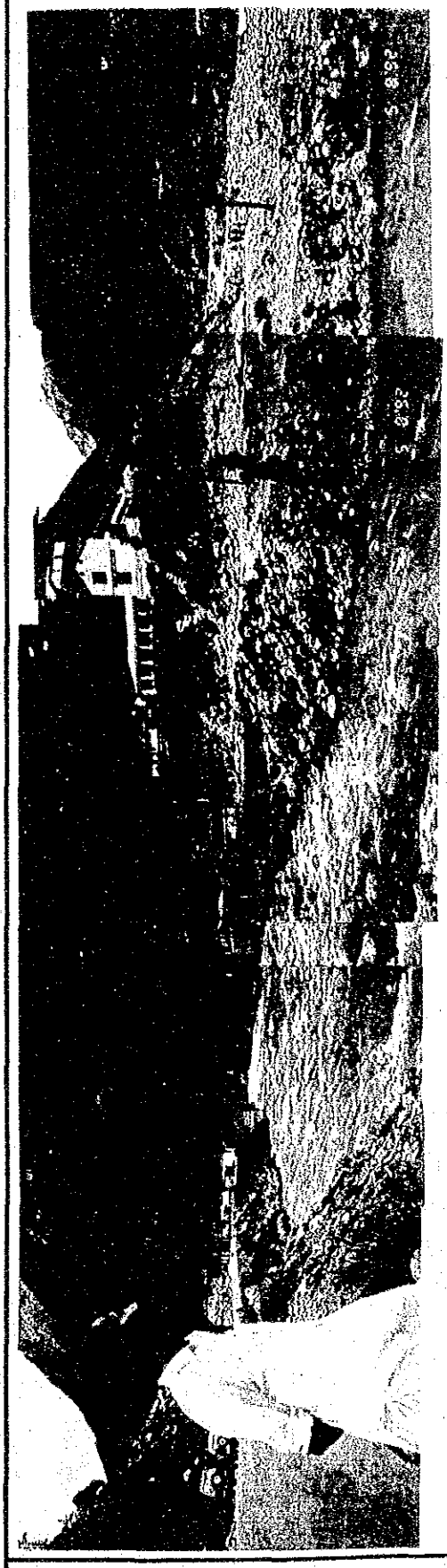
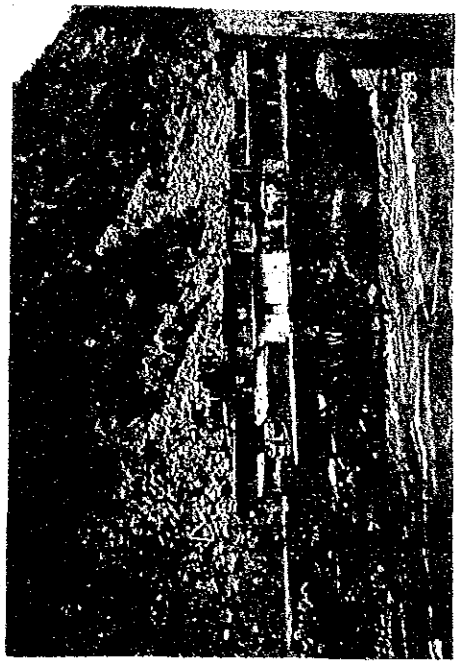
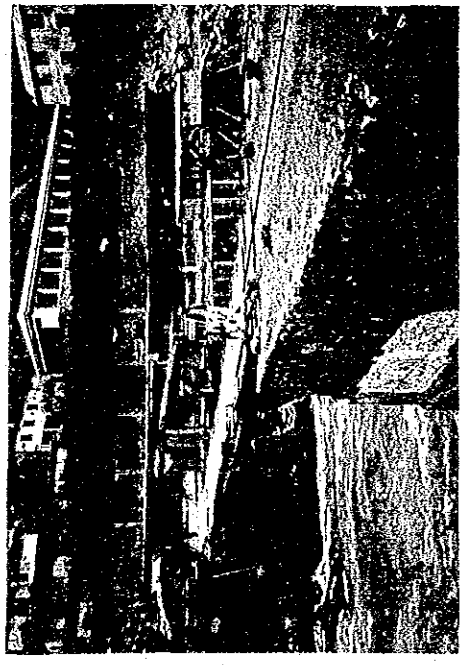
No.15 Mankial Bridge, Swat District



Downstream side view of the existing Mankial Bridge

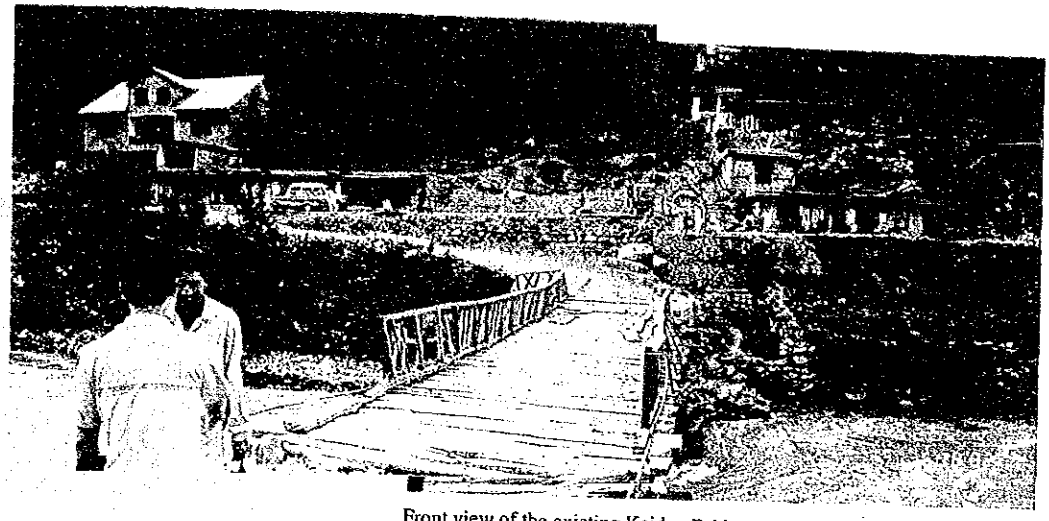


Approach on the right side bank viewed from the opposite side

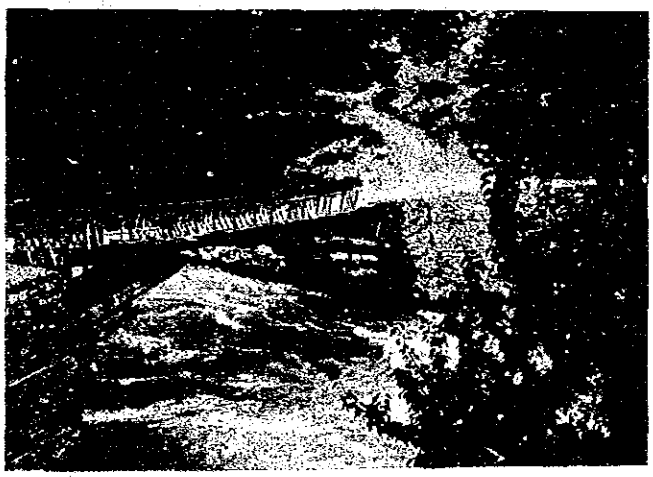


Existing Mankial Bridge made up of timber cantilever supports, wooden deck plates and suspending wires

No.16 Kaidon Bridge, Swat District



Front view of the existing Kaidon Bridge



Downstream side view of the existing Kaidon Bridge

Proposed location of new bridge, approx. 25 m upstream of the existing bridge

No.17 Peer Baba Bridge, Buner District

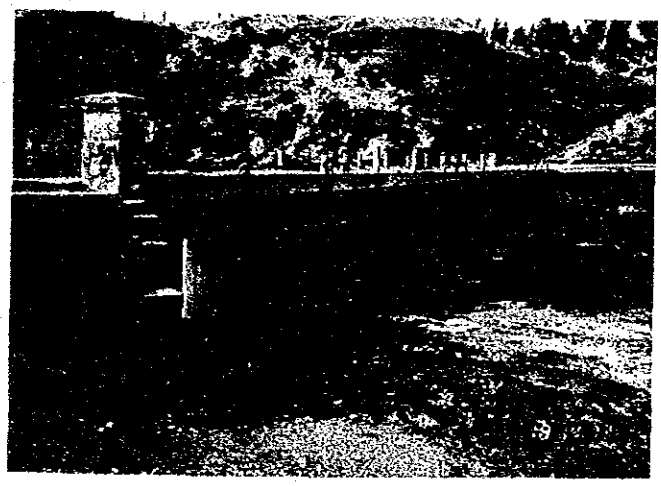
Upstream side view of the existing Peer Baba Bridge

Vehicle passes riverbed when water level is low

Proposed location of new bridge

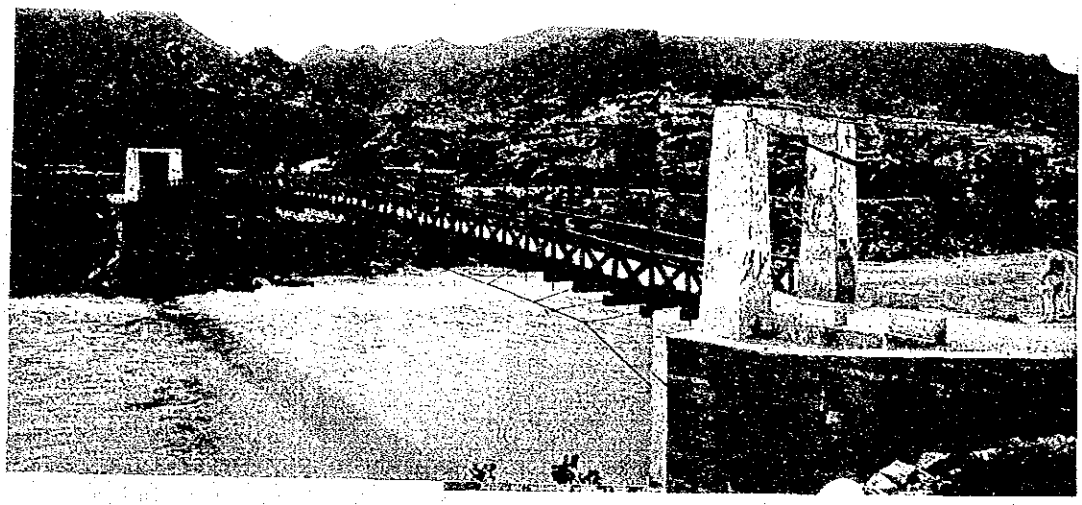
No.18 Jahazoona Dak Bridge, Malakand Agency

Existing Jahazoona Dak Bridge viewed from left bank side



Proposed location of new bridge

No.19 Totakan Bridge, Malakand Agency



Downstream side view of the existing Totakan Bridge

Proposed location of new bridge

No.20 Sakhakot Bridge, Malakand Agency

Downstream side view of the existing Sakhakot Bridge

Existing condition viewed from left bank side

Bridge in Abbottabad District

Bridge No. 1 Narlai Bridge

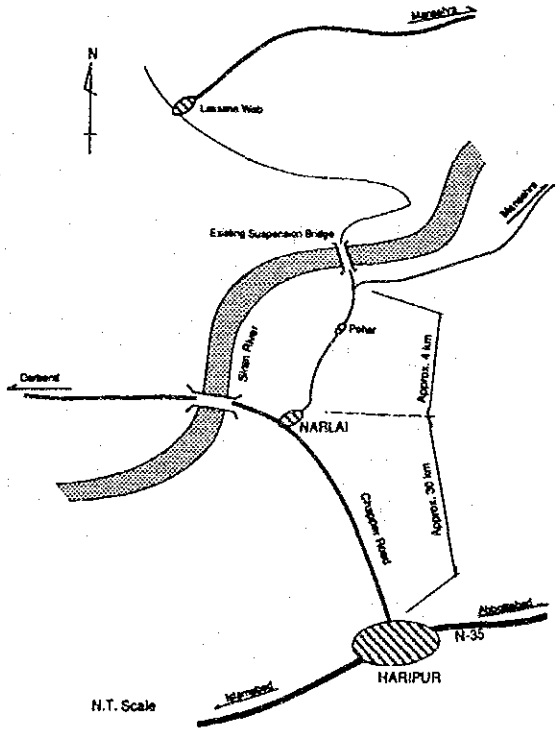
Existing Bridge: Pind Gali road crosses the Siran river approximately 10 km to the WSW of Abbottabad. The bridge is of suspension type wooden structure foot path bridge with a width of 1.0 meter. It is old and dilapidated.

Benefits anticipated: When the new bridge is completed, the recipient population of the benefits would be 200,000 (present) ~ approx. 300,000 (future). The area to benefit would be approx., 200 km^2 of agricultural region producing wheat, rice, sugar cane and beans.

Proposed new Bridge: The bridge site is situated in lat. 34°11'N, and long. 72°58'E, at an altitude of 600 m. There is a village in the left bank and field and gardens in the right bank.

Road connection at the left-bank side can be made by linking the Abbottabad-Haripur road running parallel to the Siran river which is now under construction. As for the approach road on the right bank side, there is a paved road up to Lassana Wab in Mansehra district and a jeepable road from there to the bridge site which can be linked to the bridge.

The proposed new bridge will be of prestressed concrete structure with an overall length of 100 m + 25 m.



Bridge No. 2 Desal Bridge

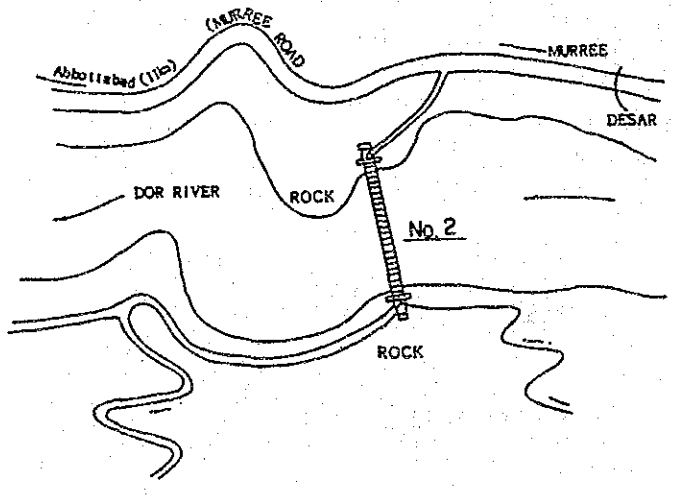
Existing Bridge: A mountain road which is linked to the Abbottabad-Murree road crosses the Dor river approx. 13 km E.S.E. of Abbottabad. The bridge is of suspension type wooden structure foot-path bridge with a width of 1.37 m and length of 88.8 m. It is old and severally dilapidated and in a hazardous state.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be approx. 20,000 (present) ~ 30,000 (future) which is quite small. The surrounding region is made up of farmland producing wheat and corn and the area to benefit is quite small.

Proposed new Bridge: The bridge site is situated in lat., 34°09'N and long. 73°18'E at an latitude of 1.210 m.

The surrounding terrain in mountainous and the approach road at the left-bank can be made by linking the Abbottabad-Murree road to the bridge. On the right bank side, there are merely 2 walking footpaths and there is no schedule at the moment to construct a vehicular road in the near future.

The anticipated bridge would be a wooden suspension type bridge with a length of 95 m.



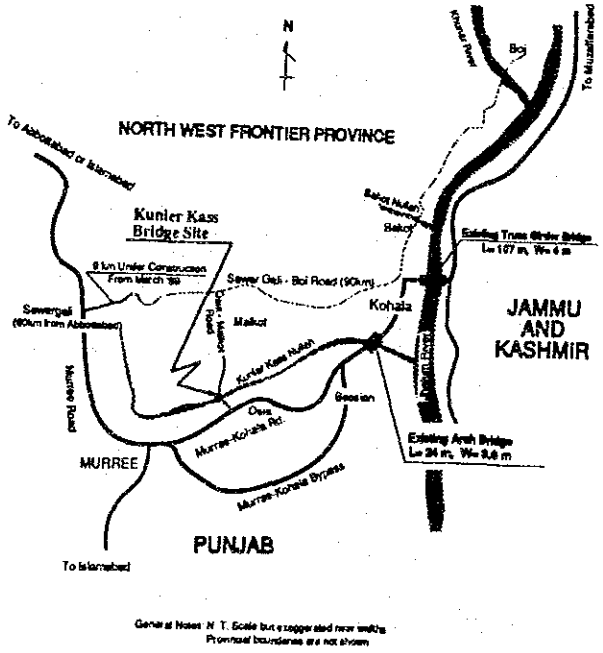
Bridge No. 3 Kunier Kass Bridge

Existing causeway: A gravel road linking the Osia village located near Murree in the Punjab Province and the Malkot village in the NWFP crosses the Kunier Kass approx. 28 km ESE of Abbottabad. A causeway with a width of 3.5m and length of 25m was constructed 5 years ago but had been washed away 2 years ago. There is a wooden structured suspension type bridge 1.0 km downstream which was constructed 15 years ago.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be 30,000 (present) ~ 50,000 (future). The surrounding region is made up of farmland producing wheat and corn and the area of benefits is quite small.

Proposed new Bridge: The bridge site is situated in lat. 33°59'N and long. 73°27'E at an altitude of 1,110m. The site is surrounded by mountainous terrain and the dry riverbed is a quarry site. The width of the river is large but the water-way is comparatively narrow with only 20m. The Osia-Malkot road which had been constructed by the local people can be linked to the bridge on both banks.

The anticipated bridge would be a prestressed concrete bridge with a length of 50m.



Bridges in Mansehra District

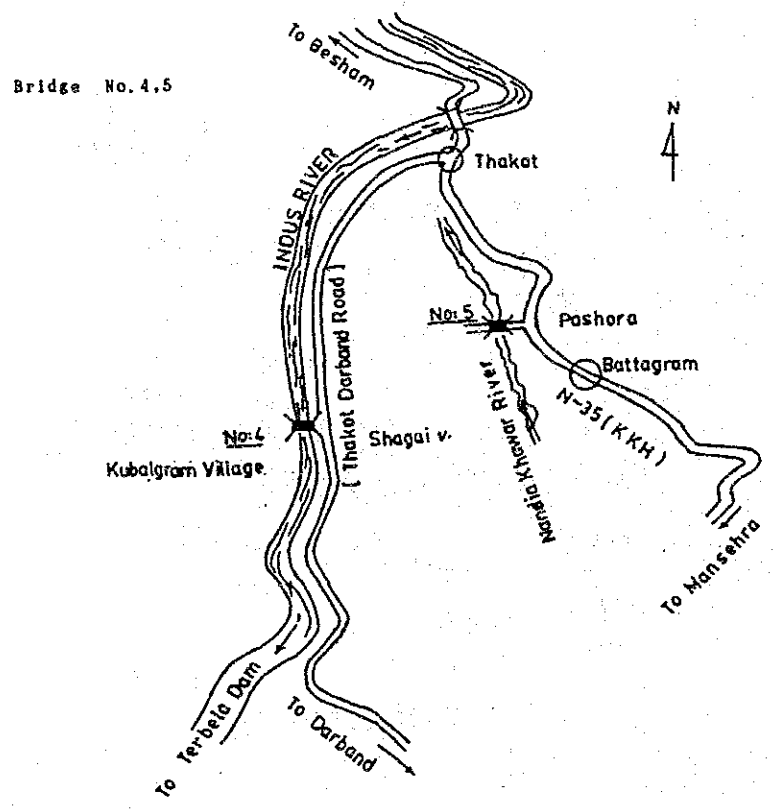
Bridge No. 4 Shagai Bridge

Existing Bridge: The bridge links the Kubulgram village in Swat district with the Shagai village across the river by the Thakot ~Darband road at approx. 47 km NW of Mansehra.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be 180,000 (present) ~ 270,000 (future) and quite large. The surrounding region is made up of farmland producing wheat, rice, corn and vegetables but since flat land is comparatively small, the labor productivity is low due to restrictions from the geographical features.

Proposed new Bridge: The bridge site is situated in lat. 34°39'N and long. 72°48'E at an altitude of 540m. The surrounding is composed of farmland in both banks. The connecting road on the left bank may have the Takot ~ Darband road now under construction to be linked to the bridge, but the completion of the road is expected to be delayed due to the flood damage suffered in September this year. As for the right bank side (Swat district side) there is no vehicular road to link the bridge.

The anticipated bridge would be a suspension type bridge with a span of 185 m.



Bridge No. 5 Pashorai Bridge

Existing Bridge: The bridge crosses the Nandia Khawar river near the Pashorai village located at Karakoram Highway Km-171, about 6 km west of Batagram.

There is no vehicular bridge existing, only a wooden structure suspension footpath.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be 50,000 (present) ~ 75,000 (future) and quite small. The surrounding region is made up of farmland producing rice, wheat, corn and vegetables.

Proposed new Bridge: The bridge site is situated 2 km downstream of the existing bridge in approx. lat. 34°42'N and long. 72°59'E at an altitude of 960m.

The anticipated bridge would be a prestressed concrete structure bridge with a span of approx. 50 m.

The bridge location is shown on the location map of Bridge No.4.

Bridge No. 6 Jabrai Bridge

Existing Bridge: The bridge crosses the Jabrai river near the Jabrai village located at Darban-Suwan-Battal road Km-16, about 27 km north of Mansehra. The existing bridge is a stone masonry arch type bridge with a width of 3.3m and a span of 56m which was constructed about 50 years ago. Although there are some cracks on the slab decks, it is not considered hazardous; traffic by trucks are permissible.

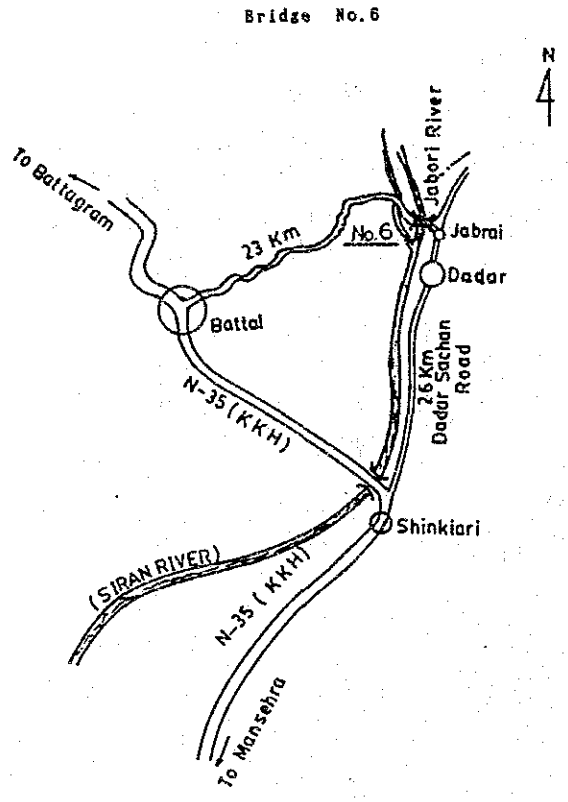
Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 80,000 (present) ~ 120,000 (future) and quite small.

The surrounding region is made up of farmland producing rice, wheat, corn, vegetables and fruits.

Proposed new Bridge: The bridge site will be situated about 100m, upstream of the existing bridge in approx. lat. 34°37'N and long. 73°14'E. The surrounding is made up of mountainous village.

The approach road may be linked to the existing Sachan-Battal road.

The anticipated bridge would be a prestressed concrete structure bridge with a span of 50 m.



Bridge in Kohistan District

Bridge No. 7 Panipa Bridge

Existing Bridge: The bridge links the Panipa village to the Gayal village across the Indus river along the Karakoram Highway at about 18 km north of Dasu.

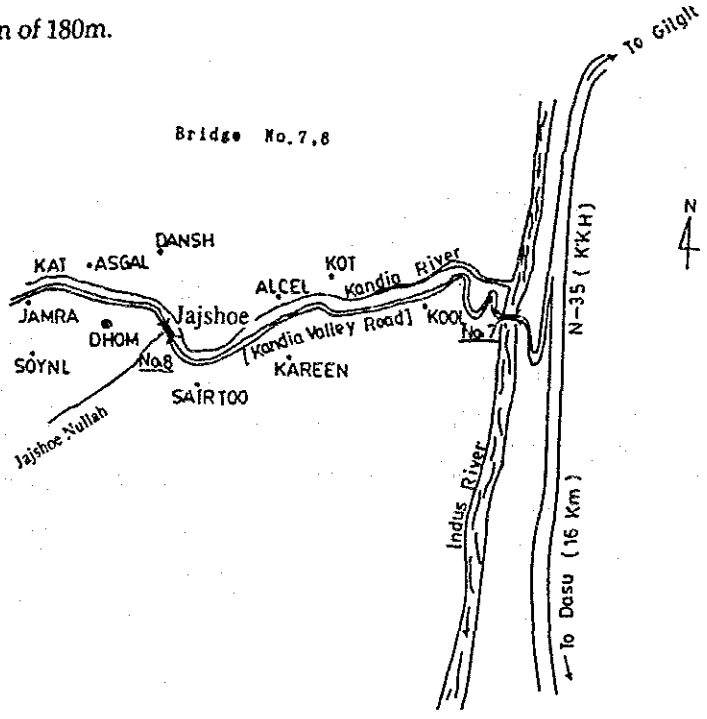
The existing bridge is a wooden structure suspension type bridge with a span of 273m. Only light weight vehicle traffic is permissible.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 30,000 (present) and quite small.

However, since the NWFP Government has in mind the "Kandia Valley Development Plan" which is aimed to exploit the abundant water resources in the region for generation of electricity which would certainly result in a considerable large number of recipient population of the benefits in the future. Although this region has an abundancy of forest resources, it is also an agricultural and forestry region producing such agricultural products as wheat and corn.

Proposed new Bridge: The bridge site will be situated about 45 m downstream at the high bank and 15 m downstream at the left bank in approx. lat. 35°25'E and long. 73°12'E, at an altitude of .935 m. The surrounding terrain is mountainous.

The approach road on the left bank of the Indus river may be linked to the Karakoram Highway and the Kandia valley road which is now under construction can be linked to the bridge on the right bank. The anticipated bridge would be a suspension type bridge with a span of 180m.



Bridge No. 8 Jajshoe Bridge

Existing Bridge: The Kandia valley road crosses the bridge at Km-18 near the Jajshoe Nullah village. The existing bridge is a wooden structure suspension type bridge with a width of 2.2 m, and a span of 56 m. Only light vehicle traffic is permissible.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 30,000 (present) and quite small.

However, since the NWFP Government has in mind the "Kandia Valley Development Plan" which is aimed to exploit the abundant water resources in the region for generation of electricity which would certainly result in a considerable large number of recipient population of the benefits in the future. Although this region has an abundancy of forest resources, it is also an agricultural and forestry region producing such agricultural products as wheat and corn.

Proposed new Bridge: The bridge site will be situated 25 m downstream from the existing bridge site in approx. lat. 35°27'E and long. 73°03'E at an altitude of 1,285 m.

The surrounding is mountainous village. As for the approach road, it is possible to link the Kandia valley road, now under constriction but regrettably, the under construction road was partially damaged due to the big flood in September 1992.

The anticipated bridge would be a prestressed concrete bridge with a span of 75 m.

The bridge location is shown on the location map of Bridge No.7.

Bridge in Chitral District

Bridge No. 9 Darband Bridge

Existing Bridge: The bridge crosses the Yarkhun river at Darband about 135 km north-east of Chitral. The access to Darband is only possible by 4-wheel drive vehicle up to Brep via Buni and Mastuj and thereafter on foot. During the site investigation trip by the team in August, the trip was made only up to Sanogar which is located between Buni and Mastuj. Since the road had been washed away and restoration work would not be completed before October (C&W); investigation of the bridge site was not made. For reference, the distance and time required to go to Darband is shown in the following Table 1-2-1, according to information received from the army scout in Chitral.

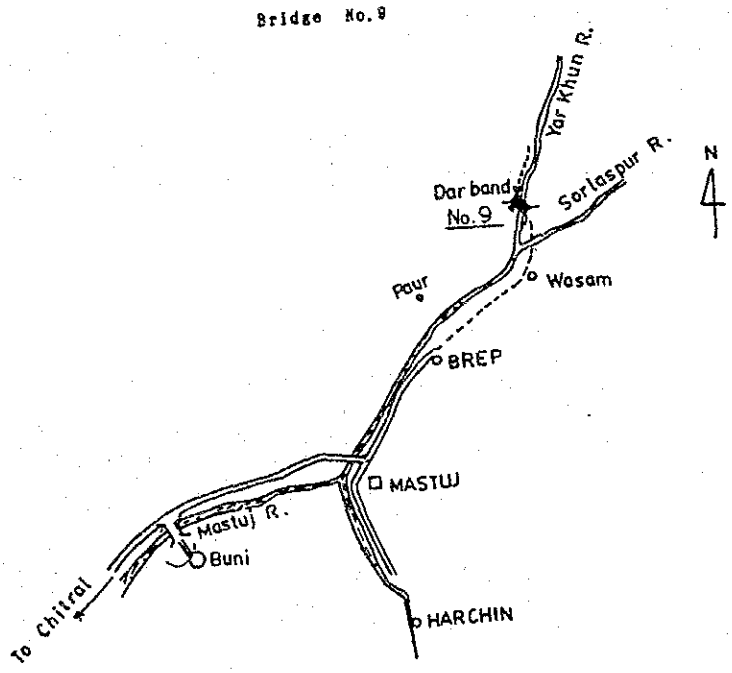
Distance & time, Chitral ~ Darband

Section			Distance	Time required	Remarks
Chitral	~	Buni	176 km	4 hrs. 15 min.	4-WD
Buni	~	Mastuj	36 "	2 " 50 "	4-WD
Mastuj	~	Brep	26 "	2 " 30 "	4-WD
Brep	~	Paur	27 "	7 " 00 "	On foot
Paur	~	Darband	18 "	5 " 00 "	On foot
Total			183 km	21 hrs. 35 min.	

According to the information received from the Deputy Commissioner, XEN Highway (C&W), S.D.O. (Chitral), S.D.O. (Buni) of Chitral District, Contract has been awarded to complete the 76 km of one lane road between Chitral and Buni by May 1994 but the construction is very much delayed.

Further, there is no plan contemplated for the road beyond Buni. Especially for the roads beyond Brep, there is no scheduled plan for a jeepable road at the present.

The situation being as explained above, the C&W of Chitral expressed that although they would wish to change the No. 9 Darband Bridge to another bridge, they are willing to delete this bridge from the basic design if the change request to the Japanese Government would be difficult.



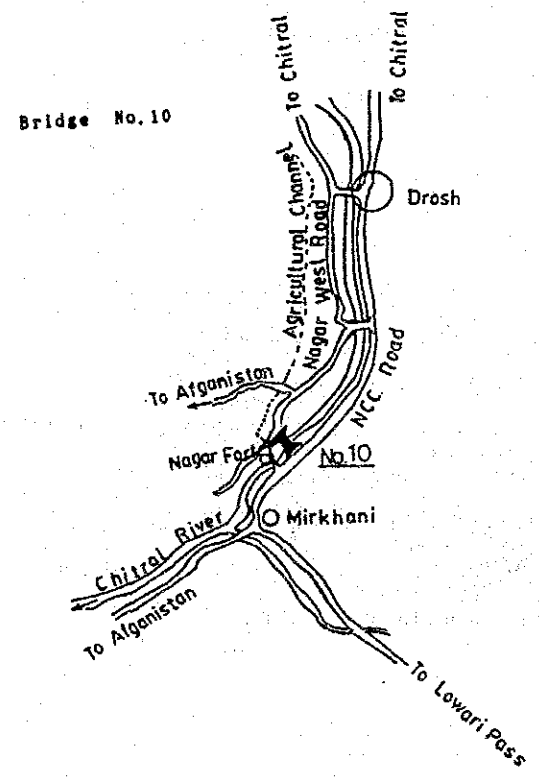
Bridge No. 10 Naggar Bridge

Existing Bridge: The NCC (Nowshera-Chakdara-Chitral) road crosses the Chitral river at Naggar village and links with the Naggar west road at about 50 km south of Chitral. The existing bridge is a wooden structured suspension type bridge with a width of 2 m and a span of 81.5m. Light weight vehicle traffic is permissible. This bridge is built at a narrow section of the river, a little south of Naggar, and Naggar Fort can be seen near the main tower of the suspension bridge on the opposite bank.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 10,000 (present) ~ 15,000 (future) which is very small.

The surrounding region is made up of farmland producing such agricultural products as tobacco, fruits and lumbers.

Proposed new Bridge: It is not possible to locate the bridge near the Naggar Fort, although this is considered to be the most preferable site, considering the environmental aspect in the Naggar Fort surrounding. The bridge site was therefore selected at a location about 3 km upstream from the existing bridge situated in approx. lat. 35°09'N and long. 71°44'E at an altitude of 1,270 m. The surrounding is a mountainous village. As for the approach road, the NCC-Naggar road which is now under construction may be linked to the bridge but the road width has barely one lane. The anticipated bridge will be suspension type bridge with a span of 150 m.



Bridge No. 11 Choni Bridge

Existing Bridge: The NCC road crosses the Chitral river and is connected to the southern part of the Chitral city. Chitral city lies in right bank of the Chitral river while the NCC road runs along the left bank.

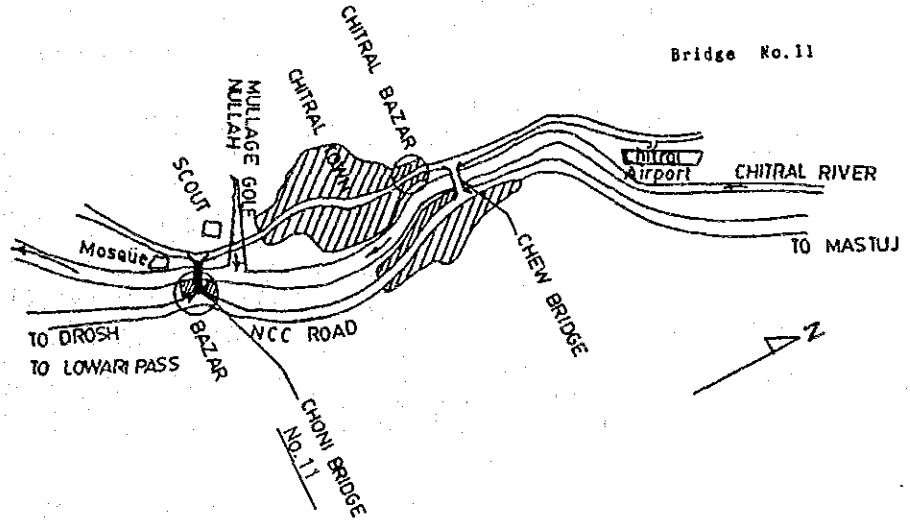
At present there is an existing prestressed concrete bridge completed in 1980 in the north of Chitral city where the river becomes narrow. The site of the proposed bridge lies in the south of Chitral city where there is an existing wooden structure suspension type bridge with a width of 2 m and span of 99 m; light weight vehicle traffic is permissible.

There is a portion on the NCC approach road to the Chew Bridge where the cut bank is ready to collapse and should it collapse, the Choni Bridge would become the only linking access between the NCC road and Chitral city so the Choni Bridge should be made as a permanent bridge.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 15,000 (present) ~ 20,000 - 30,000 (future) and deemed quite small but the vehicle traffic is estimated to be about 1,200/day (present) ~ 2,250/day (future) and quite large. This region has been developed as the administration center of the district together with tourism but the surrounding region is also known as an agricultural and forestry region from the older times.

Proposed new Bridge: The proposed site of the new Choni Bridge will be located about 40 m upstream of the existing bridge and situated in lat. 35°09'N and long. 71°44'E at an altitude of 1,270 m. There are mosque, school, shops, army scout barracks, etc. in the surrounding. The NCC road running along the left bank of the Chitral river will be linked to the Chitral city road via the new Bridge. Both roads are of 2 lane paved roads.

The anticipated bridge would be of suspension type bridge with a span of 100 m.



Bridges in Dir District

Bridge No. 12 Khal Bridge

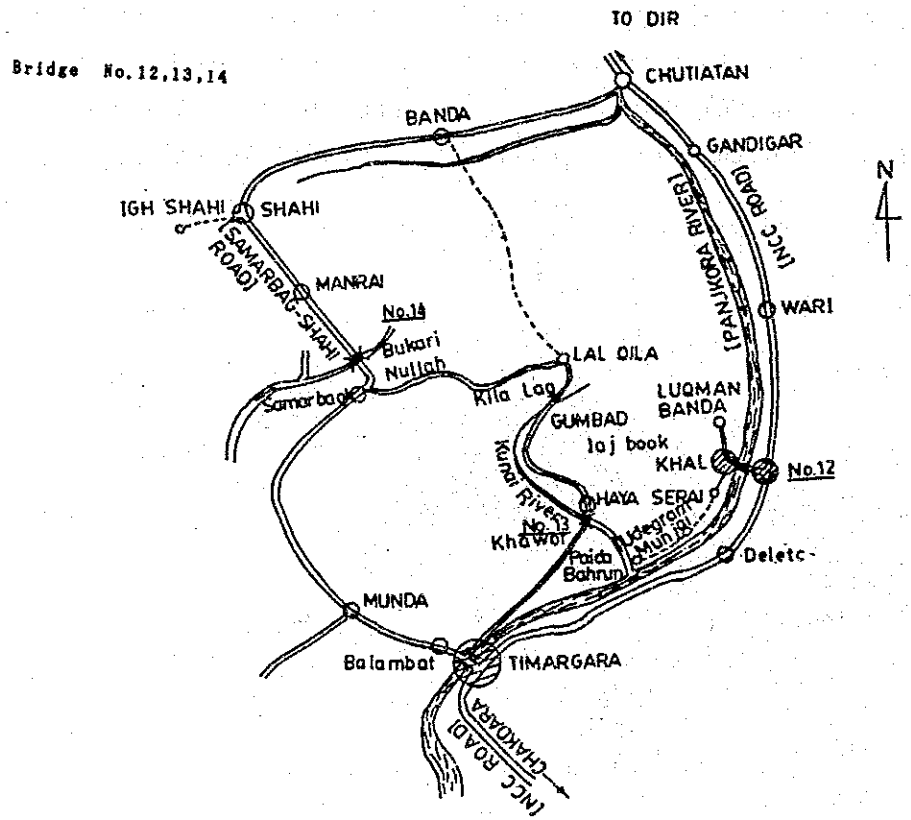
Existing Bridge: The NCC road running northward from Timargara parallel to the Panjkora river crosses the river near the town of Khal, about 16 km from Timargara. The existing bridge is of wooden suspension type bridge with a span of 120 m. Light weight vehicle traffic is permissible.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 40,000 (present) ~ 60,000 (future). The area to benefit in this region would be about 16 km^2 of agricultural farmland producing such cereal products as rice, wheat, sugar cane and vegetables and fruits such as onions, beans, oranges and apples.

Proposed new Bridge: The proposed site of the new bridge is located about 200 m downstream of the existing bridge and situated in approx. lat. 34°54' N and long. 71°59' E at an altitude of 930 m. There are shops and bazaars on the left bank side along the NCC road and shops, warehouses and agricultural villages on the right bank side.

The approach road will be linked to the NCC road on the left bank and the right bank side will be linked to the existing road linked to the existing bridge.

The anticipated bridge will be of steel composite girders having a total length of 88 m.



Bridge No. 13 Haya Serai Bridge

Existing Bridge: The Kala Dag ~ Lal Qila road crosses the Haya Serai Khawar river at Haya Serai village about 10 km north west of Timargara. The bridge is a wooden structure suspension type bridge constructed in 1989 having a width of 2.8 m and span of 67.6 m. Traffic of light weight vehicles are permissible.

Benefits anticipated: When the new bridge is completed, the expected recipient population of the benefits would be about 50,000 (present) ~ 70,000 (future). The region's main products are rice and wheat but it also produces apples and other fruits.

Proposed new Bridge: The proposed site of the new bridge is located about 30 m downstream from the existing bridge and situated in lat. 34°55' N and long. 71°50' E at an altitude of 950 m. The surrounding is made up of farmland. The causeway access road to the existing bridge and the foundation of the existing suspension bridge tower would serve as a groin for the stabilization of the river course when the new bridge is constructed. The road to be linked to the bridge may be connected from the Balanbad-Lal Qila road.

The anticipated bridge will be of prestressed concrete structure with a span of 75 m. The bridge location is shown on the location map of Bridge No.12.

Bridge No. 14 Bukari Khawar Bridge

Existing Bridge: The Samarbagh ~ Shahi road crosses the river bed of the Nullah Bukari near Bukari Khawar village at km -23, about 23 km north-west of Timargara. The river is divided into two water courses and the sand island is large with a width of 180 m. There is no existing bridge.

Benefits anticipated: When the bridge should be completed, the expected recipient population of the benefits would be about 50,000 (present) ~ 70,000 (future). The region produces rice, wheat, orange and apples.

Proposed new Bridge: The site of the proposed bridge will be located about 200 m downstream of the existing causeway crossing the river and situated approx. in lat. 34°59'N and long. 71°40' E. The surrounding is agricultural farmland.

The approach road to the bridge may be linked from the existing paved road of Samarbagh ~ Shahi road. The anticipated new bridge will be of prestressed concrete structure spanning the 2 river courses with a span of 25 m respectively and the sand island portion in between will be of causeway type structure.

The bridge location is shown on the location map of Bridge No.12.

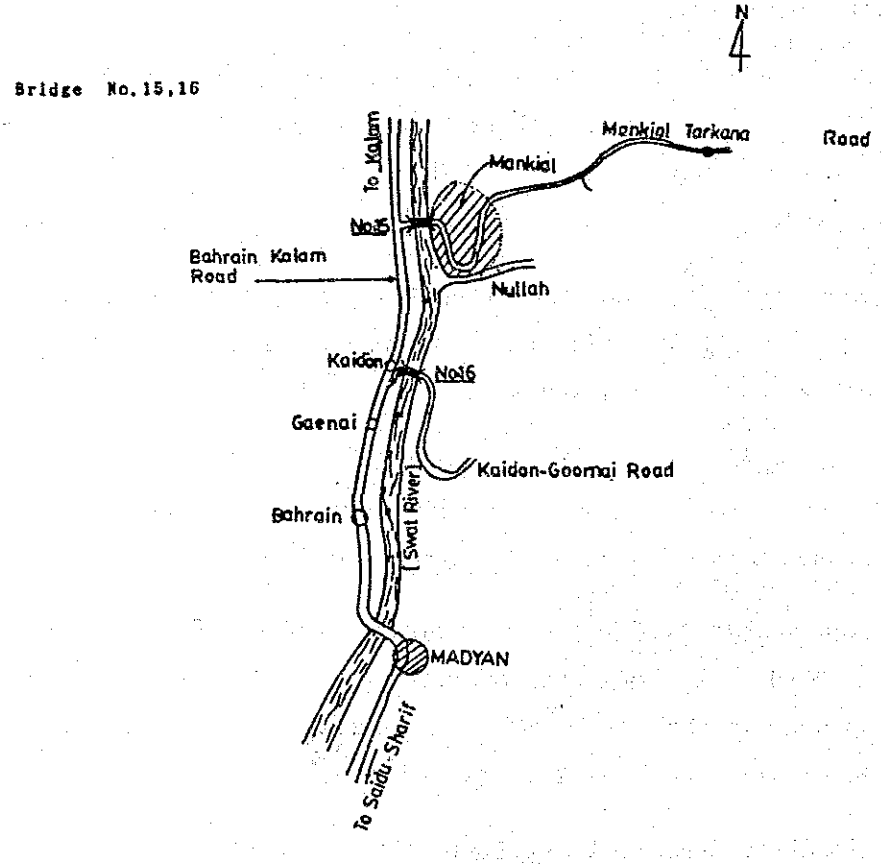
Bridges in Swat District

Bridge No. 15 Mankial Bridge

Existing Bridge: The Mankial ~ Tarkana road crosses the Swat river at km-1 (starting point) about 67 km NNW of Saidu. The existing bridge is a wooden structured suspension type bridge with a span of 50 m which was constructed about 50 years ago under the supervision of a German Engineer; the bridge was built for the purpose of hauling medical raw material products from the hinterland. The bridge is quite old and severely dilapidated.

Benefits anticipated: The anticipated recipient population of the benefits when the bridge will have been completed will be about 8,000 (present) ~ 12,000 (future) and deemed quite small but there are no other possible means of access to the main road from the hinterland. The region is an agricultural and forestry farmland producing rice, wheat and timbers.

Proposed new Bridge: The proposed site of the bridge is situated in approx. lat. 35°20' N and long. 72°37' E and there are shops, bazaars, schools, and mosque in the nearly surrounding. The connecting road to the bridge may be linked to the Mankial ~ Tarkana road. The anticipated bridge will be structural steel plate girders structure with a span of 50 m.



Bridge No. 16 Kaidon Bridge

Existing Bridge: The Kaidon ~ Goornai road crosses the Swat river near the Kaidon village at km -1 (starting point), about 60 km north-north-west of Saidu. The existing bridge is a wooden structured bridge with a span of 40 m built approx. 30 years ago. The bridge is of wooden structure suspension type bridge with an extended built-up beam and the floor deck supported by cable, the same type as Bridge No. 15.

Benefits anticipated: The anticipated recipient population of the benefits when the bridge will have been completed will be 6,000 (present) ~ 9,000 (future) and quite small but this will be the only access to the main road. This region is an agricultural and forestry region producing rice, wheat and timbers.

Proposed new Bridge: The proposed site of the new bridge will be located about 15 m upstream of the existing bridge situated in lat. 35°15' N and long. 72°35' E. The surrounding area is made up of shops and farmland.

The anticipated new bridge will be of structural steel plate girders with a span of 50 m.

The bridge location is shown on the location map of Bridge No.15.

Bridges is Buner District

Bridge No. 17 Peer Baba Bridge

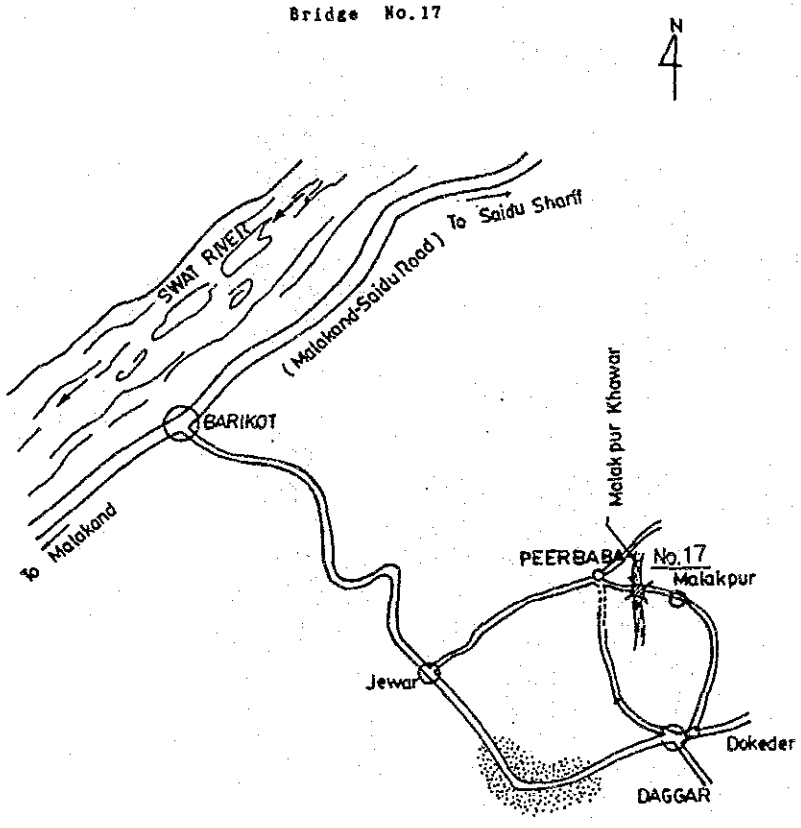
Existing Bridge: The Peer Baba-Malakpur Road crosses the Malakpur Khawar river near the Peel Baba village, approx. 17 km north-west of Gadar. The existing bridges is of a wooden structured suspension type bridge with a span of 20 m but since it is so old and dilapidated, it cannot be used and people are walking across the river bed. And also since the bridge length is insufficiently short, the approach road to the bridge is washed away.

Benefits anticipated: The anticipated recipient population of the benefits when the bridge will have been completed will be 15,000 (present) ~ 23,000 (future). This region produces such cereal products as rice, wheat, sugar cane vegetables fruits such as onions, beams, oranges and apples.

Proposed new Bridge: The site of the proposed bridge is located approx. 30 m upstream of the existing bridge and situated in lat. 34°37' N and long. 72°27' E. The bridge site is surrounded by factories, farmland and village houses. As for the approach road, the Peer Baba-Malakpur road may be linked to the bridge.

The anticipated new bridge will be of pre-stressed concrete structure with a span of 75 m. (The bridge span will be rather long because the bridge will be built as skew due to the relation of the approach road).

Bridge No.17



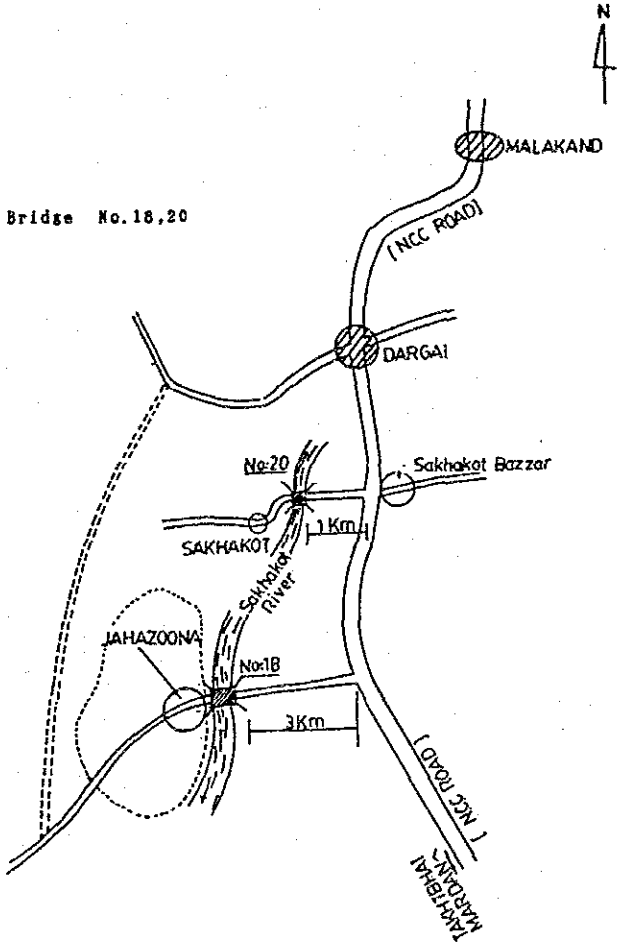
Bridge in Malakand Agency

Bridge No. 18 Jahazoona Dak Bridge

Existing Bridge: The Jahazoona Dak ~ Ghawar Killey road crosses the Sakhakot river near the Jahazoona Dak village approx. 12 m south-south-west of Malakand. The existing bridge is a reinforced concrete bridge with a width of 4.8 m and a span of 60.8 m and vehicle traffic is permissible but since the elevation of the bridge is below the flood water level, flood water overflows over the bridge.

Benefits anticipated: The anticipated recipient population of the benefits when the bridge will have been completed will be 22,000 (present) ~ 33,000 (future). This region covers an agricultural area of 70 km^2 and mainly produces sugar cane; sugar cane is transported to the Takht Bhai sugar plant.

Proposed new Bridge: The site of the proposed new bridge is located about 30 m upstream of the existing bridge and situated in approx. lat. 34°26' N and long. 71°53' E at an altitude of 450 m. There are farmland in the surrounding and plants in the back. The connecting road may be linked to the paved Jahazoona ~ Ghawar road. The anticipated new bridge will be of prestressed concrete bridge with a length of 75 m.



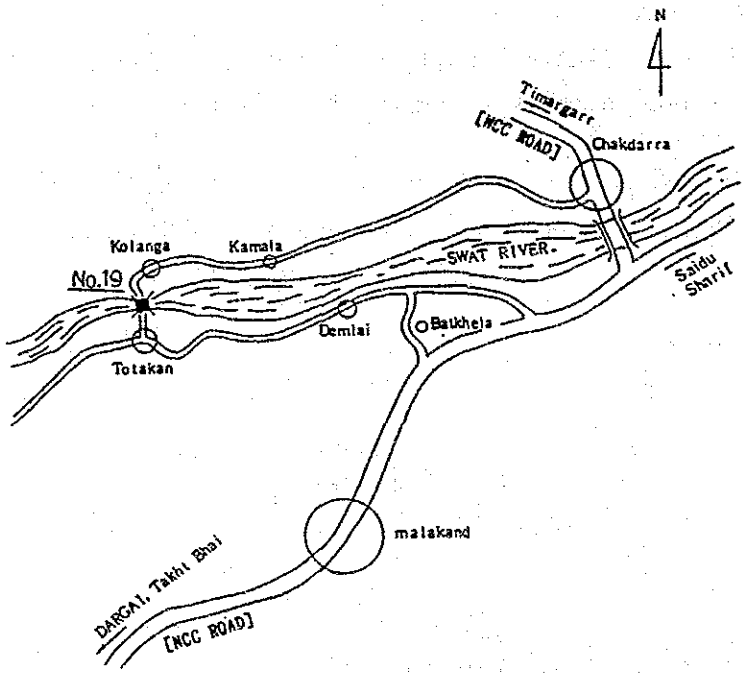
Bridge No. 19 Totakan Bridge

Existing Bridge: The Totakan Kamala road crosses the Swat river near the Totakan village approx. 10 km north-west of Malakand. The existing bridge is a wooden structured suspension type bridge with a span of 64 m.

Benefits anticipated: The anticipated recipient population of the benefits when the bridge will have been completed will be 35,000 (present) ~ 53,000 (future). This region produces such cereal products as rice, wheat, corn and sugar cane.

Proposed new Bridge: The site of the proposed new bridge is located about 60 m downstream of the existing bridge situated in lat. 34°38' N and long. 71°48' E at an altitude of 660 m. There are farmland, shops and village houses in the surrounding.

The approach road to the bridge may be linked to the paved Totakan ~ Kamala road. The anticipated new bridge will be of suspension type bridge with a span of 80 m.



Bridge No. 20 Sakhakot Bridge

Existing Bridge: The Sakhakot village road crosses the Sakhakot river running through the Sakhakot village approx. 9 km south-west of Malakand. The existing bridge is a reinforced concrete structured bridge with a span of 42 m. The bridge is old and dilapidated and there have been accidents of falling down the side because there are no high side rails. Further, traffic will be stopped during flood because the slab elevation is lower than the flood water level.

Benefits anticipated: The anticipated recipient population of the benefits when the bridge will have been completed will be 30,000 (present) ~45,000 (future). This region has an area of 40 km^2 agricultural farmland producing such cereal products as rice, wheat, sugar cane and other vegetables and fruits and transport the products to large consuming cities like Peshawar and Nowshera.

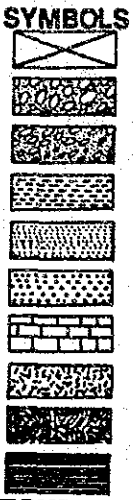
Proposed new Bridge: The site of the new bridge is located about 40 m downstream of the existing bridge and situated in approx. lat. 34°27' N and long. 71°54' E at an altitude of 480 m. There are quite a large number of farmhouses in the surrounding. The existing Sakhakot city road may be linked to the bridge. The anticipated new bridge will be of prestressed concrete structure with a span of 75 m.

The bridge location is shown on the location map of Bridge No.18.

PHASE-I

LITHOLOGIC SYMBOLS

1. SOIL
2. DETRITUS
3. CONGLOMERATE
4. MUD STONE
5. FINE SAND STONE
6. MEDIUM SAND STONE
7. LIME STONE
8. GRANITE
9. SCHIST
10. SLATE



ABBREVATIONS

*	COLOUR	-	Col.
*	MINERAL	-	Mnl.
*	PEBBLES	-	Peb.
*	COBBLES	-	Cob.
*	DISTURBED SAMPLE	-	D.S.
*	WASH SAMPLE	-	W.S.
*	CORE SAMPLE	-	C.S
*	QUARTZ	-	QTZ.

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

1B1

CLIENT: JICA BASIC DISIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

SITE : SIRI/BARIPUR
BRIDGE NO: 1
BORE CASE OF BORING NO.1

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Progressive Penetration No. 20 40 60 80	Types of Samples
01/01				TOP SOIL: SANDY SILTY CLAY, WITH COBBLES & BOULDERS, COLOURED BROWNISH GREY. SIZE OF BOULDERS UPTO 60 mm.		140 mm		D.S
		1.0		TOP SOIL: -DO-		-DO-	S.P.T. No.1 REFUSAL	D.S
		2.0		SIZE OF BOULDERS UPTO 100 mm. TOP SOIL: -DO-		-DO-	S.P.T. No.2 REFUSAL	D.S
02/01		3.0	3.0	DETRITUS: SILTY SAND WITH BOULDERS & COBBLES. BOULDER SIZE UPTO 60 - 80 mm.		-DO-	S.P.T. No.3 REFUSAL	D.S
		4.0		DETRITUS: -DO- BOULDERS SIZE UPTO 120 mm.		-DO-	S.P.T. No.4 REFUSAL	D.S
03/01		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 REFUSAL	D.S
	6.0	6.0		DETRITUS: SILTY SAND WITH BOULDERS & GRAVELS. SIZE UPTO 60 mm.		-DO-	S.P.T. No.6 REFUSAL	D.S
		7.0		DETRITUS: -DO-		-DO-	S.P.T. No.7 REFUSAL	D.S
		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	S.P.T. No.9 REFUSAL	D.S
04/01		10.0	1.0	LIMESTONE: MEDIUM HARD TO HARD GREY COLOURED, SLIGHTLY WEATHERED.		-DO-	S.P.T. No.10 REFUSAL	D.S
		11.0		LIMESTONE: -DO-		-DO-	-	D.S
05/01		12.0		LIMESTONE: HARD TO VERY HARD, WELL CONPACTED L. GREY IN COLOUR.		-DO-	-	D.S
		13.0		LIMESTONE: -DO-		-DO-	-	D.S
		14.0		LIMESTONE: -DO-		-DO-	-	D.S
		15.0	5.0	(HOLE CLOSED)				

Remarks

Date AUG 27, 1992.

Scale:1.5 cm=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

1B2

SITE : BIR/HARIPUR
BRIDGE NO: 1
BORE CHART OF BORING NO.2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
03/08				TOP SOIL: SANDY CLAY, MEDIUM DENSE. YELLOWISH GREY IN COLOUR. NO GRAVELS.		360 mm	–	D.S
		1.0		TOP SOIL: SANDY CLAY, MEDIUM DENSE, YELLOWISH GREY IN COLOUR. GRAVEL SIZE UPTO 7.0 cms		-DO-	S.P.T No.1 cms/blows: 15/9,7.5/7,7.5/7 7.5/7, 7.5/9 N=30 D E N S E	D.S
		2.0	2.0	DETRITUS: SILTY SAND, BEARING CONGLOMERATE (MAX DIA UPTO 7.0 cms) YELLOWISH GREY IN COLOUR.		-DO-	S.P.T No.2 REFUSAL	D.S
		3.0		DETRITUS: -DO- MAX DIA OF CONGLOMERATE EXEEDS UPTO 8.0 cms		-DO-	S.P.T No.3 REFUSAL	D.S
04/08		4.0		DETRITUS: -DO-		-DO-	S.P.T No.4 REFUSAL	D.S
		5.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE (MAX DIA UPTO 9.0 cms). YELLOWISH GREY IN COLOUR.		-DO-	S.P.T No.5 REFUSAL	D.S
	6.0	6.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE (MAX DIA UPTO 5.0 cms). YELLOWISH GREY IN COLOUR.		-DO-	S.P.T No.6 REFUSAL	D.S
05/08		7.0	5.0	SLATE/PHYLLITE: HARD, WELL COMPATED GREY COLOURED. SLIGHTLY. WEATHERED.		-DO-	S.P.T No.7 REFUSAL	D.S
05/09		8.0		SLATE/PHYLLITE: -DO-		-DO-	–	D.S
06/08		9.0		SLATE/PHYLLITE: -DO-		-DO-	–	D.S
		10.0		SLATE/PHYLLITE: -DO-		-DO-	–	D.S
		11.0		SLATE/PHYLLITE: -DO-		-DO-	–	D.S
		12.0	5.0	(HOLE CLOSED)				

Remarks

Date AUG 12, 1992. Scale:2.5 cms=1.0 m

ASSOCIATED DRILLERS (PVT) LTD. LAHORE

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

1B3

SITE : BIR/BARIPUR
BRIDGE NO: 1
BORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No 20 40 60 80	Types of Sample
08/08				DETRITUS: SAND WITH PEBBLES & COBBLES. LIGHT GRY COLOURED. MAX DIA UPTO 90.0 mm		560 mm		D.S
		1.0		DETRITUS: SILTY SAND WITH PEBBLES & COBBLES, LIGHT GREY COLOURED. MAX DIA UPTO 90.0 mm		-DO-	S.P.T No.1 cms/blows: 15/8, 7.5/7, 7.5/8, 7.5/8, 7.5/9 N=32 DENSE	D.S
		2.0		DETRITUS: -DO-		-DO-	S.P.T No.2 cms/blows: 15/8, 7.5/7, 7.5/8, 7.5/9, 7.5/11 N=35 DENSE	D.S
9/8		3.0		DETRITUS: -DO-		-DO-	S.P.T No.3 cms/blows: 15/7, 7.5/6, 7.5/8, 3.0/62, - , REFUSAL	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T No.4 cms/blows: 7.0/52, - , - , - , - , REFUSAL	D.S
10/8	5.2	5.0		DETRITUS: SAND WITH PEBBLES & COBBLES. LIGHT GREY COLOURED. MAX DIA UPTO 80.0 mm.		-DO-	S.P.T No.5 cms/blows: 15/4, 7.5/3, 7.5/3, 7.5/2, 7.5/2 N=10 LOOSE	D.S
11/08		6.0		DETRITUS: SAND WITH PEBBLES & COBBLES. LIGHT GREY COLOURED.		-DO-	S.P.T No.6 cms/blows: 9.5/36, -, -, -, -, REFUSAL	D.S
		7.0		DETRITUS: -DO-		-DO-	S.P.T No.7 cms/blows: 15/8, 7.5/7, 7.5/9, 7.5/8, 7.5/8 N=32 DENSE	D.S
12/08		8.0		DETRITUS: -DO-		-DO-	S.P.T No.8 cms/blows: 15/6, 7.5/9, - , - , - REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	-	D.S
		9.4	9.4	SLATE/PHYLLITE: HARD, WELL COMPATED GREY COLOURED SLATE, SLIGHTLY WEATHERED.				
		10.0		SLATE/PHYLLITE: -DO-		-DO-	-	D.S
		11.0		SLATE/PHYLLITE: -DO-		-DO-	-	D.S
		12.0		SLATE/PHYLLITE: -DO-		-DO-	-	D.S
		13.0		SLATE/PHYLLITE: -DO-		-DO-	-	D.S
		14.0	4.6	(HOLE COLSED)				

Remarks

Date AUG 16, 1992.

Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

1B4

SITE : HIR/HARIPUR
BRIDGE NO: 1
BORE CHART OF BORING NO.4

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
13/08				DETRITUS: SILTY SAND WITH GRAVEL, LIGHT GREY COLOURED. MAX DIA UPTO 5.0 cms.		546 mm	-	D.S
		1.0		DETRITUS: -DO- MAX DIA UPTO 9.0 cms		-DO-	S.P.T. No.1 cms/blows: 15/7,7.5/5,7.5/5,7.5/5 7.5/8 N=25 MEDIUM DENSE	D.S
		2.0		DETRITUS: -DO-		-DO-	S.P.T. No.2 cms/blows: 15/6,7.5/7,7.5/7,7.5/8 7.5/9 N=31 DENSE	D.S
14/08		3.0		DETRITUS: SILTY SAND WITH PEBBLES & COBBLES, SUB-ROUNDED TO LIGHT GREY COLOURED. MAX DIA UPTO 13.0 cms.		-DO-	S.P.T. No.3 cms/blows: 15/7,7.5/6,7.5/5,7.5/7 7.5/9 N=27 MEDIUM DENSE	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.4 cms/blows: 15/9,4.5/47, - , - , - REFUSAL	D.S
15/08		5.0		DETRITUS: CORSE SAND WITH GRAVEL, L.GREY COLOURED. MAX DIA UPTO 10.0 cms.		-DO-	S.P.T. No.5 cms/blows: 15/3,7.5/4,7.5/4,7.5/5, 7.5/6 N=19 MEDIUM DENSE	D.S
		6.0		DETRITUS: CORSE SAND WITH GRAVEL, L.GREY COLOURED. MAX DIA UPTO 12.0 cms.		-DO-	S.P.T. No.6 cms/blows: 15/32,2.0/47,-,-,-, REFUSAL	D.S
16/08		7.0		DETRITUS: -DO- MAX DIA UPTO 9.0 cms		-DO-	S.P.T. No.7 cms/blows: 15/9,7.5/8,7.5/12, 7.5/14,7.5/19 N=53 VERY DENSE	D.S
		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 4.5/48,-,-,-, REFUSAL	D.S
		8.5	8.5	SLATE/PHYLLITE:				
		9.0		SLATE/PHYLLITE:		-DO-	-	D.S
17/08		10.0		SLATE/PHYLLITE:		-DO-	-	D.S
		11.0		SLATE/PHYLLITE:		-DO-	-	D.S
18/08		12.0		SLATE/PHYLLITE:		-DO-	-	D.S
		13.0		SLATE/PHYLLITE:		-DO-	-	D.S
		14.0		SLATE/PHYLLITE:		-DO-	-	D.S
		14.6	6.1	(HOLE CLOSED)				

Remarks

Date AUG 22, 1992.

Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

12B1

SITE : KHAL/DIR
BRIDGE NO: 12
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Bore	Resistance Test Blow No. 20 40 60 80	Types of Sample
27/07				TOP SOIL: SANDY SILTY CLAY WITH SAND PARTICULES(30-50%) LIGHT YELLOW IN COLOUR. PEBBLES COBBLES ARE PRESENT.		560 mm	-	D.S
		1.0		TOP SOIL: -DO- PEBBLES & COBBLES PERCENTAGE INCREASES WITH DEPTH.		-DO-	S.P.T. No.1 cms/blows: 15/11,7.5/12,7.5/15 7.5/19,7.5/23 N=69 VERY DENSE	D.S
28/07		2.0		TOP SOIL: -DO-		-DO-	S.P.T. No.2 cms/blows: 3.5/46,- ,- ,-, - REFUSAL	D.S
29/07		3.0		TOP SOIL: SANDY-SILTY-CLAY:SILTY CLAY & COARSE SAND (35-50%). PEBBLES & COBBLES., L.YELLOW IN COLOUR. BOULDERS ARE ABSENT.		-DO-	S.P.T. No.3 cms/blows: 2.0/32,- ,- ,-, - REFUSAL	D.S
		4.0		DETRITUS: SANDY SILTY CLAY BEARING ABUNDANT PEBBLES & COBBLES. ROUNDED TO SUB-ROUNDED, GREYISH YELLOW IN COLOUR.		-DO-	S.P.T. No.4 cms/blows: 3.5/49,- ,- ,-, - REFUSAL	D.S
03/08		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 cms/blows: 7.0/32,- ,- ,-,- REFUSAL	D.S
		6.0		DETRITUS: SANDY-SILTY CLAY-BEARING ABUNDANT PEBBLES & COBBLES. WITH BOULDERS.YELLOWISH GREY IN COLOUR. BOULDER DIA UPTO 355 mm		-DO-	S.P.T. No.6 cms/blows: 15/35,7.5/48,-,- REFUSAL	D.S
		7.0		DETRITUS: -DO- MAX BOULDER DIA UPTO 435 mm		-DO-	S.P.T. No.7 cms/blows: 3/43,-,-,-,- REFUSAL	D.S
		8.0		DETRITUS: -DO- MAX BOULDER DIA UPTO 530 mm		-DO-	-	D.S
		9.0		DETRITUS: -DO- MAX BOULDER DIA UPTO 486 mm		-DO-	-	D.S
04/08		10.0	6.0	GRANITE: HARD MASSIVE, WITHISH GREY IN COLOUR. RECOVERY: 36%		76 mm	-	C.S & W.S
		11.0		GRANITE: RECOVERY: 70% -DO-			-	C.S
		11.3	1.3	DETRITUS: SANDY SILTY CLAY BEARING PEBBLES & COBBLES. FINE MATRIX WASHED OUT. ONLY WASH SAMPLE COLLECTED		-DO-	-	W.S
05/08	12.2	12.0		DETRITUS: SANDY SILTY CLAY BEARING PEBBLES & COBBLES.WASH SAMPLE COLLECTED		-DO-	-	W.S
		12.5	1.2	GRANITE: HARD MASSIVE, WITHISH GREY IN COLOUR. RECOVERY: 55%			-	C.S & W.S
06/08		13.0		GRANITE: -DO- SLIME COLLECTED AS WHITE MUD. RECOVERY: 51%		-DO-	-	C.S & W.S
		14.0		GRANITE: -DO- RECOVERY: 59%		-DO-	-	C.S & W.S
		15.0		GRANITE: -DO- RECOVERY: 20%		-DO-	-	C.S & W.S
		15.5	3.0	(HOLE CLOSED)				

Remarks

Date AUG 09, 1992.

Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

12B2

SITE : SHAL/DIR
BRIDGE NO: 12
BORE CHART OF BORING NO.2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
03/07				DETRITUS: COBBLES & BOULDERS, IN SILTY SAND, L. GREY COLOURED. MAX DIA UPTO 350 mm. MEDIUM BARD.		560 mm	-	D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T No.1 REFUSAL	D.S
		2.0		DETRITUS: -DO-		-DO-	S.P.T No.2 REFUSAL	D.S
		3.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE MAX DIA UPTO 80 mm. L. GREY COLOURED. MEDIUM BARD.		-DO-	S.P.T No.3 REFUSAL	D.S
	3.9	4.0		DETRITUS: -DO-		-DO-	S.P.T No.4 REFUSAL	D.S
31/07		5.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE MAX DIA UPTO 40 mm. L. GREY COLOURED.		-DO-	S.P.T No.5 REFUSAL	D.S
01/08		6.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE MAX DIA UPTO 80.0 mm. OCCASIONALLY GRANITIC BOULDERS ARE ENCOUNTERED.		-DO-	S.P.T No.6 REFUSAL	D.S
		7.0		DETRITUS: -DO- MAX DIA, OF CONGLOMERATE RANGES BETWEEN 40.0 TO 60.0 mm WELL COMPACTED.		-DO-	S.P.T No.7 REFUSAL	D.S
02/08		8.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE WITH AN AVERAGE DIA RANGE BETWEEN 20.0 TO 50.0 mm. MEDIUM BARD.		-DO-	S.P.T No.8 cms/blows: 15/9,7.5/8,7.5/11, 7.5/13,7.5/17 N=49 DENSE	D.S
		9.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE (10.0 TO 20.0 mm) WITH BOULDERS. MEDIUM BARD.		-DO-	S.P.T No.9 REFUSAL	D.S
03/08		10.0		DETRITUS: -DO-		-DO-	S.P.T No.10 cms/blows: 15/12,7.5/11,7.5/13 7.5/16,7.5/19 N=59 VERY DENSE	D.S
		11.0		DETRITUS: COARSE SAND, BEARING BOULDERS WITH AN AVERAGE DIA RANGE FROM 250.0 TO 500.0 mm.		-DO-	S.P.T No.11 REFUSAL	D.S
07/08		12.0		DETRITUS: COARSE SAND, BEARING BOULDERS WITH AN AVERAGE DIA RANGE FROM 250.0 TO 500.0 mm.			S.P.T No.12 REFUSAL	D.S
08/08		13.0		DETRITUS: -DO-			S.P.T No.13 REFUSAL	D.S
		14.0	14.0	(HOLE CLOSED)				

Remarks

Date AUG 09, 1992. Scale:2.5 cms=1.0 m

ASSOCIATED DRILLERS (PVT) LTD. KARACHI

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

12B3

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

SITE : SIR/HARIPUR
BRIDGE NO: 12
BORE CHART OF BORING NO.)

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
06/08				DETRITUS: PEBBLES/COBBLES & BOULDRES IN SILTY SAND, LIGHT GREY COLOURED MAX DIA UPTO 420.0 mm		560 mm	-	D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T No.1 REFUSAL	D.S
		2.0		DETRITUS: -DO-		-DO-	S.P.T No.2 REFUSAL	D.S
		3.0		DETRITUS: -DO- MAX DIA OF BOULDERS UPTO 480.0 mm.		-DO-	S.P.T No.3 REFUSAL	D.S
07/08		4.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE MAX DIA UPTO 75.0 mm. L. GREY COLOURED. MEDIUM BARD.		-DO-	S.P.T No.4 cm/blows: 15/19,7.5/16,7.5/17, 7.5/18,7.5/18 N=69 VERY DENSE	D.S
	4.7	5.0		DETRITUS: -DO-		-DO-	S.P.T No.5 REFUSAL	D.S
08/08		6.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE, MAX DIA UPTO 45.0 mm. L. GREY COLOURED.		-DO-	S.P.T No.6 cm/blows: 15/13,7.5/11,7.5/13 7.5/15,7.5/21 N=60 NO SAMPLE, CONGLOMERATE ENCOUNTERED.	D.S
		7.0		DETRITUS: COARSE SAND BEARING COBBLES & BOULDERS, MAX DIA UPTO 380.0 mm L. GREY COLOURED.		-DO-	S.P.T No.7 REFUSAL	D.S
09/08		8.0		DETRITUS: -DO-		-DO-	S.P.T No.8 REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	S.P.T No.9 REFUSAL	D.S
10/08		10.0		DETRITUS: -DO-		-DO-	S.P.T No.10 REFUSAL	D.S
12/08		11.0		DETRITUS: -DO-		-DO-	S.P.T No.11 REFUSAL	D.S
13/08		12.0		DETRITUS: COARSE SAND, BEARING CONGLOMERATE, MAX DIA UPTO 80.0 mm. WITH LARGE GRANITE BOULDERS (300.0 UPTO 750.0 mm)		-DO-	S.P.T No.12 REFUSAL	D.S
		13.0		DETRITUS: -DO-		-DO-	S.P.T No.13 REFUSAL	D.S
		14.0	14.0	(HOLE CLOSED)				

Remarks

Date AUG 14, 1992. Scale:1.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

12B4

SITE : SIRI/BARIPUR
BRIDGE NO: 12
BORE CHART OF BORING NO.4

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration (in Blow No. 20 40 60 80)	Types of Samples
15/08				DETRITUS: PEBBLES, COBBLES & BOULDERS IN COARSE SAND. ROUNDED TO SUB-ROUNDED. MAX DIA OF BOULDERS UPTO 850.0 mm. L.GREY IN COLOUR		963 mm	-	D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T. No.1 cms/blows: 15/11,6/41,- , - ,- REFUSAL	D.S
	1.7							
		2.0		DETRITUS: -DO-		-DO-	S.P.T. No.2 cms/blows: 15/8,7.5/9,7.5/3,7.5/4 7.5/23 n=47 ? - UNSATISFACTORY -	D.S
16/08		3.0		DETRITUS: PEBBLES,COBBLES & BOULDERS IN SILAT SAND. ROUNDED TO SUB-ROUNDED UPTO 750.0 mm L. GREY IN COLOUR.		-DO-	S.P.T. No.3 cms/blows: 3.0/43, -, -, -,- REFUSAL	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.4 cms/blows: 15/7,7.5/6,7.5/7,7.5/7 7.5/8 n=33 VERY DENSE	D.S
17/08		5.0		DETRITUS: -DO- LARGE BOULDER ENCOUNTERED DIA UPTO 1050.0 mm.		-DO-	S.P.T. No.5 cms/blows: 15/7,7.5/6,7.5/7,2/47,- REFUSAL	D.S
18/08		6.0		DETRITUS: SILTY SAND BEARING PEBBLES & COBBLES & SOME BOULDERS. ROUNDED. TO SUB-ROUNDED. L.GREY IN COLOUR.		-DO-	S.P.T. No.6 cms/blows: 8.0/43,-,-,-, REFUSAL	D.S
		7.0		DETRITUS: -DO-		-DO-	S.P.T. No.7 cms/blows: 12/41, - , - , - REFUSAL	D.S
		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 15/7,7.5/6,7.5/9,7.5/9 7.5/10 n=41 VERY DENSE	D.S
19/08		9.0		DETRITUS: LARGE BOUNDER ENCOUNTERED DIA UPTO 900.0 mm (APPROX)		-DO-	S.P.T. No.9 cms/blows: 15/22,7.5/15,3.0/43,-,- REFUSAL	D.S
20/08		10.0		DETRITUS: -DO-		-DO-	S.P.T. No.10 cms/blows: 5.0/37, - , - ,- ,- REFUSAL	D.S
		11.0		DETRITUS: -DO-		-DO-	S.P.T. No.11 cms/blows: 7.0/43, - , - ,- ,- REFUSAL	D.S
		12.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE. ROUNDED TO SUB-ROUNDED AVERAGE DIA BETWEEN 20.0 TO 70.0 mm. L.GREY IN COLOUR.		-DO-	S.P.T. No.12 cms/blows: 15/26,7.5/9,3.0/43,-,- REFUSAL	D.S
		13.0		DETRITUS: -DO- GRANITIC BOULDER ENCOUNTERED. DIA 950.0 mm (APPROX)		-DO-	S.P.T. No.13 cms/blows: 7.0/53, - , -,-,- REFUSAL	D.S
		14.0		DETRITUS: -DO-		-DO-	S.P.T. No.14 cms/blows: 15/29,7.5/21,7.5/9, 1.0/41, - REFUSAL	D.S
		15.0		DETRITUS: -DO-		-DO-	S.P.T. No.15 cms/blows: 10/41, -, - , REFUSAL	D.S
		16.0		DETRITUS: -DO-		-DO-	-	D.S
		16.0	16.0	(HOLE CLOSED)				

Remarks

Date AUG 23, 1982. Scale:2.5 cms=1.0 m

ASSOCIATED DRILLERS (PVT) LTD. LAHORE

Geologist Engineer

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

18B1

SITE : SARHA KOT/MALAKAND
BRIDGE NO: 18
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
06/08				TOP SOIL: SILTY SAND BEARING GRAVEL PEBBLES & COBBLE. L.GREY COLOURED. FINE MATRIX WASHED.		75 mm	-	W.S
		0.5	0.5	DETRITUS: SILTY SAND BEARING GRAVEL, WHITISH GREY IN COLOUR FINE MATRIX IS WASHED OUT				
		1.0		DETRITUS: SILTY SAND BEARING GRAVEL, PEBBLES & COBBLES WITH COLOURED WHITISH GREY. DIA RANGES FROM 25-75 mm. SUB-ROUNDED TO ANGULAR.		-DO-	S.P.T. No.1 Depth/Blows: 15/2,7.5/1,7.5/3,7.5/2 7.5/3 N=9 - SOFT -	W.S
		2.0		DETRITUS: SILTY SAND BEARING GRAVEL, PEBBLES & COBBLES.WITH COLOURED WHITISH GREY. DIA RANGE FROM 25-75 mm. SUB-ROUNDED TO ANGULAR.		-DO-	S.P.T. No.2 Depth/Blows: 15/1,7.5/1,7.5/2,7.5/2 7.5/5 N=10 - SOFT -	W.S
	2.8	3.0		DETRITUS: -DO-		-DO-	S.P.T. No.3 Depth/Blows: 15/1,7.5/1,7.5/2,7.5/3 7.5/6 N=11 MED DENSE	C.S & W.S
		3.5	3.0	MUD.STONE:GREENISH GREY,LESS COMPACTED				
		3.75	0.25	FINE SAND STONE:				
		4.0		FINE SAND STONE: HARD LIGHT GREY. SOME ARGILLACEOUS CONTENT IS PRESENT.		-DO-	S.P.T. No.4 Depth/Blows: 15/25,7.5/11,7.5/11 7.5/17,1.2/29 REFUSAL	C.S & W.S
09/08		5.0	1.25	MEDIUM SAND STONE: LIGHT GREY COLOURED, WELL COMPACTED.		-DO-	S.P.T. No.5 Depth/Blows: 15/3,7.5/4,7.5/5,7.5/7 7.5/10 N=26 MED DENSE	C.S & W.S
		5.65	0.65	MUD STONE: GREENISH GREY WELL COMPACTED.				
		6.0		MUD STONE YELLOWISH GREY WELL COMPACTED.		-DO-	S.P.T. No.6 Depth/Blows: 15/6,7.5/9,7.5/10, 7.5/16,7.5/23 N=60 DENSE	C.S & W.S
				RECOVERY: 29%				
		7.0		MUD STONE -DO-		-DO-	S.P.T. No.7 Depth/Blows: 15/8,7.5/11,7.5/13, 7.5/15,7.5/19 N=58 DENSE	C.S & W.S
		7.69	2.03	MEDIUM SAND STONE: WHITISH GREY WELL COMPACTED				
10/08		8.0		MEDIUM SAND STONE: -DO-		-DO-	S.P.T. No.8 Depth/Blows: 15/11,7.5/12,7.5/13, 7.5/35,- REFUSAL	C.S & W.S
				RECOVERY: 68%				
11/08		9.0		MEDIUM SAND STONE: -DO-		-DO-	S.P.T. No.9 Depth/Blows: 15/27,2.5/32, -, - ,- REFUSAL	C.S & R.S
				RECOVERY: 51%				
		10.0	2.32	(HOLE CLOSED)				

Remarks

Date AUG 13, 1992.

Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

18B2

SITE : SAKHA KOT/MALAKAND
BRIDGE NO: 16
BORE CHART OF BORING NO.2

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thicknem of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
28/07				TOP SOIL: SILTY SAND WITH PEBBLES & GRAVEL. RECOVERY: 50%		75 mm	--	N.S
		0.5	0.5	MEDIUM SAND STONE: LIGHT GREY COLOURED SOFTER.				C.S & W.S
		1.0		MEDIUM SAND STONE LIGHT GREY COLOURED. FINE MATRIX WASHED OUT. RECOVERY 45 %		-DO-	S.P.T No.1 cms/blows: 15/6,7.5/4,7.5/6,7.5/8 7.5/11 N=29 MEDIUM DENSE	C.S & W.S
29/7		2.0		MEDIUM SAND STONE -DO- RECOVERY : 45 %		-DO-	S.P.T No.2 cms/blows: 15/11,7.5/8,7.5/9,7.5/9 7.5/11 N=37 DENSE	C.S & W.S
	2.6	2.5	2.0	DETRITUS: SILTY SAND BEARING PEBBLES & COBBLES (25-40 mm)				N.S
		3.0		DETRITUS: -DO-		-DO-	S.P.T No.3 cms/blows: 15/11,7.5/10,2.0/20, - - REFUSAL	N.S
		3.4	0.9	MEDIUM SAND STONE: HARD LIGHT GREY RECOVERY: 75 %				C.S & W.S
30/7		4.0		MEDIUM SAND STONE: -DO- RECOVERY: 45%		-DO-	S.P.T No.4 cms/blows: 15/5,7.5/14,7.5/16, - , 7.5/15,7.5/19 N=64 DENSE	C.S & W.S
31/07		5.0	1.60	MUD STONE -DO- RECOVERY: 75%		-DO-	S.P.T No.5 cms/blows: 3/28, - , - ,- ,- REFUSAL	C.S & W.S
01/08		6.0		MUD STONE HARD, GREENISH GREY RECOVERY: 29%, WASHED OUT 63.8%		-DO-	S.P.T No.6 cms/blows: 15/9,7.5/11,7.5/12, 7.5/14,7.5/17 N=54 DENSE	C.S & W.S
		7.0		MUD STONE -DO-		-DO-	S.P.T No.7 cms/blows: 15/10,7.5/13,7.5/12, 7.5/16,7.5/19 N=60 DENSE	C.S & W.S
		7.68	2.68	FINE SAND STONE HARD, LIGHT GREY RECOVERY: 100%				
03/08		8.0		FINE SAND STONE -DO-		-DO-	S.P.T No.8 cms/blows: 15/30, -, - ,- ,-	C.S & W.S
07/08				RECOVERY: 100%			REFUSAL	
		9.0		FINE SAND STONE			S.P.T No.9	C.S
09/08				-DO-		-DO-	REFUSAL	& W.S
				RECOVERY: 68% WASHED 32%				
		10.0	2.32	(HOLE CLOSED)				

Remarks

Date AUG 09, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

1883

SITE : SAKHA KOT/MALAKAND
BRIDGE NO: 18
BORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
07/08				MUD STONE SOFT, LIGHT GREY IN COLOUR ONLY WASH SAMPLE COLLECTED 100 % WASHED, NO RECOVERY		56 mm	-	C.S & W.S
		1.0		MUD STONE SOFT, LIGHT GREY IN COLOUR RECOVERY 65%, WASHED 34%		-DO-	S.P.T No.1 cms/blows 15/10,7.5/13,7.5/17, 7.5/21,7.5/20 N=71 VERY DENSE	C.S & W.S
	1.8							
		2.0		MUD STONE HARD, LIGHT GREY COLOURED RECOVERY: 100%		-DO-	S.P.T No.2 cms/blows 15/11,7.5/11,7.5/18, 7.5/24,7.5/35 N=89 VERY DENSE	C.S & W.S
		2.35	2.35	MEDIUM SAND STONE HARD, WHITISH GREY IN COLOUR. RECOVERY: 65%, WASHED 35%				
08/08		3.0		MEDIUM SAND STONE HARD, WHITISH GREY IN COLOUR. RECOVERY: 50%, WASHED 50%		-DO-	S.P.T No.3 cms/blows 15/9,7.5/6,7.5/7,7.5/12 7.5/13 N=38 DENSE	C.S & W.S
		4.0		MEDIUM SAND STONE HARD, WHITISH GREY IN COLOUR. RECOVERY: 75%		-DO-	S.P.T No.4 cms/blows 15/9,7.5/11,7.5/14, 7.5/17,7.5/15 N=57 DENSE	C.S & W.S
09/08		5.0		MEDIUM SAND STONE V.HARD, WHITISH GREY IN COLOUR. RECOVERY: 56%		-DO-	S.P.T No.5 cms/blows 15/41,-, -, -, - REFUSAL	C.S & W.S
		5.45	3.10	(HOLE COLSED)				

Remarks

Date AUG 09, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer:

Consulting Soil Engineers & Contractors

1981

SITE : BALANGI
BRIDGE NO: 19
BORE CHART OF BORING NO.1

CLIENT: *RCA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN*

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No 20 40 60 80	Types of Samples
				DETRITUS				
28/07				SILTY-CLAYEY-SAND, BEARING CONG-LOMERATE, AVERAGE DIA RANGE FROM 5.0-25mm. ROUNDED TO SUB-ANGULAR COLOURED YELLOWISH GREY MAIN SAMPLE OF MATRIX IS COLLECTED.		16 mm	-	W.S
		1.0	1.0	PELITIC SCHIST HARD WHITISH-GREY IN COLOUR WITH FREQUENT QTZ. VEINS. RECOVERY: 40%		-DO-	S.P.T. No.1 one/blows: 3.5/7,-,-,-,- REFUSAL	C.S & W.S
29/07		2.0		PELITIC SCHIST		-DO-	-	C.S & W.S
				-DO-				
		3.0		RECOVERY: 75% PELITIC SCHIST -DO-		-DO-	-	C.S & W.S
		3.4	2.4	SANDY SCHIST WELL COMPACTED L.GREY COLOURED. RECOVERY: 45.5%				
30/07		4.0		SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
		5.0		RECOVERY: 61% SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
31/07		6.0		RECOVERY: 16.5% SANDY SCHIST HARD, WELL COMPACTED SCHIST, GREENISH GREY IN COLOUR, WITH ABUNDANT QTZ. VEINS, THICKNESS 0.2-1.5 cms. RECOVERY: 24%		-DO-	-	C.S & W.S
		7.0		SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
		8.0		RECOVERY: 48% SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
01/08		9.0		RECOVERY: 36% SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
		10.0		RECOVERY: 38.5% SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
02/08		11.0		RECOVERY: 35% SANDY SCHIST				C.S & W.S
				-DO-				
		12.0		RECOVERY: 25% SANDY SCHIST HARD, WELL COMPACTED SCHIST GREENISH GREY IN COLOUR WITH ABUNDANT QTZ. VEINS, THICKNESS VARIES FROM 1.0 TO 2.0 cms. RECOVERY: 32.5%		-DO-	-	C.S & W.S
		13.0		SANDY SCHIST		DO		C.S & W.S
				-DO-				
03/08		14.0		RECOVERY: 34.5% SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
		15.0		RECOVERY: 41% SANDY SCHIST -DO-				
	15.3			QTZ.VEIN (40cm THICK FRIVOLOUS-TERED. RECOVERY: 43%		-DO-	-	C.S & W.S
		16.0		SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
		17.0		RECOVERY: 43% SANDY SCHIST		-DO-	-	C.S & W.S
				-DO-				
				RECOVERY: 66 % SANDY SCHIST HARD WELL COMPACTED SCHIST GREENISH GREY IN COLOUR, ABUNDANT QTZ. VEINS (0.5 TO 2.5 cms) IN THICKNESS. RECOVERY: 53%			-	C.S & W.S
		19.0		SANDY SCHIST: RECOVERY 85%		-DO-		C.S & W.S
		19.2	16.4	(HOLE CLOSED)				

Remarks

Date AUG 19, 1982. Scale: 2.5 cms=1.0 m

Geological Engineer

1982

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

SITE : BALAKOT/MALAKAND
BRIDGE NO: 19
BORE CHART OF BORING NO.1

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blows No. 20 / 40 / 60 / 80	Types of Samples
31/07				PLUTIC SCHIST: MEDIUM HARD SCHIST BEARING ABUNDANT QUARTZ VEINS, MODERATELY WEATHERED. RECOVERY: 34%		76 mm	-	C.S & W.S
		1.0		PLUTIC SCHIST: -DO- RECOVERY: 34%		-DO-	-	C.S & W.S
		3.0		PLUTIC SCHIST: MEDIUM HARD SCHIST INTACT BEARING ABUNDANT QUARTZ VEINLETS. GREENISH GREY IN COLOUR. RECOVERY: 61%		-DO-	-	C.S & W.S
01/08		3.8		PLUTIC SCHIST: -DO-				
		5.3	3.3	SANDY SCHIST: MED HARD,WELL COMPACTED SCHIST, L.GREY IN COLOUR.BEARING THICK QTZ VEINS 8.0-22.0 cms. REC.65%		-DO-	-	C.S & W.S
02/08		6.0		SANDY SCHIST: QUARTZ VEINS, THICKNESS 10.12 & 17 cms. QUARTZ IS INTACT & IS HARD. RECOVERY: 76%		-DO-	-	C.S & W.S
	4.2	8.0		SANDY SCHIST: -DO- RECOVERY: 24%		-DO-	-	C.S & W.S
03/08		8.9		SANDY SCHIST: HARD WELL COMPACTED LIGHT GREY COLOURED SCHIST BEARING THICK QUARTZ VEINS. THICKNESS UPTO 12.0 cms RECOVERY: 43%		-DO-	-	C.S & W.S
04/08		9.0		SANDY SCHIST: -DO-		-DO-	-	C.S & W.S
05/08		8.0		SANDY SCHIST: -DO-		-DO-	-	C.S & W.S
		9.9		SANDY SCHIST: -DO-		-DO-	-	C.S & W.S
		10.9		SANDY SCHIST: -DO- QUARTZ VEIN ENCOUNTERED THICKNESS 26.0 cms		-DO-	-	C.S & W.S
06/08		11.4		SANDY SCHIST: -DO-		-DO-	-	C.S & W.S
		12.0		SANDY SCHIST: HARD WELL COMPACTED SCHIST. L. GREY IN COLOUR BEARING QTZ. VEINS THICKNESS VARIES FROM 0.5 TO 10.0 cms		-DO-	-	C.S & W.S
		13.0		SANDY SCHIST: -DO- RECOVERY:51%		-DO-	-	C.S & W.S
		14.0		SANDY SCHIST: -DO- RECOVERY: 39%		-DO-	-	C.S & W.S
07/08		15.0		SANDY SCHIST: -DO- RECOVERY:63%		-DO-	-	C.S & W.S
		16.0		SANDY SCHIST: -DO- RECOVERY:51%		-DO-	-	C.S & W.S
08/08		17.0		SANDY SCHIST: -DO-		-DO-	-	C.S & W.S
		18.0		SANDY SCHIST: HARD WELL COMPACTED SCHIST. L. GREY COLOUR.		-DO-	-	C.S & W.S
		19.0		SANDY SCHIST: -DO-		-DO-	-	C.S & W.S
		19.5	16.2	(HOLE CLOSED)				

Remarks

Date AUG 15, 1982.

Scale:2.5 cms=1.0 m

Geologist Engineers

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

19B3

SITE : KALANGI/MALAKAND
BRIDGE NO: 19
BORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
16/08				TOP SOIL: SANDY CLAY, COLOURED L.YELLOW SAND IS FINE. CONGLOMERATE IS ABSENT. RECOVERY: WASH SAMPLE.		76 mm	--	W.S
		1.0		FLEITIC SCHIST SLIGHTLY WEATHERED YELLOWISH GREY IN COLOUR. FISSILE ALONG SCHISTOSITY PLANES. RECOVERY: 64%		-DO-	S.P.T No.1 cms/blows: 15/7,7.5/6,7.5/9 7.5/10, 7.5/12 N=35 DENSE	C.S & W.S
		2.0					S.P.T No.2	
		2.1	1.1	SANDY SCHIST WELL COMPACTED LIGHT GREY COLOURED RECOVERY: 52%		-DO-	cms/blows: 4.6/31,-,-,-,- REFUSAL	C.S & W.S
17/08		3.0		SANDY SCHIST -DO- RECOVERY:76%		-DO-	--	C.S & W.S
18/08		4.0		SANDY SCHIST -DO- RECOVERY:40%		-DO-	--	C.S & W.S
	5.1	5.0		SANDY SCHIST -DO- RECOVERY: 42%		-DO-	--	C.S & W.S
		5.5	3.4	(HOLE CLOSED)				

Remarks

Date AUG 19, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

1984

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

SITE : BALAKOT/BALAKANO
BRIDGE NO: 15
BORE CHART OF BORING NO.1

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Description	Soil Symbol	Diameter Of Boring	Penetration Test Blows per 30 cm (10 / 20 / 30 / 40)	Types of Sample
31/07				TOP SOIL: SILTY CLAY, MEDIUM DENSE, COLOURED YELLOW.. NO GRAVELS & BOULDERS.		146 mm	-	D.S
		1.0		TOP SOIL: -DO-		-DO-	S.P.T. No.1 cms/Blows: 15/2, 7.5/3, 7.5/4, 7.5/5, 7.5/6 N = 18 MEDIUM DENSE	D.S
01/08		2.0		TOP SOIL: SANDY, SILTY CLAY, MEDIUM DENSE COLOURED LIGHT YELLOW. NO GRAVELS & BOULDERS.		-DO-	S.P.T. No.2 cms/Blows: 15/4, 7.5/5, 7.5/5, 7.5/7, 7.5/9 N = 26 MEDIUM DENSE	D.S
02/08		3.0		TOP SOIL: -DO-		-DO-	S.P.T. No.3 cms/Blows: 15/5, 7.5/4, 7.5/5, 7.5/7, 7.5/9 N = 25 MEDIUM DENSE	D.S
		4.0		TOP SOIL: -DO-		-DO-	S.P.T. No.4 REFUSAL	D.S
03/08		5.0	5.0	DETRITUS: PEBBLES & COBBLES IN SILTY SAND WITH MINOR CLAY CONTENT. COLOURED LIGHT YELLOW.		-DO-	S.P.T. No.5 REFUSAL	D.S
04/08		6.0		DETRITUS: GRAVELS & BOULDERS IN SILTY SAND WITH MINOR CLAY. COLOURED LIGHT YELLOW. AVERAGE DIA RANGES FROM 5-30 mm.		-DO-	S.P.T. No.6 REFUSAL	D.S
		7.0		DETRITUS: -DO- MAX. DIA OF BOULDERS UPTO 285 mm.		-DO-	S.P.T. No.7 REFUSAL	D.S
07/08		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 REFUSAL	D.S
08/08	9.5	9.0		DETRITUS: GRAVEL & BOULDERS IN SILTY SAND WITH MINOR CLAY. COLOURED LIGHT YELLOW. AVERAGE DIA RANGES FROM 10-120 mm.		-DO-	S.P.T. No.9 REFUSAL	D.S
		10.0		DETRITUS:		-DO-	S.P.T. No.10 REFUSAL	D.S
		10.7	5.3	SANDY SCHIST: - SEE BELOW -		76 mm	-	C.S & W.S
14/08		11.0		SANDY SCHIST: SLIGHTLY WEATHERED, RELATIVELY SOFT. YELLOWISH GREY IN COLOUR.		-DO-	-	C.S & W.S
15/08		12.0		SANDY SCHIST: HARD, DARK GREY IN COLOUR. BREAKS ALONG SCHISTOSITY PLANES. RECOVERY : 43%		-DO-	-	C.S & W.S
		13.0		SANDY SCHIST: -DO- RECOVERY : 71%		-DO-	-	C.S & W.S
16/08		14.0		SANDY SCHIST: -DO- RECOVERY : 52%		-DO-	-	C.S & W.S
		15.0		SANDY SCHIST: -DO- RECOVERY : 69%		-DO-	-	C.S & W.S
17/08		16.0		SANDY SCHIST: -DO- RECOVERY : 53%		-DO-	-	C.S &
		17.0	6.7	(HOLE CLOSED)				

Remarks

Date AUG 15, 1993.

Scale: 2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

2081

SITE : 1 GARHA KOT/MALAKAND
BRIDGE NO: 36
BOAE CHART OF BOARING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Above	Thickness of Layer (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blows/ft 20 40 60 80	Types of Samples
03/09				TOP SOIL: SANDY CLAY BEARING PEBBLES & COBBLES, ROUNDED TO SUB-ROUNDED, GREYISH YELLOW		76 mm	-	U.S
		0.5	0.5	DETRITUS: SILTY SAND BEARING CONGL. 10-35mm. L.GREY COL.TYPE MATRIX MARKED CUT. W.S TAKEN				
		1.0		DETRITUS: SILTY SAND BEARING PEBBLES & COBBLES WITH SOME BOULDERS. RECOVERY: PEBBLES & COBBLES WITH SOME CORE OF BOULDERS. LENGTHS 5-11 cms ETC. REC. 15%		-DO-	S.P.T. No.1 cms/blows: 15/5,7.5/6,7.5/5,7.5/7 n=27	U.S
04/09		2.0		DETRITUS: SILTY SAND BEARING PEBBLES & COBBLES DIA 10-25mm L.GREY COLOURED.		-DO-	S.P.T. No.2 cms/blows: 15/25,-,-,-,-	U.S
		2.5	2.0	CONGLOMERATE: HARD PEB. & COB. IN CALCIC OR SILICIC MAT. DARK GREY COL. WITH YELLOW PATCHES.			REFUSAL	C.S & U.S
05/09	DRY	3.0	0.5	DETRITUS: COARSE SILTY SAND BEARING ABUNDANT CONGLOMERATE. AVERAGE 5.0-30.0 mm. L.GREY COLOURED. ONLY MAIN SAMPLE COLLECTED.		-DO-	S.P.T. No.3 cms/blows: 2.5/48,-,-,-,- REFUSAL	U.S
		4.0		DETRITUS: COARSE SILTY SAND BEARING ABUNDANT CONGLOMERATE, AVERAGE DIA 25-45mm. L.GREY COLOUR. ONLY MAIN SAMPLE TAKEN.		-DO-	S.P.T. No.4 cms/blows: 15/5,2.5/39, - , - , - REFUSAL	U.S
06/09		5.0	2.0	CONGLOMERATE: VERY HARD PEBBLES & COB. WELL CEMENTED IN CALCIC OR SILICIC MATRIX. YELLOW PATCHES OF CORE ARE PRESENT L. GREY COLOURED.		-DO-	S.P.T. No.5 cms/blows: 5.5/42,-,-,-,- REFUSAL	C.S & W.S
				RECOVERY: 20%				
07/09		6.0		CONGLOMERATE: -DO- RECOVERY: 30%		-DO-	-	C.S & W.S
08/09		7.0		CONGLOMERATE: -DO- CONGLOMERATE BEARED A BOULDER DAVLE GREY OF VOLCANIC ORIGIN, ITS CORE 17cms IS ALSO OBTAINED. RECOVERY: 45%		-DO-	-	C.S & W.S
		8.0		CONGLOMERATE: -DO- RECOVERY:46%		-DO-	-	C.S & W.S
09/09		9.0		CONGLOMERATE: -DO- RECOVERY: 66%		-DO-	-	C.S & W.S
		10.0		CONGLOMERATE:		-DO-	-	C.S & W.S
		10.4	1.4	MUD STONE: (SEE BELOW) RECOVERY: 28%				
10/09		11.0		MUD STONE: HARD GREYISH YELLOW IN COLOUR. WELL COMPACTED.		-DO-	S.P.T. No.6 cms/blows: 15/16,7.5/9,7.5/22, 7.5/23,7.5/40 n=64 VERY DENSE	C.S & W.S
				RECOVERY:35% CHIPS 65			S.P.T. No.7	
11/09		12.0		MUD STONE: HARD GREYISH YELLOW IN COLOUR. WELL COMPACTED.		-DO-	cms/blows: 15/11.5/15,7.5/15, 7.5/19,7.5/19, n=67	C.S & W.S
				RECOVERY: 65%			VERY DENSE	
		13.0		MUD STONE: -DO- RECOVERY: 23.5%		-DO-	S.P.T. No.8 cms/blows: 2.5/37,-,-,- REFUSAL	C.S & W.S
12/09		14.0		MUD STONE: -DO- RECOVERY: 52%, 15%		-DO-	S.P.T. No.9 cms/blows: 15/22.7.5/12,7.5/19, 7.5/26,7.5/31 n=80 VERY DENSE	C.S & W.S
		15.0		MUD STONE: -DO- RECOVERY: 58%		-DO-	-	C.S & W.S
13/09		16.0		MUD STONE: -DO- RECOVERY: 65%		-DO-	-	C.S & W.S
		17.0	6.5	(HOLE CLOSED)				

* RECOVERY: 23%

Remarks

Date AUG 16, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.

Consulting Soil Engineers & Contractors

20B2

SITE : SAKHA KOT/MALAKAND.
BRIDGE NO: 20
BORE CHART OF BORING NO.2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
04/08				TOP SOIL: SANDY CLAY BEARING PEBBLES & COBBLES ROUNDED TO SUB-ROUNDED GREISH YELLOW COL.		75 mm		
		0.4	0.4	DETRITUS: SILTY CLAYEY SAND BEARING CONGL. DIA 5-25mm WITH COL. L.GREY W.S COLLECTED.			-	W.S
		1.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE AVERAGE DIA 10-50 mm. L.GREY COLOURED ONLY WASH SAMPLE COLLECTED.		-DO-	S.P.T No.1 cms/blows: 15/6, 7.5/5,7.5/6,7.5/6 7.5/7 N=24 MEDIUM DENSE	W.S
	1.4							
05/08		2.0		DETRITUS: -DO-		-DO-	S.P.T No.2 cms/blows: 4.5/36,-,-,-,- REFUSAL	W.S
		2.8	2.4	CONGLOMERATE RECOVERY:16%				
06/08		3.0		CONGLOMERATE HARD WITH PEBBLES & COBBLES CEMENTED IN CALCIC OR SILICIC MATRIX. OCHRE IN THE FORM OF YELLOW PATCHES. WHITISH GREY WITH YELLOW PATCHES REC.:24%		-DO-	S.P.T No.3 cms/blows: 5/37,-,-,-,-,- REFUSAL	C.S & W.S
		4.0		CONGLOMERATE -DO-			S.P.T No.4 cms/blows: 15/9,7.5/10,7.5/9, 7.5/11,7.5/21 N=52 VERY DENSE	C.S & W.S
		4.5	1.7	MUD STONE HARD WELL COMPACTED WITH COLOURED GREYISH YELLOW REC. 24%		-DO-		
10/8		5.0		MUD STONE RECOVERY:45% -DO-		-DO-	-	C.S & W.S
		5.1	1.0	(HOLE COLSED)				

Remarks

Date AUG 10, 1992. Scale:2.5 cms=1.0 m

ASSOCIATED DRILLERS (PVT) LTD. KARACHI.

Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Consulting Soil Engineers & Contractors

2083

SITE : KASHA POT/MALAKAND
BRIDGE NO: 28
HOLE CHART OF BORING NO.)

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Level	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Section	Diameter Of Boring	Penetration Test Note No 20 40 60 80	Types of Samples
0440				DETRITUS: SILTY-CLAYEY SAND BEARING CONGLOMERATE, DIA 5.0-25 mm WITH COLOURED LIGHT GREY WASH SAMPLES COLLECTED.		76 mm		U.S. C.S. & W.S.
		0.5	0.5	CONGLOMERATE: (SEE BELOW)			S.P.T. No.1	
		1.0		CONGLOMERATE: HARD, WITH PEBBLES & COBBLES CEMENTED IN CALCIC OR SILICIC MATRIX. COMES IN THE FORM OF YELLOW PATCHES. WHITISH GREY IN COLOUR.		-DO-	cms/blows: 15/5, 7.5/10, 7.5/9 7.5/11, 7.5/13. n=53	C.S. & W.S.
		2.0		CONGLOMERATE: -DO-		-DO-	S.P.T. No.2 cms/blows: 4.5/47, -, -, -, -. REFUSAL	C.S. & W.S.
		3.0		CONGLOMERATE: -DO-		-DO-	S.P.T. No.3 cms/blows: 7.0/32, -, -, -, -. REFUSAL	C.S. & W.S.
		3.1	3.1	DETRITUS: (SEE BELOW)				W.S.
		4.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE WITH AVERAGE DIA RANGE FROM 10.2 - 35.0 mm. LIGHT GREY COLOURED. WASH SAMPLES COLLECTED.		-DO-	S.P.T. No.4 cms/blows: 2.0/19, -, -, -, -. REFUSAL	W.S.
0440		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 cms/blows: 15/6, 7.5/5, 7.5/8, 7.5/18, 7.5/30. n=81	W.S
0440		6.0		DETRITUS: SILTY SAND BEARING, CONGLOMERATE WITH AVERAGE DIA RANGE FROM 0.5 - 30.0 mm. LOOSELY COMPACTED. WASH SAMPLES COLLECTED.		-DO-	S.P.T. No.6 cms/blows: 7.5/36, -, -, -, -. REFUSAL	W.S.
		7.0		DETRITUS: -DO-		-DO-	S.P.T. No.7 cms/blows: 15/2, 7.5/3, 7.5/3, 7.5 7.5/5 n=14	W.S.
0440		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 5.3/40, -, -, -, -. REFUSAL	W.S.
		9.0	5.4	MUD STONE:			S.P.T. No.9	
	9.4			HARD, WITH COLOURED GREYISH YELLOW RECOVERY: 39%		-DO-	cms/blows: 154, 7.5/4, 7.5/8, 7.5/10, 7.5/12 n=34	C.S & W.S
		10.0		MUD STONE: DO RECOVERY:41%		DO	S.P.T. No.10 cms/blows: 15/9, 7.5/12, 2.5/36, -, -. REFUSAL	C.S & W.S
		10.5	1.5	CONGLOMERATE: HARD, PEBBLES & COBBLES CEMENTED IN CALCIC OR SILICIC MATRIX. L.GREY COLOURED.				
		11.0		CONGLOMERATE: -DO-			S.P.T. No.11 cms/blows: 2.0/26, -, -, -, -. REFUSAL	C.S & W.S
		11.2	0.7	MUD STONE: HARD, WITH COLOURED GREYISH YELLOW.		-DO-		
11/00		12.0		MUD STONE: HARD, WELL COMPACTED, GREYISH YELLOW IN COLOUR		-DO-	S.P.T. No.12 cms/blows: 4.6/32, -, -, -, -. REFUSAL	C.S & W.S
		13.0		MUD STONE: -DO- RECOVERY : 45%		-DO-		C.S & W.S
		14.0		MUD STONE: -DO- RECOVERY : 53%		-DO-		C.S & W.S
12/09		15.0		MUD STONE: -DO- RECOVERY : 39%		-DO-		C.S & W.S
		16.0		MUD STONE: -DO- RECOVERY : 41%		-DO-		C.S & W.S
14/09		17.0		MUD STONE: -DO- RECOVERY : 61%		-DO-		C.S & W.S
		18.0		MUD STONE: HARD, WELL COMPACTED, GREYISH YELLOW IN COLOUR.		-DO-		C.S & W.S
		19.0	7.8	(HOLE CLOSED)				

Remarks

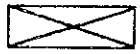
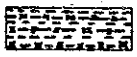
Date AUG 16, 1992.

Scale:2.5 cms=1.0 m

Geologist Engineer:

PHASE - II

LITHOLOGIC SYMBOLS

1. SOIL 
2. DETRITUS 
3. SILTY CLAYEY SAND 
4. SILTY CLAY 
5. GRANITE GNEISS 
6. MUSCOVITE SCHIST 

ABBREVATIONS

* **Colour** - **Col.**
* **Mineral** - **Mnl.**
* **Pebbles** - **Peb.**
* **Cobbles** - **Cob.**
* **Disturbed Sample** - **D.S.**
* **Wash Sample** - **W.S.**
* **Core Sample** - **C.S.**
* **Quartz** - **QTZ.**

ASSOPAK

Consulting Soil Engineers & Contractors

5B1

SITE : [illegible]
BRIDGE NO: 5
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	[illegible]	Legend Symbol	Diameter Of Boring	Penetration Test	Type of Sample
10/12				DETRITUS: SILTY SAND BEARING GRAVEL ROUNDED TO SUB-ROUNDED MAX. DIA UPTO 63 mm, L.GREY IN COLOUR.		[illegible]	-	D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T No.1 cms/blows: 15/12,7.5/7,7.5/26, 5.5/36,-. REFUSAL	D.S
11/12		2.0		DETRITUS: -DO-		-DO-	S.P.T No.2 cms/blows: 7.0/30,-,-,-,-. REFUSAL	D.S
		3.0		DETRITUS: SANDY CLAY BEARING GRAVEL ROUNDED TO SUB-ROUNDED MAX. DIA UPTO 75mm L.GREY IN COL.		-DO-	S.P.T No.3 cms/blows: 13/39-,-,-,-. REFUSAL	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T No.4 cms/blows: 2.0/47,-,-,-,-. REFUSAL	D.S
12/12		5.0		DETRITUS: -DO-		-DO-	S.P.T No.5 cms/blows: 13/19,7.5/12,5.5/41,-,- REFUSAL	D.S
		6.0	6.0	MUSCOVITE SCHIST: SOFT TO MEDIUM HARD SCHIST COMPOSED PREDOMINANTLY OF MUSCOVITE CHLORITE & BIOTITE. DEEPLY WEATHERED, GREENISH GREY IN COLOUR.		-DO-	-	D.S
13/12	DRY	7.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		8.0		MUSCOVITE SCHIST: SOFT TO MEDIUM HARD SCHIST MUSCOVITE AS PRINCIPALE MINERAL OTHER MINERALS INCLUDE BIOTITE & CHLORITE. GREENISH GREY IN COLOUR.		-DO-	-	D.S
		9.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
14/12		10.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		11.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
15/12		12.0		MUSCOVITE SCHIST: MEDIUM HARD TO HARD SCHIST COMPOSED PREDOMINANTLY OF MUSCOVITE, CHLORITE & BIOTITE. GREENISH GREY IN COLOUR.		-DO-	-	D.S
		13.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		14.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
16/12		15.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		16.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		17.0		MUSCOVITE SCHIST: MEDIUM HARD TO HARD, SCHIST, COMPOSED OF MUSCOVITE AS PRINCIPLE MNL. OTHER CONTENTS INCLUDE CHLORITE, BIOTITE ETC. GREENISH GREY IN COLOUR.		-DO-	-	D.S
17/12		18.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
18/12		19.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		20.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
19/12		21.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		22.0		MUSCOVITE SCHIST: -DO-		-DO-	-	D.S
		22.7	16.7					

Remarks

ASSOPAK

Date DEC 22, 1997. Scale 1:5 [illegible]

Geologist Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

5B2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

SITE : [illegible]
BRIDGE NO: 5
BORE CHART OF BORING NO.1

Date	Ground Water Level	Depth in Meter	Thickness of Layer (in Meter)	Strata Encountered	Litho Symbol	Diameter Of Boring	Penetration Test (20, 40, 60, 80)	Type of Sample
07/12				TOP SOIL: SILTY CLAY WITH PEBBLES & COBBLES. L.YELLOW IN COL.		150 mm	-	D.S
		0.5	0.5	DETRITUS SEE BELOW				
		1.0		DETRITUS CLAYEY SAND BEARING GRAVEL MAX. DIA UPTO 90mm SUB-ROUNDED TO SUB-ANGULAR YELLOWISH GREY COL.		-do-	S.P.T No.1 cm/blows: 13/9,7.5/7,5/9,7.5/11.- REFUSAL	D.S
		2.0		DETRITUS: SILTY SAND BEARING GRAVEL MAX. DIA UPTO 110mm. ROUNDED TO SUB-ROUNDED. L. GREY IN COLOURS.		-do-	S.P.T No.2 cm/blows: 9/31,-,-,-,-. REFUSAL	D.S
08/12		3.0		DETRITUS: MEDIUM TO COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS. BOULDER DIA RANGES FROM 250 300mm L.GREY COLOURED.		-do-	S.P.T No.3 cm/blows: 6.5/19-,-,-,-. REFUSAL	D.S
		4.0		DETRITUS: -DO-		-do-	-	D.S
09/12		5.0		DETRITUS: DO			S.P.T No.4 cm/blows: 9/27,-,-,-,-. REFUSAL	
		5.3	4.8	GRANITE GNEISS: MEDIUM TO HARD GRANITE GNEISS L. GREY IN COLOUR.		-do-		D.S
		6.0		GRANITE GNEISS: HARD MASSIVE GRANITE GNEISS L. GREY IN COLOUR.		-do-	-	D.S
10/12		7.0		GRANITE GNEISS: -DO-		-do-	-	D.S
	DRY	8.0		GRANITE GNEISS: -DO-		-do-	-	D.S
11/12		9.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		10.0		GRANITE GNEISS: -DO-		-do-	-	D.S
12/12		11.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		12.0		GRANITE GNEISS: MEDIUM TO HARD MASSIVE GRANITE GNEISS GNEISSOSE BANDS ARE OF ALTERED SCHIST.		-do-	-	D.S
13/12		13.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		14.0		GRANITE GNEISS: -DO-		-do-	-	D.S
14/12		15.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		16.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		17.0		GRANITE GNEISS: -DO-		-do-	-	D.S
15/12		18.0		GRANITE GNEISS: HARD, MASSIVE GRANITE GNEISS L. GREY IN COLOUR. WITH GNEISSOSE BANDS ARE OF ALTERED SCHIST.		-do-	-	D.S
		19.0		GRANITE GNEISS: -DO-		-do-	-	D.S
16/12		20.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		21.0		GRANITE GNEISS: -DO-		-do-	-	D.S
		21.3	16.3					

REMARKS

[illegible]

ASSOPAK

Consulting Soil Engineers & Contracting

5B3

SITE : [illegible]
BRIDGE NO: 5
BORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layer (in Meter)	Strata Encountered	Litho Symbol	Diameter of Boring	Penetration Test (20 / 40 / 60 / 80)	Type of Sample
08/12		0.5	0.5	TOP SOIL: SILTY CLAY WITH PEBBLES & COBBLES, L. YELLOW COLOURED.		150 mm	-	[illegible]
		1.0		DETRITUS: SILTY SAND BEARING GRAVEL & BOULDERS, MAX.DIA UPTO 90.0 m, YELLOWISH GREY IN COL.				
		2.0		DETRITUS: -DO-		-DO-	S.P.T. No.1 cms/blows: 15/6,7.5/3,7.5/21,-,- REFUSAL	[illegible]
		3.0		DETRITUS: SILTY SAND BEARING PEBBLES COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED. MAX.DIA UPTO 55mm L. GREY IN COLOUR.		-DO-	S.P.T. No.2 cms/blows: 15/21,2.0/5,-,-,- REFUSAL	[illegible]
09/12		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.3 cms/blows: 7.0/23,-,-,-,- REFUSAL	[illegible]
		4.5		DETRITUS: -DO-		-DO-	S.P.T. No.4 cms/blows: 2/9,-,-,-,- REFUSAL	[illegible]
10/12		5.0		DETRITUS: COARSE SAND BEARING PEBBLES COBBLES & BOULDERS, ROUNDED TO SUB-ANGULAR L.GREY COLOURED.		-DO-	S.P.T. No.5 cms/blows: 5/11,-,-,-,- REFUSAL	[illegible]
11/12		6.0	5.5	GRANITE GNEISS: MEDIUM HARD GRANITE GNEISS SLIGHTLY WEATHERED, L.GREY COL.		-DO-	-	[illegible]
	DRY	7.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		8.0		GRANITE GNEISS: HARD MASSIVE FAIRLY COARSE GRAINED GRANITE GNEISS.GNEISSO-SE BANDS ARE OF ALTERED SCHIST. L.GREY IN COLOUR.		-DO-	-	[illegible]
12/12		9.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		10.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
13/12		11.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		12.0		GRANITE GNEISS: HARD MASSIVE GRANITE GNEISS. L. GREY IN COLOUR.		-DO-	-	[illegible]
14/12		13.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		14.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
15/12		15.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		16.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		17.0		GRANITE GNEISS: HARD MASSIVE GRANITE GNEISS. L. GREY IN COLOUR. QTZ VEIN ENCOUNTERED, THICKNESS 22.0-27.0 cm.		-DO-	-	[illegible]
		18.0		GRANITE GNEISS: HARD MASSIVE GRANITE GNEISS. L. GREY IN COLOUR.		-DO-	-	[illegible]
16/12		19.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		20.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
17/12		21.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		22.0	16.0	(HOLE CLOSED)				

ASSOPAK

[illegible]

Date DEC 19, 1997. Scale [illegible]

Geologist Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

13B1

SITE : NAYA BANAI/DIR
BRIDGE NO: 13
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth In Meter	Thickness of Layers (in Meter)	Strata Encountered	Litlic Symbol	Diameter Of Boring	Penetration Test Blow No: 20 40 60 80	Types of Sample
				DETRITUS:				
25/11				COMPOSED OF PEBLES, COBBLES & BOULDERS IN CLARSE SAND. AVE DIA OF GRAVEL IS 60 mm. MAX DIA OF BOULDERS UPTO 850 mm. L.GREY COLOUR.		560 mm	-	D.S
		1.0					S.P.T. No.1	
	1.3			DETRITUS:			cms/blows:	
				-DO-		-DO-	15/5,7.5/4,4/19,-,-.	D.S
							REFUSAL	
26/11		2.0		DETRITUS:			S.P.T. No.2	
				-DO-			cms/blows:	
				LARGE BOULDER ENCOUNTERED DIA 930 mm (APPROX)		-DO-	6.5/23,-,-,-,-.	D.S
							REFUSAL	
29/11		3.0		DETRITUS:			S.P.T. No.3	
				-DO-			cms/blows:	
						-DO-	5/9,-,-,-,-	D.S
							REFUSAL	
		4.0		DETRITUS:			S.P.T. No.4	
				PEBBLES, COBBLES & SMALL BOULDERS IN MEDIUM SAND. ROUNDED TO SUB-ROUNDED. MAX. DIA OF OF BOULDERS UPTO 600 mm L.GREY IN COLOUR.		-DO-	cms/blows: 15/11,7.5/9,7.5/29,2/7 -	D.S
							REFUSAL	
		5.0		DETRITUS:			S.P.T. No.5	
29/11							cms/blows:	
				-DO-		-DO-	8/21,-,-,-,-.	D.S
							REFUSAL	
		5.7	5.7	GRANITE GNEISS:				
				(SEE BELOW)				
		6.0		GRANITE GNEISS:				
				HARD, MASSIVE, COARSE GRAINED GRANITE GNEISS. L.GREY IN COL. SLIGHTLY WEATHERED. BEARS GREEN COL. MINERAL VEINS MAY BE OF CHLORITE, EPIDOTE, OR TOURMALINE.		-DO-	-	D.S
30/11		7.0		GRANITE GNEISS:				
				-DO-		-DO-	-	D.S
01/12		8.0		GRANITE GNEISS: HARD, MASSIVE, COARSE GRAINED GNEISS L.GREY IN COLOUR BEARING ABUNDANT GREEN COLOURED MNL. VEINS. MAX. THICKNESS UPTO 2.5 cms.		-DO-	-	D.S
		9.0		GRANITE GNEISS:				
				-DO-		-DO-	-	D.S
02/12		10.0		GRANITE GNEISS:				
				-DO-		-DO-	-	D.S
03/12		11.0		GRANITE GNEISS:				
				-DO-		-DO-	-	D.S
04/12		12.0		GRANITE GNEISS: HARD MASSIVE FAIRLY COARSE GRAINED GNEISS. L.GREY IN COLOUR WITH SOME GREEN COLOURED MINERAL VEINS.		-DO-	-	D.S
05/12		13.0		GRANITE GNEISS:				
				-DO-		-DO-	-	D.S
		13.7	0.9	(HOLE CLOSED)				

Remarks

Date DEC 9, 1991. Scale:2.5 cms=1.0 m Geologist Engineer:

ASSOPAK

Consulting And Engineers & Contracting

13B2

SITE : [illegible]
BRIDGE NO: 13
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth In Meter	Thickness of Layers (in Meter)	Strata Encountered	Legend Symbol	Diameter Of Boring	Penetration test blows (15, 45, 60, 90)	Types of Samples
23/11				DETRITUS COARSE SAND WITH RIVER CLAY, BEARING PEBBLES, COBBLES & BOULDERS ROUNDED TO SUB-ROUNDED. AVE. DIA OF GRAVEL IS 54 mm. AVE DIA OF BOULDERS IS 370.0 mm		[illegible] mm	-	[illegible]
	1.0	1.0		DETRITUS -DO-		-DO-	S.P.T No.1 cms/blows: 15/10,7.5/7,5.0/41,-,-. REFUSAL	[illegible]
		2.0		DETRITUS: COARSE SAND WITH SOME SILT BEARING PEBBLES COBBLES & BOULDERS ROUNDED TO SUB-ROUNDED AVE. DIA UPTO 450 mm. L. GREY COLOURED.		-DO-	S.P.T No.2 cms/blows: 15/9,2/43,-,-,-. REFUSAL	[illegible]
24/11		3.0		DETRITUS: -DO-		-DO-	S.P.T No.3 cms/blows: 15/5,7.5/6,7.5/30, 2/40,-. REFUSAL	[illegible]
		4.0		DETRITUS: -DO- LARGE BOULDER DIA 830 mm ENCOUNTERED.		-DO-	S.P.T No.4 cms/blows: 5/39,-,-,-,-. REFUSAL	[illegible]
25/11		5.0		DETRITUS: -DO-		-DO-	S.P.T No.5 cms/blows: 15/9,7.5/11,5/39,-,-. REFUSAL	[illegible]
		5.5	5.5	GRANITE GNEISS: (SEE BELOW)				
		6.0		GRANITE GNEISS: HARD, MASSIVE, FAIRLY COARSE GRAINED GNEISS, L.GREY IN COL. SLIGHTLY WEATHERED.		-DO-	-	[illegible]
		7.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		8.0		GRANITE GNEISS: HARD, MASSIVE, FAIRLY COARSE GRAINED GNEISS, L.GREY IN COL. BEARING GREEN COL. MIN. VEINS (1.5-3.0 cm) IN THICKNESS		-DO-	-	[illegible]
26/11		9.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		10.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		11.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
27/11		12.0		GRANITE GNEISS: HARD MASSIVE, GNEISS L.GREY IN COLOUR BEARING GREEN COLOURED. MINERAL VEINS.		-DO-	-	[illegible]
		13.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
28/11		14.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		15.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		16.0		GRANITE GNEISS: -DO- QTZ VEIN ENCOUNTERED THICKNESS 11-13 cms.		-DO-	-	[illegible]
		17.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
29/11		18.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		19.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
30/11		20.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		21.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		22.0	16.5					

REMARKS

[illegible] [illegible] Geologist Engineer

ASSOPAK

Consulting Soil Engineers & Geologists

13B3

SITE : [illegible]
BRIDGE NO: 13
CORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Standing Water Level	Depth in Meter	Thickness of Layers in Meter	Strata Description	Letter Symbol	Diameter Of Boring	Penetration Test Blows	Types of Sample
[illegible]				DETRITUS COARSE SAND WITH CLAY, BEARING PEBBLES, COBBLES & BOULDERS ROUNDED TO SUB-ROUNDED. AVE. DIA OF GRAVEL 15 50 mm. MIDDLE ... OF BOULDERS (± 100mm)		[illegible]	-	[illegible]
		1.0		DETRITUS			S.P.T No.1 [illegible] 5/40,-,-,-,-	
	1.5			-DO-		-DO-	REFUSAL	[illegible]
		2.0		DETRITUS; SILTY COARSE SAND BEARING PEBBLES COBBLES & ROUNDED TO SUB-ROUNDED AVE. DIA UPTO 350 mm. L. GREY IN COLOUR.		-DO-	S.P.T No.2 [illegible] 15/7,7.5/6,7.5/8, 5/37,-. REFUSAL	[illegible]
		3.0	3.0	GRANITE GNEISS; (SEE BELOW)				
03/12		3.0		GRANITE GNEISS: HARD, MASSIVE COARSE GRAINED GRANITE GNEISS L. GREY IN COLOUR. SLIGHTLY WEATHER.		-DO-	-	[illegible]
		4.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		5.0		GRANITE GNEISS: HARD MASSIVE COARSE GRAINED GNEISS L. GREY IN COLOUR.		-DO-	-	[illegible]
05/12		6.0		GRANITE GNEISS: -DO- QTZ VEIN ENCOUNTERED THICKNESS 9.0 UPTO 14.5 cms.		-DO-	-	[illegible]
		7.0		GRANITE GNEISS: HARD, MASSIVE, FAIRLY COARSE GRAINED GNEISS. L. GREY IN COL. WITH THIN QTZ VEINLETS.		-DO-	-	[illegible]
06/12		8.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		9.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		10.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		11.0		GRANITE GNEISS: HARD, MASSIVE, FAIRLY COARSE GRAINED GNEISS. L. GREY IN COL. BEARING GREEN COL. MIN. VEINS (2.5-3.0 cm) IN THICKNESS		-DO-	-	[illegible]
07/12		12.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		13.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		14.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		15.0		GRANITE GNEISS: -DO- QTZ VEIN ENCOUNTERED THICKNESS 8-16 cm. (APPROX)		-DO-	-	[illegible]
08/12		16.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		17.0		GRANITE GNEISS: HARD MASSIVE, GNEISS L. GREY IN COLOUR BEARING GREEN COLOURED, MINERAL VEINS.		-DO-	-	[illegible]
09/12		18.0		GRANITE GNEISS: HARD MASSIVE COARSE GRAINED GNEISS L. GREY IN COLOUR. BEARING THIN GREEN COLOURED MIN. VEINS, MAY BE CHLORITE, EPIDOTE OR TOURMALLINE.		-DO-	-	[illegible]
		19.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		20.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
10/12		21.0		GRANITE GNEISS: -DO-		-DO-	-	[illegible]
		22.0	[illegible]					

Remarks

ASSOPAK

[illegible] Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

14B1

SITE : SWAR BARIN/BAJOUR.
BRIDGE NO: 14
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers in Meters	Strata Encountered	Lithic Symbol	Diameter Of Boring	Penetration Test Blow per 30 cm 20 40 60 80	Types of Sample
09/12				DETRITUS: SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED, MAX. DIA UPTO 860.0 mm. L.GREY IN COLOUR.		439 mm	-	D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T. No.1 cms/blows: 15/13,7.5/9,7.5/39, 7.5/7,2/33 REFUSAL	D.S
06/12		2.0		DETRITUS: -DO- MAX. DIA OF BOULDER UPTO 750.0 mm (APPROX).		-DO-	S.P.T. No.2 cms/blows: 7.0/43,-,-,-,-. REFUSAL	D.S
07/12		3.0		DETRITUS: -DO-		-DO-	S.P.T. No.3 cms/blows: 1.0/36,-,-,-,-. REFUSAL	D.S
		4.0		DETRITUS: -DO-		-DO-	-	D.S
		5.0		DETRITUS: -DO- MAX. DIA OF BOULDER ENCOUNTERED UP- 850.0 mm.		-DO-	S.P.T. No.4 cms/blows: 12/40,-,-,-,-. REFUSAL	D.S
		6.0		DETRITUS: PEBBLES, COBBLES, & BOULDERS IN SILTY SAND, ROUNDED TO SUB ROUNDED MAX. DIA OF BOULDERS UPTO 850 mm. L.GREY IN COLOUR.		-DO-	S.P.T. No.5 cms/blows: 15/9,7.5/6,7.5/8,2.0/43 - REFUSAL	D.S
08/12	7.5	7.0		DETRITUS: -DO-		-DO-	S.P.T. No.6 cms/blows: 9/38,-,-,-,-. REFUSAL	D.S
		8.0		DETRITUS: -DO-		-DO-	-	D.S
09/12		9.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED, DIA RANGES FROM 20.0-60.0 mm. GREYISH YELLOW IN COLOUR.		-DO-	-	D.S
		10.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 5/41,-,-,-,-,-,-,- REFUSAL	D.S
10/12		11.0		DETRITUS: -DO-		-DO-	S.P.T. No.9 cms/blows: 15/12/7.5/22,1.0/39,-,- REFUSAL	D.S
		12.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED, MAX.DIA RANGES FROM 15.00-45.00 mm. L.YELLOW IN COLOUR.		-DO-	S.P.T. No.10 cms/blows: 15/12,7.5/7,7.5/9, 2.0/43,-. REFUSAL	D.S
		13.0		DETRITUS: -DO-		-DO-	S.P.T. No.11 cms/blows: 15/9,7.5/38,5/36,-,-. REFUSAL	D.S
11/12		14.0		DETRITUS: -DO-		-DO-	-	D.S
		15.0		DETRITUS: -DO-		-DO-	S.P.T. No.12 cms/blows: 9/47,-,-,-,-. REFUSAL	D.S
12/12		16.0		DETRITUS: -DO-		-DO-	S.P.T. No.13 cms/blows: 15/9,7.5/6,6.0/41,-,-. REFUSAL	D.S
		17.0		DETRITUS: -DO-		-DO-	-	D.S
		18.0	18.0	(HOLE CLOSED)				

ASSOPAK

Remarks

Date DEC 15, 1992. Scale:2.5 cm=1.0 m

Geologist Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

14B2

SITE : SAHAR BAGH/BAJOUR
BRIDGE NO: 14
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth In Meter	Thickness of Layers (in Meter)	Strata Encountered	Litho Symbol	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Sample
25/11				DETRITUS SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 850.00 mm. L.GREY IN COLOUR.		456 mm	-	D.S
		1.0		DETRITUS -DO-		-DO-	S.P.T No.1 cms/blows: 15/12,7.5/13,5/41,-,-,- REFUSAL	D.S
	1.4							
		3.0		DETRITUS: -DO- MAX DIA OF BOULDER UPTO 950.0 mm.		-DO-	S.P.T No.2 cms/blows: 2.0/40,-,-,-,-. REFUSAL	D.S
26/11		5.0		DETRITUS: -DO-		-DO-	S.P.T No.3 cms/blows: 13/43,-,-,-,-. REFUSAL	D.S
27/11		6.0		DETRITUS: -DO- BOULDER ENCOUNTERED WITH A DIA OF 1050.0 mm (APPROX).		-DO-	S.P.T No.4 cms/blows: 15/12,7.5/13,7.5/16, 3/41,-. REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	S.P.T No.5 cms/blows: 12/47,-,-,-,-. REFUSAL	D.S
		6.0		DETRITUS: SILTY CLAYEY SAND. BEARING PEBBLES & COBBLES WITH SOME BOULDERS. ROUNDED TO SUB-ROUNDED YELLOWISH GREY IN COL. MAX.DIA OF BOULDERS UPTO 350mm		-DO-	S.P.T No.6 cms/blows: 15/13,7.5/12,5.5/47,-,- REFUSAL	D.S
		7.0		DETRITUS: -DO-		-DO-	-	D.S
28/11		8.0		DETRITUS: SILTY CLAY BEARING GRAVEL ROUNDED TO SUB-ROUNDED. DIA RANGES FROM 15.0-75.0 mm. L. YELLOW IN COLOUR.		-DO-	S.P.T No.8 cms/blows: 9.5/42,-,-,-,-. REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	-	D.S
29/11		10.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 15/9,7.5/12,7.5/9,3/38 - REFUSAL	D.S
		11.0		DETRITUS: -DO-		-DO-	S.P.T No.9 cms/blows: 7.3/48,-,-,-,-. REFUSAL	D.S
30/11		12.0		DETRITUS: SILTY CLAY BEARING GRAVEL DIA RANGES FROM 35.0-85.00 mm. ROUNDED TO SUB-ROUNDED L.YELLOW IN COLOUR		-DO-	S.P.T No.10 cms/blows: 15/9,7.5/7,7.5/10,-,-. REFUSAL	D.S
		13.0		DETRITUS: -DO-		-DO-	S.P.T No.11 cms/blows: 15/13,7.5/9,5.0/43,-,-. REFUSAL	D.S
		13.0	13.0	(HOLE CLOSED)				

ASSOPAK

Remarks

Date DEC 05, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOPAK

Consulting Soil Investigators & Contractors

14B3

SITE : SAMAN BAGH/BAJAUR
BRIDGE NO: 14
BORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth In Meter	Thickness of Layers (in Meters)	Strata Encountered	Index Symbol	Diameter Of Boring	Penetration Test Blow No. 20 / 40 / 60 / 80	Types of Sample
27/11				DETRITUS: SILTY SAND BEARING PEBBLES, COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED. MAX. DIA OF BOULDERS UPTO 800.00 mm. L. GREY IN COLOUR.		650 mm	-	D.S
		1.0					S.P.T No.1	
				DETRITUS:		-DO-	cms/blows: 15/6,7.5/13,7.5/42,-,-.	D.S
				-DO-			REFUSAL	
	1.1	2.0					S.P.T No.2	
				DETRITUS:		-DO-	cms/blows: 2.37,-,-,-,-.	D.S
				-DO-			REFUSAL	
				MAX.DIA OF BOULDER UPTO 950 mm.				
28/11		3.0		DETRITUS:		-DO-	-	D.S
				-DO-				
		4.0					S.P.T No.3	
				DETRITUS: SILTY CLAYEY SAND BEARING PEBBLES COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED. MAX.DIA UPTO 350mm YELLOWISH GREY IN COL.		-DO-	cms/blows: 13.5/43,-,-,-,-.	D.S
							REFUSAL	
29/11		5.0					S.P.T No.4	
				DETRITUS:		-DO-	cms/blows: 15/12,7.5/8,7.5/36,-,-.	D.S
				-DO-			REFUSAL	
		6.0		DETRITUS: SILTY CLAY BEARING PEBBLES, COBBLES & BOULDERS ROUNDED TO SUB-ROUNDED.MAX DIA OF BOULDERS UPTO 350mm L. YELLOW IN COL.		-DO-	-	D.S
		7.0		DETRITUS:		-DO-	-	D.S
				-DO-				
30/11		8.0					S.P.T. No.5	
				DETRITUS:		-DO-	cms/blows: 15/25,4/40,-,-,-.	D.S
				-DO-			REFUSAL	
		9.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 75 mm L. YELLOW IN COLOUR.		-DO-	-	D.S
31/11		10.0					S.P.T. No.6	
				DETRITUS:		-DO-	cms/blows: 3.9/36,-,-,-,-.	D.S
				-DO-			REFUSAL	
		11.0					S.P.T. No.7	
				DETRITUS:		-DO-	cms/blows: 7/43,-,-,-,-.	D.S
				-DO-			REFUSAL	
01/12		12.0					S.P.T. No.8	
				DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED, MAX.DIA UPTO 60.00 mm L. GREY IN COLOUR.		-DO-	cms/blows: 15/11,7.5/6,2/42,-,-.	D.S
							REFUSAL	
		13.0					S.P.T. No.9	
				DETRITUS:		-DO-	cms/blows: 3/36,-,-,-,-.	D.S
				-DO-			REFUSAL	
		14.0		DETRITUS:		-DO-	-	D.S
				-DO-				
02/12		15.0		DETRITUS:		-DO-	-	D.S
				-DO-				
				MAX. DIA OF GRAVEL UPTO 45 mm.				
		16.0		DETRITUS:		-DO-	-	D.S
				-DO-				
		17.0		DETRITUS:		-DO-	-	D.S
				-DO-				
		17.6	17.6	(HOLE CLOSED)				

ASSOPAK

Remarks

Date DEC 06, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOPAK

Consulting Soil Engineers & Geologists

14B4

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

SITE : [illegible]
BRIDGE NO: 14
BORE CHART OF BORING NO.1

Date	Ground Water Level	Depth in Metre	Thickness of Layers (in Metre)	Strata Encountered	Index Symbol	Frequency of Boring	Penetration Test Blows Per 20 40 60 80	Type of Sample
[illegible]				TOP SOIL: SILTY CLAY, RICH IN HUMUS, BEARING PEBBLES & COBBLES ROUNDED TO SUB-ROUNDED, MAX.DIA UPTO 70.0 mm YELLOWISH BROWN IN COLOUR, SOFT COHESIVE SOIL, TOP SOIL.		410 mm	-	D.S
		1.0		-DO-			S.P.T. No.1	
		1.6	1.4	DETRITUS: COMPOSED OF PEB., COB. & BOULDERS, ROUNDED TO SUB-ROUNDED IN SILTY CLAY MAX.DIA UPTO 300 mm. COL. YELLOWISH BROWN		-DO-	cms/blows: 15/6,7.5/5,7.5/6, 7.5/12,7.5/7 N=30 MEDIUM DENSE	D.S
		2.5		DETRITUS: -DO- MAX. DIA OF BOULDER ENCOUNTERED 1050 mm.		-DO-	-	D.S
07/12		3.0		DETRITUS: SILTY CLAY BEARING PEBBLES, COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED, MAX.DIA UPTO 400mm L. YELLOW IN COLOUR.		-DO-	S.P.T. No.2 cms/blows: 7/43,-,-,-,-. REFUSAL	D.S
		4.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED, MAX. DIA UPTO 35.0 mm L.YELLOW IN COLOUR.		-DO-	S.P.T. No.3 cms/blows: 15/21,5/30,-,-,-. REFUSAL	D.S
08/12		5.0		DETRITUS: -DO- MAX. DIA UPTO 45.00 mm.		-DO-	-	D.S
	6.5	6.0		DETRITUS: SILTY CLAY BEARING GRAVEL, & BOULDERS, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 950.0 mm L. YELLOW IN COLOUR.		-DO-	-	D.S
09/12		7.0		DETRITUS: -DO- MAX. DIA OF BOULDER UPTO 900mm.		-DO-	-	D.S
		8.5		DETRITUS: SILTY CLAY BEARING GRAVEL ROUNDED TO SUB-ROUNDED. DIA RANGES FROM 15.0-35.0 mm L. YELLOW IN COLOUR.		-DO-	S.P.T. No.4 cms/blows: 15/13,7.5/4,3.0/30,-,-. REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	-	D.S
10/12		10.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 cms/blows: 5/43,-,-,-,-. REFUSAL	D.S
		11.0		DETRITUS: -DO-		-DO-	S.P.T. No.6 cms/blows: 15/9,7.5/7,7.5/8,2/36,- REFUSAL	D.S
		12.0		DETRITUS: SILTY CLAY BEARING SMALL GRAVEL (UPTO 30.0 mm). ROUNDED TO SUB-ROUNDED WITH L.BOULDERS (UPTO 800 mm L. YELLOW COLOURED.		-DO-	S.P.T. No.7 cms/blows: 15/9,7.5/5,7.5/6, 7.5/4,7.5/7 N=24 MEDIUM DENSE	D.S
11/12		13.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 9/33,-,-,-,-. REFUSAL	D.S
		14.0		DETRITUS: -DO-		-DO-	-	D.S
12/12		15.0		DETRITUS: -DO-		-DO-	-	D.S
		16.0		DETRITUS: SILTY CLAY BEARING SMALL GRAVEL ROUNDED TO SUB-ROUNDED MAX. DIA 60 mm. L. YELLOW IN COLOUR.		-DO-	-	D.S
		17.0		DETRITUS: -DO-		-DO-	S.P.T. No.9 cms/blows: 15/8,7.5/6,2.0/42,-,-. REFUSAL	D.S
		18.0		DETRITUS: SILTY CLAY BEARING SMALL GRAVEL ROUNDED TO SUB-ROUNDED DIA RANGES FROM 15.0-45.0 mm. WITH SOME BOULDERS. L.YELLOW IN COL.		-DO-	-	D.S
13/12		19.0		DETRITUS: -DO-		-DO-	-	D.S
		20.0		DETRITUS: -DO- MAX. DIA OF BOULDERS UPTO 490mm		-DO-	-	D.S
		21.0		DETRITUS: -DO-		-DO-	-	D.S
		21.5	20.1	(HOLE CLOSED)				

Remarks

Date DEC 13, 1995. [illegible]

Geologist Engineers

ASSOPAK

Consulting Soil Engineers & Contractors

15B1

SITE : SHAMILAL/SWAT
BRIDGE NO: 15
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth In Meter	Thickness of Layers (in Meter)	Strata Encountered	Litho Symbol	Diameter Of Boring	Penetration Test Blow Per 30 / 40 / 50 / 60	Types of Sample
01/10				TOP SOIL: SANDY SILTY CLAY, WITH HUMUS RICH L. YELLOW IN COLOUR, BEARING PEBBLES & COBBLES (25-110 mm), ROUNDED TO SUB-ROUNDED		960 mm	-	D.S
		1.0		TOP SOIL: -DO-		-DO-	S.P.T. No.1 mm/blows: 15/4,7.5/3,7.5/4, 7.5/6,7.5/9 N=16 MEDIUM DENSE	D.S
		2.0		TOP SOIL: -DO-			S.P.T. No.2 mm/blows: 15/7,7.5/6,7.5/7, 7.5/3,7.5/4 N=20 TEST UNSATISFACTORY	
		2.4	2.4	DETRITUS: PEBBLES,COBBLES & BOULDERS IN SANDY SILTY CLAY. DIA RANGE FROM 350-750 mm.		-DO-		D.S
02/10		3.0		DETRITUS: -DO-		-DO-	S.P.T. No.3 REFUSAL	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.4 REFUSAL	D.S
04/10		5.0		DETRITUS: PEBBLES,COBBLES & BOULDERS WITH DIA RANGE FROM 550- 750 mm. WELL ROUNDED TO SUB-ROUNDED IN SANDY SILTY CLAY.		-DO-	S.P.T. No.5 REFUSAL	D.S
6/10		6.0		DETRITUS: COMPOSED OF PEBBLES,COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 350-800 mm.		-DO-	S.P.T. No.6 REFUSAL	D.S
09/10		7.0		DETRITUS: PEBBLES,COBBLES IN SANDY SILTY CLAY. BOULDERS ARE COMPOSED OF GRANITE WITH DIA RANGES FROM 400-950 mm.		-DO-	S.P.T. No.7 mm/blows: 15/9,5.0/32,-,-,- REFUSAL	D.S
		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 REFUSAL	D.S
		9.0		DETRITUS: -DO-		-DO-	S.P.T. No.9 REFUSAL	D.S
11/10	10.5	10.0		DETRITUS: PEBBLES, COBBLES IN SILTY SANDY CLAY CONTENT IS MINIMISED. PEBBLES ARE ROUNDED TO SUB-ROUNDED COLOURED L.GREY.		-DO-	S.P.T. No.10 mm/blows: 15/11,2.0/15,-,-,- REFUSAL	D.S
		11.0		DETRITUS: -DO- SOME GRANITIC BOULDERS ENCOUNTERED (250-320 mm)		-DO-	S.P.T. No.11 REFUSAL	D.S
13/10		12.0		DETRITUS: PEBBLES,COBBLES & BOULDERS IN SILTY SAND AVERAGE DIA OF BOULDERS IS ABOUT 450 mm L. GREY COLOURED		-DO- 76 mm	S.P.T. No.12 REFUSAL	D.S C.S
		13.0		DETRITUS: -DO-		-DO-	S.P.T. No.13 REFUSAL	C.S & W.S
		13.7	11.3	GRANITE GNEISS: REC.50% 6mm Blow				
14/10		14.6		GRANITE GENISS: HARD,MASSIVE,COARSE GRAINED. WHITISH GREY IN COLOUR. RECOVERY: 76%		-DO-	-	C.S & W.S
15/10		15.0		GRANITE GENISES: -DO-				
		15.3	1.6	DETRITUS: PEBBLES COBBLES IN COARSE SAND. NO BOULDERS.		-DO-	-	C.S & W.S
		16.6	0.7	GRANITE GENISES: HARD, MASSIVE, COARSE GRAINED. WHITISH GREY IN COLOUR. RECOVERY: 60%		-DO-	-	C.S & W.S
18/10		17.0		GRANITE GENISES: -DO- RECOVERY: 48%		-DO-	-	C.S & W.S
		18.9	2.9	(HOLE CLOSED)				

ASSOPAK

Remarks

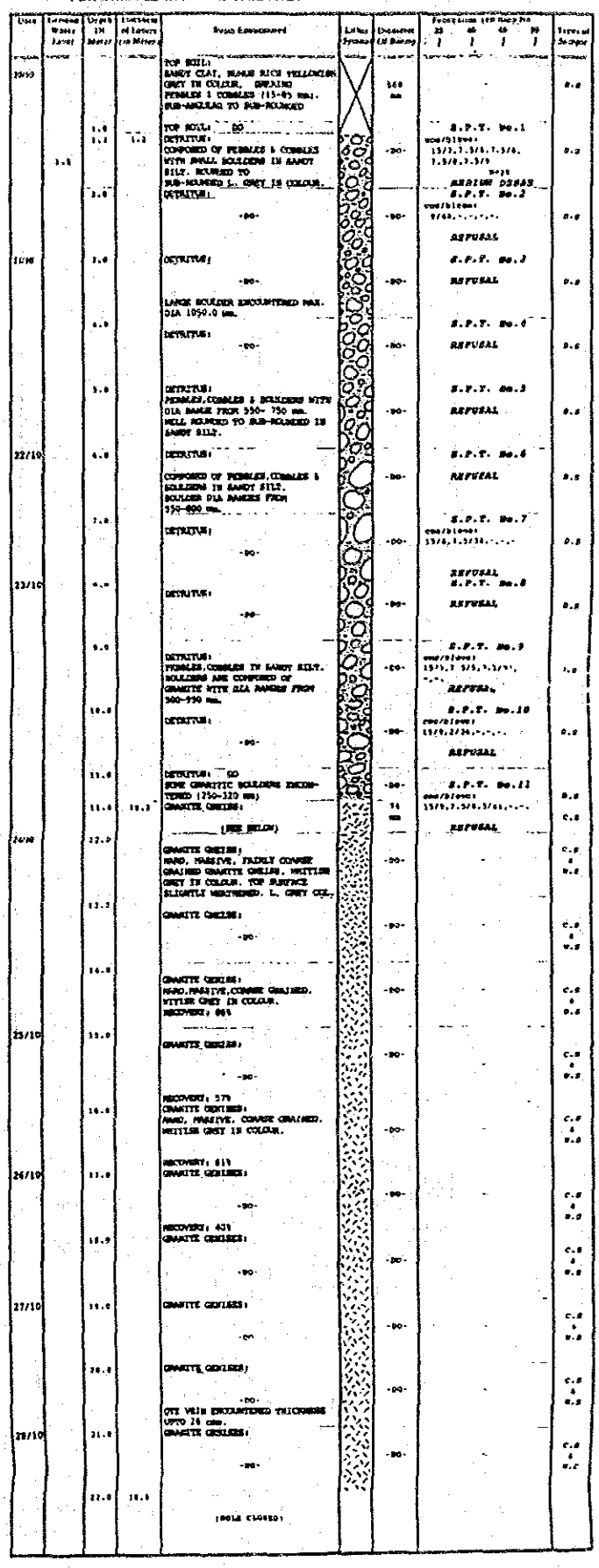
Date OCT 23, 1992.   Scale:2.5 cm=1.0 m   Geologist Engineer:

ASSOPAK

Consulting Soil Engineers & Contractors

15B2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN



ASSOPAK

Consulting Soil Engineers & Contractors

15B3

SITE : MANGLAL/SWAT
BRIDGE NO: 15
BORE CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	Strata Encountered	Litho Section	Diameter Of Boring	Penetration Test Blow No.	Types of Sample
7/10				DETRITUS PEBBLES, COBBLES & BOULDERS, DIA RANGES FROM 300-650 mm. IN SANDY SILTY CLAY.		650 mm	–	D.S
		1.0		DETRITUS -DO-		-DO-	S.P.T No.1 REFUSAL	D.S
09/10		2.0		DETRITUS: -DO- MAX DIA OF BOULDER UPTO 850.0 mm.		-DO-	S.P.T No.2 REFUSAL	D.S
		3.0		DETRITUS: -DO-		-DO-	S.P.T No.3 mm/blows: 15/17,7.5/13,-,-,-, REFUSAL	D.S
		4.0		DETRITUS: -DO- MAX DIA OF BOULDERS UPTO 550.0 mm.		-DO-	S.P.T No.4 REFUSAL	D.S
11/10		5.0		DETRITUS: -DO-		-DO-	S.P.T No.5 REFUSAL	D.S
		6.0		DETRITUS: BOULDERS (250-900 mm) IN GRAVELLIFEROUS MATRIX COMPOSED OF SANDY SILTY CLAY.		-DO-	S.P.T No.6 REFUSAL	D.S
		7.0		DETRITUS: -DO-		-DO-	S.P.T No.7 mm/blows: 7.0/13,-,-,-,- REFUSAL	D.S
12/10		8.0		DETRITUS: PEBBLES, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 250-550 mm.		-DO-	S.P.T No.8 – REFUSAL	D.S
		9.0		DETRITUS: PEBBLES, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 250-750 mm.		-DO-	S.P.T No.9 – REFUSAL	D.S
13/10		10.0		DETRITUS: -DO-		-DO-	S.P.T No.10 – REFUSAL	D.S
		11.0		DETRITUS: -DO-		-DO-	S.P.T No.11 – REFUSAL	D.S
13/10 14/10 18/10		12.0		DETRITUS: BOULDERS, DIA RANGES FROM 250-750 mm IN GRAVELLIFEROUS MATRIX COMPOSED OF CLAYEY SAND.		-DO- 76 mm	S.P.T No.12 REFUSAL	D.S C.S
		13.0		DETRITUS: -DO-		-DO-	S.P.T No.13 REFUSAL	C.S & W.C
	14.5	14.0		DETRITUS: -DO-		-DO-	S.P.T No.14 REFUSAL	C.S & W.C
		14.7	14.7	GRANITE: (SEE BELOW)				
		15.0		GRANITE: HARD, MASSIVE, COARSE GRAINED WHITISH GREY IN COLOUR. RECOVERY: 50%		-DO-	–	C.S & W.C
		15.8	1.1	DETRITUS: (SEE BELOW)				
19/10		16.0		DETRITUS: PEBBLES, COBBLES IN CLAYEY SAND FINE MATRIX WASHED OUT.		-DO-	–	C.S & W.C
		16.7	0.9	GRANITE GNEISS: (SEE BELOW)				
20/10		17.0		GRANITE GNEISS: HARD, MASSIVE, COARSE GRAINED. WHITISH GREY IN COLOUR. RECOVERY: 40%		-DO-	–	C.S & W.C
		18.0		GRANITE GNEISS: HARD, MASSIVE, COARSE, GRAINED, WHITISH, GREY IN COLOUR. RECOVERY: 76%		-DO-	–	C.S & W.C
		19.0		GRANITE: -DO-		-DO-	–	
		19.2	2.5	(HOLE CLOSED)				

Remarks

ASSOPAK

Date OCT 23, 1997.   Scale:2.5 cm=1.0 m   Geologist Engineer:

ASSOPAK

Consulting Soil Engineers & Contractors

15B4

SITE : [illegible]/SWAT
BRIDGE NO: 15
BORE CHART OF BORING NO.4

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	Strata Encountered	Litho Section	Diameter Of Boring	Penetration Test Blows Per ... 20 40 60 80	Types of Sample
22/10				DETRITUS SANDY SILTY CLAY BEARING PEBBLES, COBBLES & BOULDERS, DIA RANGES FROM 400-600 mm. L. YELLOW COLOUR.		456 mm	-	D.S
		1.0		DETRITUS -DO-		-DO-	S.P.T No.1 REFUSAL	D.S
		2.0		DETRITUS: -DO- MAX DIA OF BOULDER UPTO 950.0 mm.		-DO-	S.P.T No.2 cms/blows: 15/9,7.5/6,2/41,-,-,. REFUSAL	D.S
23/10		3.0		DETRITUS: -DO-		-DO-	S.P.T No.3 cms/blows: 15/9,7.5/8,-,-,-, REFUSAL	D.S
24/10		4.0		DETRITUS: -DO-		-DO-	S.P.T No.4 REFUSAL	D.S
		5.0		DETRITUS: -DO- MAX DIA OF BOULDERS UPTO 700.0 mm.		-DO-	S.P.T No.5 REFUSAL	D.S
		6.0		DETRITUS: -DO-		-DO-	S.P.T No.6 cms/blows: 9/39,-,-,-,-, REFUSAL	D.S
		7.0		DETRITUS: PEBBLES, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 350-450 mm.		-DO-	S.P.T No.7 cms/blows: 15/9,7.5/6,5/39,-. REFUSAL	D.S
25/10		8.0		DETRITUS: -DO-		-DO-	S.P.T No.8 - REFUSAL	D.S
		9.0		DETRITUS: PEBBLES, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 250-750 mm.		-DO-	S.P.T No.9 - REFUSAL	D.S
		10.0		DETRITUS: -DO-		-DO-	S.P.T No.10 - REFUSAL	D.S
26/10		11.0		DETRITUS: BOULDERS, DIA RANGES FROM 250-750 mm IN GRAVELLIFEROUS MATRIX COMPOSED OF CLAYEY SAND.		-DO-	S.P.T No.11 - REFUSAL	D.S
		12.0		DETRITUS: -DO-		-DO-	S.P.T No.12 REFUSAL	D.S
		13.0		DETRITUS: -DO- LARGE BOULDER ENCOUNTERED DIA UPTO 1150.0 mm.		-DO-	S.P.T No.13 REFUSAL	D.S
		14.0		DETRITUS: -DO-		-DO-	S.P.T No.14 REFUSAL	D.S
		15.0		DETRITUS: -DO-		-DO-	S.P.T No.15	D.S
	15.9	15.9	15.9	GRANITE GNEISS: (SEE BELOW)		76 mm	REFUSAL	W.C
27/10		16.0		GRANITE GNEISS: HARD MASSIVE COARSE GRAINED, BEARING QTZ VEINS. WHITISH GREY IN COLOUR.		-DO-	-	C.S & W.C
		17.0		GRANITE GNEISS: -DO-		-DO-	-	C.S & W.C
		18.0		GRANITE GNEISS: HARD, MASSIVE, COARSE, GRAINED, WHITISH, GREY IN COLOUR. RECOVERY: 86%		-DO-	-	C.S & W.C
28/10		19.0		GRANITE GNEISS: -DO-		-DO-	-	C.S & W.C
		20.0		GRANITE GNEISS: -DO-		-DO-	-	C.S & W.C
		21.0		GRANITE GNEISS: -DO-		-DO-	-	C.S & W.C
		21.9	6.0	(HOLE CLOSED)				

Remarks

Date OCT 29, 1992. Scale:2.5 cms=1.0 m

Geologist Engineer: ASSOPAK

ASSOPAK
Consulting Soil Engineers & Contractors

16B1

SITE : KEDAH/SNAY
BRIDGE NO: 16
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DISIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Boring	Penetration Test Blow No. 2) 4) 6) 8)	Types of Sample
01/10				TOP SOIL: SANDY SILTY CLAY, WITH SMALL PEBBLES, L.YELLOW IN COLOUR.				
		0.5	0.5	DETRITUS: COMPOSED OF COBBLES & BOULDERS (110.0-480 mm.)		650 mm	-	D.S
		1.0					S.P.T No.1	
				DETRITUS: -DO-		-DO-	cms/blows: 7.5/42,-,-,-,- REFUSAL	D.S
02/10		2.0					S.P.T No.2	
				DETRITUS: PEBBLES, COBBLES & BOULDERS AVERAGE DIA RANGES FROM 350-850 mm IN SILTY CLAY.		-DO-	cms/blows: 13/47,-,-,-,- REFUSAL	D.S
		3.0					S.P.T No.3	
				DETRITUS: -DO-		-DO-	cms/blows: 15/9, 7.5/10,7.5/13, 5.0/47,- REFUSAL	D.S
		4.0					S.P.T No.4	
				DETRITUS: -DO-		-DO-	cms/blows: REFUSAL	D.S
06/10	5.2	5.0					S.P.T No.5	
				DETRITUS: -DO- AVERAGE DIA OF BOULDERS RANGES FROM 300-750 mm.		-DO-	cms/blows: REFUSAL	D.S
		6.0					S.P.T No.6	
				DETRITUS: PEBBLES, COBBLES & BOULDERS IN SILTY SAND MAX. DIA UPTO 850mm LIGHT GREY COLOURED.		-DO-	cms/blows: 15/19,4.0/21,-,-,- REFUSAL	D.S
10/10		7.0					S.P.T No.7	
				DETRITUS: -DO-		-DO-	cms/blows: REFUSAL	D.S
11/10		8.0					S.P.T No.8	
				DETRITUS: COBBLES ,BOULDERS (250-600mm) IN SILTY SAND.		-DO-	cms/blows: REFUSAL	D.S
13/10		9.0	8.5	GRANITE GNEISS: HARD, MASSIVE,COARSE,GRANIED, WHITISH GREY IN COLOUR.		76 mm	-	W.S & C.S
		9.7	0.7	DETRITUS: (SEE BELOW)				
		10.0		DETRITUS: PEBBLES, IN COARSE SAND. WASH SAMPLE COLLECTED.		-DO-	-	W.S
		10.8	1.1	GRANITE: (SEE BELOW)				
14/10		11.0		GRANITE GNEISS: HARD, MASSIVE, COARSE GRANIED.		-DO-	-	W.S & C.S
		11.7	0.9	DETRITUS: COARSE SAND WITH SMALL PEBBLES.				
15/10		12.0	9.3	GRANITE GNEISS: HARD, MASSIVE, COARSE GRANIED. WHITISH GREY IN COLOUR. RECOVERY: 72%		-DO-	-	W.S & C.S
19/10		13.0		GRANITE GNEISS: -DO- RECOVERY: 80%		-DO-	-	W.S & C.S
		13.5	1.5	(HOLE COLLED)				

Remarks

ASSOPAK

Date OCT 25, 1992. Scale:2.5 cm=1.0 m Geologist Engineer:

ASSOPAK

Consulting Soil Engineers & Contractors

16B2

SITE : KIDAN/ENAT
BRIDGE NO: 16
BORE CHART OF BORING NO.2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	Strata Encountered	Lithic Symbol	Diameter Of Boring	Penetration Test Blow No.	Types of Sample
3/10				SILTY CLAYEY SAND: COARSE SAND BEARING PEBBLES, DIA RANGES FROM 2.0-6.0 cm. SOME COBBLES ARE ALSO ENCOUNTERED. DIA RANGES FROM 10.0-110 mm.		650 mm	-	D.S
		1.0		DETRITUS: SILTY CLAYEY SAND, BEARING PEBBLES. SOME BOULDERS OCCASIONALLY ENCOUNTED.		-DO-	S.P.T. No.1 cms/blows: 9.0/37,-,-,-,- REFUSAL	D.S
		2.0		DETRITUS: -DO-		-DO-	S.P.T. No.2 cms/blows: 15/3,7.5/2,7.5/2,7.5/2 7.5/3 N=10 LOOSE SOIL	D.S
05/10		3.0		DETRITUS:		-DO-	S.P.T. No.3 cms/blows: 15/3,7.5/1,7.5/1,7.5/2 7.5/2 N=6 LOOSE SOIL	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.4 cms/blows: 15/3,7.5/2,7.5/3,7.5/3 7.5/4 N=12 LOOSE SAND	D.S
06/10		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 cms/blows: 15/4,7.5/4,7.5/22,-,- REFUSAL	D.S
		6.5		DETRITUS: SILTY SAND BEARING PEBBLES, & COBBLES. ROUNDED TO SUB-ROUNDED MAX. DIA MEASURED 75.0 mm.		-DO-	S.P.T. No.6 cms/blows: 15/6,7.5/4,7.5/5,7.5/7 - REFUSAL	D.S
10/10		7.0		DETRITUS: -DO-		-DO-	S.P.T. No.7 cms/blows: 15/6,7.5/5,7.5/7,3.0/29 - REFUSAL	D.S
12/10		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cms/blows: 2.5/30,-,-,-,- REFUSAL	D.S
						76 mm		W.S
		9.0		DETRITUS: COMPOSED OF PEBBLES, COBBLES & BOULDERS (220-350 mm). IN COARSE SAND. WASH SAMPLE COLLECTED. RECOVERY: 7%		-DO-	S.P.T. No.9 - REFUSAL	C.S & W.S
	10.4	10.0		DETRITUS: -DO- RECOVERY: 13%		-DO-	S.P.T. No10 - REFUSAL	C.S & W.S
		11.0		DETRITUS: -DO- RECOVERY: 32%		-DO-	S.P.T. No11 REFUSAL	C.S & W.S
14/10		12.0		DETRITUS: SILTY SAND BEARING PEBBLES COBBLES & BOULDERS ROUNDED TO SUB-ROUNDED. MAX DIA UPTO 350mm		-DO-	S.P.T. No12 REFUSAL	C.S & W.S
		13.0		DETRITUS: -DO-		-DO-	S.P.T. No13 REFUSAL	W.S
15/10		14.0		DETRITUS: -DO-				W.S
		14.3	14.3	GRANITE GNEISS: HARD MASSIVE COARSE GRAINED GNEISS WHITISH GREY IN COLOUR. RECOVERY: 42%		-DO-	-	C.S & W.S
19/10		15.0		GRANITE GNEISS: -DO-				W.S
		15.3	1.0	DETRITUS: SMALL PEBBLES IN COARSE SAND. WASH SAMPLE COLLECTED.		-DO-	-	W.S
		16.0		DETRITUS: -DO-		-DO-	-	W.S
		16.6	1.3	GRANITE GNEISS: (SEE BELOW)				W.S
20/10		17.0		GRANITE GNEISS: HARD, MASSIVE, COARSE GRAINED WHITISH GREY IN COLOUR. RECOVERY: 20%		-DO-	-	C.S & W.S
		18.0		GRANITE GNEISS: RECOVERY: 75%		-DO-	-	C.S & W.S
		18.4	1.8	(HOLE CLOSED)				

ASSOPAK

Remarks

Date OCT 26, 1992.   Scale:2.5 cms=1.0 m

Geologist Engineer:

ASSOPAK

Consulting Soil Engineers & Contractors

17B1

SITE : [illegible]
BRIDGE NO: 17
LOGS CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	Strata Encountered	Litho Symbol	Diameter Of Boring	Penetration Test Blows/30 cm	Type of Sample
10/11				DETRITUS: SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 650 mm. L. GREY IN COLOUR, TO.0 m. YELLOWISH GREY IN COL.		150 mm		D.S
		1.0		DETRITUS: -DO- MAX. DIA OF BOULDERS 650.0 mm.		-DO-	S.P.T. No.1 cms/blows: 15/27,7.5/21,2.0/40,-,-. REFUSAL	D.S
	1.0	2.0		DETRITUS: -DO-		-DO-	S.P.T. No.2 cms/blows: 2.5/43,-,-,-,-. REFUSAL	D.S
11/11		3.0		DETRITUS: COARSE SAND BEARING ABUNDANT PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED MAX. DIA UPTO 600 mm. L.GREY IN COLOUR.		-DO-	S.P.T. No.3 cms/blows: 5.0/43,-,-,-,-. REFUSAL	D.S
12/11		4.0		DETRITUS: -DO- AN EXCEPTIONALLY LARGE BOULDER OF DIA 950 mm. ENCOUNTERED.		-DO-	S.P.T. No.4 cms/blows: 15/9,7.5/8,1.0/41,-,-. REFUSAL	D.S
		5.0		DETRITUS: MAX. DIA OF BOULDERS UPTO 650mm		-DO-	S.P.T. No.5 cms/blows: 3.0/47,-,-,-,-. REFUSAL	D.S
		5.0	5.0	SILTY CLAY: (SEE BELOW)				
13/11		6.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT L. YELLOW IN COLOUR.		-DO-	S.P.T. No.6 cms/blows: 15/4,7.5/2,7.5/3,7.5/3 7.5/4 N=14 MEDIUM DENSE	D.S
		7.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.7 cms/blows: 15/5,7.5/3,7.5/3,7.5/4 7.5/4 N=19 MEDIUM DENSE	D.S
		8.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.8 cms/blows: 15/3,7.5/2,7.5/2,7.5/3 7.5/3 N=13 MEDIUM DENSE	D.S
		9.0		SILTY CLAY: MODERATELY INDURATED CLAY, WITH MINOR SILTY CONTENT. L. YELLOW IN COLOUR. WITH INTERBEDDED THIN LAYERS (1.0-3.5cm) OF CLAYEY SAND.		-DO-	S.P.T. No.9 cms/blows: 15/2,7.5/1,7.5/2,7.5/3 7.5/3 N=11 LOOSE	D.S
14/11		10.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.10 cms/blows: 15/1,7.5/.5,7.5/.5,-, 7.5/1 N=3 VERY LOOSE	D.S
		11.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.11 cms/blows: 15/2,7.5/1,7.5/2,7.5/1 7.5/1 N=7 LOOSE	D.S
		12.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR AMOUNT OF SILT. L. YELLOW COLOUR. THIN, DISCRETE LAYERS OF CLAYEY SAND ARE PRESENT.		-DO-	S.P.T. No.12 cms/blows: 15/2,7.5/1,7.5/2,7.5/2 7.5/2 N=9 LOOSE	D.S
15/11		13.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.13 cms/blows: 15/2,7.5/2,7.5/2,7.5/2 7.5/3 N=11 LOOSE	D.S
		14.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.14 cms/blows: 15/3,7.5/2,7.5/2,7.5/3 7.5/4 N=16 MEDIUM DENSE	D.S
		15.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.15 cms/blows: 15/3,7.5/2,7.5/3,7.5/4 7.5/4 N=16 MEDIUM DENSE	D.S
		15.5	9.7	DETRITUS: SEE BELOW				
16/11		16.0		DETRITUS: COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED MAX. DIA 650 mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.16 cms/blows: 15/9,7.5/26,6.0/38,-,-. REFUSAL	D.S
		17.0		DETRITUS: -DO-		-DO-	S.P.T. No.17 cms/blows: 12.0/45,-,-,-,-. REFUSAL	D.S
17/11		18.0		DETRITUS: SILTY SAND BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 350 mm. L.GREY IN COLOUR.		-DO-	S.P.T. No.18 cms/blows: 15/21,7.5/6,2.0/41,-,-. REFUSAL	D.S
18/11		19.0		DETRITUS: -DO- LARGE BOULDERS OF GRANITIC COMPOSITION, ENCOUNTERED.		-DO-	S.P.T. No.19 cms/blows: 6.0/43,-,-,-,-. REFUSAL	D.S
		20.0		DETRITUS: -DO-		-DO-	S.P.T. No.20 cms/blows: 2.0/39,-,-,-,-,-. REFUSAL	D.S
		20.5	5.0	(HOLE CLOSED)				

Remarks

Date NOV 20, 1992. Scale: [illegible]

ASSOPAK

Geologist Engineer:

ASSOPAK

Consulting Soil Engineers & Contractors

17B2

SITE : MALIK PUR/NOWSHERA

BRIDGE NO: 17

ROAD CHAINAGE OF BORING NO.)

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meters)	Strata Encountered	Litho Symbols	Diameter Of Boring	Penetration Test Blow No. 20 40 60 80	Types of Samples
20/11	8.7			DETRITUS: SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 450 mm. L. GREY IN COLOUR.		638 mm	-	D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T. No.1 cms/blows: 15/12,7.5/41,-,-,-. REFUSAL	D.S
21/11		2.0		DETRITUS: COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 350mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.2 cms/blows: 15/9,7.5/3,7.5/43, 1.0/10,-. REFUSAL	D.S
		3.0		DETRITUS: -DO- AN EXCEPTIONALLY LARGE BOULDER OF DIA 775 MM. (APPROX) ENCOUNTERED.		-DO-	S.P.T. No.3 cms/blows: 2.5/40,-,-,-,-. REFUSAL	D.S
		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.4 cms/blows: 15/9,4.5/42,-,-,-. REFUSAL	D.S
22/11		5.0		DETRITUS: DO			S.P.T. No.5	
		5.2	5.2	SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT L. YELLOW IN COLOUR.		-DO-	cms/blows: 15/3,7.5/2,7.5/2,7.5/3 7.5/3 N=13 MEDIUM DENSE	D.S
		6.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.6 cms/blows: 15/4,7.5/2,7.5/3,7.5/4 7.5/4 N=17 MEDIUM DENSE	D.S
		7.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.7 cms/blows: 15/4,7.5/3,7.5/3,7.5/4 7.5/3 N=19 MEDIUM DENSE	D.S
		8.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.8 cms/blows: 15/3,7.5/2,7.5/3,7.5/3 7.5/4 N=15 MEDIUM DENSE	D.S
23/11		9.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT L. YELLOW IN COLOUR. WITH INTER-RELATED THIN LAYERS (2.0-3.0cm) OF CLAYEY SAND.		-DO-	S.P.T. No.9 cms/blows: 15/2,7.5/1,7.5/2,7.5/2 7.5/2 N=9 LOOSE	D.S
		10.0		SILTY CLAY: MODERATELY INDURATE CLAY WITH MINOR AMOUNT OF SILT. L.YELLOW IN COLOUR. THIN,DISCRETE LAYERS OF CLAYEY SAND ARE PRESENT.		-DO-	S.P.T. No.10 cms/blows: 15/1,7.5/.3,7.5/.5,7.5/ 7.5/.5 N=2 VERY LOOSE	D.S
		11.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.11 cms/blows: 15/2,7.5/1,7.5/1,7.5/2 7.5/2 N=6 LOOSE	D.S
		12.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.12 cms/blows: 15/3,7.5/2,7.5/2,7.5/3 7.5/3 N=13 MEDIUM DENSE	D.S
24/11		13.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.13 cms/blows: 15/3,7.5/2,7.5/3,7.5/3 7.5/4 N=15 MEDIUM DENSE	D.S
		14.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.14 cms/blows: 15/2,7.5/2,7.5/2,7.5/3 7.5/3 N=12 MEDIUM DENSE	D.S
		15.0		SILTY CLAY: DO			S.P.T. No.15	
		15.1	9.9	DETRITUS: COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED MAX. DIA 300 mm. L. GREY IN COLOUR.		-DO-	cms/blows: 15/4,7.5/3,7.5/10, 2.0/47,- REFUSAL	D.S
		16.0		DETRITUS: -DO-		-DO-	S.P.T. No.16 cms/blows: 2.0/40,-,-,-,-. REFUSAL	D.S
25/11		17.0		DETRITUS: -DO-		-DO-	S.P.T. No.17 cms/blows: 8.0/43,-,-,-,-. REFUSAL	D.S
		18.0		DETRITUS: SILTY SAND BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 350 mm. L.GREY IN COLOUR.		-DO-	S.P.T. No.18 cms/blows: 15/12,1.0/40,-,-,-. REFUSAL	D.S
26/11		19.0		DETRITUS: -DO- LARGE BOULDER OF GRANITIC COMPOSITION. ENCOUNTERED.		-DO-	S.P.T. No.19 cms/blows: 7.0/48,-,-,-,-. REFUSAL	D.S
		20.0		DETRITUS: DO		-DO-		D.S
		20.1	5.1	(HOLE CLOSED)				

ASSOPAK

Remarks

Date NOV 27, 1992. Scale:1.5 cms=1.0 m Geologist Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

17B3

SITE : HALIK PUR/DUBER
BRIDGE NO: 17
DOGS CHART OF BORING NO.3

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth In Metres	Thickness of Layers (in Metres)	Strata Encountered	Lithologic Symbol	Diameter Of Boring	Penetration Test Blows No. 20 40 60 80	Types of Sample
11/11	0.0			DETRITUS: SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED, MAX. DIA UPTO 450 mm. L. YELLOW IN COLOUR.		450 mm		D.S
		1.0		DETRITUS: -DO-		-DO-	S.P.T. No.1 cms/blows: 9.5/43,-,-,-,-. REFUSAL	D.S
		2.0		DETRITUS: -DO- LARGE BOULDER ENCOUNTERED DIA 520 mm.		-DO-	S.P.T. No.2 cms/blows: 15/9,7.5/6,2.0/40,-,-. REFUSAL	D.S
11/11		3.0		DETRITUS: COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS.WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 350mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.3 cms/blows: 10/47,-,-,-,-. REFUSAL	D.S
13/11		4.0		DETRITUS: -DO-		-DO-	S.P.T. No.4 cms/blows: 15/9,7.5/3,7.5/21, 3.0/43,- REFUSAL	D.S
		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 cms/blows: 6.5/47,-,-,-,-. REFUSAL	D.S
		5.3	5.3	SILTY CLAY: (SEE BELOW)				
		6.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT. L. YELLOW IN COLOUR.		-DO-	S.P.T. No.6 cms/blows: 15/3,7.5/2,7.5/3,7.5/5 7.5/5 N=15 MEDIUM DENSE	D.S
		7.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.7 cms/blows: 15/3,7.5/3,7.5/3,7.5/5 7.5/5 N=16 MEDIUM DENSE	D.S
14/11		8.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT L. YELLOW IN COLOUR. WITH INTERCALATED THIN LAYERS (1.0-3.5mm) OF CLAYEY SAND.		-DO-	S.P.T. No.8 cms/blows: 15/4,7.5/4,7.5/4,7.5/5 7.5/4 N=19 MEDIUM DENSE	D.S
		9.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.9 cms/blows: 15/3,7.5/2,7.5/3,7.5/4 7.5/4 N=13 MEDIUM DENSE	D.S
		10.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.10 cms/blows: 15/2,7.5/1,7.5/1,7.5/1 7.5/2 N=5 LOOSE	D.S
		11.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR AMOUNT OF SILT. L. YELLOW IN COLOUR. THIN,DISCRETE LAYERS CLAYEY SAND ARE PRESENT.		-DO-	S.P.T. No.11 cms/blows: 15/2,7.5/.5,7.5/.5 7.5/1,7.5/3 N=5 LOOSE	D.S
15/11		12.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.12 cms/blows: 15/3,7.5/2,7.5/2,7.5/3 7.5/4 N=11 MEDIUM DENSE	D.S
		13.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.13 cms/blows: 15/3,7.5/2,7.5/3,7.5/4 7.5/5 N=14 MEDIUM DENSE	D.S
		14.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.14 cms/blows: 15/3,7.5/3,7.5/4,7.5/5 7.5/5 N=17 MEDIUM DENSE	D.S
		15.0		SILTY CLAY: DO				
		15.2	9.9	DETRITUS: COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED MAX. DIA 450 mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.15 cms/blows: 15/4,7.5/3,7.5/3,7.5/4, 3.0/37, REFUSAL	D.S
16/11		16.0		DETRITUS: -DO-		-DO-	S.P.T. No.16 cms/blows: 7.0/49,-,-,-,-. REFUSAL	D.S
		17.0		DETRITUS: -DO- LARGE BOULDER OF GRANITIC COMPOSITION, ENCOUNTERED.		-DO-	S.P.T. No.17 cms/blows: 10/47,-,-,-,-. REFUSAL	D.S
17/11		18.0		DETRITUS: MEDIUM SAND BEARING PEBBLES COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 300 mm. L.GREY IN COLOUR.		-DO-	S.P.T. No.18 cms/blows: 15/9,7.5/3,7.5/39, 7.5/42,-. REFUSAL	D.S
		19.0		DETRITUS: -DO-		-DO-	S.P.T. No.19 cms/blows: 5/40,-,-,-,-. REFUSAL	D.S
		20.0		DETRITUS: -DO-		-DO-	S.P.T. No.20 cms/blows: 15/7,3.0/48,-,-,-. REFUSAL	D.S
		21.0		DETRITUS: -DO-		-DO-		D.S
		21.3	6.1	(HOLE CLOSED)				

Remarks

Date NOV 20, 1992. Scale:2.5 cms=1.0 m Geologist Engineer:

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Consulting Soil Engineers & Contractors

17B4

SITE : [illegible]
BRIDGE NO: 17
BORE CHART OF BORING NO.1

CLIENT: JICA BASIC DESIGN STUDY TEAM FOR BRIDGES IN N.W.F.P PAKISTAN

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	Strata Encountered	Legend Symbol	Diameter Of Boring	Penetration test (blows per 30 cm)	Type of Samples
19/11				DETRITUS: SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 730 mm. L. YELLOWISH IN COLOUR.		150 mm		D.S
	1.4	1.0		DETRITUS: -DO- MAX. DIA OF BOULDER UPTO 550 mm.		-DO-	S.P.T. No.1 cms/blows: 10/41,-,-,-,-. REFUSAL	D.S
20/11		2.0		DETRITUS: COARSE SAND, BEARING PEBBLES, COBBLES & BOULDERS WELL ROUNDED TO SUB-ROUNDED MAX. DIA UPTO 450.0 mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.2 cms/blows: 15/7,7.5/8,7.5/7, 6.0/36,-. REFUSAL	D.S
		3.0		DETRITUS: -DO-		-DO-	S.P.T. No.3 cms/blows: 15/9,7.5/5,3/38,-,-. REFUSAL	D.S
21/11		4.0		DETRITUS: VERY COARSE SAND, WITH PEBBLES, COBBLES & BOULDERS, WELL ROUNDED TO SUB-ROUNDED MAX. DIA UPTO 550.0 mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.4 cms/blows: 3/39,-,-,-,-. REFUSAL	D.S
22/11		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.5 cms/blows: 15/11,7.5/5,4/37,-,-. REFUSAL	D.S
		5.7	5.7	SILTY CLAY: (SEE BELOW)				
		6.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT, L. YELLOW IN COLOUR.		-DO-	S.P.T. No.6 cms/blows: 15/4,7.5/4,7.5/4,7.5/5 7.5/5 N=18 MEDIUM DENSE	D.S
23/11		7.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.7 cms/blows: 15/3,7.5/3,7.5/4,7.5/5 7.5/4 N=16 MEDIUM DENSE	D.S
		8.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.8 cms/blows: 15/4,7.5/4,7.5/5,7.5/5 7.5/7 N=21 MEDIUM DENSE	D.S
		9.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR SILTY CONTENT L. YELLOW IN COLOUR. WITH INTERCALATED THIN LAYERS (1.5-2.5cm) OF CLAYEY SAND.		-DO-	S.P.T. No.9 cms/blows: 15/3,7.5/2,7.5/3,7.5/5 7.5/5 N=15 MEDIUM DENSE	D.S
		10.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.10 cms/blows: 15/2,7.5/1,7.5/2,7.5/3 7.5/3 N=9 LOOSE	D.S
24/11		11.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.11 cms/blows: 15/1,7.5/.5,7.5/.5 7.5/1,7.5/2 N=4 VERY LOOSE	D.S
		12.0		SILTY CLAY: MODERATELY INDURATED CLAY WITH MINOR AMOUNT OF SILT. L. YELLOW IN COLOUR. THIN, DISCRETE LAYERS CLAYEY SAND ARE PRESENT.		-DO-	S.P.T. No.12 cms/blows: 15/2,7.5/1,7.5/1,7.5/2 7.5/3 N=7 LOOSE	D.S
		13.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.13 cms/blows: 15/3,7.5/2,7.5/3,7.5/3 7.5/4 N=12 MEDIUM DENSE	D.S
		14.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.14 cms/blows: 15/3,7.5/2,7.5/3,7.5/5 7.5/6 N=16 MEDIUM DENSE	D.S
25/11		15.0		SILTY CLAY: -DO-		-DO-	S.P.T. No.15 cms/blows: 15/3,7.5/2,7.5/4,7.5/5, 7.5/6 N=17 MEDIUM DENSE	D.S
		15.4	9.7	DETRITUS: (SEE BELOW)				
		16.0		DETRITUS: COARSE SAND BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED MAX. DIA 350 mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.16 cms/blows: 15/5,3.0/43,-,-,-. REFUSAL	D.S
		17.0		DETRITUS: -DO-		-DO-	S.P.T. No.17 cms/blows: 12/50,-,-,-,-. REFUSAL	D.S
		18.0		DETRITUS: SILTY SAND BEARING PEBBLES, COBBLES & BOULDERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA OF BOULDERS UPTO 300 mm. L. GREY IN COLOUR.		-DO-	S.P.T. No.18 cms/blows: 8.0/41,-,-,-,-. REFUSAL	D.S
26/11		19.0		DETRITUS: -DO-		-DO-	S.P.T. No.19 cms/blows: 15/21,5.0/38,-,-,-. REFUSAL	D.S
		20.0		DETRITUS: -DO- LARGE BOULDER OF GRANITIC COMPOSITION, ENCOUNTERED.		-DO-	S.P.T. No.20 cms/blows: 2.0/60,-,-,-,-. REFUSAL	D.S
27/11		21.0		DETRITUS: -DO-		-DO-	S.P.T. No.21 cms/blows: 14/49,-,-,-,-. REFUSAL	D.S
		22.0		DETRITUS: -DO-		-DO-	cms/blows: 15/6,7.5/4,2.0/42,-,-. REFUSAL	D.S
		23.0	7.6	(HOLE CLOSED)				

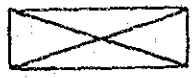
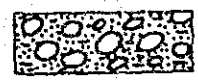
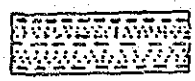
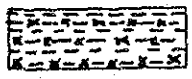
BORING: [illegible]

Date Nov 28, 1992.

Geologist Engineer

PHASE - III

LITHOLOGIC SYMBOLS

1. SOIL 
2. DETRITUS 
3. SILTY CLAYEY SAND 
4. SILTY CLAY 
5. GRANITE GNEISS 
6. MUSCOVITE SCHIST 

ABBREVATIONS

* **Colour** - **Col.**
* **Mineral** - **Mnl.**
* **Pebbles** - **Peb.**
* **Cobbles** - **Cob.**
* **Disturbed Sample** - **D.S.**
* **Wash Sample** - **W.S.**
* **Core Sample** - **C.S.**
* **Quartz** - **QTZ.**

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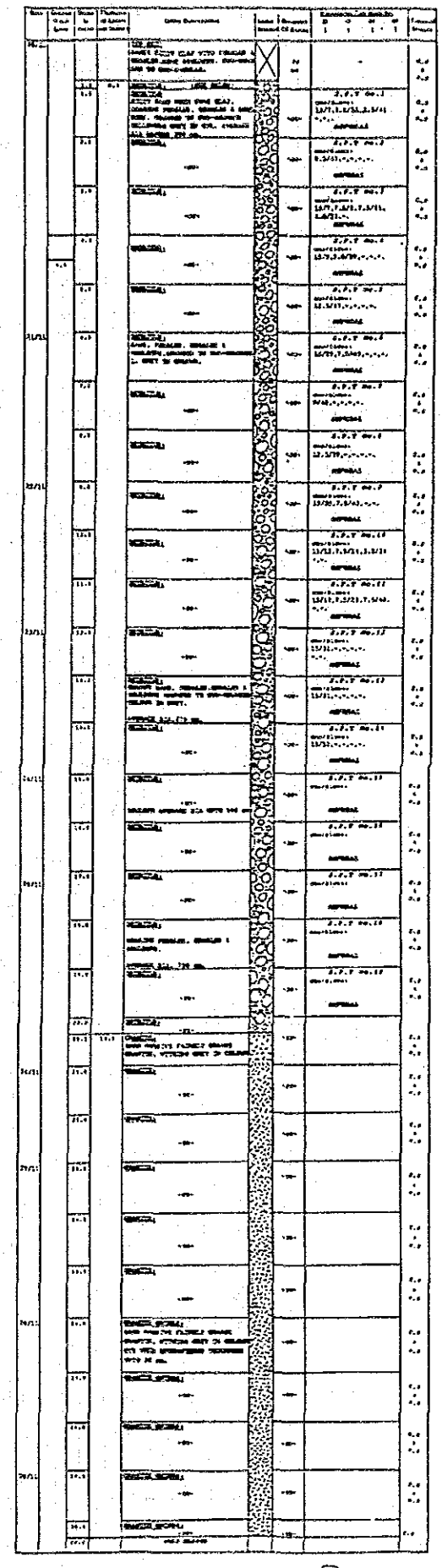
11B1

CLIENT: *HCA BASIC DESIGN STUDY TEAM*
FOR BRIDGES ON N.W.F.P PAKISTAN

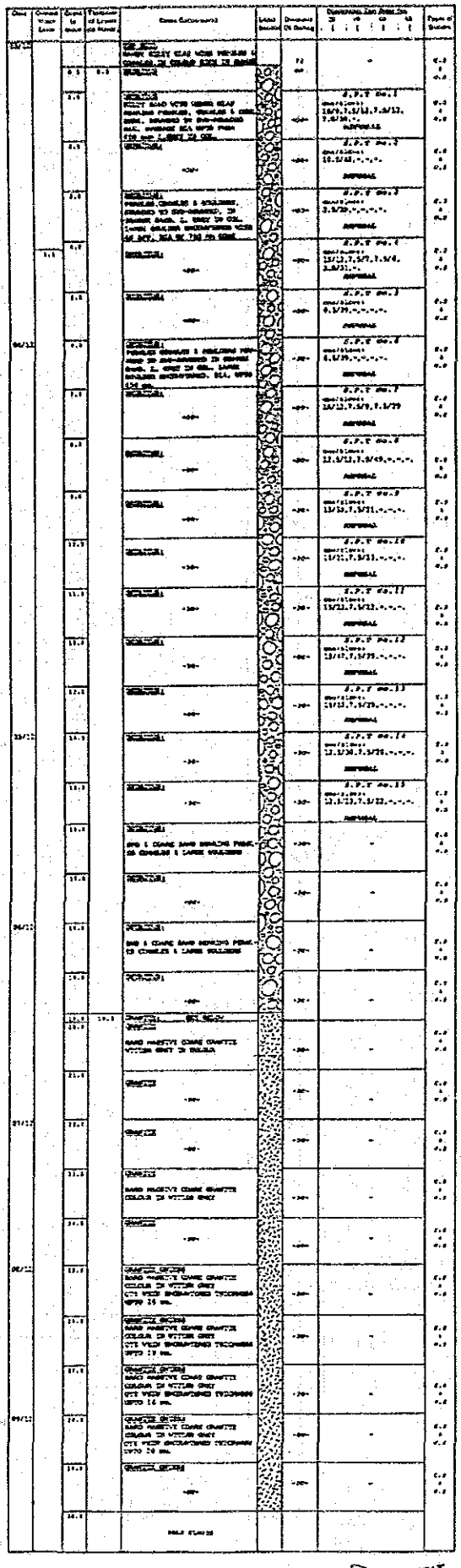


ASSOPAK

ASSOPAK

11B2

CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BARRAGES IN N.W.F.P PAKISTAN



11B3

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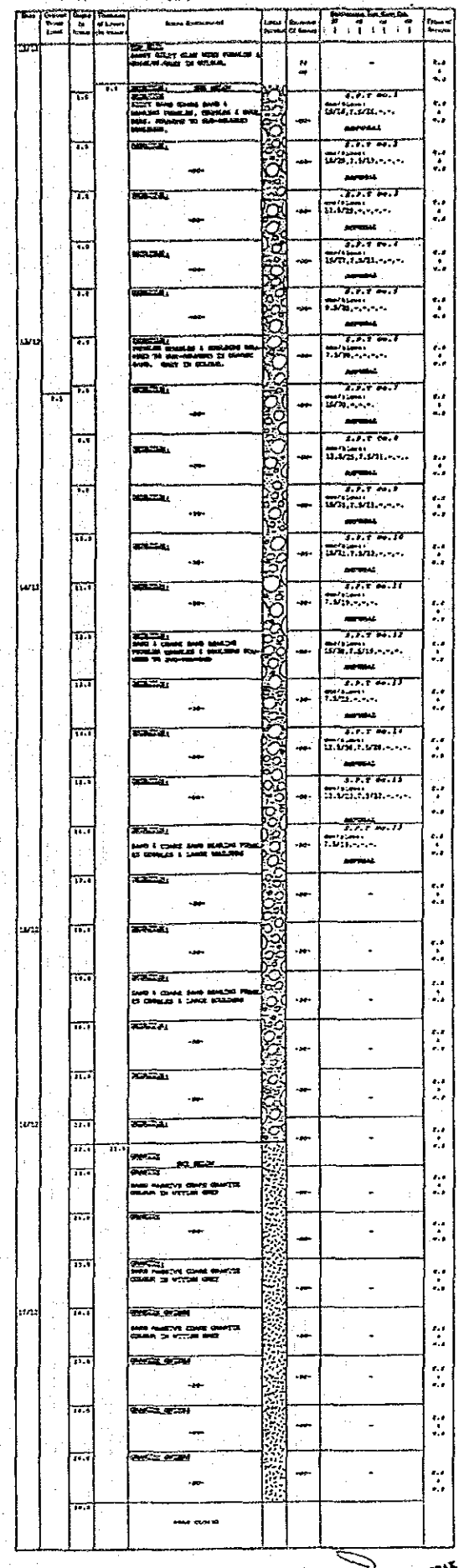
FOR BRIDGES IN N.W.F.P PAKISTAN



ASSOPAK

11B4

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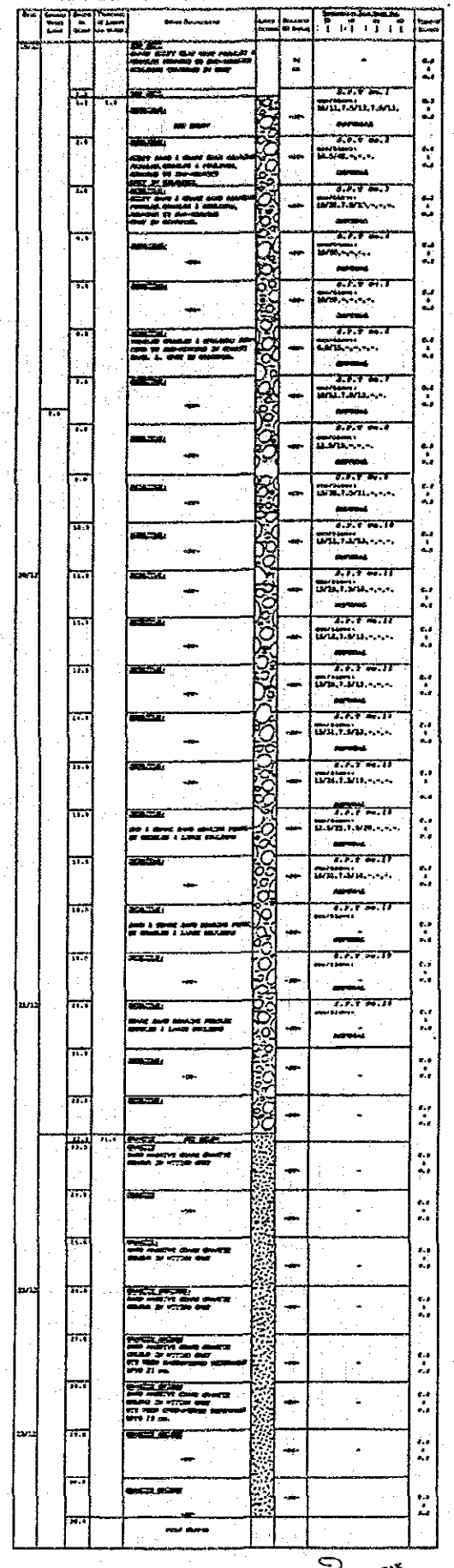
FOR BRIDGES IN N.W.F.P PAKISTAN



Appendix-7: Collected Data

	Data Name	Issued By
1	Socio-economic Data	
	a) 7 th 5-Year Plan, July 1, 1988 - June 30, 1993	Federal Government of Pakistan
	b) Perspective Plan, 1988 - 2003	NWFP Government
	c) Revenue Expenditure of NWFP for 1988 - 89 to 1990 - 91	NWFP Government
	d) Revenue Expenditure of NWFP for 1989 - 90 to 1991 - 92	NWFP Government
	e) Road Net Works Break-down in NWFP/FATA 1990	NWFP Government
	f) District Wise Area, Population, Density and Growth Rate of NWFP, 1961 - 1972 Census	NWFP Government
	g) Pakistan's Balance of Payments, 1988 - 89	NWFP Government
	h) Percentage Distribution Based on Major Industry Division of Employed Persons By Employment Status, 1986 - 87	NWFP Government
	i) Population Growth Survey, 1979	Federal Bureau of Statistics, Statistic Div., Federal Government of Pakistan
	j) Economic Survey of Pakistan for 1988 - 89	Finance Division, Economic Div. Wing, Islamabad, Federal Government of Pakistan
	k) Total No. of Dev. Schemes for 1991 - 92	NWFP Government
2	Organization	
	a) Notification dated Peshawar, 30/06/1992	C&W Dept., NWFP Government
	b) Organization Chart	C&W Dept., NWFP Government
3	Technical and Engineering Data	
	a) Standard Designs of Bridge Superstructure Precast Post-tensioned Girders	C&W Dept., NWFP Government
	b) Hydrological Data, Panjikora River and Its Tributaries, 1992	C&W Dept., NWFP Government
4	Map	
	a) Road Inventory Map, 1991 Abbottabad, Mansehra, Kohistan, Swat, Chitral, Dir, Malakand, Buner	C&W Dept., NWFP Government
	b) North West Frontier Province, Scale 1/666,666	Institute of Regional Studies, Peshawar
	c) West Pakistan, Scale 1/50,000	Surveyor General, Government of Pakistan, 1968

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