

**KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY,
SEWERAGE, DRAINAGE AND WASTE
WATER TREATMENT PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA**

**BARA SANITATION NETWORK
DISTRICT KHYBER**

TENDER DRAWINGS
OCTOBER-2026



DRAWINGS LIST:

DRAWING NO.	REV. NO.	DRAWING TITLE
KPR-BA-GEN-1001	D0	DRAWING LIST
KPR-BA-GEN-1002	D0	GENERAL NOTES

LAYOUT DRAWINGS:

DRAWING NO.	REV. NO.	DRAWING TITLE
KPR-BA-SEW-1009	D0	SEWERAGE SYSTEM LAYOUT (SHEET INDEX)
KPR-BA-SEW-1010	D0	SEWERAGE SYSTEM LAYOUT (SHEET 01 OF 12)
KPR-BA-SEW-1011	D0	SEWERAGE SYSTEM LAYOUT (SHEET 02 OF 12)
KPR-BA-SEW-1012	D0	SEWERAGE SYSTEM LAYOUT (SHEET 03 OF 12)
KPR-BA-SEW-1013	D0	SEWERAGE SYSTEM LAYOUT (SHEET 04 OF 12)
KPR-BA-SEW-1014	D0	SEWERAGE SYSTEM LAYOUT (SHEET 05 OF 12)
KPR-BA-SEW-1015	D0	SEWERAGE SYSTEM LAYOUT (SHEET 06 OF 12)
KPR-BA-SEW-1016	D0	SEWERAGE SYSTEM LAYOUT (SHEET 07 OF 12)
KPR-BA-SEW-1017	D0	SEWERAGE SYSTEM LAYOUT (SHEET 08 OF 12)
KPR-BA-SEW-1018	D0	SEWERAGE SYSTEM LAYOUT (SHEET 09 OF 12)
KPR-BA-SEW-1019	D0	SEWERAGE SYSTEM LAYOUT (SHEET 10 OF 12)
KPR-BA-SEW-1020	D0	SEWERAGE SYSTEM LAYOUT (SHEET 11 OF 12)
KPR-BA-SEW-1021	D0	SEWERAGE SYSTEM LAYOUT (SHEET 12 OF 12)

TYPICAL DETAILS:

DRAWING NO.	REV. NO.	DRAWING TITLE
KPR-BA-SEW-1031	D0	TYPICAL TRENCH AND OTHER MISCELLANEOUS DETAILS
KPR-BA-SEW-1032	D0	REINFORCEMENT DETAILS OF TYPICAL BRICK MANHOLE (FOR $D \leq 2500\text{mm}$)
KPR-BA-SEW-1033	D0	REINFORCEMENT DETAILS OF TYPICAL MANHOLE (FOR $2500\text{mm} < D \leq 4000\text{mm}$)
KPR-BA-SEW-1034	D0	BACKDROP – TYPICAL DETAILS

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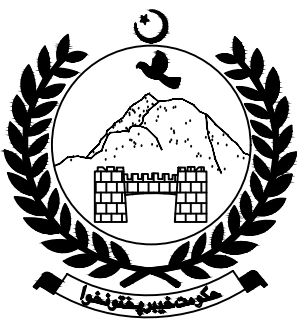
DRAWINGS NO.	REV. NO.	DRAWING TITLE
KPR-BA-SEW-1036	D0	RAIN WATER TANK 1000 GALLON
KPR-BA-SEW-1037	D0	BIORENTATION SYSTEM & RAIN GARDEN TYPICAL PLAN
KPR-BA-SEW-1038	D0	BIORENTATION SYSTEM & RAIN GARDEN TYPICAL SECTION

ABR DETAIL:

DRAWING NO.	REV. NO.	DRAWING TITLE
KPR-BA-SEW-1041	D0	GENERAL NOTES
KPR-BA-SEW-1042	D0	ANAEROBIC BAFFLED REACTOR OUTFALL-1 (SHEET 01 OF 06)
KPR-BA-SEW-1043	D0	ANAEROBIC BAFFLED REACTOR OUTFALL-1 (SHEET 02 OF 06)
KPR-BA-SEW-1044	D0	ANAEROBIC BAFFLED REACTOR OUTFALL-1 (SHEET 03 OF 06)
KPR-BA-SEW-1045	D0	ANAEROBIC BAFFLED REACTOR OUTFALL-1 (SHEET 04 OF 06)
KPR-BA-SEW-1046	D0	ANAEROBIC BAFFLED REACTOR OUTFALL-1 (SHEET 05 OF 06)
KPR-BA-SEW-1047	D0	ANAEROBIC BAFFLED REACTOR OUTFALL-1 (SHEET 06 OF 06)

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

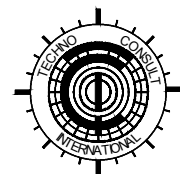
CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV



ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

DRAWING LIST

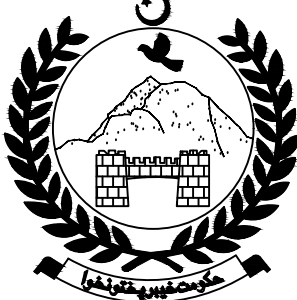
Designed by:	IFTIKHAR ALI	MAY 2026
Drawn by:	NAEEM BAKHSH	MAY 2026
CH & AP by:	RABEEA REHMAN	MAY 2026
DRAWING No.	Revision	
KPR-BA-GEN-1001	D0	
Drawing Scale:	N.T.S	
CAD filename:	KPR-BA-GEN-1001	Plot scale:1:1 @ A0

SEWERAGE SYSTEM GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS AND PIPE DIAMETERS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL DIAMETERS IN THE DRAWINGS REFER TO INNER DIAMETER FOR RCC/uPVC PIPES.
3. ALL ELEVATIONS ARE IN METERS REFERENCED TO THE TOPOGRAPHIC SURVEY PERFORMED AT SITE.
4. THE CONTRACTOR SHALL VERIFY SITE CONDITIONS, PREPARE SHOP DRAWINGS, AND OBTAIN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.
5. ALL JOINTS BETWEEN THE PIPES, AND BETWEEN PIPES AND STRUCTURES, SHALL BE WATERTIGHT.
6. ALL MATERIALS, FABRICATION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS.
7. WHERE THERE IS A DISCREPANCY BETWEEN THE REQUIREMENTS OF SPECIFICATIONS AND THOSE SHOWN ON THESE DRAWINGS, SPECIFICATIONS SHALL BE FOLLOWED WITH THE APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.
8. COORDINATION WITH ALL RELEVANT AUTHORITIES, INCLUDING, WSSC, TMA, PHED ETC SHALL BE UNDERTAKEN REGARDING THEIR REQUIREMENTS AND PRECAUTIONS PRIOR TO COMMENCING CONSTRUCTION WORKS.
9. THE CONTRACTOR SHALL FOLLOW ALL ENVIRONMENTAL, SAFETY, AND HEALTH REGULATIONS.
10. THE CONTRACTOR SHALL VERIFY LEVELS AGAINST ALL PROPOSED AND EXISTING UTILITY LINES PRIOR TO CONSTRUCTION.
11. THE CONTRACTOR SHALL VERIFY THE ACTUAL COVER LEVELS OF PROPOSED MANHOLES.
12. THE CONTRACTOR SHALL MAKE SURE THAT ALL PROPERTIES/PLOTS SURROUNDING THE PROJECT ARE PROVIDED WITH HOUSE CONNECTIONS TO THE PROPOSED SEWER LINES UNDER THIS PROJECT.
13. CONTRACTOR SHALL CARRY OUT COMPLETE SURVEY OF HOUSE CONNECTIONS OF ALL EXISTING PROPERTIES/PLOTS, AND SHALL PROVIDE HOUSE CONNECTIONS TO ALL THE EXISTING PROPERTIES/PLOTS THROUGH THE EXITING HOUSE CHAMBER, CONTRACTOR TO BUILD THE HOUSE CHAMBER IF IT IS NOT CONSTRUCTED ALREADY. FOR VACANT PLOTS HOUSE CONNECTION SHALL BE PROVIDED, CAPPED AT THE PLOT BOUNDARY.
14. CONTRACTOR IS RESPONSIBLE TO REINSTATE ALL THE ROADS/STREETS DAMAGES DURING EXECUTION OF PROJECT.
15. ALL EXCAVATION AND BACKFILLING FOR THE PIPES AND MANHOLES SHALL BE PERFORMED AS PER THE TECHNICAL SPECIFICATIONS OR AS OTHERWISE SPECIFIED BY THE ENGINEER. PROPER SAFETY PROCEDURES SHALL BE FOLLOWED FOR DEEP EXCAVATION. THE BACKFILLING SHOULD BE DONE SYMMETRICAL AND COMPACTION IN LAYERS AS SPECIFIED IN TECHNICAL SPECIFICATIONS.
16. CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY COLLECTION OR DISPOSAL FACILITY FOR THE ACTIVE SEWAGE (IF REQUIRED) DURING EXECUTION OF PROJECT.
17. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL STAKE HOLDERS AND UTILITIES ACTIVITIES RELATED TO DIVERSION OF THE EXISTING UTILITIES.
18. THE DETAILS OF THE NOMINAL SIZES OF THE PROPOSED SEWER PIPES ARE PROPOSED BELOW AS SHOWN IN THE LAYOUTS SHEETS.
19. CONTRACTOR TO REINSTATE ALL THE DAMAGES TO THE PUBLIC AND PRIVATE PROPERTIES DURING EXECUTION OF THE PROJECT.
20. CONTRACTOR TO REINSTATE ALL THE EXISTING DRAINS AND CANALS IF DAMAGED DURING CONSTRUCTION OF SEWERAGE SYSTEM.
21. BACKDROP STRUCTURE TO BE PROVIDED AT ALL THE LOCATIONS WHERE THE DIFFERENCE BETWEEN PIPE INVERT OF THE INCOMING PIPE AND PIPE SOFFIT OF OUTGOING PIPE IS MORE THAN 0.6M.
22. ALL SEWER LINES MUST BE TASTED FOR LEAKAGE, MANHOLE WATER TIGHTNESS OR ANY OTHER REQUIRED TEST AS MENTIONED IN SPECIFICATIONS.
23. THE CONTRACTOR WILL ENSURE CONNECTION OF EXISTING HOUSES WASTE WATER PIPES TO BE CONNECTED WITH PROPOSED HOUSE COLLECTION CHAMBERS.
24. A 4-INCH DIAMETER CI VENT PIPE SHALL BE INSTALLED ON MANHOLES AT AN AVERAGE SPACING OF 300 METERS FOR SEWERS EXCEEDING 450 MM IN DIAMETER. THE VENT PIPE SHALL EXTEND 3 TO 4 METERS ABOVE GROUND LEVEL AND SHALL BE PROVIDED WITH PROPER ANCHORING SUPPORT, PROTECTIVE CAP AT THE TOP AND SEALED CONNECTION AT THE BASE.

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
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CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV



ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

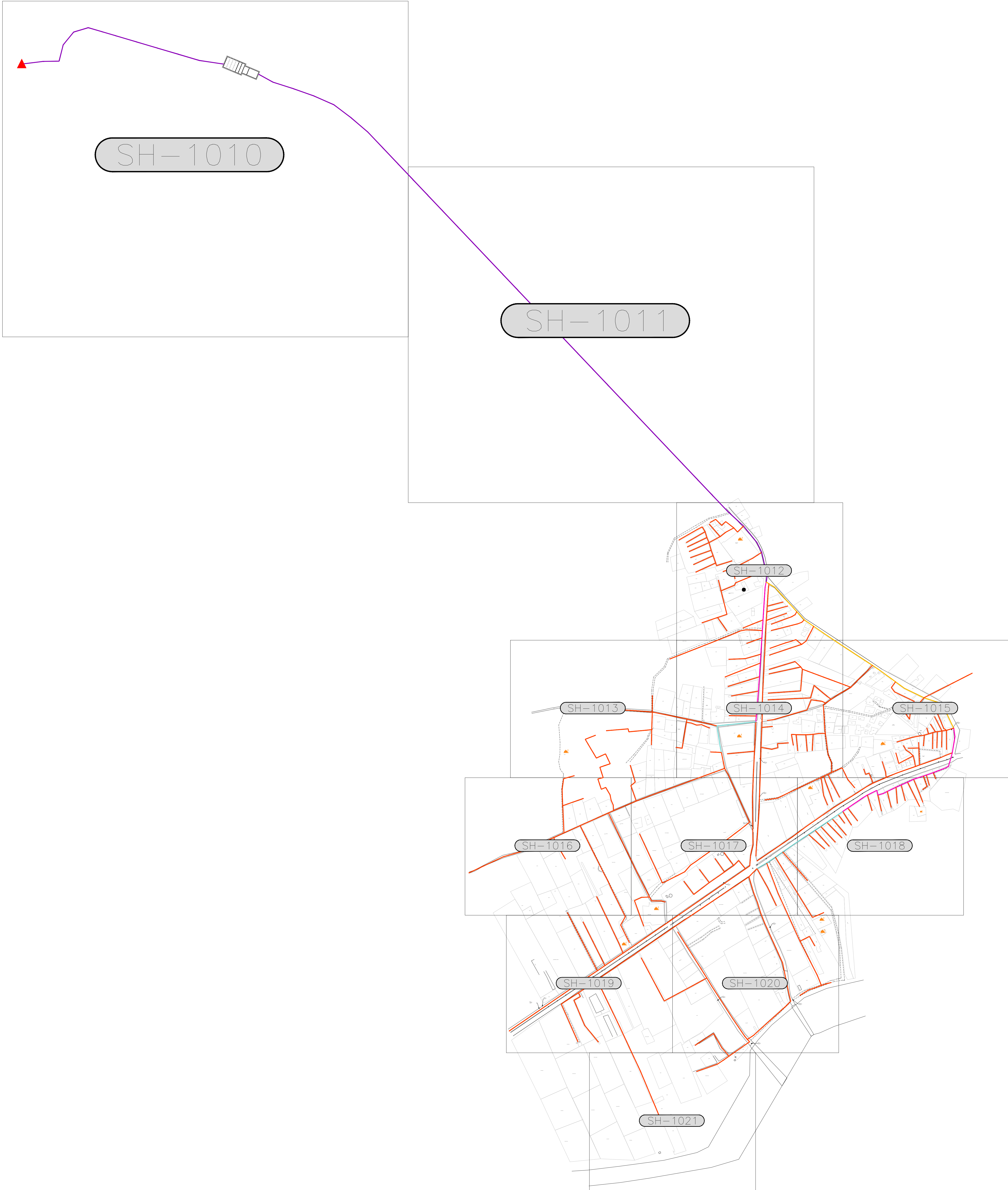
SEWERAGE SYSTEM
(GENERAL NOTES)

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

DRAWING No.	Revision
KPR-BA-GEN-1002	D0

Drawing Scale:

CAD filename: KPR-BA-GEN-1002Plot scale:1:1 @ A0



- NOTES**
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
- LEGENDS:**
- PROPOSED SEWER LINE DIA 225mm
 - PROPOSED SEWER LINE DIA 300mm
 - PROPOSED SEWER LINE DIA 375mm
 - PROPOSED SEWER LINE DIA 450mm
 - PROPOSED SEWER LINE DIA 525mm
 - PROPOSED OUTFALL
 - PROPOSED ABR

IA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



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CONSULTANT:

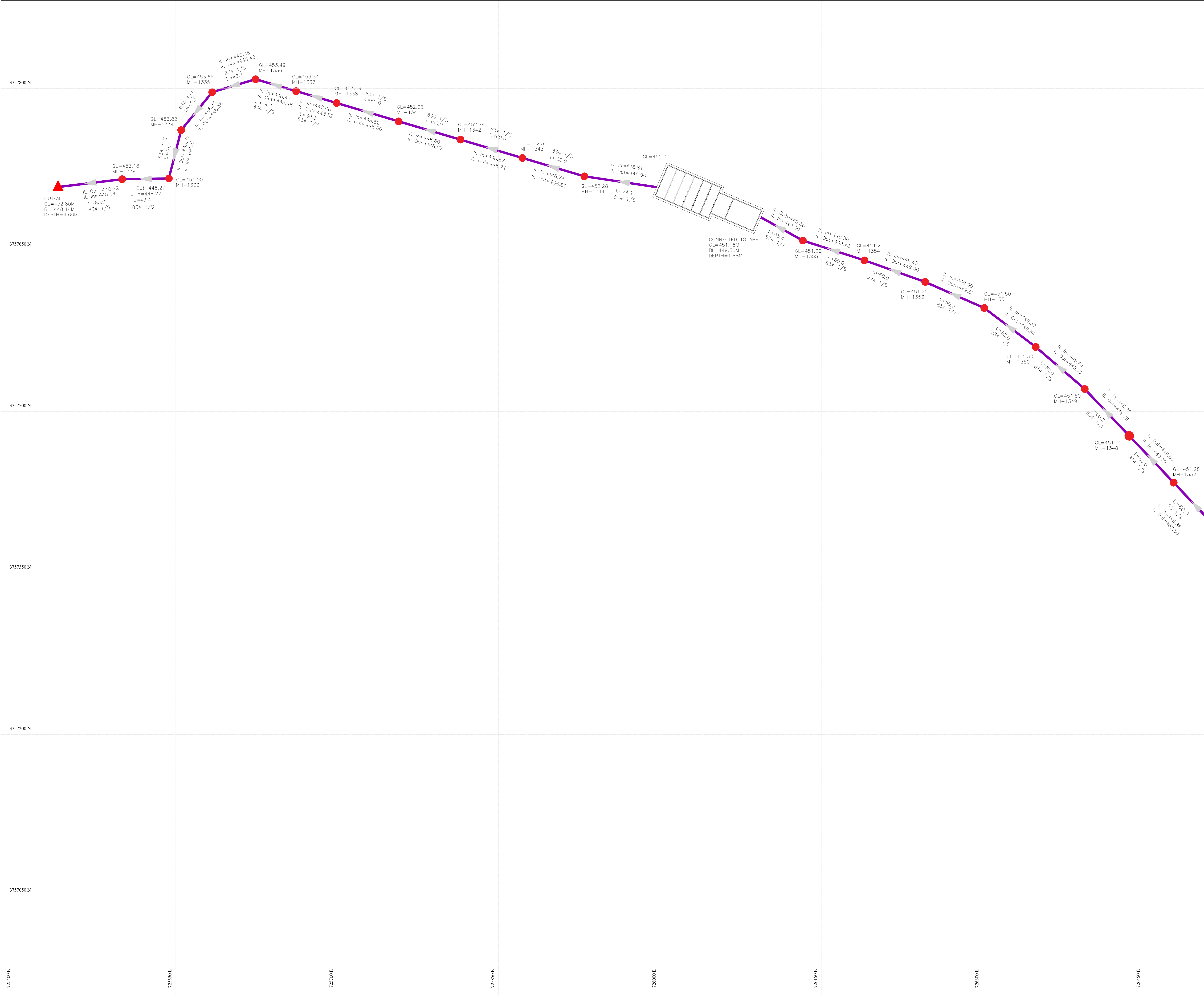


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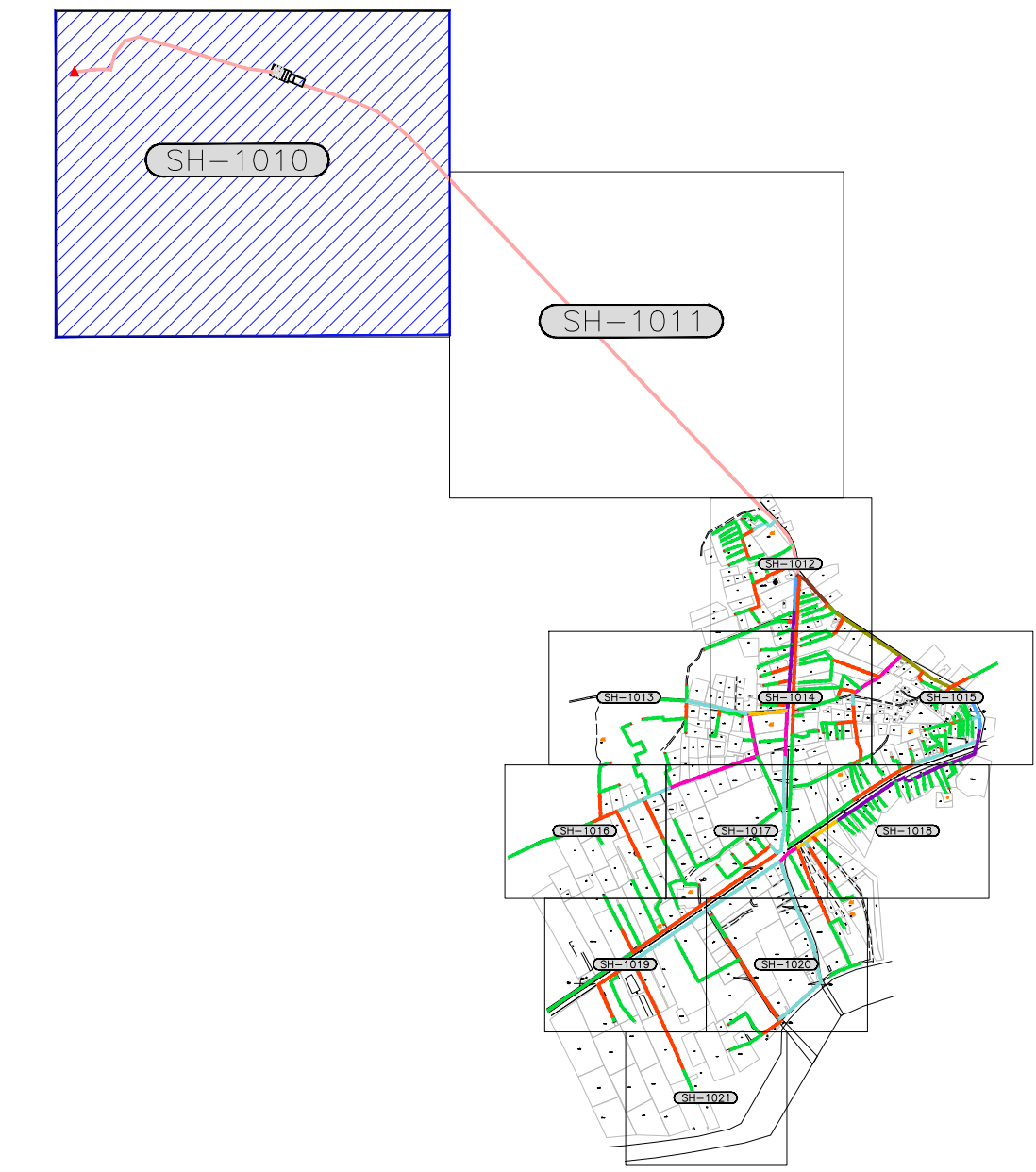
SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING		PROPOSED SEWERAGE SHEET INDEX	
Designed by: IFTIKHAR ALI		MAY 2026	
Drawn by: NAEEM BAKHSH		MAY 2026	
CH & AP by: RABEEA REHMAN		MAY 2026	
DRAWING No.		Revision	
KPR-BA-SEW-1009		D0	
Drawing Scale:		N.T.S	
CAD filename:KPR-DB-SEW-1009 (S)		Plot scale:1:1 @ A0	



KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED SEWER LINE DIA 525mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

- MH MANHOLE
- GL GROUND LEVEL
- L LENGTH OF SEWER
- IL IN INVERT LEVEL IN
- IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

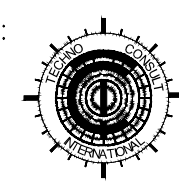
CLIENT:


PUBLIC HEALTH ENGINEERING
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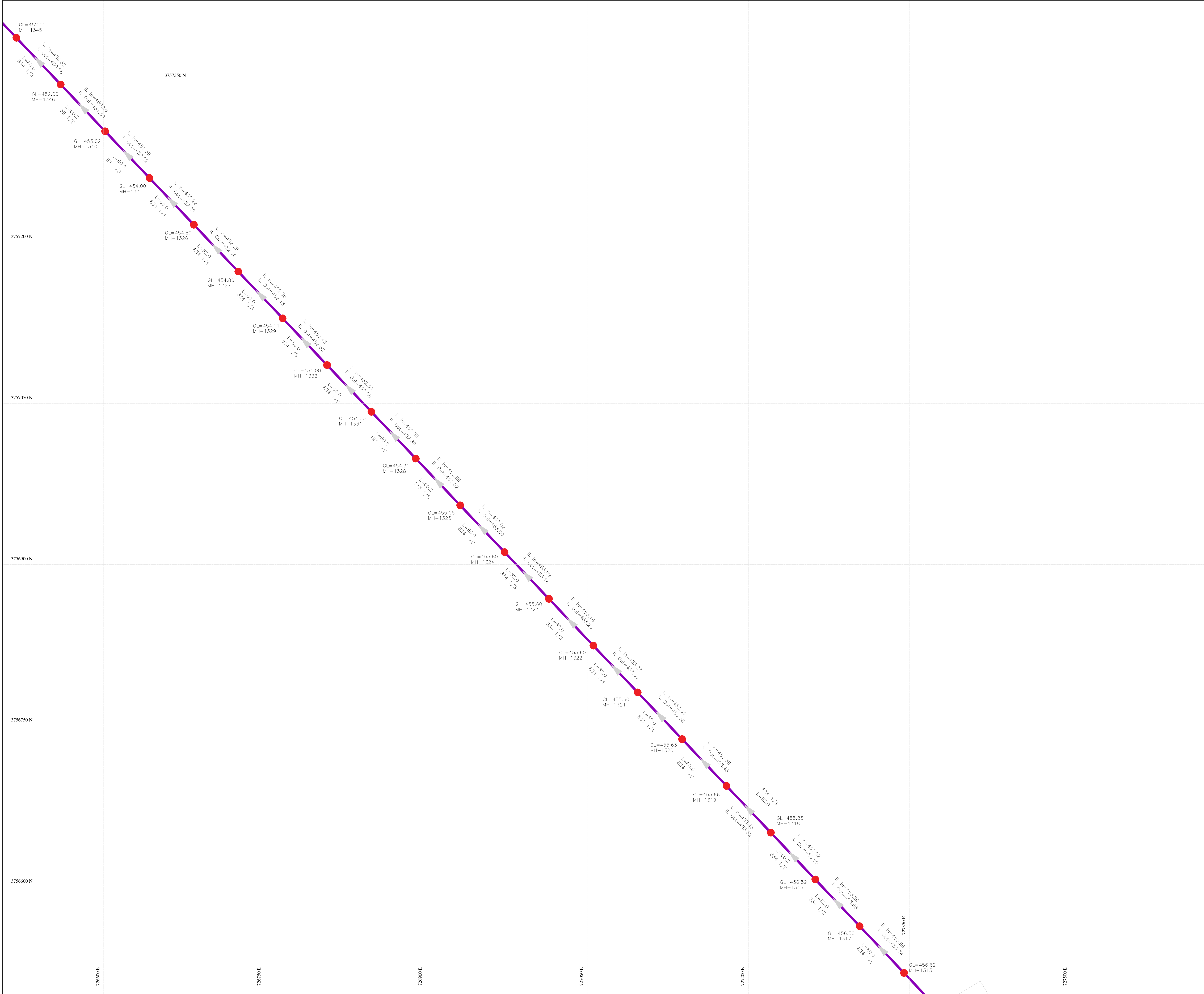
CONSULTANT:

 TECNO CONSULTANT
INTERNATIONAL
JV
 ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

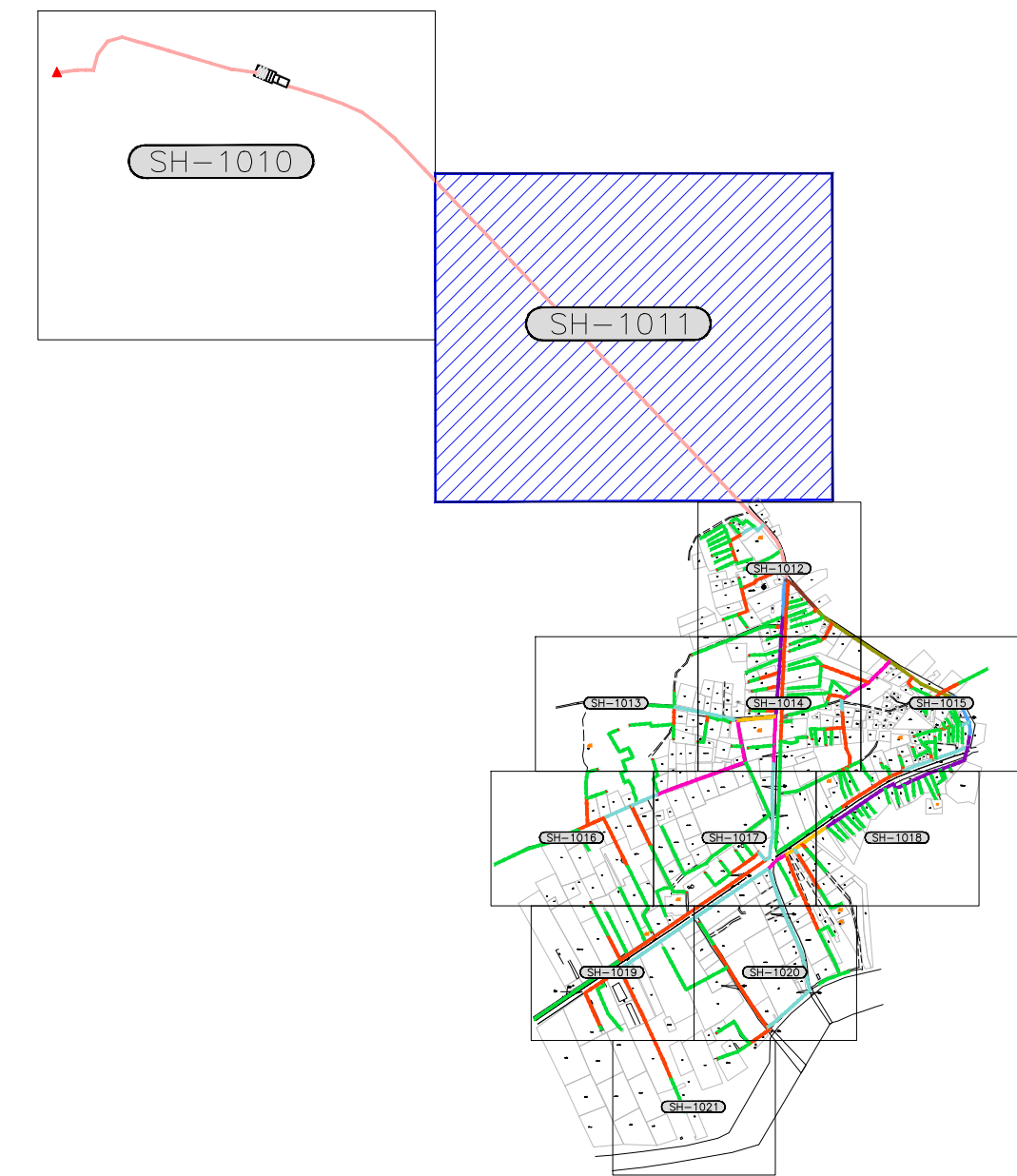
BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING	
PROPOSED SEWERAGE NETWORK LAYOUT PLAN	
Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026
DRAWING No.	Revision
KPR-BA-SEW-1010	DO
Drawing Scale:	2:500
CAD filename:KPR-DB-SEW-1010-21	Plot scale:1:1 @ A0



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1012)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
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- PROPOSED SEWER LINE DIA 525mm
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- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

- MH MANHOLE
- GL GROUND LEVEL
- L LENGTH OF SEWER
- IL IN INVERT LEVEL IN
- IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

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DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

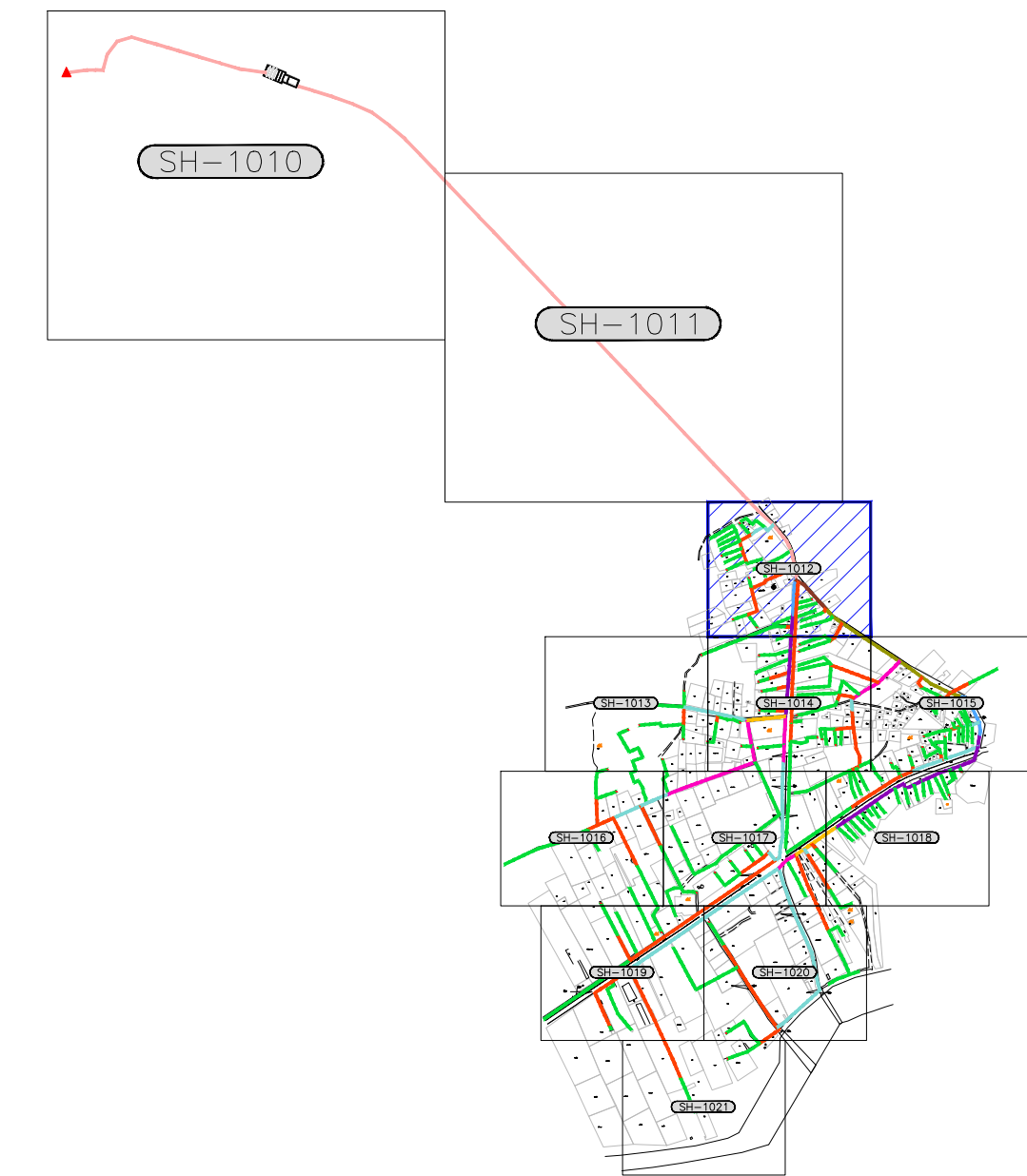
BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING	
PROPOSED SEWERAGE NETWORK LAYOUT PLAN	
Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026
DRAWING No.	Revision
KPR-BA-SEW-1011	DO
Drawing Scale:	2:500
CAD filename:KPR-DB-SEW-1010-21	Plot scale:1:1 @ A0



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1014)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
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ABBREVIATIONS:

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IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

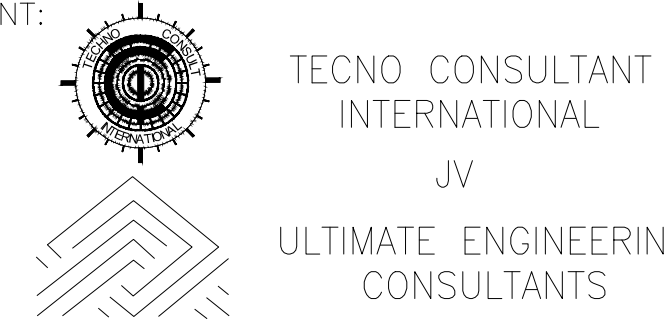
CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
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DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

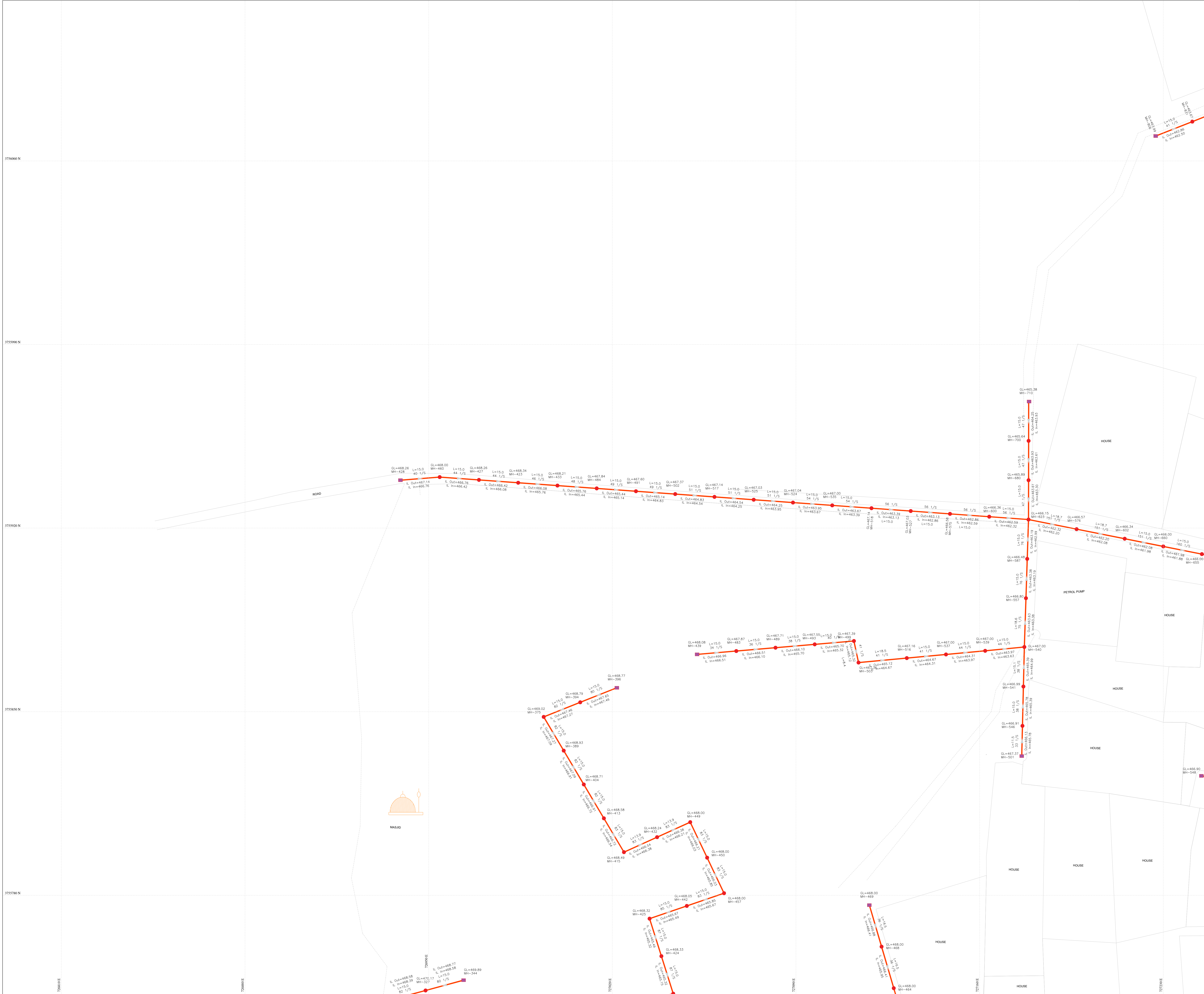
PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI MAY 2026
Drawn by: NAEEM BAKHSH MAY 2026
CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. Revision
KPR-BA-SEW-1012 DO

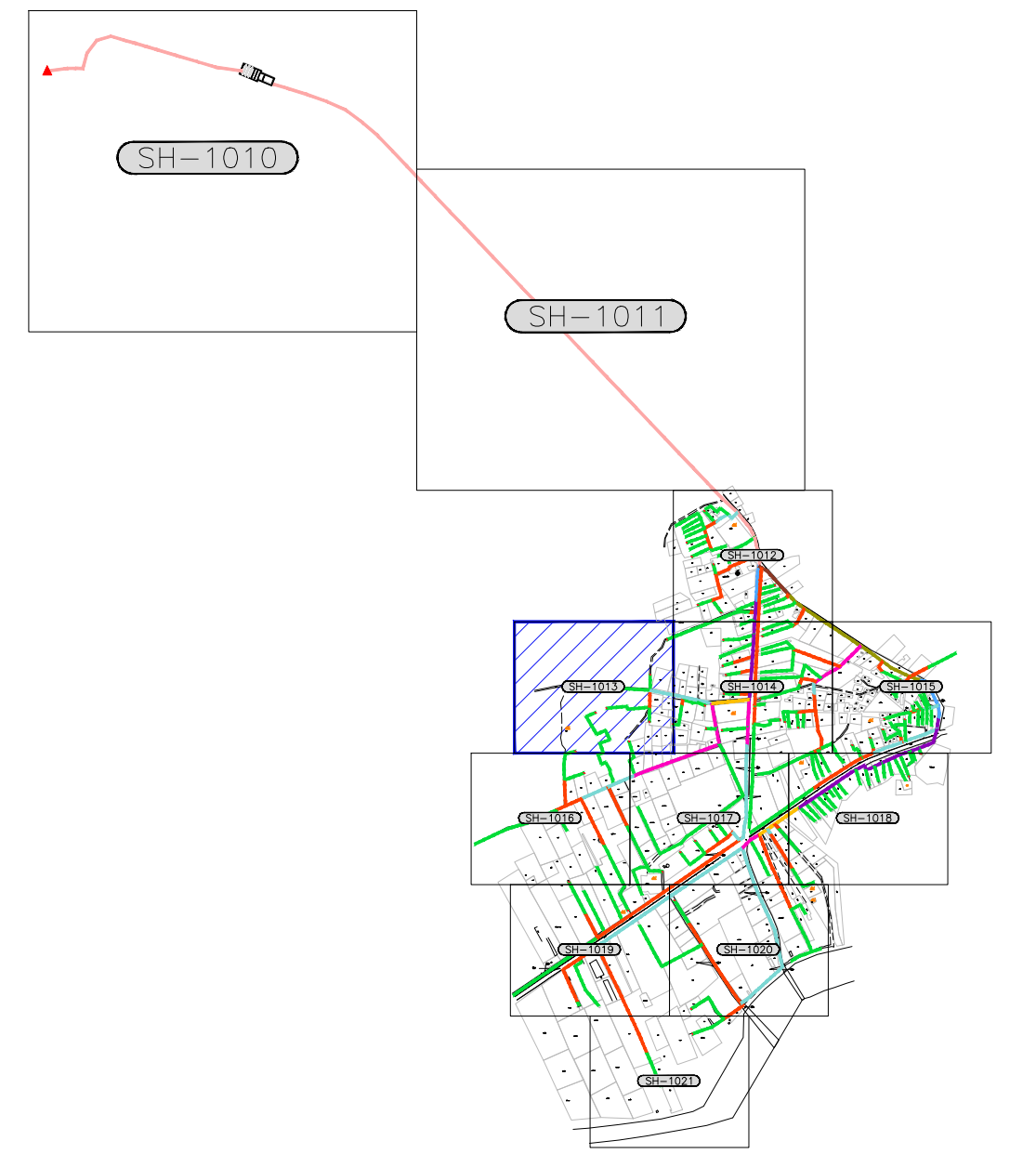
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MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1016)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

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CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
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ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

DRAWING No.	Revision
KPR-BA-SEW-1013	DO

Drawing Scale: 1:500

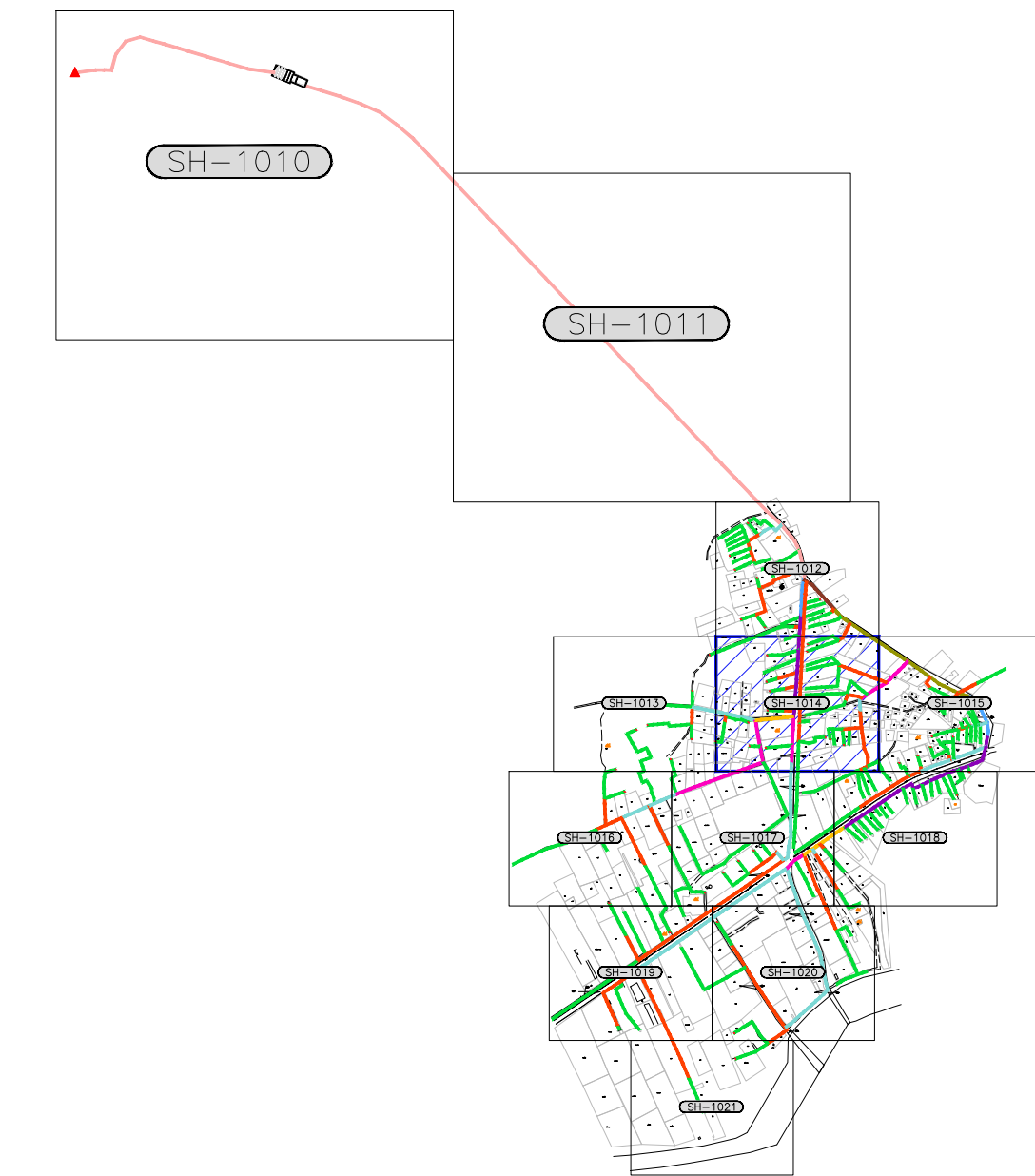
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MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1012)



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1017)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

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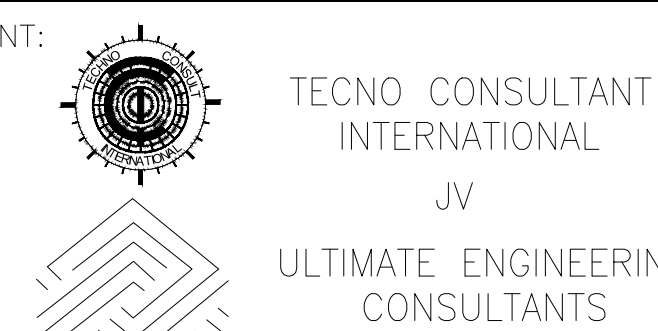
CLIENT:



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CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI MAY 2026
Drawn by: NAEEM BAKHSH MAY 2026
CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. KPR-BA-SEW-1014 Revision DO

Drawing Scale: 1:500

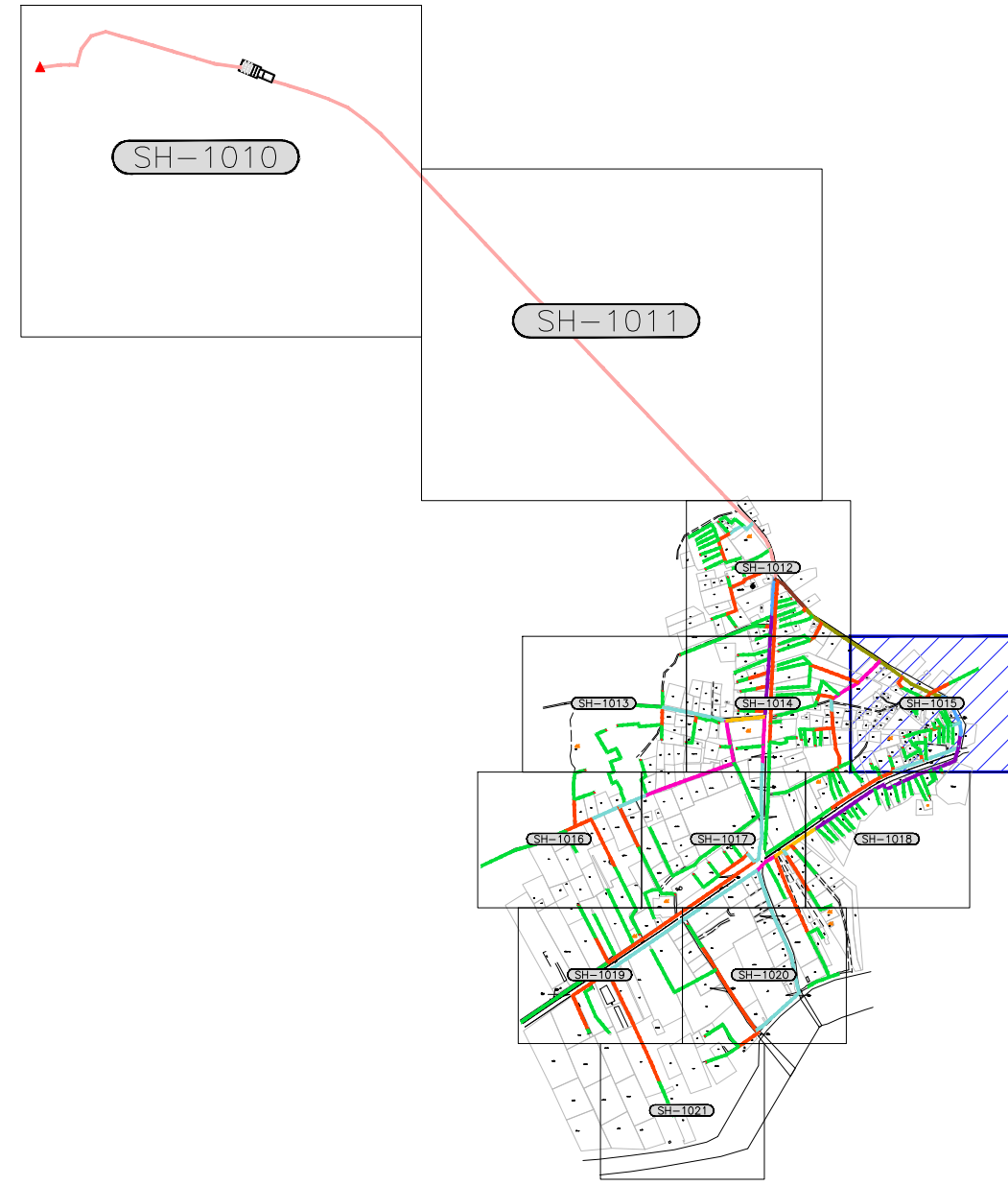
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MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1014)



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1018)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

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ABBREVIATIONS:

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L LENGTH OF SEWER
IL INVERT LEVEL IN
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AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

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CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV



ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI MAY 2026

Drawn by: NAEEM BAKHSH MAY 2026

CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. Revision

KPR-BA-SEW-1015

DO

Drawing Scale: 1:500

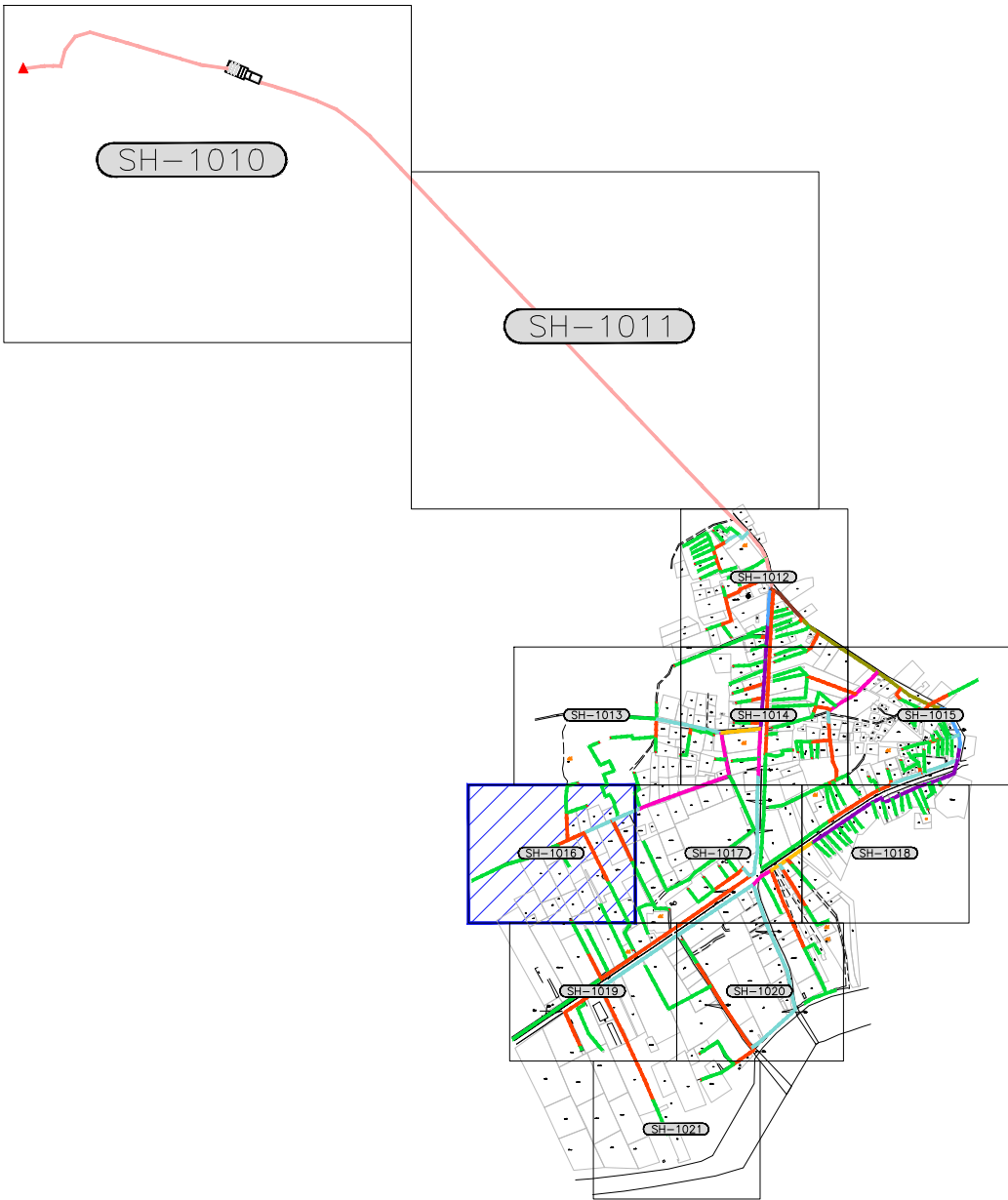
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MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1013)



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1019)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED SEWER LINE DIA 525mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

- MH MANHOLE
- GL GROUND LEVEL
- L LENGTH OF SEWER
- IL IN INVERT LEVEL IN
- IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

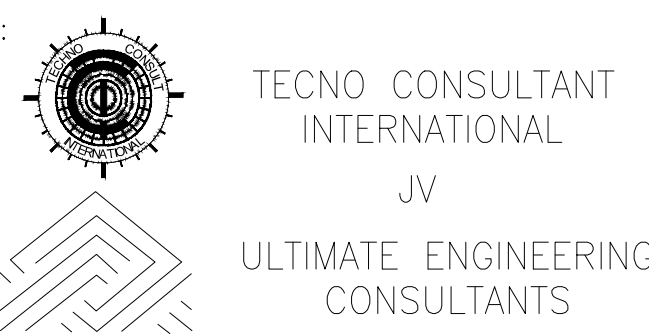
CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

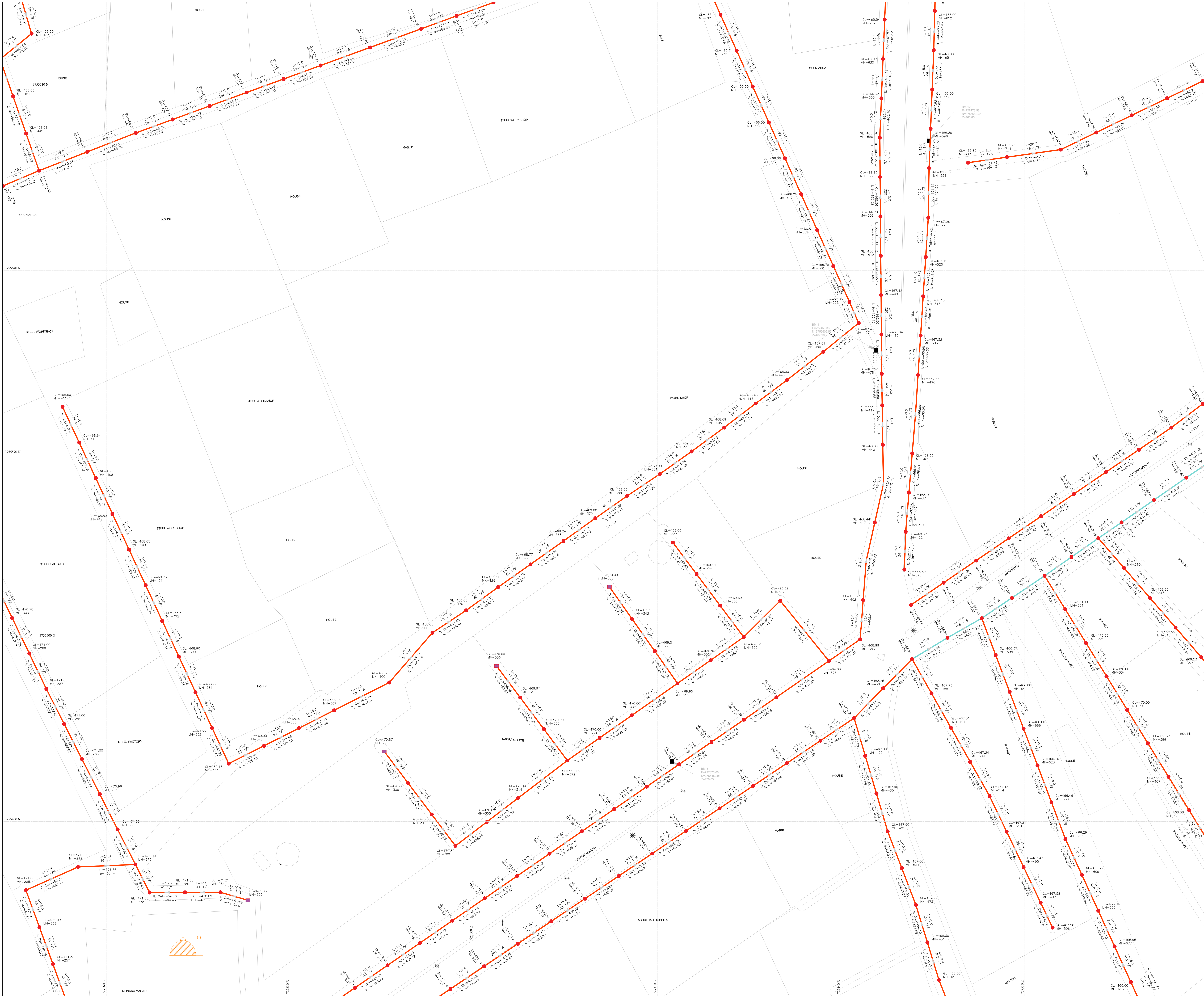
PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

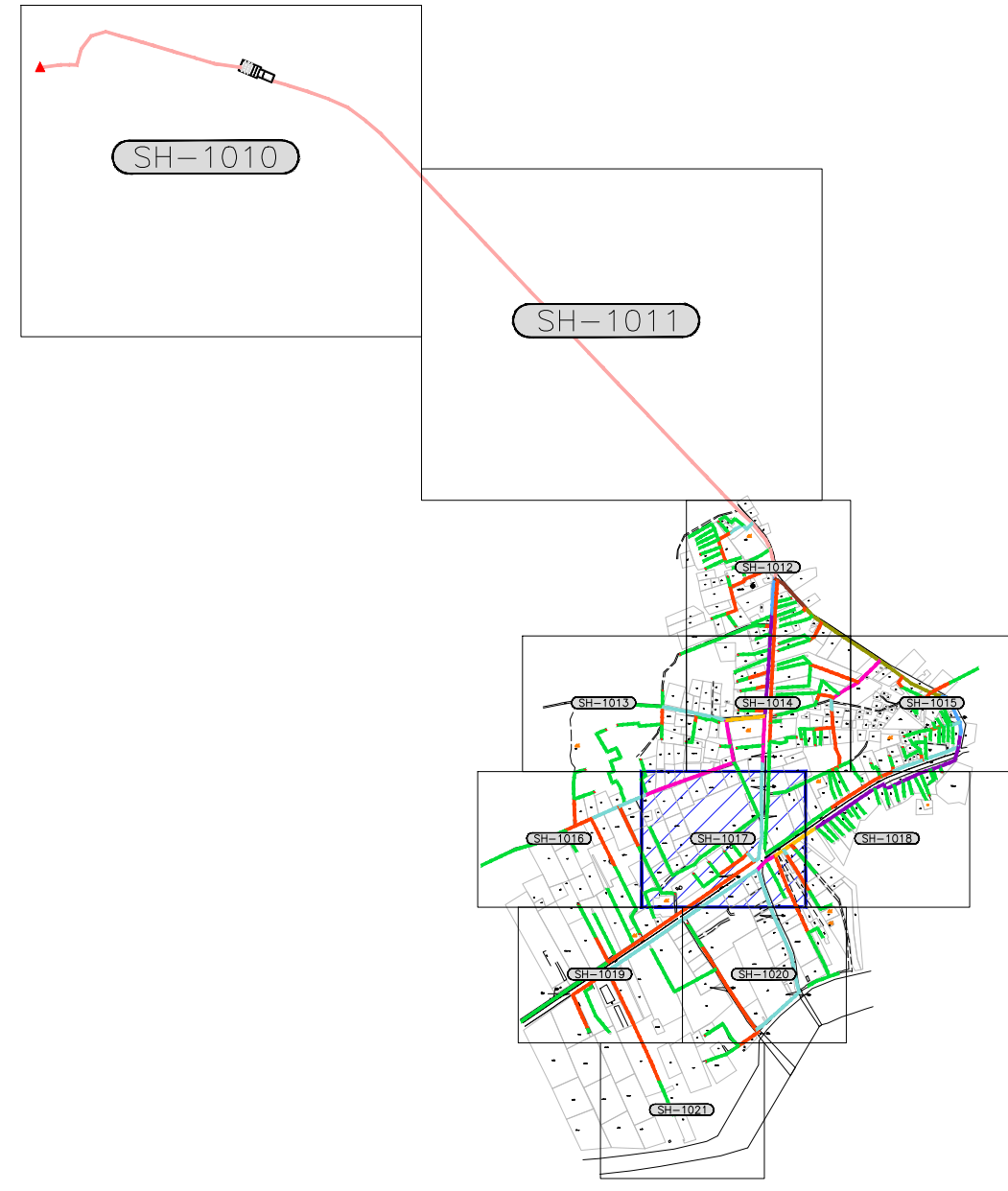
DRAWING No.	Revision
KPR-BA-SEW-1016	D0

Drawing Scale: 1:500

CAD filename:KPR-DB-SEW-1010-21 Plot scale:1 @ A0



KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED SEWER LINE DIA 525mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

MH MANHOLE
GL GROUND LEVEL
L LENGTH OF SEWER
IL INVERT LEVEL IN
IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV



ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI MAY 2026

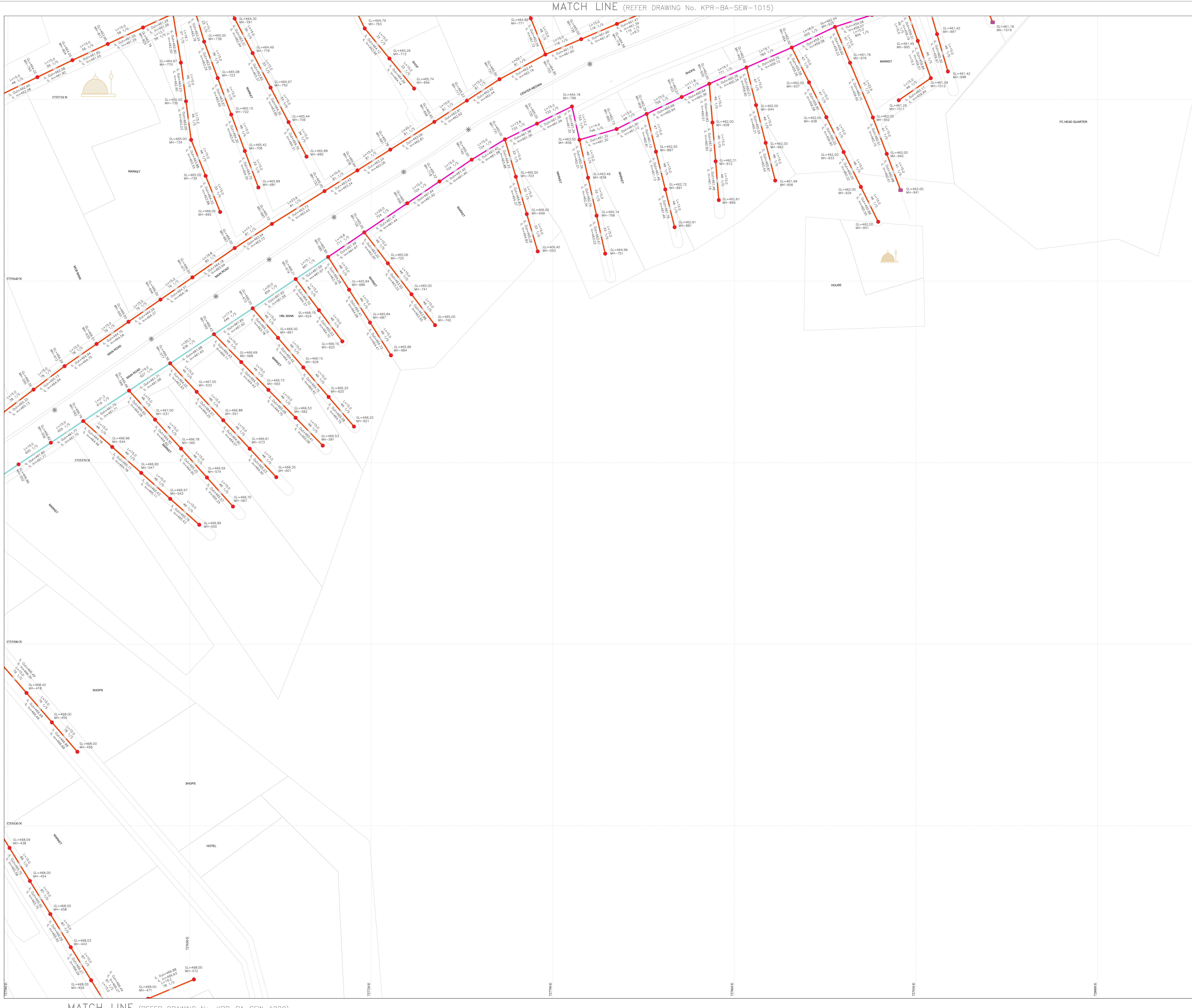
Drawn by: NAEEM BAKHSH MAY 2026

CH & AP by: RABEEA REHMAN MAY 2026

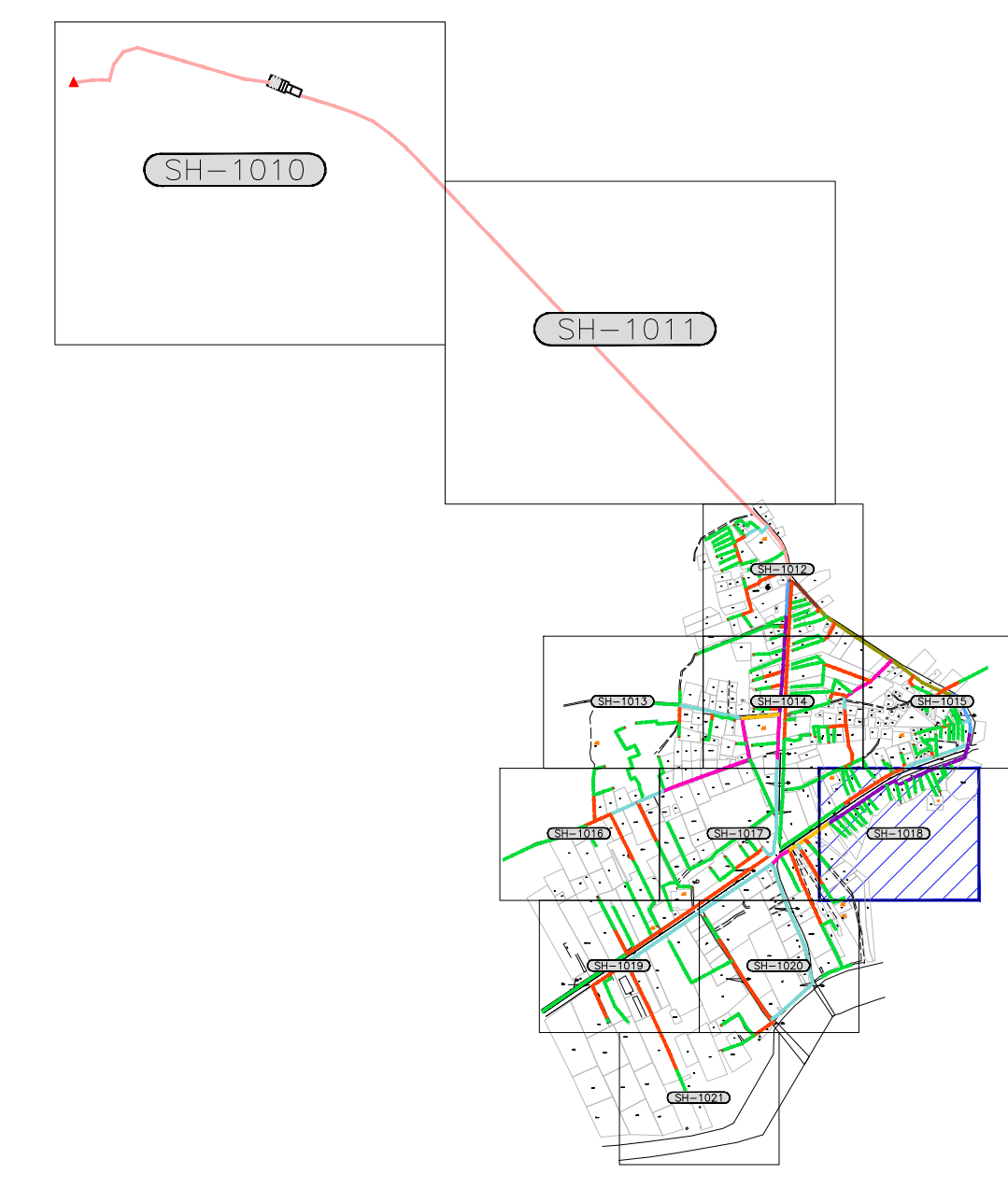
DRAWING No. KPR-BA-SEW-1017 Revision DO

Drawing Scale: 1:500

CAD filename:KPR-DB-SEW-1010-21 Plot scale:1:1 @ A0



KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED SEWER LINE DIA 525mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

- MH MANHOLE
- GL GROUND LEVEL
- L LENGTH OF SEWER
- IL IN INVERT LEVEL IN
- IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

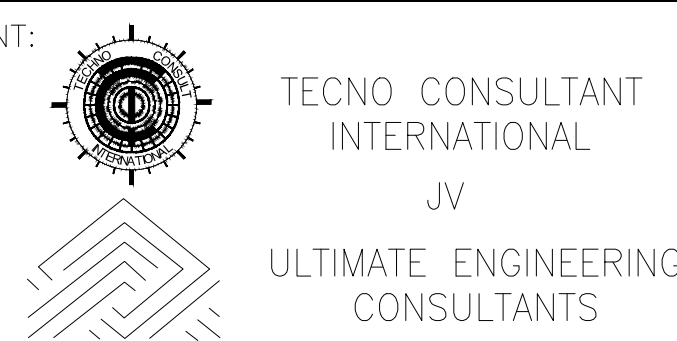
CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

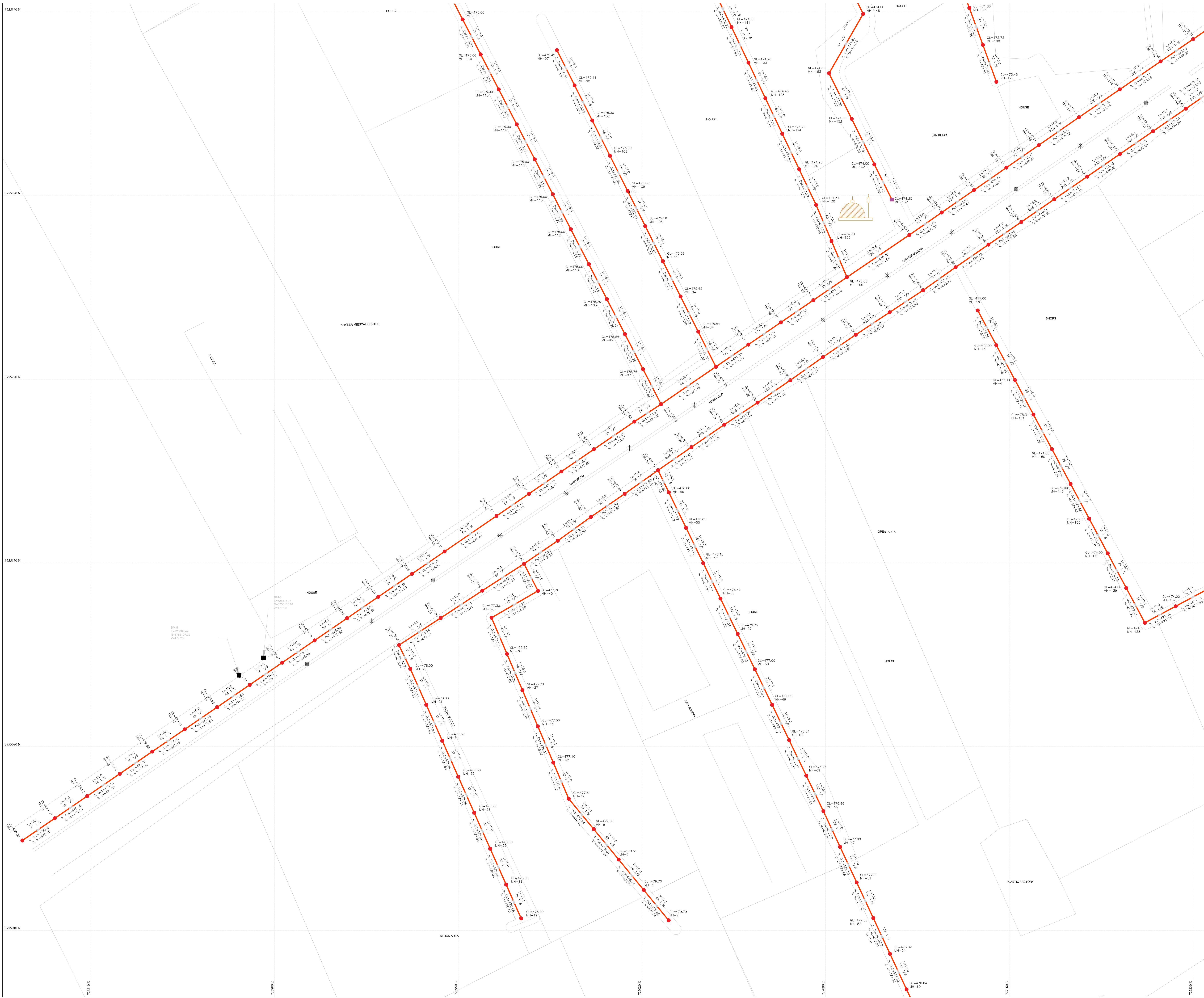
Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

DRAWING No.	Revision
KPR-BA-SEW-1018	DO

Drawing Scale: 1:500

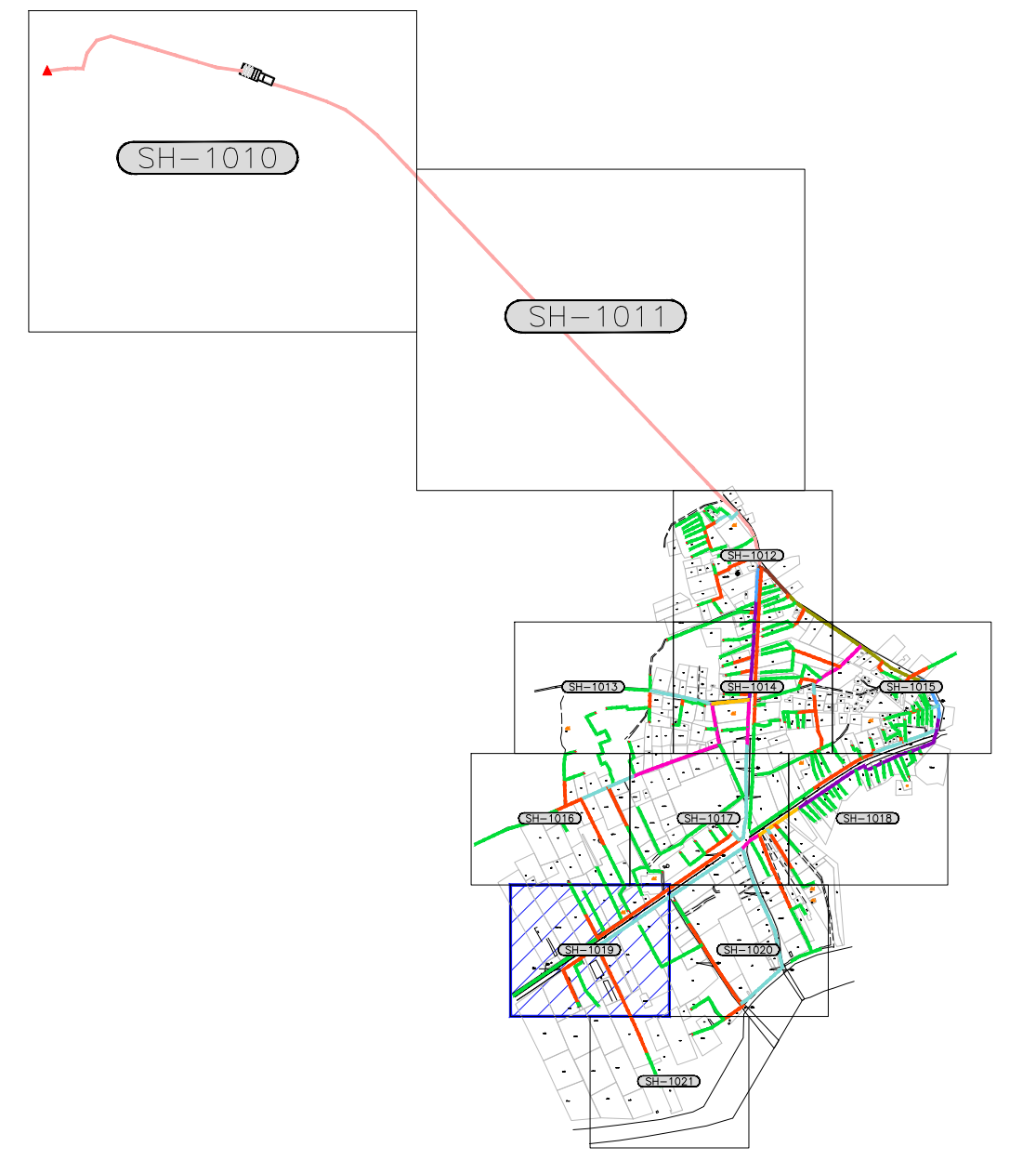
CAD filename:KPR-DB-SEW-1010-21 Plot scale:1:1 @ A0

MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1016)



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1021)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

MH MANHOLE
GL GROUND LEVEL
L LENGTH OF SEWER
IL INVERT LEVEL IN
IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:

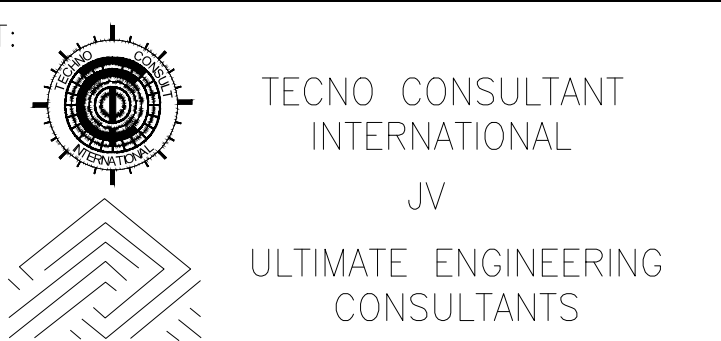


PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRISP - DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

DRAWING No.	Revision
KPR-BA-SEW-1019	DO

Drawing Scale: 1:500

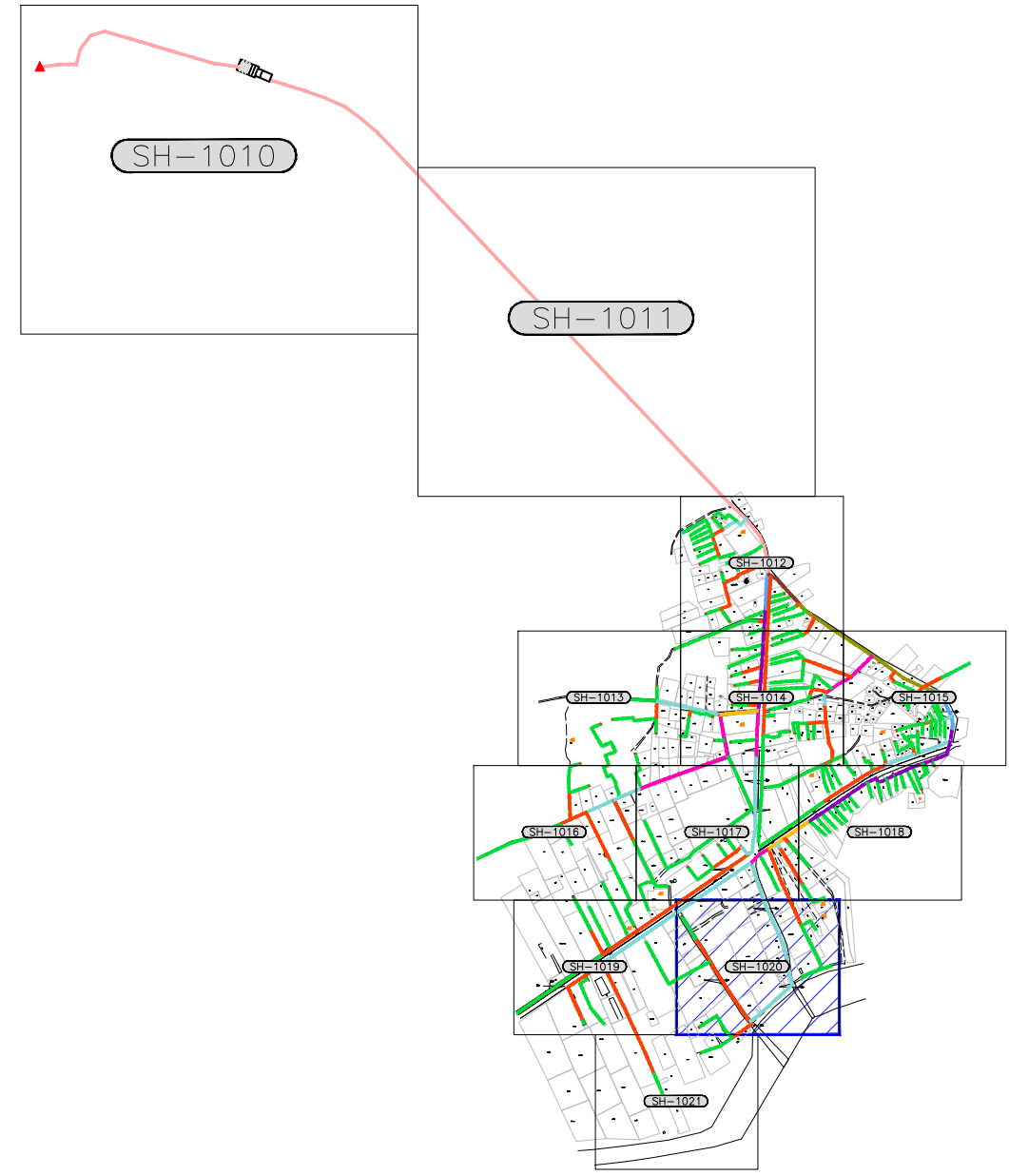
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MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1017)



MATCH LINE (REFER DRAWING No. KPR-BA-SEW-1021)

KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED SEWER LINE DIA 525mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

MH MANHOLE
GL GROUND LEVEL
L LENGTH OF SEWER
IL IN INVERT LEVEL
IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

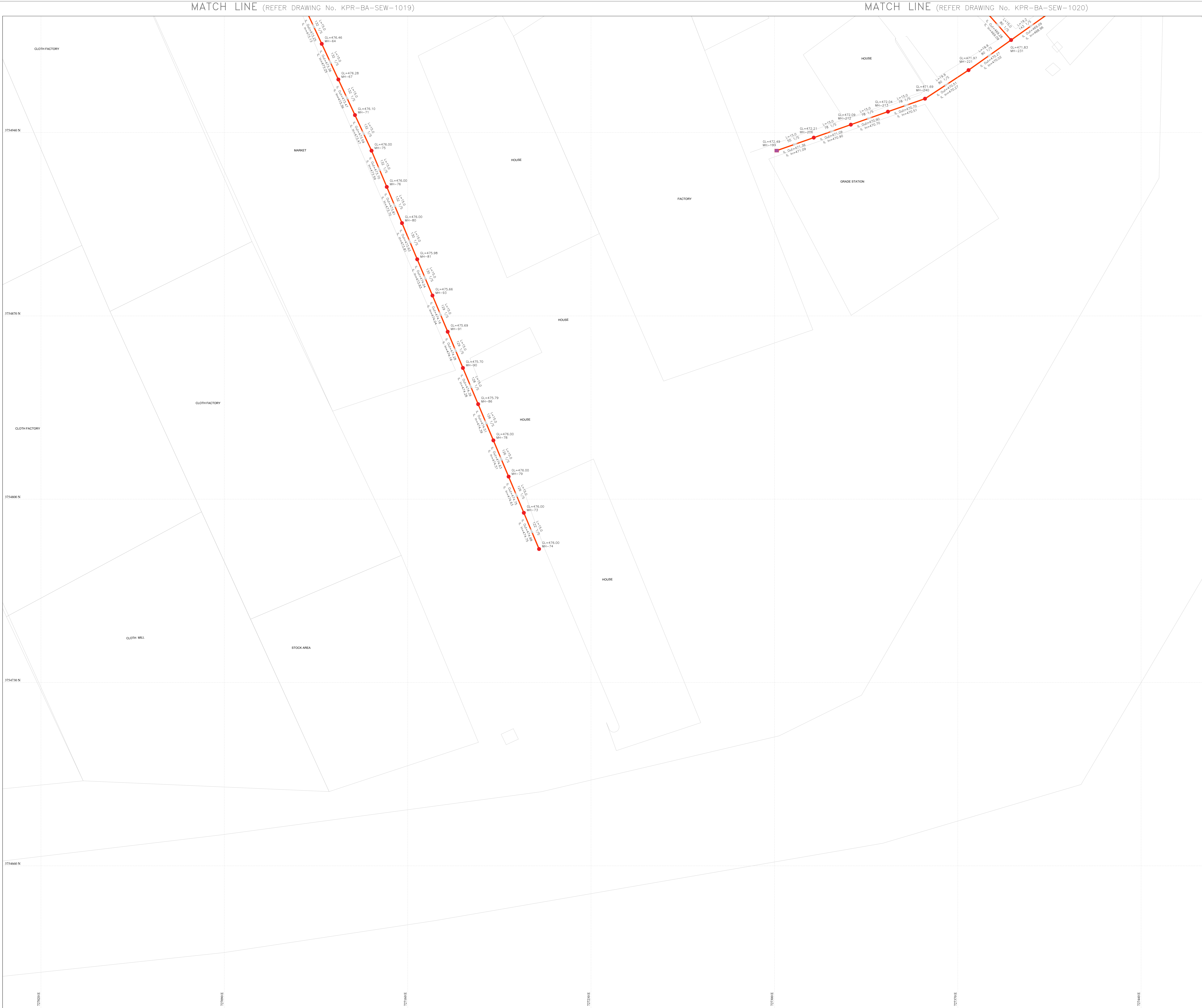
PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

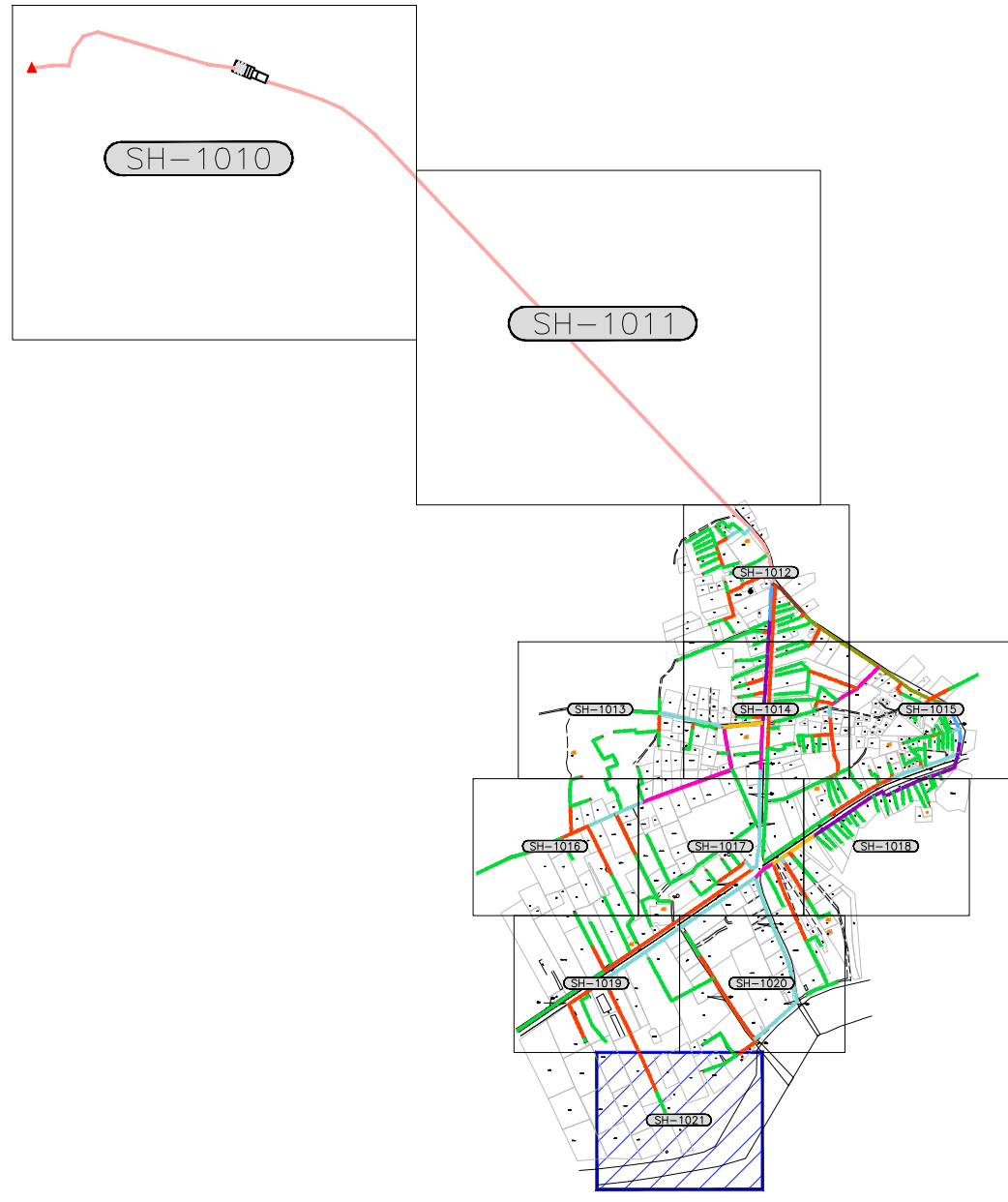
DRAWING No.	Revision
KPR-BA-SEW-1020	DO

Drawing Scale: 1:500

CAD filename:KPR-DB-SEW-1010-21 Plot scale:1:1 @ A0



KEY PLAN:



NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

LEGENDS:

- PROPOSED SEWER LINE DIA 225mm
- PROPOSED SEWER LINE DIA 300mm
- PROPOSED SEWER LINE DIA 375mm
- PROPOSED SEWER LINE DIA 450mm
- PROPOSED SEWER LINE DIA 525mm
- PROPOSED MANHOLE
- PROPOSED FLUSHING UNIT
- PROPOSED OUTFALL
- PROPOSED ABR

ABBREVIATIONS:

MH MANHOLE
GL GROUND LEVEL
L LENGTH OF SEWER
IL IN INVERT LEVEL IN
IL OUT INVERT LEVEL OUT

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

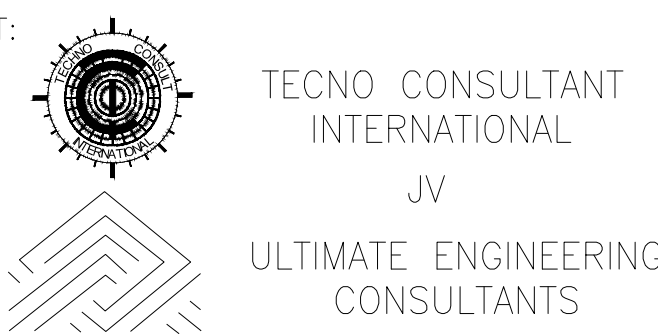
CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

PROPOSED SEWERAGE
NETWORK LAYOUT

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

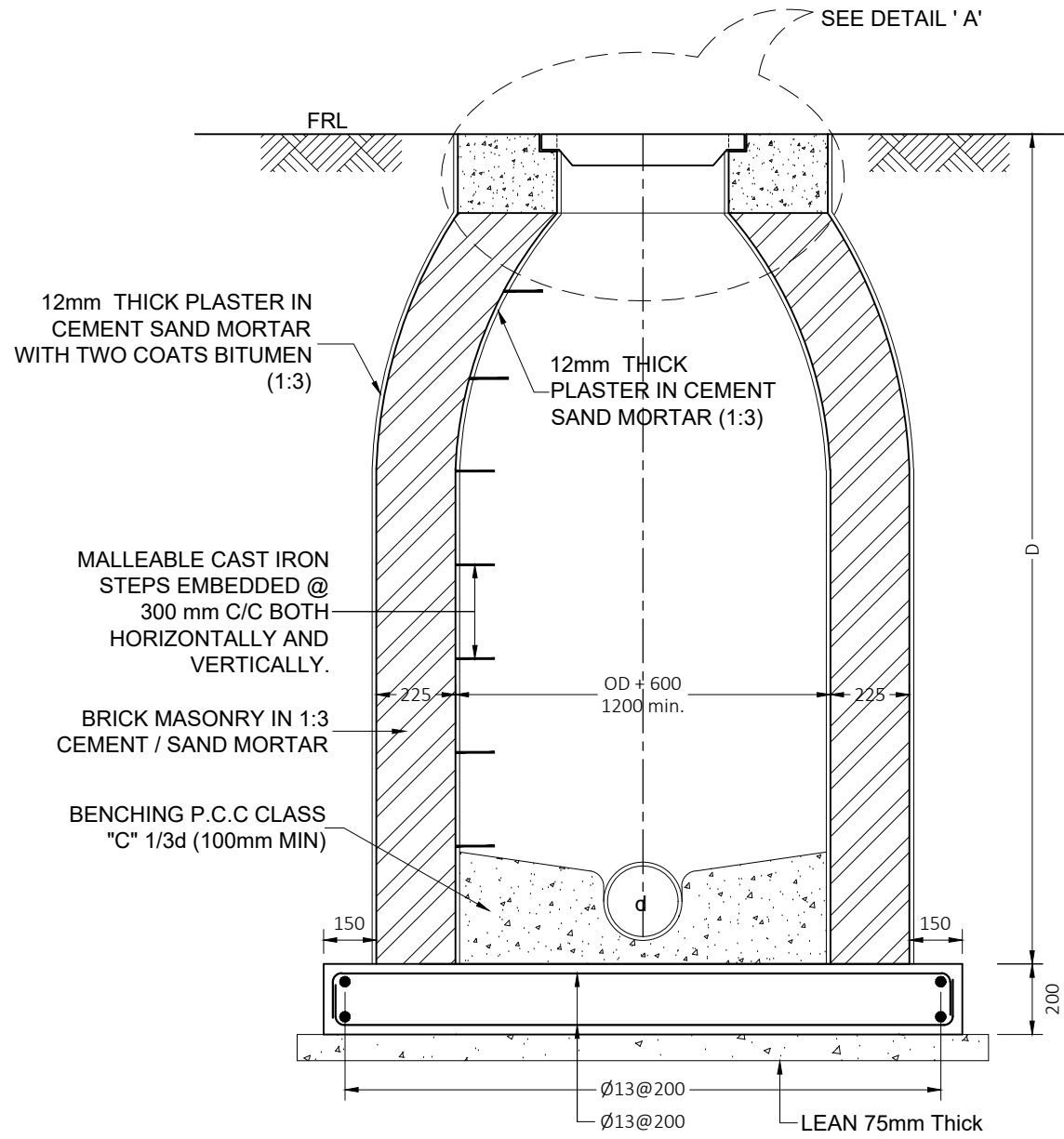
DRAWING No.	Revision
KPR-BA-SEW-1021	D0

Drawing Scale: 1:500

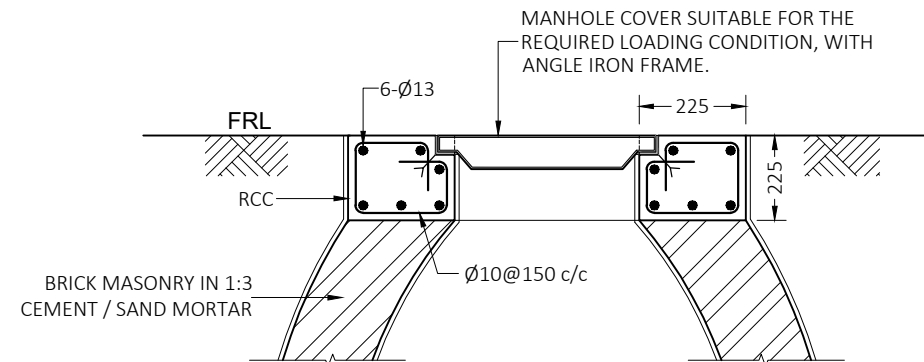
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TYPICAL DETAILS

Plot scale:1:1 @ A0



**MANHOLE
TYPICAL SECTION
(FOR D ≤ 2500mm)**



DETAIL - 'A'

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
2. ALL REINFORCED CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE CYLINDER STRENGTH OF 21 MPA(3000 Psi.) AT 28 DAYS UNLESS OTHERWISE NOTED.
3. BLINDING CONCRETE/LEAN CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE CYLINDER STRENGTH OF 10.5 MPA (1500 Psi.) AT 28 DAYS.
4. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60, HAVING A MINIMUM YIELD STRENGTH OF 414 MPA(60,000 Psi.)
5. STANDARD SIZE OF BRICKS SHALL BE USED WITH MINIMUM COMPRESSIVE STRENGTH OF 10.5 MPA (1500 Psi.)
6. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN THE FORMS AND HELD FIRMLY IN PLACE BEFORE & DURING THE PLACEMENT OF CONCRETE, BY MEANS OF WIRE AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.
7. ALL STRUCTURAL SURFACES, AGAINST WHICH EARTH IS TO BE FILLED, SHALL BE COATED WITH TWO COATS OF HOT BITUMEN.
8. BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS LIKE PIPES, STRUCTURAL STEEL AND OTHER WORKS ARE PROPERLY LOCATED AND FIRMLY SECURED IN PLACE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE ADJACENT EXISTING STRUCTURES/BUILDINGS AND SHALL PROVIDE SHORING AND BRACING DURING EXCAVATION AND CONSTRUCTION, WHEREVER AND WHENEVER REQUIRED.
10. BACKFILLING SHALL BE DONE ONLY AFTER CASTING OF TOP SLAB.
11. ASSUMED BEARING CAPACITY OF THE FOUNDATION SOIL IS 100 KPa (1TSF).
12. CLEAR COVER TO THE REINFORCEMENT (UNLESS OTHERWISE NOTED)

COVER SLAB	=	35mm
BASE SLAB	=	50mm
CONCRETE EXPOSED TO EARTH	=	50mm
CONCRETE EXPOSED TO WATER	=	50mm

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

REINFORCEMENT DETAILS OF
TYPICAL BRICK MANHOLE
(FOR D ≤ 2500mm)

Designed by: IFTIKHAR ALI MAY 2026

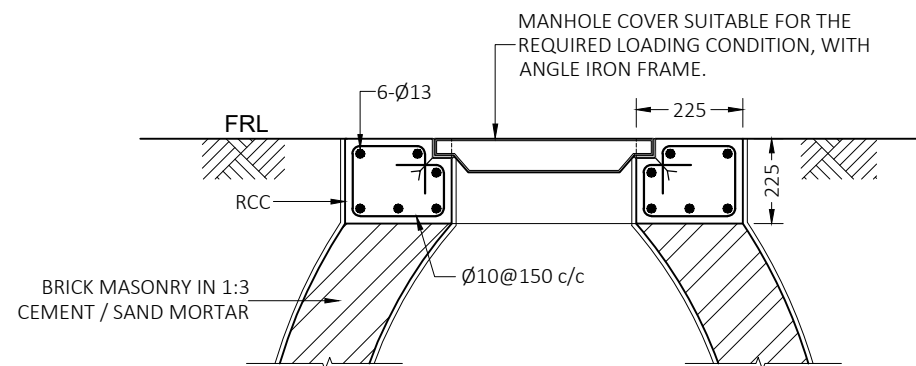
Drawn by: NAEEM BAKHSH MAY 2026

CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. KPR-BA-SEW-1032 Revision DO

Drawing Scale:

CAD filename: KPR-BA-SEW-1032 Plot scale: 1:1 0 A0



MANHOLE
TYPICAL SECTION
(FOR 2500mm < D ≤ 4000mm)

- | | | |
|---------------------------|---|------|
| COVER SLAB | = | 35mm |
| BASE SLAB | = | 50mm |
| CONCRETE EXPOSED TO EARTH | = | 50mm |
| CONCRETE EXPOSED TO WATER | = | 50mm |

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP - DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL



ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

**BARA SANITATION NETWORK
DISTRICT KHYBER**

DRAWING

REINFORCEMENT DETAILS OF
TYPICAL MANHOLE
(FOR 2500mm < D ≤ 4000mm)

Designed by: IFTIKHAR ALI MAY 2026

Designed by: W. FIKRIAN ALI	MAY 2020
Drawn by: NAFEM BAKHSH	MAY 2026

CH & AP by: **RABEEA REHMAN** **MAY 2026**

CH & A: By: RADELLA, REHMAN MAY 2020

DRAWING No. Revision

DRAWING No.	Revision
KPR-BA-SEW-1033	D0

Drawing Scale:

CAD filename: KPR-BA-SEW-1033 Plot scale:1:1 ● A0



PIPE DIAMETER	FIRST PIPE (LENGTH PROJECTING)	ROCKER PIPE LENGTH
LESS THAN 300	150	600
300 TO 600 INCLUSIVE	300	2 x DIAMETER
LARGER THAN 600	450	1200

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

CLIENT:



PROJECT:
KPRIISP - DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

BACKDROP – TYPICAL DETAILS

Designed by: IFTIKHAR ALI MAY 2026

Drawn by: **NAFEM BAKHSH** **MAY 2026**

CH & AP by: **RABEFA REHMAN** MAY 2026

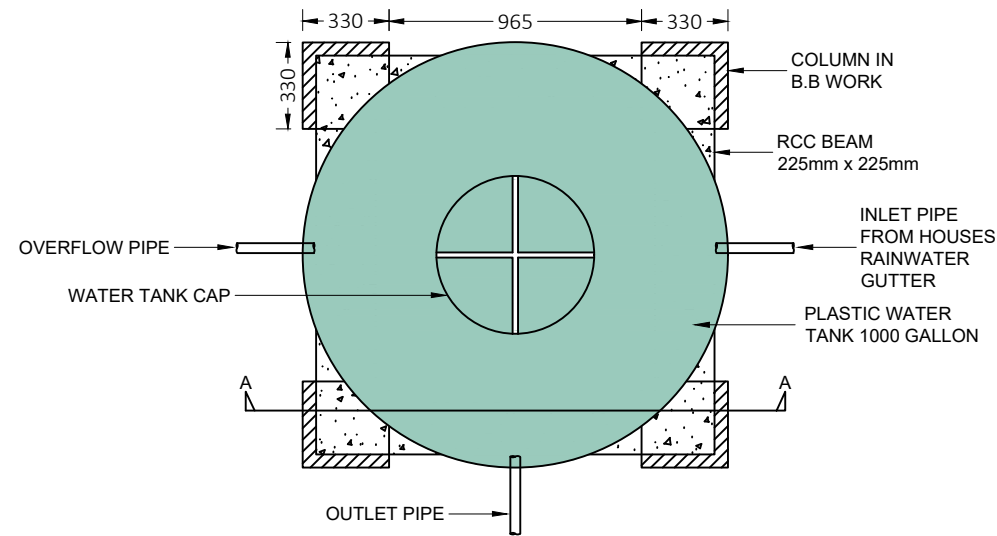
DRAWING No.	Revised
KPR-BA-SEW-1034	DO

Drawing Scale: _____

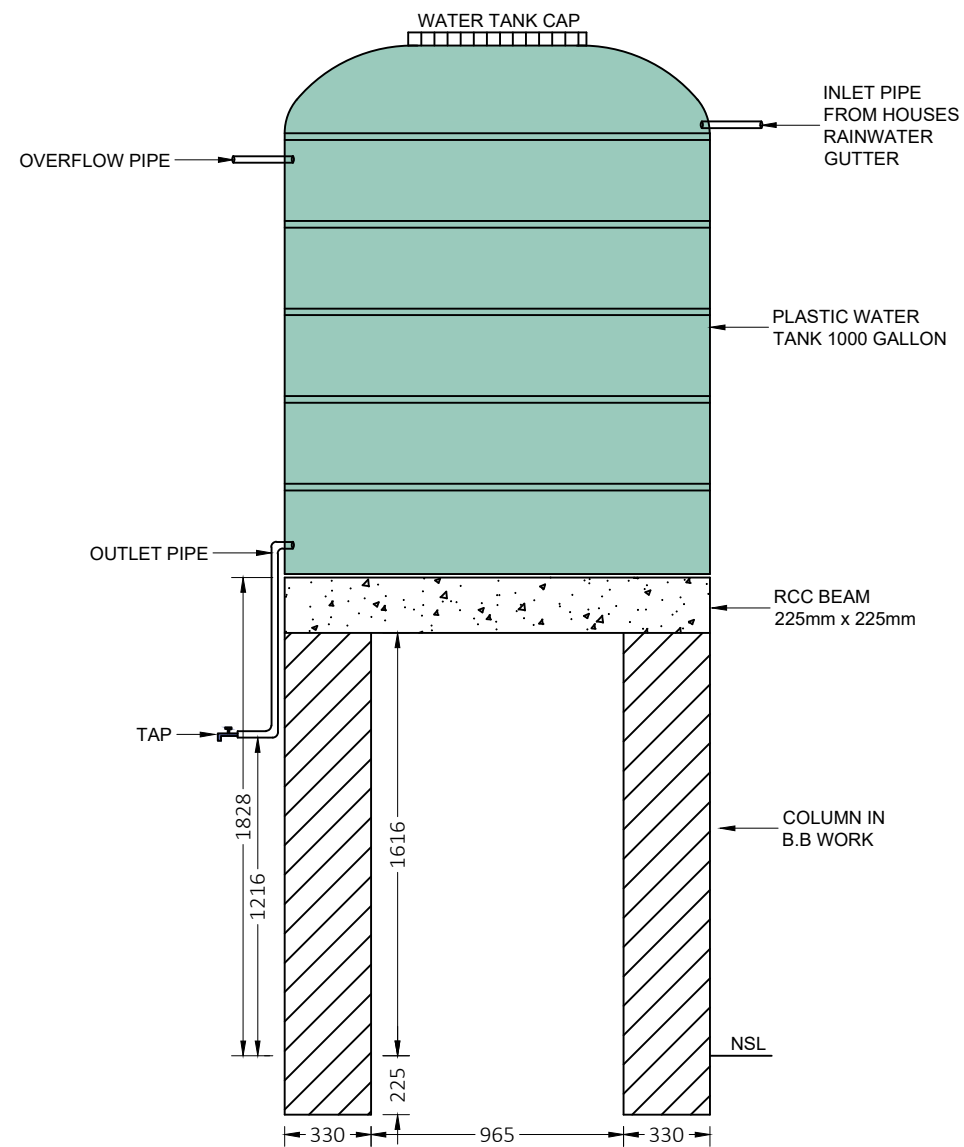
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NBS DRAWINGS

CAD Ref: D:\KPRIISP\Bara Sanitation\E-NBS\CAD\ Rain Water tank 1000 Gallon.dwg Last saved: Mon, 4 May 2026 12:45 pm PLOTTED BY : sohail Plot Layout : 1



PLAN



SECTION A-A

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

RAINWATER HARVESTING
1000 GALLON WATER TANK

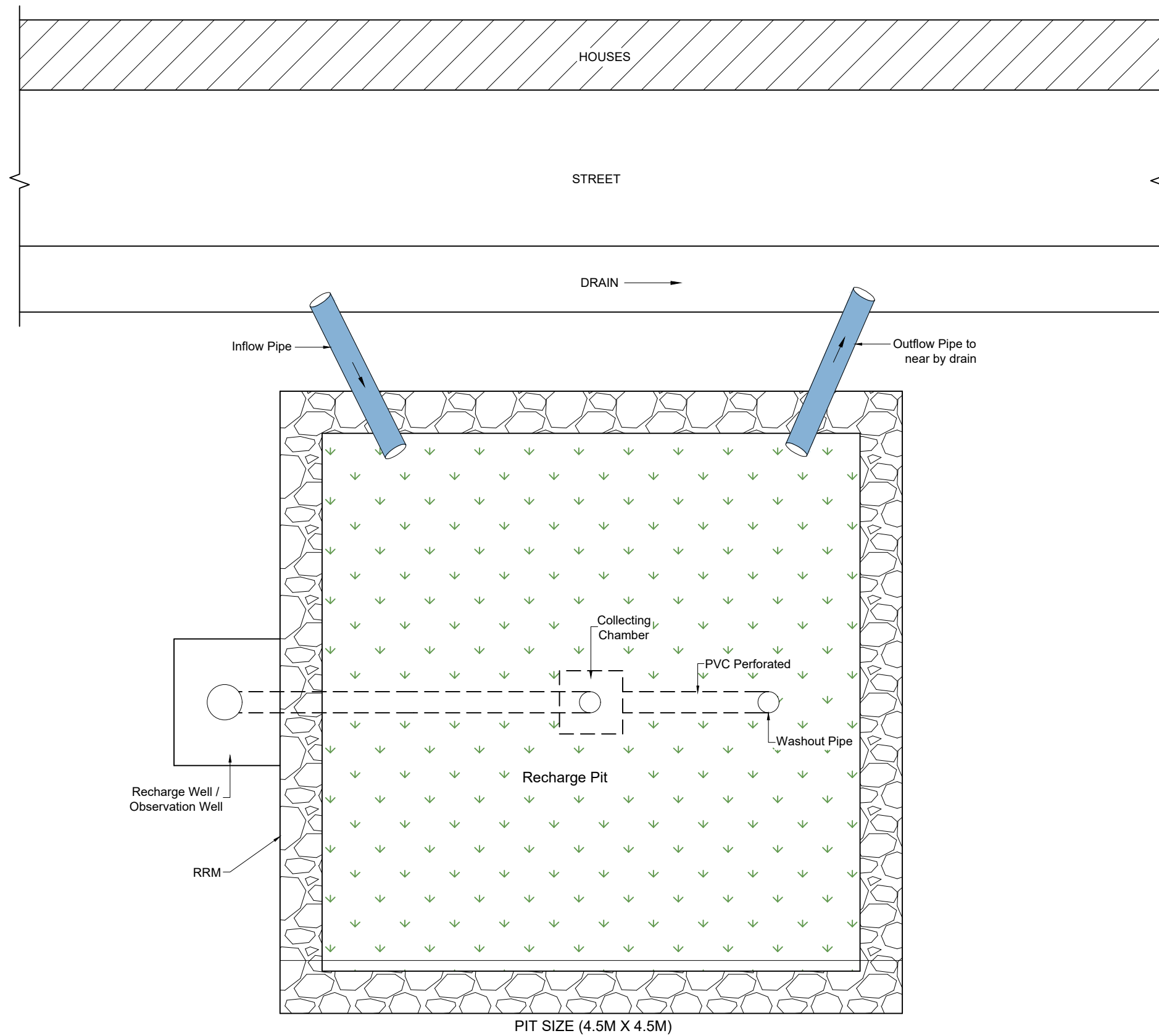
Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

DRAWING No.	Revision
KPR-BA-SEW-1036	D0

Drawing Scale:

CAD filename: Rain Water tank 1000 GallonPlot scale:1:1 A0

CAD Ref: D:\KPRIISP\Bara Sanitation\E-NBS\CAD\ Bioretention System & Rain Garden.dwg Last saved: Mon, 4 May 2026 12:45 pm PLOTTED BY : schail Plot Layout : 1



**TYPICAL BIORETENTION SYSTEM
/ RAIN GARDEN**

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

**BARA SANITATION NETWORK
DISTRICT KHYBER**

DRAWING

TYPICAL PLAN OF
BIORETENTION SYSTEM

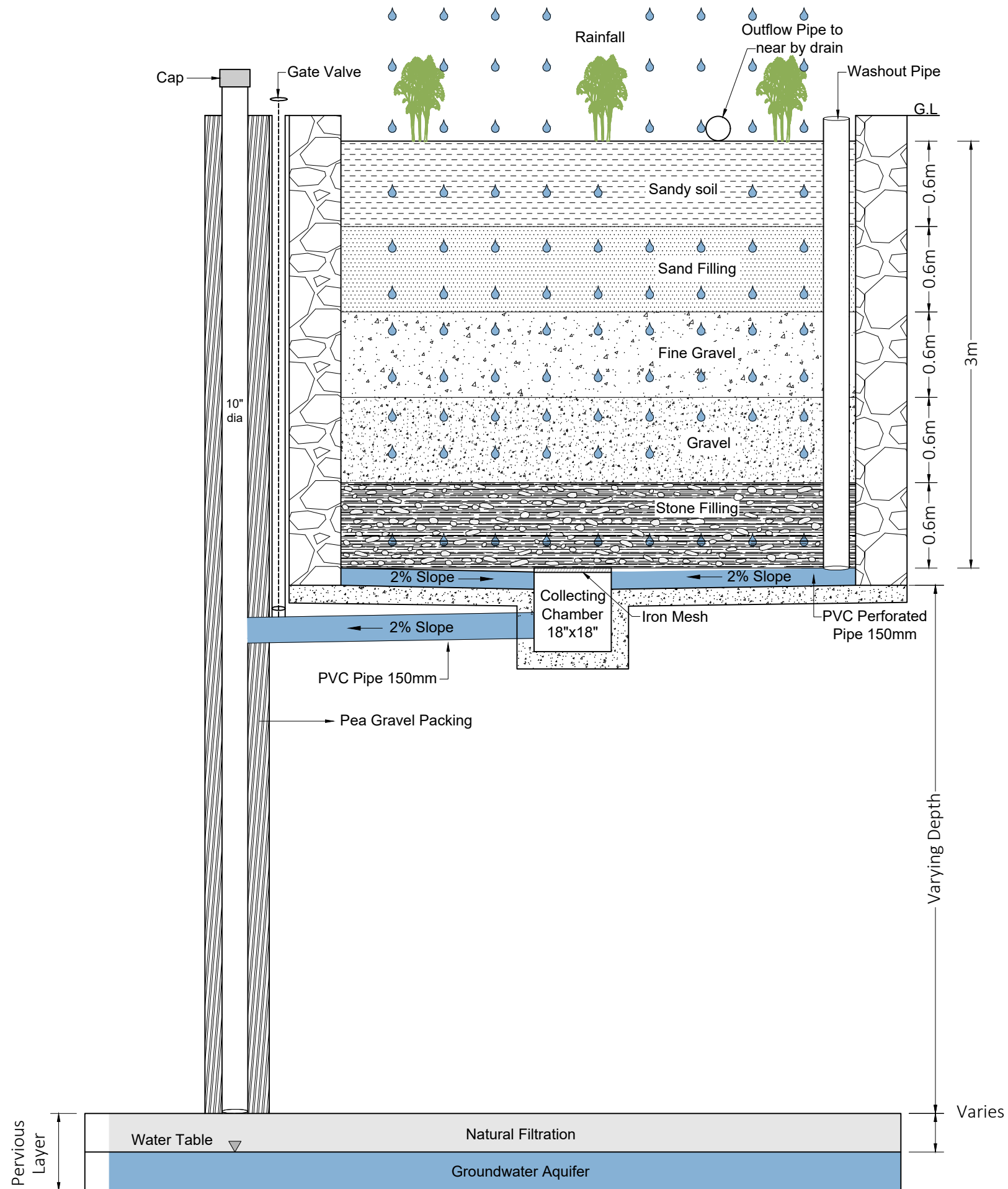
Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026

DRAWING No.	Revision
KPR-BA-SEW-1037	DO

Drawing Scale:

CAD filename: Bioretention System & Rain Garden.dwg Scale: 1:1 A0

CAD Ref: D:\KPRISP\Bara Sanitation\E-NBS\CAD\ Bioretention System & Rain Garden.dwg
Last saved: Mon, 4 May 2026 12:45 pm
PLOTED BY : schail
Plot Layout : 2



RAINWATER INFILTRATION

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP - DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

TYPICAL SECTION OF BIORETENTION
SYSTEM / RAIN GARDEN

Designed by: IFTIKHAR ALI MAY 2026

Drawn by: NAEEM BAKHSH MAY 2026

CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. KPR-BA-SEW-1038

Revision
DO

Drawing Scale:

CAD filename: Bioretention System & Rain Garden.dwg
Scale: 1:1 A0

ABR DRAWINGS

GENERAL NOTES

1.GENERAL:

- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METERS UNLESS OTHERWISE NOTED.
- DO NOT SCALE THE DRAWINGS. DIMENSIONS, GIVEN ON THE DRAWING, SHALL GOVERN.
- READ ALL DRAWINGS IN CONJUNCTION WITH GENERAL ARRANGEMENT, MECHANICAL, ELECTRICAL & ANY OTHER RELEVANT DRAWINGS.
- NOTES GIVEN IN THIS DRAWING ARE APPLICABLE TO ALL DRAWINGS UNLESS MENTIONED OTHERWISE. NOTES WRITTEN ON OTHER DRAWINGS, SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS-REFERRED.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE SPECIFICATIONS OF THE CONTRACT DOCUMENTS. IN ABSENCE OF ANY SPECIFICATIONS, ALL MATERIALS & WORKMANSHIP SHALL CONFORM TO RELEVANT ACI / BRITISH CODES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE STRUCTURES DURING CONSTRUCTION. HE SHALL ALSO VERIFY ALL DIMENSIONS AND LEVELS BEFORE EXECUTION OF WORK. ANY DISCREPANCY, ERROR OR OMISSION, IF FOUND, SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER.
- THE CONTRACTOR SHALL CO-ORDINATE WITH VARIOUS SERVICES DRAWINGS FOR SIZES & LOCATION OF ALL STRUCTURAL MEMBERS, FLOORS, WALLS, OPENINGS, FLOOR FINISHES, PIPES ETC.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF DEWATERING SYSTEM WHERE SO REQUIRED DURING CONSTRUCTION.
- ALL FABRICATION, PAINTING, ERECTION AND QUALITY CONTROL IS TO BE DONE IN ACCORDANCE WITH THE LATEST APPLICABLE ACI / BRITISH / AISC SPECIFICATIONS.
- MATERIAL BACKFILLING AROUND FOUNDATIONS SHALL BE WELL COMPACTED IN LAYERS NOT EXCEEDING 200mm IN THICKNESS FOR THE DENSITY SPECIFIED.
- ALL STRUCTURAL STEEL MEMBERS IF NOT SPECIFICALLY MENTIONED SHALL ATLEAST CONFORM TO ASTM-A36 HAVING MINIMUM YIELD STRENGTH OF (248.3 MPa) 36000 PSI.
- PROVIDE PVC WATERSTOPS IN CONSTRUCTION JOINTS AS SHOWN, REQUIRED AND AS SPECIFIED IN BOQ.
- PROVIDE WATERPROOFING UNDER THE FOUNDATIONS AND ON ALL CONCRETE SURFACES EXPOSED TO SOIL, AS SHOWN ON INVESTIGATION REPORT.
- ALL PIPES TO BE LAID UNDER THE STRUCTURE SHALL BE ENCASED WITH THE CONCRETE AS SPECIFIED

2.EXCAVATION:

- EXCAVATION SHALL BE MADE TO THE LINES OF SLOPES AND LEVELS SHOWN ON THE DRAWING OR AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR MAY PROPOSE ALTERNATIVE STABLE SLOPES ACCORDING TO THE SITE REQUIREMENTS SUBJECT TO THE APPROVAL BY THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE EXCAVATED AREA AND SHALL KEEP THE AREA IN A SOUND AND DRY CONDITION.
- ALL OVER EXCAVATED AREAS OR DOUBTFUL PATCHES SHALL BE FILLED WITH APPROVED SELECTED MATERIAL OR AS DIRECTED BY THE ENGINEER AT THE COST OF THE CONTRACTOR.
- BEFORE START OF THE WORK, THE CONTRACTOR SHALL SUBMIT HIS METHOD STATEMENT OF CONSTRUCTION FOR APPROVAL OF THE ENGINEER.

3.FOUNDATION:

- ALL FOUNDATION MUST BE PLACED ON COMPETENT BEARING STRATA. IF ACCEPTABLE BEARING STRATA IS NOT FOUND AT INDICATED DEPTH OF FOUNDATION, THE ENGINEER SHALL BE NOTIFIED IN WRITING FOR HIS INSTRUCTION.
- ANY FOUNDATION SHOULD NOT BE PLACED ON FILL MATERIAL. ANY LOOSE, WET, SOFT SOIL PATCHES SHOULD BE REPLACED WITH WELL COMPACTED GRANULAR SELECT FILL MATERIAL COMPACTED TO 95% MODIFIED AASHTO DENSITY.
- A BEARING CAPACITY OF 85 KPA (0.8 TSF) HAS BEEN CONSIDERED FOR THE DESIGN OF FOUNDATIONS. THE CONTRACTOR SHALL CONDUCT DETAILED GEOTECHNICAL INVESTIGATIONS AT EACH STRUCTURE LOCATION, IN CONSULTATION WITH THE GEOTECHNICAL EXPERT. IF THE ACTUAL BEARING CAPACITY OR SOIL CONDITIONS ARE FOUND TO BE INADEQUATE, THE ENGINEER SHALL BE INFORMED FOR REDESIGN OF FOUNDATION BASED ON THE GEOTECHNICAL REPORT.
- GRANULAR SELECTED FILL MATERIAL (IF SPECIFIED IN GEOTECHNICAL INVESTIGATION REPORT) SHOULD BE PLACED IN LAYERS (NOT EXCEEDING THAN 200mm) COMPACTED UP TO 95% MDD (AASHTO T-180). THE THICKNESS SHOULD BE ACCORDING TO THE DRAWING/ GEOTECH. REPORT BUT NOT LESS THAN 500mm FROM THE SOFIT (LOWEST POINT) OF FOUNDATION.

4.REINFORCED CONCRETE:

- ALL REINFORCED CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE CYLINDER STRENGTH OF 27.5 MPa(4000 Psi.) AT 28 DAYS UNLESS OTHERWISE NOTED.
- BLINDING CONCRETE/LEAN CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE CYLINDER STRENGTH OF 10.5 MPa (1500 Psi.) AT 28 DAYS.
- ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60, HAVING A MINIMUM YIELD STRENGTH OF 414 MPa(60,000 Psi.)
- ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN THE FORMS AND HELD FIRMLY IN PLACE BEFORE & DURING THE PLACEMENT OF CONCRETE, BY MEANS OF WIRE AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.
- ALL STRUCTURAL SURFACES, AGAINST WHICH EARTH IS TO BE FILLED, SHALL BE COATED WITH TWO COATS OF HOT BITUMEN OF 10/20 GRADE AT THE RATE OF 2.0 Kg/m²/coat.
- BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, STRUCTURAL STEEL AND OTHER WORKS ARE PROPERLY LOCATED AND FIRMLY SECURED IN PLACE.
- JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL. THEY SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF THE SPANS OF SLAB BEAMS & JOISTS. IN WALLS & COLUMNS SHALL BE AT THE UNDER- SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.

- SHORE & BRACE ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION, TO THE EXTENT NECESSARY TO ENSURE COMPLETE SAFETY, STRENGTH & SERVICEABILITY OF ALL STRUCTURAL ELEMENTS UNDER ALL CONDITIONS OF LOADS WHICH MAY OCCUR DURING CONSTRUCTION. SUCH SHORING & BRACING IS THE CONTRACTOR'S SOLE RESPONSIBILITY AND IS NOT SHOWN ON STRUCTURAL DRAWINGS OR SPECIFIED IN THE PROJECT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE ADJACENT EXISTING STRUCTURES/BUILDINGS AND SHALL PROVIDE SHORING AND BRACING DURING EXCAVATION AND CONSTRUCTION, WHEREVER AND WHENEVER REQUIRED

5.CLEAR COVERS:

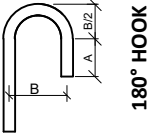
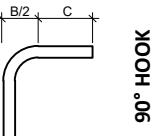
- CLEAR COVER TO THE REINFORCEMENT (UNLESS OTHERWISE NOTED)		
SLABS	=	20mm
BEAMS AND COLUMNS	=	40mm
FOOTINGS	=	75mm
CONCRETE EXPOSED TO EARTH	=	75mm
CONCRETE EXPOSED TO WATER	=	50mm

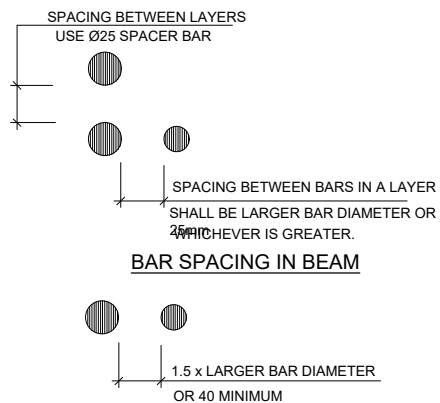
DEVELOPMENT LENGTH LAP SPLICE LENGTH TABLES:

BAR DIAMETER (MM)	MINIMUM DEVELOPMENT LENGTH(MM)		MINIMUM SPLICE LENGTH LENGTH(MM)		HOOK DEVELOPMENT LENGTH(MM)
	TOP BARS*	OTHER BARS	TOP BARS*	OTHER BARS	
10	470	361	611	470	152
13	627	482	814	627	175
16	783	602	1018	783	225
20	940	723	1222	940	250
25	1566	1205	2036	1566	350

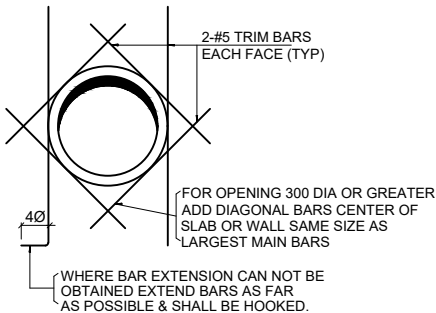
*HORIZONTAL OR NEARLY HORIZONTAL BARS SO PLACED THAT MORE THAN 300MM FRESH CONCRETE IS CAST BELOW THEM.

STANDARD HOOKS TABLE:

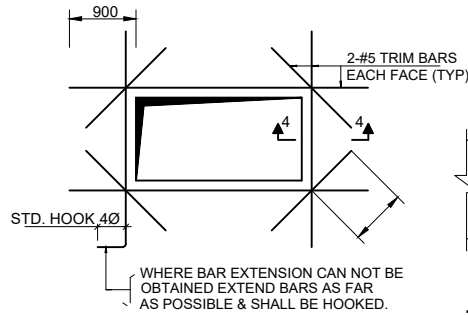
BAR DIA (MM)	A	B	C		180° HOOK
10	65	57	115		
13	65	75	150		90° HOOK
16	65	95	190		
19	75	115	230		
25	100	150	300		



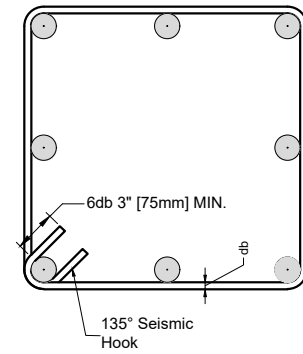
VERTICAL BAR SPACING IN COLUMNS



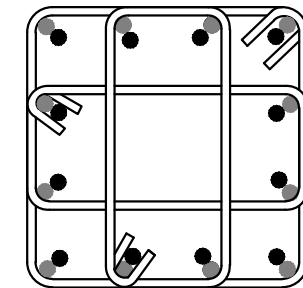
REINFORCEMENT AROUND SLEEVE IN SLAB & WALLS (TYP)



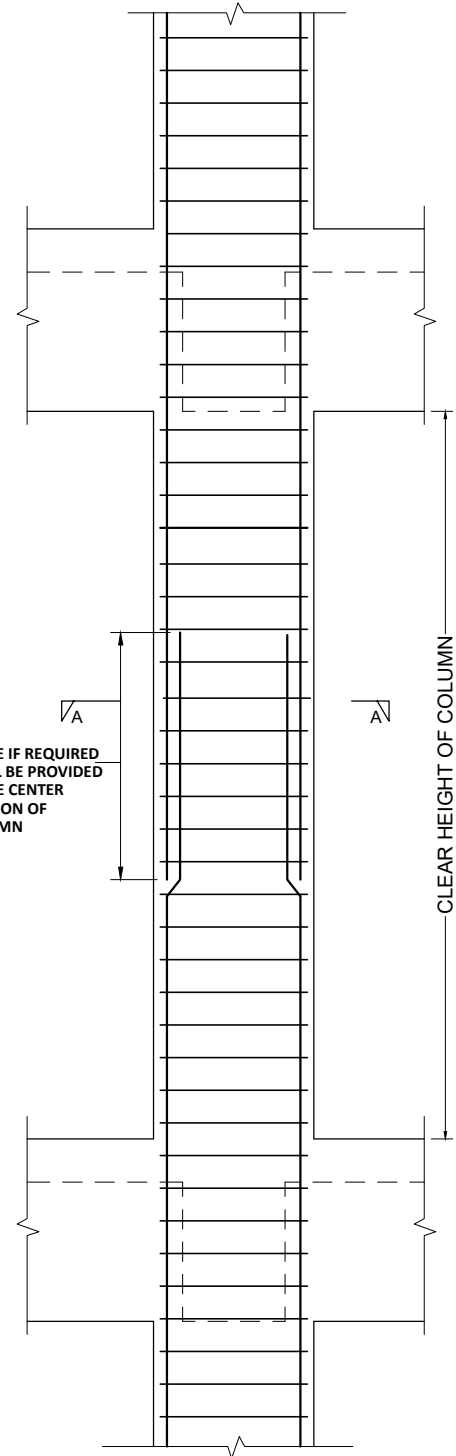
REINFORCEMENT DETAIL AT OPENING IN SLAB & WALLS (TYP)



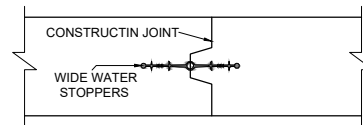
SEISMIC HOOK DETAIL



TYPICAL SPLICE ARRANGMENT AT SECTION A-A



TYPICAL COLUMN LONG SECTION



TYPICAL CONSTRUCTION JOINT DETAIL

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRIISP - DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

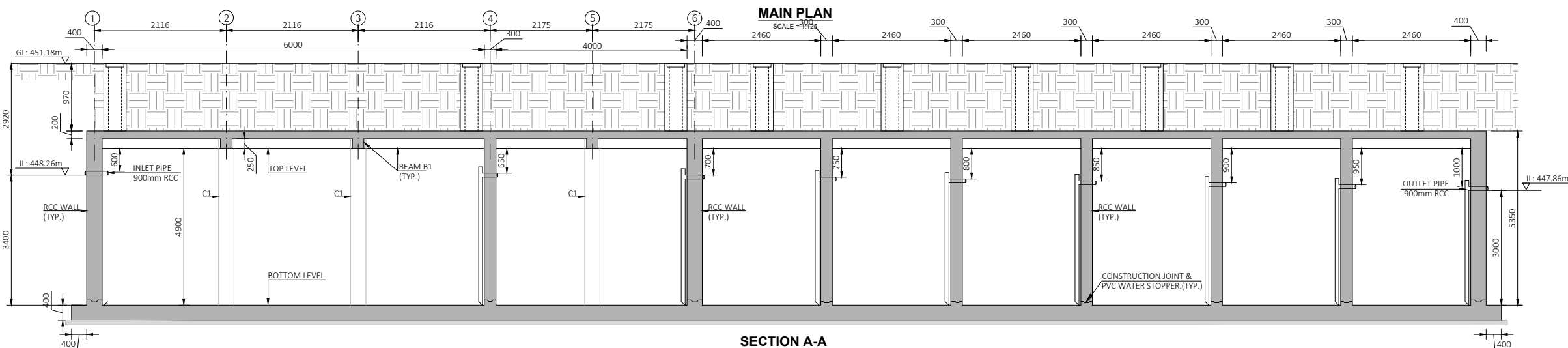
SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

GENERAL NOTES

Designed by: IFTIKHAR ALI	MAY 2026
Drawn by: NAEEM BAKHSH	MAY 2026
CH & AP by: RABEEA REHMAN	MAY 2026
DRAWING No.	Revision
KPR-BA-SEW-1041	DO
Drawing Scale:	
CAD filename: 1-ABR General Notes Plot scale:1:1	



SCALE = 1:125

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CONSULTANT:



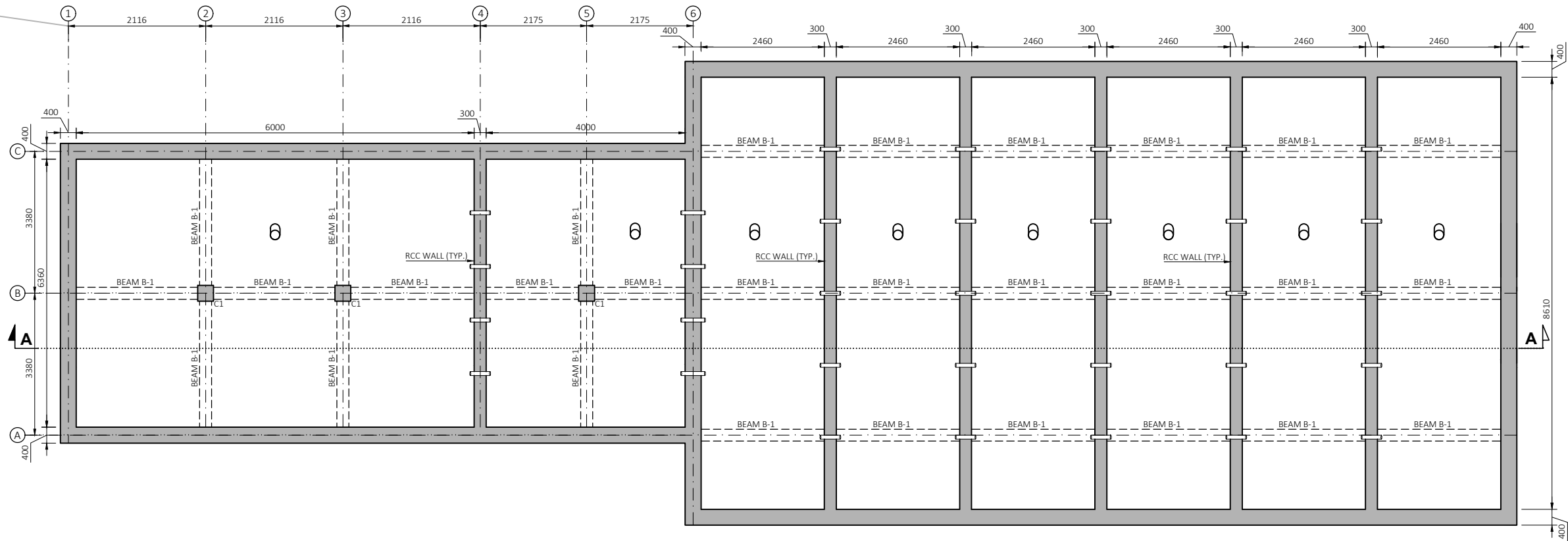
TECNO CONSULTANT
INTERNATIONAL
JV



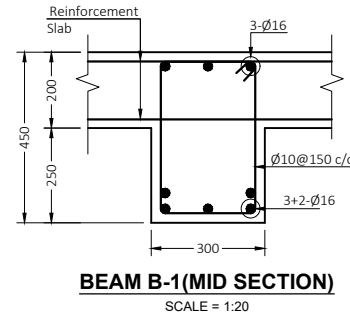
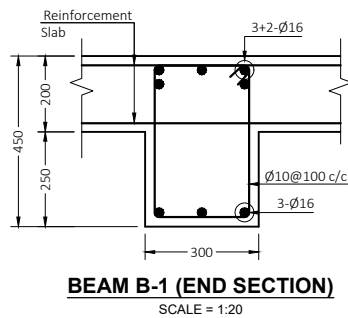
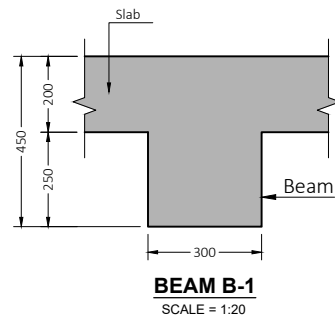
ULTIMATE ENGINEERING
CONSULTANTS

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Last saved: Mon, 4 May 2026 12:37 pm
PLOTED BY : sohail
Plot Layout : ABR-01-02



BEAM & RCC WALL LAYOUT PLAN
SCALE = 1:125



NOTES:

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:
KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING ANAEROBIC BAFFLED REACTOR
FOR OUTFALL
(SHEET 02 OF 06)

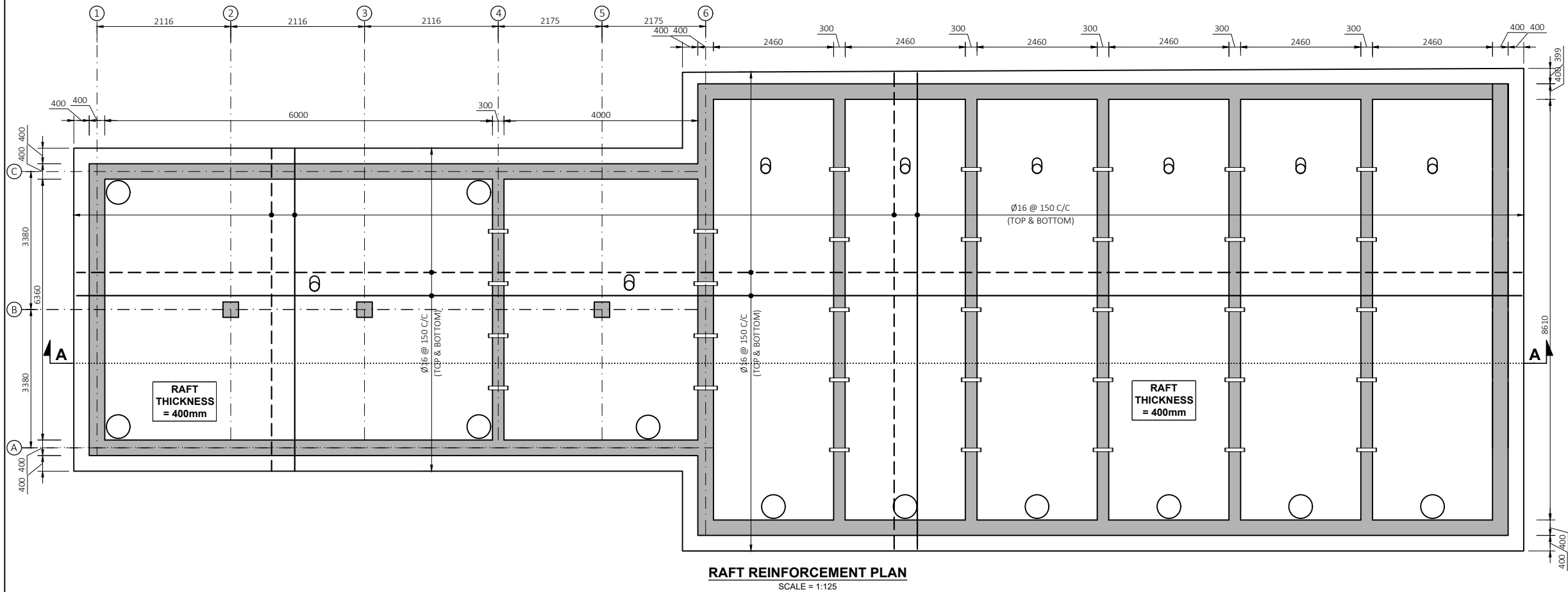
Designed by: IFTIKHAR ALI MAY 2026
Drawn by: NAEEM BAKHSH MAY 2026
CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. KPR-BA-SEW-1043 Revision
DO

Drawing Scale:

CAD filename: 2-ABR For Outfall 01 Plot scale: 1:1 0 A0

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Last saved: Mon, 4 May 2026 12:37 pm
PLOTED BY : sohail
Plot Layout : ABR-01-03



NOTES:

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRIISP – DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
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PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

**BARA SANITATION NETWORK
DISTRICT KHYBER**

DRAWING ANAEROBIC BAFFLED REACTOR
FOR OUTFALL
(SHEET 03 OF 06)

Designed by: IFTIKHAR ALI MAY 2026

Drawn by: NAEEM BAKHSH MAY 2026

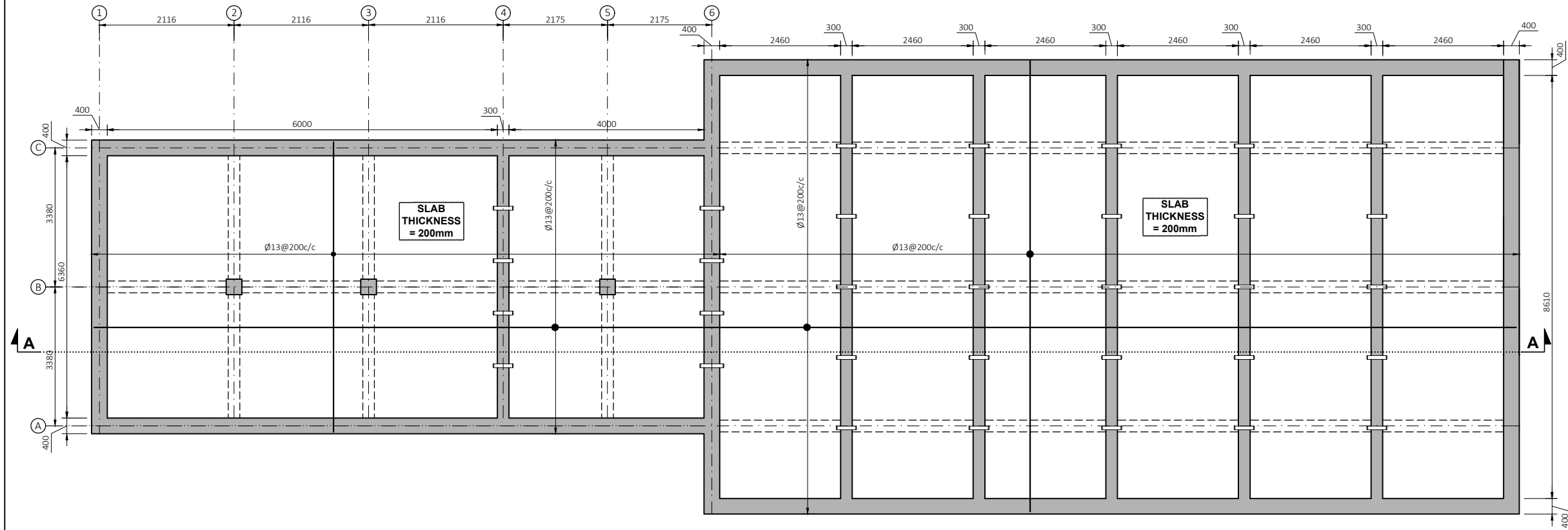
CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. KPR-BA-SEW-1044	Revision D0
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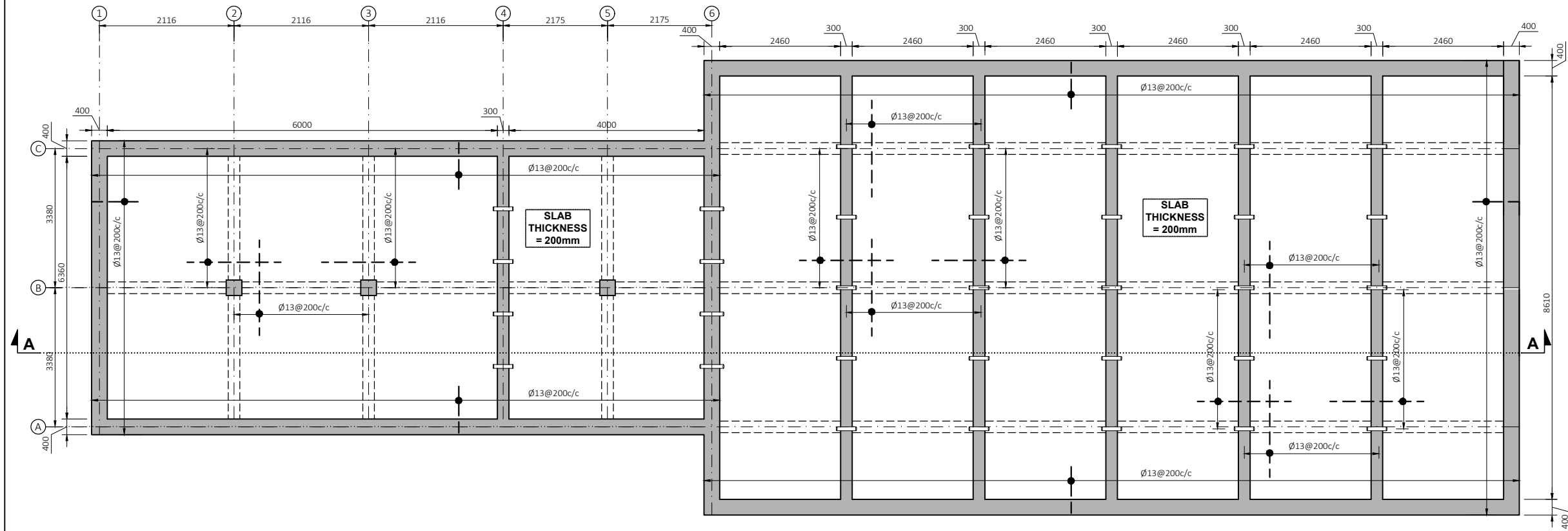
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Last saved: Mon, 4 May 2026 12:37 pm
PLOTTED BY : sohail
Plot Layout : ABR-01-04



SLAB BOTTOM REINFORCEMENT PLAN
SCALE = 1:125



SLAB TOP REINFORCEMENT PLAN
SCALE = 1:125

NOTE:-
1. SLAB TOP REINFORCEMENT SHALL BE PROVIDED ON BEAMS & RCC WALLS UPTO L/3 & L/4.
2. IN THE ABOVE SLAB REINFORCEMENT PLAN, SLAB TOP REINFORCEMENT SHOWN ONLY IN THE SELECTED PANELS JUST FOR BETTER CLARITY.

NOTES:

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

PROJECT:

KPRIISP - DESIGN REVIEW AND CONSTRUCTION
SUPERVISION FOR WATER SUPPLY, SEWERAGE,
DRAINAGE AND WASTE WATER TREATMENT
PROJECT IN NEWLY MERGED
DISTRICTS OF KHYBER PAKHTUNKHWA

CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING ANAEROBIC BAFFLED REACTOR
FOR OUTFALL
(SHEET 04 OF 06)

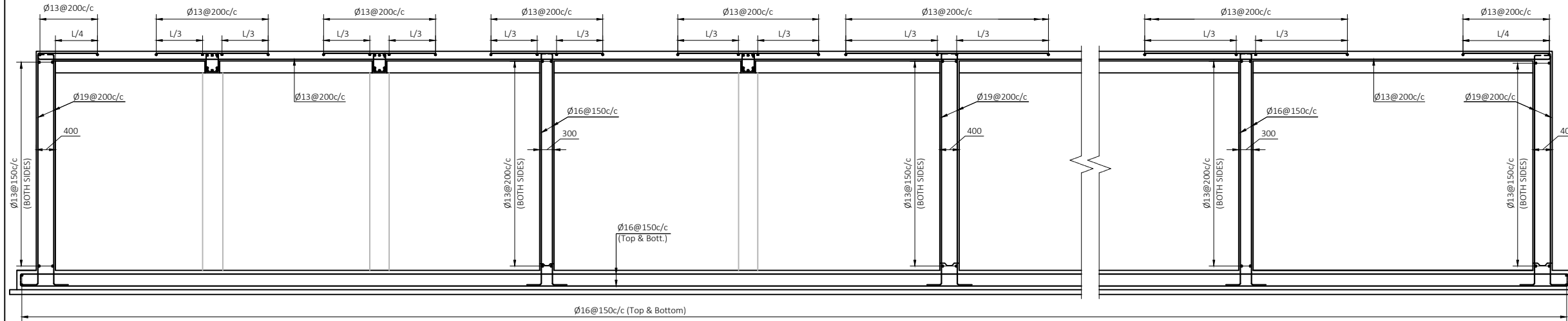
Designed by:	IFTIKHAR ALI	MAY 2026
Drawn by:	NAEEM BAKHSH	MAY 2026
CH & AP by:	RABEEA REHMAN	MAY 2026

DRAWING No.	KPR-BA-SEW-1045	Revision
		D0

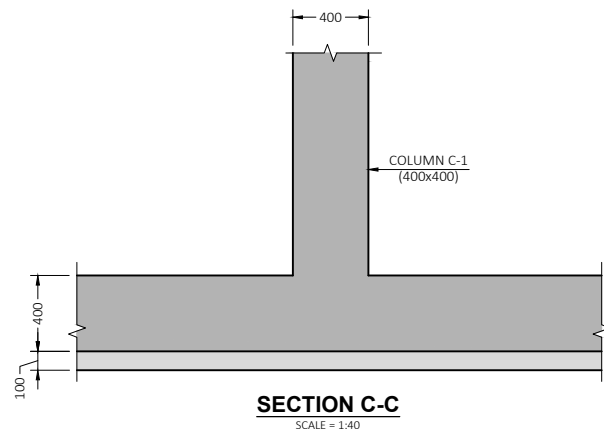
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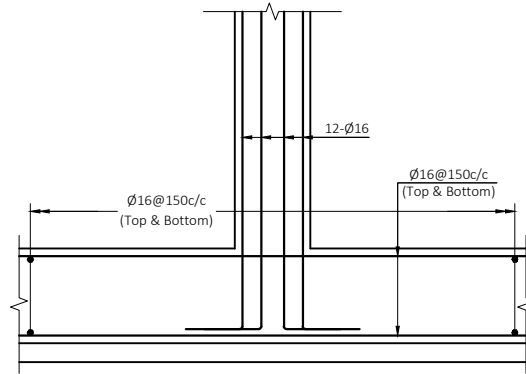
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PLOTED BY : sohail
Plot Layout : ABR-01-05



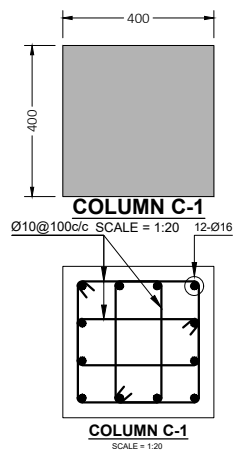
SECTION A-A REINFORCEMENT
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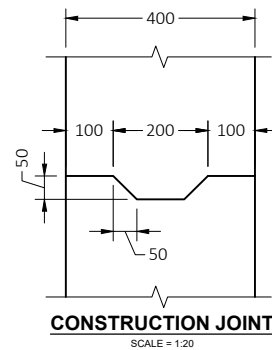
SECTION C-C
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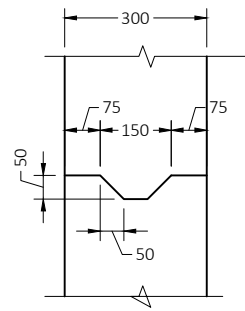
SECTION C-C REINFORCEMENT
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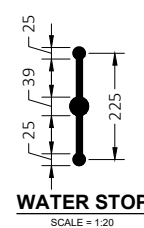
COLUMN C-1
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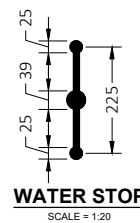
CONSTRUCTION JOINT
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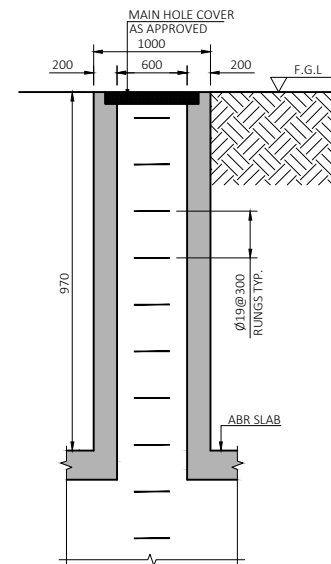
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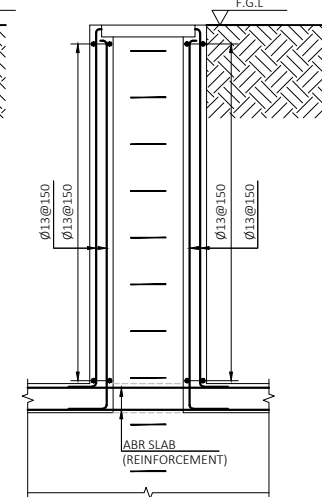
WATER STOP
SCALE = 1:20



WATER STOP
SCALE = 1:20



ACCESS MAIN HOLE (CONCRETE OUTLINE)
SCALE:1:60



ACCESS MAIN HOLE (REINFORCEMENT)
SCALE:1:60

NOTES:

1. ALL LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

AA	NB	RR	RR	MAY-26	TENDER DRAWINGS
Design	Drawn	Checked	Approved	Date	Description

CLIENT:



PUBLIC HEALTH ENGINEERING
DEPARTMENT KHYBER PAKHTUNKHWA

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SUPERVISION FOR WATER SUPPLY, SEWERAGE,
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CONSULTANT:



TECNO CONSULTANT
INTERNATIONAL
JV
ULTIMATE ENGINEERING
CONSULTANTS

SUB PROJECT:

BARA SANITATION NETWORK
DISTRICT KHYBER

DRAWING

ANAEROBIC BAFFLED REACTOR
FOR OUTFALL
(SHEET 05 OF 06)

Designed by: IFTIKHAR ALI MAY 2026

Drawn by: NAEEM BAKHSH MAY 2026

CH & AP by: RABEEA REHMAN MAY 2026

DRAWING No. KPR-BA-SEW-1046 Revision
DO

Drawing Scale:

CAD filename: 2-ABR For Outfall 01 Plot scale:1:1 1:1 1:1

