

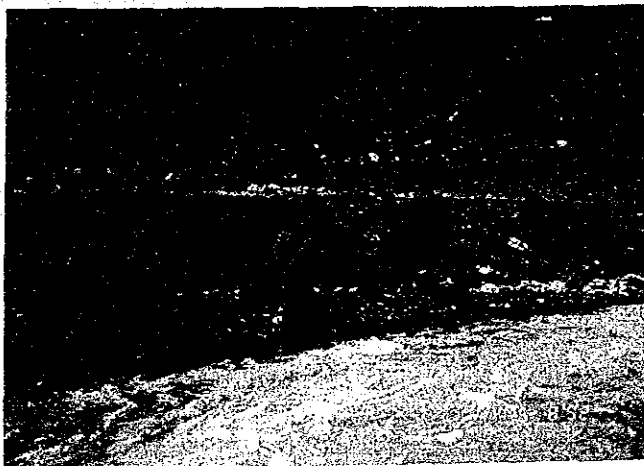
No.16 Kaidon Bridge, Swat District



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

BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTION OF BRIDGES IN NORTH WEST FRONTIER PROVINCE

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

BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTION OF BRIDGES IN NORTH WEST FRONTIER PROVINCE

No.18 Jahazoon Dak Bridge, Malakand Agency



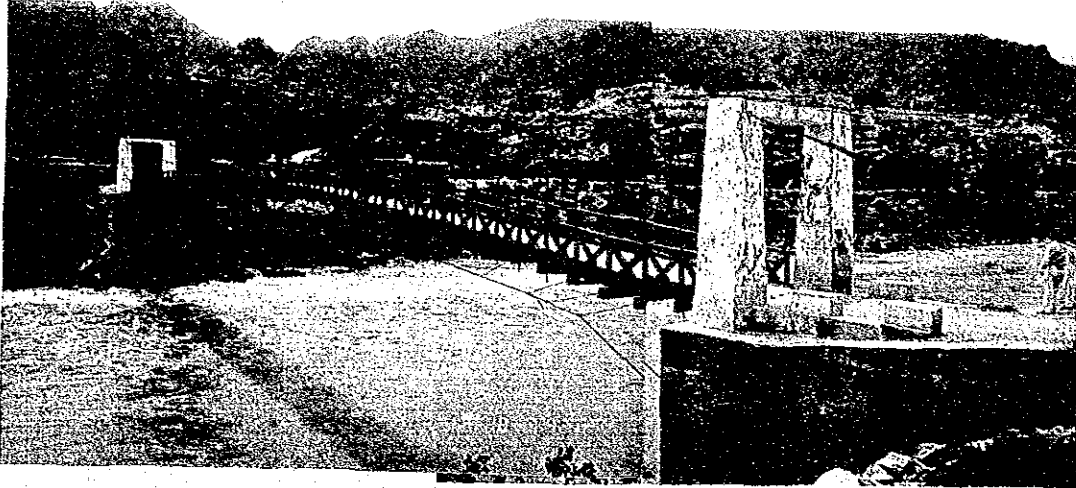
Existing Jahazoon Dak Bridge viewed from left bank side



Proposed location of new bridge

BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTION OF BRIDGES IN NORTH WEST FRONTIER PROVINCE

No.19 Totakan Bridge, Malakand Agency



Downstream side view of the existing Totakan Bridge



Proposed location of new bridge

**BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTION OF BRIDGES IN NORTH WEST FRONTIER PROVINCE**

No.20 Sakhakot Bridge, Malakand Agency



Downstream side view of the existing Sakhakot Bridge



Existing condition viewed from left bank side

BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTION OF BRIDGES IN NORTH WEST FRONTIER PROVINCE

アッボタバッド県 (Abbottabad District) の橋梁

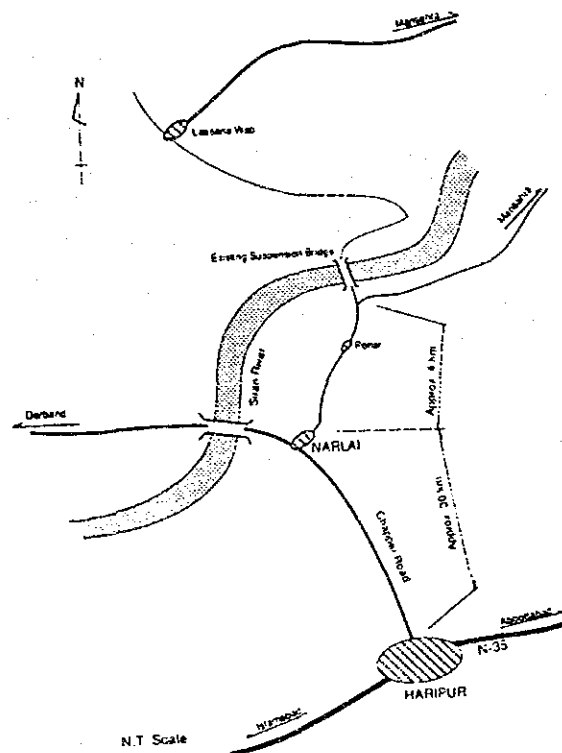
Br.No.1 Narlai 橋

アッボタバッドの西北西約10km、Pind Gali 道路上で Siran 川を渡河。既設橋梁は幅員 1m の木床版の歩道吊橋で老朽化が激しい。

新橋が出来た場合の裨益人口は約 20 万人 (現況) ~ 約 30 万人 (将来) と多い。裨益地区は約 200 km² の農業地帯が殆どを占め、小麦、米、砂糖キビ、豆類を産する。

架橋地点は概ね北緯 34° 11' 東経 72° 58' 標高約 600m、周辺は、左岸側に山村があり右岸側は田園。取付道路としては、現在建設中の Siran 川沿いに走るアッボタバッド~Haripur 道路が左岸側の取付道路として利用出来る。一方、右岸側の取付道路としてはマンセラ県の Lassana Wab まで舗装道路があり、ここから架橋予定地点までジーバブル道路があるので、取付道路として利用可能である。

予想される新橋はプレストレストコンクリートの桁橋で、橋長は約 100m+25m。



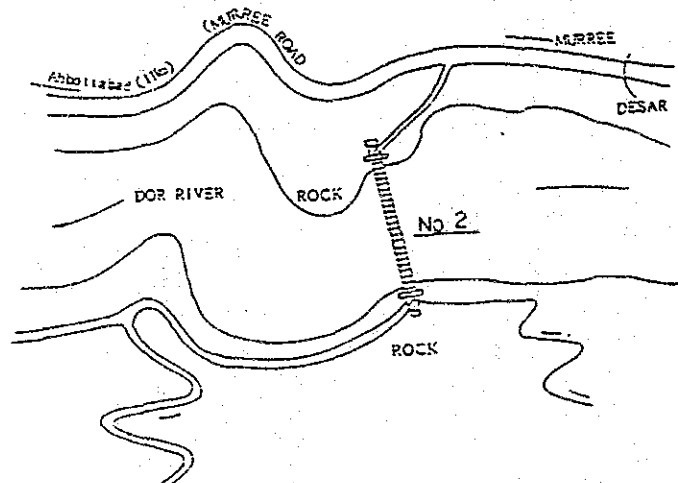
Br.No.2 Desal 橋

アッボッタバッドの東南東約13km、Abbottabad～Murree 道路にアクセスする南方に向かう山道上で Dor 川を渡河。既設橋は幅員1.37m、橋長88.8m の木床版の歩道吊橋で傷みが激しく危険な状況にある。

新橋が出来た場合の裨益人口は約2万人（現況）～約3万人（将来）と少ない。この地域は、小麦、とうもろこし等の穀類を産する農村であり、裨益面積は小さい。

架橋地点は概ね北緯34° 09' 東経73° 18' 標高約1,210m、周辺は山。取付道路としては、Abbottabad～Murree 道路が左岸側の取付道路として利用出来る。一方、右岸側には2本の踏み分け道 (Trail) があるのみで、近い将来に自動車道路建設の予定は無い。

予想される新橋は吊橋で、橋長は約95m。



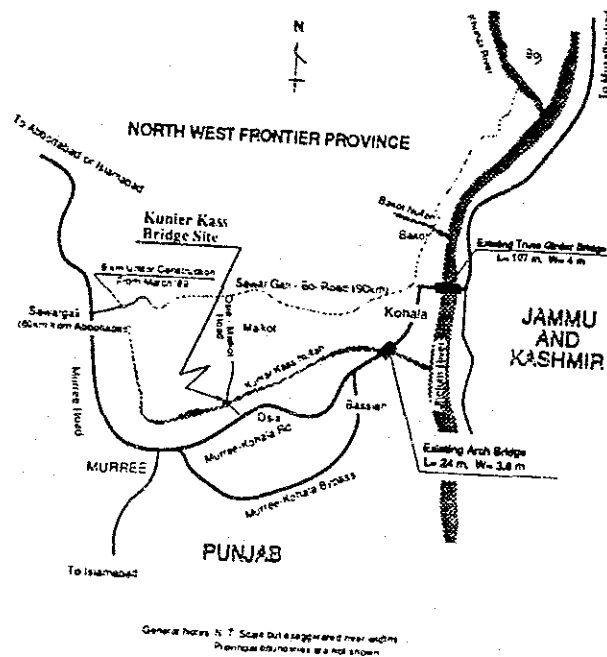
Br.No.3 Kuniar Kass 橋

アッボッタバッドの東南東約28km、パンジャブ州の Murree 近くの Osia 村と北西辺境州の Malkot 村を結ぶ砂利道上で Kuniar Kass 川を渡河。5年前に建設した幅員3.5m、延長約25m のコウズウェイは2年前に流出、崩壊。尚、1km 下流には15年前に建設された木床版の歩道吊橋がある。

新橋が出来た場合の裨益人口は約3万人（現況）～約4.5万人（将来）と少ない。この地域は、小麦、とうもろこし等の穀類を産する農村であり、裨益面積は小さい。

架橋地点は概ね北緯33° 59' 東経73° 27' 標高約1,110m、周辺は山で川原は採石場。川幅は広いが水路部は約20mと比較的狭い。取付道路としては、既に住民参加により建設されたOsia～Malkot 道路が左右両岸の取付道路として利用出来る。

予想される新橋はプレストレストコンクリート桁橋で、橋長は約50m。



マンセラ県 (Mansehra District) の橋梁

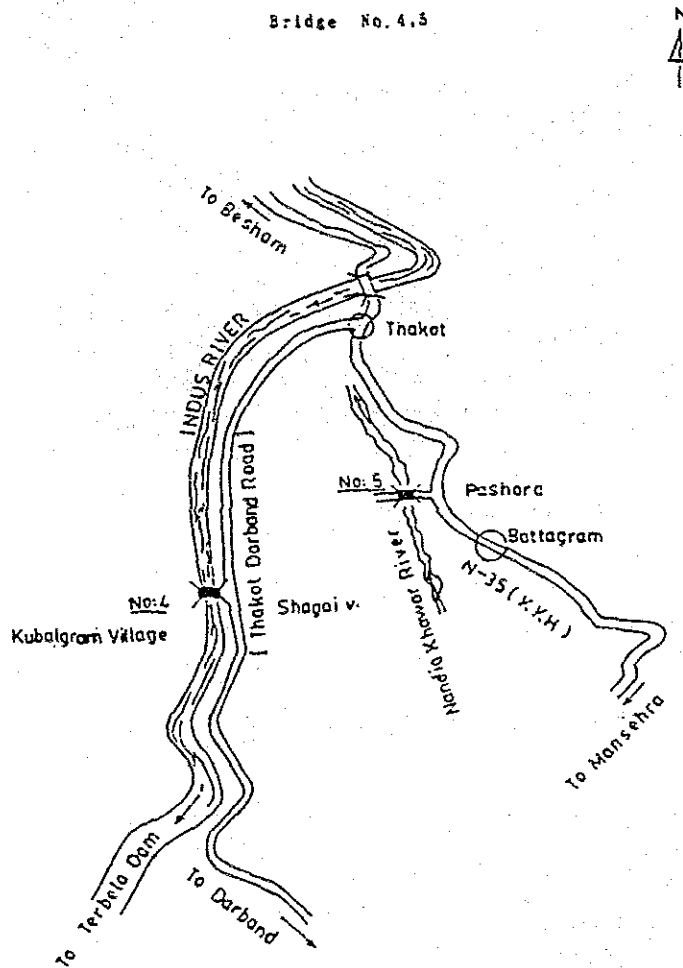
Br.No.4 Shagai 橋

マンセラの北西約47km、Thakot~Darband道路上(km-38)の Shagai 村とインダス河を挟んだ対岸のスワット県 Kubalgram 村を結ぶ橋梁。既存橋梁は無い。

新橋が出来た場合の裨益人口は約18万人(現況)~約27万人(将来)と多い。この地域は、米、小麦、とうもろこし、野菜等を産する農村であるが、平地が少ないための地形的制約から労働生産性が低い。

架橋地点は概ね北緯 $34^{\circ} 39'$ 東経 $72^{\circ} 48'$ 標高約540m、周辺は左岸側と右岸側ともに農村。取付道路としては、現在建設中のTakot~Darband 道路が左岸側の取付道路として利用出来ると考えられるが、今年の9月の大洪水の被災のためこの道路の完成は未だ先になるものと予想される。一方、右岸側のスワット県側には車両通行可能な取付道路は無い。

予想される新橋は吊橋で、橋長は約185m。



Br.No.5 Pashorai 橋

バタグラムの西方約6km、カラコルムハイウェイkm-171のPashorai村でNandia Khawar 川を渡河。既存の橋梁は、木床版の歩道吊橋。

新橋が出来た場合の裨益人口は約5万人(現況)～約7.5万人(将来)と少ない。この地域は、米、小麦、とうもろこし、野菜等を産する農村である。

架橋地点は既存橋梁の下流側約2km、概ね北緯34°42' 東経72°59' 標高約960m、周辺は農村。

予想される新橋はプレストレストコンクリート桁橋で、橋長は約50m。

橋梁位置図については、前頁のBr.No.4 橋の図に併記してあるので、これを参照のこと。

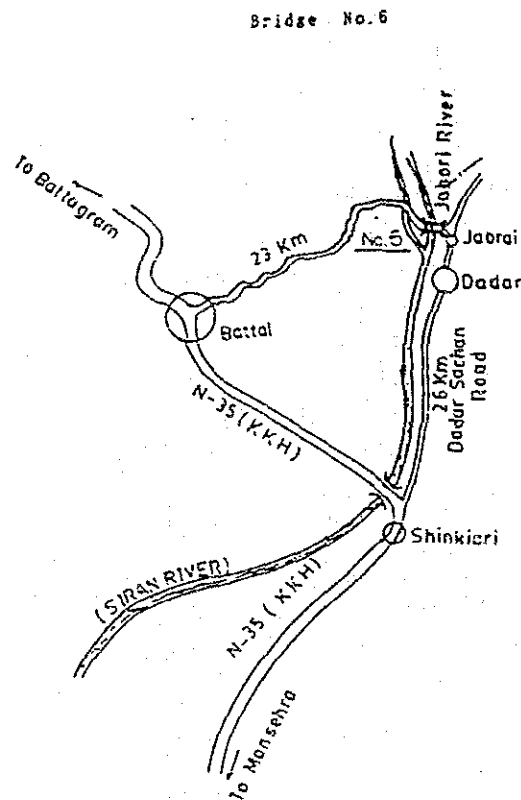
Br.No.6 Jabrai 橋

マンセラの北方約27km、Dadar～Sachan～Battal 道路km-16のJabrai村のJabrai川を渡河。既存の橋梁は約50年前に建設された幅員3.3m、橋長56mの石積アーチで、床版の損傷があるものの構造上危険な状態では無い。トラックの通行も可。

新橋が出来た場合の裨益人口は約8万人（現況）～約12万人（将来）と比較的少ない。この地域は、米、小麦、とうもろこし、野菜、果実等を産する農村である。

予想される新橋の架橋地点は既存橋梁の上流側約100m、概ね北緯34°37' 東経73°14' 標高約1,450m、周辺は山村。取付道路としては、既存のDadar～Sachan～Battal 道路が利用出来る。

予想される新橋はプレストレストコンクリート桁橋で、橋長は約50m。



コヒスタン県の橋梁

Br.No.7 Panipa 橋

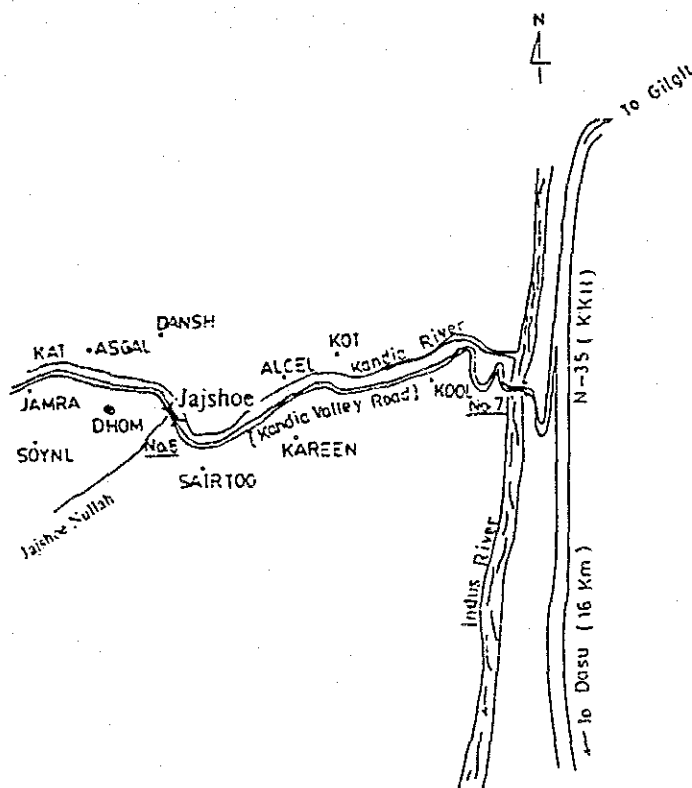
ダスの北方約18km、カラコルムハイウェイ上の Panipa 村とインダス河を挟んだ対岸の Gayal 村を結ぶインダス河の橋梁。カンディアバレー道路の起点部。既存の橋梁は、木床版の吊橋で橋長は173m。軽車両のみ通行可能。

新橋が出来た場合の裨益人口は約3万人（現況）と少ないが、北西辺境州政府はこの地域の豊富な水資源を発電に利用する「カンディアバレー開発構想」を持っているので、将来の裨益人口は可なりなものとなろう。この地域は、森林資源が豊富であるほかに小麦、とうもろこし等の穀類を産する農林業地帯である。

予想される新橋の架橋地点は既存橋梁の下流で右岸側約45m左岸側約15m、概ね北緯35°25' 東経73°12' 標高約935m、周辺は山。取付道路としては、インダス川左岸側ではカラコルムハイウェイが利用出来、一方右岸側は現在建設中のカンディアバレー道路を利用出来る。

予想される新橋は吊橋で、橋長は約180m。

Bridge No.7,8



Br.No.8 Jajshoe 橋

カンディアバレー道路 km-18 の地点の Jajshoie 村で Jajshoi Nullah 川を渡河。既存橋梁は木床版の吊橋で橋長56m,幅員 2.2m。軽車両は通行可。

新橋が出来た場合の裨益人口は約3万人(現況)と少ないが、北西辺境州政府はこの地域の豊富な水資源を発電に利用する「カンディアバレー開発構想」を持っており、将来の裨益人口は可なりなものとなろう。この地域は、森林資源が豊富であるほかに小麦、とうもろこし等の穀類を産する農林業地帯である。予想される新橋の架橋地点は既存橋梁の下流側約25m、概ね北緯35° 27' 東経73° 03' 標高約1,285m、周辺は山村。取付道路としては現在建設中のカンディアバレー道路が利用可能であるが、不幸にして今年9月の大洪水中にこの建設中の道路が部分的に崩落に見舞われた。

予想される新橋はプレストレストコンクリート桁橋で、橋長は約75m。

橋梁位置図については、前頁のBr.No.7 橋の中に併記してあるのでこれを参照。

チトラル県の橋梁

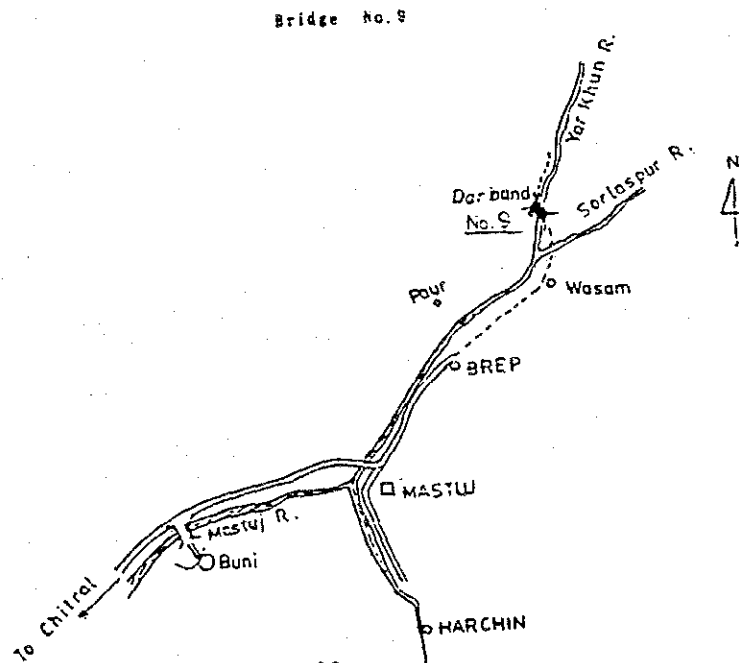
Br.No.9 Darband 橋

チトラルの北東約135kmの Darband で Yarkhun 川を渡河。Darband にはチトラルから4輪駆動車で Buni, Mastuj, Brep と行き、後は徒歩になる。今回の現地調査を行なった8月には Buni と Mastuj のほぼ中間の所 (Sanogar) で道路が流失しており、この復旧は早くても10月末までかかる (C&Wの見解) ため調査団は Sonogar から引き返さざるを得ず、現地に到着出来なかった。因みに、チトラルの陸軍スカウトからの情報によると、Darband までの所要距離と時間は表 のとおりである。

表 チトラル〜ダルバンドまでの距離及び所要時間

区間	距離	所要時間	備考
チトラル〜ブニ(Buni) :	76 km	4 時間 15分	4 輪駆動
ブニ〜マスツジ(Mastuj) :	36 km	2 時間 50分	4 輪駆動
マスツジ〜ブレップ(Brep) :	26 km	2 時間 30分	4 輪駆動
ブレップ〜パウル(Paur) :	27 km	7 時間	徒歩
パウル〜ダルバンド :	18 km	5 時間	徒歩

チトラルの Deputy Commssioner, XEN Highway(C&W), S.D.O (Chitral), S.D.O (Buni)等からの情報では、94年5月までにはチトラル〜ブニ間の76kmの1車線道路を完了する契約になっているが、工事は大分遅れている。また、ブニから奥の道路工事は具体的になっていない。とりわけ、ブレップより奥については、ジーバブル道路の建設予定は今のところ無い。このため、チトラルのC&Wからは、No.9 Darband 橋でなく他の橋梁に変更したいが、日本政府への要請変更が難しいのであればこの No.9 の橋梁を基本設計の対象から除外して欲しい旨の発言があった。



Br.No.10 Naggar 橋

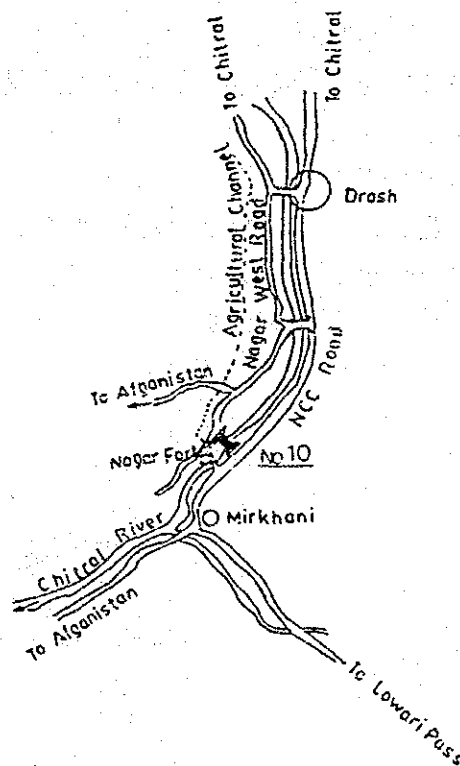
チトラルの南方約50km、NCC(Nowshera-Chakdara-Chitral) 道路上の Naggar 村でチトラル川を渡河し Naggar West 道路につながる。既設橋梁は木床版の吊橋で幅員2m、橋長81.5m で軽車両は通行可。この橋はNaggar より少し南の川幅が狭くなっている所に架けられており、対岸の吊橋主塔の付近にNaggar Fort がある。

新橋が出来た場合の裨益人口は約1万人(現況)～1.5万人(将来)と少ない。この地域は、タバコ、果実、木材を産する農林業地帯である。

予想される新橋の架橋地点としては、Naggar Fort 近傍は環境上の観点から不可能。このため、架橋地点は既存橋梁の上流側約3km、概ね北緯35° 09' 東経71° 44' 標高約1,270m、周辺は山村。取付道路としては、現在建設中のNCC～Naggar 道路が利用出来るが、幅員はかろうじて1車線あるのみである。

予想される新橋は吊橋で、橋長は約150m。

Bridge No.10



Br.No.11 Choni 橋

チトラル市の南側とNCC道路を結ぶためチトラル川を渡河。チトラル市はチトラル川の右岸に位置し、一方NCC道路は左岸を走っている。現在、市の北側のチトラル川の狭まった所にプレストレストコンクリート桁橋(Chew Bridge 1980年竣工)が架けられている。今回の要請橋梁である Choni 橋は、市の南側に位置し、ここには既設の木床版の吊橋がある。この既設橋梁は、幅員2m、橋長99mで軽車両の通行可。

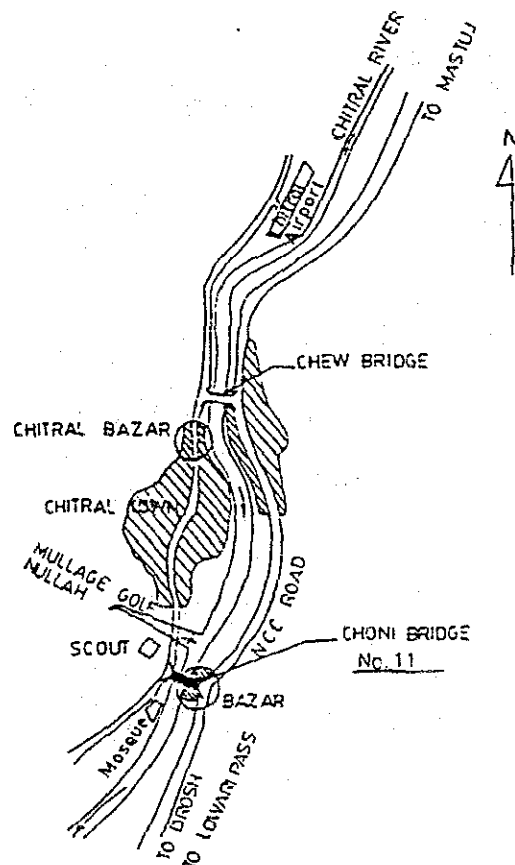
市の北側にあるChew 橋に取り付く NCC 道路には切土法面の崩落し易い箇所があり、一旦切土法面の崩落が起こると、Choni 橋が市と NCC 道路を結ぶ唯一の橋となるのでこれを永久橋にする必要性が高い。

新橋が出来た場合の裨益人口は約1.5万人(現況)~2.3万人(将来)と少ないが、交通量は1200台/日(現在)~2,250台/日(将来)と高い。この地域は、観光と県の行政中心として発展しつつあるが、周辺には昔からの農林業地帯が存在する。

予想される新橋の架橋地点は既存の Choni 橋の上流側約40m、概ね北緯35°09' 東経71°44' 標高約1,270m、周辺はモスク、学校、商店、陸軍スカウト等。取付道路としてはチトラル川左岸側にある NCC 道路と右岸側のチトラル市内道路が利用出来る。両道路は、2車線の舗装道路である。

予想される新橋は吊橋で、橋長は約100m。

Bridge No.11



デノール県の橋梁

Br.No.12 Khal 橋

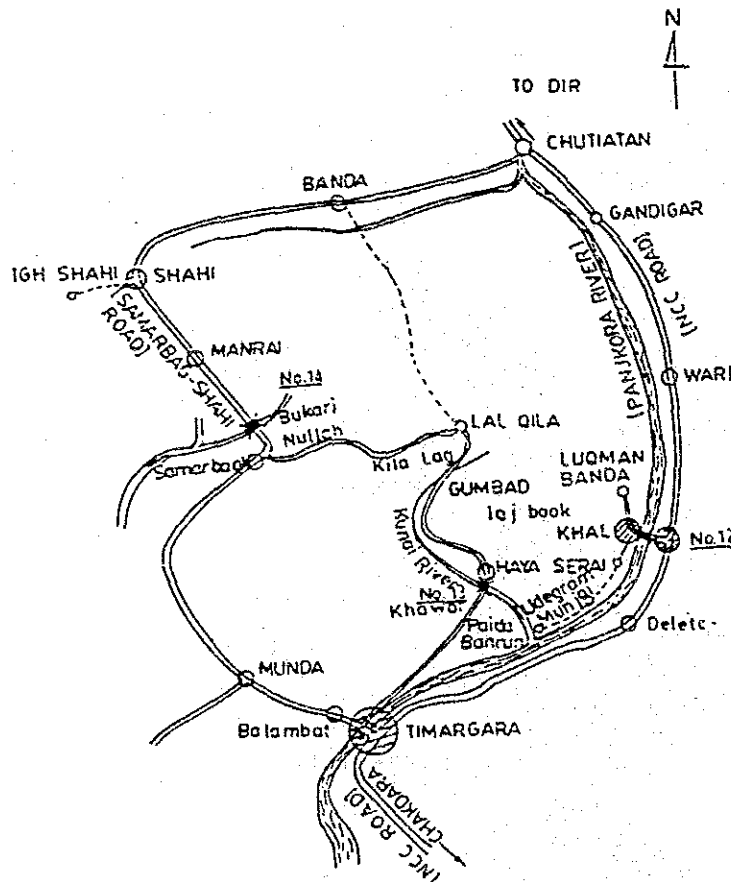
ティマラガラ (Timargara) よりNCC道路を Panjkora 川沿いに北上し、約16km 地点の Khal 町で Panjkora 川を渡河。既存橋は、橋長120m の木床版の吊橋で軽車両の通行可。

新橋が出来た場合の裨益人口は約4万人 (現況) ~ 6万人 (将来) が見込まれる。この地域は、裨益面積として約16km² の農業地帯を抱え、米、小麦、砂糖キビ等穀類の他にタマネギ、エンドウ豆、野菜、オレンジ、リンゴ等も産出している。

予想される新橋の架橋地点は既存橋梁の下流側約200m、概ね北緯34° 54' 東経71° 59' 標高約930m、周辺はNCC道路側は商店、バザール、また Khal 側にも商店、倉庫、農村。取付道路としては、Panjkora 川の左岸側にはNCC道路があり、右岸側には既設橋につながっている道路がある。

予想される新橋は鋼桁橋で、橋長は約88m。

Bridge No.12,13,14



Br.No.13 Haya Serai 橋

ティマラガラの北西約10km、Kala Dag ~Lal Qila 道路上の Haya Serai 村でKunai Khawar 川を渡河。既設橋梁は1989年に完成した木床版の吊橋（橋長 67.6m、幅員2.8m）で、軽車両の通行可。

新橋が出来た場合の裨益人口は約5万人（現況）～7万人（将来）が見込まれる。裨益地区では、主として米、小麦の他にリンゴ等の果実も産出している。予想される新橋の架橋地点は既存橋梁の下流側約30m、概ね北緯34° 55' 東経71° 50' 標高約950m、周辺は田園。既設橋梁の左岸側の吊橋タワーの基礎と取付け道路（コウズウェイタイプ）の部分は、新橋完成後の河道安定のためのグロインとして大いに役立つ。取付道路としては、既存の舗装道路 Balanbad ~Lal Qila 道路を利用できる。

予想される新橋はプレストレストコンクリート桁橋で、橋長は約75m。橋梁位置図については、Br.No.12 橋に併記してあるのでこれを参照のこと。

Br.No.14 Bukari Khawar 橋

ティマラガラの北西約23km、Samar Bagh 町を過ぎて Samar Bagh ~Shahi 道路 km-23 の Bukari Khawar 村近くの Nullah Bukari 川を渡河。この川の低水路は2つに分岐し、中洲は約180mと広い。既設橋梁は無い。

新橋が出来た場合の裨益人口は約5万人（現況）～7万人（将来）が見込まれる。裨益地区では、米、小麦、オレンジ、リンゴ等を産出している。

現在川底を車両が走行しているが、予想される新橋の架橋地点はこの車両の走行している所の下流側約200m、概ね北緯34° 59' 東経71° 40' で周辺は農村。

取付道路は、既存の舗装道路である Samar Bagh ~Shahi 道路を利用可能である。

予想される新橋は2つある低水路を約25mのプレストレストコンクリート桁橋で跨ぎ、途中の中洲約180mの部分はコウズウェイタイプの構造。

橋梁位置図については、Br.No.12 橋の中に併記してあるのでこれを参照の事。

スワット県の橋梁

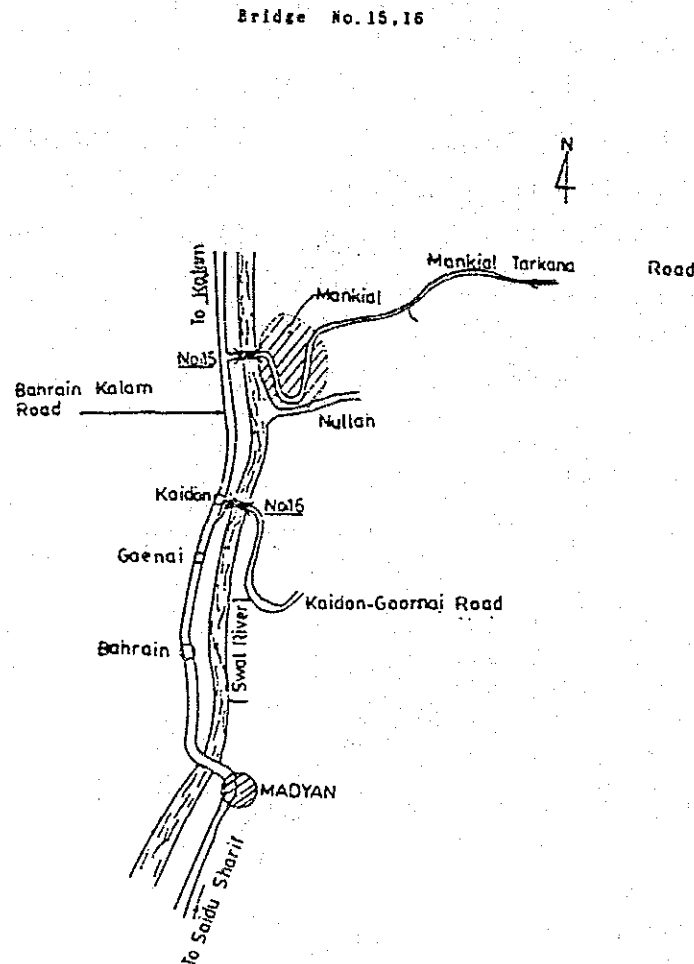
Br.No.15 Mankial 橋

サイドウの北北西約67km、Mankial ~Tarkana 道路km-1 (始点部) のMankial 村近くのSwat川を渡河。既設橋梁は、奥地から薬の原料を搬出するため約40年前にドイツ人の指導で建設された橋長約50mの木製橋梁で老朽化が顕著である。これは梁をかさねて張り出し構造にしたもので、床版部分は更にケーブルで支えられた吊り床版。

新橋が出来た場合の裨益人口は約0.8万人(現況)~1.2万人(将来)と少ないが、橋の背後地はこの橋以外に幹線道路に結ばれる橋は無い。この地域は、米、小麦、木材等を産出する農林業地域である。

予想される新橋の架橋地点は、概ね北緯35°20' 東経72°37' 周辺は商店、バザール、高校、モスク等。Mankialの対岸のMankial ~Tarkana 道路側は、切り土法面の崩落があり、現在商店の並んでいるあたりの地山が比較的安定している。取付道路としては、Mankial ~Tarkana 道路を利用出来る。

予想される新橋は、鋼桁橋で、橋長約50m。



Br.No.16 Kaidon 橋

サイドウの北北西約60km、Kaidon ~ Goornai 道路km-1 (始点部) のKaidon 村近くの Swat 川を渡河。既設橋梁は、約30年前に建設された約40mの木製橋梁。これはNo.15と同様に梁をかさねて張り出し構造にしたもので、床版部分は更にケーブルで支えられた吊り床版。

新橋が出来た場合の裨益人口は約0.6万人(現況)~0.9万人(将来)と少ないが、背後地から幹線道路にアクセス出来る橋はこの橋梁のみである。この地域は、米、小麦、木材等を産出する農林業地域である。

予想される新橋の架橋地点は、既設橋梁の上流側約15m、概ね北緯35°15' 東経72°35' 周辺は商店、田畑。

予想される新橋は、鋼プレートガーダー橋で、橋長約50m。

橋梁位置図については、前頁のBr.No.15 橋に併記してあるのでこれを参照のこと。

ブニール県の橋梁

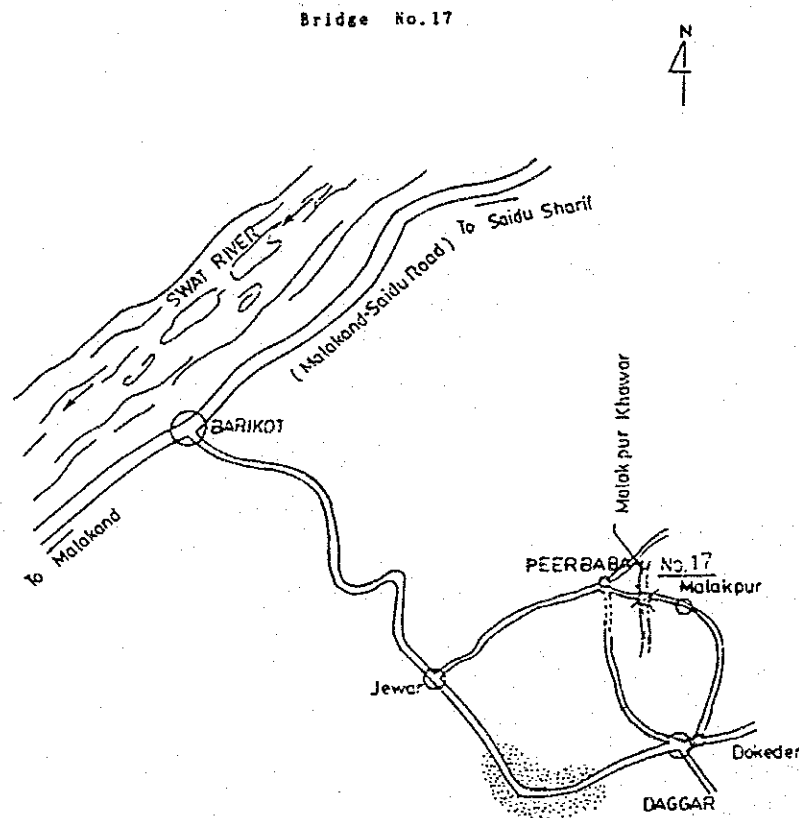
Br.No.17 Peer Baba 橋

ダガールの北西約17km、Peer Baba ~ Malakpur 道路のPeer Baba 村近くの Malakpur Khawar 川を渡河。既設橋梁は、約 20m の木製床版の歩道吊橋で老朽化が激しく殆ど利用できず、人々は川床を歩いている。また、既設橋梁は、橋長が極めて短く造られており、取付道路は流出している。

新橋が出来た場合の裨益人口は約 1.5 万人 (現況) ~ 2.3 万人 (将来) が見込まれる。この地域は、米、小麦、砂糖キビ等穀類の他にタマネギ、エンドウ豆、野菜、オレンジ、リンゴ等も産出している。

予想される新橋の架橋地点は、既設橋梁の上流側約30m、概ね北緯34° 37' 東経72° 27' 周辺は工場、農家、田畑。取付道路としては、既設の舗装道路 Peer Baba ~ Malakpur 道路を利用できる。

予想される新橋は、プレストレストコンクリート桁橋で、橋長約75m (取付け道路との関係から、川に対して斜に橋を架けるため橋長が長い)。



マラカンド・エイジエンシーの橋梁

Br.No.18 Jahazoon Dak 橋

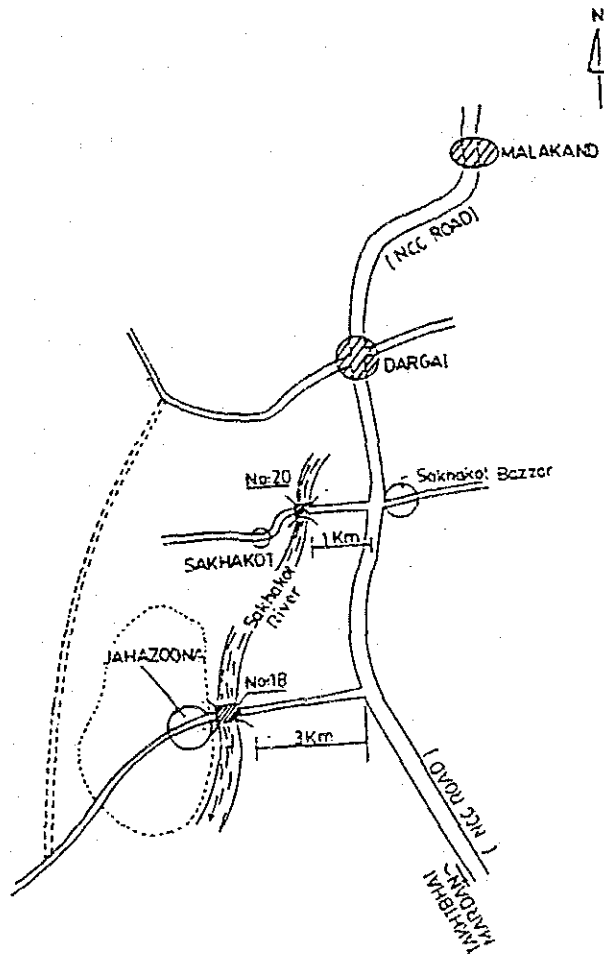
マラカンドの南南西12km、Jahazoon Dak ~ Ghawar Killey 道路のJahazoon Dak 村近くの Sakhakot 川を渡河。既設橋梁は、橋長60.8m の鉄筋コンクリート桁橋で幅員が4.8m あり自動車走行上での支障は無いが、橋が洪水面より低く出来ているため、冠水する。

新橋が出来た場合の裨益人口は約2.2万人(現況)~3.3万人(将来)が見込まれる。この地域は、裨益面積として約70km²の農業地帯を抱え、主に砂糖キビ産出し、これをタクトバイの砂糖工場に搬出している。

予想される新橋の架橋地点は、既設橋梁の上流側約30m、概ね北緯34°26' 東経71°53' 標高約450m、周辺は田畑で奥には工場がある。取付道路としては、既存の舗装道路 Jahazoon Dak ~Ghawar 道路を利用出来る。

予想される新橋は、プレストレストコンクリート桁橋で、橋長約75m。

Bridge No.18.20



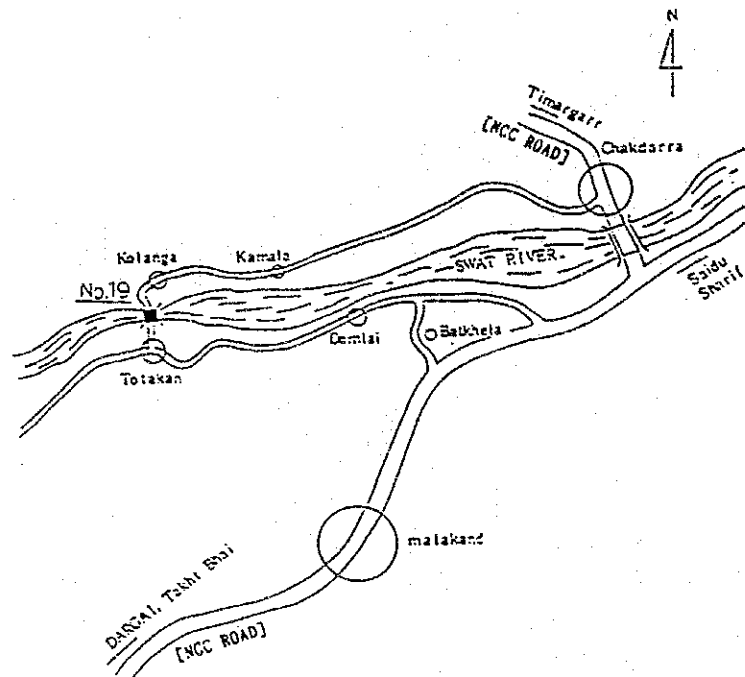
Br.No.19 Totakan 橋

マラカンドの北西約10km、Totakan Kamala 道路のTotakan 村近くの Swat 川を渡河。既設橋梁は、64m の木床版の歩道吊橋。

新橋が出来た場合の裨益人口は約3.5万人(現況)～5.3万人(将来)が見込まれる。この地域は、米、小麦、トウモロコシ、砂糖キビ等の穀類を産出している。

予想される新橋の架橋地点は、既設橋梁の下流側約60m、概ね北緯34°38' 東経71°48' 標高約660m、周辺は農家、商店、田畑。取付道路としては、既設の舗装道路 Totakan～Kamala 道路を利用できる。

予想される新橋は、吊橋で、橋長約80m。



Br.No.20 Sakhakot 橋

マラカンドの南西約9km、Sakhakot Village 道路のSakhakot 村を流れるSakhakot 川を渡河。既設橋梁は、42m の鉄筋コンクリート床版橋で傷みがひどく、高欄も無いため転落事故も起きている。また、橋面が洪水面より低いため、洪水時には不通となる。

新橋が出来た場合の裨益人口は約3万人（現況）～4.5万人（将来）が見込まれる。この地域は、裨益面積として約40km²の農業地帯を抱え、米、小麦、砂糖キビ等穀類の他に野菜、果実等を産出しペシャワールやノウシエラ等の大消費地に出荷している。

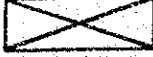


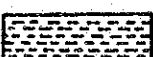

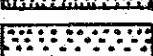
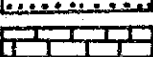
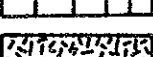


予想される新橋の架橋地点は、既設橋梁の下流側約40m、概ね北緯34° 27' 東経71° 54' 標高約480m、周辺は農家が比較的密集している。取付道路としては、既設のSakhakot 市内道路を利用できる。

予想される新橋は、プレストレストコンクリート桁橋で、橋長約75m。

橋梁位置図については、Br.No.18 橋に併記してあるのでこれを参照のこと。

PHASE-I

LITHOLOGIC SYMBOLS

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

<p>* COLOUR</p> <p>* MINERAL</p> <p>* PEBBLES</p> <p>* COBBLES</p> <p>* DISTURBED SAMPLE</p> <p>* WASH SAMPLE</p> <p>* CORE SAMPLE</p> <p>* QUARTZ</p>	<p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p>	<p>Col.</p> <p>Mnl.</p> <p>Peb.</p> <p>Cob.</p> <p>D.S.</p> <p>W.S.</p> <p>C.S.</p> <p>QTZ.</p>
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Consulting Soil Engineers & Contractors

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

SITE : BIR/HAJIPOUR
BRIDGE NO: 1
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 Blow No.				Types of Sample
							20	40	60	80	
01/08				TOP SOIL: SANDY SILTY CLAY, WITH COBBLES & BOULDERS, COLOURED BROWNISH GREY. SIZE OF BOULDERS UPTO 60 mm.		300 mm					D.S
		1.0		TOP SOIL: -DO- SIZE OF BOULDERS UPTO 100 mm.		-DO-				S.P.T. No.1 REFUSAL	D.S
		2.0		TOP SOIL: -DO-		-DO-				S.P.T. No.2 REFUSAL	D.S
02/08		3.0	1.0	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
03/08		5.0		DETRITUS: -DO-		-DO-				S.P.T. No.5 REFUSAL	D.S
		6.0	4.0	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
04/08		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
05/08		12.0		LIMESTONE: HARD TO VERY HARD, WELL COMPACTED L. GREY IN COLOUR.		-DO-					D.S
		13.0		LIMESTONE: -DO-		-DO-					D.S
		14.0		LIMESTONE: -DO-		-DO-					D.S
		15.0	3.0	(HOLE CLOSED)							

Remarks

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Consulting Soil Engineers & Contractors

1B2

SITE : BIN/HANIPUR
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 Symbols	Diameter Of Boring	Percussion Test Blow No.				Types of Sample	
							20	40	60	80		
03/08				TOP SOIL: SANDY CLAY, MEDIUM DENSE. YELLOWISH GREY IN COLOUR. NO GRAVELS.		560						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 W-30 D E N S E S.P.T No.2				D.S	
		2.0	2.0	DETRITUS: SILTY SAND, BEARING CONG- LOMERATE (MAX DIA UPTO 7.0 cms) YELLOWISH GREY IN COLOUR		-DO-	REFUSAL				D.S	
		3.0		DETRITUS: -DO- MAX DIA OF CONGLOMERATE EXCEEDS 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 CONG- LOMERATE (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 CONG- LOMERATE (MAX DIA UPTO 5.0 cms). YELLOWISH GREY IN COLOUR.	-DO-	S.P.T No.6 REFUSAL				D.S
		7.0	5.0	SLATE/PHYLLITE: HARD, WELL COMPACTED GREY COLOURED. SLIGHTLY WEATHERED.		-DO-	S.P.T No.7 REFUSAL				D.S	
05/08		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



A. S. Khalid
Geologist Engineer

ASSOCIATED DRILLERS (PVT) LTD.
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CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

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

Date	Ground Water Level	Depth Meter	Thickness of Layers (in Meter)	Soils Encountered	Soil Symbol	Diameter Of Sizing	PERCUSSION TEST SHOW NO.				Types of Sample
							30	40	60	80	
08/08				DETRITUS: SAND WITH PEBBLES & COBBLES. LIGHT GREY 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 cme/blows: 15/8, 7.5/7, 7.5/8, 7.5/8, 7.5/9 N=32	D.S		
				2.0	DETRITUS: -DO-		-DO-	DENSE S.P.T No.2 cme/blows: 15/8, 7.5/7, 7.5/8, 7.5/9, 7.5/11 N=35	D.S		
				9/8	3.0	DETRITUS: -DO-		-DO-	DENSE S.P.T No.3 cme/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 cme/blows: 7.0/52, - , - , - , - , REFUSAL	D.S	
				10/8	5.2	5.0	DETRITUS: SAND WITH PEBBLES & COBBLES. LIGHT GREY COLOURED. MAX DIA UPTO 90.0 mm.		-DO-	S.P.T No.5 cme/blows: 15/4, 7.5/3, 7.5/3, 7.5/2, 7.5/2 N=10	D.S
				11/08		6.0	DETRITUS: SAND WITH PEBBLES & COBBLES. LIGHT GREY COLOURED.		-DO-	S.P.T No.6 cme/blows: 9.5/36, - , - , - , REFUSAL	D.S
						7.0	DETRITUS: -DO-		-DO-	S.P.T No.7 cme/blows: 15/8, 7.5/7, 7.5/9, 7.5/8, 7.5/8 N=32	D.S
12/08		8.0	DETRITUS: -DO-		-DO-	DENSE S.P.T No.8 cme/blows: 15/6, 7.5/9, - , - , - , REFUSAL	D.S				
		9.0	DETRITUS: -DO-		-DO-	-	D.S				
		9.4	9.4	SLATE/PHYLLITE: HARD, WELL COMPACTED GREY COLO- URED SLATE. SLIGHTLY WEATHERED.		-DO-	-	D.S			
		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 COLLSED)									

Remarks

Date AUG 18, 1992.

Scale: 2.5 cm=1.0 m



Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
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SITE : BIR/SARIPUR
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	SPT. Blows				Types of Sample
							25	50	75	100	
13/08				DEBRITUS: SILTY SAND WITH GRAVEL, LIGHT GREY COLOURED. MAX DIA UPTO 3.0 cms.		540 mm					D.S
		1.0		DEBRITUS: -DO- MAX DIA UPTO 9.0 cms		-DO-	S.P.T. No.1 cms/blows: 15/7, 7.5/3, 7.5/5, 7.5/5, 7.5/5 n=25				D.S
		2.0		DEBRITUS: -DO-		-DO-	MEDIUM DENSE S.P.T. No.2 cms/blows: 15/6, 7.5/7, 7.5/7, 7.5/8, 7.5/9 n=31				D.S
14/08		3.0		DEBRITUS: SILTY SAND WITH PEBBLES & COBBLES, SUB-ROUNDED TO LIGHT GREY COLOURED. MAX DIA UPTO 13.0 cms.		-DO-	DENSE S.P.T. No.3 cms/blows: 15/7, 7.5/6, 7.5/5, 7.5/7, 7.5/9 n=27				D.S
		4.0		DEBRITUS: -DO-		-DO-	MEDIUM DENSE S.P.T. No.4 cms/blows: 15/9, 4.5/47, -, -, - REFUSAL				D.S
15/08		5.0		DEBRITUS: COARSE SAND WITH GRAVEL, L.GREY COLOURED. MAX DIA UPTO 10.0 cms.		-DO-	S.P.T. No.5 cms/blows: 15/3, 7.5/8, 7.5/4, 7.5/5, 7.5/6 n=19				D.S
		6.0		DEBRITUS: COARSE SAND WITH GRAVEL, L.GREY COLOURED. MAX DIA UPTO 12.0 cms.		-DO-	MEDIUM DENSE S.P.T. No.6 cms/blows: 15/32, 2.0/47, -, -, - REFUSAL				D.S
16/08		7.0		DEBRITUS: -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				D.S
		8.0		DEBRITUS: -DO-		-DO-	VERY DENSE S.P.T. No.8 cms/blows: 4.5/48, -, -, - REFUSAL				D.S
		8.5	8.5	SLATE/PHYLLITE:		-DO-	REFUSAL				D.S
17/08		9.0		SLATE/PHYLLITE:		-DO-	-				D.S
		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	8.1	(HOLE CLOSED)		-DO-	-				D.S

Remarks

Date AUG 22, 1992.

Scale: 2.5 cms=1.0 m



Geologist Engineer:

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

12B1

SITE : RNAL/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 Boring	Penetration Test Blow No.				Types of Sample
							20	40	60	80	
27/07		1.0		TOP SOIL: SANDY SILTY CLAY WITH SAND PARTICLES(30-50%) LIGHT YELLOW IN COLOUR. PEBBLES COBBLES ARE PRESENT.		540 mm					D.S
				TOP SOIL: -DO- PEBBLES & COBBLES PERCENTAGE INCREASES WITH DEPTH.			S.P.T. No.1 cm/blows: 15/11,7.5/12,7.5/15 7.5/19,7.5/23 N=69 VERY DENSE				
28/07		2.0		TOP SOIL: -DO-		-DO-	S.P.T. No.2 cm/blows: 3.5/46,-,-,- REFUSAL				D.S
				TOP SOIL: -DO-			S.P.T. No.3 cm/blows: 2.0/32,-,-,- REFUSAL				
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.4 cm/blows: 3.5/49,-,-,- REFUSAL				D.S
				TOP SOIL: -DO-			S.P.T. No.5 cm/blows: 7.0/32,-,-,- REFUSAL				
03/08		4.0		DETRITUS: SANDY SILTY CLAY BEARING ABUNDANT PEBBLES & COBBLES. ROUNDED TO SUB-ROUNDED, GREYISH YELLOW IN COLOUR.		-DO-	S.P.T. No.6 cm/blows: 15/35,7.5/48,-,- REFUSAL				D.S
				DETRITUS: -DO-			S.P.T. No.7 cm/blows: 3/43,-,-,- REFUSAL				
03/08		5.0		DETRITUS: -DO-		-DO-	S.P.T. No.8 cm/blows: -,-,-,- REFUSAL				D.S
				DETRITUS: -DO-			S.P.T. No.9 cm/blows: -,-,-,- REFUSAL				
03/08		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.10 cm/blows: -,-,-,- REFUSAL				D.S
				DETRITUS: -DO-			S.P.T. No.11 cm/blows: -,-,-,- REFUSAL				
03/08		7.0		DETRITUS: -DO-		-DO-	S.P.T. No.12 cm/blows: -,-,-,- REFUSAL				D.S
				DETRITUS: -DO-			S.P.T. No.13 cm/blows: -,-,-,- REFUSAL				
03/08		8.0		DETRITUS: -DO-		-DO-	S.P.T. No.14 cm/blows: -,-,-,- REFUSAL				D.S
				DETRITUS: -DO-			S.P.T. No.15 cm/blows: -,-,-,- REFUSAL				
03/08		9.0		DETRITUS: -DO-		-DO-	S.P.T. No.16 cm/blows: -,-,-,- REFUSAL				D.S
				DETRITUS: -DO-			S.P.T. No.17 cm/blows: -,-,-,- REFUSAL				
03/08		10.0	6.0	GRANITE: HARD MASSIVE, WITHISH GRAY IN COLOUR.		16 mm	S.P.T. No.18 cm/blows: -,-,-,- REFUSAL				C.S & W.S
				RECOVERY: 36%			S.P.T. No.19 cm/blows: -,-,-,- REFUSAL				
03/08		11.0		GRANITE: RECOVERY: 70% -DO-		-DO-	S.P.T. No.20 cm/blows: -,-,-,- REFUSAL				C.S
				DETRITUS: SANDY SILTY CLAY BEARING PEBBLES & COBBLES. FINE MATRIX WASHED OUT. ONLY WASH SAMPLE COLLECTED			S.P.T. No.21 cm/blows: -,-,-,- REFUSAL				
03/08	12.2	12.0		DETRITUS: SANDY SILTY CLAY BEARING PEBBLE & COBBLES. WASH SAMPLE COLLECTED		-DO-	S.P.T. No.22 cm/blows: -,-,-,- REFUSAL				W.S
				DETRITUS: SANDY SILTY CLAY BEARING PEBBLE & COBBLES. WASH SAMPLE COLLECTED			S.P.T. No.23 cm/blows: -,-,-,- REFUSAL				
03/08		12.5	1.3	GRANITE: HARD MASSIVE, WITHISH GRAY IN COLOUR. RECOVERY: 55%		-DO-	S.P.T. No.24 cm/blows: -,-,-,- REFUSAL				C.S & W.S
				GRANITE: -DO-			S.P.T. No.25 cm/blows: -,-,-,- REFUSAL				
06/08		13.0		GRANITE: -DO-		-DO-	S.P.T. No.26 cm/blows: -,-,-,- REFUSAL				C.S & W.S
				SLIME COLLECTED AS WHITE MUD. RECOVERY: 51%			S.P.T. No.27 cm/blows: -,-,-,- REFUSAL				
06/08		14.0		GRANITE: -DO-		-DO-	S.P.T. No.28 cm/blows: -,-,-,- REFUSAL				C.S & W.S
				RECOVERY: 59%			S.P.T. No.29 cm/blows: -,-,-,- REFUSAL				
06/08		15.0		GRANITE: -DO-		-DO-	S.P.T. No.30 cm/blows: -,-,-,- REFUSAL				C.S & W.S
				RECOVERY: 20%			S.P.T. No.31 cm/blows: -,-,-,- REFUSAL				
06/08		15.5	3.0	(HOLE CLOSED)							

Remarks

Date AUG 09, 1992.

Scale: 2.5 cm=1.0 m



Geologist Engineer:

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

1282

SITE : KHAL/DIR
BRIDGE NO: 12
SOIL 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.				Types of Sample		
							20	40	60	80			
03/07				DETRITUS: CORBELS & BOULDERS, IN SILTY SAND. L. GREY COLOURED. MAX DIA UPTO 350 MM. MEDIUM HARD.		360 mm	-				D.S		
				DETRITUS: -DO-			-DO-	S.F.T No.1	REFUSAL	D.S			
				DETRITUS: -DO-			-DO-	S.F.T No.2	REFUSAL	D.S			
				DETRITUS: SILTY SAND BEARING CONGLOMERATE MAX DIA UPTO 80 MM. L. GREY COLOURED. MEDIUM HARD.			-DO-	S.F.T No.3	REFUSAL	D.S			
31/07		3.8	4.0	DETRITUS: -DO-		-	-				S.F.T No.4	REFUSAL	D.S
				DETRITUS: COARSE SAND BEARING CONGLOMERATE MAX DIA UPTO 40 MM. L. GREY COLOURED.			-DO-	S.F.T No.5	REFUSAL	D.S			
01/08		4.0	7.0	DETRITUS: COARSE SAND BEARING CONGLOMERATE MAX DIA UPTO 60.0 MM. OCCASIONALLY GRANITIC BOULDERS ARE ENCOUNTERED.		-	-				S.F.T No.6	REFUSAL	D.S
				DETRITUS: -DO- MAX DIA. OF CONGLOMERATE RANGES BETWEEN 40.0 TO 60.0 MM WELL COMPACTED.			-DO-	S.F.T No.7	REFUSAL	D.S			
02/08		8.0	9.0	DETRITUS: COARSE SAND BEARING CONGLOMERATE WITH AN AVERAGE DIA RANGE BETWEEN 20.0 TO 50.0 MM. MEDIUM HARD.		-	-				S.F.T No.8	REFUSAL	D.S
				DETRITUS: COARSE SAND BEARING CONGLOMERATE (10.0 TO 20.0 MM) WITH BOULDERS. MEDIUM HARD.			-DO-	15/9,7.5/8,7.5/11, 7.5/13,7.5/17 N=49 DENSE S.F.T No.9	REFUSAL	D.S			
03/08		10.0	11.0	DETRITUS: -DO-		-	-				S.F.T No.10	REFUSAL	D.S
				DETRITUS: COARSE SAND, BEARING BOULDERS WITH AN AVERAGE DIA RANGE FROM 250.0 TO 300.0 MM.			-DO-	15/12,7.5/11,7.5/13 7.5/16,7.5/19 N=59 VERY DENSE S.F.T No.11	REFUSAL	D.S			
07/08		12.0		DETRITUS: COARSE SAND, BEARING BOULDERS WITH AN AVERAGE DIA RANGE FROM 250.0 TO 300.0 MM.		-	-				S.F.T No.12	REFUSAL	D.S
08/08		13.0		DETRITUS: -DO-			-DO-	S.F.T No.13	REFUSAL	D.S			
		14.0	14.0	(HOLE CLOSED)									

Remarks

Date AUG 09, 1992.

Scale: 2.5 cm=1.0 m



A.S.L.
Geologist Engineer

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

1283

SITE : BIR/NANIPUR
BRIDGE NO: 12
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.				Types of Sample	
							20	40	60	80		
06/08				DETRITUS: PEBBLES/CORRALS & BOULDERS IN SILTY SAND, LIGHT GREY COLOURED. MAX DIA UPTO 420.0 mm		540 mm	-				D.S	
				DETRITUS: -DO-			-DO-	S.P.T No.1	REFUSAL	D.S		
				DETRITUS: -DO-			-DO-	S.P.T No.2	REFUSAL	D.S		
				DETRITUS: -DO- MAX DIA OF BOULDERS UPTO 480.0 mm.			-DO-	S.P.T No.3	REFUSAL	D.S		
07/08	4.7	4.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE. MAX DIA UPTO 75.0 mm. L. GREY COLOURED. MEDIUM HARD.		-DO-	S.P.T No.4 cm/blows: 15/19,7.5/16,7.5/17, 7.5/18,7.5/18				D.S	
		DETRITUS: -DO-	-DO-	S.P.T No.5			REFUSAL	D.S				
08/08		5.0		DETRITUS: -DO-		-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	
		6.0		DETRITUS: COARSE SAND BEARING CONGLOMERATE, MAX DIA UPTO 45.0 mm. L. GREY COLOURED.			-DO-	S.P.T No.7	REFUSAL	D.S		
09/08		7.0		DETRITUS: COARSE SAND BEARING CORRALS & BOULDERS, MAX DIA UPTO 380.0 mm. L. GREY COLOURED.		-DO-	S.P.T No.8				REFUSAL	D.S
		8.0		DETRITUS: -DO-			-DO-	S.P.T No.9	REFUSAL	D.S		
10/08		9.0		DETRITUS: -DO-		-DO-	S.P.T No.10				REFUSAL	D.S
		10.0		DETRITUS: -DO-			-DO-	S.P.T No.11	REFUSAL	D.S		
12/08		11.0		DETRITUS: -DO-		-DO-	S.P.T No.12				REFUSAL	D.S
		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.13	REFUSAL	D.S		
13/08		13.0		DETRITUS: -DO-		-DO-	S.P.T No.13				REFUSAL	D.S
		14.0	14.0	(BORE CLOSED)								

Remarks

Date AUG 14, 1992.

Scale: 2.5 cm=1.0 m



[Signature]
Geologist Engineer:

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

12B4

SITE : SIS/MARIPUR
BRIDGE NO: 12
BORE CREST OF BORTHING 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 Layer (in Meter)	Strata Encountered	Soil Symbol	Diameter Of Borelog	Penetration Log Blow No.				Types of Sample
							20	40	60	80	
15/08		1.7	1.0	DETRITUS: PEBBLES, COBBLES & BOULDERS IN COARSE SAND. ROUNDED TO SUB- ROUNDED. MAX DIA OF BOULDERS UP TO 250.0 mm. L. GREY IN COLOUR	-	544 mm	S.P.T. No-1 cm/blows: 15/11,6/41,-,-,-				D.S
				REFUSAL							
16/08		2.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-2 cm/blows: 19/8,7.5/9,7.5/3,7.5/4 7.5/23 n=47				D.S
				REFUSAL							
16/08		3.0	1.0	DETRITUS: PEBBLES, COBBLES & BOULDERS IN SILTY SAND. ROUNDED TO SUB- ROUNDED UP TO 750.0 mm L. GREY IN COLOUR.	-	-DO-	S.P.T. No-3 cm/blows: 3.0/43,-,-,-				D.S
				REFUSAL							
17/08		4.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-4 cm/blows: 15/7,7.3/6,7.3/1,7.5/7 7.5/8 n=35				D.S
				REFUSAL							
17/08		5.0	1.0	DETRITUS: -DO- LARGE BOULDER ENCOUNTERED DIA UP TO 1050.0 mm.	-	-DO-	S.P.T. No-5 cm/blows: 15/7,7.5/6,7.5/1,2/47,-				D.S
				REFUSAL							
18/08		6.0	1.0	DETRITUS: SILTY SAND BEARING PEBBLES & COBBLES & SOME BOULDERS. ROUNDED TO SUB-ROUNDED. L. GREY IN COLOUR.	-	-DO-	S.P.T. No-6 cm/blows: 8.0/43,-,-,-				D.S
				REFUSAL							
19/08		7.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-7 cm/blows: 12/41,-,-,-				D.S
				REFUSAL							
19/08		8.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-8 cm/blows: 15/7,7.5/6,7.5/9,7.5/9 7.5/10 n=41				D.S
				REFUSAL							
19/08		9.0	1.0	DETRITUS: -DO- LARGE BOULDER ENCOUNTERED DIA UP TO 900.0 mm (APPROX)	-	-DO-	S.P.T. No-9 cm/blows: 15/22,7.5/15,3.0/47,-,-				D.S
				REFUSAL							
20/08		10.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-10 cm/blows: 5.0/37,-,-,-				D.S
				REFUSAL							
20/08		11.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-11 cm/blows: 7.0/43,-,-,-				D.S
				REFUSAL							
20/08		12.0	1.0	DETRITUS: COARSE SAND BEARING CONGLOME- RATE, ROUNDED TO SUB-ROUNDED AVERAGE DIA BETWEEN 20.0 TO 70.0 mm. L. GREY IN COLOUR.	-	-DO-	S.P.T. No-12 cm/blows: 15/26,7.5/9,3.0/43,-,-				D.S
				REFUSAL							
20/08		13.0	1.0	DETRITUS: -DO- GRANITIC BOULDER ENCOUNTERED. DIA 250.0 mm (APPROX)	-	-DO-	S.P.T. No-13 cm/blows: 7.0/53,-,-,-				D.S
				REFUSAL							
20/08		14.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-14 cm/blows: 15/29,7.5/21,7.5/9, 1.0/41,-				D.S
				REFUSAL							
20/08		15.0	1.0	DETRITUS: -DO-	-	-DO-	S.P.T. No-15 cm/blows: 10/41,-,-,-				D.S
				REFUSAL							
20/08		16.0	1.0	DETRITUS: -DO-	-	-DO-	-				D.S
				REFUSAL							
20/08		16.6		(BORE CLOSED)							

Remarks

Date AUG 23, 1992.

Scale: 1:2.5 cm=1.0 m



[Signature]
Geological Engineers

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

1881

SITE : SAKHA 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.				Types of Sample
							20	40	60	80	
06/08	2.8			TOP SOIL: SILTY SAND BEARING GRAVEL PEBBLES & COBBLE. L.GREY COLOURED. FINE MATRIX WASHED.		75					N.S
		0.5	0.5	DETRITUS: SILTY SAND BEARING GRAVEL, WHITISH GREY IN COLOUR FINE MATRIX IS WASHED OUT						N.S	
		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 -				N.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 -				N.S
		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				C.S & N.S
		3.5	3.0	MUD STONE: GREENISH GREY, LESS COMPACTED			MED DENSE S.P.T. No.4				C.S & N.S
		3.75	0.25	FINE SAND STONE:			Depth/Blows: 15/25,7.5/11,7.5/11,7.5/17,1.2/29 REFUSAL				C.S & N.S
		4.0		FINE SAND STONE: HARD LIGHT GREY. SOME ARGILLACEOUS CONTENT IS PRESENT.		-DO-	S.P.T. No.5 Depth/Blows: 15/3,7.5/4,7.5/5,7.5/7,7.5/10 N=26				C.S & N.S
		5.0	1.25	MEDIUM SAND STONE: LIGHT GREY COLOURED, WELL COMPACTED.			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 & N.S
		5.65	0.65	MUD STONE: GREENISH GREY WELL COMPACTED.			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 & N.S
6.0		MUD STONE YELLOWISH GREY WELL COMPACTED.		S.P.T. No.8 Depth/Blows: 15/11,7.5/12,7.5/13,7.5/35,- REFUSAL				C.S & N.S			
7.0		RECOVERY: 29% MUD STONE	-DO-	S.P.T. No.9 Depth/Blows: 15/27,2.5/32, -, -, - REFUSAL				C.S & N.S			
7.68	2.03	MEDIUM SAND STONE: WHITISH GREY WELL COMPACTED									
8.0		MEDIUM SAND STONE: -DO-	-DO-								
9.0		RECOVERY: 68% MEDIUM SAND STONE: -DO-	-DO-								
10.0	2.32	RECOVERY: 51% (HOLE CLOSED)									

Remarks

Date AUG 13, 1992.

Scale: 2.5 cms=1.0 m



[Signature]
Geologist Engineers:

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

18B2

SITE : SAKHA KOT/MALARAND
BRIDGE NO: 18
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.				Types of Sample
							20	40	60	80	
28/07				TOP SOIL: SILTY SAND WITH PEBBLES & GRAVEL. RECOVERY: 50%	X	75 mm					W.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				C.S & W.S
29/7		2.0		MEDIUM SAND STONE -DO-	●	-DO-	MEDIUM DENSE S.P.T No.2 cms/blows: 15/11,7.5/8,7.5/9,7.5/9 7.5/11 N=37				C.S & W.S
		2.6	2.0	DETRITUS: SILTY SAND BEARING PEBBLES & COBBLES (25-40 mm)	○						W.S
		3.0		DETRITUS: -DO-	○						W.S
		3.4	0.9	MEDIUM SAND STONE: HARD LIGHT GREY RECOVERY: 75 %	●	-DO-	S.P.T No.3 cms/blows: 15/11,7.5/10,2.0/20, - - REFUSAL				C.S & W.S
30/7		4.0		MEDIUM SAND STONE: -DO-	●	-DO-	S.P.T No.4 cms/blows: 15/5,7.5/14,7.5/16, - , 7.5/15,7.5/19 N=44				C.S & W.S
				RECOVERY: 45%	●						W.S
31/07		5.0	1.60	MUD STONE -DO-	●	-DO-	S.P.T No.5 cms/blows: 3/28, - , - , - , - REFUSAL				C.S & W.S
				RECOVERY: 75%	●						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				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				C.S & W.S
		7.68	2.68	FINE SAND STONE HARD, LIGHT GREY RECOVERY: 100%	●						W.S
03/08		8.0		FINE SAND STONE -DO-	●	-DO-	S.P.T No.8 cms/blows: 15/30, - , - , - , -				C.S & W.S
				RECOVERY: 100%	●						W.S
07/08		9.0		FINE SAND STONE -DO-	●	-DO-	REFUSAL S.P.T No.9				C.S & W.S
09/08				RECOVERY: 68% WASHED 32%	●						W.S
		10.0	2.32	(HOLE CLOSED)							

Remarks

Date AUG 09, 1992.

Scale: 2.5 cms=1.0 m



A.S. Dil
Geologist Engineer:

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

18B3

SITE : SAKHA ROT/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.				Types of Sample
							20	40	60	80	
07/08				<u>MUD STONE</u> SOFT, LIGHT GREY IN COLOUR ONLY WASH SAMPLE COLLECTED 100 % WASHED, NO RECOVERY		56					C.S & W.S
		1.0		<u>MUD STONE</u> SOFT, LIGHT GREY IN COLOUR RECOVERY: 55%, 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		<u>MUD STONE</u> 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=88 VERY DENSE				C.S & W.S
		2.35	2.35	<u>MEDIUM SAND STONE</u> HARD, WHITISH GREY IN COLOUR. RECOVERY: 65%, WASHED 35%		-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
	08/08		3.0	<u>MEDIUM SAND STONE</u> HARD, WHITISH GREY IN COLOUR. RECOVERY: 50%, WASHED 50%		-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
		4.0	<u>MEDIUM SAND STONE</u> HARD, WHITISH GREY IN COLOUR. RECOVERY: 75%	-DO-	S.P.T No.5 cms/blows 15/41,-, -, - REFUSAL				C.S & W.S		
09/08		5.0	<u>MEDIUM SAND STONE</u> V.HARD, WHITISH GREY IN COLOUR. RECOVERY: 56%	-DO-							
		5.45	3.10	(HOLE COLSED)							

Remarks

Date AUG 09, 1992.

Scale: 2.5 cms=1.0 m



Amir Said
Geologist Engineer

1991

SITE : SALAKI
 BRIDGE NO: 19
 SOIL CHART OF BORING NO.1

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

Date	Ground Water Level (Depth)	Depth (Meters)	Thickness of Layer (in Meter)	Soil Description	Soil Symbols	Diameter of Boring	SPT Blows				Type of Sample
							25	50	75	100	
28/07		1.0	1.0	SILTY-CLAYEY SAND, BEARING CAPABILITY AVERAGE DIA RANGE FROM 5.0-25mm. ROUNDED TO SUB-ANGULAR COLOURED YELLOWISH GREY MASS SAMPLE OF FINEST IS COLLECTED. PELLETIC SOILS HARD BRITTLE-GREY IN COLOUR WITH FREQUENT QTS. VEINS. RECOVERY: 60%	[Symbol]	74 mm					C.S & W.S
29/07		2.0	2.0	PELLETIC SOILS -PO- RECOVERY: 75% PELLETIC SOILS -PO-	[Symbol]	-90-					C.S & W.S
30/07		3.0	3.0	SANDY SOILS WELL COMPACTED L. GREY COLOURED. RECOVERY: 45.5%	[Symbol]	-90-					C.S & W.S
30/07		4.0	4.0	SANDY SOILS -PO- RECOVERY: 61%	[Symbol]	-90-					C.S & W.S
31/07		5.0	5.0	SANDY SOILS -PO- RECOVERY: 16.5% SANDY SOILS HARD, WELL COMPACTED SOILS, GREENISH GREY IN COLOUR, WITH ABUNDANT QTS. VEINS, THICKNESS 0.2-1.5 mm. RECOVERY: 24%	[Symbol]	-90-					C.S & W.S
31/07		6.0	6.0	SANDY SOILS -PO- RECOVERY: 69%	[Symbol]	-90-					C.S & W.S
01/08		7.0	7.0	SANDY SOILS -PO- RECOVERY: 36%	[Symbol]	-90-					C.S & W.S
02/08		8.0	8.0	SANDY SOILS -PO- RECOVERY: 28.5%	[Symbol]	-90-					C.S & W.S
02/08		9.0	9.0	SANDY SOILS -PO- RECOVERY: 35%	[Symbol]	-90-					C.S & W.S
03/08		10.0	10.0	SANDY SOILS -PO- RECOVERY: 23% SANDY SOILS HARD, WELL COMPACTED SOILS, GREENISH GREY IN COLOUR, WITH ABUNDANT QTS. VEINS, THICKNESS VARIES FROM 1.0 TO 2.0 mm. RECOVERY: 22.5%	[Symbol]	-90-					C.S & W.S
03/08		11.0	11.0	SANDY SOILS -PO- RECOVERY: 23% SANDY SOILS HARD, WELL COMPACTED SOILS, GREENISH GREY IN COLOUR, WITH ABUNDANT QTS. VEINS, THICKNESS VARIES FROM 1.0 TO 2.0 mm. RECOVERY: 22.5%	[Symbol]	-90-					C.S & W.S
03/08		12.0	12.0	SANDY SOILS -PO- RECOVERY: 34.5%	[Symbol]	-90-					C.S & W.S
03/08		13.0	13.0	SANDY SOILS -PO- RECOVERY: 41%	[Symbol]	-90-					C.S & W.S
03/08		14.0	14.0	SANDY SOILS -PO- RECOVERY: 41% SANDY SOILS QTS. VEIN 140mm THICK ENTIRELY STUCK. RECOVERY: 43%	[Symbol]	-90-					C.S & W.S
03/08		15.0	15.0	SANDY SOILS -PO- RECOVERY: 43%	[Symbol]	-90-					C.S & W.S
03/08		16.0	16.0	SANDY SOILS -PO- RECOVERY: 43%	[Symbol]	-90-					C.S & W.S
03/08		17.0	17.0	SANDY SOILS -PO- RECOVERY: 44%	[Symbol]	-90-					C.S & W.S
03/08		18.0	18.0	SANDY SOILS HARD WELL COMPACTED SOILS, GREENISH GREY IN COLOUR, ABUNDANT QTS. VEINS (0.5 TO 2.5 mm) IN THICKNESS. RECOVERY: 33%	[Symbol]	-90-					C.S & W.S
03/08		19.0	19.0	SANDY SOILS, RECOVERY: 63%	[Symbol]	-90-					C.S & W.S
03/08		19.2	19.2	(SOIL CLOSED)							

Scale:

Date AUG 15, 1992.

Scale: 2.5 cm=1.0 m



Geotechnical Engineers

ASSOCIATED DRILLERS (PVT) LTD.
Coaching Road, Hyderabad & Cochin

1982

#172 / KALANGI/KALAKAND
BRIDGE NO: 15
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 Layer (in Meter)	Soils Encountered	Soil System	Diameter (in Boring)	Penetration Test Blow No.			Type of Sample
							25	50	60	
31/01		1.0		PLUTIC SCHIST; MEDIUM HARD SCHIST BEARING ABUNDANT QUARTZ VEINS. MODERATELY WEATHERED. RECOVERY: 34%		76				C-5 & W-5
				PLUTIC SCHIST; --DO-- RECOVERY: 34%						100
02/09		2.0		PLUTIC SCHIST; MEDIUM HARD SCHIST IMPACT BEARING ABUNDANT QUARTZ VEINS. QUARTZ GREY IN CLUSTERS. RECOVERY: 61%		100				C-5 & W-5
				PLUTIC SCHIST; --DO-- RECOVERY: 61%						100
02/09		3.3	3.3	SANDY SCHIST; MEDIUM HARD, WELL COMPACTED SCHIST. L. GREY IN COLOUR. BEARING THICK QTY VEINS 8.0-22.0 cm. REC. 45%		100				C-5 & W-5
				SANDY SCHIST; QUARTZ VEINS. THICKNESS 10, 12 & 17 cm. QUARTZ IS IMPACT & IS HARD. RECOVERY: 76%						100
03/09		4.0	4.3	SANDY SCHIST; --DO-- RECOVERY: 24%		100				C-5 & W-5
				SANDY SCHIST; HARD WELL COMPACTED LIGHT GREY COLOURED SCHIST BEARING THICK QUARTZ VEINS. THICKNESS UP TO 12.0 cm RECOVERY: 43%						100
04/09		5.0		SANDY SCHIST; --DO-- RECOVERY: 43%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 43%						100
05/09		6.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
06/09		7.0		SANDY SCHIST; --DO-- RECOVERY: 39%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 39%						100
07/09		8.0		SANDY SCHIST; --DO-- RECOVERY: 63%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 63%						100
08/09		9.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
09/09		10.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
10/09		11.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
11/09		12.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
12/09		13.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
13/09		14.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
14/09		15.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
15/09		16.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
16/09		17.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
17/09		18.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
18/09		19.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
19/09		20.0		SANDY SCHIST; --DO-- RECOVERY: 51%		100				C-5 & W-5
				SANDY SCHIST; --DO-- RECOVERY: 51%						100
20/09		21.0	16.2	(HOLE CLOSED)		100				C-5 & W-5
				(HOLE CLOSED)						100

DD-04734

Date AUG 19, 1982.

Scale: 2.5 cm=1.0 m



Geotechnical Engineer

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

19B3

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

Remarks

Date AUG 19, 1992.

Scale: 2.5 cm=1.0 m



[Signature]
Geologist Engineer:

ASSOCIATED DRILLERS (PVT) LTD.
Crushing Soil Engineers & Constructors

1984

SITE : KALASHI/MALAKAND
BRIDGE NO: 19
BORE CASEY OF BORING NO. 4

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

Depth (m)	Ground Water Level	Depth of Layer (m)	Soil Description	Soil Type	Diameter of Boring	Penetration Test Results				Type of Sample	
						10	20	30	40		
0.0			TOP SOIL: SILTY CLAY, MEDIUM DENSE, COLOURED YELLOW. NO GRAVELS & Boulders.		100						D.1
1.0			TOP SOIL: -DO-		100						D.2
2.0			TOP SOIL: SANDY, SILTY CLAY, MEDIUM DENSE COLOURED LIGHT YELLOW. NO GRAVELS & Boulders.		100						D.3
3.0			TOP SOIL: -DO-		100						D.4
4.0			TOP SOIL: -DO-		100						D.5
5.0		5.0	REFUSAL: PENETRATION: PERICLES & COMBES IN SILTY SAND WITH HIGHER CLAY CONTENT. COLOURED LIGHT YELLOW.		100						D.6
6.0		6.0	REFUSAL: GRAVELS & Boulders IN SILTY SAND WITH HIGHER CLAY. COLOURED LIGHT YELLOW. AVERAGE DIA RANGES FROM 5-20 mm.		100						D.7
7.0		7.0	REFUSAL: -DO- MAX. DIA OF Boulders UP TO 250 mm.		100						D.8
8.0		8.0	REFUSAL: -DO-		100						D.9
9.0		9.0	REFUSAL: GRAVELS & Boulders IN SILTY SAND WITH HIGHER CLAY. COLOURED LIGHT YELLOW. AVERAGE DIA RANGES FROM 10-120 mm.		100						D.10
10.0		5.3	SANDY SILT: - SEE BELOW -		76						C.1
11.0		11.0	SANDY SILT: SLIGHTLY WEATHERED, RELATIVELY SOFT. YELLOWISH GREY IN COLOUR		100						C.2
12.0		12.0	SANDY SILT: HARD, DARK GREY IN COLOUR. BURNS ALONG SPLITTING PLANE		100						C.3
13.0		13.0	RECOVERY : 47%								C.4
14.0		14.0	SANDY SILT: -DO- RECOVERY : 71%		100						C.5
15.0		15.0	SANDY SILT: -DO- RECOVERY : 57%		100						C.6
16.0		16.0	SANDY SILT: -DO- RECOVERY : 65%		100						C.7
17.0		17.0	SANDY SILT: -DO- RECOVERY : 52%		100						C.8
18.0		6.7	(HOLE CLOSED)								

Remarks

Date AUG 19, 1982.

Scale: 2.5 cm=1.0 m



Geological Engineer:

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

2081

SITE : KARLA KOT/MLAARAO
BRIDGE NO: 20
GORE CRIST OF BORING NO.1

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

Date	Ground Water Level	Depth Meter	Thickness of Layer (in Meter)	Soils Encountered	Soil Symbol	Diameter Of Boring	Penetration Test (SPT) Blow Count				Types of Sample
							20	30	40	50	
03/08		0.5	0.5	TOP SOIL: SANDY CLAY BEARING PERBBLES & COMBLES. ROUNDED TO SUB-ROUNDED, GREYISH YELLOW. DETRITUS: SILTY SAND BEARING COMBL. 10-15mm. L.GREY CO. THE MATRIX MARKED QTY. N.E. TAKEN. DETRITUS: SILTY SAND BEARING PERBBLE & COMBLES WITH SOME BOULDER. RECOVERY: 20%		75				S.P.T. No.1 15/5, 7.5/6, 7.5/5, 7.5/7 n=3	U.S
04/08		2.0	2.0	DETRITUS: SILTY SAND BEARING PERBBLE & COMBLES DIA 10-25mm. L.GREY COLOURED. CONGLOMERATE: SAND PER. & COMBL. CALCIC OR SILICIC MAT. DARK GREY CO. WITH YELLOW STAINING.						S.P.T. No.2 15/20, -, -, -	U.S
05/08	0.1	3.0	0.5	CONGLOMERATE: SAND PER. & COMBL. CALCIC OR SILICIC MAT. DARK GREY CO. WITH YELLOW STAINING. DETRITUS: SILTY SAND BEARING PERBBLE & COMBLES DIA 10-25mm. L.GREY COLOURED. ONLY NEAR SAMPLE COLLECTED.						S.P.T. No.3 2.5/46, -, -, -	U.S
		4.0	0.5	DETRITUS: COARSE SILTY SAND BEARING PERBBLE & COMBLES DIA 10-25mm. L.GREY COLOUR. ONLY NEAR SAMPLE TAKEN.						S.P.T. No.4 15/5, 2.5/39, -, -, -	U.S
06/08		5.0	2.0	CONGLOMERATE: FINE SAND PERBBLE & COMBL. COMPACTED IN CALCIC OR SILICIC MATRIX. YELLOW PATCHES OF COARSE ARE PRESENT L. GREY COLOURED. RECOVERY: 20%						S.P.T. No.5 5.5/42, -, -, -	C.S & U.S
07/08		6.0		CONGLOMERATE: RECOVERY: 30%							C.S & U.S
08/08		7.0		CONGLOMERATE: CONGLOMERATE BEARING A BOULDER SHAPE GREY OF VOLCANIC ORIGIN. THE CORE 15mm IS ALSO OBTAINED. RECOVERY: 65%							C.S & U.S
		8.0		CONGLOMERATE: RECOVERY: 44%							C.S & U.S
09/08		9.0		CONGLOMERATE: RECOVERY: 64%							C.S & U.S
		10.0		CONGLOMERATE:							C.S & U.S
		10.5		MUD STONE: (SEE BELOW)							C.S & U.S
10/08		11.0		RECOVERY: 20% MUD STONE: HARD GREYISH YELLOW IN COLOUR. WELL COMPACTED.						S.P.T. No.6 15/15, 7.5/8, 7.5/22, 7.5/23, 7.5/40 n=4	C.S & U.S
11/08		12.0		RECOVERY: 25% MUD STONE: HARD GREYISH YELLOW IN COLOUR. WELL COMPACTED.						VERY DENSE S.P.T. No.7 15/11, 7.5/15, 7.5/15, 7.5/18, 7.5/19 n=4	C.S & U.S
		13.0		RECOVERY: 65% MUD STONE: RECOVERY: 23.5%						VERY DENSE S.P.T. No.8 2.5/37, -, -, -	C.S & U.S
12/08		14.0		MUD STONE: RECOVERY: 52%, 15%						S.P.T. No.9 15/22, 7.5/12, 7.5/19, 7.5/24, 7.5/33 n=5	C.S & U.S
		15.0		MUD STONE: RECOVERY: 54%							C.S & U.S
13/08		16.0		MUD STONE: RECOVERY: 65%							C.S & U.S
		17.0	0.5	(HOLE CLOSED)							

* RECOVERY: 23%



[Signature]
Geologist Engineer

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Date AUG 14, 1952.

Scale: 1:2.5 cm=1.0 m

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

20B2

SITE : SAKHA ROT/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.				Types of Sample
							20	40	60	80	
04/08				TOP SOIL: SANDY CLAY BEARING PEBBLES & COBBLES ROUNDED TO SUB-ROUNDED GREYISH YELLOW COL.	X	75 mm					
		0.4	0.4	DETRITUS: SILTY CLAYEY SAND BEARING CONGL. DIA 5-25mm WITH COL. L.GREY W.S COLLECTED.	O						W.S
05/08	1.4	1.0		DETRITUS: SILTY SAND BEARING CONGLOMERATE AVERAGE DIA 10-50 mm. L.GREY COLOURED ONLY WASH SAMPLE COLLECTED.	O	-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
		2.0		DETRITUS: -DO-	O	-DO-	S.P.T No.2 cms/blows: 4.5/36, -, -, -, - REFUSAL				W.S
06/08		2.8	2.4	CONGLOMERATE RECOVERY: 16% CONGLOMERATE	O		S.P.T No.3 cms/blows: 5/37, -, -, -, - REFUSAL				C.S & W.S
		3.0		HARD WITH PEBBLES & COBBLES CEMENTED IN CALCIC OR SILICIC MATRIX. OCHRE IN THE FORM OF YELLOW PATCHES. WHITISH GREY WITH YELLOW PATCHES REC.: 24% CONGLOMERATE	O	-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
10/8		4.0		-DO-	O						
		4.5	1.7	MUD STONE HARD WELL COMPACTED WITH COLOURED GREYISH YELLOW REC. 24%	O	-DO-					
		5.0		MUD STONE RECOVERY: 45% -DO-	O	-DO-					C.S & W.S
		5.1	1.0	(HOLE CLOSED)							

Remarks

Date AUG 10, 1992.

Scale: 2.5 cms=1.0 m



Amir Shah
Geologist Engineer

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

2083

SITE : BAKRA KOT/MALAKAND
BRIDGE NO: 70
SOIL CHART OF BORING NO.3

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

Litho	Termed Water Level	Depth Metric (in Meter)	Thickness of Layer (in Meter)	Soils Encountered	Soil Type	S.P.T. Blows Per Foot Of Boring	Penetration Test Blow No				Type of Sample																	
							1	2	3	4																		
0450		0.5	0.5	DETRITUS: SILTY-CLAYEY SAND BEARING CONGLOMERATE, DIA 3.0-25 MM WITH COLOURED LIGHT GRAY MARE SAMPLES COLLECTED. CONGLOMERATE (SEE BELOW)	TC	71					U.S.																	
				CONGLOMERATE: HARD, WITH FERRULES & COBBLES CEMENTED IN CALCIC OR SILICIC MEDIUM. OCCUR IN TWO FORM OF YELLOW PATCHES. MATTING GRAY IN COLOUR. CONGLOMERATE)								-DO-	S.P.T. No.1 con/blows: 15/9, 7.5/10, 7.5/9 7.5/11, 7.5/13. n=13	C.S. & U.S.														
															S.P.T. No.2 con/blows: 4.5/47, -, -, -, -	C.S. & U.S.												
																	REFUSAL	C.S. & U.S.										
																			S.P.T. No.3 con/blows: 7.0/32, -, -, -, -	C.S. & U.S.								
																					REFUSAL	U.S.						
																							S.P.T. No.4 con/blows: 2.0/19, -, -, -, -	U.S.				
																									REFUSAL			
																											S.P.T. No.5 con/blows: 15/6, 7.5/5, 7.5/8, 7.5/18, 7.5/30.	D.S.
	S.P.T. No.6 con/blows: 7.5/36, -, -, -, -	C.S.																										
			REFUSAL																									
					S.P.T. No.7 con/blows: 15/2, 7.5/3, 7.5/3, 7.5/3 7.5/3	U.S.																						
							REFUSAL																					
									S.P.T. No.8 con/blows: 5.5/40, -, -, -, -	U.S.																		
											REFUSAL																	
													S.P.T. No.9 con/blows: 154, 7.5/4, 7.5/8, 7.5/10, 7.5/12	C.S. & U.S.														
															REFUSAL													
																	S.P.T. No.10 con/blows: 15/9, 7.5/12, 2.5/36, -	C.S. & U.S.										
																			REFUSAL	U.S.								
	S.P.T. No.11 con/blows: 2.0/26, -, -, -, -	C.S. & U.S.																										
			REFUSAL																									
					S.P.T. No.12 con/blows: 4.5/32, -, -, -, -	C.S. & U.S.																						
							REFUSAL																					
									RECOVERY : 45%	C.S. & U.S.																		
											-DO-																	
													RECOVERY : 53%	C.S. & U.S.														
															-DO-													
																	RECOVERY : 29%	C.S. & U.S.										
																			-DO-									
	RECOVERY : 41%	C.S. & U.S.																										
			-DO-																									
					RECOVERY : 61%	C.S. & U.S.																						
							-DO-																					
									RECOVERY : 43%	C.S. & U.S.																		
											-DO-																	
													HARD, WELL COMPACTED, GREYISH YELLOW IN COLOUR.	C.S. & U.S.														
															-DO-													
																	(HOLE CLOSED)											

00000000

Date AUG 16, 1982.



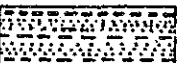
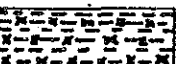
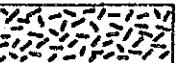

SCALE: 1:2.5 CON-1.0 m



Handwritten Signature
Geological Engineer

PHASE - II

LITHOLOGIC SYMBOLS

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

ABBREVIATIONS

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

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Consulting And Engineers P. L. Chakravarti
Incorporated

5B1

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

SITE : BATHAKHANEKHA
SCALE : 1 : 1000
NO. OF SHEETS : 10

Level	Ground Water Level	Depth to Water in Meter	Thickness of Layer in Meter	Soils encountered	Lab. tested	Number of Samples	Proportion 1/10 Scale to	Type of Sample
							1 1 1 1	
197/12				SECTION 1: SILTY SAND GRAVEL RELINDED TO SAND GRAVEL. S&G SPD 66 No. 1-ONLY IN COLOR.		542		0.2
		1.5		SECTION 2: SAND		543	S.P.T No. 1 15/12, 1.5/12, 1.5/24, 1.5/24, -	0.2
117/12		2.7		SECTION 3: SAND		544	S.P.T No. 2 1.0/20, -,-,-,-	0.2
		3.0		SECTION 4: SAND CLAY GRAVEL RELINDED TO SAND GRAVEL. S&G SPD 700 No. 1-ONLY IN CO.		545	S.P.T No. 3 11/20, -,-,-,-	0.2
		4.0		SECTION 5: SAND		546	S.P.T No. 4 1.5/21, -,-,-,-	0.2
127/12		5.0		SECTION 6: SAND		547	S.P.T No. 5 15/19, 1.5/12, 1.5/21, -	0.2
		6.0	0.1	SECTION 7: SAND TO SILTY SAND SOIL COVERED PROBABLY BY MANGROVE CHARCOAL & BUTTER SHEDS. SPECIES ONLY IN COLOR.		548	-	0.2
137/12		7.0		SECTION 8: SAND		549	-	0.2
		8.0		SECTION 9: SAND TO SILTY SAND SOIL COVERED BY PRINCIPAL MANGROVE OTHER SPECIES INCLUDING BUTTER & CHARCOAL. SPECIES ONLY IN COLOR.		550	-	0.2
		9.0		SECTION 10: SAND		551	-	0.2
147/12		10.0		SECTION 11: SAND		552	-	0.2
		11.0		SECTION 12: SAND		553	-	0.2
157/12		12.0		SECTION 13: SAND TO SILTY SAND COVERED PROBABLY BY MANGROVE CHARCOAL & BUTTER. SPECIES ONLY IN COLOR.		554	-	0.2
		13.0		SECTION 14: SAND		555	-	0.2
		14.0		SECTION 15: SAND		556	-	0.2
167/12		15.0		SECTION 16: SAND		557	-	0.2
		16.0		SECTION 17: SAND		558	-	0.2
		17.0		SECTION 18: SAND TO SILTY SAND. SOIL, COVERED BY MANGROVE AS PRINCIPAL MANGROVE OTHER SPECIES INCLUDING CHARCOAL & BUTTER. SPECIES ONLY IN COLOR.		559	-	0.2
177/12		18.0		SECTION 19: SAND		560	-	0.2
187/12		19.0		SECTION 20: SAND		561	-	0.2
		20.0		SECTION 21: SAND	562	-	0.2	
197/12		21.0		SECTION 22: SAND	563	-	0.2	
		22.0		SECTION 23: SAND	564	-	0.2	
		22.5	19.3					0.2

1-707AR

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

Date	Ground Water Level	Depth to Meter	Thickness of Layer (in Meter)	Soils Encountered	Label Symbol	Thickness Of Berings	Penetration test Blow No.				Type of Sample		
							30	60	90	120			
07/12			0.4	TOP SOIL: SLITY CLAY WITH PEAGLES & CONGLES, L. YELLOW IS COL.		319					D.S		
				DETAILS: SEE BELOW								S.P.T No.1 15/9, 7.5/7, 5/9, 7.5/11, -	
				DETAILS: CLAYTY SAND BEARING GRAVEL MAX. DIA UP TO 75mm SUB-ROUNDED TO SUB-ANGULAR YELLOWISH GREY COL.									REFUSAL
				DETAILS: SLITY SAND BEARING GRAVEL MAX. DIA UP TO 110mm. ROUNDED TO SUB-ROUNDED. L. GREY IN COLOUR.									REFUSAL
09/12		3.0	DETAILS: MEDIUM TO COARSE SAND BEARING PEAGLES, CONGLES & BOLLERS. BOLLER DIA RANGES FROM 150 TO 300mm L. GREY COLOURED.		-DO-					S.P.T No.3 6.5/19, -,-,-,-,-	D.S		
			DETAILS: -DO-									REFUSAL	
09/12		5.0	DETAILS: -DO-		-DO-					S.P.T No.4 9/21, -,-,-,-,-	D.S		
			DETAILS: -DO-									REFUSAL	
10/12	DAY	8.0	GRANITE GNEISS: MEDIUM TO HARD GRANITE GNEISS L. GREY IN COLOUR.		-DO-						D.S		
			GRANITE GNEISS: HARD MASSIVE GRANITE GNEISS L. GREY IN COLOUR.									REFUSAL	
11/12		9.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: -DO-									REFUSAL	
12/12		11.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: MEDIUM TO HARD MASSIVE GRANITE GNEISS GNEISSIC BANDS ARE OF ALIGNED SCHIST.									REFUSAL	
13/12		12.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: -DO-									REFUSAL	
14/12		14.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: -DO-									REFUSAL	
15/12		15.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: HARD MASSIVE GRANITE GNEISS L. GREY IN COLOUR. WITH GNEISSIC BANDS ARE OF ALIGNED SCHIST.									REFUSAL	
16/12		16.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: -DO-									REFUSAL	
16/12		21.0	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: -DO-									REFUSAL	
16/12		21.5	GRANITE GNEISS: -DO-		-DO-						D.S		
			GRANITE GNEISS: -DO-									REFUSAL	

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5B3

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

SITE : BIGHAR/RAHEEM
BRIDGE NO. 3
ROAD CRAFT CO ROUTING NO. 3

ELEVATION	DEPTH (m)	DEPTH (ft)	DEPTH (m)	Soils discovered	Litho. Symbols	Thickness (m)	Termination 17th Nov 1977				Type of Sample	
							1	2	3	4		
04/12	0.0	0.0	0.0	TOP SOIL SLTY CLAY WITH PEBBLES & COARSE L. YELLOW COLOURED DETRITUS; SLTY SAND BEARING GRAVEL & BOLLERS. FEA. DIA UP TO 90.0 mm. YELLOWISH GREY IN COL.	X	0.0						
	0.5	0.5	0.5	DETRITUS; -90-		-00-						
	1.0	1.0	1.0	DETRITUS; -90-		-00-						
	2.0	2.0	2.0	DETRITUS; SLTY SAND BEARING PEBBLES COARSE & BOLLERS. BOUNDED TO SUB-ROUND. FEA. DIA UP TO 50mm L. GREY IN COLOR.		-00-						
	3.0	3.0	3.0	DETRITUS; -90-		-00-						
	4.0	4.0	4.0	DETRITUS; -90-		-00-						
10/12	5.0	5.0	5.0	DETRITUS; COARSE SAND BEARING PEBBLES COARSE & BOLLERS. BOUNDED TO SUB-ANGULAR L. GREY COLOURED.		-00-						
11/12	6.0	6.5	6.5	QUARTZ GRAIN; MEDIUM SAND QUARTZ GRAIN SLIGHTLY WEATHERED. L. GREY COL.		-00-						
	7.0	7.0	7.0	QUARTZ GRAIN; -90-		-00-						
	8.0	8.0	8.0	QUARTZ GRAIN; -90-		-00-						
	9.0	9.0	9.0	QUARTZ GRAIN; HARD MASSIVE FAIRLY COARSE QUARTZ GRAIN QUARTZ GRAIN OR SANDS ARE OF ALTHOUGH SLIGHTLY L. GREY IN COLOR.		-00-						
12/11	10.0	10.0	10.0	QUARTZ GRAIN; -90-		-00-						
	10.5	10.5	10.5	QUARTZ GRAIN; -90-		-00-						
	11.0	11.0	11.0	QUARTZ GRAIN; -90-		-00-						
	12.0	12.0	12.0	QUARTZ GRAIN; HARD MASSIVE QUARTZ GRAIN. L. GREY IN COLOR.		-00-						
14/12	13.0	13.0	13.0	QUARTZ GRAIN; -90-		-00-						
	14.0	14.0	14.0	QUARTZ GRAIN; -90-		-00-						
15/12	15.0	15.0	15.0	QUARTZ GRAIN; -90-		-00-						
	16.0	16.0	16.0	QUARTZ GRAIN; -90-		-00-						
	17.0	17.0	17.0	QUARTZ GRAIN; -90-		-00-						
	18.0	18.0	18.0	HARD MASSIVE QUARTZ GRAIN. L. GREY IN COLOR. ONE WEIR ENCOUNTERED, THICKNESS 22.0-27.0 mm.		-00-						
	19.0	19.0	19.0	QUARTZ GRAIN; -90-		-00-						
	20.0	20.0	20.0	HARD MASSIVE QUARTZ GRAIN. L. GREY IN COLOR.		-00-						
16/12	21.0	21.0	21.0	QUARTZ GRAIN; -90-		-00-						
	22.0	22.0	22.0	QUARTZ GRAIN; -90-		-00-						
17/12	23.0	23.0	23.0	QUARTZ GRAIN; -90-		-00-						
	24.0	24.0	24.0	(HOLE CLOSED)		-00-						

A.C. 11/17/77

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13B1

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

SITE : HAYA GARAI/DIR
BRIDGE NO: 13
BORE CHART OF BORING NO.1

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
							20	40	60	80	
25/11				DETRITUS: COMPOSED OF PEBBLES, COBBLES & BOULDERS IN COARSE SAND. AVE. DIA OF GRAVEL IS 60 mm. MAX DIA OF BOULDERS UPTO 850 mm. L.GREY COLOUR.		560 mm					D.S
		1.0		DETRITUS: -DO-		-DO-					
26/11		1.2		DETRITUS: -DO-							D.S
		2.0		DETRITUS: -DO- LARGE BOULDER ENCOUNTERED (DIA 930 mm (APPROX))		-DO-					
28/11		3.0		DETRITUS: -DO-							D.S
		4.0		DETRITUS: PEBBLES, COBBLES & SMALL BOULDERS IN MEDIUM SAND. ROUNDED TO SUB-ROUNDED. MAX. DIA OF BOULDERS UPTO 500 mm L.GREY IN COLOUR.		-DO-					
29/11		5.0		DETRITUS: -DO-							D.S
		5.7	5.7	GRANITE GNEISS: (SEE BELOW)		-DO-					
30/11		6.0		GRANITE GNEISS: HARD, MASSIVE, COARSE GRAINED GRANITE GNEISS. L.GREY IN COL. SLIGHTLY WEATHERED. BEARS GREEN COL. MINERAL VEINS MAY BE OF CILORITE, EPIDOTE, OR TOURMALINE.							D.S
		7.0		GRANITE GNEISS: -DO-		-DO-					
01/12		8.0		GRANITE GNEISS: HARD, MASSIVE, COARSE GRAINED GNEISS L.GREY IN COLOUR BEARING ABUNDANT GREEN COLOURED MIN. VEINS. MAX. THICKNESS UPTO 2.5 cms.							D.S
		9.0		GRANITE GNEISS: -DO-		-DO-					
02/12		10.0		GRANITE GNEISS: -DO-							D.S
03/12		11.0		GRANITE GNEISS: -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.							D.S
05/12		13.0		GRANITE GNEISS: -DO-							D.S
		13.7	8.0	(HOLE CLOSED)							

Remarks

Date DEC 9, 1992.

Scale: 1:2.5 cm=1.0 m

Geologist Engineer

ASSOPAK
(Consulting Soil Engineers & Geologists)

13B2

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

SITE : DATA ROAD/100
 BAIDAR NO. 11
 ROAD CANTONMENT, BAHAWALPUR

Dist	Elevation Water Level	Depth in Meters	Thickness of Layers in Meters	Soils Encountered	Labor Spreads	Thickness in Meters	Provisions for Tests Per				Type of Sample	
							1	2	3	4		
27/11		1.0		DEBRIS CLAYE SAND WITH FINE CLAY, WEARING FIBRES, COBBLES & BOLD BRS BOUNDED TO SUB-ROUNDER. AVE. DIA OF GRAVEL IS 24 mm. AVE DIA OF BOLDERS IS 50.0 mm	100							P.1
		2.0		DEBRIS -80-	100							
24/11		2.0		DEBRIS; CLAYE SAND WITH FINE SILL WEARING FIBRES COBBLES & BOLDERS BOUNDED TO SUB-ROUNDER AVE. DIA UP TO 450 mm. L. UNIT COLOURED.	100							P.1
		3.0		DEBRIS; -80-	100							
25/11		4.0		DEBRIS; -80-	100							P.1
		5.0		LARGE BOLDERS DIA 800 mm UNCLASSIFIED; DEBRIS; -80-	100							
26/11		6.0	1.5	GRANITE GNEISS; (SEE BELOW)	100							P.1
		7.0		GRANITE GNEISS; HARD, MASSIVE, FAIRLY COARSE GRAINED GNEISS. L. UNIT IN COL. SILTY SAND WEATHERED	100							
27/11		8.0		GRANITE GNEISS; -80-	100							P.1
		9.0		GRANITE GNEISS; HARD, MASSIVE, FAIRLY COARSE GRAINED GNEISS. L. UNIT IN COL. WEARING SANDS CO. W. V. FEEDS (1.5-2.0 mm) IN DETACHMENT	100							
28/11		10.0		GRANITE GNEISS; -80-	100							P.1
		11.0		GRANITE GNEISS; -80-	100							
29/11		12.0		GRANITE GNEISS; HARD MASSIVE, GNEISS L. UNIT IN COLOR WEARING SANDS COLOURED. GENERAL FEELS.	100							P.1
		13.0		GRANITE GNEISS; -80-	100							
30/11		14.0		GRANITE GNEISS; -80-	100							P.1
		15.0		GRANITE GNEISS; -80-	100							
31/11		16.0		GRANITE GNEISS; -80-	100							P.1
		17.0		GRANITE GNEISS; -80-	100							
32/11		18.0		GRANITE GNEISS; -80-	100							P.1
		19.0		GRANITE GNEISS; -80-	100							
33/11		20.0		GRANITE GNEISS; -80-	100							P.1
		21.0		GRANITE GNEISS; -80-	100							
34/11		22.0	14.5	GRANITE GNEISS; -80-	100							P.1
		23.0		GRANITE GNEISS; -80-	100							

PROBES

PHOTO NO. 11, 177C.

3/2/1973 08:03:00

Geological Engineering

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Consulting Soil Engineers & Contractors

13B3

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

SHEET NO. 13B3/012
SHEET NO. 13
SHEET NO. 13

Date	Ground Water Level	Depth in Meters	Thickness of Layer (in Meters)	Soil Description	Label	Thickness of Sample	Proctor's Jan No. 1				Type of Sample
							20	40	60	80	
03/12		1.0		REDDISH COARSE SAND WITH CLAY, HEAVY FINESS, COARSE & POLY. BEING BELONGED TO SUB-SUBSOIL. AVE. DIA OF GRAVEL IS 50 mm. WHILE THAT OF BALLS IS 70mm.		450					D.F
		1.5		UNSATURATED							
03/12		2.0		REDDISH, SILTY COARSE SAND BEARING FINESS COARSE & BELONGED TO SUB-SUBSOIL. AVE. DIA UP TO 50 mm. L. GREY IN COLOUR. GRANITE GHELLE (SEE BELOW)							D.F
		2.0	3.0	GRANITE GHELLE: HARD MASSIVE COARSE GRAINED GRANITE GHELLE L. GREY IN COLOUR. SLIGHTLY WEATHER.							D.F
03/12		4.0		GRANITE GHELLE:							D.F
		5.0		GRANITE GHELLE: HARD MASSIVE COARSE GRAINED GHELLE L. GREY IN COLOUR.							D.F
05/12		6.0		GRANITE GHELLE:							D.F
		7.0		ONE VEIN ENCOUNTERED THICKNESS 2.0 UP TO 14.5 cm.							D.F
06/12		8.0		HARD, MASSIVE, FAIRLY COARSE GRAINED GHELLE L. GREY IN COL. WITH FEW QZ VEINS.							D.F
		9.0		GRANITE GHELLE:							D.F
07/12		10.0		GRANITE GHELLE:							D.F
		11.0		GRANITE GHELLE: HARD, MASSIVE, FAIRLY COARSE GRAINED GHELLE L. GREY IN COL. BEARING COARSE QZ. FEW VEINS (2.5-3.0 cm) IN THICKNESS							D.F
08/12		12.0		GRANITE GHELLE:							D.F
		13.0		GRANITE GHELLE:							D.F
09/12		14.0		GRANITE GHELLE:							D.F
		15.0		GRANITE GHELLE:							D.F
09/12		16.0		ONE VEIN ENCOUNTERED THICKNESS 8-16 cm. (APPEAR)							D.F
		17.0		GRANITE GHELLE:							D.F
10/12		18.0		HARD MASSIVE, GHELLE L. GREY IN COLOUR BEARING GREEN COLOURED. MINERAL VEINS.							D.F
		19.0		GRANITE GHELLE: HARD MASSIVE COARSE GRAINED GHELLE L. GREY IN COLOUR. BEARING FEW SPHER COLOURED QZ. VEINS. MAY BE COLOURED, SPHERE OR SCORPION. GRANITE GHELLE:							D.F
10/12		20.0		GRANITE GHELLE:							D.F
		21.0		GRANITE GHELLE:							D.F
10/12		22.0		GRANITE GHELLE:							D.F
		23.0	19.2	GRANITE GHELLE:							D.F

Address

Phone No. 12 120

Address No. 12 120

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Geotechnical Engineers

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14B1

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

SITE : RAHAR BACH/BAJOUR.
 BRIDGE NO: 14
 SOFT COPY OF DESIGN NO.1

Date	Ground Water Level	Depth in Meter	Thickness of Layers (in Meter)	Soils Encountered	Labo Symbol	Parameter of Soils	Engineered SPT Blow No				Type of Sample
							20	30	40	50	
05/12		1.0		DETRITUS: SILTY SAND, HEAVY FINESS, COMBLES & BULDERS, ROUNDED TO SUB-ROUNDED. MAX. DIA UP TO 860.0 mm. L-GREY IN COLOUR.	610 mm						D.S
				DETRITUS: -DO-			S.P.T. No.1 no/blows: 15/13, 7.5/8, 7.5/39, 7.5/1, 2/33 REFUSAL				
06/12		2.0		DETRITUS: -DO- MAX. DIA OF BULLDER UP TO 750.0 mm (APPROX).	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.2 no/blows: 7.0/43, -, -, -, - REFUSAL				
07/12		3.0		DETRITUS: -DO-	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.3 no/blows: 1.0/36, -, -, -, - REFUSAL				
		4.0		DETRITUS: -DO-	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.4 no/blows: 12/40, -, -, -, - REFUSAL				
		5.0		DETRITUS: -DO- MAX. DIA OF BULLDER ENCOUNTERED UP- 850.0 mm.	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.5 no/blows: 15/8, 7.5/6, 7.5/8, 2.0/43 REFUSAL				
08/12	1.3	7.0		DETRITUS: FINESS, COMBLES, & BULDERS IN SILTY SAND. ROUNDED TO SUB ROUNDED MAX. DIA OF BULLDERS UP TO 650 mm. L-GREY IN COLOUR.	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.6 no/blows: 9/36, -, -, -, - REFUSAL				
		8.0		DETRITUS: -DO-	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.7 no/blows: 5/41, -, -, -, -, - REFUSAL				
09/12		9.0		DETRITUS: SILTY CLAY HEAVY GRAVEL. ROUNDED TO SUB-ROUNDED, DIA RANGES FROM 20.0-60.0 mm. GREYISH YELLOW IN COLOUR.	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.8 no/blows: 15/12, 7.5/1, 7.5/9, 2.0/43, - REFUSAL				
		10.0		DETRITUS: SILTY CLAY HEAVY GRAVEL. ROUNDED TO SUB-ROUNDED, MAX. DIA RANGES FROM 15.00-45.00 mm. L-YELLOW IN COLOUR.	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.9 no/blows: 15/12, 7.5/12, 1.0/39, - REFUSAL				
10/12		11.0		DETRITUS: SILTY CLAY HEAVY GRAVEL. ROUNDED TO SUB-ROUNDED, MAX. DIA RANGES FROM 15.00-45.00 mm. L-YELLOW IN COLOUR.	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.10 no/blows: 15/8, 7.5/36, 5/36, -, - REFUSAL				
		12.0		DETRITUS: SILTY CLAY HEAVY GRAVEL. ROUNDED TO SUB-ROUNDED, MAX. DIA RANGES FROM 15.00-45.00 mm. L-YELLOW IN COLOUR.	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.11 no/blows: 15/8, 7.5/36, 5/36, -, - REFUSAL				
11/12		14.0		DETRITUS: -DO-	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.12 no/blows: 9/47, -, -, -, - REFUSAL				
		15.0		DETRITUS: -DO-	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.13 no/blows: 15/8, 7.5/6, 6.0/41, -, - REFUSAL				
12/12		16.0		DETRITUS: -DO-	-DO-	-DO-					D.S
				DETRITUS: -DO-			S.P.T. No.14 no/blows: 15/8, 7.5/6, 6.0/41, -, - REFUSAL				
		17.0		DETRITUS: -DO-	-DO-	-DO-					D.S
		18.0	18.0	(SOIL CLOSED)							

A. OPAR

Drawn by

Date DEC 15, 1992.

Scale: 1:500

(Signature)
 Geotechnical Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

14B2

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

SITE : SAHAR BAGH/BAJOUR
BRIDGE NO: 14
BORE CHART OF BORING NO.2

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
							20	40	60	80	
25/11				DETRITUS SILTY SAND, BEARING PEBBLES, COBBLES & BOULDERS, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 850.00 MM. L. GREY IN COLOUR.		450 mm					D.S
		1.0	DETRITUS	-DO-		S.P.T No.1 cms/blows: 15/12,7.5/13,5/41,-,-,-	D.S				
		2.0	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	1.4	3.0	DETRITUS: -DO-	-DO-	S.P.T No.3 cms/blows: 13/43,-,-,-,- REFUSAL	D.S					
27/11		4.0	DETRITUS: -DO- BOULDER ENCOUNTERED WITH A DIA OF 1050.0 MM (APPROX).	-DO-	S.P.T No.4 cms/blows: 15/12,7.5/13,7.5/14, 3/41,-,- REFUSAL	D.S					
5.0		DETRITUS: -DO-	-DO-	S.P.T No.5 cms/blows: 12/47,-,-,-,- REFUSAL	D.S						
28/11		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					
		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					
29/11		9.0	DETRITUS: -DO-	-DO-		D.S					
		10.0	DETRITUS: -DO-	-DO-	S.P.T No.8 cms/blows: 15/9,7.5/12,7.5/5,3/38 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					
		13.8	(HOLE CLOSED)								

Remarks

ASSOPAK

Date DEC 06, 1987.

Scale: 2.5 cm=1.0 m


Geologist Engineer

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

Date	Current Water Level	Depth in Meter	Thickness of Layers (in Meters)	Soils Investigated	Litho Symbol	Diameter Of Sample	Frictionless (in blow) No.				Type of Sample
							20	40	60	80	
27/11		1.0		DETRITUS: SILTY SAND BEARING PEBBLES, CORRUS & BOLLERS, ROUNDED TO SUB-ROUNDED. MAX. DIA OF BOLLERS UPTO 800.00 MM. L. GREY IN COLOUR.		475					D.S
				DETRITUS: -DO-			-DO-	S.P.T No.1 no/blows: 15/6,7,5/13,7,5/42,-,-,-		D.S	
	1.2	2.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.2 no/blows: 2,37,-,-,-,-,-		D.S	
28/11		3.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.3 no/blows: 13,5/43,-,-,-,-,-		D.S	
29/11		5.0		DETRITUS: SILTY CLAYEY SAND BEARING PEB- LES CORRUS & BOLLERS, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 350MM YELLOWISH GREY IN CO.		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.4 no/blows: 15/12,7,5/8,7,5/34,-,-,-		D.S	
		6.0		DETRITUS: SILTY CLAY BEARING PEBBLES, CORRUS & BOLLERS ROUNDED TO SUB-ROUNDED. MAX. DIA OF BOLLERS UPTO 350MM L. YELLOW IN CO.		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.5 no/blows: 15/29,4/46,-,-,-,-,-		D.S	
30/11		7.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 75 MM L. YELLOW IN COLOUR.		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.6 no/blows: 3,5/36,-,-,-,-,-		D.S	
31/11		10.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.7 no/blows: 7/43,-,-,-,-,-		D.S	
01/12		11.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED. MAX. DIA UPTO 60.00 MM L. GREY IN COLOUR		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.8 no/blows: 15/11,7,5/6,2/42,-,-,-		D.S	
		14.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.9 no/blows: 1/36,-,-,-,-,-		D.S	
02/12		15.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.10 no/blows: 1/36,-,-,-,-,-		D.S	
		16.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.11 no/blows: 1/36,-,-,-,-,-		D.S	
		17.0		DETRITUS: -DO-		-DO-	REFUSAL				D.S
				DETRITUS: -DO-			-DO-	S.P.T No.12 no/blows: 1/36,-,-,-,-,-		D.S	
		17.4	17.4	(BORE CLOSED)							

ASSOPAK

8000700

Date DEC 04, 1992.

Scale: 1:2.5 cm=1.0 m

Geologist Engineer

ASSOPAK

(Incorporating Soil Investigation & Construction)

14B4

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

SITE : SAHAN BASHIRAJOUS,
BRIDGE NO: 14
BORE CREST OF BORING NO. 4

Date	Ground Water Level	Depth to Meter	Thickness of Layers in Meter	Soils Encountered	Labor System	Diameter of Boring	Penetration Test Data for				Type of Sample		
							20	40	60	80			
09/11				TOP SOIL: SILTY CLAY, RICH IN MARLS, BEARING FIBRES & COBBLES ROUNDED TO SUB-ROUNDED, MAX. DIA UP TO 70.0 mm YELLOWISH BROWN IN COLOUR. SOFT COHESIVE SOIL, TOP SOIL.		450 mm						D.S	
		1.4	1.4	DETRITUS: COMPOSED OF FINE COB- BLES, ROUNDED TO SUB-RO- UNDED IN SILTY CLAY MAX. DIA UP TO 500 mm. GR., YELLOWISH BROWN DETRITUS.		-20-							D.S
		2.0		MAX. DIA OF BOLLERS ENCOUNTERED 1050 mm.		-20-							D.S
09/11		3.0		DETRITUS: SILTY CLAY BEARING FIBRES, COBBLES & BOLLERS, ROUNDED TO SUB-ROUNDED, MAX. DIA UP TO 400mm L. YELLOW IN COLOUR.		-20-							D.S
		4.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED, MAX. DIA UP TO 35.0 mm L. YELLOW IN COLOUR.		-20-							D.S
08/12		5.0		DETRITUS: -20-		-20-							D.S
		6.0		MAX. DIA UP TO 45.00 mm.		-20-							D.S
		6.0		DETRITUS: SILTY CLAY BEARING GRAVEL, & BOLLERS, ROUNDED TO SUB- ROUNDED, MAX. DIA UP TO 55.0 mm L. YELLOW IN COLOUR.		-20-							D.S
09/12		7.0		DETRITUS: -20-		-20-							D.S
		8.0		MAX. DIA OF BOLLER UP TO 800mm		-20-							D.S
		9.0		DETRITUS: SILTY CLAY BEARING GRAVEL, ROUNDED TO SUB-ROUNDED, DIA RANGES FROM 15.0-35.0 mm L. YELLOW IN COLOUR.		-20-							D.S
		9.0		DETRITUS: -20-		-20-							D.S
10/12		10.0		DETRITUS: -20-		-20-							D.S
		11.0		DETRITUS: -20-		-20-							D.S
		11.0		DETRITUS: -20-		-20-							D.S
		12.0		DETRITUS: SILTY CLAY BEARING SMALL GRAVEL (UP TO 30.0 mm), ROUNDED TO SUB- ROUNDED WITH L. BOLLERS (UP TO 800 mm L. YELLOW COLOURED.		-20-							D.S
11/12		13.0		DETRITUS: -20-		-20-							D.S
		14.0		DETRITUS: -20-		-20-							D.S
		14.0		DETRITUS: -20-		-20-							D.S
12/12		15.0		DETRITUS: -20-		-20-							D.S
		16.0		DETRITUS: SILTY CLAY BEARING SMALL GRAVEL, ROUNDED TO SUB-ROUNDED DIA 60 mm L. YELLOW IN COLOUR.		-20-							D.S
		17.0		DETRITUS: -20-		-20-							D.S
		18.0		DETRITUS: SILTY CLAY BEARING SMALL GRAVEL, ROUNDED TO SUB-ROUNDED DIA RANGES FROM 15.0-45.0 mm WITH SOME BOLLERS, L. YELLOW IN CO.		-20-							D.S
13/12		19.0		DETRITUS: -20-		-20-							D.S
		20.0		DETRITUS: -20-		-20-							D.S
		21.0		MAX. DIA OF BOLLERS UP TO 600mm		-20-							D.S
		21.0		DETRITUS: -20-		-20-							D.S
		22.0	22.1	(WELL CLOSED)		-20-							D.S

Assopak

Date: DEC 13, 1992.

Scale: 1:5000

Geological Engineer

ASSOPAK
Consulting Soil Engineers & Contractors

15B1

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

SITE : MARIAL/PMAT
BRIDGE NO: 15
BORE CROWN OF BORING NO.1

Elev. (m)	Ground Water Level	Depth (m)	Thickness of Layers (m)	Soil Characteristics	Lab. Sample	Character of Material	Penetration Test (mm/sec)				Type of Sample	
							20	50	100	300		
09/10				TOP SOIL: SANDY SILTY CLAY, WITH NUMEROUS FINE, YELLOW IN COLOR, WEARING FEMULES & COBBLES (25-110 mm), ROUNDED TO SUB-ROUNDED.		342						D.S
		1.0		TOP SOIL: -DO-		-DO-						D.S
		2.0		TOP SOIL: -DO-		-DO-						D.S
		2.4	2.0	DETRITUS: FEMULES, COBBLES & BOLLERS IN SANDY SILTY CLAY, DIA RANGE FROM 350-750 mm.		-DO-						D.S
09/10		3.0		DETRITUS: -DO-		-DO-						D.S
		4.0		DETRITUS: -DO-		-DO-						D.S
09/10		5.0		DETRITUS: FEMULES, COBBLES & BOLLERS WITH DIA RANGE FROM 550-750 mm, WELL ROUNDED TO SUB-ROUNDED IN SANDY SILTY CLAY.		-DO-						D.S
09/10		6.0		DETRITUS: -DO-		-DO-						D.S
		7.0		COMPOSED OF FEMULES, COBBLES & BOLLERS IN SANDY SILTY CLAY, BOLLERS DIA RANGES FROM 550-800 mm.		-DO-						D.S
09/10		7.5		DETRITUS: FEMULES, COBBLES IN SANDY SILTY CLAY, BOLLERS ARE COMPOSED OF GRANITE WITH DIA RANGES FROM 400-950 mm.		-DO-						D.S
		8.0		DETRITUS: -DO-		-DO-						D.S
		9.0		DETRITUS: -DO-		-DO-						D.S
09/10		10.0		DETRITUS: FEMULES, COBBLES IN SILTY SANDY CLAY, CLAY CONTENT IS MINOR. FEMULES ARE ROUNDED TO SUB-ROUNDED COLOURED L. GREY.		-DO-						D.S
		11.0		DETRITUS: -DO-		-DO-						D.S
		12.0		DETRITUS: SOME GRANITIC BOLLERS ENCOUNTERED (250-320 mm)		-DO-						D.S
13/10		13.0		DETRITUS: FEMULES, COBBLES & BOLLERS IN SILTY SAND AVERAGE DIA OF BOLLERS IS ABOUT 450 mm L. GREY COLOURED.		-DO-						D.S
		13.0		DETRITUS: -DO-		-DO-						C.S & W.S
13/10		13.7	11.5	GRANITE GEMS/PEC. 50% See Also		-DO-						C.S & W.S
		14.0		GRANITE GEMS: HARD, MASSIVE, COARSE GRAINED, WHITER GREY IN COLOR, RECOVERY: 76%		-DO-						C.S & W.S
15/10		15.0		GRANITE GEMS: -DO-		-DO-						C.S & W.S
		15.3	1.6	DETRITUS: FEMULES, COBBLES IN CLAY SAND, NO BOLLERS.		-DO-						C.S & W.S
		16.0	0.7	GRANITE GEMS: HARD, MASSIVE, COARSE GRAINED, WHITER GREY IN COLOR, RECOVERY: 64%		-DO-						C.S & W.S
18/10		17.0		GRANITE GEMS: -DO-		-DO-						C.S & W.S
		17.0		RECOVERY: 48%		-DO-						C.S & W.S
		17.0	2.0	(BORE CLOSED)		-DO-						C.S & W.S

ASSOPAK

Remarks

Date OCT 23, 1982.

Scale: 2.5 cm=1.0 m

AS
Geologist Engineer

ASSOPAK

Consulting And Engineers & Contractors

15B2

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

SITE: KARBALA/AGAY
 BRIDGE NO. 15
 RIGHT BANK OF SOAN RIVER NO. 3

Depth (m)	Water Level (m)	Elevation (m)	Soil Description	Lab. No.	Penetration Test Results				Type of Sample
					20	40	60	80	
10.15			TOP SOIL: SANDY CLAY, BROWN RICH YELLOWISH GREY TO OLIVE, SPREADING FIBRES & COMBES (12-25 mm), SUB-ANGULAR TO SUB-ANGLED	910					P.F.
1.5		1.5	TOP SOIL: SD DETRITUS: COMPOSED OF PERLES & COMBES WITH SMALL BOLLERS IN SANDY SILT, BOUNDED TO SUB-ROUNDED, L. GREY TO OLIVE, DETRITUS.	-80	S.P.T. No. 1 044/10001 1577.7.5/6, 1.5/6, 1.5/6, 1.5/6				P.F.
		2.0	-80	-80	S.P.T. No. 2 044/10001 9748.7.7/7				P.F.
		3.0	DETRITUS: -80	-80	REFUSAL				P.F.
12.54		4.0	LARGE BOLLER ENCLINED PKV. DIA 1050.0 mm. DETRITUS: -80	-80	S.P.T. No. 4 REFUSAL				P.F.
		5.0	DETRITUS: PERLES, COMBES & BOLLERS WITH DIA RANGE FROM 550-750 mm. BELL BOUNDED TO SUB-ROUNDED IN SANDY SILT.	-80	S.P.T. No. 5 REFUSAL				P.F.
22.710		6.0	DETRITUS: COMPOSED OF PERLES, COMBES & BOLLERS IN SANDY SILT. BOLLER DIA RANGE FROM 550-800 mm.	-80	S.P.T. No. 6 REFUSAL				P.F.
		7.0	DETRITUS: -80	-80	S.P.T. No. 7 044/10001 1576.7.5/6, 1.5/6, 1.5/6				P.F.
23.710		8.0	DETRITUS: -80	-80	REFUSAL S.P.T. No. 8 REFUSAL				P.F.
		9.0	DETRITUS: PERLES, COMBES IN SANDY SILT. BOLLERS ARE COMPOSED OF GRANITE WITH DIA RANGE FROM 300-350 mm.	-80	S.P.T. No. 9 044/10001 1576.7.5/6, 1.5/6, 1.5/6				P.F.
		10.0	DETRITUS: -80	-80	REFUSAL S.P.T. No. 10 044/10001 1573.7/70				P.F.
		11.0	DETRITUS: SD SOME GRANITE BOLLERS ENCLINED (250-300 mm)	-80	S.P.T. No. 11 044/10001 1573.7.5/6, 1.5/6, 1.5/6				P.F.
		11.4	GRANITE GRIEL: (SEE BELOW)	71	REFUSAL				C.F.
24.0		12.0	GRANITE GRIEL: HARD, MASSIVE, FAIRLY COARSE GRAINED GRANITE GRIEL, WHITISH GREY TO OLIVE. TOP SURFACE SLIGHTLY WEATHERED, L. GREY CO.	-80					C.F. 4 P.F.
		13.0	GRANITE GRIEL: -80	-80					C.F. 4 P.F.
		14.0	GRANITE GRIEL: HARD, MASSIVE, COARSE GRAINED. WHITISH GREY TO OLIVE. RECOVERY: 54%	-80					C.F. 4 P.F.
25.710		15.0	GRANITE GRIEL: -80	-80					C.F. 4 P.F.
		16.0	RECOVERY: 57% GRANITE GRIEL: HARD, MASSIVE, COARSE GRAINED. WHITISH GREY TO OLIVE.	-80					C.F. 4 P.F.
26.710		17.0	RECOVERY: 61% GRANITE GRIEL: -80	-80					C.F. 4 P.F.
		18.0	RECOVERY: 64% GRANITE GRIEL: -80	-80					C.F. 4 P.F.
27.710		19.0	GRANITE GRIEL: -80	-80					C.F. 4 P.F.
		20.0	GRANITE GRIEL: -80	-80					C.F. 4 P.F.
28.710		21.0	OTE WITH ENCLINED PERLES UP TO 25 mm. GRANITE GRIEL: -80	-80					C.F. 4 P.F.
		22.0	(POLE CLOSED)						

ASSOPAK

Sheet 15

DATE: OCT 26, 1977.

Scale: 1:5000

Geotechnical Engineering

CLIENT: JICA HASIC INSKIN STUDY TEAM
FOR BRIDGES IN N.W.F.P PAKISTAN

Litho Water Level	Depth in Meter	Thickness of Layer (in Meter)	Soils Encountered	Labor Symbol	Thickness Of Boring	Penetration (cm blow Sp.)				Type of Sample	
						20	40	60	80		
7/10			DETRITUS PEBBLES, COBBLES & BOULDERS, DIA RANGES FROM 300-450 mm. IN SANDY SILTY CLAY.		111 mm					S.P.T No.1	D.S
	1.0		DETRITUS -DO-		-DO-					REFUSAL	D.S
09/10	2.0		DETRITUS -DO- MAX DIA OF BOULDER UPTO 850.0 mm.		-DO-					S.P.T No.2	D.S
	3.0		DETRITUS -DO-		-DO-					S.P.T No.3	D.S
	4.0		DETRITUS -DO-		-DO-				15/17, 7.3/13, -,-,-,-	REFUSAL	D.S
	5.0		DETRITUS -DO- MAX DIA OF BOULDERS UPTO 550.0 mm.		-DO-					S.P.T No.4	D.S
11/10	6.0		DETRITUS -DO-		-DO-					REFUSAL	D.S
	7.0		DETRITUS -DO- BOULDERS (250-900 mm) IN GRAVELLIFEROUS MUDSIX COMPOSED OF SANDY SILTY CLAY.		-DO-					S.P.T No.5	D.S
	8.0		DETRITUS -DO-		-DO-					REFUSAL	D.S
	9.0		DETRITUS -DO-		-DO-					S.P.T No.6	D.S
12/10	10.0		DETRITUS -DO- BOULDERS (250-900 mm) IN GRAVELLIFEROUS MUDSIX COMPOSED OF SANDY SILTY CLAY.		-DO-					S.P.T No.7	D.S
	11.0		DETRITUS -DO-		-DO-				mm/blow: 7.0/13, -,-,-,-	REFUSAL	D.S
	12.0		DETRITUS -DO-		-DO-					S.P.T No.8	D.S
	13.0		DETRITUS PEBBLES, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 250-350 mm.		-DO-					REFUSAL	D.S
	14.0		DETRITUS PEBBLES, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 250-350 mm.		-DO-					S.P.T No.9	D.S
13/10	15.0		DETRITUS -DO-		-DO-					REFUSAL	D.S
	16.0		DETRITUS -DO-		-DO-					S.P.T No.10	D.S
	17.0		DETRITUS -DO-		-DO-					REFUSAL	D.S
	18.0		DETRITUS -DO-		-DO-					S.P.T No.11	D.S
13/10	19.0		DETRITUS -DO-		-DO-					REFUSAL	D.S
14/10	20.0		DETRITUS -DO- BOULDERS, DIA RANGES FROM 250- 750 mm IN GRAVELLIFEROUS MUDSIX COMPOSED OF CLAYEY SAND.		-DO-					S.P.T No.12	D.S
18/10	21.0		DETRITUS -DO-		-DO-					REFUSAL	C.S & W.C
	22.0		DETRITUS -DO-		-DO-					S.P.T No.13	C.S & W.C
	23.0		DETRITUS -DO-		-DO-					REFUSAL	C.S & W.C
	24.0		DETRITUS -DO-		-DO-					S.P.T No.14	C.S & W.C
	25.0		DETRITUS -DO-		-DO-					REFUSAL	C.S & W.C
	26.0	16.7	GRANITE (SEE BELOW) GRANITE FAND, PASSIVE, COARSE GRAINED WHITISH GREY IN COLOUR. RECOVERY: 50%		-DO-						C.S & W.C
19/10	27.0	1.1	DETRITUS (SEE BELOW) DETRITUS PEBBLES, COBBLES IN CLAYEY SAND FINE MUDSIX WASHED OUT.		-DO-						C.S & W.C
	28.0	0.9	GRANITE GNEISS (SEE BELOW)		-DO-						C.S & W.C
20/10	29.0		GRANITE GNEISS FAND, PASSIVE, COARSE GRAINED, WHITISH GREY IN COLOUR. RECOVERY: 40%		-DO-						C.S & W.C
	30.0		GRANITE GNEISS FAND, PASSIVE, COARSE, GRAINED, WHITISH, GREY IN COLOUR. RECOVERY: 76%		-DO-						C.S & W.C
	31.0	2.5	GRANITE -DO-		-DO-						C.S & W.C
	32.0		(HOLE CLOSED)		-DO-						

Remarks

ASSOPAK

Date OCT 23, 1992.

Scale: 1:5000

Geological Engineer

15B4

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

SITE : HAKHAL/SMT
BRIDGE NO: 15
SOLE CHART OF BORING NO. 4

Time	Ground Water Level	Depth to Water (m)	Thickness of Layer (m)	Strata Encountered	Type Symbol	Diameter of Boring	Penetration Test Data (mm)				Types of Sample
							30	60	90	120	
23/10			1.0	DETACHED SANDY SILTY CLAY BEARING PERMAS, COBBLES & BOULDERS, DIA RANGES FROM 400-600 mm. L. YELLOW COLOUR.	0	650 mm					D.S
				DETACHED -DO-		-DO-				S.P.T No. 1	D.S
			2.0	DETACHED -DO- MAX DIA OF BOULDER UP TO 950.0 mm.		-DO-				S.P.T No. 2 mm/blows: 13/9, 7.5/6, 2/41, -,-,-	D.S
23/10			3.0	DETACHED -DO-		-DO-				S.P.T No. 3 mm/blows: 15/9, 7.5/8, -,-,-	D.S
24/10			4.0	DETACHED -DO-		-DO-				S.P.T No. 4	D.S
			5.0	DETACHED -DO- MAX DIA OF BOULDERS UP TO 700.0 mm.		-DO-				S.P.T No. 5	D.S
			6.0	DETACHED -DO-		-DO-				S.P.T No. 6 mm/blows: 9/39, -,-,-,-	D.S
			7.0	DETACHED PERMAS, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 350-450 mm.		-DO-				S.P.T No. 7 mm/blows: 15/9, 7.5/6, 5/39, -,-	D.S
25/10			8.0	DETACHED -DO-		-DO-				S.P.T No. 8	D.S
			9.0	DETACHED -DO-		-DO-				S.P.T No. 9	D.S
			10.0	DETACHED PERMAS, COBBLES & BOULDERS IN SANDY SILTY CLAY. BOULDER DIA RANGES FROM 250-750 mm.		-DO-				S.P.T No. 10	D.S
26/10			11.0	DETACHED -DO-		-DO-				S.P.T No. 11	D.S
			12.0	BOULDERS, DIA RANGES FROM 250-750 mm IN GRAVELLIFEROUS MATRIX COMPOSED OF CLAYEY SAND.		-DO-				S.P.T No. 12	D.S
			13.0	DETACHED -DO-		-DO-				S.P.T No. 13	D.S
			14.0	LARGE BOULDER ENCOUNTERED DIA UP TO 1150.0 mm.		-DO-				S.P.T No. 14	D.S
			15.0	DETACHED -DO-		-DO-				S.P.T No. 15	D.S
			15.8	GRANITE GNEISS (SEE BELOW)		76 mm				REFUSAL	N.C
27/10	13.9		16.0	GRANITE GNEISS HARD MASSIVE COARSE GRAINED, WEARING OFF YELLOW, WHITISH GREY IN COLOUR.		-DO-					C.S & N.C
			17.0	GRANITE GNEISS -DO-		-DO-					C.S & N.C
			18.0	GRANITE GNEISS HARD, MASSIVE, COARSE GRAINED, WHITISH, GREY IN COLOUR. RECOVERY: 86%		-DO-					C.S & N.C
28/10			19.0	GRANITE GNEISS -DO-		-DO-					C.S & N.C
			20.0	GRANITE GNEISS -DO-		-DO-					C.S & N.C
			21.0	GRANITE GNEISS -DO-		-DO-					C.S & N.C
			21.0	(SOLE CLOSED)							

Remarks
Date OCT 29, 1972.

Scale: 1:500

ASSOPAK
Geologist Engineer

ASSOPAK
Consulting Soil Engineers & Contractors

16B1

SITE : KEDAH/SNAT
BRIDGE No: 16
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)	Soils Encountered	Soil Symbols	Diameter Of Boring	Penetration Test Blow No.				Types of Sample
							20	40	60	80	
01/10		0.5	0.5	TOP SOIL: SANDY SILTY CLAY, WITH SMALL PEBBLES. L. YELLOW IN COLOUR. DETRITUS: COMPOSED OF COBBLES & Boulders (110.0-480 mm.)		430 mm					D.S
		1.0		DETRITUS: -DO-			S.P.T No.1 cm/blows: 7.5/42,-,-,-,- REFUSAL	D.S			
02/10		2.0		DETRITUS: PEBBLES, COBBLES & Boulders AVERAGE DIA RANGES FROM 350-850 mm IN SILTY CLAY.		-DO-					D.S
		3.0		DETRITUS: -DO-			S.P.T No.2 cm/blows: 13/47,-,-,-,- REFUSAL	D.S			
		4.0		DETRITUS: -DO-			S.P.T No.3 cm/blows: 15/9, 7.5/10, 7.5/13, 5.0/47,- REFUSAL	D.S			
06/10	5.2	5.0		DETRITUS: -DO- AVERAGE DIA OF Boulders RANGES FROM 300-750 mm.		-DO-					D.S
		6.0		DETRITUS: PEBBLES, COBBLES & Boulders IN SILTY SAND MAX. DIA UP TO 850mm LIGHT GREY COLOURED.			S.P.T No.4 cm/blows: 15/19, 4.0/21,-,-,- REFUSAL	D.S			
10/10		7.0		DETRITUS: -DO-		-DO-					D.S
11/10		8.0		DETRITUS: COBBLES, Boulders (250-600mm) IN SILTY SAND.			S.P.T No.5 cm/blows: - REFUSAL	D.S			
13/10		9.0	8.5	GRANITE GNEISS: HARD, MASSIVE, COARSE, GRANIED, WHITISH GREY IN COLOUR.		74 mm					N.S & C.S
		9.7 10.0	0.7	DETRITUS: (SEE BELOW) DETRITUS: PEBBLES, IN COARSE SAND. WASH SAMPLE COLLECTED.			-DO-			N.S	
14/10		10.2 11.0	1.1	GRANITE: (SEE BELOW) GRANITE GNEISS: HARD, MASSIVE, COARSE GRANIED.		-DO-					N.S & C.S
		11.7	0.9	DETRITUS: COARSE SAND WITH SMALL PEBBLES.			-DO-			N.S & C.S	
15/10		12.0	0.3	GRANITE GNEISS: HARD, MASSIVE, COARSE GRANIED, WHITISH GREY IN COLOUR. RECOVERY: 72%		-DO-					N.S & C.S
19/10		13.0		GRANITE GNEISS: -DO-			-DO-				
		13.5	1.5	(HOLE CLOSED)							

Remarks

ASSOPAK

Date OCT 25, 1992.

Scale: 2.5 cm=1.0 m

Geologist Engineer:

ASSOPAK
Geotechnical Soil Engineers & Contractors

16B2

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

SITE : KEDAH/SWAT
BRIDGE NO: 1A
BORE CHART OF BORING NO. 3

Date	Ground Water Level	Depth in Meter	Thickness of Layer (in Meter)	Soils Encountered	Lab. Source	Diameter of Boring (mm)	Penetration Test (Blows per 30 cm)				Type of Sample
							20	40	60	80	
27/10		1.0		SILTY CLAYEY SAND; COARSE SAND BEARING PEBBLES, DIA RANGES FROM 2.0-4.0 mm. SOME COMBLES ARE ALSO ENCOUNTERED. DIA RANGES FROM 10.0-110 mm.		650					D.S
		2.0		DETRITUS: SILTY CLAYEY SAND, BEARING PEBBLES. SOME BOLLERS OCCASIONALLY ENCOUNTERED.		-00					D.S
05/10		3.0		REFUSAL: -00-		-00					D.S
		4.0		DETRITUS: -00-		-00					D.S
06/10		5.0		DETRITUS: -00-		-00					D.S
		6.0		DETRITUS: SILTY SAND BEARING PEBBLES, & COMBLES. ROUNDED TO SUB-ANGULAR SIZES. DIA MEASURED 75.0 mm.		-00					D.S
10/10		7.0		DETRITUS: -00-		-00					D.S
		8.0		DETRITUS: -00-		-00					D.S
12/10		9.0		DETRITUS: COMPOSED OF PEBBLES, COMBLES & BOLLERS (220-350 mm). IN COARSE SAND. WASH SAMPLE COLLECTED. RECOVERY: 75		-00					C.S & N.S
		10.0		DETRITUS: -00-		-00					C.S & N.S
14/10		11.0		RECOVERY: 11%		-00					C.S & N.S
		12.0		DETRITUS: -00-		-00					C.S & N.S
15/10		13.0		DETRITUS: SILTY SAND BEARING PEBBLES COMBLES & BOLLERS ROUNDED TO SUB-ANGULAR SIZES DIA UP TO 150mm		-00					C.S & N.S
		14.0		DETRITUS: -00-		-00					N.S
19/10		15.3	14.3	DETRITUS: -00-		-00					C.S & N.S
		15.3		GRANITE GNEISS; HARD MASSIVE COARSE GRAINED GNEISS WHITISH GREY IN COLOUR. RECOVERY: 62%		-00					C.S & N.S
19/10		15.3	1.4	GRANITE GNEISS: -00-		-00					N.S
		16.0		DETRITUS: SMALL PEBBLES IN COARSE SAND. WASH SAMPLE COLLECTED.		-00					N.S
20/10		16.0	1.3	DETRITUS: -00-		-00					N.S
		17.0		GRANITE GNEISS; (SEE BLOW) GRANITE GNEISS; HARD, MASSIVE, COARSE GRAINED WHITISH GREY IN COLOUR. RECOVERY: 60%		-00					C.S & N.S
19/10		18.0		GRANITE GNEISS; RECOVERY: 75%		-00					C.S & N.S
		18.4	3.8	(HOLE CLOSED)		-00					

A. H. KAR

Remarks

Date OCT 26, 1992.

Scale: 2.5 cm=1.0 m

Geologist Engineer

ASSOPAK

Consulting Soil Engineers & Contractors

17B1

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

SITE : BALLE PPT/BOBES
BRIDGE NO: 17
BORE CREST OF BORE NO: 1

LAYER	LAYER NO.	LAYER DEPTH (m)	LAYER THICKNESS (m)	Soil Description	Liquor Index	Flow Index	Penetration (1st 20 mm)				Type of Sample
							20	40	60	80	
10/1	1.0	1.0	1.0	DETAILED: SILTY SAND, HARDING FIBRES, CURBLES & BOLLERS, WELL BOUNDED TO SUB-CORDED. MAX. DIA UP TO 250 mm. L. GREY IN COLLAR. 50.0% FOLLOWING GREY IN COLLAR.	100	-	S.P.T. No. 1	15/27, 7.5/31, 1.0/40	0.2	REFUSAL	
				DETAILED: -	100	-	S.P.T. No. 2	2.0/45	0.2		
				MAX. DIA OF BOLLERS (50.0 mm)	100	-	S.P.T. No. 3	0.0/43	0.2		
11/1	2.0	2.0	2.0	DETAILED: COPPER SAND HARDING ALUMINUM FIBRES, CURBLES & BOLLERS, WELL BOUNDED TO SUB-CORDED MAX. DIA UP TO 250 mm. L. GREY IN COLLAR.	100	-	S.P.T. No. 4	15/29, 7.5/38, 1.0/41	0.2	REFUSAL	
				DETAILED: -	100	-	S.P.T. No. 5	3.0/43	0.2		
12/1	3.0	3.0	3.0	DETAILED: AN EXCEPTIONALLY LARGE BOLLER (OF DIA 250 mm. UNACCOUNTED, UNPAID).	100	-	S.P.T. No. 6	15/28, 7.5/32, 7.5/32, 7.5/32	0.2	REFUSAL	
				DETAILED: -	100	-	S.P.T. No. 7	7.5/4	0.2		
13/1	5.0	5.0	5.0	SILTY CLAY (SEE BELOW)	100	-	S.P.T. No. 8	15/28, 7.5/32, 7.5/32, 7.5/32	0.2	REFUSAL	
				SILTY CLAY	100	-	S.P.T. No. 9	7.5/4	0.2		
				NECESSARILY IMPURIFIED CLAY WITH RICH SILTY CONTENT. L. YELLOW IN COLLAR.	100	-	S.P.T. No. 10	15/28, 7.5/32, 7.5/32, 7.5/32	0.2		
14/1	10.0	10.0	10.0	SILTY CLAY	100	-	S.P.T. No. 11	15/28, 7.5/32, 7.5/32, 7.5/32	0.2	REFUSAL	
				SILTY CLAY	100	-	S.P.T. No. 12	7.5/4	0.2		
				NECESSARILY IMPURIFIED CLAY WITH RICH SILTY CONTENT. L. YELLOW IN COLLAR. WITH INTER-SPACED WITH LAYERS (1.0-3.0mm) OF CLAYEY SAND.	100	-	S.P.T. No. 13	15/28, 7.5/32, 7.5/32, 7.5/32	0.2		
15/1	12.0	12.0	12.0	SILTY CLAY	100	-	S.P.T. No. 14	15/28, 7.5/32, 7.5/32, 7.5/32	0.2	REFUSAL	
				SILTY CLAY	100	-	S.P.T. No. 15	7.5/4	0.2		
				NECESSARILY IMPURIFIED CLAY WITH RICH SILTY CONTENT. L. YELLOW IN COLLAR. WITH INTER-SPACED WITH LAYERS OF CLAYEY SAND ARE PRESENT.	100	-	S.P.T. No. 16	15/28, 7.5/32, 7.5/32, 7.5/32	0.2		
16/1	13.0	13.0	13.0	SILTY CLAY	100	-	S.P.T. No. 17	15/28, 7.5/32, 7.5/32, 7.5/32	0.2	REFUSAL	
				SILTY CLAY	100	-	S.P.T. No. 18	7.5/4	0.2		
				DETAILED: COPPER SAND HARDING FIBRES, CURBLES & BOLLERS, WELL BOUNDED TO SUB-CORDED. MAX. DIA 250 mm. L. GREY IN COLLAR.	100	-	S.P.T. No. 19	15/28, 7.5/32, 6.0/38	0.2		
17/1	17.0	17.0	17.0	DETAILED: -	100	-	S.P.T. No. 20	12.0/45	0.2	REFUSAL	
				DETAILED: -	100	-	S.P.T. No. 21	15/28, 7.5/32, 2.0/41	0.2		
				DETAILED: -	100	-	S.P.T. No. 22	0.0/43	0.2		
18/1	20.0	20.0	20.0	DETAILED: SILTY SAND HARDING FIBRES, CURBLES & BOLLERS, WELL BOUNDED TO SUB-CORDED. MAX. DIA 250 mm. L. GREY IN COLLAR.	100	-	S.P.T. No. 23	15/28, 7.5/32, 2.0/41	0.2	REFUSAL	
				DETAILED: -	100	-	S.P.T. No. 24	0.0/43	0.2		
				DETAILED: -	100	-	S.P.T. No. 25	2.0/39	0.2		
19/1	20.5	20.5	20.5	LARGE BOLLERS OF GRANITIC COMPOSITION, UNACCOUNTED.	100	-	S.P.T. No. 26	0.0/43	0.2	REFUSAL	
				DETAILED: -	100	-	S.P.T. No. 27	2.0/39	0.2		
				(HOLE CLOSED)							

NUMBER

DATE NOV 28, 1972.

ASSOPAK CONSULTANTS

ENGINEERING EQUIPMENT

ASSOPAK

Consulting Soil Engineers & Contractors

17B2

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

SITE : KALIE PUNJWER
BRIDGE No: 17
BORE CHART OF BORING NO.2

Date	Ground Water Level	Depth in Meter	Thickness of Layer (in Meter)	Soils Encountered	Litho Symbol	Diameter of Boring	Penetration Test No				Type of Sample			
							1	2	3	4				
20/11	0.2	1.0		DEBRITUS; SLITY SAND, BEARING PEBBLES, CORNLES & BOLLERS, WELL ROUNDED TO SUB-ROUNDED. MAX. DIA UP TO 450 MM. L. GREY IN COLOUR.		650 mm					D.S			
									S.P.T. No.1 con/blows: 15/12, 7.5/41, -, -, -	D.S				
21/11		2.0		DEBRITUS; COARSE SAND BEARING PEBBLES, CORNLES & BOLLERS, WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 350mm. L. GREY IN COLOUR.		-					D.S			
									S.P.T. No.2 con/blows: 15/9, 7.5/3, 7.5/43, 1.0/10, -	D.S				
		3.0		DEBRITUS; -DO- AN EXCEPTIONALLY LARGE BOLLER OF DIA 715 MM. (APPROX) ENCOUNTERED.				-					D.S	
											S.P.T. No.3 con/blows: 2.5/40, -, -, -	D.S		
22/11		4.0		DEBRITUS; -DO- SILTY CLAY; MODERATELY INCLINATED CLAY WITH HIGH SILTY CONTENT L. YELLOW IN COLOUR.		-					D.S			
									S.P.T. No.4 con/blows: 15/9, 4.5/42, -, -, -	D.S				
		5.0	5.3	DEBRITUS; DO SILTY CLAY; MODERATELY INCLINATED CLAY WITH HIGH SILTY CONTENT L. YELLOW IN COLOUR.				-					D.S	
											S.P.T. No.5 con/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-		-				D.S
											S.P.T. No.6 con/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-		-				D.S				
							S.P.T. No.7 con/blows: 15/4, 7.5/3, 7.5/3, 7.5/4 7.5/5 n=19 MEDIUM DENSE	D.S						
23/11		8.0		SILTY CLAY; -DO-		-					D.S			
									S.P.T. No.8 con/blows: 15/3, 7.5/2, 7.5/3, 7.5/3 7.5/4 n=13 MEDIUM DENSE	D.S				
				9.0		SILTY CLAY; MODERATELY INCLINATED CLAY WITH HIGH SILTY CONTENT L. YELLOW IN COLOUR. WITH INTER- RELATED THIN LAYERS (2.0-3.0cm) OF CLAYEY SAND.		-			D.S			
									S.P.T. No.9 con/blows: 15/2, 7.5/1, 7.5/2, 7.5/2 7.5/2 n=11 LOOSE	D.S				
				10.0		SILTY CLAY; MODERATELY INCLINATED CLAY WITH HIGH SILTY CONTENT L. YELLOW IN COLOUR. THIS DISCRETE LAYERS OF CLAYEY SAND ARE PRESENT.		-				D.S		
									S.P.T. No.10 con/blows: 15/1, 7.5/3, 7.5/5, 7.5/1 7.5/5 n=3 VERY LOOSE	D.S				
				11.0		SILTY CLAY; -DO-		-				D.S		
									S.P.T. No.11 con/blows: 15/2, 7.5/1, 7.5/1, 7.5/2 7.5/2 n=8 LOOSE	D.S				
		12.0		SILTY CLAY; -DO-		-				D.S				
							S.P.T. No.12 con/blows: 15/3, 7.5/2, 7.5/2, 7.5/3 7.5/3 n=11 MEDIUM DENSE	D.S						
24/11		13.0		SILTY CLAY; -DO-		-					D.S			
									S.P.T. No.13 con/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-		-					D.S			
									S.P.T. No.14 con/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		-					D.S			
		15.1	9.9	DEBRITUS; COARSE SAND BEARING PEBBLES, CORNLES & BOLLERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 300 MM. L. GREY IN COLOUR.				-					D.S	
		15.0		DEBRITUS; -DO-		-						D.S		
									S.P.T. No.16 con/blows: 2.0/40, -, -, -	D.S				
25/11		17.0		DEBRITUS; -DO-		-					D.S			
									S.P.T. No.17 con/blows: 8.0/43, -, -, -	D.S				
		18.0		DEBRITUS; SLITY SAND BEARING PEBBLES, CORNLES & BOLLERS. WELL ROUNDED TO SUB-ROUNDED. MAX. DIA 350 MM. L. GREY IN COLOUR.		-					D.S			
									S.P.T. No.18 con/blows: 15/1, 7.5/3, 7.5/18, 2.0/41, -	D.S				
26/11		19.0		DEBRITUS; -DO-		-					D.S			
									S.P.T. No.19 con/blows: 7.0/48, -, -, -	D.S				
		20.0	5.1	DEBRITUS; DO (HOLE CLOSED)		-				D.S				

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

SITE: 1 KILLIS POND/INDIA
SRI 1982 NO. 17
BOSS CHART OF BOSSING NO.3

Elev.	Ground Water Level	Depth to Water	Thickness of Layer (in Meters)	Soils Described	Litho Symbol	Discovery Of Sample	Frequency 1st Run to				Type of Sample
							20	30	40	50	
13/11		0.0		DEBRIS: CLAY SAND, BEARING PEBBLES, CORALS & BOLLERS, WELL BOUNDED TO SUB-ROUNDED. FINE. DIA UP TO 450 MM. L. YELLOW IN COLOUR.	014						0.0
		1.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		2.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		3.0		LARGE BOLLER RECORDED DIA 520 MM.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
12/11		3.0		DEBRIS: COARSE SAND BEARING PEBBLES, CORALS & BOLLERS, WELL BOUNDED TO SUB-ROUNDED. FINE. DIA 550MM. L. GREY IN COLOUR.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		4.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		5.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		6.0	1.0	SILTY CLAY (SEE BELOW)	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		7.0		SILTY CLAY MODERATELY IMBIBED CLAY WITH FINER SILTY CONTENT. L. YELLOW IN COLOUR.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		8.0		SILTY CLAY --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
14/11		9.0		SILTY CLAY MODERATELY IMBIBED CLAY WITH FINER SILTY CONTENT. L. YELLOW IN COLOUR. WITH IMPU- RITIES WITH LAMINAE (1.0-2.0mm) OF CLAYE SAND.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		10.0		SILTY CLAY --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		11.0		SILTY CLAY MODERATELY IMBIBED CLAY WITH FINER AMOUNT OF SILT. L. YELLOW IN COLOUR. THE FINEST LAMINAE CLAYE SAND ARE PRESENT.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
15/11		12.0		SILTY CLAY --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		13.0		SILTY CLAY --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		14.0		SILTY CLAY --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		15.0		SILTY CLAY --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		15.2	0.9	DEBRIS: CLAY SAND BEARING PEBBLES, CORALS & BOLLERS, WELL BOUNDED TO SUB-ROUNDED. FINE. DIA 450 MM. L. GREY IN COLOUR.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
16/11		16.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		17.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		18.0		LARGE BOLLER OF GRANITIC COMPOSITION. RECORDED.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
17/11		19.0		DEBRIS: FINE SAND BEARING PEBBLES CORALS & BOLLERS, WELL BOUNDED TO SUB-ROUNDED. FINE. DIA 300 MM. L. GREY IN COLOUR.	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		20.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		21.0		DEBRIS: --	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0
		21.3	0.1	(HOLE CLOSED)	-20-	0007/10001	15/3, 7.5/3, 7.5/3, 7.5/3				0.0

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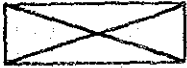


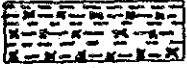
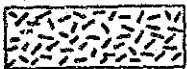

CLIENT: JICA BASIC DESIGN STUDY TEAM
 FOR BRIDGES IN N.W.F.P. PAKISTAN

SITE: I. MALIR (PUNJAB)
 BRIDGE NO. 17
 DRAWING NO. 17/100-1

Elev. at Top of Level	Elev. at Bottom of Level	Soil Description	Soil Class	Penetration Test Results				Type of Sample
				qc	q _u	cs	cu	
191.1	190.0	DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. YELLOWISH IN COLOR. DEPOSIT: -50-	132				S.P.T. No. 1 10/41	P.S.
192.1	191.0	DEPOSIT: -50- MAX. DIA OF BOLLERS UP TO 550 mm. DEPOSIT: CONCRETE SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 450.0 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 2 15/7, 7.5/6, 7.5/7, 0.0/25	P.S.
193.1	192.0	DEPOSIT: -50- DEPOSIT: VERY COARSE SAND, WITH FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 250.0 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 3 15/7, 7.5/7, 3/30	P.S.
194.1	193.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY (SEE BELOW) DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR.	130				S.P.T. No. 4 15/11, 7.5/7, 4/37	P.S.
195.1	194.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 7 15/7, 7.5/7, 7.5/4, 7.5/5, 7.5/4	P.S.
196.1	195.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 8 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
197.1	196.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 9 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
198.1	197.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 10 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
199.1	198.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 11 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
200.1	199.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 12 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
201.1	200.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 13 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
202.1	201.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 14 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
203.1	202.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 15 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
204.1	203.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 16 15/7, 7.5/7, 7.5/7, 7.5/7, 7.5/7	P.S.
205.1	204.0	DEPOSIT: -50- DEPOSIT: SILTY CLAY DEPOSIT: NONCOMPACTLY ENRICHED CLAY WITH MEDIUM SILTY CONCRET. L. YELLOW IN COLOR. WITH ENRICHED THIN LAYERS (1-2-2.5mm) OF CLAYEY SAND.	130				REGION OVER S.P.T. No. 17 12/30	P.S.
206.1	205.0	DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 18 6.0/41	P.S.
207.1	206.0	DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 19 15/7, 3.0/30	P.S.
208.1	207.0	DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 20 3.0/60	P.S.
209.1	208.0	DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 21 14/39	P.S.
210.1	209.0	DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50- DEPOSIT: SILTY SAND, GRANULAR FERRUG, CONCRETE & BOLLERS, WELL BOUNDED TO SUB-BOUNDED. MAX. DIA UP TO 120 mm. L. GREY IN COLOR. DEPOSIT: -50-	130				S.P.T. No. 22 15/7, 7.5/7, 2.0/42	P.S.

PHASE - III

LITHOLOGIC SYMBOLS

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

ABBREVIATIONS

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

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

Sheet No.	Drawn	Checked	Scale	Description	Remarks	Quantity	Material	Remarks
117/11	C.I.	-	1:1	FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
118/11	C.I.	-	1:1	FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				119/11	C.I.	-	1:1	FOR 2000
FOR 2000								
FOR 2000								
FOR 2000								
FOR 2000								
FOR 2000								
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FOR 2000								
FOR 2000								
FOR 2000								
FOR 2000								
120/11	C.I.	-	1:1					FOR 2000
				FOR 2000				
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				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				FOR 2000				
				121/11	C.I.	-	1:1	FOR 2000
FOR 2000								
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FOR 2000								
FOR 2000								
FOR 2000								
FOR 2000								
122/11	C.I.	-	1:1					FOR 2000
				FOR 2000				
				FOR 2000				
				FOR 2000				
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				FOR 2000				
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				123/11	C.I.	-	1:1	FOR 2000
FOR 2000								
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FOR 2000								
124/11	C.I.	-	1:1					FOR 2000
				FOR 2000				
				FOR 2000				
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				FOR 2000				
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				125/11	C.I.	-	1:1	FOR 2000
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CLIENT: JICA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN N.W.F.P. PAKISTAN

SHEET NO. 11
OF TOTAL SHEETS 11
DATE: 22.12.1972

Station	Span	Abutment	Pier	Foundation	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks			Remarks																																																																																																																																								
													Remarks	Remarks	Remarks																																																																																																																																									
05/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																																																								
																	06/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																																							
																																		07/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																						
																																																			08/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																					
																																																																				09/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																				
																																																																																					10/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																			
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15/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																																																								
																	16/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																																							
																																		17/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																						
																																																			18/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																					
																																																																				19/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																				
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																																																																																																						21/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																		
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																																																																																																																																								23/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
25/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																																																								
																	26/12	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0																																																																																																																							
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ASSOPAK
 22.12.1972

CLIENT: PCA BASIC DESIGN STUDY TEAM
FOR BRIDGES IN K.W.P.P. PAKISTAN

Station	Grade	Depth	Thickness	Remarks	Layer	Quantity	Contract	Remarks	Unit
11/11				1.00	GRAVEL	100	100	100	100
				1.01	GRAVEL	100	100	100	100
				1.02	GRAVEL	100	100	100	100
				1.03	GRAVEL	100	100	100	100
				1.04	GRAVEL	100	100	100	100
				1.05	GRAVEL	100	100	100	100
				1.06	GRAVEL	100	100	100	100
				1.07	GRAVEL	100	100	100	100
				1.08	GRAVEL	100	100	100	100
				1.09	GRAVEL	100	100	100	100
				1.10	GRAVEL	100	100	100	100
				1.11	GRAVEL	100	100	100	100
				1.12	GRAVEL	100	100	100	100
				1.13	GRAVEL	100	100	100	100
				1.14	GRAVEL	100	100	100	100
				1.15	GRAVEL	100	100	100	100
				1.16	GRAVEL	100	100	100	100
				1.17	GRAVEL	100	100	100	100
				1.18	GRAVEL	100	100	100	100
				1.19	GRAVEL	100	100	100	100
				1.20	GRAVEL	100	100	100	100
				1.21	GRAVEL	100	100	100	100
				1.22	GRAVEL	100	100	100	100
				1.23	GRAVEL	100	100	100	100
				1.24	GRAVEL	100	100	100	100
				1.25	GRAVEL	100	100	100	100
				1.26	GRAVEL	100	100	100	100
				1.27	GRAVEL	100	100	100	100
				1.28	GRAVEL	100	100	100	100
				1.29	GRAVEL	100	100	100	100
				1.30	GRAVEL	100	100	100	100
				1.31	GRAVEL	100	100	100	100
				1.32	GRAVEL	100	100	100	100
				1.33	GRAVEL	100	100	100	100
				1.34	GRAVEL	100	100	100	100
				1.35	GRAVEL	100	100	100	100
				1.36	GRAVEL	100	100	100	100
				1.37	GRAVEL	100	100	100	100
				1.38	GRAVEL	100	100	100	100
				1.39	GRAVEL	100	100	100	100
				1.40	GRAVEL	100	100	100	100
				1.41	GRAVEL	100	100	100	100
				1.42	GRAVEL	100	100	100	100
				1.43	GRAVEL	100	100	100	100
				1.44	GRAVEL	100	100	100	100
				1.45	GRAVEL	100	100	100	100
				1.46	GRAVEL	100	100	100	100
				1.47	GRAVEL	100	100	100	100
				1.48	GRAVEL	100	100	100	100
				1.49	GRAVEL	100	100	100	100
				1.50	GRAVEL	100	100	100	100
				1.51	GRAVEL	100	100	100	100
				1.52	GRAVEL	100	100	100	100
				1.53	GRAVEL	100	100	100	100
				1.54	GRAVEL	100	100	100	100
				1.55	GRAVEL	100	100	100	100
				1.56	GRAVEL	100	100	100	100
				1.57	GRAVEL	100	100	100	100
				1.58	GRAVEL	100	100	100	100
				1.59	GRAVEL	100	100	100	100
				1.60	GRAVEL	100	100	100	100
				1.61	GRAVEL	100	100	100	100
				1.62	GRAVEL	100	100	100	100
				1.63	GRAVEL	100	100	100	100
				1.64	GRAVEL	100	100	100	100
				1.65	GRAVEL	100	100	100	100
				1.66	GRAVEL	100	100	100	100
				1.67	GRAVEL	100	100	100	100
				1.68	GRAVEL	100	100	100	100
				1.69	GRAVEL	100	100	100	100
				1.70	GRAVEL	100	100	100	100
				1.71	GRAVEL	100	100	100	100
				1.72	GRAVEL	100	100	100	100
				1.73	GRAVEL	100	100	100	100
				1.74	GRAVEL	100	100	100	100
				1.75	GRAVEL	100	100	100	100
				1.76	GRAVEL	100	100	100	100
				1.77	GRAVEL	100	100	100	100
				1.78	GRAVEL	100	100	100	100
				1.79	GRAVEL	100	100	100	100
				1.80	GRAVEL	100	100	100	100
				1.81	GRAVEL	100	100	100	100
				1.82	GRAVEL	100	100	100	100
				1.83	GRAVEL	100	100	100	100
				1.84	GRAVEL	100	100	100	100
				1.85	GRAVEL	100	100	100	100
				1.86	GRAVEL	100	100	100	100
				1.87	GRAVEL	100	100	100	100
				1.88	GRAVEL	100	100	100	100
				1.89	GRAVEL	100	100	100	100
				1.90	GRAVEL	100	100	100	100
				1.91	GRAVEL	100	100	100	100
				1.92	GRAVEL	100	100	100	100
				1.93	GRAVEL	100	100	100	100
				1.94	GRAVEL	100	100	100	100
				1.95	GRAVEL	100	100	100	100
				1.96	GRAVEL	100	100	100	100
				1.97	GRAVEL	100	100	100	100
				1.98	GRAVEL	100	100	100	100
				1.99	GRAVEL	100	100	100	100
				2.00	GRAVEL	100	100	100	100

資料名	発行機関等
1 社会・経済関係	
a) 7 th 5-Year Plan, July 1, 1988 - June 30, 1993	Government of the Islamic Republic 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., Government of Pakistan
j) Economic Survey of Pakistan for 1988 - 89	Finance Division, Economic Div. Wing, Islamabad, Government of Pakistan
k) Total No. of Dev. Schemes for 1991 - 92	NWFP Government
2 組織	
a) Notification dated Peshawar, 30/06/1992	C&W Dept., NWFP Government
b) Organization Chart	C&W Dept.,NWFP Government
3 技術・工学データ	
a) Standard Designs of Bridge Superstructure Precast Post-tensioned Girders	C&W Dept.NWFP Government
b) Hydrological Data, Panjikora River and Its Tributaries, 1992	NWFP Government
4 地図	
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

パキスタンイスラム共和国カントリーデータ

主要項目	内 容			
国 名	パキスタンイスラム共和国 The Islamic Republic of Pakistan			
独立年月	1947年8月14日 (インドとの分離独立、当時の国家元首はMohammad Ali Jinnah)			
国家元首	Ghulam Ishaq Khan 大統領			
国土総面積	796,095 km ²			
人 口	84,253,644人 (1981年国勢調査) 117.31百万人 (1991-1992年推定値: Federal Bureau of Statistics, Statistics Division, Government of Pakistan が推定)			
行政区分	4州 (パンジャブ州: Punjab、北西辺境州: North West Frontier、バルチスタン州: Baluchistan、シンド州: Sind) と連邦政府管轄の首都イスラマバードとFATA (Federally Administrated Tribal Areas) から成る。 更に、インドとの分離独立時に藩王国で帰属のはっきりしなかったギルギット (Gilgit) とジャム・カシミール (Jammu & Kashmir) の二つは今なおインドとの係争地となっている。			
行政区分別面積、人口等	1981年の国勢調査結果は、次の通り。			
	州	面 積	人 口	人口密度
	北西辺境州	74,521 km ²	11,061,328人	148人/km ²
	FATA	27,220 km ²	2,198,547人	81人/km ²
	パンジャブ州	205,344 km ²	47,292,441人	230人/km ²
	シンド州	140,914 km ²	19,028,666人	135人/km ²
	バルチスタン州 イスラマバード	347,190 km ² 906 km ²	4,332,376人 340,286人	13人/km ² 376人/km ²
通 貨	パキスタン・ルピー: Rsと表記 US\$1.0 = Rs26.2669 (1993年2月)			
国民総生産GNP 一人当たりGNP	1兆2,253万ルピー (1991-92会計年度) 10,446ルピー (1991-92会計年度): 約US\$415			
主な産業	農業: 小麦、米、トウモロコシ、綿花、砂糖キビ、タバコ等 工業: 自動車組立、紡績、ジュート加工、セメント、肥料、紅茶等			
教育施設数、就学者数 (1989-90年度)	小学校 (5年):	118,607校	不明	
	中学校 (3年):	7,161校	不明	
	高等学校 (2年):	6,805校	不明	
	芸術科学短期大学 (2年):	575校	不明	
	専門短期大学 (2年):	99校	75,310人	
	大学 (4年):	22校	73,382人	
政 治	国会は2院制: National Assembly は、議員数240名。 Senate Houseは、議員数110名 (Senator はNational Assembly の議員の投票により選出される)。			

主要項目	内 容
主な政党	<ul style="list-style-type: none"> - Muslim League-1：党首は、首相のMian Mohammad Nawaz Sharif。 - Muslim League-2：党首は、Junejo。 - PDA (People's Democratic Allies)：党首は、Benazir Bhutto。 - ANP (Awami National Party)：党首は、Wali Khan。 - Jamat Islami：党首は、Qazi Hussain Ahmad。
人 種	<p>インドアリア系パンジャビ人(Punjabi)、イラン系バローチ人(Baluchi) 同じくイラン系のパタン人(Patan)</p>
言語 (公用語) 言語 (日常語)	<p>ウルドゥ語 (Urdu とはトルコ語で軍隊の陣営の意味) または英語。 日常使用される言語は、各州毎に異なりパンジャブ州ではパンジャビ語 (Punjabi)、北西辺境州ではプシト語(Pashto)、バルチスタン州ではバローチ語 (Baluchi)、シンド州ではシンドゥ語(Sindhu)となっている。</p>
宗 教	<p>イスラム教を国教としている。イスラム教は人口の96%の占め、このうちスンニ派が多数で次にシーア派、また小数であるがイスマイリア派に属する者もいる。 キリスト教も約3%、ヒンズー教約1%で小数派。カンダラ仏教の発祥の地 Saidu Sharif があるものの仏教徒の数は極めて少ない。</p>

JICA