24I00409

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. VIII
BARAS, PALO, LEYTE

F.Y. 2024 PROJECT
DETAILED ENGINEERING DESIGN PLAN FOR
NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS -
DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010

TACLOBAN CITY LD

CW1 - ROAD WIDENING - 0.07 LANE KM.

BEG OF PROJECT : LAT = 11.220001° N. ; LONG = 124.993167° E
END OF PROJECT: LAT = 11.219421° N. ; LONG = 124.993401° E

SUBMITTED:

AGNES M. BARONDA
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDED:

MA. MARGARITA C. JUNIA, D.M.
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED:

EDGAR B. TABACON, CESO IV
REGIONAL DIRECTOR
DATE

A-2698

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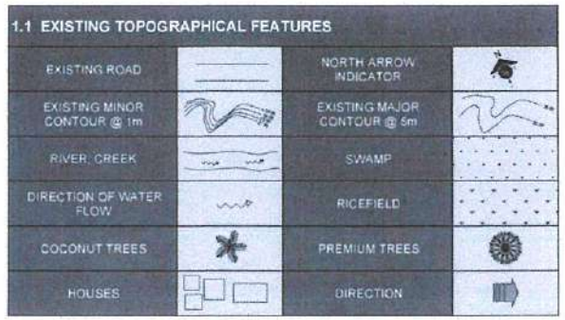
NOTE:

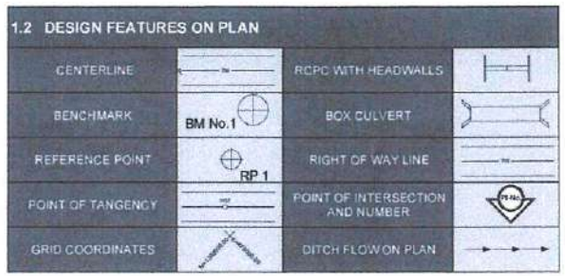
THIS PLAN SHALL ONLY BE USED AS A GUIDE, SPECIFICALLY IN THE PRE-CONSTRUCTION STAGE. THE ACTUAL IMPLEMENTATION FOR THE PROJECT, ON THE HAND, WILL BE BASED ON THE "AS-STAKED PLAN" WHICH WILL BE DONE JOINTLY BY THE CONTRACTOR, THE IMPLEMENTING OFFICE, AND THE PLANNING AND DESIGN DIVISION. THE SAME SHALL BE SUBMITTED TO THE REGIONAL OFFICE, ATTN: CHIEF, PLANNING AND DESIGN DIVISION, FOR THE THE ADDITIONAL REVIEW AND APPROVAL OF THE REGIONAL DIRECTOR. REVISE THE TEMPLATE AND/ OR STAKE-OUT THE LOCATION OF LINED CANAL AND OTHER STRUCTURES AS PER TYPICAL ROADWAY SECTION BEFORE COMMENCING CONSTRUCTION. ADDITIONALLY, ANY CHANGES IN THE QUANTITY OF WORKS ITEM INVOLVED AS A RESULT OF REVISION MUST BE COMPUTED AND RE-CONSIDERED IN THE "AS-STAKED PLAN".

SYMBOLS

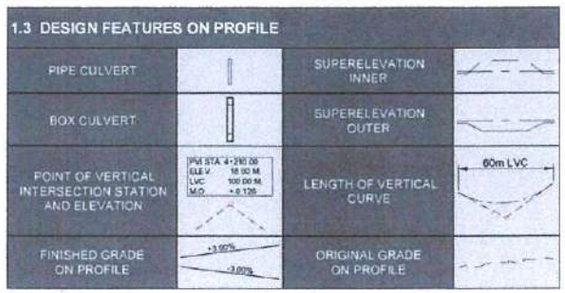
1.1 EXISTING TOPOGRAPHICAL FEATURES



1.2 DESIGN FEATURES ON PLAN



1.3 DESIGN FEATURES ON PROFILE



ABBREVIATIONS

AH	=	AHEAD STATIONING
AZI	=	AZIMUTH
BK	=	BACK STATIONING
BM	=	BENCH MARK
D	=	DEGREE OF CURVATURE
E	=	EASTING
e	=	SUPERELEVATION, m/m
ELEV	=	ELEVATION
EQ	=	EQUATION
FGE	=	FINISHED GROUND ELEVATION
g	=	GRADE in %
I	=	INTERNAL ANGLE
IBM	=	INTERMEDIATE BENCH MARK
Lc	=	LENGTH OF CURVE
MFL	=	MAXIMUM FLOOD LEVEL
N	=	NORTHING
NAMRIA	=	NATIONAL MAPPING & RESOURCE INFORMATION AUTHORITY
NBZ	=	NO BUILD ZONE
OGE	=	ORIGINAL GROUND ELEVATION
PC	=	POINT OF CURVATURE
PCC	=	POINT OF COMPOUND CURVATURE
PCCP	=	PORTLAND CEMENT CONCRETE PAVEMENT
PI	=	POINT OF INTERSECTION
PT	=	POINT OF TANGENCY
PVI	=	POINT OF VERTICAL INTERSECTION
R	=	RADIUS OF CURVATURE
R-No.	=	REFERENCE POINT
RCBC	=	REINFORCED CONCRETE BOX CULVERT
RCPC	=	REINFORCED CONCRETE PIPE CULVERT
RROW	=	ROAD RIGHT OF WAY
STA	=	STATION
T	=	TANGENT
TBM	=	TEMPORARY BENCH MARK
V	=	VEHICLE SPEED, kpm
W	=	WIDENING

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S0000ZLT) - K0905 + 941 - K0937 + 010	SHEET CONTENTS INDEX OF SHEETS SYMBOLS AND ABBREVIATIONS	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. BACUS CHIEF HIGHWAY DESIGN SECTION DATE	SUBMITTED AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA E. JUNIA, DM ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR	SET NO.	SHEET NO.
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GENERAL NOTES

1. DESIGN

THE REHABILITATION/ CONSTRUCTION PROJECT FOLLOWS THE EXISTING TRAVERSE AND GROUND ELEVATION.

2. DESIGN CRITERIA

A.) DPWH DESIGN GUIDELINES, CRITERIA AND STANDARDS (DGCS), VOLUME 4, 2015 EDITION
B.) AASHTO A POLICY ON GEOMETRIC DESIGN STANDARDS OF HIGHWAYS AND STREETS, 2011, 6TH EDITION
C.) AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURES, 4TH EDITION, 1993
D.) HIGHWAY SAFETY DESIGN STANDARDS: PART 1 - ROAD SAFETY DESIGN, AND PART 2 - ROAD SIGNS AND PAVEMENT MARKINGS, 2012 EDITION
E.) ROAD NOTE 29. THIRD EDITION - A GUIDE TO THE STRUCTURAL DESIGN OF PAVEMENTS FOR NEW ROADS
F.) EXECUTIVE ORDER NO. 113, ESTABLISHING THE CLASSIFICATION OF ROADS
G.) P.D. 187 AS AMENDED BY P.D. 748 AND BATAS PAMBANSA BLG. 8. AN ACT DEFINING THE METRIC SYSTEM AND ITS UNITS, PROVIDING FOR ITS IMPLEMENTATION AND FOR OTHER PURPOSES; AND DPWH MEMORANDUM CIRCULAR NO. 6, DATED JANUARY 6, 1983. RE METRIC SYSTEM (SI) TABLES

3. DESIGN SPECIFICATION

A.) ALL WORKS SHALL COMPLY WITH THE DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS, 2013 EDITION VOLUME 2
B.) THE ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES, 17TH EDITION 2002, AND DPWH DESIGN GUIDELINES, CRITERIA AND STANDARDS, 2015
C.) THE ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES, 17TH EDITION 2002, AND DPWH DESIGN GUIDELINES, CRITERIA AND STANDARDS, 2015

4. DIMENSION

A.) DISTANCES, ELEVATIONS AND DIMENSIONS ARE IN METER UNLESS OTHERWISE INDICATED.
B.) STATIONS ARE GIVEN IN KILOMETERS AND METERS.
C.) RADII AND TRANSITION CURVES ARE GIVEN IN METERS.

5. TOPOGRAPHIC SURVEY

SHALL BE DONE AS PER TERMS OF REFERENCE.

A.) STATIONING

A.) ROAD STATIONS AND ELEMENTS ARE RELATIVE TO THE CENTERLINE OF THE ROAD UNLESS OTHERWISE INDICATED.
B.) STATIONS ARE LOCATED AT EVERY 20 METERS, AT EVERY RCBC/RCPC CENTERLINE AND, AT EVERY POINT OF HORIZONTAL GEOMETRY

B.) COORDINATE SYSTEM

1.) COORDINATE REFERENCE SYSTEM : PRS92 / Philippine Zone V
2.) PROJECTION : Transverse Mercator (TM) in zone of 2° net width
3.) DATUM : Philippine Reference System 1992
4.) EPSG CODE : 3125

C.) DATE OF SURVEY

APRIL 11-13, 2024

D.) EQUIPMENT USED

EQUIPMENT	BASE	ROVER	CONTROLLER
MODEL	iRTK5	iRTK5	Orion A130/W9i
S/N	SJ13683487	SJ13683509	SJ14935515

E.) REFERENCE BENCHMARK DETAILS

THE POSITION OF PROJECT CONTROL POINTS SHALL BE DEFINED AND MARKED ON THE GROUND

F.) REFERENCES

DESCRIPTION	NORTHINGS	EASTINGS	ELEV.	REMARKS
Ref-1	1,246,727.1133	495,964.8232	71.9775	At K0900+000 Kilometer Post

6. ALIGNMENT, ELEVATIONS AND GRADES

1.) ALIGNMENT AND GRADES ARE SUBJECT TO ADJUSTMENTS TO SUIT EXISTING FIELD CONDITIONS. (AS STAKE OUT)
2.) ELEVATIONS GIVEN IN THE ROW "FINISHED GRADE ELEV." REFER TO THE FINISHED GRADE LEVEL AS SHOWN IN THE ROAD CROSS SECTION.
3.) ELEVATIONS GIVEN IN THE ROW "EXISTING GRADE" REFER TO THE EXISTING GROUND PROFILE AT THE ROAD ELEV." GEOMETRIC CENTERLINE

7. VERTICAL CONTROLS

STATIONING ARE BASED ON THE ROAD & BRIDGE INFORMATION (RBIA) APPLICATION UNDER DO # 54, SERIES OF REFERENCES ARE RECKONED ON THE EXISTING KILOMETER POST STARTING FROM KM. 0900+000.00

8. HORIZONTAL CONTROL

1.) AZIMUTHS WERE RECKONED FROM CENTERLINE OF EXISTING PAVEMENT.

9. CLEARING AND GRUBBING

THIS ITEM SHALL CONSIST OF CLEARING, GRUBBING, REMOVING AND DISPOSING ALL VEGETATION AND DEBRIS AS DESIGNATED IN THE CONTRACT, EXCEPT THOSE OBJECTS THAT ARE DESIGNATED TO REMAIN IN PLACE OR ARE TO BE REMOVED IN CONSONANCE WITH OTHER PROVISIONS OF THIS SPECIFICATION. THE WORK SHALL ALSO INCLUDE THE PRESERVATION FROM INJURY OR DEFACEMENT OF ALL OBJECTS DESIGNATED TO REMAIN.

10. REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS

PORTIONS OF EXISTING UTILITIES SUCH AS WATER MAINS, IRRIGATION CHANNELS, TELEPHONE POSTS AND TRUNK LINE, ETC. THAT MAY CAUSE OBSTRUCTION TO THE CONSTRUCTIONS OWNER CONCERNED. EXTREME PRECAUTION SHALL BE EXERCISED BY THE CONTRACTOR NOT TO DAMAGE ANY SECTION OF THE EXISTING PUBLIC UTILITIES DURING CONSTRUCTION , ANY REPAIR OF DAMAGE HEREOF SHALL BE ON THE ACCOUNT OF THE CONTRACTOR. ANY REMOVAL OF THE MISCELLANEOUS STRUCTURES THAT MAY BE REQUIRED SHALL BE SUBSIDIARY WORK PERTAINING TO OTHER CONTRACT ITEM. NO DIRECT PAYMENT SHALL BE MADE FOR THIS EXCEPT FOR SPECIFIC ITEMS EXPLICITLY IDENTIFIED FOR PAYMENT IN THE BID SCHEDULE.

11. EMBANKMENT AND SLOPE PROTECTION WORKS

A.) FOUNDATION OF THE SLOPE AND EMBANKMENT PROTECTION WORKS SHALL SIT ON A FIRM AND SUITABLE FOUNDATION SOFT SPOTS UNDER THE FOUNDATION SHALL BE REMOVED AND REPLACED WITH SUITABLE BEDDING MATERIALS OR CONCRETE CLASS "B".
B.)SOFT SPOTS BETWEEN THE OUT FACE AND SLOPE/ EMBANKMENT PROTECTION WALLS MUST BE FILLED WITH ROCKS OR SUITABLE MATERIALS SUCH AS BACKFILL MATERIALS PLACED BEHIND THE WALL SHALL BE FREE DRAINING, NON EXPENSIVE AND WATER SHALL BE DRAINED BY WHEEP HOLES PLACED AT SUITABLE INTERVALS AND ELEVATIONS.
C.) THE DEPTH PENETRATION SHALL BE MEASURED FROM LEVEL OF THE ORIGINAL GROUND SURFACE AND SHALL NOT INCLUDE EXCAVATED MATERIALS.

12. ROAD CONNECTIONS AND PRIVATE ENTRANCES

A.) APPROACHES AND PRIVATE ENTRANCES SHALL BE CONSIDERED BY THE CONTRACTOR AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN SUCH A MANNER TO ENSURE SMOOTH CONNECTIONS AND RIDING QUALITY.
B.) NO OPENING FOR DRIVEWAYS OR PRIVATE ENTRANCES SHALL BE ALLOWED EXCEPT WITH THE PRIOR APPROVAL FROM THE PROPER AUTHORITIES.

13. ACCESSIBILITY FEATURES

THE IMPLEMENTING OFFICE SHALL IDENTIFY THE LOCATIONS OF AND PROVIDE ACCESSIBILITY FACILITIES FOR PERSONS WITH DISABILITY IN ACCORDANCE WITH D.O. 37 SERIES OF 2009.

14. RIGHT OF WAY

ROAD CLASSIFICATION DICTATES THE RIGHT-OF-WAY LIMITS

15. ROAD SAFETY

ROAD SAFETY MANUAL DATED MAY 2012 SHALL BE ADOPTED.

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S0900ZLT) - K0900 + 341 - K0907 + 010	SHEET CONTENTS GENERAL NOTES	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. BACUS CHIEF, HIGHWAY PLANNING SECTION DATE	RECOMMENDED AGRESIM. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. JUNIA, DM ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO A 4/13	SHEET NO 3 19

CONSTRUCTION REQUIREMENT

1. ALL CONSTRUCTION SHALL CONFORM TO

A.) CONDITIONS OF CONTRACT
B.) THE SPECIAL PROVISIONS
C.) THE SPECIFICATIONS OF ITEMS OF WORK FOR THIS PROJECT SHALL BE THE DPWH STANDARD SPECIFICATIONS FOR PUBLIC WORKS & HIGHWAYS 2013 EDITION, VOLUME II - HIGHWAYS BRIDGES & AIRPORTS OR SPECIAL PROVISION AS PRESENTED IN THE TENDER DOCUMENTS OF THE PROJECT.

2. SETTING OUT

THE SETTING OUT AND ELEVATION OF THE DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY CONSTRUCTION WORK.

3. CONSTRUCTION SURVEY AND STAKING

SHALL CONSIST OF FURNISHING THE NECESSARY EQUIPMENT AND MATERIAL TO SURVEY, STAKE, CALCULATE, AND RECORD DATA FOR THE CONTROL OF WORK IN ACCORDANCE WITH THIS SPECIFICATION AND IN CONFORMITY WITH THE LINES, GRADES AND DIMENSIONS SHOWN ON THE PLANS OR AS ESTABLISHED BY THE ENGINEER.

4. PROJECT BILLBOARD

A.) DO. 11, SERIES OF 2022 , AMENDMENT TO DEPARTMENT ORDER NO. 21 SERIES OF 2017 "REVISED GUIDELINES ON THE INSTALLATION OF PROJECT BILLBOARD"
B.) REVISED GUIDELINES ON THE INSTALLATION OF PROJECT BILLBOARD (PER D.O. 21, S. 2017)

5. TRAFFIC MANAGEMENT

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEVELOPING AND MAINTAINING AN EFFECTIVE TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE SPECIAL PROVISIONS SUBJECT TO THE APPROVAL OF THE ENGINEER AND THE CORRESPONDING LOCAL AUTHORITIES.

6. MOBILIZATION

A.) SHALL CONSIST OF MOBILIZATION OF EQUIPMENT AND MANPOWER, MATERIALS AND OTHER ITEMS THAT SHALL BE OF USE IN THE IMPLEMENTATION OF THE PROJECT.
B.) ALL CEMENT MATERIALS SHALL BE STORED IMMEDIATELY UPON DELIVERY AT SITE, IN A WEATHER PROOF BUILDING WHICH WILL PROTECT THE CEMENT FROM DAMPNESS. THE FLOOR SHALL BE RAISED FROM THE GROUND BY 4 INCHES.
C.) ALL SIGNAGES AND PROJECT BILLBOARDS SHALL BE PLACED AT DESIGNATED LOCATIONS APPROVED BY THE PROJECT ENGINEER.

7. DEMOBILIZATION

FOLLOWS ONLY AFTER THE PROJECT WAS FINALLY ACCEPTED AND THE SURROUNDINGS ARE PROPERLY CLEANED

8. CLEARING AND GRUBBING

A.) THE ENGINEER WILL ESTABLISH THE LIMITS OF WORK AND DESIGNATE ALL TREES, SHRUBS, PLANTS AND OTHER THINGS TO REMAIN. THE CONTRACTOR SHALL PRESERVE ALL OBJECTS DESIGNATED TO REMAIN. PAINT REQUIRED FOR CUT OR SCARRED SURFACE OF TREES OR SHRUBS SELECTED FOR RETENTION SHALL BE AN APPROVED ASPHALTUM BASE PAINT PREPARED ESPECIALLY FOR TREE URGERY.
B.) CLEARING SHALL EXTEND ONE (1) METER BEYOND THE TOE OF THE FILL SLOPES OR BEYOND ROUNDING OF CUT SLOPES AS THE CASE MAYBE FOR THE ENTIRE LENGTH OF THE PROJECT UNLESS OTHERWISE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER AND PROVIDED IT IS WITHIN THE RIGHT OF WAY LIMITS OF THE PROJECT, WITH THE EXCEPTION OF TREES UNDER THE JURISDICTION OF THE FOREST MANAGEMENT BUREAU (FMB).

9. ALIGNMENT AND GRADE

A.) FINISHED GRADE FOR THIS PROJECT ARE SUBJECT TO CHANGE TO SUIT EXISTING FIELD CONDITION HOWEVER THAT IT IS MORE ADVANTAGEOUS AND MORE ECONOMICAL ON THE PART OF THE GOVERNMENT AND THE DESIGN STANDARD FOR HIGHWAYS PER REQUIREMENT OF AASHTO ARE PROPERLY FOLLOWED
B.) WIDENING IN CURVES IS SUBJECTED TO ADJUSTMENT TO SUIT EXISTING FIELD CONDITION AND SHALL BE BACKFIELD WITH APPROVED MATERIALS.
C.) PROPER ROAD CONNECTION AT THE BEGINNING AND END OF THE PROJECT SHALL BE PROVIDED TO ENSURE SMOOTH RIDING SURFACE.

10. EXCAVATION

EXCAVATION FOR STRUCTURES SHALL BE NEAT LINES AS SHOWN IN THE PLANS AND THE SOIL UNDERNEATH STRUCTURE FOUNDATION SHALL NOT BE DISTURBED

12. SUBGRADE, SUBBASE, AND BASE

A.) UNSUITABLE SUB-GRADE MATERIALS SHALL BE EXCAVATED BELOW THE GROUND SURFACE TO THE REQUIRED WIDTH AND DEPTH, THE AREA EXCAVATED SHALL BE BACKFILLED WITH THE APPROVED MATERIALS.
B.) NO EMBANKMENT MATERIALS SHALL BE PLACED UNTIL THE FOUNDATION IS STABLE.

13. CONCRETE AND CONCRETE PAVEMENT

A.) TRAFFIC SHALL BE REQUIRED TO REDUCE SPEED WHEN PASSING THE VICINITY OF THE NEWLY LAID CONCRETE PAVEMENT UNTIL SUCH TIME THAT IT HAS OBTAINED THE FOURTEEN (14) DAYS REQUIRED CURING PERIOD.
B.) NO ADMIXTURES OR ADDITIVES WILL BE ALLOWED FOR ALL CONCRETE WORKS WITHOUT PRIOR APPROVAL FROM THE SECRETARY OF DPWH OR HIS DULY APPOINTED REPRESENTATIVES.
C.) WHEN CONCRETING OF PAVEMENT PROGRESSES TRAFFIC SHALL BE MADE TO PASS OUTSIDE THE EMBANKMENT PRISM IN ORDER TO MINIMIZE THE EFFECT OF VIBRATION TO THE SETTING CONCRETE.
D.) THE EXISTING CONCRETE CURB AND GUTTER THAT INTERFERES IN THE CONSTRUCTION SHALL BE REMOVED.

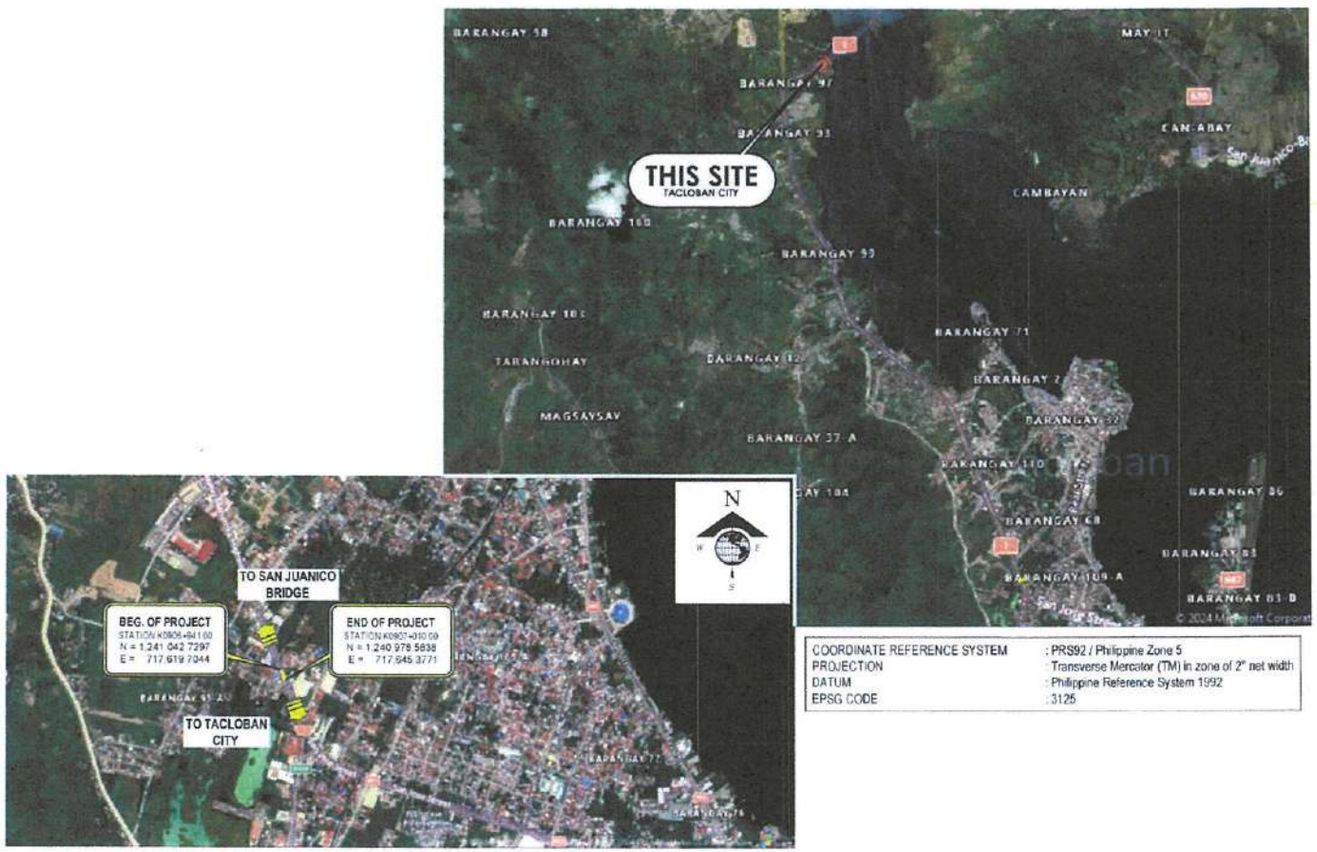
17. AGGREGATE SUBBASE COURSE

A.) THE EXISTING SURFACE SHALL BE GRADED AND FINISHED AS PROVIDED UNDER ITEM 105, SUBGRADE PREPARATION, BEFORE PLACING THE SUBBASE MATERIAL.
B.) THE AGGREGATE SUBBASE MATERIAL SHALL BE PLACED AT A UNIFORM MIXTURE ON A PREPARED SUBGRADE IN A QUANTITY WHICH WILL PROVIDE THE REQUIRED COMPACTED THICKNESS.
C.) PLACING SHALL BE FROM VEHICLES ESPECIALLY EQUIPPED TO DISTRIBUTE THE MATERIAL IN A CONTINUOUS UNIFORM LAYER OR WINDROW. THE LAYER OR WINDROW SHALL BE OF SUCH SIZE THAT WHEN SPREAD AND COMPACTED, THE FINISHED LAYER SHALL BE IN REASONABLY CLOSE CONFORMITY TO THE NOMINAL THICKNESS SHOWN ON THE PLANS.

21. TREE PLANTING

A.) BALLING OF PLANTS AND TREES - BALLING IS EMPLOYED IN PLANTS AND TREES TO BE TRANSPLANTED OR TRANSFERRED. TO BALL OUT THE TREES, THE DEPTH TO WHICH THE ROOT SYSTEM REACHES IS FIRST DETERMINED. DIGGING AROUND THE TREE IS THEN DONE, BEING CAREFUL NOT TO CUT MANY ROOTS.
B.) DIGGING PLANTS - ALL PLANTS, NURSERY-GROWN OR COLLECTED, SHALL BE DUG WITH CARE AND SKILL IMMEDIATELY BEFORE SHIPPING AND AVOIDING ALL POSSIBLE INJURY TO THE PLANTS. LOSS OR DAMAGE OF THE ROOTS, PARTICULAR ATTENTION BEING GIVEN TO FIBROUS ROOTS IN THIS RESPECT.
C.) TEMPORARY STORAGE AND PLANT SPRAY - AFTER DELIVERY AND INSPECTION, THE PLANTS SHALL BE SPRAYED WITH AN APPROVED ANTI-DESICCANT PRIOR TO PLANTING, HEELING-IN OR STORING, EXCEPT IN THE CASE OF COLLECTED STOCK WHICH SHALL NOT BE HEELED-IN OR STORED, BUT SHALL BE SPRAYED WITH ANTI-DESICCANT IMMEDIATELY AND PLANTED WITHIN 36 HOURS AFTER DIGGING.
D.) LAYOUT OF PLANTING - BEFORE DIGGING POCKET HOLES OR BEDS, THE CONTRACTOR SHALL LAYOUT, BY SUITABLE STAKING, THE LOCATION OF ALL POCKET HOLES AND BEDS. THE LAYOUT OF PLANTING SHALL BE APPROVED BY THE ENGINEER.
E.) ROOTS AND TOP PRUNING - THE ENDS OF ALL BROKEN AND DAMAGED ROOTS, 6MMØ OR LARGER, SHALL BE PRUNED WITH A CLEAN CUT, REMOVING NO MORE THAN THE INJURED PORTION. ALL PLANTS SHALL BE PRUNED TO BALANCE THE TOP WITH THE ROOT SYSTEM THE NATURAL SHAPE OF THE SPECIES.
F.) POCKET HOLES - SHALL BE DUG AT THE LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY ENGINEER. THE HOLES SHALL BE DUG TO THE DEPTH AND CROSS-SECTION SPECIFIED AND SHOULD BE OF SUFFICIENT SIZE TO PROVIDE FOR NOT LESS THAN 150MM OF TOP SOIL BACKFILL BENEATH AND AROUND THE ROOT SYSTEM.
G.) BACKFILL - THE POCKET HOLES SHALL BE BACKFILLED WITH TOPSOIL AS EACH PLANT IS SET. THE TOPSOIL SHALL BE WELL-TAMPED BY THE WORKER'S FEET, RODS OR OTHER APPROVED TAMPERING DEVICES AS IT IS SHOVELLED INTO THE HOLES.
G.) BACKFILL - THE POCKET HOLES SHALL BE BACKFILLED WITH TOPSOIL AS EACH PLANT IS SET. THE TOPSOIL SHALL BE WELL-TAMPED BY THE WORKER'S FEET, RODS OR OTHER APPROVED TAMPERING DEVICES AS IT IS SHOVELLED INTO THE HOLES.
H.) PLANTING - PLANTS TO BE PLANTED SHALL BE THE SPECIE, VARIETY AND SIZE SPECIFIED.
I.) MULCHING - WITHIN 24 HOURS AFTER PLANTING, MULCHING MATERIALS SHALL BE SPREAD TO COVER THE PLANT HOLE AND THE AREA 150MM OUTSIDE THE PERIPHERY OF THE PLANT HOLE. THE DEPTH AND APPLICATION FOR WOOD CHIPS SHALL BE A MINIMUM OF 150 MM.
J.) WATERING AND MAINTENANCE - ALL PLANTS SHALL BE WATERED DURING THE PLANTING OPERATIONS, SUBJECT TO THE DIRECTION AND APPROVAL OF THE ENGINEER.
K.) BRACING - ALL DECIDUOUS AND EVERGREEN TREES SHALL BE BRACED IMMEDIATELY AFTER PLANTING. DECIDUOUS TREES FROM 1.20M TO 1.80M IN HEIGHT SHALL HAVE ONE VERTICAL SUPPORT DECIDUOUS TREES FROM 1.80 M TO 2.50M IN HEIGHT SHALL HAVE TWO VERTICAL SUPPORT STAKES.
L.) DEAD TREES - BEFORE COMPLETION AND FINAL ACCEPTANCE OF THE PROJECT, ALL TREES NOT HEALTHY OR THAT HAVE DIED BACK INTO THE CROWN OR BEYOND THE NORMAL PRUNING LINE SHALL BE REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE WITH TREES OF THE SPECIFIED SPECIES OR VARIETY, SIZE AND QUALITY AND MEETING THE SPECIFICATION.

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS PALO, LEYTE	PROJECT NAME AND LOCATION: NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (5000021LT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS: CONSTRUCTION REQUIREMENT	PREPARED: RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED: FELIX R. BACUS CHIEF, HIGHWAY DESIGN SECTION DATE:	SUBMITTED: ROMEO M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE:	RECOMMENDED: MA. MARGARITA C. LUMAMA, O.M. ASSISTANT REGIONAL DIRECTOR DATE:	APPROVED: EDNAR B. TABAGON, CESO IV REGIONAL DIRECTOR DATE:	SHT NO. A 13	SHEET NO. 4 19



COORDINATE REFERENCE SYSTEM	: PRS92 / Philippine Zone 5
PROJECTION	: Transverse Mercator (TM) in zone of 2° net width
DATUM	: Philippine Reference System 1992
EPSG CODE	: 3125

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. VIII
BARAS, PALO, LEYTE

PROJECT NAME AND LOCATION: NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (580002LT) - K0906 + 541 - K0907 + 810

SHEET CONTENTS: LOCATION MAP

PREPARED: RAMON ELMER E. MANAGBANAG, ENGINEER II

REVIEWED: FELIX R. BACUS, CHIEF HIGHWAY PLANNING SECTION, DATE

SUBMITTED: AGNES M. BARONDA, CHIEF PLANNING AND DESIGN DIVISION, DATE

RECOMMENDED: MA. MARGARITA C. JUNIA, D.M., ASSISTANT REGIONAL DIRECTOR, DATE

APPROVED: EDGAR B. TABAÇON, CESO III, REGIONAL DIRECTOR, DATE

SHT NO. 5 of 19

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	REMARKS
PART B	**OTHER GENERAL REQUIREMENTS**			
B.4 (10)	Miscellaneous survey and staking	L.S.	1.00	
B.5	Project Billboard/Signboard	Each	8.00	
B.7(2)	Occupational Safety and Health Program	L.S.	1.00	
B.8(2)	Traffic Management	L.S.	1.00	
B.9	Mobilization/Demobilization	L.S.	1.00	
B.12	Removal and Relocation of Utilities	L.S.	1.00	
PART C	**EARTHWORK**			
100(1)	Clearing and Grubbing	Ha.	0.023	
100(3)a1	Individual Removal of Trees, 150-300 mm dia., Small	Each	1.00	
101(1)	Removal of Structures and Obstruction	L.S.	1.00	
101(3)b3	Removal of Actual Structures/Obstruction: 0.23m thick, PCCP (Unreinforced)	Sq.M	157.00	
103(1)a	Structure Excavation, Common Soil	Cu.M	51.59	
105(1)a	Subgrade Preparation, Common Material	Sq.M	234.50	
PART D	**SUBBASE AND BASE COURSE**			
200(1)	Aggregate Subbase Course	Cu.M	46.90	
PART E	**SURFACE COURSES**			
302(2)	Emulsified Asphalt	Sq.M	255.50	
310(1)c	Bituminous Concrete Surface Wearing Course, Hot-Laid, 50 mm	Sq.M	245.00	
311(1)f1	Portland Cement Concrete Pavement (Unreinforced), 0.30 m thick, 14 days	Sq.M	234.50	
PART H	**MISCELLANEOUS STRUCTURES**			
611(1)	Trees (Furnishing and Transplanting)	Each	100.00	
612(1)	Reflectorized Thermoplastic Pavement Markings White	Sq.M	35.20	
613(1)	Concrete Joint Sealant (Hot-Poured Elastic Type)	Kg	2.50	

NOTE:

1. *THE CONTRACTOR SHALL SUBMIT AS-STAKED PLAN TO VALIDATE CONTRACT QUANTITIES IN COMPLIANCE WITH D.O. NO. 15 SERIES OF 2016.*
2. *THE QUANTITIES SHOWN ARE SUBJECT TO CHANGE IF SIGNIFICANT IMPROVEMENT HAVE OCCURRED BETWEEN THE APPROVED DETAILED ENGINEERING PLAN AND ACTUAL CONDITION OF THE PROJECT DURING THE CONDUCT OF AS-STAKED SURVEY.*

PAVING QUANTITIES

PCCP Thickness :	**0.30m**
Length :	70.00m
Width (Widening) :	3.35m
Width (Shoulder)	-
Total Area :	**234.50m²**

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. VIII
BARAS, PALO, LEYTE

PROJECT NAME AND LOCATION: NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S0000ZLT) - K0505 + 541 - K0507 + 010

SHEET CONTENTS: SUMMARY OF QUANTITIES AND PAVING QUANTITIES

PREPARED: RAMON ELMORE MANAGBANAG, ENGINEER II

REVIEWED: FELIXR. BACUS, CHIEF HIGHWAYS EVALUATION, DATE

SUBMITTED: AGNES M. BARONDA, CHIEF PLANNING AND DESIGN DIVISION, DATE

RECOMMENDED: MA. CRISTINA C. JUNIA, O.M., ASSISTANT REGIONAL DIRECTOR, DATE

APPROVED: EDGAR B. TABACON, CESO III, REGIONAL DIRECTOR, DATE

SET NO. 6 of 13

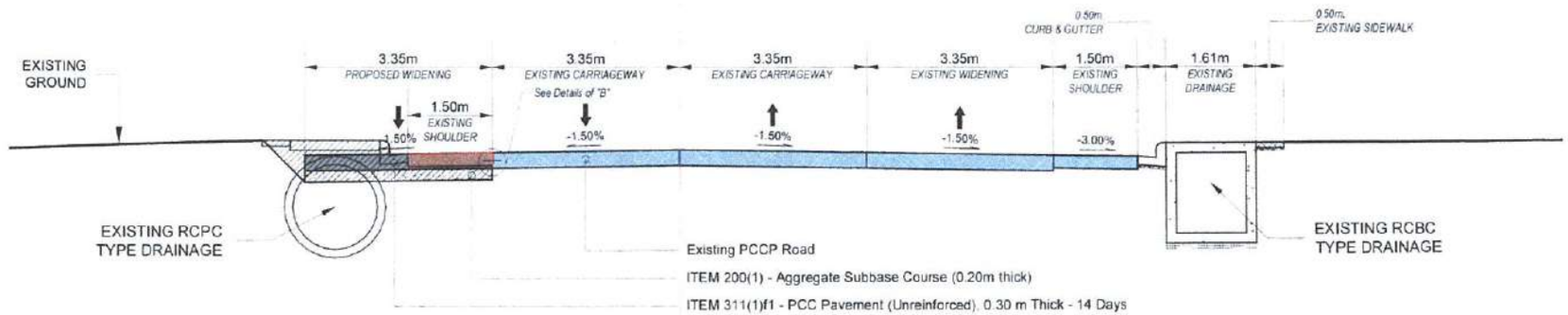
SHEET NO. 6 of 19

DESIGN CRITERIA : PAVEMENT DESIGN PARAMETERS

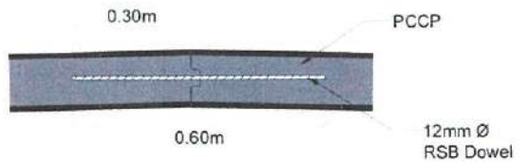
ITEM	DESIGN REQUIREMENTS
1. PERFORMANCE PERIOD FOR PCCP	20 years
2. DESIGN TRAFFIC, ESAL	7.277 x 10^6
3. DESIGN RELIABILITY, R	85%
4. STANDARD DEVIATION, So	0.35
5. DESIGN SERVICEABILITY LOSS, ΔPSI	2.50
6. PCCP MODULUS OF RUPTURE, Sc	464 psi
7. PCCP MODULUS OF ELASTICITY, Ec	3.360 x 10^6
8. SUBGRADE DESIGN CBR	5.31
9. EFFECTIVE ROADBED RESILIENT MODULUS, MR	7,965.00
10. SUBBASE ELASTIC MODULUS, ESB	15,000 psi
11. SUBBASE THICKNESS	8" (200 mm)
12. EFFECTIVE MODULUS AT SUBGRADE REACTION, K (pci)	175.00
13. DRAINAGE COEFFICIENT, Cd	1.00
14. LOAD TRANSFER COEFFICIENT, J	3.20
15. LOSS OF SUPPORT, Ls	1.00
16. K (corrected)	168.00

LEGEND

EXISTING PCCP		SubBase Course	
PCCP (0.28m thk)		Area Cut	
PCCP (0.23m thk)		Area Fill	

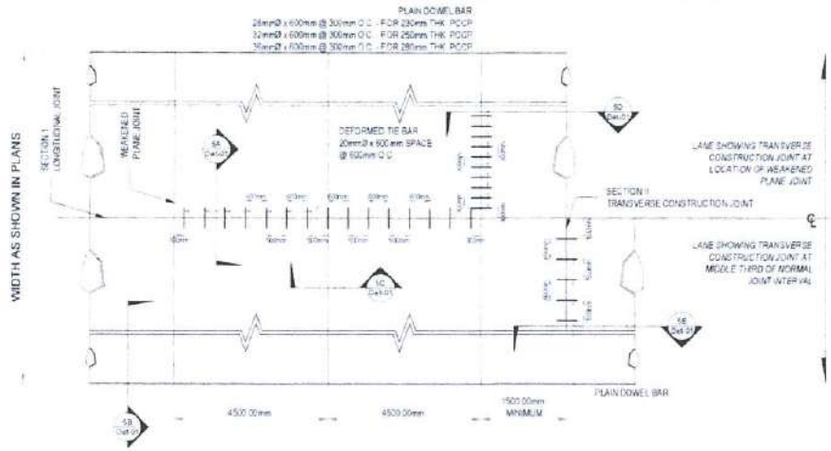


DETAILS OF "A"
Scale NTS



DETAILS OF "B"
Scale NTS

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS TYPICAL ROADWAY SECTION	PREPARED RAMON ELMER Z. MANAGBANAG ENGINEER II	REVIEWED FELIX R. [illegible] CHIEF HIGHWAYS DESIGNATION DATE	SUBMITTED AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. LUMA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. A 7 of 13	SHEET NO. 7 13



1 Det-01 **TYPICAL PLAN FOR TWO-LANE PAVEMENT**
NOT TO SCALE

3A Det-01 **CONTRACTION JOINT (HALF-LANE PAVING)**
NOT TO SCALE

3B Det-01 **SEWED JOINT (TWO-LANE PAVING)**
NOT TO SCALE

3 Det-01 **SECTION - I (LONGITUDINAL JOINT)**
NOT TO SCALE

4A Det-01 **CONTRACTION JOINT**
NOT TO SCALE

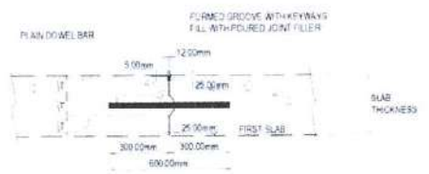
4B Det-01 **CONSTRUCTION JOINT**
NOT TO SCALE

4 Det-01 **SECTION - II (TRANSVERSE JOINT)**
NOT TO SCALE

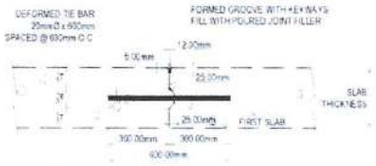
CARRIAGE WAY = 300mm THICK

2 Det-01 **PAVEMENT WIDENING ADDITIONAL LANE**
NOT TO SCALE

NOTE
TRANSVERSE CONSTRUCTION (CONTACT) JOINT SHALL BE APPROVED AT THE END OF ANY RUN WHERE LAYING OF CONCRETE HAS BEEN STOPPED FOR THIRTY (30) MINUTES OR LONGER.
TRANSVERSE CONSTRUCTION JOINTS WHICH OCCUR AT LOCATION OF WEAKENED PLANE JOINT SHOULD BE BUTT JOINTS WITH DOWELS. IF JOINT OCCURS IN THE MIDDLE THIRD OF THE WEAKENED JOINT INTERVAL (1500mm - 3000mm), IT SHOULD BE KEYED JOINTS WITH TIE BARS.

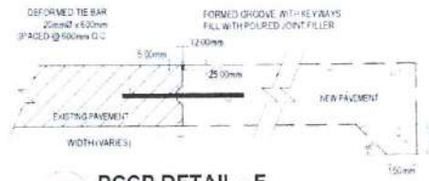


5E Det-01 **PCCP DETAIL - E**
NOT TO SCALE

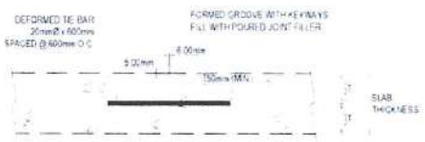


5A Det-01 **PCCP DETAIL - A**
NOT TO SCALE

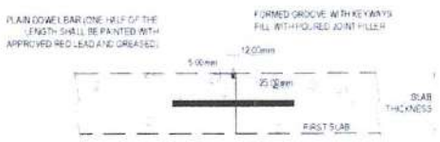
5C Det-01 **PCCP DETAIL - C**
NOT TO SCALE



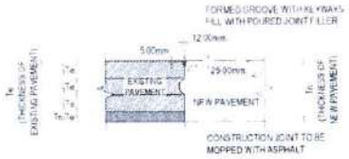
5F Det-01 **PCCP DETAIL - F**
NOT TO SCALE



5B Det-01 **PCCP DETAIL - B**
NOT TO SCALE

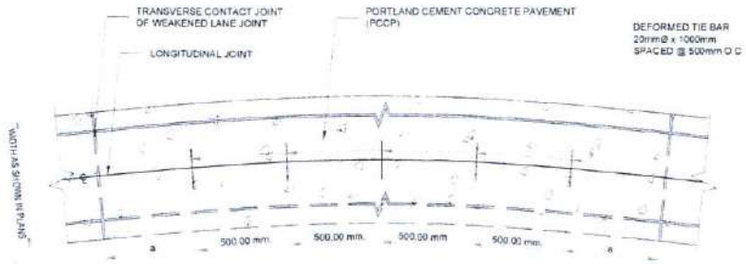


5D Det-01 **PCCP DETAIL - D**
NOT TO SCALE

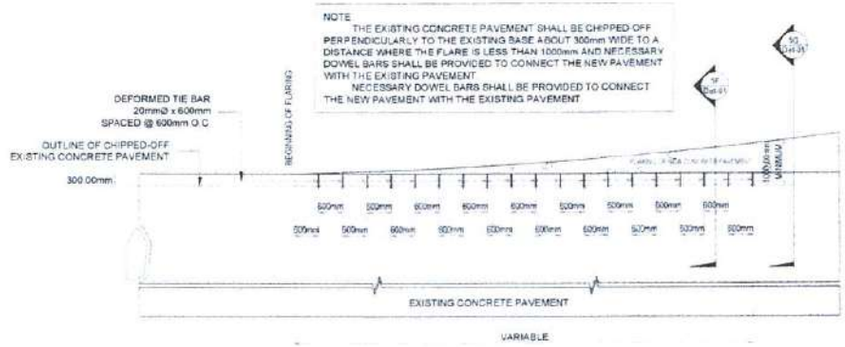


5G Det-01 **PCCP DETAIL - G**
NOT TO SCALE

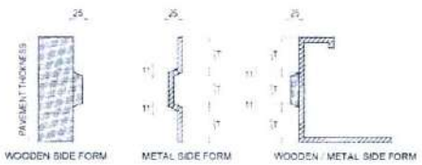
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (500002LT) - K0926 + 941 - K0927 + 010	SHEET CONTENTS STANDARD PORTLAND CEMENT CONCRETE PAVEMENT JOINTS (PLAIN)	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. BAGUS CHIEF HIGHWAY REGULATION DATE	SUBMITTED AGNES N. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. LUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. A 8 13	SHEET NO. 8 19



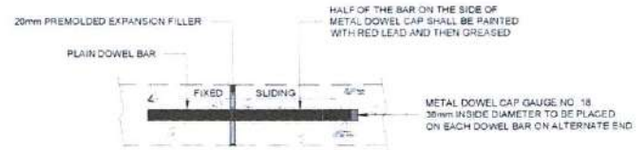
1 Det-02 **DETAILS OF BAR SPACING ALONG CURVES**
NOT TO SCALE



2 Det-02 **PLAN (SHOWING FLARING OF EXISTING CONCRETE PAVEMENT)**
NOT TO SCALE



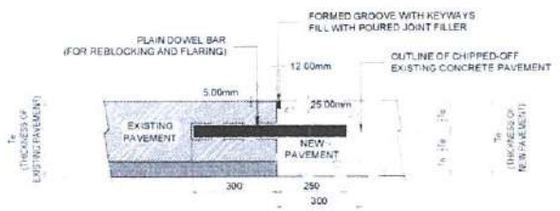
3 Det-02 **DETAILS OF SIDE FORMS**
NOT TO SCALE



4 Det-02 **DETAILS OF EXPANSION JOINT (DOWELED) AT CERTAIN INTERSECTIONS AND STRUCTURES**
NOT TO SCALE

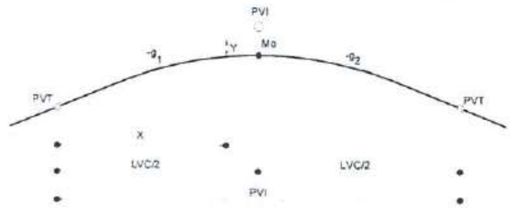
GENERAL NOTES :

1. MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE "DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGE AND AIRPORTS, 2013".
2. CONSTRUCTION (CONTRACT) JOINTS ARE FORMED WHEN CONCRETE ON ONE SIDE OF THE JOINT IS POURED AHEAD AND ALLOWED TO SET BEFORE POURING ON THE OTHER SIDE.
3. AT CONSTRUCTION JOINTS (LONGITUDINAL OR TRANSVERSE), CARE SHOULD BE TAKEN THAT NO CONCRETE FROM THE LAST SLAB OVERHANGS ANY PORTION OF THE FIRST SLAB.
4. THE BARKS SHOULD BE DEFORMED STEEL BARS. ALL DOWEL BAR SHALL BE SMOOTH ROUND STEEL BAR FREE FROM RUST AND OTHER DEFECTS WHICH MIGHT RESTRICT THEIR MOVEMENT.
5. TYPE OF WEAKENED JOINT TO BE USED SHALL BE AS SPECIFIED IN THE PLANS AND ONLY ONE TYPE SHALL BE USED FOR THE WHOLE PROJECT.
6. MATERIAL FOR THE METAL SIDE FORM SHALL BE BRAND NEW SHEET METAL GAUGE NO. 18 OF BLACK IRON FREE FROM RUST AND LINKS.
7. AT LEAST SIX (6) SUCCESSIVE DOWELED BUTT JOINTS AT NORMAL JOINT SPACING SHALL BE PROVIDED BEFORE OR AFTER AN EXPANSION JOINT.
8. THE GROOVE OR CRACK ABOVE JOINTS (LONGITUDINAL OR TRANSVERSE) SHALL BE SEALED WITH 30-50 PENETRATION ASPHALT SEAL OR COLD APPLIED LIQUID RUBBER COMPOUND AFTER THE CONCRETE HAD BEEN CURED AND BEFORE OPENING PAVEMENT TO TRAFFIC.
9. ALL TRANSVERSE JOINTS, EXCEPT CONSTRUCTION JOINT, SHALL BE CONTINUOUS FROM EDGE TO EDGE.
10. ALL LONGITUDINAL JOINT SHALL MEET AT INTERSECTIONS WITH NO GAPS OR OFFSET.
11. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
12. AVOID STOPPAGE OF FORMWORKS ALONG CURVES.
13. CONSTRUCT EXPANSION JOINT AT EVERY 90 METERS AND/OR AT EVERY ADJACENT EXISTING STRUCTURES.



5 Det-02 **CONSTRUCTION JOINT TO BE USED FOR FLARING EXISTING CONCRETE PAVEMENT AND REBLOCKING**
NOT TO SCALE

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BAFAEL PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS STANDARD PORTLAND CEMENT CONCRETE PAVEMENT JOINTS (PLAIN)	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. [illegible] CHIEF, HIGHWAY DESIGN SECTION DATE	CONCURRED AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. [illegible], P.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO 13	SHEET NO 9 19



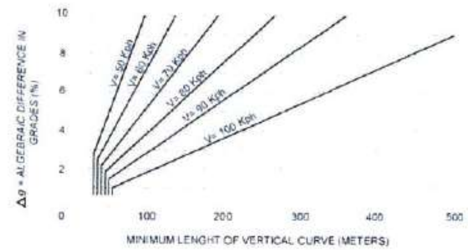
SYMMETRICAL VERTICAL PARABOLIC CURVES (CREST)

IN ANY VERTICAL PARABOLIC CURVE :

1. $Mo = \dfrac{(g_1 - g_2)\,(LVC)}{800}$

2. $Mo = \frac{1}{2}\left[\left(\dfrac{ELEV.\ PVC + ELEV.\ PVT}{2}\right) - ELEV.\ PVI\right]$

3. $Y = 4Mo$



DESIGN CONTROL FOR VERTICAL CURVES (CREST)

LEGEND:

PVI - POINT OF VERTICAL INTERSECTION

PVC - POINT OF VERTICAL CURVATURE

PVT - POINT OF VERTICAL TANGENCY

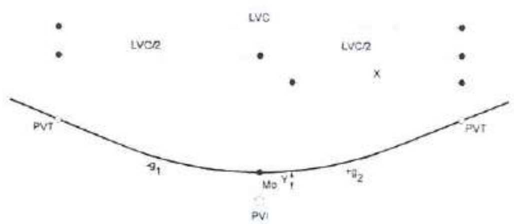
LVC - LENGTH OF VERTICAL CURVES - METER

Mo - MIDDLE ORDINATE

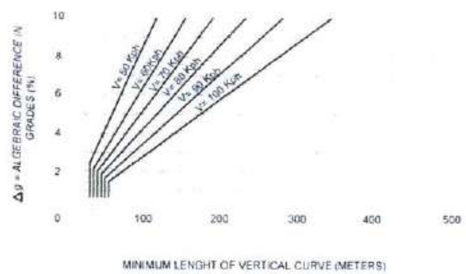
g_1 g_2 - GRADE RATES PERCENT

X - DISTANCE FROM PVC OR PVT TO ANY POINT ON CURVE - METERS

Y - VERTICAL OFFSET AT DISTANCE X - METERS



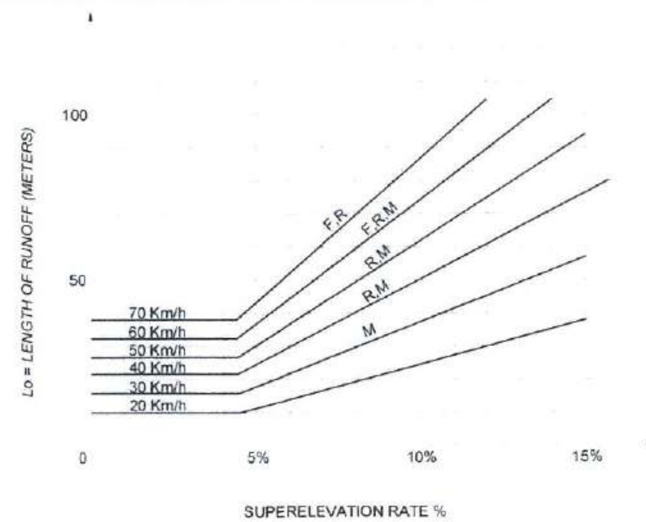
SYMMETRICAL VERTICAL PARABOLIC CURVES (SAG)



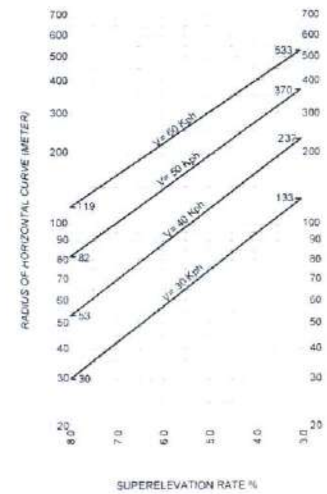
DESIGN CONTROL FOR VERTICAL CURVES (SAG)

NOTES:

1. GRADES ASCENDING FORWARD ARE POSITIVE, GRADES DESCENDING FORWARD ARE NEGATIVE.
2. NO VERTICAL CURVE IS REQUIRED WHEN THE ALGEBRAIC DIFFERENCE IN GRADE IS 0.5% OR LESS.



SUPERELEVATION RUNOFF CHART



DESIGN SUPERELEVATION RATES

LEGEND:

F - FLAT

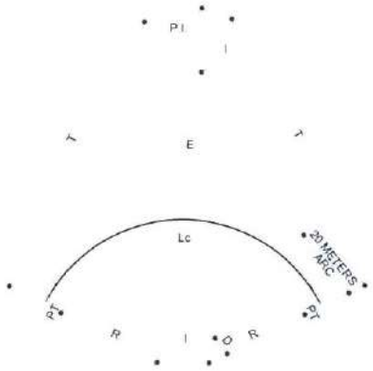
R - ROLLING

M - MOUNTAINOUS

V - DESIGN SPEED

Kph - KILOMETER PER HOUR

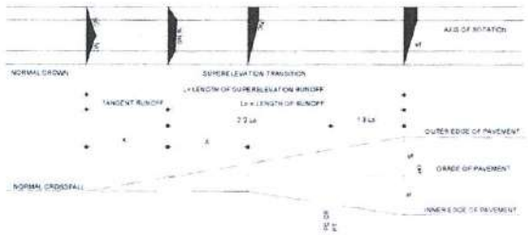
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS GEOMETRIC DESIGN STANDARD FOR VERTICAL (PARABOLIC CURVE) AND SUPERELEVATION CHART	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. BAGUS CHIEF, HIGHWAY DESIGN SECTION DATE	SUBMITTED AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. JUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. A 10 / 13	SHEET NO. 10 19



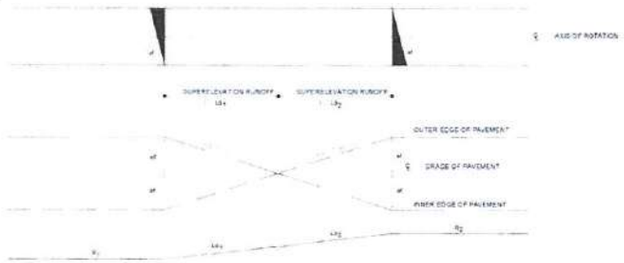
HORIZONTAL CURVE (CIRCULAR)

LEGEND

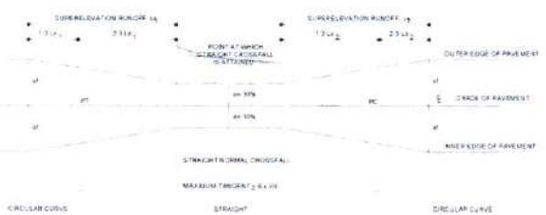
wf - FULL WIDENING
PI - POINT OF INTERSECTION
I - INTERSECTION ANGLE (CENTRAL ANGLE)
T - TANGENT DISTANCE
R - HORIZONTAL RADIUS
Lc - LENGHT OF CIRCULAR CURVE
E - EXTERNAL DISTANCE
D - DEGREE OF CURVE (ARC DEFINITION)
PC - POINT OF CURVATURE
PT - POINT OF TANGENCY
L - LENGHT OF SUPERELEVATION RUNOFF
Δ Le - LENGTH OF SUPERELEVATION RUNOFF
ef - FULL SUPERELEVATION
X - LENGTH BETWEEN SUPERELEVATION 0% & N.C. %
S - SLOPE OF EDGE OF PAVEMENT IN % RELATIVE TO
Vd - DESIGN SPEED
N.C. - NORMAL CROSSFALL



CASE 1
SUPERELEVATION TRANSITION



CASE 2
TRANSITION CIRCULAR CURVE - REVERSED CIRCULAR



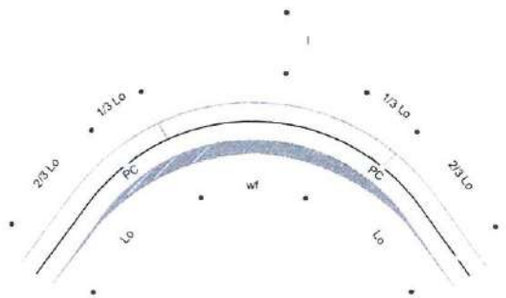
CASE 3
TRANSITION CIRCULAR CURVE - STRAIGHT - CIRCULAR CURVE

NOTES

1. FOR EFFECTIVE DRAINAGE ΔS HAS TO BE > 0.30%
2. WHERE ΔS < 0.30% A SPECIAL METHOD OF SUPERELEVATION TRANSITION HAS TO BE ADOPTED AS INDICATED IN THE DOTTED LINE.
3. ROUNDING OFF ONLY NECESSARY IF ΔS > 0.60%

Vd	≤50 Km/H	80 Km/H	≥80Km/H
R	500 m	1,000 m	2,000 m

4. ef CAN BE TAKEN FROM CHART OF SUPERELEVATION RATE
5. SUPERELEVATION CAN BE ATTAINED BY REVOLVING THE PAVEMENT ABOUT THE CENTERLINE PROFILE.
6. THE SLOPE OF THE SIDEWALK SHALL ALWAYS FALL TOWARD THE TRAVELLED WAY
7. THE SLOPE OF THE SHOULDER SHALL ALWAYS FALL IN THE DIRECTION OF THE OUTSIDE EDGE OF TRAVELLED WAY
8. WHEN SUPERELEVATION IS LARGER THAN 4% THEN THE SLOPE OF LOWER SHOULDER SHALL BE THE SAME FOR THE TRAVELLED WAY
9. WHEN THE SUPERELEVATION IS LESS THAN 6%, THE HIGHER SHOULDER SHALL HAVE A SLOPE OF 4% OR 5% FOR PAVED AND UNPAVED SHOULDER RESPECTIVELY
10. IF THE SUPERELEVATION VARIES FROM 6% TO 8% (BEING THE MAXIMUM PERMITTED IN GEOMETRIC STANDARD FOR THE SECONDARY ROAD) THEN THE SLOPE OF THE HIGHER SHOULDER VARY FROM 4% TO 2%. THE aLGEBRAIC SUM OF THE SLOPES OF TRAVELLED WAY AND THE SHOULDER WHEN SUPERELEVATED SHALL ALWAYS BE EQUAL TO 10%
11. USE CASE 3 WHEN MINIMUM TANGENT BETWEEN CURVES IS GRATER THAN 2/3 (Lo + Lo)
12. NO HORIZONTAL CURVE IS REQUIRED WHEN THE INTERSECTION I (CENTRAL ANGLE) IS LESS THA ONE DEGREE (1°)



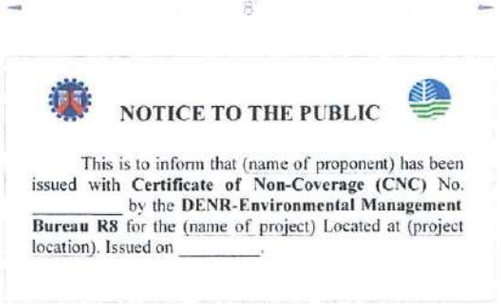
METHOD OF WIDENING

RADIUS (m)	DESIGN SPEED (KM/H)							COMMENTS
	40	50	60	70	80	100	120	
50	1.75							THE VALUE GIVEN IN THE TABLE ARE VALID FOR CARRIAGE WAY WIDTH OF 6.1 METERS
80	1.50	1.50						
100	1.50	1.50						FOR 7.00 METERS THE GIVEN VALUES ARE TO BE REDUCED BY 0.75 m AND 0.25 m RESPECTIVELY
125	1.25	1.25	1.25					
150	1.00	1.25	1.25					WHERE A SIGNIFICANT NUMBER OF SPECIALLY LARGE VEHICLES IS ENVISAGED EXTRA WIDENING MAY HAVE TO BE CONSIDERED
160	1.00	1.25	1.25	1.25				
200	0.75	0.75	1.00	1.00	1.25			VALUES LESS THAN 0.6 MAY BE DISREGARDED
250	0.75	0.75	1.00	1.00	1.00			
300	0.75	0.75	1.00	1.00	1.00			THE WIDENING IS ATTAINED LINEARLY OVER THE WHOLE SUPERELEVATION RUN OFF AND APPLIED ON THE INSIDE OF THE CURVE
400	50	0.75	0.75	0.75	1.00	1.00		
500	50	50	0.75	0.75	1.00	1.00		
600		50	50	0.75	0.75	1.00	1.00	
800			50	50	0.75	0.75	1.00	
1200				50	0.75	0.75	0.75	
1500	N.O. WIDENING				50	0.75	0.75	
1600						0.75	0.75	

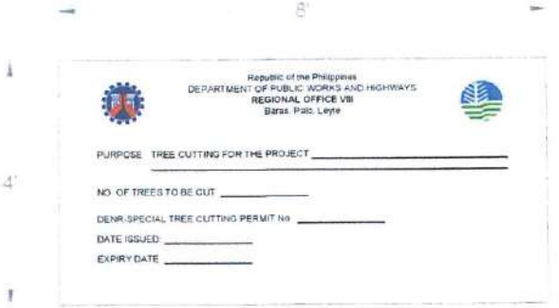
WIDENING OF CURVES

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (5000021LT) - K0005 + 941 - K0007 + 010	SHEET CONTENTS GEOMETRIC DESIGN STANDARD FOR HORIZONTAL (CIRCULAR CURVE) SUPERELEVATION, WIDENING	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. BACOS CHIEF, HIGHWAY DESIGN SECTION DATE	SUBMITTED AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. SONIA, DPA ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABAGON, CESO IV REGIONAL DIRECTOR DATE	SET NO A 13	SHEET NO 11 19

DPWH STANDARD PROJECT BILLBOARD

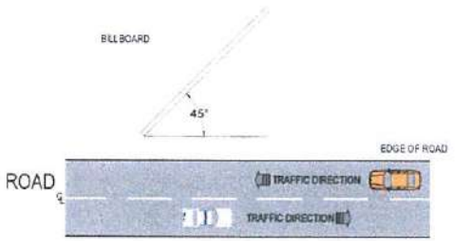


CNC BILLBOARD (4' x 8')



SPECIAL TREE CUTTING PERMIT BILLBOARD (4' x 8')

NOTE:
INSTALLATION OF BILLBOARD SHALL CONFORM WITH DEPARTMENT ORDER NO. 11 SERIES OF 2022 REVISED GUIDELINE ON THE INSTALLATION PROJECT BILLBOARDS



TYPICAL FRAME ELEVATION

FRONT ELEVATION (OPTION 1)

FRONT ELEVATION (OPTION 2)

BILLBOARD FRAME

(NOT TO SCALE, ALL DIMENSIONS ARE IN MILLIMETERS)

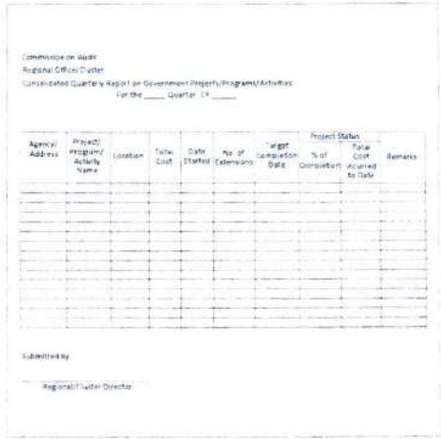
NOTE

1. THE NEW BILLBOARD DESIGN LAYOUT, DIMENSION AND LETTER SIZES ON WHITE BACKGROUND, AS SHOWN ON THE ATTACHED DRAWING, SHALL BE DEPICTED ON A STANDARD BILLBOARD MEASURING 1220mm X 2440mm (4ft. X 8ft.) USING 12.50mm ($\frac{1}{2}$ inch) THICK MARINE PLYWOOD OR TARPAULIN OF THE SAME SIZE POSTED ON 5mm ($\frac{3}{16}$ inch) MARINE PLYWOOD.
2. ALL EXISTING BILLBOARDS OF ON-GOING PROJECTS SHALL BE REPLACED WITH NEW ONE ADOPTING THE ABOVE GUIDELINES.
3. FOR EACH BUILDING PROJECT, THE BILLBOARD SHALL BE INSTALLED IN FRONT OF THE PROJECT SITE.
4. FOR EACH ROAD/BRIDGE/FLOOD CONTROL PROJECT, TWO BILLBOARDS SHALL BE INSTALLED, ONE AT THE BEGINNING AND ONE AT THE END OF THE PROJECT.
5. FOR ROAD PROJECTS WITH LENGTH OF 10 KILOMETER INTERVAL OR MORE, ADDITIONAL BILLBOARD SHALL ALSO BE INSTALLED AT EVERY 5-KILOMETER INTERVAL.
6. NAME(S) AND/OR PICTURE(S) OF ANY PERSONAGES SHOULD NOT APPEAR IN THE BILLBOARD.
7. NO OTHER BILLBOARDS SHALL BE ALLOWED TO BE INSTALLED 100 METERS BEFORE AND 100 METERS AFTER ALL DPWH PROJECTS AND IN-BETWEEN THE PROJECT LIMITS OR WITHIN THE ROAD RIGHT-OF-WAY.
8. DPWH CONTRACTORS SHALL NOT BE ALLOWED TO PLACE NAMES OF POLITICIANS OR CARRY POLITICAL BILLBOARD ON THEIR EQUIPMENT.

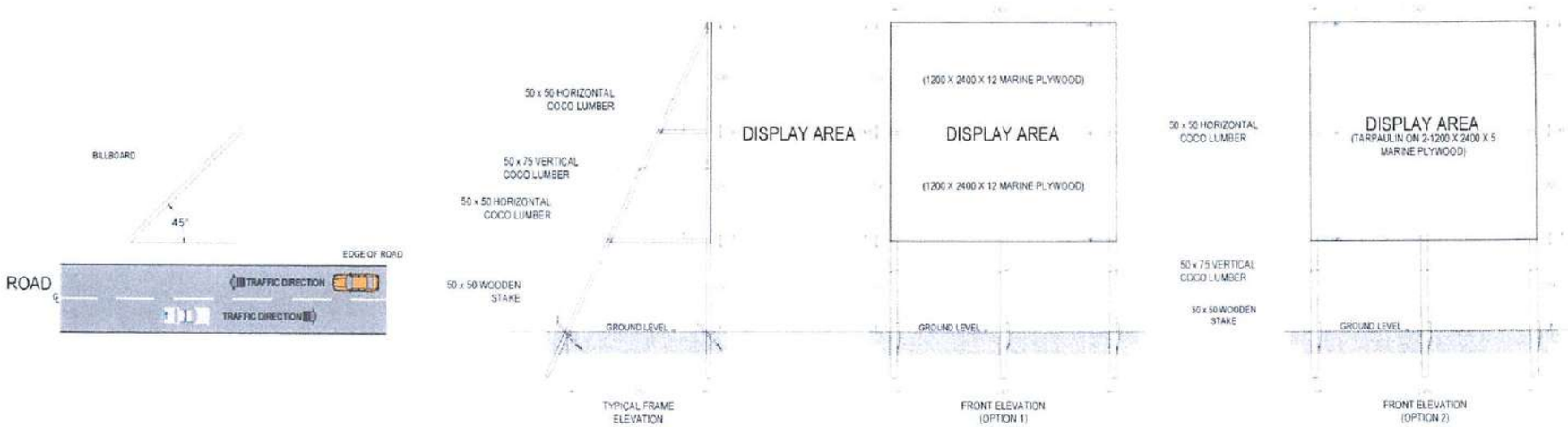
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S0000ZLT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS PROJECT BILLBOARD/SIGNBOARD	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED FELIX R. BACUS CHIEF HIGHWAYS DESIGN SECTION DATE	SUBMITTED AGNES E. BARONDA CHIEF PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. LONIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. 12 13	SHEET NO. 12 19

SPECIFICATIONS

Tarpaulin, white, 8 ft x 8 ft
Resolution : 70 dpi
Font : Helvetica
Font size : Main Information - 3"
Sub-Information - 1"
Font Color : Black



COA STANDARD PROJECT BILLBOARD



BILLBOARD FRAME

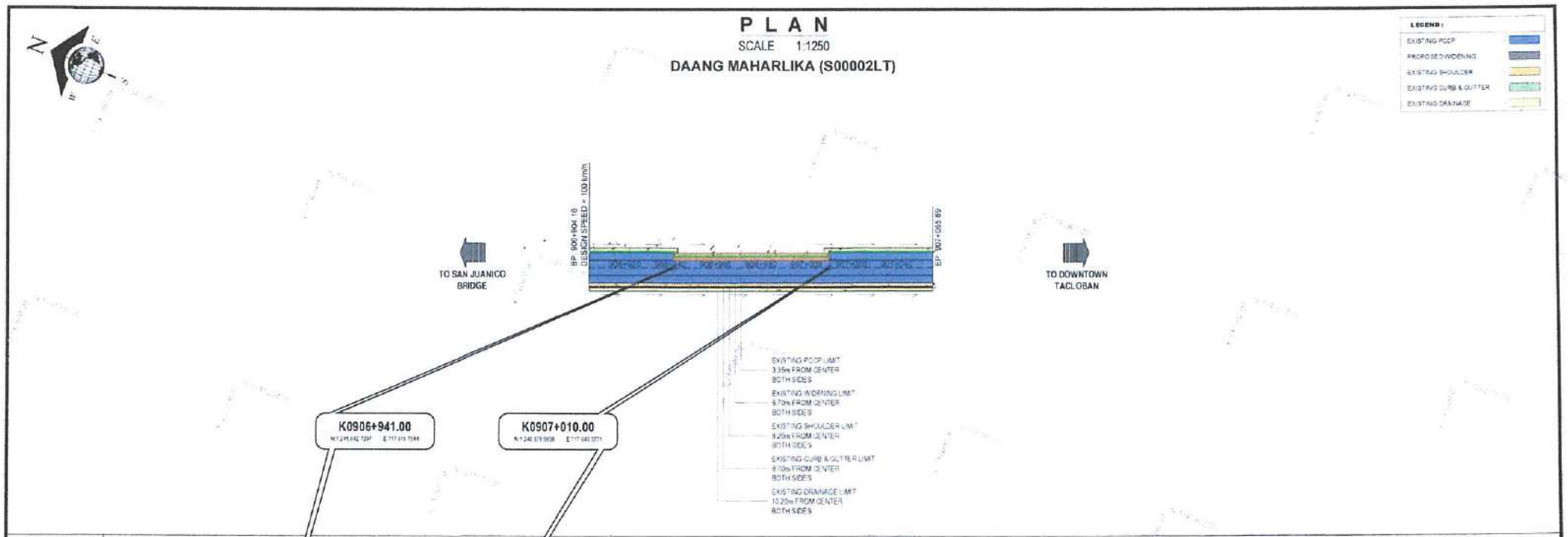
(NOT TO SCALE. ALL DIMENSIONS ARE IN MILLIMETERS)

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION: NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (500002LT) - K0906 + 941 - K0907 + 016	SHEET CONTENTS: PROJECT BILLBOARD/SIGNBOARD	PREPARED: RAMON ELMER E. MANAGBANAG ENGINEER I	REVIEWED: FELIX R. BINUS CHIEF HIGHWAY DESIGN SECTION DATE	SUBMITTED: AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED: MA. MARGARITA C. JUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED: EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. 13 19	SHEET NO. 13 19

PLAN

SCALE 1:1250

DAANG MAHARLIKA (S00002LT)



PROFILE

VERTICAL SCALE 1:125
HORIZONTAL SCALE 1:1250

STATION	906+900	906+920	906+940	906+960	906+980	907+000	907+020	907+040	907+060
FINISHED GRADE ELEVATION		67.10	67.13	67.11	67.12	67.11	67.16	67.19	
SUPERELEVATION	FOLLOW EXISTING SUPERELEVATION								
WIDENING DIAGRAM	FOLLOW EXISTING WIDENING								

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. VIII
BARAS, PALO, LEYTE

PROJECT NAME AND LOCATION: NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010

SHEET CONTENTS: PLAN AND PROFILE

PREPARED: RAMON ELMER E. MANAGBANAG, ENGINEER II

REVIEWED: FELIX R. BACUS, CHIEF HIGHWAYS DESIGN SECTION, DATE

SUBMITTED: AGNES M. BARONDA, CHIEF, PLANNING AND DESIGN DIVISION, DATE

RECOMMENDED: MA. MARGARITA C. JUNIA, CESO III, ASSISTANT REGIONAL DIRECTOR, DATE

APPROVED: EDGAR B. TABACON, CESO IV, REGIONAL DIRECTOR, DATE

SET NO: 6

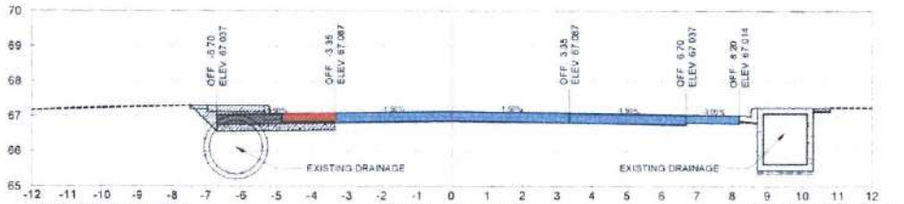
SHEET NO: 14 / 19

DETAILED CROSS SECTION

SCALE 1:100

LEGEND :

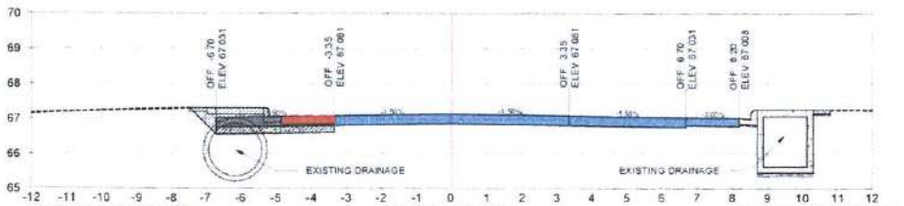
- Existing PCCP
- Proposed PCCP
- Proposed Shoulder
- Aggregate SubBase Course



NORTHING : 1,240,987.8656
EASTING : 717,641.6558

STATION : 907+000.00
FGE : 67.11

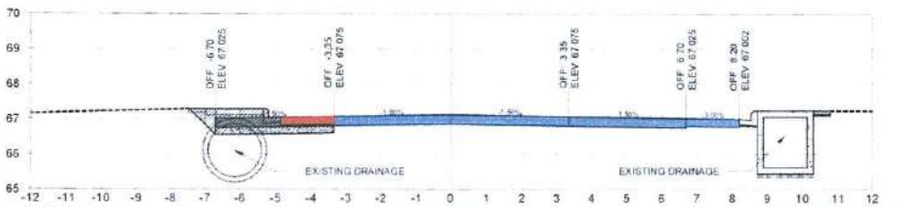
CUT AREA : 1.93 (L/S ONLY)



NORTHING : 1,241,006.4292
EASTING : 717,634.2131

STATION : 906+980.00
FGE : 67.17

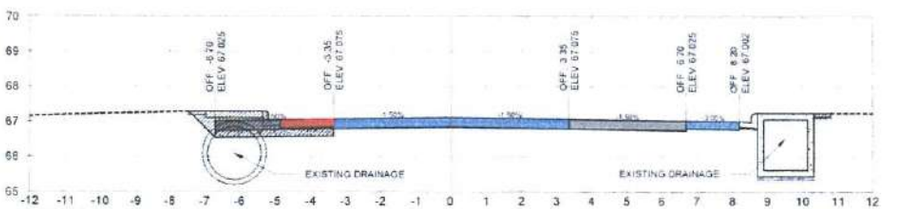
CUT AREA : 1.93 (L/S ONLY)



NORTHING : 1,241,024.9927
EASTING : 717,626.7704

STATION : 906+960.00
FGE : 67.11

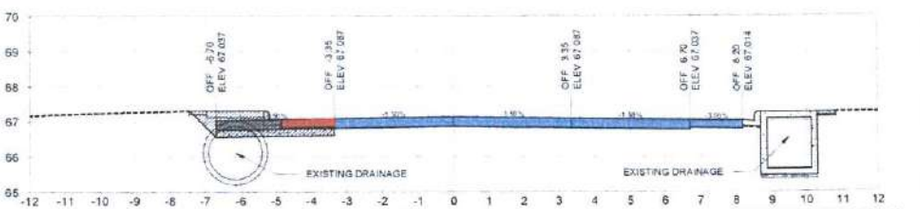
CUT AREA : 1.93 (L/S ONLY)



NORTHING : 1,241,042.7297
EASTING : 717,619.7044

STATION : 906+941.00
FGE : 67.13

CUT AREA : 1.93 (L/S ONLY)



NORTHING : 1,240,978.5838
EASTING : 717,645.3771

STATION : 907+010.00
FGE : 67.11

CUT AREA : 1.93 (L/S ONLY)

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, RAD LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S0002LT) - K0906 + 541 - K0907 + 010	SHEET CONTENTS DETAILED CROSS SECTION	PREPARED RAMON ELMER E. MANAGBANAG ENGINEER I	REVIEWED FELIX R. BACOS CHIEF, HIGHWAY DESIGN SECTION DATE	SUBMITTED AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. JUNIA, CPA ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. 1 of 1	SHEET NO. 15 19

SOURCE MAP

NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010

TACLOBAN CITY LD

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION: NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (S00002LT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS: SOURCE MAP	PREPARED: RAMON ELMER E. MANAGBANAG ENGINEER II	REVIEWED: FELIX R. BACUS CHIEF HIGHWAY DESIGN SECTION DATE	SUBMITTED: AGNES M. BARONDA CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDED: MA. MARGARITA C. JUNIA, D.M. ASSISTANT REGIONAL DIRECTOR DATE	APPROVED: EDGAR B. TABACON, CESO IV REGIONAL DIRECTOR DATE	SET NO. D	SHEET NO. 16 19

SITE CONDITION:

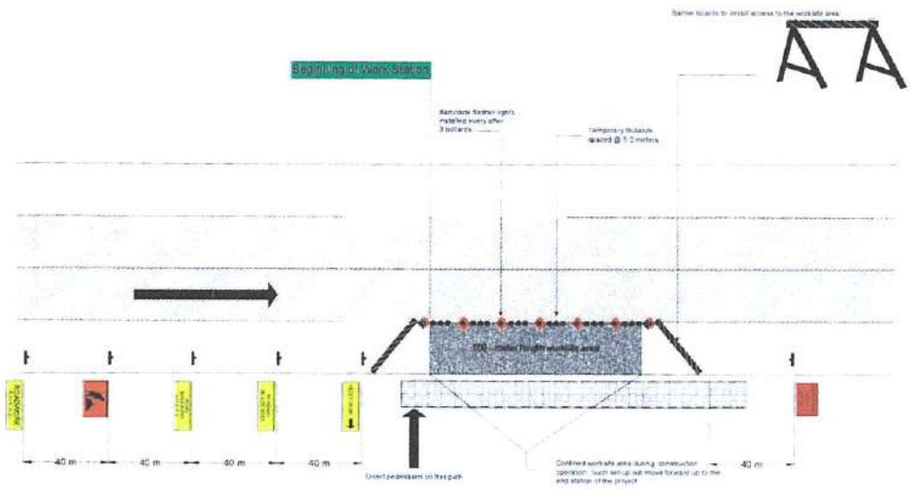
A PROPOSED 1.565 KILOMETER CONTINUOUS ROAD RECONSTRUCTION WORK HAS THE FOLLOWING ROAD CONSTRUCTION AND TRAFFIC CONDITIONS TO BE CONSIDERED

ROAD LOCATION	RURAL AREA
DIRECTION OF THE TRAFFIC	TWO WAY TRAFFIC
NUMBER OF TRAFFIC	TWO LANES
MAXIMUM SPEED OF VEHICLES	4 KPH (LOW SPEED)
DESIGN STRENGTH OF CONCRETE FOR THE PCCP	14-DAYS CONCRETE (7 DAYS CURING PERIOD)

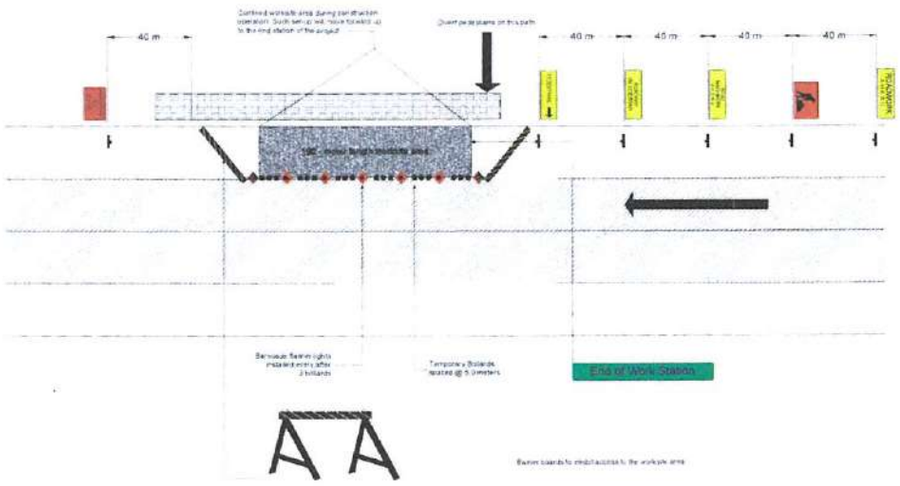
PROPOSED TRAFFIC MANAGEMENT LAYOUT

IN THIS CONDITION, EACH SERIES OF ROADWAY SET-UP OR LAYOUT IS PLANNED TO BE 100 meter IN LENGTH FOR WIDENING. TO FACILITATE THE COMPLETION OF WORKS, 3 SET-UPS ARE PROPOSED TO BE UNDERTAKEN PERFORMING PARALLEL WORKS.

ILLUSTRATED BELOW IS THE PROPOSED TRAFFIC MANAGEMENT SCHEME WITH THREE SET-UPS OPERATING ON OPPOSITE ENDS OF THE STRETCH OF THE ROAD TO BE RECONSTRUCTED. THE TWO GROUPS WILL BE MOVING FORWARD TO MEET AT THE CENTER UNTIL THE WORKS IN ONE LANE ARE COMPLETED.



SET - UP 1 (OPERATING AT ONE END)



SET - UP 2 (OPERATING AT OTHER END)

LAYOUT FOR ROAD WIDENING

NOT TO SCALE

TRAFFIC MANAGEMENT PLAN

NOT TO SCALE

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. VIII BARAS, PALO, LEYTE	PROJECT NAME AND LOCATION NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (500002LT) - K0906 + 941 - K0907 + 010	SHEET CONTENTS TRAFFIC MANAGEMENT PLAN (FOR WIDENING)	PREPARED JOEL PAULO C. AVORQUE, ENGINEER II DATE	REVIEWED FELIX R. BACUS, CHIEF HIGHWAY DESIGN SECTION DATE	SUBMITTED AGNES M. BARONDA, CHIEF PLANNING AND DESIGN DIVISION DATE	RECOMMENDED MA. MARGARITA C. JUNIA, CESO III, ASSISTANT REGIONAL DIRECTOR DATE	APPROVED EDGAR B. TABACON, CESO III, REGIONAL DIRECTOR DATE	SET NO. E 3	SHEET NO. 17 19

ROAD WORK SITE TEMPORARY SIGNAGE		SIGNAGE DESCRIPTION			
		Sign No.	Size (mm) (Width X Height)	Letters/Symbols	Background
ADVANCE WARNING SIGNS					
ROADWORK AHEAD	ROADWORK AHEAD (T1-1, T1-31)	T1-1	1800 x 600	Line 1- Black 200 DM Line 2- Black 160 DM	Yellow Reflectorized
ROAD MACHINERY AHEAD	ROAD MACHINERY AHEAD (T1-3)	T1-3	1200 x 600	Line 1- Black 160 EM Line 2- Black 120 DM Line 3- Black 160 EM	Yellow Reflectorized
	WORKMEN AHEAD (Symbolic) (T1-5)	T1-5	900 x 600	Black	Red / Orange Fluorescent for day use (Short Term) Reflectorized for night use (Long Term)
ROADWORK ON SIDE ROAD	ROADWORK ON SIDE ROAD (T1-25)	T1-25	1800 x 600	Line 1- Black 160 EN Line 2- Black 160 DN	Yellow Reflectorized
END ROADWORK	END ROADWORK (T2-16, T2-17)	T2-19	1800 x 600	Line 1- Black 200 DM Line 2- Black 160 DM	Yellow Reflectorized
REGULATORY SIGNS					
PREPARE TO STOP	PREPARE TO STOP (T1-18)	T1-18	900 x 600	Line 1- White 120 DM Line 2- White 120 DM Line 3- White 120 EM Reflectorized	Red Reflectorized
40	SPEED RESTRICTION (R4-1)	R4-1	600 x 600 (size B)	Black 240 DN Circle - 600 dia. Red	White Reflectorized Red circle Reflectorized
	END SPEED RESTRICTION (R4-1Z, R4-2) De-restriction	R4-2	600 x 600 (size B)	Symbol - 600 dia. Black	White Reflectorized
SIGNS FOR PEDESTRIAN CONTROL					
PEDESTRIANS / PEDESTRIANS	PEDESTRIANS (T8-2 L or R)	T8-2 L or R	1200 X 300 Type C-2	Black 160 CM Arrow 140	Yellow Reflectorized

CONSTRUCTION OF SAFETY AND HEALTH

PURSUANT TO DPWH D. O. NO. 56 SERIES OF 2005 AND IN CONSONANCE WITH DOLE D.O. NO. 13, SERIES OF 1998, GUIDELINES ARE SET COVERING OCCUPATIONAL SAFETY AND HEALTH IN CONSTRUCTION INDUSTRY.

THE CONTRACTOR IS REQUIRED TO FORM A SAFETY AND HEALTH COMMITTE TO LOOK FOR THE GENERAL WELFARE OF THE WORKERS THROUGH THE IMPLEMENTATION PERIOD OF THE PROJECT. THE HEALTH AND SAFETY COMMITTEE MUST BE COMPOSED OF CHAIRMAN (DESIGNATED BY THE CONTRACTOR) LICENSED/ACCREDITED PART TIME SAFETY PRACTITIONER, ACCREDITED FIRST AIDER AND MEMBERS (PROBABLY ALL WORKERS).

PRIOR TO START OF PROJECT, THE COMMITTEE WILL SET A MEETING TO TACKLE THE SAFETY AND HEALTH PROGRAM SET FORTH IN THIS PARTICULAR PROJECT RULES AND REGULATION ARE ALSO EXPLAINED AND ITS CORRESPONDING CONSEQUENCES SHOULD THERE BE VIOLATION.

THE CONTRACTOR IS REQUIRED TO PROVIDE THE FOLLOWING:

1. BUNK HOUSE WITH COMFORT ROOM
2. LIGHTS AND POTABLE WATER
3. MEDICAL SPACE FOR FIRST AIDE TREATMENT
4. MEDICAL SUPPLY (FIRST AIDE TREATMENT)
5. PERSONAL PROTECTIVE EQUIPMENT
6. SAFETY SIGNAGES
7. BODEGA FOR MATERIALS STOCK FILLING
8. HEAVY EQUIPMENT IN GOOD CONDITION

AS A PART OF SAFETY REQUIREMENTS, COMPETENT HEAVY EQUIPMENT OPERATOR IS REQUIRED AND MUST BE TESDA ACCREDITED.

PERSONAL PROTECTIVE EQUIPMENT

SAFETY SHOES

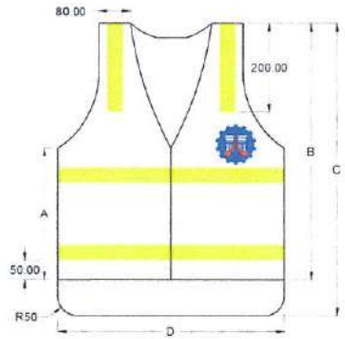
SAFETY GLOVES

SAFETY BOOTS

SAFETY HELMET

TRAFFIC SAFETY VEST

SAFETY VEST SHOULD BE:
- WORN AT ALL TIMES WHILE WORKING ON OR NEAR THE ROADWAY
- PROPERLY FASTENED
- CLEAN AND IN GOOD CONDITION



FRONT

BACK

	A	B	C	D
MEDIUM	280	600	750	580
LARGE	295	625	775	610
EXTRA LARGE	310	650	800	640

FABRIC

1.) A KNITTED ACRYLIC FABRIC ; OR
2.) A WOVEN NYLON MESH

PETRO-REFLECTIVE MATERIALS

1.) SHALL BE 50mm WIDE OF FLUORESCENT
2.) 2 HORIZONTAL STRIPS ON THE FRONT
3.) 3 HORIZONTAL STRIPS ON THE BACK

ZIP

1.) THE ZIP IS TO BE FITTED TO THE FRONT OF THE GARMENT WITH THE ZIP OPENING AT THE BOTTOM OF THE GARMENT

LOGO

1.) SAFETY VEST WORN BY DPWH PERSONNEL HAVE A DPWH LOGO OF APPROXIMATELY 80mm DIAMETER.

SAFETY AND HEALTH MARKER

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. VIII
BARAS, PALO, LEYTE

PROJECT NAME AND LOCATION	SHEET CONTENTS	PREPARED	REVIEWED	SUBMITTED	RECOMMENDED	APPROVED	SET NO	SHEET NO
NETWORK DEVELOPMENT - ROAD WIDENING - PRIMARY ROADS - DAANG MAHARLIKA (SO000ZLT) - K0506 + 541 - K0907 + 019	ROAD WORK SITE TEMPORARY SIGNAGE & CONSTRUCTION OF SAFETY & HEALTH	JOEL PAUL E. AMORQUE, ENGINEER II DATE	FELIX R. BACUS, CHIEF, HIGHWAY DESIGN SECTION DATE	AGNES M. BARONDA, CHIEF, PLANNING AND DESIGN DIVISION DATE	MA. MARGARITA C. JUNIA, O.M., ASSISTANT REGIONAL DIRECTOR DATE	EDGAR B. TABACON, CESO IV, REGIONAL DIRECTOR DATE	E 3 3	19 19