

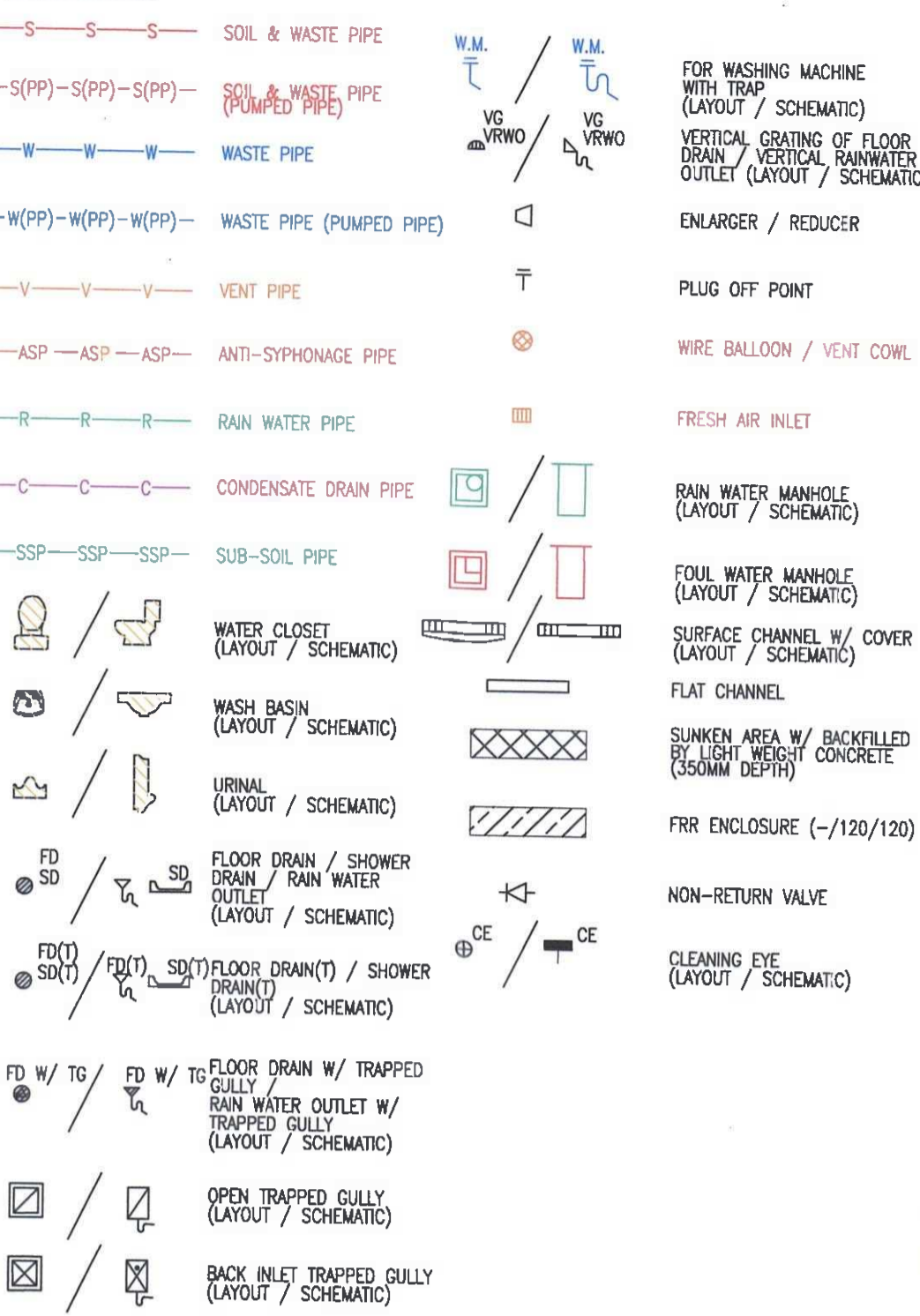
APPENDIX 5

APPROVED DRAINAGE PLAN

GENERAL NOTES

- IN ABOVE GROUND DRAINAGE SYSTEMS, CLEANING EYE MUST BE PROVIDED AT EVERY CHANGE IN DIRECTION OF FLOW AND AT SUITABLE LOCATION AS NECESSARY FOR PIPEWORK TO BE CLEARED OF ANY OBSTRUCTION.
- TRAPS FOR SOIL AND WASTE FITMENTS SHALL HAVE A WATER SEAL OF NOT LESS THAN 80mm DEEP.
- EVERY DRAIN OR SEWER SHALL BE LAID WITH A MINIMUM FALL FROM ITS HIGHEST INLET TO THE FINAL DISCHARGE IN ACCORDANCE WITH THE FOLLOWING :-
DIAMETER OF PIPE (mm) FALL
100 & BELOW 1 : 40
150 1 : 70
225 1 : 100
300 OR ABOVE 1 : 150
- TRAPS FOR WASH BASINS AND SINKS SHALL BE WHITE UPVC PLASTIC BOTTLE, ANTI-VACUUM TYPE WITH A WATER SEAL OF MINIMUM OF 80mm DEEP.
- APPROVED TYPE PLASTIC WATER-CLOSET PAN CONNECTOR OF BELOW OR STRAIGHT TYPE SHALL BE PROVIDED FOR EVERY WATER-CLOSET.
- LONG RADIUS BENDS SHALL BE PROVIDED AT BOTTOM OF ALL SOIL, WASTE & RAIN WATER STACKS.
- THE CONTRACTOR SHALL PROVIDED MIN FALL 1:100 TO ALL CHANNEL AND FLOOR SCREEDING INSIDE BUILDING, UNLESS OTHERWISE SPECIFIED. EXTERNAL GROUND SHALL BE LAID TO FALL AT GRADIENT NOT LESS THAN 1 : 80.
- ALL UNITS TO BE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
- ALL U/G PIPE SHALL BE PROVIDED WITH CONCRETE SURROUND.
- PIPE WORK PASSING BUILDING JOINT SHALL BE PROVIDED WITH FLEXIBLE JOINT.
- GROSS VENTILATION AT EVERY THREE FLOORS (AT 3/F, 7/F, 10/F, 15/F, 18/F, 21/F, 25/F, 28/F & 31/F) SHALL BE PROVIDED FOR DOWNSTACK OF SOIL & WASTE PIPE.
- ALL PIPES PASSING THROUGH FIRE COMPARTMENT SHOULD BE COMPLIED WITH FIRE RESISTING CONSTRUCTION REQUIREMENT IN PART C AND PART E OF COP FOR FIRE SAFETY IN BUILDING 2011 (OCTOBER 2015 VERSION).
- NO DRAINAGE PIPING SHALL BE EMBEDDED IN STRUCTURAL ELEMENT AS STATED ON PNA1 APP-105.
- ALL C.I. PIPES SHOULD BE COMPLIED WITH PNA1 APP-133.
- MAINTENANCE ACCESS TO COMMON DRAINAGE PIPES LOCATED WITHIN THE LIGHT WELL, PIPE WELL AND/OR RE-ENTRANT WILL BE PROVIDED AND ACCESS WILL BE PROVIDED VIA AREAS TO BE DESIGNATED AS COMMON PARTS.
- UNLESS OTHERWISE STATED, SIZE OF BRANCH PIPES FOR SANITARY FITTINGS SHALL BE AS BELOW:
BASIN - #32mm BATH - #50mm FLOOR DRAIN - #50mm URINAL - #40mm SHOWER - #50mm SINK - #40mm WATER CLOSET - #100mm WM - #40mm
- THE SOIL & WASTE DOWNSTACKS ARE PROVIDED IN SEPARATE ZONES AND THE ZONE DIVISIONS ARE LISTED AS BELOW:
HIGH ZONE : 5/F-30/F
LOW ZONE : 3/F
- THE FALL RATIO TO ALL BALCONY, UTILITY PLATFORM & COVERS OF BALCONY AND UTILITY PLATFORM SHALL BE 1:75.
- DRAINAGE PIPE SHALL NOT PASS THROUGH STRUCTURAL ELEMENT.
- MANHOLES COVER SHALL BE DOUBLE SEAL AND AIRTIGHT.
HEAVY DUTY - SUBJECT TO VEHICULAR TRAFFIC
MEDIUM DUTY - SUBJECT TO PEDESTRIAN TRAFFIC
- ARRANGEMENT FOR INSPECTION OF EXTERNAL DRAINAGE PIPES ENCLOSED BY ARCHITECTURAL FEATURES SHOULD BE PROVIDED.
- FLOOR DRAIN / SHOWER DRAIN RUN INSIDE SUNKEN SLAB SHOULD BE TOP ACCESS.
- ALL CLADDINGS FOR RAINWATER STACK SHALL BE DEMOUNTABLE PANEL WITH SAFETY CHAIN (FOR MAINTENANCE), UNOBSTRUCTED VERTICAL SPACE FOR INSPECTION BY CAMERA (MIN. 120mm DIA.) PROVIDING CLEAR VIEW OF ALL PIPES.
- ALL CHANNEL SHALL BE CONSTRUCTED WITH A MINIMUM FALL OF 1:100.
- ALL VENT AND ANTI-SYPHONAGE PIPES WILL BE INSTALLED WITH GRADIENTS TOWARDS STACK.
- FRESH AIR INLETS FOR SEWAGE TERMINAL SHALL BE TERMINATED NOT LESS THAN 2500mm ABOVE FINISHED FLOOR LEVEL.
- ALL WASTE AND VENT STACKS, SOIL PIPE AND VENT STACKS, SOIL & WASTE PIPE AND VENT STACKS, RAIN WATER PIPE AND VENT STACKS, SHALL BE CARRIED UP TO THE ROOF AND TERMINATED AT 3000mm ABOVE THE ROOF OR AS SHOWN.
- NO UPVC PIPES SHOULD PASS THROUGH COMPARTMENT WALLS & FLOORS.
- IF THE BALCONY / UTILITY PLATFORM IS CONSTRUCTED WITH CANTILEVERED STRUCTURE, IT SHALL BE PROVIDED WITH FALL OF NOT LESS THAN 1:75.
- ALL THE PIPES TO BE RUN INSIDE FIRE PROTECTED AREA SHALL BE PROVIDED WITH FRR ENCLOSURE BY BUILDERS. FIRE RESISTING PERIOD OF THE FIRE RATED ENCLOSURE MUST NOT LESS THAN THE FIRE RESISTING PERIOD OF THE BOUNDARY BUILDING ELEMENTS OF THE PROTECTIVE AREA.
- EXPANSION JOINT / FLEXIBLE JOINT SHALL BE PROVIDED FOR ALL PIPEWORKS PASSING THROUGH THE BUILDING EXPANSION JOINT.
- ALL CONCEAL PIPEWORKS SHALL BE CONCEALED IN NON-BEARING STRUCTURE MEMBER.
- CHANNEL GRATING DUTIES ARE CLASSIFIED AS FOLLOWS :-
MEDIUM DUTY - BEAR WHEEL LOADS UP TO 5.00 TONNES, FOR USE IN CARRIAGEWAYS.
HEAVY DUTY - BEAR WHEEL LOADS UP TO 11.50 TONNES, FOR USE IN CARRIAGEWAYS.
- MAINTENANCE ACCESS TO COMMON DRAINAGE PIPES LOCATED WITHIN LIGHT WELL, PIPE WELL AND/OR RE-ENTRANT WILL BE PROVIDED AND SUCH ACCESS WILL PROVIDE VIA AREA TO BE DESIGNATED AS COMMON PIPES.
- THE DRAINAGE PLUS CORRESPOND TO THE LATEST GBP / SITE FORMATION PLANS.
- OPENINGS FOR DRAINAGE PIPES THROUGH FIRE BARRIERS OR ENCLOSURE AROUND SERVICES IN REQUIRED STAIRCASES / PROTECTED LOBBY COMPLY WITH THE FIRE RESISTING CONSTRUCTION REQUIREMENTS IN PART C AND E OF CODE OF PRACTICE FOR FIRE SAFETY IN BUILDINGS 2011 (OCTOBER 2015 VERSION).
- DIRECTION OF FLOW FOR UNDERGROUND DRAIN COMPLIED WITH B (SSFPD&L) REGS. 48 & 49.
- NO SURFACE WATER DISCHARGE INTO FOUL WATER DRAINS AND FOUL WATER DISCHARGE INTO SURFACE DRAINS.
- COMMON UNDERGROUND DRAIN IS LOCATED IN COMMON PARTS OF THE BUILDING, WHICH ARE SO DESIGNATED IN BUILDING PLANS IN ACCORDANCE WITH PNA1 APP-93.
- COMMON ABOVE-GROUND SOIL / WASTE / RAINWATER STACKS LOCATED IN COMMON PARTS OF THE BUILDING.
- SUNKEN SLABS IS DESIGNED IN ACCORDANCE WITH PNA1 APP-93.
- ALL WORKS OUTSIDE LOT BOUNDARY ARE FOR REFERENCE ONLY AND NOT FOR BD APPROVAL.
- STRUCTURAL DETAIL WILL BE SUBMITTED UNDER SEPARATE SUBMISSION.
- REINFORCEMENTS LAYOUT IN THIS SUBMISSION ARE FOR REFERENCE ONLY.
- THE ACCESS POINTS TO THE DUCTS BEING PROVIDED AS PER INDICATED ON DRAWING.
- CARBON STEEL GRIP COLLAR SHALL PROVIDED AS PER INDICATED ON DRAWING.
- THE DESIGN & CONSTRUCTION OF THE DRAINAGE WORKS SHOULD COMPLIED W/ BUILDING (SSFPD&L) REGULATIONS & PNAPS AND BUILDING ORDINANCE.
- CROSS VENTILATION CONNECTING PIPES TO BE PROVIDED AND SLOPING UPWARDS AT AN ANGLE NOT GREATER THAN 67.5 DEGREE FROM THE DRAINAGE STACK WITH INTERNAL DIAMETER NOT LESS THAN THE MAIN ANTI-SYPHONAGE PIPE.
- THE WHOLE OF DRAINAGE INSTALLATION SHOULD BE COMPLIED WITH BUILDING REGULATION, BUILDING ORDINANCE, PNAPS.

LEGENDS



ABBREVIATIONS

S.W.P.	SOIL & WASTE PIPE	W/	WITH
W.P.	WASTE PIPE	F/A	FROM ABOVE
V.P.	VENT PIPE	F/B	FROM BELOW
R.W.P.	RAIN WATER PIPE	T/A	TO ABOVE
FMH	FOUL WATER MANHOLE	T/B	TO BELOW
SMH	STORM WATER MANHOLE	H/L	HIGH LEVEL
B.I.T.G.	BACK INLET TRAPPED GULLY	L/L	LOW LEVEL
O.T.G.	OPEN TRAP GULLY	U/G	UNDERGROUND
F.D.	FLOOR DRAIN	C.L.	COVER LEVEL
V.G.	VERTICAL GRATING OF FLOOR DRAIN	I.L.	INVERT LEVEL
S.D.	SHOWER DRAIN	D.T.I.L.	DISCONNECTING TRAP INVERTED LEVEL
T.G.	TRAP GULLY	A.F.F.L.	ABOVE FINISHED FLOOR LEVEL
A.P.	ACCESS PANEL	C.I.	CAST IRON
R.W.O.	RAIN WATER OUTLET	N.T.S.	NOT TO SCALE
V.R.W.O.	VERTICAL RAIN WATER OUTLET	EX.	EXISTING
F.A.I.	FRESH AIR INLET	L-R	LEFT TO RIGHT
F.D. (T)	TOP ACCESS RESEALING FLOOR DRAIN	T-B	TOP TO BOTTOM
S.D. (T)	TOP ACCESS RESEALING SHOWER DRAIN	C.E.	CLEANING EYE
C/W	COMPLETED WITH	A.S.P.	ANTI-SYPHONAGE PIPE
STMH	STORM WATER TERMINAL MANHOLE	P.P.	PUMPED PIPE
FTMH	FOUL WATER TERMINAL MANHOLE		

DRAWING LIST

DRAWING NO.	DRAWING TITLE
1938-BD-1-01	GENERAL NOTES, BLOCK PLAN AND DRAWING LIST
1938-BD-2-01	SCHEMATIC LINE DIAGRAM FOR DRAINAGE SYSTEM
1938-BD-3-01	PROPOSED DRAINAGE LAYOUT PLAN FOR G/F - 2/F
1938-BD-3-02	PROPOSED DRAINAGE LAYOUT PLAN FOR 3/F - 28/F
1938-BD-3-03	PROPOSED DRAINAGE LAYOUT PLAN FOR 29/F - UR/F
1938-BD-4-01	INSTALLATION DETAILS

PIPEWORK MATERIAL SCHEDULE :

DESCRIPTION	SPECIFIED
A) ABOVE GROUND CONDENSATION, RAIN, SOIL & WASTE AND VENT DRAINAGE SYSTEM FOR THE FOLLOWINGS:-	
I) DRAINAGE PIPES RUN INSIDE INTERNAL AREA OR SUNKEN SLAB (EXCLUDE THE PIPE WHEN / AFTER PASSING THROUGH DIFFERENT FIRE COMPARTMENTS)	32MM - 50MM DIA.: UPVC PIPE AND FITTINGS TO BS EN 1329. 80MM - 100MM DIA.: UPVC PIPE AND FITTINGS TO BS 4514.
II) DRAINAGE PIPES WHEN / AFTER PASSING THROUGH DIFFERENT FIRE COMPARTMENTS	50MM - 200MM DIA.: SOCKETLESS EPOXY COATED CAST IRON PIPES AND FITTINGS TO BS EN 877 WITH INTERNAL AND EXTERNAL AVERAGE 120-150 MIN. MICRONS EPOXY COATING TO BS EN 877. COUPLING SHALL BE 316 STAINLESS STEEL SHELL AND BOLTING, INCLUDING EPDM ELASTOMER SLEEVE, COMPLETED WITH ELECTRICAL CONTINUITY CHIPS, AND A STAINLESS STEEL COLLAR WITH TWO PIECES OF STAINLESS STEEL SCREWS AND NUTS.
III) DRAINAGE PIPES RUN AT EXTERNAL AREA	32MM - 50MM DIA.: UPVC PIPE AND FITTINGS TO BS EN 1329. 80MM - 150MM DIA.: UPVC PIPE AND FITTINGS TO BS 4514. 200MM DIA.: SOCKETLESS EPOXY COATED CAST IRON PIPES AND FITTINGS TO BS EN 877 WITH INTERNAL AND EXTERNAL AVERAGE 120-150 MIN. MICRONS EPOXY COATING TO BS EN 877. COUPLING SHALL BE 316 STAINLESS STEEL SHELL AND BOLTING, INCLUDING EPDM ELASTOMER SLEEVE, COMPLETED WITH ELECTRICAL CONTINUITY CHIPS, AND A STAINLESS STEEL COLLAR WITH TWO PIECES OF STAINLESS STEEL SCREWS AND NUTS.
IV) DRAINAGE PIPES (PASSING THROUGH TRANSFER PLATE)	50MM DIA.: SOCKETLESS EPOXY COATED CAST IRON PIPES AND FITTINGS TO BS EN 877 WITH INTERNAL AND EXTERNAL AVERAGE 120-150 MIN. MICRONS EPOXY COATING TO BS EN 877. COUPLING SHALL BE 316 STAINLESS STEEL SHELL AND BOLTING, INCLUDING EPDM ELASTOMER SLEEVE, COMPLETED WITH ELECTRICAL CONTINUITY CHIPS, AND A STAINLESS STEEL COLLAR WITH TWO PIECES OF STAINLESS STEEL SCREWS AND NUTS. 80MM - 150MM DIA.: DUCTILE IRON PIPES AND FITTINGS TO BS EN 598, WITH INTERNAL CEMENT LINING AND FITTING OF PUSH - ON TYPE FLEXIBLE JOINT WITH RUBBER SEALING GASKET. (REFER NOTES 1 AND 2)
B) UNDERGROUND SOIL & WASTE, RAINWATER AND VENT DRAINAGE SYSTEM	100MM - 225MM DIA.: CAST IRON PIPES AND FITTINGS TO BS437. (REFER NOTE 3)
C) UNDERGROUND SOIL & WASTE DRAINAGE SYSTEM OUTSIDE SITE BOUNDARY (FOR BD INFORMATION ONLY)	BLACK POLYETHYLENE (PE100) TO B.S. EN 12201 (FOR BD INFORMATION ONLY)
D) UNDERGROUND STORM DRAINAGE SYSTEM OUTSIDE SITE BOUNDARY (FOR BD INFORMATION ONLY)	PRECAST CONCRETE PIPES AND FITTINGS TO BE BS 5911: PT 100 WITH FLEXIBLE JOINTS OF SPIGOT AND SOCKET. (FOR BD INFORMATION ONLY)
E) SUB-SOIL DRAINAGE SYSTEM	PERFORATED SUB-SOIL PIPES AND FITTINGS TO BS 4962. OF SPIGOT AND SOCKET.
F) A/C CONDENSATE DRAIN PIPE	32MM - 50MM DIA.: UPVC PIPE AND FITTINGS TO BS 5255 OR BS EN 1329 WITH MATCHING COLOUR. 80MM - 100MM DIA.: UPVC PIPE AND FITTINGS TO BS 4514. FOR INTERNAL AREA (50MM DIA.) SOCKETLESS EPOXY COATED CAST IRON PIPE TO B.S. EN 877 WITH INTERNAL AND EXTERNAL AVERAGE 120-150 MICRONS EPOXY COATING TO B.S. EN 877. CAST IRON PIPE FITTING TO B.S. EN 877 WITH AVERAGE 120-150 MICRON EPOXY COATING APPLIED INTERNALLY AND EXTERNALLY. COUPLING SHALL BE 316 STAINLESS STEEL SHELL AND BOLTING, INCLUDING EPDM ELASTOMER SLEEVE, COMPLETED WITH ELECTRICAL CONTINUITY CHIPS, AND A STAINLESS STEEL COLLAR WITH TWO PIECES OF STAINLESS STEEL SCREWS AND NUTS.
G) SUMP AND PUMP DRAINAGE SYSTEM	DUCTILE IRON PIPES AND FITTINGS TO BS EN 598 WITH INTERNAL CEMENT LINING AND INTEGRALLY CAST OR SCREWED FLANGES TO BS EN 1092. (REFER NOTES 1 AND 2)
NOTE:	
1) INTEGRALLY CAST OR SCREWED FLANGES TO BS EN 1092-1 (STEEL), BS EN 1092-2 (CAST IRON / DUCTILE IRON) AND BS EN 1092-3 (COPPER ALLOY) AS APPROPRIATE. SUITABLE JOINTING RINGS OR FIBRE GASKETS TO BS EN 1514-1 SHALL BE USED AND MUST BE COATED WITH JOINTING COMPOUND. FLANGE BOLTS SHALL BE HEXAGONAL HEADED BRIGHT STEEL COATED WITH RUSTOLEUM PAINT BEFORE INSTALLATION. BOLT THREADS SHALL PROTRUDE THROUGH NUT.	
2) DUCTILE IRON TO BS EN 545 / BS EN 598, INTERNALLY AND EXTERNALLY COATED WITH BITUMEN TO BS 4164. THE COAT TAR LINING SHALL NOT BE SOLUBLE IN POTABLE WATER NOR SHALL IT IMPART ANY TASTE OR SMELL TO THE WATER.	
3) THE CAST IRON PIPE SHALL BE INTERNALLY COATED WITH COLD APPLIED BITUMEN-BASED COATING TO BS 3416 OR OTHER EQUIVALENT INTERNATIONAL STANDARDS. EXTERNAL COATING SHALL CONTAIN ANTI-CORROSION INHIBITORS USED ON METALLIC STRUCTURES.	

