



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
NATIONAL CAPITAL REGION
NORTH MANILA DISTRICT ENGINEERING OFFICE
OFFICE OF THE DISTRICT ENGINEER
Nagtahan, Sta. Mesa, Manila

C.Y. 2025 PROJECT
DETAILED ENGINEERING DESIGN PLAN FOR
PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00

SECTION :
LOCATION : TONDO, MANILA
STATION LIMIT : K0007 + 473.00 - K0007 + 945.00
NET LENGTH : 472.00 L.M.
ROAD SECTION/ BRIDGE I.D. :

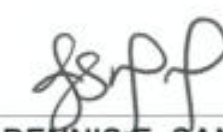
SUBMITTED:


ARLENE S. MENDOZA
OIC - CHIEF, PLANNING AND DESIGN SECTION
DATE:

RECOMMENDED:


DENRYL CAESAR S. CORTUNA
ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED:


DENNIS E. SANDOVAL
DISTRICT ENGINEER
DATE:

GENERAL NOTES

1. STANDARD SPECIFICATION:

ALL WORKS SHALL COMPLY WITH DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS REVISED 2013 SPECIAL PROVISION AND SUPPLEMENTAL SPECIFICATIONS PERTAINING TO THIS PROJECT, CONDITIONS OF THE CONTRACT (NTL) FOR WORKS OF CIVIL ENGINEERS CONSTRUCTION, 2ND EDITION, PREPARED BY F.I.D.I.C. SHALL ALSO GOVERN.

2. DIMENSIONS

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS WHICH INCLUDE STATIONING, DISTANCES BETWEEN CONTROL POINTS AND ELEVATIONS ARE MEASURED IN METERS.

3. ALIGNMENT AND GRADE

NO ALTERATION OR CHANGE IN ALIGNMENT AND GRADE SHALL BE MADE UNLESS EXISTING FIELD CONDITION SO WARRANT AND ONLY UPON WRITTEN ORDER BY THE ENGINEERS AND APPROVED BY THE PROPER AUTHORITY CONCERNED.

4. REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS.

a) ALL WORKS SHALL COMPLY WITH CLAUSE 10 "REQUIREMENTS AND CONDITIONS OF CONTRACTS", VOLUME 1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS AND HIGHWAYS, 2013.

b) PORTION OF EXISTING UTILITIES, SUCH AS WATER MAINS, IRRIGATION CHANNELS, TELEPHONE POST AND TRUNK LINES ETC., THAT MAY CAUSE OBSTRUCTIONS TO THE CONSTRUCTIONS OF THIS PROJECT SHALL BE RELOCATED BY THE ENTITY OR OWNER CONCERNED. EXTREME PRECAUTIONS SHALL BE EXERCISED. DAMAGED THEREOF SHALL BE TO THE ACCOUNT OF THE CONTRACTOR.

5. SURFACE COURSES

A. BITUMINOUS TACK COAT
BITUMINOUS MATERIAL FOR TACK COAT SHALL BE EITHER RAPID CURRING (RC) CUT-BACK EMULSIFIED ASPHALT. IT SHALL CONFORM TO THE REQUIREMENTS OF ITEM 702. BITUMINOUS MATERIAL TACK COAT SHALL BE APPLIED ONLY TO SURFACES WHICH ARE DRY OR SLIGHTLY MOIST. NO TACK COAT SHALL BE APPLIED WHEN THE WEATHER IS FOGGY OR RAINY. THE LIQUID BITUMINOUS MATERIAL SHALL BE SPRAYED BY MEANS OF PRESSURE DISTRIBUTOR OF NOT LESS THAN 1000 LITERS CAPACITY, MOUNTED ON PNEUMATIC TIRES OF SUCH WIDTH AND NUMBER THAT THE LOAD PRODUCED ON THE ROAD SURFACE WILL NOT EXCEED 1 kN (100kg) PER CM WIDTH OF TIRE, IMMEDIATELY BEFORE APPLYING THE TACK COAT. THE FULL WIDTH OF THE SURFACE TO BE TREATED SHALL BE CLEANED OF LOOSE AND FOREIGN MATERIALS BY MEANS OF A POWER BROOM OR POWER BLOWER, SUPPLEMENTED AS NECESSARY BY HAND SWEEPING. THE RATE OF APPLICATION SHALL BE WITHIN THE RANGE OF 0.20 TO 0.70 LITER / SQ. M. THE EXACT RATE AS DETERMINED BY THE ENGINEER. ANY EXCESS SHALL BE SLOTTED BY SAND OR REMOVED. TRAFFIC SHALL BE KEPT OFF THE COAT AT ALL TIMES.

B. BITUMINOUS CONCRETE SURFACE COURSE (HOT LAID) BITUMINOUS MATERIAL SHALL BE EITHER MEDIUM CURRING (MC) CUT-BACK ASPHALT OR ASPHALT CEMENT. IT SHALL CONFORM TO THE REQUIREMENT OF ITEM 702. BITUMINOUS MATERIALS, THE PENETRATION GRADE TYPE AND GRADE OF BITUMINOUS MATERIAL ON THE BASIS OF TOTAL DRY AGGREGATE SHALL BE FROM 5.5 TO 8.0 MASS PERCENT. THE EXACT PERCENTAGE TO BE USED SHALL BE FIXED BY THE ENGINEER IN ACCORDANCE WITH THE JOB-MIX FORMULA AND OTHER QUALITY CONTROL REQUIREMENTS. THE BITUMINOUS PLANT MIX SHALL NOT BE ON ANY WET SURFACE, OR WHEN WEATHER CONDITION WOULD PREVENT THE HANDLING OR FINISHING OF THE BITUMINOUS MIXTURE. THE BITUMINOUS PAVERS SHALL BE SELF-CONTAINED, POWER-PROPELLED UNITS, PROVIDED WITH AN ADJUSTABLE ACTIVATED, SCREED OR STRIKE-OFF ASSEMBLY HEATED IF NECESSARY, CAPABLE OF SPREADING AND FINISHING COURSES OF BITUMINOUS PLANT MIX MATERIAL IN LANE WIDTHS APPLICABLE TO THE SPECIFIED TYPICAL SECTION AND THICKNESS SHOWN ON THE PLAN. THE ROLLERS SHALL BE OF THE STEEL AND / OR PNEUMATIC TIRE TYPE AND SHALL BE IN GOOD CONDITION, CAPABLE OF REVERSING WITHOUT BACKLASH, AND SHALL BE OPERATED AT SPEEDS SLOW ENOUGH TO AVOID DISPLACEMENT OF THE BITUMINOUS MIXTURE. THE NUMBER AND WEIGHT OF ROLLERS SHALL BE SUFFICIENT TO COMPACT THE MIXTURE TO THE REQUIREMENT DENSITY WHILE IT IS STILL IN A WORKABLE CONDITION. THE USE OF EQUIPMENT WHICH RESULT IN EXCESSIVE CRUSHING OF THE AGGREGATE WILL NOT BE PERMITTED.

6. CONSTRUCTION STAKES

a) THE CONTRACTOR WILL BE RESPONSIBLE FOR TRUE AND PROPER SETTING-OUT OF THE WORK OR IMPROVEMENT AND FOR CORRECTNESS OF POSITION, LEVEL, SLOPE AND CONTINUOUS PROFILE GRADE IN ROAD WORK. HE WILL SET CONSTRUCTION STAKES, ESTABLISHING LINES, SLOPE AND CONTINUOUS PROFILE WORK AND OTHER LINE AND BENCH MARK FOR BRIDGE WORK, GRADE IN ROAD PROTECTIVE AND NECESSARY STRUCTURES AND APPURTENANCES CULVERT WORK, AS ARE DEEMED NECESSARY FROM THE REFERENCE DATUM TO BE FURNISHED BY THE ENGINEER IN WRITING.

b) THE CHECKING OF CONSTRUCTION STAKES BY THE ENGINEER SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR THE CORRECTNESS THEREOF AND THE CONTRACTOR SHALL CAREFULLY PROTECT AND PRESERVE ALL BENCH MARK, PEGS AND OTHER THINGS USED IN SETTING-OUT THE WORK.

c) IN THE CASE OF "CHANGES" OR CHANGE IN CONDITION WHICH INVOLVES ANY CHANGES IN STAKE-OUT, THE CONTRACTOR SHALL COOPERATE WITH THE ENGINEER AND FACILITATE THE PROMPT RE-ESTABLISHMENT OF THE FIELD CONTOUR FOR THE ALTERNATIVE OF ADJUSTED WORK.

7. STANDARD DRAWING

THE NECESSARY DRAWING CONTAINED IN THE DPWH STANDARD FOR ROAD SHALL BE UTILIZED FOR THE PROJECT UNLESS OTHERWISE MORE DETAILED.

8. QUANTITY

QUANTITY OF VARIOUS WORK ITEM INVOLVED ARE SUBJECT TO DECREASE OR INCREASE DEPENDING ON THE ACTUAL FIELD CONDITION.

BILL OF QUANTITIES

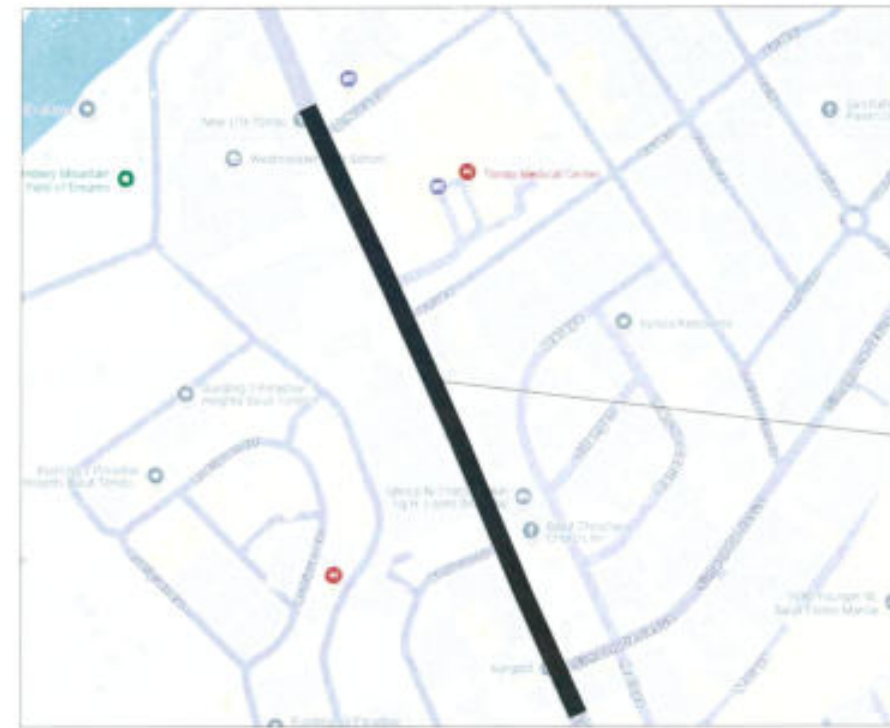
ITEM NO.	DESCRIPTION	QTY.	UNIT
PART A FACILITIES FOR THE ENGINEER			
A.1.1 (3)	Construction of Field Office for the Engineer	1.00	l.s.
PART B OTHER GENERAL REQUIREMENTS			
B.5	Project Billboard/ Signboard (DPWH Billboard)	2.00	each
B.5	Project Billboard/ Signboard (COA Billboard)	2.00	each
B.7 (2)	Occupational Safety and Health Program	1.00	l.s.
B.8 (2)	Traffic Management	1.00	l.s.
B.9	Mobilization/ Demobilization	1.00	l.s.
PART C EARTHWORK			
101(1)	Removal of Structures and Obstruction	1.00	l.s.
101(3)b6	Removal of Actual Structures / Obstruction (PCCP, Unreinforced, 0.30m thk)	2,070.00	sq.m
PART D SUBBASE AND BASE COURSE			
200(1)	Aggregate Subbase Course	103.50	cu.m
PART E SURFACE COURSES			
302(2)	Emulsified Asphalt	14,969.50	sq.m
310(1)c	Bituminous Concrete Surface Wearing Course, Hot Laid (50mm)	7,439.10	sq.m
310(2)c	Bituminous Concrete Surface Binder Course, Hot Laid (50mm)	7,484.70	sq.m
311(1)f3	Portland Cement Concrete Pavement (Unreinforced) (0.30m thick, 3 days)	2,070.00	sq.m
PART G DRAINAGE AND SLOPE PROTECTION STRUCTURES			
502(4)a3	Concrete Covers (910mm dia.)	99.00	each
PART H MISCELLANEOUS STRUCTURES			
612(1)	Reflectorized Thermoplastic Pavement Markings White	160.60	sq.m

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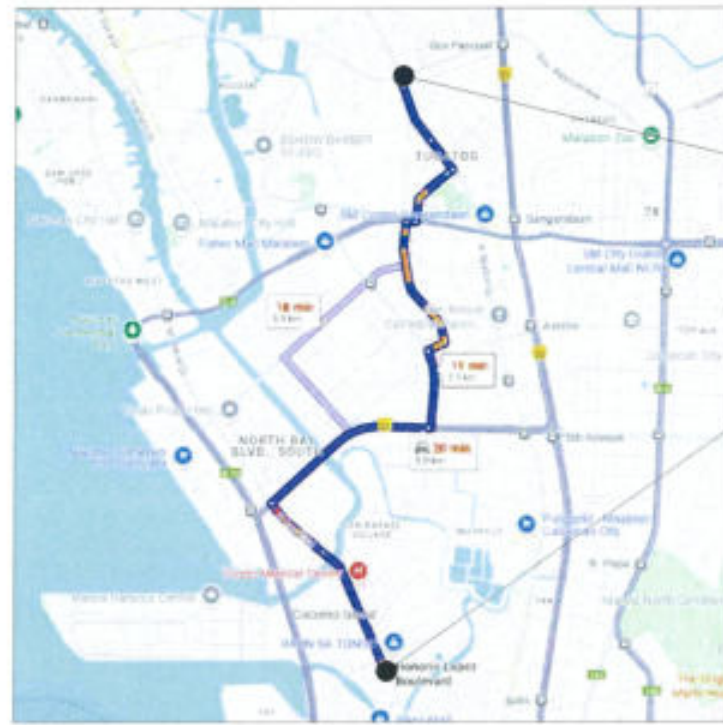
1
3 SCALE NTS
TOPOGRAPHIC MAP



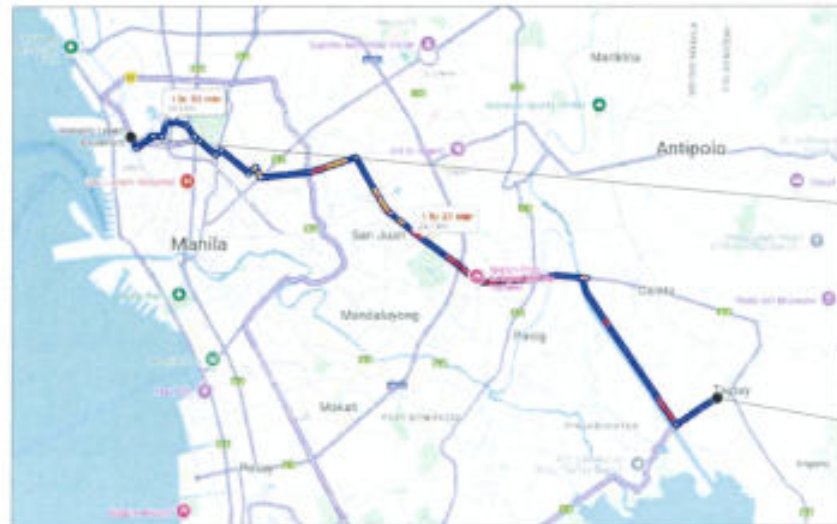
2
3 SCALE NTS
LOCATION MAP



3
3 SCALE NTS
VICINITY MAP



1
4 SCALE NTS
SITE DISPOSAL MAP



2
4 SCALE NTS
SOURCE MAP

BENCHMARK

BM GM-5B IS IN TONDO, MANILA, AT THE INTERSECTION OF MORIONES AND STA. MARIA STREET, ON TOP OF THE S PORTION OF THE FIRST CONCRETE STEP OF THE STAIRWAY LEADING TO THE BANDSTAND, 0.21 METER ABOVE THE STREET MARK IS A 5/8-INCH DIAMETER BRASS ROD EMBEDDED IN THE STEP AND PROTRUDING ABOUT 5MM. FROM WASHOUT SURFACE

LEGEND

- PRIMARY ROADS
- SECONDARY ROADS
- TERTIARY ROADS



3
4 SCALE NTS
CONTOUR MAP



4
4 SCALE NTS
ROAD NETWORK DIAGRAM

Administrative Boundary		Encircling Features	
Provincial Boundary	—	Wall / Fence	—
City and Municipal Boundary	—	Buildings	
Approximate Barangay Boundary	—	Independent Building (More than 13m in Height)	25' 24'
Roads		Other Independent Building / Houses	
Highway	—	Abandoned House	—
Toll Gate	—	Landmarks	
More than 2.0m in Width	—	Monument	—
Road Under Construction	—	Water Tank	—
Less than 2.0m in Width	—	Storage Tank	—
Footpath	—	Radio Tower	Radio
Sidewalk	—	Tower	—
Road Island	—	Power Transmission Line	—
Bridge / Grade Separation (More than 2.0m in Width)	—	Power Plant Sub-Station	—
Bridge (Less than 2.0m in Width)	—	Lighthouse	—
Pedestrian Overpass	—	Airport / Airfield	—
Road Underpass	—	Aero Beacon	—
Road Underpass (Culvert)	—	Gas Station	—
Route Marker (National / Provincial)	—	Helipad	—
Railways		Water Supply Sewerage	—
Railway (Single Track / Double Track)	—	Pipeline	—
Railway Under Construction	—	Control Points	
Bridge / Grade Separation	—	Horizontal Control Station	PMG-1
Railway Underpass	—	Control Point	155.95
Railway Underpass (Culvert)	—	Bench Mark	4.241
Railway Station	—	Direct Leveling Point	37.2
Water Area		Spot Height by Photogrammetry	69.0
More than 2.0m in Width	—	Land Use	
Less than 2.0m in Width	—	Railway	Military
Indefinite (More than 2.0m in Width)	—	Cemetery	Cem
Indefinite (Less than 2.0m in Width)	—	Park	Park
Channel / Causeway (More than 2.0m in Width)	—	Vegetation Boundary	—
Channel / Causeway (Less than 2.0m in Width)	—	Boundary of Cultivated Area	—
Lake / Pond / Shoreline	—	Broad Leaf Tree (Area)	—
Falls	—	Broad Leaf Tree	—
Weir	—	Grass Field	—
Dam	—	Swamp / Marsh	—
Slipway	—	Coconut	—
Flood Gate	—	Paddy Field	—
Flow Arrow	—	Upland Field	—
Pier / Jetty	—	Decid	—
Breakwater	—	Mangrove	—
Fishpen	—	—	—
Wreck	—	Contours	
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Face of Slope		Intermediate Contour	—
Concrete Retention	—	Supplementary Contour	—
		Depression	—

GENERAL NOTES

1.0 DESIGN STANDARDS:

- THE FOLLOWING STANDARDS ARE BASICALLY APPLIED FOR THIS PROJECT:
- DPWH DESIGN GUIDELINES, CRITERIA AND STANDARDS (DCCS) VOLUME 4 2015 EDITION
 - ASHTO A POLICY ON GEOMETRIC DESIGN STANDARD OF HIGHWAYS AND STREETS, 2011, 6TH EDITION
 - AASHTO GUIDE ON PAVEMENT DESIGN, 1993 EDITION
 - HIGHWAY SAFETY DESIGN STANDARD - PART 1 - ROAD SAFETY DESIGN, AND PART 2 - ROAD SIGNS AND PAVEMENT MARKINGS, 2012 EDITION

1.1 DIMENSIONS

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS WHICH INCLUDE STATIONING, DISTANCES BETWEEN CONTROL POINTS AND ELEVATIONS ARE MEASURED IN METERS.

1.2 ALIGNMENT AND GRADE

NO ALTERATION OR CHANGE IN ALIGNMENT AND GRADE SHALL BE MADE UNLESS EXISTING FIELD CONDITION SO WARRANT AND ONLY UPON WRITTEN ORDER BY THE ENGINEER AND APPROVED BY THE PROPER AUTHORITY CONCERNED.

2.0 DESIGN SPECIFICATION

A. GEOMETRIC DESIGN CRITERIA

THE APPLIED GEOMETRIC DESIGN CRITERIA FOR THIS PROJECT ARE SHOWN BELOW:
ROAD CLASSIFICATION:
LOCATION AREA:
TOTAL LENGTH:

EXISTING ROAD GEOMETRIC CRITERIA	
CARRIAGEWAY WIDTH (m)	
SIDEWALK WIDTH (m)	
SURFACE TYPE (m)	ACP (I) = _____ mm (Bk) PCDP (I) = _____ mm (Bk)

B. PAVEMENT DESIGN CRITERIA

THE PAVEMENT DESIGN ANALYSIS WAS BASED ON ASHTO GUIDELINES FOR DESIGN OF PAVEMENT STRUCTURES 1993.

C. DESIGN CONSIDERATION

IN DETERMINATION THE DESIGN THICKNESS OF RIGID PAVEMENT STRUCTURE TH FOLLOWING DESIGN INPUTS ARE STRUCTURES 1993.

C.1 ROADBED SOIL

- RESILIENT MODULES OF SUBGRADE (MR)
- MODULUS SUBGRADE REACTION (k)
- COMPOSITE MODULUS OF SUBGRADE REACTION (k)

C.2 DESIGN TRAFFIC LOAD (W₁₈)

C.3 RELIABILITY, R-TABLE 4

C.4 DESIGN SERVICEABILITY LOSS (ASPI)

C.5 DRAINAGE COEFFICIENT (C_d)

C.6 LOAD TRANSFER COEFFICIENT (J)

C.7 OVERALL STANDARD DEVIATION (S)

C.8 CONCRETE MODULUS OF RUPTURE (S)

C.9 CONCRETE MODULUS OF ELASTICITY (E)

D. PAVEMENT DESIGN CALCULATION

CALCULATION RESULTS OR PCDP THICKNESS PCDP THICKNESS IS CALCULATED USING FORMULA

E. DESIGN FORMULA

THE BASIS EQUATIONS DEVELOPED BY ASHTO FOR RIGID PAVEMENTS ARE IN THE SAME FORM AS THOSE FOR FLEXIBLE PAVEMENTS BUT WITH THE DIFFERENT VALUES FOR THE REGRESSION CONSTANT

$$\log(W_{18}) = [Z^2 \times S^2 \times 7.35 \times \log((D+1) \times 0.06 + \log((\Delta PSI) \times (4.5 - 1.5) \times (4.22 - 0.32 P) \times \log(S \times C_d \times (D+1)^{1.32}) \times 215.63 \times J \times D)^{-1}) - 18.42] \times 1.824 \times 10^3 \times (D+1)^{-1}$$

WHERE:

- W₁₈ = PREDICTED NUMBER OF 18-KIP EQUIVALENT SINGLE AXLE LOAD APPLICATIONS.
Z₁₈ = STANDARD NORMAL DEViate
S₁₈ = COMBINED STANDARD ERROR OF THE TRAFFIC PREDICTION AND PERFORMANCE PREDICTION
D = THICKNESS (INCHES) OF PAVEMENT SLAB
ΔPSI = DIFFERENCE BETWEEN THE INITIAL DESIGN SERVICEABILITY INDEX, P AND THE DESIGN TERMINAL SERVICEABILITY INDEX.
S₁₈ = MODULUS OF RUPTURE (psi) FOR PORTLAND CEMENT CONCRETE USED ON A SPECIFIC PROJECT.
J = LOAD TRANSFER COEFFICIENT USED TO ADJUST FOR LOAD TRANSFER CHARACTERISTIC OF A SPECIFIC DESIGN.
C_d = DRAINAGE COEFFICIENT
E = MODULUS OF ELASTICITY (psi) FOR PORTLAND CEMENT CONCRETE.
k = MODULUS OF SUBGRADE REACTION (psi)

(SOURCE: AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURE 1993)

PAVEMENT DESIGN PARAMETERS

W ₁₈ = PREDICTED NUMBER OF 18-KIP EQUIVALENT SINGLE AXLE LOAD APPLICATIONS	
Z ₁₈ = STANDARD NORMAL DEViate	
S ₁₈ = COMBINED STANDARD ERROR OF THE TRAFFIC PREDICTION AND PERFORMANCE PREDICTION	
D = THICKNESS (INCHES) OF PAVEMENT SLAB	
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C _d = DRAINAGE COEFFICIENT	
E = MODULUS OF ELASTICITY (psi) FOR PORTLAND CEMENT CONCRETE	
k = MODULUS OF SUBGRADE REACTION (psi)	

DRAINAGE DESIGN CRITERIA

DRAINAGE DESIGN CRITERIA	
HYDROLOGY DESIGN	
DRAINAGE AREA	
TIME CONCENTRATION (MIN)	
RAINFALL INTENSITY (mm/hr) 10yr. RETURN PERIOD	
RAINFALL INTENSITY (mm/hr) 15yr. RETURN PERIOD	
DESIGN DISCHARGE 15 YRS (Q ₁₅ m ³ /s)	
HYDRAULIC DESIGN	
ROUGHNESS COEFFICIENT	
SLOPE	
MAX DISCHARGE (Q)	
VELOCITY	

3.0 CONSTRUCTION REQUIREMENTS

THE FOLLOWING STANDARDS ARE BASICALLY APPLIED FOR THIS PROJECT:

- DPWH STANDARD SPECIFICATION FOR HIGHWAYS, BRIDGES, AND AIRPORTS, 2013 EDITION
- CONSTRUCTION REQUIREMENTS (I & B.P. 344 ACCESSIBILITY LAW, REMOVAL OF EXISTING STRUCTURES & OBSTRUCTION, TREE PLANNING, PAVEMENT, DRAINAGE SLOPE/EMBANKMENT PROTECTION REQUIREMENTS/ DETAILS, OTHER OTHER VITAL TO THE PROJECT)

3.1 REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS.

- ALL WORKS SHALL COMPLY WITH CLAUSE 39 "REQUIREMENTS AND CONDITIONS OF CONTRACT" VOLUME - 1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS AND HIGHWAYS, 2013.
- PORTION OF EXISTING UTILITIES, SUCH AS WATER MAINS, IRRIGATION CHANNELS, TELEPHONE POST AND TRUNK LINES ETC., THAT MAY CAUSE OBSTRUCTIONS TO THE CONSTRUCTIONS OF THIS PROJECT SHALL BE RELOCATED BY THE ENTITY OR OWNER CONCERNED. EXTREME PRECAUTIONS SHALL BE EXERCISED. DAMAGED THEREOF SHALL BE TO THE ACCOUNT OF THE CONTRACTOR.

3.2 SUB-GRADE, SUB-BASE AND BASE

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

3.3 CONCRETE AND CONCRETE PAVEMENT

- ALL CONCRETE TO BE USED IN THIS PROJECT SHALL BE CLASS "A" UNLESS OTHERWISE INDICATED.
- NO ADMIXTURES OR ADDITIVES WILL BE ALLOWED FOR ALL CONCRETE WORKS WITHOUT PRIOR APPROVAL FROM THE SECRETARY OF DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS OR HIS DULY REPRESENTATIVE.
- 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 THREE (3) DAYS REQUIRED STRENGTH.

3.4 DRAINAGE

- LOCATIONS OF EXISTING DRAINAGE STRUCTURES REFLECTED IN THE PLAN AND BASED ON THE TOPOGRAPHIC SURVEY.
- EXACT LOCATIONS OF GRADIENTS, OUTFALLS AND TOP AND INVERT ELEVATIONS OF DRAINAGE STRUCTURES SHALL BE CHECKED AND VERIFIED IN THE FIELD DURING CONSTRUCTION BY ENGINEER TO SUIT ACTUAL CONDITIONS.
- PRIOR INSTALLATION OF RCPC AND OTHER DRAINAGE STRUCTURES, ALL MATERIALS MUST BE TESTED AND CONFORMING WITH THE TECHNICAL SPECIFICATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY MATERIALS INSTALLED AND FOUND TO BE DEFICIENT IN WORKMANSHIP AND QUALITY OF WORKS.
- RCPC DIAMETERS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- INLETS AND OUTLETS OF NEW AND EXISTING CULVERT TO BE UTILIZED SHOULD BE CHANNELIZED AND CLEARED OF DEBRIS IN ORDER TO HAVE SMOOTH FLOW OF WATER.

3.5 CONSTRUCTION STAKES

- THE CONTRACTOR WILL BE RESPONSIBLE FOR TRUE AND PROPER SETTING-OUT OF THE WORK OR IMPROVEMENT AND FOR CORRECTNESS OF POSITION, LEVEL, SLOPE AND CONTINUOUS PROFILE GRADE IN ROAD WORK. HE WILL SET CONSTRUCTION STAKES, ESTABLISHING LINES, SLOPE AND CONTINUOUS PROFILE WORK AND OTHER LINE AND BENCHMARK FOR BRIDGE WORK, GRADE IN ROAD PROTECTIVE AND NECESSARY STRUCTURES AND APPURTENANCES CULVERT WORK, AS ARE DEEMED NECESSARY FROM THE REFERENCE DATUM TO BE FURNISHED BY THE ENGINEER IN WRITING.

- THE CHECKING OF CONSTRUCTION STAKES BY THE ENGINEER SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR THE CORRECTNESS THEREOF AND THE CONTRACTOR SHALL CAREFULLY PROTECT AND PRESERVE ALL BENCHMARK, PEGS AND OTHER THINGS USED IN SETTING-OUT THE WORK.

- IN THE CASE OF "CHANGES" OR CHANGE IN CONDITION WHICH INVOLVES ANY CHANGES IN STAKE OUT, THE CONTRACTOR SHALL COOPERATE WITH THE ENGINEER AND FACILITATE THE PROMPT RE-ESTABLISHMENT OF THE FIELD CONTOUR FOR THE ALTERNATIVE OF ADJUSTED WORK.

3.6 STANDARD DRAWING

THE NECESSARY DRAWING CONTAINED IN THE DPWH STANDARD FOR ROAD SHALL BE UTILIZED FOR THE PROJECT UNLESS OTHERWISE MORE DETAILED.

3.7 QUANTITY

QUANTITY OF VARIOUS WORK ITEM INVOLVED ARE SUBJECT TO DECREASE OR INCREASE DEPENDING ON THE ACTUAL FIELD CONDITION.

3.8 ROAD SIGNS

ROAD SIGN SHALL CONFORM WITH THE LATEST MANUAL ON PHILIPPINE ROAD SIGNS (REVISED EDITION) OF THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, TRAFFIC ENGINEERING AND MANAGEMENT, PROJECTS.

3.9 ACCESSIBILITY LAW

- THE DESIGN SHALL CONFORM WITH THE REPUBLIC ACT 7182.
- THE DESIGN SHALL CONFORM WITH THE REPUBLIC ACT 9710.
- STRICT COMPLIANCE WITH THE BATAS PAMBANSA BLANG 344 AND ITS IMPLEMENTING RULES AND REGULATION SHALL BE IMPOSED.

4.0 SURVEY SPECIFICATION

- ALL PROJECT POINTS ARE PROJECTED IN PRS 92 GRID COORDINATE SYSTEM (ZONE 3).
- SURVEY INSTRUMENT USED GNSS-RTK (STONEX SIAQ) SN SIAQ 3580125568, SN SIAQ 3580110024.
- DATE SURVEYED:
- PROJECT CONTROL POINTS: REFER TO PAGE RD36/IT1 SHEET 07a/75

4.1 ROAD CONNECTION AND PRIVATE ENTRANCES

- APPROACHES AND CONNECTIONS SHALL BE CONSTRUCTED BY THE CONTRACTOR AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER IN SUCH MANNER AS TO ENSURE SMOOTH CONNECTION AND RIDING QUALITY.
- EXACT LOCATIONS OF ROAD INTERSECTIONS AND PRIVATE ENTRANCES OR DRIVEWAYS, WHERE ITEM 7.1 ABOVE APPLIES SHALL BE VERIFIED BY THE ENGINEER.

4.2 SLOPE PROTECTION STRUCTURES

- PRIOR TO CONSTRUCTION, CONFORMATORY GEOTECHNICAL INVESTIGATION SHALL BE CONDUCTED ALONG THE ALIGNMENT OF THE STRUCTURE TO CHECK OR VERIFY THE STABILITY OF SOIL AND STRUCTURE, AND REDESIGN OR REVISE IF NECESSARY.



LOCATION MAP

SITE



PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00

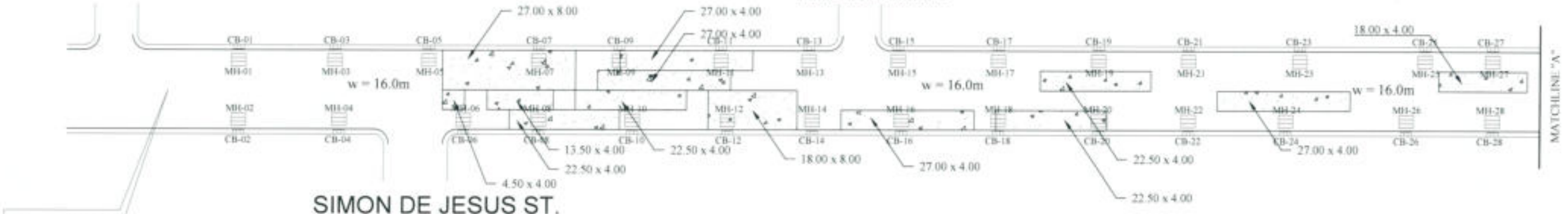
LEGEND

	REPLACEMENT OF EXISTING MANHOLE COVER (1.50 x 0.40 x 0.20)		EXISTING CURB AND GUTTER
	REBLOCKING		EXISTING CATCHBASIN

K0007 + 458.20 C 1.438.20
K0007 + 467.00 C 1.447.00

K0007 + 610.80 C 1.590.80
K0007 + 619.50 C 1.599.50

KAUNLARAN



BEG. OF PROJECT
K0007 + 473.00

C 1.453.00	K0007 + 473.00	C 1.467.20	K0007 + 487.20	C 1.488.00	K0007 + 508.00	C 1.497.00	K0007 + 517.00	C 1.505.90	K0007 + 525.90	C 1.510.10	K0007 + 530.10	C 1.513.00	K0007 + 533.00	C 1.545.60	K0007 + 565.60	C 1.548.30	K0007 + 568.30	C 1.528.20	K0007 + 548.20	C 1.567.70	K0007 + 587.70	C 1.585.30	K0007 + 605.30	C 1.603.50	K0007 + 623.50	C 1.623.20	K0007 + 643.40	C 1.643.50	K0007 + 663.50	C 1.661.90	K0007 + 681.90	C 1.684.50	K0007 + 704.50	C 1.681.70	K0007 + 701.70	C 1.709.90	K0007 + 729.90	C 1.706.10	K0007 + 726.10	C 1.723.70	K0007 + 743.70
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PLAN
SCALE: 1:500

	PROJECT NAME AND LOCATION PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00	SHEET CONTENTS LOCATION MAP PLAN LEGEND	DRAFTED JONATHAN C. CASINO JR. ARCHITECT	REVIEWED REY Y. CASTILLO ENGINEER	SUBMITTED ARLENE S. MENDOZA D/C, CHIEF, PLANNING AND DESIGN SECTION	RECOMMENDED DENRY CAESAR S. CORTUNA ASSISTANT DISTRICT ENGINEER	APPROVED DENNIS E. SANDOVAL DISTRICT ENGINEER	SET NO. 	SHEET NO.
			PREPARED JOYCE D. MATANGUIHAN ENGINEER	DATE	DATE	DATE	DATE	DATE	



LOCATION MAP

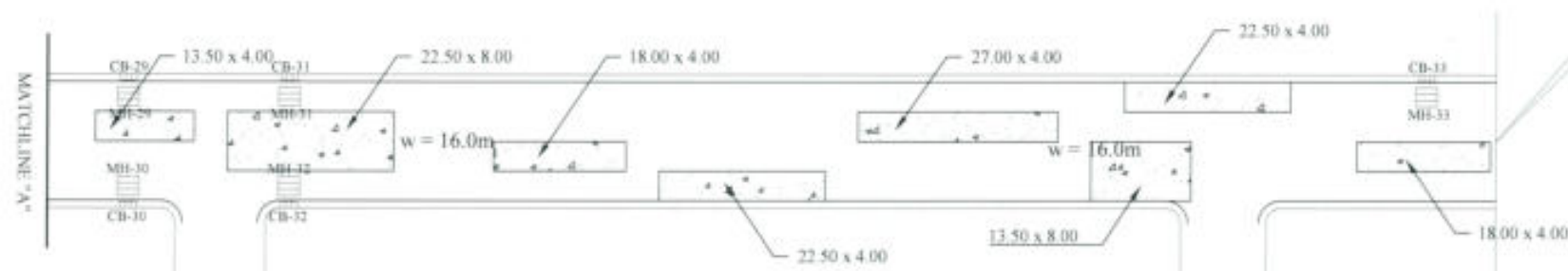
SITE

PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00



LEGEND

	REPLACEMENT OF EXISTING MANHOLE COVER (1.50 x 0.40 x 0.20)		EXISTING CURB AND GUTTER
	REBLOCKING		EXISTING CATCHBASIN



KALAKAL

C 1,745.00	K0007 + 765.00	C 1,767.50	K0007 + 787.50	C 1,763.10	K0007 + 783.10	C 1,887.30	K0007 + 907.30	C 1,898.90	K0007 + 918.90	C 1,920.30	K0007 + 940.30	C 1,925.00	K0007 + 945.00
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PLAN
SCALE 1:1 mbs



SITE

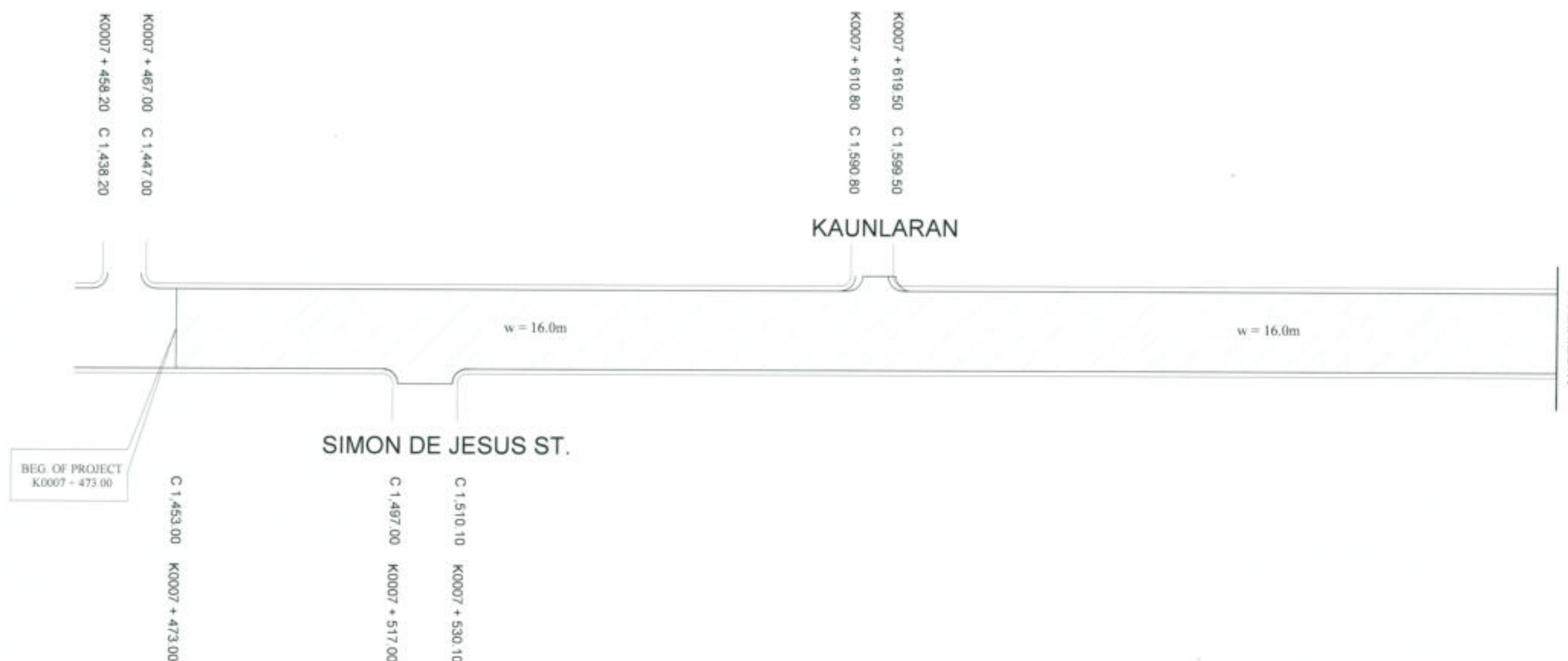
**PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00**



LEGEND

 PROPOSED ASPHALT
t=100mm

EXISTING CURB
AND GUTTER



SIMON DE JESUS ST.

BEG. OF PROJECT
K0007 = 473.00

K0007 + 467.00	C 1,447.00
K0007 + 458.20	C 1,438.20

K0007 + 458.20 C 1,438.20

C 1,453.00	K0007 + 473.00
------------	----------------

C 1,497.00 K0007 + 517.00

C 1,510.10 K0007 + 530.10

K0007 + 619.50	C 1,599.50
K0007 + 610.80	C 1,590.80

K0007 + 610.80 C 1,590.80

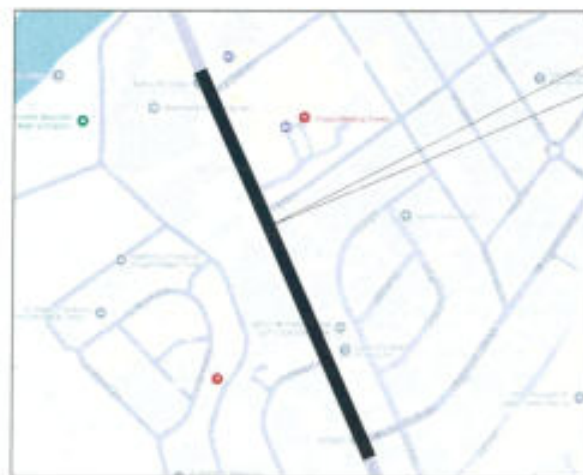
 $w = 16.0 \text{ mm}$ $w = 16.0 \text{ m}$

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P L A N

SCALE

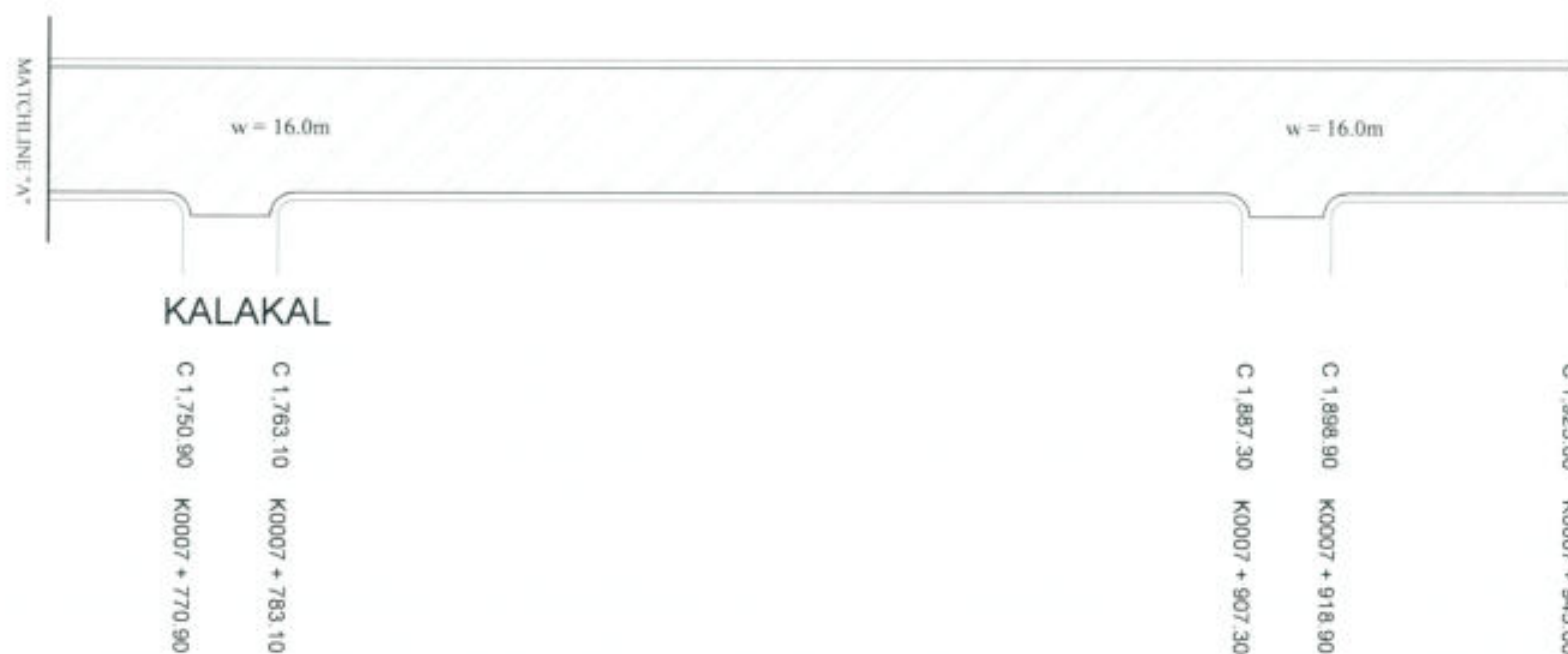
1.5:1 ratio.



LOCATION MAP

SITE

PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00



PLAN
SCALE 1:9



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
NATIONAL CAPITAL REGION
NORTH MANILA DISTRICT ENGINEERING OFFICE
OFFICE OF THE DISTRICT ENGINEER
Nagtahan, Sta. Mesa, Manila

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE -
TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00

SHEET CONTENTS
LOCATION MAP
PLAN
LEGEND

DRAFTED
JONATHAN C. CASINO JR.
ENGINEER I
PREPARED
JOYCE D. MATANGUIHAN
ENGINEER I

REVIEWED
REY Y. CASTILLO
ENGINEER I
DATE

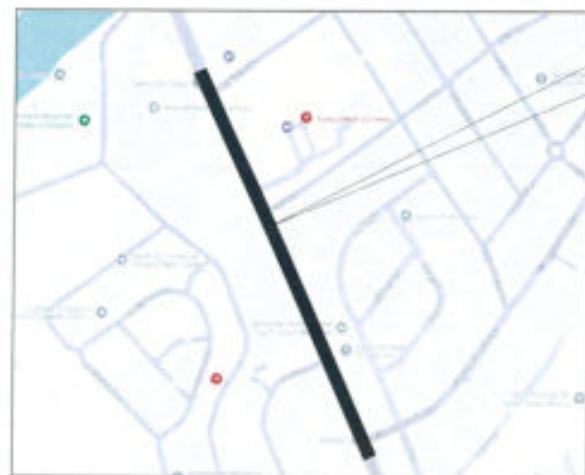
SUBMITTED
ARZENE S. MENDOZA
DIP - CIVIL, PLANNING AND DESIGN SECTION
DATE

RECOMMENDED
DENRYL CAESAR S. CORTUNA
ASSISTANT DISTRICT ENGINEER
DATE

APPROVED
DENNIS E. SANDOVAL
DISTRICT ENGINEER
DATE

SET NO.
9

SHEET NO.
18



LOCATION MAP

SITE

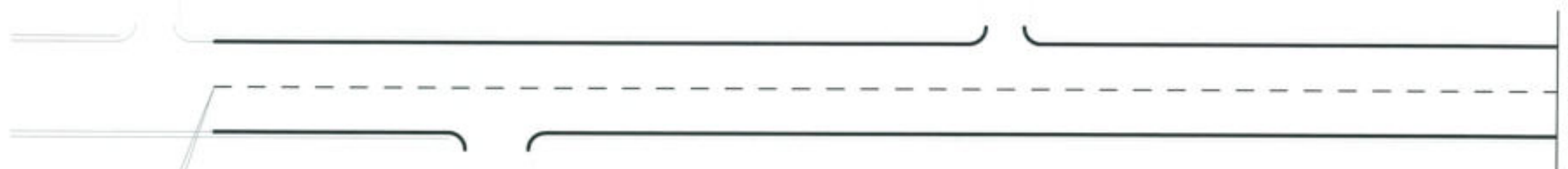
PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00



K0007 + 467.00 C 1,447.00
K0007 + 458.20 C 1,438.20



K0007 + 619.50 C 1,599.50
K0007 + 610.80 C 1,590.80
KAUNLARAN



BEG. OF PROJECT
K0007 + 473.00

C 1,453.00 K0007 + 473.00

SIMEON DE JESUS ST.

C 1,497.00 K0007 + 517.00

C 1,510.10 K0007 + 530.10

1
10

ROAD SAFETY PLAN

SCALE 1:5.1 mls

LEGEND

- EXISTING CURB AND GUTTER
- PROPOSED EDGE LINE
- PROPOSED LANE LINE



LOCATION MAP

SITE



PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00



MATCHLINE "A"

END OF PROJECT
K0007 + 945.00

KALAKAL

C 1,750.90 K0007 + 770.90
C 1,763.10 K0007 + 783.10

R. NICASIO

C 1,887.30 K0007 + 907.30
C 1,898.90 K0007 + 918.90
C 1,925.00 K0007 + 945.00

ROAD SAFETY PLAN

1
11

SCALE

1:5.1 mts

LEGEND

	EXISTING CURB AND GUTTER
	PROPOSED EDGE LINE
	PROPOSED LANE LINE



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
NATIONAL CAPITAL REGION
NORTH MANILA DISTRICT ENGINEERING OFFICE
OFFICE OF THE DISTRICT ENGINEER
Nagtahan, Sta. Mesa, Manila

PROJECT NAME AND LOCATION
**PREVENTIVE MAINTENANCE -
TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00**

SHEET CONTENTS
LOCATION MAP
ROAD SAFETY PLAN
LEGEND

DRAWN BY
JONATHAN C. CASIÑO JR.
ARCHITECT
PREPARED BY
JOYCE D. MATANGUIHAN
ENGINEER

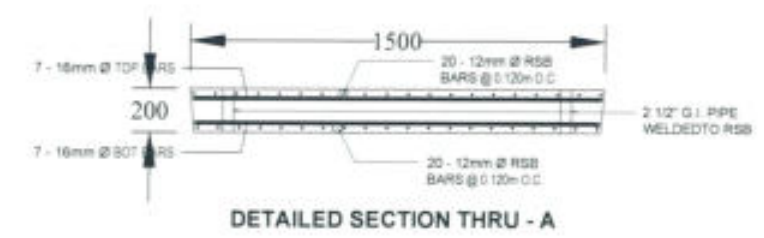
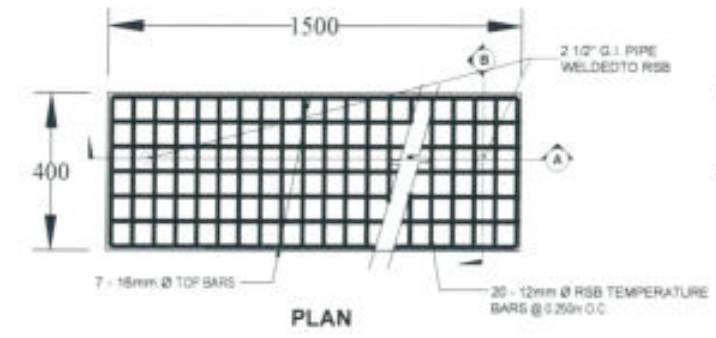
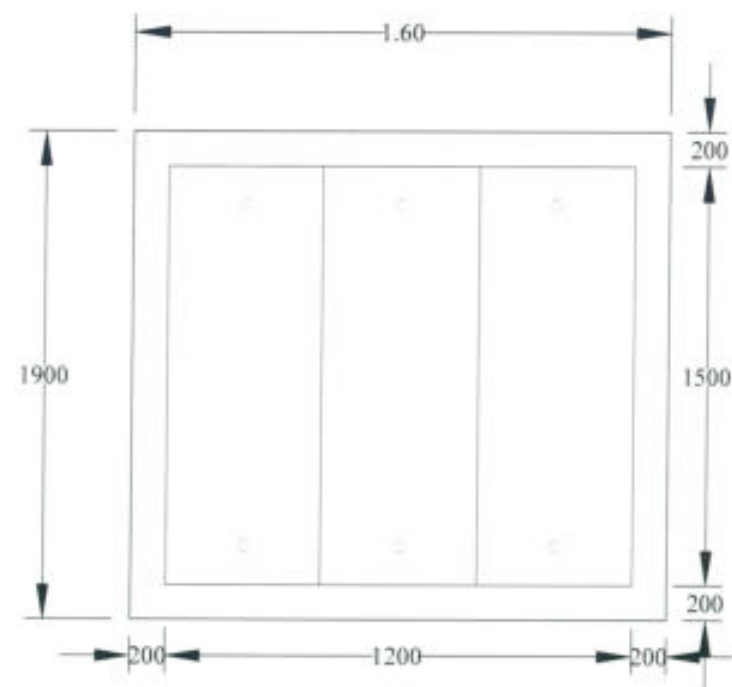
REVIEWED
REY Y. CASTILLO
ENGINEER
DATE

SUBMITTED
ARJENE S. MENDOZA
D/C - CHIEF PLANNING AND DESIGN SECTION
DATE

RECOMMENDED
DENRYL CAESAR S. CORTUNA
ASSISTANT DISTRICT ENGINEER
DATE

APPROVED
DENNIS E. SANDOVAL
DISTRICT ENGINEER
DATE

SET NO. 11
SHEET NO. 18



1 DETAILS OF MH COVER 1.50m X .40m
SCALE 1:30 METERS



2 EDGE LINE
SCALE 1:50 METERS



2 LANE LINE MARKINGS
SCALE 1:50 METERS

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION NORTH MANILA DISTRICT ENGINEERING OFFICE OFFICE OF THE DISTRICT ENGINEER Nagtahan, Sta. Mesa, Manila	PROJECT NAME AND LOCATION PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00	SHEET CONTENTS DETAILS OF MH COVER 1.50 x .40m EDGE LINE LANE LINE MARKINGS	DESIGNED BY JONATHAN C. CASINO JR. ARCHITECT PREPARED BY JOYCE D. MATANGUIHAN ENGINEER I	REVIEWED BY KEY Y. CASTILLO ENGINEER I DATE	SUBMITTED BY ARLDO S. MENDOZA D.C. - CHIEF PLANNING AND DESIGN SECTION DATE	RECOMMENDED BY DENRYL CAESAR S. CORTUNA ASSISTANT DISTRICT ENGINEER DATE	APPROVED BY DENNIS E. SANDOVAL DISTRICT ENGINEER DATE	SET NO. 12 SHEET NO. 18
--	---	---	--	--	--	---	--	------------------------------------

NOTES:

1. MATERIAL AND CONSTRUCTION REQUIREMENTS SHALL CONFORM TO DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES 2004.
2. USE OF MONOFILAMENT POLYPYLENE (D.O. NO. 95, SERIES OF 2005) AS ADDITIVE TO CONCRETE MIX.
3. SIDEWALK WIDTH OF 1.50 M SHALL BE MINIMUM PEDESTRIAN ACCESSIBLE ROUTE FREE OF VERTICAL AND HORIZONTAL OBSTRUCTIONS. DRAINAGE COVERS, JUNCTION BOXES, CABLE VAULTS, PULL BOXES AND OTHER APPURTENANCES WITHIN THE SIDEWALK MUST HAVE SLIP RESISTANT SURFACE AND BE FLUSH WITH THE SURFACE AND MATCH GRADE OF THE SIDEWALK.
4. FULL WIDTH CONCRETE SIDEWALK MAY BE PERMITTED WHEN CONSTRUCTED FOR THE ENTIRE BLOCK.
5. SIDEWALK SHALL HAVE A MINIMUM THICKNESS OF 150 MM IF MOUNTABLE CURB IS USED, OR IF SIDEWALK IS INTENDED AS PORTION OF DRIVEWAY. OTHERWISE, SIDEWALK SHALL HAVE A MINIMUM THICKNESS OF 100 MM.
6. JOINTS LEGEND.
 - A. 100 MM EXPANSION JOINTS (FULL DEPTH PREFORMED JOINT FILLER)
 - B. 5 MM SAW CUT JOINTS, 40 MM DEED (WITHIN 96 HRS.) MAXIMUM 1500 MM CENTER.
 - C. 5 MM SAW CUT JOINTS, 40 MM DEEP (WITHIN 12 HRS.) MAXIMUM 9000 MM CENTER.
 - D. 100 MM EXPANSION JOINT FOR 36000 MM MAXIMUM LENGTH OF RUN OF SIDEWALK (FULL DEPTH PREFORMED JOINT FILLER).

NOTE: IN CASE THE REQUIRED DIAMETER OF 36mm AS CITED ABOVE IS NOT COMMERCIALY AVAILABLE, SMALLER DOWEL BAR CAN BE USED WITH ADJUSTMENT IN BAR SPACING AS SHOWN IN TABLE 1.2.

TABLE 1.2

AS PER D.O. 40, s. 2014			SUBSTITUTE	
THICKNESS OF PCCP (mm)	SIZE OF DOWEL BAR (mm)	SPACING (mm)	SIZE OF DOWEL BAR (mm)	SPACING (mm)
280	36	300	32	250
			28	190
			25	150
			32	230
290	36	295	28	170
			25	140
			32	210
			28	160
300	36	274	25	130
			32	200
			28	150
			25	120
310	36	255	32	190
			28	140
			25	110
			32	180
320	36	238	28	130
			25	110
			32	170
			28	130
330	36	223	25	110
			32	170
			28	130
			25	100
340	36	209		

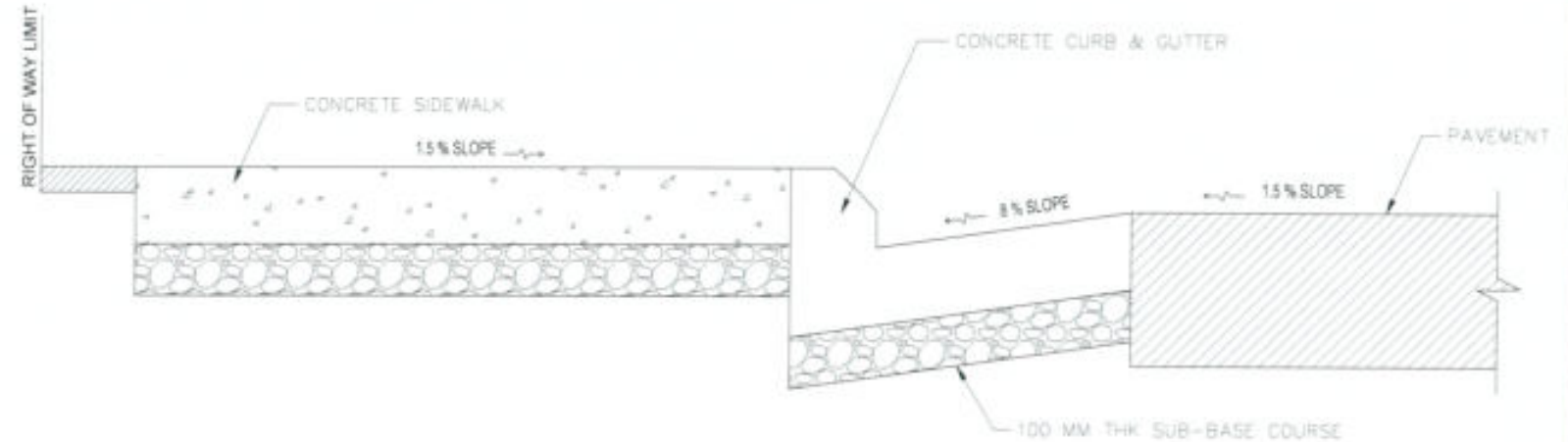
NOTES:

1. MATERIAL AND CONSTRUCTION REQUIREMENTS SHALL CONFORM TO DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES 2004.
2. USE OF MONOFILAMENT POLYPYLENE SYNTHETIC FIBERS (D.O. NO. 95, SERIES OF 2005) AS ADDITIVE TO CONCRETE MIX.
3. CONCRETE CURB AND GUTTER SHALL BE CONSIDERED IN THE DESIGN OF PAVED ROADS IF THE FUNCTION IS TO FACILITATE THE CHANNELING OF THE SURFACE WATER RUN-OFF THUS PREVENTING THE EROSION OF THE SHOULDERS AND SLOPE.
4. MINIMUM CURB INLET INTERVAL ("D") 10.0 METERS IN FLOODED AREAS.
5. MINIMUM CURB INLET INTERVAL ("D") 20.0 METERS IN OTHER AREAS.

NOTE: ALL TRANSVERSE JOINTS SHALL BE PROVIDED WITH DOWEL BARS IN ACCORDANCE WITH DEPARTMENT ORDER 40, SERIES OF 2014, RE: PRESCRIBING MINIMUM DESIGN STANDARD FOR PORTLAND CEMENT CONCRETE PAVEMENT (PCCP) IN ARTERIAL AND SECONDARY NATIONAL ROADS AND ACCESS ROADS LEADING TO PORTS AS STATED BELOW.

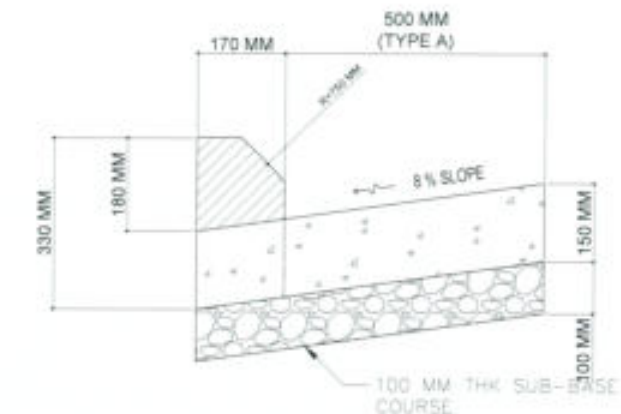
TABLE 1.1

SPACING OF DOWEL BARS (DIAMETER = 36mm/ LENGTH = 600mm)	
SLAB DEPTH, T (mm)	SPACING (mm)
280	300
290	295
300	274
310	255
320	238
330	223
340	209



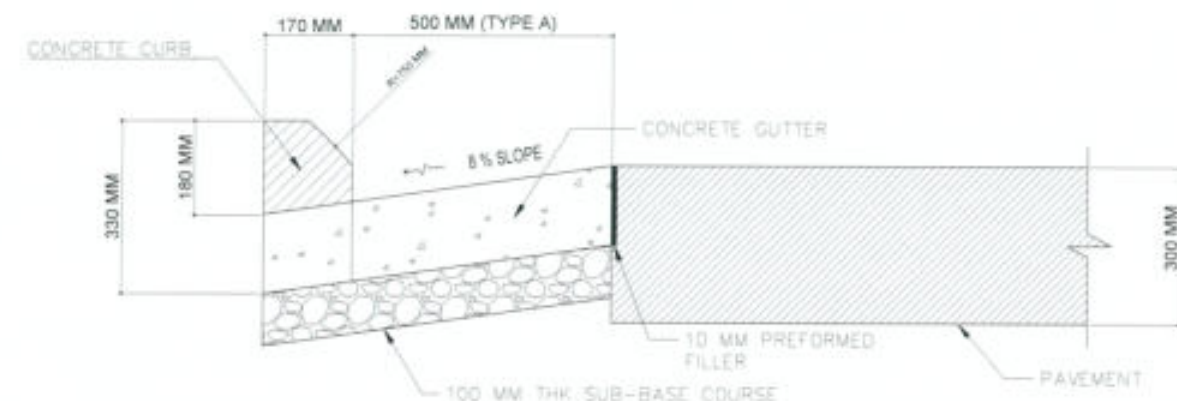
TYPICAL SECTION OF CONCRETE SIDEWALK

SCALE: 1:100 mts.



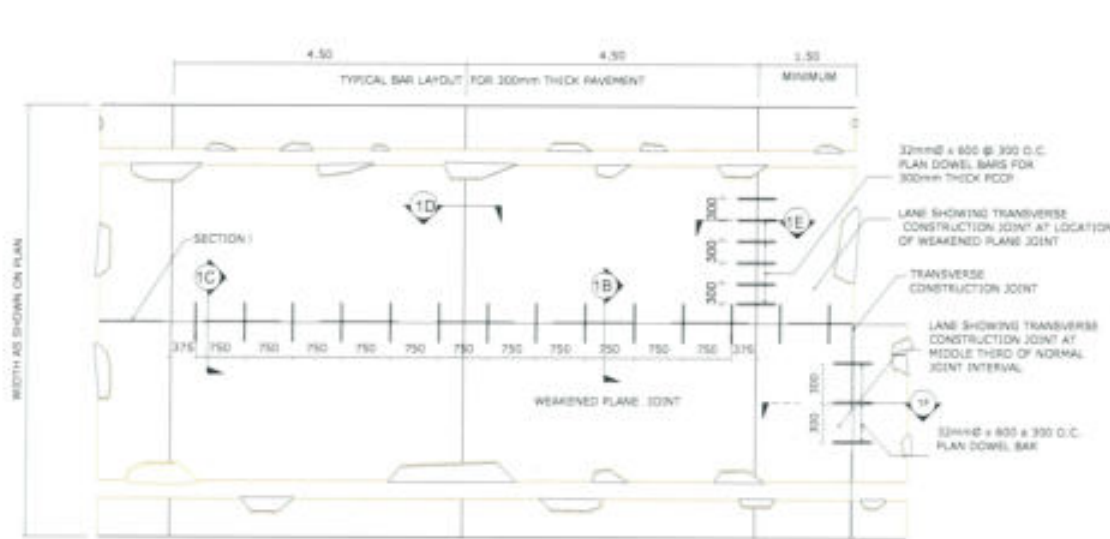
DETAIL OF CONCRETE CURB & GUTTER

SCALE: 1:100 mts.

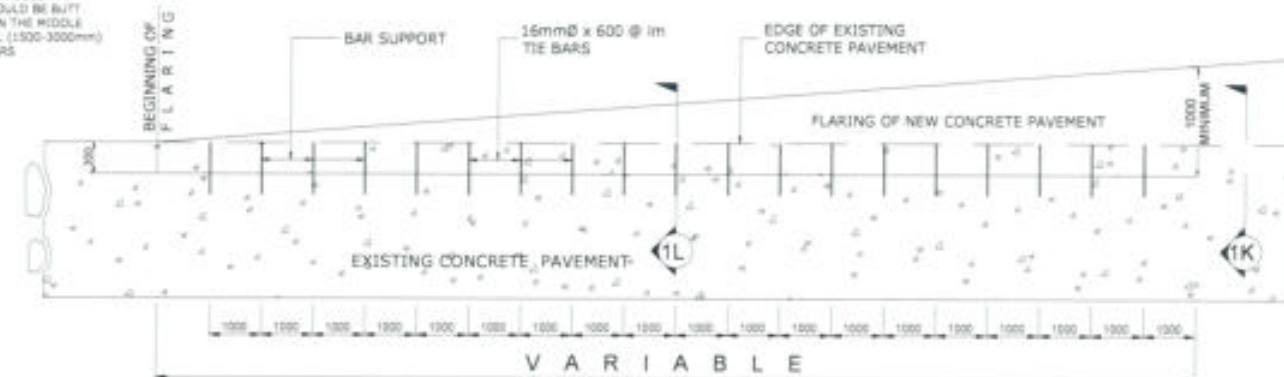


TYPICAL SECTION

SCALE: 1:100 mts.



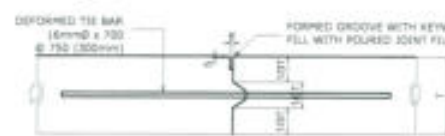
NOTE:
TRANSVERSE CONSTRUCTION (CONTACT) JOINT SHALL BE PROVIDED AT THE END OF ANY RUN WHERE LAYING OF CONCRETE HAS BEEN STOPPED FOR THIRTY (30) MINUTES OR LONGER.
TRANSVERSE CONSTRUCTION JOINT WHICH OCCUR AT LOCATION OF WEAKENED PLANE JOINT SHOULD BE BUTT JOINT WITH DOWELS. IF JOINT OCCURS IN THE MIDDLE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



1 TWO LANE PAVEMENT TYP. PLAN
SCALE: 1:50 H/S



1B DETAIL SECTION
SCALE: 1:10 H/S



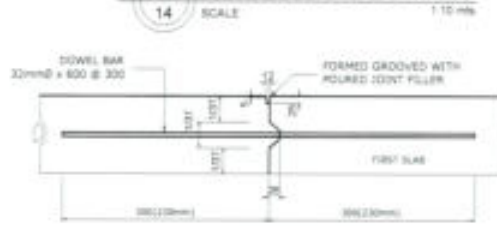
1C DETAIL SECTION
SCALE: 1:10 H/S



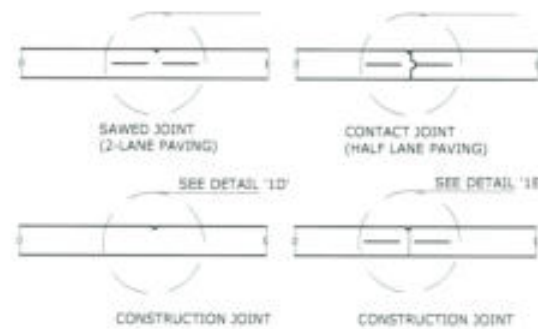
1D DETAIL SECTION
SCALE: 1:10 H/S



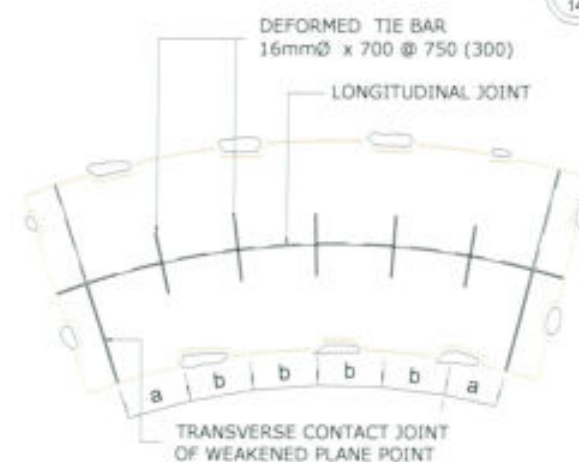
1E DETAIL SECTION
SCALE: 1:10 H/S



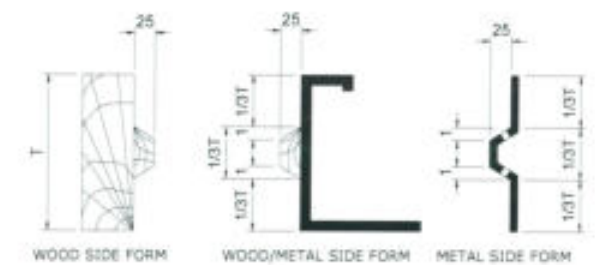
1F DETAIL SECTION
SCALE: 1:10 H/S



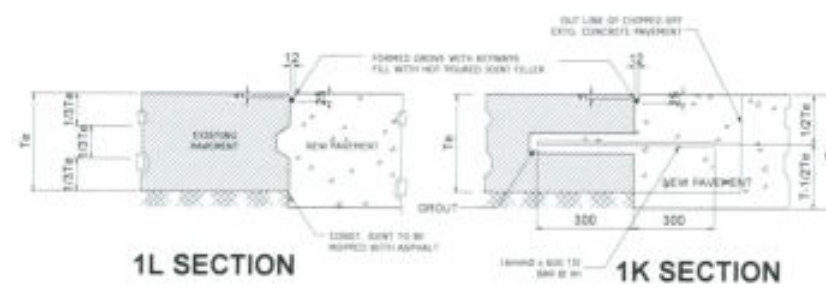
SECTION
SCALE: 1:40 H/S



BAR SPACING ALONG CURVES DET.
SCALE: NTS

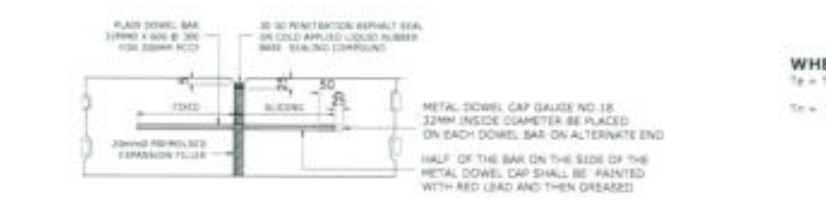


DETAIL OF JOINT IN RIGID PAVEMENT
SCALE: NTS



1L SECTION

1K SECTION



DETAIL OF EXPANSION JOINT (DOWELLED) AT CERTAIN INTERSECTIONS AND STRUCTURES

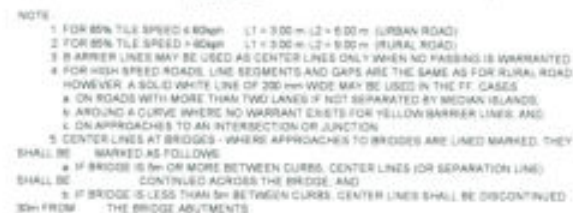
STANDARD PORTLAND CEMENT CONCRETE PAVEMENT
SCALE: AS SHOWN

GENERAL NOTES:

1. MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE STANDARD SPECIFICATIONS FOR HIGHWAYS BRIDGES AND AIRPORTS 2013.
2. CONSTRUCTION (CONTACT) JOINTS ARE FORMED WHEN CONCRETE ON ONE SIDE OF THE JOINTS 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 PLACED OVERHANGS ANY PORTION OF THE FIRST SLAB.
4. TIE BARS SHOULD BE DEFORMED STEEL BARS. ALL DOWEL BARS SHALL BE SMOOTH ROUND STEEL BAR FREE FROM RUST AND OTHER DEFECTS WHICH MIGHT RESTRICT THEIR MOVEMENT.
5. TYPE OF WEAKENED PLANE JOINT TO BE USED SHALL BE AS SPECIFIED IN THE PLANS ON 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 SIX (6) SUCCESSIVE DOWELLED 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 COMPOUND AFTER THE CONCRETE HAD BEEN CURED AND BEFORE OPENING PAVEMENT TO TRAFFIC. PENETRATION ASPHALT SEAL ON CONCRETE JOINT SHOULD BE POURED IN SUCH MANNER THAT SPILLING WILL BE ELIMINATED. THUS, PROVIDE A SMOOTH RIDING SURFACE.
9. ALL TRANSVERSE JOINT, EXCEPT CONSTRUCTION JOINT, SHALL BE CONTINUOUS FROM EDGE TO EDGE.
10. ALL LONGITUDINAL JOINTS, SHALL MEET AT INTERSECTIONS WITH NO GAPS OR OFFSET.
11. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
12. AVOID STORAGE OF FORMWORKS ALONG CURVES.
13. DRILLING OF HOLES ON EXISTING PCP AND OTHER STRUCTURES SHALL BE PERFORMED USING POWER TOOLS. THE HOLES SHALL BE PROPERLY CLEARED BEFORE GROUT/POXY INJECTION AND INSTALLATION OF DOWELS OR TIE BARS.

WHERE:
Te = THICKNESS OF EXISTING PAVEMENT
Tn = THICKNESS OF NEW PAVEMENT

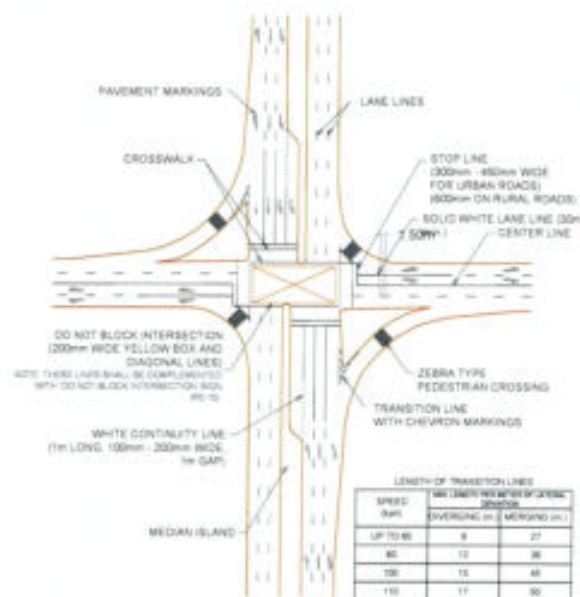
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION NORTH MANILA DISTRICT ENGINEERING OFFICE OFFICE OF THE DISTRICT ENGINEER Nagtahan, Sta. Mesa, Manila	PROJECT NAME AND LOCATION PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00	SHEET CONTENTS - TWO LANE PAVEMENT TYP. PLAN - PLAN - DET. SECTIONS - BAR SPACING ALONG CURVES DET - DET. OF JOINT IN RIGID PAVEMENT - STANDARD PORTLAND CEMENT CONCRETE PAVEMENT	DRAFTED JONATHAN C. CASINO JR. PROJECT PREPARED JOYCE D. MATANGUIRAN ENGINEER	REVIEWED REY Y. CASTILLO ENGINEER I DATE	SUBMITTED ARLENE S. MENDOZA OIC, CHIEF PLANNING AND DESIGN SECTION DATE	RECOMMENDED DENRY L. CAESAR S. CORTUNA ASSISTANT DISTRICT ENGINEER DATE	APPROVED DENNIS E. SANDOVAL DISTRICT ENGINEER DATE	BET NO. 14 SHEET NO. 18
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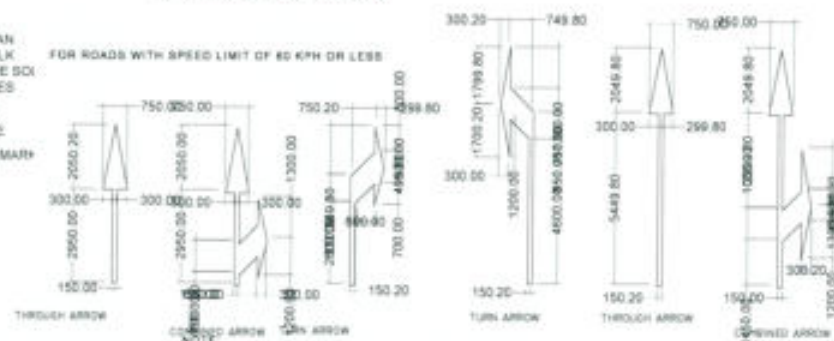
CENTER AND EDGE LINES MARKING
FOR A TYPICAL 2-LANE ROAD



NOTE BARRIER (NO PASSING) LINES



TYPICAL LINE MARKINGS ON AN APPROACH
TO A SIGNALIZED INTERSECTION



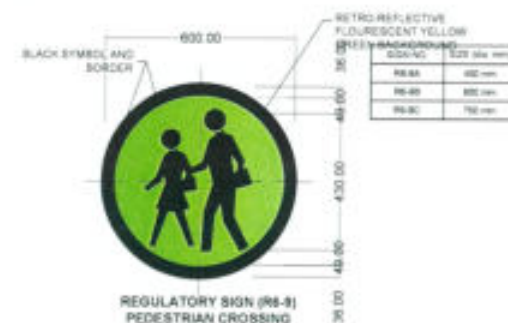
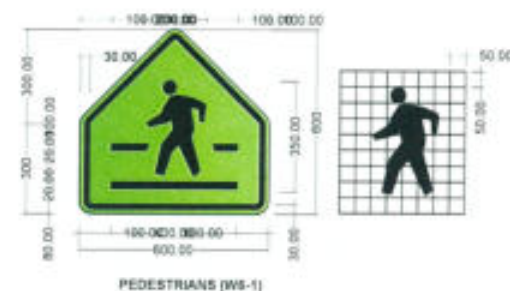
STANDARD PAVEMENT ARROWS



ZERRA TYPE PEDESTRIAN CROSSING



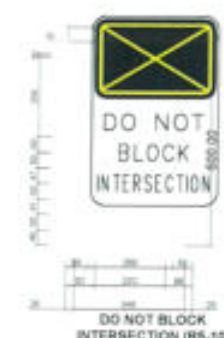
TYPICAL LINE MARKINGS ON AN APPROACH
TO A SIGNALIZED INTERSECTION

REGULATORY SIGN (R6-1)
PEDESTRIAN CROSSINGREGULATORY
PEDESTRIAN (

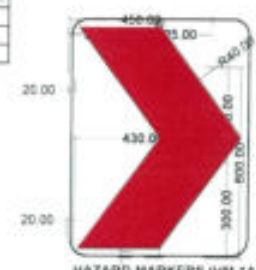
PEDESTRIANS (WS-1)



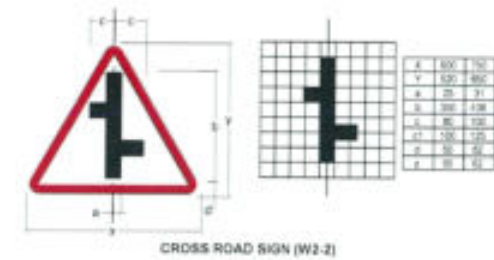
PRIORITY SIGN, STOP SIGN (R1-1)



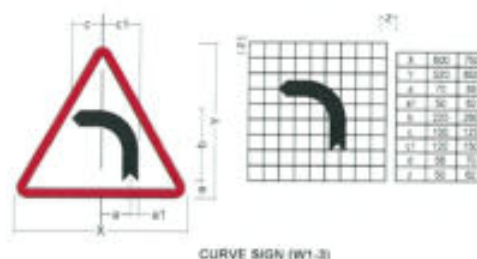
DO NOT BLOCK
INTERSECTION (R5-10)



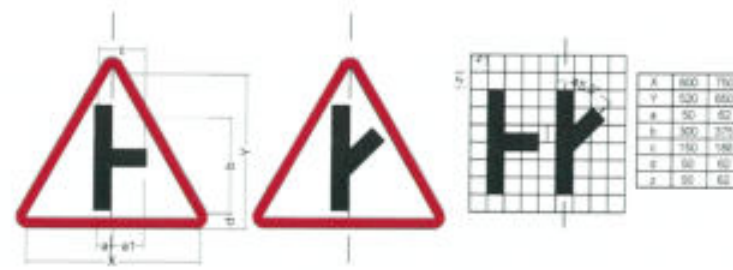
HAZARD MARKERS (HM-1A)



CROSS ROAD SIGN (W2-2)



CURVE SIGN (W1-3)



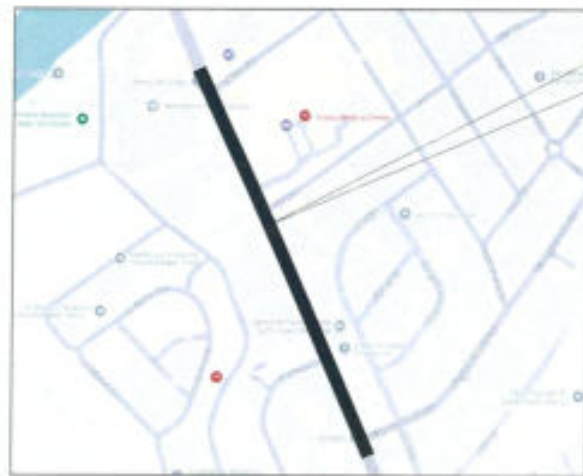
SIDE ROAD JUNCTION SIGN (W2-5A, W2-6)

15 SCALE

NETS

15 SCALE

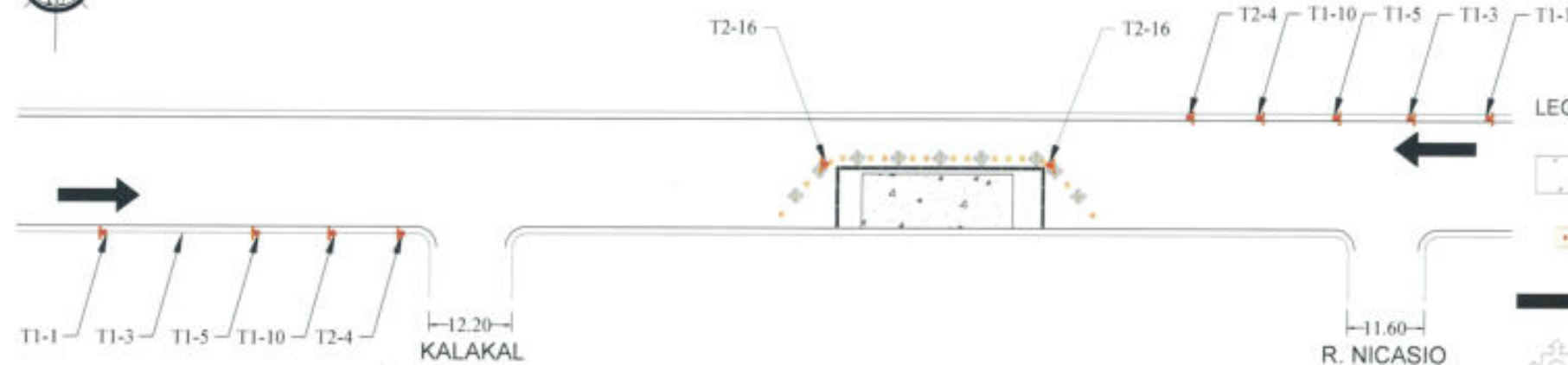
1:15 min



LOCATION MAP

SITE

PREVENTIVE MAINTENANCE - TERTIARY ROADS - H. LOPEZ BLVD. K0007 + 473.00 - K0007 + 945.00



LEGEND:

- WORK AREA
- TRAFFIC CONES (27 PCS.)
- STEEL BARRIERS (27 PCS.)
- BARRICADE FLASHER LIGHT (9 PCS.)
- TRAFFIC FLOW

NOTE:

DIMENSION 'D' = A DISTANCE EXPRESSED IN METERS EQUAL TO THE APPROACH SPEED OF TRAFFIC IN KILOMETER PER HOUR (V=60kph)



ROADWORK AHEAD				
SIGN NO.	SIZE	LETTER	BACKGROUND	
T1-1	1800 x 600	Line 1 - Black 200DM Line 2 - Black 160DM	Yellow ReflectORIZED	



ROADWORK AHEAD				
SIGN NO.	SIZE	LETTER	BACKGROUND	
T2-4	1800 x 300	Black 140 EN	Yellow ReflectORIZED	



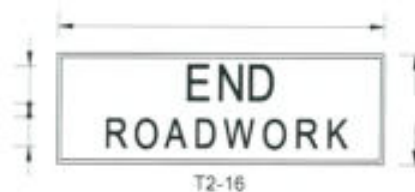
TRAFFIC HAZARD AHEAD				
SIGN NO.	SIZE	LETTER	BACKGROUND	
T1-10	900 x 600	Line 1 - Black 200DM Line 2 - Black 160DM	Yellow ReflectORIZED	



ROAD MACHINERY AHEAD				
SIGN NO.	SIZE	LETTER	BACKGROUND	
T1-3	1200 x 600	Line 1 - Black 200DM Line 2 - Black 160DM	Yellow ReflectORIZED	



WORKMEN AHEAD				
SIGN NO.	SIZE	LETTER	BACKGROUND	
T1-5	900 x 600	Black	Red / Orange - Fluorescent for day use - ReflectORIZED by night use	



END ROADWORK				
SIGN NO.	SIZE	LETTER	BACKGROUND	
T2-16	1800 x 600	Line 1 - Black 200DM Line 2 - Black 160DM	Yellow ReflectORIZED	

1
16
TRAFFIC MANAGEMENT PLAN AND DETAILS
SCALE: NTS



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
NATIONAL CAPITAL REGION
NORTH MANILA DISTRICT ENGINEERING OFFICE
OFFICE OF THE DISTRICT ENGINEER
Nagtahan, Sta. Mesa, Manila

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE -
TERTIARY ROADS - H. LOPEZ BLVD.
K0007 + 473.00 - K0007 + 945.00

SHEET CONTENTS
TRAFFIC MANAGEMENT PLAN AND
DETAILS

DRAFTED
JONATHAN C. CASINO JR.
PREPARED
JOYCE D. MARRIGUIHAN

REVIEWED
REY Y. CASTILLO
DATE

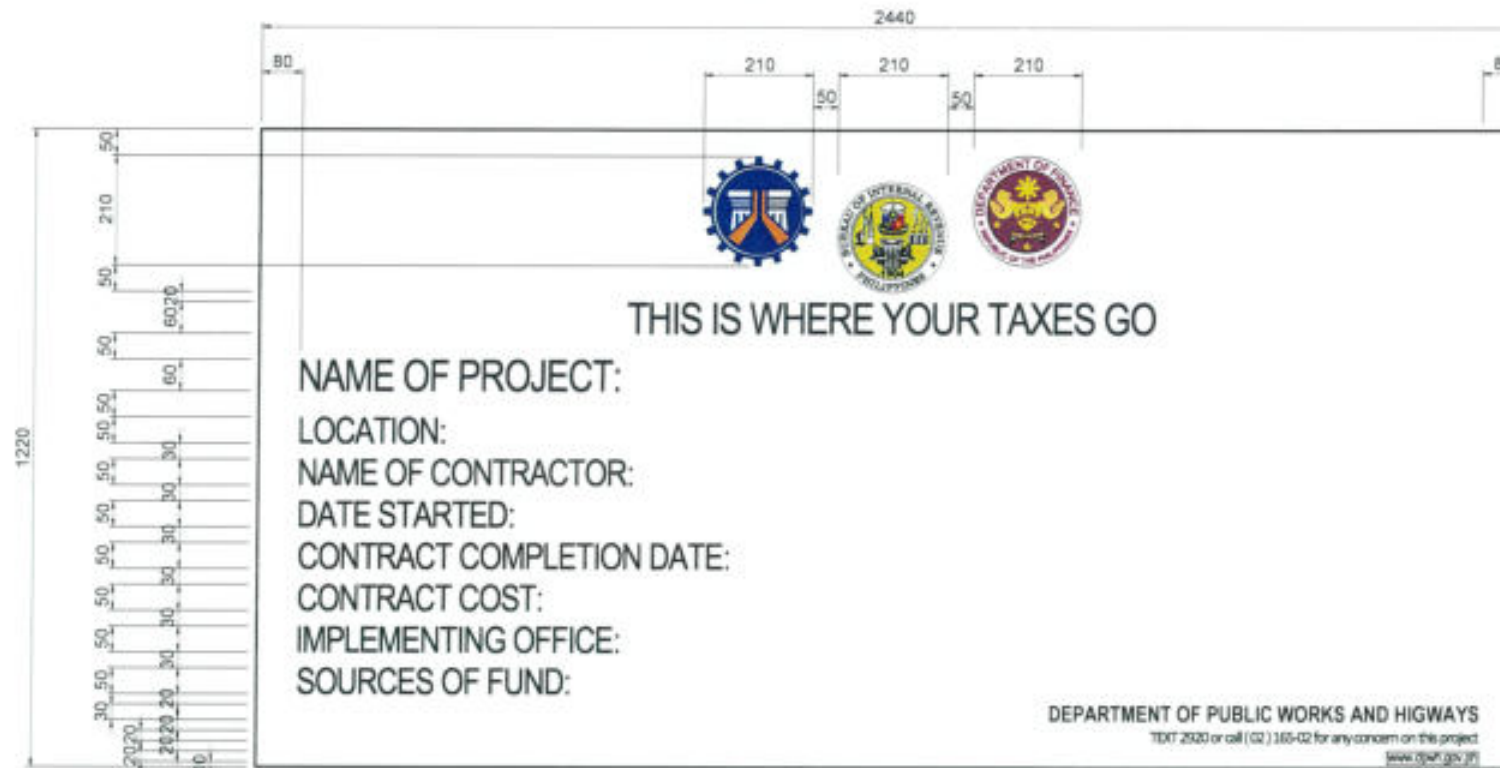
SUBMITTED
ARLENE S. MENDOZA
DATE

RECOMMENDED
DENRYL CAESAR S. CORTUNA
DATE

APPROVED
DENNIS E. SANDOVAL
DATE

SET NO.
SHEET NO.
16
18

PROJECT BILLBOARD



1 DPWH STANDARD PROJECT BILLBOARD
SCALE 1:10 METERS

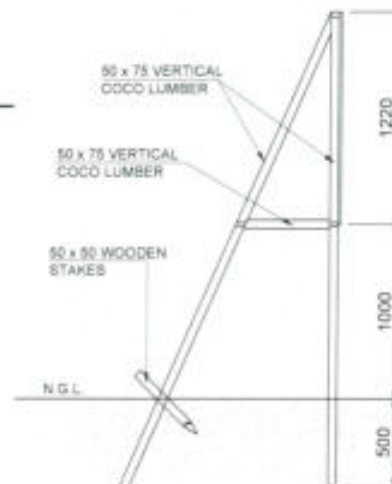


2 ISOMETRIC VIEW
SCALE 1:10 METERS

NOTES:
1. LAYOUT OF PROJECT BILLBOARD IS BASED ON D.O. 11, SERIES OF 2022 FOR SOURCE OF FUND STATE IF DPWH-REGULAR BUDGET, PRIORITY DEVELOPMENT ASSISTANCE FUND, DEPED/DA/DAAR BUDGET, CALAMITY FUND, ARVUC FUND, ETC.
2. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.



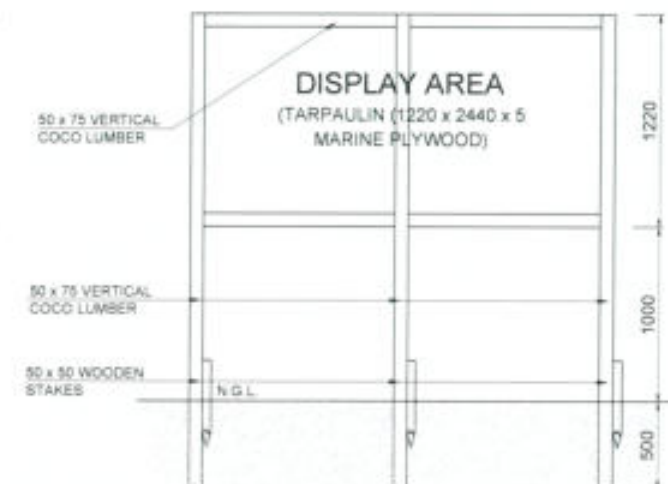
TRAFFIC DIRECTION



4 TYPICAL FRAME ELEVATION
SCALE 1:10 METERS

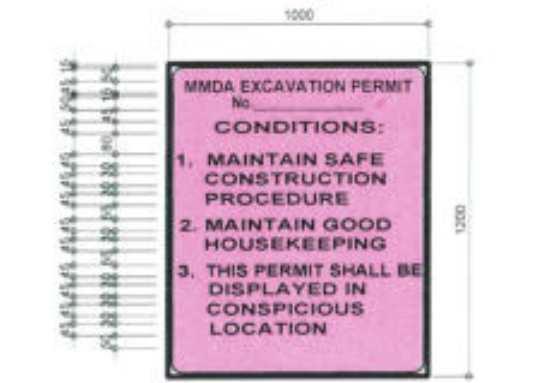
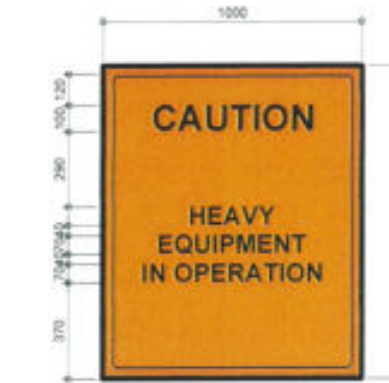
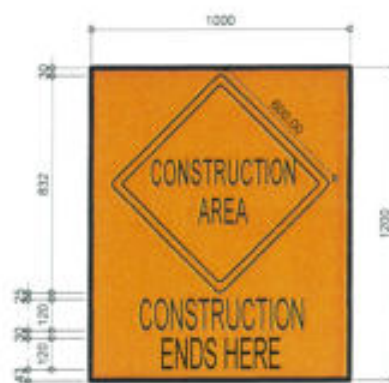
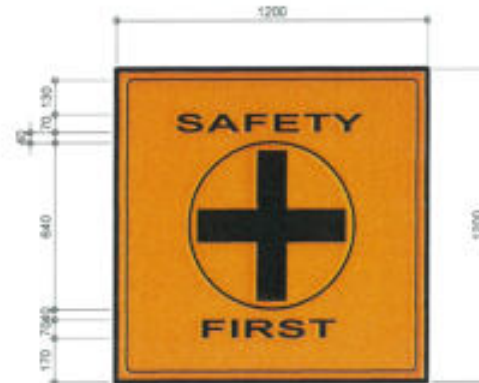
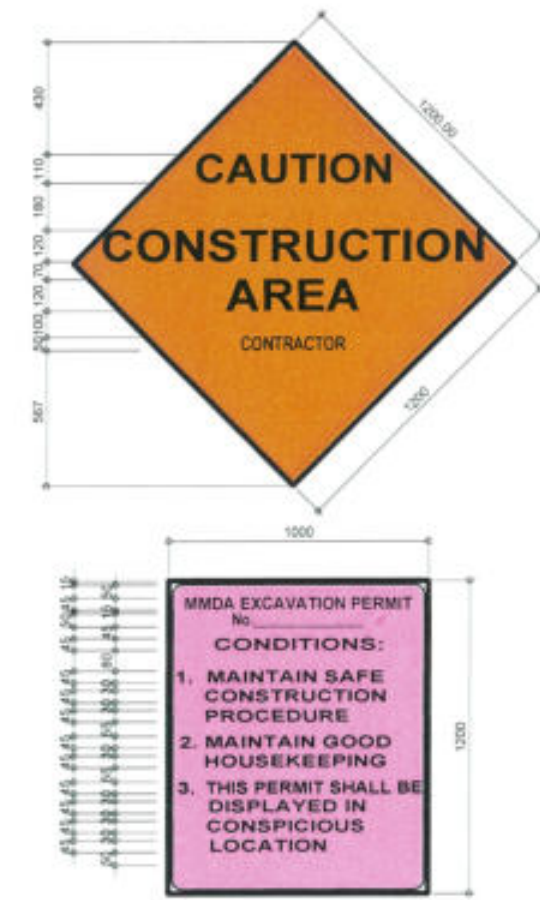
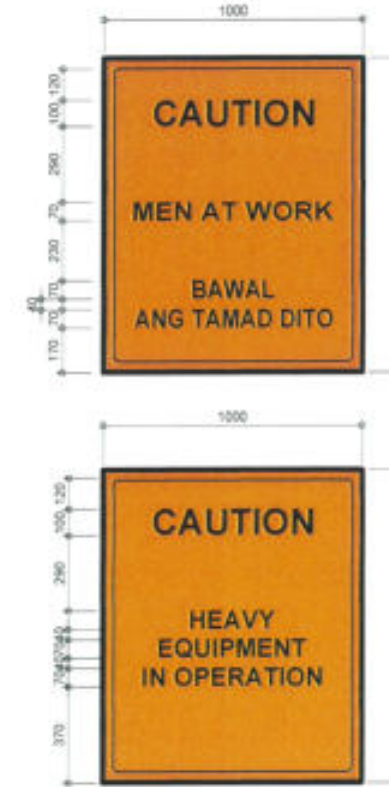
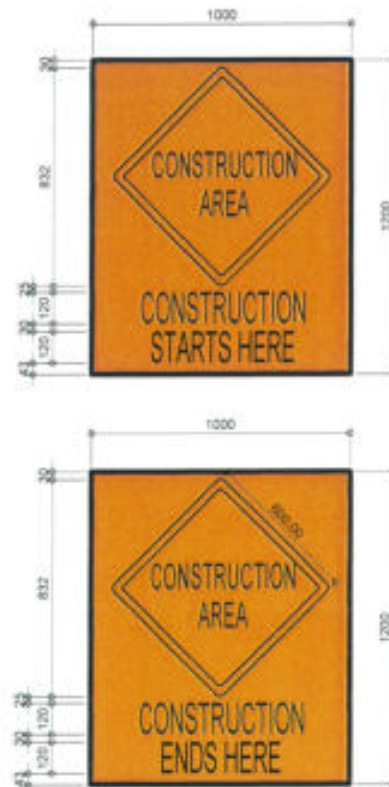
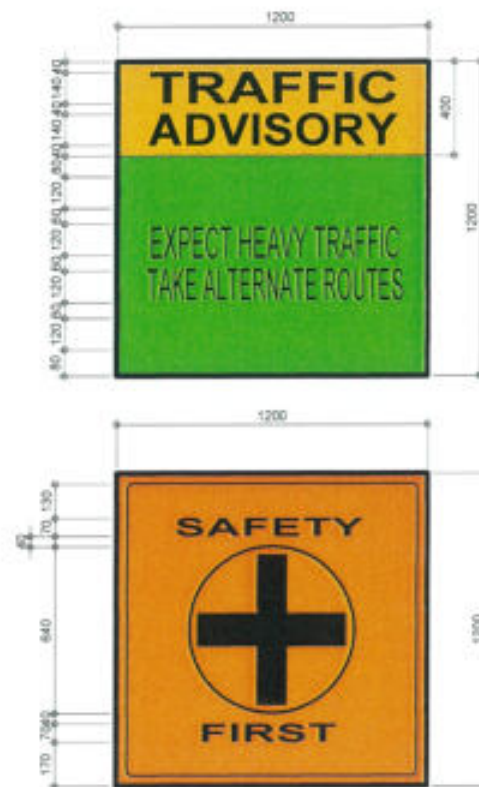


5 FRONT ELEVATION (OPTION 1)
SCALE 1:10 METERS



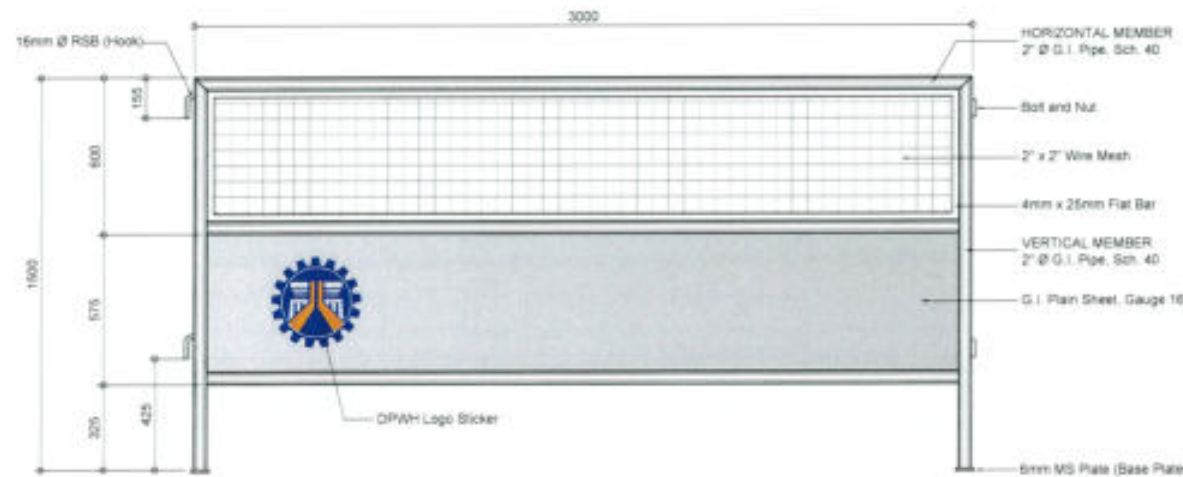
6 FRONT ELEVATION (OPTION 2)
SCALE 1:10 METERS

3 ORIENTATION
SCALE 1:10 METERS



1 SAFETY ROADS AND DEVICES

SCALE 1:20 METERS



2 DETAILS OF STEEL BARRIER

SCALE 1:20 METERS

Republic of the Philippines
COMMISSION ON AUDIT
National Capital Region

Project: _____

Location: _____

Cost: _____
Fund Source(s): _____
Development Partner(s): _____
Implementing Agency: _____
Contractor/Supplier: _____
Brief Description of Project: _____

Project Details:

Project Data							
Duration	Start	Target Date of Completion	Percentage of Completion	No. of Cases	Cost Incurred to Date	Date Completed	Remarks

For particulars or comments about this project, please contact the Regional Office or Cluster which has audit jurisdiction on this project.

COA Regional Office No. 1 Cluster - NCR Cluster 7-Transport, Energy and Public Works
Address: Commonwealth Ave.-Quezon City
Contract Number: 952-5700 or Text COA Citizen's Desk at 0915-539-1967

3 COA BILLBOARD

SCALE 1:20 METERS

TARPAULINE - WHITE - 8FT X 8 FT
RESOLUTION - 70 dpi
FONT - HELVETICA
FONT SIZE - MAIN INFORMATION - 3"
SUB-INFORMATION - 1"
FONT COLOR - BLACK