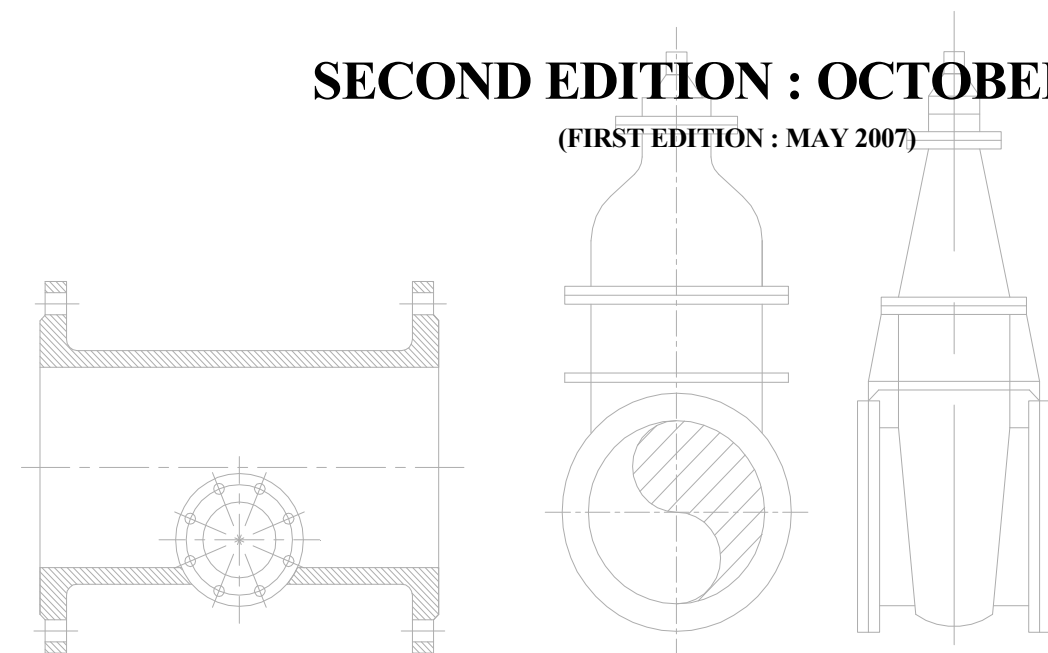
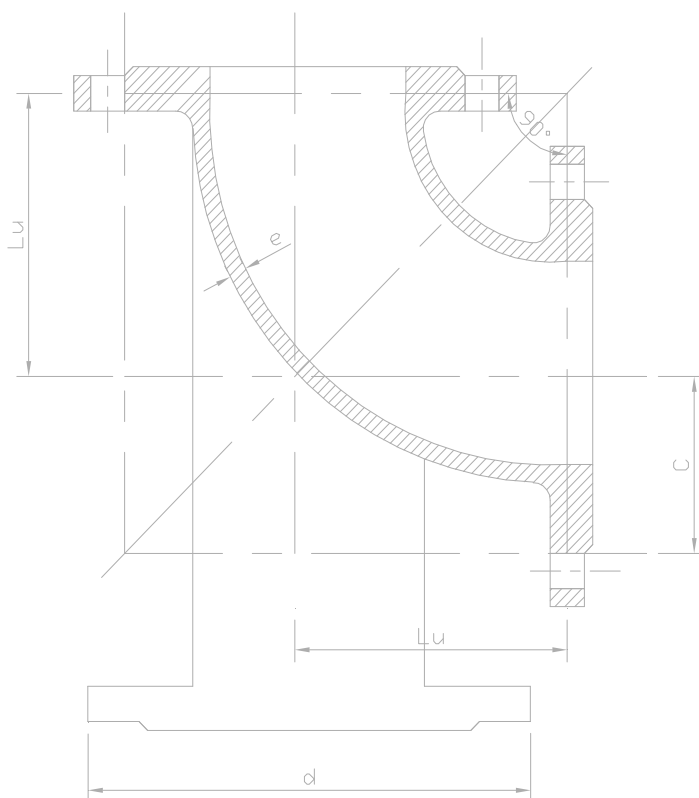
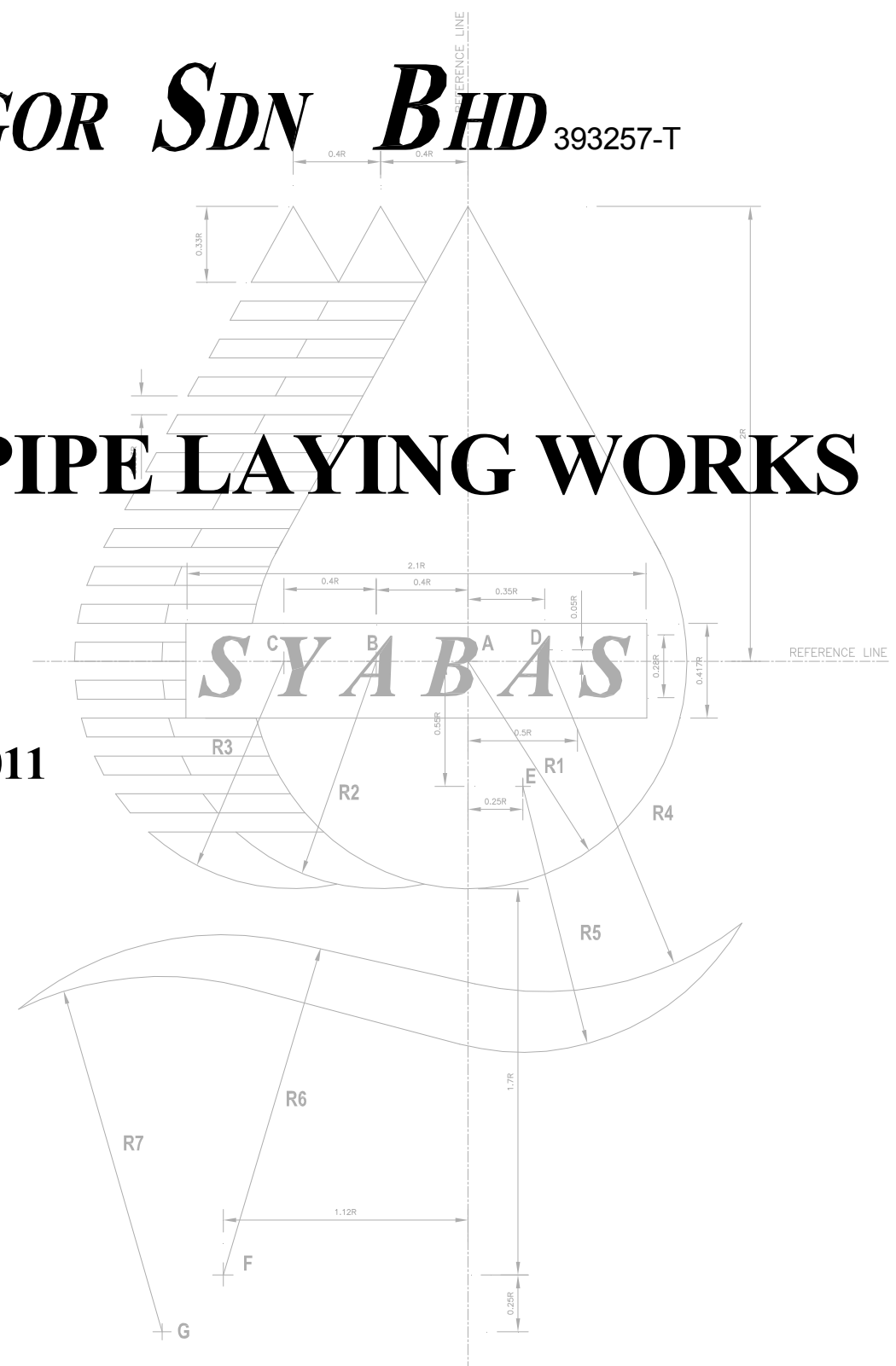
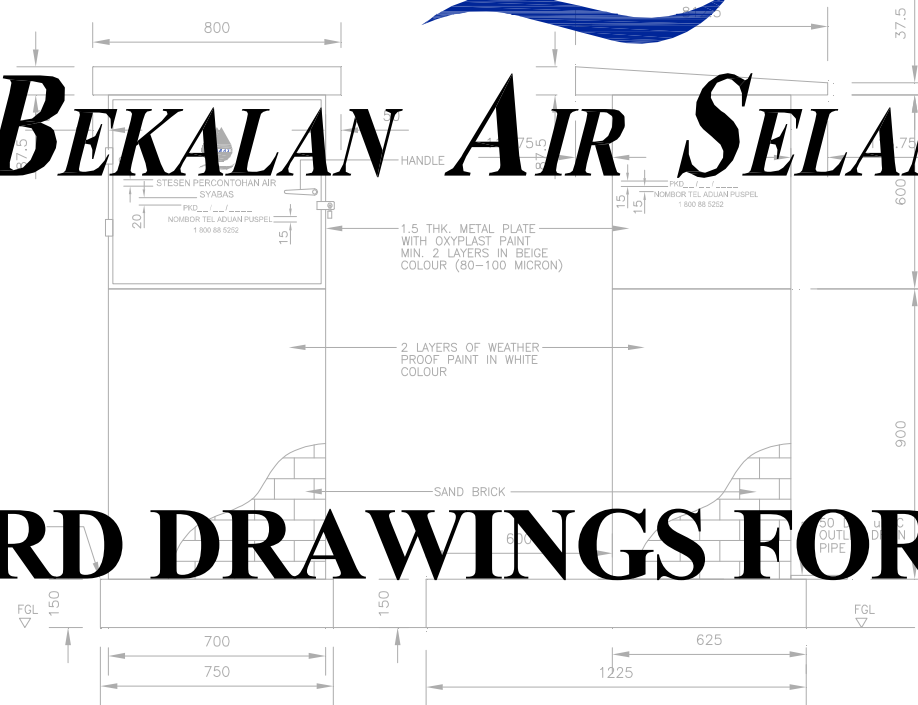




# SYARIKAT BEKALAN AIR SELANGOR SDN BHD 393257-T

## SYABAS STANDARD DRAWINGS FOR PIPE LAYING WORKS



**SECOND EDITION : OCTOBER 2011**

(FIRST EDITION : MAY 2007)

Prepared by :  
Planning and Design Department



# *SYARIKAT BEKALAN AIR SELANGOR SDN. BHD.*

PROJECT TITLE

## STANDARD DRAWINGS

PEMAJU :

[Empty box for PEMAJU signature]

KONTRAKTOR REKABINA :

[Empty box for KONTRAKTOR REKABINA signature]

JURUTERA PERUNDING :

[Empty box for JURUTERA PERUNDING signature]



SYARIKAT BEKALAN AIR SELANGOR SDN BHD

JALAN PANTAI BAHRU,  
59990, KUALA LUMPUR.  
TEL NO : 03 - 2088 5400  
LAMAM WEB : [www.syabas.com.my](http://www.syabas.com.my)  
EMAIL : [puspel@syabas.com.my](mailto:puspel@syabas.com.my)



# SYARIKAT BEKALAN AIR SELANGOR SDN. BHD.

## LIST OF DRAWINGS

### STANDARD DRAWINGS

SYA/STD/001	LEGEND, ABBREVIATION AND GENERAL NOTES
SYA/STD/002	SYABAS STANDARD LOGO
SYA/STD/003A	ARRANGEMENT AND DIMENSION FOR SYABAS LOGO AND LETTERING FOR WATER TANK
SYA/STD/004	STANDARD LOGO FOR RC CIRCULAR GROUND
SYA/STD/005/REV.1	STANDARD LAYERS AND SYMBOLS
SYA/STD/006/REV.1	PROJECT SIGNBOARD DETAILS
SYA/STD/007	PERMANENT SIGNBOARD DETAILS
SYA/STD/008/REV.2	ROAD TRAFFIC SIGNBOARD
SYA/STD/009 (CANCEL)	ROAD SIGN
SYA/STD/010/REV.2	TYPICAL DETAILS OF STANDARD MARKER POST
SYA/STD/011 (CANCEL)	DETAILS OF REFLECTIVE 3M STICKERS
SYA/STD/012/REV.3	DETAILS OF SECURITY FENCING
SYA/STD/013/REV.1	DETAILS OF WATER SAMPLING STATION
SYA/STD/014	TYPICAL DETAILS OF FIRE HYDRANT
SYA/STD/014/1	TYPICAL DETAILS OF ELEPHANT TRUNK
SYA/STD/015/REV.5	METER STAND INSTALLATION (METER SIZE 15mm-40mm) USING STAINLESS STEEL PIPE
SYA/STD/015A/REV.5	METER STAND INSTALLATION (METER SIZE 15mm-40mm) USING STAINLESS STEEL TUBE
SYA/STD/016/REV.2	TYPICAL DETAIL OF BULK METER STAND
SYA/STD/016/1	TYPICAL DETAIL OF CONSTANT FLOW VALVE
SYA/STD/017/REV.4	METER STAND FOR MULTI METER CONNECTION USING STAINLESS STEEL PIPES
SYA/STD/017A	METER STAND FOR MULTI METER CONNECTION USING STAINLESS STEEL TUBE
SYA/STD/018/REV.5	METER STAND INSTALLATION (METER SIZE 15mm-40mm) USING POLYSTEEL PIPE
SYA/STD/019/REV.4	METER STAND FOR MULTI METER CONNECTION USING POLYSTEEL PIPES
SYA/STD/019/1	METER STAND INSTALLATION FOR 4 TO 5 STOREY WALK-UP BUILDINGS
SYA/STD/019/2	METER STAND INSTALLATION FOR HIGH RISE MAPARTMENT/CONDOMINIUM
SYA/STD/019/3	METER STAND INSTALLATION FOR 4 TO 5 STOREY WALK-UP BUILDINGS USING STAINLESS STEEL TUBE
SYA/STD/020/REV.1	DETAILS FOR COMMUNICATION PIPES TAPPING ARRANGEMENT AND PIPE TRENCH
SYA/STD/021/REV.1	DETAILS OF HDPE COMMUNICATION PIPE AND TAPPING FROM HDPE RETICULATION PIPE – SHEET 1 OF 2
SYA/STD/022	DETAILS OF HDPE COMMUNICATION PIPE AND TAPPING FROM HDPE RETICULATION PIPE – SHEET 2 OF 2
SYA/STD/023	DETAILS OF HDPE COMMUNICATION PIPE AND TAPPING FROM MILD STEEL RETICULATION PIPE
SYA/STD/024	DETAILS OF HDPE COMMUNICATION PIPE AND TAPPING FROM DUCTILE IRON/uPVC/AC RETICULATION PIPE
SYA/STD/025	COMBINED METER POSITION FOR COMERCIAL AND HYDRANT METER

### TYPICAL DETAIL DRAWINGS

SYA/TD/001/REV.1	TYPICAL DETAILS OF AIR VALVE CHAMBER
SYA/TD/002/REV.2	TYPICAL DETAILS OF BUTTERFLY VALVE CHAMBER
SYA/TD/003/1/REV.2	TYPICAL DETAILS OF SCOUR VALVE CHAMBER (FOR 500 DIA. AND BELOW)
SYA/TD/003/2/REV.2	TYPICAL DETAILS OF SCOUR VALVE CHAMBER (FOR 600 DIA. AND ABOVE)
SYA/TD/004/REV.1	TYPICAL DETAILS OF PRECAST CHAMBER
SYA/TD/004/1	TYPICAL DETAILS OF SLUICE VALVE CHAMBER
SYA/TD/005 (CANCEL)	DETAILS OF STANDARD COVER CHAMBER – (SHEET 1 OF 2)
SYA/TD/006 (CANCEL)	DETAILS OF STANDARD COVER CHAMBER – (SHEET 2 OF 2)
SYA/TD/007/REV.1	DETAILS OF ZONE METER CHAMBER
SYA/TD/008	DETAILS OF TELEMETRY CABINET
SYA/TD/009/REV.1	TYPICAL DETAILS OF TRENCH
SYA/TD/010	TYPICAL DETAILS OF PIPE CROSSING AND SPIKE GUARD
SYA/TD/011/REV.1	DETAILS OF AIR INSERTION POINT AND PRECAST CHAMBER
SYA/TD/012	DETAILS OF MULTI SHAPED CHAMBER COVER TYPE A
SYA/TD/013	DETAILS OF MULTI SHAPED CHAMBER COVER TYPE B
SYA/TD/014/REV.1	DETAILS OF COMPOSITE CHAMBER COVER
SYA/TD/015	JOINTING DETAILS OF HDPE PIPE/MS PIPE
SYA/TD/016	TYPICAL DETAILS OF ALTITUDE VALVE WITH STRAINER
SYA/TD/017	LAYOUT PLAN OF PRESSURE REDUCING VALVE
SYA/TD/018	TYPICAL DETAILS OF THERMOPLASTIC, DI AND MS PIPE TRENCH FOR CONCRETED ROAD SHOULDER
SYA/TD/019	TYPICAL DETAILS OF INTERNAL STAIRCASE FOR RC RESERVOIR
SYA/TD/020	TYPICAL DETAILS OF EXTERNAL STAIRCASE FOR RC RESERVOIR
SYA/TD/021/REV.2	DOWNSIZING OF PIPE SIZE AND REPOSITIONING OF FIRE HYDRANT

### MS PIPE DRAWINGS

SYA/MS/STD/001/REV.1	DETAILS OF MILD STEEL PIPES, BENDS AND CONCENTRIC TAPERS.
SYA/MS/STD/002/REV.1	DETAILS OF MILD STEEL TEES
SYA/MS/STD/003/REV.1	DETAILS OF JOINTS (SHEET 1 OF 2)
SYA/MS/STD/004	DETAILS OF JOINTS (SHEET 2 OF 2)
SYA/MS/STD/005	DETAILS OF CONCRETE THRUST BLOCK AND ANCHOR BLOCK.

### DI PIPE DRAWINGS

SYA/DI/STD/001	DETAILS OF DUCTILE IRON GUSSETED BENDS.
SYA/DI/STD/002/REV.1	DETAILS OF DI FLANGED TEES, DOUBLE SOCKET TEES WITH FLANGED AND ALL-SOCKET TEES.
SYA/DI/STD/003/REV.1	DETAILS OF DI FLANGED FLANGED SPIGOT, COLLARS, FLANGED DOUBLE SOCKET LEVEL INVERT TEE, TAPERS AND 90 DUCKFOOT.
SYA/DI/STD/004/REV.1	DETAILS OF ALL-FLANGED LEVEL INVERT TEE, FLANGED BELLMOUTHS AND FLANGED SOCKET.
SYA/DI/STD/005	DETAILS OF DI CONCRETE THRUST BLOCK AND ANCHOR BLOCK.
SYA/DI/STD/006	SCHEDULE OF THRUST BLOCK AND ANCHOR BLOCK.

### HDPE DRAWINGS

SYA/PE/STD/001	PIPE SPECIALS – (SHEET 1 OF 2)
SYA/PE/STD/002	PIPE SPECIALS – (SHEET 2 OF 2)
SYA/PE/STD/003	DETAILS OF THRUST BLOCK – (SHEET 1 OF 2)
SYA/PE/STD/004	DETAILS OF THRUST BLOCK – (SHEET 2 OF 2)

### ABS PIPE DRAWINGS

SYA/ABS/STD/001	PIPE FITTINGS – (SHEET 1 OF 3)
SYA/ABS/STD/002	PIPE FITTINGS – (SHEET 2 OF 3)
SYA/ABS/STD/003	PIPE FITTINGS – (SHEET 2 OF 3)

LEGEND	
	EXISTING ROAD/TRACK
	EXISTING STREAM/DRAIN (EARTH DRAIN)
	CONTOUR LINES
	EXISTING SLOPE
	PROPOSED SLOPE
	FUTURE SLOPE BY OTHERS
	CONCRETE BUILDING
	SEMI-PERMANENT BUILDING
	WOODEN BUILDING
	LOT BOUNDARY
	CHAIN-LINK FENCE
	FENCE AND GATE
	BRICK/CONCRETE FENCE
	GUARDRAIL
	TRANSMISSION LINE WITH PYLON
	RAILWAY LINE
	EXISTING CULVERT WITH SUMP INLET AND WINGWALL OUTLET
	TELEPHONE POST
	ELECTRIC POST
	LAMP POST
	REFLECTOR POST
	CHEVRON
	VALVE CHAMBER
	HYDRANT CHAMBER
	SIGNBOARDS WITH POSTS

LEGEND	
	STATE BOUNDARY
	DISTRICT BOUNDARY
	MUKIM BOUNDARY
	ALIGNMENT OF PROPOSED DRAIN/DIVERSION OF EXISTING DRAIN
	PROPOSED GROUND LEVEL
	FUTURE GROUND LEVEL BY OTHERS
	PROPOSED PIPELINE IN PROFILE
	EXISTING GROUND IN PROFILE
	PROPOSED GROUND IN PROFILE
	GROUND TO CUT IN PROFILE
	GROUND TO BE FILLED IN PROFILE
	450mm NB SLUICE VALVE
	450mm NB BUTTERFLY VALVE
	300mm NB WASHOUT VALVE INSTALLED ON 300mm OFF 1200mm LEVEL INVERTED TEE
	200mm NB DOUBLE ORIFICE AIR VALVE INSTALLED ON 700mm OFF 1200mm TEE
	600mm NB FLOW METER
	END CAP/BLANK FLANGE
	FIRE HYDRANT
	TAPER
	PROPOSED RESERVOIR
	EXISTING RESERVOIR
	PIPELINE No. 1

ABBREVIATION	FULL WORDS
	DEFLECTION ANGLE
AC	ASBESTOS CEMENT PIPE
APPROX.	APPROXIMATE
B.D.	BLOCK DRAIN
BM	BENCH MARK
BS	BRITISH STANDARD
BV	BUTTERFLY
B.W.	BOTH WAYS
BWL	BOTTOM WATER LEVEL
CAP.	CAPACITY
c/c, c.c	CENTRE TO CENTRE
CD	CONCRETE DRAIN
Ch., Ch.	CHAINAGE
C.I.	CAST IRON
CL	CENTRELINE
CONC.	CONCRETE
CUL.	CULVERT
C/W	COMPLETE WITH
DAV	DOUBLE AIR VALVE
D/F	DOUBLE FLANGE
DI.	DIAMETER
DI	DUCTILE IRON PIPE
DWG.	DRAWING
E.F.	EACH FACE
ELEV.	ELEVATION
F/E	FLANGE END
F/PE, F/S	FLANGED/PLAIN END
F.F.	FAR FACE
FGL	FINISHED GROUND LEVEL
FID., fid	FINISH INTERNAL DIAMETER
FM	FLOW METER
GALV.	GALVANISED
G.I.	GALVANISED IRON
G.L.	GROUND LEVEL
GRP	GLASSFIBRE REINFORCED PLASTICS PIPE
H	HEIGHT, HORIZONTAL
HB	HORIZONTAL BEND
HORIZ.	HORIZONTAL
H/R	HALF-ROUND
H.W.	HARD WOOD
I.L.	INVERT LEVEL
INV., inv.	INVERT
I.P.	INTERSECTION POINT
JBA	JABATAN BEKALAN AIR
KG., kg	KAMPUNG, KILOGRAM
Km	KILOMETER
KN	KILONEWTON
L	LENGTH
LEV.	LEVEL

ABBREVIATION	FULL WORDS
LHS	LEFT HAND SIDE
m	METER
MAX.	MAXIMUM
M.C.	MECHANICAL COUPLING
MH	MANHOLE
MIN.	MINIMUM
MLD	MILLION LITRES PER DAY
mm	MILIMETRE
MS	MILD STEEL
N.B.	NOMINAL BORE
N.F.	NEAR FACE
NO., No.	NUMBER
NRV	NON-RETURN VALVE
NTS	NOT TO SCALE
O.D., o.d.	OUTSIDE DIAMETER
P.A.	PAIP AIR
PE	POLYETHYLENE PIPE
P/E	PLAIN ENDED
P.C.	PRECAST CONCRETE
P.L.	PLATFORM LEVEL
PROV.	PROVISIONAL
PVC	POLYVINYL CHLORIDE
R, Rc	RADIUS
R.C.	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
REF.	REFERENCE
REINF.	REINFORCED, REINFORCEMENT
REQD.	REQUIRED
RHS	RIGHT HAND SIDE
R.L.	REDUCE LEVEL
R.O.W.	RIGHT OF WAY
SAV	SINGLE AIR VALVE
SB	SIGN BOARD
SG., Sg.	SUNGAI
STD.	STANDARD
STN	STATION
SV	SLUICE VALVE
SYABAS	SYARIKAT BEKALAN AIR SELANGOR SDN. BHD.
T & B	TOP AND BOTTOM
TNB	TENAGA NASIONAL BERHAD
TBM	TEMPORARY BENCH MARK
THK.	THICK
T.W.L.	TOP WATER LEVEL
uPVC	UNPLASTICISED POLYVINYL CHLORIDE PIPE
V, VERT.	VERTICAL
VB	VERTICAL BEND
V.C.	VALVE CHAMBER
W	WIDTH
WO	WASHOUT/SCOUR

NOTE :  
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

- NOTES :
- ALL LEVELS ARE IN METRES WITH REFERENCE TO LAND SURVEY DATUM.
  - ALL CHAINAGE ARE IN METERS.
  - THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE GENERAL SPECIFICATION.
  - THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LEVELS BEFORE WORK STARTS.
  - ALL EXISTING INVERT LEVELS AND GROUND LEVELS WHERE INDICATED SHALL BE CONFIRMED ON SITE.
  - ALL PIPES ARE TO BE STEEL PIPES COMPLYING WITH B.S. EN 534:1990 AND B.S 3601:1987 OBTAINED FROM SYABAS APPROVED SUPPLIERS.
  - DIAMETER OF PIPE SPECIALS AND PIPE FITTING MENTIONED IN THE DRAWING ARE REFERED TO THE NOMINAL BORE OF THE PIPE.
  - MINIMUM COVER TO PIPES TO BE 1.0m UNLESS OTHERWISE STATED.
  - WHERE INSUFFICIENT COVER IS ENCOUNTERED AND OR WHERE DIRECTED BY THE S.O. a 0.15m CONCRETE SURROUND SHALL BE PROVIDED FOR PIPES.
  - EXPOSED STEEL PIPES ARE TO BE INTERNALLY CONCRETE LINED AND EXTERNALLY PAINTED WITH 100 MICRON THICK PRIMER, 150 MICRON TWO PACK EPOXY AND FINISHED WITH 100 MICRON THICK POLYURETHANE AFTER REPAIRING ALL DAMANGED PAINTWORKS. THE TOTAL PAINT THICKNESS SHALL BE 350 MICRON.
  - BURIED STEEL PIPES ARE TO BE INTERNALLY CONCRETE LINED AND EXTERNALLY WRAPPED WITH BITUMEN WRAPPING AS SPECIFIED.

- THE SCOUR PIPE ARE TO BE PROVIDED AT LOW POINTS AND ARE TO BE LAID TO DISCHARGE INTO NEAR BY DRAIN.
- THE EXACT POSITION OF SLUICE VALVES, SCOURS VALVES, AIR VALVES, BEND, DEGREE OF BEND TO BE CONFIRMED ON SITE BY S.O.
- STEEL S-BEND TO BE INSTALLED OVER ALL CROSSINGS OF CULVERT, DRAIN, SUMPS AND OTHER PERMANENT STRUCTURE WHERE REQUIRED TO AVOIDS OBSTRUCTION SHALL BE CONFIRMED BY THE S.O. ON SITE.
- WHEN THE PROPOSED PIPE IS CONNECTED TO THE EXISTING PIPE, THE EXISTING PIPELINE SHALL BE EXPOSED TO ASCERTAIN ITS EXACT DIMENSION BEFORE ORDERING OF THE NEW PIPE, SPECIAL AND FITTING FOR SUCH CONNECTION. PIPE SIZE, LOCATIONS AND DETAILS FOR ALL EXISTING PIPELINES AS SHOWN ON THESE DRAWING ARE INDICATIVE ONLY.
- ALL PERMANETLY EXPOSED EDGES OF CONCRETE MEMBER TO HAVE 20mm x 20mm CHAMFER.
- COVER TO THE OUTERMOST REINFORCEMENT SHALL BE 50mm(MINIMUM). TO BE TESTED AND PROVEN WITH A CALIBRATED GAUGE.
- ALL REINFORCED BARS TO BE HIGH YIELD DEFORMED BARS COMPLYING WITH B.S 4449:1997 UNLESS OTHERWISE STATED.
- IDENTIFICATION MEMBERS, SIZES AND SPACING OF BARS 'Y12-150' MEANS HIGH TENSILE DEFORMED BARS OF 12mm NOMINAL DIAMETER PALTE AT AT 150 c/c CENTRES.
- MINIMUM LAP LENGTH FOR STEEL BARS SHALL BE 50  $\phi$  WHERE ' $\phi$ ' IS DIAMETER OF BAR IN MILIMETRE.

- DIMENSIONS OF HOOKS, RADIUS OF BEND SHALL COMPLY WITH B.S 4499:1997.
- REINFORCE CONCRETE GRADE 35A/20 FOR WATER RETAINING STRUCTURES AND CLASS 25/20 FOR VALVE CHAMBERS, DRAINAGE SUMPS, U-DRAINS AND BOX CULVERT. FOR CONCRETE CHAMBER INSTALLED NEAR CORROSIVE GROUND SHALL BE OF THE SULPHITE RESISTANT CEMENT AND STEEL REINFORCEMENT COVERS INCREASED TO 60mm(MINIMUM).
- MASS CONCRETE CLASS 20/20.
- BUILDING CONCRETE CLASS 15/20.
- STEEL GUSSETED BEND ARE INDICATED ON PLAN. THE ACTUAL DEGREE OF BENDS AND THEIR POSITIONS ARE TO BE ASCERTAINED ON SITE BY S.O APPROPRIATE BENDS ARE TO BE PROVIDED WHERE NECESSARY.
- THE RESERVOIR SHALL BE PAINTED WITH 2 COATS OF APPROVED ACRYLIC BASE PAINT TO EXTERNAL EXPOSED CONCRETE SURFACES. ALL PAINTWORK SHALL BE PROVIDED WITH 5 YEARS WRITTEN WARRANTY FROM THE MANUFACTURER AGAINST PEELING AND FUNGUS GROWTH.
- FOR TEST OF WATER RETENSION, THE RESERVOIR SHOULD BE CLEANED AND INITIALLY FILLED TO THE NORMAL MAXIMUM LEVEL WITH TREATED WATER AT A UNIFORM RATE OF NOT GREATER THAN 1 METER IN 24 HOURS.
- CEMENT SAND MORTAR 1:3 MIX.

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
PETI SURAT 5001,  
JALAN PANTAI BAHRU,  
59990, KUALA LUMPUR.  
TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
FAX NO : 03 - 2282 5498  
LAMAM WEB : www.syabas.com.my  
EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
**LEGEND, ABBREVIATION AND GENERAL NOTES**

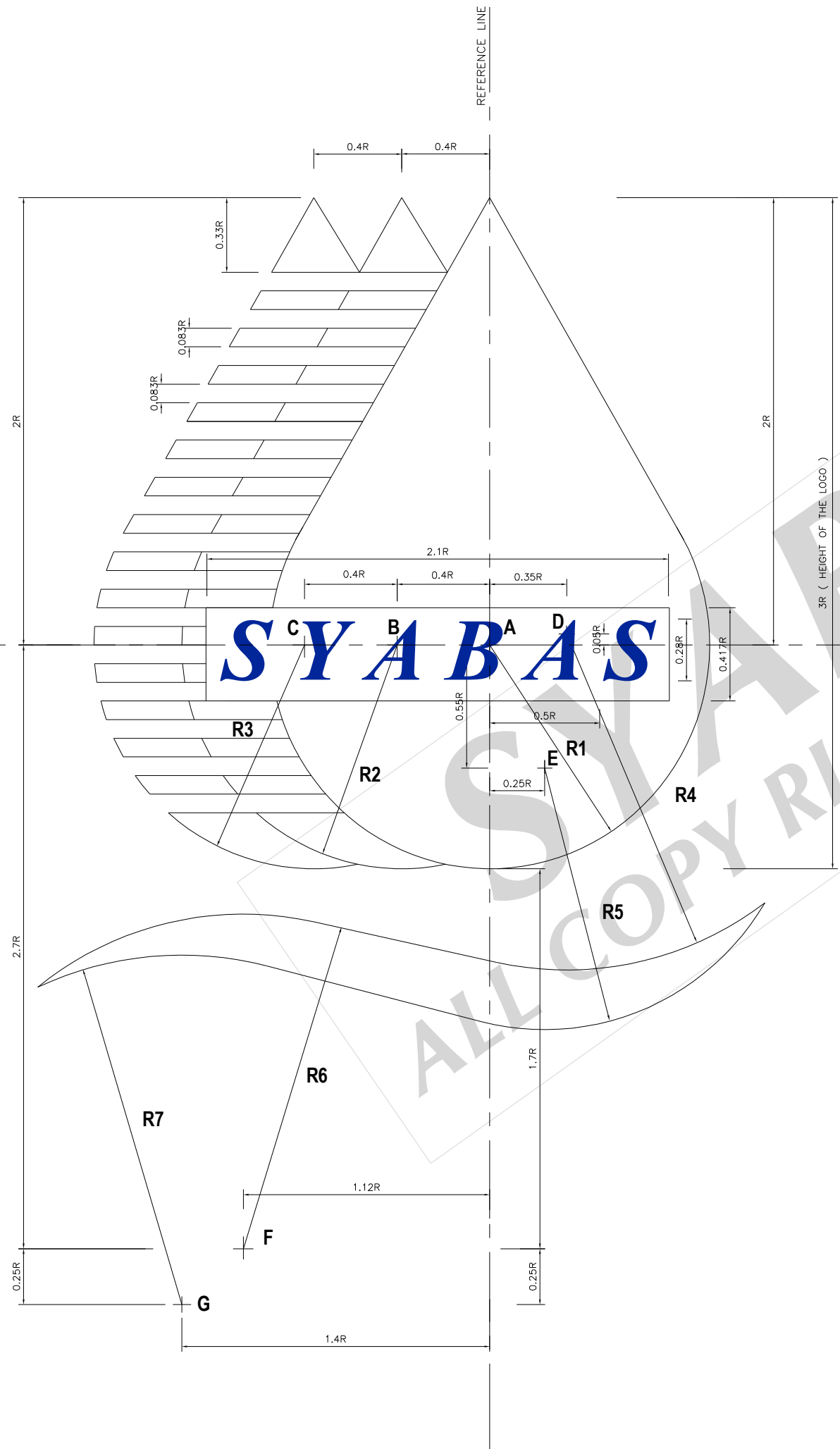
DRAWN BY : SHAHRUL      DESIGN : SAT

CHECKED : HS              APPROVED : LPL

SCALE : NTS              DATE : OCT 2006

DRAWING NO:  
**SYA / STD / 001**

- NOTE:
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.
  2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
  3. THE LETTERING SIZE SHALL BE 0.28R, WHEREBY R IS RADIUS.
  4. THE LETTERING FONT MUST BE IN 'TIMES NEW ROMAN'.
  5. THE LETTERING SPACING SHALL BE 1 'SPACE-BAR' SPACING.
  6. THE COLOUR CODES ARE AS FOLLOW :
    - WATER DROP ( 1 ) - BLUE (PAINT CODE : TRANS ELITE BLUE P396-11463)
    - WATER DROP ( 2 ) - LIGTH BLUE (PAINT CODE : JOTUN 1050R90B)
    - WATER DROP ( 3 ), LATTERING & WAVE - DARK BLUE (NATION WIDE PURPLE P396-11406)



SCHEDULE OF RADIUS

R1	1R
R2	1R
R3	1R
R4	3R
R5	2.33R
R6	1R
R7	3.13R

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

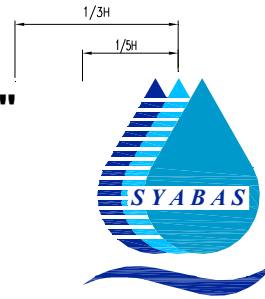
PROJECT :

DRAWING TITLE :  
**SYABAS STANDARD LOGO**

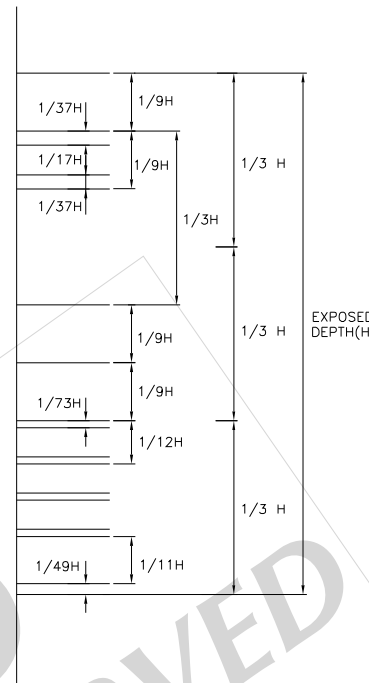
DRAWN BY : SHAIFUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2006

DRAWING NO:  
**SYA / STD / 002**

"AIR NADI KEHIDUPAN"



**TAMAN TUN DR ISMAIL**  
**MUATAN : 50JL**  
**PTA : 80m (ODL)**  
**PRA : 73m (ODL)**  
**PUSPEL : 1 800 88 5252**



ARRANGEMENT AND DIMENSION OF SYABAS LOGO AND  
 LETTERING FOR WATER TANK

**GENERAL GUIDELINES ON SYABAS LOGO DIMENSION  
 TO BE PAINTED ON WATER RESERVOIRS/TANKS.**

1. Depth of the reservoirs/tanks is defined as the exposed vertical surface of the reservoir /tank excluding supporting structures. ( refer to Drawing No: SYA / STD / 004).
2. Column width of Mushroom type water tower is defined as diameter of the vertical column of the water tower.
3. SYABAS logo height is defined as the height of the 3 water drops excluding the wave.
  - a. In the technical Drawing No:SYA / STD / 002, it is indicated as 3R.
  - b. 3R is equivalent to 1/3 of exposed vertical surface of the reservoir/tank.
  - c. R is the radius of the circle required to construct SYABAS logo.
  - d. The dimension of SYABAS logo is shown in Drawing No: SYA / STD / 002.
4. SYABAS logo height shall be painted as 1/3 of exposed depth for normal reservoirs/tanks or 1/3 of column diameter for mushroom type of water tower.

**GENERAL GUIDELINES ON LETTERING DIMENSION TO BE  
 PAINTED ON THE WALL OF WATER RESERVOIRS/TANKS.**

1. The name of Tank/Taman shall be painted as 1/3 of SYABAS logo height and the font used shall be ARIAL ( refer to Drawing SYA / STD / 004).
2. Technical information such as Capacity, TWL and BWL shall be 2/9 of SYABAS logo height and the font shall be ARIAL ( refer to Drawing No: SYA / STD / 004).

**GENERAL SPECIFICATION OF PAINT  
 ON THE WALL OF WATER RESERVOIRS/TANKS.**

1. Suitable surface preparation and undercoat shall be applied in accordance to the manufacturer's requirement.
2. All paint shall be of water based emulsion type paint which is fungus resistant.
3. Paint shall be suitable for external use ( weatherbond, weather shield etc ). with 5 years (minimum). Manufacturer's shall provide a written warranty to SYABAS to cover defect, peeling, poor workmanship, fungus etc. The paintwork shall be applied by the manufacturer's workers or under their supervision.
4. Paint colour code shall follow colour code as in drawing no. SYA / STD / 002.

- NOTE:
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.
  2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
  3. THE LETTERING FONT MUST BE IN ' ARIAL '.
  4. THIS DRAWING SHALL BE READ INCONJUNCTION WITH DRAWING NO. SYA / STD / 002.

REV.	DESCRIPTION	DATE
A	ADDITIONAL NOTES	OCT 2006



SYARIKAT BEKALAN AIR SELANGOR SDN BHD  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

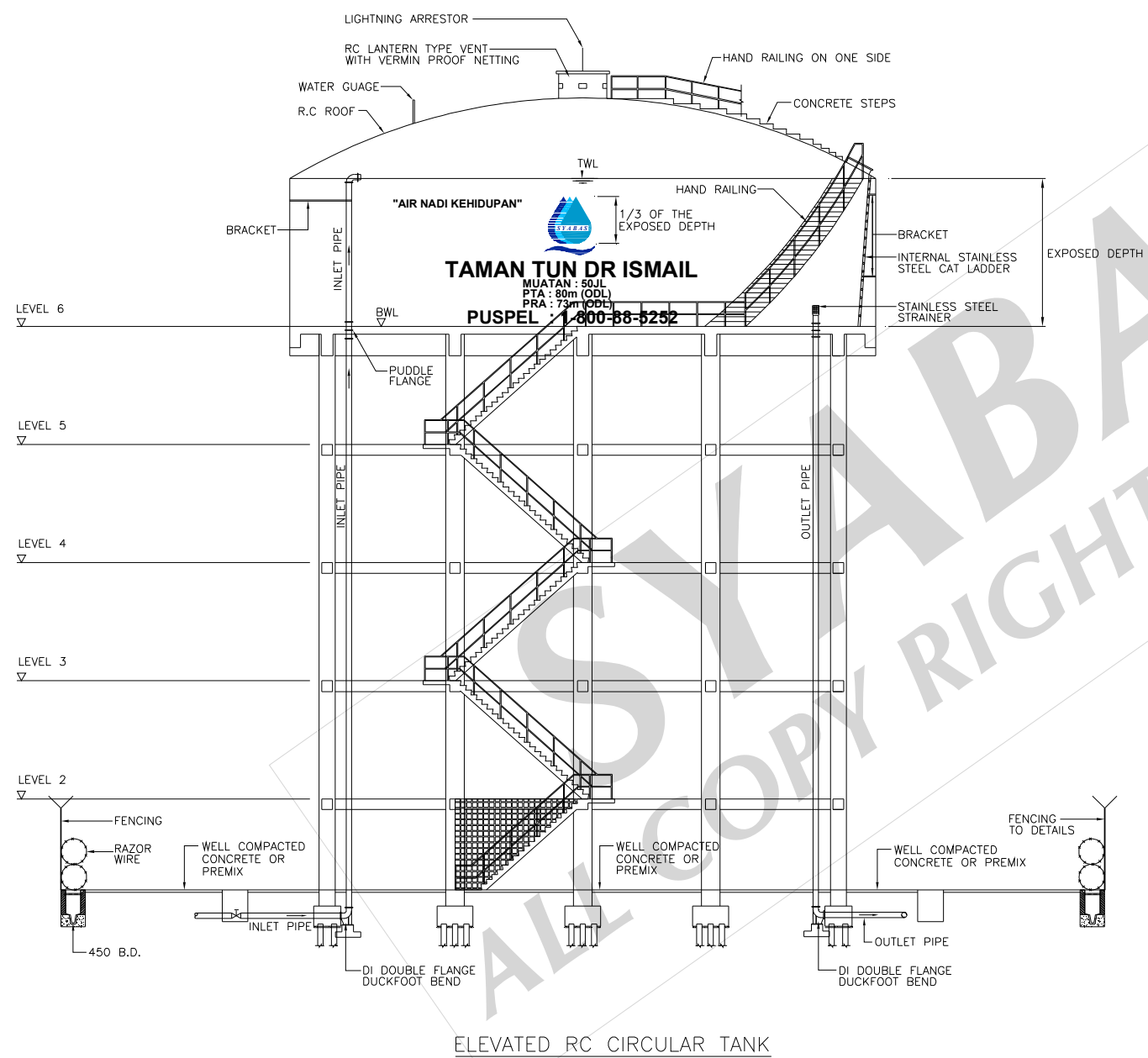
PROJECT :

DRAWING TITLE :  
 ARRANGEMENT AND DIMESION FOR SYABAS LOGO AND  
 LETTERING FOR WATER TANK.

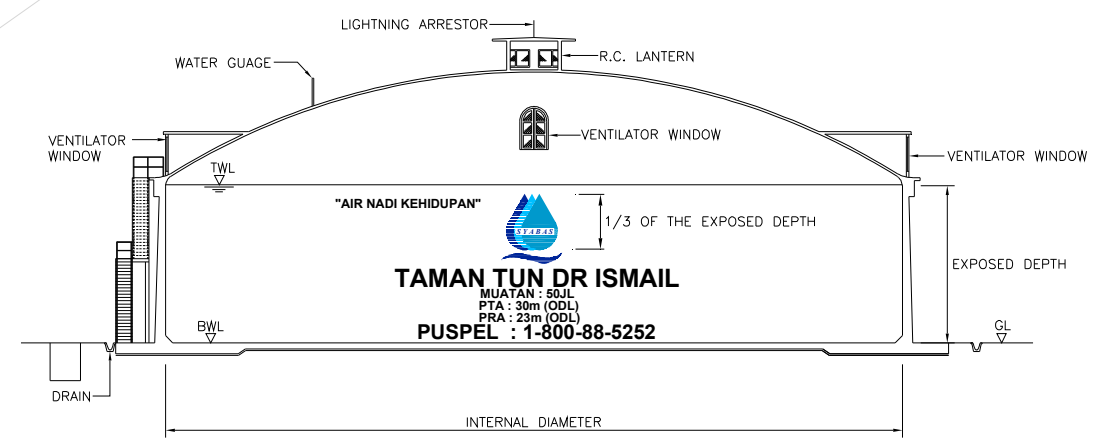
DRAWN BY : SHAIFUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2006

DRAWING NO:  
 SYA / STD / 003A

NOTE:  
 1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.  
 2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.



ELEVATED RC CIRCULAR TANK



GROUND RC CIRCULAR TANK

REV.	DESCRIPTION	DATE

  
**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

JOB TITLE :

DRAWING TITLE :  
 STANDARD LOGO FOR RC CIRCULAR  
 GROUND AND ELEVATED WATER TANK

DRAWN BY : SHAIFUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2006

DRAWING NO:  
 SYA / STD / 004

SYMBOL	LAYER LEGEND	DESCRIPTION	LAYER TEXT
	WLSV	Sluice Valve Open	WTSV
	WLSV	Sluice Valve Throttle	WTSV
	WLSV	Sluice Valve Close	WTSV
	WLBV	Butterfly valve Close	WTAV
	WLBV	Butterfly valve Throttle	WTAV
	WLBV	Butterfly valve Open	WTAV
	WLAV	Air Valve	WTAV
	WLSV	Scour Valve	WTSV
	WLPRV	Pressure Reducing Valve	WTPRV
	WLACV	Altitude Control Valve	WTACV
	WLCFV	Constant Flow Valve	WTCFV
	WLFTV	Float Tank / Valve	WTFTV
	WLNRV	Non Return Valve	WTNRV
	WLFH	Fire Hydrant	WTFH
	WLFM	Flow Meter / Zone Meter	WTFM
	WLMS	Stand Meter	WTMS
	WLWSP	Water Sampling Point	WTWSP
	WLTTP	Taper / Reducer	WTTTP
	WLP	Pump	WTP
	WLPGR	Pressure Gauge / Recorder	WTPGR
	WLDE	Dead End	WTDE
	WLS	Stopcock	WTS
	WLB	Bend	WTB
	WLSB	S/Bend	WTSB
	WLET	Elephant Trunk	WTET
	WLWT	Water Tank	WTWT
	WLR	Reservoir	WTR
	WLD	Dam	WTD
	WLIP	Intake Point	WTIP
	WLWTP	Water Treatment Plant	WTWTP

PIPE SIZE	COLOUR NEW PIPELINE	LAYER TEXT	LAYER POLYLINE	COLOUR EXISTING PIPELINE	EXISTING LAYER TEXT	EXISTING LAYER POLYLINE
100mm	Blue	PT100	PL100	Blue	EXPT100	EXPL100
150mm	Blue	PT150	PL150	Blue	EXPT150	EXPL150
200mm	Blue	PT200	PL200	Blue	EXPT200	EXPL200
250mm	Blue	PT250	PL250	Blue	EXPT250	EXPL250
300mm	Blue	PT300	PL300	Blue	EXPT300	EXPL300
350mm	Green	PT350	PL350	Green	EXPT350	EXPL350
400mm	Green	PT400	PL400	Green	EXPT400	EXPL400
450mm	Green	PT450	PL450	Green	EXPT450	EXPL450
500mm	Green	PT500	PL500	Green	EXPT500	EXPL500
600mm	Green	PT600	PL600	Green	EXPT600	EXPL600
700mm	Green	PT700	PL700	Green	EXPT700	EXPL700
750mm	Red	PT750	PL750	Red	EXPT750	EXPL750
800mm	Red	PT800	PL800	Red	EXPT800	EXPL800
850mm	Red	PT850	PL850	Red	EXPT850	EXPL850
900mm	Red	PT900	PL900	Red	EXPT900	EXPL900
1000mm	Red	PT1000	PL1000	Red	EXPT1000	EXPL1000
1050mm	Red	PT1050	PL1050	Red	EXPT1050	EXPL1050
1100mm	Red	PT1100	PL1100	Red	EXPT1100	EXPL1100
1150mm	Red	PT1150	PL1150	Red	EXPT1150	EXPL1150
1200mm	Red	PT1200	PL1200	Red	EXPT1200	EXPL1200
1300mm	Red	PT1300	PL1300	Red	EXPT1300	EXPL1300
1400mm	Red	PT1400	PL1400	Red	EXPT1400	EXPL1400
1500mm	Red	PT1500	PL1500	Red	EXPT1500	EXPL1500
1600mm	Red	PT1600	PL1600	Red	EXPT1600	EXPL1600
1700mm	Red	PT1700	PL1700	Red	EXPT1700	EXPL1700
1800mm	Red	PT1800	PL1800	Red	EXPT1800	EXPL1800
1900mm	Red	PT1900	PL1900	Red	EXPT1900	EXPL1900
2000mm	Red	PT2000	PL2000	Red	EXPT2000	EXPL2000
2100mm	Red	PT2100	PL2100	Red	EXPT2100	EXPL2100
2200mm	Red	PT2200	PL2200	Red	EXPT2200	EXPL2200

AS A GENERAL GUIDELINE FOR THE LAYER SHALL BE :-

PIPE SIZE	COLOUR	LAYER TEXT	LAYER POLYLINE
Ø	100mm TO 300mm - BLUE	PT Ø	PL Ø
Ø	350mm TO 700mm - GREEN	PT Ø	PL Ø
Ø	750mm AND ABOVE - RED	PT Ø	PL Ø

- NOTE:
- Ø IS THE DIAMETER OF PIPELINE.
  - PROPOSED OR AS BUILT PIPELINE SHALL BE CONTINUOUS LINETYPE.
  - EXISTING PIPELINE SHALL BE DASHED LINETYPE.

BOUNDARY	LAYER TEXT	LAYER POLYLINE POLYGON	COLOUR CODE	LINE TYPE 25mm THICK.	LINE TYPE NAME		TYPE OF DATA
					SYABAS REF.	ACAD NAME	
1. STATE	BTS	BLS	30	---·---·	SYABAS 1	- Dash dot	POLYGON
2. DISTRICT	BTD	BLD	220	-·-·-·-·-·-·	SYABAS 2	- Dash double-dot	POLYGON
3. MUKIM	BTM	BLM	171	·-·-·-·-·-·-·	SYABAS 3	- Dash triple-dot	POLYGON
4. MUNICIPAL / COUNCIL	BTMC	BLMC	170	·-·-·-·-·-·-·	SYABAS 4	- Dash forth-dot	POLYGON
5. BANDAR	BTB	BLB	140	-·-·-·-·-·-·-·	SYABAS 5	- Double-dash dot	POLYGON
6. TAMAN / SECTION	BTTTS	BLTS	89	-·-·-·-·-·-·-·	SYABAS 6	- Double-dash, double-dott	POLYGON
7. KAMPUNG	BTK	BLK	10	-·-·-·-·-·-·-·	SYABAS 7	- Double-dash, triple-dot	POLYGON

TRANSPORTATION	LAYER TEXT	LAYER POLYLINE POLYGON	COLOUR CODE	LINE TYPE	LINE TYPE NAME	TYPE OF DATA	
						ROAD LINE TYPE	THICKNESS
1. FEDERAL ROAD	TFR	TLFR	1	—————	CONTINUOUS		
2. STATE ROAD	TSTR	TLSTR	40	—————	CONTINUOUS	POLYLINE	- 100mm Thk.
3. HIGHWAY	TTH	TLH	3	—————	CONTINUOUS	ROAD EDGE	- 150mm Thk.
4. MUNICIPAL / COUNCIL	TTMC	TLMC	150	—————	CONTINUOUS	CENTRE LINE	- 100mm Thk.
5. LRT/MONORAIL/ERL	TTLME	TLLME	5	+++++	TRACKS		
6. RAILWAYS	TTR	TLR	7	+++++	TRACKS		

NOTE :  
 1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.  
 2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

REV.	REVISED BY	DESCRIPTION	DATE
01	LPL/HS	Original drawing.	OCT. '06
1	YHH	Colour code for pipeline changed.	18 MAY '11

  
**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

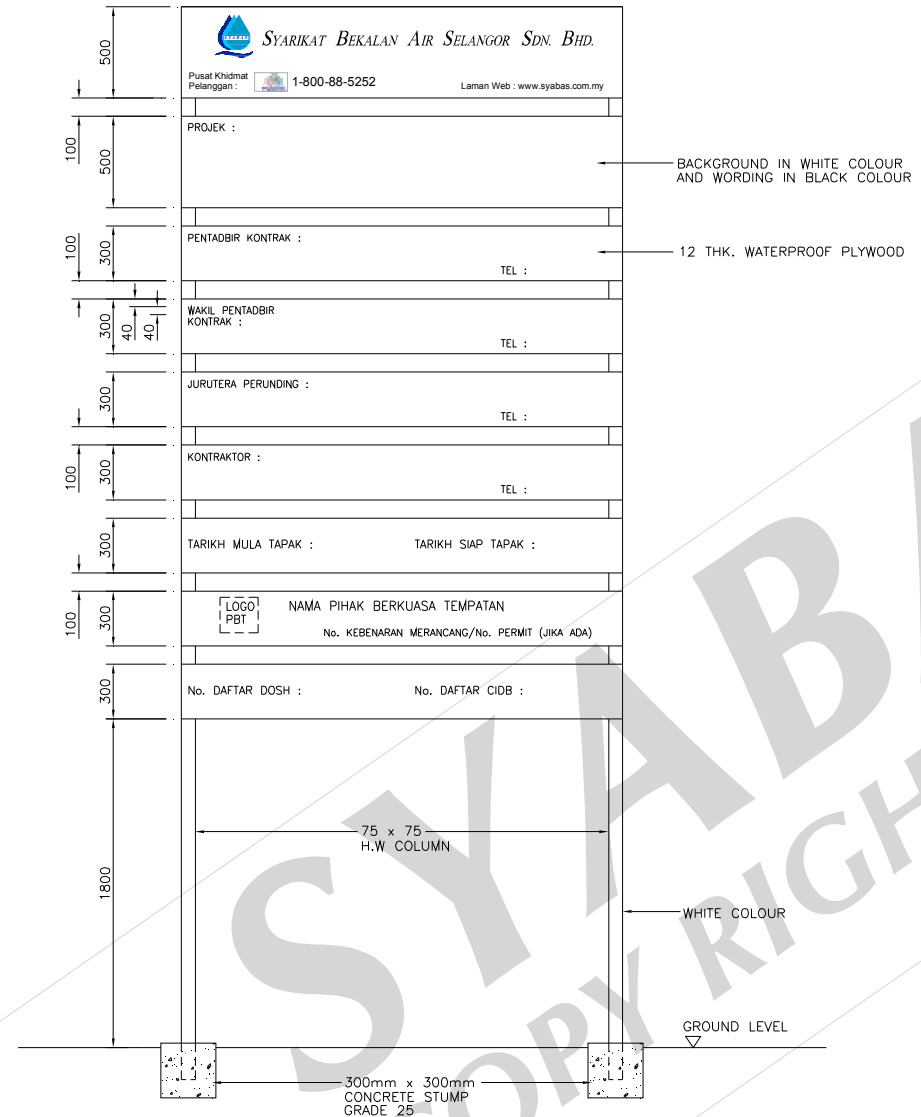
PROJECT :

DRAWING TITLE :  
 STANDARD LAYERS AND SYMBOLS

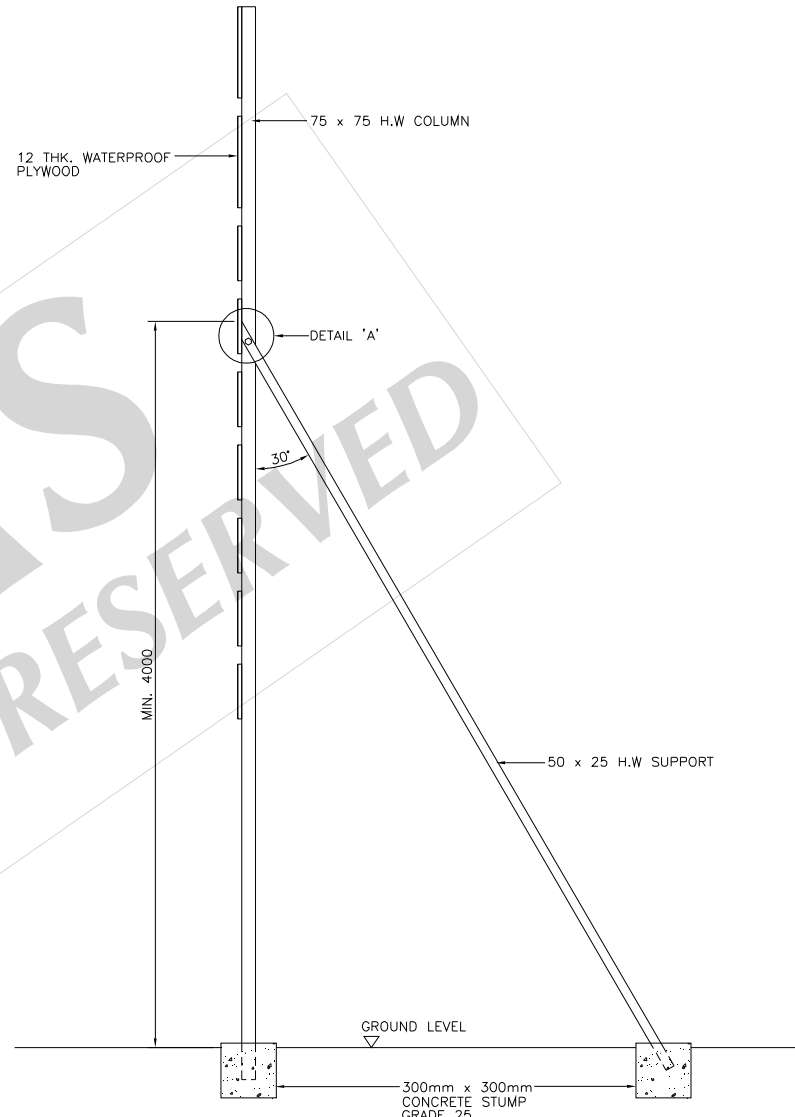
DRAWN BY : SHAHRUL	DESIGNED : YHH
CHECKED : KTT	APPROVED : SS
SCALE : NTS	DATE : MAY 2011

DRAWING NO:  
 SYA / STD / 005 / REV.1

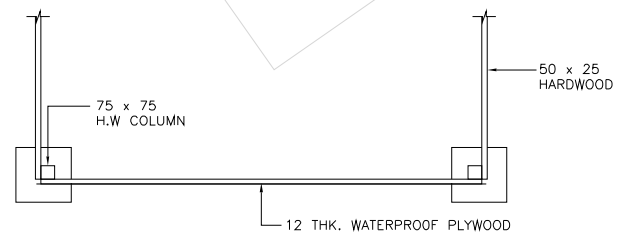




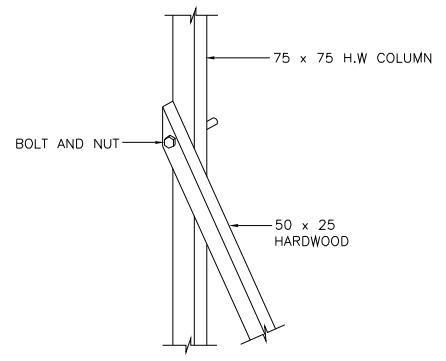
**PROJECT SIGNBOARD**  
SCALE 1:20  
("No. DAFTAR DOSH" FOR PROJECT MORE THAN RM20 MILLION)  
("No. DAFTAR CIDB" FOR PROJECT MORE THAN RM500,000)



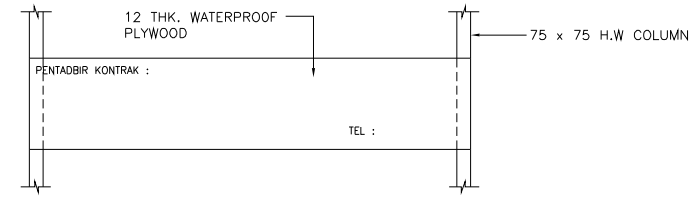
**SECTION**  
SCALE 1:20



**VIEW A (FRONT)**  
**PLAN**  
SCALE 1:20



**DETAIL 'A'**



**VIEW A (FRONT)**

NOTE :  
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.  
2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

REV.	REVISED BY	DESCRIPTION	DATE
0	LPL/HS	Original drawing	Sept. '06
1	YHH	ABS column for temporary signboard changed to hardwood.	18 APR. '11

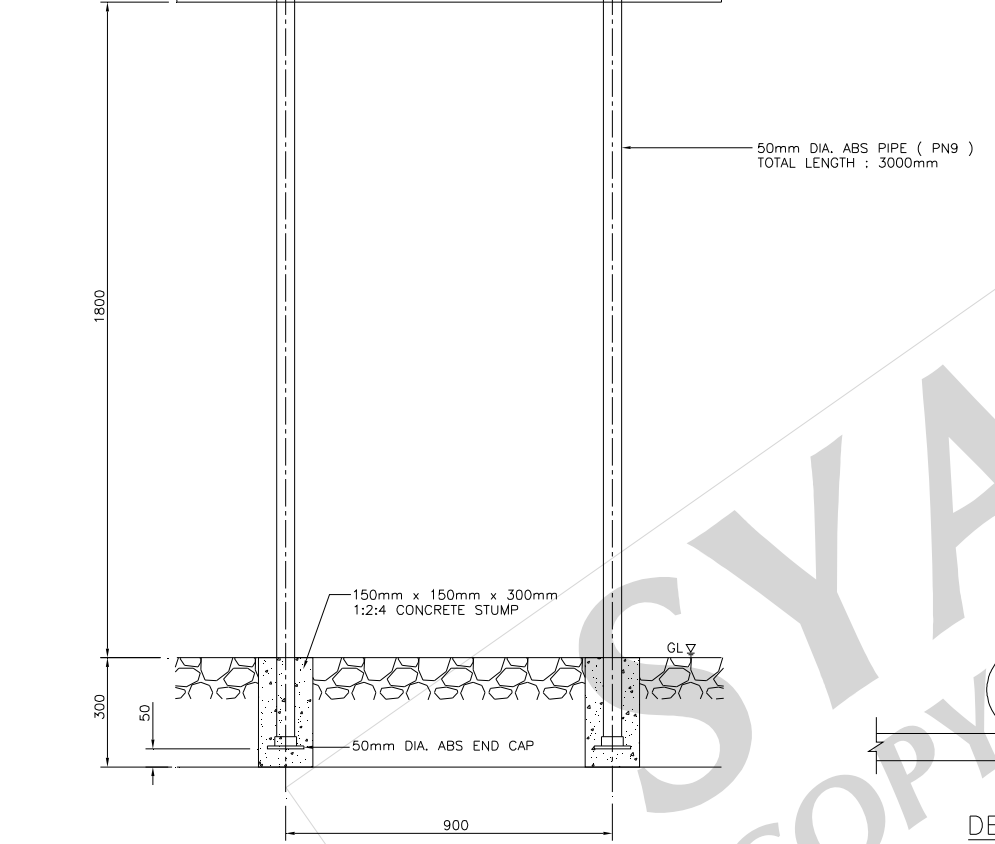
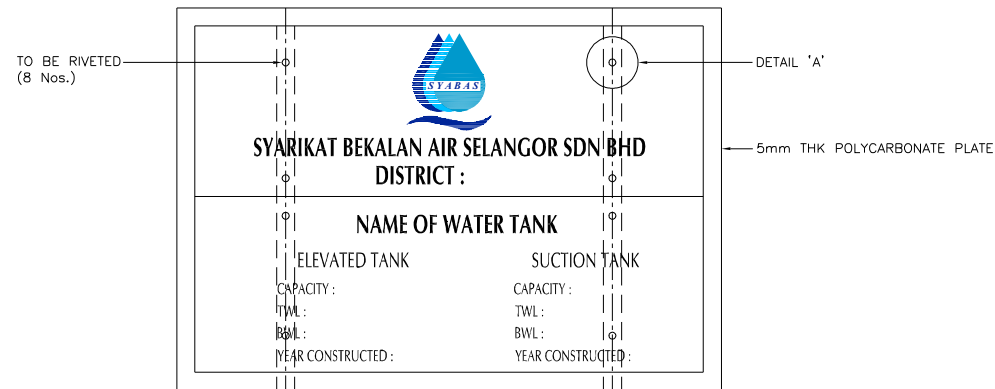
  
**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
PROJECT SIGNBOARD DETAILS

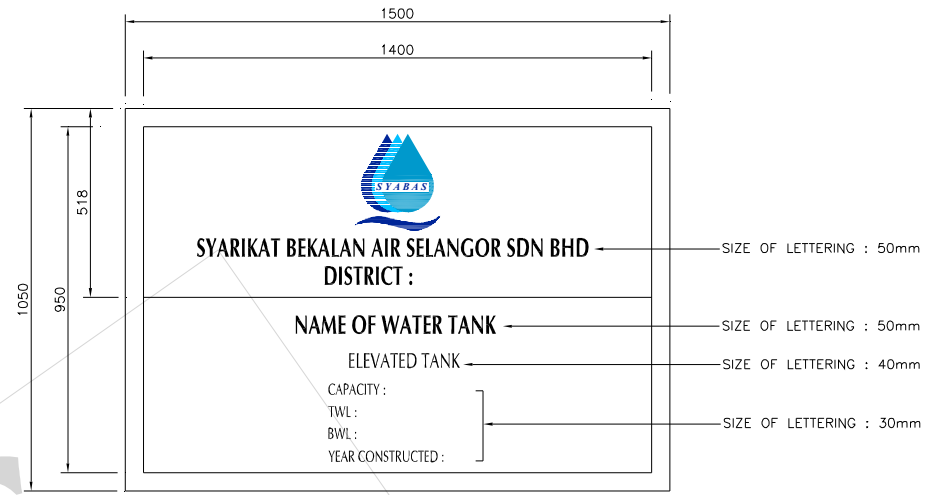
DRAWN BY : SHAHRUL	DESIGNED : YHH
CHECKED : KTT	APPROVED : SS
SCALE : AS SHOWN	DATE : JUNE 2011

DRAWING NO:  
SYA / STD / 006 / REV.1

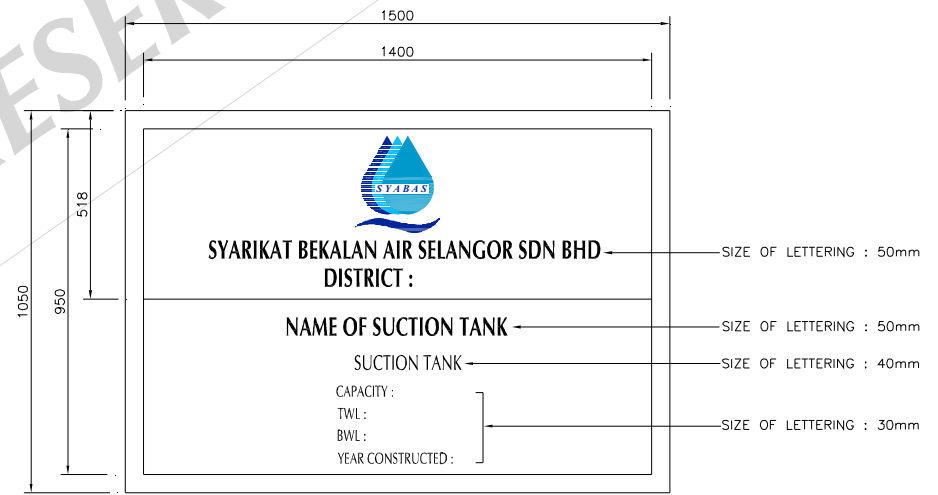


TYPICAL DETAILS OF SIGNBOARD

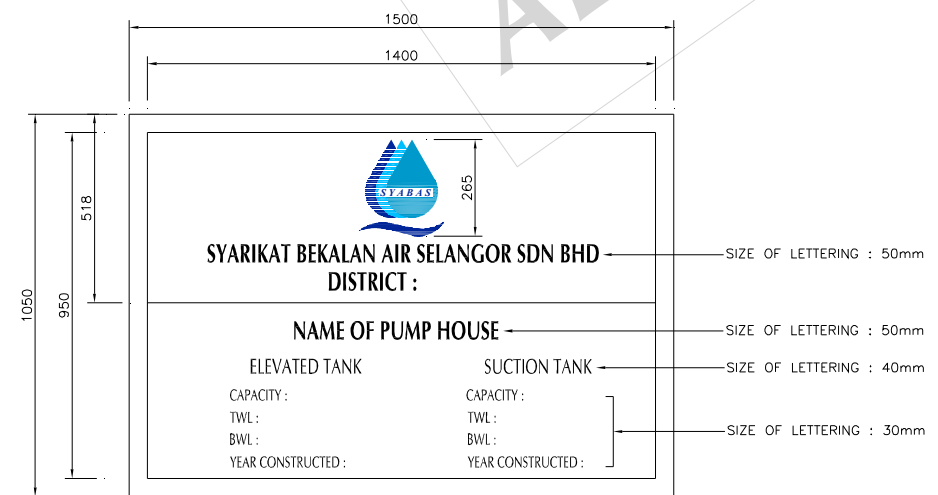
DETAIL 'A'  
JOINT DETAIL



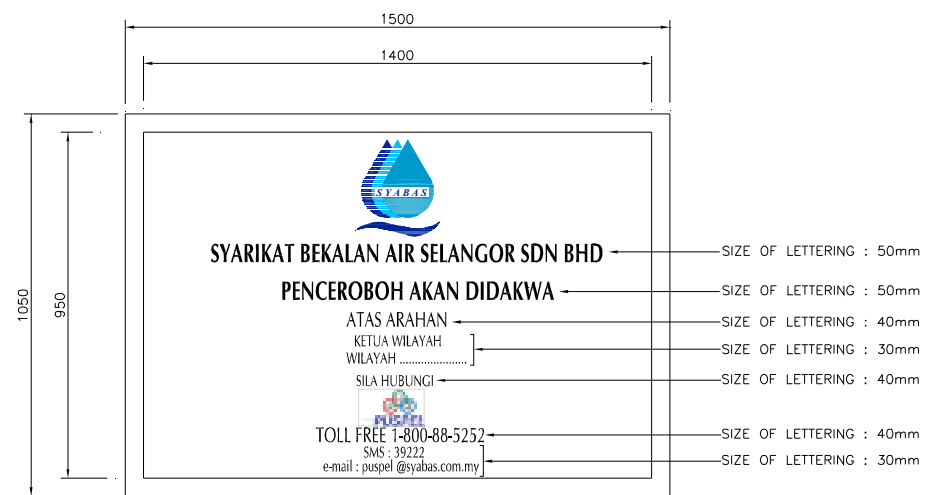
TYPE B



TYPE C



TYPE A



TYPE D

NOTE:  
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.  
2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
PERMANENT SIGNBOARD DETAILS

DRAWN BY : SHAFUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : OCT 2006

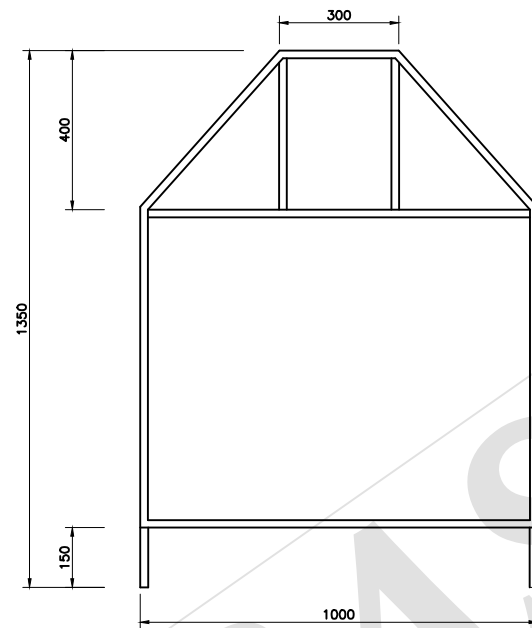
DRAWING NO:  
SYA / STD / 007



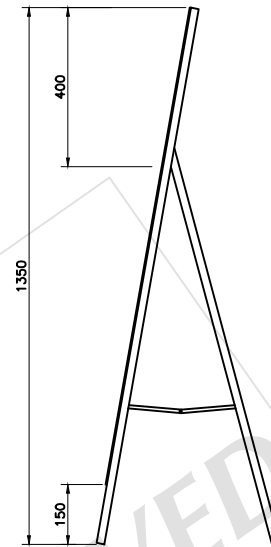
WHITE BACKGROUND  
 FONT : TIMES NEW ROMAN (H:40mm)  
 COLOUR : BLACK  
 FONT : TIMES NEW ROMAN (H:40mm)  
 COLOUR : BLACK  
 FONT : ARIAL BOLD (H:15mm)  
 COLOUR : BLACK  
 FONT : ARIAL BOLD (H:150mm)  
 COLOUR : BLACK  
 ORANGE BACKGROUND  
 BLUE LINE COLOUR  
 FONT : CG OMEGA (H:50mm)  
 COLOUR : DARK BLUE  
 WHITE BACKGROUND  
 FONT : ARIAL BOLD (H:60mm)  
 COLOUR : LIGHT BLUE  
 WHITE BACKGROUND

**FRONT ELEVATION**

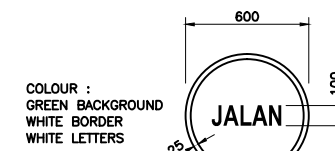
COLOUR : ORANGE AND WHITE BACKGROUND  
 (REFLECTIVE FLUORESCENT)



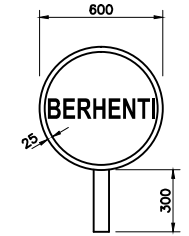
**REAR VIEW**



**SIDE ELEVATION**

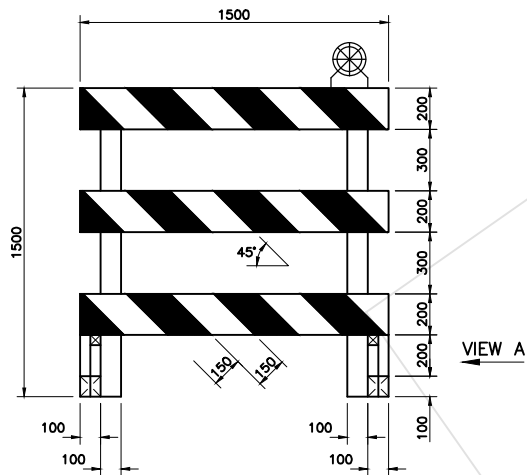


COLOUR :  
 GREEN BACKGROUND  
 WHITE BORDER  
 WHITE LETTERS

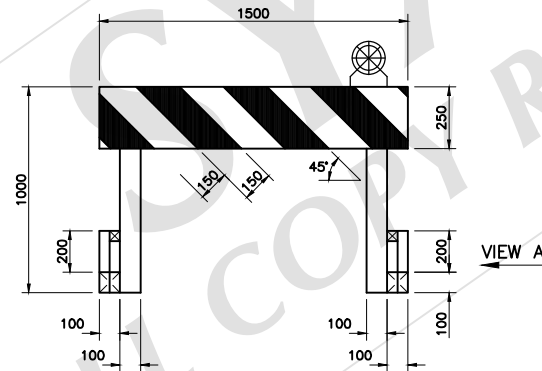


COLOUR :  
 RED BACKGROUND  
 WHITE BORDER  
 WHITE LETTERS

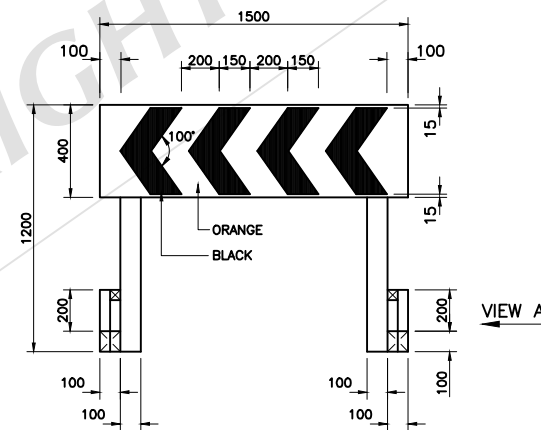
**HAND DISC STOP/GO  
 CONTROL SIGN HAND SIGNAL CONTROL**



**BARRICADE TYPE 1**

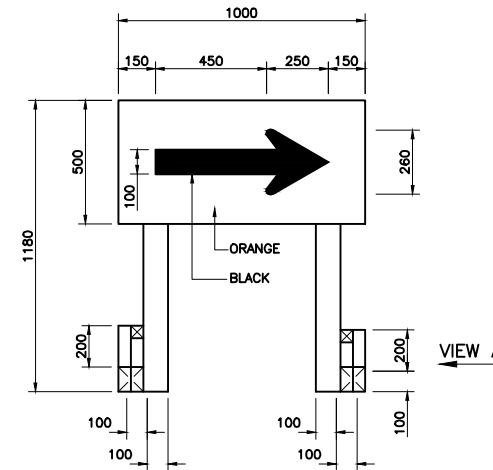


**BARRICADE TYPE 2**



**SHARP DEVIATION SIGN**

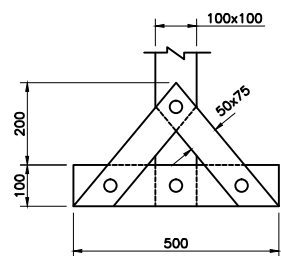
STRIPES SHALL POINT TOWARDS THE  
 DIRECTION OF TRAFFIC



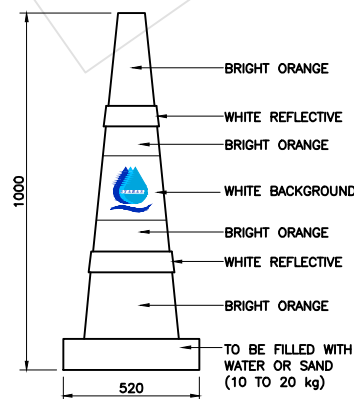
**DETOUR SIGN**



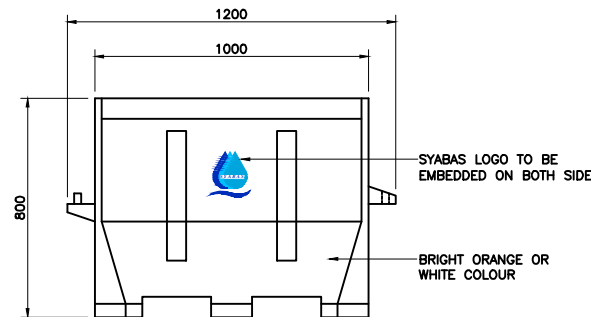
**FLASHING AMBER LAMP**



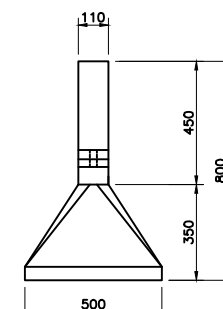
**VIEW 'A'**



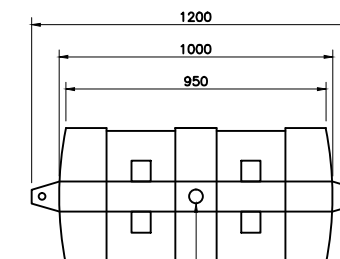
**TYPICAL TRAFFIC GUIDANCE CONE**



**FRONT ELEVATION**



**SIDE ELEVATION**



**TOP VIEW**

50 DIA. HOLE TO  
 BE FILLED WITH  
 WATER OR SAND

**TYPICAL DETAILS OF ROAD BARRIER**

- NOTE :
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.
  2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
  3. FOR NIGHT USED, ALL SIGN TO BE REFLECTORISED.
  4. FOR BARRICADE, USE ORANGE AND WHITE COLOUR ALTERNATE STRIPES.
  5. FRAME SHALL BE COLOURED WHITE, SLOPE OF THE STRIPES TO BE IN THE DIRECTION OF THE TRAFFIC.

REV.	REVISED BY	DESCRIPTION	DATE
0	LPL/HS	Original drawing	OCT. '06
1	YHH	Symbols and road signboard removed. New signboard for Contractor appointed by the developer added. Typical Details of Road Barrier drawing added.	07 MAR '11
2	SH	Detailing text height for SYABAS Signboard and Traffic Guidance Cone	APR. '15



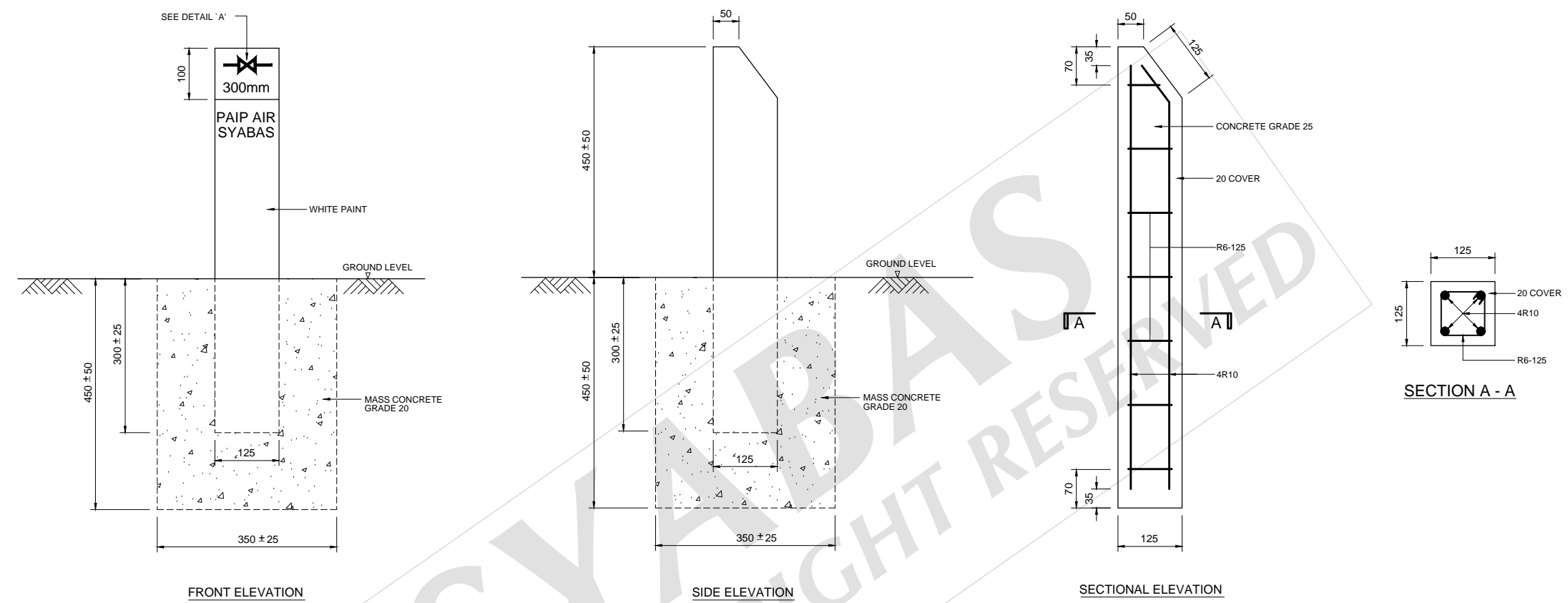
**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

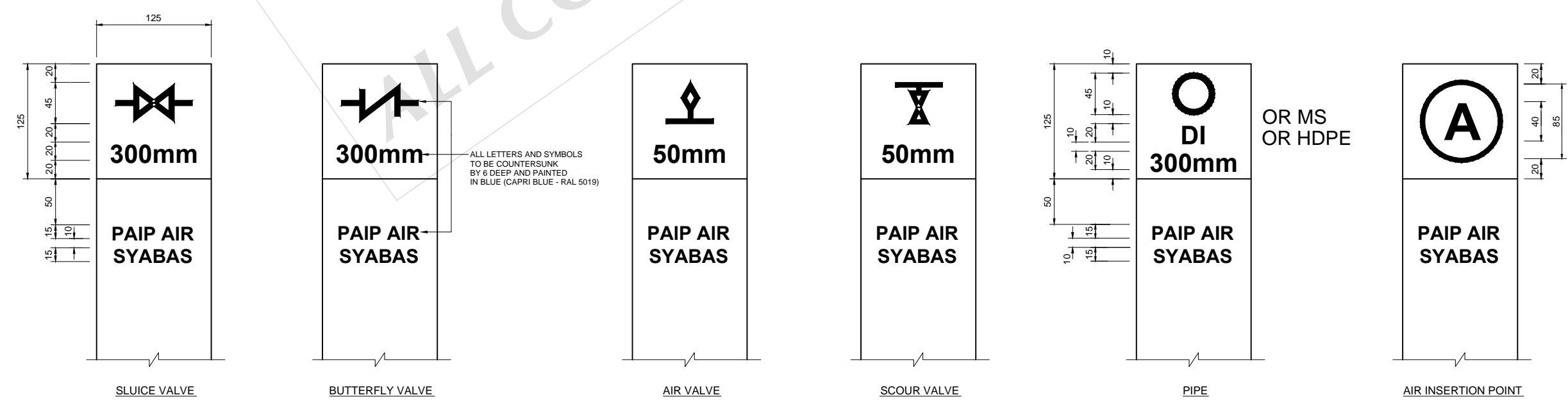
DRAWING TITLE :  
 ROAD TRAFFIC SIGNBOARD

DRAWN BY : SHAHRUL	DESIGNED : YHH
CHECKED : KTT	APPROVED : SS
SCALE : NTS	DATE : APRIL 2015
DRAWING NO: SYA / STD / 008 / REV. 2	

NOTE :  
 1. FOR LEGENDS, ABBREVIATION AND GENERAL NOTES SEE DRG. SYA / STD / 001.  
 2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.



DETAIL OF CONCRETE MARKER POST

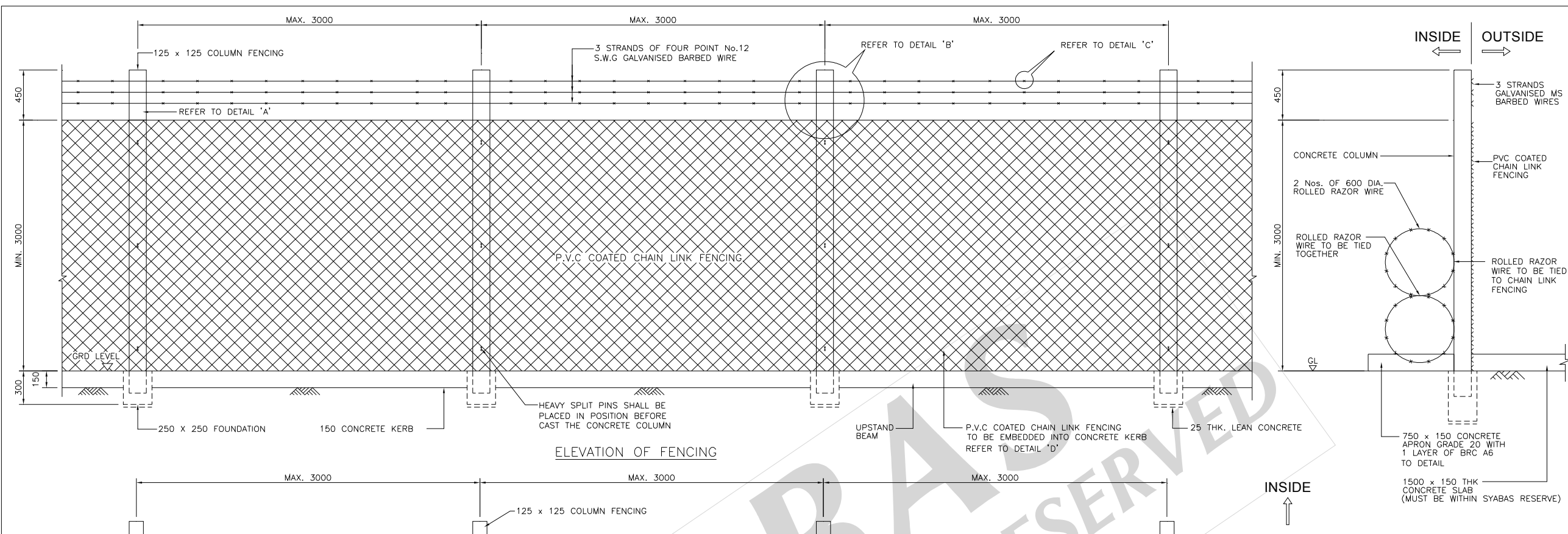


DETAIL 'A'

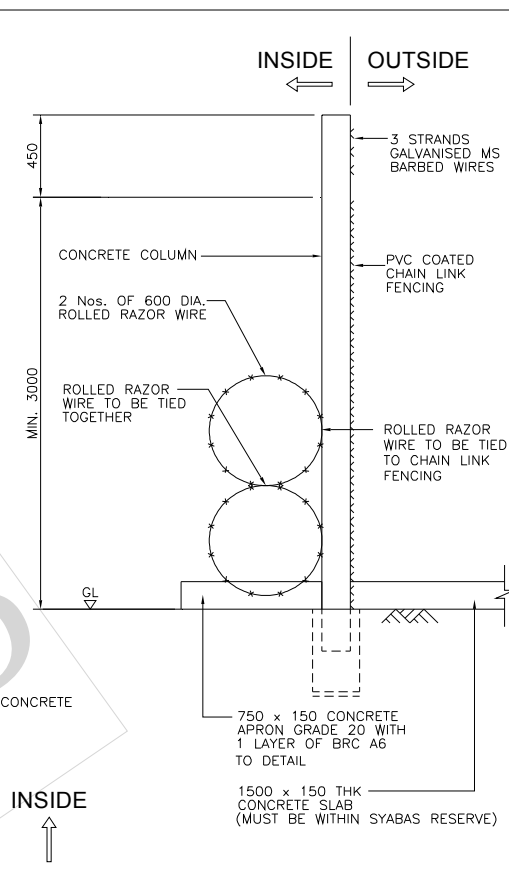
REV.	REVISED BY	DESCRIPTION	DATE
0	LPL/HS	Original drawing	MAY '06
1	YHH	To replace ABS Marker Post with concrete Marker Post.	18 APR '11
2	WQD	Marker post for Air Insertion Point added.	MAC 2013

  
**SYARIKAT BEKALAN AIR SELANGOR SDN**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

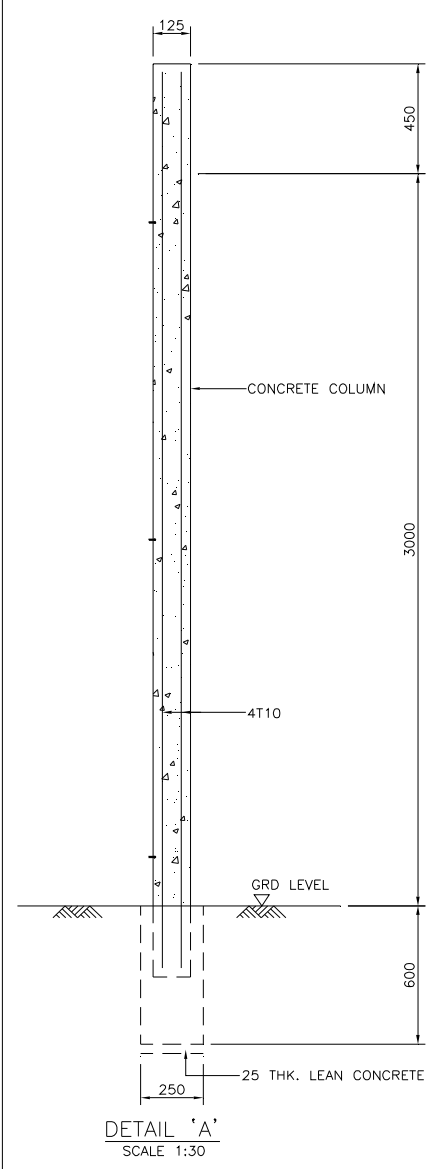
PROJECT :	
DRAWING TITLE : TYPICAL DETAILS OF STANDARD MARKER POST	
DRAWN BY : SHAHRUL	DESIGNED : YHH
CHECKED : KTT	APPROVED : SS
SCALE : NTS	DATE : DEC. 2012
DRAWING NO: SYA / STD / 010 / REV.2	



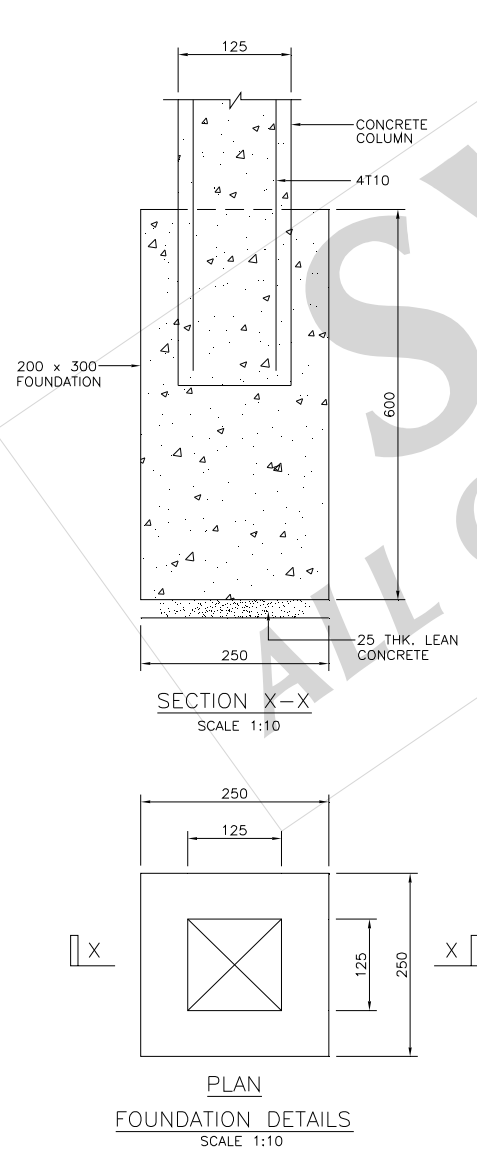
ELEVATION OF FENCING



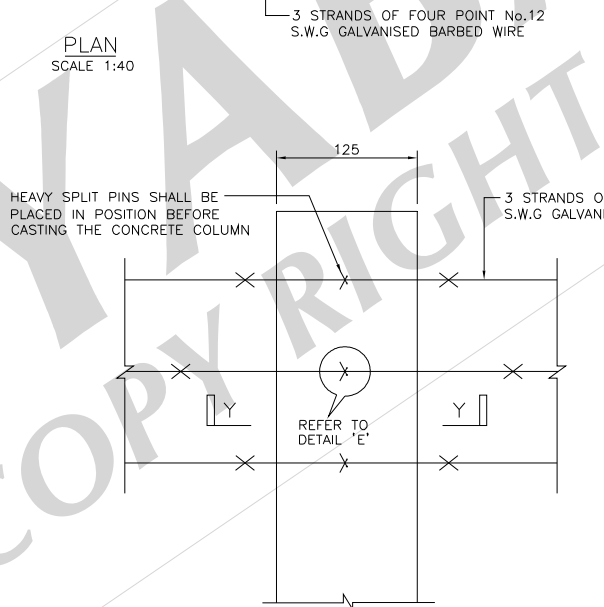
DETAIL OF RC SLAB  
SCALE 1:50



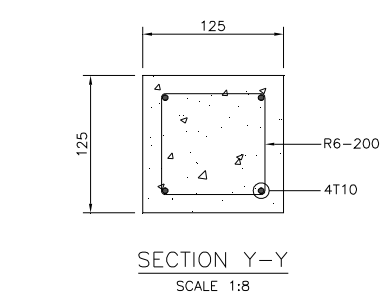
DETAIL 'A'  
SCALE 1:30



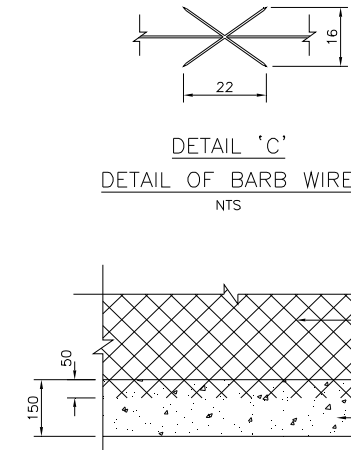
FOUNDATION DETAILS  
SCALE 1:10



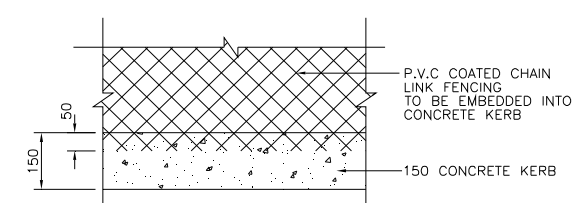
DETAIL 'B'  
SCALE 1:8



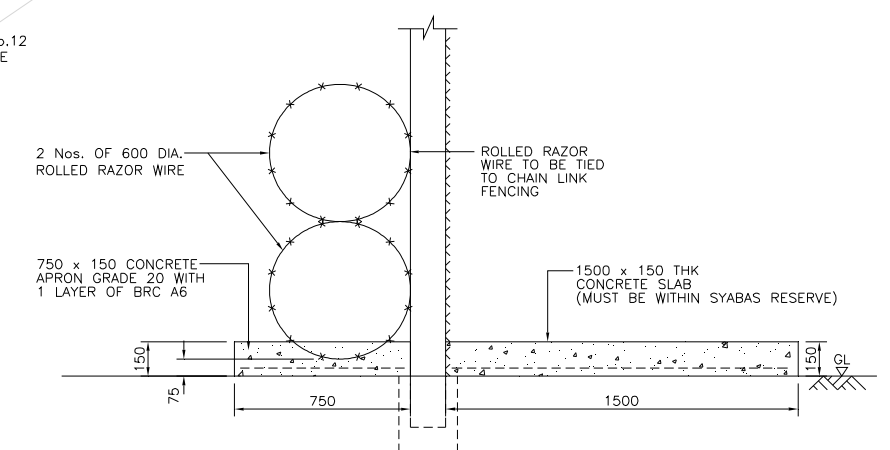
SECTION Y-Y  
SCALE 1:8



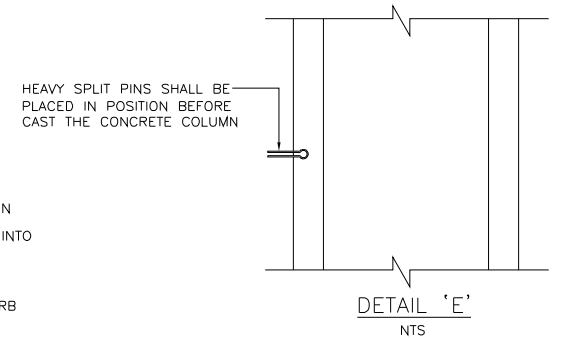
DETAIL 'C'  
DETAIL OF BARB WIRE  
NTS



DETAIL 'D'



DETAIL OF RC SLAB  
SCALE 1:50



DETAIL 'E'  
NTS

- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
  2. CONCRETE SHALL BE OF GRADE 25 N / mm<sup>2</sup> IN COMPLIANCE TO BS 8110:1985.
  3. ALL LEAN CONCRETE SHALL BE GRADE 15/20.
  4. PORTLAND CEMENT USED SHALL COMPLY TO BS 12.
  5. REINFORCEMENT STEEL SHALL COMPLY WITH BS 4449, BS 4482 OR BS 4483. REINFORCEMENT SHALL CUT AND/OR BENT IN ACCORDANCE WITH BS 4466.
  6. ALL CONCRETE SHALL PROPERLY VIBRATED WITH AND APPROVED MECHANICAL VIBRATORS.
  7. EXCAVATED FOUNDATIONS AND STEEL REINFORCEMENT SHALL BE APPROVED BY THE ENGINEER BEFORE PLACING OF CONCRETE.
  8. UNLESS OTHERWISE STATED, 25mm LEAN CONCRETE SHALL BE PROVIDED BENEATH ALL SUBSTRUCTURAL WORKS.

REV.	REVISED BY	DESCRIPTION	DATE
0	LPL/HS	Original drawing.	Sept. 06
1	HS	To replace drawing no. SYA / STD / 012. Concrete post introduce.	Sept. 08
2	HS	To replace the 25mm dia. opening with 10mm dia. c/w 5mm slot at the top of the concrete post.	Oct. 08
3	HS	Changed to the straight column fencing.	Oct. 08
		Straight column fencing size changed from 75mm to 125mm.	

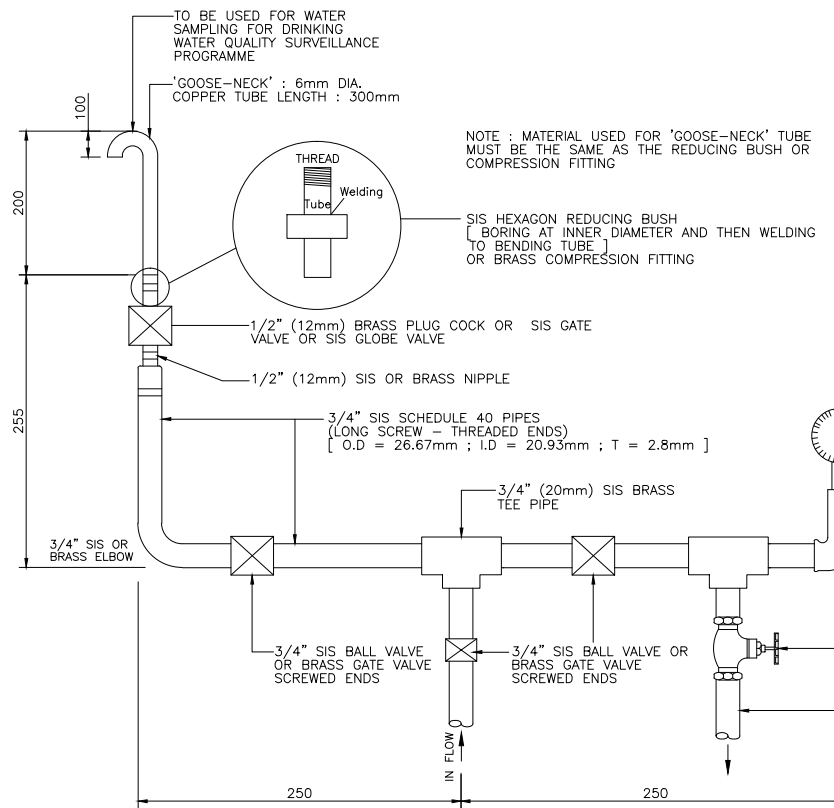


**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

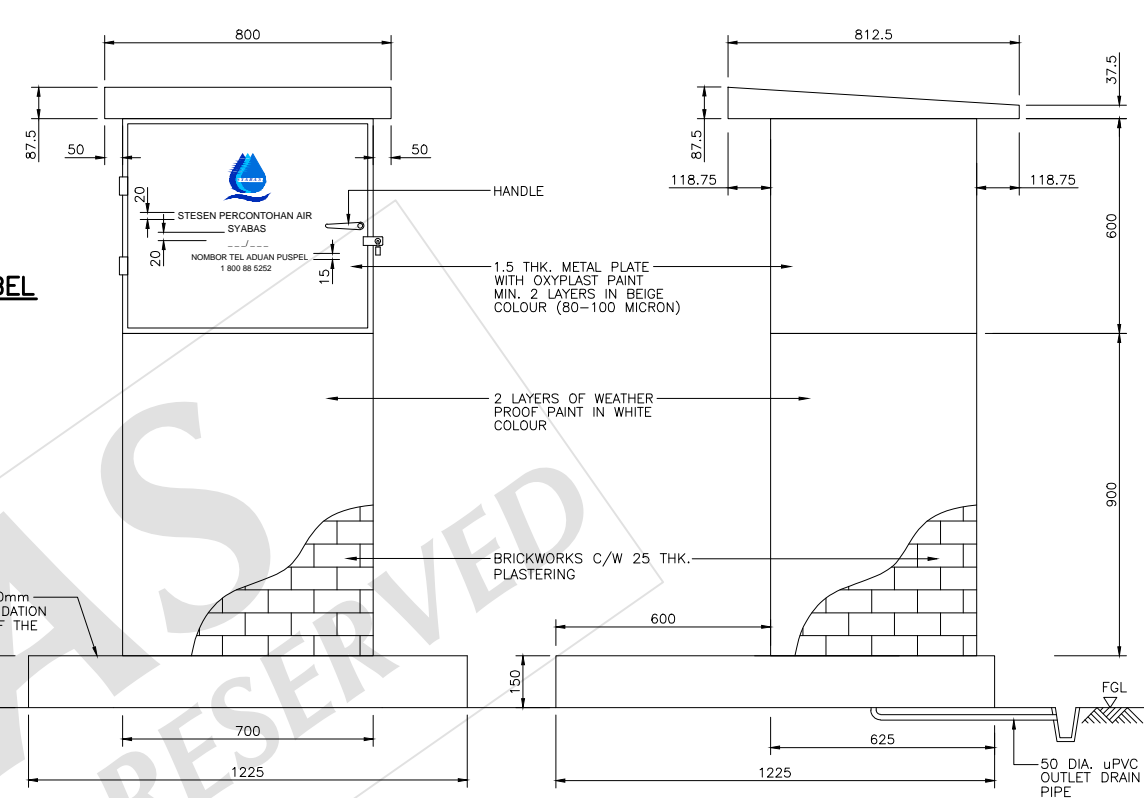
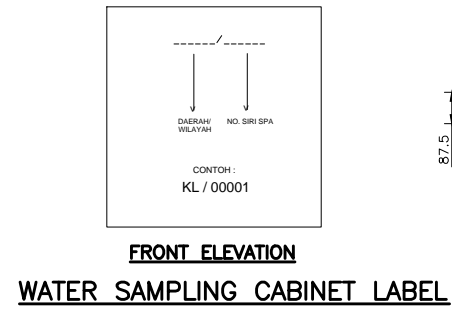
PROJECT :

DRAWING TITLE :  
 DETAILS OF SECURITY FENCING

DRAWN BY : SHAHRUL      DESIGNED : YHH  
 CHECKED : KTT            APPROVED : SS  
 SCALE : AS SHOWN      DATE : JUNE 2011  
 DRAWING NO :  
 SYA / STD / 012 / REV.3

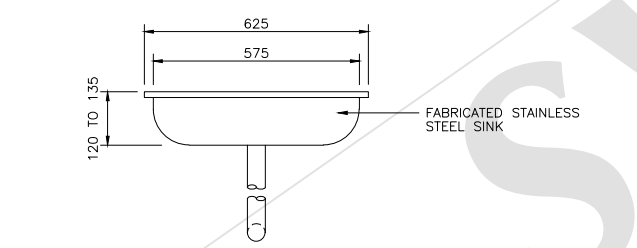


**PIPING DETAILS**

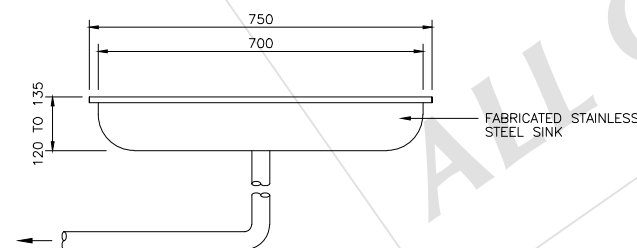


**FRONT ELEVATION**

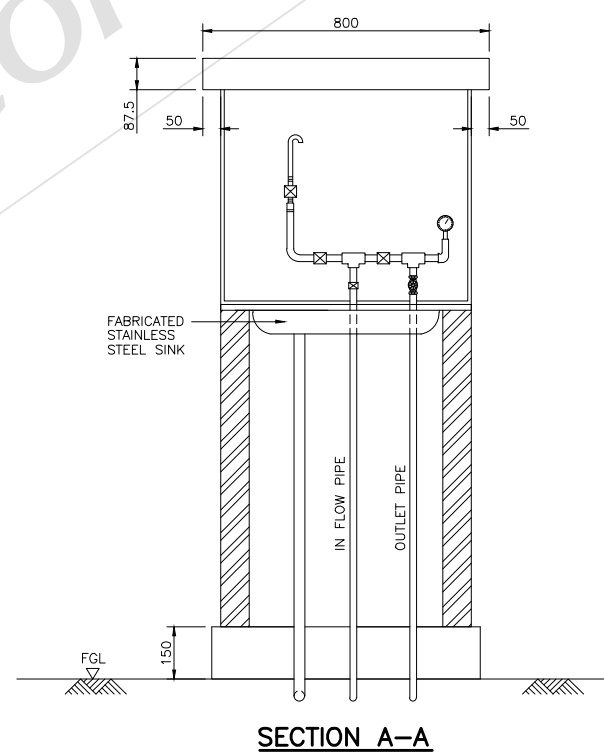
**SIDE ELEVATION**



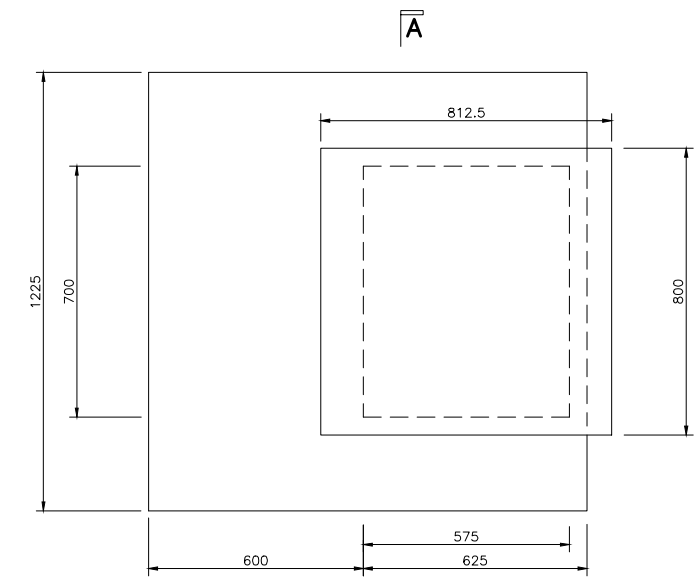
**SIDE VIEW**



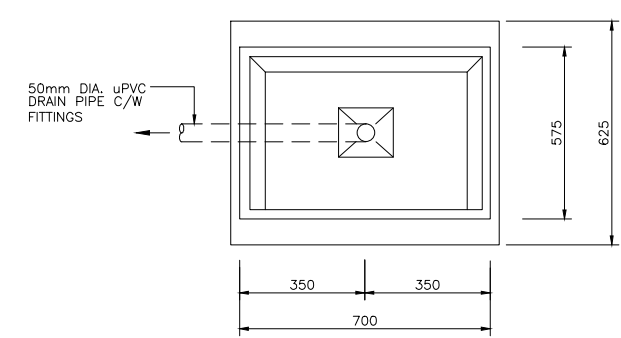
**FRONT VIEW**



**SECTION A-A**



**PLAN VIEW SAMPLING STATION**



**PLAN VIEW STAINLESS STEEL SINK DETAIL**

NOTE :  
1. FOR LEGEND, ABBREVIATION AND GENERAL NOTES SEE DRG. NO. SYA / STD / 001.  
2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.  
3. WATER SAMPLING STATION CODE.

NO.	DISTRICT	WATER SAMPLING STATION CODE
1	GOMBAK	GBK / 00001
2	HULU LANGAT	HLGT / 00001
3	HULU SELANGOR	HSGR / 00001
4	KLANG	KLK / 00001
5	KUALA LUMPUR	KL / 00001
6	KUALA SELANGOR	KSGR / 00001
7	KUALA LANGAT	KLGT / 00001
8	PETALING	PTG / 00001
9	SABAK BERNAM	SBK / 00001
10	SEPANG	SPG / 00001

REV.	REVISED BY	DESCRIPTION	DATE
1	WQD	To remove Type 2 Stainless steel Sink drawing.	23/11/12
		To added dimension for depth of stainless steel sink.	
		To amend perimeter slab from 1225 x 750 x 150 to 1225 x 1225 x 150	
		To remove "Side Elevation" drawing and to amend "Front Elevation" drawing label for Water sampling Cabinet.	
		To change description note for 100mm dia. Pressure Guage.	

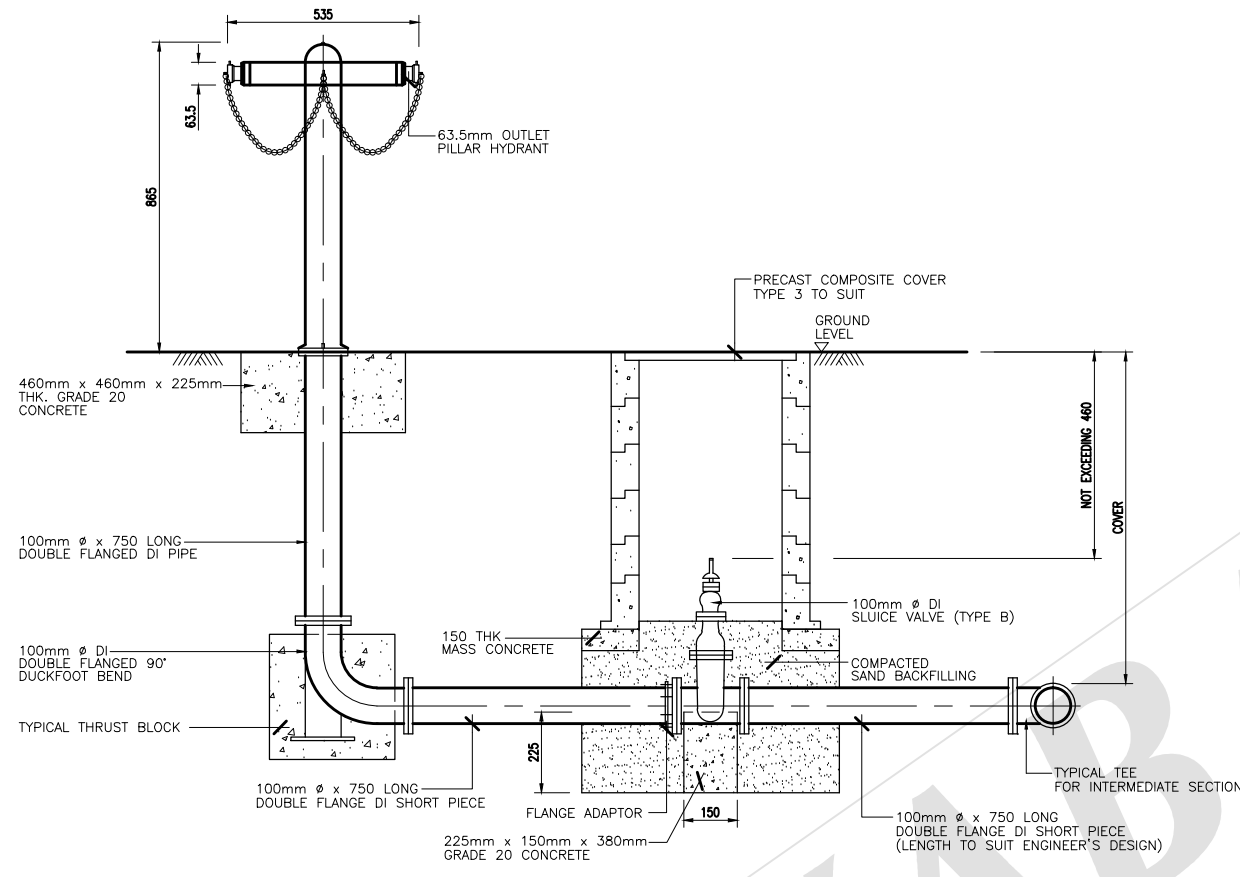
  
**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
PETI SURAT 5001,  
JALAN PANTAI BAHRU,  
59990, KUALA LUMPUR.  
TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
FAX NO : 03 - 2282 5498  
LAMAM WEB : www.syabas.com.my  
EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
DETAILS OF WATER SAMPLING STATION

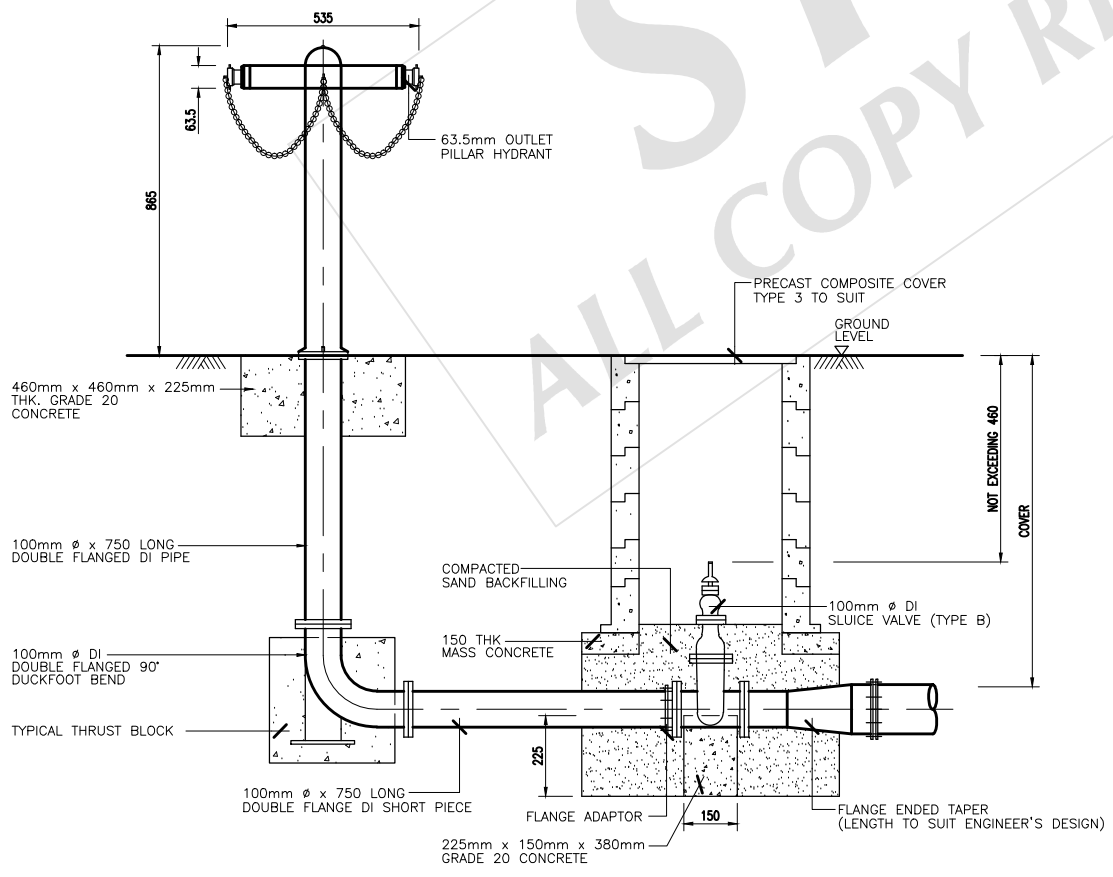
DRAWN BY : SHAHRUL	DESIGNED : WQD
CHECKED : KTT	APPROVED : SS
SCALE : NTS	DATE : NOV. 2012

DRAWING NO :  
SYA / STD / 013 / REV.1



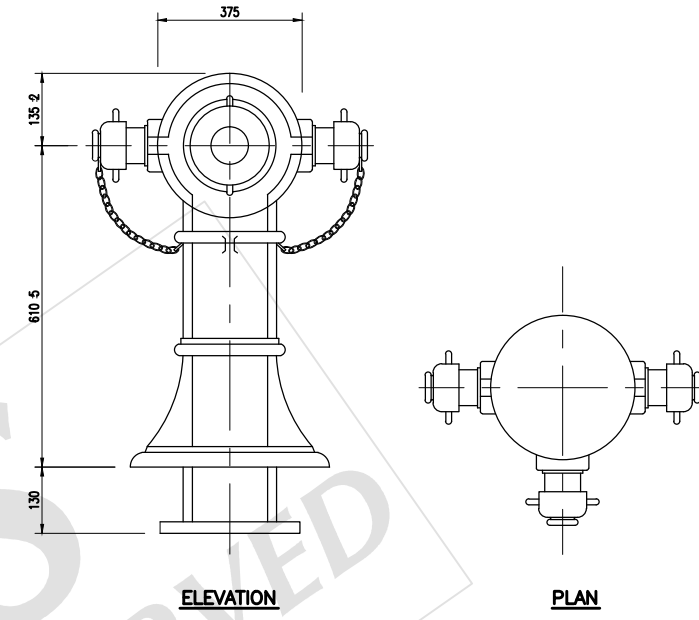
**TYPICAL ARRANGEMENT OF 100mm  $\phi$  SLUICE VALVE AT 100mm  $\phi$  PILLAR HYDRANT WITH 63.5mm (2 1/2") OUTLET (AT INTERMEDIATE LOCATION)**

SCALE 1:10



**TYPICAL ARRANGEMENT OF 100mm  $\phi$  SLUICE VALVE AT 100mm  $\phi$  PILLAR HYDRANT WITH 63.5mm (2 1/2") OUTLET (AT DEAD END)**

SCALE 1:10



**ELEVATION**

**PLAN**

**3 WAY PILLAR HYDRANT**

NOT TO SCALE

NOTE :  
 1. ABBREVIATION AND GENERAL NOTES REFER TO DRAWING NO. SYA / STD / 001.  
 2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspei@syabas.com.my

PROJECT :

DRAWING TITLE :  
 TYPICAL DETAILS OF FIRE HYDRANT

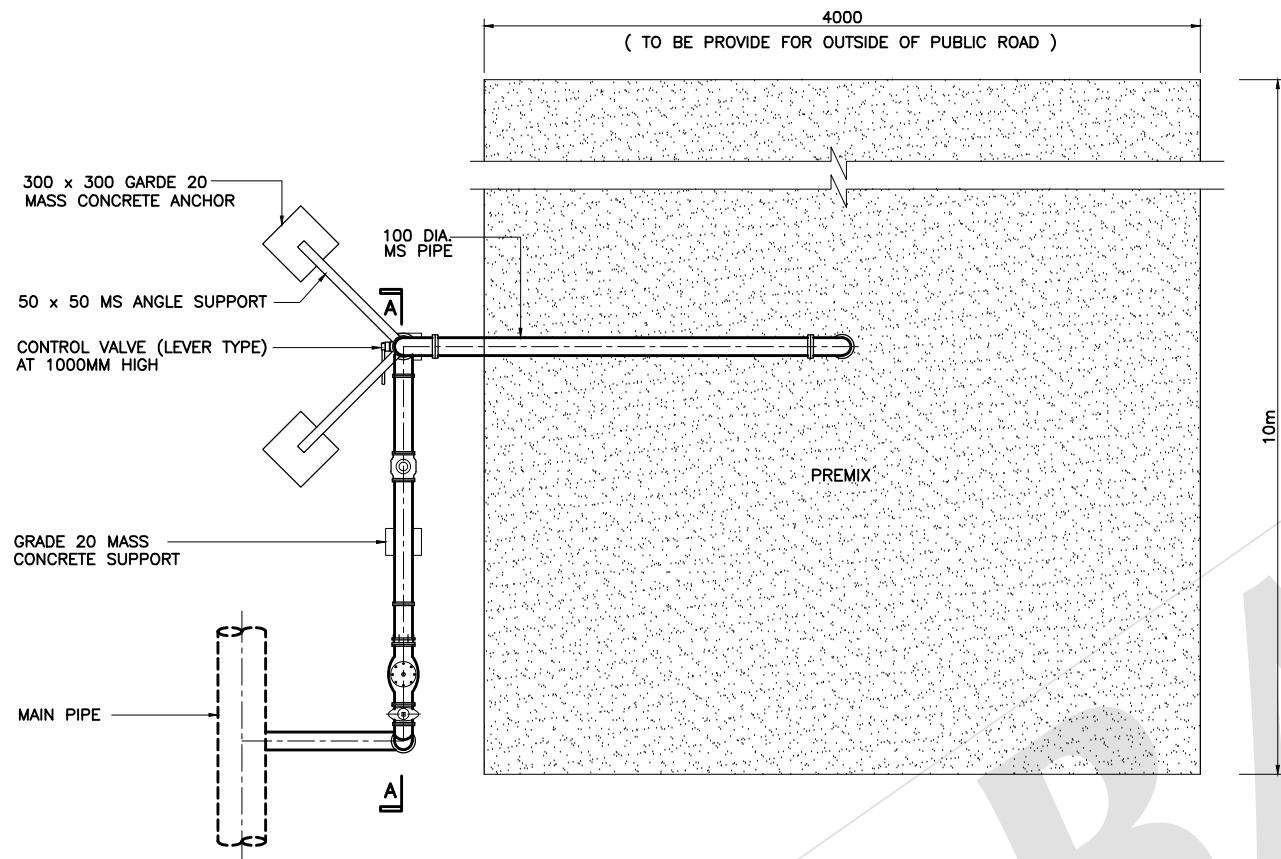
DRAWN BY : SHAHRUL      DESIGNED : SAT

CHECKED : HS              APPROVED : LPL

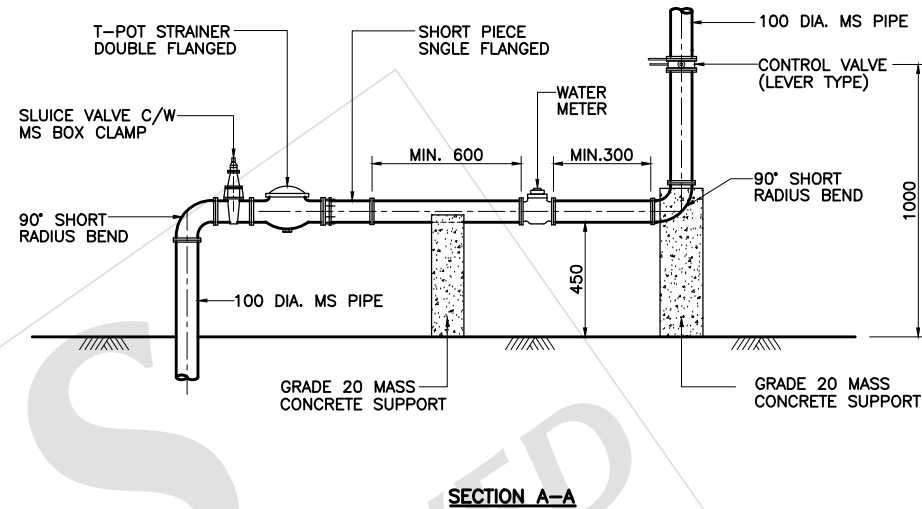
SCALE : AS SHOWN      DATE : SEPT. 2006

DRAWING NO:  
 SYA / STD / 014

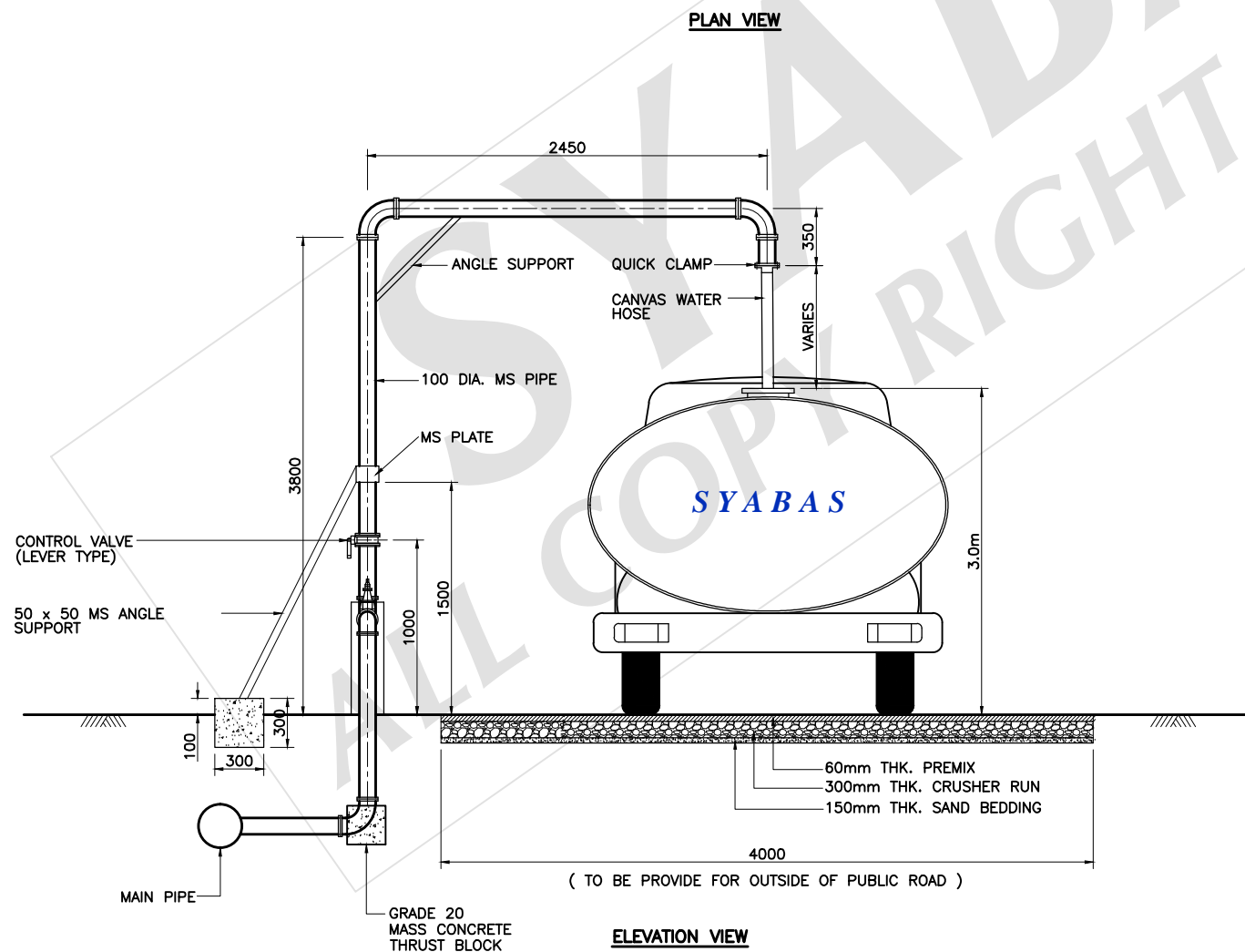
NOTE :  
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.



PLAN VIEW

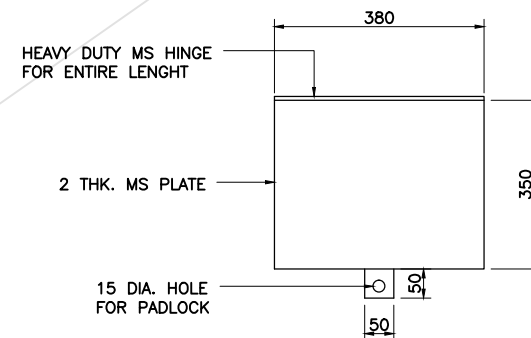


SECTION A-A

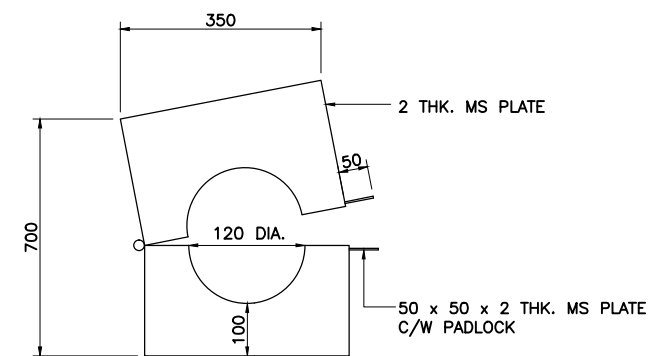


ELEVATION VIEW

ELEPHANT TRUNK



PLAN VIEW



SIDE VIEW

DETAIL 'A'

TYPICAL DETAILS OF MS BOX CLAMP

REV.	REVISED BY	DESCRIPTION	DATE
1	O&M	The following features are added : 1. Bulk meter stand added. 2. Stop cock c/w MS Box Clamp added 3. Premix platform 4. Control valve (lever type) added.	Sept. '13



SYARIKAT BEKALAN AIR SELANGOR SDN BHD  
PETI SURAT 5001,  
JALAN PANTAI BAHRU,  
59990, KUALA LUMPUR.  
TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
FAX NO : 03 - 2282 5498  
LAMAM WEB : www.syabas.com.my  
EMAIL : puspei@syabas.com.my

PROJECT :

DRAWING TITLE :  
TYPICAL DETAILS OF ELEPHANT TRUNK

DRAWN BY : SHAHRUL      DESIGNED : YHH

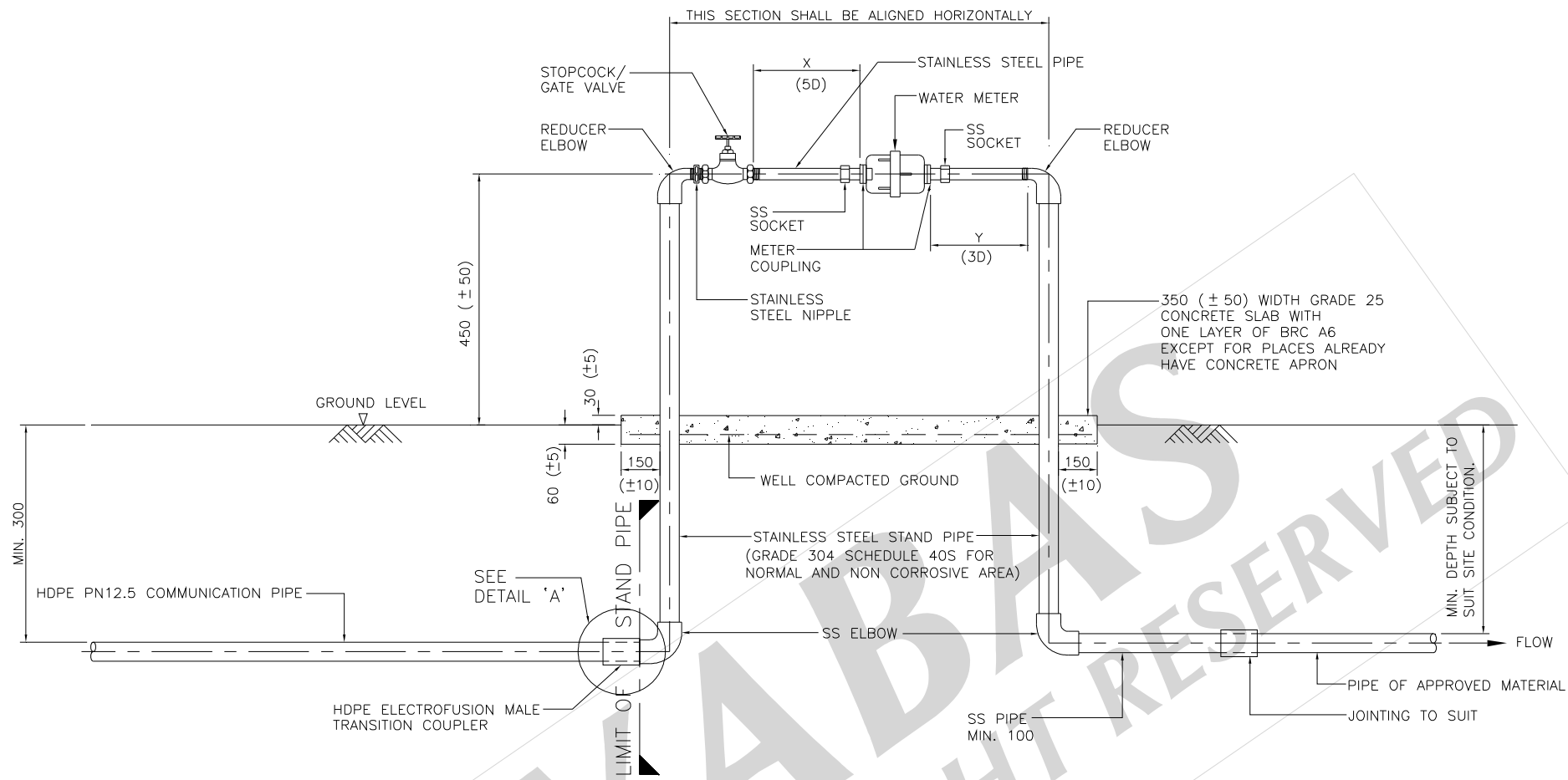
CHECKED : HS              APPROVED : LPL

SCALE : NTS              DATE : AUG. 2014

DRAWING NO:

SYA / STD / 014 / 1

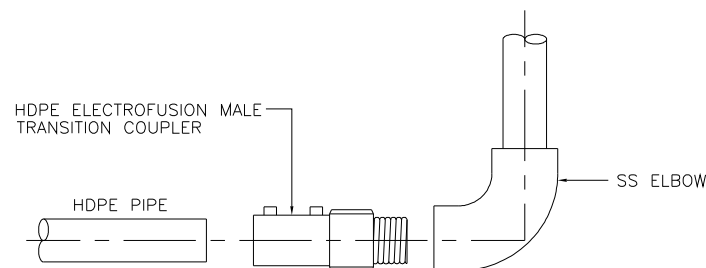




WATER METER SIZE (mm)	MIN. LENGTH X (5D)	MAX. ALLOWABLE TOLERANCE
15	100	+25
20	100	+25
25	125	+25
40	200	+25

WATER METER SIZE (mm)	MIN. LENGTH Y (3D)	MAX. ALLOWABLE TOLERANCE	MIN. STAND PIPE SIZE
15	THE LENGTH OF METER COUPLING IS ADEQUATE	THE LENGTH OF METER COUPLING IS ADEQUATE	20
20	60	+25	20
25	75	+25	25
40	120	+25	40

TYPICAL DETAILS OF STAINLESS STEEL METER STAND



DETAIL 'A'

- NOTES :
- ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
  - ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  - ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
  - CLASS C GI PIPE SLEEVE SHALL BE PROVIDED FOR HDPE COMMUNICATION PIPE WHICH CROSSES THE DRAIN.

REV.	REVISED BY	DESCRIPTION	DATE
1	HS	Short piece between reducer elbow and stopcock removed.	03 JAN. '08
	HS	To use SS socket after the meter coupling on both sides of the water meter.	
	HS	To include 5D and 3D requirement for meter size 32mm dia. and 40mm dia.	
	HS	Concrete slab removed.	
	HS	To changed communication pipe from Stainless Steel to HDPE.	
	HS	X for 15mm dia. changed to 100mm.	
		Y for 15mm dia. removed.	
		Y for 20mm dia. and 25mm dia. changed to 85mm.	
2	HS	Reintroduce concrete slab with additional notes.	11 APR. '08
	HS	Additional notes on communication pipe material for projects undertaken by SYABAS and Developers.	
3	HS	To use Push Cap Lockable Valve before the stopcock.	5 SEPT. '08
4	HS	Concrete slab to be embedded 50mm in ground level and 25mm exposed.	2 MAR. '09
	HS	Edge of concrete slab changed to 150mm instead of 300mm.	
	HS	Changed BRC A10 for concrete slab to BRC A6.	
	HS	Removed fencing line.	
	HS	Removed 50mm water meter size.	
	HS	Removed Push Cap Lockable Valve.	
	HS	To changed note for communication pipe.	
5	WG	Detail of Transition Coupler added.	3 DEC. '10
	WG	Tolerances for all dimensions added.	
	WG	Minimum size for stand pipe added.	
	WG	Note for concrete slab amended.	
	WG	Removed 32mm water meter size.	



SYARIKAT BEKALAN AIR SELANGOR SDN BHD  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :

METER STAND INSTALLATION (METER SIZE 15mm - 40mm)  
 USING STAINLESS STEEL PIPE

DRAWN BY : SHAHRUL

DESIGNED : SAT

CHECKED : HS

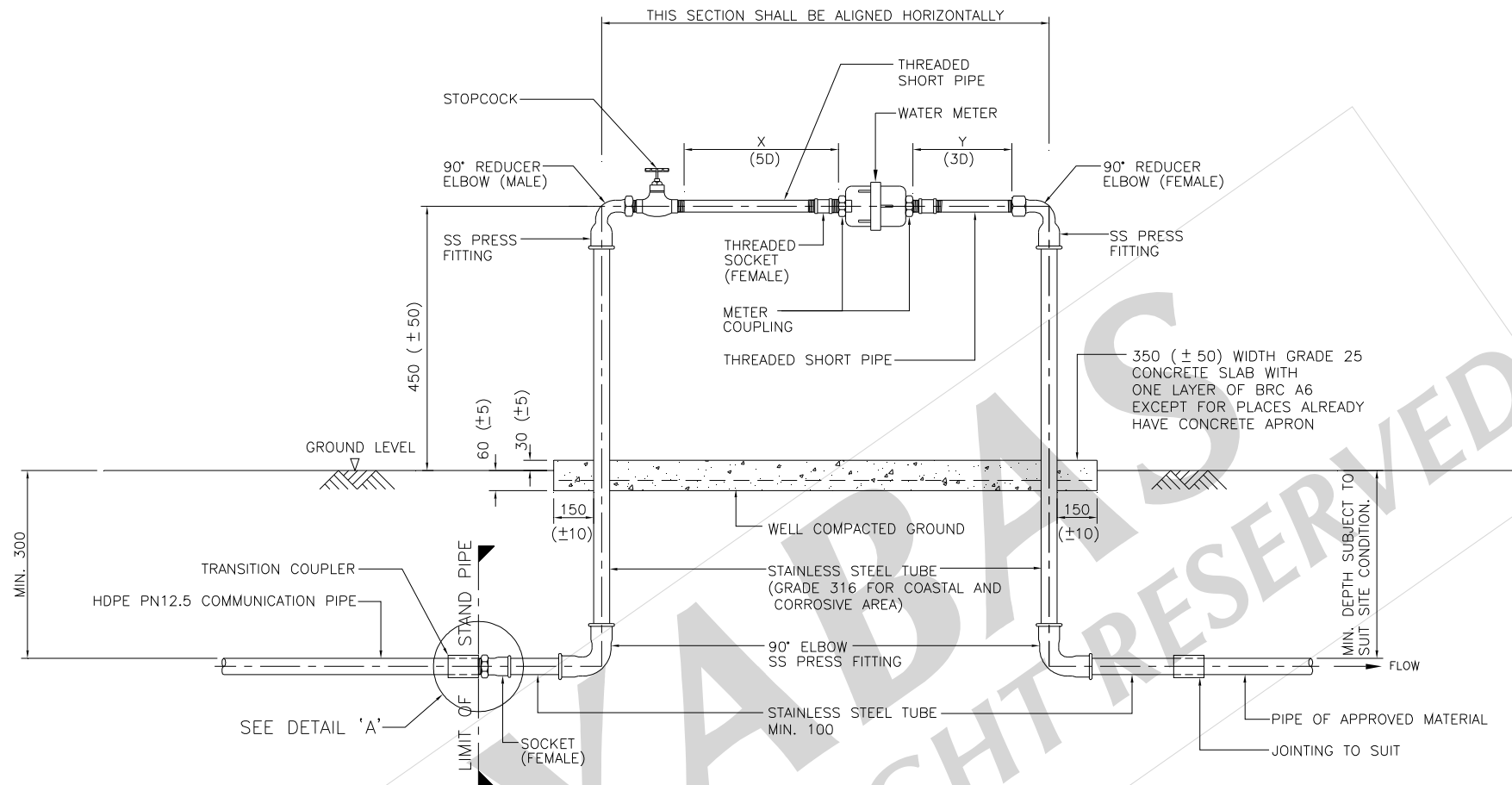
APPROVED : LPL

SCALE : NTS

DATE : DECEMBER 2007

DRAWING NO:

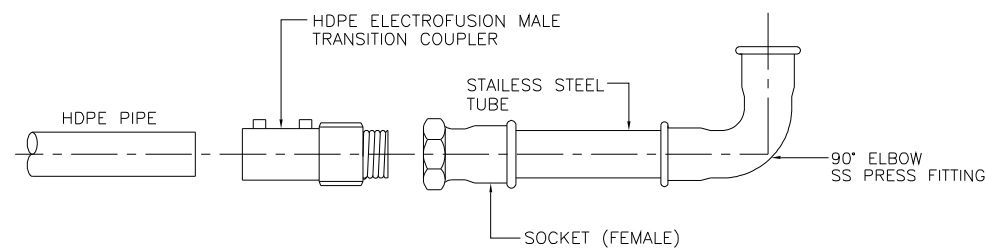
SYA / STD / 015 / REV. 5



WATER METER SIZE (mm)	MIN. LENGTH X (5D)	MAX. ALLOWABLE TOLERANCE
15	100	+25
20	100	+25
25	125	+25
40	200	+25

WATER METER SIZE (mm)	MIN. LENGTH Y (3D)	MAX. ALLOWABLE TOLERANCE	MIN. STAND PIPE SIZE
15	THE LENGTH OF METER COUPLING IS ADEQUATE	THE LENGTH OF METER COUPLING IS ADEQUATE	20
20	60	+25	20
25	75	+25	25
40	120	+25	40

### TYPICAL DETAILS OF STAINLESS STEEL TUBE METER STAND



DETAIL 'A'

**NOTES :**

- ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
- ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
- ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
- THE PIPE AND FITTING SHALL BE JOINTED BY CRIMPING USING ELECTRO-HYDRAULIC PRESS TOOL SUPPLIED BY HOTO STAINLESS STEEL INDUSTRIES SDN. BHD.
- CLASS C GI PIPE SLEEVE SHALL BE PROVIDED FOR HDPE COMMUNICATION PIPE WHICH CROSSES THE DRAIN.

REV.	REVISED BY	DESCRIPTION	DATE
1	HS	Short piece between reducer elbow and stopcock removed.	03 JAN. '08
	HS	To use SS socket after the meter coupling on both sides of the water meter.	
	HS	To include 5D and 3D requirement for meter size 32mm dia. and 40mm dia.	
	HS	Concrete slab removed.	
	HS	To changed communication pipe from Stainless Steel to HDPE.	
	HS	X for 15mm dia. changed to 100mm.	
	HS	Y for 15mm dia. removed.	
	HS	Y for 20mm dia. and 25mm dia. changed to 85mm.	
2	HS	Reintroduce concrete slab with additional notes.	11 APR. '08
	HS	Additional notes on communication pipe material for projects undertaken by SYABAS and Developers.	
3	HS	To use Push Cap Lockable Valve before the stopcock.	5 SEPT. '08
4	HS	Concrete slab to be embedded 50mm in ground level and 25mm exposed.	2 MAR. '09
	HS	Edge of concrete slab changed to 150mm instead of 300mm.	
	HS	Changed BRC A10 for concrete slab to BRC A6.	
	HS	Removed fencing line.	
	HS	Removed 50mm water meter size.	
	HS	Removed Push Cap Lockable Valve.	
	HS	To changed note for communication pipe	
5	WG	Detail of Transition Coupler added.	3 DEC. '10
	WG	Tolerances for all dimensions added.	
	WG	Minimum size for stand pipe added.	
	WG	Note for concrete slab amended.	
	WG	Removed 32mm water meter size.	



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :

METER STAND INSTALLATION (PIPE 15mm - 40mm)  
 USING STAINLESS STEEL TUBE

DRAWN BY : SHAHRUL

DESIGNED : YHH

CHECKED : HS

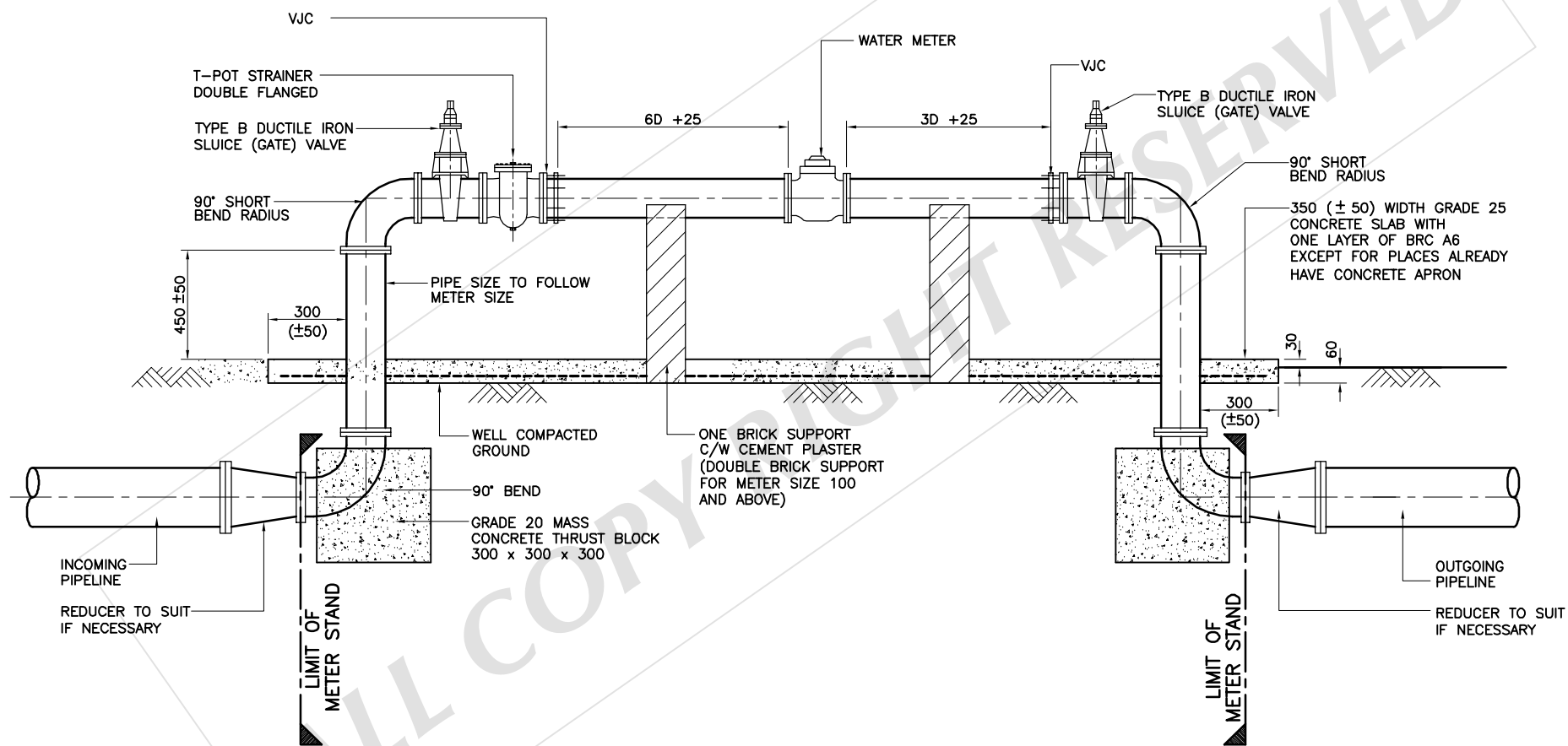
APPROVED : LPL

SCALE : NTS

DATE : AUGUST 2007

DRAWING NO:

SYA / STD / 015A / REV. 5



### TYPICAL DETAIL OF BULK METER STAND

(Y-STRAINER MAY BE USED IN PLACE OF T-POT STRAINER FOR SIZE NOT AVAILABLE IN THE MARKET)

1. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
2. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
3. ALL FLANGE SHALL COMPLY WITH BS EN 1092-1:2002
4. ALL PIPEWORKS SHALL BE OF MILD STEEL TO BS EN 534. WITHOUT CONCRETE CUTBACK.
5. ALL DUCTILE IRON PIPEWORKS SHALL BE SOURCED FROM SUPPLIERS/MANUFACTURERS APPROVED BY SPAN.
6. EXPOSED STEEL PIPES ARE TO BE INTERNALLY CONCRETE LINED AND EXTERNALLY PAINTED WITH 100 MICRON THICK PRIMER, 150 MICRON TWO PACK EPOXY AND FINISHED WITH 100 MICRON THICK POLYURETHANE AFTER REPAIRING ALL DAMAGED PAINTWORKS. THE TOTAL PAINT THICKNESS SHALL BE 350 MICRON.
7. THE METER STAND SHALL REFER TO THE SIZE OF THE METER APPROVED BY SYABAS AND SHALL BE MODIFIED TO SUIT THE SIZE OF THE METER AT THE INITIAL STAGE OF HANDING OVER. THE DEVELOPER/MANAGEMENT COMMITTEE SHALL UPGRADE THE SIZE OF THE METER WHEN THE NEED RISE.

REV.	REVISED BY	DESCRIPTION	DATE
0	LPL/HS	Original drawing.	OCT. '01
1	WG	Typical detail of Bulk Meter Stand has been combined in one(1) drawing. Tolerances for all dimension added. Note for concrete slab amended. Table for Size Of Constant Flow Valve and Type Of Bulk Meter added.	16 DEC '11
2	SH	Detail for Constant Flow Valve and Table Size removed.  Reducer added before meter stand and pipe size for meter stand to follow meter size.  Brick size for pipe support revised.  Taper at meter stand removed.  Table for Size Of Bulk Meter removed.	AUG. '11
3	SH	Additional note for T-Pot Strainer and Y Strainer.	APR. '11
4	SH	Additional note.	OCT. '11



SYARIKAT BEKALAN AIR SELANGOR SDN BHD

PETI SURAT 5001,  
JALAN PANTAI BAHRU,  
59990, KUALA LUMPUR.  
TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
FAX NO : 03 - 2282 5498  
LAMAM WEB : www.syabas.com.my  
EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :

TYPICAL DETAIL OF BULK METER STAND

DRAWN BY : SHAHRUL

DESIGNED : SAT

CHECKED : HS

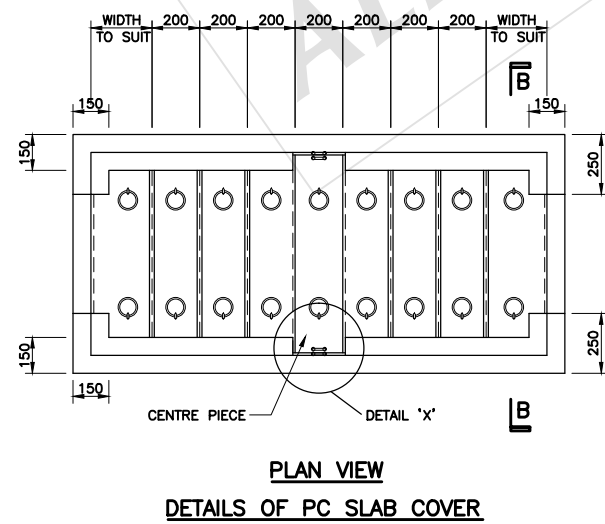
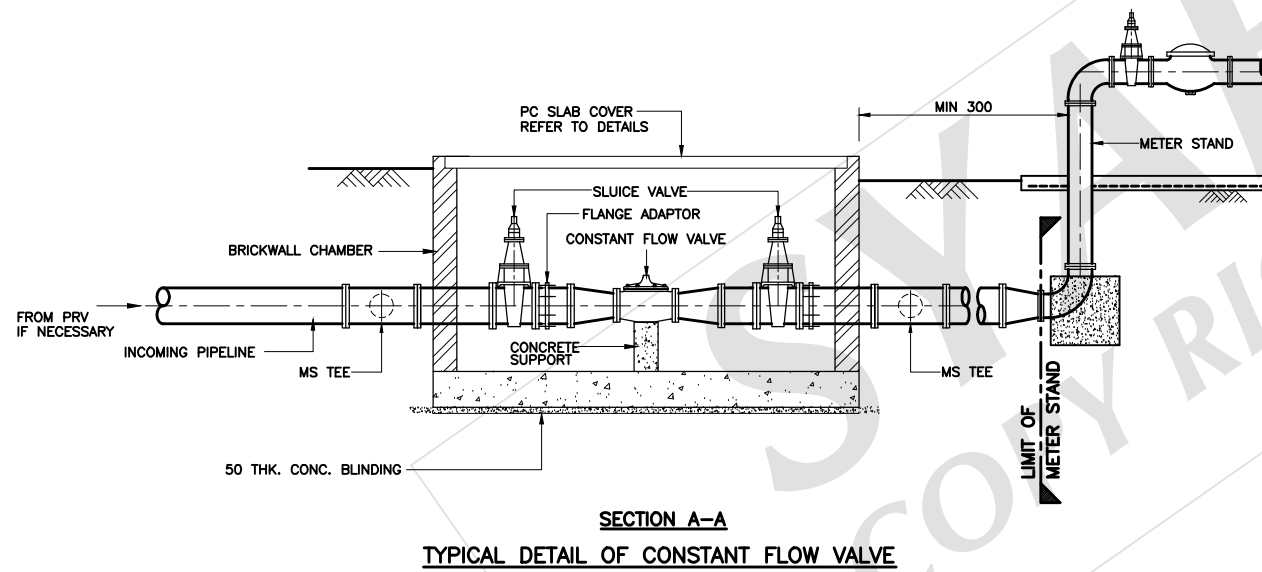
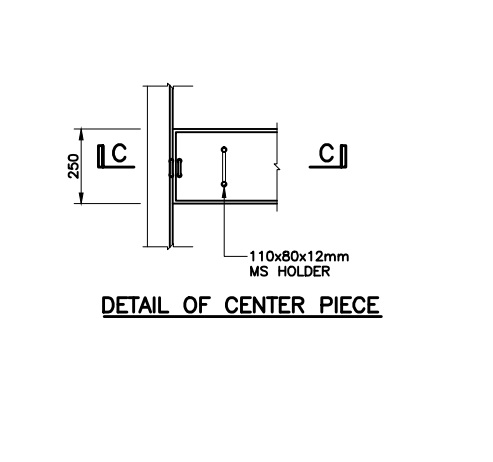
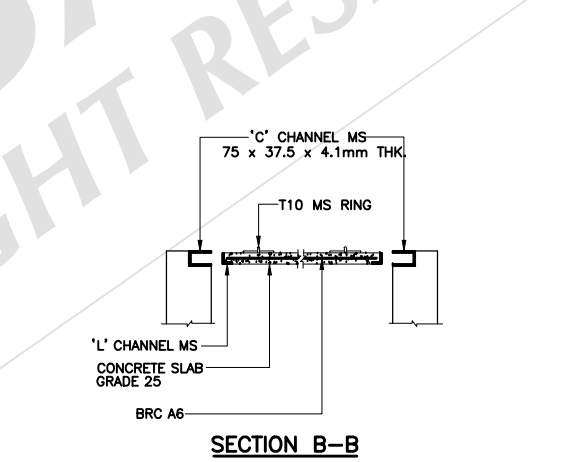
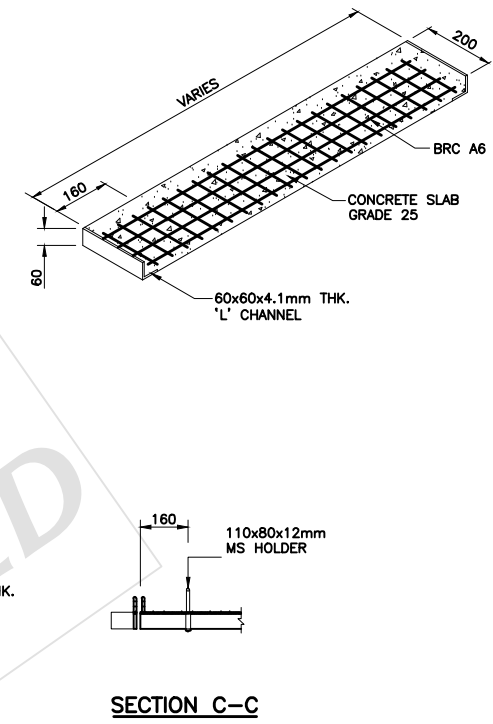
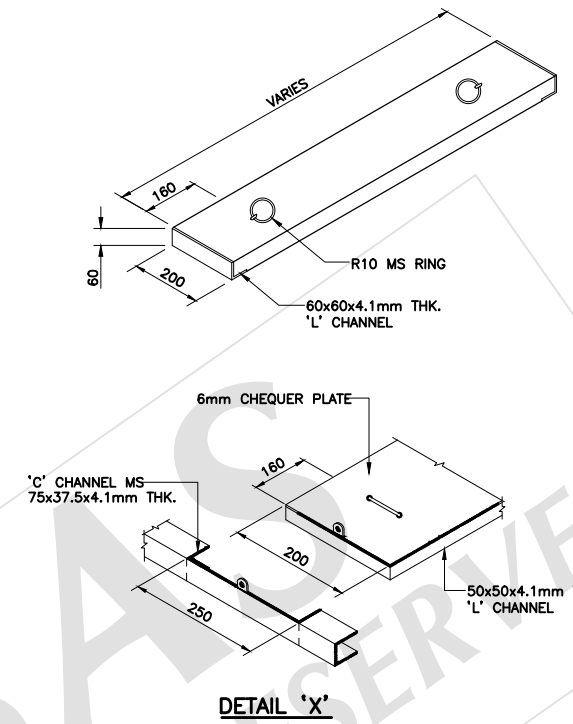
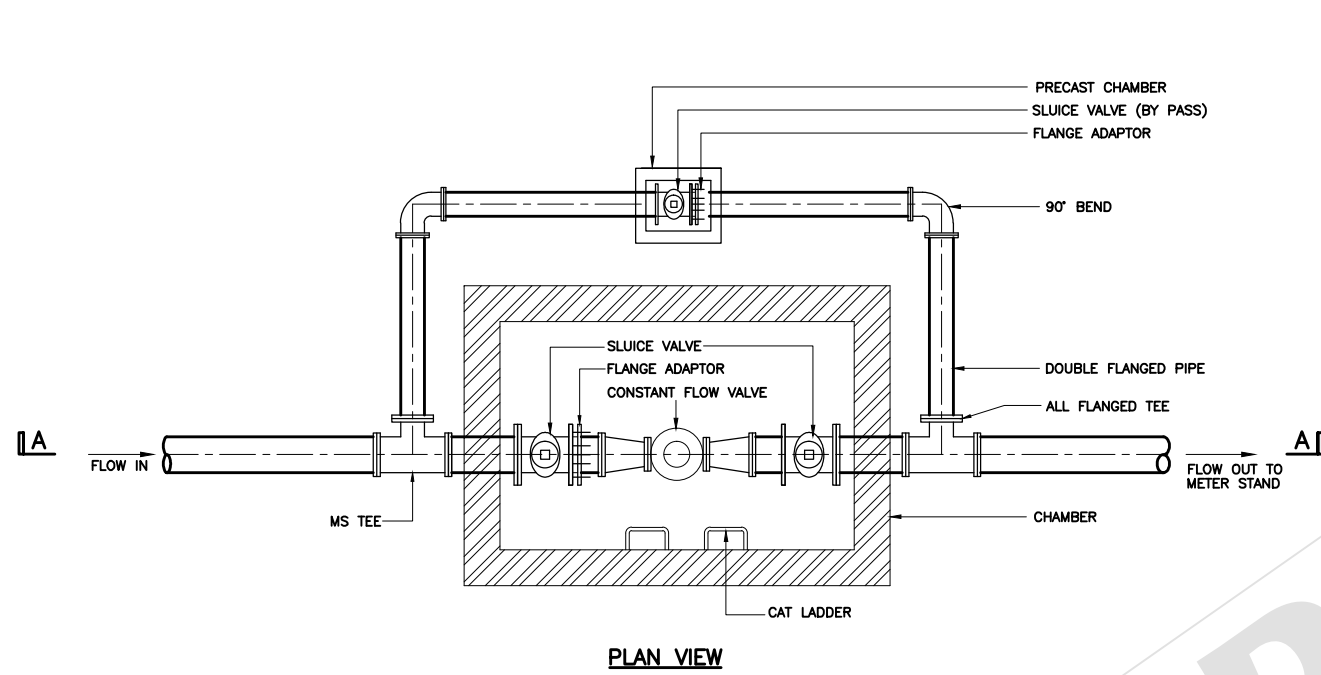
APPROVED : LPL

SCALE : AS SHOWN

DATE : OCT. 2015

DRAWING NO:

SYA / STD / 016 / REV.4



SIZE OF CONSTANT FLOW VALVE

FLOW RATE Q (l/s)	FLOW RATE AT 20 hrs PER DAY (MLD)	FULL BORE (mm)	HALF BORE (mm)
2	0.144	25	80
3	0.216	25	80
4	0.288	32	80
5	0.360	32	80
6	0.432	40	80
7	0.504	50	80
8	0.576	50	80
9	0.648	50	80
10	0.720	50	80
15	1.080	65	100
20	1.440	80	100
30	2.160	100	100
40	2.880	100	150
50	3.600	150	150
60	4.320	150	200
70	5.040	150	200
80	5.760	150	200
90	6.480	150	200
100	7.200	200	200
150	10.800	200	250
200	14.400	250	250
300	21.600	300	300

NOTES:

- ESTIMATED PRESSURE DROP FOR CONSTANT FLOW VALVE IS 7 PSI (0.48 bar)
- THE ORIFICE OF THE CONSTANT FLOW VALVE IS USUALLY SIZE TO GENERATE A PRESSURE DIFFERENTIAL OF 3 TO 5 PSI (0.20 TO 0.35 bar)
- THEREFORE TOTAL PRESSURE DROP:  
MIN. = 10 PSI (0.68 bar)  
MAX. = 12 PSI (0.83 bar)

NOTE:

- ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.

REV.	REVISED BY	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :

TYPICAL DETAIL OF CONSTANT FLOW VALVE

DRAWN BY : SHAHRUL

DESIGNED : SAT

CHECKED : HS

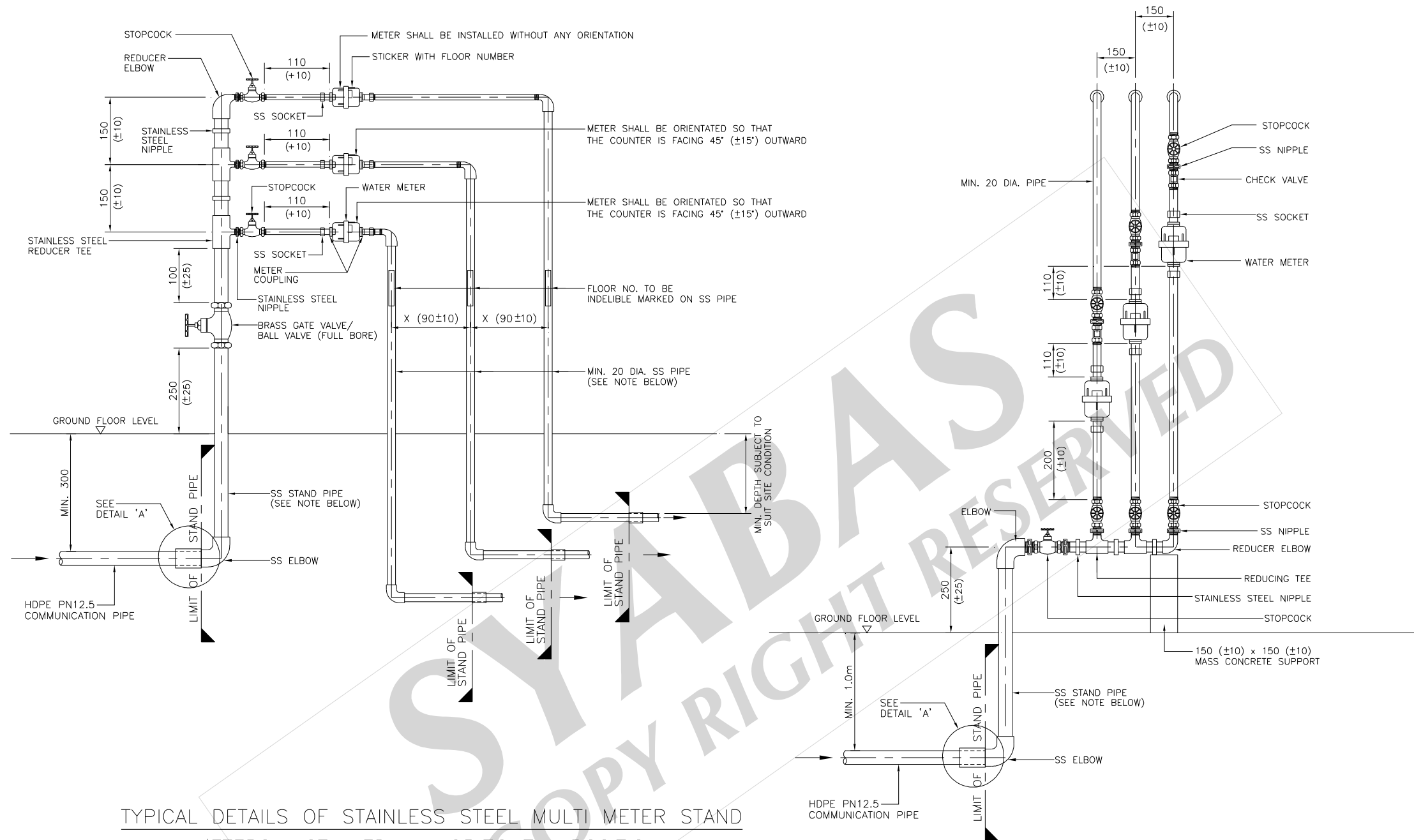
APPROVED : LPL

SCALE : AS SHOWN

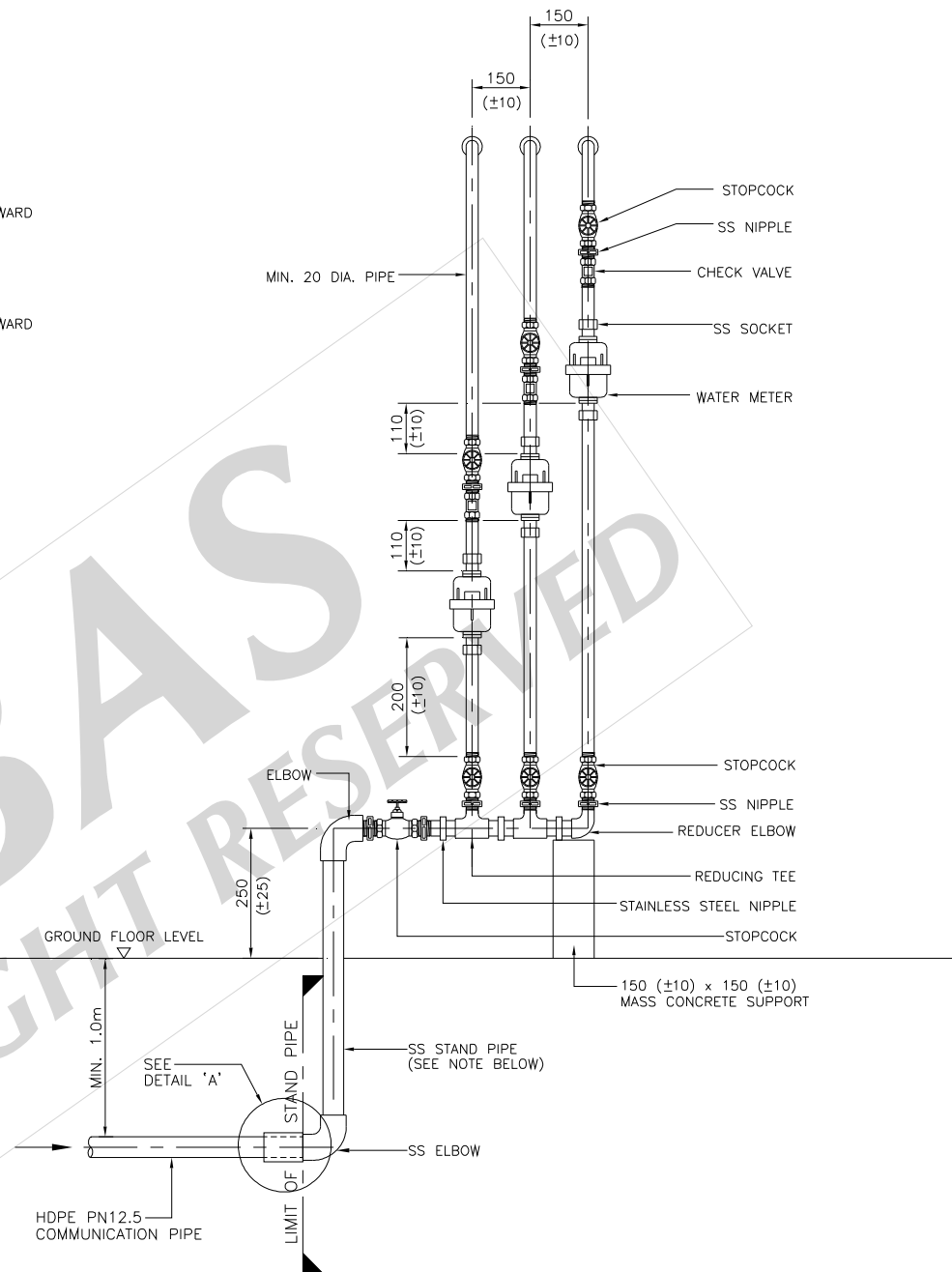
DATE : AUG. 2014

DRAWING NO:

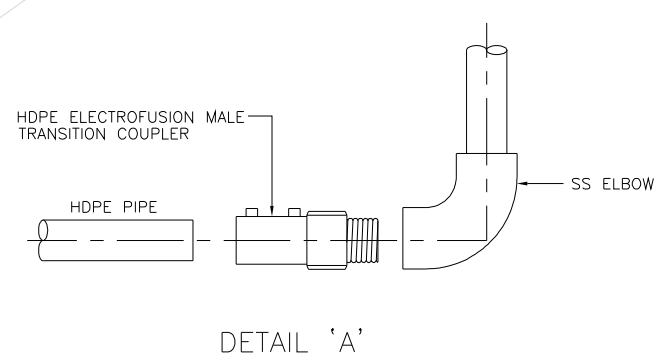
SYA / STD / 016 / 1



TYPICAL DETAILS OF STAINLESS STEEL MULTI METER STAND  
METERS INSTALLED IN HORIZONTAL POSITION



TYPICAL DETAILS OF STAINLESS STEEL MULTI METER STAND  
METERS INSTALLED IN VERTICAL POSITION



TYPICAL DETAILS OF STAINLESS STEEL METER STAND  
INSTALLATION FOR 2 TO 3 STOREY BUILDING

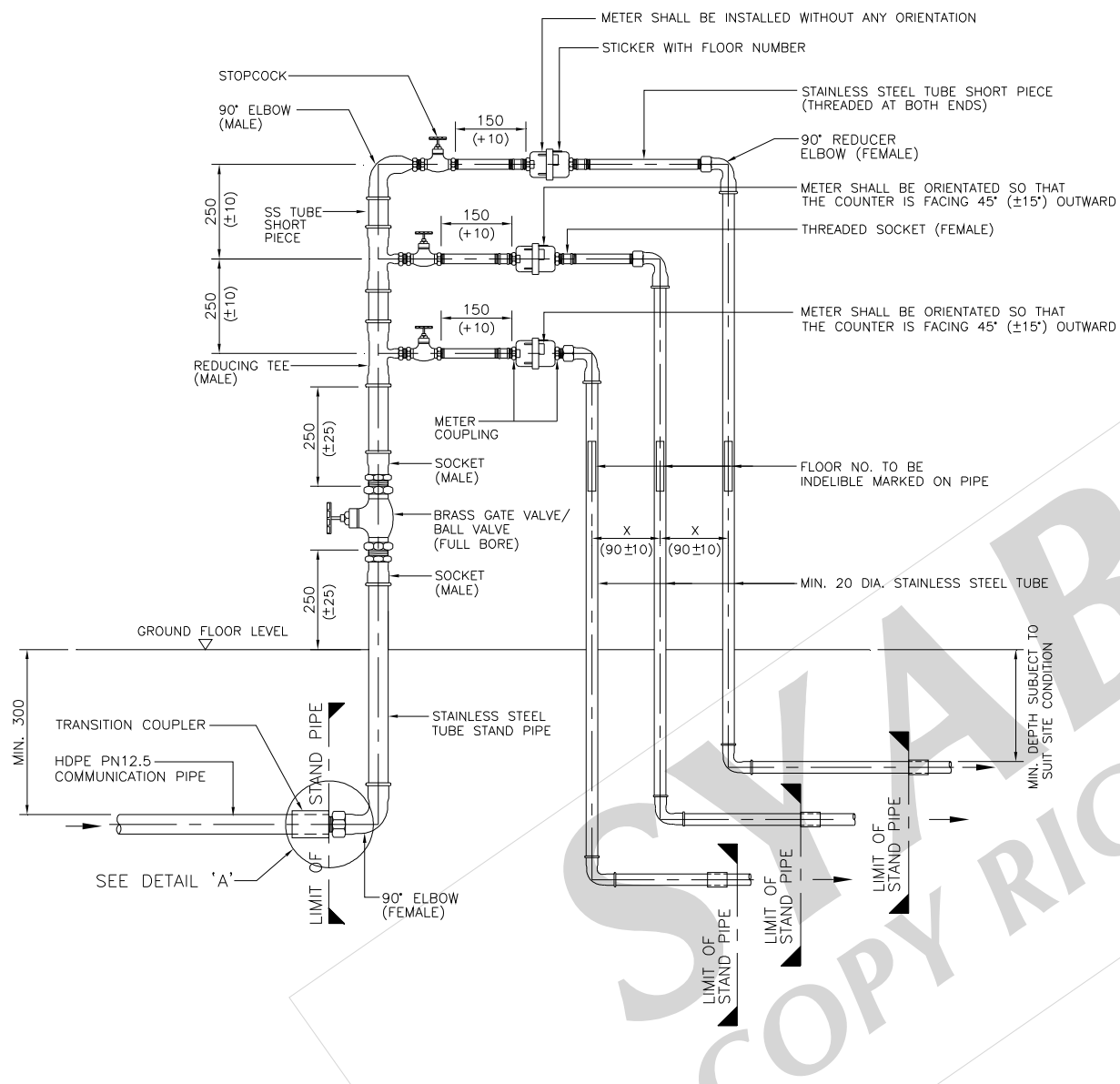
- NOTES :
1. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  2. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
  3. ALL STAINLESS STEEL PIPES SHALL BE OF GRADE 304 TO SCHEDULE 40S.
  4. SS STAND PIPE SHALL BE:
    - a) 25 DIA. FOR 2 Nos. OF METERS OR
    - b) 50 DIA. FOR 3 TO 5 Nos. OF METERS
  5. CLASS C GI PIPE SLEEVE SHALL BE PROVIDED FOR HDPE COMMUNICATION PIPE WHICH CROSSES THE DRAIN.

REV.	REVISED BY	DESCRIPTION	DATE
1	HS	Removal of short piece and replace with stainless steel nipple between reducing elbow and stopcock.	06 JUNE '08
		Additional of a socket at short piece before and after the water meter.	
		Spacing between either 2 Nos. of reducing tees or between a reducing tee and a reducing elbow is reduced from 150mm to 110mm.	
		Additional note on spacing X requirement for project under Pipe Replacement Programme and Developers	
		Removal of concrete slab	
2	HS	To use Push Cap Lockable Valve before the stopcock.	8 JAN. '09
3	HS	For developer project, spacing X changed to 80mm.	02 MAR '09
		Removed Push Cap Lockable Valve.	
4	WG	Detail of Transition Coupler added.	3 DEC. '10
	WG	Tolerances for all dimensions added.	
	WG	Typical detail for meters to be installed in vertical position is added.	
	WG	Spacing X changed to 90mm ± 10	
	WG	Spacing between either 2 Nos. of reducing tees or between a reducing tee and a reducing elbow changed from 110mm to 150mm.	
	WG	Distance between inlet stopcock and ground level is specified.	
	WG	Orientation for the lowest and second lowest meter to be installed is specified.	
	WG	Tagging and marking for meter.	
	WG	The length of the short piece between the stopcock and meter is specified.	

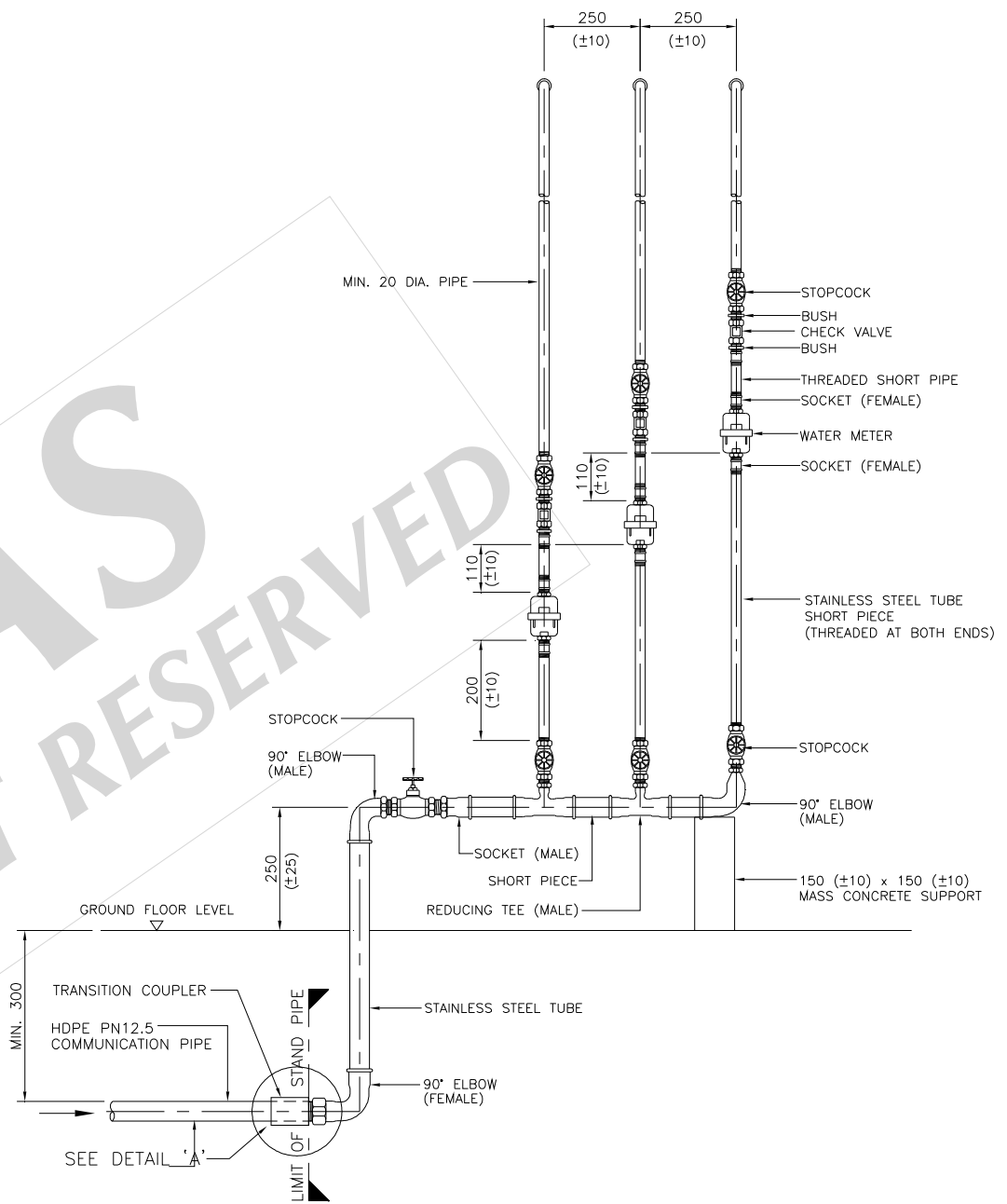


SYARIKAT BEKALAN AIR SELANGOR SDN BHD  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

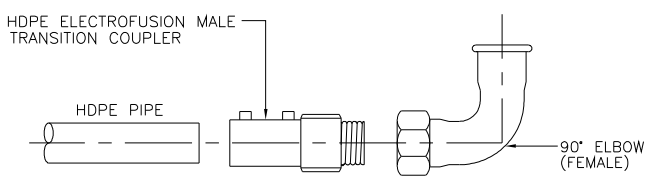
PROJECT :	
DRAWING TITLE : METER STAND FOR MULTI METER CONNECTION USING STAINLESS STEEL PIPES	
DRAWN BY : SHAHRUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : AUGUST 2006
DRAWING NO: SYA / STD / 017 / REV. 4	



TYPICAL DETAILS OF STAINLESS STEEL TUBE MULTI METER STAND  
METERS INSTALLED IN HORIZONTAL POSITION



TYPICAL DETAILS OF STAINLESS STEEL TUBE MULTI METER STAND  
METERS INSTALLED IN VERTICAL POSITION



DETAIL 'A'

TYPICAL DETAILS OF STAINLESS STEEL TUBE METER STAND  
INSTALLATION FOR 2 TO 3 STOREY BUILDING

- NOTES :
1. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  2. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
  3. STAINLESS STEEL TUBE STAND PIPE SHALL BE:
    - a) 25 DIA. FOR 2 Nos. OF METERS OR
    - b) 50 DIA. FOR 3 TO 5 Nos. OF METERS
  4. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
  5. THE PIPE AND FITTING SHALL BE JOINED BY CRIMPING USING ELECTRO-HYDRAULIC PRESS TOOL SUPPLIED BY HOTO STAINLESS STEEL INDUSTRIES SDN. BHD.
  6. CLASS C GI PIPE SLEEVE SHALL BE PROVIDED FOR HDPE COMMUNICATION PIPE WHICH CROSSES THE DRAIN.

REV.	REVISED BY	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

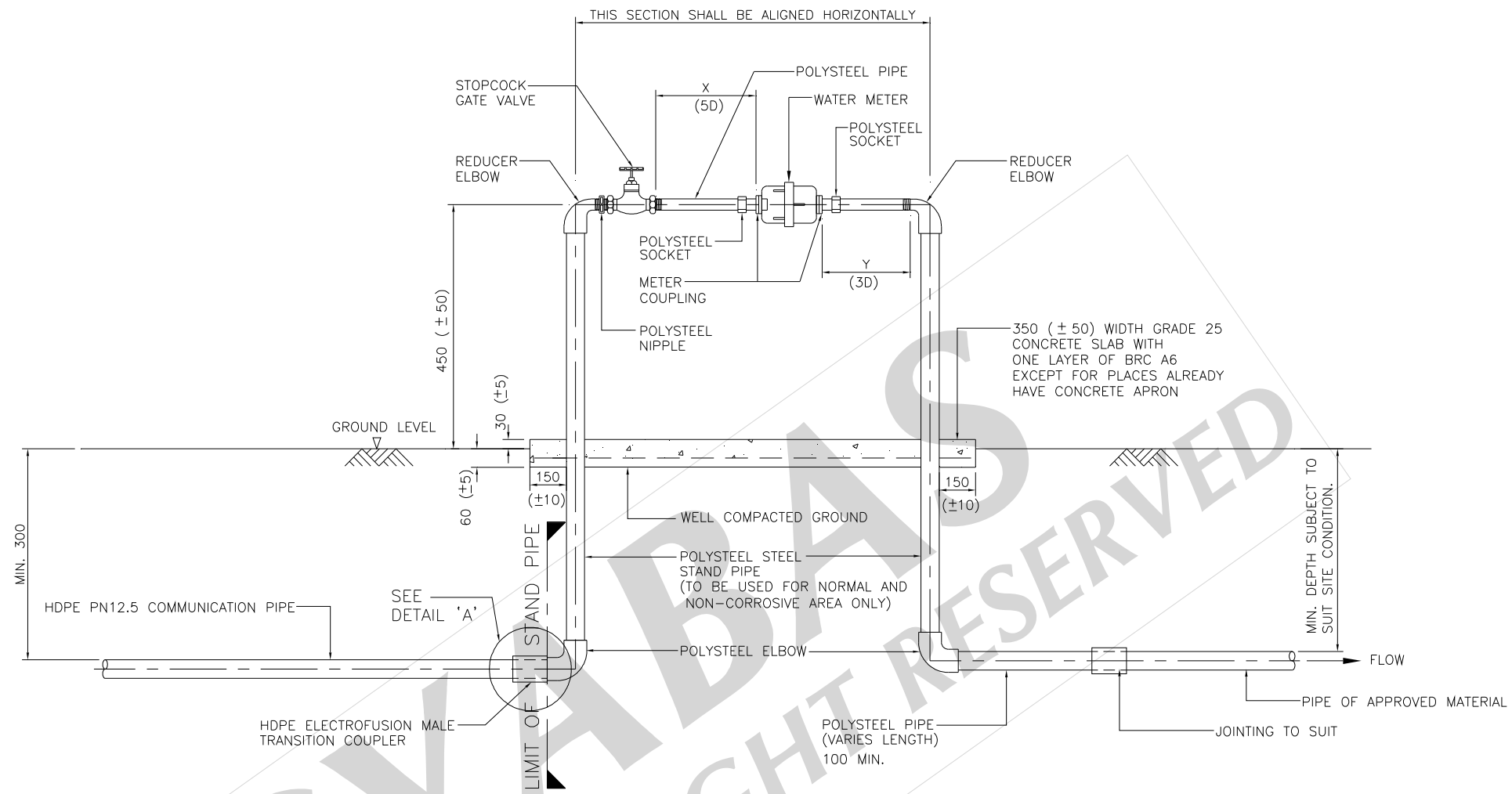
DRAWING TITLE :  
METER STAND FOR MULTI METER CONNECTION  
USING STAINLESS STEEL TUBE

DRAWN BY : SHAHRUL      DESIGNED : YHH

CHECKED : KTT              APPROVED : SS

SCALE : NTS                 DATE : JUNE 2011

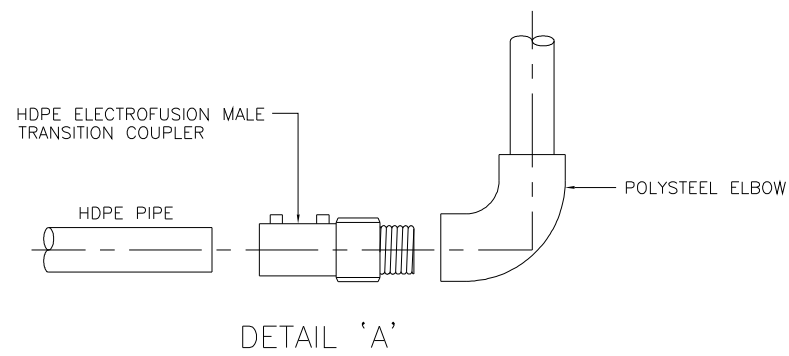
DRAWING NO:  
SYA / STD / 017A



WATER METER SIZE (mm)	MIN. LENGTH X (5D)	MAX. ALLOWABLE TOLERANCE
15	100	+25
20	100	+25
25	125	+25
40	200	+25

WATER METER SIZE (mm)	MIN. LENGTH Y (3D)	MAX. ALLOWABLE TOLERANCE	MIN. STAND PIPE SIZE
15	THE LENGTH OF METER COUPLING IS ADEQUATE	THE LENGTH OF METER COUPLING IS ADEQUATE	20
20	60	+25	20
25	75	+25	25
40	120	+25	40

TYPICAL DETAILS OF POLYSTEEL METER STAND



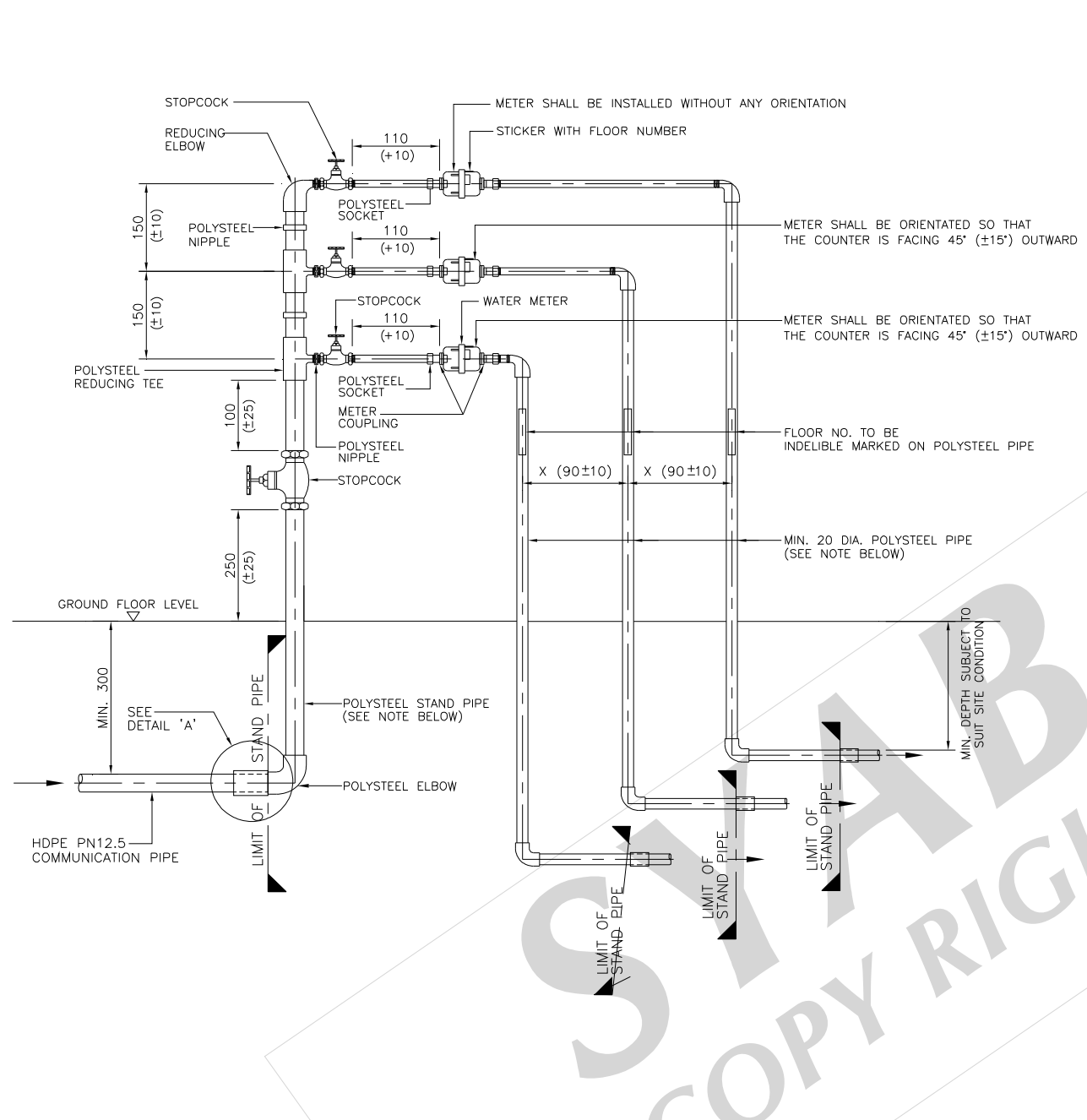
- NOTES :
- ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
  - ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  - ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
  - CLASS C GI PIPE SLEEVE SHALL BE PROVIDED FOR HDPE COMMUNICATION PIPE WHICH CROSSES THE DRAIN.

REV.	REVISED BY	DESCRIPTION	DATE
1	HS	Short piece between reducer elbow and stopcock removed.	03 JAN. '08
	HS	To use SS socket after the meter coupling on both sides of the water meter.	
	HS	To include 5D and 3D requirement for meter size 32mm dia. and 40mm dia.	
	HS	Concrete slab removed.	
	HS	To changed communication pipe from Stainless Steel to HDPE.	
	HS	X for 15mm dia. changed to 100mm.	
	HS	Y for 15mm dia. removed.	
	HS	Y for 20mm dia. and 25mm dia. changed to 85mm.	
2	HS	Reintroduce concrete slab with additional notes.	11 APR. '08
	HS	Additional notes on communication pipe material for projects undertaken by SYABAS and Developers.	
3	HS	To use Push Cap Lockable Valve before the stopcock.	5 SEPT. '08
4	HS	Concrete slab to be embedded 50mm in ground level and 25mm exposed.	2 MAC. '09
	HS	Edge of concrete slab changed to 150mm instead of 300mm.	
	HS	Changed BRC A10 for concrete slab to BRC A6.	
	HS	Removed fencing line.	
	HS	Removed 50mm water meter size.	
	HS	Removed Push Cap Lockable Valve.	
	HS	To changed note for communication pipe.	
5	WG	Detail of Transition Coupler added.	3 DEC. '10
	WG	Tolerances for all dimensions added.	
	WG	Minimum size for stand pipe added.	
	WG	Note for concrete slab amended.	
	WG	Removed 32mm water meter size.	

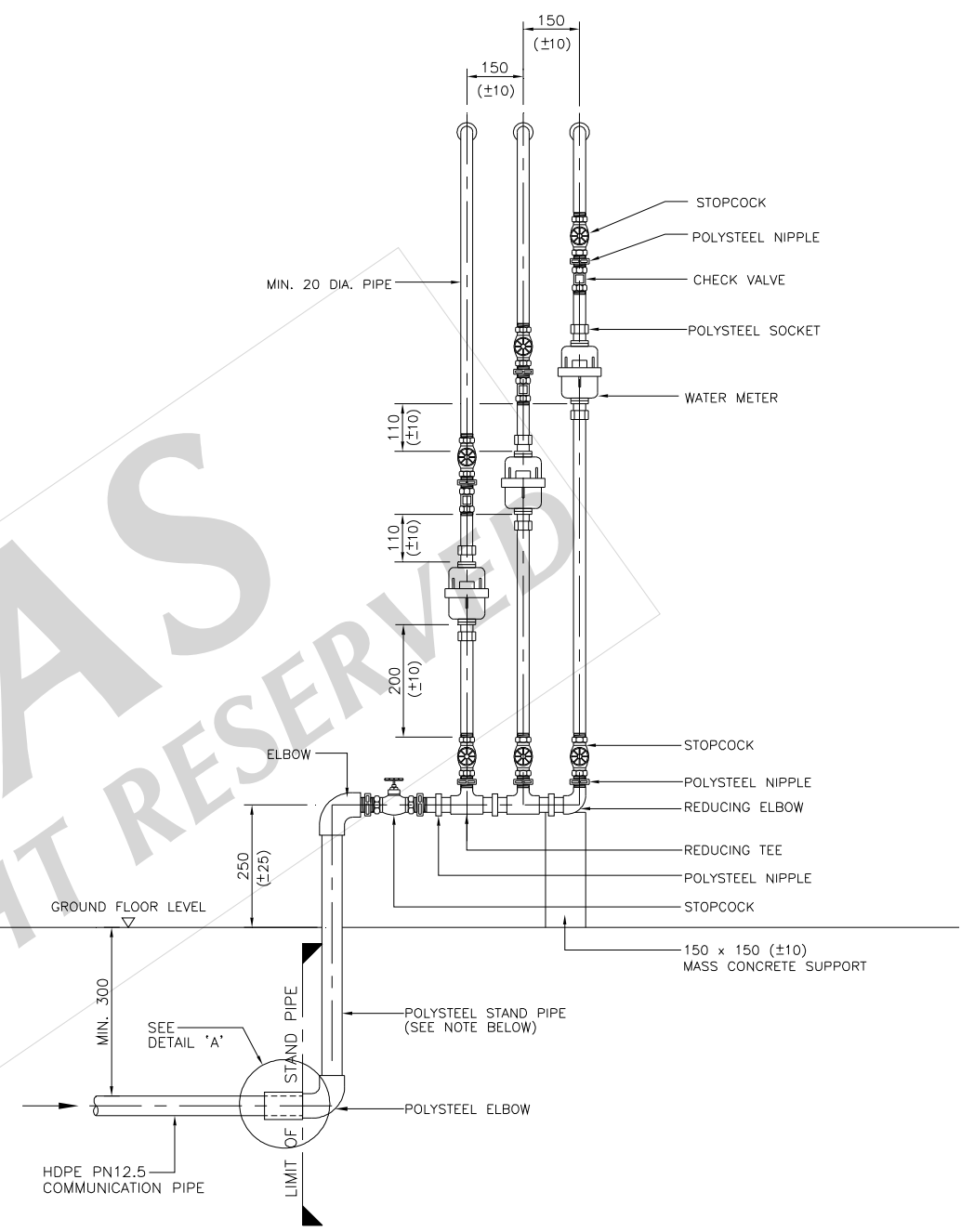


**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

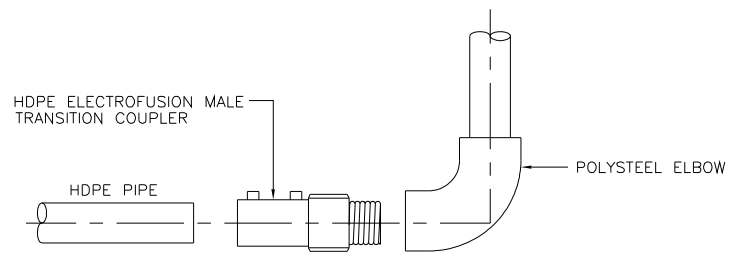
PROJECT :	
DRAWING TITLE : METER STAND INSTALLATION (METER SIZE 15mm - 40mm) USING POLYSTEEL PIPE	
DRAWN BY : SHAHRUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : AUGUST 2006
DRAWING NO: SYA / STD / 018 / REV. 5	



TYPICAL DETAILS OF POLYSTEEL MULTI METER STAND  
METERS INSTALLED IN HORIZONTAL POSITION



TYPICAL DETAILS OF POLYSTEEL MULTI METER STAND  
METERS INSTALLED IN VERTICAL POSITION



DETAIL 'A'

TYPICAL DETAILS OF POLYSTEEL METER STAND  
INSTALLATION FOR 2 TO 3 STOREY BUILDING

NOTES :

1. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
2. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
3. POLYSTEEL STAND PIPE SHALL BE:
  - a) 25 DIA. FOR 2 Nos. OF METERS OR
  - b) 50 DIA. FOR 3 TO 5 Nos. OF METERS
4. CLASS C GI PIPE SLEEVE SHALL BE PROVIDED FOR HDPE COMMUNICATION PIPE WHICH CROSSES THE DRAIN.

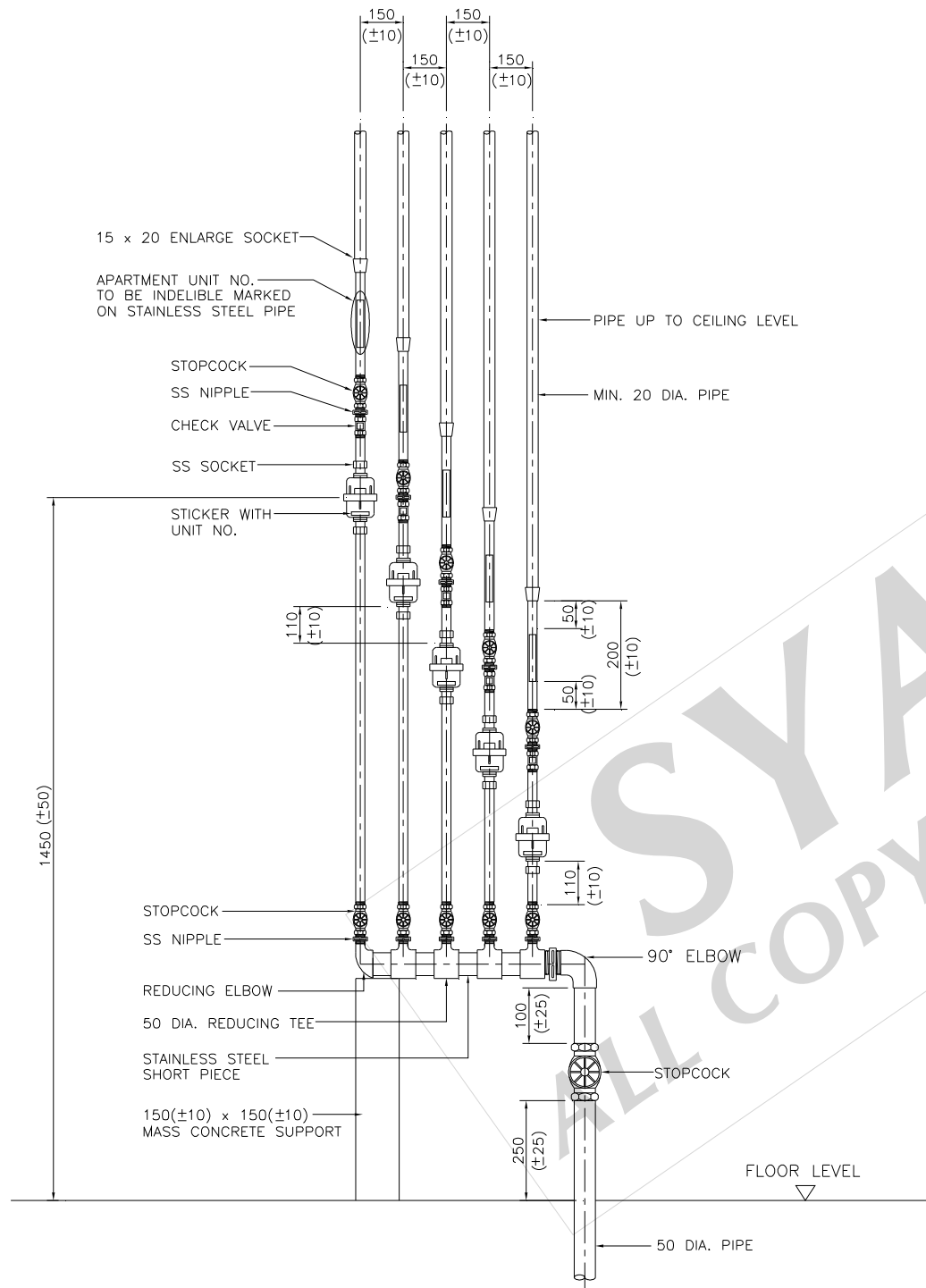
REV.	REVISED BY	DESCRIPTION	DATE
1	HS	Removal of short piece and replace with polysteel nipple between reducing elbow and stop-cock.	06 JUNE '08
		Additional of a socket at short piece before and after the water meter.	
		Spacing between either 2 Nos. of reducing tees or between a reducing tee and a reducing elbow is reduced from 150mm to 110mm.	
		Additional note on spacing X requirement for project under Pipe Replacement Programme and Developers	
		Removal of concrete slab	
2	HS	To use Push Cap Lockable Valve before the stopcock.	8 JAN. '09
3	HS	For developer project , spacing X changed to 80mm.	02 MAC '09
		Removed Push Cap Lockable Valve.	
4	WG	Detail of Transition Coupler added.	3 DEC. '10
	WG	Tolerances for all dimensions added.	
	WG	Typical detail for meters to be installed in vertical position is added.	
	WG	Spacing X changed to 90mm ±10	
	WG	Spacing between either 2 Nos. of reducing tees or between a reducing tee and a reducing elbow changed from 110mm to 150mm.	
	WG	Distance between inlet stopcock and ground level is specified.	
	WG	Orientation for the lowest and second lowest meter to be installed is specified.	
	WG	Tagging and marking for meter are added.	
	WG	The length of the short piece between the stopcock and meter is specified.	



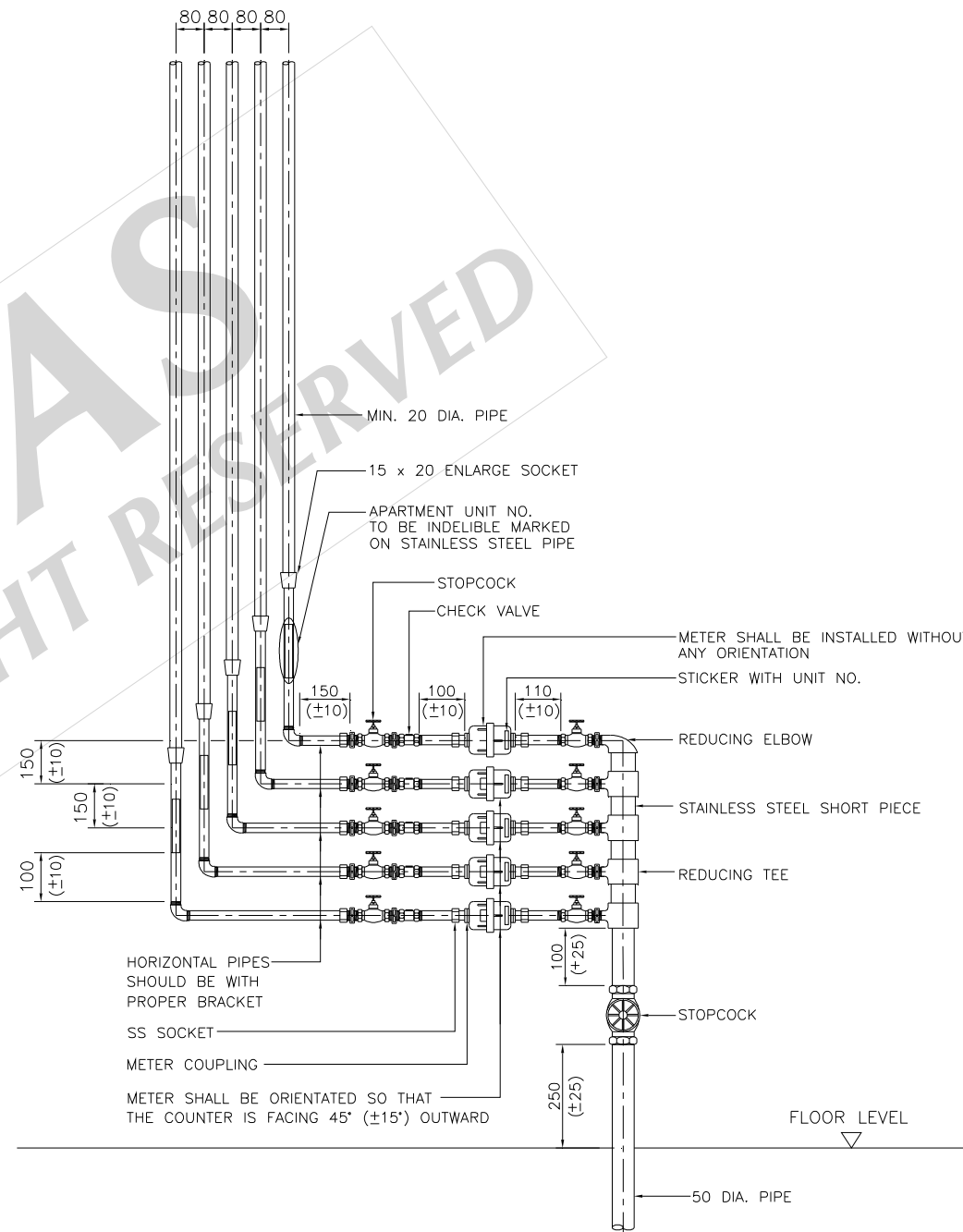
SYARIKAT BEKALAN AIR SELANGOR SDN BHD  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :	
DRAWING TITLE : METER STAND FOR MULTI METER CONNECTION USING POLYSTEEL PIPES	
DRAWN BY : SHAHRUL	DESIGNED : SAT
CHECKED : HS	APPROVED : LPL
SCALE : NTS	DATE : AUGUST 2006
DRAWING NO : SYA / STD / 019 / REV. 4	





TYPICAL DETAILS OF STAINLESS STEEL/POLYSTEEL METER STAND  
METERS INSTALLED IN VERTICAL POSITION



TYPICAL DETAILS OF STAINLESS STEEL/POLYSTEEL METER STAND  
METERS INSTALLED IN HORIZONTAL POSITION

NOTES :

1. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
2. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
3. ALL STAINLESS STEEL PIPES SHALL BE OF GRADE 304 TO SCHEDULE 40S.
4. STAINLESS STEEL PIPES AND FITTINGS MAY BE REPLACED BY POLYSTEEL PIPES AND FITTINGS.
5. ALL VERTICAL PIPES SHOULD BE SECURED WITH PROPER BRACKET.

REV.	REVISED BY	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
 METER STAND INSTALLATION FOR 4 TO 5 STOREY  
 WALK-UP BUILDINGS

DRAWN BY : SHAHRUL      DESIGNED : RIR

CHECKED : YHH          APPROVED : SS

SCALE : NTS              DATE : DEC 2010

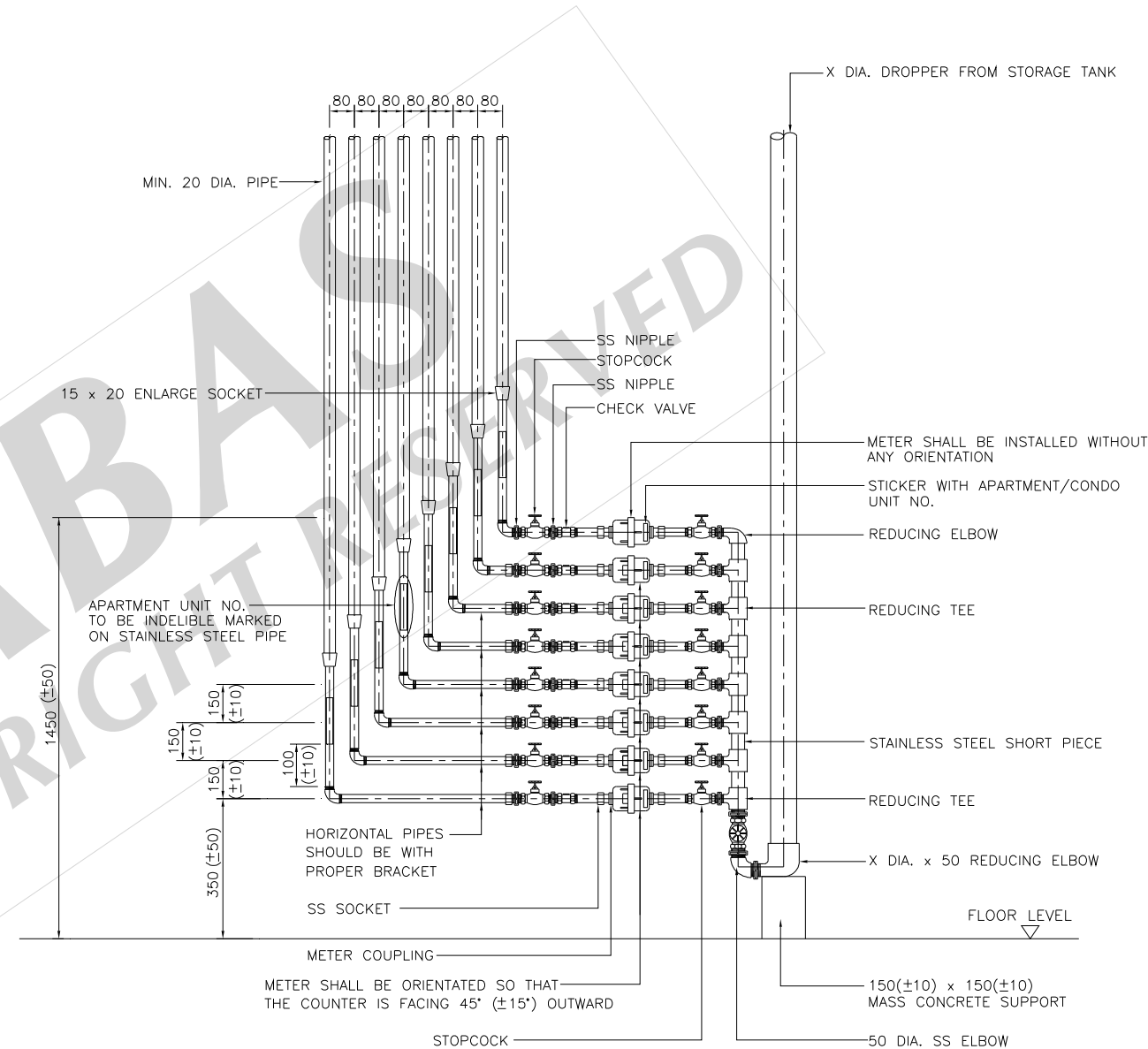
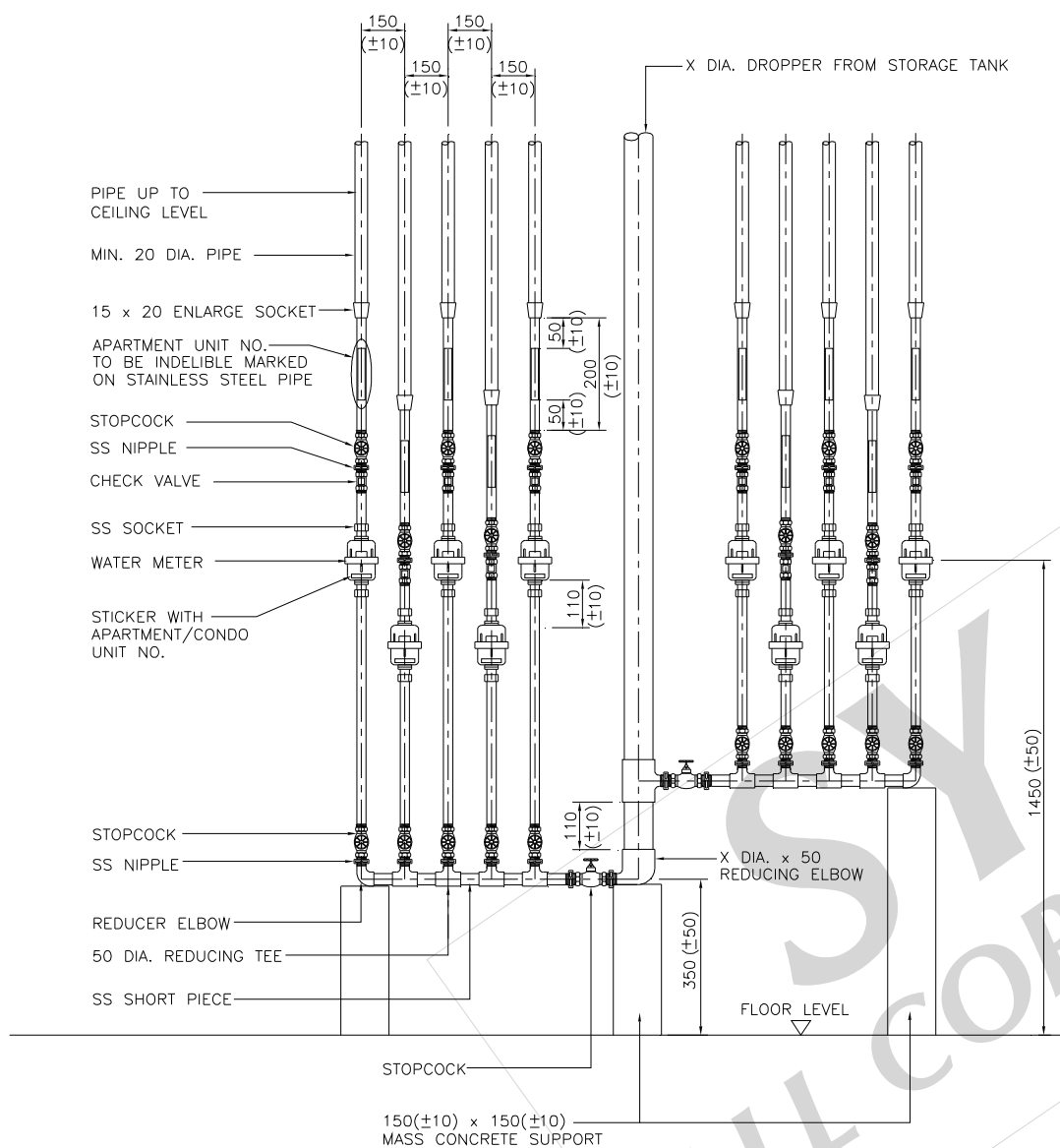
DRAWING NO:

SYA / STD / 019 / 1

4 TO 5 STOREY WALK-UP BUILDING

NOTES :

1. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
2. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
3. ALL STAINLESS STEEL PIPES SHALL BE OF GRADE 304 TO SCHEDULE 40S.
4. STAINLESS STEEL PIPES AND FITTINGS MAY BE REPLACED BY POLYSTEEL PIPES AND FITTINGS.
5. ALL VERTICAL PIPES SHOULD BE SECURED WITH PROPER BRACKETS.



TYPICAL DETAILS OF STAINLESS STEEL/POLYSTEEL METER STAND  
METERS INSTALLED IN VERTICAL POSITION

TYPICAL DETAILS OF STAINLESS STEEL/POLYSTEEL METER STAND  
METERS INSTALLED IN HORIZONTAL POSITION

HIGH RISE APARTMENT/CONDOMINIUM  
(METER INSTALLATION INSIDE PIPE SHAFT/METER ROOM)

REV.	REVISED BY	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

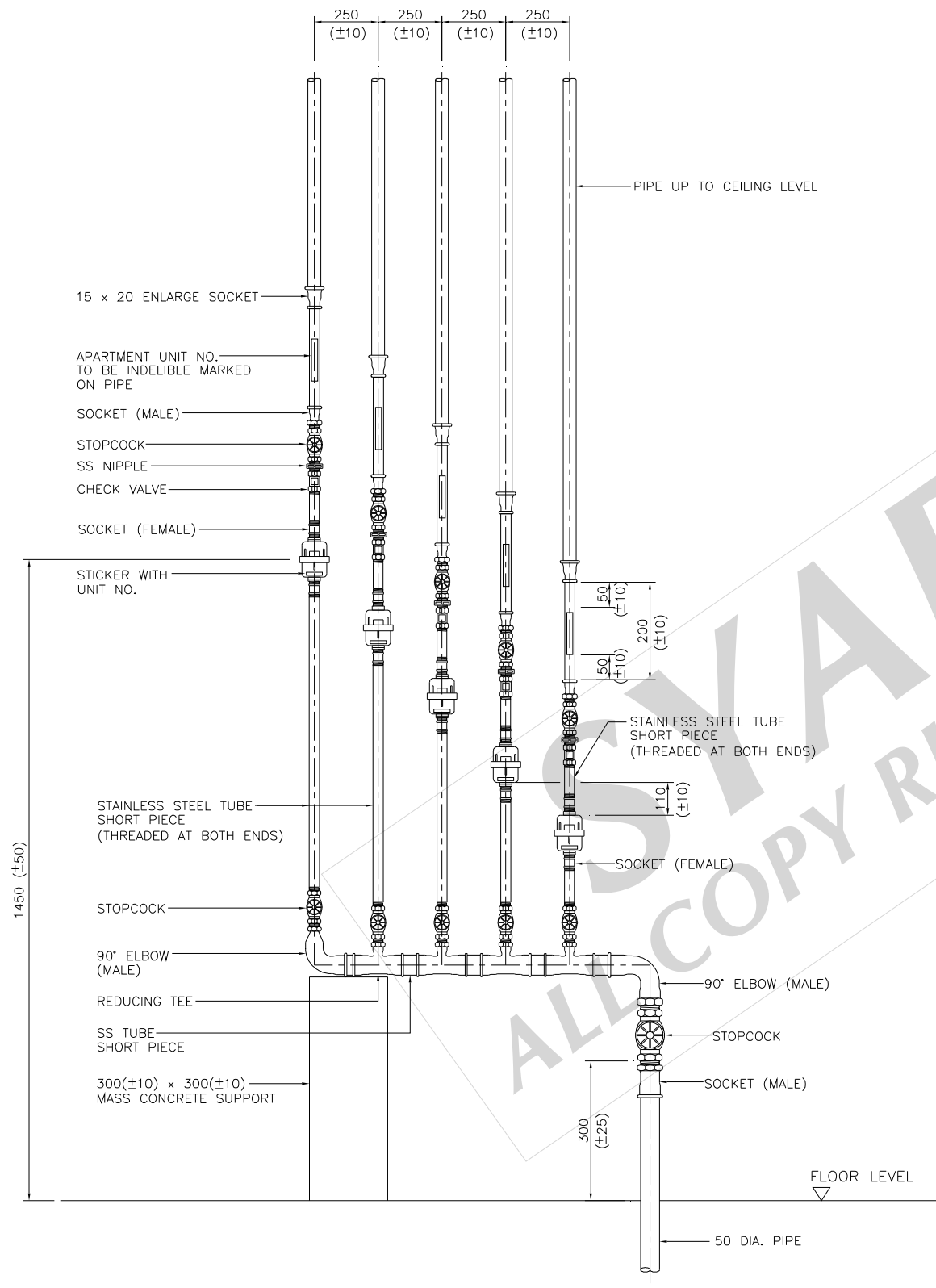
DRAWING TITLE :  
 METER STAND INSTALLATION FOR HIGH RISE  
 APARTMENT / CONDOMINIUM

DRAWN BY : SHAHRUL      DESIGNED : RIR

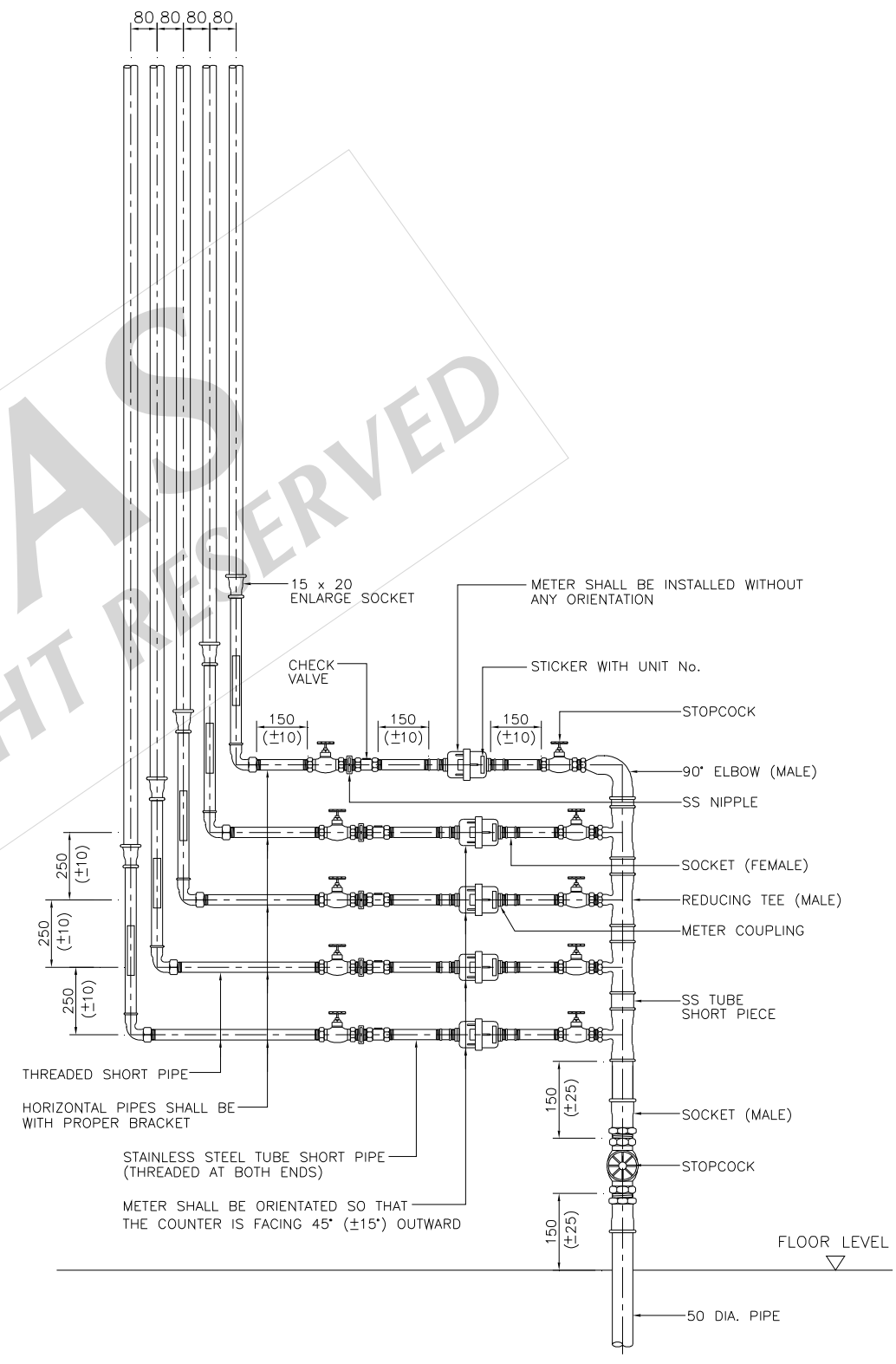
CHECKED : YHH              APPROVED : SS

SCALE : NTS                  DATE : DEC 2010

DRAWING NO:  
 SYA / STD / 019 / 2



TYPICAL DETAILS OF STAINLESS STEEL TUBE METER STAND  
METERS INSTALLED IN VERTICAL POSITION



TYPICAL DETAILS OF STAINLESS STEEL TUBE METER STAND  
METERS INSTALLED IN HORIZONTAL POSITION

4 TO 5 STOREY WALK-UP BUILDING

- NOTES :
1. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
  2. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  3. ALL VERTICAL PIPES SHOULD BE SECURED WITH PROPER BRACKET.

REV.	REVISED BY	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2088 5400  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

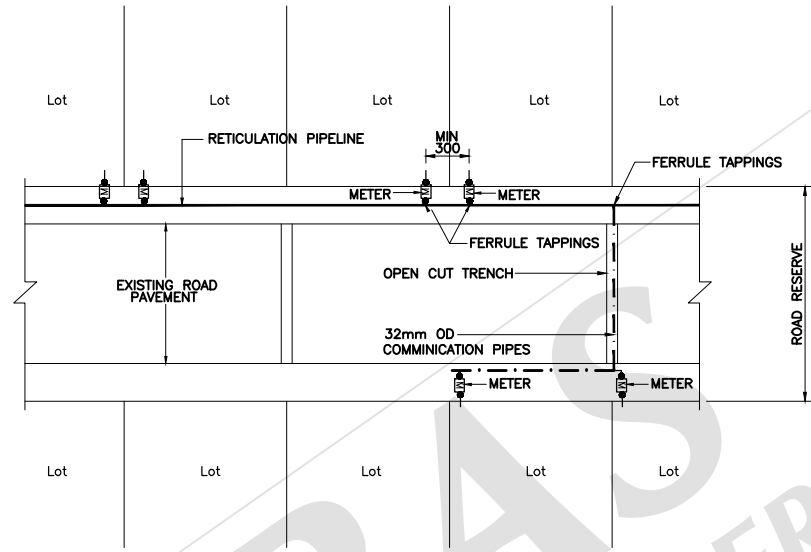
PROJECT :

DRAWING TITLE :  
 METER STAND INSTALLATION FOR 4 TO 5 STOREY  
 WALK-UP BUILDINGS USING STAINLESS STEEL TUBE

DRAWN BY : SHAHRUL	DESIGNED : YHH
CHECKED : KTT	APPROVED : SS
SCALE : NTS	DATE : JUNE 2011

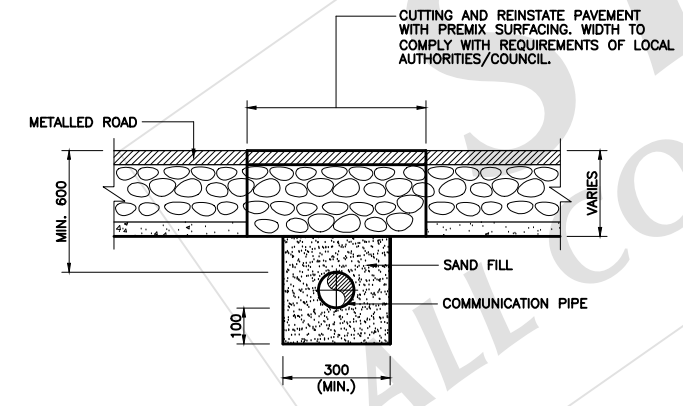
DRAWING NO:  
 SYA / STD / 019 / 3

NOTE :  
 1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE STATED.  
 2. 3 TAPPING PER METER LENGTH



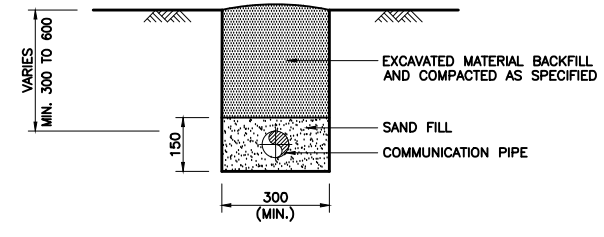
**TYPICAL COMMUNICATION PIPES TAPPING ARRANGEMENT (OPEN CUT)**

NOTE : IF INSTALLATION OF ROAD CROSSING IS BY APPROVED DIRECTIONAL HYDRAULIC RAMMING THERE IS NO REINSTATEMENT REQUIRED.



**COMMUNICATION PIPE UNDER METALLED ROAD CROSSING**

NOTE : GI PIPE CLASS C SLEEVE TO BE PROVIDED FOR COMMUNICATION PIPE WHICH CROSSES THE ROAD.



**NORMAL TRENCH FOR COMMUNICATION PIPE ON ROAD SHOULDER NOT UNDER METALLED ROAD**

REV.	REVISED BY	DESCRIPTION	DATE
1	SH	To remove drawing for Typical Details For HDPE Limit Of Works.	AUG. '14



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

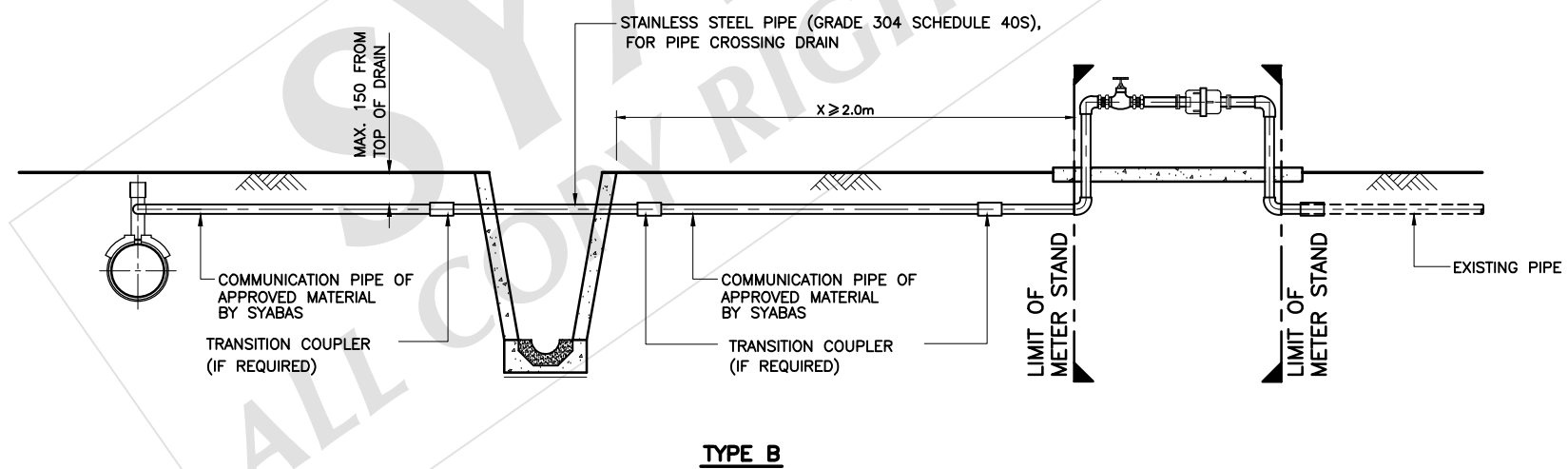
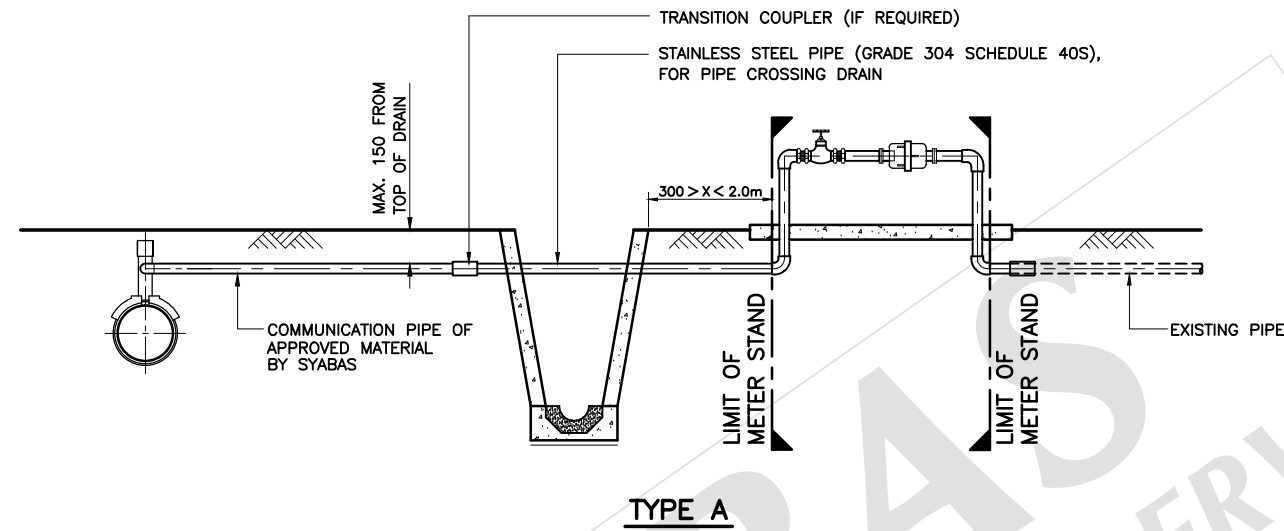
PROJECT :

DRAWING TITLE :  
 DETAILS FOR COMMUNICATION PIPES TAPPING ARRANGEMENT AND PIPE TRENCH

DRAWN BY : SHAHRUL	DESIGNED : Ir. LEE CHOON WENG
CHECKED : Ir. LEE CHOON WENG	APPROVED : DATO' IR LEE MIANG KOI
SCALE : AS SHOWN	DATE : AUG. 2014

DRAWING NO:  
 SYA / STD / 020 / REV.1

- NOTES :
1. ALL DIMENSIONS ARE IN MILIMETRE UNLESS OTHERWISE STATED.
  2. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  3. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
  4. FOR  $X > 2.0m$ , THEN THE STAINLESS STEEL PIPE IS ONLY THE DRAIN CROSSING AND SHALL BE CONNECTED TO THE METER STAND BY HDPE PIPE USING SUITABLE JOINTING MATERIAL.



**TYPICAL DETAIL FOR COMMUNICATION PIPE WITH DRAIN CROSSING**

REV.	REVISED BY	DESCRIPTION	DATE
1	SH	To remove drawing for communication pipe with stream crossing and details of tapping saddle.	APR. '15
		To use SS pipe Grade 304 pipe which crosses the drain.	



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

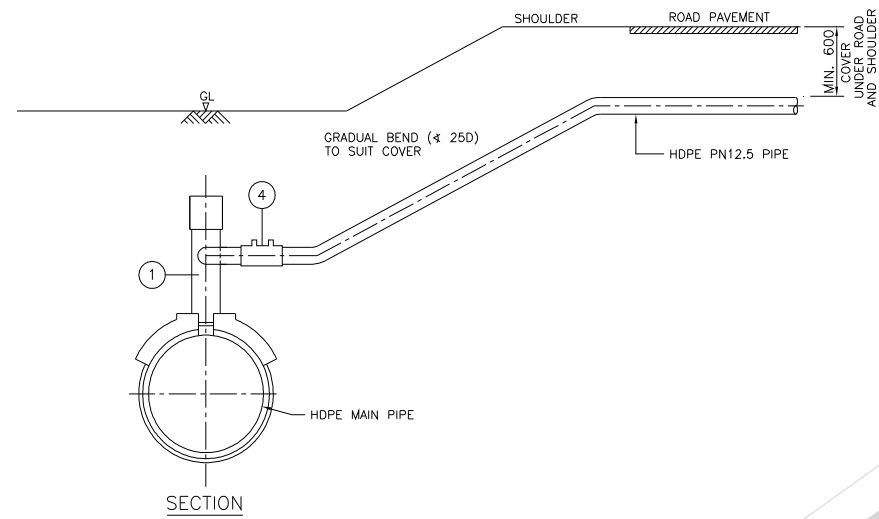
PROJECT :

DRAWING TITLE :  
 TYPICAL DETAILS OF COMMUNICATION PIPE  
 WITH DRAIN CROSSING  
 (SHEET 1 OF 2)

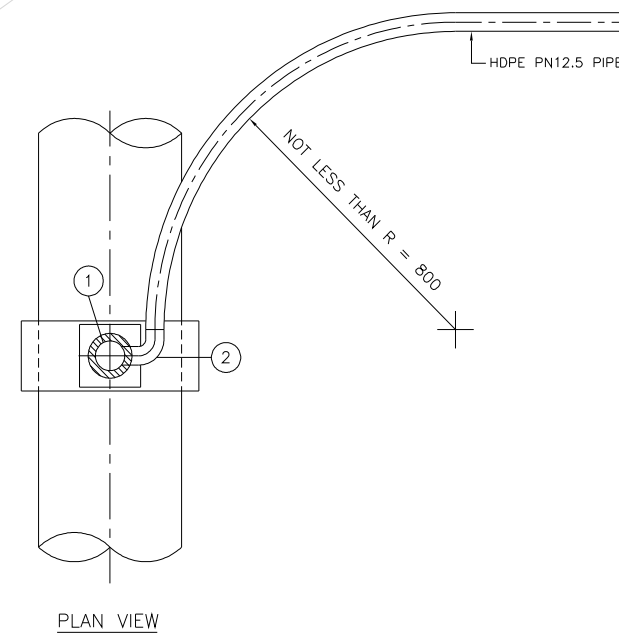
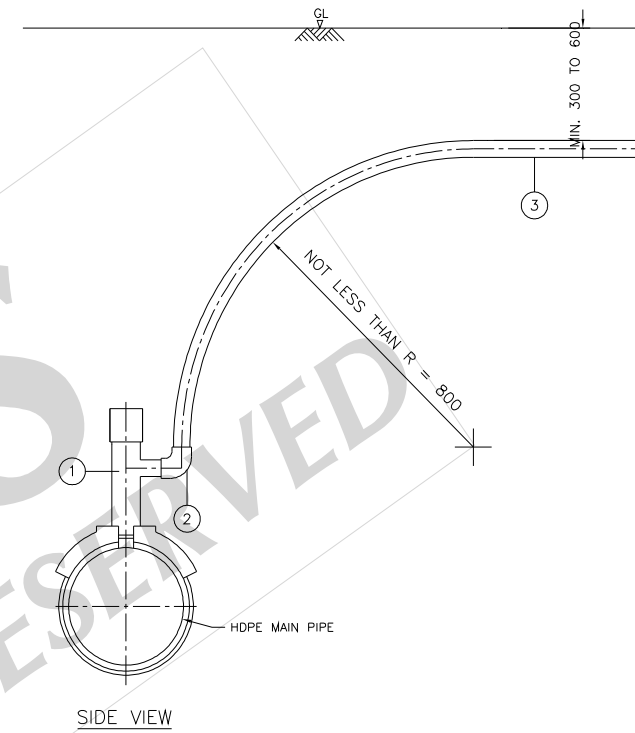
DRAWN BY : SHAHRUL	DESIGNED : Ir. LEE CHOON WENG
CHECKED : Ir. LEE CHOON WENG	APPROVED : DATO' IR LEE MIANG KOI
SCALE : AS SHOWN	DATE : APRIL 2015

DRAWING NO:  
 SYA / STD / 021 / REV.1

FOR LOCATION WITH AMPLE SPACE AND ROAD LEVEL HIGHER THAN SHOULDER



TYPE 3A – HDPE TAPPING SADDLE FOR HDPE MAIN PIPE  
WITH HDPE COMMUNICATION PIPE



TYPE 3B – HDPE TAPPING SADDLE FOR HDPE MAIN PIPE  
WITH HDPE COMMUNICATION PIPE

SCHEDULE :

- ① ELECTROFUSION TAPPING TEE UNDERPART
- ② HDPE ELECTROFUSION ELBOW (90°)
- ③ HDPE PN12.5 PIPE
- ④ ELECTROFUSION COUPLER

- NOTES :
1. ALL DIMENSIONS ARE IN MILLIMETRE UNLESS OTHERWISE STATED.
  2. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  3. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

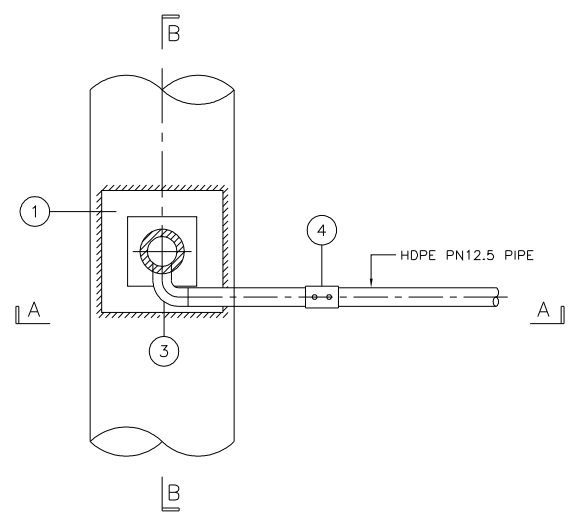
DRAWING TITLE :  
 DETAILS OF HDPE COMMUNICATION PIPE AND  
 TAPPING FROM HDPE RETICULATION PIPE  
 (SHEET 2 OF 2)

DRAWN BY : SHAHRUL	DESIGNED : Ir. LEE CHOON WENG
CHECKED : Ir. LEE CHOON WENG	APPROVED : DATO' Ir. LEE MIANG KOI
SCALE : AS SHOWN	DATE : JUNE 2007

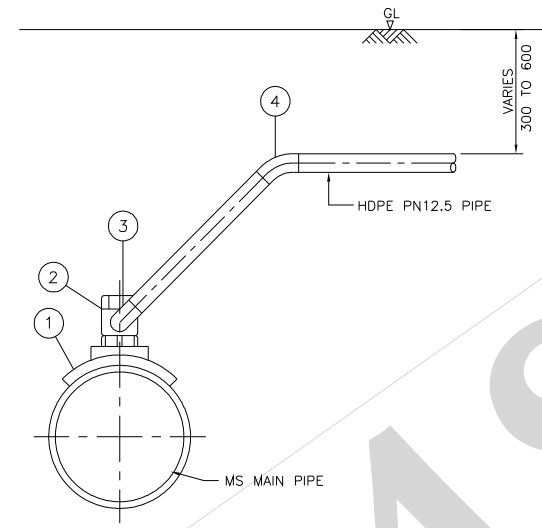
DRAWING NO:

SYA / STD / 022

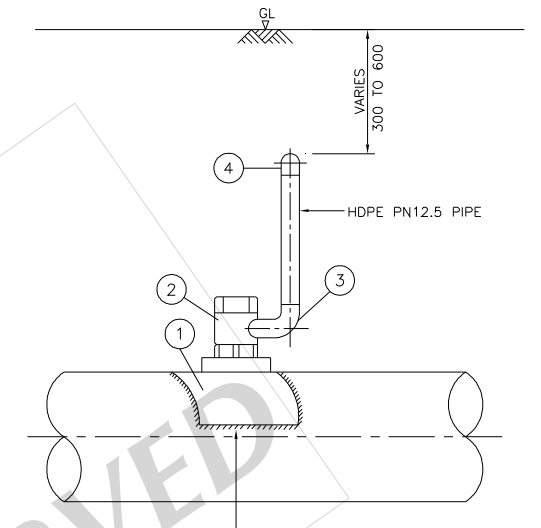
- NOTES :
1. ALL DIMENSIONS ARE IN MILIMETRE UNLESS OTHERWISE STATED.
  2. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
  3. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.



TYPE 1  
PLAN

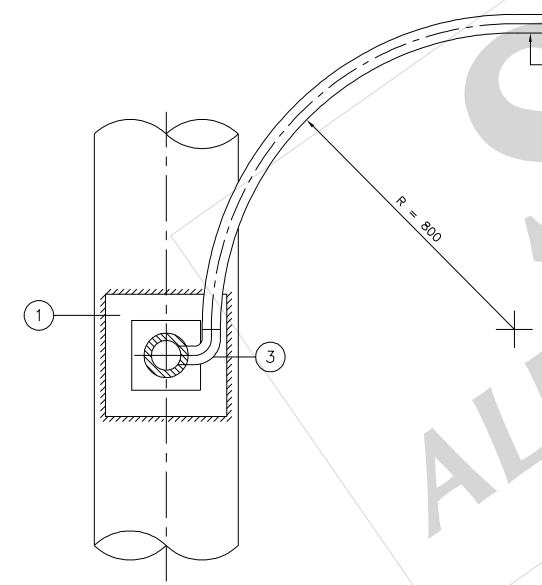


SECTION A-A

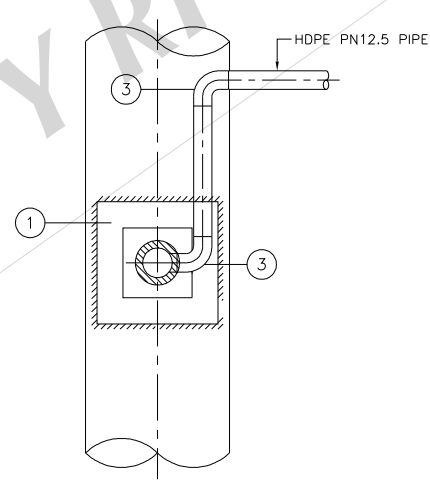


SECTION B-B

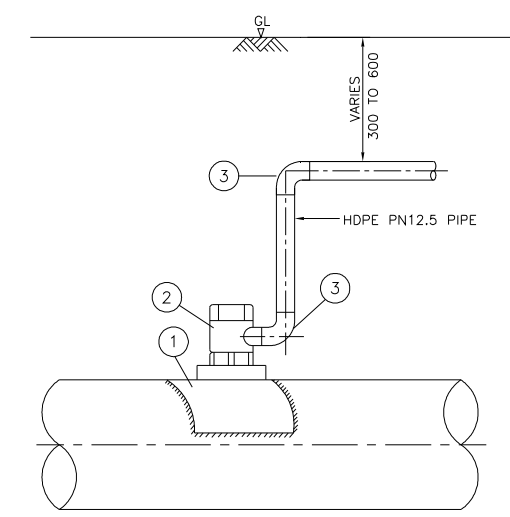
250 x 250 SQ. SADDLE PLATE WITH 20 OR 25 THREADED SOCKET WELDED TO MS MAIN (PLATE THICKNESS SHALL BE 1.5 X THE STEEL PIPE THICKNESS) COLD APPLIED EPOXY COATED AFTER WELDING TO ALL EXPOSED METAL AND WELD



TYPE 2  
PLAN



TYPE 3  
PLAN



TYPE 4  
SECTION

MILD STEEL TAPPING SADDLE FOR MILD STEEL MAIN PIPE WITH HDPE COMMUNICATION PIPE

SCHEDULE :

- 1 MS TAPPING SADDLE PLATE WITH TREADED SOCKET
- 2 BRASS FERRULE
- 3 ELECTROFUSION TRANSITION ELBOW (90°)
- 4 ELECTROFUSION 45° ELBOW

REV.	DESCRIPTION	DATE



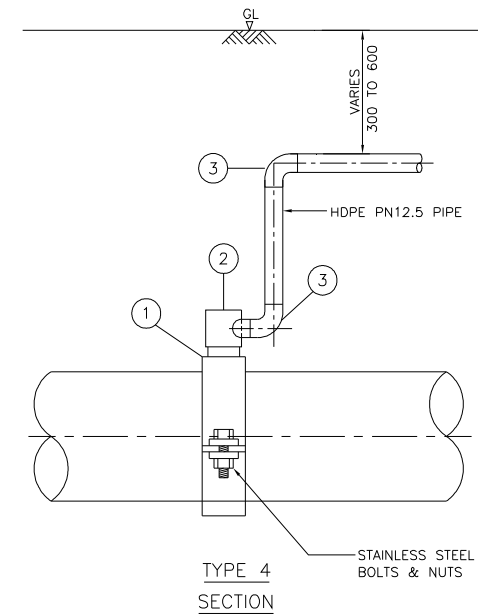
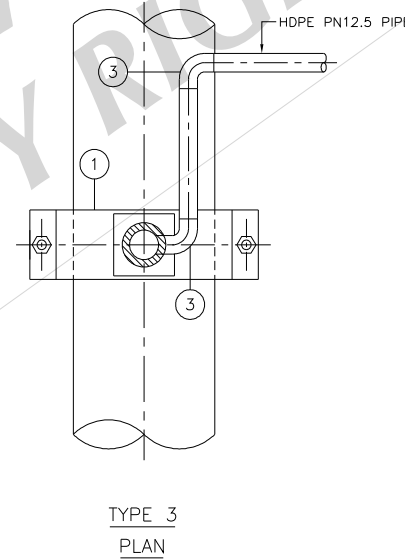
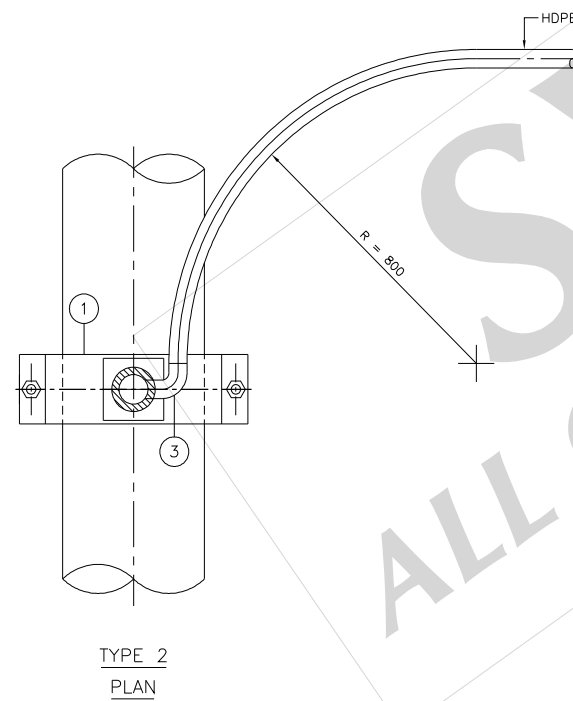
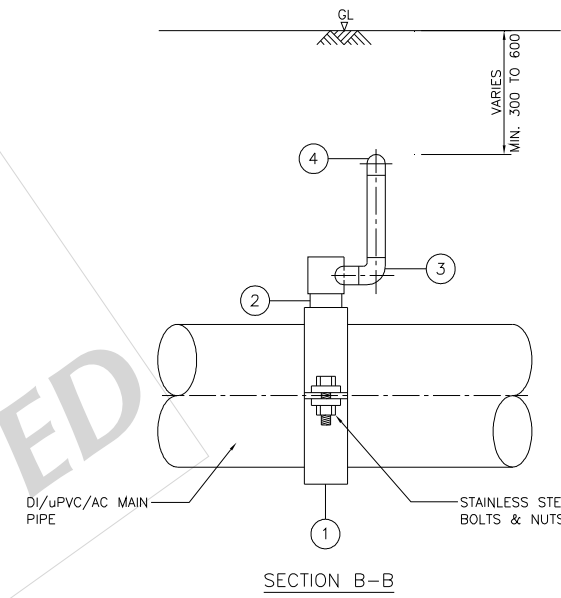
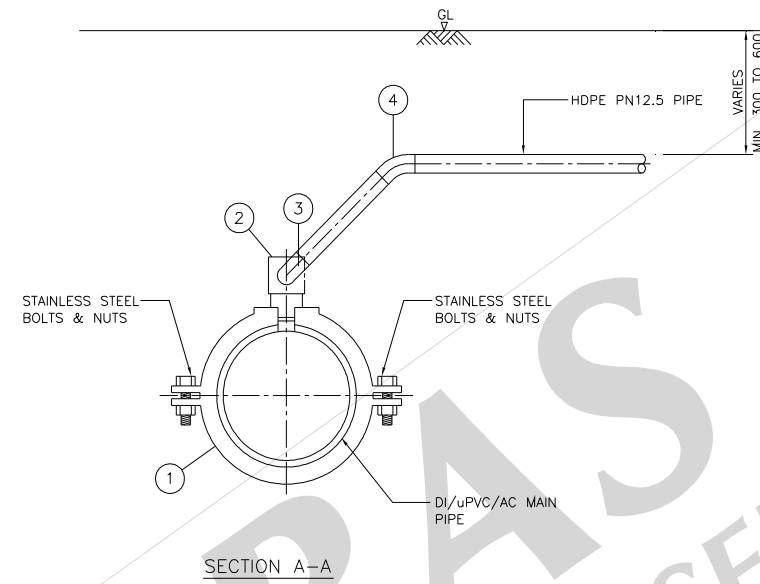
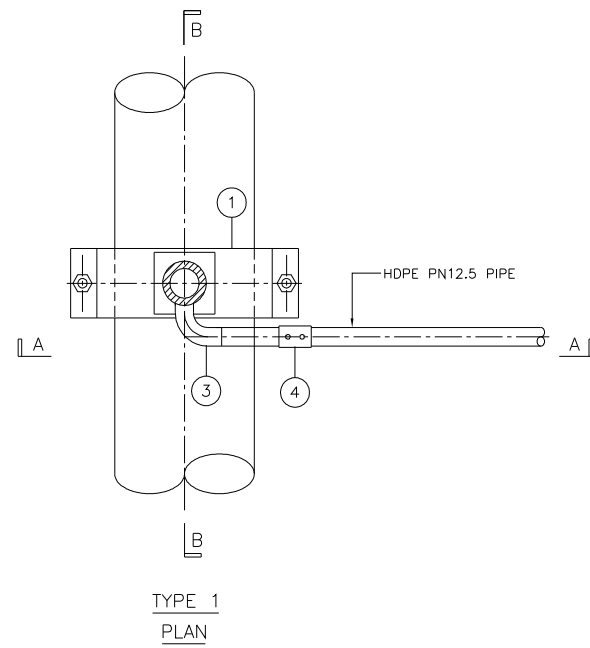
**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
 DETAILS OF HDPE COMMUNICATION PIPE AND TAPPING FROM MILD STEEL RETICULATION PIPE

DRAWN BY : SHAHRUL	DESIGNED : Ir. LEE CHOON WENG
CHECKED : Ir. LEE CHOON WENG	APPROVED : DATO' Ir. LEE MIANG KOI
SCALE : 1:10	DATE : JUNE 2007

DRAWING NO:  
 SYA / STD / 023



DI TAPPING SADDLE FOR DI/uPVC/AC MAIN PIPE  
WITH HDPE COMMUNICATION PIPE

SCHEDULE :

- ① DI SADDLE WITH PA INFIL (JKR SPECIFICATION 20200-0184-04) FOR uPVC/AC/DI RETICULATION PIPE (TYPE B)
- ② BRASS FERRULE
- ③ ELECTROFUSION TRANSITION ELBOW
- ④ ELECTROFUSION 45° ELBOW

NOTES :

1. ALL DIMENSIONS ARE IN MILIMETRE UNLESS OTHERWISE STATED.
2. ACTUAL LENGTH OF COMMUNICATION PIPE SHALL BE DETERMINED ON SITE.
3. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

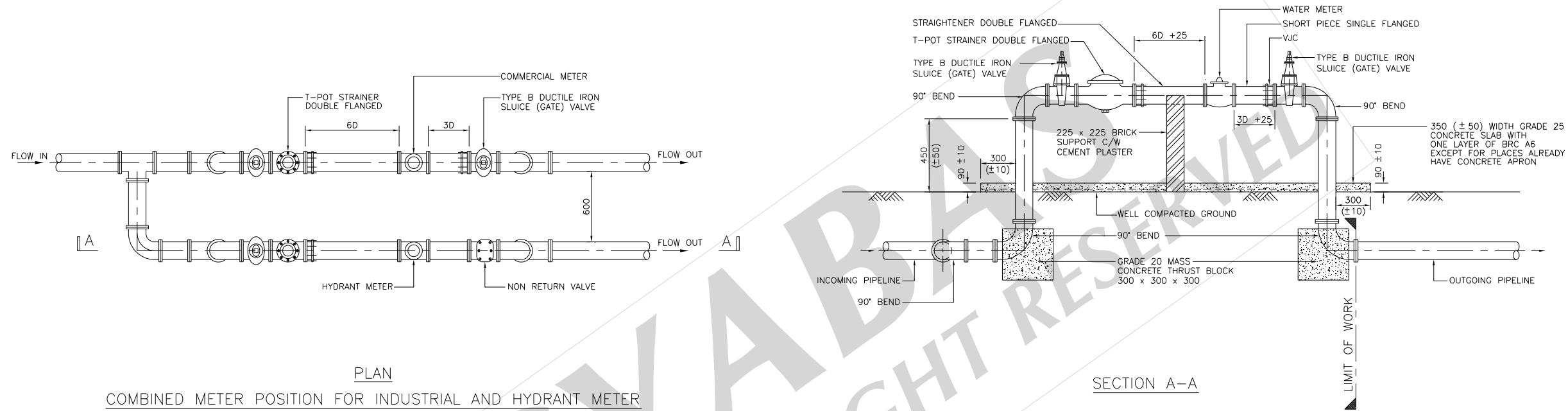
PROJECT :

DRAWING TITLE :  
 DETAILS OF HDPE COMMUNICATION PIPE AND TAPPING  
 FOR DUCTILE IRON / uPVC / AC RETICULATION PIPE

DRAWN BY : SHAHRUL	DESIGNED : Ir. LEE CHOON WENG
CHECKED : Ir. LEE CHOON WENG	APPROVED : DATO' Ir. LEE MIANG KOI
SCALE : NTS	DATE : JUNE 2007

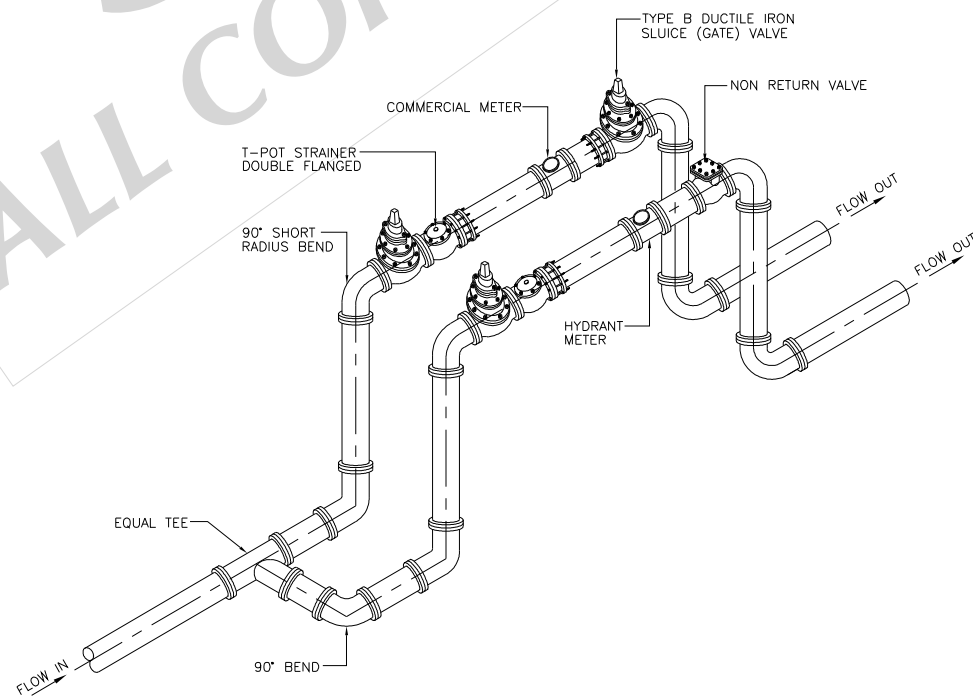
DRAWING NO: SYA / STD / 024





PLAN  
COMBINED METER POSITION FOR INDUSTRIAL AND HYDRANT METER

SECTION A-A



ISOMETRIC VIEW

NOTE :

1. ALL DIMENSIONS ARE IN MILLIMETRE AND LEVELS ARE IN METRE UNLESS OTHERWISE STATED.
2. ALL CONCRETE TO BE GRADE 25 UNLESS OTHERWISE STATED.
3. ALL FLANGE SHALL COMPLY WITH BS EN 1092-1:2002
4. ALL PIPEWORKS SHALL BE OF MILD STEEL TO BS EN 534. WITHOUT CONCRETE CUTBACK.
5. ALL DUCTILE IRON PIPEWORKS SHALL BE SOURCED FROM SUPPLIERS/MANUFACTURERS APPROVED BY SYABAS ONLY.
6. EXPOSED STEEL PIPES ARE TO BE INTERNALLY CONCRETE LINED AND EXTERNALLY PAINTED WITH 100 MICRON THICK PRIMER, 150 MICRON TWO PACK EPOXY AND FINISHED WITH 100 MICRON THICK POLYURETHANE AFTER REPAIRING ALL DAMANGED PAINTWORKS. THE TOTAL PAINT THICKNESS SHALL BE 350 MICRON.

REV.	DESCRIPTION	DATE



**SYARIKAT BEKALAN AIR SELANGOR SDN BHD**  
 PETI SURAT 5001,  
 JALAN PANTAI BAHRU,  
 59990, KUALA LUMPUR.  
 TEL NO : 03 - 2282 6244 / 03 - 2283 1111  
 FAX NO : 03 - 2282 5498  
 LAMAN WEB : www.syabas.com.my  
 EMAIL : puspel@syabas.com.my

PROJECT :

DRAWING TITLE :  
 COMBINED METER POSITION FOR COMMERCIAL AND HYDRANT METER

DRAWN BY : SHAHRUL      DESIGNED : YHH

CHECKED : KTT              APPROVED : SS

SCALE : NTS                DATE : JUNE 2011

DRAWING NO:  
 SYA / STD / 025