

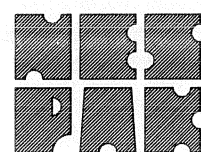
**GOVERNMENT OF PAKISTAN
PAKHTUNKHWA
HIGHWAY AUTHORITY**



**FEASIBILITY STUDY AND DETAILED ENGINEERING DESIGN OF ADP
SCHEME NO.1581/210516 FEASIBILITY STUDY, DESIGN AND
CONSTRUCTION OF GRADE SEPERATED INTERSECTION AT SHAHEED
CHOWK TIMERGARA**

TENDER DRAWINGS

FEBRUARY, 2024



NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LIMITED.

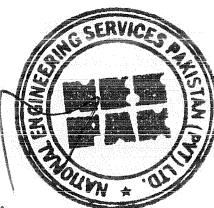
NESPAK HOUSE 2nd Floor Attaturk Avenue, Sector G-5/2 Islamabad- Pakistan.

LIST OF DRAWINGS

GENERAL NOTES

Sr.No.	TITLE OF DRAWING	DRAWING No.	TOTAL NO OF SHEETS
1	LIST OF DRAWINGS AND GENERAL NOTES	SA-488/102/TD/LDG001	01
2	KEY MAP	SA-488/102/TD/KM002	01
3	SYMBOLS AND ABBREVIATIONS	SA-488/102/TD/SA003	01
4	ROUTE LOCATION PLAN	SA-488/102/TD/RLP01	01
5	TYPICAL CROSS SECTIONS	SA-488/102/TD/TC004	01
6	TRAVERSE STATION DATA	SA-488/102/TD/TS005	01
7	GENERAL ARRANGEMENT PLAN	SA-488/102/TD/GA006	01
8	TYPICAL CROSS SECTIONS AND DETAILS	SA-488/102/TD/TCD007	01
9	PRECAST PRESTRESSED GIRDER CONCRETE OUTLINE DETAILS	SA-488/102/TD/PG008~009	02
10	RETAINING WALL CONCRETE OUTLINE & REINFORCEMENT	SA-488/102/TD/RW010	01
11	TYPICAL RCC DRAIN DETAIL	SA-488/102/TD/D011	01
12	GENERAL NOTES FOR STRUCTURES	SA-488/102/TD/GNS012	01
13	REBAR SHAPE CODE	SA-488/102/TD/RS013	01
14	TYPICAL ROAD SIGN DETAILS	SA-488/102/TD/RS014~018	05
15	PAVEMENT MARKING AND ROAD STUDS	SA-488/102/TD/PMS019	01
16	METAL GUARD RAIL	SA-488/102/TD/GRO20~021	02
17	DETAIL PLAN & PROFILE DRAWINGS	SA-488/102/TD/P&P1~3	03

1. ALL DIMENSIONS SHOWN ON PLAN AND PROFILE DRAWINGS ARE IN METERS WHEREAS ANGULAR MEASUREMENTS ARE IN DEGREES, MINUTES AND SECONDS (360° TO A CIRCLE).
2. EACH DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS.
3. GRID CO-ORDINATES AND ELEVATIONS ARE BASED ON UTM ZONE 42-N.
4. MINOR CHANGES IN HORIZONTAL/VERTICAL ALIGNMENT MAY BE CARRIED OUT AT SITE WITH PRIOR APPROVAL OF THE ENGINEER.
5. STRUCTURES SHOWN ON PLAN/PROFILE ARE SYMBOLIC. FOR DETAIL OF STRUCTURES AND PROTECTION WORKS SEE RELEVANT DRAWING. HOWEVER DETAILED INVENTORY OF STRUCTURES SHALL BE PREPARED AS PER SITE CONDITION/REQUIREMENTS AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES AT SITE.
6. FOR PAVEMENT MARKING AND ROAD SIGNS, CONTRACTOR SHALL SUBMIT DETAILED PLANS DRAWINGS FOR APPROVAL OF THE ENGINEER.
7. LOCATION OF UNDER GROUND CABLES/UTILITIES SHOWN ON PLANS ARE APPROXIMATE. EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR AT HIS OWN COST.
8. ANY DAMAGE DONE TO THE UTILITIES DURING EXCAVATION/EXECUTION OF WORKS SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR AT HIS OWN COST TO THE SATISFACTION OF CONCERNED DEPARTMENTS.
9. THE SUBGRADE MATERIAL SHALL HAVE A MINIMUM SOAKED C.B.R. OF 08% AT 95% M.D.D. AASHTO T-180 FOR BOTH FILL AND CUT SECTIONS.
10. THE LENGTHS, SIZES, SLOPES, INVERT LEVELS AND OTHERS GIVEN DETAILS REGARDING CULVERTS, AS SHOWN IN SCHEDULE OF STRUCTURES ARE TENTATIVE. THE CONTRACTOR SHALL PREPARE SHOP DRAWINGS OF EACH CULVERT LOCATIONS WITH THE REQUIRED SKEW ANGLE AS PER SITE REQUIREMENTS AND SHALL SUBMIT THE SAME TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION EXECUTION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE TO CATER FOR ALL TEMPORARY TRAFFIC DIVERSIONS BEFORE START OF CONSTRUCTION OF THE ROAD TO THE ENTIRE SATISFACTION OF THE ENGINEER INCLUDING DETOUR ROAD AND ITS MAINTENANCE, SPRINKLING OF WATER, GRADING AND COMPACTION WHEN AND WHERE REQUIRED AT HIS OWN COST.
12. RETAINING/BREAST/TOE WALL, GUARD RAIL, CONCRETE CURB STONES, FOOTPATH, ROAD SIGNS, GANTRY SIGNS, PAVEMENT STUDS AND OTHER ANCILLARY ITEMS SHALL BE PROVIDED AS PER THE BOQ ITEMS, AS PER SITE REQUIREMENT OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS FOR EACH ACTIVITY/ LOCATION ALONG WITH METHODOLOGY AND SHALL SUBMIT FOR APPROVAL TO THE ENGINEER PRIOR TO START OF CONSTRUCTION.
13. TWO COATS OF BITUMEN PAINT SHALL BE APPLIED ON CONCRETE FACES IN CONTACT WITH THE SOIL. COST OF THIS ITEM IS DEEMED TO BE INCLUDED IN THE RELEVANT BOQ ITEM RATES AND NO SEPRATE PAYMENT SHALL BE MADE FOR THIS ITEM OF WORK.
14. RETAINING/DRAINAGE STRUCTURES FOUNDATION SHALL BE PLACED ON FIRM, HARD AND ROCKY STRATA, OR AS DIRECTED BY ENGINEER.
15. ROADWAY EXCAVATION MATERIAL SHALL BE UTILIZED IN MOST EFFECTIVE MANNER IN THE EMBANKMENT EVEN WITH BLENDING /MIXING WITH THE SUPERIOR MATERIALS (IF REQUIRED, WITHOUT AT ANY EXTRA COST). ROADWAY EXCAVATION SHALL NOT BE DISPOSED OFF OUTSIDE RIGHT OF WAY, IT IS MANDATORY TO UTILIZE IN THE PROJECT.
16. DURING EXECUTION, JOINT CROSS SECTION AND ACTUAL NSL OF CENTER LINE WILL BE PROVIDED TO FINALIZE THE ROAD PROFILE PRIOR TO COMMONS CONSTRUCTION ACTIVELY AT SITE.

PAKHTUNKHWA
HIGHWAY AUTHORITY

NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

				DRAWN		CONSTRUCTION OF GRADE SEPERATED INTERSECTION AT SHAHEED CHOWK TIMERGARA	TITLE LIST OF DRAWINGS & GENERAL NOTES	
				SUBMITTED				
				RECOMMENDED				
				CHD./VER.			DATE	DWG NO.
REV.	DATE	DESCRIPTION	APPROVED	APPROVED			MARCH, 2022	SA-488/102/TD/LDG001

LEGEND

NATIONAL CAPITAL

★

PROVINCIAL CAPITAL

⊗

IMPORTANT CITY

○

INTERNATIONAL BOUNDARY

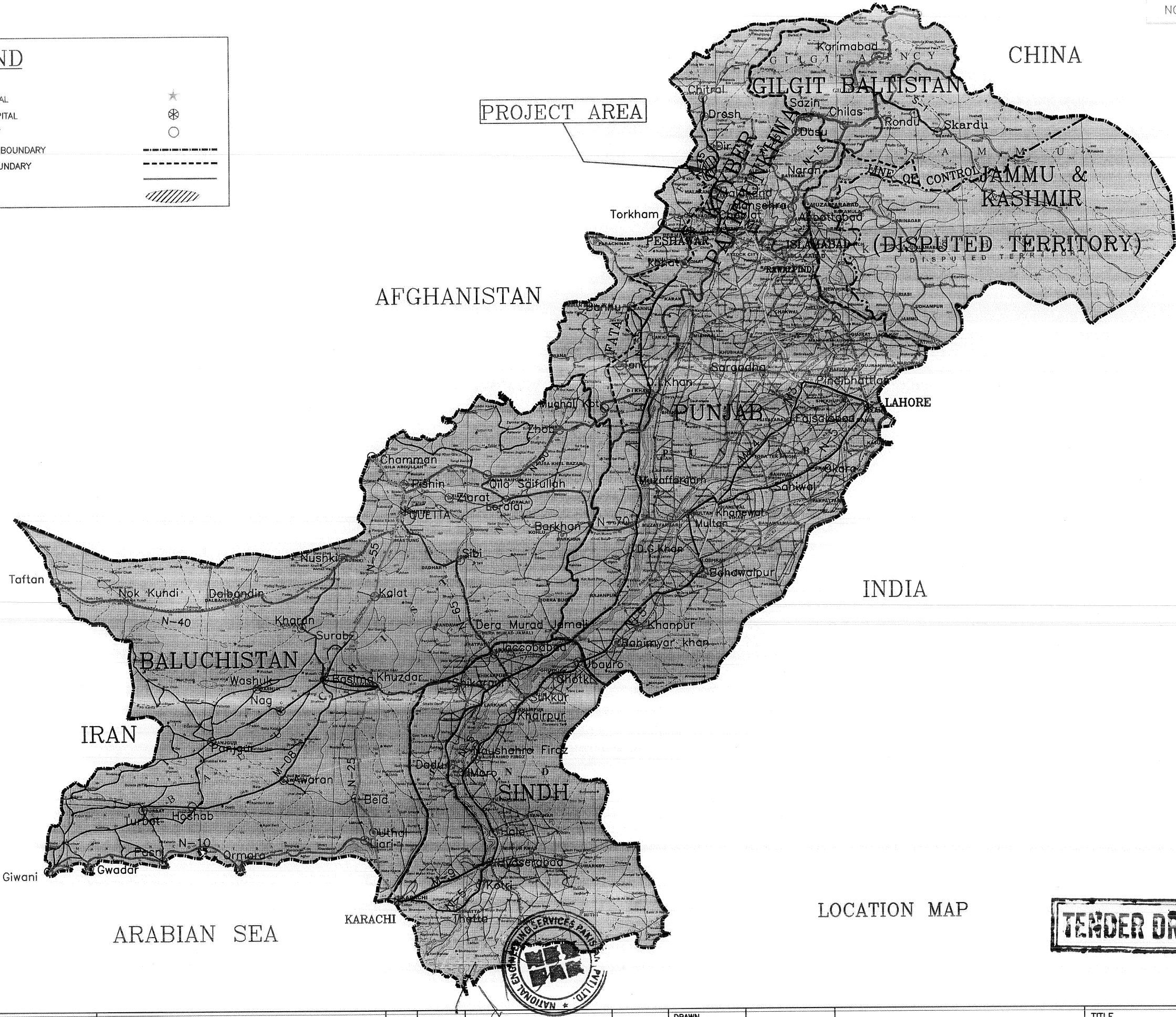
PROVINCIAL BOUNDARY

ROADS

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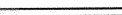
PROJECT AREA

|||||



LOCATION MAP

TENDER DRAWINGS

 PAKHTUNKHWA HIGHWAY AUTHORITY	 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.					DRAWN		CONSTRUCTION OF GRADE SEPERATED INTERSECTION AT SHAHEED CHOWK TIMERGARA	TITLE KEY MAP	
						SUBMITTED			DATE	DWG NO.
						RECOMMENDED			MARCH, 2022	SA-488/102/TD/ KM002
						CHD./VER.				
		REV.	DATE	DESCRIPTION	APPROVED	APPROVED				

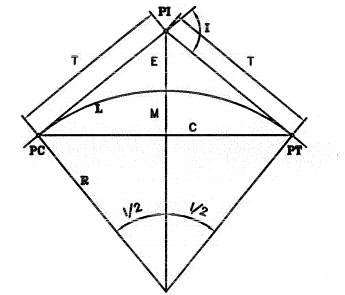
SYMBOLS

ABBREVIATIONS

TENDER DRAWINGS
NOT TO BE USED FOR CONSTRUCTION

DESIGN CENTER LINE		MANHOLE	
AGRICULTURE LAND		NULLAH	
LAND ACQUISITION		CULVERT / BRIDGE	
TREES		T&T BOX	
BUSHES		HAND PUMP	
MOSQUE		CANAL / DRAIN	
PERMANENT HOUSE / TEMPORARY		LINED WATER COURSE	
GRAVES / GRAVE YARD		UNLINED WATER COURSE	
TELEPHONE POLE		SPUR STRUCTURE	
ELECTRIC & T&T LINE		GRID LINE	
DIRT TRACK		SPOT LEVEL (TYP.)	
METALLED ROAD		ROAD SIGN (IN PLAN)	
ELECTRIC POLE		EXISTING GROUND LEVEL (PROFILE)	
HIGH TENSION LINE PYLON		FINISHED GRADE LINE	
HORIZONTAL CURVE DATA		C/WAYS IN PROFILE	
GRID NORTH		CULVERT IN PROFILE	
TRAVERSE /BM POINTS		C/WAYS IN PLAN	
POINT OF INTERSECTION			
FENCE			
SUI GAS & WATER PIPE LINE			
TUBE WELL			
BOUNDARY LINE			

A	AREA	P	OFFSET OF TANGENT LINE TO PC OF SHIFTED CIRCLE CURVE
ALIG.	ALIGNMENT	PC	POINT OF HORIZONTAL CURVATURE (START OF HORIZONTAL CURVE)
B	BREADTH	P.C.	REINFORCED CONCRETE PIPE CULVERT
BC	BOX CULVERT	PGL	PROFILE GRADE LINE
B.M	BENCH MARK	P.I.	PLASTICITY INDEX
BOP	BEGINNING OF PROJECT	PI	POINT OF HORIZONTAL INTERSECTION
C	CHORD LENGTH	PR	POINT OF ROTATION
C.B.R	CALIFORNIA BEARING RATIO	PT	POINT OF HORIZONTAL TANGENCY (END OF HORIZONTAL CURVE)
C/C	CENTER TO CENTER	R	RADIUS OF HORIZONTAL CURVE
CHD.	CHECKED	R.C	REINFORCED CONCRETE
C/L, $\frac{C}{L}$	CENTER LINE	REINF.	REINFORCEMENT
CM/cm	CENTIMETER	REV.	REVISION
CONC.	CONCRETE	RHS.	RIGHT HAND SIDE
CONST/JT	CONSTRUCTION JOINT	R.O.W.	RIGHT OF WAY
CS	CURVE TO SPIRAL	RT.	RIGHT
CUL	CULVERT	R/W	RETAINING WALL
Cu.m	CUBIC METER	RWC	RELOCATED WATER COURSE
CURVE LEN	VERTICAL CURVE LENGTH	S	SLOPE GRADIENT (PERCENT)
DC	DEPTH OF CUT	SE	SUPERELEVATION
Da	DEGREE OF CURVE (BY ARC)	S.B.P	SHOULDER BREAK POINT
Dc	DEGREE OF CURVE (BY CHORD)	S.C.	SLAB CULVERT
DEG	DEGREE	SC	SPIRAL TO CURVE, SLAB CULVERT
DIA.	DIAMETER	SHLD	SHOULDER
DIM.	DIMENSION	Sq.m	SQUARE METER
D/S	DOWNSTREAM	S.T.	SHORT TANGENT
D.S.T	DOUBLE SURFACE TREATMENT	ST	SPIRAL TO TANGENT
DRG.	DRAWING	STA./STA	STATION (CHAINAGE)
E	EASTING, EAST, EXTERNAL DISTANCE (SHIFT)	STRUCT	STRUCTURE
ELEV./EL	ELEVATION	SUPEREL.	SUPERELEVATION
EOP	END OF PROJECT	S'WALK	SIDE WALK
EXP/JT	EXPANSION JOINT	T	TANGENT LENGTH OF HORIZONTAL CURVE
G.I	GALVANIZED IRON	TS	TANGENT TO SPIRAL
H/HOR.	HORIZONTAL	T.S.T	TRIPPLE SURFACE TREATMENT
H.T/L.T	HIGH TENSION/LOW TENSION	TAN.	TANGENT
HF	HEIGHT OF FILL	TH	THICKNESS
HFL	HIGH FLOOD LEVEL	TR	TRANSITION
HWY.	HIGHWAY	TYP.	TYPICAL
I	DEFLECTION ANGLE (HORIZONTAL CURVE)	U/S	UPSTREAM
ic	CIRCULAR DEFLECTION ANGLE	V	VERTICAL
I.L	INVERT LEVEL	VAR.	VARIABLE
K	SMOOTHNESS FACTOR (IN CASE OF VERTICAL CURVE)	VER.	VERIFIED
Kg.	KILOGRAM	VPC	VERTICAL POINT OF CURVATURE (START OF VERTICAL CURVE)
KM/Km	KILOMETER	VPI	VERTICAL POINT OF INTERSECTION OF PROFILE GRADE.
L	LENGTH OF HORIZONTAL CURVE/SPIRAL	VPT	VERTICAL POINT OF TANGENCY (END OF VERTICAL CURVE)
LIN.M	LINEAR METER	W.	WEST, WIDTH OF ROADWAY
LHS.	LEFT HAND SIDE	W.B.M	WATER BOUND MACADAM
LT.	LEFT	WC	WATER COURSE
LT	LONG TANGENT	X	DISTANCE, PERPENDICULAR TO THE TANGENT, FROM BEGINNING TO THE END OF SPIRAL
M/m	METER	Y	DISTANCE, PERPENDICULAR TO THE TANGENT, FROM BEGINNING TO THE END OF SPIRAL
M	MIDDLE ORDINATE	θ	SKREW ANGLE
MAX.	MAXIMUM		
M.H	MAN HOLE		
MIN.	MINIMUM		
mm	MILLIMETER		
N.S.L	NATURAL SURFACE LEVEL (E.G.L)		
N	NORTHING, NORTH		
NO.	NUMBER		
N.T.S	NOT TO SCALE		



CIRCULAR CURVE PARAMETERS

TENDER DRAWINGS



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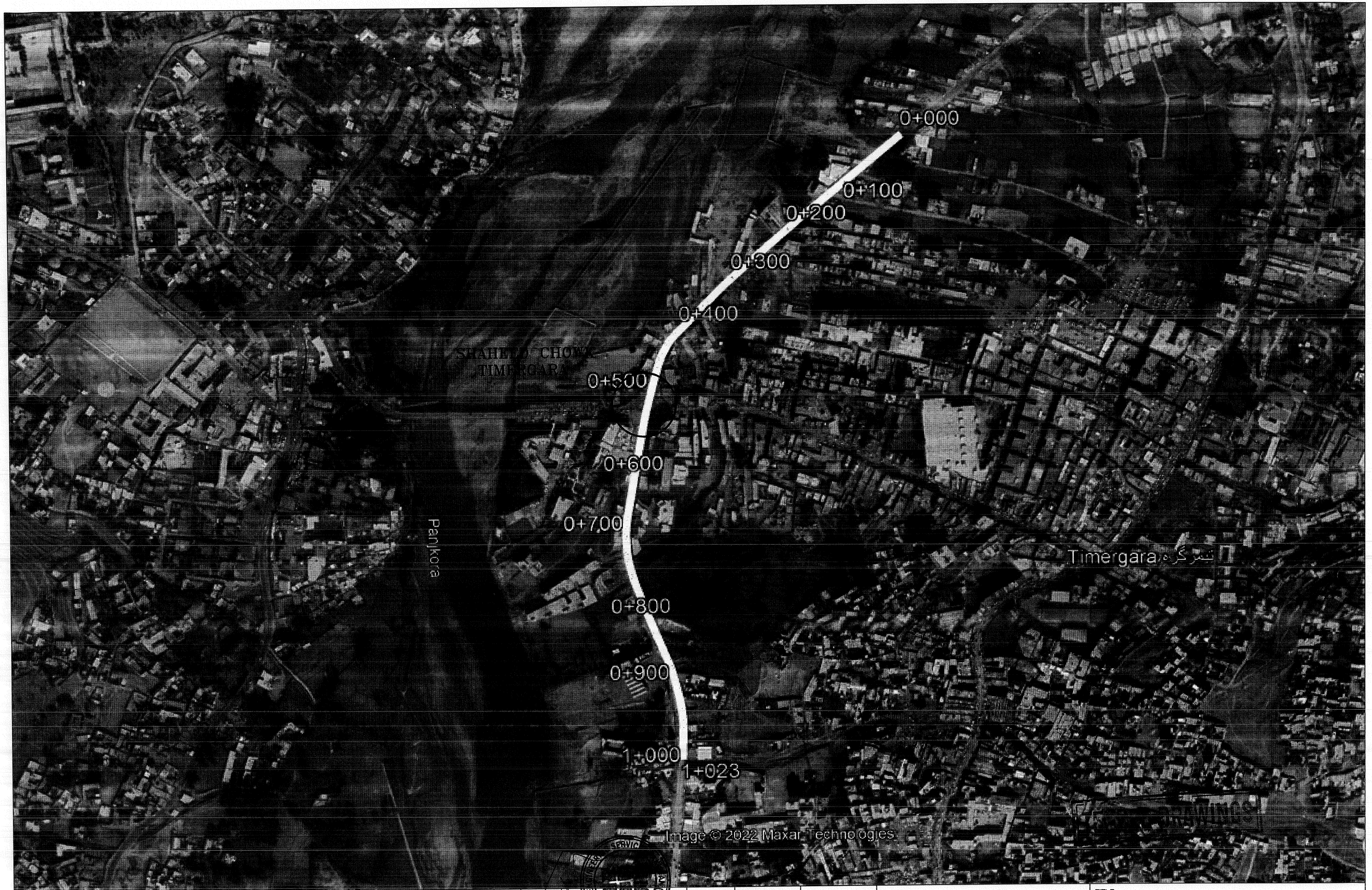
NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

REV.	DATE	DESCRIPTION	APPROVED	APPROVED

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE SYMBOLS AND ABBREVIATIONS

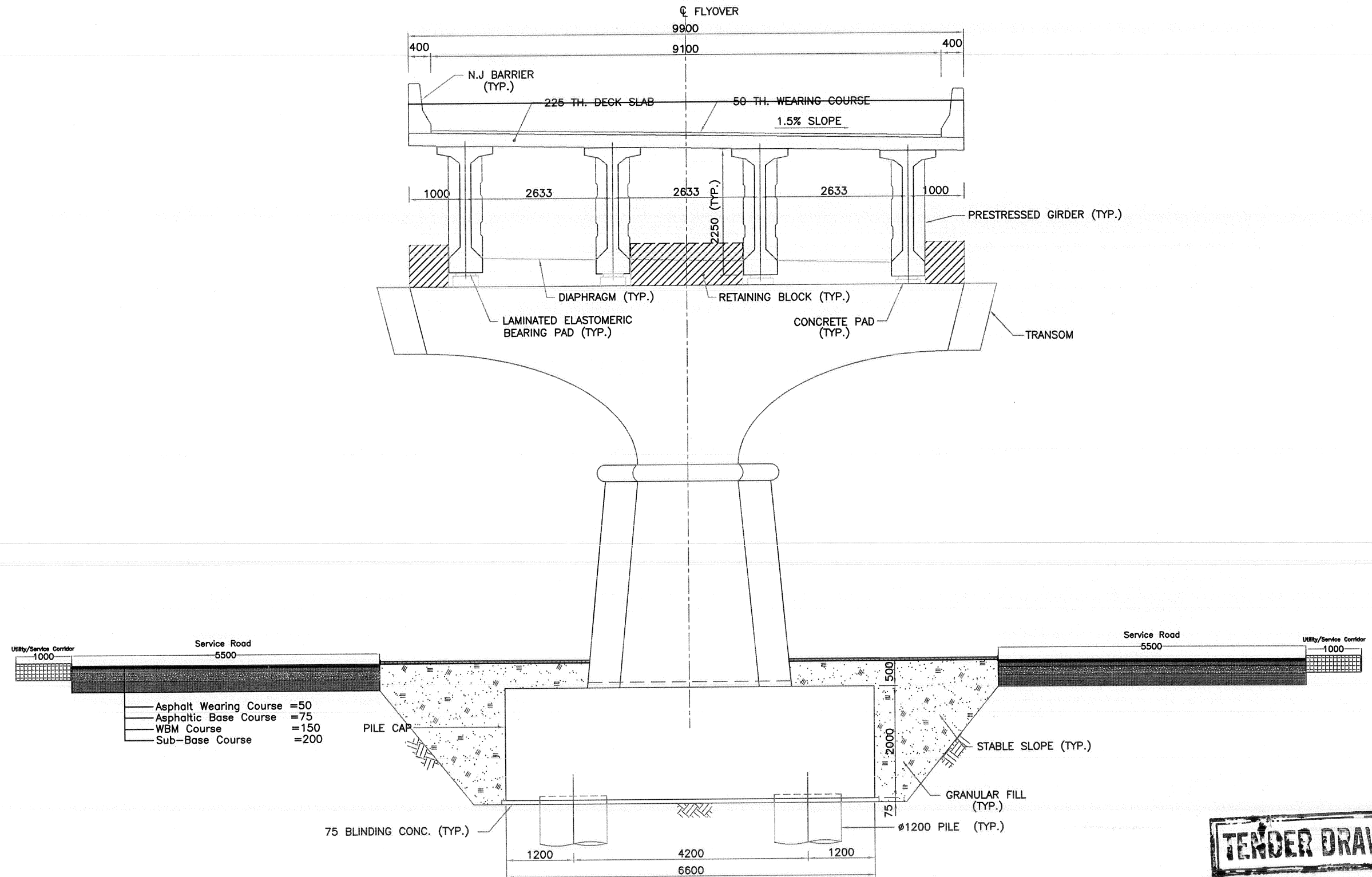
DATE MARCH, 2022 DWG NO. SA-488/102/TD/ SA003



 PAKHTUNKHWA HIGHWAY AUTHORITY	 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.						DRAWN		CONSTRUCTION OF GRADE SEPERATED INTERSECTION AT SHAHEED CHOWK TIMERGARA	TITLE ROUTE LOCATION PLAN		
								SUBMITTED				
								RECOMMENDED				
								CHD./VER.				
								APPROVED				
		REV.	DATE	DESCRIPTION	APPROVED	APPROVED						

TYPICAL CROSS SECTION

TENDER DRAWINGS
NOT TO BE USED FOR CONSTRUCTION



TENDER DRAWINGS

NOTE
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



PAKHTUNKHWA HIGHWAYS
AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

04				DRAWN	INAM ULLAH
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	
REV.	DATE	DESCRIPTION	APPROVED	APPROVED	

PROJECT
CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TYPICAL CROSS SECTION

SCALE

1:1000

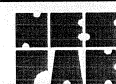
DATE	DWG No.	REV.
MARCH, 2022	SA-488/102/TD/TC004	0

SUMMARY OF SURVEY CONTROL POINTS

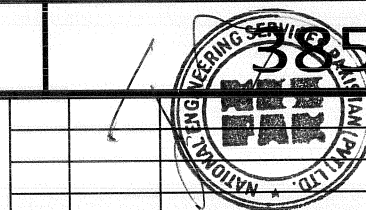
S. NO.	Easting (m)	Northing (m)	Elevation (m)	Code
1	759281.95	3857861.72	735.92	BM11A
2	759263.69	3857737.46	734.53	BM11-3
3	759264.53	3857821.12	735.99	BM11
4	759281.39	3857766.57	735.25	BM11B
5	759153.02	3857818.71	736.95	BM12-2
6	759313.64	3857927.31	735.53	BM11-3
7	759422.93	3857831.03	743.21	BM11C-1
8	759257.48	3857606.67	733.68	BM11-4
9	759436.83	3858057.39	736.01	BM11-4
10	759535.97	3857767.01	742.52	BM11C-2
11	759314.26	3857489.42	733.48	BM11-5
12	759654.38	3857735.59	742.47	BM11C-3
13	759568.8	3858162.65	737.51	BM11-5
14	759344.67	3857341.81	732.16	BM11-5
15	759651.04	3857718.15	742.1	BM11C-4
16	759221.35	3857823.12	736.85	BM12
17	759361.05	3857812.7	735.04	BM11C



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NATIONAL ENGINEERING SERVICES
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REV.	DATE	DESCRIPTION	APPROVED
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DRAWN	
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE

TRAVERSE STATIONS

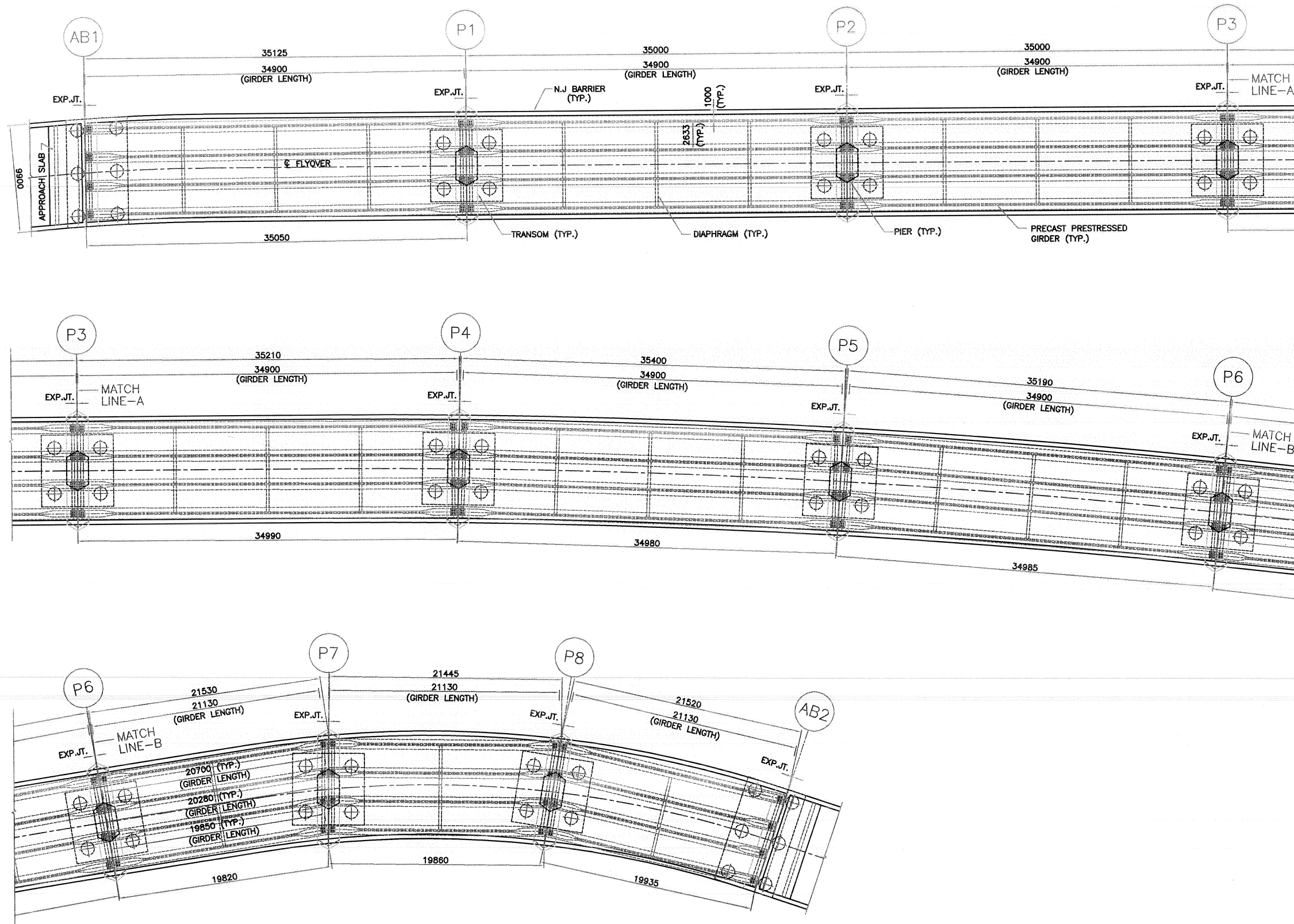
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MARCH, 2022

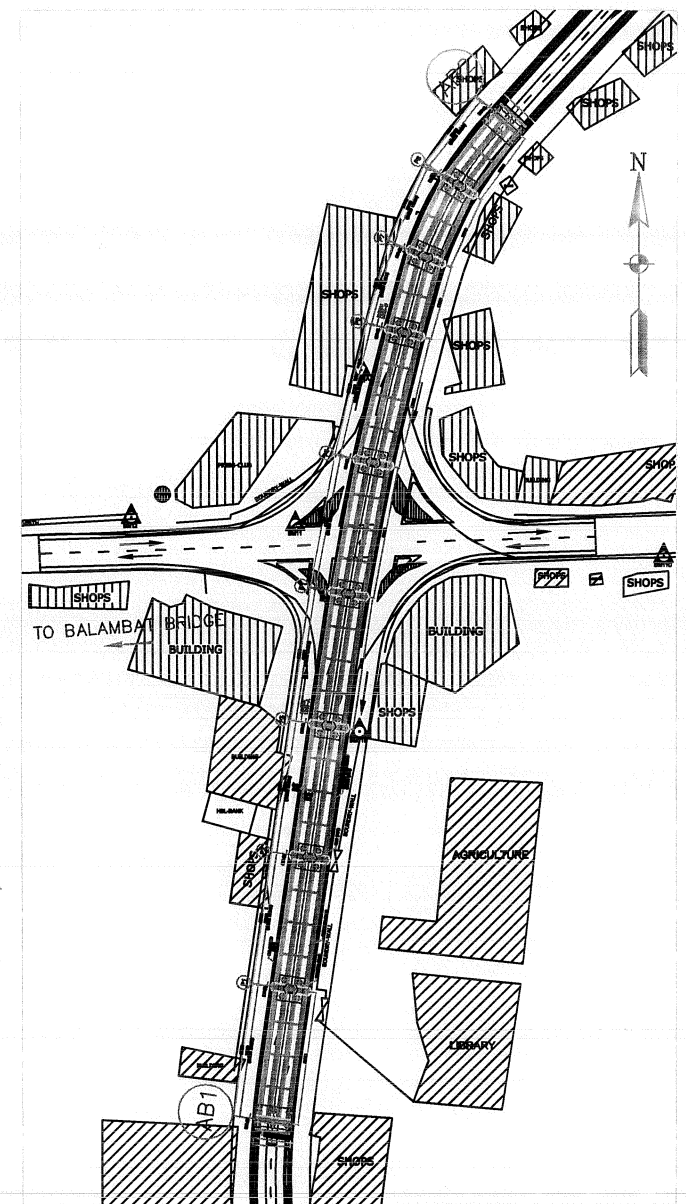
DWG NO.

SA-488/102/TD/TS005

TENDER DRAWINGS



PLAN



KEY PLAN

TENDER DRAWINGS

TENDER DRAWINGS
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- NOTES
1. FOR GENERAL NOTES REFER DWG. NO. GNS012.
 2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



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04				DRAWN	M.A.
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	
REV.	DATE	DESCRIPTION	APPROVED	APPROVED	

CONSTRUCTION OF GRADE SEPARATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

GENERAL ARRANGEMENT PLAN		SCALE
DATE		1/8" = 1'-0"
MARCH, 2022	DRAWING No.	
	SA-488/102/TD/GA006	REV.
		0



TENDER DRAWINGS
NOT TO BE USED FOR CONSTRUCTION

1. FOR GENERAL NOTES REFER DRAWING NO. GNS012.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
3. GIRDERS SHOULD BE INSTALLED IN THEIR CORRECT POSITIONS ON BEARING BY LIFTING FROM BOTH ENDS AND SHALL BE TEMPORARILY BRACED UNTIL CASTING OF THE DIAPHRAGM.
4. ALL PRESTRESSED CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE CYLINDER STRENGTH OF 33.00MPa (4800 Psi.) AT 28 DAYS.
5. GIRDER LIFTING DETAILS SHALL BE PROVIDED BY CONTRACTOR FOR ENGINEER'S APPROVAL.
6. THE FOLLOWING VALUES HAVE BEEN ASSUMED IN THE CALCULATION OF THEORETICAL ELONGATION/EXTENSION (Δ_o) OF TENDONS:
MODULUS OF ELASTICITY, $E = 193,000 \text{ MPa (28,000 ksi)}$
COEFFICIENT OF CURVATURE FRICTION $= 0.25 \text{ PER RADIAN}$
WOBBLE FRICTION COEFFICIENT $= 0.0033 \text{ PER METER}$
ANY DEVIATION FROM THE ABOVE VALUES SHALL BE REPORTED TO THE ENGINEER.
7. STRESSING SHALL BE STOPPED AS SOON AS ONE OF THE FOLLOWING CONDITIONS IS FULFILLED:
 - STRESS REACHES 0.77 TIMES GUARANTEED ULTIMATE TENSILE STRENGTH (GUTS) OR ACTUAL ELONGATION/EXTENSION REACHES 1.10 Δ_o . (IN NO CASE JACKING FORCE SHOULD BE LESS THAN AS GIVEN IN TABLE).
 - IF AT 0.75 GUTS ACTUAL ELONGATION IS STILL BELOW 0.95 Δ_oSTRESSING SHALL BE PROCEEDED UPTO MAXIMUM OF 0.80 GUTS.
8. IN THE EVENT OF NON-CONFORMANCE OF ABOVE, THE CABLE MAY BE REPLACED.
9. TENDON EXTENSION GIVEN IN TABLE IS FOR THE JACKING END.
10. STRESSING OF GIRDERS SHOULD BE DONE FROM BOTH ENDS.
11. CABLE DUCTS SHALL BE GROUTED IMMEDIATELY AFTER STRESSING.
12. ANCHORAGE SLIP SHOULD BE LESS THAN 5mm.
13. DETAILS SHOWN ARE BASED ON THE STRONGHOLD MULTI-STRAND SYSTEM OF POST TENSIONING. ALTERNATIVE MULTI-STRAND POST-TENSIONING SYSTEM MAY BE USED SUBJECT TO APPROVAL BY THE ENGINEER.
14. PRESTRESSING OPERATIONS ARE NOT TO BE STARTED UNTIL THE CONCRETE GAINS ITS FULL STRENGTH OF 33.00MPa (4800 Psi).
15. IN CASE OF CHANGE IN PRESTRESSING PARAMETERS, THE MATTER SHALL BE REFER TO DESIGN OFFICE BEFORE PROCEEDING THE CONSTRUCTION OF GIRDERS.

JACKING FORCE = 158.00 M Tons.

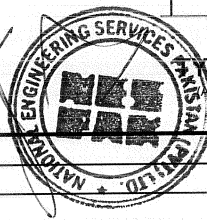
FENDON NO.		DATA FOR GIRDER											EXTENSION AT EACH END (MM)	SEQUENCE OF STRESSING
		END 0.00	0.05L	0.10L	0.15L	0.20L	0.25L	0.30L	0.35L	0.40L	0.45L	0.50L		
1	Z	375	323	276	235	199	169	144	125	111	103	100	128	A
	Y	0	0	0	0	0	0	0	0	0	0	0		
2	Z	750	627	516	419	334	263	204	159	126	107	100	127	B
	Y	0	0	0	12	35	55	80	110	130	145	150		
3	Z	1125	930	756	602	469	356	264	192	141	110	100	126	C
	Y	0	0	0	0	0	-25	-55	-90	-122	-145	-150		
4	Z	1500	1263	1050	863	700	563	450	363	300	263	250	125	D
	Y	0	0	0	0	0	0	10	50	100	135	150		
5	Z	1875	1566	1290	1046	835	656	510	396	315	266	250	124	E
	Y	0	0	0	0	0	0	0	-35	-86	-135	-150		

ANCHORAGE RECESS DATA

ANCHORAGE RECESS DATA		
TENDON NO.	ANGLE α°	X (mm)
1	1° 42' 10"	9
2	4° 01' 28"	22
3	6° 20' 47"	34
4	7° 44' 22"	42
5	10° 03' 41"	55

PAKHTUNKHWA HIGHWAYS
AUTHORITY

NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.



04				DRAWN	M.A
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	
REV.	DATE	DESCRIPTION	APPROVED	APPROVED	

CONSTRUCTION OF GRADE SEPARATED INTERSECTION AT SHAHEED CHOWK TIMERGARA

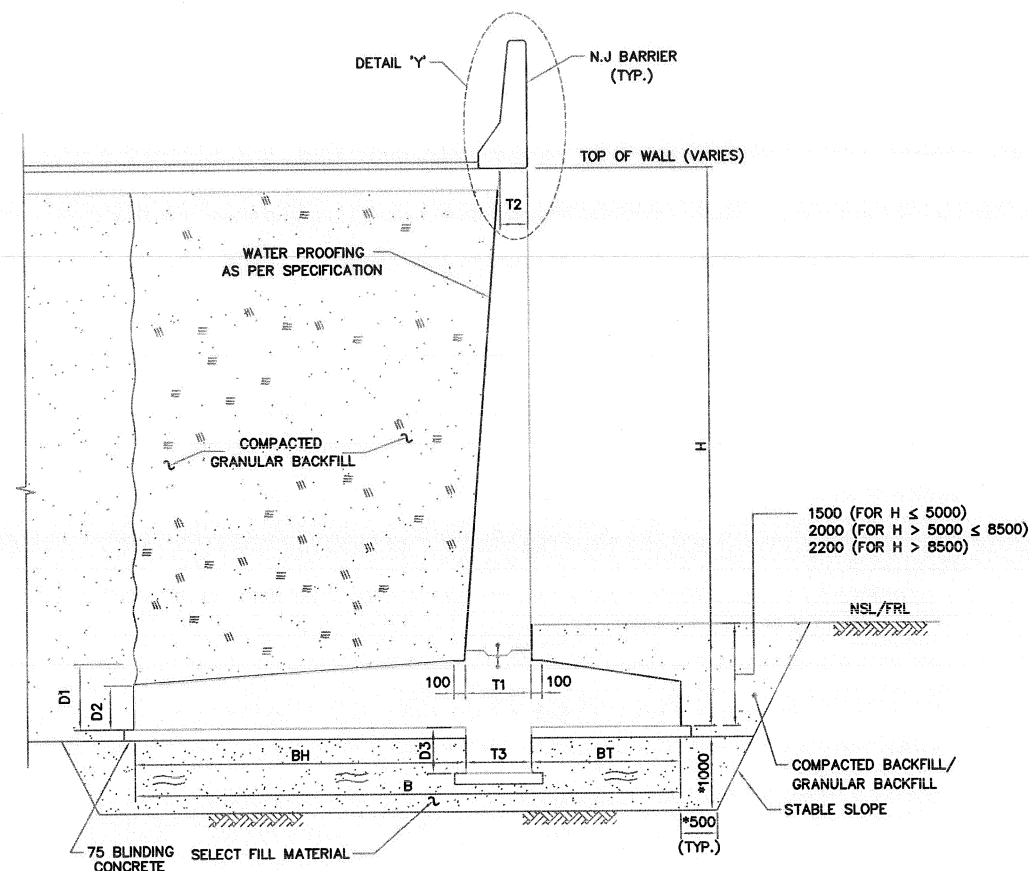
34.9M PRECAST PRESTRESSED GIRDER CONCRETE OUTLINE

DATE
MARCH, 2022

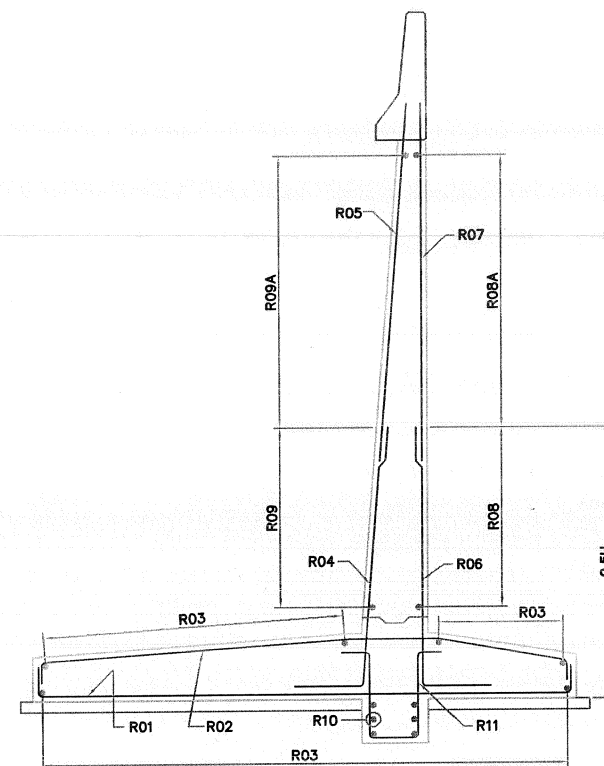
DRAWING No. SA-488/102/TD/PG009

SCALE
1/8" = 1'-0"

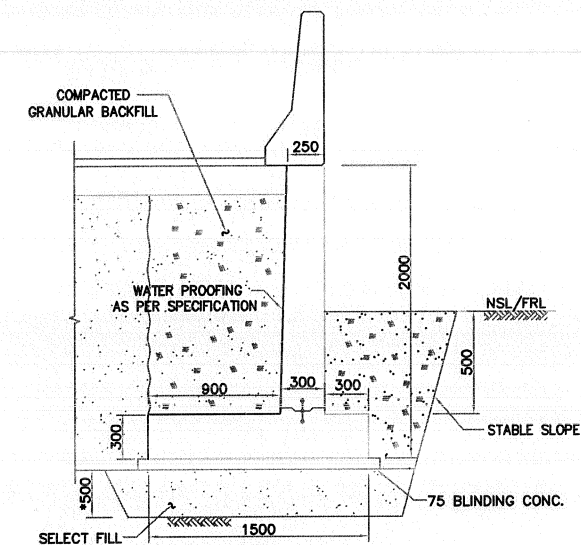
REV.
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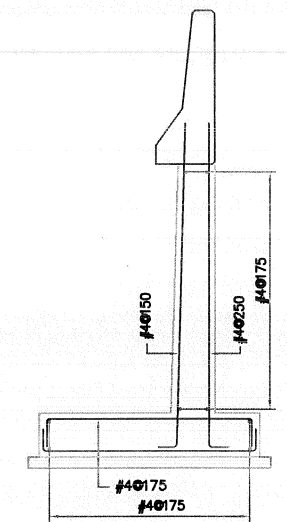
SECTION A-A (1G31)
(CONCRETE OUTLINE)
SCALE 1:50



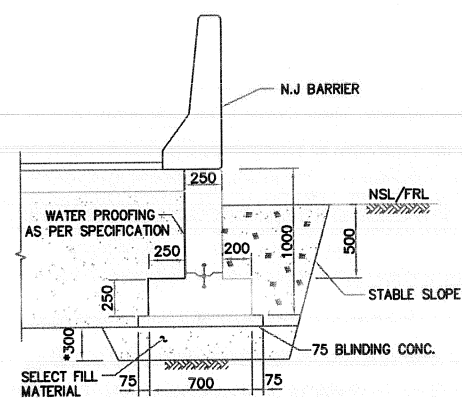
SECTION A-A (1G31)
(REINFORCEMENT)
SCALE 1:50



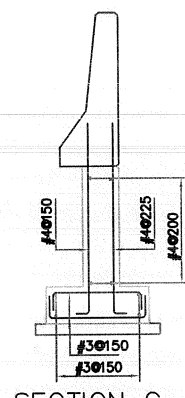
SECTION B-B (1G31)
(CONCRETE OUTLINE)
SCALE 1:25



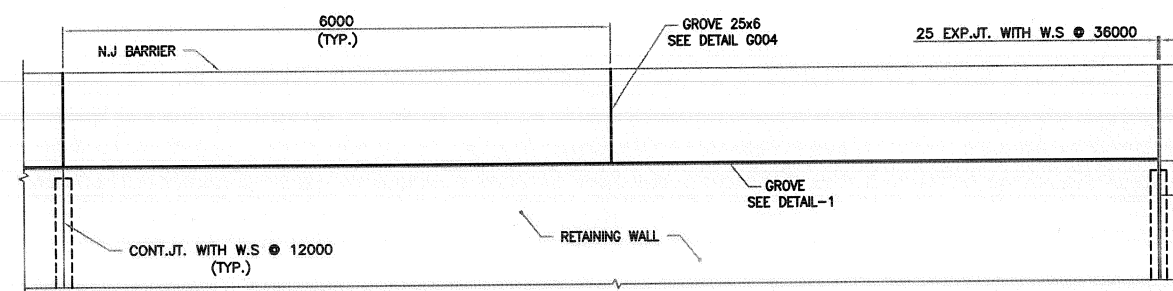
SECTION B-B (1G31)
(REINFORCEMENT)
SCALE 1:25



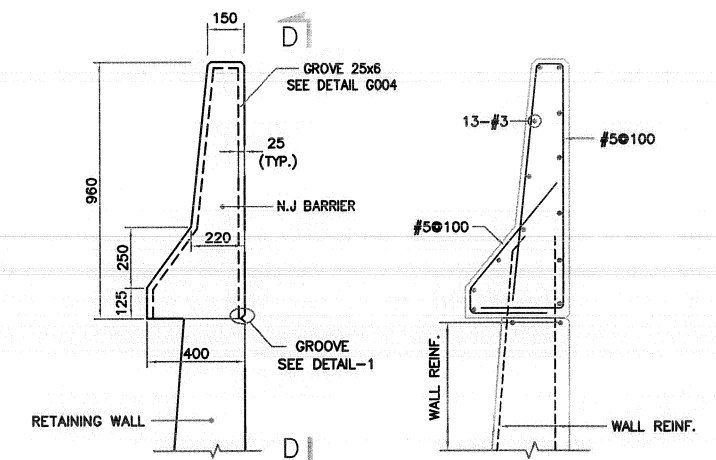
SECTION C-C (1631)
(CONCRETE OUTLINE)
SCALE 1:25



SECTION C-C
(REINFORCEMENT)
SCALE 1:25



SECTIONAL ELEVATION D-D
SCALE 1:40

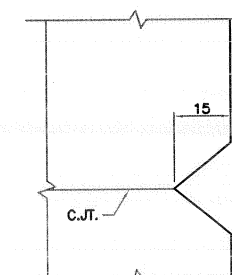


DETAIL 'Y'
(CONCRETE OUTLINE)
SCALE 1:15

DETAIL 'Y'
(REINFORCEMENT)
SCALE 1:15

SCHEDULE OF RETAINING WALLS

WALL DESCRIPTION	SR. NO.	DIMENSIONS										REINFORCEMENT																	
		H	B	BH	BT	D1	D2	D3	T1	T2	T3	R01	R02	R03	R04	R05	R06	R07	R08	R08A	R09	R09A	R10	R11					
FOR ALL RETAINING WALLS	01	9500	7000	3600	2400	900	600	1200	1000	250	1000	#8@175	#8@175	#5@175	#1@175	#8@175	#6@175	#5@175	#8@175	#6@175	#6@175	#5@175	#5@175	#6@175					
	02	9000	6750	3600	2250	800	500	1000	900	250	900	#8@200	#8@200	#5@200	#1@200	#8@200	#6@175	#5@175	#8@200	#6@200	#6@200	#5@200	#5@200	#6@200					
	03	8500	6250	3250	2200	800	500	1000	800	250	800	#6@100	#6@100	#5@200	#8@100	#6@100	#6@200	#5@200	#6@125	#5@125	#6@200	#5@200	#5@200	#6@200					
	04	8000	6100	3200	2100	800	450	800	800	250	800	#6@125	#6@125	#5@200	#8@125	#6@125	#6@200	#5@200	#6@125	#5@125	#6@150	#4@150	#5@200	#6@250					
	05	7000	5900	3300	2000	600	400	600	600	250	600	#6@150	#6@150	#4@175	#8@125	#6@125	#5@175	#4@175	#6@150	#5@150	#5@175	#4@175	#4@175	#4@150					
	06	6000	4700	2500	1700	500	350	---	500	250	---	#5@125	#5@125	#4@200	#8@150	#6@150	#5@200	#4@200	#6@200	---	#5@200	---	---	---					
	07	5000	4150	2400	1300	450	300	---	450	250	---	#5@150	#5@150	#4@200	#8@200	#6@200	#5@250	#4@250	#5@150	---	#4@150	---	---	---					
	08	4000	3200	2000	800	400	300	---	400	250	---	#4@150	#4@150	#4@200	#6@150	#4@150	#5@250	#4@250	#4@150	---	#4@150	---	---	---					
	09	3000	2400	1500	600	300	300	---	300	250	---	#4@175	#4@175	#4@200	#6@150	#4@150	#5@250	#4@250	#4@150	---	#4@150	---	---	---					



DETAIL-1
SCALE 1:1

TENDER DRAWINGS

NOTES

1. FOR GENERAL NOTES REFER DWG. NO. GNS012.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
3. SELECT FILL MATERIAL OF 1m DEPTH OR (AS SHOWN ON SECTIONS)
SHALL BE PLACED BELOW FOUNDATION LEVEL.
4. BACKFILL AND SELECT FILL MATERIAL SHALL BE PLACED IN LAYERS TO ACHIEVE A
RELATIVE COMPACTION OF 95% ON MODIFIED ASHTO BASIS. MORE OVER BACKFILL
MUST BE DONE AS PARALLEL ACTIVITY ON BOTH SIDES.
5. * SHALL BE AS PER GEO-TECHNICAL ENGINEER RECOMMENDATION AT SITE
6. BEARING CAPACITY AS PER GEO-TECHNICAL RECOMMENDATION IS USED FOR
FOUNDATION DESIGN WHICH SHALL BE VERIFIED AT SITE BEFORE EXECUTION OF WORK.

PAKHTUNKHWA HIGHWAYS
AUTHORITY

**NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.**

04					DRAWN	M.A
03					SUBMITTED	
02					RECOMMENDED	
01					CHD./VER.	
REV	DATE	DESCRIPTION	APPROVED	APPROVED		

CONSTRUCTION OF GRADE SEPARATED INTERSECTION AT SHAHEED CHOWK TIMERGARA

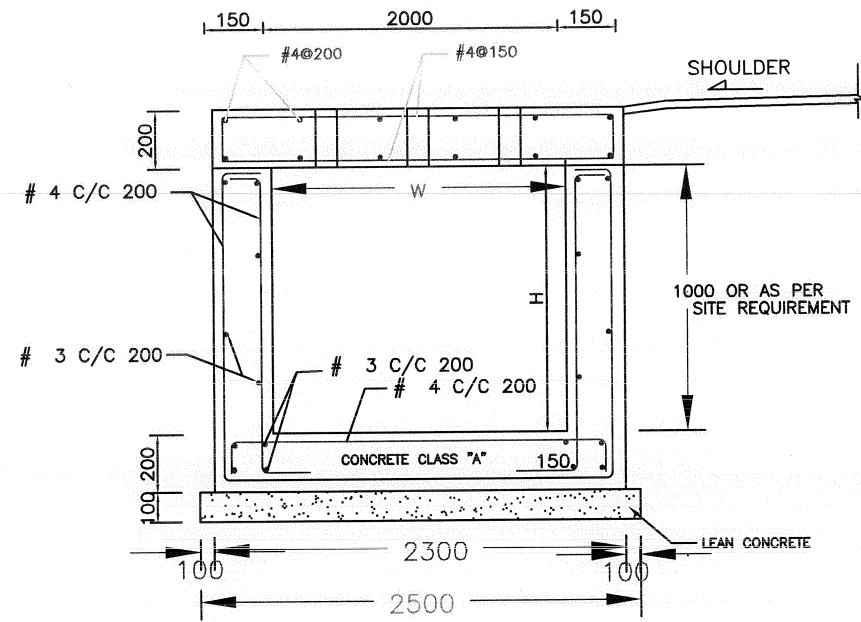
RETAINING WALL CONCRETE OUTLINE & REINFORCEMENT

DATE	DRAWING No.	REV.
MARCH. 2022	SA-488/102/TD/RW010	0

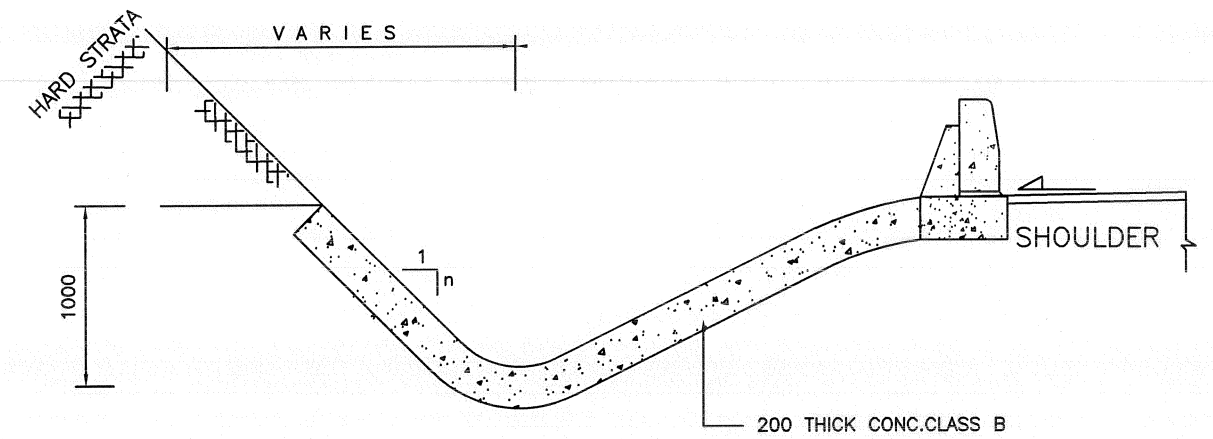
SCALE

 $1/8'' = 1'-0''$

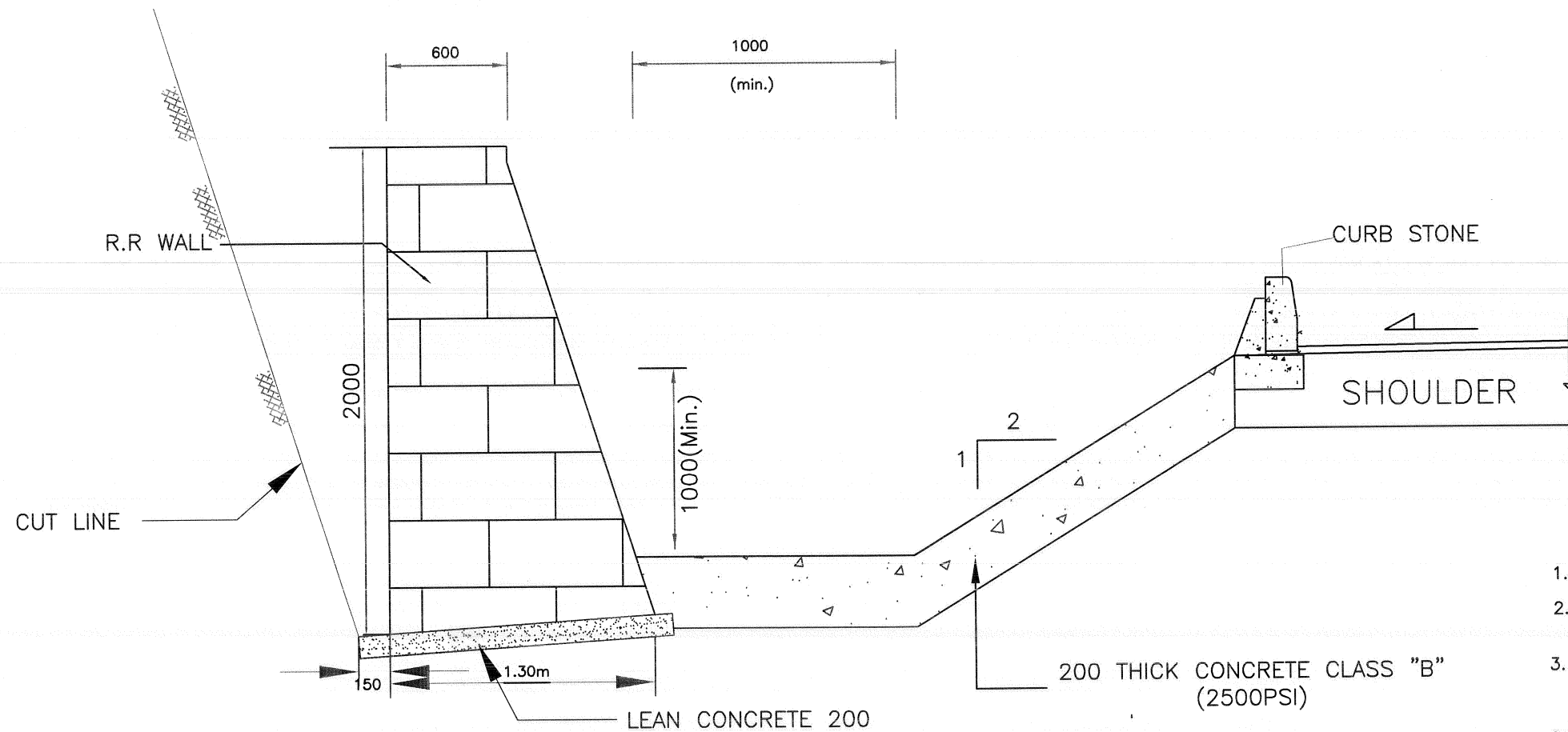
REV.



TYPE-III



TYPE-I



TYPE-II

TENDER DRAWINGS

NOTES: -

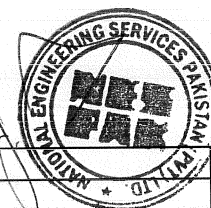
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. INVERT LEVEL OF DRAIN SHALL GENERALLY FOLLOW PROFILE GRADE AND SHALL BE CONNECTED TO ADJOINING CULVERTS/CHUTES.
3. SIDE DRAIN TYPE III SHALL BE COVERED IN BUILT UP AREAS AT LOCATION WHERE ACCESS IS REQUIRED FOR CROSSING OR WHERE SHOULDER IS ELIMINATED DUE TO UNAVAILABILITY OF SPACE .
4. ACTUAL TYPE ,LOCATION, LENGTH, SLOPE AND INVERT LEVEL OF DRAIN SHALL BE AS APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION AT SITE.



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.



REV.	DATE	DESCRIPTION	APPROVED	APPROVED

DRAWN	
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE	TYPICAL RCC DRAIN DETAIL
DATE	MARCH, 2022
DWG NO.	SA-488/102/TD/ D011

1. GENERAL:

1.1 SPECIFIC TO PROJECT ONLY AND SHOULD BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS, STRUCTURAL ENGINEERING DRAWINGS, RELEVANT CONTRACT CONDITIONS AND ENGINEER'S INSTRUCTIONS.

1.2 ALL DRAWINGS SHALL BE CO-ORDINATED WITH OTHER SPECIALTY DRAWINGS / DETAILS. ANY DISCREPANCY, ERROR OR RECTIFICATION IF REQUIRED, SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER FOR NECESSARY APPROVAL.

1.3 ALL DIMENSIONS ARE IN MILLIMETRES AND ELEVATIONS IN METRES. UNLESS SPECIFIED OTHERWISE.

1.4 ALL ELEVATIONS SHOWN ON DRAWINGS ARE FINISHED SURFACE LEVELS UNLESS NOTED OTHERWISE.

1.5 ALL EXPOSED CONCRETE CORNERS, EDGES AND ANGLES SHALL BE CHAMFERED OR FILLETED 20mm x 20mm UNLESS SPECIFIED OTHERWISE.

1.6 THE CONTRACTOR SHALL SUBMIT, COMPLETE METHODOLOGY FOR DIFFERENT WORK ITEMS LIKE EXCAVATION/BACKFILLING, DEWATERING/DRAINAGE, CONCRETING, JOINTS ETC FOR APPROVAL OF ENGINEER.

1.7 ALL EXPOSED SURFACES SHALL HAVE CLASS 1 SURFACE FORM FINISH UNLESS SPECIFIED OTHERWISE.

2. MATERIALS:

2.1 ALL THE MATERIALS AND WORKMANSHIP SHALL BE ACCORDING TO THE AASHTO SPECIFICATIONS AND ASTM STANDARDS EXCEPT WHERE MODIFIED BELOW, OR IN "PARTICULAR SPECIFICATIONS AND SPECIAL PROVISIONS" OF TENDER DOCUMENTS.

2.2 CONCRETE

CONCRETE CLASSIFICATION AND STRENGTHS SHALL BE AS PER TABLE GIVEN BELOW:

CONCRETE	CLASS	28 DAYS CYLINDER STRENGTH (psi)
CULVERT (TOP SLAB), BOTTOM SLAB, WALLS, WINGWALL	A3	4000
APPROACH SLAB, CUTOFF WALL	A2	3500
GIRDER	d1	5000
PCC SHOULDER	1:2:4	3000
LEAN CONCRETE	1:4:8	1500

2.3 REINFORCEMENT

REINFORCING STEEL SHALL BE DEFORMED ROUND BARS OF INTERMEDIATE GRADE (GRADE 60) CONFORMING TO AASHTO M-31 (ASTM A-615) WITH MINIMUM YIELD STRENGTH OF 4,200 Kg/Sq.Cm (60,000 Psi).

3. CONCRETE COVER:

THE MINIMUM COVER TO REINFORCEMENT SHALL BE AS UNDER UNLESS SPECIFIED OTHERWISE.

TOP SLAB	
TOP.....	40 mm
BOTTOM	25 mm
APPROACH SLAB	
BOTTOM	50 mm
TOP	75 mm
WALLS	
EARTH SIDE	50 mm
OTHER SIDE	40 mm

4. FOUNDATIONS:

4.1 ALL THE EXCAVATION FOR OPEN FOUNDATIONS / BOX CULVERTS SHALL BE SUBJECT TO INSPECTION BY THE ENGINEER PRIOR TO POURING OF CONCRETE.

4.2 BEHIND THE ABUTMENT AND WING WALLS, COMPACTED GRANULAR BACKFILL SHALL BE PLACED IN LAYERS OF THICKNESS APPROPRIATE TO THE COMPACTION EQUIPMENT ENSURING A MINIMUM IN SITU COMPACTION OF 95% MODIFIED PROCTOR.

5. JOINTS:

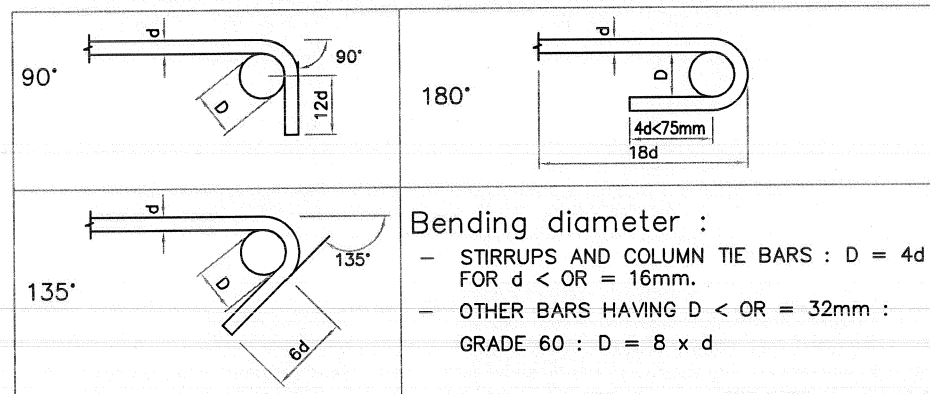
5.1 THE CONTRACTOR SHALL SUBMIT COMPLETE LAYOUT AND DETAILS OF ALL CONSTRUCTION JOINTS FOR APPROVAL OF THE ENGINEER.

5.2 CONCRETE IN DECK SLAB SHALL BE PLACED IN FULL WIDTH. NO CONSTRUCTION JOINT SHALL BE PERMITTED. DIAPHRAGMS AND DECK SLAB SHALL BE CAST MONOLITHICALLY. EXCEPT AS SHOWN ON DRAWING AT LOCATION FOR INSTALLATION OF EXPANSION JOINTS.

5.3 CONCRETE FOR THE BARRIERS AND SIDEWALKS SHALL BE PLACED NO SOONER THAN 20 DAYS AFTER PLACING OF CONCRETE.

6. BAR BENDING SCHEDULE

DETAILED BAR BENDING SCHEDULE SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED FOR ENGINEER'S APPROVAL. LAP LENGTHS AND STANDARD HOOKS SHALL BE AS GIVEN BELOW:



7. TENDER DOCUMENTS, DRAWINGS & CONSTRUCTION DRAWINGS:

7.1 TENDER DRAWINGS ISSUED WITH TENDER DOCUMENTS ARE TO APPRAISE THE BIDDERS OF THE GENERAL NATURE & FAIR IDEA OF THE WORK TO PREPARE BOQ & TENDER DOCUMENTS. ENGINEER SHALL ISSUE THE DETAILED CONSTRUCTION DRAWINGS & SUCH FIELD SKETCHES FROM TIME TO TIME AS NECESSARY FOR THE EASE OF CONSTRUCTION.

7.2 THE CONTRACTOR SHALL CHECK ALL CONSTRUCTION DRAWINGS AND CONTRACT DOCUMENTS CAREFULLY AS SOON AS PRACTICABLE AFTER RECEIPT THERE OF, AND SHALL PROMPTLY ADVISE THE ENGINEER'S REP OF ANY ERRORS OR OMISSIONS THERE IN PRIOR TO START OF ANY CONSTRUCTION ACTIVITIES.

8. SCAFFOLDING:

ALL SCAFFOLDING SHALL BE DESIGNED BY THE CONTRACTOR & THE TRAFFIC MOVEMENT UNDERNEATH SUCH SCAFFOLDING MAY REMAIN UNOBSTRUCTED.

9. LIST OF SYMBOLS AND ABBREVIATIONS:

B	=	BOTTOM
○ B.H	=	BORE HOLE
C. JT.	=	CONSTRUCTION JOINT
℄	=	CENTRELINE
C/C	=	CENTER TO CENTER
DIA.	=	DIAMETER
EXP. JT.	=	EXPANSION JOINT
E.F	=	EACH FACE
ELE.	=	ELEVATION
F.F	=	FAR FACE
G.I	=	GALVANIZED IRON
ID	=	INTERNAL DIAMETER
I.F	=	INNER FACE
m	=	METER
mm	=	MILLIMETER
N.F	=	NEAR FACE
N.S.L	=	NATURAL SURFACE LEVEL
P.G.L	=	PROFILE GRADE LEVEL
SYM.	=	SYMMETRICAL
T	=	TOP
TH.	=	THICK
TYP.	=	TYPICAL
θ	=	SKREW ANGLE IN DEGREES

TABLE NO.1

(i) SPLICE LENGTH IN TENSION

(a) TOP BARS		SPLICE LENGTH mm									
Bar Size	fc' Kg/cm ²	#3	#4	#5	#6	#7	#8	#9	#10	#11	
210		710	945	1180	1410	2060	2355	2645	2940	3240	
280		610	820	1020	1225	1780	2040	2995	2550	2805	
350		425	565	705	845	1215	1390	1565	1765	1960	

(b) OTHER BARS

Bar Size	fc' Kg/cm ²	SPLICE LENGTH mm									
		#3	#4	#5	#6	#7	#8	#9	#10	#11	
210		550	730	905	1085	1590	1815	2035	2265	2490	
280		475	630	790	945	1375	1570	1765	1960	2160	
350		325	435	540	650	935	1070	1205	1360	1505	

(ii) SPLICE LENGTH IN COMPRESSION

SPLICE LENGTH (mm) IN COMPRESSION (Fy=4220Kg/cm ²)											
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11		
Splice Length	300	380	480	575	670	765	860	955	1050		

(iii) EMBEDMENT LENGTH IN TENSION

(a) TOP BARS		SPLICE LENGTH mm									
Bar Size	fc' Kg/cm ²	#3	#4	#5	#6	#7	#8	#9	#10	#11	
210		545	730	910	1090	1590	1820	2050	2310	2565	
280		475	630	785	945	1360	1555	1755	1975	2190	
350		425	565	705	845	1215	1390	1565	1765	1960	

(b) OTHER BARS

Bar Size	fc' Kg/cm ²	SPLICE LENGTH mm									
		#3	#4	#5	#6	#7	#8	#9	#10	#11	
210		420	560	700	840	1225	1400	1580	1775	1970	
280		365	485	605	725	1045	1195	1350	1520	1685	
350		325	435	540	650	935	1070	1205	1360	1505	



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

REV.	DATE	DESCRIPTION	APPROVED	APPROVED

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE GENERAL NOTES FOR
STRUCTURES

DATE
MARCH, 2022

DWG NO.
SA-488/102/TD/GNS012

TENDER DRAWINGS

SHAPE CODE	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	TOTAL LENGTH OF BAR (L) MEASURED ALONG CENTERLINE	SKETCH AND DIMENSIONS TO BE GIVEN IN SCHEDULE	SHAPE CODE	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	TOTAL LENGTH OF BAR (L) MEASURED ALONG CENTERLINE	SKETCH AND DIMENSIONS TO BE GIVEN IN SCHEDULE	SHAPE CODE	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	TOTAL LENGTH OF BAR (L) MEASURED ALONG CENTERLINE	SKETCH AND DIMENSIONS TO BE GIVEN IN SCHEDULE	SHAPE CODE	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	TOTAL LENGTH OF BAR (L) MEASURED ALONG CENTERLINE	SKETCH AND DIMENSIONS TO BE GIVEN IN SCHEDULE
1.		A	Straight	17.		A+B+C Where D is at least 2 diameters		33.		A+0.57B+C		49.		2A+2B+C+2D-R-2d	
2.		A+H		18.		A+2B+C+E If angle with horizontal is 45° or less		34.		A+B+C+D If angle with horizontal is 45° or less		50.		A+B	
3.		A+2H		19.		A+B+C+D+E-R-2d		35.		A+B+C-1/2R-d		51.		A+2B+2C-2R-4d	
4.		A+B		20.		2A+1.14B		36.		A+B+C If angle with horizontal is 45° or less		52.		A+2B-R-2d	
5.		A+2B		21.		2A+B+20d		37.		A+B+C+D-1/2R-3d		53.		A+B+C	
6.		A+B-1/2R-d		22.		A+B+C+D+E-2R-4d		38.		A+B+C+D+3E If angle with horizontal is 45° or less		54.		A+B+C+D-1/2R-3d	
7.		A+B+C-R-2d		23.		A+2B+C+10#		39.		A		55.		A+B+C+D+E	
8.		A+B+C+D+E-2R-4d		24.		A+lap		40.		A+B+C+D+E+F-1/2R-d		56.		A+B+C+D-1/2R-d	
9.		A+B+C-R-2d		25.		2A+2B+22#		41.		A+B+C		57.		A+B+C+D+E-21/2R-3d	
10.		A+B+C+D-1/2R-3d		26.		A+B+0.57C+D-1/2R-2.57d		42.		A+2B+2C-2R-4d		58.		A+B+C+D-R+32d	
11.		A+B+C+D+E-R-2d		27.		2A+B+20#		43.		A+2B+2C-2R-4d		59.		A+B+C-1/2R-d	
12.		A+B+C+D-1/2R-d		28.		2A+2B+C+20#		44.		A+2B+2C-R-2d		60.		2(A+B)+C-R-2d	
13.		A+B+C+D+E-1/2R-d		29.		A+B+C+10#		45.		A+2(B+C+D)-R-2d		61.		A+2B+C+D-R-2d	
14.		2(A+B+C)+D-R-2d		30.		A+20#		46.		2(A+B+C)+D-R-2d					
15.		(C/B)*3.14*(A+d)+Bd Where, B is not greater than A/5. d = dia of bar.	HELIX A = Internal dia.(mm) B = pitch of helix(mm) C = overall height(mm)	31.		A+B+C+D-1/2R-d		47.		A+B+C+D+E-2R-4d					
16.		A+B		32.		2(A+B+C)+D-R-2d		48.		A+B+C-1/2R-d					

NOTES:
1- "φ" AND "d" ARE THE DIAMETER OF REINFORCEMENTS.
2- "R" IS THE RADIUS OF BEND IN RADIAN.

TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

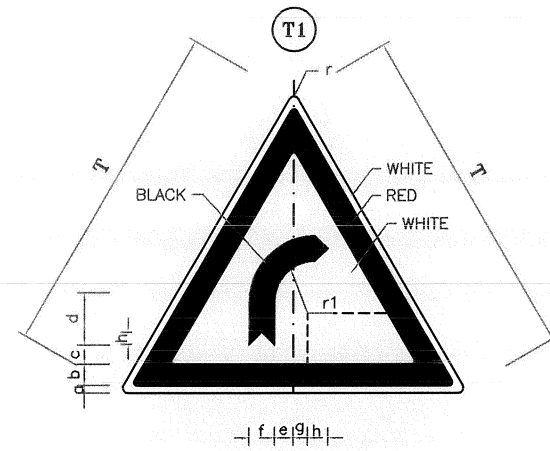


REV.	DATE	DESCRIPTION	APPROVED

DRAWN	
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

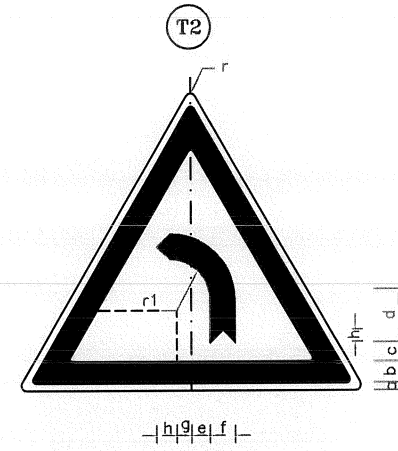
CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE	REBAR SHAPE CODE
DATE	MARCH, 2022
DWG NO.	SA-488/102/TD/RS013



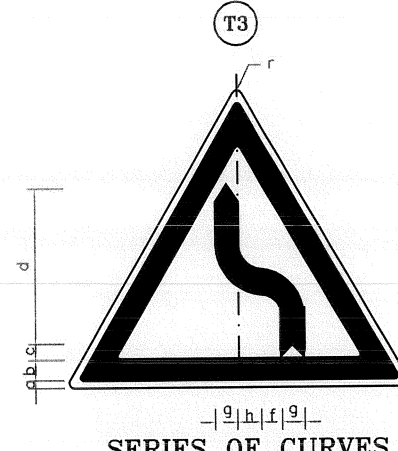
RIGHT BEND
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	4.0	5.3
d	11.5	15.3
e	8.5	11.3
f	7.0	9.3
g	6.0	8.0
h	3.5	4.7
r1	12.5	16.7



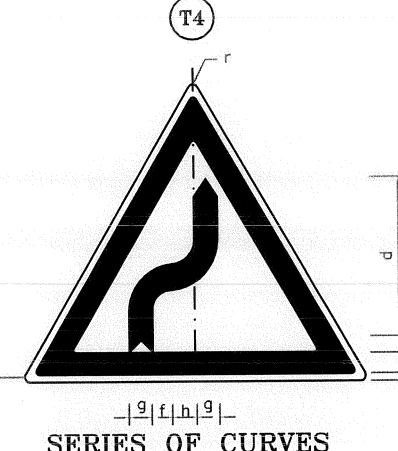
LEFT BEND
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	4.0	5.3
d	11.5	15.3
e	8.5	11.3
f	7.0	9.3
g	6.0	8.0
h	3.5	4.7
r1	12.5	16.7



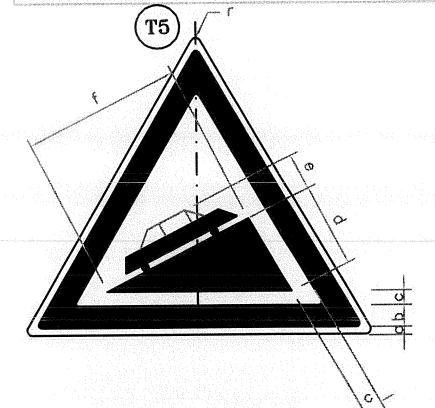
SERIES OF CURVES
(FIRST TO LEFT)
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	33.0	44.0
e	14.0	18.7
f	8.0	10.7
g	7.0	9.3
h	2.0	2.7
i	3.5	4.7
r1	4.5	6.0



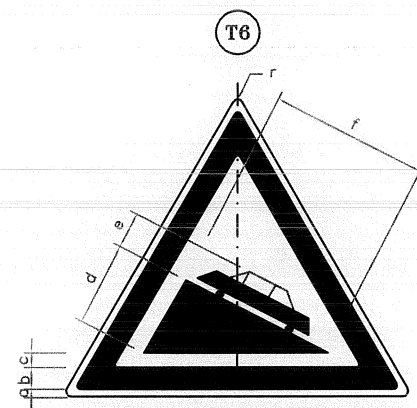
SERIES OF CURVES
(FIRST TO RIGHT)
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	33.0	44.0
e	14.0	18.7
f	8.0	10.7
g	7.0	9.3
h	2.0	2.7
i	3.5	4.7
r1	4.5	6.0



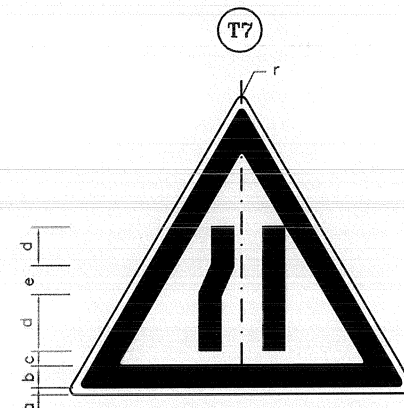
STEEP ASCEND
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.5	4.7
d	23.5	31.3
e	11.5	15.3
f	33.0	44.0



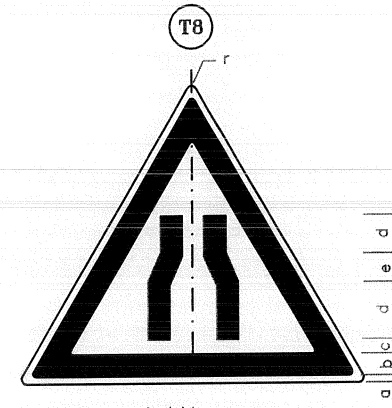
STEEP DESCEND
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.5	4.7
d	23.5	31.3
e	11.5	15.3
f	33.0	44.0



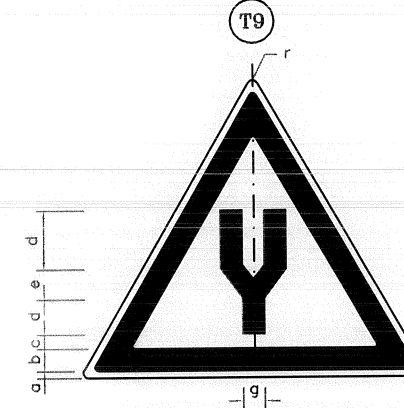
ROADWAY NARROWS
(FROM LEFT)
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.5	4.7
d	10.0	13.3
e	14.0	18.7
f	2.5	3.3
g	5.0	6.7



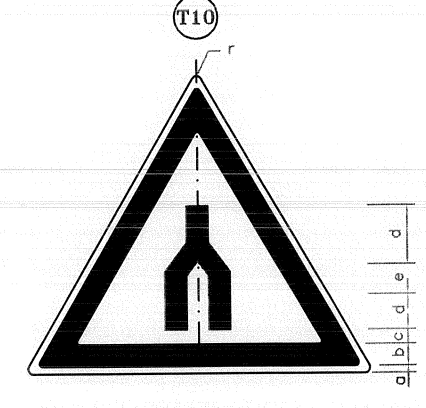
ROADWAY NARROWS
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.5	4.7
d	10.0	13.3
e	14.0	18.7
f	2.5	3.3
g	5.0	6.7



DUAL CARRIAGEWAY STARTS
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	4.5	6.0
d	15.0	20.0
e	9.0	12.0
f	12.0	16.0
g	9.0	12.0
h	7.0	9.3



DUAL CARRIAGEWAY ENDS
DIMENSION(cm)

PARTS	SIGN SIZE	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	4.0	5.30
d	15.0	20.0
e	9.0	12.0
f	12.0	16.0
g	9.0	12.0
h	7.0	9.3

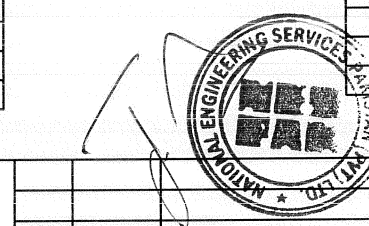
TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

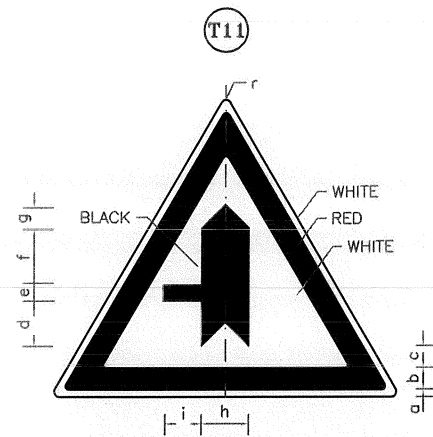


REV.	DATE	DESCRIPTION	APPROVED	APPROVED

DRAWN	
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

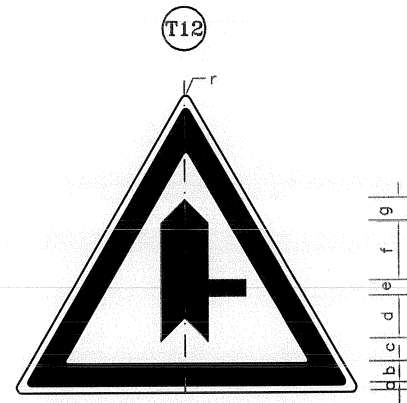
TITLE	ROAD SIGNS (1) (INFORMATORY SIGN)	
DATE	MARCH, 2022	DWG NO. SA-488/102/TD/RS014



MINOR ROAD FROM LEFT

DIMENSION(cm)

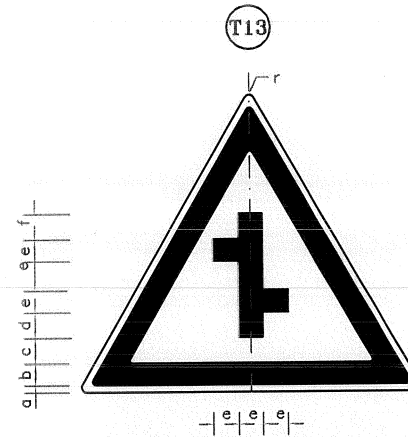
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	13.5	18.0
e	5.5	7.3
f	15.0	20.0
g	7.0	9.3
h	14.0	18.7
i	10.5	14.0



MINOR ROAD FROM RIGHT

DIMENSION(cm)

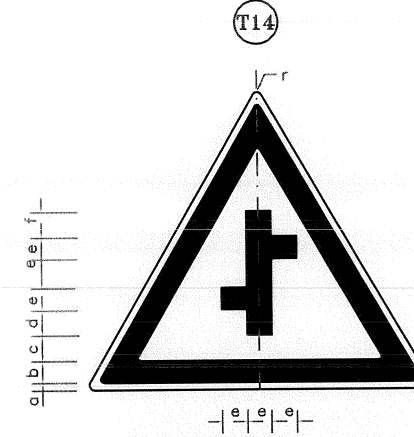
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	13.5	18.0
e	5.5	7.3
f	15.0	20.0
g	7.0	9.3
h	14.0	18.7
i	10.5	14.0



MINOR ROAD CROSSING
WITH AN OFFSET

DIMENSION(cm)

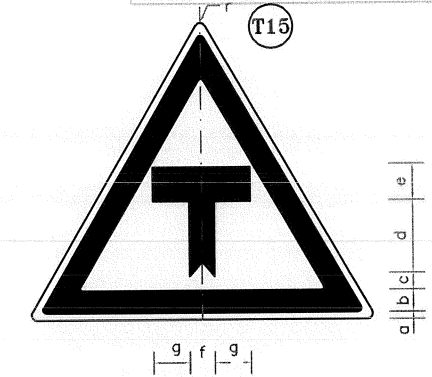
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	2.5	3.3
d	8.0	10.7
e	7.5	10.0
f	9.0	12.0



MINOR ROAD CROSSING
WITH AN OFFSET

DIMENSION(cm)

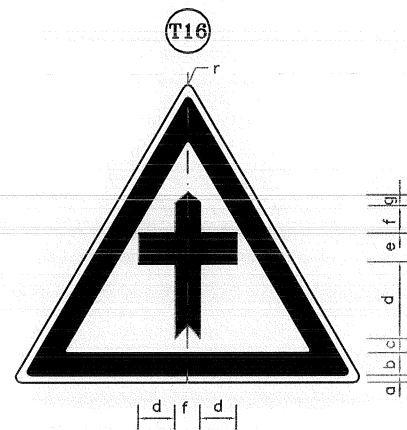
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	2.5	3.3
d	8.0	10.7
e	7.5	10.0
f	9.0	12.0



T- JUNCTION AHEAD

DIMENSION(cm)

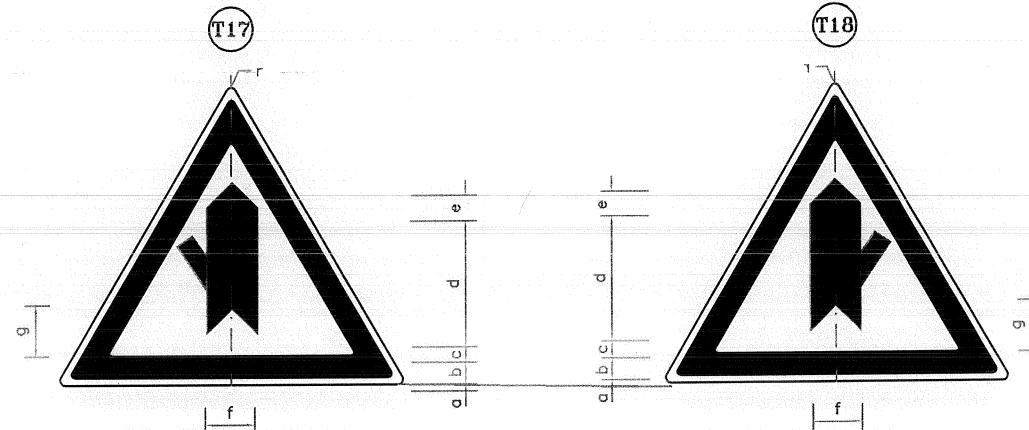
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	15.5	20.7
e	7.0	9.3
f	5.0	6.7
g	11.0	14.7
h	2.5	3.3



CROSS ROAD AHEAD

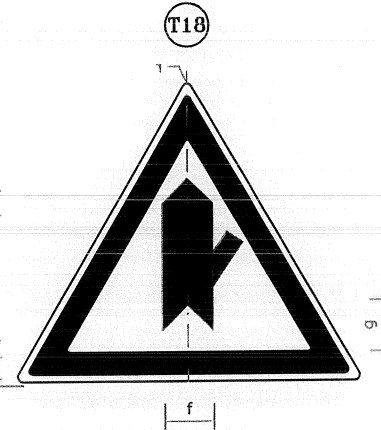
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	13.0	17.3
e	7.0	9.3
f	10.0	13.3
g	2.5	3.3
i	5.0	6.7



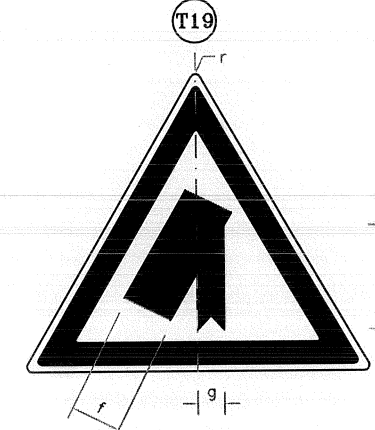
MINOR ROAD
FROM LEFT
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.5	4.7
d	33.0	44.0
e	7.0	9.3
f	14.0	18.7
g	15.0	20.0
h	3.0	4.0
i	5.5	7.3



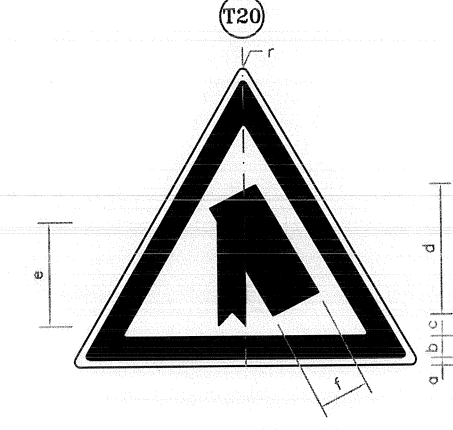
MINOR ROAD
FROM RIGHT
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.5	4.7
d	33.0	44.0
e	7.0	9.3
f	14.0	18.7
g	15.0	20.0
h	3.0	4.0
i	5.5	7.3



MAIN ROAD
(ON LEFT)
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	2.5	3.3
d	39.0	52.0
e	27.0	36.0
f	13.0	17.3
g	5.0	6.7



MAIN ROAD
(ON RIGHT)
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	2.5	3.3
d	39.0	52.0
e	27.0	36.0
f	13.0	17.3
g	5.0	6.7

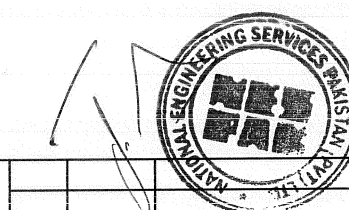
TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.



REV.	DATE	DESCRIPTION	APPROVED	APPROVED

DRAWN

SUBMITTED

RECOMMENDED

CHD./VER.

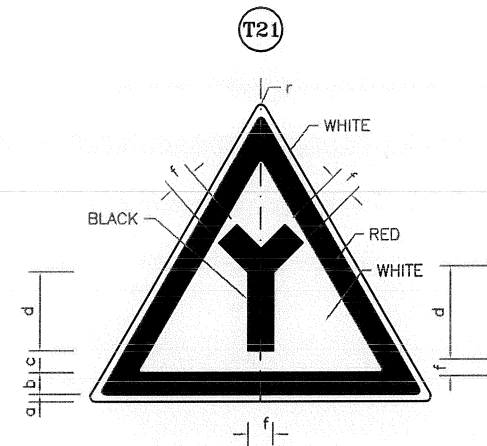
APPROVED

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE ROAD SIGNS (2)
(INFORMATORY SIGN)

DATE MARCH, 2022

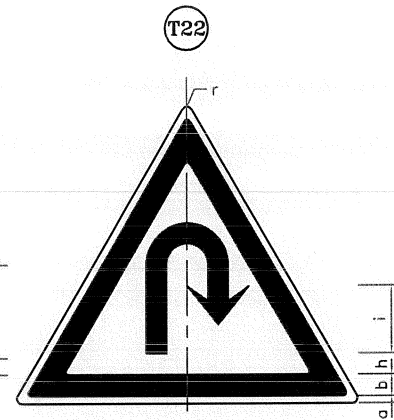
DWG NO. SA-488/102/TD/RS015



Y-JUNCTION

DIMENSION(cm)

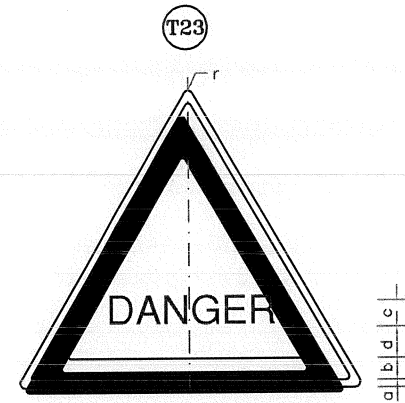
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	17.0	22.7
e	13.0	17.3
f	7.0	9.3



U-TURN

DIMENSION(cm)

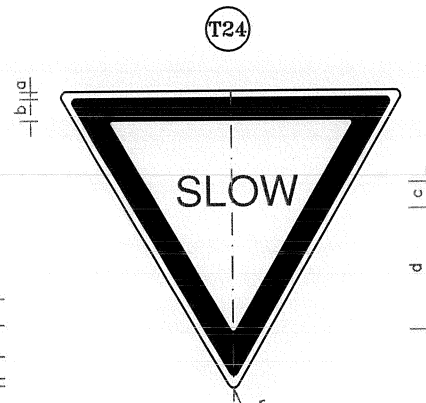
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	5.5	7.3
d	7.0	9.3
e	5.0	6.7
f	2.5	3.3
g	23.0	30.7
h	7.5	10.0
i	12.0	16.0



DANGER WARNING

DIMENSION(cm)

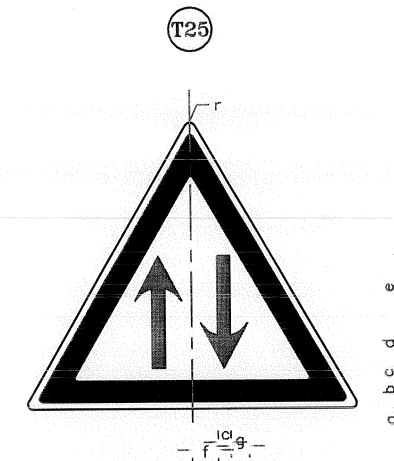
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	6.5	8.7
d	7.0	9.5



SLOW

DIMENSION(cm)

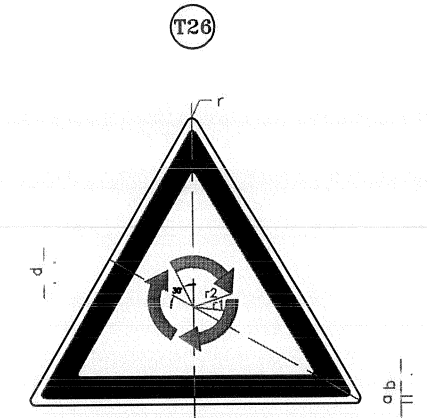
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	6.5	8.7
d	16.0	21.3



TWO WAY TRAFFIC

DIMENSION(cm)

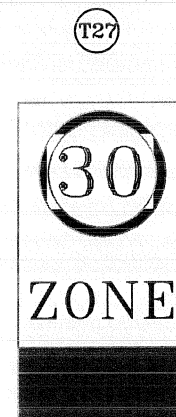
PARTS	Sign Size	
	90cm	120cm
r	3.5	4.7
a	1.0	1.3
b	6.5	8.7
c	4.0	8.7
d	9.0	21.3
e	19.0	21.3
f	5.0	21.3
g	3.5	21.3



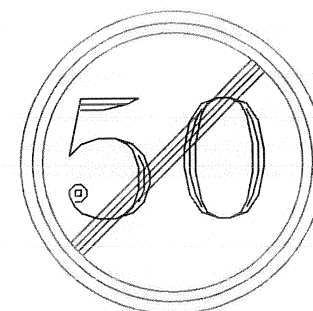
ROUNDABOUT

DIMENSION(cm)

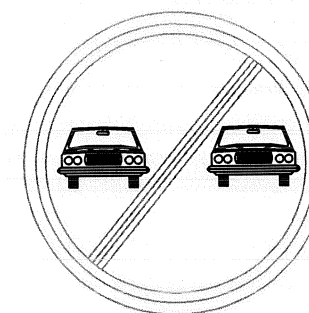
PARTS	Sign Size	
	90cm	120
r	3.5	120
a	1.0	-
b	6.5	-
c	3.0	-
d	9.0	-
r1	12.0	-
r2	16.0	-



ENTRY TO 30KM/H ZONE



END OF SPEED LIMIT IMPOSED



END OF PROHIBITION OF OVFERTAKING

TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



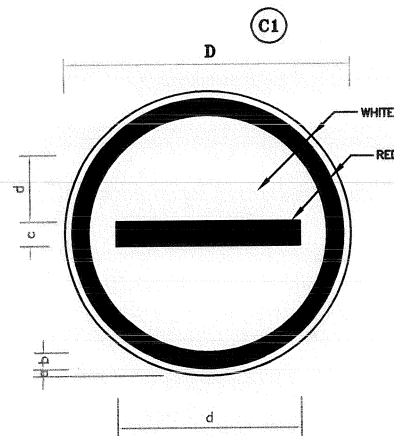
NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

REV.	DATE	DESCRIPTION	APPROVED	APPROVED

DRAWN
SUBMITTED
RECOMMENDED
CHD./VER.
APPROVED

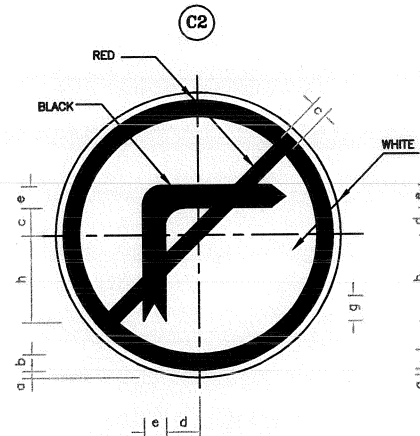
CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE ROAD SIGNS (3) (WARNING SIGN)	
DATE MARCH, 2022	DWG NO. SA-488/102/TD/RS016



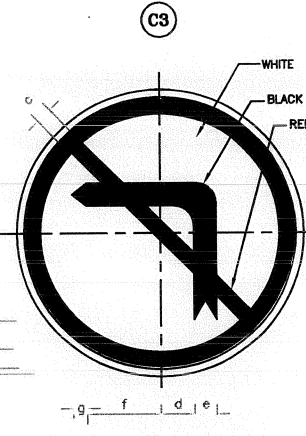
NO ENTRY
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.3
b	4.0	5.3
c	8.0	10.7
d	84.0	85.3



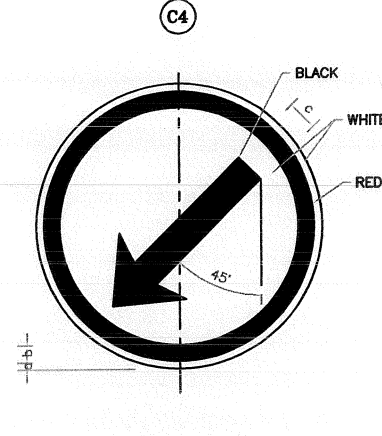
NO RIGHT TURN
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.3
b	6.5	8.7
c	5.5	7.3
d	6.0	8.0
e	10.0	13.3
f	25.0	33.3
g	5.0	6.7
h	30.0	40.0



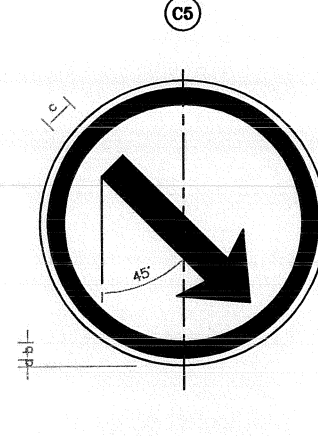
NO LEFT TURN
DIMENSION(cm)

PARTS	Sign Size	
	90cm(C13)	120cm(C7)
a	1.0	1.3
b	6.5	8.7
c	5.5	7.3
d	6.0	8.0
e	10.0	13.3
f	25.0	33.3
g	5.0	6.7
h	30.0	40.0



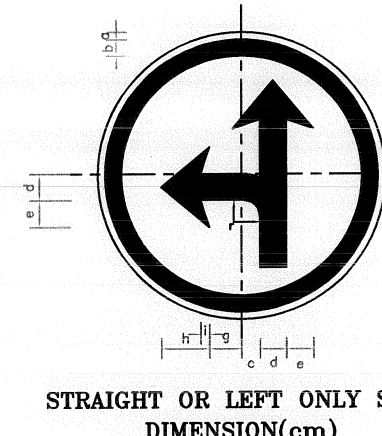
KEEP LEFT
DIMENSION(cm)

PARTS	Sign Size	
	90cm(C4)	120cm(C3)
a	1.0	1.3
b	4.0	5.3
c	8.0	10.7
d	9.0	12.0
e	32.0	42.7
f	23.0	30.7
g	4.5	6.0



KEEP RIGHT
DIMENSION(cm)

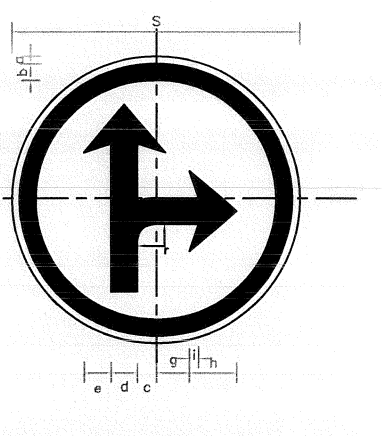
PARTS	Sign Size	
	90cm(C4)	120cm(C3)
a	1.0	1.3
b	4.0	5.3
c	8.0	10.7
d	9.0	12.0
e	32.0	42.7
f	23.0	30.7
g	4.5	6.0



STRAIGHT OR LEFT ONLY SIGN

DIMENSION(cm)

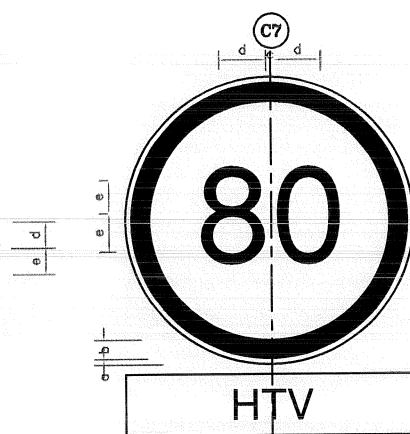
PARTS	Sign Size	
	90cm(C4)	120cm(C3)
a	1.0	1.3
b	6.5	8.7
c	10.0	13.3
d	8.0	10.7
e	9.0	12.0
f	34.0	45.3
g	10.5	14.0
h	23.5	31.3
i	4.5	6.0
r	8.0	10.7



STRAIGHT OR RIGHT ONLY SIGN

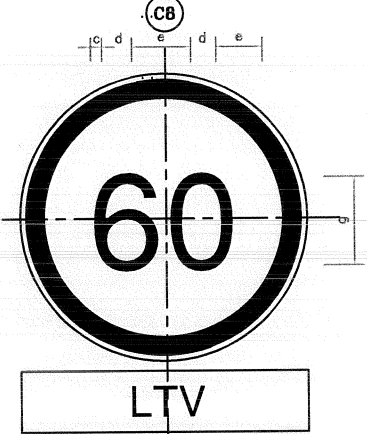
DIMENSION(cm)

PARTS	Sign Size	
	90cm(C4)	120cm(C3)
a	1.0	1.3
b	6.5	8.7
c	10.0	13.3
d	8.0	10.7
e	9.0	12.0
f	34.0	45.3
g	10.5	14.0
h	23.5	31.3
i	4.5	6.0
r	8.0	10.7



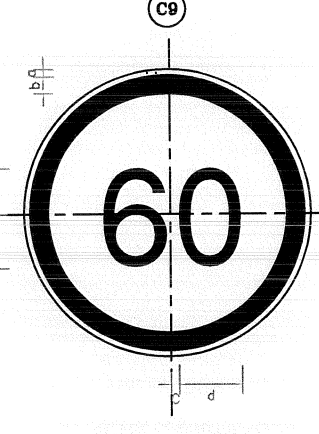
SPEED LIMIT (100)
DIMENSION(cm)

PARTS	Sign Size	
	90cm(C4)	120cm(C3)
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	23.0	30.7
e	20.0	26.7



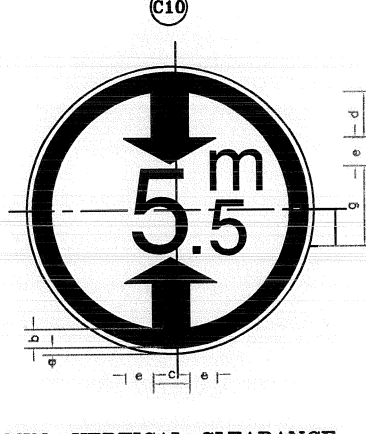
SPEED LIMIT (120)
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.3
b	6.5	8.7
c	2.5	3.25
d	5.0	6.5
e	11.25	15.38
f	35.0	47.0
g	40.0	53.5



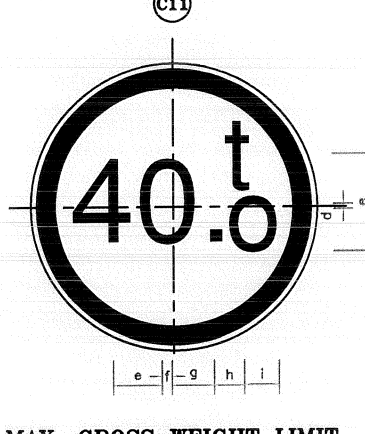
SPEED LIMIT (60)
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.3
b	6.5	8.7
c	3.0	4.0
d	23.0	30.7
e	20.0	26.7



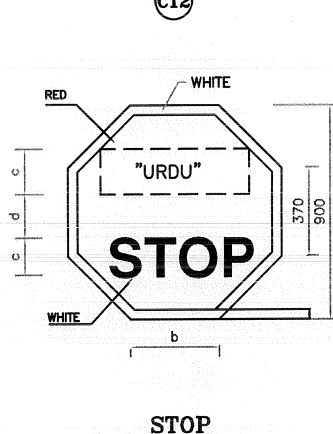
MIN. VERTICAL CLEARANCE
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.3
b	6.5	8.7
c	13.5	18.0
d	12.5	17.0
e	8.5	11.5
f	31.0	41.0
g	24.5	32.5
h	12.5	16.5



MAX. GROSS WEIGHT LIMIT
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.3
b	6.5	8.67
c	32.0	42.50
d	2.5	3.50
e	17.0	22.50
f	1.5	2.0
g	17.0	22.50
h	3.5	4.50
i	10.0	13.50



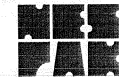
STOP
DIMENSION(cm)

PARTS	Sign Size	
	90cm	120cm
a	1.0	1.30
b	37.0	49.5
c	20.0	25.0
d	15.0	20.0
e	36.0	43.0
f	90.0	120.0

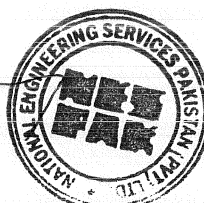
TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

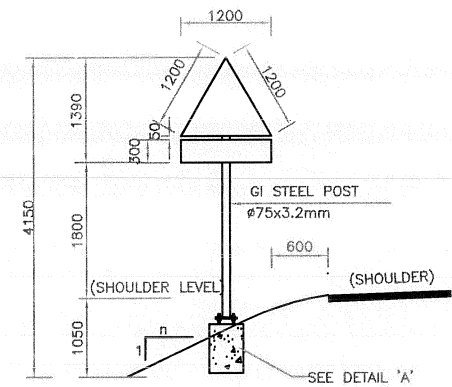
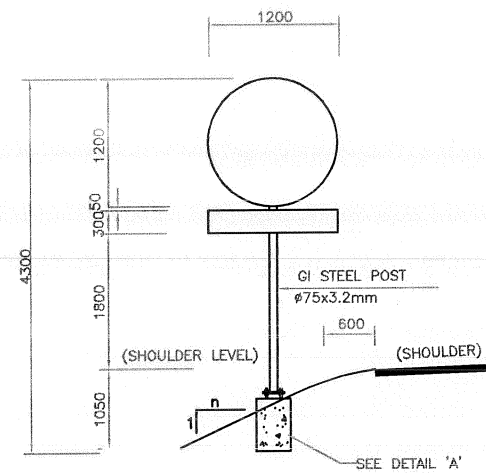
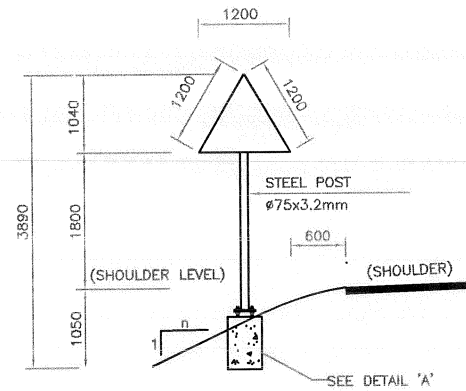
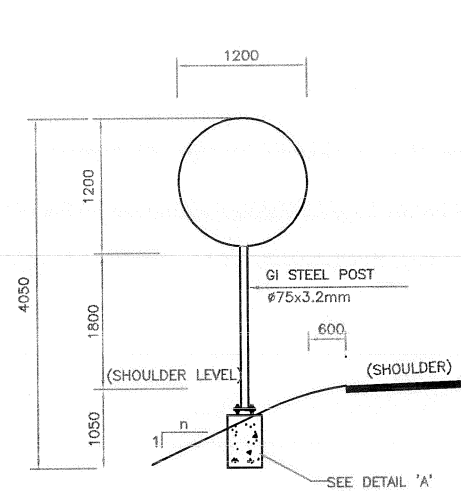


REV.	DATE	DESCRIPTION	APPROVED

DRAWN	
SUBMITTED	
RECOMMENDED	
CHD./VER.	
APPROVED	

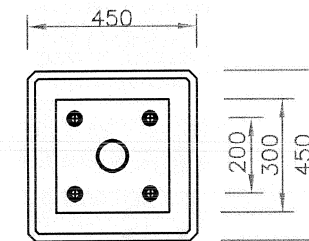
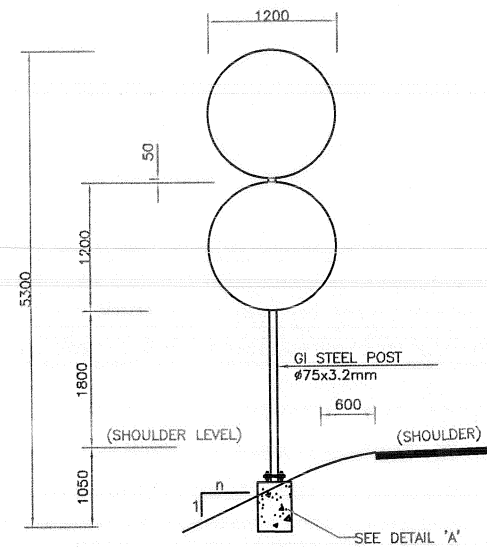
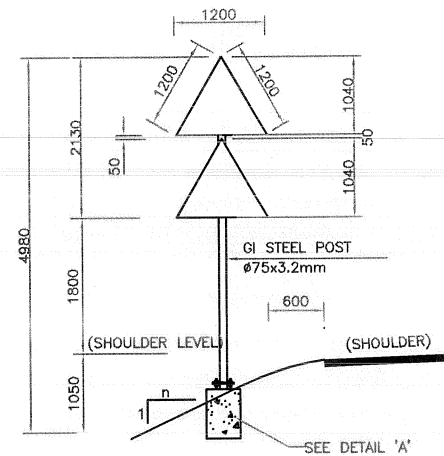
CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE	
ROAD SIGNS (4) (REGULATORY SIGN)	
DATE	DWG NO.
MARCH, 2022	SA-488/102/TD/RS017

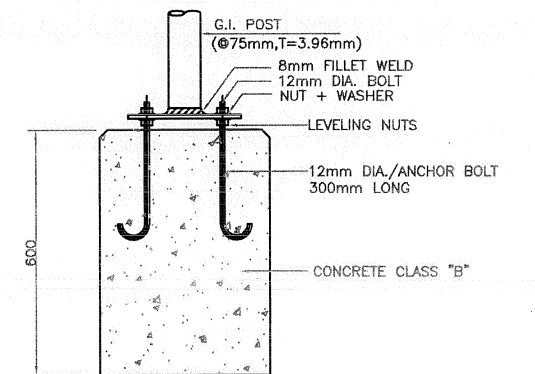


SINGLE SIGNS

SINGLE SIGNS WITH ADDITIONAL PLATE



PLAN



SECTION

PRECAST CONCRETE FOUNDATION
(TYPE-1)
DETAIL 'A'

DOUBLE SIGNS

NOTES:-

- 1- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- 2- POST LENGTH AS SHOWN ARE FOR EXPRESSWAY SIGNS OF 1200mm NOMINAL SIZE. FOR RAMP, POST LENGTH SHALL BE ADJUSTED ACCORDINGLY.
- 3- PRECAST CONCRETE FOUNDATION BLOCKS SHALL BE CAST USING CLASS "B" CONCRETE.
- 4- SIGN PANELS SHALL BE MADE OF ALUMINUM ALLOY PLATES OF MINIMUM 3mm THICKNESS.
- 5- FOR ALL TRIANGULAR, CIRCULAR SIGNS AND INFORMATION SIGNS OF LESS THEN 1.5m Sq.m AREA, USE INNER DIA 75mm, 3.2mm THICK CIRCULAR GI POST WITH.
- 6- ALL SIGN POSTS SHALL BE PAINTED WITH NON-REFLECTORISED BLACK AND WHITE PAINT STRIPES 300mm WIDE.
- 7- ALL SIGN BACK PANELS SHALL BE PAINTED WITH GRAY ENAMEL PAINT.
- 8- ALL POSTS SHALL BE 300mm SHORT OF SIGN TOP.

TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

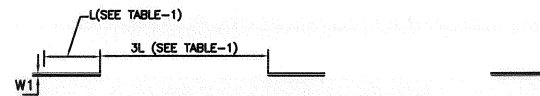
REV.	DATE	DESCRIPTION	APPROVED	APPROVED

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE	TYPICAL PLACEMENT OF ROAD SIGNS
DATE	DWG NO. SA-488/102/TD/RS018

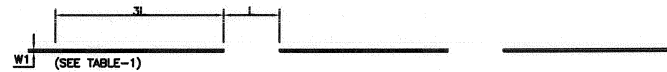
PAVEMENT MARKING LINES

SCALE 1:200
FOR DIMENSIONS L & W1 TO W5 (SEE TABLE-1)



L1 - BROKEN GUIDE LINE - WHITE

AT CENTERLINE OF DIVIDED (SINGLE) 2-LANE HWYS AND LANE SEPARATION OF DIVIDED (DUAL) HWYS



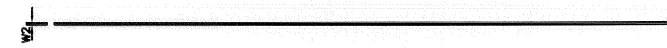
L2 - BROKEN WARNING LINE - WHITE

AT APPROACHES TO DANGER (e.g roundabouts, median openings and junctions)



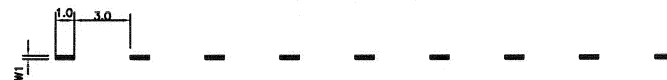
L3 - CONTINUOUS LINE - WHITE

AT CENTERLINE NEAR INTERSECTIONS AND AT NO PASSING ZONES



L4 - CONTINUOUS EDGE LINE - YELLOW

AT EDGE OF PAVEMENT OF ALL HWYS



L5 - DASHED LINE - WHITE

AT SEPERATION OF THROUGH LANES FROM ACCELERATION/DECELERATION LANE



L6 - DOTTED LINE - WHITE

FOR DEFINING VEHICLE PATHS WITHIN INTERSECTIONS



L7 - STOP LINE - WHITE

AT INTERSECTIONS ACROSS PAVEMENT



L8 - TRANSVERSE YIELD LINE - WHITE

AT INTERSECTIONS ACROSS PAVEMENT IN THE SAME POSITION AS L7 LINE TO INDICATE GIVE WAY



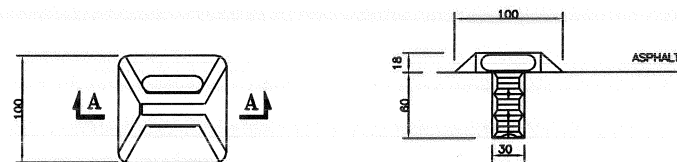
L9 - DOTTED LINE - YELLOW

FOR EDGE LINE WHERE PARKING BAYS ARE PROVIDED OUTSIDE THE LANE



L10 - CONTINUOUS LINE - WHITE

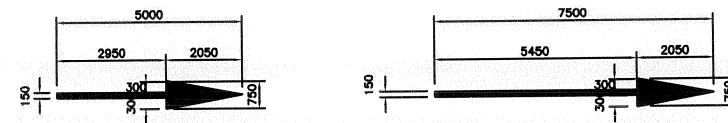
FOR DELINEATION OF LIMITS OF PARKING BAYS



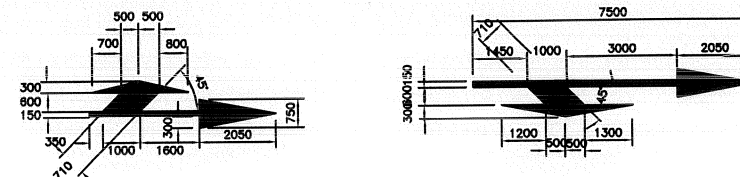
PLAN

SECTION A-A

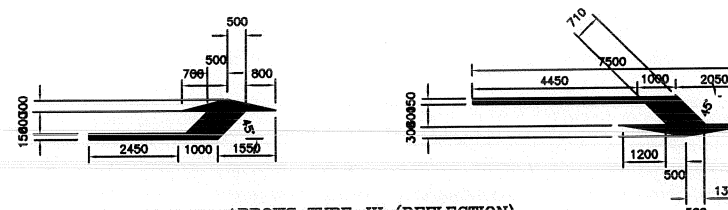
REFLECTORISED PAVEMENT STUD
(RAISED PROFILE TYPE)



ARROWS TYPE-I (STRAIGHT)



ARROWS TYPE-II (COMBINED)



ARROWS TYPE-III (DEFLECTION)

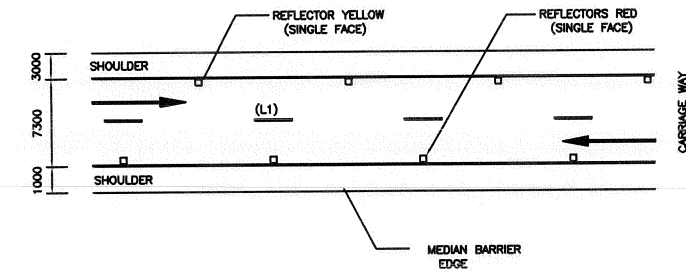
(FOR <60 Km/hr)

(FOR >60 Km/hr)

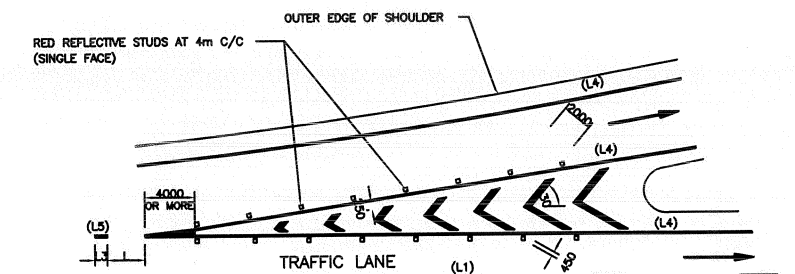
LANE SELECTION ARROWS - WHITE

TABLE - 1

ROADWAY SPEED	L (mm)	W1	W2	W3	W4	W5
<50 Km/hr	2000	100	100	100	300	100
50-80 Km/hr *	3000	120	120	150	300	100
>120 Km/hr	4000	200	200	200	400	100

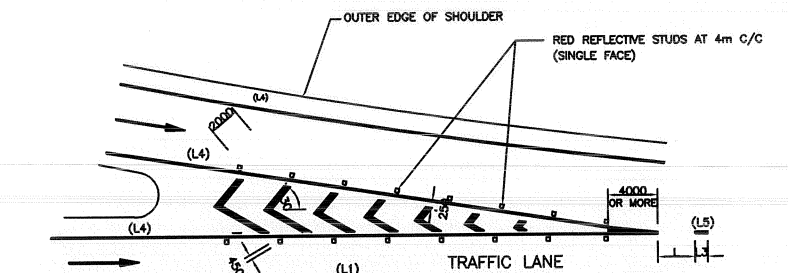


ADDITIONAL DETAIL FOR MEDIAN
AND CARRIAGE WAY



ENTRANCE NOSE DETAIL

SCALE 1:300



EXIT NOSE DETAIL

SCALE 1:300

PAVEMENT MARKING & ROAD STUDS DETAILS

NOTES :-

- ALL DIMENSIONS ARE IN MILLIMETERS.
- AT APPROACHES TO INTERSECTIONS/ROUNDBABOUTS, CENTER LINE OR LANE SEPARATION LINE (L1) BECOMES (L2) FOR A LENGTH = 150m AND CONTINUOUS LINE (L3) FOR LAST 50m.
- LENGTH OF STORKE IN (L2) = LENGTH OF GAP IN MATCHING (L1).
- LOCATION OF DIRECTIONAL ARROWS, NOSES AND STOP SIGN SHALL BE PLACED AS DIRECTED BY THE ENGINEER.

TENDER DRAWINGS

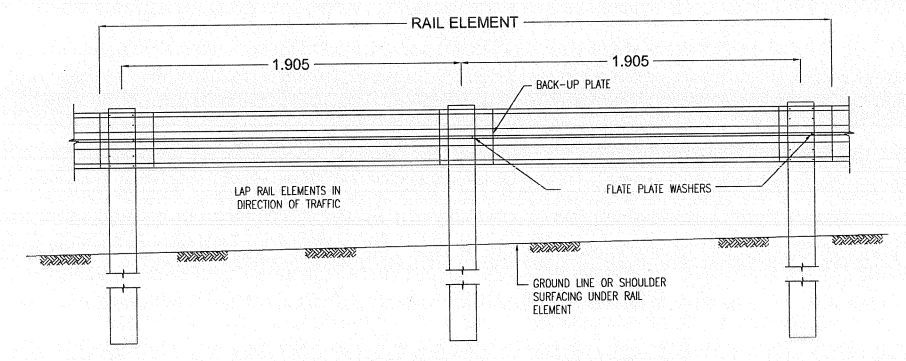
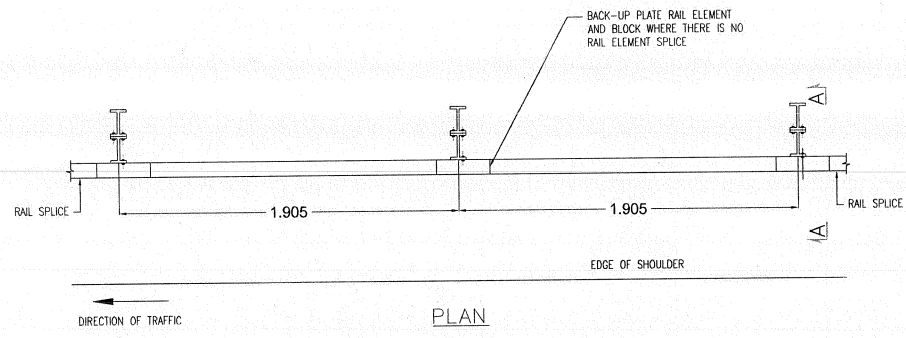


PAKHTUNKHWA
HIGHWAY AUTHORITY

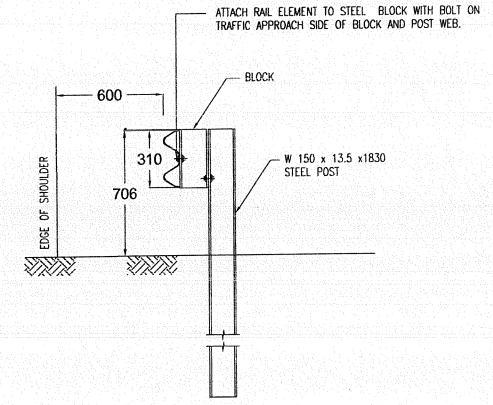


NATIONAL ENGINEERING SERVICES
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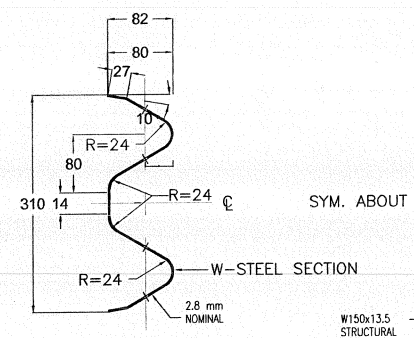
REV.	DATE	DESCRIPTION	APPROVED	APPROVED	DRAWN		CONSTRUCTION OF GRADE SEPERATED INTERSECTION AT SHAHEED CHOWK TIMERGARA	TITLE	PAVEMENT MARKING AND ROAD STUDS
					SUBMITTED			DATE	MARCH, 2022
					RECOMMENDED			DWG NO.	SA-488/102/TD/PMS019
					CHD./VER.				



METAL W-BEAM GUARD RAILING WITH W150x13.5 STEEL POSTS AND BLOCKS



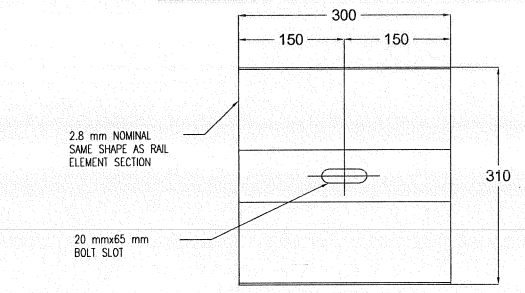
SECTION A-A
POST SPACING 1.905m C/C



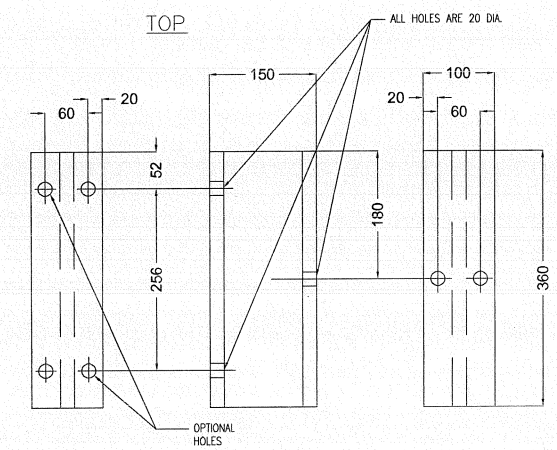
SECTION THROUGH
W-BEAM RAIL ELEMENT

SYM. ABOUT

W150x13.5
STRUCTURAL
SHAPE



TOP

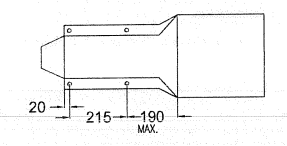
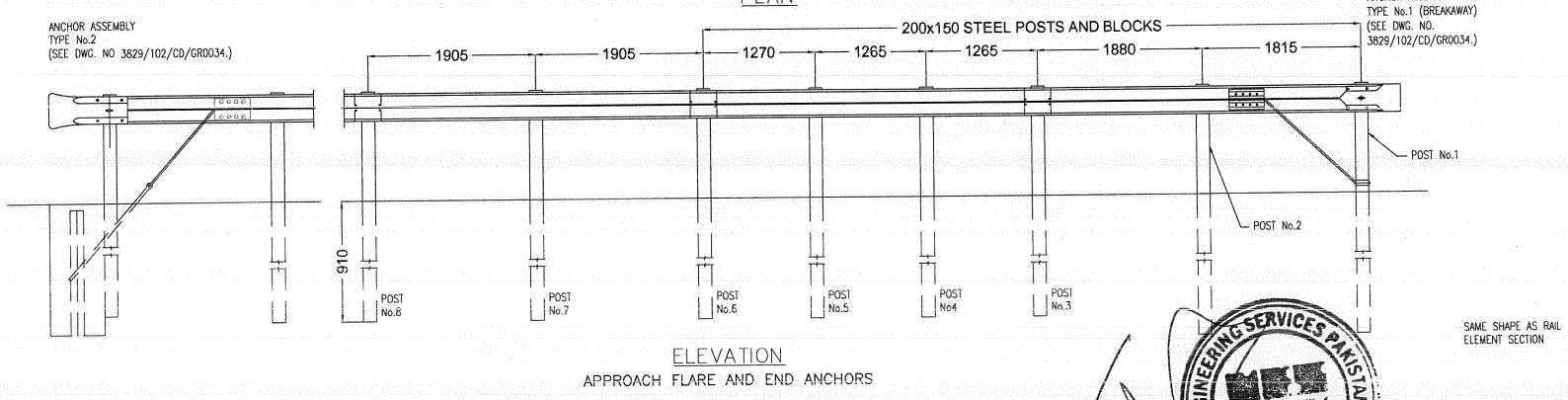
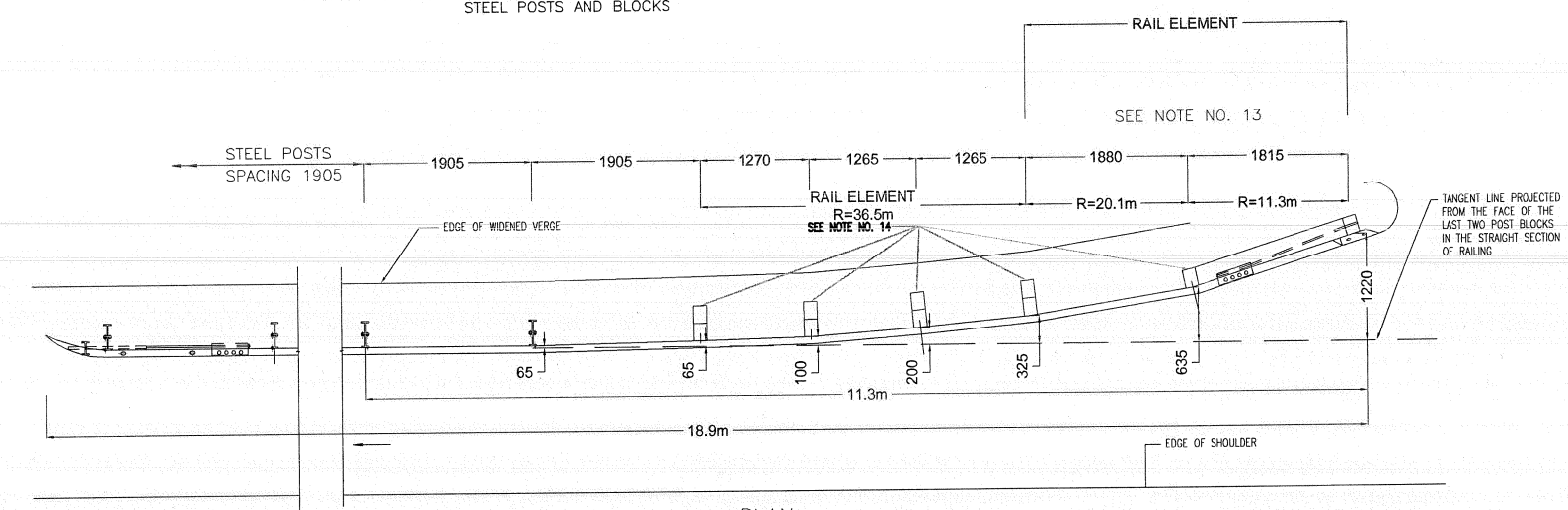


W-BEAM GUARD RAIL BLOCK

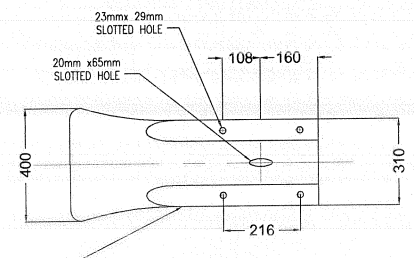
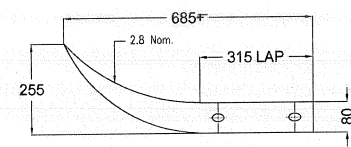
TENDER DRAWINGS

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE.
2. ALL LAPS SHALL BE IN THE DIRECTION OF TRAFFIC.
3. W-BEAM TERMINAL SECTIONS SHALL BE USED IN PLACE OF END ANCHORAGE RAIL AT THE DEPARTURE END ONLY OR AT OTHER RESTRICTED LOCATIONS AS APPROVED BY THE ENGINEER.
4. W-BEAM RAIL SECTION SHALL CONFORM TO AASHTO M-180 AND SHALL BE TYPE-II, CLASS 'B'.
5. WHERE THE GUARD RAIL HAS TO FOLLOW A CURVE OF LESS THAN 45m RADIUS, THE BEAM SHALL BE CURVED TO SUIT, BY THE BEAM MANUFACTURER.
6. THE HOLES FOR ANCHORAGE POSTS SHALL BE BACKFILLED WITH WELL COMPACTED GRANULAR MATERIAL. THE SPACE INSIDE THE TERMINAL NOSE SHALL BE FILLED WITH CONCRETE, CLASS 20.
7. THE CONTRACTOR SHALL PREPARE DRAWINGS SHOWING LOCATIONS, ELEVATIONS AND SPACING OF POSTS AT EACH CULVERT/HIGH FILL LOCATION AND SHALL OBTAIN APPROVAL OF THE ENGINEER.
8. BACKFILLING OF THE POST HOLES SHALL BE CARRIED OUT AS FOLLOWS:
 - IN CASE OF ROCK, CORED HOLES-250 DIA (AS MADE) WILL BE BACKFILLED WITH LEAN CONCRETE CLASS 15
 - IN CASE OF STRATA OTHER THAN ROCK, HOLES-300 DIA (AS MADE) WILL BE BACKFILLED WITH LEAN CONCRETE CLASS 15 OR THE POSTS MAY BE HAMMERED IN PLACE AS APPROVED BY THE ENGINEER.
9. NO EXTRA PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR CORING AND OR CONCRETING FOR POST FIXATION.
10. EXISTING EMBANKMENT MAY BE WIDENED WHERE NECESSARY TO ACCOMMODATE GUARD RAIL FLARE AT APPROACH END.
11. BACK-UP PLATE TO BE USED BETWEEN GUARD RAIL ELEMENT AND STEEL BLOCK ON STEEL POST WHERE THERE IS NO RAIL ELEMENT SPLICE.
12. DIRECTION OF TRAFFIC INDICATED BY ARROW (→).
13. POST SPACING AND HEIGHT IS AS PER TYPE OF RAIL SPECIFIED IN HIGHWAY DESIGN STANDARDS SECTION 16.
14. THE RAIL ELEMENT CONNECTING POST NOS. 1, 2, AND 3 HAS A COMPOUND BEND WITH A RADIUS OF 11.3m BETWEEN POST NOS. 1 AND 2, AND A RADIUS OF 20.1m BETWEEN POST NOS. 2 AND 3. THE RADIUS CHANGES AT POST NO. 2.
15. SHELF ANGLES TO SUPPORT THE RAIL ELEMENT SHALL BE INSTALLED ON POST NOS. 2, 3, 4, 5 AND 6 OF THE FLARE. SEE DWG. NO. SA-488/102/TD/GR021
16. FOR GUARD RAIL EXTENDED INTO CUT BANK, THE POSTS INSTALLED ON SLOPES GREATER THAN 10:1, SHOULD BE 2400 LONG.
17. THE FLARE RATE FOR THE GUARD RAIL EXTENDED INTO CUT BANKS MAY BE INCREASED AFTER CROSSING THE DITCH BOTTOM (AT THE ANGLE POINT), TO SHORTEN THE LENGTH OF TERMINAL (UPTO 8:1).
18. TYPE NO.2 WOULD BE USED ON THE TRAIL END OF A 1WAY SINGLE CARRIAGEWAY. AND ON THE TRAIL END FOR A DUAL CARRIAGEWAY.
19. MINOR ADJUSTMENTS TO POST SPACING AND OFFSETS MAY BE REQUIRED TO FIT SITE CONDITIONS.



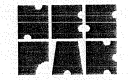
ELEVATION
TERMINAL SECTION TYPE No. 1
W-BEAM



ELEVATION
TERMINAL SECTION TYPE No. 2
W-BEAM



PAKHTUNKHWA
HIGHWAYS AUTHORITY

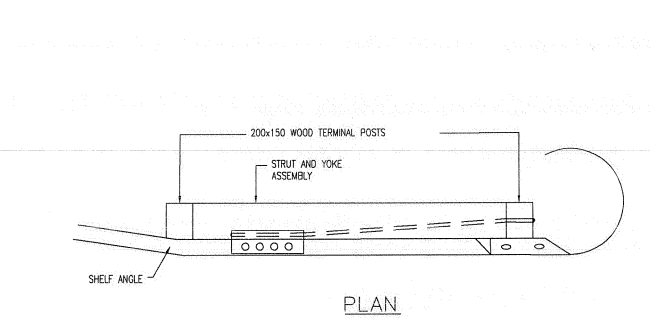


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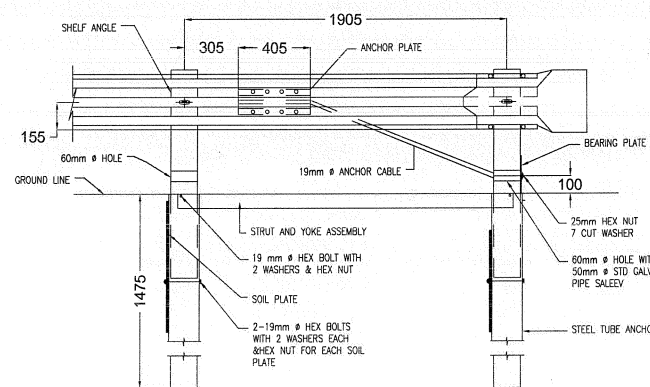
REV.	DATE	DESCRIPTION	APPROVED	APPROVED

CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

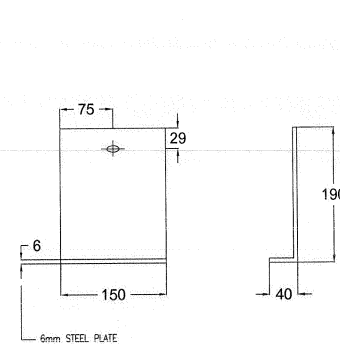
TITLE	
TYPICAL GUARD RAIL DETAILS (1)	
DATE	DWG NO.
MARCH, 2022	SA-488/102/TD/GR020



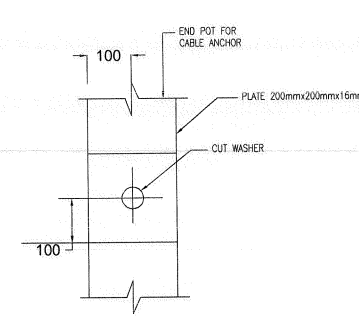
PLAN



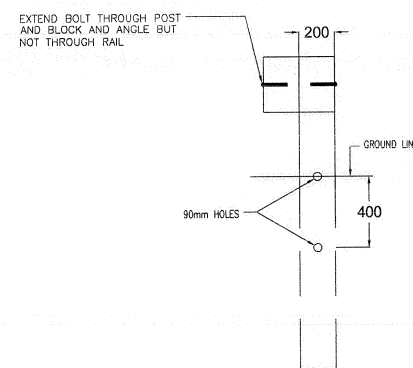
ELEVATION
ANCHORS ASSEMBLY
TYPE NO.1 (BREAKAWAY)



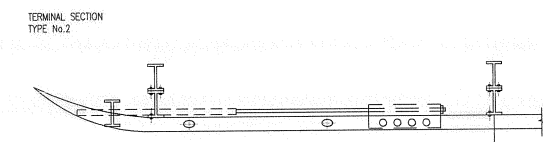
SHELF ANGLE



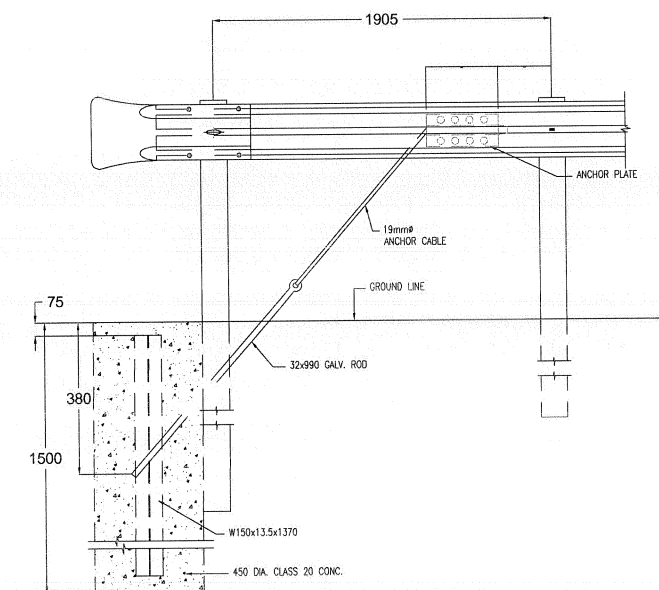
BEARING PLATE DETAIL



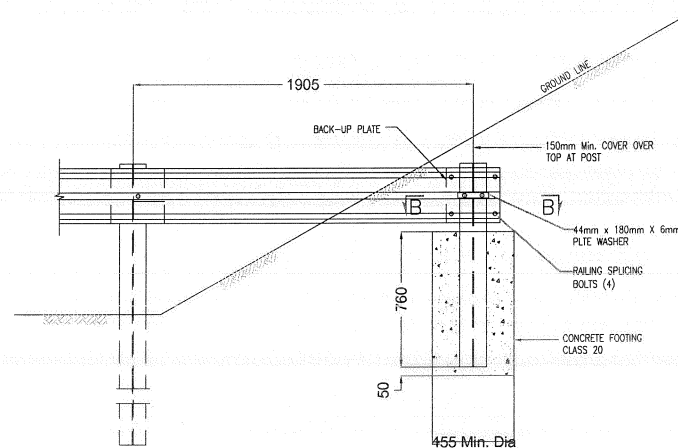
BREAKAWAY POST
(POST NO. 2, 3<, 4, 5, AND 6)



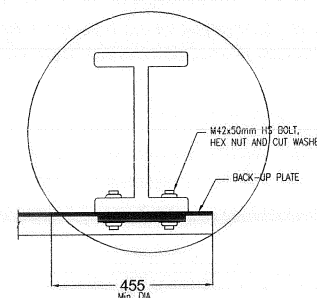
PLAN



ELEVATION
ANCHORS ASSEMBLY
TYPE NO.2



ELEVATION
BURIED POST ANCHOR



SECTION B-B

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. NO. SA-488/102/TD/GR020.)
3. THE LAYOUT AND DETAILS SHOWN ON THIS PLAN ARE INDICATIVE ONLY OF THE VARIOUS POSSIBILITIES AVAILABLE FOR THE APPROACH AND TAIL ENDS FOR GUARD RAIL INSTALLATION.
4. IN CASE SOLID ROCK IS ENCOUNTERED, THE POST MAY BE SHORTENED, PROVIDED IT EXTENDS INTO THE SOLID ROCK A MIN. OF 900mm.

TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAY AUTHORITY



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.

REV.	DATE	DESCRIPTION	APPROVED	DRAWN	SUBMITTED	RECOMMENDED	CHD./VER.	APPROVED

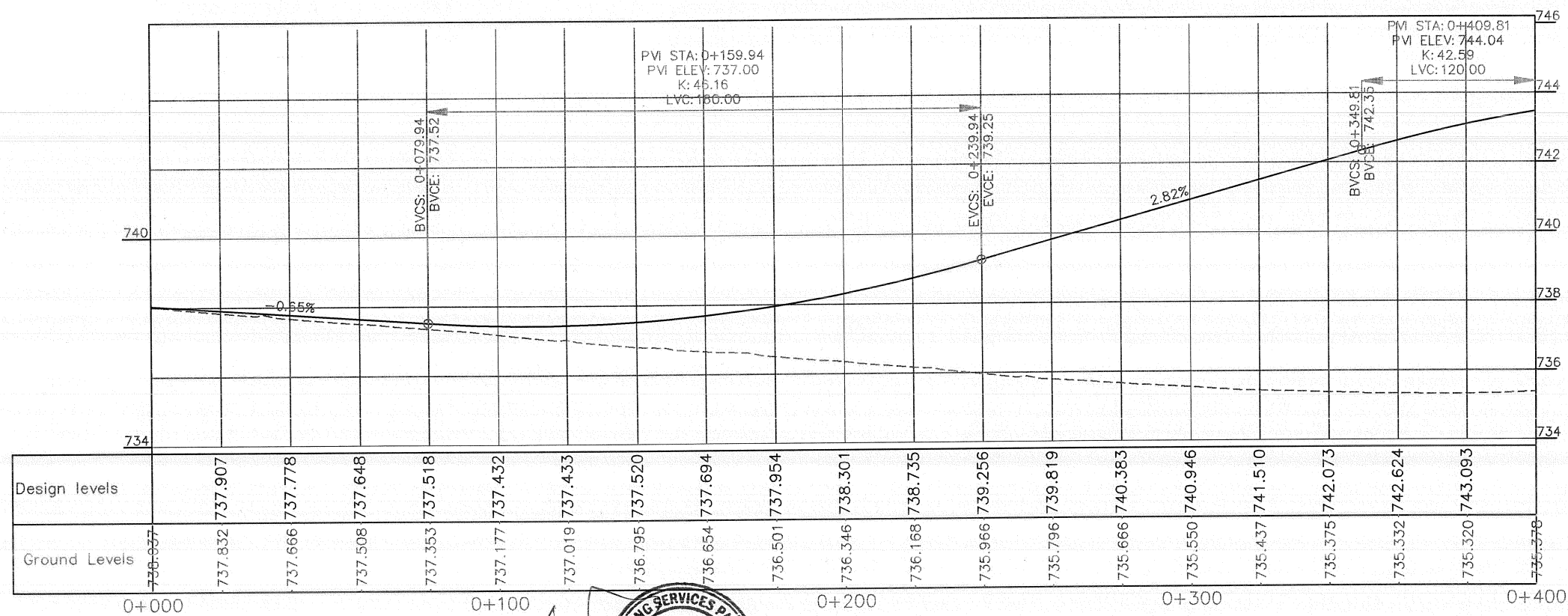
CONSTRUCTION OF GRADE SEPERATED INTERSECTION
AT SHAHEED CHOWK TIMERGARA

TITLE	
TYPICAL GUARD RAIL DETAILS (2)	
DATE	DWG NO.
MARCH, 2022	SA-488/102/TD/GR021

SHAHEED CHOWK FLYOVER Updated.dwg

N=3858208.7655
E=7596111.2416

MATCH LINE KM : 0+400



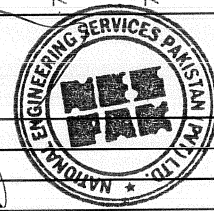
TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAYS AUTHORITY (PKHA)
GOVERNMENT OF KPK

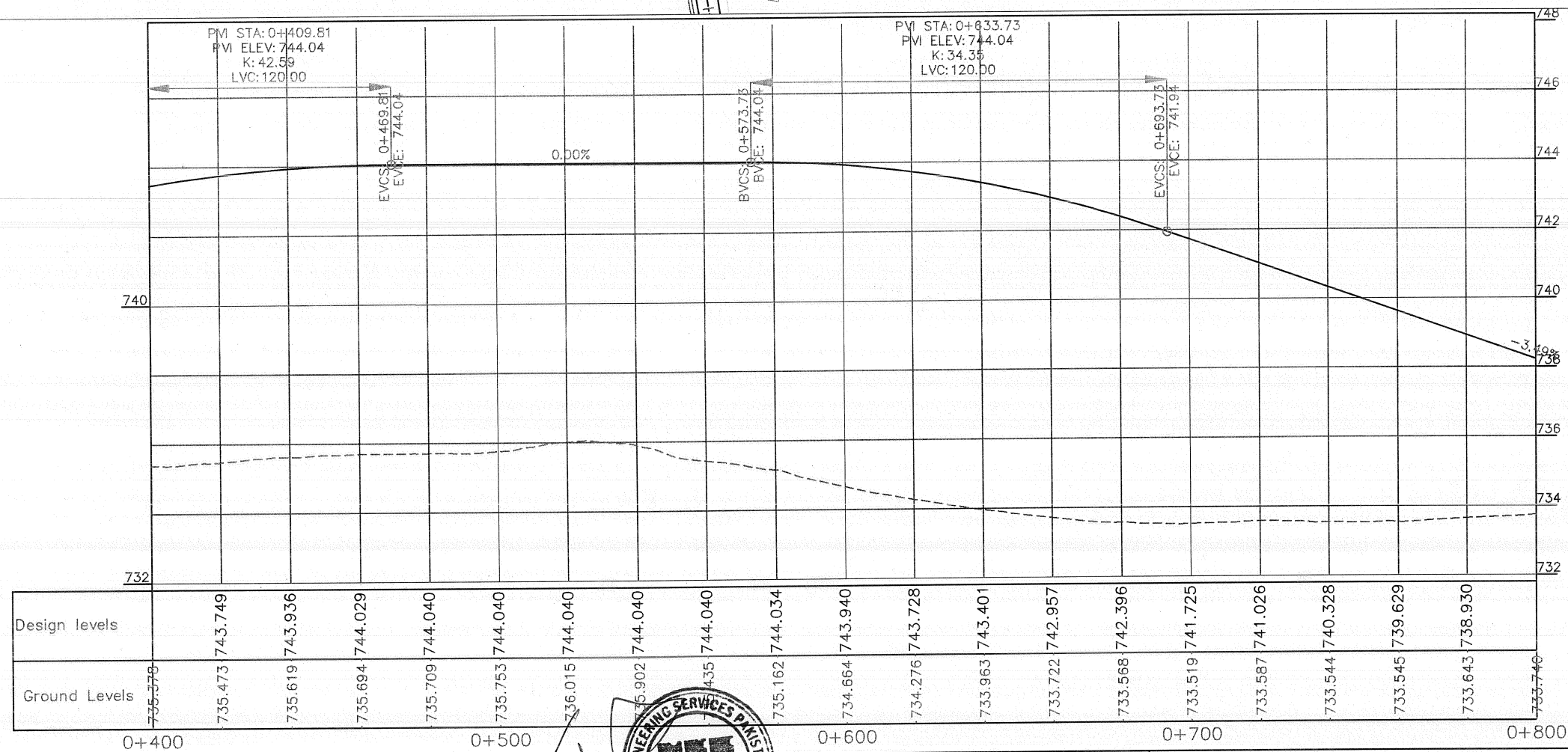
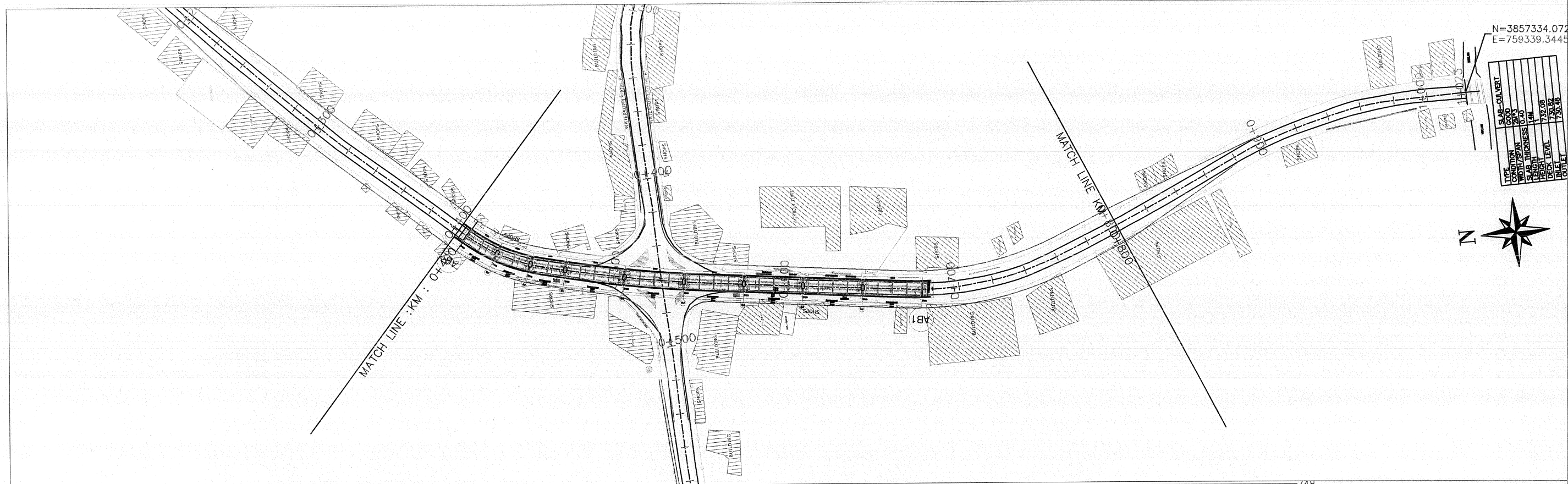


NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.



DESCRIPTION	APPROVED	DRAWN	JUNAID	PROJECT	PLAN & PROFILE	SCALE
		SUBMITTED	INAM ULLAH			
		RECOMMENDED				
		CHD./VER.				
		APPROVED		CONSTRUCTION OF GRADE SEPERATED INETERSECTOR AT SHAHEED CHOWK TIMERGARA	DATE February 2022	DWG NO. SA-488/TD/P&P 1

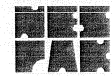
SHAHEED CHOWK FLYOVER Updated.dwg



TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAYS AUTHORITY (PKHA)
GOVERNMENT OF KPK



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.



DESCRIPTION

APPROVED

DRAWN
SUBMITTED
RECOMMENDED
CHD./VER.
APPROVED

JUNAID
INAM ULLAH

PROJECT
CONSTRUCTION OF GRADE SEPERATED INETERSECTON
AT SHAHEED CHOWK TIMERGARA

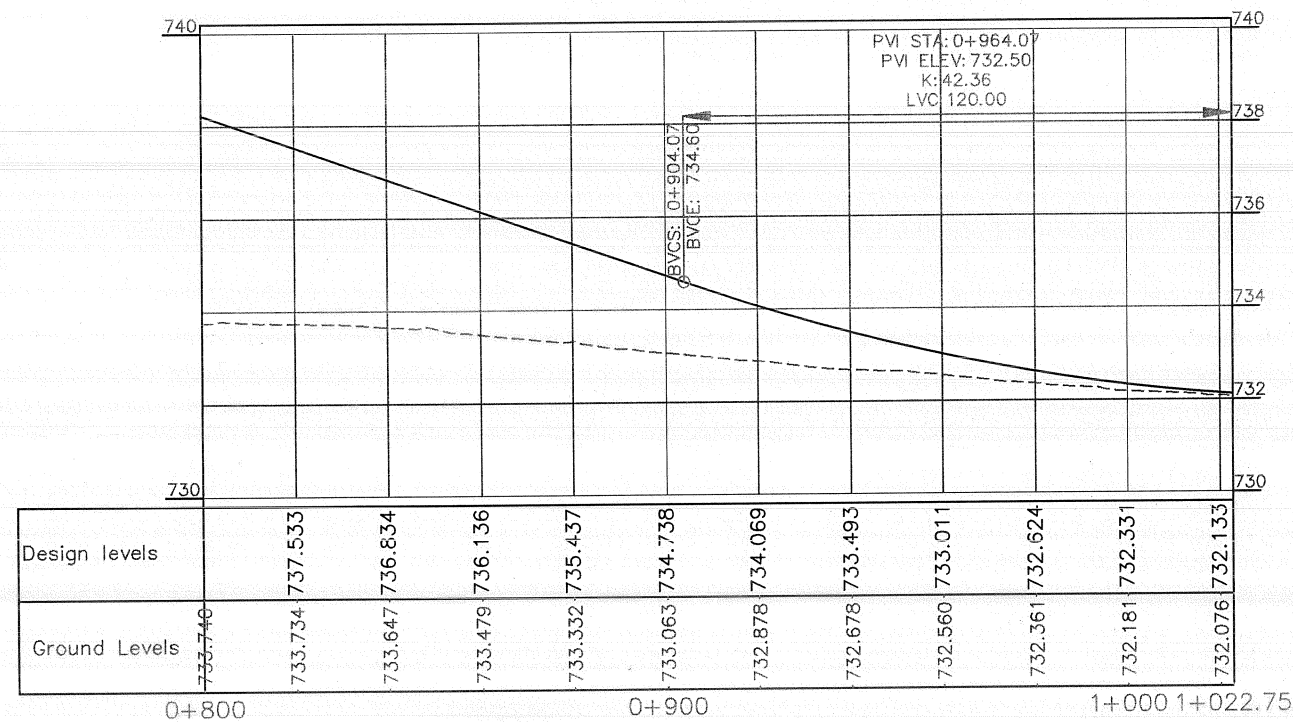
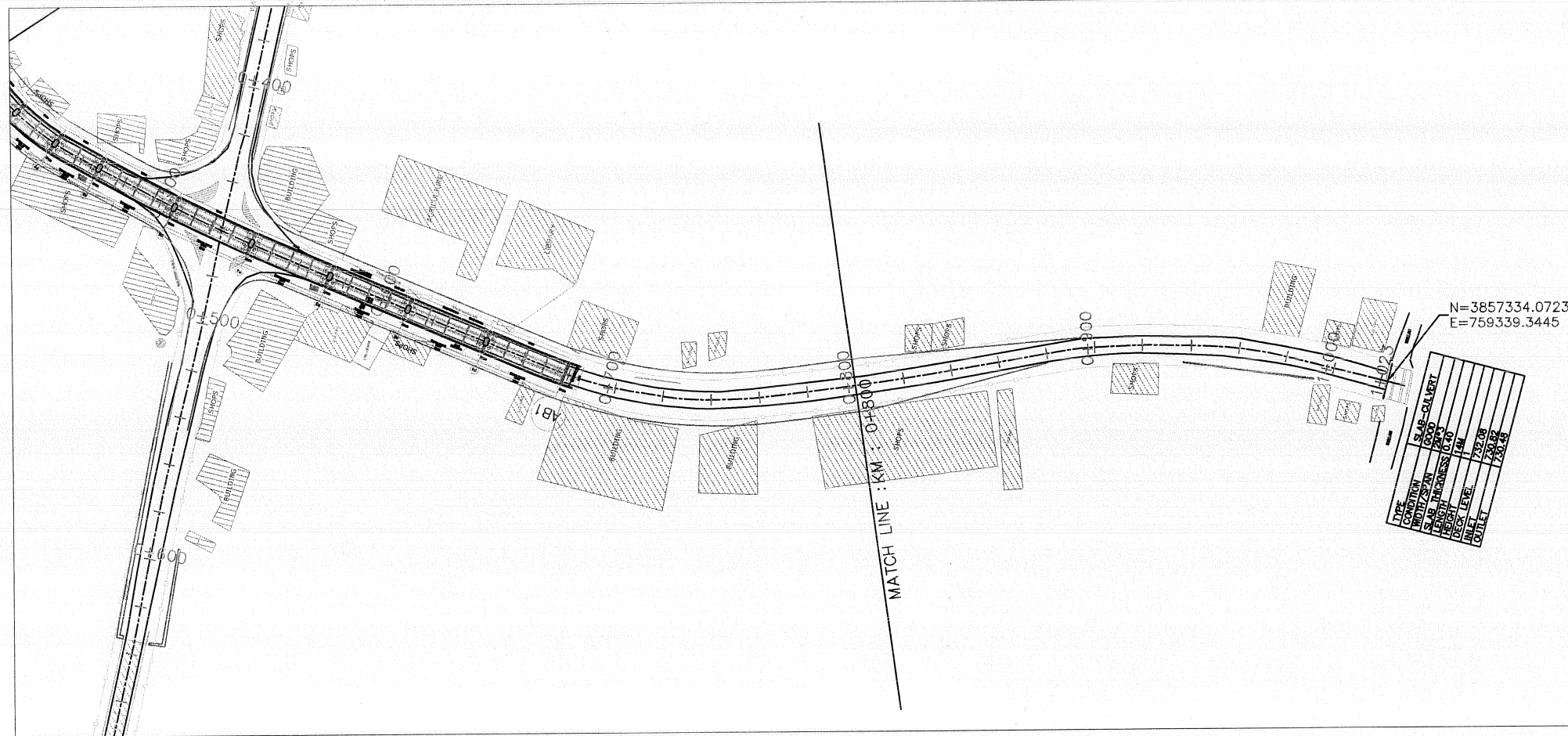
PLAN & PROFILE

DATE
February 2022

DWG NO.
SA-488/TD/P&P 2

SCALE
1:1500

SHAHEED CHOWK FLYOVER Updated.dwg



TENDER DRAWINGS



PAKHTUNKHWA
HIGHWAYS AUTHORITY (PKHA)
GOVERNMENT OF KPK



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD.



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