

**GOVERNMENT OF KHYBER PAKHTUNKHWA  
DIRECTORATE GENERAL SMALL DAMS  
IRRIGATION DEPARTMENT**



**BIDDING DOCUMENTS  
CHAMAK MAIRA DAM PROJECT  
DISTRICT ABBOTTABAD**



**BID DRAWINGS**

*May 2021*

**Volume - II**



**PAKISTAN ENGINEERING SERVICES (PVT.) LTD.**  
Plot No. 7, Block-B, Street No. 12, Commercial Area, Phase-V, D.H.A. Lahore.  
Tel: +92-42-358641654-59 (6 Lines) Fax: +92-42-5722003 E-Mail : info@pespk.com



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DIRECTORATE GENERAL SMALL DAMS  
IRRIGATION DEPARTMENT**



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CHAMAK MAIRA DAM PROJECT  
DISTRICT ABBOTTABAD**



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PROJECT VICINITY MAP

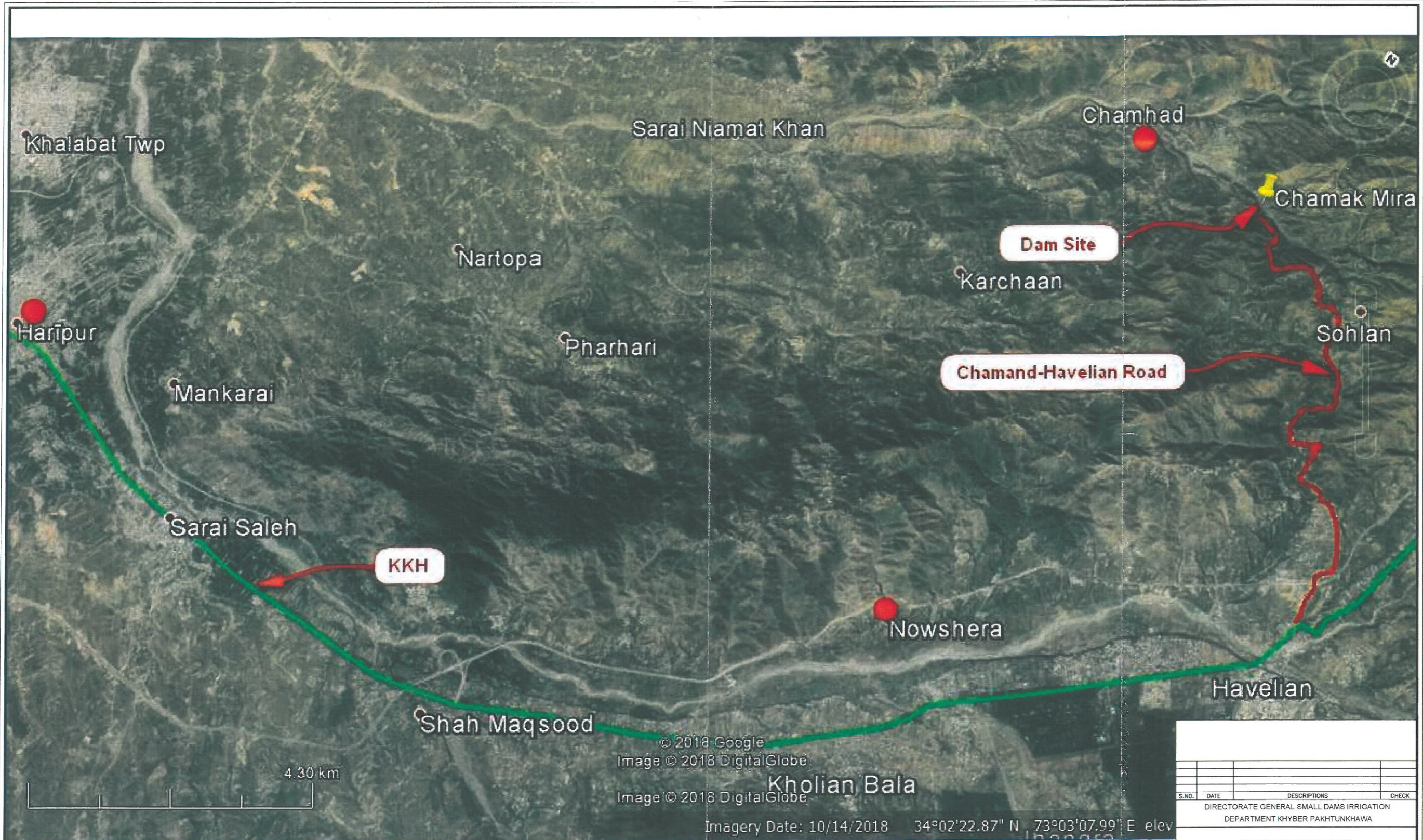



KEY MAP

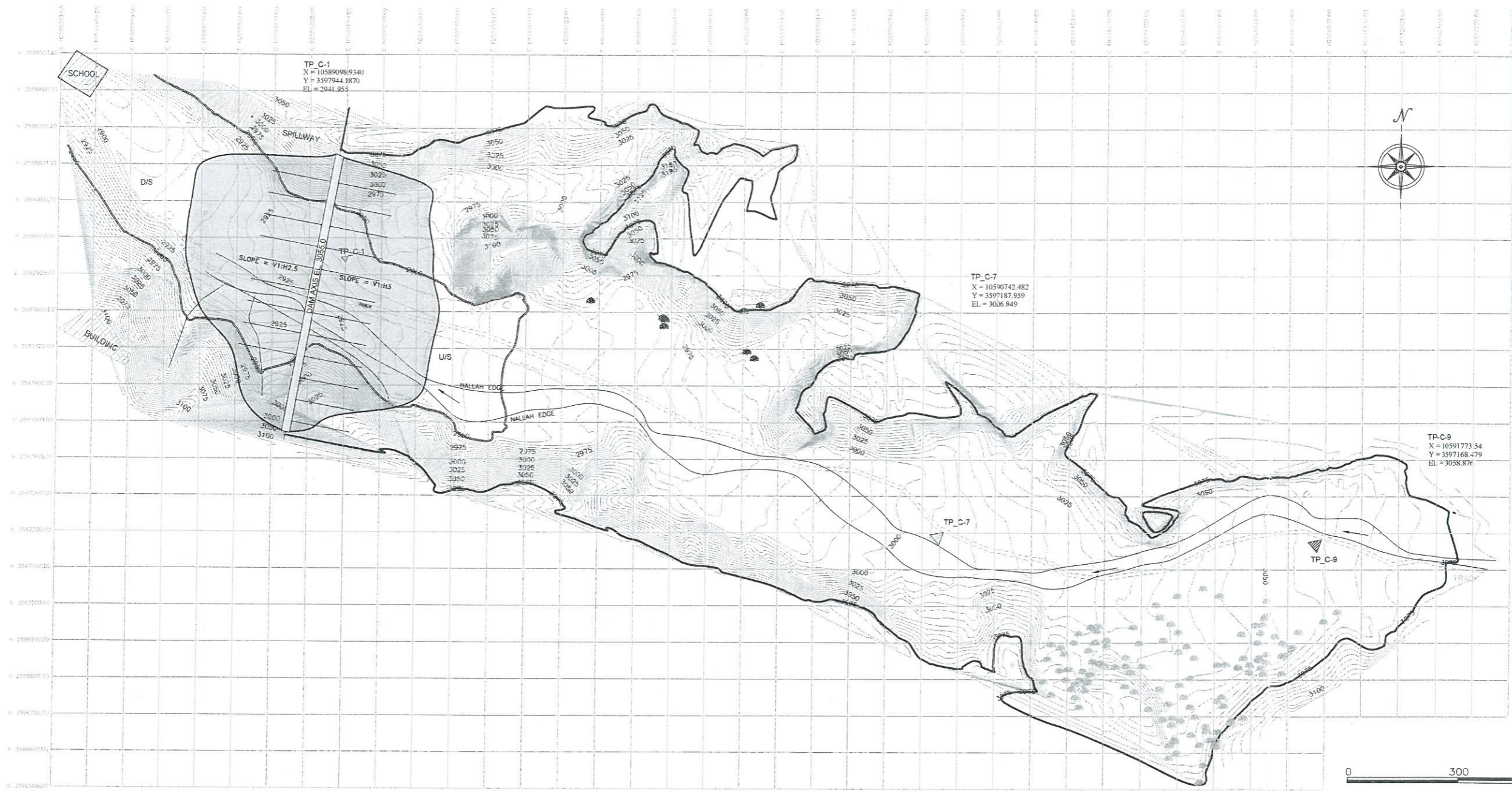
**LEGEND**

- INTERNATIONAL BOUNDARY
- PROVINCE BOUNDARY
- CAPITAL
- PROVINCE CAPITAL
- ROAD
- DAM SITE
- RIVERS

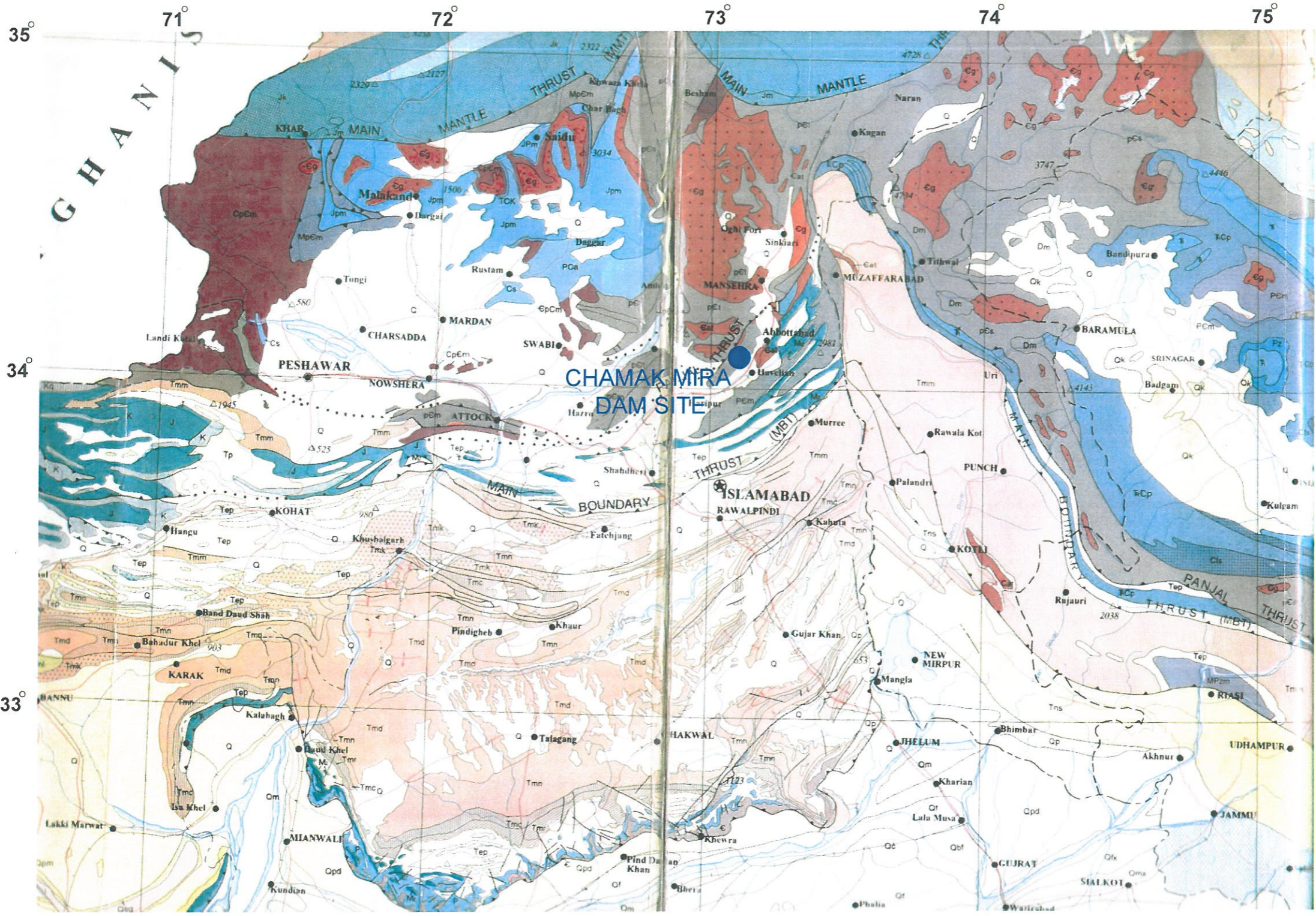
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| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>PROJECT LOCATION PLAN  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| CHECKED BY:   | AHMED SHAHZAWAR | DRAWING NO.: |           |
| APPROVED BY:  | ADNAN MANZOOR   | REV. No.:    | 1.1       |
|   | LIAQUAT RABBANI |              |           |



| S.NO.   | DATE                                     | DESCRIPTIONS  | CHECK |
|---|--|---------------|-------|
|   |  |               |       |
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION   |  |               |       |
| DEPARTMENT KHYBER PAKHTUNKHAWA  |  |               |       |
| SMALL DAM PROJECT   |  |               |       |
| CHAMAK MIRA DAM   |  |               |       |
| PROJECT LOCATION MAP  |  |               |       |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |  |               |       |
| DRAUGHTSMAN:<br>G.MUSTAFA<br>DESIGNER:<br>AHMED SHAHZAWAR<br>CHECKER:<br>ADNAN MANZOOR<br>APPROVED:<br>LAOQUAT RABBANI  | DATE:<br>DEC, 2018<br>DRAWING NO:<br>1.2 | REV. No:<br>- |       |



| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>DAM AND RESERVIOR AREA SURVEY  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV. 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DATE:        | NOV. 2018 |
| CHECKED:  | ADNAN MANZOOR   | REV. No.     | 2.1       |
| APPROVED:   | LIAQUAT RABBANI |              |           |



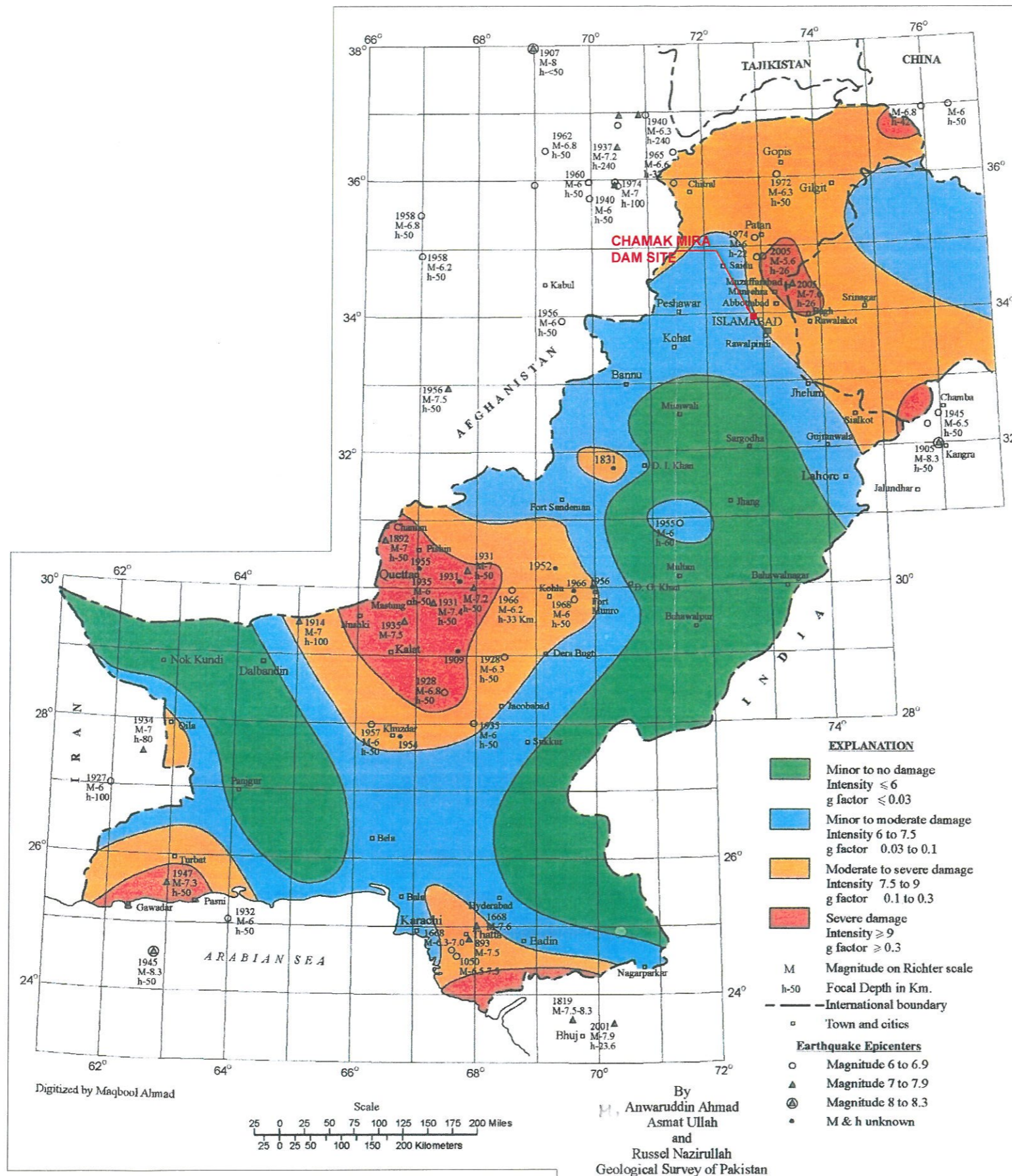
**LEGENDS:**

- Q = Quaternary Deposits
- Tmm = Murree Formation
- Mz = Mesozoic Rocks
- TRcp = Punjal Formation
- Cat = Abbottabad Group
- Cg = Mansehra Group (Granite)
- Pct = Tanawal Formation
- Pcm = Hazara Formation
- Pcs = Salkhala Formation

**SOURCE:**

GEOLOGICAL MAP OF PAKISTAN  
(PUBLISHED BY GSP 1993)

| S.NO.  | DATE                                  | DESCRIPTIONS  | CHECK |
|--|---------------------------------------|---------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                            |                                       |               |       |
| SMALL DAM PROJECT  |                                       |               |       |
| CHAMAK MIRA DAM<br>REGIONAL GEOLOGICAL MAP   |                                       |               |       |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE.      |                                       |               |       |
| DRAFTER: G.MUSTAFA<br>DESIGNED: AHMED SHAHZAWAR<br>CHECKED: ADNAN MANZOOR<br>APPROVED: LIAQUAT RABBANI | DATE: NOV, 2018<br>DRAWING NO.<br>3.1 | REV. No.<br>- |       |

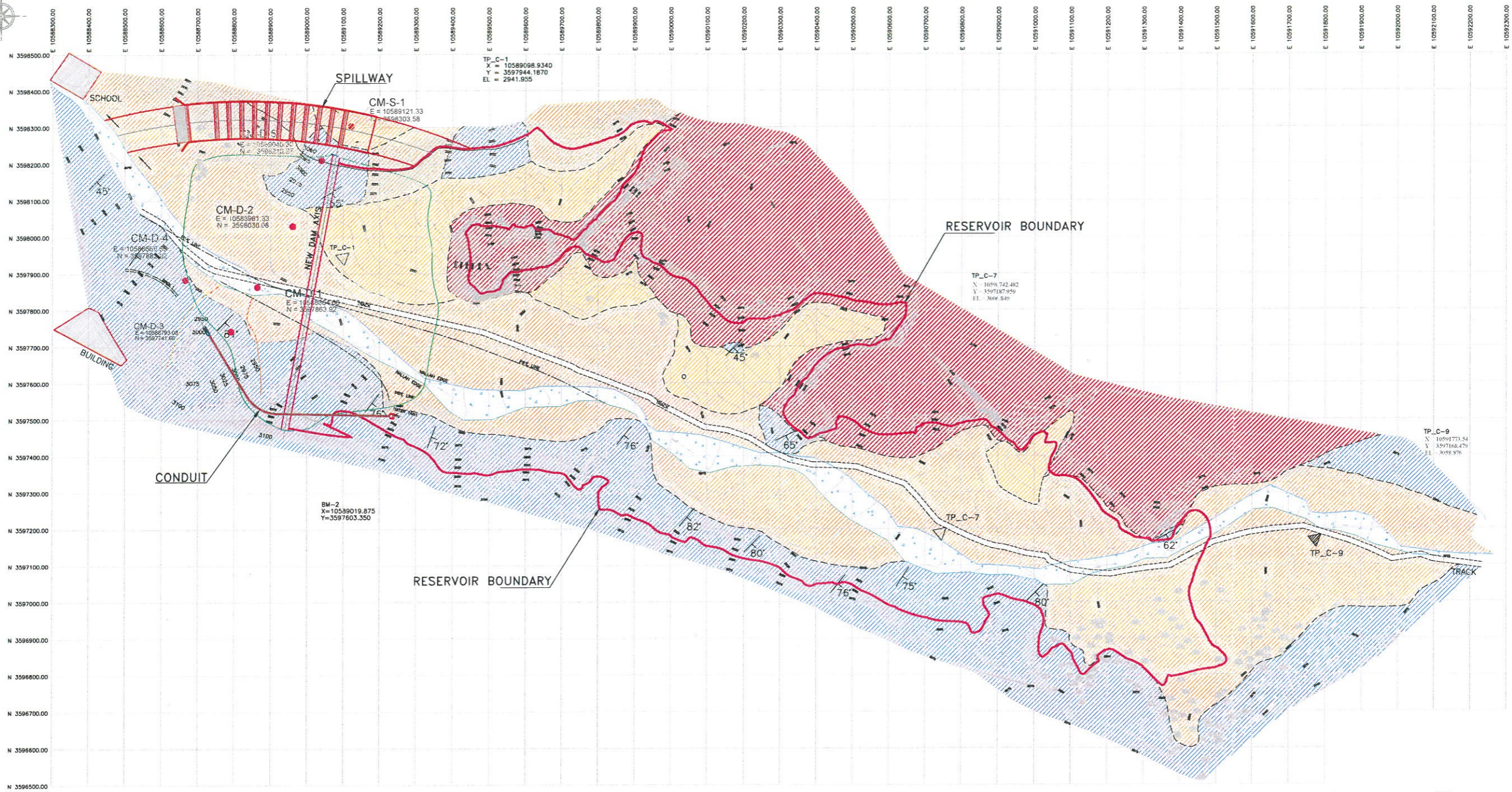


| S.NO.   | DATE            | DESCRIPTIONS   | CHECK   |
|---|-----------------|----------------|---------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |                |         |
| SMALL DAM PROJECT   |                 |                |         |
| CHAMAK MIRA DAM<br>SEISMIC ZONING MAP   |                 |                |         |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |                |         |
| DESIGNED BY:  | M. NADEEM       | DATE: 27-06-16 | REV No. |
| CHECKED BY:   | AHMED SHAHZAWAR | DRAWING NO.    |         |
| APPROVED BY:  | ADNAN MANZOOR   | 3.2            |         |
|   | LIAQUAT RABBANI |                |         |



| S.NO.   | DATE   | DESCRIPTIONS                          | CHECK         |
|---|--|---------------------------------------|---------------|
|   |  |                                       |               |
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |  |                                       |               |
| SMALL DAM PROJECT   |  |                                       |               |
| CHAMAK MIRA DAM<br>PROJECT LAYOUT PLAN  |  |                                       |               |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |  |                                       |               |
| DRAINED BY:<br>DESIGNED BY:<br>CHECKED BY:<br>APPROVED BY:  | G. MUSTAFA<br>AHMED SHAHZAWAR<br>ADNAN MANZOOR<br>LAQUAT RABBANI | DATE: DEC, 2018<br>DRAWING NO:<br>5.1 | REV. No:<br>- |





**LEGEND**

- STREAM BED (OB)  
CONSISTS OF GRAVEL, OCCASIONALLY BOULDERS, WITH SAND AND SILT ON THE BED OF THE RIVER.
- ALLUVIAL DEPOSITS (OB)  
ALLUVIAL DEPOSITS OF GRAVELS, SAND, CLAY SILT ALONG THE BANK OF THE STREAM.
- ALLUVIAL FAN DEPOSITS (OB)  
STREAM OUTWASH FROM THE SLOPE OF THE HILLS, GRAVELS, PEBBLE, CLAY SILT.

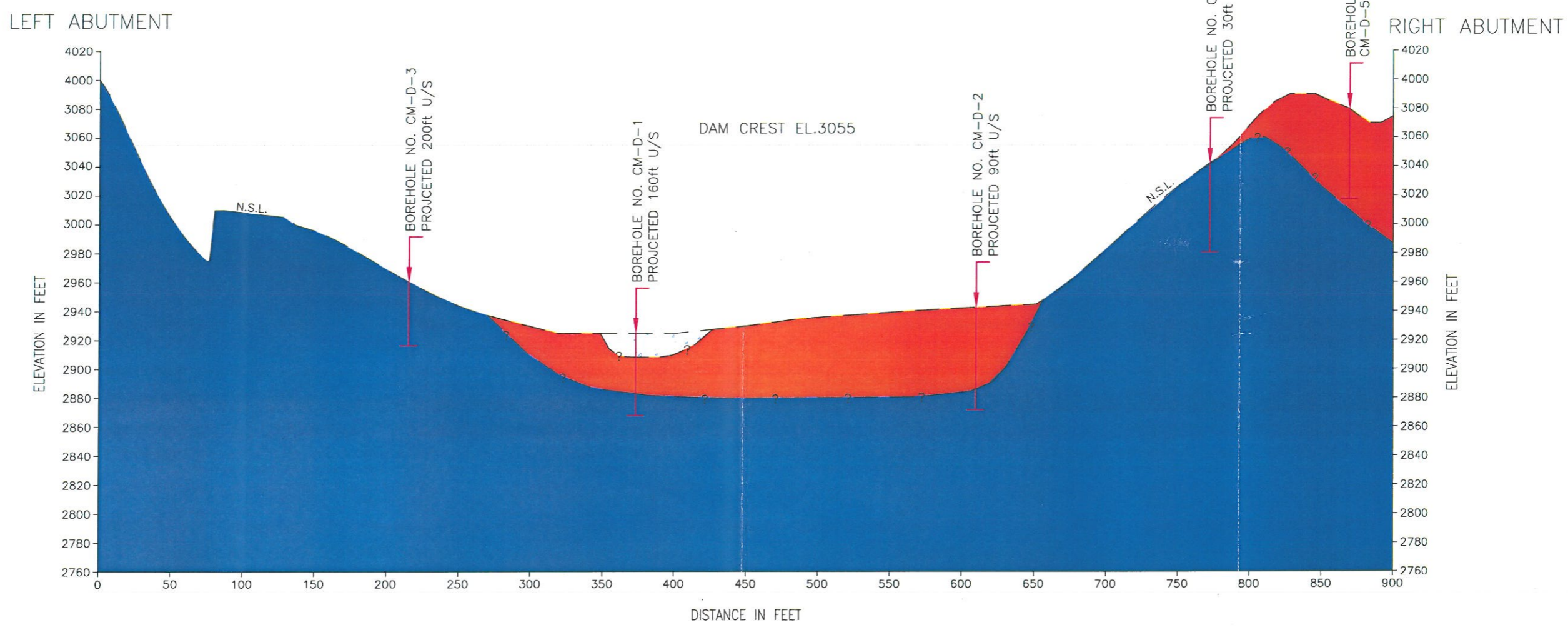
- TERRACE DEPOSITS (OB)  
HIGH BENCH DEPOSITS FORMING THE DAM AXIS. IT SHOWS ALTERNATE LAYERS/BED OF GRAVELS CLAY MIXTURE IN CLAY MATRIX IN VARIOUS PROPORTIONS.
  - SLATE/PHYLLITE/ ARGILLITES  
GRAY, TO BROWNISH GRAY, MOSTLY THIN BEDDED, FRACTURED AND MEDIUM HARD PHYLLITE AND SLATE IN SEPARABLE.
- STRIKE/DIP OF BED
- LEGENDS**
- BORE HOLE

**SUMMARY OF BORE HOLES**

| Hole No. | Location                | Coordinates |             | Dip with Horizontal | Top of Rock Elevation (ft) | Ground Water Elevation (ft) | Ground Elevation (ft) | Drilling Length |           |            | Soil/Rock Type                         |
|----------|-------------------------|-------------|-------------|---------------------|----------------------------|-----------------------------|-----------------------|-----------------|-----------|------------|--|
|          |                         | North (ft)  | East (ft)   |                     |                            |                             |                       | Soil (ft)       | ROCK (ft) | Total (ft) |  |
| CM-D-1   | Dam Axis Nullah Bed     | 3597863.92  | 10588864.66 | 90°                 | 2871                       | 2870                        | 2520                  | 49              | 13        | 62         | Silly Clayey Gravel / Slate / Phyllite |
| CM-D-2   | Dam Axis Nullah Bed     | 3598030.08  | 10588961.33 | 90°                 | 2862                       | -                           | 2528                  | 60.6            | 12.4      | 73         | Silly Clayey Gravel / Slate / Phyllite |
| CM-D-3   | Dam Axis Left Abutment  | 3597741.66  | 10588793.08 | 90°                 | 2960                       | -                           | 2960                  | -               | 72        | 72         | Slate / Phyllite                       |
| CM-D-4   | Left Abutment (Outlet)  | 3597862.92  | 10588665.66 | 90°                 | -                          | -                           | -                     | -               | 34        | 34         | Slate / Phyllite                       |
| CM-D-5   | Right abutment Dam Axis | 3598210.27  | 10589040.30 | 90°                 | 3035                       | -                           | 3035                  | -               | 50        | 50         | Slate / Phyllite                       |
| CM-D-S-1 | Spillway                | 3598303.58  | 10589121.33 | 90°                 | -                          | -                           | 3080                  | 50              | -         | 50         | Silly Clayey Gravel                    |

| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
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| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>BOREHOLE LOCATION MAP  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2016 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 3.3       |
| APPROVED:   | LIAQUAT RABBANI |              |           |

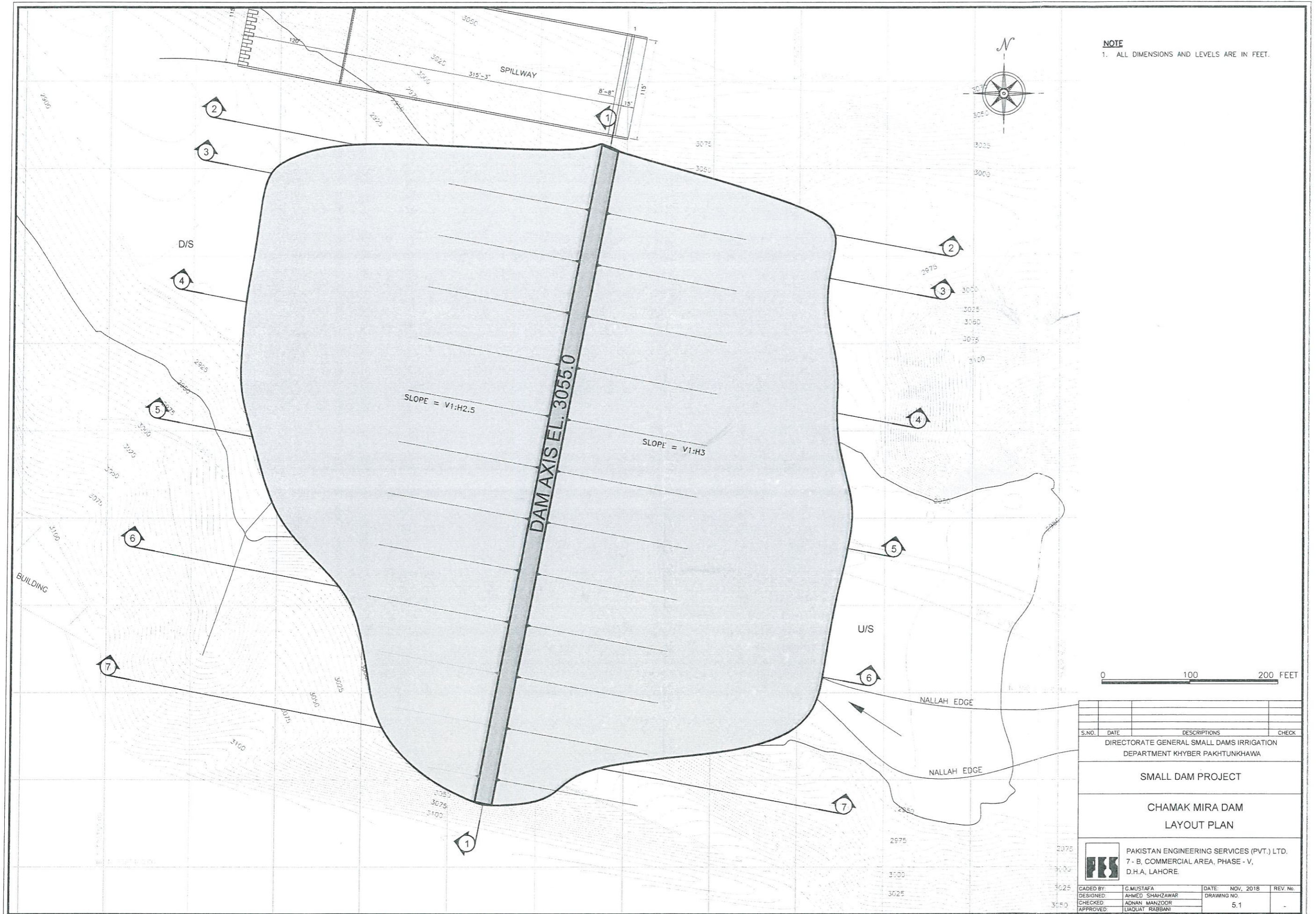
**NOTE**  
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.




**LEGEND**

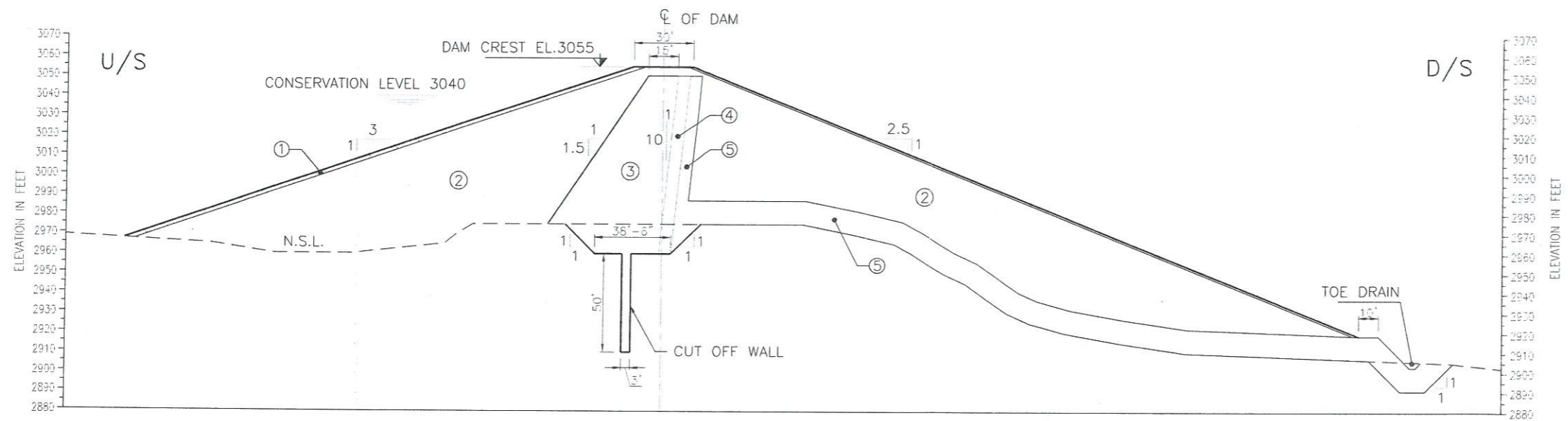
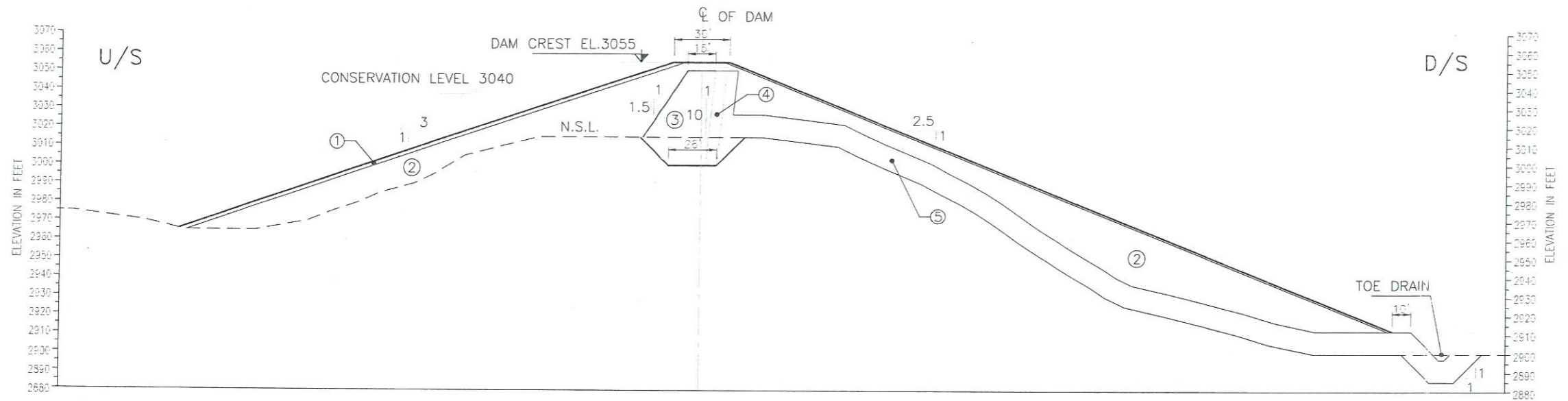
- STREAM BED DEPOSITS (ALLUVIAL) BOULDERS, GRAVELS, COBBLES SAND AND SILT
- SLATE AND PHYLLITIC GREY TO DARK GREY, SOFT AND WEATHERED, FRACTURED, CRUMBLLED, THIN BEDDED.
- ALLUVIAL DEPOSITS (OB) GRAVELS, SAND TRACE TO LITTLE SILT.

| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>GEOLOGICAL SECTION ALONG<br>DAM AXIS   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G. MUSTAFA      | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.: |           |
| CHECKED:  | ADNAN MANZOOR   |              | 3.4       |
| APPROVED:   | LIAQUAT RABBANI |              |           |



**NOTE**  
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| S.NO.   | DATE  | DESCRIPTIONS                          | CHECK         |
|---|---|---------------------------------------|---------------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |   |                                       |               |
| SMALL DAM PROJECT   |   |                                       |               |
| CHAMAK MIRA DAM<br>LAYOUT PLAN  |   |                                       |               |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |   |                                       |               |
| DRAFTER:<br>DESIGNED:<br>CHECKED:<br>APPROVED:  | G. MUSTAFA<br>AHMED SHAHZAWAR<br>ADNAN MANZOOR<br>LIJLAQT RABBANI | DATE: NOV, 2018<br>DRAWING NO:<br>5.1 | REV. No:<br>- |



**LEGEND**

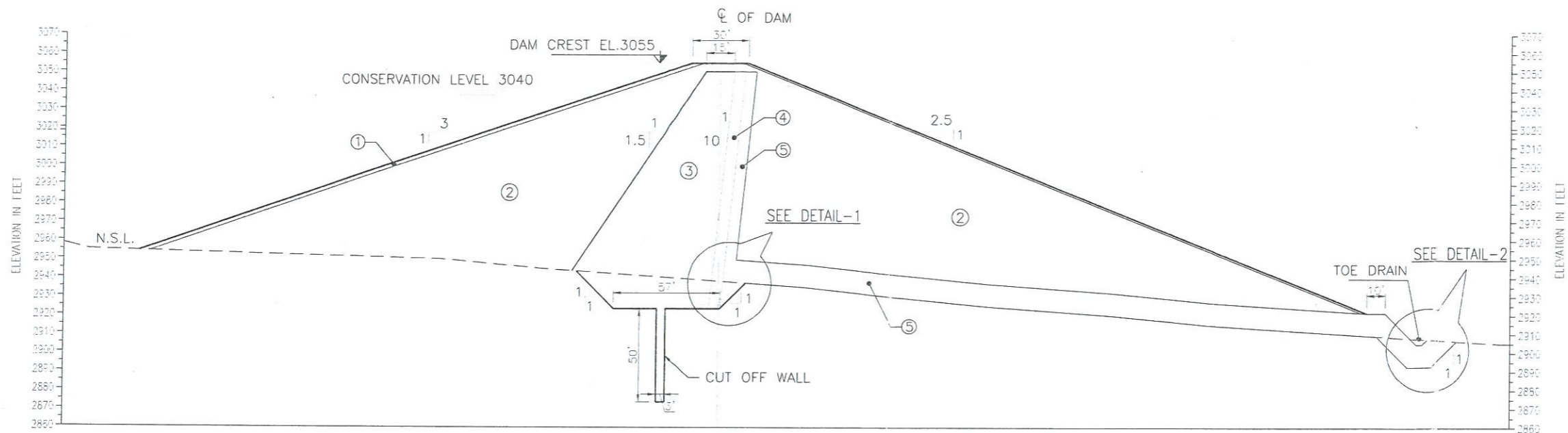
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- ② SHELL
- ③ CORE
- ④ FINE FILTER
- ⑤ COARSE FILTER

**NOTE**

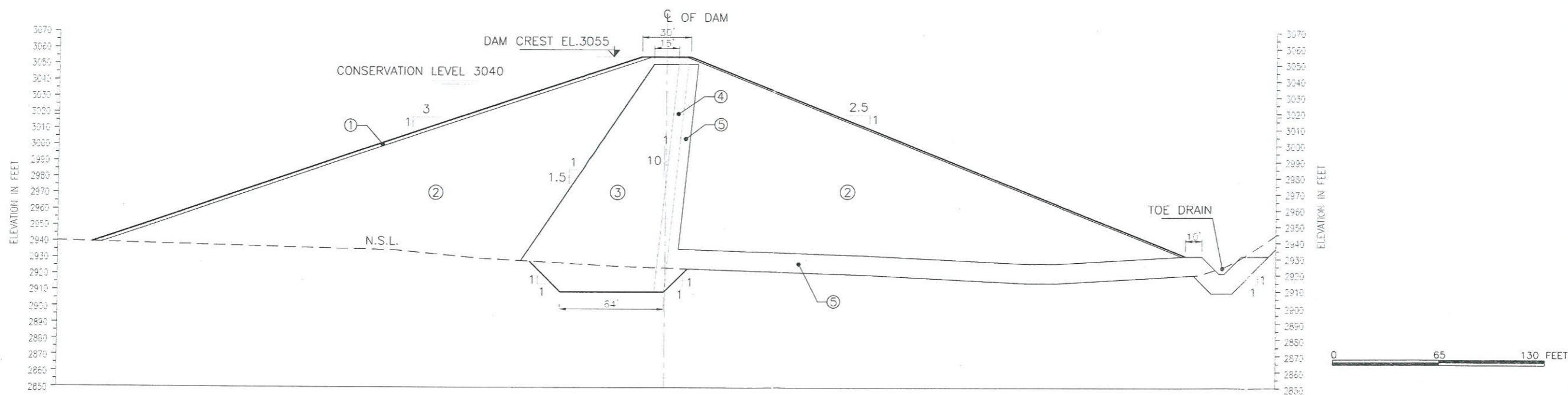
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.



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|--|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                        |                 |              |           |
| SMALL DAM PROJECT  |                 |              |           |
| CHAMAK MIRA DAM<br>DAM CROSS SECTIONS  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A., LAHORE. |                 |              |           |
| DESIGNED BY:   | G.MUSTAFA       | DATE:        | NOV. 2018 |
| DESIGNED:  | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:   | ADNAN MANZOOR   |              | 5.3       |
| APPROVED:  | LIQAAT RABBANI  |              |           |



SECTION 4-4



SECTION 5-5

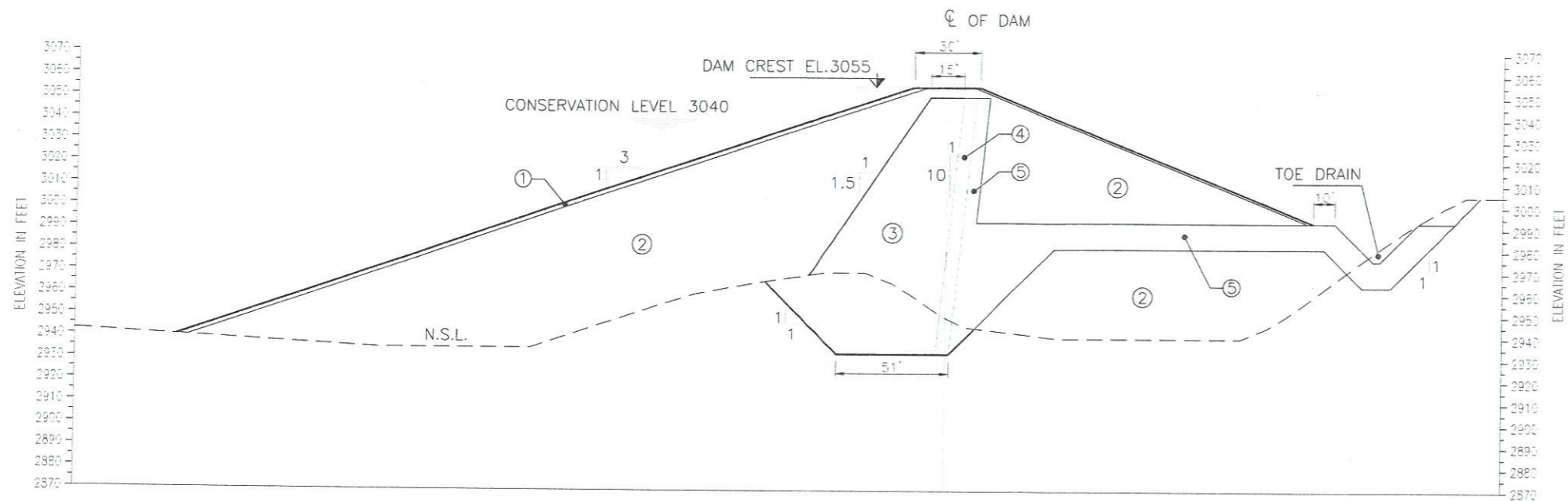
**LEGEND**

- ① RIPRAP
- ② SHELL
- ③ CORE
- ④ FINE FILTER
- ⑤ COARSE FILTER

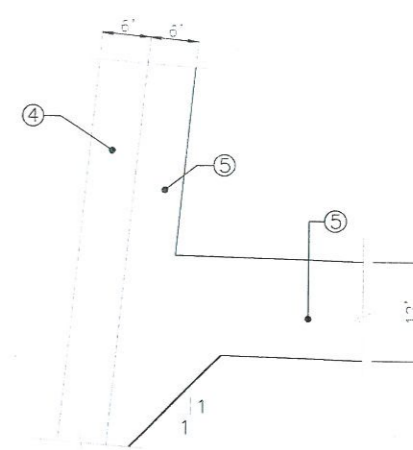
**NOTE**

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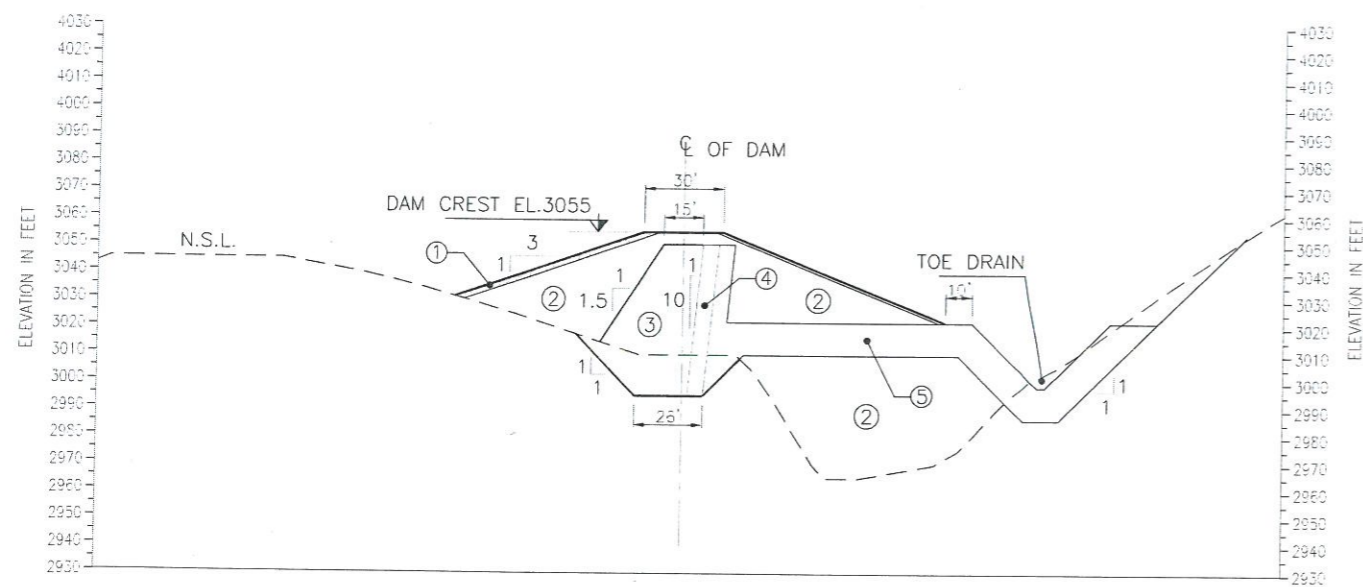
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| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>DAM CROSS SECTIONS   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 5.4       |
| APPROVED:   | LIQUAT RABBANI  |              |           |



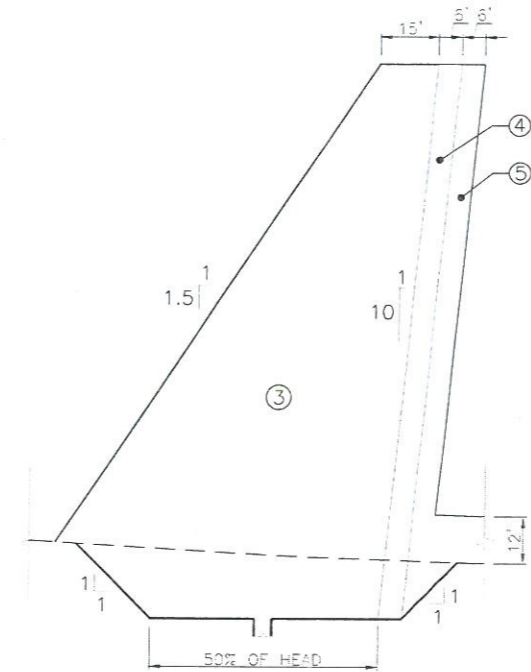
SECTION 6-6



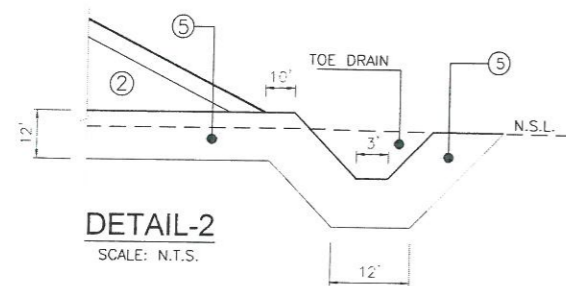
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SCALE: N.T.S.



SECTION 7-7



VERTICAL CORE DETAIL  
SCALE: N.T.S.



DETAIL-2  
SCALE: N.T.S.

**LEGEND**

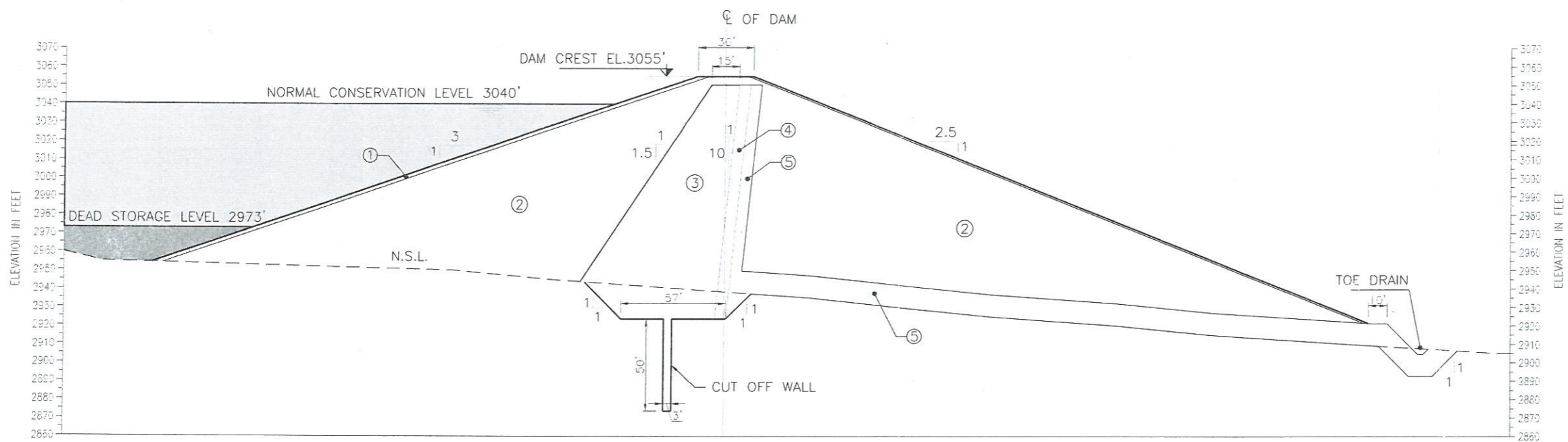
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- ③ CORE
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**NOTE**

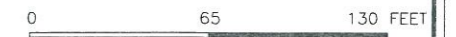
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|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>DAM CROSS SECTIONS   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 5.5       |
| APPROVED:   | LIQUAT RABBANI  |              |           |



TYPICAL CROSS SECTION



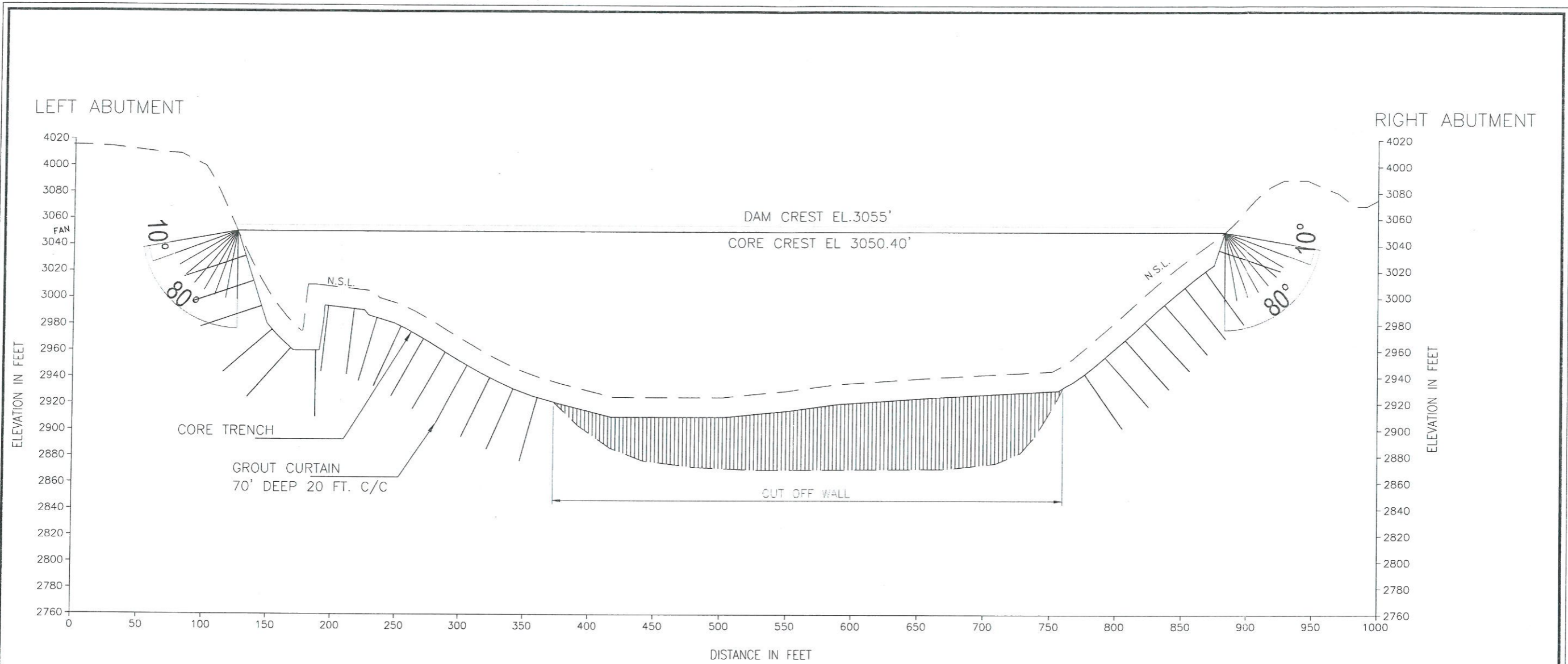
**LEGEND**

- ① RIPRAP
- ② SHELL
- ③ CORE
- ④ FINE FILTER
- ⑤ COARSE FILTER

**NOTE**


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| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>TYPICAL CROSS SECTION  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | C.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 5.6       |
| APPROVED:   | LIAGUAT RABBANI |              |           |



### FOUNDATION TREATMENT



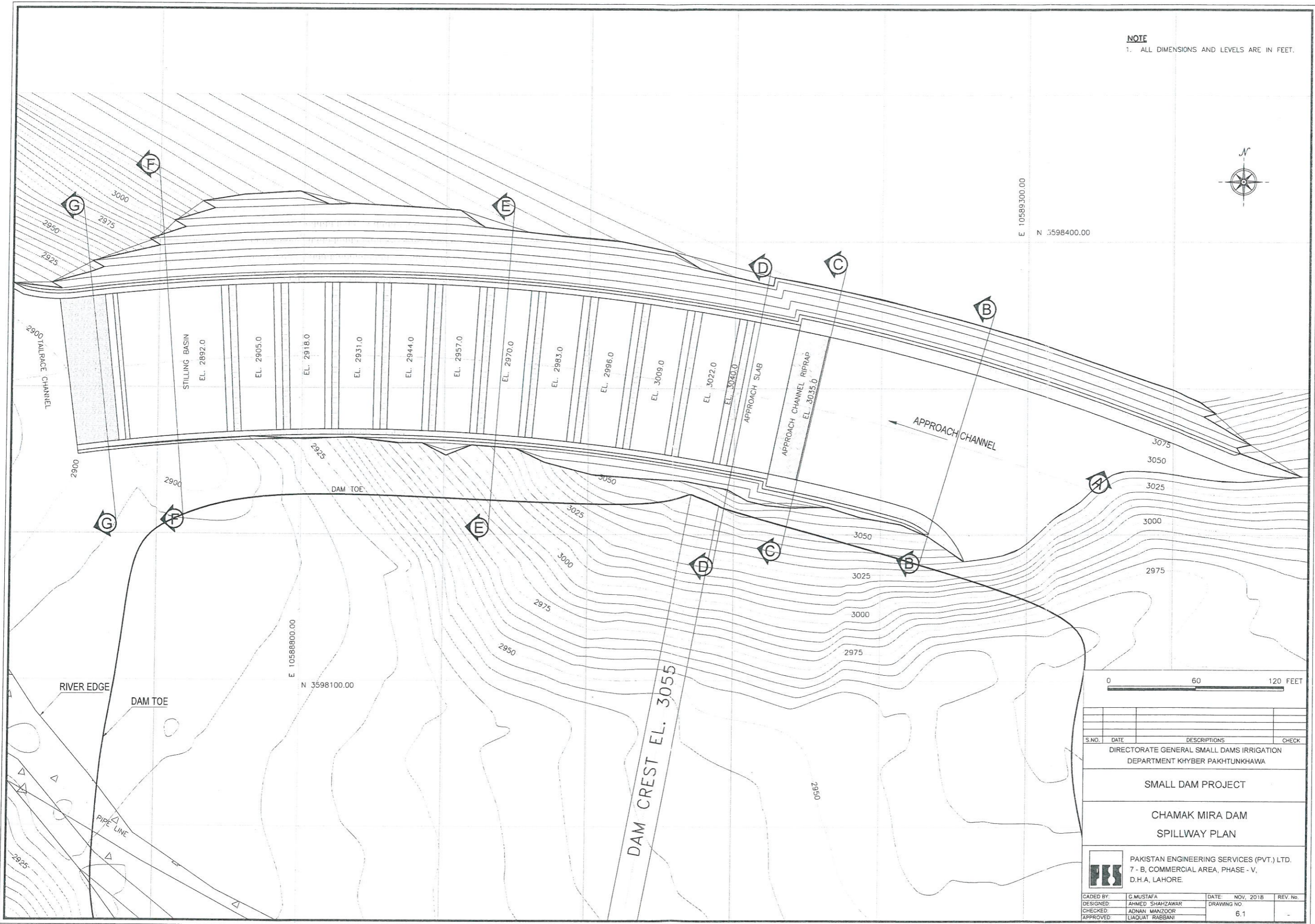
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| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                                       |              |       |
| SMALL DAM PROJECT   |                                       |              |       |
| CHAMAK MIRA DAM<br>FOUNDATION TREATMENT   |                                       |              |       |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                                       |              |       |
| DRAFTER: C.MUSTAFA<br>DESIGNED: AHMED SHAHZAWAR<br>CHECKED: ADNAN MANZOR<br>APPROVED: LIAQUAT RABBANI   | DATE: NOV, 2018<br>DRAWING NO:<br>5.7 | REV. No.     |       |



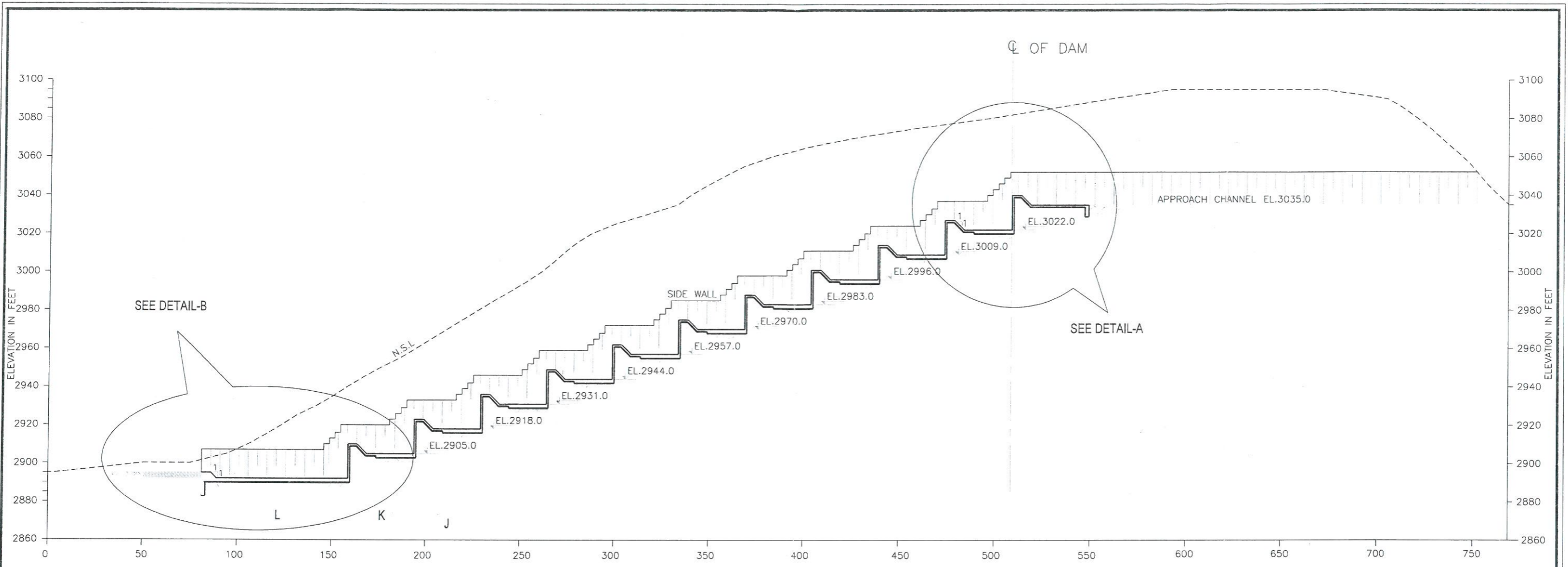
**NOTE**  
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.



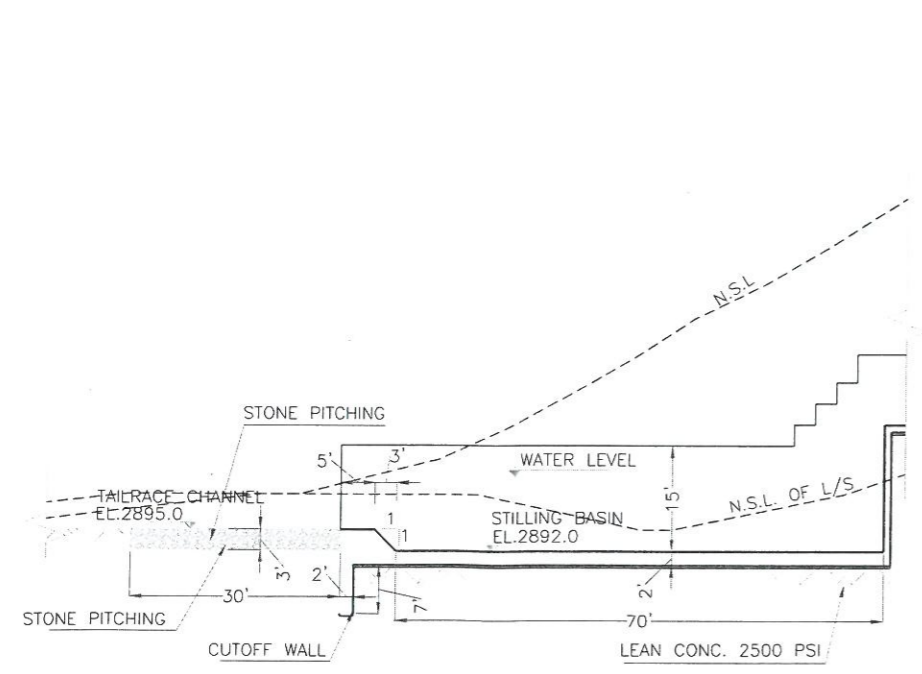
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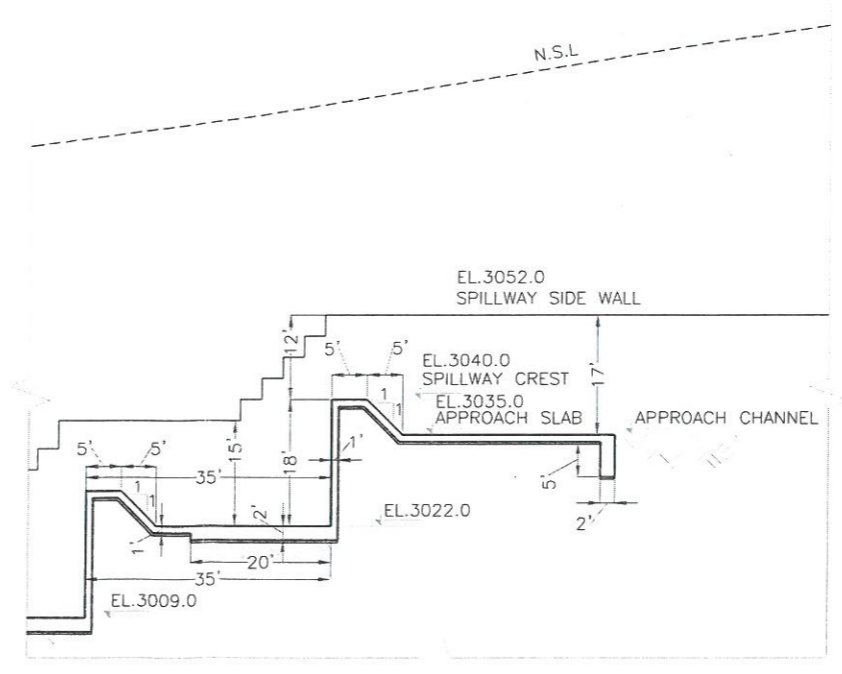
| S.NO.   | DATE   | DESCRIPTIONS                          | CHECK         |
|---|--|---------------------------------------|---------------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |  |                                       |               |
| SMALL DAM PROJECT   |  |                                       |               |
| CHAMAK MIRA DAM<br>SPILLWAY PLAN  |  |                                       |               |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |  |                                       |               |
| DRAFTER:<br>DESIGNED:<br>CHECKED:<br>APPROVED:  | G.MUSTAFA<br>AHMED SHAHZAWAR<br>ADNAN MANZOOR<br>LIAQUAT RABBANI | DATE: NOV, 2018<br>DRAWING NO:<br>6.1 | REV. No:<br>- |



SECTION A-A




DETAIL-B

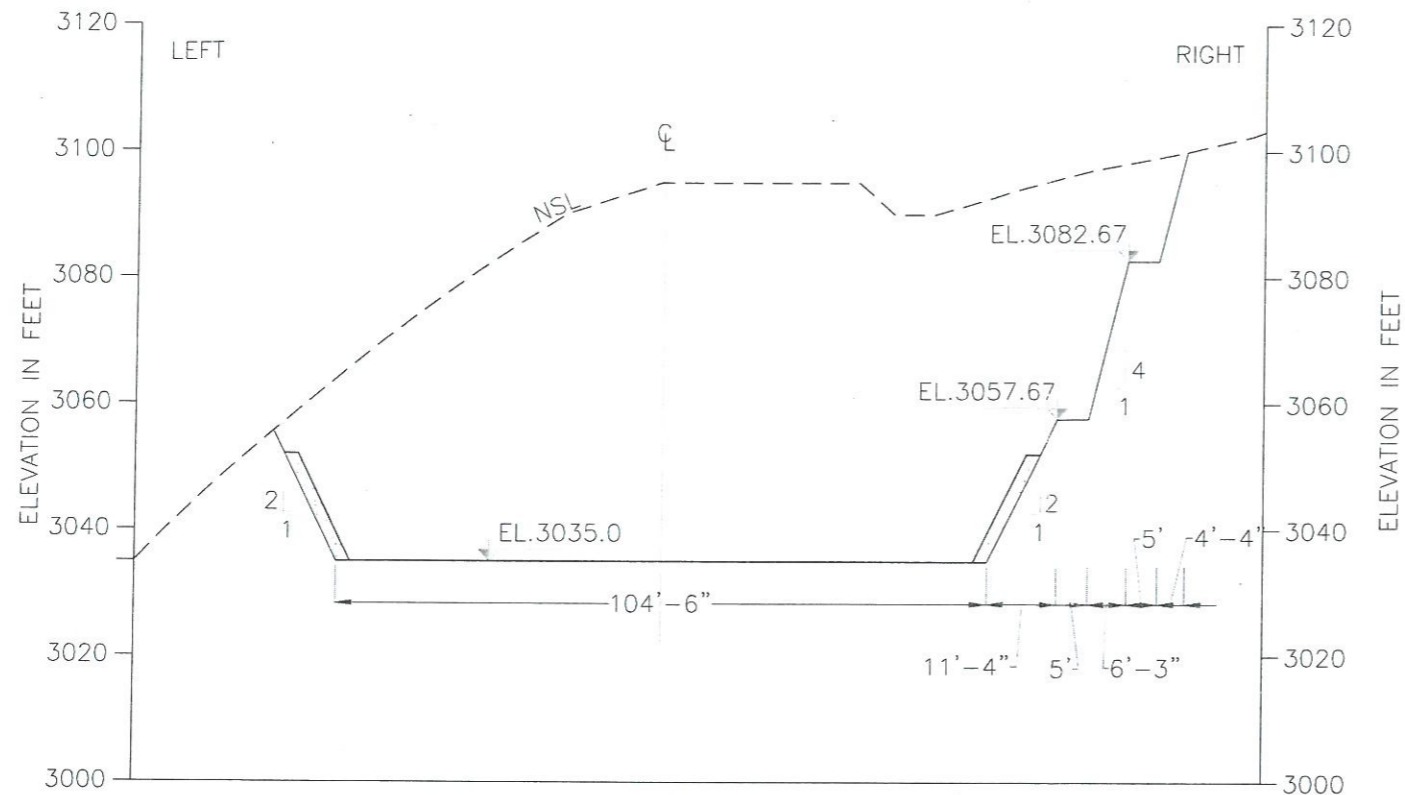


DETAIL-A

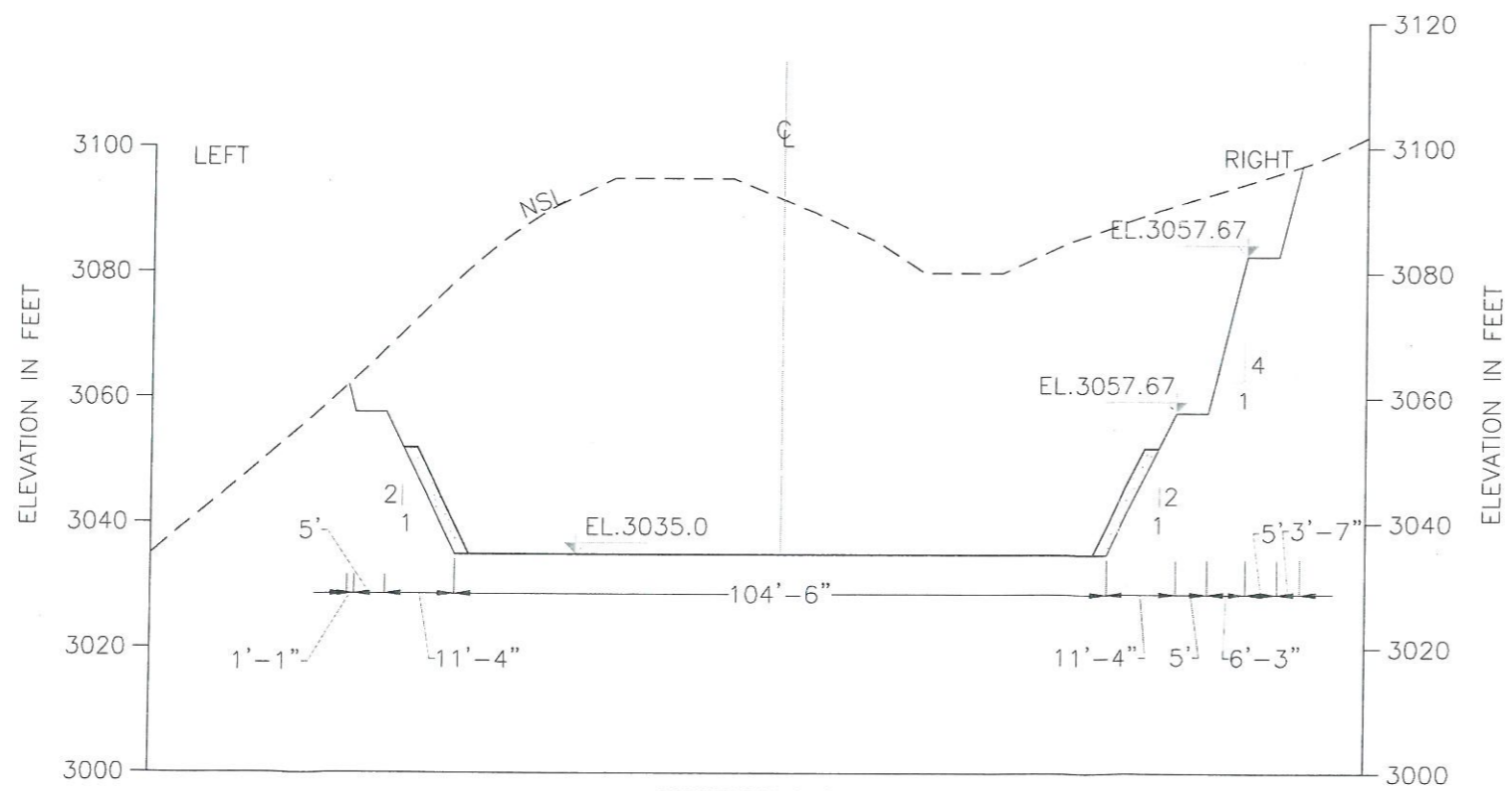
**NOTE**  
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.



| S.NO.   | DATE                                  | DESCRIPTIONS  | CHECK |
|---|---------------------------------------|---------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                                       |               |       |
| SMALL DAM PROJECT   |                                       |               |       |
| CHAMAK MIRA DAM<br>SPILLWAY L-SECTION & DETAILS   |                                       |               |       |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                                       |               |       |
| DRAFTER: C. MUSTAFA<br>DESIGNED: AHMED SHAHZAWAR<br>CHECKED: ADMAN MANZOOR<br>APPROVED: LIAQUAT RABBANI   | DATE: NOV, 2018<br>DRAWING NO:<br>6.2 | REV. No:<br>- |       |



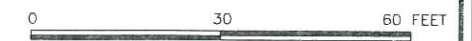
SECTION B-B



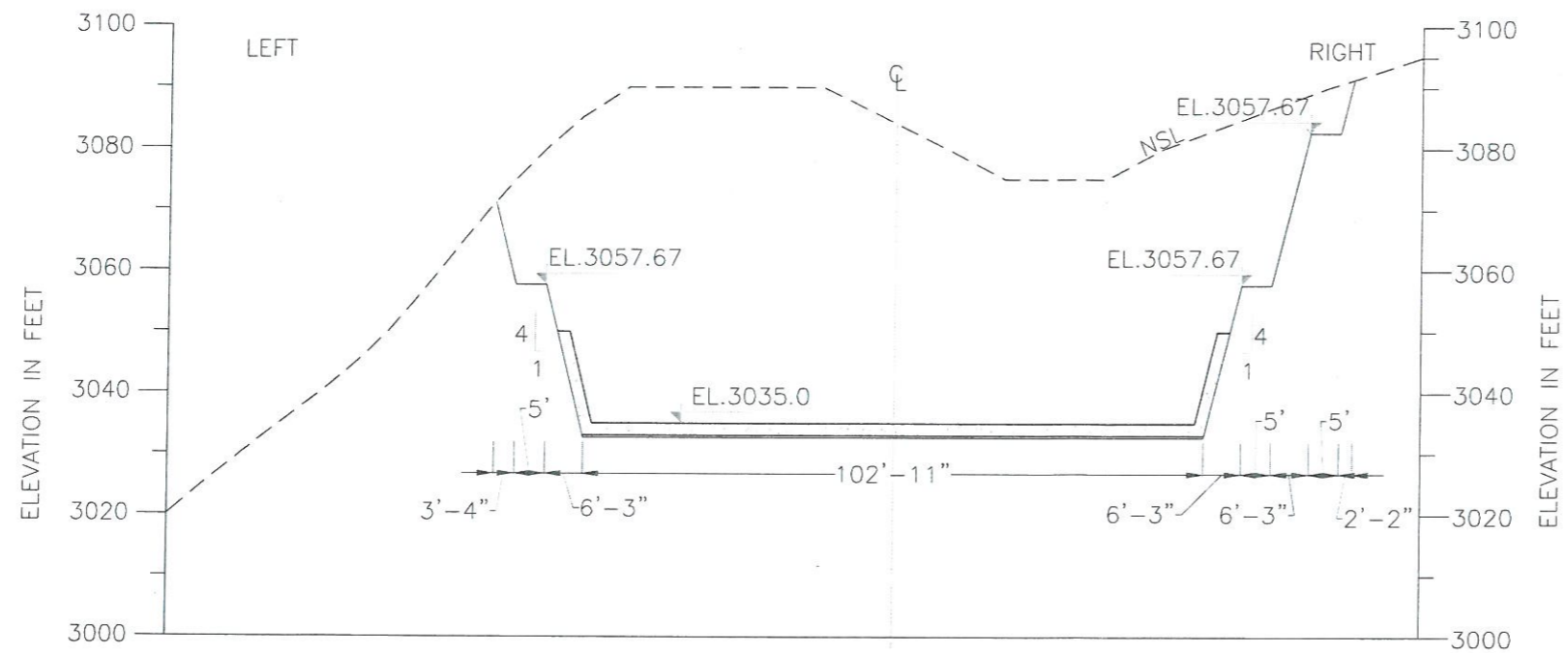
SECTION C-C

**NOTE**  
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.

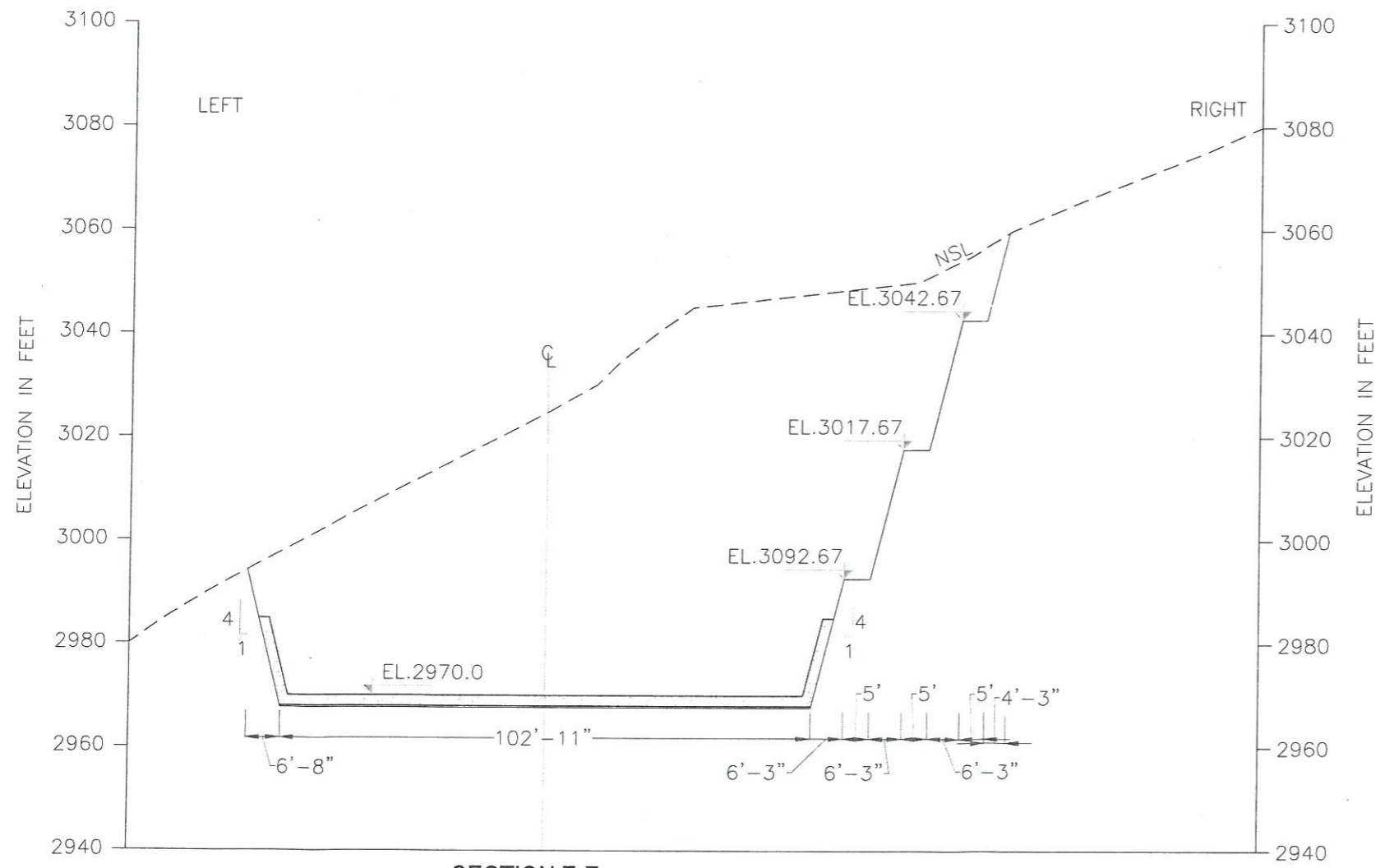
SHEET 1 OF 3



| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>SPILLWAY X-SECTION   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV. 2018 |
| DESIGNED BY:  | AHMED SHAHZAWAR | DRAWING NO:  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 6.3       |
| APPROVED:   | LIAQUAT RABBANI |              |           |



SECTION D-D



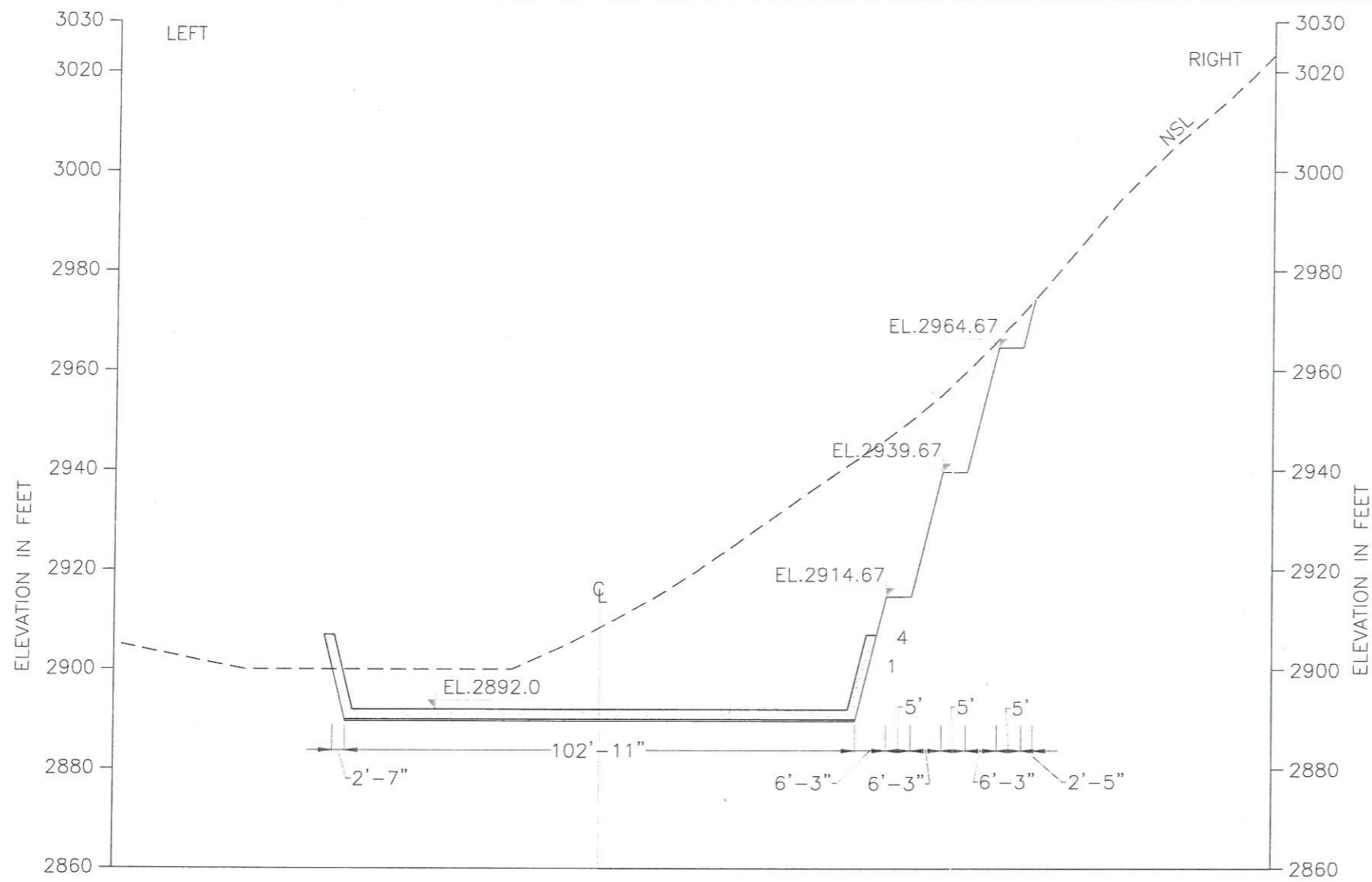
SECTION E-E

**NOTE**  
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.

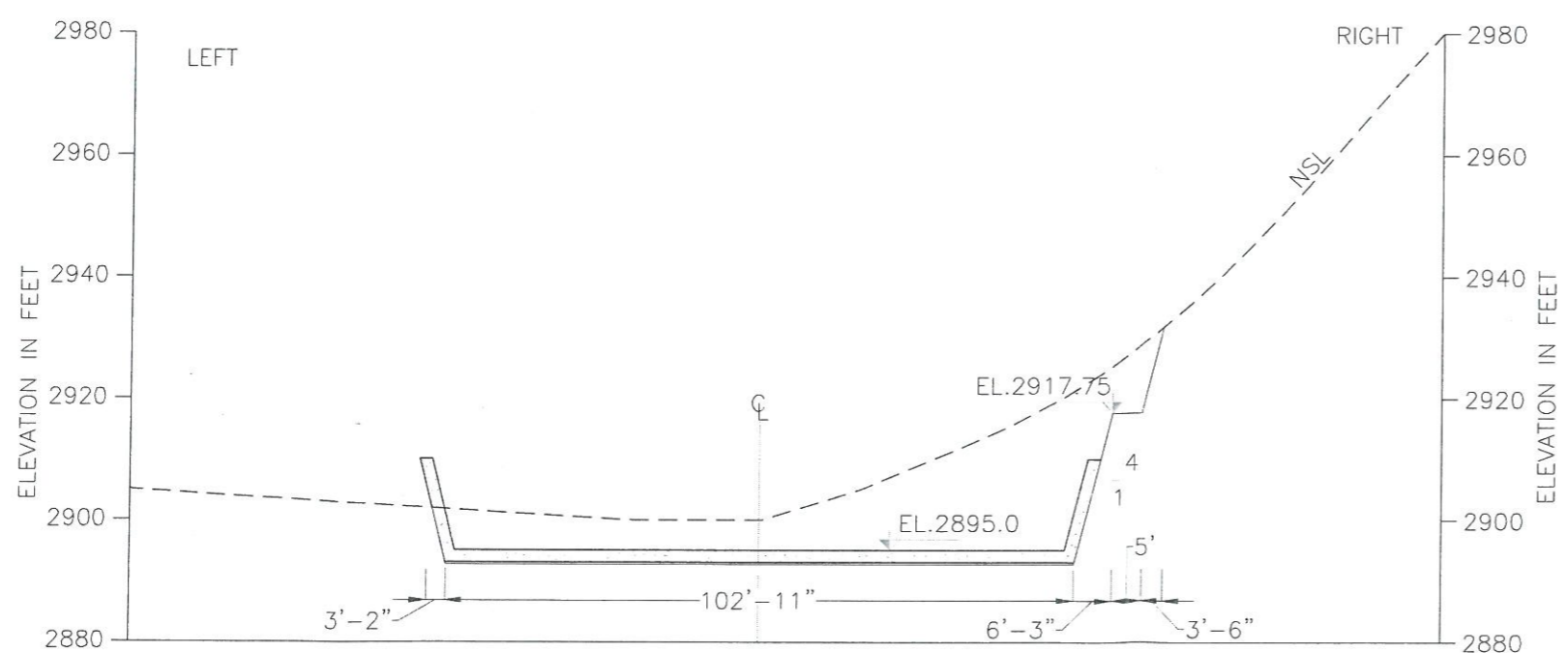
SHEET 2 OF 3



| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>SPILLWAY X-SECTION   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G. MUSTAFA      | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 6.3       |
| APPROVED:   | LIAQUAT RABBANI |              |           |



SECTION F-F



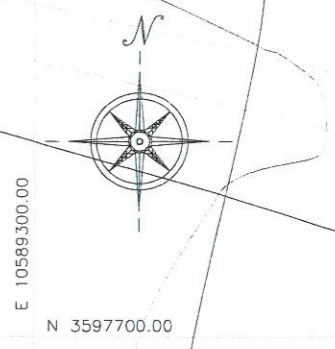
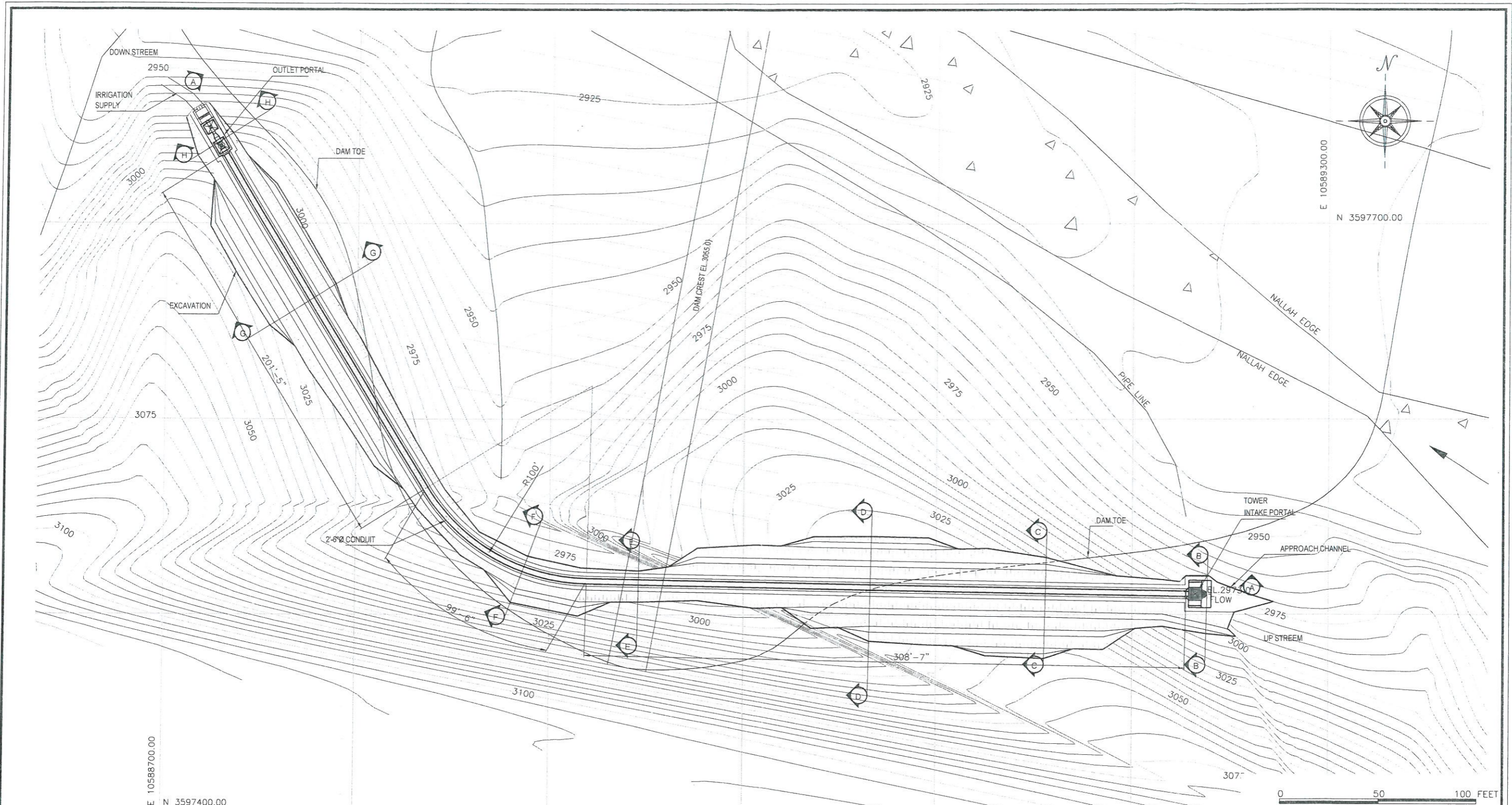
SECTION G-G

**NOTE**  
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.

SHEET 3 OF 3



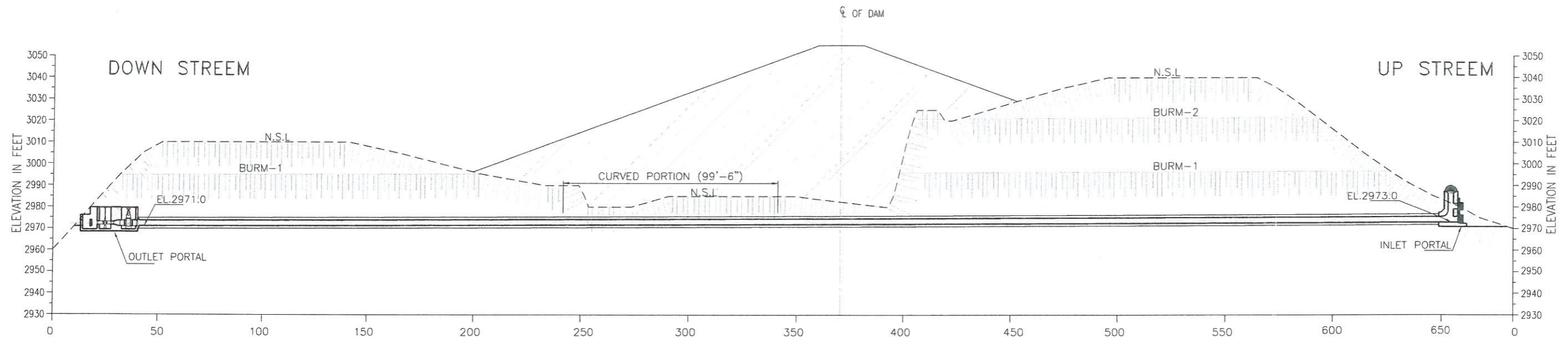
| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>SPILLWAY X-SECTION   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED BY:  | AHMED SHAHZAWAR | DRAWING NO.: | 6.3       |
| CHECKED:  | ADNAN MANZOOR   | REV. No:     | -         |
| APPROVED:   | LIAQUAT RABBANI |              |           |



E 10588700.00  
N 3597400.00



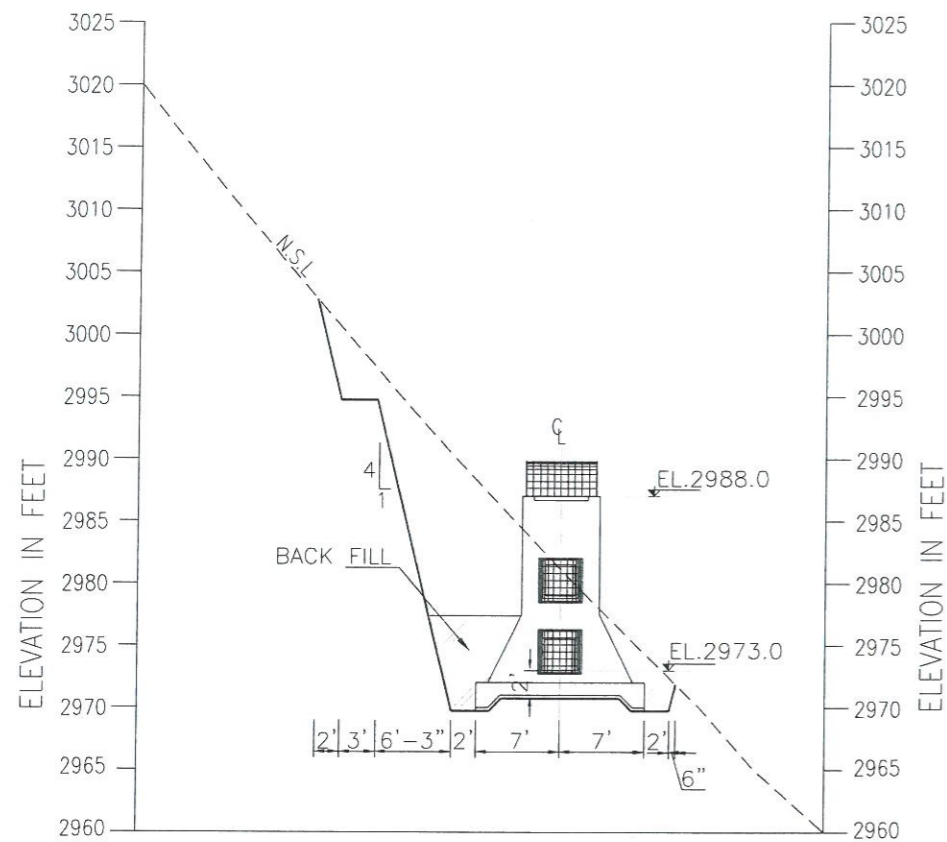
| S.NO.   | DATE                                | DESCRIPTIONS | CHECK |
|---|-------------------------------------|--------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                             |                                     |              |       |
| SMALL DAM PROJECT   |                                     |              |       |
| CHAMAK MIRA DAM<br>CONDUIT EXCAVATION<br>& LAYOUT PLAN  |                                     |              |       |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE.       |                                     |              |       |
| DRAFTER: G. MUSTAFA<br>DESIGNED: AHMED SHANZAWAR<br>CHECKED: ADNAN MANZOOR<br>APPROVED: LIAQUAT RABBANI | DATE: NOV, 2018<br>DRAWING NO.: 7.1 | REV. No.: -  |       |



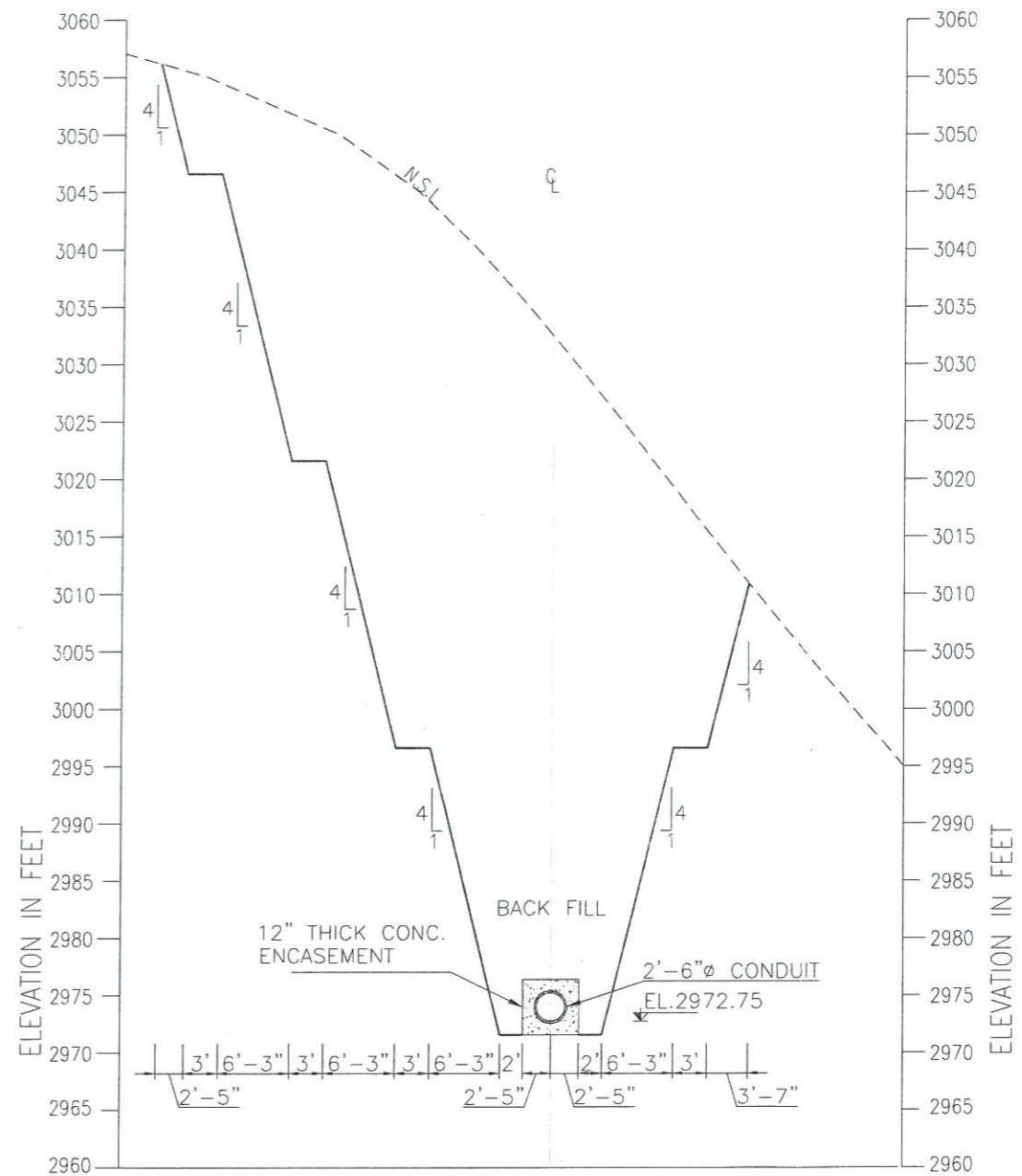
SECTION A-A



| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>CONDUIT SECTION A-A  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 7.2       |
| APPROVED:   | LIAQUAT RABBANI |              |           |




SECTION B-B

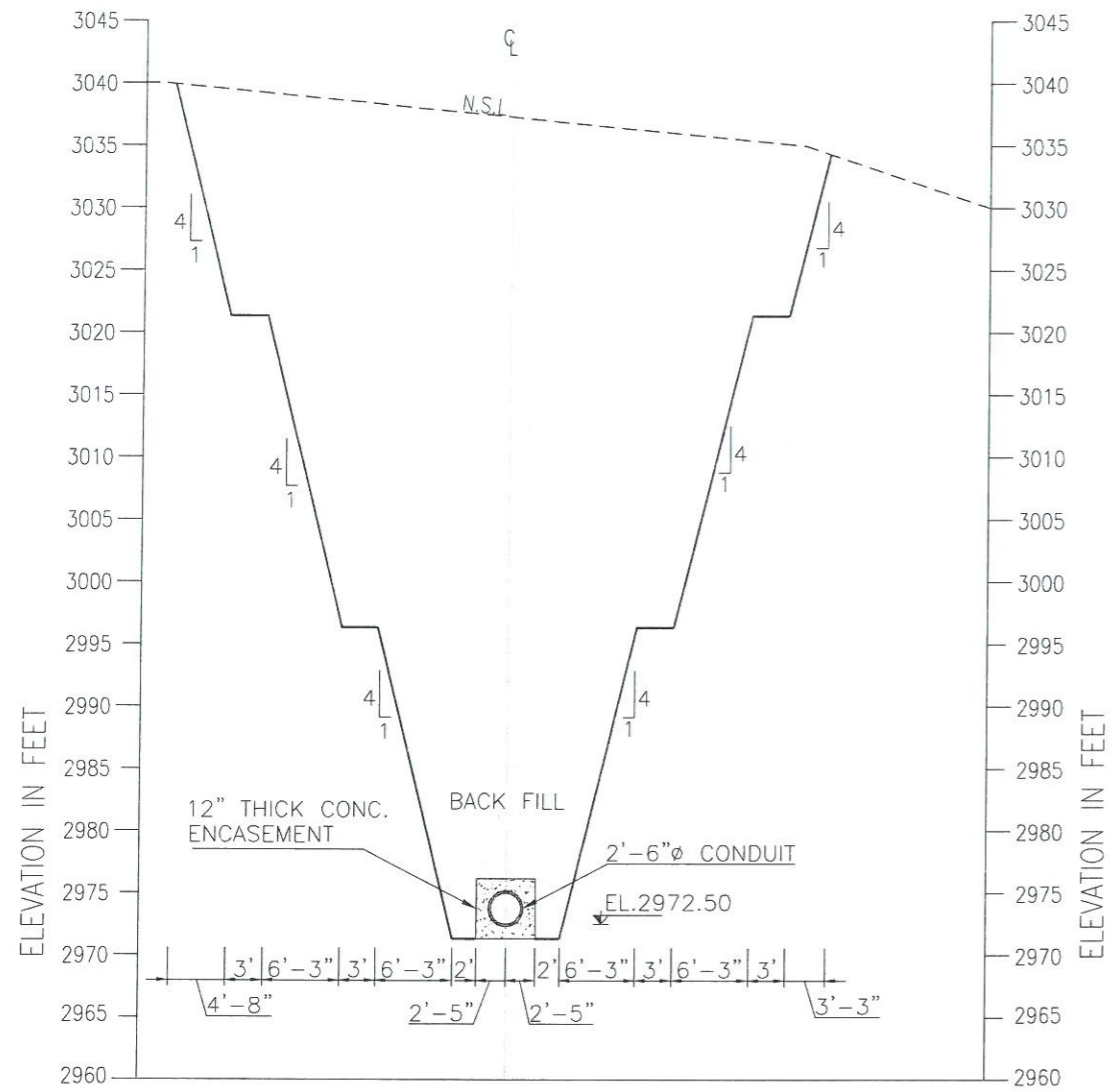


SECTION C-C

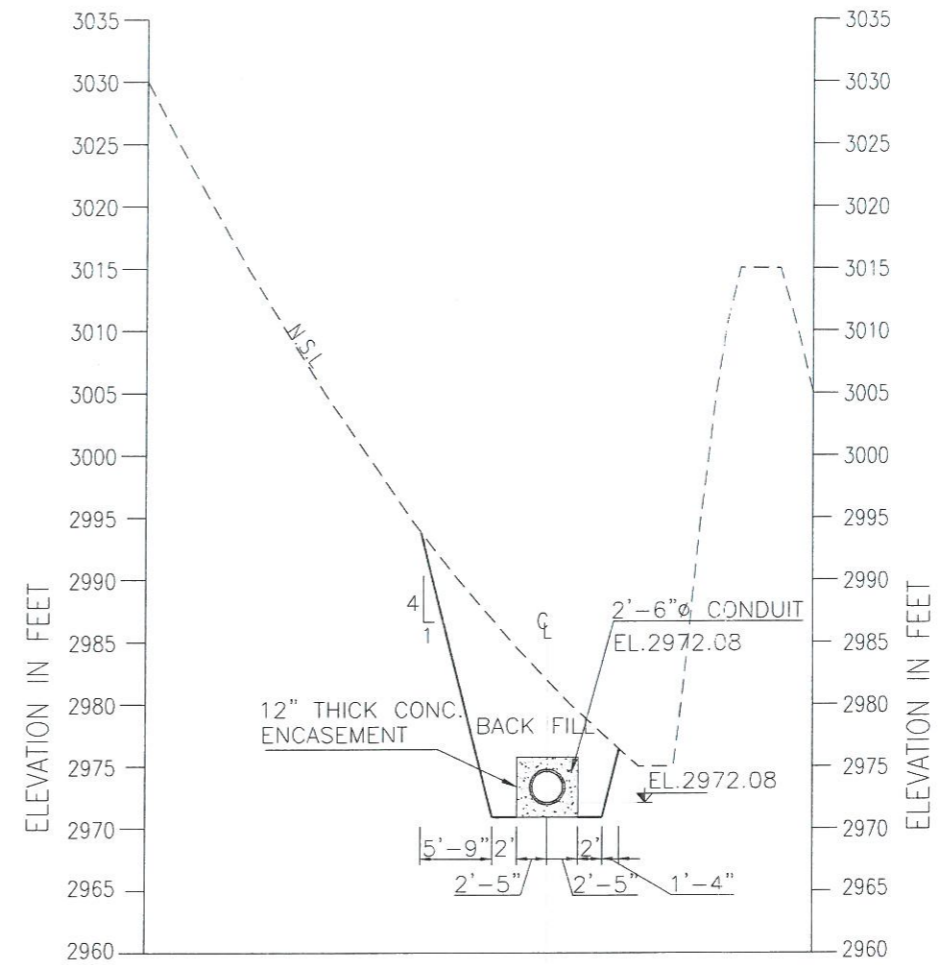


| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>CONDUIT CROSS SECTIONS   |                 |              |           |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A. LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV. 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 7.3       |
| APPROVED:   | LIAQUAT RABBANI |              |           |





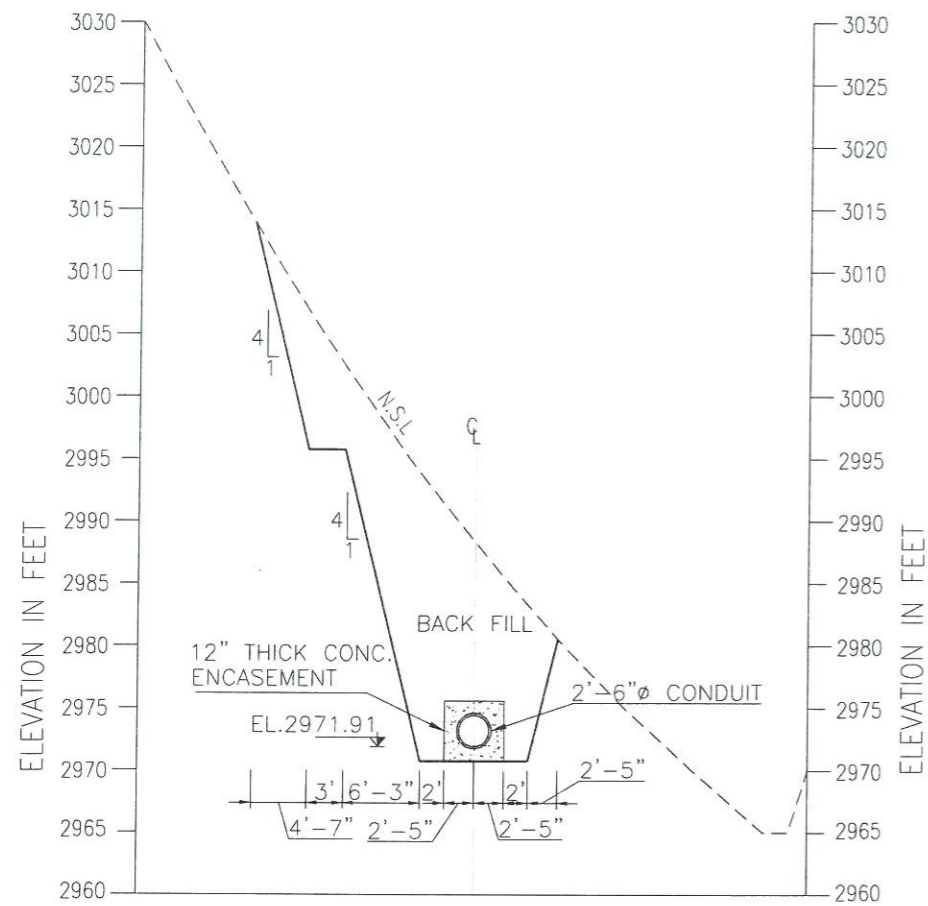
SECTION D-D



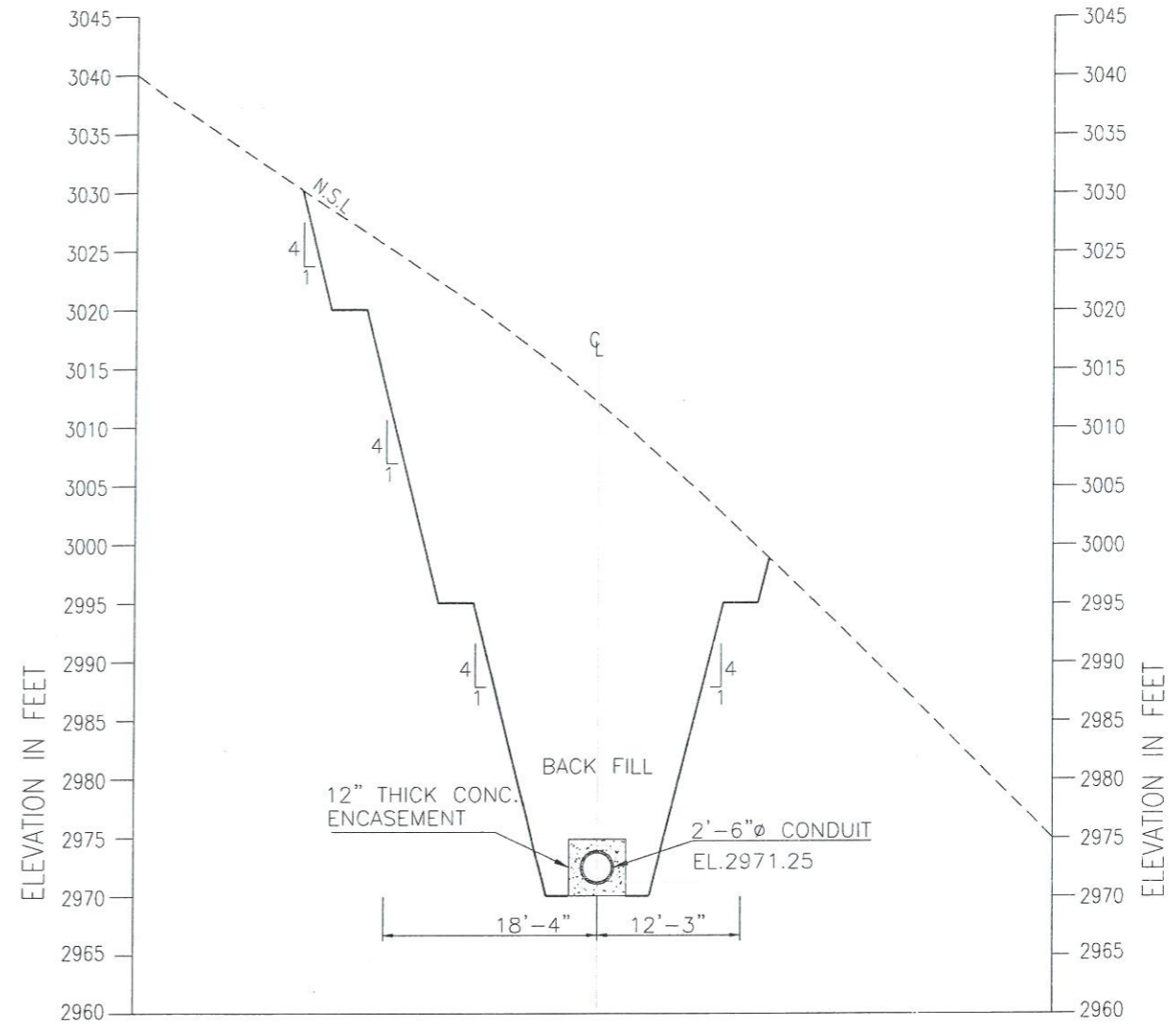
SECTION E-E



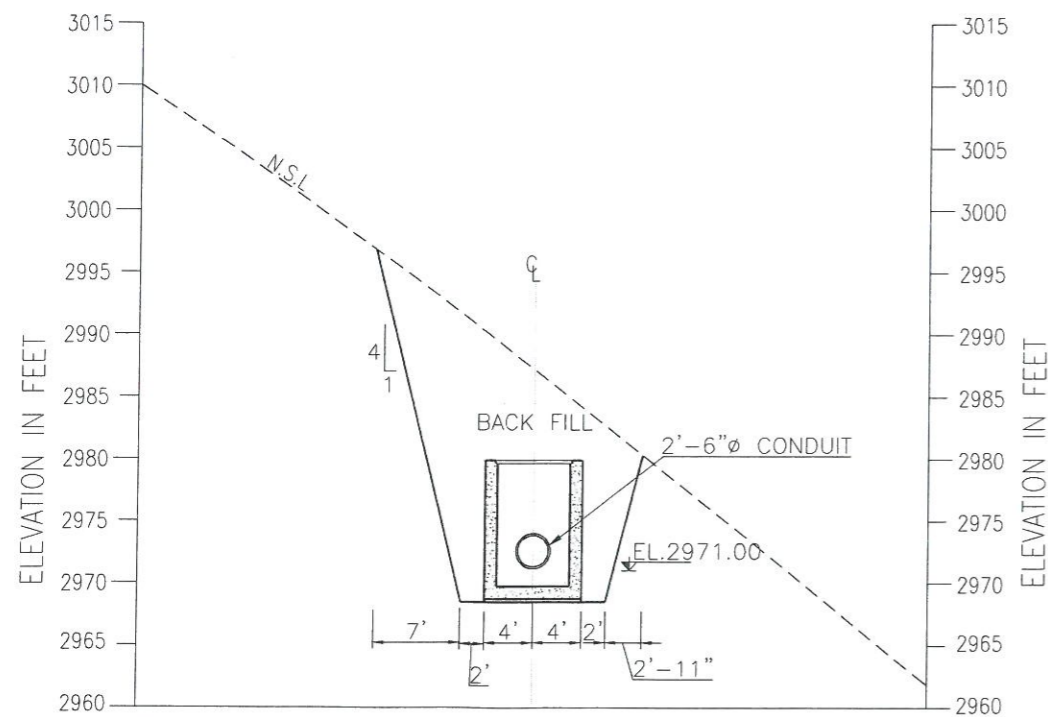
| S.NO.   | DATE               | DESCRIPTIONS            | CHECK |
|---|--------------------|-------------------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                    |                         |       |
| SMALL DAM PROJECT   |                    |                         |       |
| CHAMAK MIRA DAM<br>CONDUIT CROSS SECTIONS   |                    |                         |       |
|   |                    |                         |       |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                    |                         |       |
| DRAFTER BY:<br>G. MUSTAFA   | DATE:<br>NOV. 2018 | REV. No.<br>DRAWING NO. |       |
| DESIGNED BY:<br>AHMED SHAHZAWAR   |                    | 7.4                     |       |
| CHECKED BY:<br>ADNAN MANZOOR  |                    |                         |       |
| APPROVED BY:<br>LIAQUAT RABBANI   |                    |                         |       |



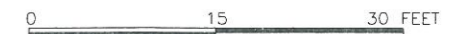
SECTION F-F



SECTION G-G



SECTION H-H



| S.NO. | DATE | DESCRIPTIONS | CHECK |
|-------|------|--------------|-------|
|       |      |              |       |

DIRECTORATE GENERAL SMALL DAMS IRRIGATION  
DEPARTMENT KHYBER PAKHTUNKHAWA

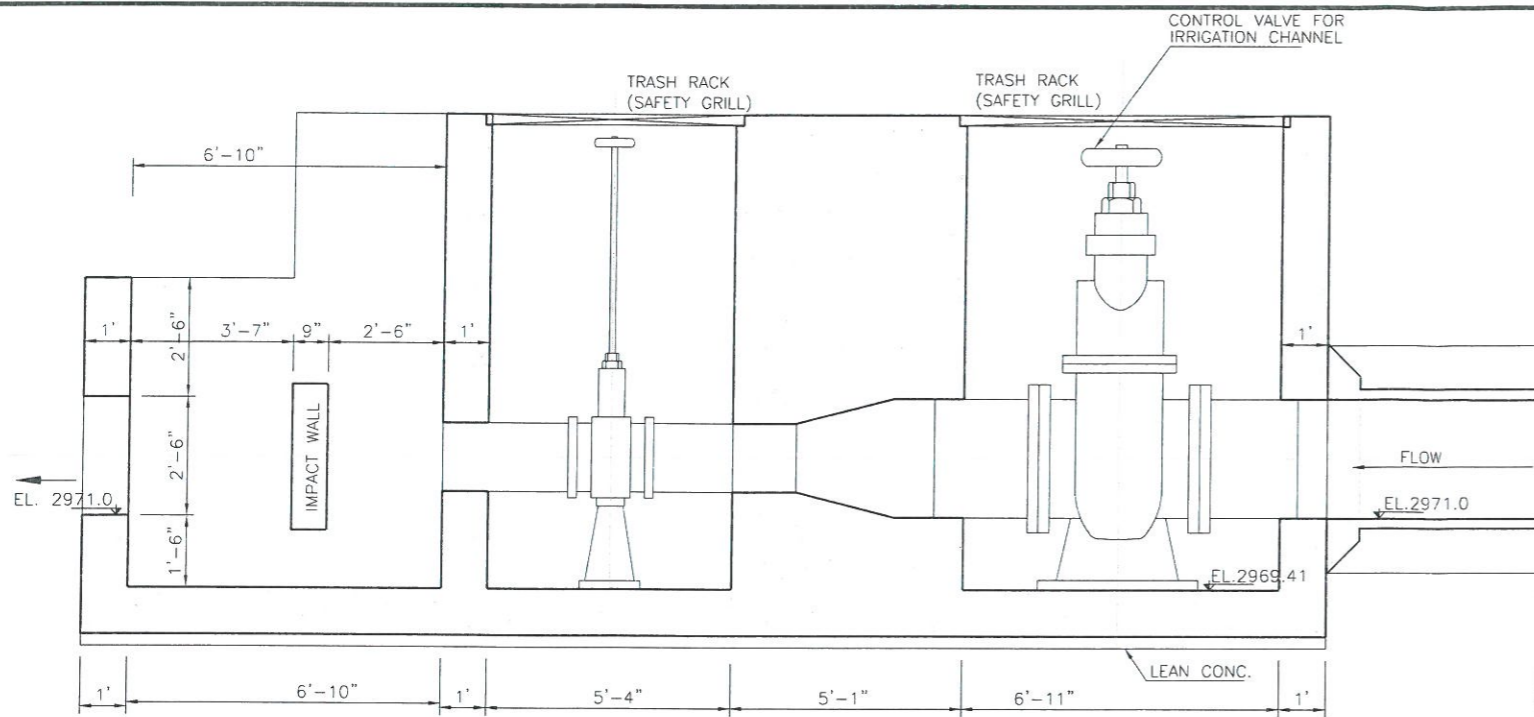
SMALL DAM PROJECT

CHAMAK MIRA DAM  
CONDUIT CROSS SECTIONS

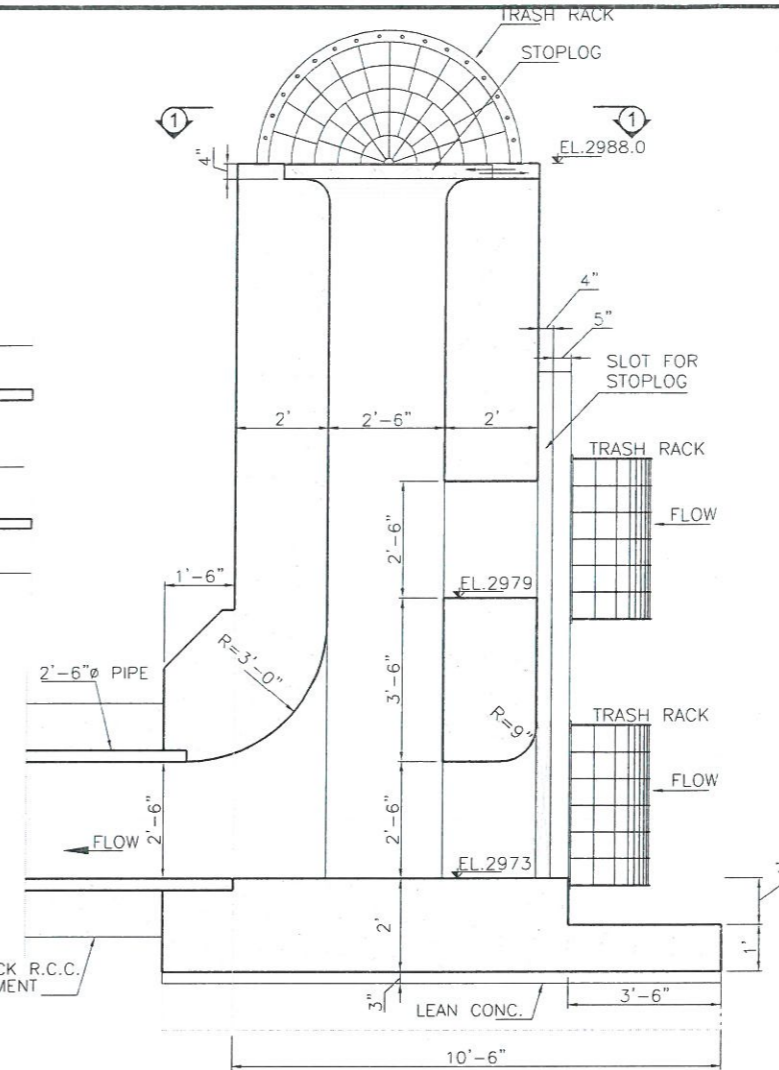


PAKISTAN ENGINEERING SERVICES (PVT.) LTD.  
7 - B, COMMERCIAL AREA, PHASE - V,  
D.H.A, LAHORE.

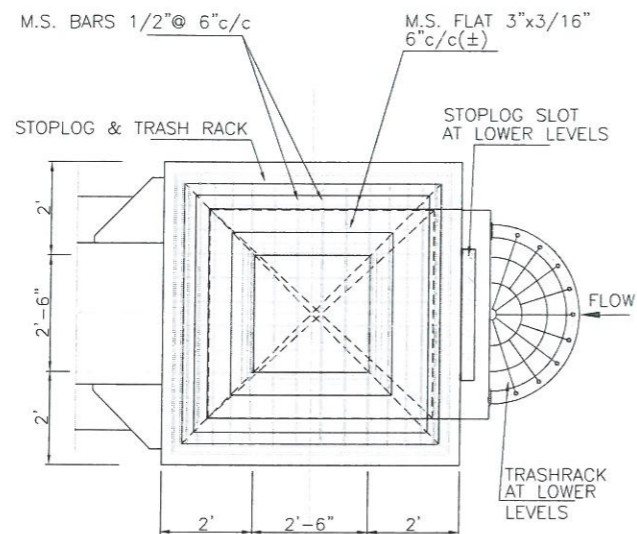
|              |                 |             |           |          |
|--------------|-----------------|-------------|-----------|----------|
| DESIGNED BY: | G. MUSTAFA      | DATE:       | NOV. 2018 | REV. No. |
| CHECKED:     | AHMED SHAHZAWAR | DRAWING NO. | 7.5       |          |
| APPROVED:    | LIAQUAT RABBANI |             |           |          |



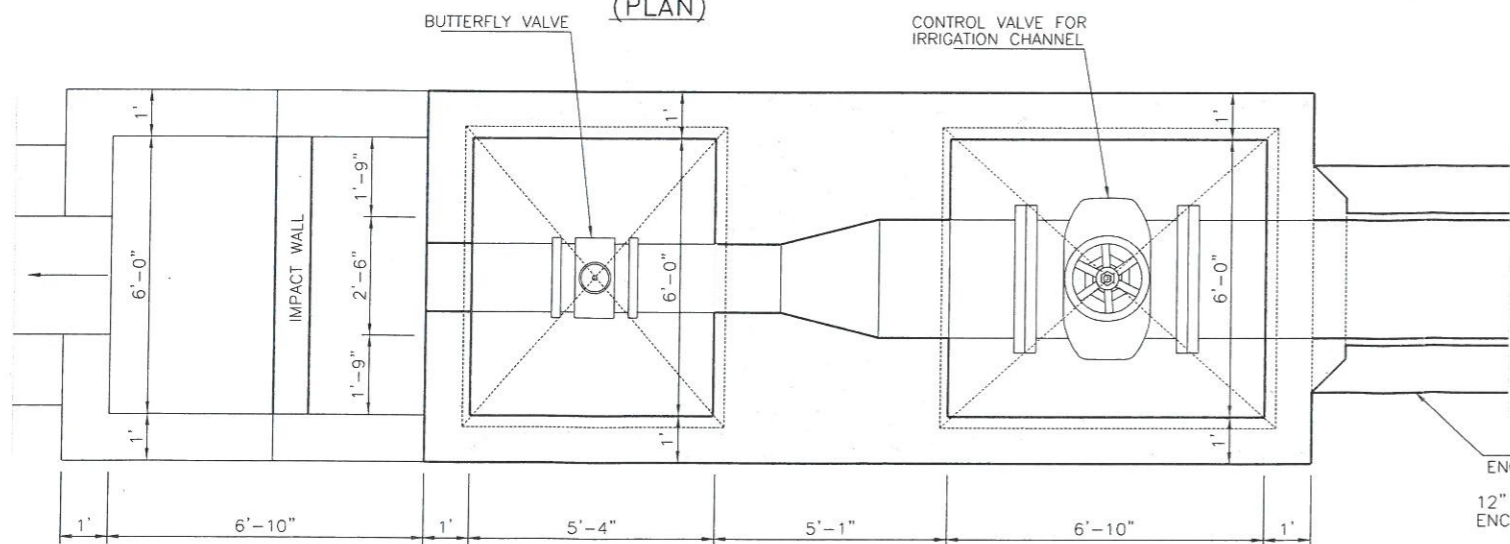
**OUTLET STRUCTURE (SECTION)**  
SCALE: N.T.S.



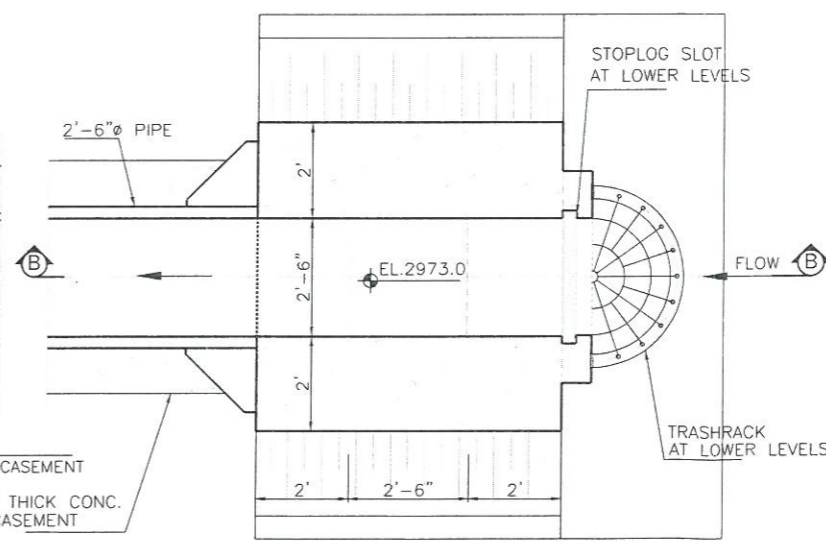
**SECTION B-B INLET (TOWER) PORTAL**



**DETAIL 1-1 INLET STRUCTURE AT EL. 2988.0 (PLAN)**



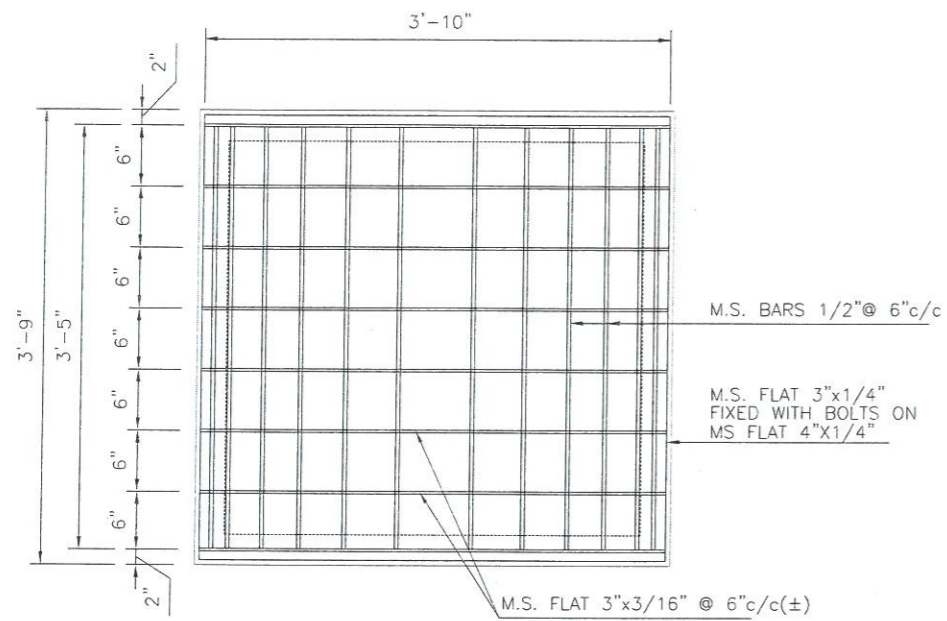
**OUTLET STRUCTURE DETAIL**



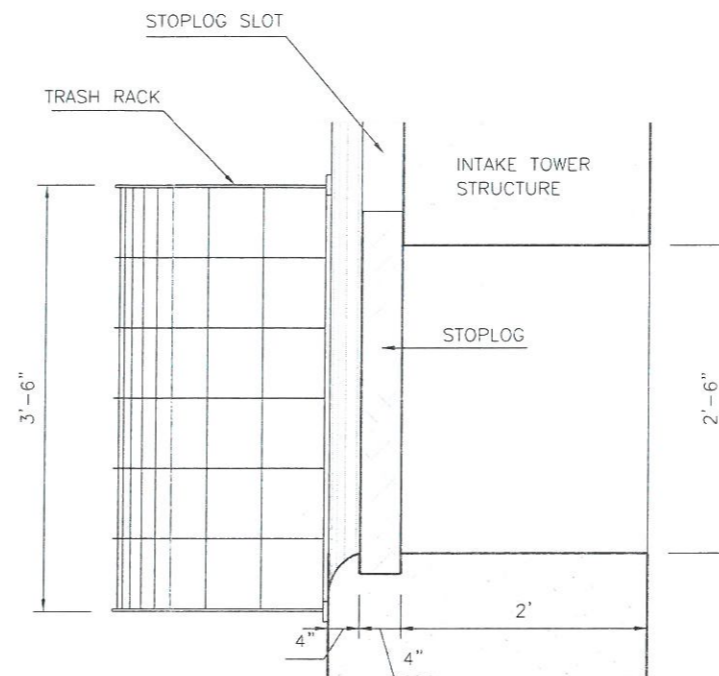
**INLET PORTAL DETAIL (PLAN)**



| S.NO.   | DATE                                  | DESCRIPTIONS  | CHECK |
|---|---------------------------------------|---------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                               |                                       |               |       |
| SMALL DAM PROJECT   |                                       |               |       |
| CHAMAK MIRA DAM<br>DETAILS OF INTAKE PORTAL AND<br>OUTLET PORTAL  |                                       |               |       |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE.         |                                       |               |       |
| DRAFTER BY: G.MUSTAFA<br>DESIGNED: AHMED SHAHZAWAR<br>CHECKED: ADNAN MANZDOR<br>APPROVED: LIAQUAT RABBANI | DATE: NOV, 2018<br>DRAWING NO:<br>7.6 | REV. No:<br>- |       |



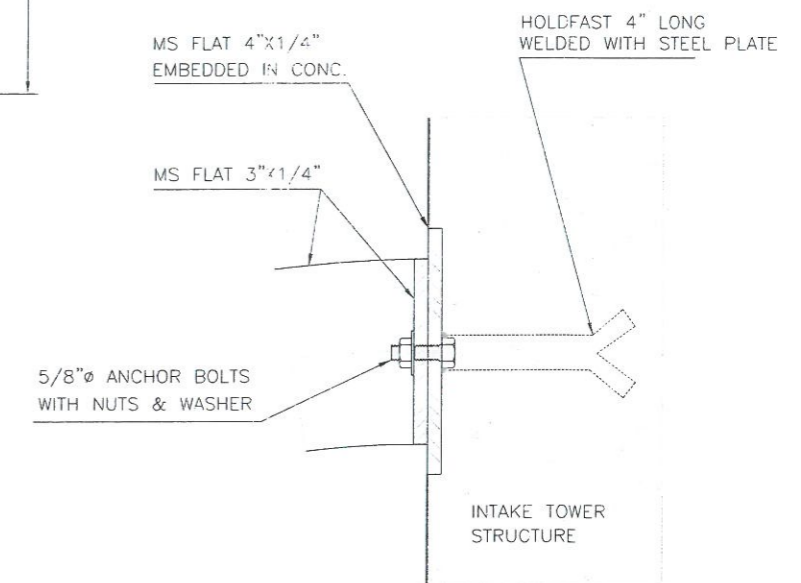
**SECTION A-A**  
LOWER TASHRACK ELEVATION



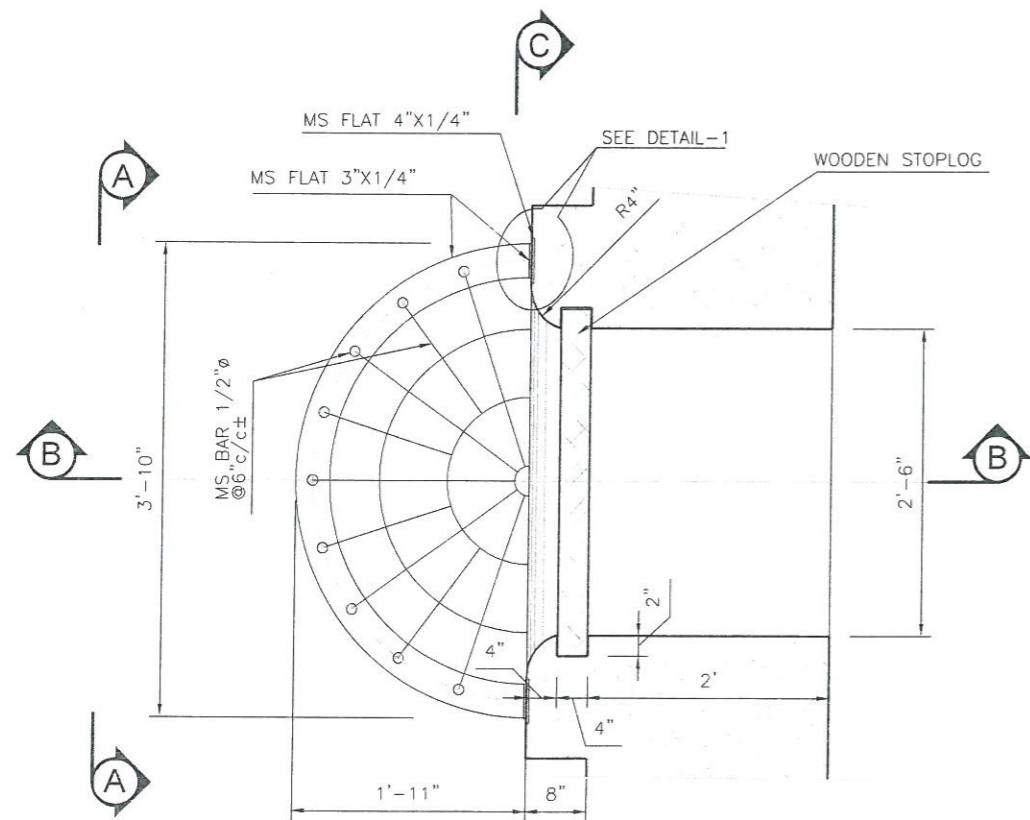
**SECTION B-B**

**NOTE**

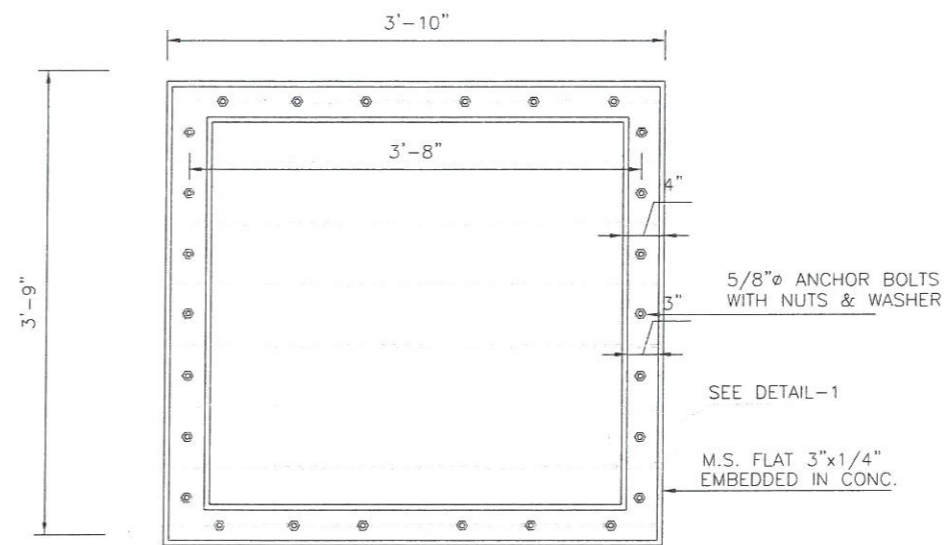
1. ALL DIMENSIONS AND LEVELS ARE IN FEET.




**DETAIL - 1**

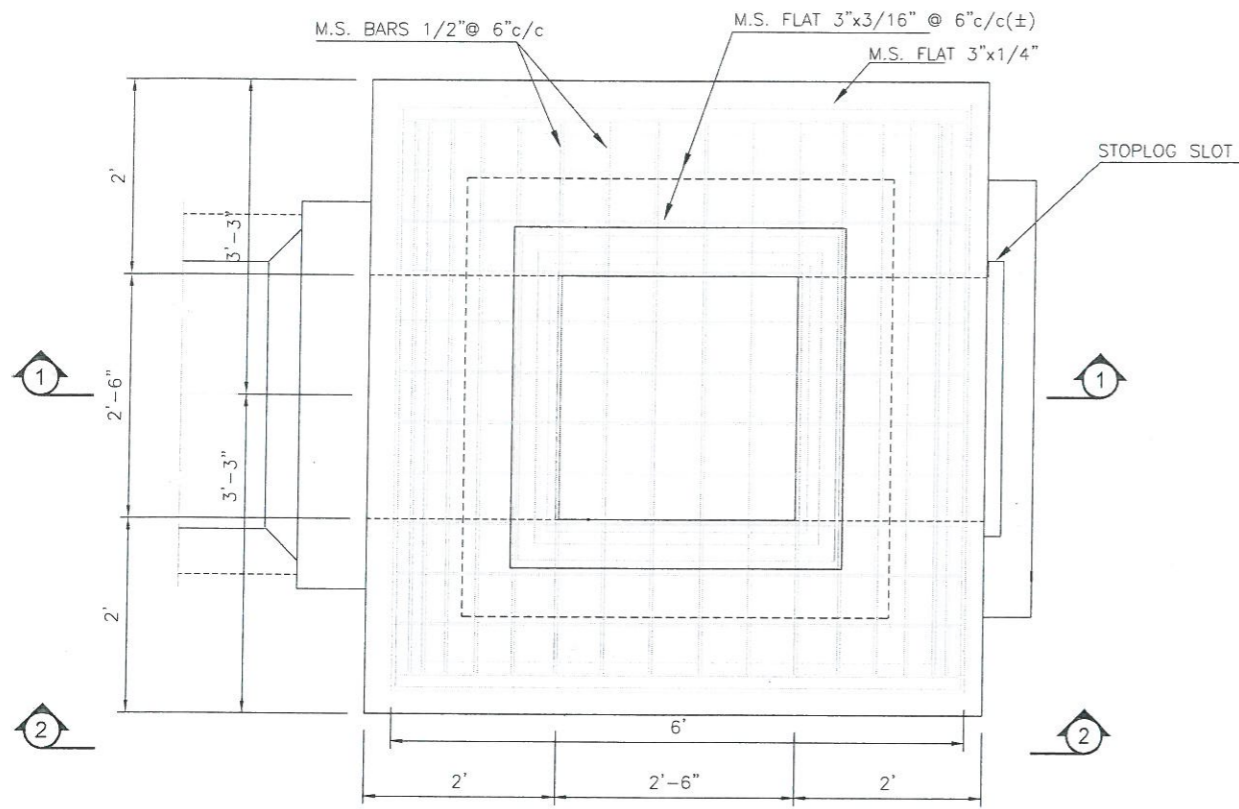


**LOWER TASHRACK**  
PLAN

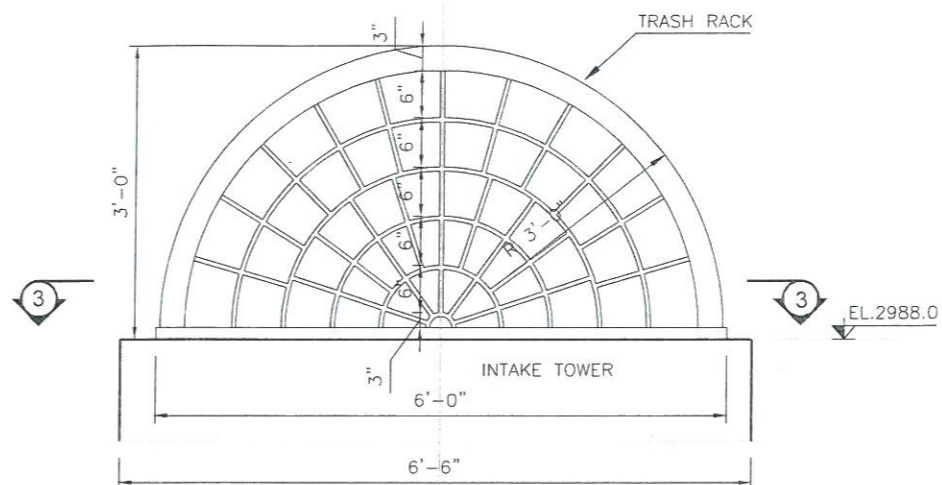


**SECTION C-C**  
LOWER TASHRACK FRAME

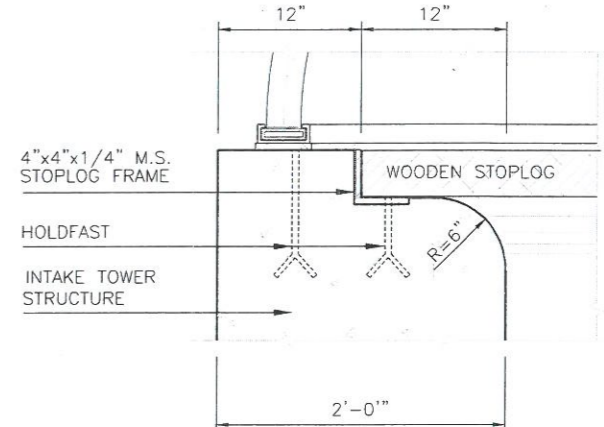
| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>TRASHRACK AND STOPLOG DETAILS<br>INTAKE OPENING AT LOWER LEVEL   |                 |              |           |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAMAR | DRAWING NO:  |           |
| CHECKED:  | ADMAN MANZOOR   |              | 7.7       |
| APPROVED:   | LIQJAL RABBANI  |              |           |



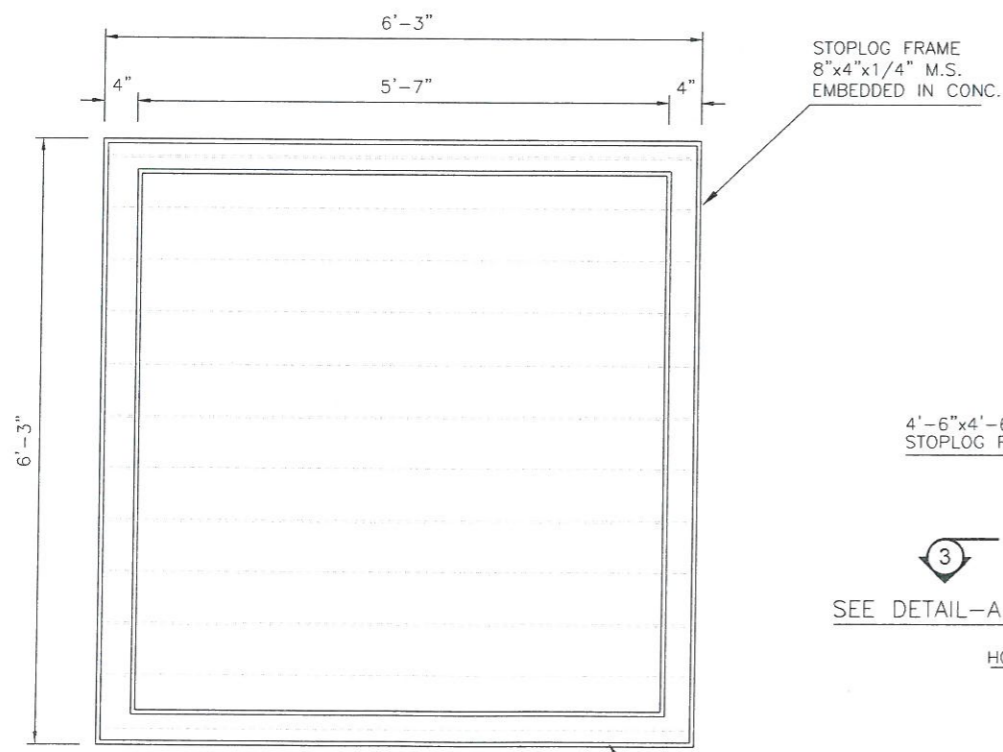
**TRASHRACK PLAN**  
INLET STRUCTURE AT EL.3000.0



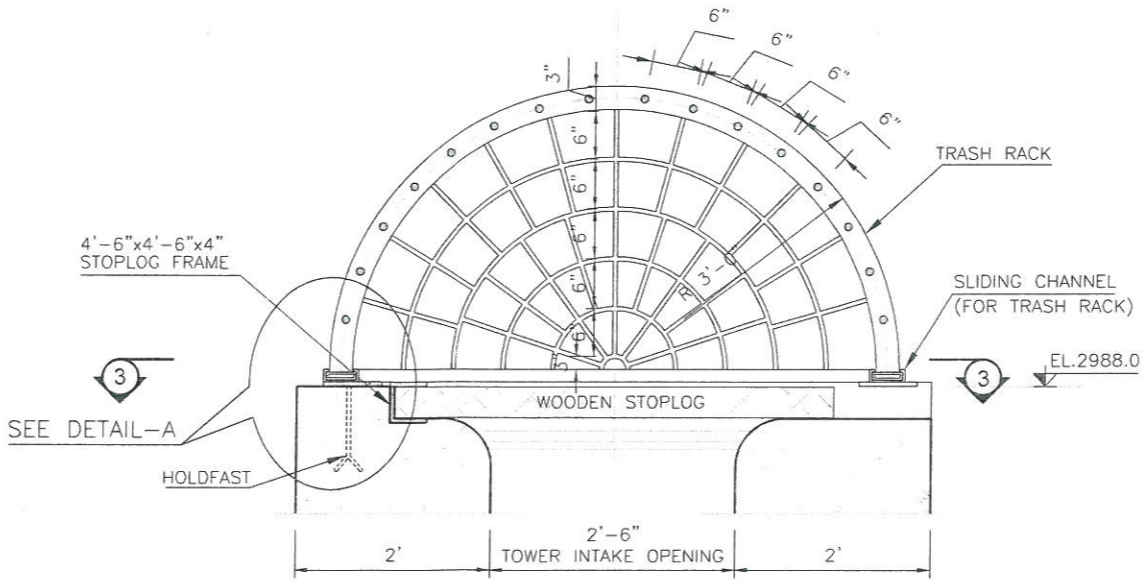
**SECTION 2-2**  
(ELEVATION OF TRASHRACK)




**DETAIL - A**

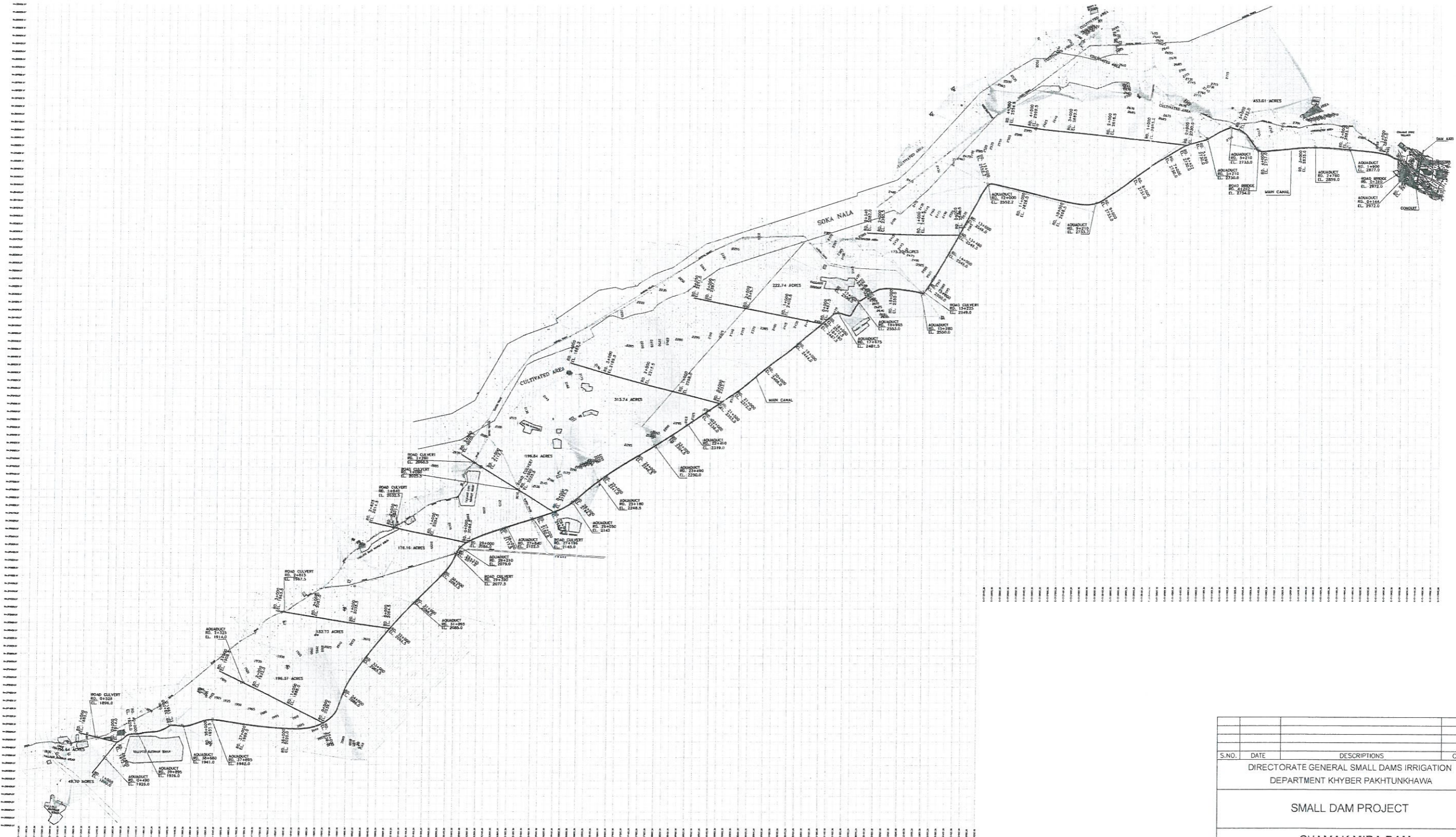
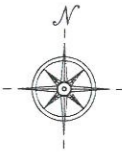


**STOPLOG FRAME 3-3**  
PLAN



**SECTION 1-1**

| S.NO.   | DATE                                   | DESCRIPTIONS   | CHECK |
|---|--|----------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |  |                |       |
| SMALL DAM PROJECT   |  |                |       |
| CHAMAK MIRA DAM<br>TRASHRACK AND STOPLOG<br>DETAILS   |  |                |       |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |  |                |       |
| DRAFTER: G.MUSTAFA<br>DESIGNED: AHMED SHANZAWAR<br>CHECKED: ADAM MANZOOR<br>APPROVED: LAUQAT RABBANI  | DATE: NOV, 2018<br>DRAWING NO.:<br>7.8 | REV. No.:<br>- |       |



| S.NO.   | DATE            | DESCRIPTIONS  | CHECK     |
|---|-----------------|---|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA |                 |   |           |
| SMALL DAM PROJECT   |                 |   |           |
| CHAMAK MIRA DAM<br>COMMAND AREA WITH<br>CANAL ALIGNMENT                     |                 |   |           |
|   |                 | PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE  | NOV. 2018 |
| DESIGNED BY:  | AHMED SHAHZAWAR | DRAWING NO.   |           |
| CHECKED:  | ADNAN MANZOOR   |   | 7.10      |
| APPROVED:   | LIAQUAT RABBANI |   |           |

| R.D.   | N.S.Level | Bed Level          | F.S.Level          |
|--------|-----------|--------------------|--------------------|
| 0+000  | 2973.00   | 2971.50            | 2974.25            |
| 0+144  | 2972.00   | 2971.43            | 2974.18            |
| 0+310  | 2972.00   | 2971.34            | 2974.09            |
| 1+000  | 2895.00   | 2971.00<br>2876.00 | 2973.75<br>2878.75 |
| 1+900  | 2877.00   | 2875.55            | 2878.30            |
| 2+000  | 2883.00   | 2875.50<br>2857.00 | 2878.25<br>2859.82 |
| 2+760  | 2859.00   | 2857.62<br>2833.00 | 2860.44<br>2835.82 |
| 3+000  | 2835.00   | 2832.88<br>2731.00 | 2835.70<br>2833.82 |
| 4+000  | 2757.00   | 2730.50            | 2733.32            |
| 4+242  | 2754.00   | 2730.38            | 2733.20            |
| 5+000  | 2733.00   | 2730.00            | 2732.82            |
| 5+210  | 2733.00   | 2729.89            | 2732.71            |
| 5+800  | 2730.00   | 2729.59            | 2732.41            |
| 6+000  | 2730.00   | 2729.50            | 2732.32            |
| 6+422  | 2730.00   | 2729.29<br>2729.56 | 2732.11            |
| 7+000  | 2730.00   | 2729.17            | 2731.72            |
| 8+000  | 2731.00   | 2728.67            | 2731.22            |
| 9+000  | 2733.00   | 2728.17            | 2730.72            |
| 9+210  | 2734.00   | 2728.06<br>2695.00 | 2730.61<br>2697.55 |
| 10+000 | 2696.00   | 2694.39<br>2625.00 | 2696.94<br>2627.55 |
| 11+000 | 2626.00   | 2624.50<br>2549.00 | 2627.05<br>2551.55 |
| 12+000 | 2552.00   | 2548.50            | 2551.05            |
| 13+000 | 2549.00   | 2548.00            | 2550.55            |
| 13+480 | 2549.00   | 2547.76<br>2547.72 | 2550.31            |
| 14+000 | 2549.00   | 2547.46            | 2550.05            |
| 15+000 | 2550.00   | 2546.96            | 2549.55            |
| 15+225 | 2549.00   | 2546.85            | 2549.44            |
| 15+280 | 2550.00   | 2546.82            | 2549.41            |
| 16+000 | 2550.00   | 2546.46            | 2549.05            |
| 16+965 | 2553.00   | 2545.98            | 2548.57            |
| 17+000 | 2550.00   | 2545.96<br>2480.00 | 2548.55<br>2482.59 |
| 17+675 | 2482.00   | 2479.66<br>2471.00 | 2482.27<br>3343.48 |
| 18+000 | 2473.00   | 2470.84<br>2467.0  | 3342.98<br>3177.98 |
| 18+190 | 2468.00   | 2466.9<br>2443.0   | 3177.48<br>3229.79 |
| 19+000 | 2444.00   | 2442.59<br>2407.00 | 3229.29<br>3184.79 |
| 20+000 | 2408.00   | 2406.50<br>2371.50 | 3184.29<br>3170.29 |
| 21+000 | 2373.00   | 2371.00<br>2353.00 | 3169.79<br>3167.29 |
| 21+500 | 2354.00   | 2352.75<br>2335.00 | 3166.79<br>3163.29 |
| 22+000 | 2336.00   | 2334.75<br>2318.00 | 3162.79<br>3136.79 |
| 22+490 | 2319.00   | 2317.50<br>2304.00 | 3136.29<br>3104.11 |
| 23+000 | 2305.00   | 2303.50<br>2247.50 | 3103.61<br>3078.11 |

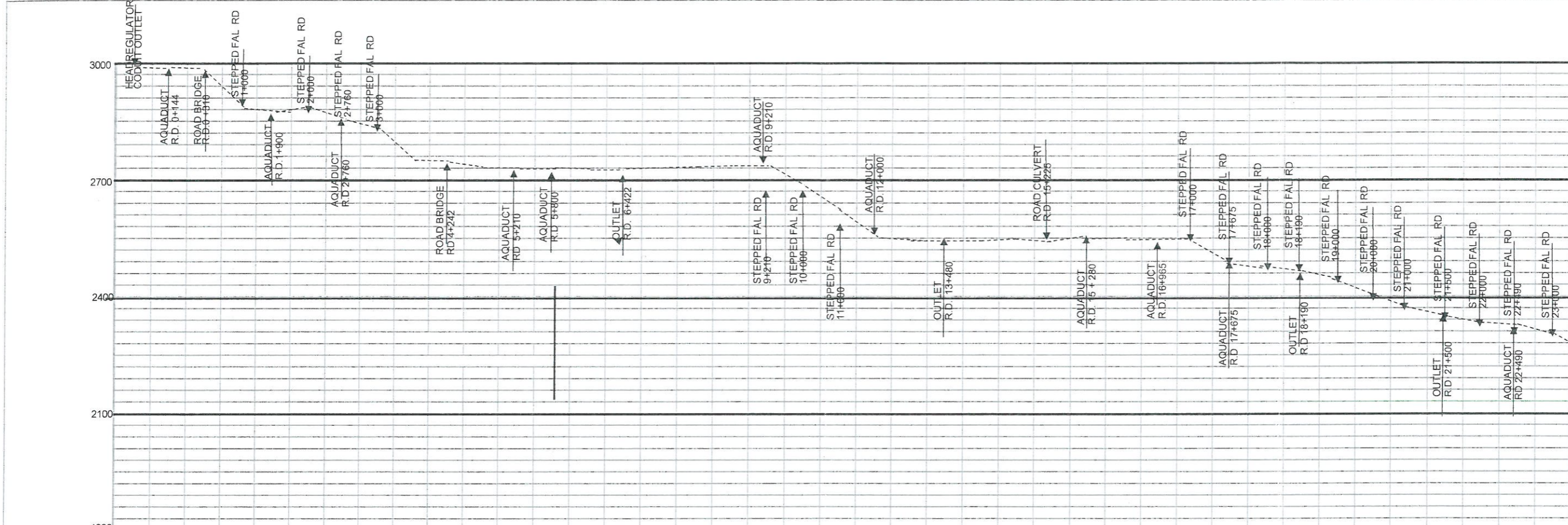
BANK WIDTH L & F  
FREE BOARD  
F.S.Discharge  
F.S.Slope  
F.S.Depth  
Bed Width

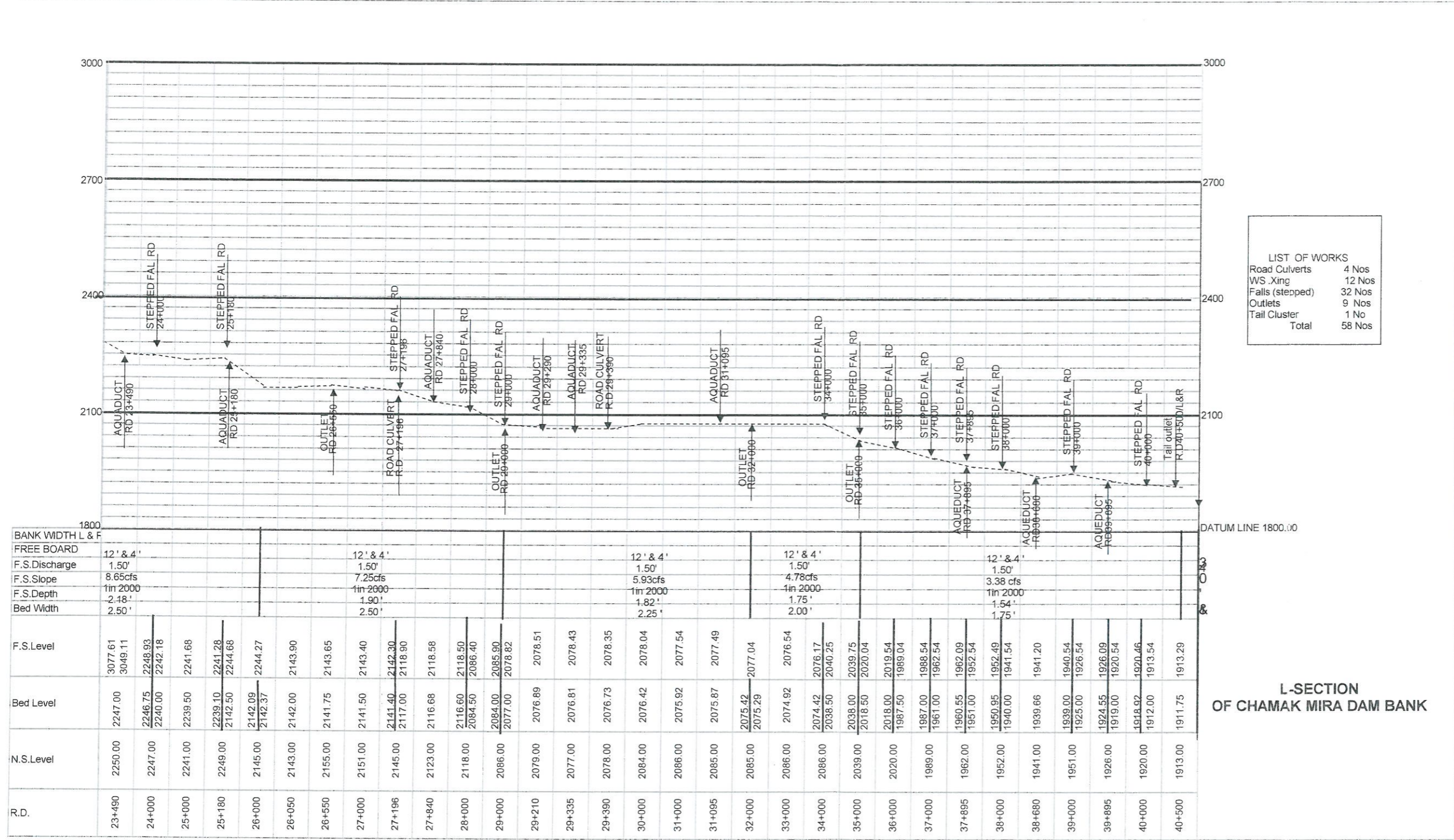
12' & 4'  
1.5'  
16.72 cfs  
1 in 2000  
2.75'  
3.25'

12' & 4'  
1.50'  
13.57 cfs  
1 in 2000  
2.82'  
3.00'

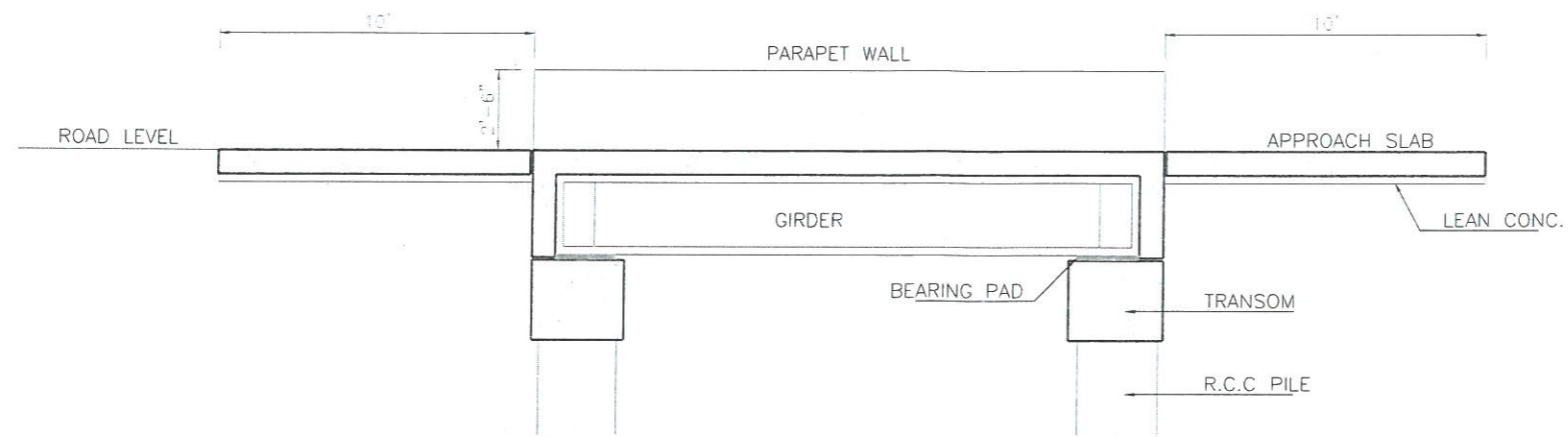
12' & 4'  
1.50'  
12.26 cfs  
1 in 2000  
2.56'  
2.75'

12' & 4'  
1.50'  
10.71 cfs  
1 in 2000  
2.33'  
2.75'

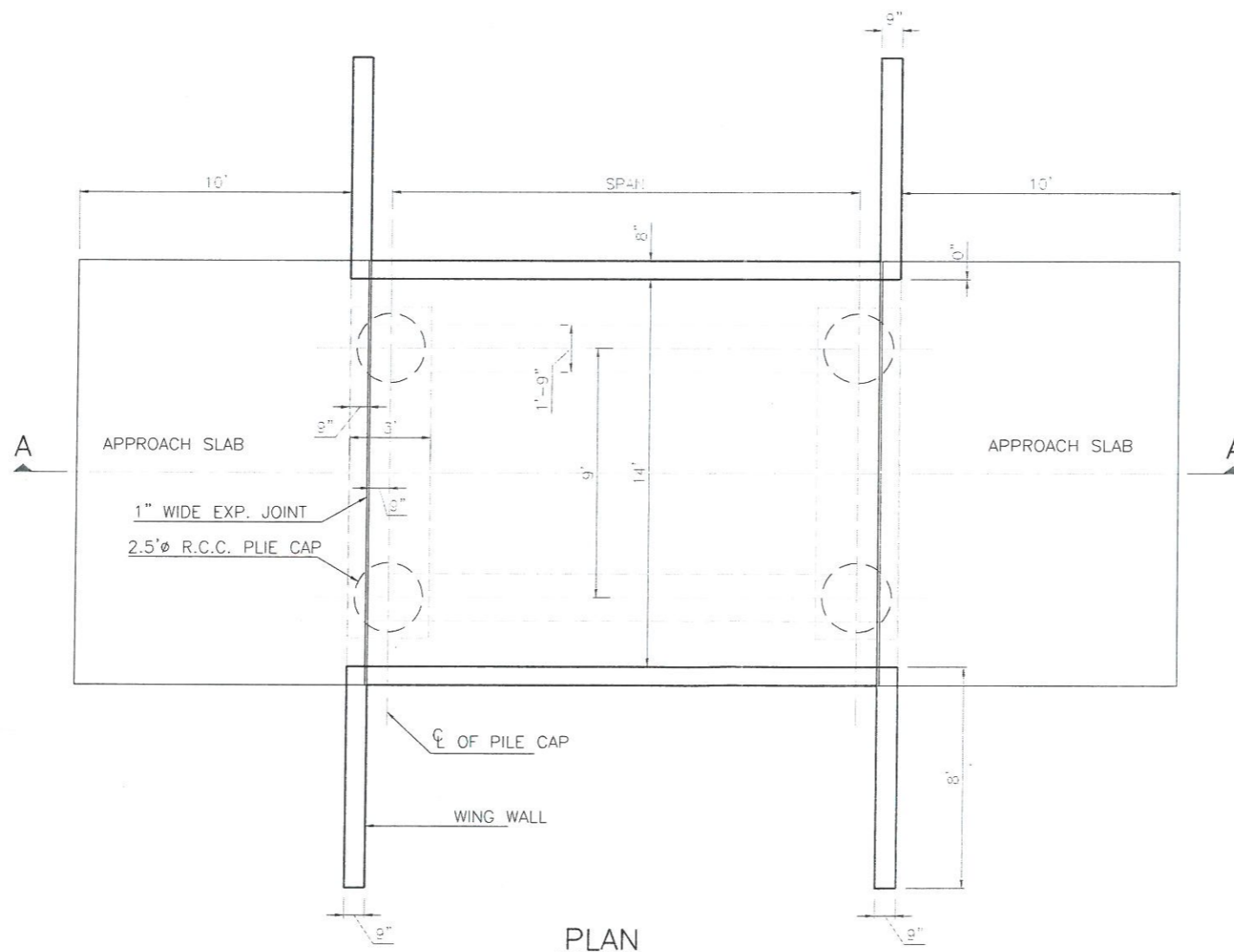








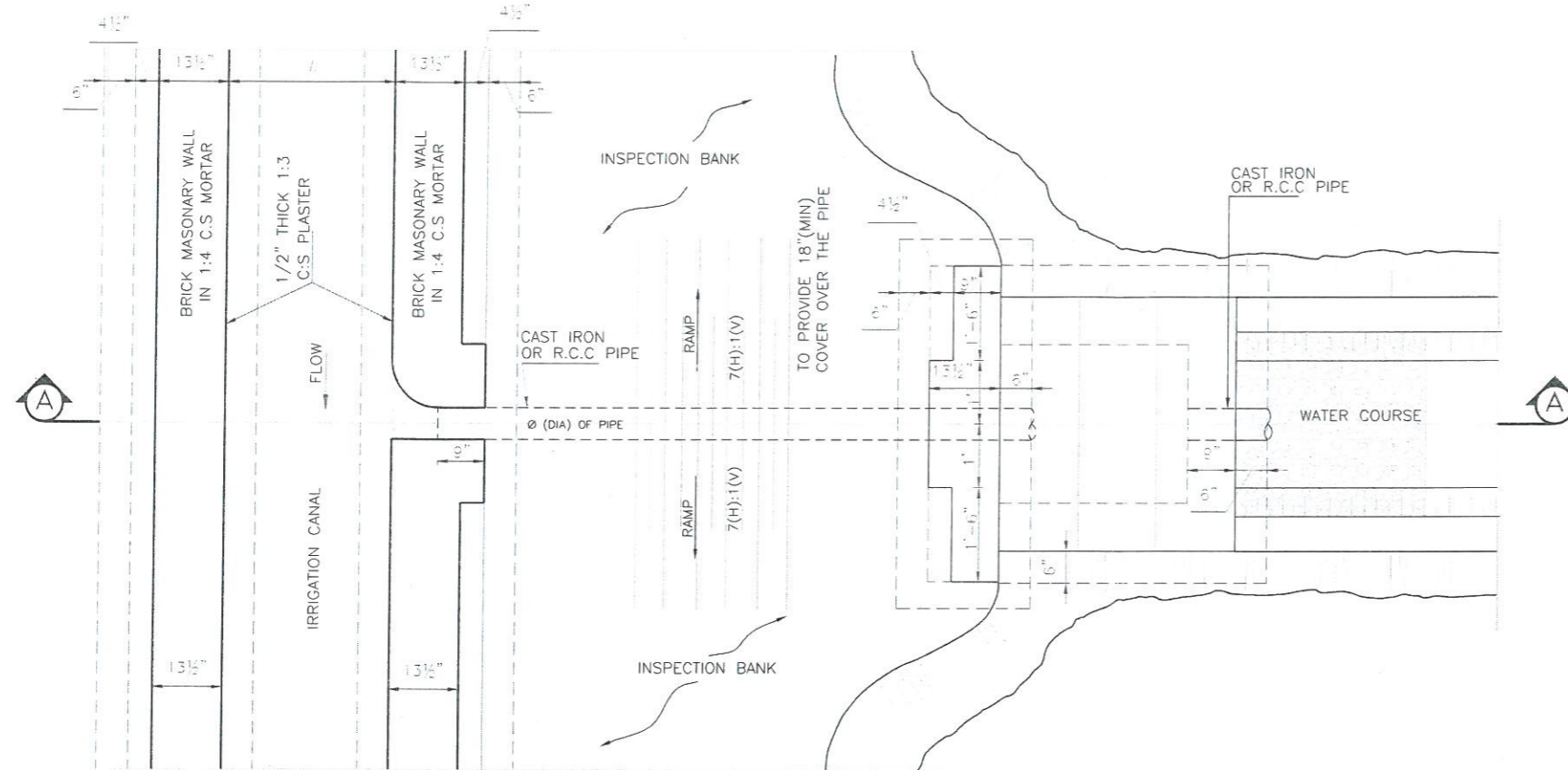
SECTION A-A



PLAN



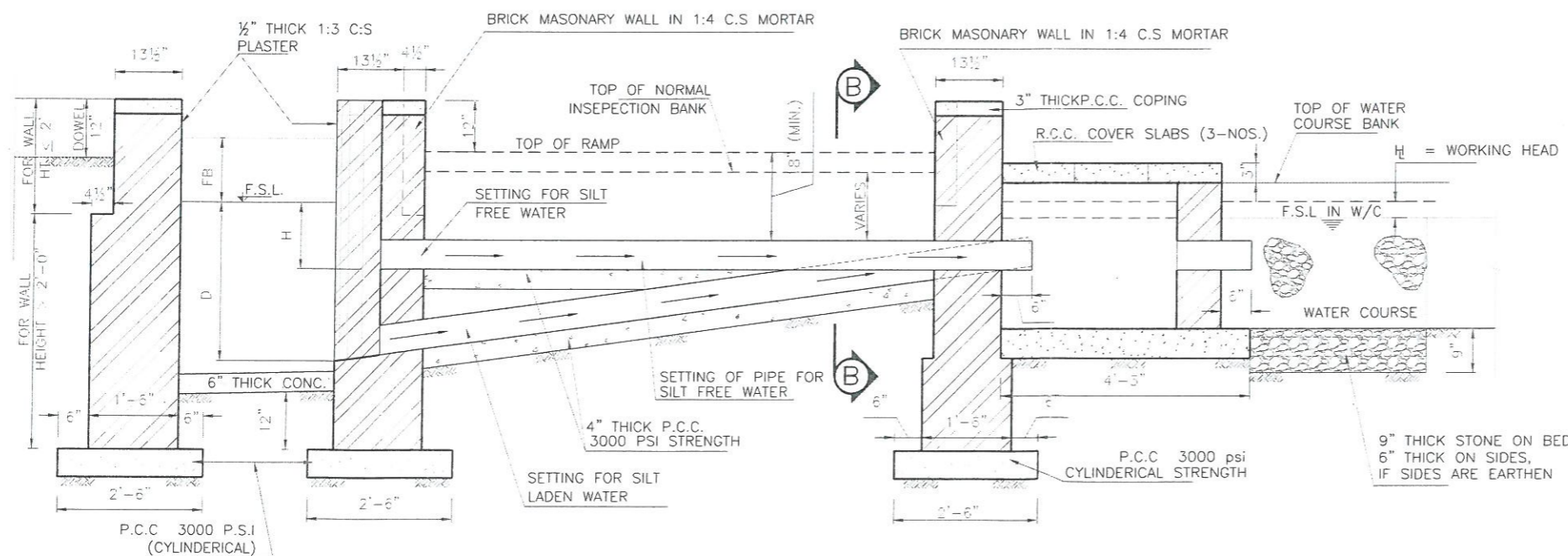
| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>V.R BRIDGE<br>PLAN & SECTION (TYP)   |                 |              |           |
|   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2016 |
| DESIGNED:   | AHMED SHAHZAMAR | DRAWING NO.: | 7.11      |
| CHECKED:  | ADMAN MANZOOR   | REV. No.     | -         |
| APPROVED:   | LIQAQAT RABBANI |              |           |



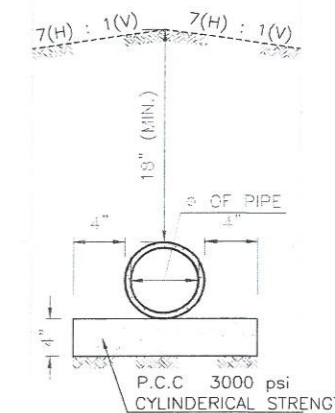
**PLAN**  
N.T.S.

**NOTES:**


1. PIPE USED FOR THE OUTLET WILL BE OF CAST IRON, R.C.C. OR G.I. PIPE
2. IF THE COVER OVER THE PIPE IS LESS THAN 18", A RAMP WITH 7(H) : 1(V) SLOPE WILL BE PROVIDED TO MAKE THE COVER 18" AS SHOWN.
3. PIPE OUTLETS WILL BE USED FOR DISCHARGES LESS THEN 1.0 CUSEC. HOWEVER, AT THE DISCRETION OF THE ENGINEER, THESE COULD BE USED FOR LARGER DISCHARGES AS WELL.
4. FOR SILT FREE WATER 'H' ≈ 10" AND 'H' ≈ D, FOR SILT LADEN WATER. HOWEVER EXACT SETTING OF THE PIPE WILL BE DECIDED BY THE ENGINEER DEPENDING ON THE SITE CONDITIONS.
5. THIS DRAWING COMBINES TWO DRAWINGS, 1 FOR THE SILT FREE CANAL WATER AND THE OTHER FOR THE SILT LADEN CANAL WATER. THE TYPE OF OUTLET TO BE USED WILL BE DECIDED BY THE ENGINEER.
6. MASONARY DOWEL WILL BE RAISED AT OUTLET SITES TO ASSURE 12" HEIGHT ABOVE THE RAMP TOP.
7. IN CASE OF INTERFERENCE OF INNER EDGES OF P.C.C. FOUNDATIONS FOR CANAL WALLS PROVIDE A COMMON FOUNDATION FOR THE 2 WALLS. OUTER PROJECTION WILL REMAIN THE SAME i.e. 6".
8. ALL EARTH WORK WILL BE COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.

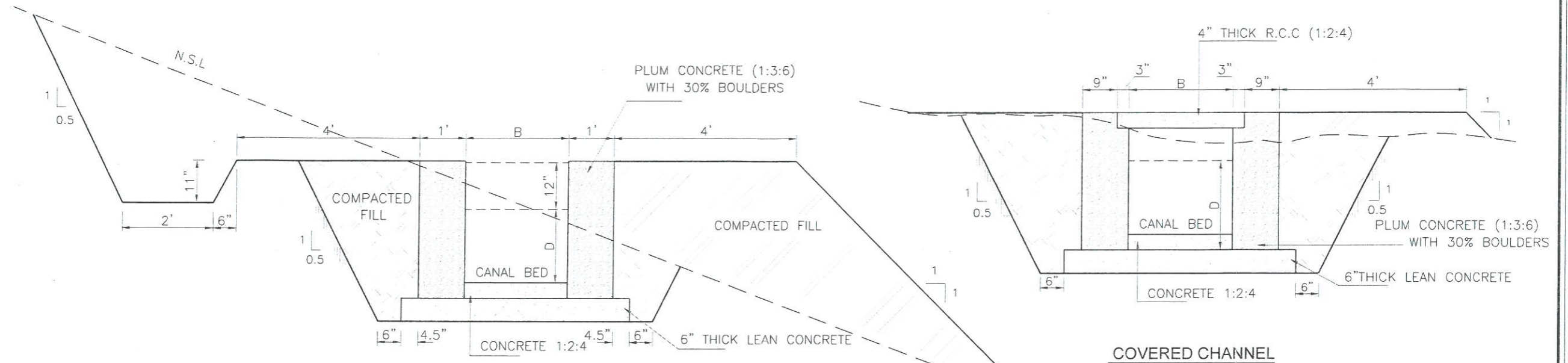


**SECTION A-A**  
N.T.S.

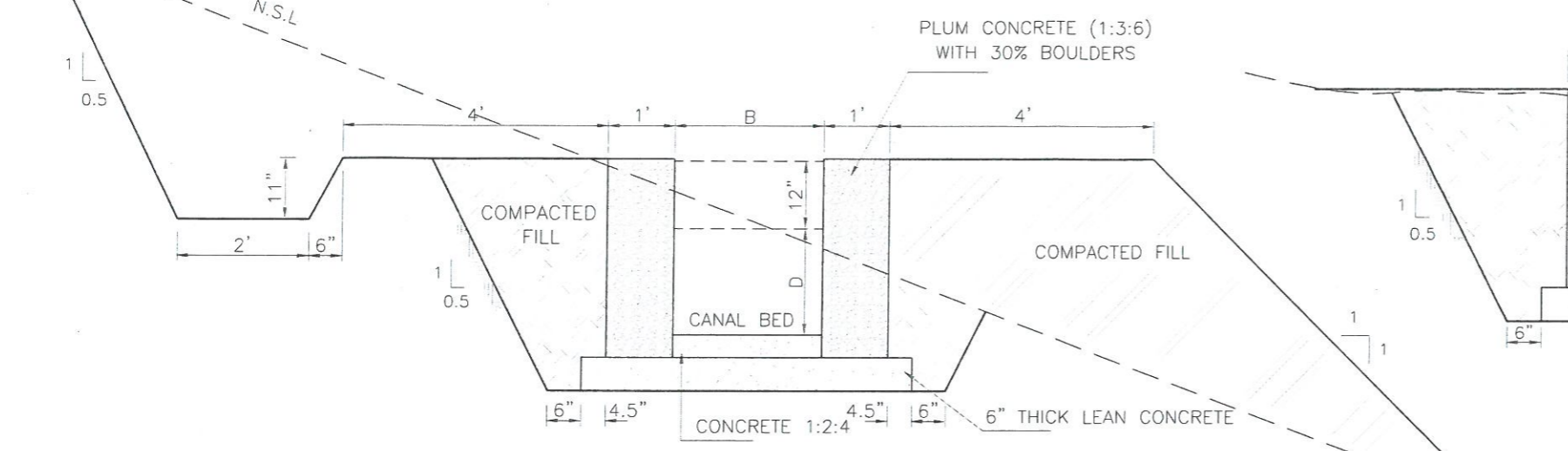


**SECTION B-B**

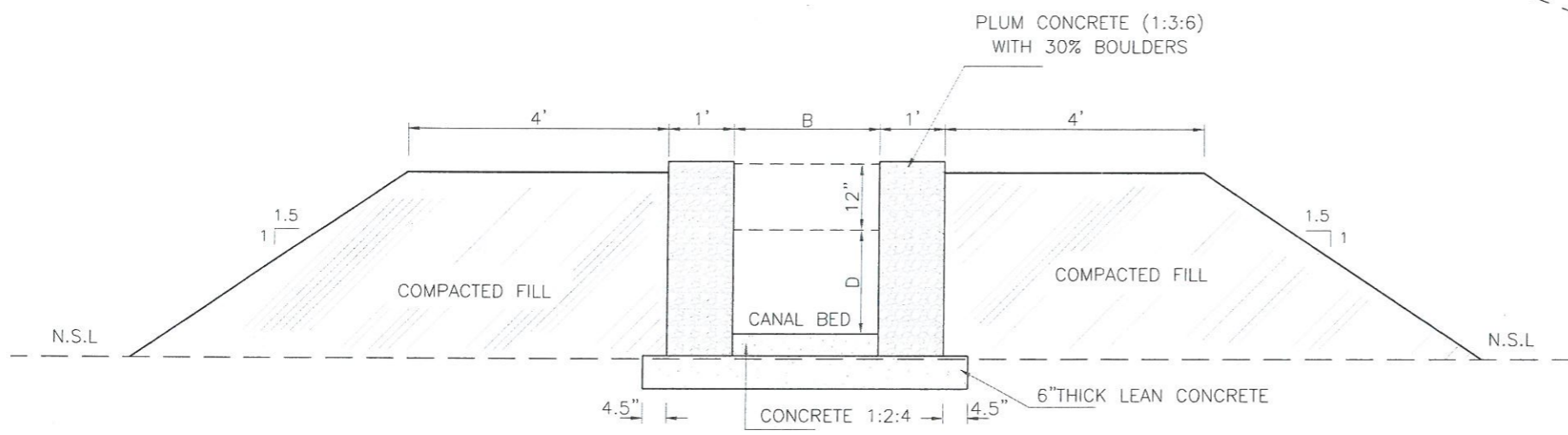
| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>TYPICAL PIPE OUTLET AND<br>IRRIGATION CANAL X-SECTION<br>DETAIL  |                 |              |           |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| CHECKED:  | AHMED SHAHZAWAR | DRAWING NO.  |           |
| APPROVED:   | ADNAN MANZOOR   | 7.12         |           |
|   | LIAQUAT RABBANI |              |           |



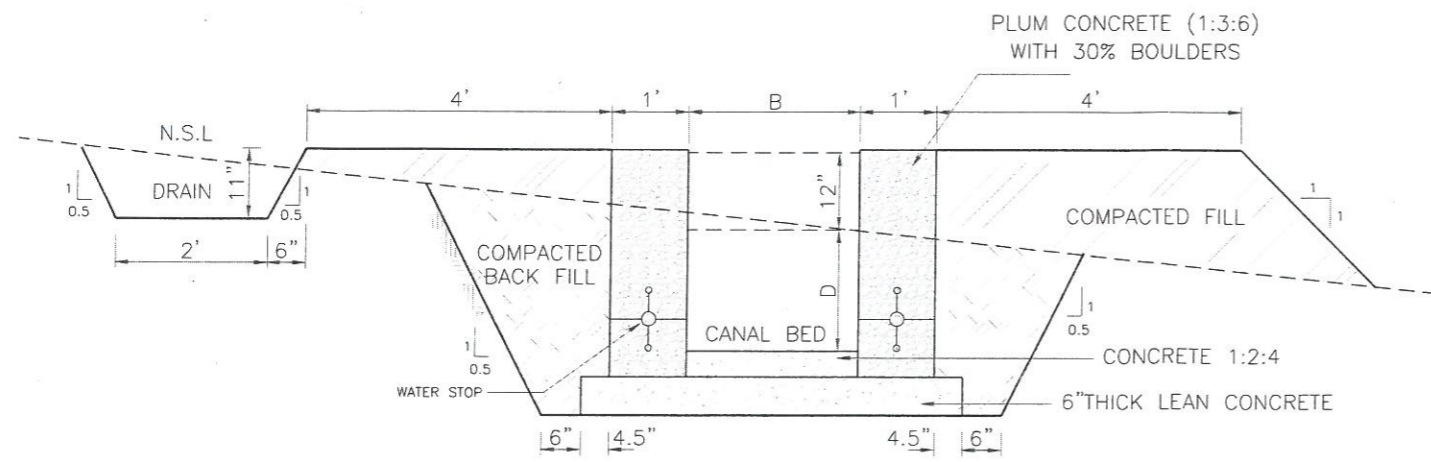
**COVERED CHANNEL**




**PARTIAL CUT & FILL SECTION**

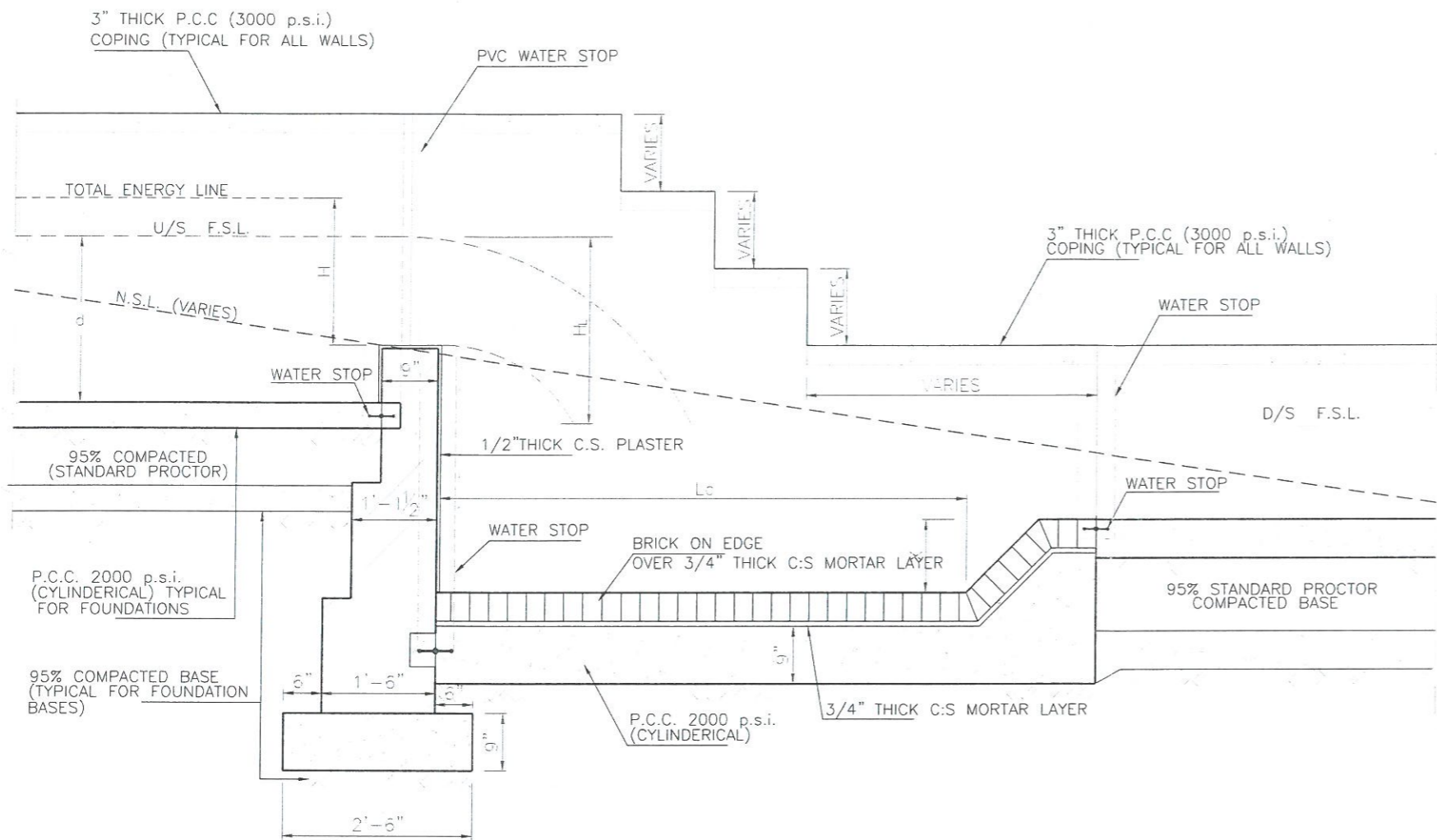


**OPEN CHANNEL IN FILL**

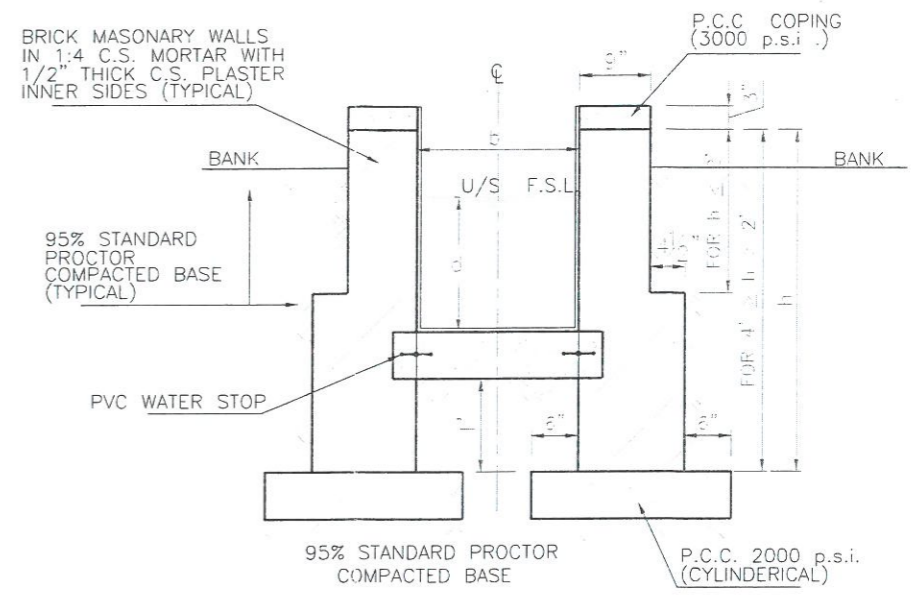


**PARTIAL CUT & FILL SECTION**

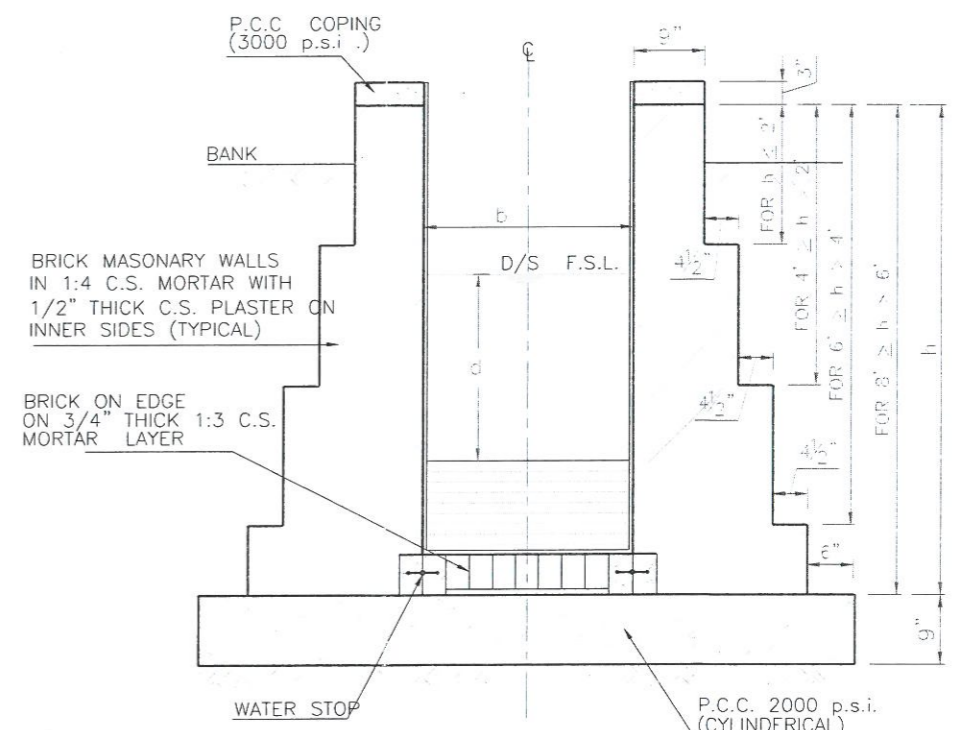
| S.NO.   | DATE                                 | DESCRIPTIONS | CHECK |
|---|--------------------------------------|--------------|-------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                                      |              |       |
| SMALL DAM PROJECT   |                                      |              |       |
| CHAMAK MIRA DAM<br>TYPICAL CANAL X-SECTIONS   |                                      |              |       |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                                      |              |       |
| DRAFTER: G. MUSTAFA<br>DESIGNED: AHMED SHAMZAWAR<br>CHECKED: ADNAN MANZOOR<br>APPROVED: LIAQUAT RABBANI   | DATE: NOV, 2018<br>DRAWING NO.: 7.14 | REV. No.: -  |       |



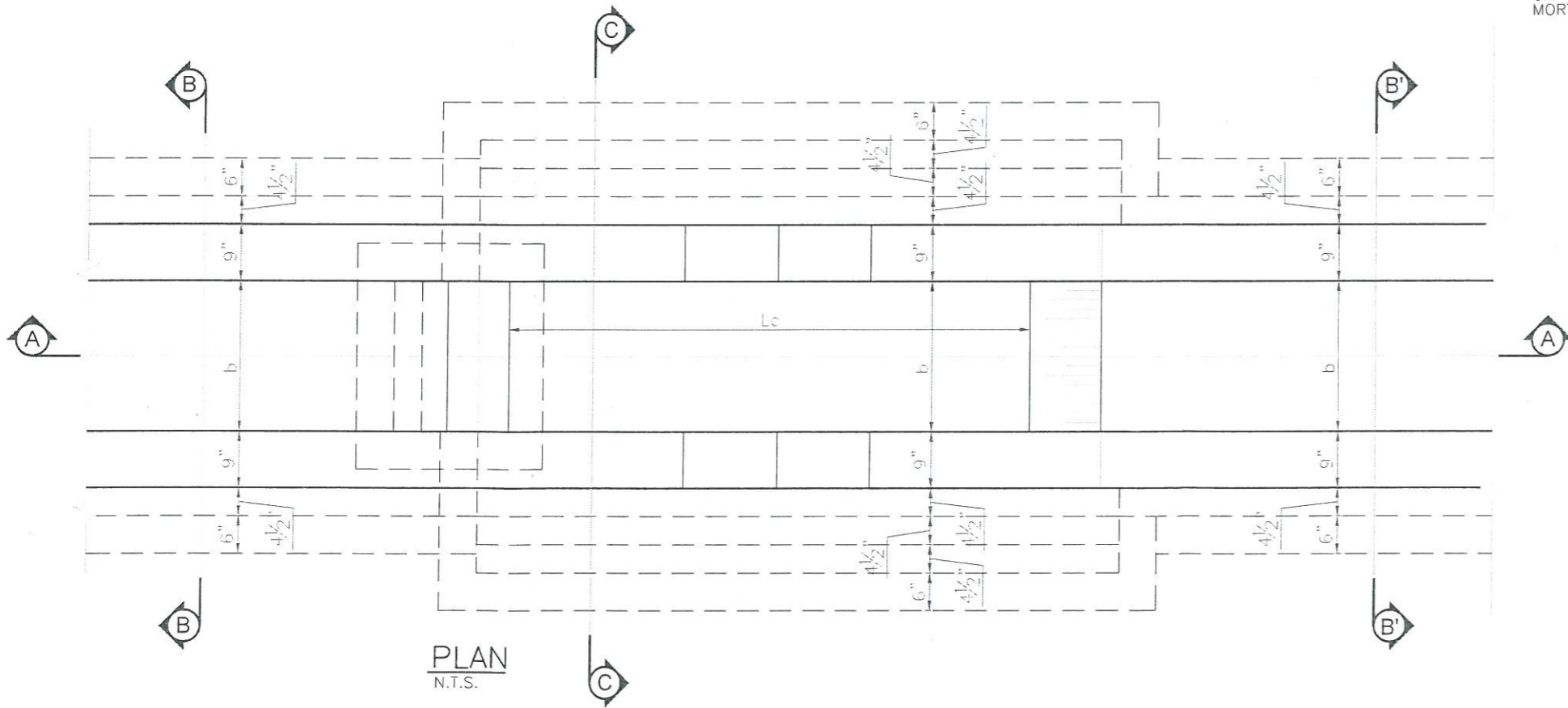
SECTION A-A  
N.T.S.



SECTION B-B & B'-B'  
N.T.S.



SECTION C-C  
N.T.S.



PLAN  
N.T.S.

FORMULA FOR  
CISTERN DIMENSIONS

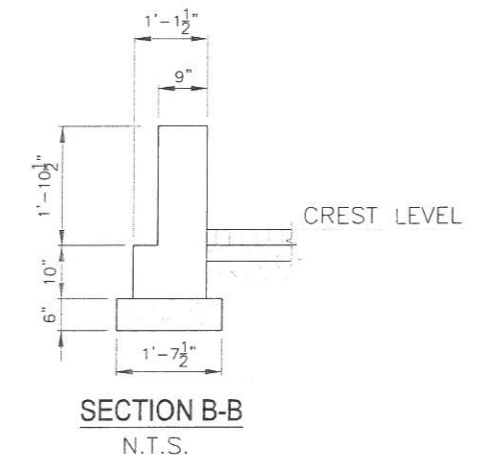
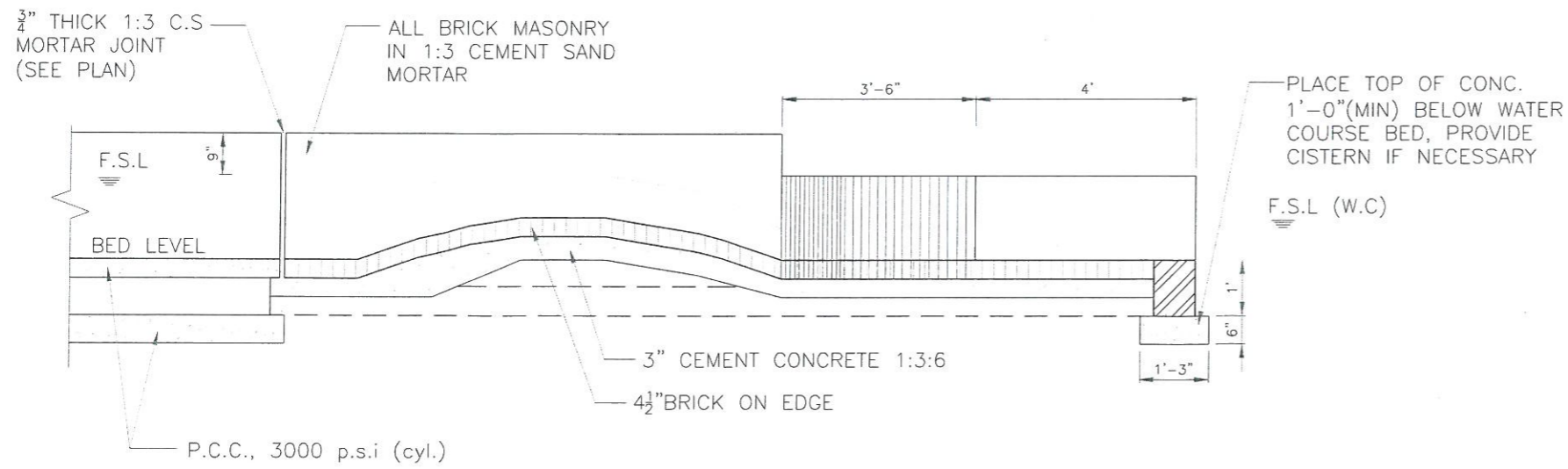
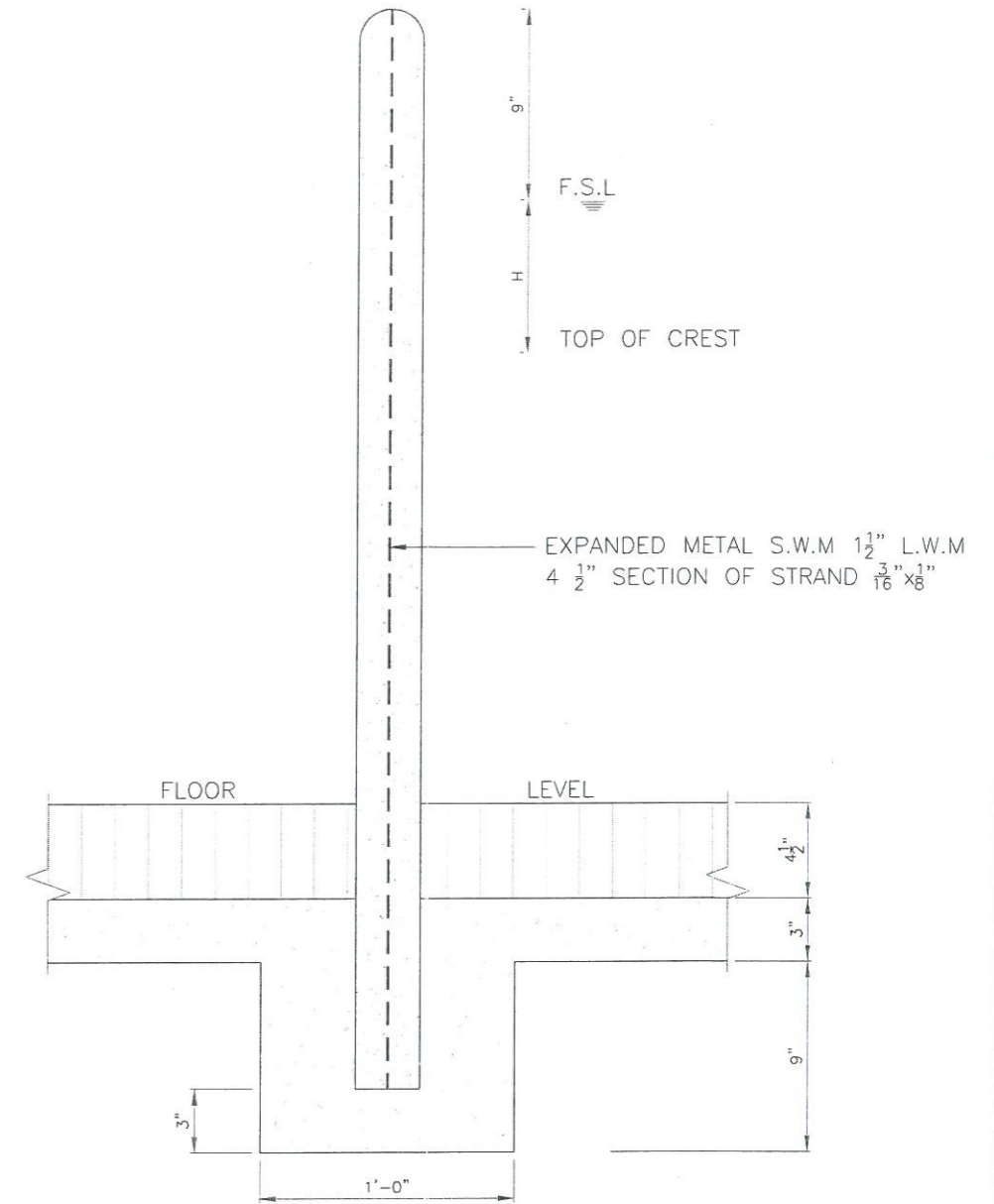
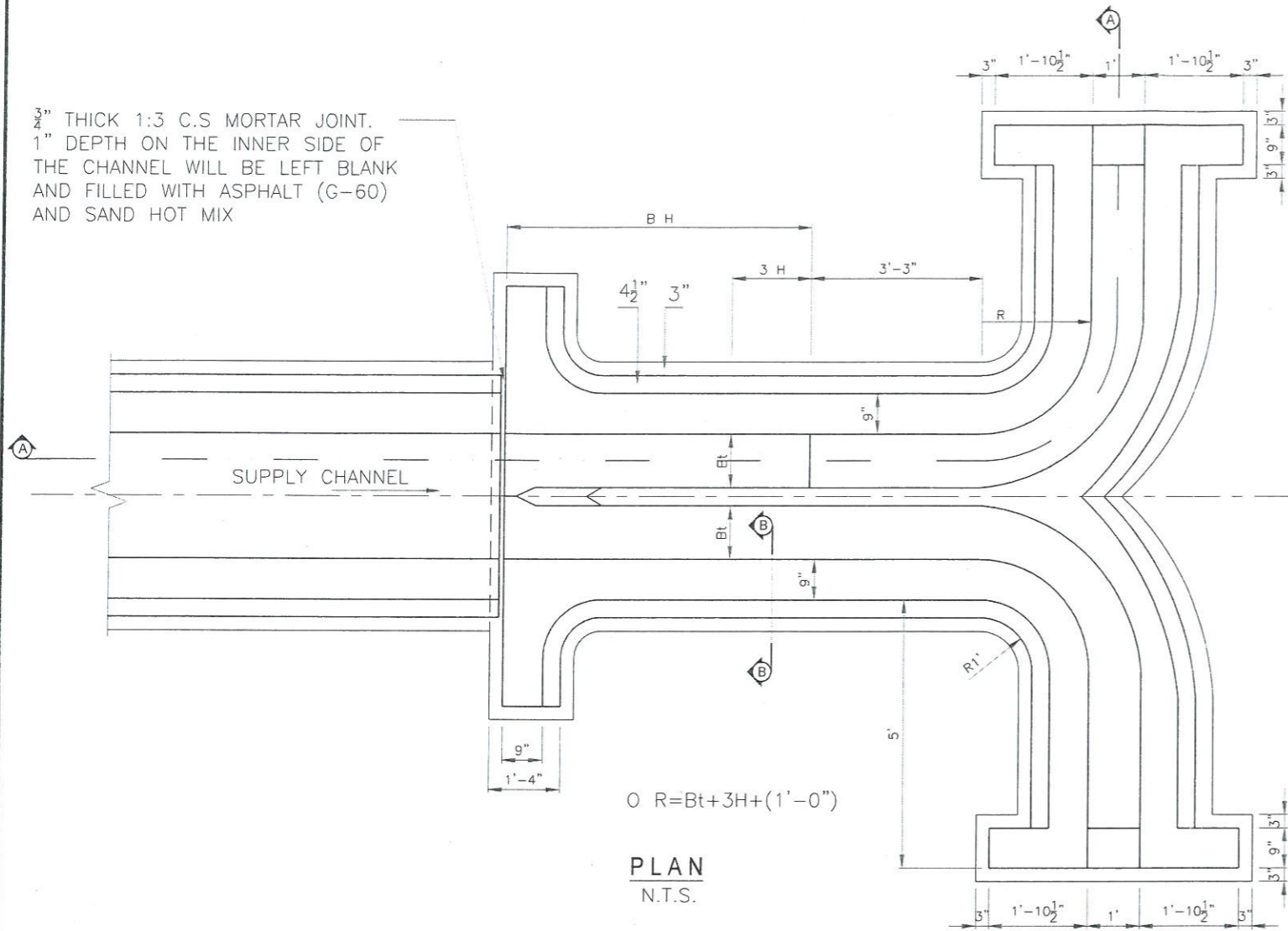
$$L_c = 5\sqrt{H.H_L}$$

$$X = 0.168 (H.H_L)^{2/3} \text{ WHERE}$$

$L_c, X, H \text{ \& } H_L \text{ ARE IN FEET.}$

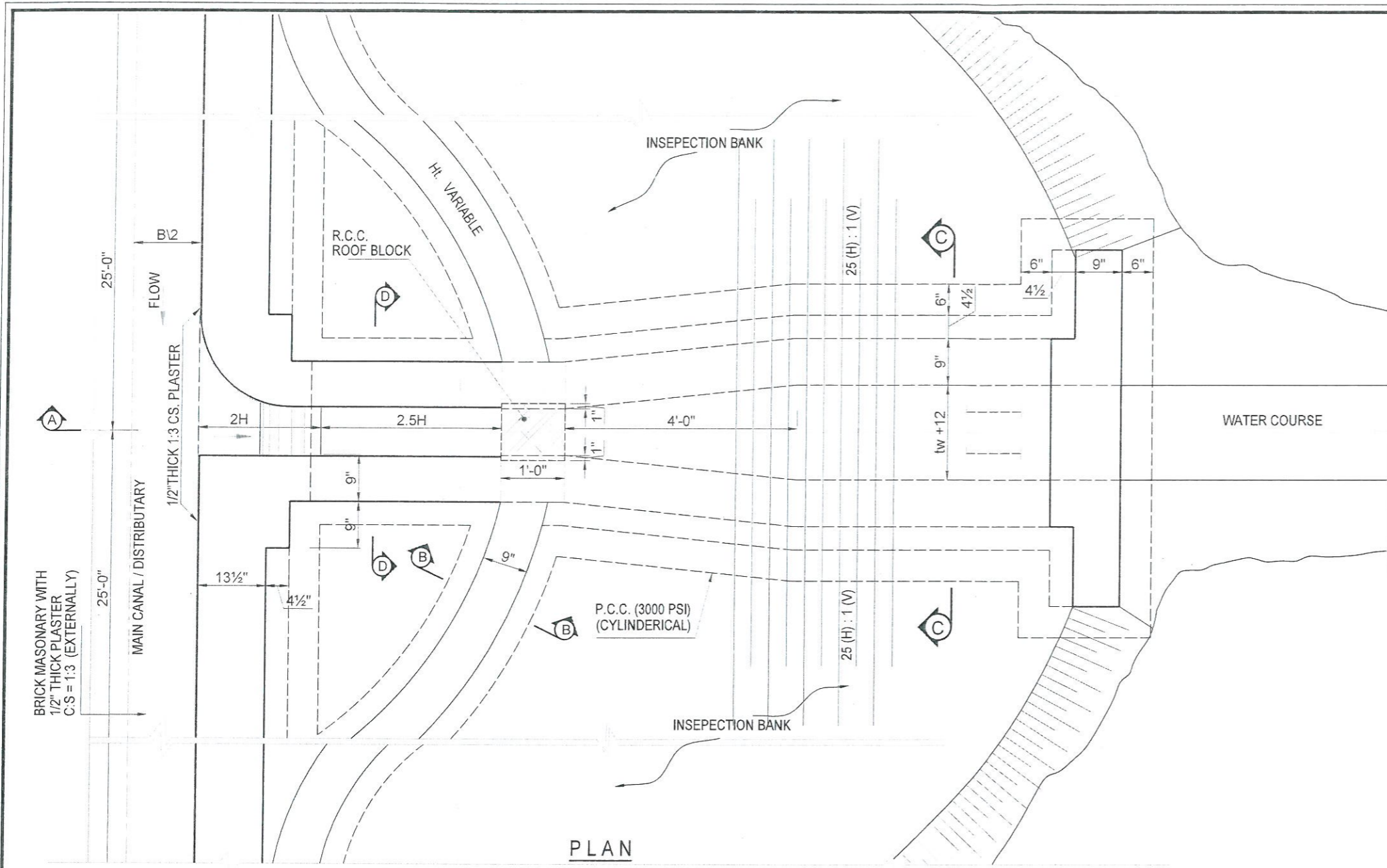
| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>TYPICAL DROP FALL  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G. MUSTAFA      | DATE:        | NOV. 2016 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 7.15      |
| APPROVED:   | LIAQUAT RABBANI |              |           |

3/4" THICK 1:3 C.S MORTAR JOINT.  
1" DEPTH ON THE INNER SIDE OF  
THE CHANNEL WILL BE LEFT BLANK  
AND FILLED WITH ASPHALT (G-60)  
AND SAND HOT MIX

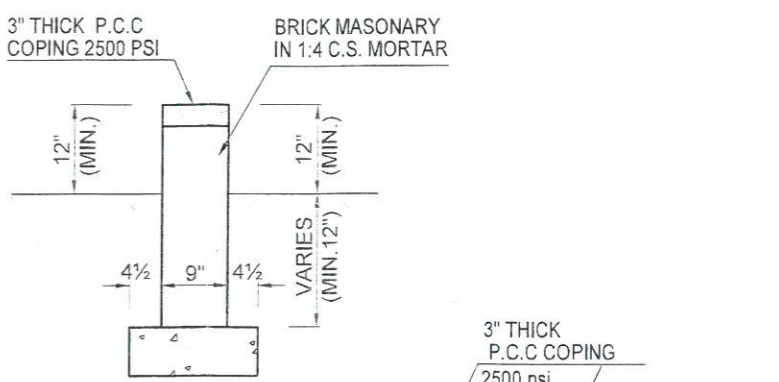


| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| <b>SMALL DAM PROJECT</b>  |                 |              |           |
| <b>CHAMAK MIRA DAM<br/>TYPICAL TAIL CLUSTER<br/>WITH TWO OUTLETS</b>                              |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   | 7.16         |           |
| APPROVED:   | LIAGHAT RABBANI |              |           |

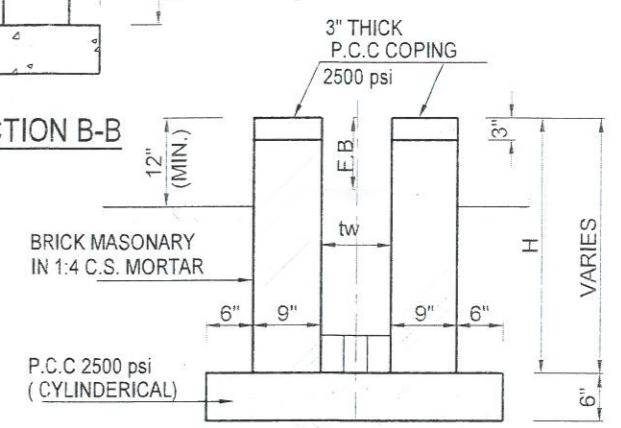




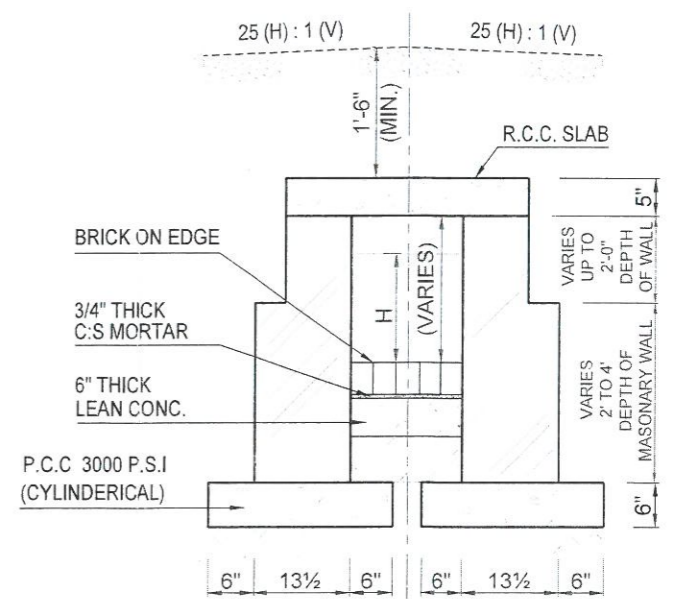
PLAN



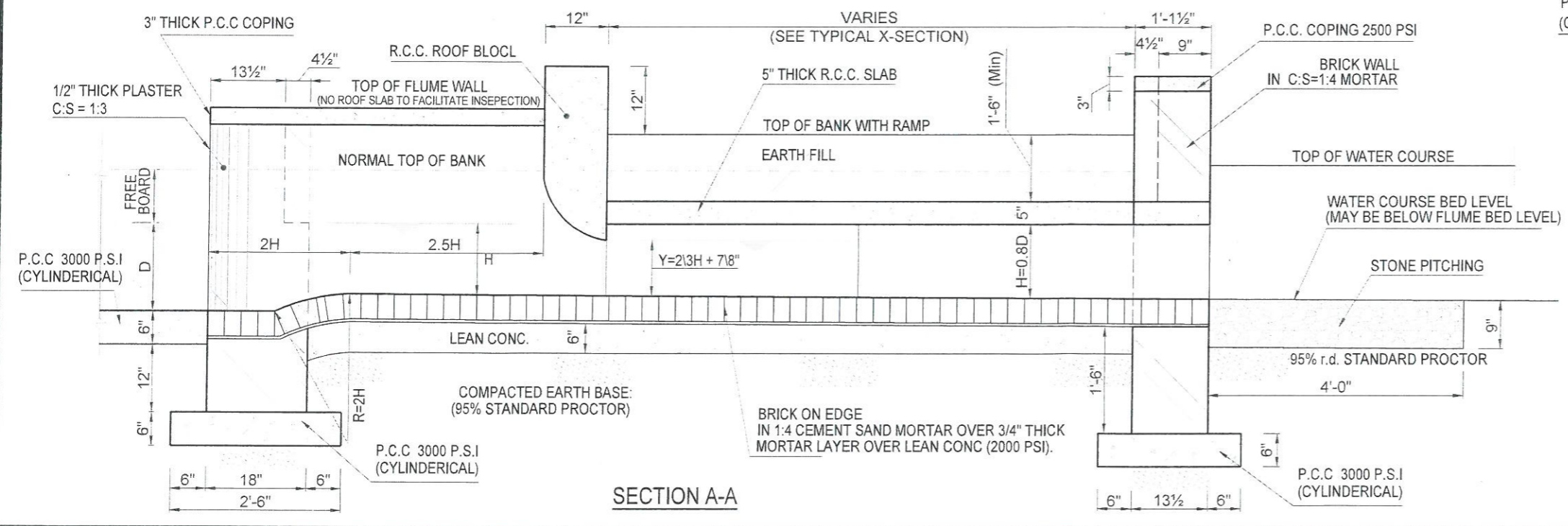
SECTION B-B




SECTION D-D

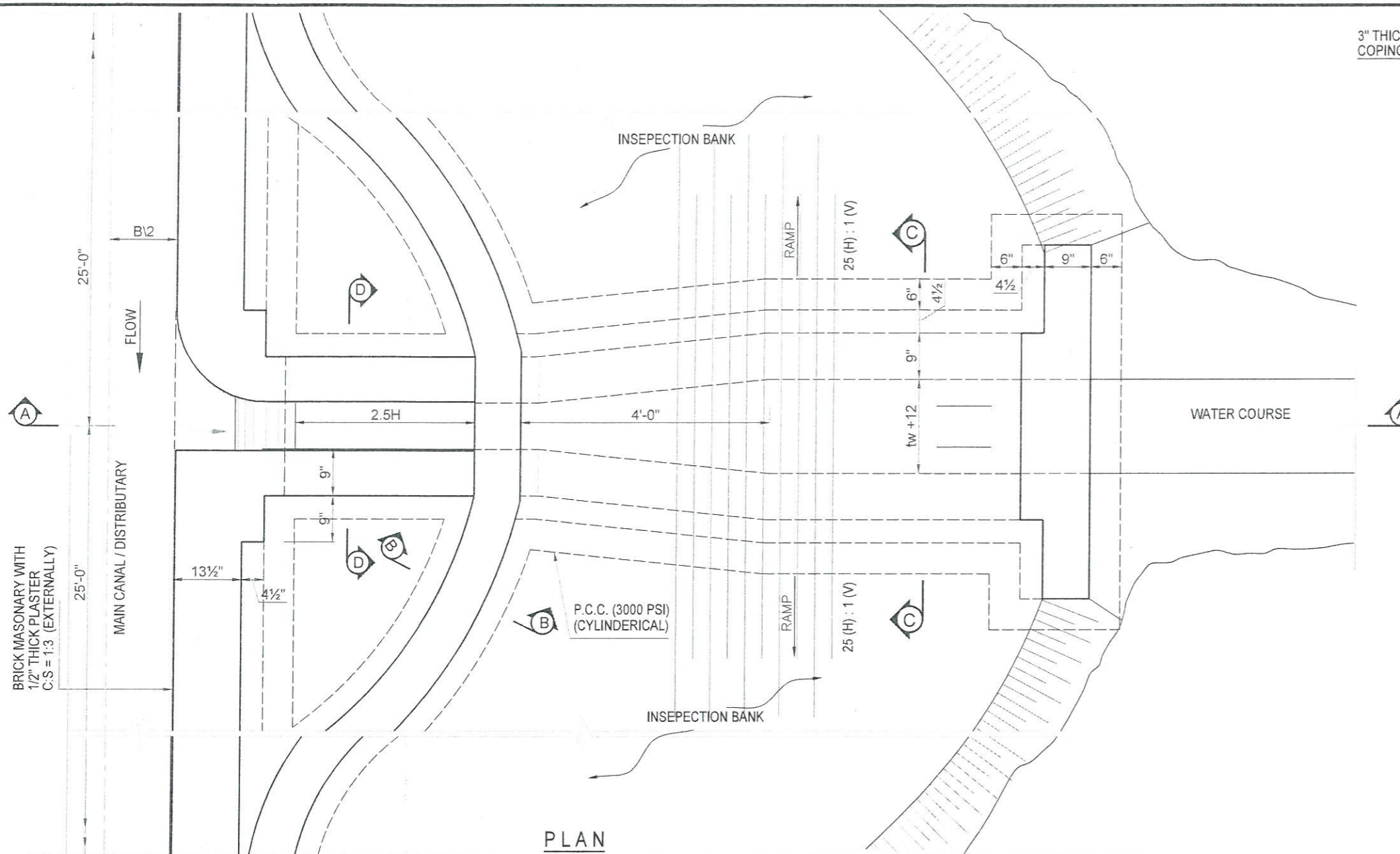


SECTION-CC

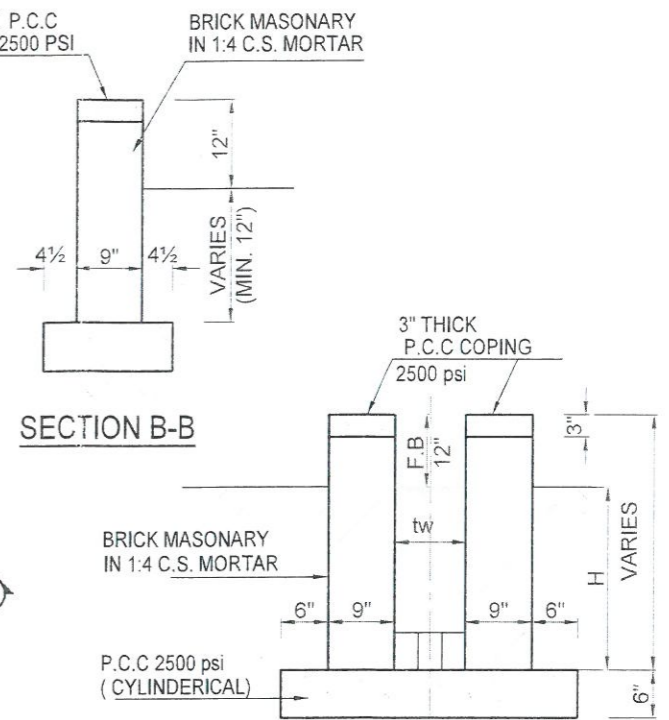


SECTION A-A

| S.NO.   | DATE  | DESCRIPTIONS                | CHECK  |
|---|---|-----------------------------|--------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |   |                             |        |
| SMALL DAM PROJECT   |   |                             |        |
| CHAMAK MIRA DAM<br>TYPICAL OPEN FLUME OUTLET<br>WITH ROOF BLOCK   |   |                             |        |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |   |                             |        |
| DESIGNED BY: AHMED SHAHZAWAR<br>CHECKED: ADNAN MANZOOR<br>APPROVED: LIAQUAT RABBANI   | G.MUSTAFA<br>NOV, 2018<br>DRAWING NO:<br>7.18 | DATE: NOV, 2018<br>REV. No: | CHECK: |

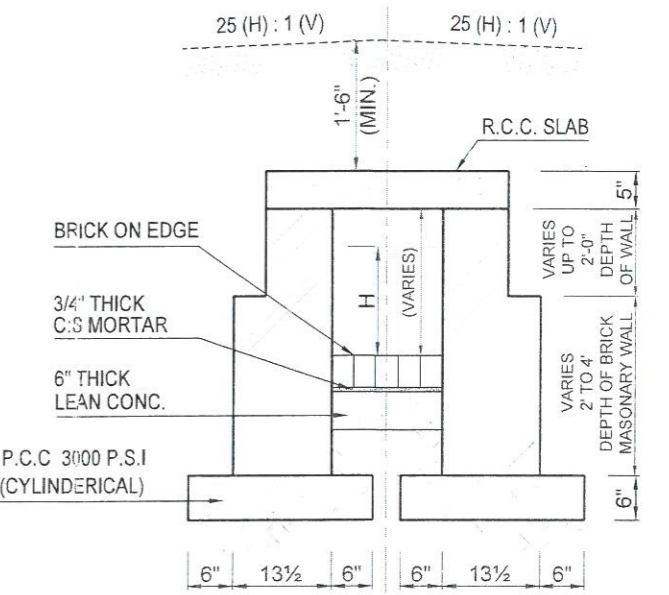


PLAN

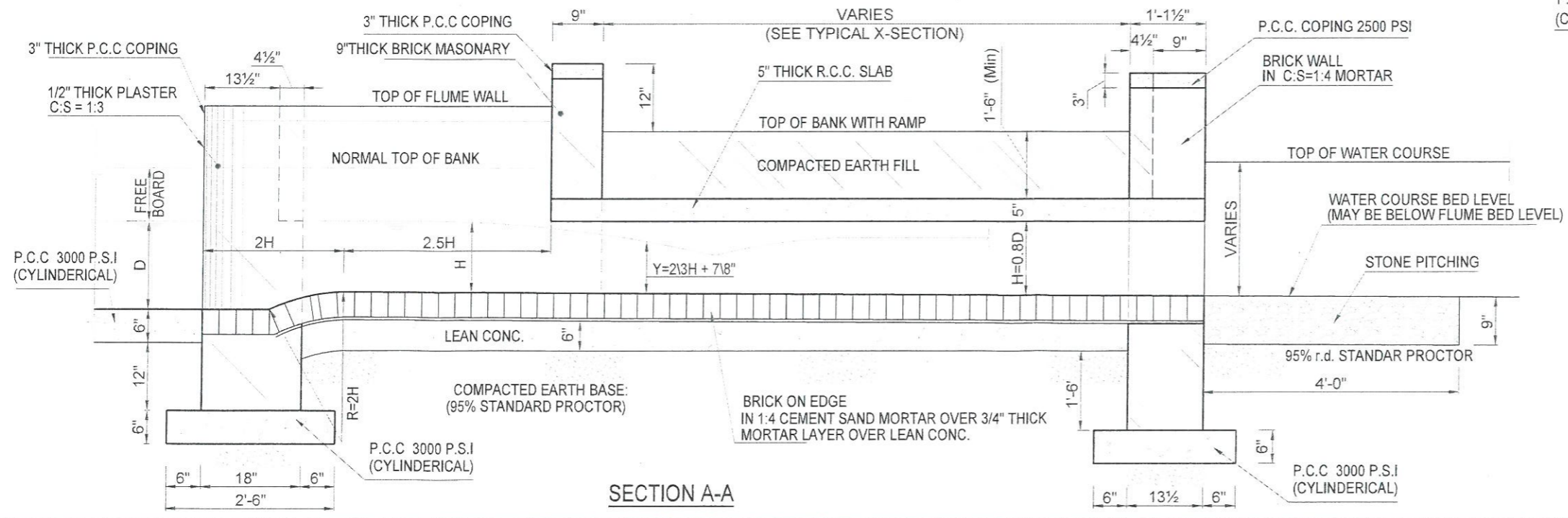


SECTION B-B

SECTION D-D



SECTION-CC



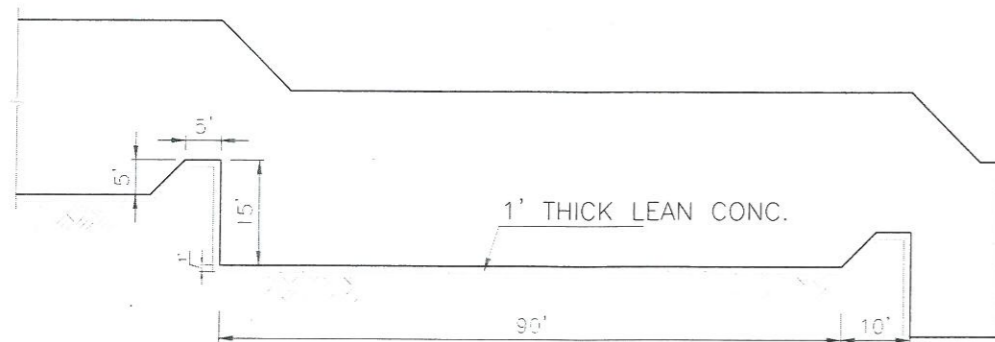
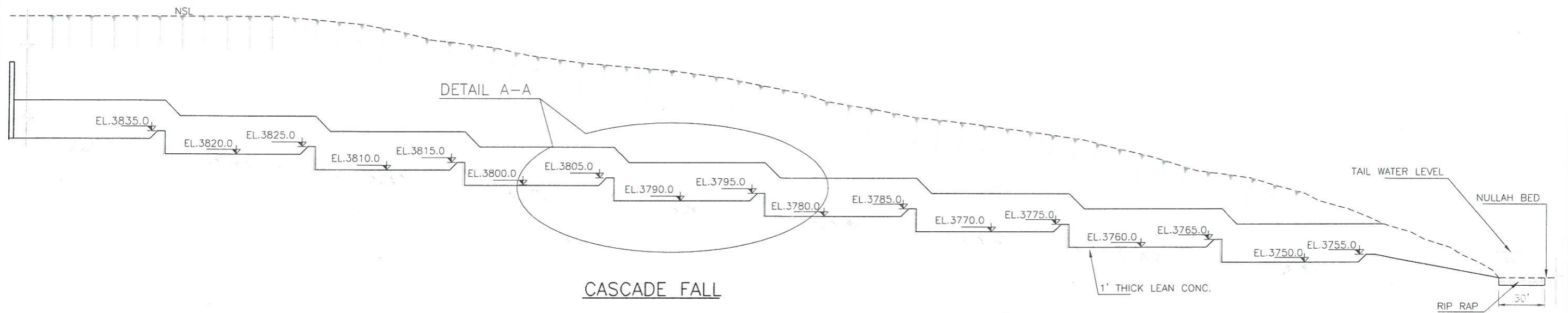
SECTION A-A

| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>TYPICAL OPEN FLUME OUTLET<br>WITHOUT ROOF BLOCK                                |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV. 2018 |
| DESIGNED BY:  | AHMED SHAHZAWAR | DRAWING NO:  |           |
| CHECKED:  | ADNAN MANZOOR   | REV. No:     | 7.19      |
| APPROVED:   | LIAQUAT RABBANI |              |           |

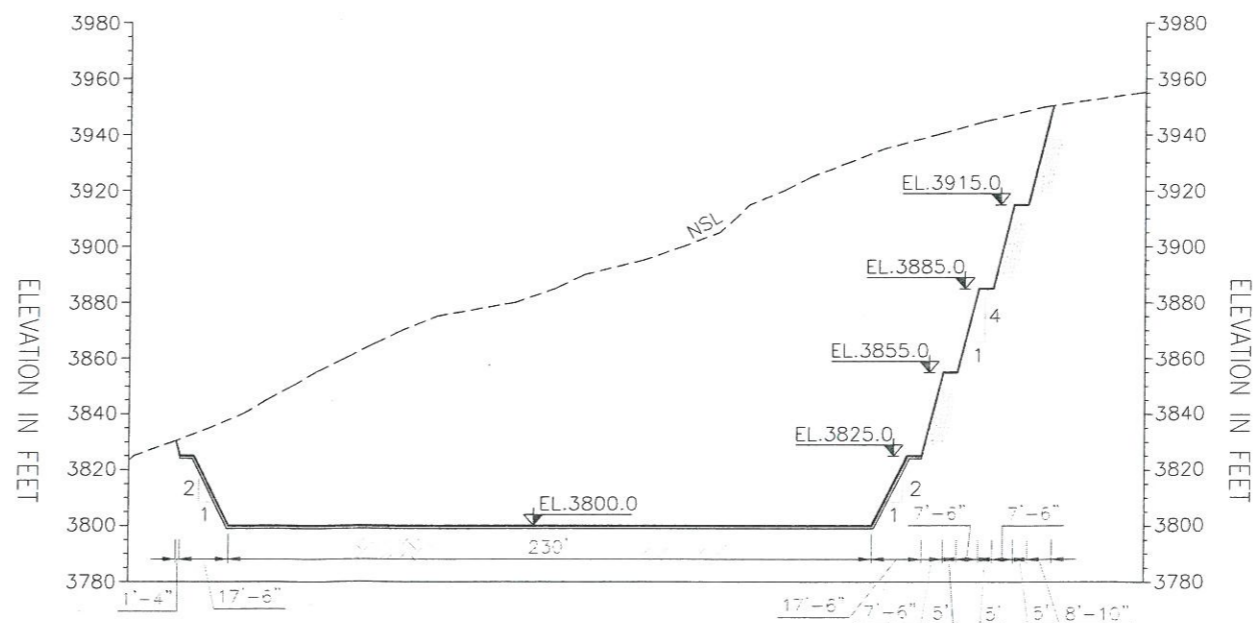


**NOTES**

1. ALL DIMENSIONS AND LEVELS ARE IN FEET.




**DETAIL A-A**  
SCALE: NTS



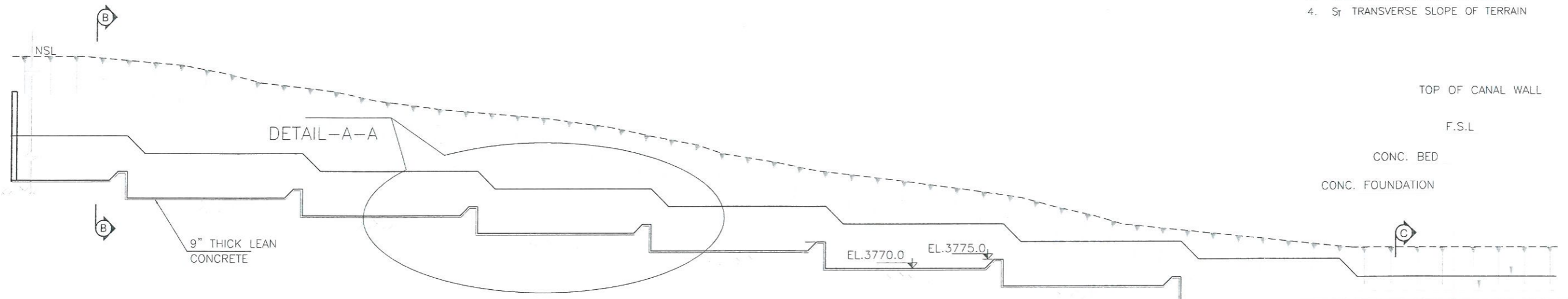
**SPILLWAY SECTION G-G**



| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>CASCADE FALL   |                 |              |           |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A. LAHORE. |                 |              |           |
| DESIGNED BY:  | G. MUSTAFA      | DATE:        | NOV, 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 7.21      |
| APPROVED:   | LIADUAT RABBANI |              |           |

**NOTES**

1. THIS DRAWING IS FOR  $D \leq 3'$  AND  $L \leq 40'$
2. ALL DIMENSIONS ARE IN FEET AND INCHES
3. THIS DRAWING IS NOT TO SCALE
4.  $S_T$  TRANSVERSE SLOPE OF TERRAIN



**CASCADE FALL**

DETAIL-A-A

9" THICK LEAN CONCRETE

EL.3770.0 EL.3775.0

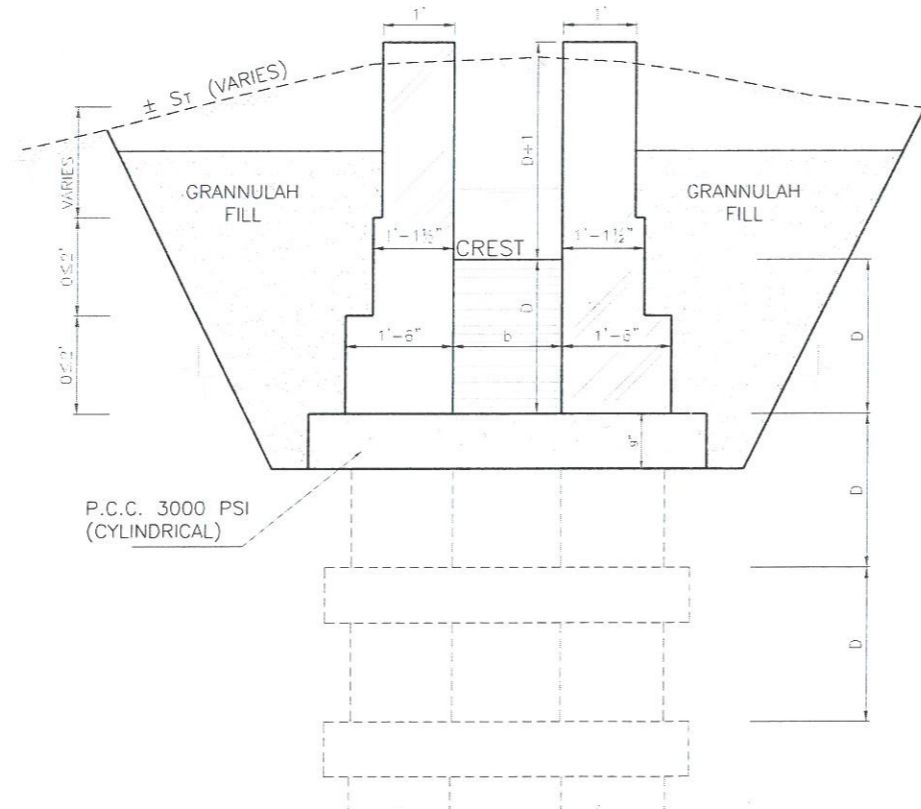
TOP OF CANAL WALL

F.S.L

CONC. BED

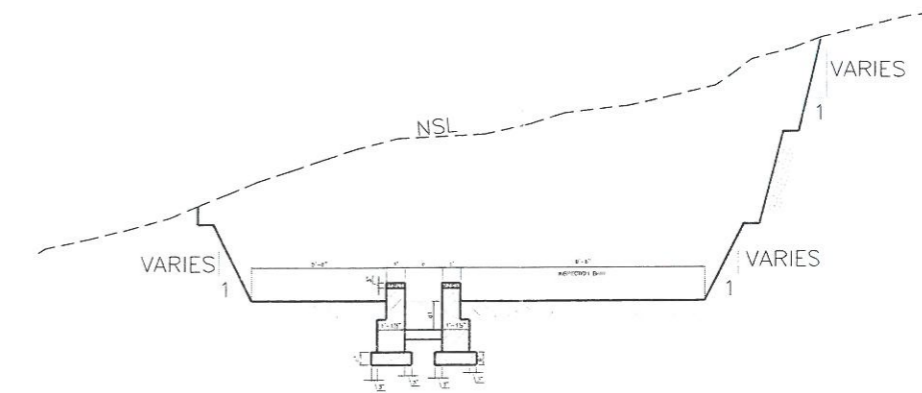
CONC. FOUNDATION

REGULAR CHANNEL



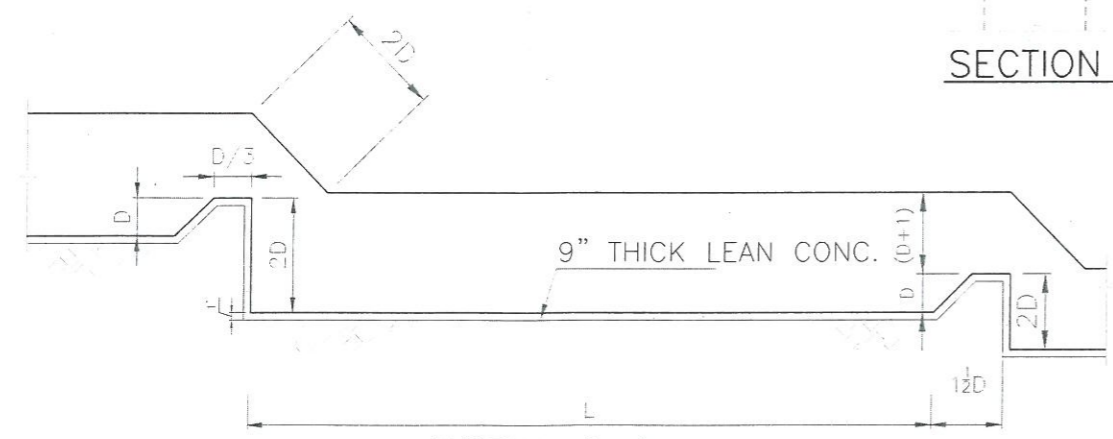
**SECTION B-B**

N.T.S




**SECTION C-C**

(TYPICAL SECTION WITH MILD SLOPE)  
(ALSO SEE TYPICAL IRRIGATION CHANNEL X-SECTION DWGS)



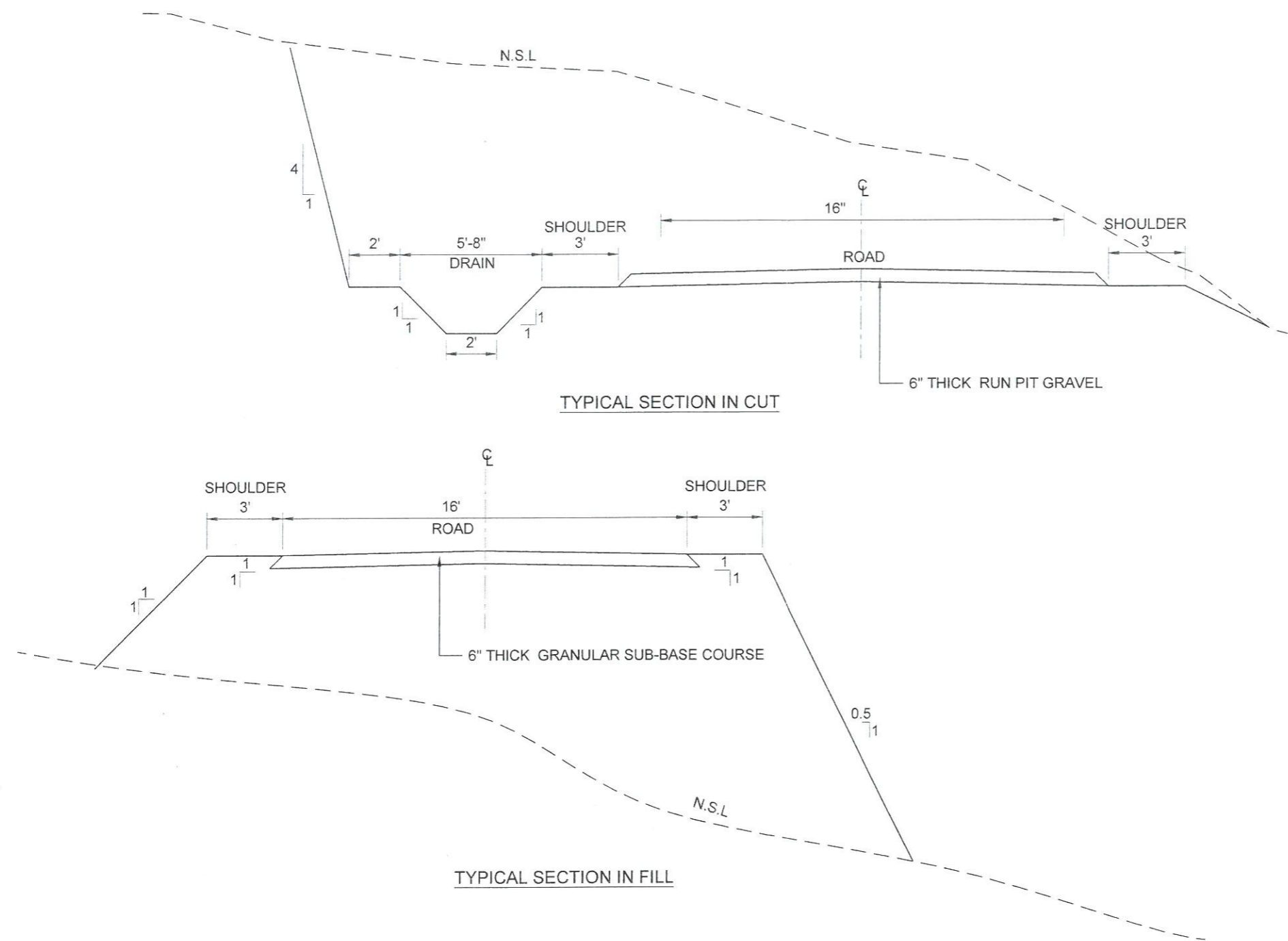
**DETAIL A-A**  
SCALE: NTS

| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA   |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>CASCADE FALL   |                 |              |           |
|  PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G. MUSTAFA      | DATE:        | NOV, 2018 |
| DESIGNED BY:  | AHMED SHAHZAWAR | DATE:        | NOV, 2018 |
| CHECKED BY:   | ADNAN MANZOOR   | DATE:        | 7.21      |
| APPROVED BY:  | LIADUAT RABBANI | DATE:        | 7.21      |

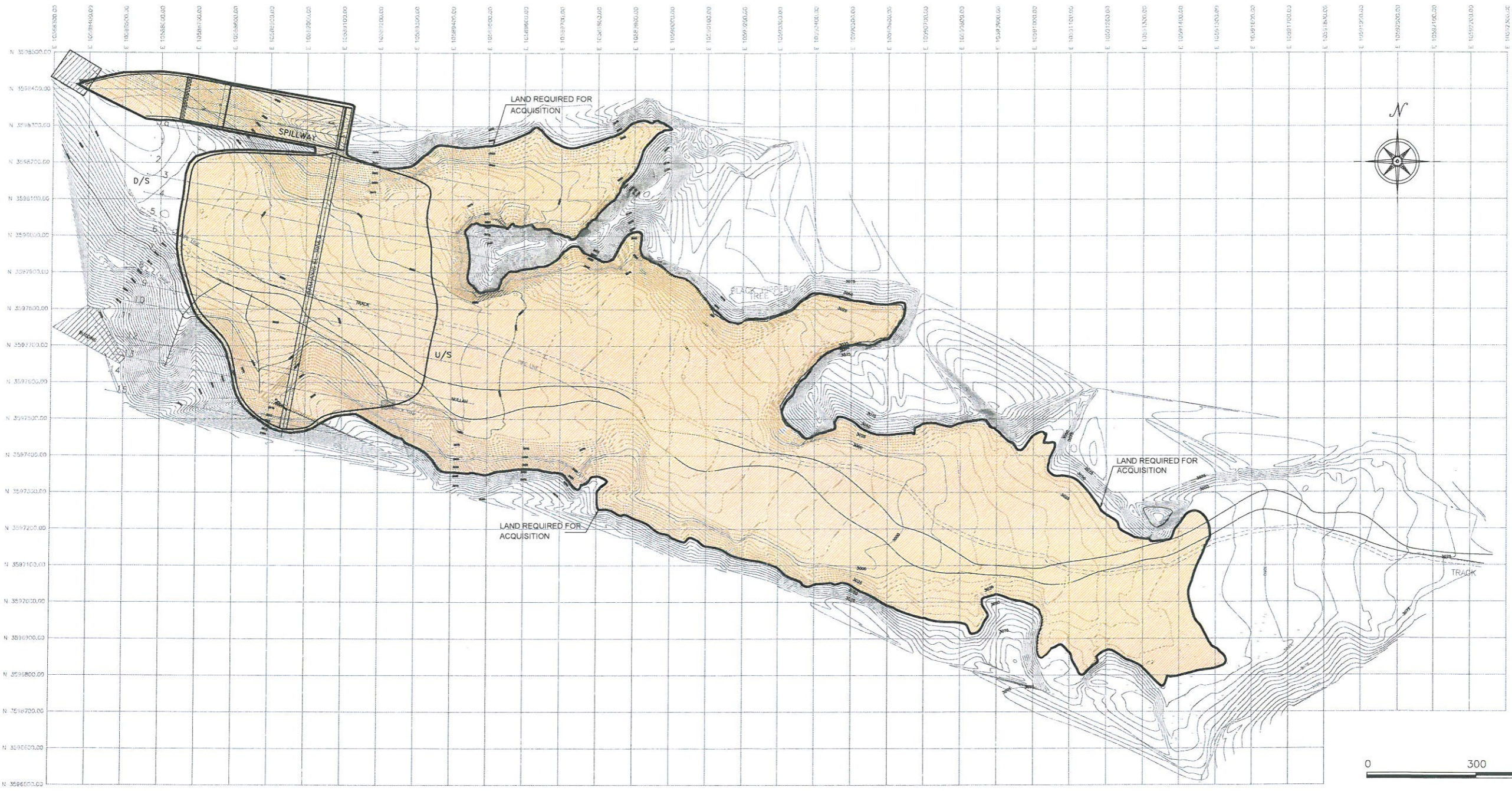


| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
|   |                 |              |           |
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>ACCESS ROAD PLAN   |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G. MUSTAFA      | DATE:        | NOV. 2018 |
| CHECKED:  | AHMED SHAHZAWAR | DRAWING NO.  | 8.1       |
| APPROVED:   | ADNAN MANZOOR   | REV. No.     | -         |
|   | LIAQUAT RABBANI |              |           |

**NOTE**  
1:- ALL DIMENSIONS ARE IN FEET



| S.NO.   | DATE            | DESCRIPTIONS | CHECK     |
|---|-----------------|--------------|-----------|
| DIRECTORATE GENERAL SMALL DAMS IRRIGATION<br>DEPARTMENT KHYBER PAKHTUNKHAWA                       |                 |              |           |
| SMALL DAM PROJECT   |                 |              |           |
| CHAMAK MIRA DAM<br>TYPICAL ROAD CROSS SECTIONS  |                 |              |           |
| PAKISTAN ENGINEERING SERVICES (PVT.) LTD.<br>7 - B, COMMERCIAL AREA, PHASE - V,<br>D.H.A, LAHORE. |                 |              |           |
| DESIGNED BY:  | G.MUSTAFA       | DATE:        | NOV. 2018 |
| DESIGNED:   | AHMED SHAHZAWAR | DRAWING NO.  |           |
| CHECKED:  | ADNAN MANZOOR   |              | 8.2       |
| APPROVED:   | LIAQUAT RABBANI |              |           |



| S.NO. | DATE | DESCRIPTIONS | CHECK |
|-------|------|--------------|-------|
|       |      |              |       |

DIRECTORATE GENERAL SMALL DAMS IRRIGATION  
DEPARTMENT KHYBER PAKHTUNKHAWA

SMALL DAM PROJECT

CHAMAK MIRA DAM  
LAND ACQUISITION PLAN



PAKISTAN ENGINEERING SERVICES (PVT.) LTD.  
7 - B, COMMERCIAL AREA, PHASE - V,  
D.H.A, LAHORE.

|              |                 |             |           |          |
|--------------|-----------------|-------------|-----------|----------|
| DESIGNED BY: | G. MUSTAFA      | DATE:       | NOV, 2018 | REV. No. |
| CHECKED:     | AHMED SHAHZAWAR | DRAWING NO. | 9.1       | -        |
| APPROVED:    | LIQAQT RABBANI  |             |           |          |