log and Site Visit Photos.

3.14 Operation, Maintenance, testing, commissioning and Training

Training: The following reflects the training that were conducted and organized in the classroom and field for ZWN project.

1. Prepaid Training had been conducted for three days by the supplier representative for the municipality technical and administrator staff. The training covered three major topics; software user manual; HHU user manual and meter catalogue. Prepaid water meter training had been conducted by Technical Company for Electrical Engineering representatives, Mr. Muawiyah Hidmi and Mr. Mohammed Qasem for the following municipal staff:
 - Yousef Abdallah Ahmed Musleh, IT officer
 - Mousa Mohammed Abu Zer, Accountant
 - Yasser Musa Qasim abu qoho, water technician
2. Bermad Control valve training had been conducted in one day by Bermad representative for the municipality technician. The training covered the control valves manual and calibration/ setting process. Bermad Control Valve Training had been conducted by Bermad representative, Mr. Afif Hawwash for Yasser Musa Qasim; water technician (municipality staff).

The objective of both classroom and hands-on field training was to provide the knowledge needed by the Owner technicians, engineers and maintenance team to safely operate, maintain and repair all installed control valves, air valves, prepaid water meters and vending stations. The required training provided all needed information to make sure that the trained staff is able to deal with the installed system. All supporting documents such as operation and maintenance manual, data sheets and others was provided to the trainees during the classroom training.

Disinfection: Disinfection process had been successfully conducted for all installed pipelines, service house connections, valves and fittings after the successful completion of the

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

hydraulic pressure test and pre-flushing activity. The disinfection process was performed by Mr. Mohamad Hadidoun, representative of Center for Chemical and Biological Analysis – Al Quds University/ Jerusalem. Mr. Hadidoun is authorized by Al Quds center to conduct the disinfection process of the water network system; he was approved also by the CMC to conduct this activity.

As an integral part of the disinfection process, pipelines and house connections flushing was performed to the disinfected water system by Mr. Hadidoun as well. Municipal water source was used during the implementation of the whole process of the disinfection and flushing activity.

Zawieh Water Network Disinfection and Flushing

The disinfection and flushing process were implemented as per the approved submittal, Pressure field test and disinfection plan, submitted on Oct. 30, 2013. The implemented process is described as follows:

Reference Standard: disinfection and flushing Works had been performed in compliance with ANSI/AWWA C651 standards.

Dosage: Disinfection was performed through dozing the chlorine- water solution 12 %. (This is the maximum available concentration in the local Market).

Chlorination Process: A chlorine-water mixture was uniformly introduced into the pipelines by means of a solution-feed chlorinating pump. The chlorine solution was introduced at one end of the pipeline through a tap in such a manner that as the pipeline is filled with water, the dosage applied to the water entering the pipelines was approximately 50 mg/l. Along the water pipelines; ports was installed both for chlorine dozing and for testing and inspection as well.

Retention Period: The injected chlorinated water was left in the pipelines for at least 24 hours. After that, the free chlorine residual at the different locations of the pipelines extremities and at other representative points was measured using the calorimeter device. Multi chlorine residual samples were taken at the presence of the CMC engineers during the first day of the chlorine injection. After 24 hours of injection and after flushing, all results were within the relevant water quality standards.

Final Flushing: After the applicable retention period passed, the chlorinated water was flushed from the whole water network until chlorine measurements showed that the concentration in the water leaving the pipeline was not higher than that generally prevailing in the system or was acceptable for domestic use, and not exceeding 0.7 mg/l.

Bacteriological Testing: After final and successful flushing and before the water pipelines and service house connections were connected and placed in service, twelve water samples for bacteriological testing purposes were collected by Mr. Hadidoun from different locations in the water network. The collected samples were tested at “Chemical and Biological Analysis Center” in Al Quds University for bacteriological quality testing in accordance with the PWA requirements.

Water Quality Sampling and Results

Report for free chlorine results and bacteriological results was prepared by Chemical and Biological Analysis Center, Al Quds University for the water samples taken by the lab

DISCLAIMER:

The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

representative. The report showed that the water quality of the disinfected water network of Zawieh is within the referenced standards of the PWA and AWWA.

Disinfection Process Photos

- The following Photos show part of the disinfection works implemented by Mr. Hdidoun at Zawieh water network project during the disinfection period.



Pre commissioning, commissioning and testing: the following had been conducted:

- Pre commissioning works started on March 13, 2014 for seven successive days.
- The commissioning and testing started after finishing the pre commissioning period.
- In the testing and commissioning works the following has been performed:
 - ✓ Make sure that the water was flowing through all pipelines, and house connections.
 - ✓ Make sure that the installed PPWM were functioning well and as programmed.
 - ✓ Make sure that the hydrostatic pressure arrived all high points at the water distribution system.
 - ✓ Make sure that the installed control valves, PRV, FCV, & Pressure relieve valve, inside main connection chamber were set correctly and work as per the design.
 - ✓ Make sure that the upstream and downstream pressure settings of the PRV are as per deigned (14 bars upstream and 7 bars downstream.)

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- ✓ Make sure that all installed valves and air release valves work properly and maintain the network as required for maintenance.
 - ✓ Make sure that the connections between the old pipelines and the new installed system are functioning and that the water from the new system reaches the old pipelines.
- After 14 days of pre commissioning, testing and commissioning the installed system was successfully operating with no hydraulic or leakage issues.

3.15 Construction Challenges

Although IRD did not face major obstructions during the construction phases and the project was completed on time without any delays, there were a few challenges during the construction period that required additional efforts from the contractor in addition to the contract requirements.

One of the most faced challenges was organizing the work and managing the resources inside highly populated rural areas with narrow existing streets. This challenge continued during the entire project implementation and was encountered and managed successfully by IRD through the additional PR activities, direct contacts with the locals and regular coordination with the local authorities.

After the accident occurrence in January 25, 2014, (explained earlier under section 3.8-site safety) additional safety measures, PR and overall management improvement were introduced through the end of the project in order to prevent similar or any safety incident to occur again.

Some other construction challenges were also encountered during the project implementation such as:

- 1- Excavation in very hard rock that was overcome using and scheduling the proper equipment and method of excavation (such as rock breaking...etc.).
- 2-The introduction of new prepaid water meters was also challenging but was overcome with timely public promotion, explanation of benefits of using such water meters directly to the consumers as well as through the commissioning and testing process which was conducted in close coordination with the PWA and local authorities. Few prepaid water meter enclosures and prepaid water meters were damaged by the residents before handing over the project.
- 3- Unavailability of shop drawings for the existing utilities, which resulted in conducting trial pits to locate them and caused damage to some utilities during excavation activities.
- 4- Encountering few existing septic tanks adjacent to edges of the roads, which resulted in excavation activities slow down and the need to install shoring for these septic tanks to keep them protected while functioning.

4. SUBCONTRACTOR BACKGROUND INFORMATION

Arab Brothers Construction and Infrastructure Group Company was established in 1998 as a privately owned incorporation. The company has extensive experience in general contracting and has implemented many infrastructure projects in the West Bank under the supervision of respectful donors and institutions such as PWA, USAID, CARE, and UNDP. Since it was founded, the company has successfully delivered several USAID funded infrastructure projects such as supply and installation of Tarqumia Transmission. Arab Brothers Construction and Infrastructure Group Company is classified by the Contractor's Union as:

Grade (1B) Buildings

Grade (1) Water and Sewage Grade

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

- (2) Electro Mechanical Grade
- (4) Roads.

5. GOVERNMENT FURNISHED PROPERTIES

As per Contract Specifications Section 01610-Government Furnished Materials, IRD and its subcontractor received Government Furnished Material that consisted of various sizes of pipes and fittings. The pipes and fittings were utilized in the installation of the transmission pipeline and the four water distribution networks under TO-05-SWN.

These pipes and fittings were stored at PWA Storage yards in Bani Naim and Awarta and transported to Madama and Az Zawieh storage yards by the subcontractor during the months of June and July 2013.

After completion of pipes and fittings installation, the CMC and IRD verified jointly the supplied, installed and waste quantities of all Owner Furnished Material. IRD and its subcontractor agreed to reimburse the cost of the damaged pipes to the owner at the unit rates of the Original Disposition Form supplied by the USAID. All unused surplus pipes and fittings were returned to PWA Awarta storage yard on September 14, 2014.

Items # VO 9.1a and VO 9.1b in the revised BOQ attached to the issued Variation Order #09 for the Transmission Pipeline captured the cost of the damaged pipes supplied under Owner Furnished Material.

The following table presents Government Furnished Material Balance Sheet (Attachment No.08 in VO-13-05-SWN-009):

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

USAID WEST BANK/ GAZA
INFRASTRUCTURE NEEDS PROGRAM INP
CONTRACT NO. AID-294-1-00-08-00217
TASK ORDER NO. AID-294-TO-13-00005
SOUTHWEST NABLUS VILLAGES WATER SUPPLY PROJECT AND AZ ZAWIEH NETWORK PROJECT

Item No.	Description	Unit	Received / Paid				Total (1)	Installed		Total (2)	Waste (+) *	Balance	Unit Rate (\$)	Total
			PWA	Transferred Under VO#08	Available in Madama Storage Yard	Contractor		Project No.1	Project No.2					
						Total (1)-Total(2)-Wastage								
Steel Pipes														
1	Supply of DN 250mm Steel pipes	lm	971.93		(103.00)		868.93	854.08		854.08	14.25	(0.00)		\$0.00
2	Supply of DN 150mm Steel pipes	lm	5426.4				5,426.40	5065.86	229.71	5295.57	32.50	98.33	\$64.97	\$6,388.50
3	Supply of DN 100mm Steel pipes	lm	4591.1				4,591.10	3804.17	794.62	4591.1	0.00	0.00		\$0.00
4	Supply of DN 75mm Steel pipes	lm	10614.8	(746.00)			9,868.80	6363.37	3569.19	9732.56	60.61	75.63	\$27.92	\$2,111.59
Fittings														
1	2" SCH 40 Coupling, NPT thread female	No.	110				110	110		110.00	0.00	0.00		\$0.00
2	2" SCH 40 Elbow, 45 degree, NPT thread female	No.	75				75	75		75.00	0.00	0.00		\$0.00
3	2" SCH 40 Elbow, 90 degree, NPT thread female	No.	28		(28.00)		0			0.00	0.00	0.00		\$0.00
4	2" SCH 40 Pipe cap, NPT thread female	No.	145				145	145		145.00	0.00	0.00		\$0.00
5	Tee, straight 2"x2"x2", NPT thread female	No.	150		(117.00)		33	33		33.00	0.00	0.00		\$0.00
6	3" SCH 40 Elbow, 45 degree, butt weld	No.	23		(1.00)		22	16	6	22.00	0.00	0.00		\$0.00
7	3" SCH 40 Elbow, 90 degree, butt weld	No.	4		(1.00)		3	3		3.00	0.00	0.00		\$0.00
8	3" SCH 40 Pipe cap, butt weld	No.	90		(40.00)	(20.00)	30	21	9	30.00	0.00	0.00		\$0.00
9	Tee, straight 3"x3"x3" butt weld	No.	14		(8.00)		6	6		6.00	0.00	0.00		\$0.00
10	Tee, reduced 3"x3"x2" butt weld & NPT thread female on 2" outlet	No.	87				87	87		87.00	0.00	0.00		\$0.00
11	4" SCH 40 Elbow, 45 degree, butt weld	No.	15				15	15		15.00	0.00	0.00		\$0.00
12	4" SCH 40 Elbow, 90 degree butt weld	No.	6				6	6		6.00	0.00	0.00		\$0.00
13	4" SCH 40 Pipe cap butt weld	No.	45		(53.00)		12	10	2	12.00	0.00	0.00		\$0.00
14	SCH 40 Tee 4"x4"x4" butt weld	No.	11				11	11		11.00	0.00	0.00		\$0.00
15	SCH 40 Tee reduced 4"x4"x3" butt weld	No.	12		(9.00)		3	3		3.00	0.00	0.00		\$0.00
16	SCH 40 Tee reduced 4"x4"x2" butt weld	No.	24				24	24		24.00	0.00	0.00		\$0.00
17	Concentric Reducer 4"x3"	No.	13		(5.00)		8	5	3	8.00	0.00	0.00		\$0.00
18	Concentric Reducer 4"x2"	No.	11		(2.00)		9	7	2	9.00	0.00	0.00		\$0.00
19	6" SCH 40 Elbow, 45 degree butt weld	No.	4				4	4		4.00	0.00	0.00		\$0.00
20	6" SCH 40 Pipe cap butt weld	No.	25		(17.00)		8	8		8.00	0.00	0.00		\$0.00
21	SCH 40 Tee, straight 6"x6"x6" butt weld	No.	4				4	4		4.00	0.00	0.00		\$0.00
22	SCH 40 Tee, reduced 6"x6"x4" butt weld	No.	6		(1.00)		5	5		5.00	0.00	0.00		\$0.00
													Total	\$8,500.09

*Wastage : The CMC verified the wasted quantity which comprises short pieces of pipes resulted from normal cutting and installation and fit-up process. Damaged pipes disposed to waste dumping site. See attached photos.

CMC Representative: *Rabah Najjarah*
Signature: *[Signature]*
Sep. 22, 2014

Contractor Representative: *Daoud Abu-Ghannam*
Signature: *[Signature]*
Sept. 22, 2014

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

6. LESSONS LEARNED

❖ Safety

- No activities shall be underestimated in terms of traffic and safety arrangements.
- Specific safety plan shall be prepared and approved while working in narrow roads without pedestrian sidewalks and inhibited houses facing the roads directly.
- Equipment and Drivers licenses shall be inspected on a daily basis and a daily log for all used equipment, machinery and drivers licenses shall be prepared in this respect.
- Safety Toolboxes to be held on a weekly basis and at the beginning of any new activity for all site workers in order to focus on issues related to safety.
- The use of mini steel barriers for trenches of the pipelines installation proved to be more practical and easier to remove after trench backfilling completion.

❖ Housekeeping:

Housekeeping is an ongoing issue that requires continuous follow up and needs to be addressed seriously. It is preferable to assign a crew by the contractor for this vital issue.

❖ Quality:

- There is no compromise on quality issues when it's related to work implementation; additional quality control measures shall be taken at the concrete batching plant and at sites when concrete pouring is executed to ensure that concrete quality complies with the contract technical specifications and the with the approved Job Mix Design.
- Periodical check for the concrete components (sand, coarse aggregates and additives) shall be made to ensure full compliance.
- Collection and preparation of the concrete cubes at site shall be conducted by technicians of the approved laboratories in accordance with contract requirements.
- Quality Control Log to be prepared for easy tracking and reference.

❖ Quantities:

- Project's quantities forecast is a crucial issue and shall be conducted periodically.

❖ Long Lead Items:

These items are the most critical items that need to be addressed seriously from the beginning of the project; time of delivery needs to be achieved as per planned and without any delay; failure to obtain the CMC approval on the planned time will delay procurement and may cause a significant delay for the whole project and results in applying LDs by the Client.

❖ Progress Payments:

Invoicing of the interim progress payments depends on the jointly signed daily measurement sheets by the CMC and the Contractor representatives. Consequently, these measurement sheets need to be signed as quickly as practical in order to match between the earned value and the invoiced amount and submit the payments periodically.

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

For more information, please visit
[http:// www.usaid.gov/west-bank-and-gaza](http://www.usaid.gov/west-bank-and-gaza)

DISCLAIMER:

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

USAID WEST BANK/GAZA

American Embassy

USAID

71 HaYarkon Street

Tel Aviv, 63903

Israel

www.usaid.gov/west-bank-and-gaza