

GENERAL NOTES:

- 1. ALL DIMENSIONS ARE IN mm AND LEVELS IN mPD.
2. ALL DESIGN SHALL COMPLY WITH HONG KONG BUILDING (CONSTRUCTION) REGULATION 1990 EDITION AND STRUCTURAL DESIGN OF STEEL IS IN ACCORDANCE WITH THE CODE OF PRACTICE FOR THE STRUCTURAL USE OF STEEL 2011.
3. THIS SET OF DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOUNDATION PLAN.
4. THE CONTRACTOR SHALL CHECK ALL RELEVANT DRAWINGS AND VERIFY LEVELS AND DIMENSIONS IN ADVANCE OF THE WORK AND REPORT ANY DISCREPANCY TO THE ENGINEER IMMEDIATELY.
5. ALL EXCAVATION SHALL BE BACKFILLED TO THE PROPOSED GROUND LEVEL AFTER COMPLETION OF FOUNDATION CONSTRUCTION.
6. THE CONSTRUCTION SEQUENCE FOR EXCAVATION AND LATERAL SUPPORT, REFER TO DRG. NO. S-ELS-006 TO 007.
7. THE INSTALLATION OF SHEET PILE SHALL BE WALL CARRIED OUT TO ACCORDING TO APPROVAL DRAWINGS PRIOR TO THE COMMENCEMENT OF EXCAVATION AND LATERAL SUPPORT WORKS.

NOTES ON CONSTRUCTION MATERIAL

- 1. STRUCTURAL STEEL MEMBERS
a. ALL STRUCTURAL STEEL MEMBERS SHALL BE GRADE S355 (CLASS 1) WELDABLE STRUCTURAL STEEL AND COMPLY WITH TO BS EN 10025:2004.
b. ALL WELDING SHALL COMPLY WITH THE CODE OF PRACTICE FOR STRUCTURAL USE OF STEEL 2005, BS EN 1011-1:2009, BS EN 1011-2:2001 & BS EN 499:1995.
c. ALL CONNECTIONS SHALL BE 10mm FILLET WELDS ALL ROUNDED UNLESS OTHERWISE SPECIFIED.
d. SAMPLES OF WELDING MATERIALS USED SHALL BE TESTED & TEST RESULTS SHALL BE SUBMITTED TO RSE FOR APPROVAL. ALL WORKS, MATERIALS AND TESTING SUCH AS TESTING OF STEEL BAR SHALL COMPLY WITH GENERAL SPECIFICATION FOR CIVIL ENGINEER WORKS 1992 EDITION AND HONG KONG BUILDING (CONSTRUCTION) REGULATION 1990 EDITION UNLESS OTHERWISE STATED IN THE DRAWING.

NOTES FOR EXCAVATION AND LATERAL SUPPORT (ELS) WORKS (TEMPORARY)

- 1. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR THE ERECTION, MAINTENANCE AND REMOVAL OF ALL TEMPORARY WORKS DURING CONSTRUCTION.
2. NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT DAMAGE TO EXISTING FOUNDATIONS, DRAINS, PAVEMENTS, FEATURES, SERVICES ETC. SHOULD ANY DAMAGE OCCUR, NOTIFY THE ARCHITECT AND RELEVANT AUTHORITIES CONCERNED IMMEDIATELY AND MAKE GOOD BY THE CONTRACTOR AT NO EXTRA COST AND NO EXTENSION OF TIME.
3. ALL TEMPORARY WORKS SHALL BE WITHIN THE SITE BOUNDARY.
4. DURING SUBSTRUCTURE CONSTRUCTION, THE GROUNDWATER LEVEL SHALL BE KEPT BELOW THE FINAL FORMATION LEVEL.
5. THE CONTRACTOR SHALL INCREASE THE FREQUENCY OF MONITORING AS INSTRUCTED BY THE ENGINEER SHOULD ANY UNDUCE GROUND MOVEMENT BE OBSERVED.
6. MAX. ANGLE FOR TEMPORARY SOIL CUT SLOPE SHALL BE REFERRED TO PLANS AND SECTIONS, BUT IN NO CIRCUMSTANCE BE GREATER THAN 20° IN MD LAYER.

NOTES ON STRUCTURAL STEELWORK

- 1. ALL STRUCTURAL STEELWORK SHALL BE COMPLIED WITH CODE OF PRACTICE FOR THE STRUCTURAL USE OF STEEL 2011.
2. ALL LEVEL SHOWN ARE IN METERS AND OTHER DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
3. ALL STRUCTURAL STEEL SECTION SHALL BE WELDABLE STRUCTURAL STEEL TO BS EN 10025:2004 UNLESS OTHERWISE NOTED.
4. DESIGN SURCHARGE:
a) BACK SERVICE LANE (2.0m WIDE) : 10kPa
b) RECLAMATION STREET (9.0m WIDE) : 20kPa
c) FOOTPATH ALONG RECLAMATION STREET (2.0m WIDE) : 5kPa
d) BEARING PRESSURE AT HOARDING FOOTPATH (0.45m WIDE) : 20kPa
e) D.L. & L.L. OF EXISTING BUILDING VIA PILING SYSTEM : (REFER TO RECORD PLAN) DATUM FOR SURCHARGE AT 2/3 OF THE LENGTH OF PILE MEASURED FROM GROUND LEVEL
f) LIVE LOAD FOR EACH LAYER OF WALING/ STRUT : 2kPa

NOTES ON WELDING

- 1. THE CONTRACTOR SHALL SUBMIT TO AP/ RSE HIS PROPOSED PROCEDURE FOR WELDING. WELDING PROCEDURE WILL BE TESTED IN ACCORDANCE WITH BS EN ISO 15614-1:2004+A1:2008.
2. THE CONTRACTOR SHALL ONLY USE QUALIFIED WELDERS WHO HAVE DEMONSTRATED THEIR COMPETENCE IN WELDING TO THE AGREED PROCEDURE. EACH WELDER WILL BE TESTED AS DESCRIBED IN BS EN 287-1:2004.
3. ALL WELDS SHALL MEET THE ACCEPTANCE CRITERIA LAID DOWN IN BS EN 1011-1:2009 & BS EN 1011-2:2001.
4. UPON REQUESTED BY THE ARCHITECT WELDS WILL BE TESTED BY RADIOGRAPHIC EXAMINATION TO BS EN 1435:1997 OR ULTRASONIC EXAMINATION TO BS EN 1714:1998 UNLESS OTHERWISE APPROVED. ALL SPLICES TO BE CONTINUOUS FULL/STRENGTH FULL PENETRATION BUTT WELDS.
5. UNLESS OTHERWISE STATED, ALL FILLET WELDS SHALL BE 8mm ALL ROUND.
6. ALL IMPROPER MATERIALS (e.g. SLAG, DIRT, IRREGULARITIES, OIL, etc.) TO BE REMOVED FROM JOINTS PRIOR TO WELDING.
7. ALL WELDING SHALL COMPLY WITH BS EN 1011, P. T. 1:2009, P.T. 2:2001.
8. SAMPLES OF ALL MATERIALS USED SHALL BE TESTED & TEST RESULTS SHALL BE SUBMITTED TO RSE FOR APPROVAL. ALL WORKS, MATERIALS AND TESTING SUCH AS TESTING OF STEEL BAR SHALL COMPLY WITH GENERAL SPECIFICATION FOR CIVIL ENGINEER WORKS 1992 EDITION AND HONG KONG BUILDING (CONSTRUCTION) REGULATION UNLESS OTHERWISE STATED IN THE DRAWING.

NOTES ON SITE SUPERVISION

THE TCP TS SITE SUPERVISION PERSONNEL UNDER THE RGE'S STREAM SHALL SUBMIT REGULAR REPORTS OF HER/HIS/ THEIR FINDINGS AND RECOMMENDATIONS TO THE RGE. THE RGE SHALL FORMALLY SUBMIT THESE REPORTS TO THE BD AND PROVIDE A COPY TO THE GEO AT MONTHLY INTERVALS OR MORE FREQUENTLY AS NECESSARY. TYPICAL CONTENTS OF THE REGULAR REPORTS PREPARED BY THE TCP TS SITE SUPERVISION PERSONNEL INCLUDE THE FOLLOWING:

- (1) PROGRESS OF THE WORKS
(2) RESULTS OF MONITORING DURING CONSTRUCTION
(3) SITE OBSERVATIONS
(4) INSPECTION RECORDS
(5) REVIEW

STANDARD FOR FILLING WORK

- 1. FILL MATERIAL SHALL BE GRADED, CONTAINING NO PARTICLES COARSER THAN 200mm AND THE PERCENTAGE BY MASS PASSING 75mm BS TEST SIEVE SHALL BE 75% TO 100%.
2. THE IN SITU FIELD DRY DENSITIES OF COMPACTED MATERIALS FORMING THE EARTH FILL SLOPE SHALL BE NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY DESCRIBED IN ITEM (2) BELOW.
3. THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENTS SHALL BE DETERMINED IN ACCORDANCE WITH THE STANDARD GIVEN IN GEO SPEC 3 CLAUSE 10.1 & 10.2. EACH SOIL TYPE SHALL BE TESTED WHEN FIRST USED THEREAFTER AT THE SAME TIME AS EVERY SET OF FIELD DENSITY TESTS ARE OBTAINED. RECORDS SHALL BE KEPT. IDENTIFYING ON DRAWINGS THE SOIL TYPE, PLAN LOCATION AND ELEVATION REFERENCE TO PRINCIPAL DATUM OF EACH TEST TOGETHER WITH THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENTS. GRAPHS OF DRY DENSITY VS. MOISTURE CONTENTS, LABORATORY TEST RECORD SHEETS AND A COMPLETE SOIL DESCRIPTION ARE TO BE KEPT IN A COMPANION FOLDER.
4. THE IN SITU FIELD DENSITY AND MOISTURE CONTENTS SHALL BE DETERMINED IN ACCORDANCE WITH THE STANDARD GIVEN IN GEO SPEC 3 CLAUSE 11.1 & PNPAP 55 TO DETERMINE THE RELATIVE COMPACTION ACHIEVED. THE NUMBER OF DETERMINATIONS FOR EACH BATCH OF FILL MATERIAL SHALL BE AS STATED IN TABLE 1 BELOW. RECORDS SHALL BE KEPT. IDENTIFYING ON DRAWINGS THE SOIL TYPE, PLAN LOCATION AND ELEVATION REFERENCE TO PRINCIPAL DATUM OF EACH TEST TOGETHER WITH DRY DENSITY OF SOIL TESTED, MOISTURE CONTENTS AND RELATIVE COMPACTION ACHIEVED (%). THE FIELD SHEETS, CALCULATION SHEETS AND A COMPLETE SOIL DESCRIPTION ARE TO BE KEPT IN A COMPANION FOLDER.
5. ALL TESTS SHALL BE CARRIED OUT BY OR UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER, OR BY AN INDEPENDENT TESTING AGENCY.

NOTES ON PROTECTION OF EARTHWORKS AGAINST HEAVY RAINFALL

- 1. SURFACE WATER FLOWING INTO AND OUT OF THE SITE SHALL BE INTERCEPTED AND CONDUCTED FROM THE SITE TO AN INDICATED SAFE DISCHARGE POINT. AT EACH INTERSECTION AND ABRUPT CHANGE IN DIRECTION OF SURFACE DRAINAGE, CHANNELS AND ACCESSIBLE CATCH PIT SHALL BE PROVIDED. ALL DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS.
2. WHERE PARTIALLY COMPLETED DRAINAGE WORKS DISCHARGE WORKS DISCHARGE WITHIN THE SITE, A TEMPORARY CONDUIT SHALL BE PROVIDED TO THE DISCHARGE POINT.
3. DURING EXCAVATION, A METHOD OF WORKING SHALL BE ADOPTED IN WHICH THE MINIMUM AMOUNT OF BARE SOIL IS EXPOSED AT ANY TIME. EXCAVATION TO FORM THE FINAL FACE SHALL BE FOLLOWED UP IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS AND THE FACE PANEL SIZE SHALL BE SMALL ENOUGH TO PERMIT THIS.
4. WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE, THEY SHALL BE PROTECTED WITH HEAVY DUTY SHEETING ADEQUATELY SECURED AT THE EDGES, SEALED AT THE CREST, AND LAPPED AT JOINTS. WHERE SLOPE FACES ARE TO BE TEMPORARILY EXPOSED FOR MORE THAN TWO WEEKS, TEMPORARY DRAINS SHALL BE INSTALLED IN ADDITION TO SURFACING.
5. TRENCHES OR ADJACENT TO SLOPES SHALL BE EXCAVATED WITH EXTREME CARE IN SHORT SECTIONS AT A TIME. PRECAUTIONS SHALL ALWAYS BE TAKEN TO PREVENT WATER ENTERING AND CONNECTING IN THE TRENCHES.

NOTES ON SHEET PILING - FOR REFERENCE ONLY

- 1. STEEL SHEET PILES TO COMPLY WITH BS EN 1993-5:2007 GRADE S355. UPON COMPLETION OF INSTALLING SHEET PILE WALLS, A RECORD PLAN FOR SHEET PILES SHALL BE SUBMITTED TO THE BUILDING AUTHORITY VIA THE R.S.E. FOR CONSENT APPLICATION.
2. IN CASE ROCK OR OBSTRUCTION DUE TO BOULDER OR CORESTONE IS ENCOUNTERED, PREBORING SHOULD BE CARRIED OUT.
3. TOLERANCE - THE MAXIMUM PERMISSIBLE DEVIATION FROM THE VERTICAL AT ANY LEVEL OF A FINISHED PILE IS 1 IN 75.
4. THE SHEET PILE WALLS SHALL BE INSTALLED BY PRESS-IN, NO VIBRO DRAWING IS ALLOWED DURING INSTALLATION.

NOTES ON EXISTING SERVICES, UTILITIES AND STRUCTURES

- 1. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL CONSULT THE VARIOUS SERVICES AND UTILITY AUTHORITIES FOR THE EXTENT OF WORKS TO BE CARRIED OUT.
2. THE CONTRACTOR SHALL EXERCISE DUE CARE DURING THE WORKS ON SITE TO AVOID CAUSING DAMAGE TO ADJACENT STRUCTURES PAVEMENT, UTILITIES/SERVICES, PRIVATE AND GOVERNMENT PROPERTIES.
3. SHOULD ANY DAMAGE OCCUR TO THE ADJACENT STRUCTURES, PAVEMENT, UTILITIES/SERVICES, PRIVATE AND GOVERNMENT PROPERTIES DUE TO THE CONTRACTOR'S WORKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COST INCURRED FROM THE DAMAGE. THE CONTRACTOR SHALL REPAIR, REINSTATE AND MAKE GOOD ANY DAMAGE DUE TO THE CONTRACTOR'S WORKS TO THEIR ORIGINAL CONDITIONS OR TO THE SATISFACTION OF THE CM, UNLESS OTHERWISE SPECIFIED.

PRECAUTIONARY MEASURES TO PREVENT THE OCCURRENCE OF OVER BREAK DURING PREBORING

- 1. A PROCEDURE SHALL BE CARRIED OUT TO MONITOR THE CONDITION OF OVER BREAK. IF THE DRILL BIT IS FOUND NOT TO PROPAGATE AFTER A CONSIDERABLE AMOUNT OF DRILLING, THE OPERATOR OF THE DRILLING RIG SHALL STOP THE DRILLING PROCESS AND INFORM THE ENGINEER IMMEDIATELY. THE RGE/RSE SHALL REVIEW THE GEOLOGY OF THE SPECIFIC LOCATION. PROPOSAL TO LIMIT ANY OVER BREAK OF SOIL SHALL BE SUBMITTED TO AND AGREED BY THE RSE/RGE PRIOR TO ANY FURTHER DRILLING WORKS MAY COMMENCE.
2. SHOULD ANY UNDUCE OVER BREAK OF SOIL OBSERVED DURING THE DRILLING OPERATIONS, THE DRILLING AT THAT LOCATION SHOULD BE STOPPED AND THE RSE SHALL BE INFORM IMMEDIATELY. THE MONITORING DATA AND METHOD OF PREBORING SHALL BE REVIEWED. PROPOSAL TO LIMIT ANY FURTHER OVER BREAK OF SOIL SHALL BE SUBMITTED AND AGREED WITH RSE PRIOR TO ANY FURTHER DRILLING WORKS MAY COMMENCE.

PRECAUTIONARY MEASURES FOR PREBORING METHOD

- 1. (a) THE AMOUNT OF AIR SUPPLY TO LIMIT THE PRESSURE OF DRILLINGS SHOULD BE MONITORED.
(b) THE ADVANCEMENT RATE OF DRILL BIT SHOULD BE MONITORED DURING THE BORING.
2. THE OVERBREAK SHOULD NOT BE ALLOWED.
3. THE DRILL BIT SHOULD BE ADVANCED SIMULTANOUSLY WITH THE STEEL CASING.

DEPROPPING SEQUENCE OF STRUTS

ALL STRUT SHALL NOT BE REMOVED UNTIL CONSTRUCTION UP TO THE GROUND FLOOR OF THE SUPERSTRUCTURE HAS BEEN COMPLETED AND THE REQUIRED 28-DAY CONCRETE STRENGTH HAS BEEN ACHIEVED.
STAGE 1: CAST PILE CAPS, STRAP/ GROUND BEAM (UNDER SEPARATE SUBMISSION)
STAGE 2: CAST BASEMENT WALL, COLUMN, WALL, BEAM & SLAB OF B1F & G/F (UNDER SEPARATE SUBMISSION)
STAGE 3: REMOVE ALL STRUTS WHEN G/F SLAB AND BASEMENT WALL ACHIEVE 28 DAYS OF STRENGTH

NOTES ON PRE-BORING FOR INSTALLATION OF SHEET PILES

- 1. THE PRE-BORED HOLES SHALL BE SUNK ALONG THE ALIGNMENT OF THE SHEET PILE WALL USING SYMMETRIX DRILLING METHOD. THE PRE-BORED HOLES SHALL BE SUPPORTED BY TEMPORARY STEEL CASING ALONG THE FULL DEPTH OF THE EXCAVATION.
2. THE PRE-BORED HOLES SHALL BE DRILLED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
a) DEVIATION FROM THE CORRECT LINE FOR THE LOCATION NOT GREATER THAN 20mm
b) DEVIATION FROM VERTICALITY OF INDIVIDUAL PRE-BORED HOLES IN ANY DIRECTION SHALL BE LESS THAN 1:100.
c) DRILL 250mm MINIMUM DIAMETER HOLES FROM EXISTING GROUND LEVEL TO THE REQUIRED LEVEL BY SYMMETRIX DRILLING METHOD.
3. AFTER DRILLING THROUGH TO THE REQUIRED DEPTH OF OBSTRUCTIONS THE INTERIOR OF EACH CASING SHALL BE FILLED WITH APPROVED GRANULAR BACKFILL MATERIAL SHALL BE TOPPED UP IMMEDIATELY.
4. UPON COMPLETION SHEET PILE WALL SHALL BE INSTALLED TO THE REQUIRED TOE LEVEL BY THE METHOD APPROVED BY THE RSE. THROUGH A GUIDE FRAME AT GROUND LEVEL TO ENSURE PROPER PITCHING, VERTICALITY AND ALIGNMENT OF SHEET PILE WALL.
5. NO WITHSTANDING THE ABOVE-MENTIONED MINIMUM PRE-BORING REQUIREMENTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ANY ADDITIONAL PRE-BORING OR ALTERNATIVE MEASURES TO ENSURE THAT ALL SHEET PILE WALLS ARE TO BE PRESSE-D IN FREE OF OBSTRUCTIONS TO ACHIEVE THE REQUIRED TOE LEVELS SPECIFIED.
6. THE CONTRACTOR SHALL SUBMIT A DETAILED METHOD STATEMENT TOGETHER WITH THE PLANT AND EQUIPMENT FOR PRE-BORING TO AP, RSE & RGE FOR APPROVAL BEFORE COMMENCEMENT OF WORKS. THE PROPOSED METHOD AND SEQUENCE OF PRE-BORING SHALL BE ARRANGED SO AS TO MINIMIZE THE CONSTRUCTION NOISE DURING PRE-BORING.
7. SHALL ANY UNDUCE SETTLEMENT OCCUR DUE TO PRE-BORING, THE CONTRACTOR SHALL SUBMIT A REMEDIAL PROPOSAL FOR THE APPROVAL OF THE RSE TO PREVENT FURTHER UNDUCE SETTLEMENT PRIOR TO THE RE-COMMENCEMENT OF THE PRE-BORING WORKS.
8. THE CONTRACTOR SHALL KEEP RECORD OF EACH PRE-BORED HOLES FOR ENGINEER INSPECTION.

SOIL PARAMETER

Table with 3 columns: SOIL PARAMETER, Ø (DEGREE), C' (kpa). Rows include FILL, MD, ALL, CDG.

SCHEDULE OF VERTICAL TIE

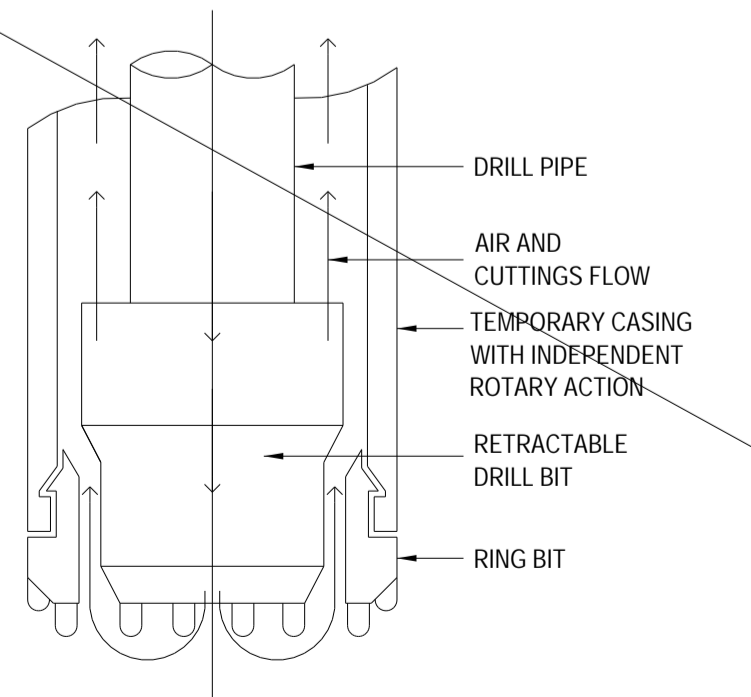
Table with 4 columns: ITEM, MEMBER MARK, GRADE, MEMBER SIZE. Row: VERTICAL\_TIE, P4, S355, UBP356x368x174

SCHEDULE OF HORIZONTAL TIE

Table with 4 columns: ITEM, MEMBER MARK, GRADE, MEMBER SIZE. Rows: HORIZONTAL\_TIE T1, T2, T3, T4, T5, T6, T7.

SCHEDULE OF MAIN STRUT

Table with 5 columns: PILE TYPE, LAYER, STRUT MEMBER SIZE, STRUT LEVEL, HORIZONTAL LOAD (kNm), DESIGN LOAD FOR STRUT (kN). Rows: A 1 to C 7.



SCHEMATIC DETAILS OF RING BIT DRILLING SYSTEM FOR OVERCOMING UNDERGROUND OBSTRUCTIONS

N.T.S.

SCHEDULE OF WALING

Table with 6 columns: PILE TYPE, LAYER, WALING MEMBER SIZE, COMPRESSION (kNm), SHEAR (kNm), MOMENT (kNm). Rows: A 1 to C 7.

SECTION PROPERTIES OF WALING

Table with 8 columns: ITEM, GRADE, SECTION AREA (cm²), MOMENT OF INERTIA (cm⁴), WEIGHT (kg/m), SECTION MODULUS (cm³), DEPTH D (mm), WIDTH B (mm), WEB THICKNESS t (mm), FLANGE THICKNESS T (mm). Rows: UB533x210x92, UB610x305x179, UB610x305x238, UB914x305x289.

SECTION PROPERTIES OF STRUTS

Table with 8 columns: ITEM, GRADE, SECTION AREA (cm²), MOMENT OF INERTIA (cm⁴), WEIGHT (kg/m), SECTION MODULUS (cm³), DEPTH D (mm), WIDTH B (mm), WEB THICKNESS t (mm), FLANGE THICKNESS T (mm). Rows: UC305x305x97, UC356x368x177, UC356x368x202, UC356x406x235, UC356x406x287.

SECTION PROPERTIES OF SHORT STRUTS/ SPACER

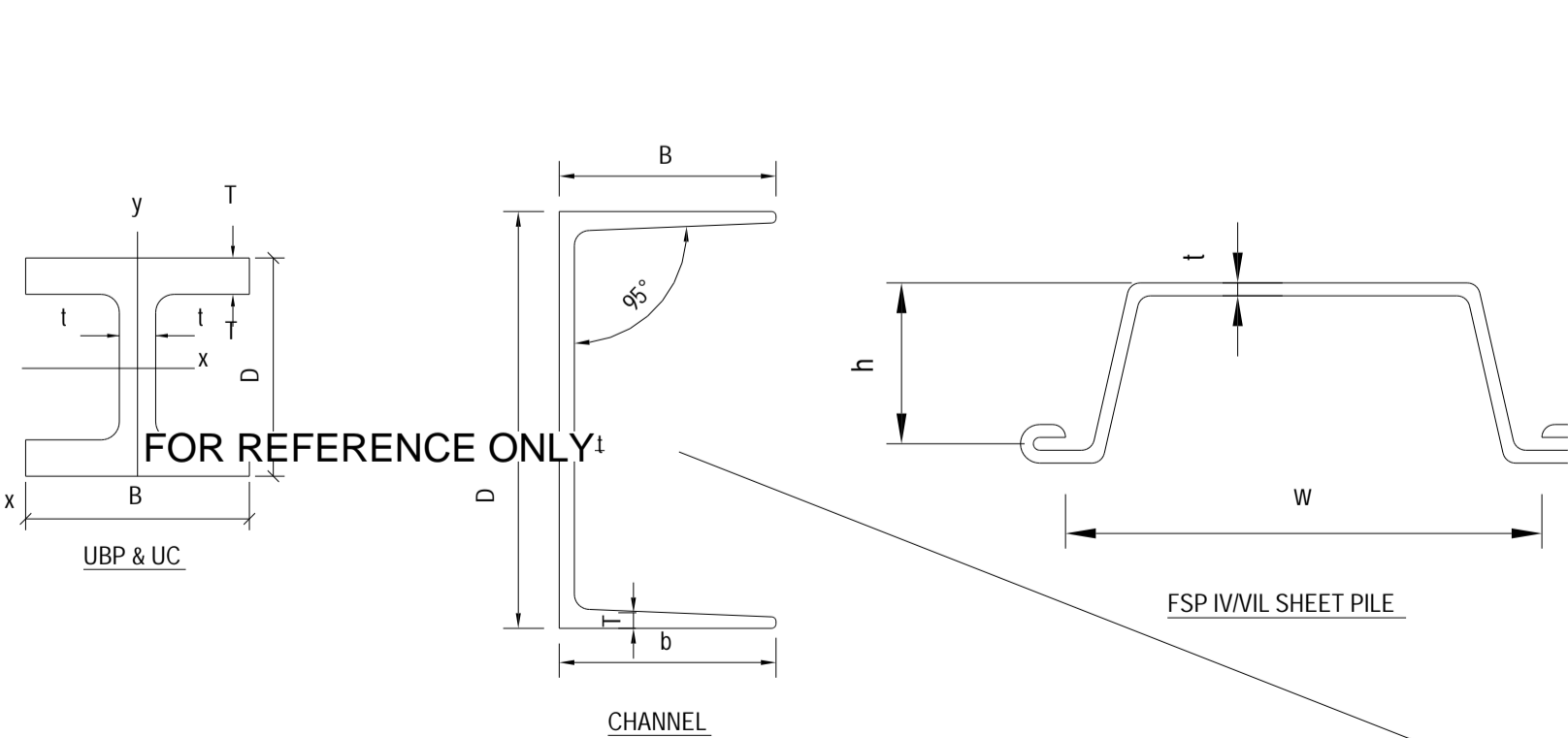
Table with 8 columns: ITEM, GRADE, SECTION AREA (cm²), MOMENT OF INERTIA (cm⁴), WEIGHT (kg/m), SECTION MODULUS (cm³), DEPTH D (mm), WIDTH B (mm), WEB THICKNESS t (mm), FLANGE THICKNESS T (mm). Row: C 152x89x24.

SECTION PROPERTIES OF HORIZONTAL TIE

Table with 8 columns: ITEM, GRADE, SECTION AREA (cm²), MOMENT OF INERTIA (cm⁴), WEIGHT (kg/m), SECTION MODULUS (cm³), DEPTH D (mm), WIDTH B (mm), WEB THICKNESS t (mm), FLANGE THICKNESS T (mm). Row: UC203x203x46.

SECTION PROPERTIES OF VERTICAL TIE

Table with 8 columns: ITEM, GRADE, SECTION AREA (cm²), MOMENT OF INERTIA (cm⁴), WEIGHT (kg/m), SECTION MODULUS (cm³), DEPTH D (mm), WIDTH B (mm), WEB THICKNESS t (mm), FLANGE THICKNESS T (mm). Row: UBP356x368x174.



FOR REFERENCE ONLY!

BD REF :

BIM REF :

REV DATE AMENDMENT

PROJECT: CIC SAMPLE PROJECT

DRAWING TITLE: EXCAVATION & LATERAL SUPPORT GENERAL NOTES

SCALE: AS SHOWN@A1

DRAWING NO. REV. NO.

E001

SOURCE: ---

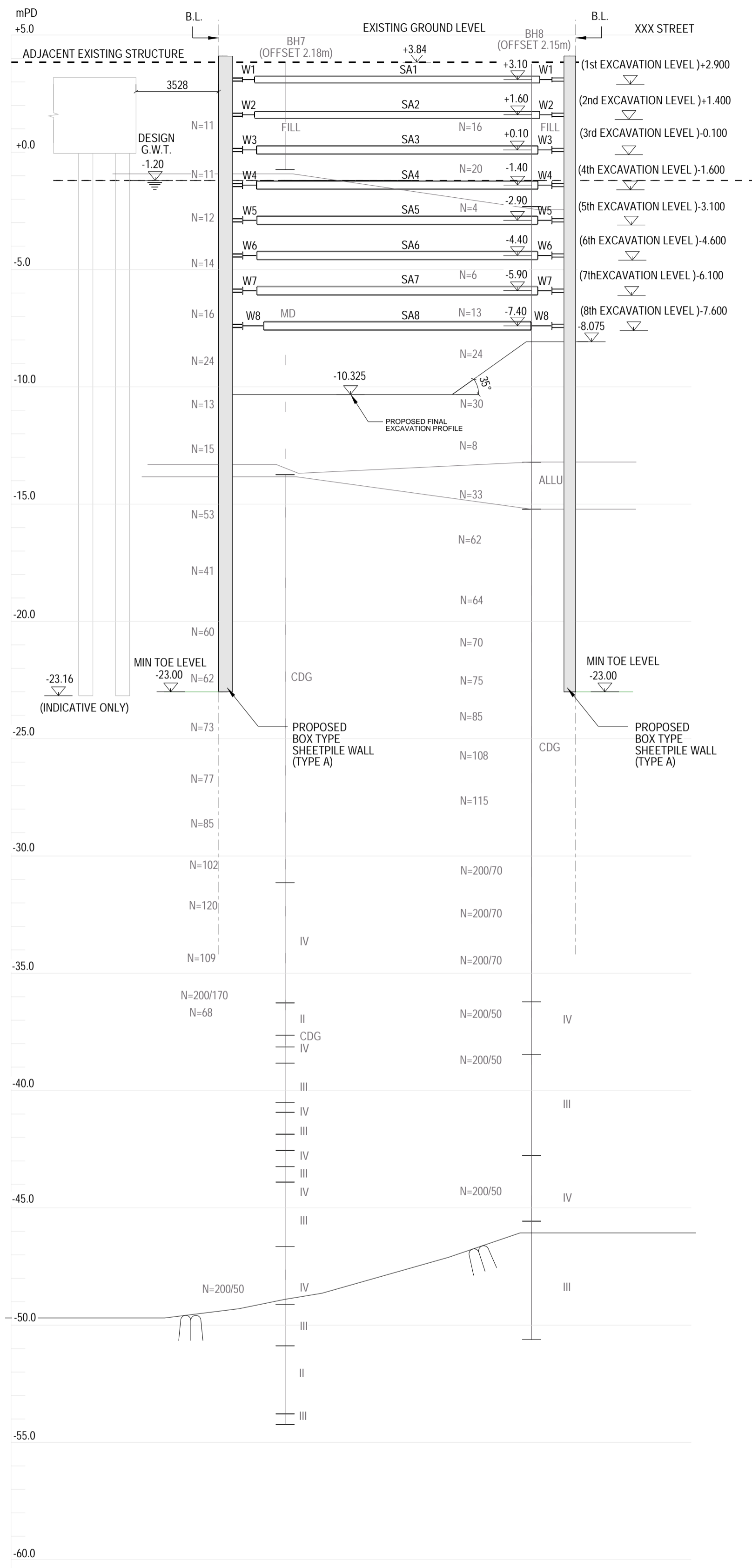
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90mm (W) x 60mm (H) space for AP/RSE/RGE's signature/ and stamp chop

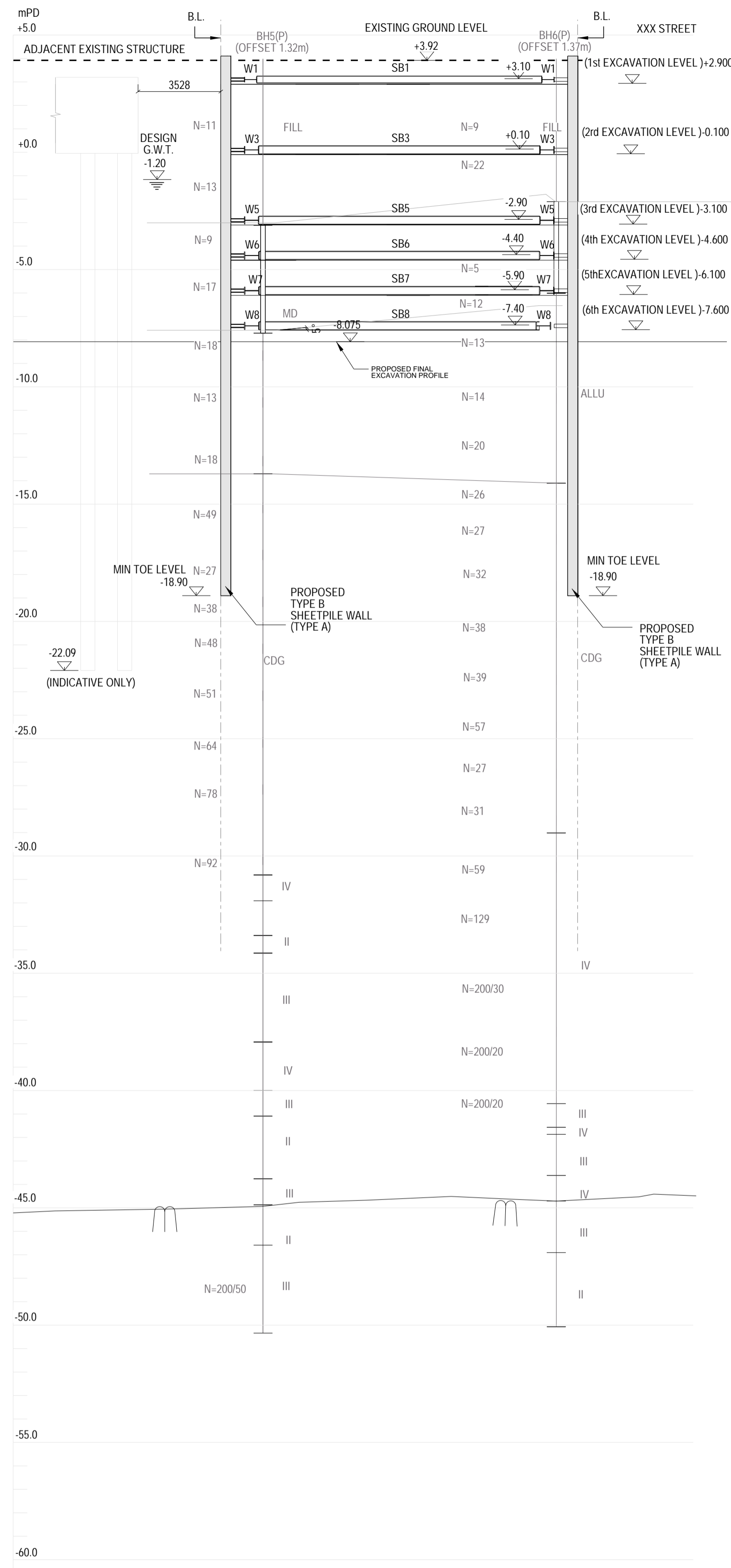
BD'S OFFICAL USE

90mm (W) x 150mm (H) space for BD's approval stamp / certification of copies of approved plans (PNAP ADM-10 APP A)





**A** ELS SECTION A  
1:150

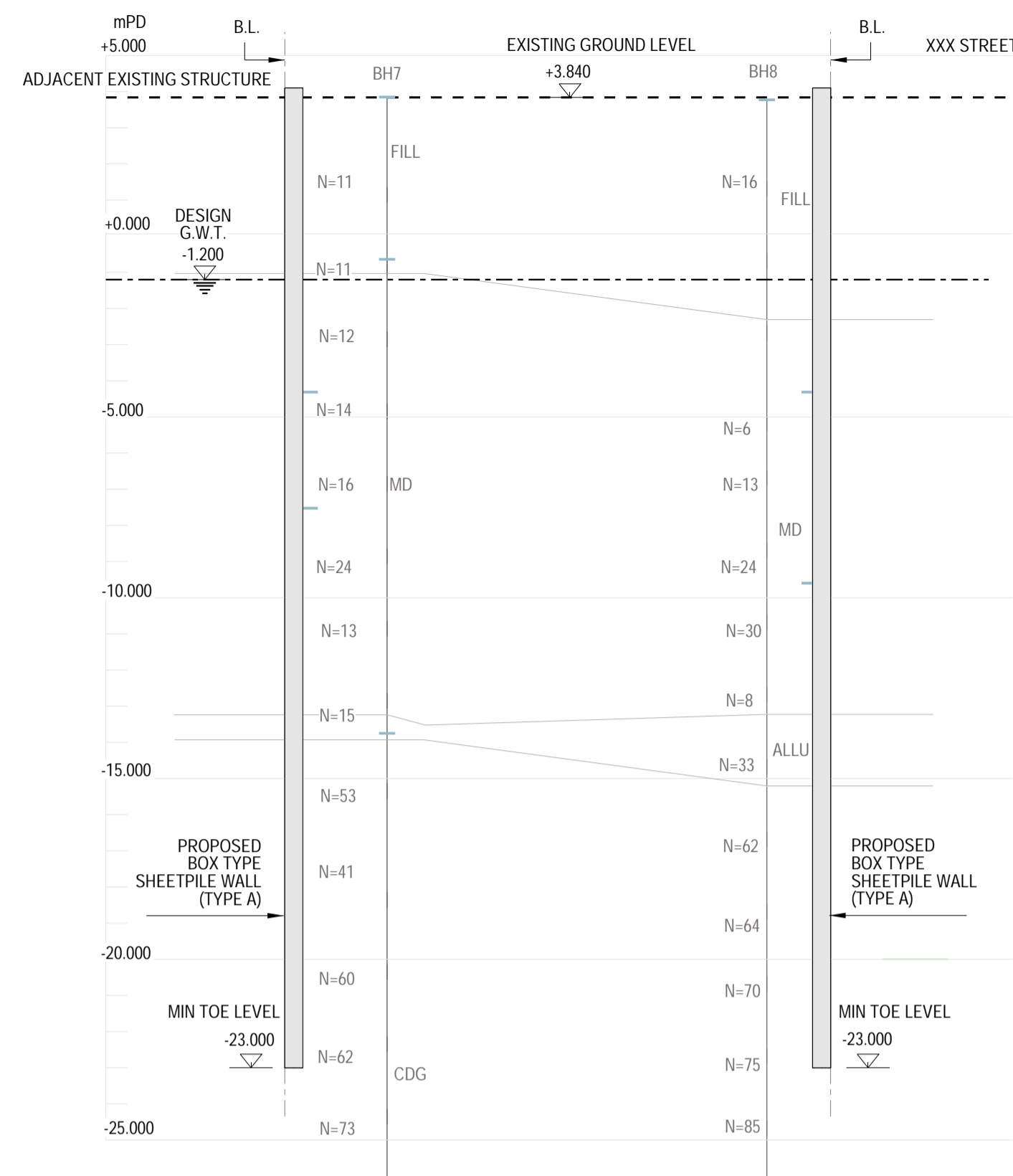


**B** ELS SECTION B  
1:150

- LEGEND AND NOTES:**
- BOUNDARY LINE
  - FILL FILL
  - CDG COMPLETELY DECOMPOSED GRANITE
  - IV HIGHLY DECOMPOSED GRANITE
  - III MODERATELY DECOMPOSED GRANITE
  - II SLIGHTLY DECOMPOSED GRANITE
  - N=28 SPT N VALUE
  - ▮ PROPOSED SHEET PILE
  - ▮ PROPOSED WALING
  - ▮ PROPOSED SHORT STRUT
  - ▮ PROPOSED STRUT
  - ▮ PROPOSED EXCAVATION PROFILE

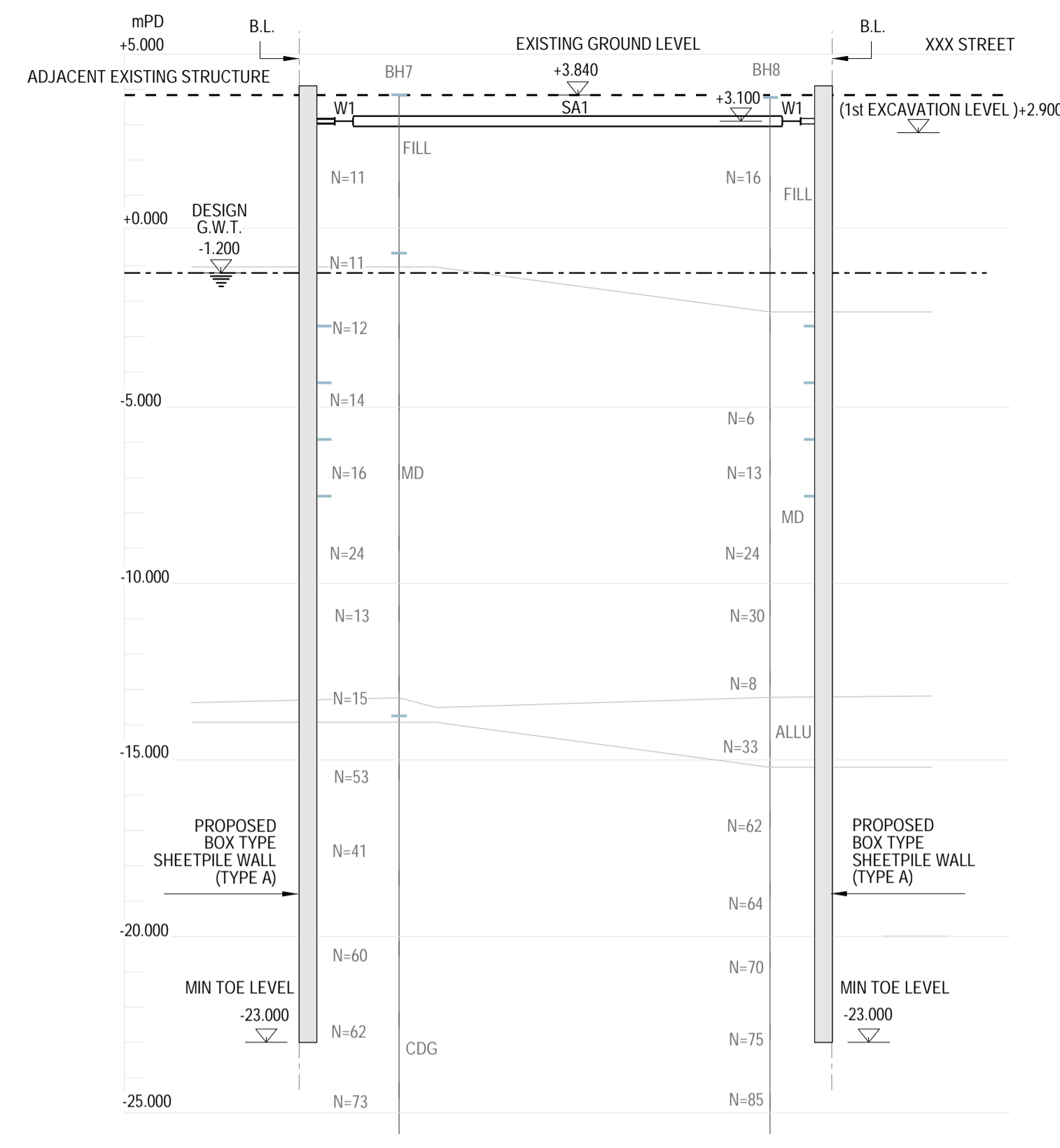
BD REF :		
BIM REF :		
REV	DATE	AMENDMENT
PROJECT CIC SAMPLE PROJECT		
DRAWING TITLE EXCAVATION & LATERAL SUPPORT SUPPORT SECTIONS (1 OF 2)		
SCALE AS SHOWN@A1		
DRAWING NO. E003		REV. NO.
SOURCE ---		
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90mm (W) x 60mm (H) space for AP/RSE/RGE's signature/ and stamp chop		
BD's OFFICAL USE		
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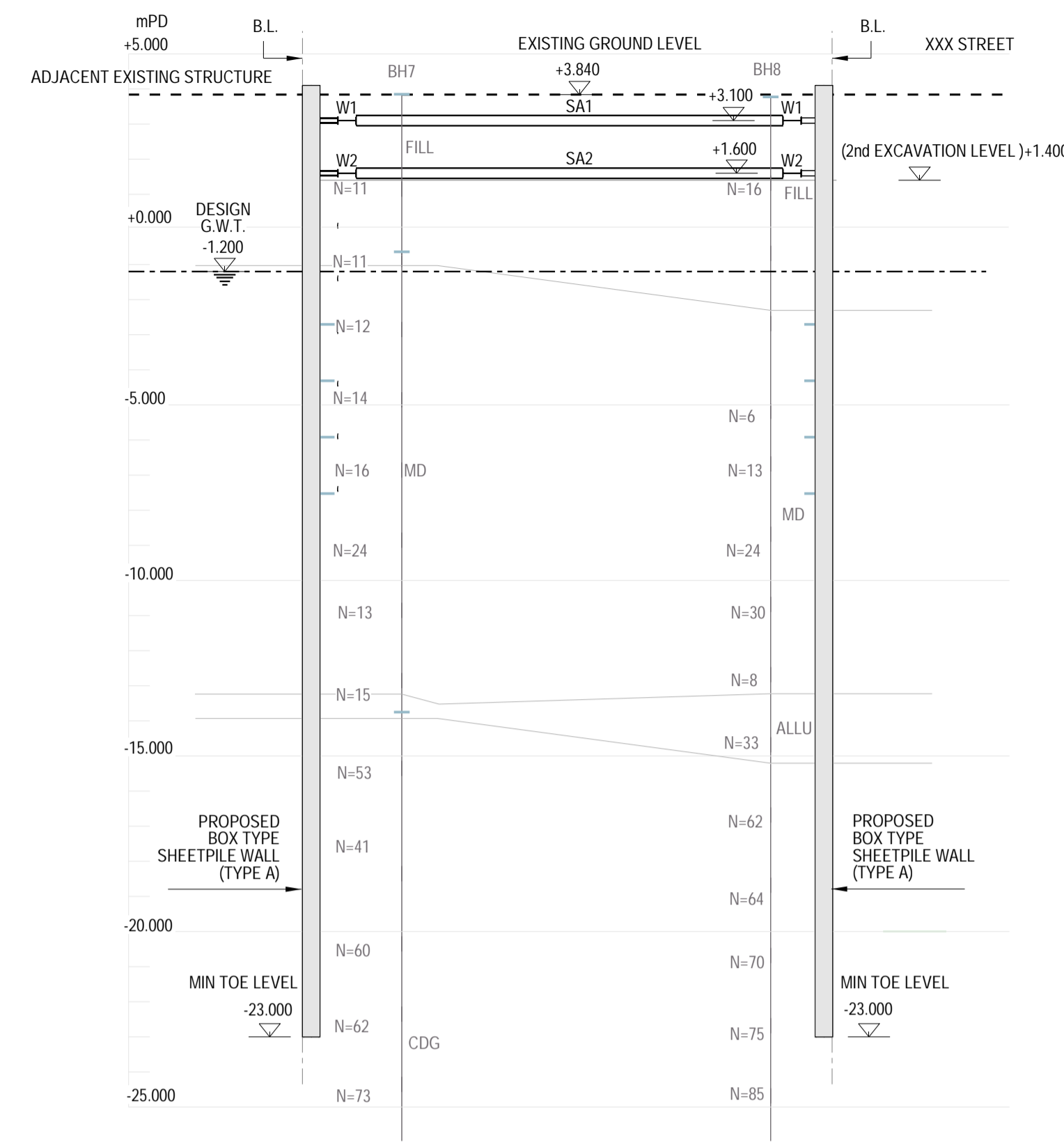
1. INSTALL MONITORING CHECKPOINTS AS SHOWN ON DRAWING NO. E008 AND TAKE INITIAL READING
2. CARRY OUT INSTALLATION OF SHEET PILES AS SHOWN ON PLAN TO REQUIRED LEVEL
3. CARRY OUT PUMPING TEST AS SHOWN ON DWG NO.: E009 (TYPE A)

**0 STAGE 0**  
1:150



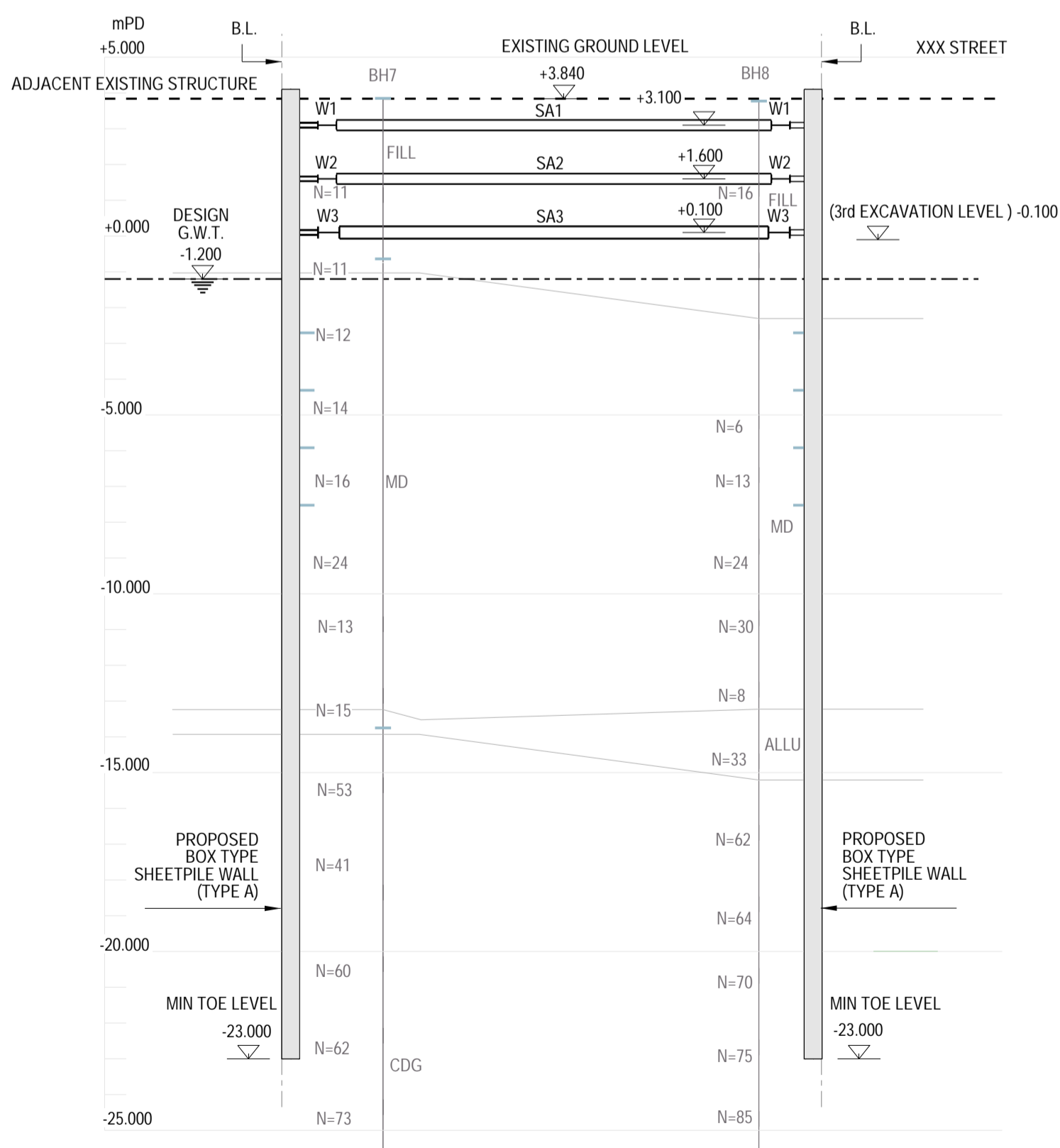
1. DEWATER AND EXCAVATE TO -2.900mPD.
2. INSTALLATION OF THE 1st LAYER WALINGS, STRUTS & TIES

**1 STAGE 1**  
1:150



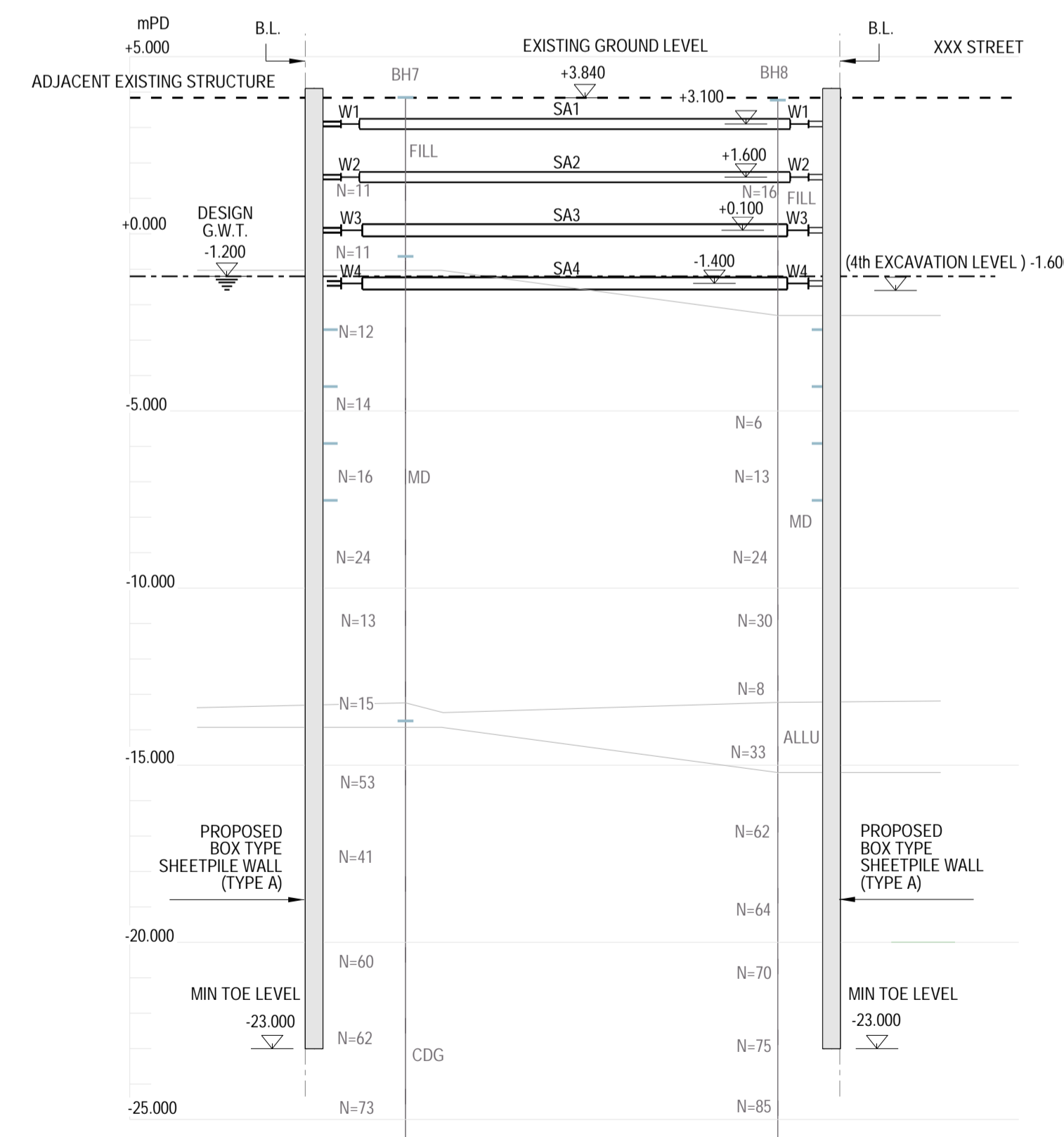
1. DEWATER AND EXCAVATE TO +1.400mPD.
2. INSTALLATION OF THE 2nd LAYER WALINGS, STRUTS & TIES

**2 STAGE 2**  
1:150



1. DEWATER AND EXCAVATE TO -0.100mPD.
2. INSTALLATION OF THE 3rd LAYER WALINGS, STRUTS & TIES

**3 STAGE 3**  
1:150



1. DEWATER AND EXCAVATE TO -1.600mPD.
2. INSTALLATION OF THE 4th LAYER WALINGS, STRUTS & TIES

**4 STAGE 4**  
1:150

- LEGEND AND NOTES:**
- BOUNDARY LINE
  - FILL FILL
  - CDG COMPLETELY DECOMPOSED GRANITE
  - IV HIGHLY DECOMPOSED GRANITE
  - III MODERATELY DECOMPOSED GRANITE
  - II SLIGHTLY DECOMPOSED GRANITE
  - N=28 SPT N VALUE
  - ▮ PROPOSED SHEET PILE
  - ▮ PROPOSED WALING
  - ▮ PROPOSED SHORT STRUT
  - ▮ PROPOSED STRUT
  - ▮ PROPOSED EXCAVATION PROFILE

BD REF :

BIM REF :

REV DATE AMENDMENT

PROJECT  
CIC SAMPLE PROJECT

DRAWING TITLE  
EXCAVATION & LATERAL SUPPORT  
CONSTRUCTION SEQUENCE  
FOR SECTION A (1 OF 2)

SCALE AS SHOWN@A1

DRAWING NO. REV. NO.

E005

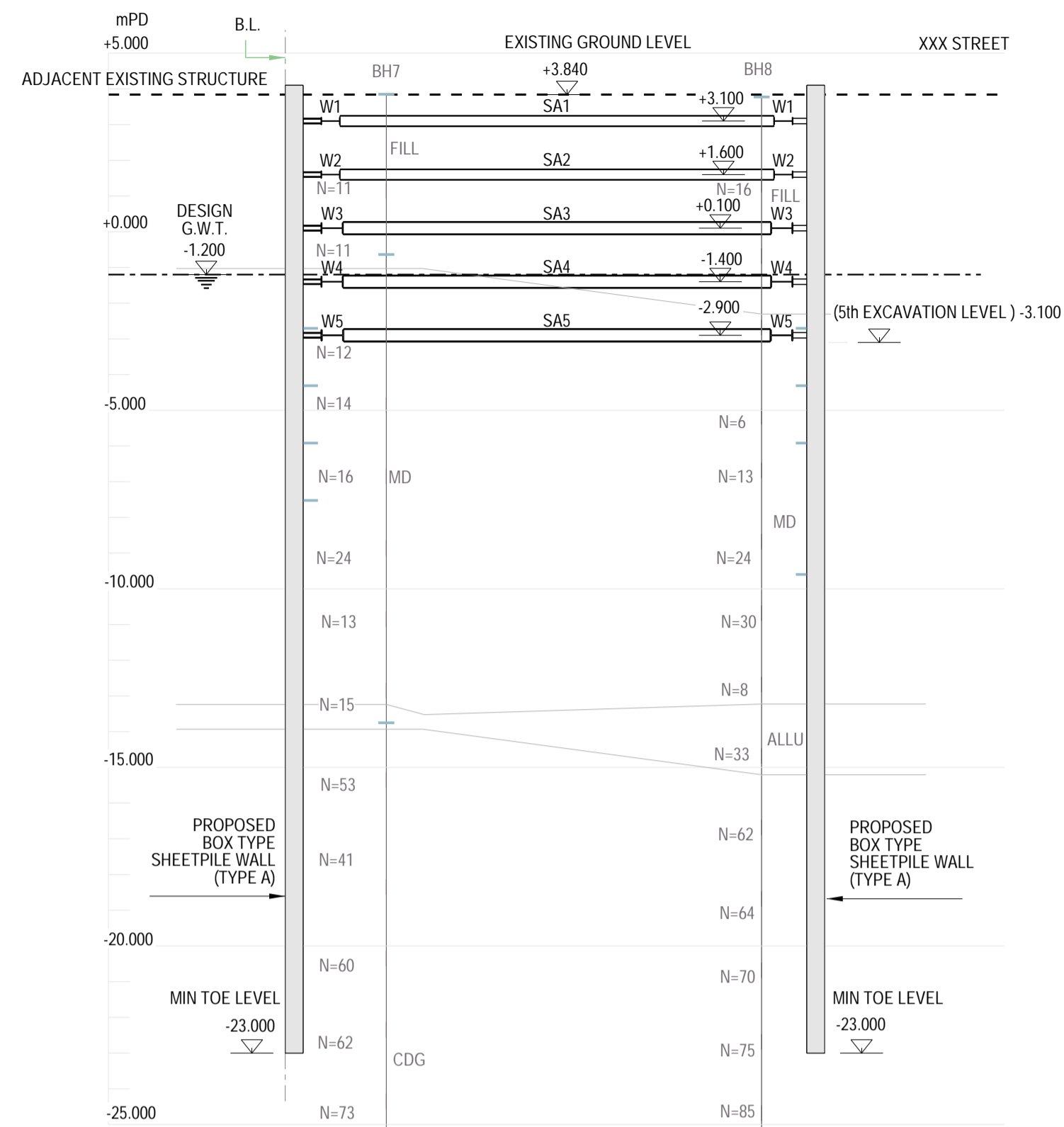
SOURCE ---

90mm (W) x 40mm (H) space  
for COMPANY LOGO

90mm (W) x 60mm (H) space  
for AP/RSE/RGE's  
signature/ and stamp chop

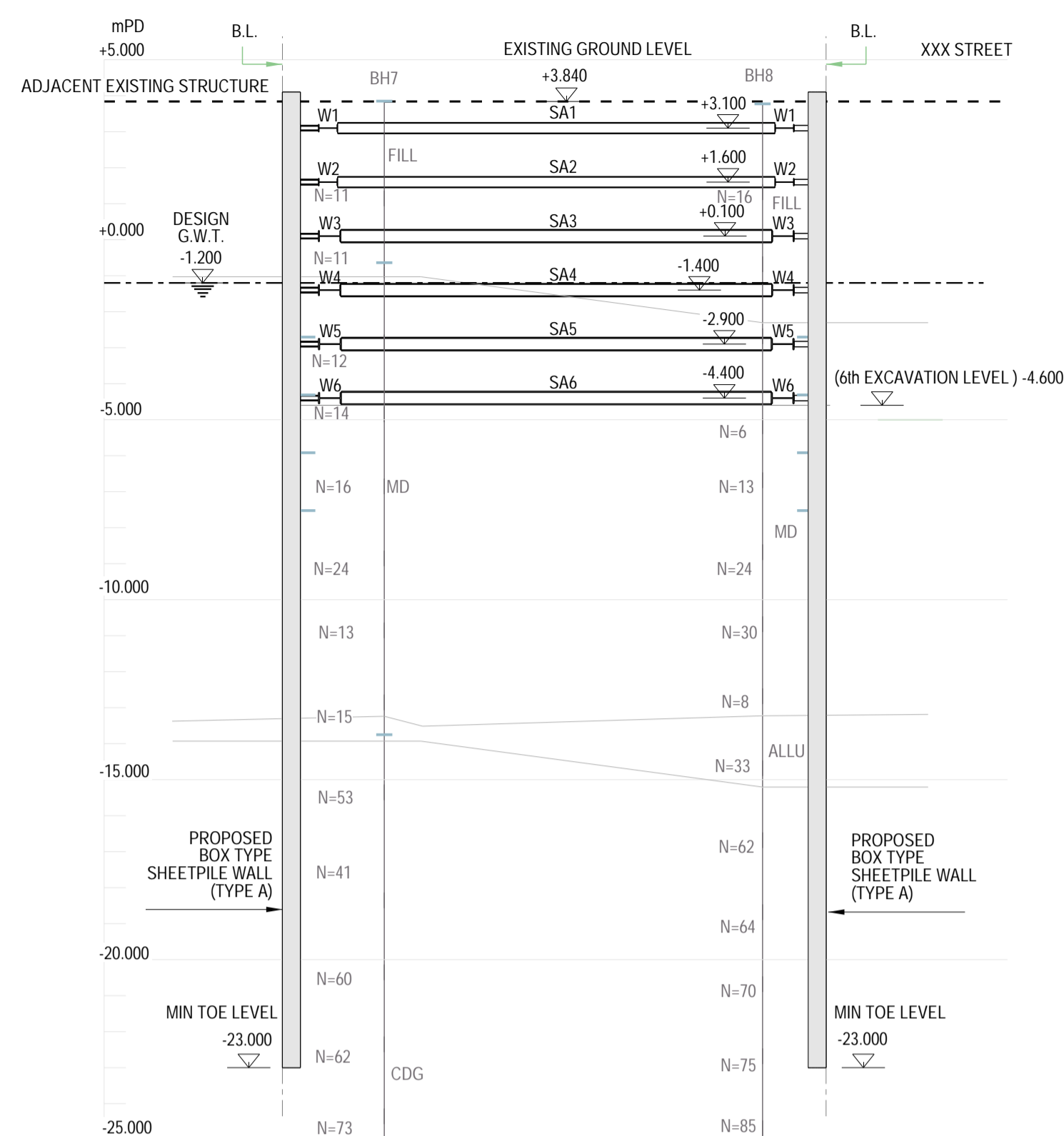
BD's OFFICIAL USE

90mm (W) x 150mm (H) space  
for BD's approval stamp /  
certification of copies of  
approved plans  
(PNAP ADM-10 APP A)



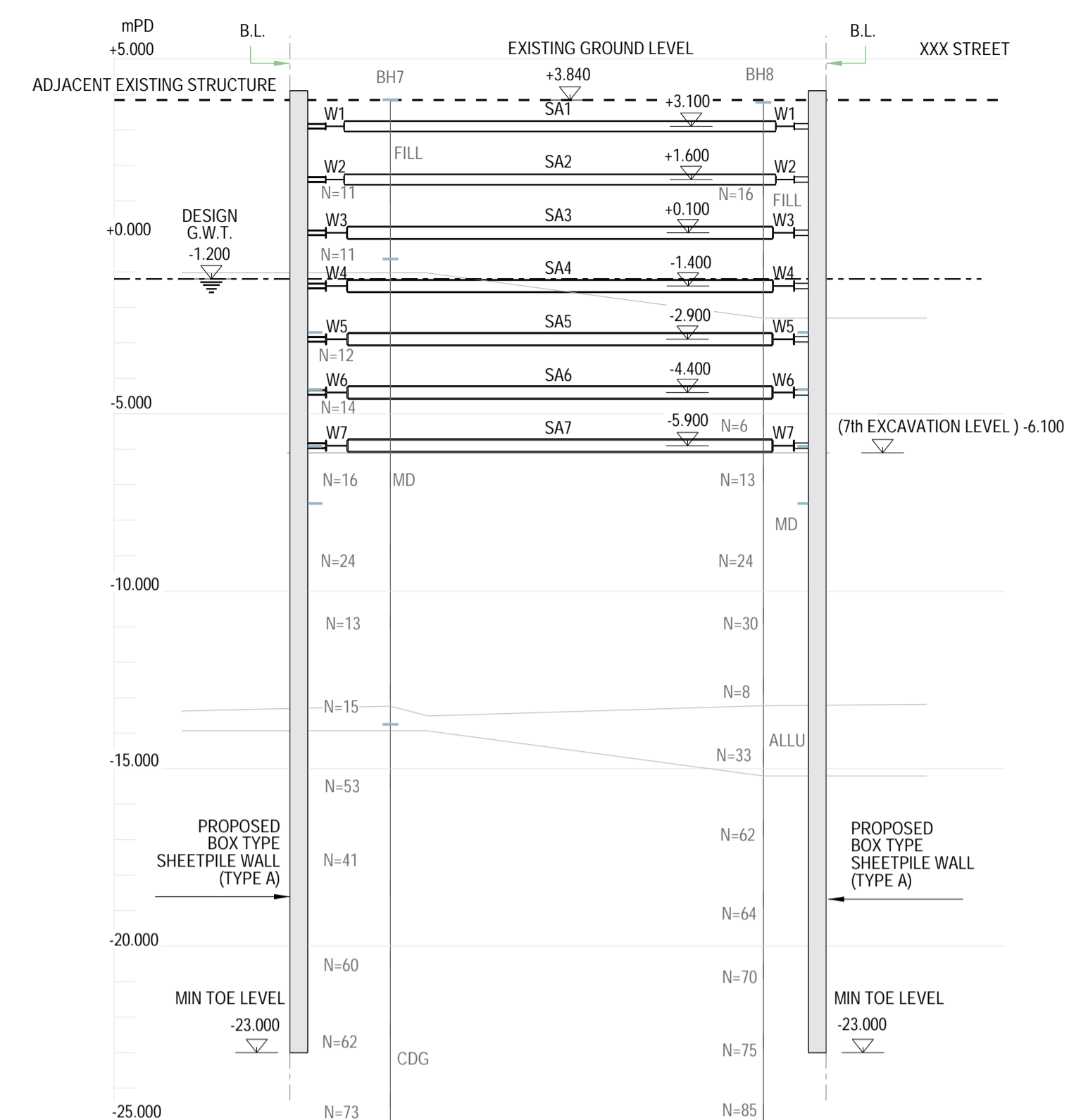
1. DEWATER AND EXCAVATE TO -3.100mPD.
2. INSTALLATION OF THE 5th LAYER WALLINGS, STRUTS & TIES

**5 STAGE 5**  
1:150



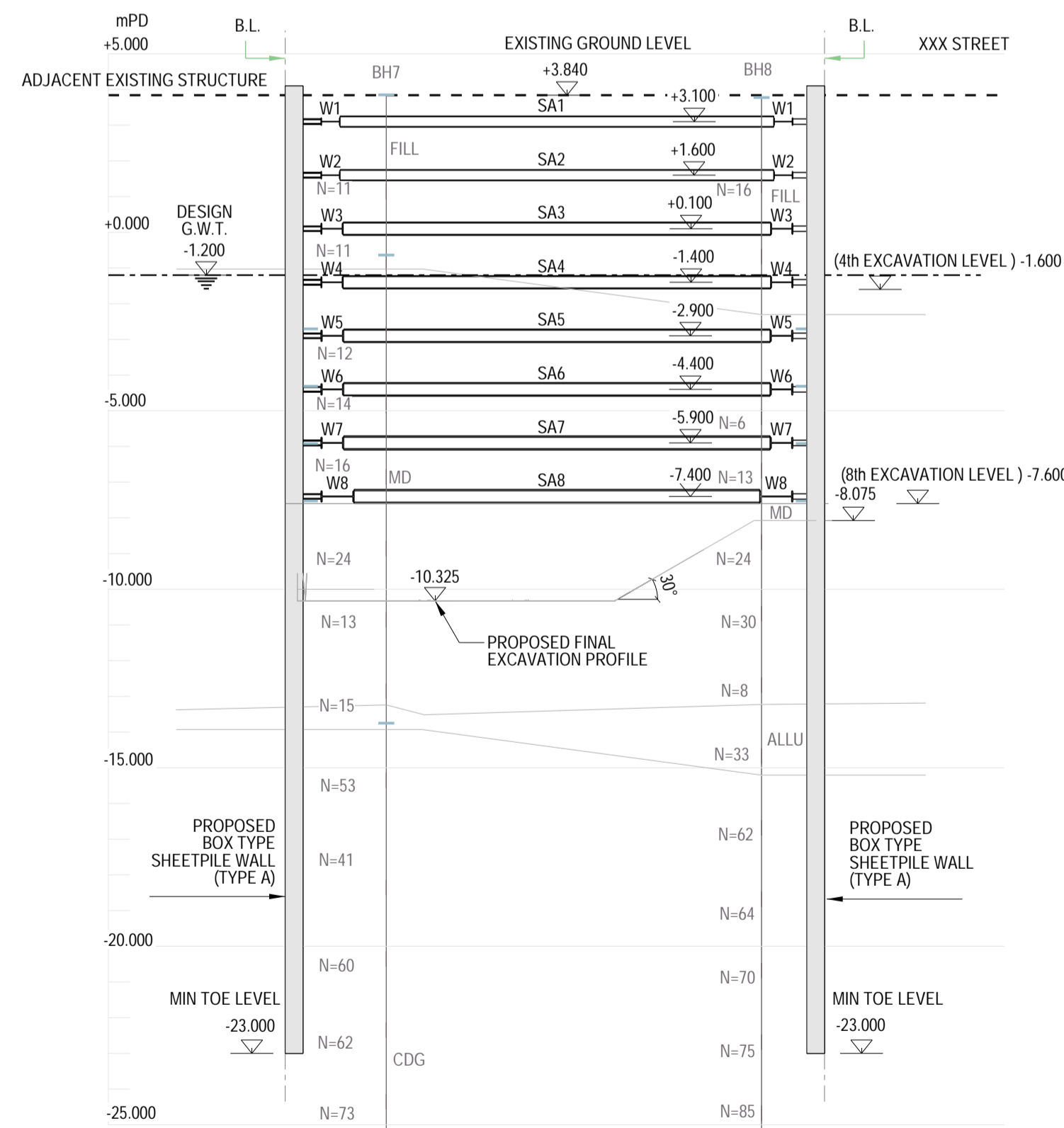
1. DEWATER AND EXCAVATE TO -4.600mPD.
2. INSTALLATION OF THE 6th LAYER WALLINGS, STRUTS & TIES

**6 STAGE 6**  
1:150



1. DEWATER AND EXCAVATE TO -6.100mPD.
2. INSTALLATION OF THE 7th LAYER WALLINGS, STRUTS & TIES

**7 STAGE 7**  
1:150



1. DEWATER AND EXCAVATE TO -7.600mPD.
2. INSTALLATION OF THE 8th LAYER WALLINGS, STRUTS & TIES
3. DEWATER AND EXCAVATE TO FINAL EXCAVATE PROFILE (i.e.: -8.075/-10.325mPD) WITH TEMPORARY CUT SLOPE(20° MAX). (REFER TO ELS LAYOUT PLAN IN DWG. NO.: E002)
4. CARRY OUT REMAINING PILE CAP CONSTRUCTION (UNDER SEPARATE SUBMISSION) AND BACKFILL TO PILE CAP TOP
5. CARRY OUT BASEMENT CONSTRUCTION (UNDER SEPARATE SUBMISSION)
6. ALL STRUT SHALL NOT BE REMOVED UNTIL CONSTRUCTION UP TO G/F.

**8 STAGE 8**  
1:150

- LEGEND AND NOTES:**
- BOUNDARY LINE
  - FILL FILL
  - CDG COMPLETELY DECOMPOSED GRANITE
  - IV HIGHLY DECOMPOSED GRANITE
  - III MODERATELY DECOMPOSED GRANITE
  - II SLIGHTLY DECOMPOSED GRANITE
  - N=28 SPT N VALUE
  - PROPOSED SHEET PILE
  - PROPOSED WALING
  - PROPOSED SHORT STRUT
  - PROPOSED STRUT
  - PROPOSED EXCAVATION PROFILE

BD REF :

BIM REF :

REV DATE AMENDMENT

PROJECT  
CIC SAMPLE PROJECT

DRAWING TITLE  
EXCAVATION & LATERAL SUPPORT  
CONSTRUCTION SEQUENCE  
FOR SECTION A (2 OF 2)

SCALE AS SHOWN@A1

DRAWING NO. REV. NO.

E006

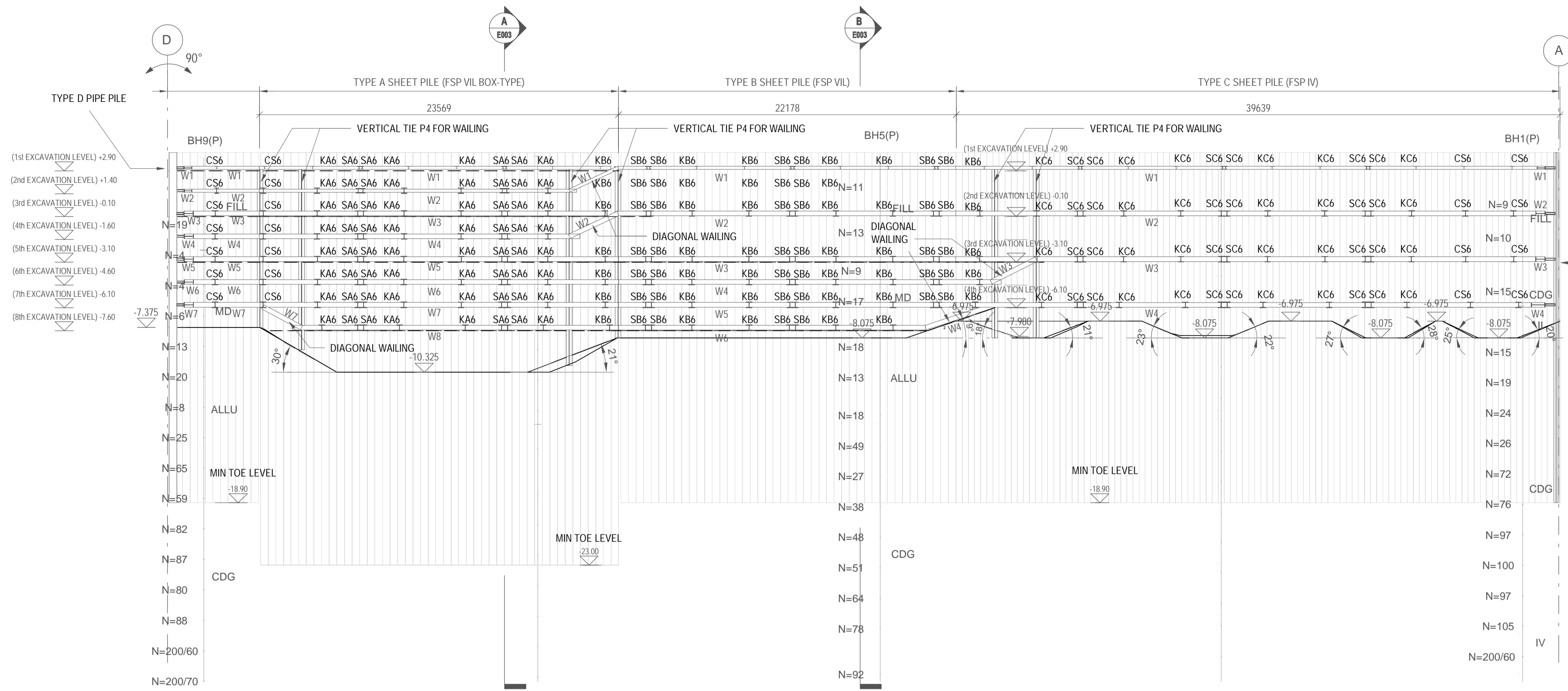
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for COMPANY LOGO

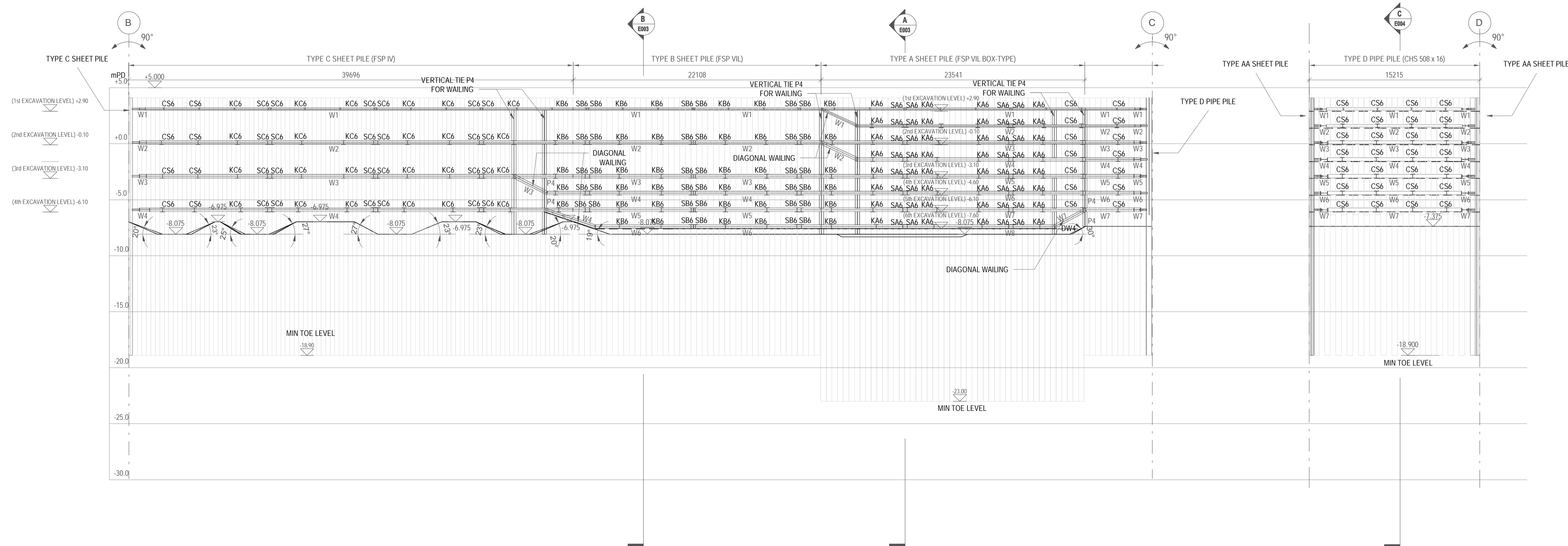
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for AP/RSE/RGE's  
signature/ and stamp chop

BD's OFFICIAL USE

90mm (W) x 150mm (H) space  
for BD's approval stamp /  
certification of copies of  
approved plans  
(PNAP ADM-10 APP A)

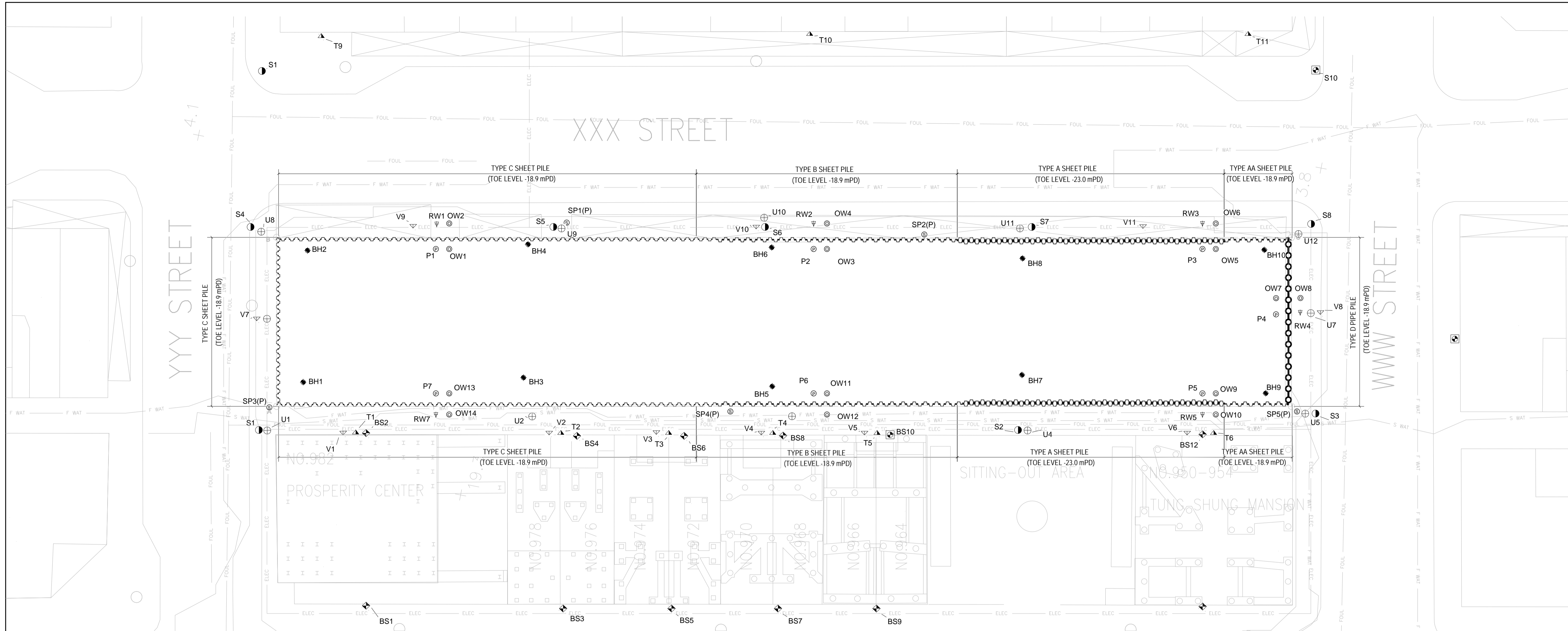


1 ELS ELEVATION D-A-B  
1 : 200



2 ELS ELEVATION B-C-D  
1 : 200

BD REF :		
BIM REF :		
REV	DATE	AMENDMENT
PROJECT CIC SAMPLE PROJECT		
DRAWING TITLE EXCAVATION & LATERAL SUPPORT ELEVATION		
SCALE 1 : 200@A1		
DRAWING NO. E007	REV. NO.	
SOURCE ---		
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90mm (W) x 60mm (H) space for AP/RS/RS's signature and stamp chop		
BD'S OFFICIAL USE		
90mm (W) x 150mm (H) space for BD's approval stamp / certification of copies of approved plans (PNAP ADM-10 APP A)		



BD REF :		
BIM REF :		
REV	DATE	AMENDMENT
PROJECT CIC SAMPLE PROJECT		
DRAWING TITLE EXCAVATION & LATERAL SUPPORT WORKS MONITORING PLAN		
SCALE AS SHOWN@A1		
DRAWING NO.	REV. NO.	
E008		
SOURCE ---		
90mm (W) x 40mm (H) space for COMPANY LOGO		
90mm (W) x 60mm (H) space for AP/RSE/RGE's signature/ and stamp chop		
BD's OFFICIAL USE		
90mm (W) x 150mm (H) space for BD's approval stamp / certification of copies of approved plans (PNAP ADM-10 APP A)		

**NOTES ON EXISTING UTILITIES**

- THE POSITION OF EXISTING UTILITIES SHOWN ON THIS DRAWING IS APPROXIMATE ONLY. EXACT LOCATION AND DEPTH OF THE UTILITIES MUST BE ASCERTAINED BY TRIAL PITS ON SITE. EXTREME CARE MUST BE TAKEN DURING EXCAVATIONS IN THE PROXIMITY OF THE UTILITIES. PRECAUTIONS SHALL BE TAKEN TO PREVENT DAMAGE TO ANY OF THE UTILITIES.
- THE INFORMATION INDICATED IS GIVEN IN GOOD FAITH AND NO GUARANTEE IS GIVEN AS TO ITS ACCURACY OR COMPLETENESS. THE USE OF THIS INFORMATION BY THE CONTRACTOR OR ANY OTHER PARTY SHALL NOT RELIEVE HIM OF ANY OF HIS OBLIGATIONS OR RESPONSIBILITY UNDER THE CONTRACT.
- THE CONTRACTOR SHALL ARRANGE FOR ANY REALIGNMENT OF THE EXISTING UTILITIES AT THE WORKING LOCATION PRIOR TO THE CONSTRUCTION OF WORKS, IF REQUIRED.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT TO THE EXISTING UTILITIES DURING THE CONSTRUCTION WORKS, IF REQUIRED.
- THE CONTRACTOR'S PARTICULAR ATTENTION IS DRAWN TO THE EXISTENCE OF UNDERGROUND SERVICE WITHIN AND AROUND THE SITE. HE SHALL PROTECT AND MAINTAIN ALL THOSE WORKS DURING THE ENTIRE CONTRACT PERIOD. NECESSARY PRECAUTIONS AND MONITORING SHALL BE TAKEN TO PREVENT DAMAGE TO THE EXISTING UPPER GROUND SERVICE.
- THE CONTRACTOR SHALL IDENTIFY AND ESTABLISH HIMSELF THE TYPES AND EXACT LAYOUT/LOCATION OF THE EXISTING SERVICES BEFORE CARRYING OUT ANY CONSTRUCTION WORKS ON SITE. HE SHALL ALSO PLAN AND ARRANGE HIS WORKS TAKING INTO ACCOUNT THE EXISTENCE OF ALL SUCH WORKS THAT MAY AFFECT THE CONSTRUCTION SEQUENCE OF HIS WORKS. SHALL ANY SERVICES FALL WITHIN THE SITE, THE CONTRACTOR SHALL PROPOSE AND SUBMIT A METHOD STATEMENT ON PROTECTING OR DIVERTING THE EXISTING UTILITIES FOR ARCHITECT'S APPROVAL AT NO EXTRA COST. IF NECESSARY, THE CONTRACTOR SHALL MODIFY THE DESIGN OF SERVICES AND/OR PROVIDE TEMPORARY SUPPORTS FOR THE SERVICES AND SUBMIT THE METHOD STATEMENT FOR THE SERVICES AND SUBMIT THE METHOD STATEMENT FOR ARCHITECT'S APPROVAL. SHOULD ANY DAMAGE OCCUR, NOTIFY THE ARCHITECT'S AND RELEVANT AUTHORITIES CONCERNED IMMEDIATELY AND MAKE GOOD BY THE CONTRACTOR AT NO EXTRA COST.

**NOTES ON MONITORING**

- INSTALL ALL CHECK POINTS AS SHOWN ON PLAN.
- INITIAL READINGS OF CHECK POINTS AND BENCH MARKS SHALL BE SUBMITTED TO BUILDINGS DEPT. BEFORE COMMENCEMENT OF THE WORK.
- ALL CHECK POINTS SHALL BE PROPERLY MAINTAINED AND MONITORED ON DAILY INTERVAL AND THE READINGS SHALL BE SUBMITTED TO THE AP/RSE/RGE AND BUILDING AUTHORITY BI-WEEKLY. ANY DEFECTIVE MONITORING DEVICES SHALL BE REPLACED ASAP.
- THE LEVEL SHALL BE REPORTED IN mPD AND THE CHECK POINTS SHALL BE SURVEYED ACCORDING TO HONG KONG METRIC GRID.

- EXISTING PIEZOMETERS/STANDPIPES INSTALLED ON SITE PREVIOUSLY SHOULD BE MONITORED ON DAILY BASIS CONTINUOUSLY THROUGHOUT THE CONSTRUCTION. THE READINGS SHOULD BE SUBMITTED TO RSE / RGE / BA ON BIWEEKLY BASIS. INITIAL READINGS SHOULD ALSO BE SUBMITTED BEFORE THE COMMENCEMENT OF WORKS.
- CHECK POINT READINGS TO BE KEPT ON SITE FOR INSPECTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR APPLICATION OF EXCAVATION PERMIT FOR INSTALLATION OF MONITORING CHECK POINTS OUTSIDE SITE BOUNDARY. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR SEEKING CONSENT FROM THE ADJACENT LOT OWNERS FOR INSTALLATION OF MONITORING CHECK POINT AT ADJACENT LOTS / BUILDINGS.

**ALERT LEVEL**

- RESPONSE ACTION:
- RC TO NOTIFY AND SUBMIT WRITTEN REPORT TO AP/RSE/RGE.
  - AP/RSE/RGE TO ASSESS EFFECT OF MOVEMENTS AND PREDICT FUTURE MOVEMENTS. AP/RSE/RGE TO AGREE WITH RC ON THE SUITABLE ACTION PLAN WHICH MAY INCLUDE THE INSTALLATION OF ADDITIONAL CHECK POINTS AND/OR INCREASING MONITORING FREQUENCY, AND THE REMEDIAL/MITIGATING MEASURES TO BE TAKEN UPON REACHING THE "ALARM LEVEL".

**ALARM LEVEL**

- RESPONSE ACTION:
- RC TO NOTIFY AND SUBMIT UPDATED REPORT TO AP/RSE/RGE AND NOTIFY THE BD IMMEDIATELY.
  - AP/RSE/RGE AND RC TO CONDUCT JOINT SITE INSPECTION TO DETERMINE IF ANY CONSTRUCTION ACTIVITIES SHOULD BE TEMPORARILY SUSPENDED.
  - RC TO IMPLEMENT THE NECESSARY REMEDIAL/MITIGATING MEASURES IN ACCORDANCE WITH THE AGREED ACTION PLAN.
  - AP/RSE/RGE AND RC TO DISCUSS THE INSTRUMENT RESPONSE AND REVIEW THE EFFECTIVENESS OF THE RESPONSE ACTION.
  - AP/RSE/RGE TO AGREE WITH RC ON THE EMERGENCY PLAN DETAILING THE MEASURES TO BE TAKEN UPON REACHING "ACTION LEVEL".
  - ANY CONSTRUCTION ACTIVITIES MAY BE SUSPENDED IF THE RESPONSE ACTION HAS BEEN IMPLEMENTED AND ON THE ADVICE OF THE AP/RSE/RGE AS NECESSARY.
  - AP/RSE/RGE TO REVIEW THE METHOD STATEMENTS OF PILING/ELS WORKS TO DETERMINE WHETHER MODIFICATION TO THE CONSTRUCTION METHODS IS REQUIRED TO PREVENT ACTION LEVEL FROM BEING REACHED.

**ACTION LEVEL**

- RESPONSE ACTION:
- ALL WORKS THAT WILL CAUSE GROUND MOVEMENT ARE TO BE CEASED.
  - RC TO NOTIFY AND CARRY OUT A JOINT SITE INSPECTION WITH THE RSE/RGE IMMEDIATELY. THE BD AND THE RELEVANT PARTIES SHOULD BE NOTIFIED IMMEDIATELY.
  - RC TO IMPLEMENT THE NECESSARY EMERGENCY MEASURES IN ACCORDANCE WITH THE AGREED EMERGENCY PLAN.
  - RC TO SUBMIT AN INCIDENT REPORT TO RSE/RGE AND THE BD DETAILING THE FULL HISTORY OF THE MOVEMENTS AND REMEDIAL/EMERGENCY MEASURES IMPLEMENTED.

**ELS MONITORING PLAN**  
1:200

- RSE/RGE TO REVIEW THE INCIDENT AND AGREE WITH RC ON FURTHER REMEDIAL AND PREVENTIVE MEASURES TO ENABLE RESUMPTION OF THE SUSPENDED WORKS.
- CONSTRUCTION ACTIVITIES SHOULD NOT BE RESUMED UNTIL THE NECESSARY REMEDIAL AND PREVENTIVE MEASURES HAVE BEEN COMPLETED TO THE SATISFACTION OF THE BD.
- IF THE TRIGGER VALUES AND RESPONSE ACTION ARE REVISED, THE AMENDED PLANS SHOULD BE SUBMITTED TO THE BD FOR APPROVAL. THE SUSPENDED CONSTRUCTION ACTIVITIES SHOULD NOT BE RESUMED UNTIL THE AMENDED PLANS ARE APPROVED BY THE BD.

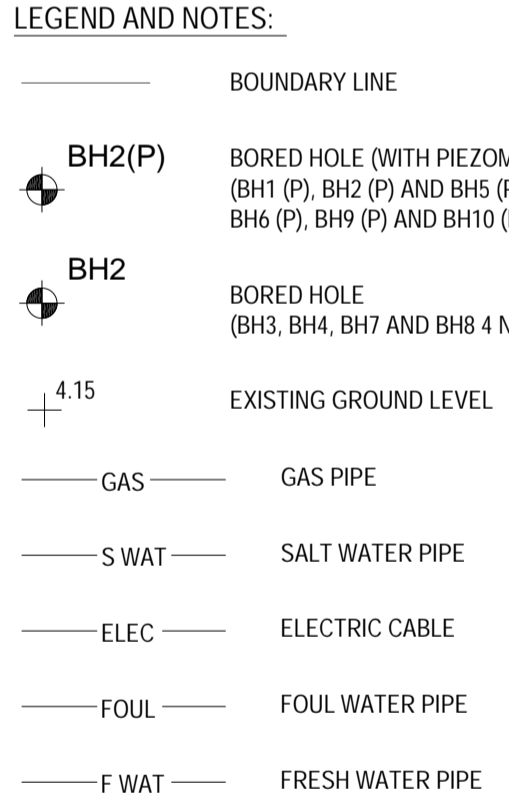
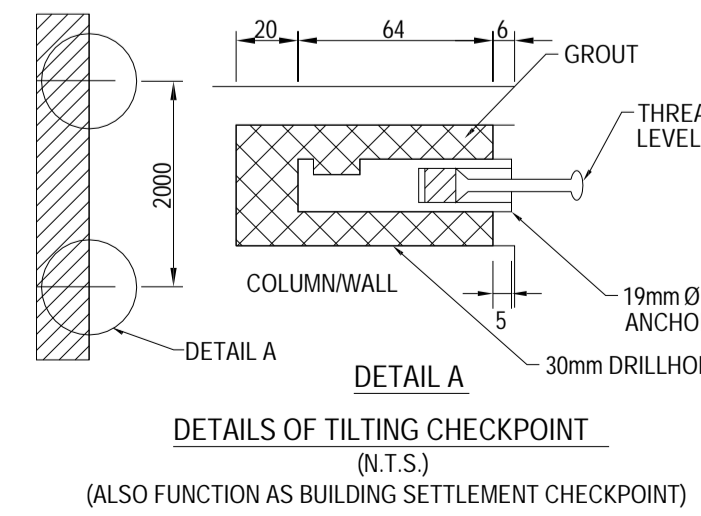
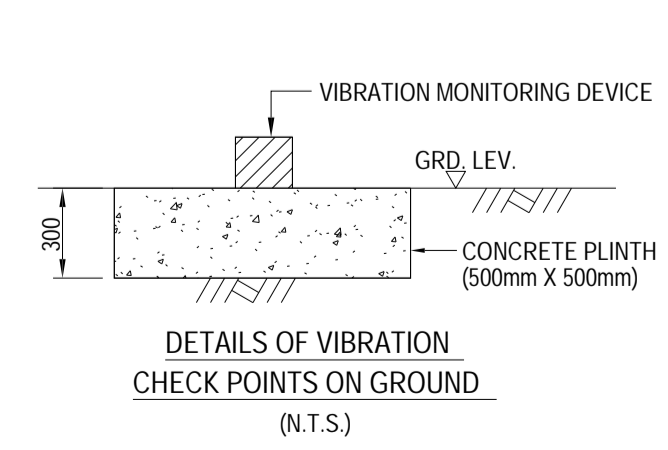
INSTRUMENT	CRITERION	ALERT	ALARM	ACTION
GROUND SETTLEMENT CHECK POINT	TOTAL SETTLEMENT	12mm	18mm	25mm
UTILITY SETTLEMENT CHECK POINT	TOTAL SETTLEMENT	12mm	18mm	25mm
TILTING CHECK POINT	ANGULAR DISTORTION	1:1000	1:750	1:500
VIBRATION CHECK POINT (V1 TO V5)	PEAK PARTICLE VELOCITY	7.5mm/s	10mm/s	15mm/s
BUILDING SETTLEMENT CHECK POINT	TOTAL SETTLEMENT	12mm	18mm	25mm
STANDPIPE	RISE OF GROUND	+2.00mPD	+2.50mPD	+3.10mPD
PIEZOMETER	WATER LEVEL	-3.00mPD	-3.50mPD	+4.10mPD
STANDPIPE	DRAIN OF GROUND	-0.35mPD	-0.40mPD	-0.47mPD
STANDPIPE	CR LEVEL	-0.40mPD	-0.45mPD	-0.50mPD

**FOR REFERENCE ONLY**

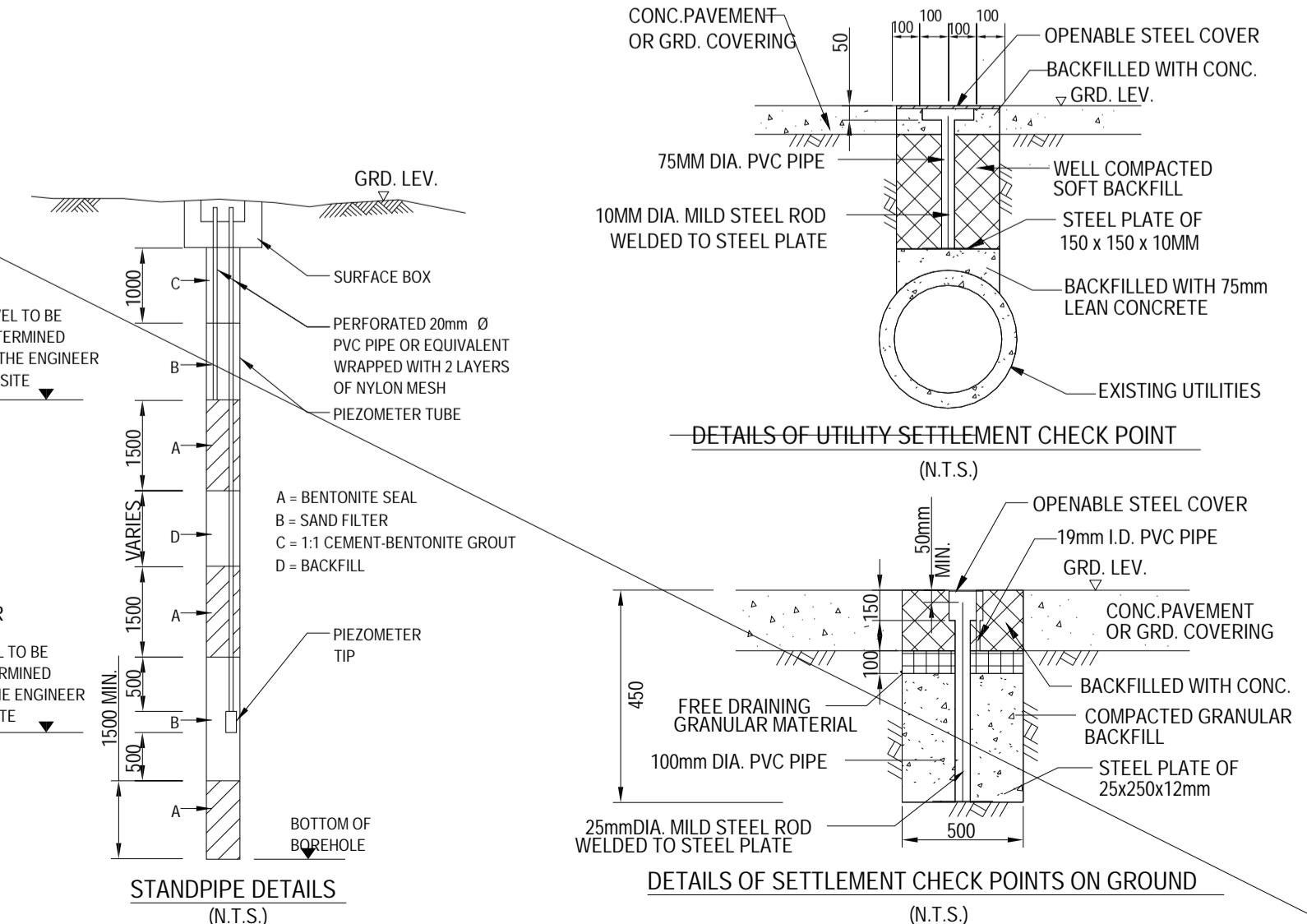
- THE "ACTION LEVEL" RESPONSE ACTION SHOULD BE TAKEN IF ANY OF THE FOLLOWING SITUATION OCCURS:
- ANY MONITORING STATION HAS A READING REACHING THE SERVICEABILITY LIMIT.
  - UNDUO SETTLEMENT AS INDICATED IN ANY CHECK POINTS (E.G. AN INCREASE OF 5mm BETWEEN TWO CONSECUTIVE DAILY READINGS).
  - SIGN OF DISTRESS OR DAMAGES OBSERVED IN ANY ADJACENT STRUCTURES AND/OR UTILITIES.

**MASTER CONSTRUCTION SEQUENCE**

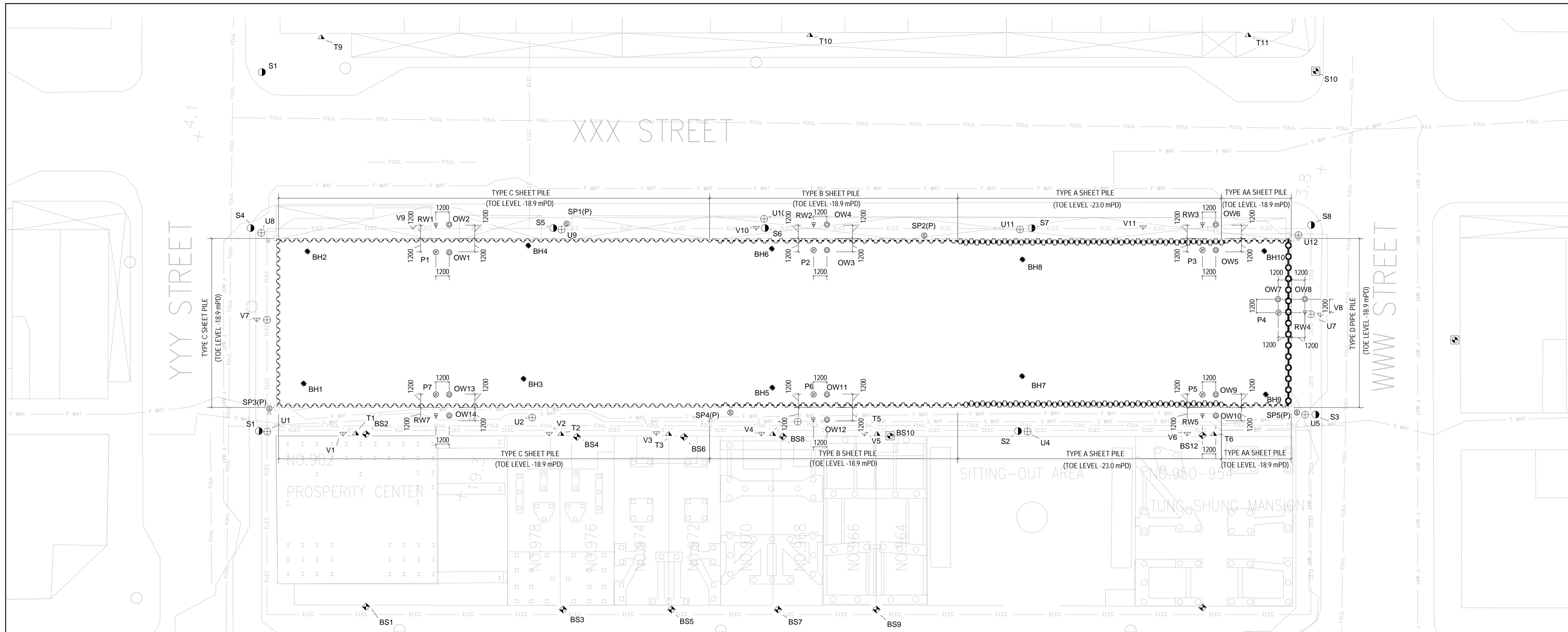
- INSTALL MONITORING CHECK POINTS AND TAKE INITIAL READINGS.
  - CONSTRUCT BORED PILES FOUNDATION.
  - CARRY OUT EXCAVATION AND LATERAL SUPPORT WORKS. (UNDER SEPARATE SUBMISSION)
  - CARRY OUT THE CONSTRUCTION OF PILE CAP AND FOOTING. (UNDER SEPARATE SUBMISSION)
  - CONSTRUCTION OF SUPERSTRUCTURE. (UNDER SEPARATE SUBMISSION)
- NOTE : ITEM 2, 3, 4, 5 CAN BE CARRIED OUT CONCURRENTLY AND INDEPENDENTLY.



INSTRUMENT SCHEDULE		
SYMBOL	TYPE	NUMBER
BS1	BUILDING SETTLEMENT MARKER (BS1-BS12)	12
T1	BUILDING TILTING CHECK POINT WITH VERTICAL DISPLACEMENT (T1-T11)	11
S1	GROUND SETTLEMENT CHECK POINT (S1-S10)	10
OW1	OBSERVATION WELL (OW1-OW14)	14
P1	PUMP WELL (P1 TO P7)	7
RW1	RECHARGE WELL (RW1-RW7)	7
SP1(P)	STANDPIPE (WITH PIEZOMETER) (SP1(P) TO SP5(P))	5
U1	UTILITY SETTLEMENT MONITORING POINT ON GROUND (U1-U12)	12
V1	VIBRATION CHECK POINT (V1-V11)	11







BD REF :		
BIM REF :		
REV	DATE	AMENDMENT
PROJECT CIC SAMPLE PROJECT		
DRAWING TITLE EXCAVATION & LATERAL SUPPORT WORKS PUMPING TEST SETTING OUT PLAN		
SCALE AS SHOWN@A1		
DRAWING NO.	REV. NO.	
E009		
SOURCE ---		
90mm (W) x 40mm (H) space for COMPANY LOGO		
90mm (W) x 60mm (H) space for AP/RSE/RGE's signature/ and stamp chop		
BD'S OFFICIAL USE		

**(I) PUMPING TEST PROCEDURES**

- INSTALL THE DEWATERING WELLS (P1-P7), STANDPIPES AND OBSERVATION WELLS (OW1-OW15) AS SHOWN IN DWG. NO. ELS-13.
- THE PROPOSED TOE LEVEL OF THE DEWATERING WELL AND OBSERVATION WELLS ARE AS FOLLOWS:

HOLE	PROPOSED TOE LEVEL (mPD)	PROPOSED LEVEL OF WATER LEVEL CONTROL ELECTRODES CUT-ON LEVEL (mPD)	CUT-OFF LEVEL (mPD)
DEWATERING WELL (P1-P7)	-15.00	-12.50	-13.50
OBSERVATION WELL (OW1-OW15)	-15.00	N/A	N/A

- BEFORE INSERTION OF THE SUBMERSIBLE PUMP, THE DEWATERING WELLS SHALL BE CLEANED, FLUSHED AND THE DEPTH OF THE WELL SHALL BE ACCURATELY MEASURED.
- THE DEWATERING WELLS INCLUDING DISCHARGE PIPES SHALL THEN BE COMPLETED AND TESTED TO BE FUNCTIONAL.
- THE PROPOSED DEWATERING PUMP TO BE INSTALLED IS 'MASTRA' MODEL R95-S-08 WITH A MINIMUM DISCHARGE CAPACITY OF 10CU.MHR/WELL UNDER A DELIVERY HEAD OF 46M AND BE ABLE TO LOWER WATER LEVEL WITHIN 1M ABOVE THE PUMP.
- FLOW METER AND GATE VALVE TO CONTROL FLOW SHALL BE INCORPORATED INTO EACH DEWATERING WELL.
- BEFORE COMMENCEMENT OF PUMP TEST, WATER LEVELS IN ALL DEWATERING WELLS, STANDPIPES, OBSERVATION WELLS SHALL BE MEASURED AT 4 HOURS INTERVALS FOR A PERIOD OF 72 HOURS. THE LOWEST MEASURED LEVELS IN THE PUMP WELL AND STANDPIPES SHALL BE USED AS INITIAL READINGS FOR THE PUMPING TEST.
- ALL DEWATERING PUMPS SHALL BE SWITCHED ON SIMULTANEOUSLY.
- STEADY STATE SHALL BE DEFINED AS SUCH THAT THE RATE OF GROUNDWATER DRAW DOWN BOTH INSIDE AND OUTSIDE THE SITE IS LESS THAN 0.1M OVER AN HOUR.
- THE WATER LEVEL IN THE PUMP WELL SHALL BE MAINTAINED AT THE SPECIFIED LEVEL FOR AT LEAST 72 HOURS.
- SHOULD THE SPECIFIED STEADY STATE IN GROUNDWATER DRAWDOWN NOT BE REACHED, PUMPING SHALL BE CONTINUED UNTIL SUCH A STATE IS REACHED OR AS DIRECTED BY THE ENGINEER. THE MINIMUM TEST PERIOD IS 7 DAYS.
- DURING THE TEST THE WATER LEVELS IN ALL DEWATERING WELL, OBSERVATION WELLS AS SHOWN ON DWG. NO. ELS-13 SHALL BE REACHED AT REGULAR INTERVALS WHICH SHOWN BELOW (II) WATER LEVEL MEASUREMENT.
- ALL MONITORING DATA SHALL BE PRODUCED IN BOTH TABULAR AND GRAPHICAL FORM DURING THE COURSE OF THE PUMPING TEST AND SUBMIT TO ENGINEER FOR BUILDINGS DEPARTMENT'S APPROVAL.
- WATER LEVELS SHALL BE MONITORED AFTER CESSATION OF PUMPING UNTIL RECOVERY TO INITIAL LEVELS IS COMPLETED.

**(II) WATER LEVEL MEASUREMENT**

DURING THE PUMPING AND RECOVERY TESTS, THE WATER LEVELS IN THE DEWATERING WELLS, OBSERVATION WELLS AND STANDPIPES SHALL BE MEASURED AT THE FOLLOWING INTERVALS:

TIME FROM COMMENCEMENT OF PUMPING TEST (mins)	INTERVAL BETWEEN READINGS (mins)
0-30	5
30-60	10
60-120	15
120-360	30
360-END OF TEST	60

DURING THE RECOVERY PHASE, THE READINGS SHALL BE TAKEN CONTINUOUSLY UNTIL THE WATER LEVEL IN ALL OBSERVATION WELLS AND STANDPIPES HAVE RECOVERED TO THEIR PRE-TEST LEVELS OR FOR A PERIOD OF TWO DAYS, WHICHEVER IS THE SOONER. PRIOR TO TERMINATING READINGS, THE ARCHITECT SHALL BE NOTIFIED.

**(III) MONITORING OF CHECKPOINTS**

- DURING THIS TEST AND UNTIL ALL STANDPIPES/OBSERVATION WELLS HAVE RECOVERED TO THEIR PRE-TEST LEVELS, ALL SETTLEMENT CHECKPOINTS TILTING CHECK POINTS AND UTILITY CHECK POINTS AS SHOWN ON THE DRAWING NO. ELS-01 SHALL BE MONITORED ONCE PER DAY. THE RESULTS SHALL BE PRODUCED IN ACCORDANCE WITH NOTE (I) 13.

**(IV) PUMP TEST CRITERIA**

THE PUMPING TEST SHALL BE CONSIDERED ACCEPTABLE IF THE FOLLOWING CRITERIA ARE MET WHEN THE DESIGNATED WATER LEVEL IS ACHIEVED INSIDE THE SITE:

- NO UNDUE SETTLEMENT OR MOVEMENT OF ANY SETTLEMENT CHECKPOINTS OR TILTING CHECKPOINTS AS STATED IN APPROVED EXCAVATION AND LATERAL SUPPORT WORKS PLAN OR NO DEFECT/DAMAGE TO ADJACENT GROUND/ STRUCTURES/ UTILITIES.
- THE GROUND SETTLEMENT DURING DEWATERING SHOULD NOT EXCEED 5.0mm.

**(V) ASSESSMENT REPORT**

- AFTER COMPLETION OF THE PUMPING TEST, THE CONTRACTOR SHALL PREPARE AN ASSESSMENT REPORT BASED ON THE TEST RESULTS DISCUSSING THE ASSUMED AND ACTUAL CONDITIONS ON SITE. INTERPRET THE RESULTS AND ASSESS THE EFFECTS TO THE SURROUNDING STRUCTURES AND UTILITIES. THIS REPORT SHALL BE SUBMITTED TO THE AP/RSE/RGE FOR VERIFICATION OF THE WATER CUT-OFF EFFECTIVENESS OF THE SHEET PILE WALL. THIS REPORT SHALL BE SUBMITTED TO BD'S SATISFACTION AFTER REVIEWED AND APPROVED BY AP/RSE/RGE.

**(VI) CONTINGENCY MEASURES**

- 2 NUMBERS OF RECHARGE WELL WOULD BE PROVIDED AS CONTINGENCY MEASURES IF GROUNDWATER DRAWDOWN EXCEEDING THE LIMIT AND UNSATISFACTORY PERFORMANCE DURING RECOVERY PHASE WERE FOUND. THE LOCATION OF RECHARGE WELL ARE SHOWN AT DWG. NO. ELS-13

**GENERAL NOTES ON PUMPING TEST**

- THE PUMPING WELLS SHOWN ARE MINIMUM REQUIREMENT ONLY. NOTWITHSTANDING THESE MINIMUM REQUIREMENTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO TAKE WHATEVER ADDITIONAL MEASURES THAT ARE NECESSARY TO ENSURE THE WATER LEVEL INSIDE THE SITE CAN BE LOWERED TO THE TO THE DESIGNATED LEVEL WITHOUT EXCEEDING THE DRAWDOWN AND SETTLEMENT CRITERIA STATED IN THIS DRAWING.
- INSTALLATION RECORDS AND RESPONSE TEST RESULTS OF THE PIEZOMETERS, STANDPIPES, PUMPING WELLS AND OBSERVATION WELLS SHALL BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE PUMPING TEST.
- THE PUMPING WELLS AND OBSERVATION WELLS FORM PART OF THE DEWATERING SYSTEM FOR THE FUTURE EXCAVATION.
- THE TARGET GROUNDWATER TABLES TO BE LOWERED WITHIN THE SITE, AS RECORDED BY OBSERVATION WELLS

OBSERVATION WELL	TARGET						
	P1	P2	P3	P4	P5	P6	P7
DRAWDOWN LEVEL (mPD)	-8.075	-8.075	-8.075	-7.375	-10.325	-8.075	-8.075

- THE PUMPING TEST SHALL BE STOPPED IN CASE THE GROUNDWATER DRAWDOWN OUTSIDE THE SITE EXCEEDS 2.0m. THE CONTRACTOR SHALL INVESTIGATE THE CAUSE OF THE DRAWDOWN AND IMPROVEMENT MEASURES SHALL BE PROPOSED AND IMPLEMENTED. CONTINGENCY MEASURES SUCH AS INSTALLATION OF RECHARGE WELLS BEHIND SHEET PILE WALLS MAY BE REQUIRED.
- COMPLETE PUMPING TESTS RESULT SHALL BE SUBMITTED TO BD AFTER THE SUCCESSFUL COMPLETION.
- PUMP WELLS AND OBSERVATION WELLS SHALL BE PROTECTED FROM DAMAGE. WORKS SHALL BE CARRIED OUT WITH DUE CARE IN PROXIMITY OF THOSE WELLS.
- IN CASE THE PUMPOBSERVATION WELL HAS BEEN DAMAGED DURING ANY TIME OF THE CONSTRUCTION WORKS, THE CONTRACTOR SHALL INFORM AP/RSE/RGE IMMEDIATELY AND REINSTATEMENT SHALL BE CARRIED OUT WITHOUT DELAY.

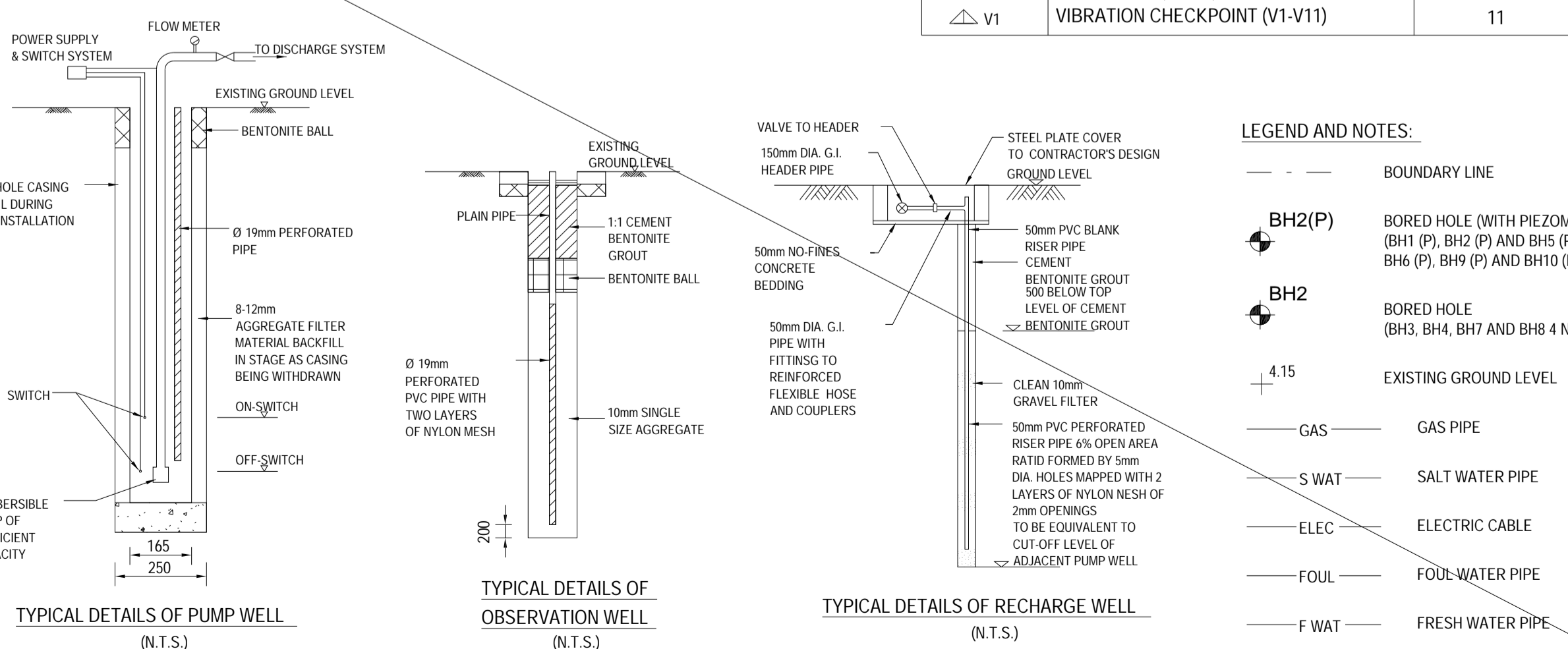
**NOTES FOR PARTIAL PUMPING TEST**

- PARTIAL PUMPING TEST SHALL BE CARRIED OUT AFTER INSTALLATION OF PILES AND BEFORE COMMENCEMENT OF BULK EXCAVATION.
- INSTALL PUMP WELL, OBSERVATION WELL, RECHARGING WELL AND PIEZOMETER.
- THE PUMPING TEST PROPOSAL TO BE SUBMITTED SEPARATELY.
- THE CRITERIA OF PUMPING TEST REFERS TO THE DWG. NO. ELS-13.
- AFTER COMPLETION OF THE PARTIAL PUMPING TEST, AN ASSESSMENT REPORT SHALL BE PREPARED BY CONTRACTOR. THIS REPORT SHOULD BE SUBMITTED TO BUILDING AUTHORITY.

**MEASURED GROUNDWATER DRAWDOWN**

	ALERT LEVEL	ALARM LEVEL	ACTION LEVEL
OBSERVATION WELLS (OW2, OW4, OW6, OW8, OW9, OW12, OW14)	0.75m BELOW THE LOWEST MEASURED GROUND WATER TABLE (RECORDS WITHIN 72 HOURS PRIOR TO THE CARRYING OUT OF PUMPING TEST)	0.80m BELOW THE LOWEST MEASURED GROUND WATER TABLE (RECORDS WITHIN 72 HOURS PRIOR TO THE CARRYING OUT OF PUMPING TEST)	0.87m BELOW THE LOWEST MEASURED GROUND WATER TABLE (RECORDS WITHIN 72 HOURS PRIOR TO THE CARRYING OUT OF PUMPING TEST)

**FOR REFERENCE ONLY**



**1 ELS PUMPING TEST SETTING OUT PLAN**  
1:200

INSTRUMENT SCHEDULE		
SYMBOL	TYPE	NUMBER
BS1	BUILDING SETTLEMENT MARKER (BS1-BS12)	12
T1	BUILDING TILTING CHECK POINT WITH VERTICAL DISPLACEMENT (T1-T11)	11
S1	GROUND SETTLEMENT CHECK POINT (S1-S10)	10
OW1	OBSERVATION WELL (OW1-OW14)	14
P1	PUMP WELL (P1 TO P7)	7
RW1	RECHARGE WELL (RW1-RW7)	7
SP1(P)	STAND PIPE (WITH PIEZOMETER) (SP1(P) TO SP5 (P))	5
U1	UTILITY SETTLEMENT MONITORING POINT ON GROUND (U1-U2)	12
V1	VIBRATION CHECKPOINT (V1-V11)	11

**LEGEND AND NOTES:**

- BOUNDARY LINE
- BH2(P) BORED HOLE (WITH PIEZOMETER) (BH1 (P), BH2 (P) AND BH5 (P), BH6 (P), BH9 (P) AND BH10 (P) NOS.)
- BH2 BORED HOLE (BH3, BH4, BH7 AND BH8 4 NOS.)
- +1.15 EXISTING GROUND LEVEL
- GAS — GAS PIPE
- S WAT — SALT WATER PIPE
- ELEC — ELECTRIC CABLE
- FOUL — FOUL WATER PIPE
- F WAT — FRESH WATER PIPE

90mm (W) x 150mm (H) space  
for BD's approval stamp /  
certification of copies of  
approved plans  
(PNAP ADM-10 APP A)