

SPECIFICATIONS FOR HIGH VOLTAGE OVER HEAD CONDUCTORS

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E071

(1) Class notes + Flexible for Electrical contracting & Estimating

Est Estimating 1 / 2 / 3

(2A) Class Teaching notes references for specifications

E071 Design HV OH conductor

—— L.V OH conductor

—— Hazard Identification

—— General wiring

—— UG cable

—— Telecom + Datacom

Switching

Design Std for
OH Development

Electrical Contracting & Estimating

References for specifications

OH conductor

for

location

Switching

Design Std for

OH Development

(2B)

Flexible Study notes & ref. for
specification



CONSTRUCTION REQUIREMENT FOR

11 KV OH CONDUCTOR.

COVERED CONDUCTOR (CCT) \longleftrightarrow AS 3695

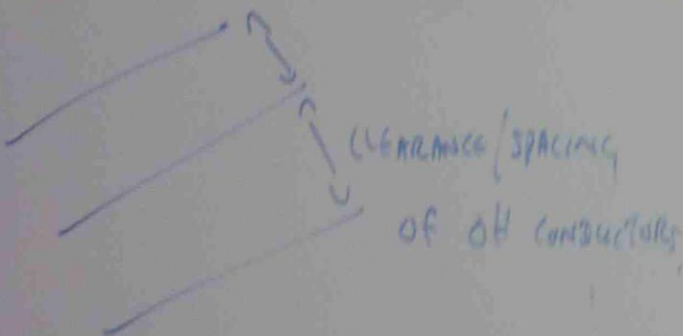
BARE CONDUCTOR (BC) \longleftrightarrow AS 1222, AS 3607, AS 1531, AS 1746

AERIAL BUNDLED CABLE (ABC) \longleftrightarrow AS 3599.1, AS 3599.2,

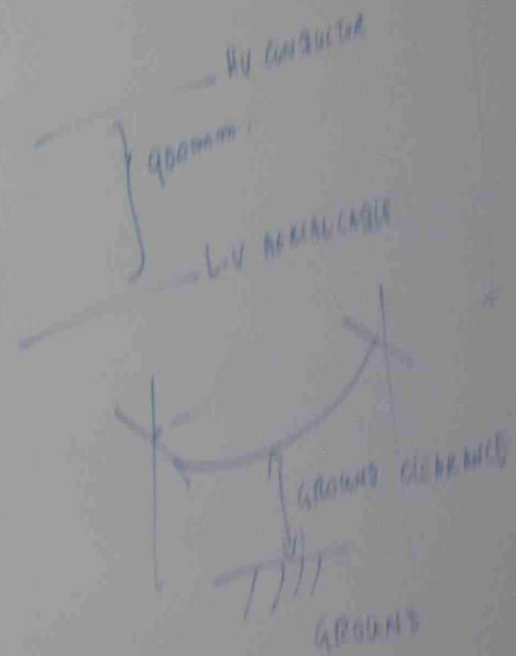
CONSTRUCTION \longleftrightarrow COVERING \longleftrightarrow XLPE (CROSS LINK POLYETHYLENE), HDPE (HIGH DENSITY POLYETHYLENE)

WATER BLOCKING COMPOUND \longleftrightarrow GREASING IN JOINTS.

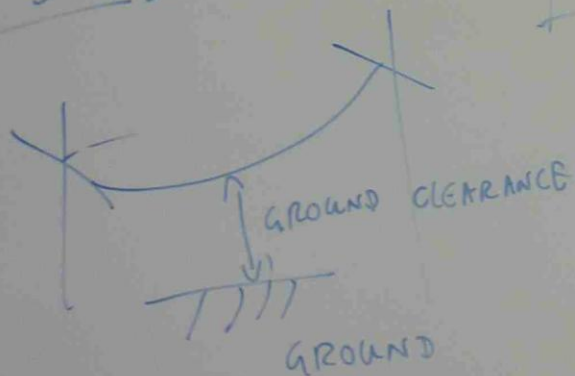
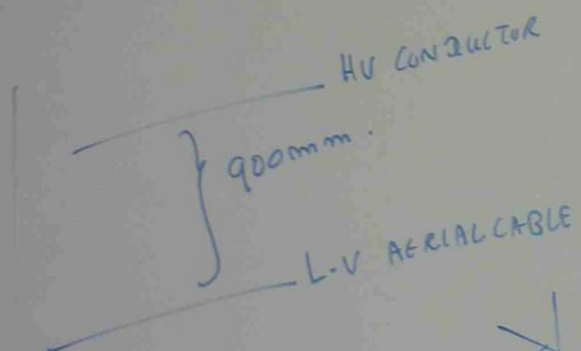
CONDUCTOR ALLOY \longleftrightarrow AA AL / 1120 ALUMINIUM ALLOY



MINIMUM 500 mm PHASE TO PHASE SPACING.



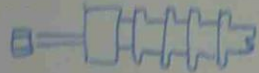
ENE), HDPE (HIGH DENSITY POLYETHYLENE)



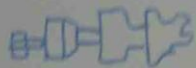
LOCATION	CLEARANCE
OVER THE CARRIAGE WAY OF ROADS	7.5m
OVER THE GROUND OTHER THAN THE CARRIAGE WAY OF ROADS	6m
NO ACCESS FOR VEHICLE OR MOBILE PLANTS	5m

INSULATORS

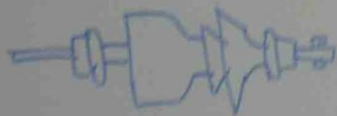
MORLYNN PIN POST



NGK PIN POST



NGK STRAIN ROD



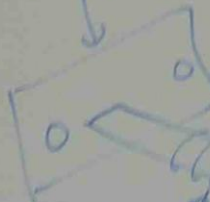
LIGHTNING PROTECTION

SURGE ARRESTERS

10 KV POLY METRIC ARRESTOR

11 KV CURRENT LIMITING ARRESTING HORN

SUPPORT BRACKET



INSULATED BRACKET



LINE CONNECTION CABLE

EARTH CABLE

ELECTRODE BARS FOR
SURGE ARRESTERS

CSA

H.V SURGE ARRESTERS - 10 mm^2

POLE TRANSFORMER H.V
ARRESTOR - 16 mm^2

CURRENT LIMITING



GAP

ADJUSTABLE
ARRESTING HORN

CURRENT
LIMITING
ELEMENT

INSULATION

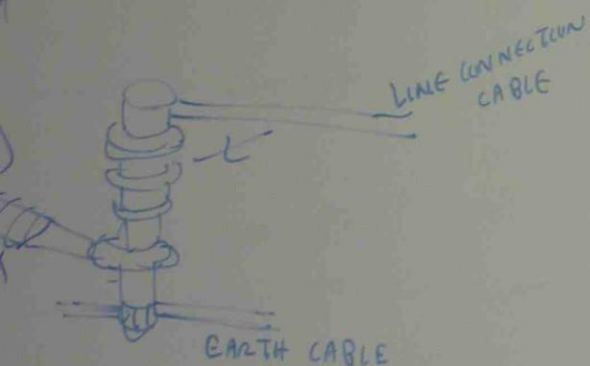
AS 18

PROTECTION

ARRESTERS

6 KV POLY METRIC ARRESTER

11 KV CURRENT LIMITING ARCING HORN



ARRESTER
ARRESTER

ELECTRODE BARS FOR

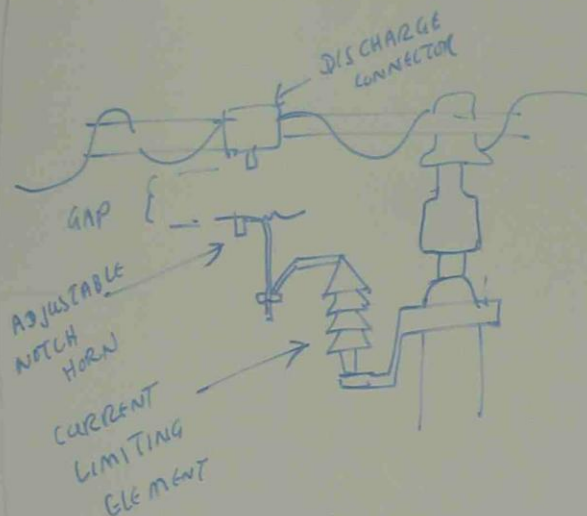
SURGE ARRESTERS

C.SA

H.V SURGE ARRESTERS - 10mm^2

POLE TRANSFORMER H.V
ARRESTER - 16mm^2

CURRENT LIMITING ARCING HORN



INSULATION COORDINATION

AS 1824.1, AS 1824.2

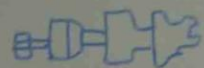
INSULATING COVERS AND FITTINGS

INSULATORS

MORLYNN PIN POST



NGK PIN POST



NGK STRAIN ROD

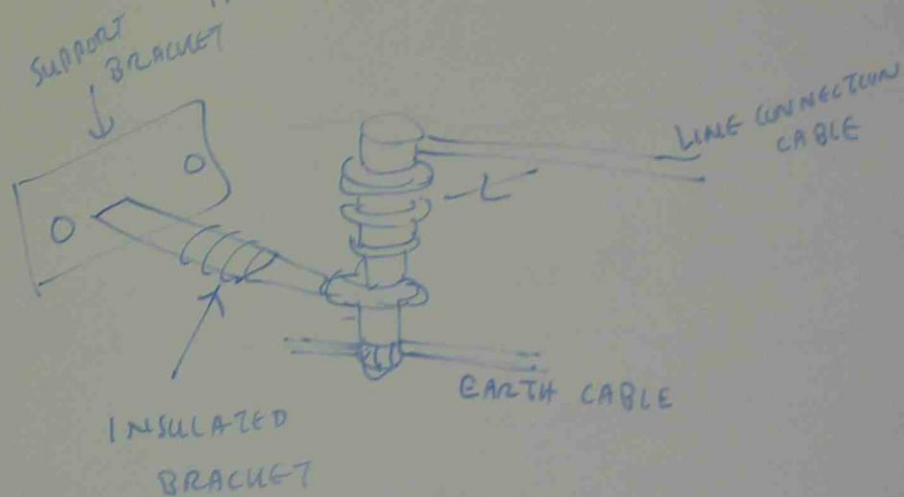


LIGHTNING PROTECTION

SURGE ARRESTERS

10 KV POLY METRIC ARRESTER

11 KV CURRENT LIMITING ARCING HORN

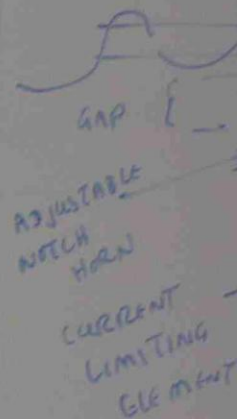


ELECTRODE BARS FOR
SURGE ARRESTERS

H.V SURGE ARRESTERS - 10 mm^2

POLE TRANSFORMER H.V
ARRESTOR - 16 mm^2

CURRENT LIMITING



INSULATION

AS 18

C.SA - CROSS

4 METRIC ARRESTER
CURRENT LIMITING ARCING HORN

LINE CONNECTION
CABLE

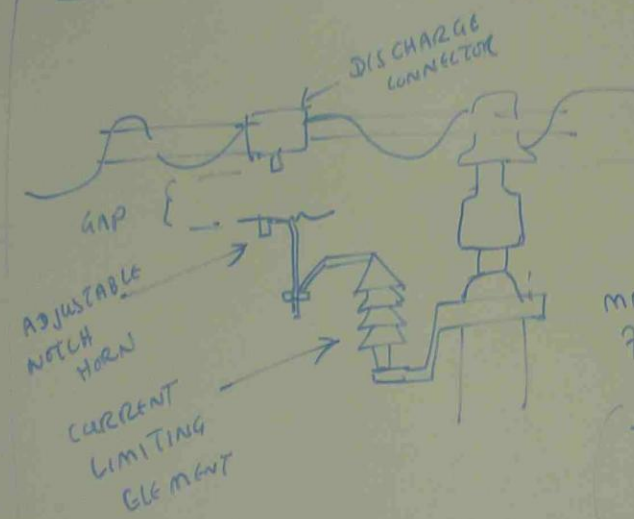
EARTH CABLE

ELECTRODE BARS FOR
SURGE ARRESTERS

H.V SURGE ARRESTERS - 10mm^2

DOUBLE TRANSFORMER H.V
ARRESTER - 16mm^2

CURRENT LIMITING ARCING HORN



INSULATION COORDINATION

AS 1824.1, AS 1824.2

C.S.A - CROSS SECTIONAL AREA

INSULATING COVERS AND FITTINGS

80 mm²
120 mm² STRAIN CLAMPS & COVER

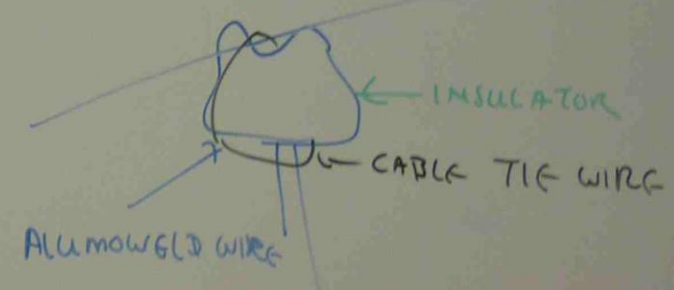
MAIN CONDUCTOR
7/3.75 → 19/3.5

PARALLEL GROOVE CLAMP
AND COVER

TAPPING
CONDUCTOR
7/3.75 → 19/3.5

EARTH POINT COVER

LINE
WIRE



ALUMINOID WIRE
COATED WITH
GREY NYLON

POLE TOP SWITCHES

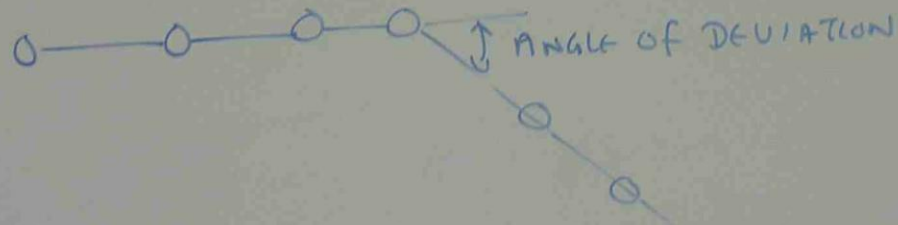
— NON ENCLOSED ISOLATING SWITCHES

LOAD BREAK INTERRUPTERS

POLE TRANSFORMERS

POLE TRANSFORMERS CAN ONLY BE CONNECTED TO
CROSS-ARM MOUNTED COVERED CONDUCTORS.

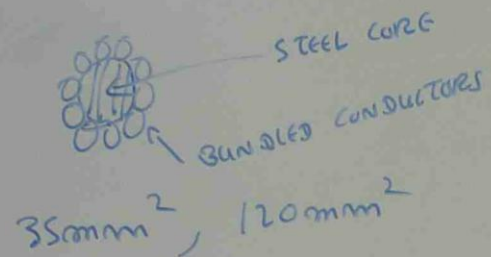
ANGLE OF DEVIATION SPECIFICATIONS



ANGLE OF DEVIATION	REQ
VERTICAL CONSTRUCTION $> 30^\circ$ DEVIATION	STRAIN STRAIN
HORIZONTAL CONSTRUCTION $\leq 25^\circ$ DEVIATION $> 25^\circ$ BUT $\leq 50^\circ$ $> 50^\circ$	PIN PO PIN PO STRAIN ROD A

ANGLE OF DEVIATION	REQUIRED CONSTRUCTION
VERTICAL CONSTRUCTION $> 30^\circ$ DEVIATION	STRAIN CLAMP AND STRAIN ROD ARRANGEMENT
HORIZONTAL CONSTRUCTION $< 25^\circ$ DEVIATION	PIN POST (SINGLE CROSS ARM)
$> 25^\circ$ BUT $< 50^\circ$	PIN POST (DOUBLE CROSS ARM)
$> 50^\circ$	STRAIN CLAMP AND STRAIN ROD ARRANGEMENT

HIGH VOLTAGE AERIAL BUNDLED CABLES



AS 1222 (STEEL CONDUCTORS & STAYS - BARE OVER HEAD)

AS 1531 (CONDUCTORS - BARE OVER HEAD, ALUMINIUM, ALUMINIUM ALLOY)

AS 1746 (CONDUCTORS - BARE OVER HEAD, HARD DRAWN COPPER)

AS 3607 (CONDUCTORS - BARE OVER HEAD, ALUMINIUM ALUMINIUM ALLOY STEEL REINFORCE)

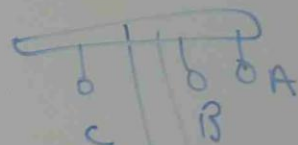
VERTICAL

○ PHASE (C)

○ PHASE (B)

○ PHASE (A)

HORIZONTAL



ROAD

FOOT WAY

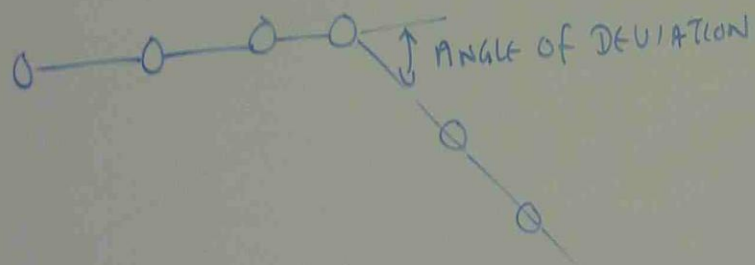
POLE TOP SWITCHES — NON ENCLOSED ISOLATING SWITCHES

LOAD BREAK INTERRUPTERS

POLE TRANSFORMERS

POLE TRANSFORMERS CAN ONLY BE CONNECTED TO
CROSS-ARM MOUNTED COVERED CONDUCTORS.

ANGLE OF DEVIATION SPECIFICATIONS



ANGLE OF DEVIATION	REQUIRED CONSTRUCTION
VERTICAL CONSTRUCTION $> 30^\circ$ DEVIATION	STRAIN CLAMP AND STRAIN ROD ARRANGEMENT
HORIZONTAL CONSTRUCTION $< 25^\circ$ DEVIATION	PIN POST (SINGLE CROSS ARM)
$> 25^\circ$ BUT $< 50^\circ$	PIN POST (DOUBLE CROSS ARM)
$> 50^\circ$	STRAIN CLAMP AND STRAIN ROD ARRANGEMENT

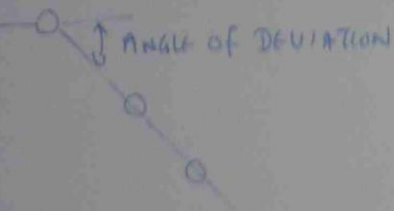
NON ENCLOSED ISOLATING SWITCHES

LOAD BREAK INTERRUPTERS

FORMERS CAN ONLY BE CONNECTED TO

MOUNTED COVERED CONDUCTORS.

ION SPECIFICATIONS



ANGLE OF DEVIATION

VERTICAL CONSTRUCTION

$> 30^\circ$

DEVIATION

HORIZONTAL CONSTRUCTION

$\leq 25^\circ$ DEVIATION

$> 25^\circ$ BUT $\leq 50^\circ$

$> 50^\circ$

REQUIRED CONSTRUCTION

STRAIN CLAMP AND

STRAIN ROD ARRANGEMENT

PIN POST (SINGLE CROSS ARM)

PIN POST (DOUBLE CROSS ARM)

STRAIN CLAMP AND STRAIN

ROD ARRANGEMENT

HIGH VOLTAGE AERIAL BUILT



STEEL CORE

MULTIPLE CONDUCTORS

35 mm^2 , 120 mm^2

AS 1222 (STEEL CORE)

AS 1581 (CONDUCTORS)

AS 1746 (CONDUCTORS)

AS 3607 (CONDUCTORS)

VERTICAL

○ PHASE (C)

○ PHASE (B)

○ PHASE (A)

THE WORK METHODS & INSTALLATION PROCEDURES
MUST COMPLY WITH THE FOLLOWING AUSTRALIAN
STANDARDS AND SAFETY REGULATIONS

MINIMUM ACCEPTABLE IR (INSULATION RESISTANCE)

400 MΩ PHASE TO PHASE

100+ MΩ PHASE TO EARTH

ELECTRICITY SAFETY ACT 1945

OHS ACT 2000

OHS REGULATION 2001

ENVIRONMENTAL REGULATIONS

2 ACTS

AS 1307.2 SURGE ARRESTERS - METAL OXIDE TYPE FOR AC SYSTEM

AS 1824.1 INSULATION CO-ORDINATION

AS 1824.2 INSULATION CO-ORDINATION APPLICATION TYPE

AS 3675 CONDUCTORS - COVERED OVERHEAD FOR WORKING VOLTAGE

6.35 / 11KV

AS 3599.1 ELECTRIC CABLE, AERIAL BUNDLED

AS 3766 FITTINGS FOR AERIAL BUNDLED CABLE

ESAA HB C(b)-1 - GUIDE LING & MAINTENANCE OF OH

1999 DISTRIBUTION & TRANSMISSION LINE.

