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PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

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C O N S U L T A N T S

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REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

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STA. 9□360.00 TO STA. 9□400.00	CS-145
STA. 9□420.00 TO STA. 9□440.00	CS-146
STA. 9□460.00 TO STA. 9□480.00	CS-147
STA. 9□500.00 TO STA. 9□520.00	CS-148
STA. 9□540.00 TO STA. 9□560.00	CS-149
STA. 9□580.00 TO STA. 9□600.00	CS-150
STA. 9□620.00 TO STA. 9□640.00	CS-151
STA. 9□660.00 TO STA. 9□680.00	CS-152
STA. 9□700.00 TO STA. 9□720.00	CS-153
STA. 9□740.00 TO STA. 9□760.00	CS-154
STA. 9□780.00 TO STA. 9□800.00	CS-155
STA. 9□820.00 TO STA. 9□840.00	CS-156
STA. 9□860.00 TO STA. 9□880.00	CS-157
STA. 9□900.00 TO STA. 9□920.00	CS-158
STA. 9□940.00 TO STA. 9□960.00	CS-159
STA. 9□980.00 TO STA. 10□000.00	CS-160
STA. 10□020.00 TO STA. 10□040.00	CS-161
STA. 10□060.00 TO STA. 10□080.00	CS-162
STA. 10□100.00 TO STA. 10□120.00	CS-163
STA. 10□140.00 TO STA. 10□160.00	CS-164
STA. 10□180.00 TO STA. 10□200.00	CS-165
STA. 10□220.00 TO STA. 10□240.00	CS-166
STA. 10□260.00 TO STA. 10□280.00	CS-167
STA. 10□300.00 TO STA. 10□320.00	CS-168
STA. 10□340.00 TO STA. 10□360.00	CS-169
STA. 10□380.00 TO STA. 10□400.00	CS-170
STA. 10□420.00 TO STA. 10□440.00	CS-171
STA. 10□460.00 TO STA. 10□480.00	CS-172
STA. 10□500.00 TO STA. 10□540.00	CS-173
STA. 10□560.00 TO STA. 10□600.00	CS-174
STA. 10□620.00 TO STA.10□640.00	CS-175
STA. 10□660.00 TO STA.10□700.00	CS-176
STA. 10□720.00 TO STA.10□740.00	CS-177
BRIDGE 3 ABUT.A STA.10□752.80 TO BRIDGE 3 ABUT. B STA.10□896.80	CS-178
STA. 10□900.00 TO STA.10□920.00	CS-179
STA. 10□940.00 TO STA.10□980.00	CS-180
STA. 11□000.00 TO STA.11□040.00	CS-181
STA.11□060.00 TO STA.11□100.00	CS-182
STA.11□120.00 TO STA.11□160.00	CS-183
STA.11□180.00 TO STA.11□220.00	CS-184
STA.11□240.00 TO STA.11□280.00	CS-185
STA.11□300.00 TO STA.11□340.00	CS-186
STA.11□360.00 TO STA.11□400.00	CS-187
STA.11□420.00 TO STA.11□460.00	CS-188
STA.11□480.00 TO STA.11□520.00	CS-189
STA.11□540.00 TO STA.11□580.00	CS-190
STA.11□600.00 TO STA.11□640.00	CS-191
STA.11□660.00 TO STA.11□700.00	CS-192
STA.11□720.00 TO STA.11□760.00	CS-193
STA.11□780.00 TO STA.11□820.00	CS-194
STA.11□840.00 TO STA.11□880.00	CS-195
STA.11□900.00 TO STA.11□940.00	CS-196
STA.11□960.00 TO STA.12□000.00	CS-197
STA.12□020.00 TO STA.12□060.00	CS-198
STA.12□080.00 TO STA.12□120.00	CS-199
STA.12□140.00 TO STA.12□180.00	CS-200
STA.12□200.00 TO STA.12□240.00	CS-201
STA.12□260.00 TO STA.12□300.00	CS-202
STA.12□320.00 TO STA.12□360.00	CS-203
STA.12□380.00 TO STA.12□420.00	CS-204
STA.12□440.00 TO STA.12□480.00	CS-205
STA.12□500.00 TO STA.12□540.00	CS-206
STA.12□560.00 TO STA.12□600.00	CS-207
STA.12□620.00 TO STA.12□660.00	CS-208
STA.12□680.00 TO STA.12□720.00	CS-209
STA.12□740.00 TO STA.12□780.00	CS-210
STA.12□800.00 TO STA.12□840.00	CS-211
STA.12□860.00 TO STA.12□900.00	CS-212
STA.12□920.00 TO STA.12□960.00	CS-213
STA.12□980.00 TO STA.13□020.00	CS-214
STA.13□040.00 TO STA.13□080.00	CS-215
STA.13□100.00 TO STA.13□140.00	CS-216
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STA.13□460.00 TO STA.13□500.00	CS-222
STA.13□520.00 TO STA.13□560.00	CS-223
BRIDGE 4 ABUT.A STA.13□571.80 TO STA.13□620.00	CS-224
STA.13□640.00 TO STA.13□680.00	CS-225
STA.13□700.00 TO STA.13□740.00	CS-226
STA.13□760.00 TO STA.13□800.00	CS-227
STA.13□820.00 TO STA.13□860.00	CS-228
STA.13□880.00 TO STA.13□920.00	CS-229
STA.13□940.00 TO STA.13□980.00	CS-230
STA.14□000.00 TO STA.14□020.00	CS-231
STA.14□040.00 TO STA.14□060.00	CS-232
STA.14□140.00 TO STA.14□180.00	CS-233
STA.14□140.00 TO STA.14□180.00	CS-234
STA.14□200.00 TO STA.14□240.00	CS-235
STA.14□260.00 TO STA.14□300.00	CS-236
STA.14□320.00 TO STA.14□360.00	CS-237
STA.14□380.00 TO STA.14□420.00	CS-238
STA.14□440.00 TO STA.14□480.00	CS-239
STA.14□500.00 TO STA.14□540.00	CS-240
STA.14□560.00 TO STA.14□600.00	CS-241
STA.14□620.00 TO STA.14□660.00	CS-242
STA.14□680.00 TO STA.14□720.00	CS-243
STA.14□740.00 TO STA.14□780.00	CS-244
STA.14□800.00 TO STA.14□840.00	CS-245
STA.14□860.00 TO STA.14□900.00	CS-246
STA.14□920.00 TO STA.14□960.00	CS-247
STA.14□980.00 TO STA.15□020.00	CS-248
STA.15□040.00 TO STA.15□080.00	CS-249
STA.15□100.00 TO STA.15□140.00	CS-250
STA.15□160.00 TO STA.15□200.00	CS-251
STA.15□220.00 TO STA.15□260.00	CS-252
STA.15□280.00 TO STA.15□320.00	CS-253
STA.15□340.00 TO STA.15□380.00	CS-254
STA.15□400.00 TO STA.15□440.00	CS-255
STA.15□460.00 TO STA.15□500.00	CS-256
STA.15□520.00 TO STA.15□560.00	CS-257
STA.15□580.00 TO STA.15□620.00	CS-258
STA.15□640.00 TO STA.15□680.00	CS-259
STA.15□700.00 TO STA.15□740.00	CS-260
STA.15□760.00 TO STA.15□800.00	CS-261
STA.15□820.00 TO STA.15□860.00	CS-262
STA.15□880.00 TO STA.15□920.00	CS-263
STA.15□940.00 TO STA.15□980.00	CS-264
STA.16□000.00	CS-265

C O N S U L T A N T S

Urban Integrated Consultants, Inc.
UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UIC1
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UIC1
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

INDEX OF DRAWINGS (S□eet 3 o□3)

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO. / SIZE
	G-3 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -

GENERAL NOTES

1.0 SPECIFICATIONS:

1.1 ALL WORKS SHALL COMPLY WITH THE AASHTO STANDARD SPECIFICATIONS, 2004 EDITIONS, VOLUME II–HIGHWAYS, BRIDGES AND AIRPORTS", SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS TO THIS PROJECT.

2.0 DIMENSIONS:

2.1 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

2.2 DIMENSIONS ON DRAINAGE, TYPICAL ROAD SECTION AND STANDARD DRAWINGS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

3.0 STATIONINGS AND RADIUS OF HORIZONTAL CURVE :

3.1 THE STATIONINGS OF HORIZONTAL ALIGNMENT IN KM TO M (0+000) OF THE PROJECT ROAD ARE RELATIVE TO THE CENTERLINE SHOWN ON THE PLANS.

3.2 STATIONINGS OF CIM, MH, AND OTHER STRUCTURES ARE RECKONED AT THE STATIONINGS OF THE CENTERLINE SHOWN ON THE PLANS.

3.3 THE RADIUS OF HORIZONTAL CURVE SHOWN ON THE PLAN WERE BASED ON THE ACTUAL LAID–OUT ROADWAY CENTERLINE.

4.0 HORIZONTAL CONTROLS :

4.1 HORIZONTAL CONTROL WERE ESTABLISHED THRU GLOBAL POSITIONING SYSTEM (GPS) INSTRUMENT.

4.2 AZIMUTHS AND DISTANCES BETWEEN CONTROL POINTS WERE MEASURED BY THE USE OF TOTAL STATION DEVICE.

5.0 VERTICAL CONTROLS :

5.1 VERTICAL CONTROL ARE LOCATED ALONG THE PROJECT ROADS WHICH WERE ESTABLISHED ON PERMANENT STRUCTURES STRATEGICALLY LOCATED. (REFER TO CONTROL MAP INDEX DRAWING).

6.0 ELEVATIONS AND GRADES :

6.1 FINISHED GRADE ELEVATIONS ARE RELATIVE TO CENTERLINE OF THE ROAD.

6.2 THE ELEVATIONS SHOWN ON THE ORIGINAL GROUND ON THE PLAN AND PROFILE ARE RELATIVE TO CENTERLINE OF THE ROAD.

7.0 ROAD CONNECTIONS AND PRIVATE ENTRANCES :

7.1 APPROACHES AND CONNECTIONS SHALL BE CONSTRUCTED BY THE CONTRACTOR AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER IN SUCH A MANNER AS TO ENSURE SMOOTH CONNECTION AND RIDING QUALITY.

7.2 EXACT LOCATIONS OF INTERSECTION ROADS AND PRIVATE ENTRANCES OR DRIVEWAYS WHERE ITEM 7.1 ABOVE APPLIES, SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.

7.3 PROVIDE A DROP CURB AND GUTTER TO EXISTING ENTRANCES AS SHOWN ON THE STANDARD CURB AND GUTTER DRAWINGS.

8.0 DRAINAGE STRUCTURES :

8.1 LOCATIONS OF EXISTING DRAINAGE STRUCTURES REFLECTED IN THE PLAN WERE BASED ON THE TOPOGRAPHIC SURVEY.

8.2 EXACT LOCATIONS, GRADIENTS, OUTFALLS AND TOP & INVERT ELEVATIONS OF DRAINAGE STRUCTURES SHALL BE CHECKED AND VERIFIED IN THE FIELD, DURING CONSTRUCTION BY THE ENGINEER. FIELD ADJUSTMENT MAY BE MADE BY THE ENGINEER TO SUIT ACTUAL FIELD CONDITIONS.

8.3 EXTENSIONS AND OTHER IMPROVEMENTS OF EXISTING DRAINAGE STRUCTURES ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.

8.4 PRIOR TO INSTALLATION OF RCPC AND OTHER DRAINAGE STRUCTURES, ALL MATERIALS MUST BE TESTED AND SHOULD CONFORM WITH THE TECHNICAL SPECIFICATION.

8.5 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY MATERIALS INSTALLED AND FOUND TO BE DEFICIENT IN WORKMANSHIP AND QUALITY OF WORK.

8.6 RCPC DIAMETERS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

8.7 INLETS AND OUTLETS OF NEW AND EXISTING CULVERTS TO BE UTILIZED SHOULD BE CHANNELIZED AND CLEARED OF DEBRIS IN ORDER TO HAVE A SMOOTH FLOW OF WATER.

9.0 REMOVAL OF EXISTING STRUCTURES AND RELOCATION OF EXISTING UTILITIES :

9.1 REMOVAL OF EXISTING BUILDINGS, HOUSES, AND FENCES, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. AND WILL BE PAID ACCORDING TO THE CONTRACT.

9.2 PORTIONS OF EXISTING UTILITIES, SUCH AS WATER LINES, TELEPHONE TRUNK LINES, ELECTRIC LINES ETC. WHICH MAY OBSTRUCT THE CONSTRUCTION OF THE PROJECT SHALL BE RELOCATED BY THE ENTITIES OR OWNERS CONCERNED. EXTREME PRECAUTION SHALL BE EXERCISED BY THE CONTRACTOR SO AS NOT TO DAMAGE THE EXISTING UTILITIES DURING CONSTRUCTION. ANY DAMAGE THEREOF SHALL BE ON THE ACCOUNT OF THE CONTRACTOR.

10.0 ROAD SIGNS :

10.1 ROAD SIGNS SHALL CONFORM WITH THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE OF ROAD SIGNS . (MUTCD).

11.0 PAVEMENT MARKING :

11.1 MARKING SHOULD BE NON–SKID REFLECTORIZED THERMOPLASTIC MATERIALS AND CONFORMS WITH THE LATEST SPECIFICATION OF DPWH.

11.2 THE MATERIALS SHALL NOT PROTRUDE MORE THAN 6mm ABOVE THE LEVEL OF THE ROADWAY.

11.3 PAINT WITH GLASS BEADS EMBEDDED OR PRE–MIXED CAN BE APPLIED EITHER BY HAND OR WITH LINE MARKING MACHINES. FOR PROPER REFLECTORIZATION AT NIGHT, THE AMOUNT OF GLASS BEADS SHOULD BE FROM 0.45kg AND 0.50kg PER LITER OF MIXED PAINT.

11.4 LOCATIONS AND TYPES OF PAVEMENT MARKINGS REFLECTED ON THE PLANS MAY BE CHANGED / ADJUSTED DURING CONSTRUCTION TO SUIT THE ACTUAL FIELD CONDITIONS AS DIRECTED BY THE ENGINEER ON SITE.

12.0 DESIGN DATA / REFERENCE :

12.1 THE DESIGN DATA ADOPTED IN THIS PROJECT WERE MAINLY ESTABLISHED WITH REFERENCE TO AASHTO's. A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS AND DESIGN GUIDELINES, CRITERIA AND STANDARDS (DGCS) OF DPWH.

12.2 GUIDELINES FOR ROAD DRAINAGE DESIGN, DPWH GUIDELINES.

CONSULTANTS	SUBMITTED BY			REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	BCDA CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD GENERAL NOTES	AS SHOWN PROJECT CODE: - DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: G-4 SIZE: A1 DATE REVISED: - REV.: -

L E G E N D

	GUARDRAIL/PARAPET RIGHT SIDE (PROFILE)
	GUARDRAIL/PARAPET LEFT SIDE (PROFILE)
	GROUTED RIPRAP EXISTING GROUTED RIPRAP NEW
	STONE MASONRY
	EXISTING LINE DITCH PROPOSED LINE DITCH
	CUT AND FILL SECTION
	GABIONS
	REINFORCED CONCRETE RETAINING WALL
	CHURCH / CHAPEL
	CEMETERY
	FLARED TYPE HEADWALL L – TYPE HEADWALL
	ROAD SIGN
	STRAIGHT TYPE HEADWALL CATCH BASIN/INLET
	TREES
PI NO.	POINT OF INTERSECTION
N 15,000.00	GRID COORDINATES
DLI-01 (PLAN)	CURB INLET MANHOLE
	ORIGINAL GROUND
(PLAN)	CONTOUR
KM 7 (EXISTING)	KILOMETER POST
	EXISTING ASPHALT PAVEMENT
	HEAVELY DAMAGED EXISTING PCCP
WS	WAITING SHED
	NORTH SIGN

	BENCHMARK
(PLAN)	RECTANGULAR CULVERT
(PLAN)	FLOW
	PIPE CULVERT EXISTING
	PIPE CULVERT NEW
(PLAN) PROFILE	BOX CULVERT EXISTING
(PLAN) PROFILE	BOX CULVERT NEW
KM 49	PLAN FULL KM STATION
	℄ PROJECT ROAD
	EXISTING BRIDGE
	EXISTING RAILROAD TRACKS
	RIVER/CREEK
	EXISTING FENCE EXISTING RAILING
RC	RESIDENTIAL STRUCTURE
C	COMMERCIAL
	EXISTING ELECTRIC POST
0 + 100	STATION
– 0.50%	FINISHED GRADE LINE
	POINT OF VERTICAL CURVE
	RROW
	PROPOSED BRIDGE
	GOOD/NEW PCCP
	PARAPET WALL (PLAN)
	E–POST
	S–LIGHT

A B B R E V I A T I O N S :

ACP	ASPHALT CONCRETE PAVEMENT
AZIM	AZIMUTH
BLDG	BUILDING
BM	BENCH MARK
BOQ	BILL OF QUANTITIES
BR	BRIDGE
BRDY	BOUNDARY
BRGY	BARANGAY
BVCE	BEGINNING OF VERTICAL CURVE ELEV.
BVCS	BEGINNING OF VERTICAL CURVE STATION
BW	BOTHWAYS
CIM	CURB INLET MANHOLE
CL	CENTERLINE
c□	CENTIMETER
CS	CURVE TO SPIRAL
CU	CULVERT
D	DEGREE OF CURVE
DIST.	DISTANCE
DLI-01	DRAINAGE MANHOLE MEMBER
DPWH	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
E	EXTERNAL DISTANCE/EASTING
e	SUPERELEVATION
EB	EAST BOUND
ELEV.	ELEVATION
EXTG	EXISTING
g	GRADIENT
HOR	HORIZONTAL
HW	HEADWALL
I	INTERSECTION ANGLE
I I E	INLET INVERT ELEVATION
INT□	INTERNATIONAL
KMS	KILOMETERS
L	LEFT/LENGTH
Lc	LENGTH OF HORIZONTAL CURVE
L□	LINEAR METER
LT	LEFT
LVC	LENGTH OF VERTICAL CURVE
M	METER
Ma□	MAXIMUM
MH	MANHOLE
□□	MILLIMETER
Mo	MIDDLE ORDINATE/MONTH
MUN	MUNICIPAL
N	NORTHING/NORTH
NB	NORTH BOUND
O.C	ON CENTER
OIE	OUTLET INVERT ELEVATION
PC	POINT OF CURVATURE
PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
PVI	POINT OF VERTICAL INTERSECTION
PVC	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RC	REINFORCED CONCRETE
RCBC	REINFORCED CONCRETE BOX CULVERT
RCPC	REINFORCED CONCRETE PIPE CULVERT
RD	ROAD
RROW	ROAD RIGHT–OF–WAY
RT	RIGHT
S	NORMAL CROSSFALL/SLOPE
SB	SOUTH BOUND
SC	SPIRAL CURVE
SHLDR	SHOULDER
ST	SPIRAL TANGENT
STA	STATION
STD	STANDARD
SW	SOUTH WEST
T	TANGENT
TBM	TEMPORARY BENCH MARK
TS	TANGENT SPIRAL
VC	VERTICAL CURVE
VERT, V	VERTICAL
W	WIDENING
WB	WEST BOUND
WW	WINGWALL

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

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PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

LEGENDS AND ABBREVIATIONS

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO. / SIZE
-	G-5 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
PART A	**FALICITIES FOR THE ENGINEER**		
A.1.1 (3)	Construction of Field Office for the Engineer (Minimum of 180 sq.m. Floor Area)	1.0	l.s.
A.1.1 (10)	Provision of Living Quarters for the Engineer 2units (Rental Basis)	48.0	mo.
A.1.1 (11)	Provision of Furnitures/Fixtures, Equipment & Appliances for the Field Office for the Engineer	1.0	l.s.
A.1.1 (13)	Provision of Furnitures/Fixtures, Equipment & Appliances for the Living Quarters for the Engineer	1.0	l.s.
A.1.1 (16)	Operation and Maintenance of Field Office for the Engineer	24.0	mo.
A.1.1 (18)	Operation and Maintenance of Living Quarters for the Engineer	24.0	mo.
A.1.2 (2)	Provision of (3units) 4x4 Pick Up Type Service Vehicle for the Engineer on Bare Rental Basis	72.0	mo.
A.1.2 (5)	Operation and Maintenance of (3units) 4x4 Pick Up Type Service Vehicle for the Engineer	72.0	mo.
A.1.3 (3)	Provision of Survey Personnel for the Assistance to the Engineer	24.0	mo.
A.1.4 (1)	Provision of Progress Photographs	24.0	mo.
A.1.5 (1)	Provision of Communication Facility for the Engineer	6.0	ea.
PART B	**OTHER GENERAL REQUIREMENT**		
B.2	Medical Room and First Aid Facilities	1.0	l.s.
B.4 (1)	Construction Survey and Staking	15.0	k.m.
B.4 (2)	Slope, Reference, and Clearing and Grubbing stakes	15.0	k.m.
B.4 (3)	Centerline Reestablishment	15.0	k.m.
B.4 (4)	Culvert Survey and Staking	114.0	ea.
B.4 (5)	Bridge Survey and Staking	1.0	l.s.
B.4 (7)	Grade Finishing Stakes	15.0	k.m.
B.4 (8)	Permanent Monuments and Markers	145.0	ea.
B.5	Project Sign board	3.0	ea.
B.7	Construction Occupational Safety and Health Program	24.0	mo.
B.8	Traffic Management	1.0	l.s.
B.9	Mobilization / Demobilization	1.0	l.s.
PART C	**EARTHWORKS**		
100 (1)	Clearing and Grubbing	111.22	Hectare
100 (3)a2	Individual Removal of Trees above 301-500mm dia. Small	650.0	ea.
100 (3)a4	Individual Removal of Trees above 751-900mm dia. Small	560.0	ea.
102 (2)	Roadway Surplus Common Excavation	1,472,109.0	cu.m.
103 (3)	Foundation Fill	7,837.0	cu.m.
103 (6)a	Structure Excavation (Pipe Culverts and Drain Excavation)	122,447.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	3,775,129.0	cu.m.
105 (1)a	Subgrade Preparation (Common Materials)	378,811.0	sq.m.
PART D	**SUBBASE AND BASECOURSE**		
200 (1)	Aggregate Subbase Course	107,212.00	cu.m.
PART E	**SURFACE COURSE**		
311(1)f1	Portland Cement Concrete Pavement (PCCP Unreinforced) 0.30m thick	316,590.00	sq.m.
PART F - BRIDGE CONSTRUCTION			
1.0	**MARIMLA BRIDGE (L=144.0m)**		
103 (2)a	Bridge Excavation (Common Soil)	157.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	4,460.0	cu.m.
202 (1)	Crushed Aggregate Base Course	116.0	cu.m.
400 (23)a13	Bored Pile (2.0m Diameter)	360.0	l.m.
400 (23)a21	Bored Pile (2.80m Diameter)	372.0	l.m.
400 (24)m1	Permanent Casing (2.0m dia. X 12mm thk.)	108.0	l.m.
400 (24)u1	Permanent Casing (2.80m dia. X 16mm thk.)	108.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	19.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	5.0	ea.
401 (2)b	Reinforced Concrete Railing (Baluster), Painted	288.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	39,021.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	350,454.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	116.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	2,128.0	cu.m.
406 (1)h3	Prestressed Structural Concrete Members (Type VI, L=35.0m, I-Girders)	48.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	52.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	96.0	ea.
507 (1)	Rubble Concrete	700.0	cu.m.
508 (1)	Hand Laid Rock Embankment	157.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	224.0	l.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	493.0	sq.m.

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
2.0	**BRIDGE - 3 (L=144.0m)**		
103 (2)a	Bridge Excavation (Common Soil)	682.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	4,492.0	cu.m.
202 (1)	Crushed Aggregate Base Course	116.0	cu.m.
400 (23)a13	Bored Pile (2.0m Diameter)	360.0	l.m.
400 (23)a21	Bored Pile (2.80m Diameter)	360.0	l.m.
400 (24)m1	Permanent Casing (2.0m dia. X 12mm thk.)	108.0	l.m.
400 (24)u1	Permanent Casing (2.80m dia. X 16mm thk.)	108.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	19.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	5.0	ea.
401 (2)b	Reinforced Concrete Railing (Baluster), Painted	292.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	36,814.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	378,298.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	116.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	2,703.0	cu.m.
406 (1)h4	Prestressed Structural Concrete Members (Type VI, L=35.8m, I-Girders)	48.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	52.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	96.0	ea.
507 (1)	Rubble Concrete	845.0	cu.m.
508 (1)	Hand Laid Rock Embankment	273.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	280.0	l.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	389.0	sq.m.
3.0	**BRIDGE-4 (L=3.60m)**		
103 (2)a	Bridge Excavation (Common Soil)	431.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	2,257.0	cu.m.
202 (1)	Crushed Aggregate Base Course	124.0	cu.m.
400 (23)a9	Bored Pile (1.60m Diameter)	360.0	l.m.
400 (24)t1	Permanent Casing (1.60m dia. X 12mm thk.)	108.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	10.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	2.0	ea.
401 (2)a	Concrete Railing (Standard)	72.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	12,677.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	111,488.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	124.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	713.0	cu.m.
406 (1)h3	Prestressed Structural Concrete Members (Type VI, L=35.00m, I-Girders)	12.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	56.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	24.0	ea.
507 (1)	Rubble Concrete	484.0	cu.m.
508 (1)	Hand Laid Rock Embankment	162.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	56.0	l.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	188.0	sq.m.
4.0	**OVERPASS-1 (L=65.86m) AND ROADWAY**		
105 (1)a	Subgrade Preparation (Common Materials)	5,588.0	sq.m.
103 (2)a	Bridge Excavation (Common Soil)	237.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	25,839.0	cu.m.
200 (1)	Aggregate Subbase Course	675.0	cu.m.
202 (1)	Crushed Aggregate Base Course	74.0	cu.m.
300 (2)	Crushed Aggregate Surface Course	1,233.0	cu.m.
311 (1)f1	Portland Cement Concrete Pavement (PCCP Unreinforced) 0.30m thick	2,912.0	sq.m.
400 (23)a13	Bored Pile (2.0m Diameter)	120.0	l.m.
400 (23)a19	Bored Pile (2.60m Diameter)	45.0	l.m.
400 (24)m1	Permanent Casing (2.0m dia. X 12mm thk.)	36.0	l.m.
400 (24)s1	Permanent Casing (2.60m dia. X 16mm thk.)	18.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	6.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	3.0	ea.
401 (2)a	Concrete Railing (Standard)	132.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	8,517.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	55,348.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	74.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	431.0	cu.m.
406 (1)g8	Prestressed Structural Concrete Members (Type V, L=32.75m, I-Girders)	8.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	14.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	16.0	ea.
507 (1)	Rubble Concrete	350.0	cu.m.
508 (1)	Hand Laid Rock Embankment	237.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	208.0	l.m.
603 (3)a1	Metal Guardrail (Metal Beam) Including Post W-Beam	40.0	l.m.
603 (4)a	Metal Beam, End Piece	8.0	ea.
612 (1)	Reflectorized Thermoplastic Pavement Marking (White) 3.20mm thick	179.0	sq.m.
613 (1)	Concrete Joint Sealant (Hot-Poure Elastic Type)	41.0	kgs.
622 (1)b	Bio-Engineering Solutions (Coco-net 700 CN)	5,803.0	sq.m.
622 (3)a	Bio Engineering Solution (Vegetation Hydroseeding Grass Cover)	5,803.0	sq.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	100.0	sq.m.

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
5.0	**OVERPASS - 2 (L=81.30m)**		
103 (2)a	Bridge Excavation (Common Soil)	155.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	811.0	cu.m.
202 (1)	Crushed Aggregate Base Course	102.0	cu.m.
400 (23)a7	Bored Pile (1.40m Diameter)	360.0	l.m.
400 (24)g1	Permanent Casing (1.40m dia. X 10mm thk.)	108.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	10.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	2.0	ea.
401 (2)a	Concrete Railing (Standard)	64.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	11,882.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	111,561.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	102.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	781.0	cu.m.
406 (1)g6	Prestressed Structural Concrete Members (Type V, L=31.30m, I-Girders)	12.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	56.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	24.0	ea.
507 (1)	Rubble Concrete	411.0	cu.m.
508 (1)	Hand Laid Rock Embankment	155.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	175.0	l.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	202.0	sq.m.
6.0	**OVERPASS-3 (L=64.86m)**		
105 (1)a	Subgrade Preparation (Common Materials)	3,320.0	sq.m.
103 (2)a	Bridge Excavation (Common Soil)	330.0	cu.m.
104 (1)a	Embankment (From Roadway Excavation)	4,272.0	cu.m.
200 (1)	Aggregate Subbase Course	520.0	cu.m.
202 (1)	Crushed Aggregate Base Course	74.0	cu.m.
300 (2)	Crushed Aggregate Surface Course	734.0	cu.m.
311 (1)f1	Portland Cement Concrete Pavement (PCCP Unreinforced) 0.30m thick	1,730.0	sq.m.
400 (23)a7	Bored Pile (1.40m Diameter)	120.0	l.m.
400 (23)a19	Bored Pile (2.60m Diameter)	45.0	l.m.
400 (24)g1	Permanent Casing (1.40m dia. X 10mm thk.)	36.0	l.m.
400 (24)s1	Permanent Casing (2.60m dia. X 16mm thk.)	18.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	6.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	3.0	ea.
401 (2)a	Concrete Railing (Standard)	130.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	7,515.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	51,576.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	74.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	424.0	cu.m.
406 (1)g7	Prestressed Structural Concrete Members (Type V, L=32m, I-Girders)	8.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	14.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	16.0	ea.
506 (1)	Stone Masonry	518.0	cu.m.
507 (1)	Rubble Concrete	278.0	cu.m.
508 (1)	Hand Laid Rock Embankment	380.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	208.0	l.m.
603 (3)a1	Metal Guardrail (Metal Beam) Including Post W-Beam	40.0	l.m.
603 (4)a	Metal Beam, End Piece	8.0	ea.
612 (1)	Reflectorized Thermoplastic Pavement Marking (White) 3.20mm thick	114.0	sq.m.
613 (1)	Concrete Joint Sealant (Hot-Poure Elastic Type)	26.0	kgs.
622 (1)b	Bio-Engineering Solutions (Coco-net 700 CN)	1,542.0	sq.m.
622 (3)a	Bio Engineering Solution (Vegetation Hydroseeding Grass Cover)	1,542.0	sq.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	56.0	sq.m.
7.0	**OVERPASS - 4 (L=84.20m)**		
103 (2)a	Bridge Excavation (Common Soil)	268.0	cu.m.
104 (1)a	Embankment From Barrow (Common Soil)	5,844.0	cu.m.
202 (1)	Crushed Aggregate Base Course	102.0	cu.m.
400 (23)a13	Bored Pile (2.0m Diameter)	360.0	l.m.
400 (24)m1	Permanent Casing (2.0m dia. X 12mm thk.)	108.0	l.m.
400 (27)a	Load Test (Low Strain Dynamic Method, PIT)	10.0	ea.
400 (28)	Load Test (Pile Dynamic Method,PDA)	2.0	ea.
401 (2)a	Concrete Railing (Standard)	69.0	l.m.
404 (1)a	Reinforcing Steel Bar (GRADE 40)	10,527.0	kgs.
404 (1)b	Reinforcing Steel Bar (GRADE 60)	125,632.0	kgs.
405 (1)b2	Structural Concrete Class "A"(f'c= 27.58 Mpa), 14days	102.0	cu.m.
405 (1)b3	Structural Concrete Class "A"(f'c= 27.58 Mpa), 28days	962.0	cu.m.
406 (1)h2	Prestressed Structural Concrete Members (Type VI, L=34.20m, I-Girders)	12.0	ea.
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	56.0	cu.m.
412 (1)	Elastomeric Bearing Pad DURO 60	24.0	ea.
507 (1)	Rubble Concrete	809.0	cu.m.
508 (1)	Hand Laid Rock Embankment	280.0	cu.m.
517 (1)a	Drain Pipe 100mm dia. Galvanized Pipe including Pipe Fittings	194.0	l.m.
SPL-801	Premolded Expansion Joint Filler with Sealant	218.0	sq.m.

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD

SUMMARY OF QUANTITIES (Sheet 1 of 2)

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
-	G-6	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
PART G	**DRAINAGE STRUCTURES**		
404 (1)a	Reinforcing Steel, Grade 40 (Drainage Structures)	5,358,079.00	kgs.
405 (1)a3	Structural Concrete, Class "A" (Drainage Structures)	41,630.00	cu.m.
407 (8)	Lean Concrete Class "B" 16.5MPa (Drainage Structures)	592.00	cu.m.
500 (1)a	Pipe Culvert, 460mm dia. Class II, TYPE B (RCPC)	2,664.00	l.m.
500 (1)a3	Pipe Culvert, 910mm dia. Class II, TYPE B (RCPC)	1,677.0	l.m.
502 (1)a	Manhole (1.0m x 1.0m) for 460mm Ø RCPC	2,664.0	ea.
502 (1)a7	Manhole (1.50m x 1.50m) for Lateral Drained	2,664.0	ea.
502 (3)a3	Catch Basins 910mm dia.	11.0	ea.
502 (4)a	Concrete Cover for Manhole (1.0m x 1.0m)	5,328.0	ea.
502 (4)a7	Concrete Cover for Manhole (1.50m x 1.50m)	5,328.0	ea.
505 (2)a	Grouted Riprap Class "A"	5,416.0	cu.m.
506 (1)	Stone Masonry	19,338.0	cu.m.
PART H	**MISCELLANEOUS STRUCTURES**		
600 (1)	Concrete Curb (Cast in Place)	29,636.00	l.m.
600 (4)	Combination Curb and Gutter (Cast in Place)	29,636.00	l.m.
602 (3)b	Kilometer Post (Precast)	14.0	ea.
603 (3)a1	Metal Guardrail (Metal Beam) Including Post W-Beam	1,562.00	l.m.
603 (4)a	Metal Beam, End Piece	313.00	ea.
604 (2)	Fencing Chain Link Fence Fabric (Including Pedestal)	7,920.0	l.m.
605 (1)c2	Warning Signs, 750mm Triangle (W 1-3B)	45.0	ea
605 (1)g3	Warning Signs, 750mm Triangle (W 2-1C), Cross Road	3.0	ea
605 (1)j3	Warning Signs, 750mm Triangle (W 2-4C), T-Junction	2.0	ea
605 (2)r2	Regulatory Signs, 600mm Circle, (R4-1B)	45.0	ea
605 (3)	Guide or Informative Signs, 800mm x 1200mm Rectangle (Load Limit)	10.0	ea
605 (3)a2	Guide or Informative Signs, 960mm x 2100mm Rectangle (G1-2) Advance Direction	2.0	ea
612 (1)	Reflectorized Thermoplastic Pavement Marking (White) 3.20mm thick	9,135.0	sq.m.
613 (1)	Concrete Joint Sealant (Hot-Poure Elastic Type)	3,704.0	kgs.
618 (1)	Reflectorized Thermoplastic RUMBLE STRIP (White) 6.0mm thick	675.0	sq.m.
622 (1)b	Bio-Engineering Solutions (Coco-net 700 CN)	505,035.0	sq.m.
622 (3)a	Bio Engineering Solution (Vegetation Hydroseeding Grass Cover)	505,035.0	sq.m.
PART J	**STREETLIGHTS AND AREA LIGHTINGS**		
103(1)a	Structure Excavation (Streetlight Concrete Pedestal)	1,874.0	cu.m.
103(3)b	Structure Backfill (From Excavation Materials)	1,539.0	cu.m.
SPL-1000	Construction of Steel Pole Concrete Pedestal, Including Rebars and Anchor Bolts w/ nut & Washer 25mm x 762mm	366.0	sets
SPL-1100-1	Supply & Install, 12 m. HIGH STEEL LIGHTING POLE, 3.0m - Single Arms, Including Ground Rod w/ Clamp	6.0	sets
SPL-1100-2	Supply & Install, 12 m. HIGH STEEL LIGHTING POLE, 3.0m - Double Arms, Including Ground Rod w/ Clamp	360.0	sets
SPL-1100-3	Supply & Install, 120W LED Roadway Luminaire, Post Mounting with Copper Split bolt Connector	726.0	sets
SPL-1100-4	Supply & Install, THW Copper Wire, 22mm²	147,070.0	l.m.
SPL-1100-5	Supply & Install, THW Copper Wire, 8mm²	73,585.0	l.m.
SPL-1100-6	Supply & Install, THW Copper Wire, 3.5mm²	21,960.0	l.m.
SPL-1100-7	Supply & Install, 50mm Ø PVC Pipe with Coupling	58,005.0	l.m.
SPL-1100-8	Supply & Install, Enclosed Circuit Breaker, 2P30A 22KAIC, NEMA-4x, with 50mm HUB	76.0	sets
SPL-1100-9	Supply & Install, Panel Board, MCB: 3P225AT; BRS: 24-2P40AT; NEMA-4x	11.0	sets
SPL-1100-10	Supply & Install Syncronizing Panel, 4-45KVA, 3ϕ, 400V, 60HZ, PLC	11.0	sets
SPL-1100-11	Supply & Install Generator Set, Diesel, 45KV, 3ϕ, 430V, 60HZ. Brushless	22.0	sets
SPL-1100-12	Construction of Powerhouse Building, 4m x 6m	11.0	units
SPL-1100-13	Standard Electrical Handhole, for Service Lateral Connection	240.0	units
SPL-1100-14	Supply & Install Metered Electric Utility Services for 45KVA, 3ϕ,400V	11.0	units
SPL-1100-15	Miscellaneous & Consumables	1.0	lot
PART K	**STREET LANDSCAPE**		
105 (1)a	Subgrade Preparation (Common Materials)	242,675.0	sq.m.
200 (1)	Aggregate Subbase Course	14,109.0	cu.m.
202 (1)	Crushed Aggregate Base Course	10,159.0	cu.m.
601 (1)a	Reinforced Concrete Sidewalk 0.10m thk., with Homogeneous Granite Tile Finished	56,436.0	sq.m.
601 (1)b	Reinforced Concrete Sidewalk 0.10m thk., with Colored Cement Finished	42,327.0	sq.m.
601 (1)c	Sidewalk Concrete Plank Paver Finished (0.125m x 0.368m, Dark Gray)	42,327.0	sq.m.
SPL-1200-1	BIKEWAY PAVING (75mm thick Reinforced Concrete with Exposed GLOW IN THE DARK AGGREGATES Finished)	101,585.0	sq.m.
SPL-1200-2	Supply and Installed 6.0m High Pedestrian Lamp Post Double Arms with 70W Luminaire @ 30m O.C., Including Concrete Pedestal & Ground Rod w/ Clamp, (Theos by Performance in Lighting)	940.0	sets.

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
	CENTER ISLAND PLANTING (INSIDE CITY)		
SPL-1200-3	Tree - DITA, Alstonia Scholaris, 3000mm Ht., 50mm Trunk Caliper	282.0	pcs.
SPL-1200-4	Tree - ANAHAW, Livistonia Rotundifolia, 5000mm. Ht., 75mm Trunk Caliper	20.0	pcs.
SPL-1200-5	Tree - PALAWAN CHERRY (Cassia Philippinesis), 3000mm. Ht.	282.0	pcs.
SPL-1200-6	Tree - AFRICAN TULIP TREE (Spathodea campanulata), 3000mm. Ht.	282.0	pcs.
SPL-1200-7	Tree - TOOG (Petersianthus quadrialata), 3000mm. Ht.	282.0	pcs.
SPL-1200-8	Tree - YELLOW PONCIANA TREE (Peltophorum pterocarpum), 3000mm. Ht.	282.0	pcs.
	SHRUB COMBINATION - 1		
SPL-1200-9	SHRUB - SELLOUM (Philodendron Selloum), 500mm Ht.	14,080.0	pcs.
SPL-1200-10	SHRUB - BEACH KANGKONG (Ipomoea pes-caprae), 600mm, Long	30,976.0	pcs.
SPL-1200-11	SHRUB - SPIDERLILY Hymenocallis Littoralis, 500mm Ht.	14,080.0	pcs.
SPL-1200-12	SHRUB - FUSCHIA BOUGAINVILLEA (Bougainvillea Spectabilis cv.), 300mm Ht.	14,080.0	pcs.
	SHRUB COMBINATION - 2		
SPL-1200-13	SHRUB - WEDELIA Trilobata, Wedelia 250mm Ht.	30,976.0	pcs.
SPL-1200-14	SHRUB - YELLOW IRIS (Iris Pseudacorus), 500mm Ht.	30,976.0	pcs.
SPL-1200-15	SHRUB -CIGAR PLANT (Calathea lutea), 750mm Ht.	8,448.0	pcs.
SPL-1200-16	SHRUB - YELLOW CRINUM (Crinum Xanthophyllum), 500mm Ht.	14,080.0	pcs.
	SHRUB COMBINATION - 3		
SPL-1200-9	SHRUB - SELLOUM (Philodendron Selloum), 500mm Ht.	14,080.0	pcs.
SPL-1200-12	SHRUB - FUSCHIA BOUGAINVILLEA (Bougainvillea Spectabilis cv.), 300mm Ht.	14,080.0	pcs.
SPL-1200-14	SHRUB - YELLOW IRIS (Iris Pseudacorus), 500mm Ht.	30,976.0	pcs.
SPL-1200-17	SHRUB - ELEPHANT EAR (Alocasia odorata), 600mm Ht.	14,080.0	pcs.
	SHRUB COMBINATION - 4		
SPL-1200-10	SHRUB - BEACH KANGKONG (Ipomoea pes-caprae), 600mm, Long	30,976.0	pcs.
SPL-1200-15	SHRUB -CIGAR PLANT (Calathea lutea), 750mm Ht.	8,448.0	pcs.
SPL-1200-16	SHRUB - YELLOW CRINUM (Crinum Xanthophyllum), 500mm Ht.	14,080.0	pcs.
SPL-1200-18	SHRUB - PEANUT PLANT (Arachis Pintoi), 150mm Ht.	58,080.0	pcs.
	ROADSIDE PLANTING (INSIDE CITY)		
SPL-1200-3	Tree - DITA, Alstonia Scholaris, 3000mm Ht., 50mm Trunk Caliper	564.0	pcs.
SPL-1200-5	Tree - PALAWAN CHERRY (Cassia Philippinesis), 3000mm. Ht.	564.0	pcs.
SPL-1200-6	Tree - AFRICAN TULIP TREE (Spathodea campanulata), 3000mm. Ht.	564.0	pcs.
SPL-1200-7	Tree - TOOG (Petersianthus quadrialata), 3000mm. Ht.	564.0	pcs.
SPL-1200-8	Tree - YELLOW PONCIANA TREE (Peltophorum pterocarpum), 3000mm. Ht.	564.0	pcs.
	SHRUB COMBINATION - 1		
SPL-1200-9	SHRUB - SELLOUM (Philodendron Selloum), 500mm Ht.	38,720.0	pcs.
SPL-1200-10	SHRUB - BEACH KANGKONG (Ipomoea pes-caprae), 600mm, Long	70,400.0	pcs.
SPL-1200-11	SHRUB - SPIDERLILY Hymenocallis Littoralis, 500mm Ht.	38,720.0	pcs.
SPL-1200-12	SHRUB - FUSCHIA BOUGAINVILLEA (Bougainvillea Spectabilis cv.), 300mm Ht.	38,720.0	pcs.
	SHRUB COMBINATION - 2		
SPL-1200-13	SHRUB - WEDELIA Trilobata, Wedelia 250mm Ht.	70,400.0	pcs.
SPL-1200-14	SHRUB - YELLOW IRIS (Iris Pseudacorus), 500mm Ht.	70,400.0	pcs.
SPL-1200-15	SHRUB -CIGAR PLANT (Calathea lutea), 750mm Ht.	16,896.0	pcs.
SPL-1200-16	SHRUB - YELLOW CRINUM (Crinum Xanthophyllum), 500mm Ht.	38,720.0	pcs.

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
	SHRUB COMBINATION - 3		
SPL-1200-9	SHRUB - SELLOUM (Philodendron Selloum), 500mm Ht.	38,720.0	pcs.
SPL-1200-12	SHRUB - FUSCHIA BOUGAINVILLEA (Bougainvillea Spectabilis cv.), 300mm Ht.	38,720.0	pcs.
SPL-1200-14	SHRUB - YELLOW IRIS (Iris Pseudacorus), 500mm Ht.	70,400.0	pcs.
SPL-1200-17	SHRUB - ELEPHANT EAR (Alocasia odorata), 600mm Ht.	38,720.0	pcs.
	SHRUB COMBINATION - 4		
SPL-1200-10	SHRUB - BEACH KANGKONG (Ipomoea pes-caprae), 600mm, Long	70,400.0	pcs.
SPL-1200-15	SHRUB -CIGAR PLANT (Calathea lutea), 750mm Ht.	16,896.0	pcs.
SPL-1200-16	SHRUB - YELLOW CRINUM (Crinum Xanthophyllum), 500mm Ht.	38,720.0	pcs.
SPL-1200-18	SHRUB - PEANUT PLANT (Arachis Pintoi), 150mm Ht.	119,680.0	pcs.
	SHRUB COMBINATION - 3		
SPL-1200-11	SHRUB - SPIDERLILY Hymenocallis Littoralis, 500mm Ht.	38,720.0	pcs.
SPL-1200-13	SHRUB - WEDELIA Trilobata, Wedelia 250mm Ht.	70,400.0	pcs.
SPL-1200-17	SHRUB - ELEPHANT EAR (Alocasia odorata), 600mm Ht.	38,720.0	pcs.
SPL-1200-18	SHRUB - PEANUT PLANT (Arachis Pintoi), 150mm Ht.	119,680.0	pcs.
	SHRUB COMBINATION - 4		
SPL-1200-9	SHRUB - SELLOUM (Philodendron Selloum), 500mm Ht.	38,720.0	pcs.
SPL-1200-10	SHRUB - BEACH KANGKONG (Ipomoea pes-caprae), 600mm, Long	70,400.0	pcs.
SPL-1200-14	SHRUB - YELLOW IRIS (Iris Pseudacorus), 500mm Ht.	70,400.0	pcs.
SPL-1200-24	SHRUB - RED COSTUS (Costus Spectabilis), 300mm Ht.	38,720.0	pcs.
	ROAD INTERSECTION PLANTING (INSIDE CITY)		
SPL-1200-5	Tree - PALAWAN CHERRY (Cassia Philippiniensis), 3000mm Ht.	8.0	pcs.
SPL-1200-11	SPIDERLILY Hymenocallis Littoralis, 500mm Ht. (at Center Island)	88.0	pcs.
SPL-1200-25	FROG GRASS (Paspalum cv.)	48.0	sq.m.
	GRASS STRIP AT WALKWAY (INSIDE CITY)		
SPL-1200-25	FROG GRASS (Paspalum cv.)	1,068.0	sq.m.
	MISCELLANEOUS ITEMS		
SPL-1200-26	GARDEN SOIL (300mm thick)	35,767.0	cu.m.
SPL-1200-27	Supply and Install Quick Coupler System complete Accessories, with Rain Bird Rectangular Sprinkler Valve Box @ 30m o.c.	1,410.0	pcs.
SPL-1200-28	Supply and Install 32mm dia. PVC Pipe with Fittings	44,444.0	l.m.

NOTE : The Quantities of all work items involved are subject to increase/decrease as per actual field requirement

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

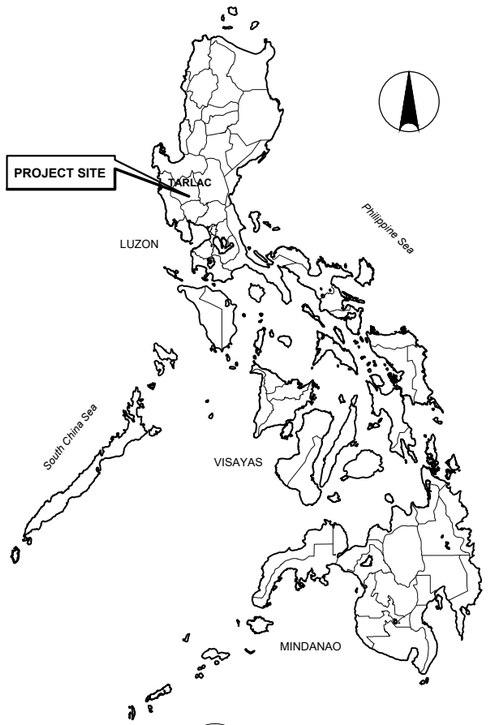
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

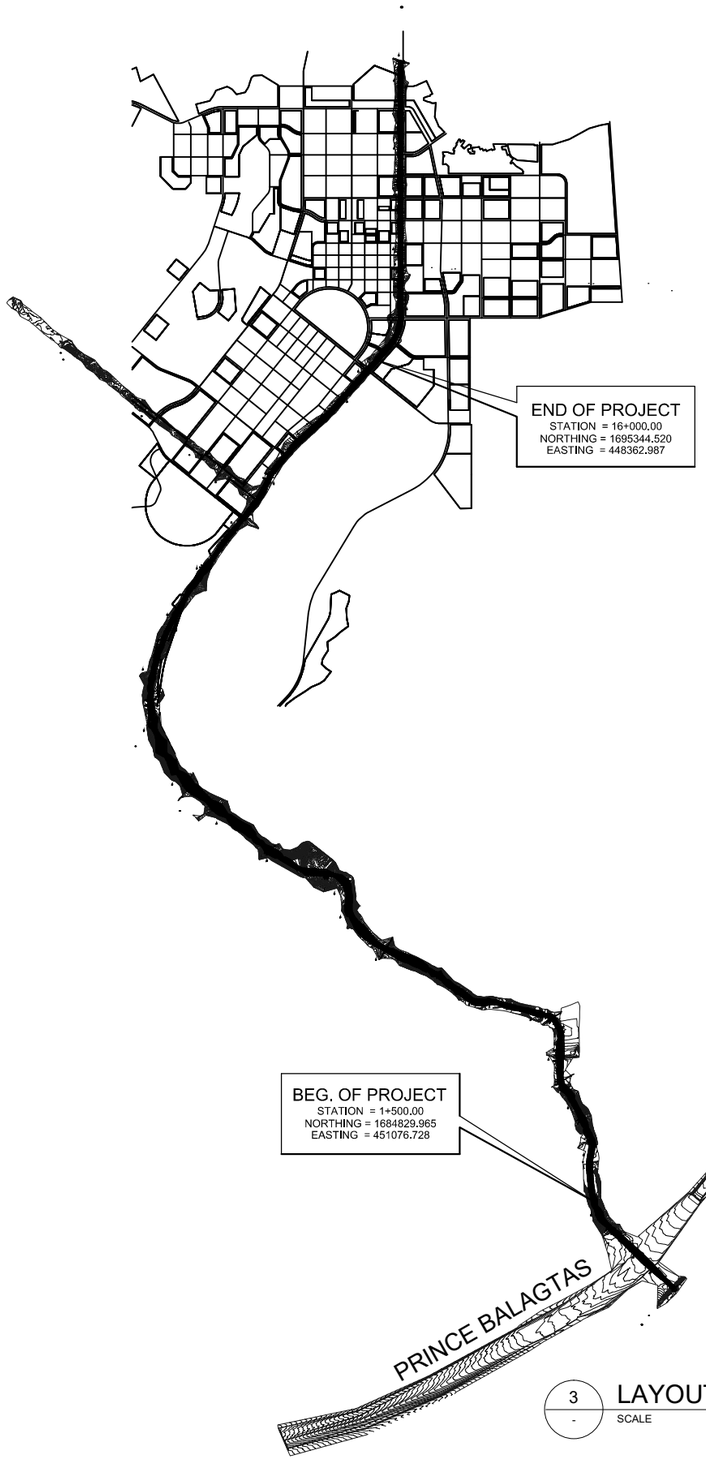
PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD
SUMMARY OF QUANTITIES (Sheet 2 of 2)

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
-	G-7	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

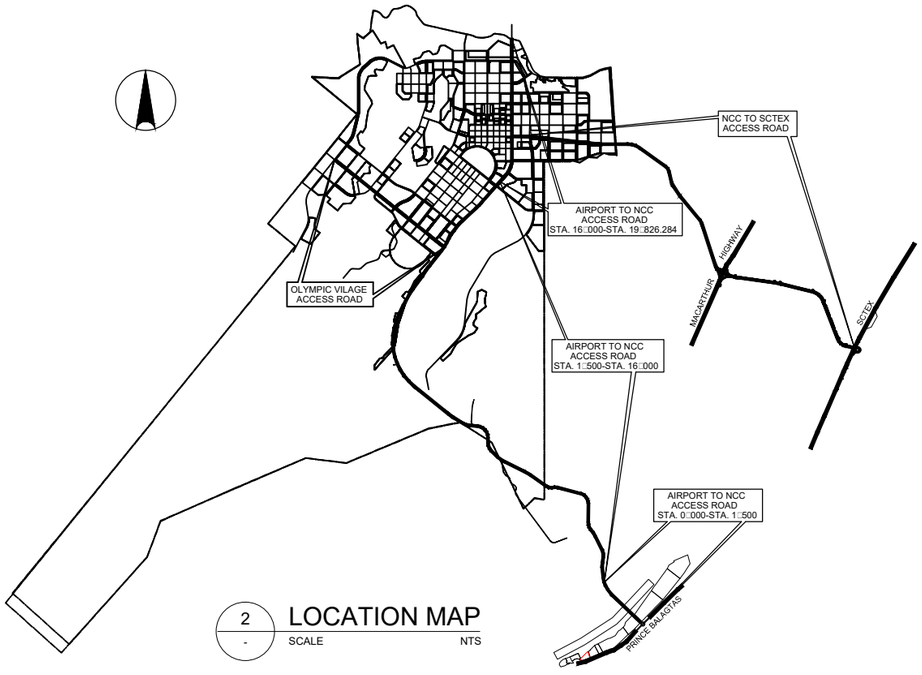
ROADWAY



1 KEY MAP
SCALE - NTS



3 LAYOUT PLAN
SCALE - NTS



2 LOCATION MAP
SCALE - NTS

CONSULTANTS

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SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS		DATE
A		
B		
C		
D		
E		
F		

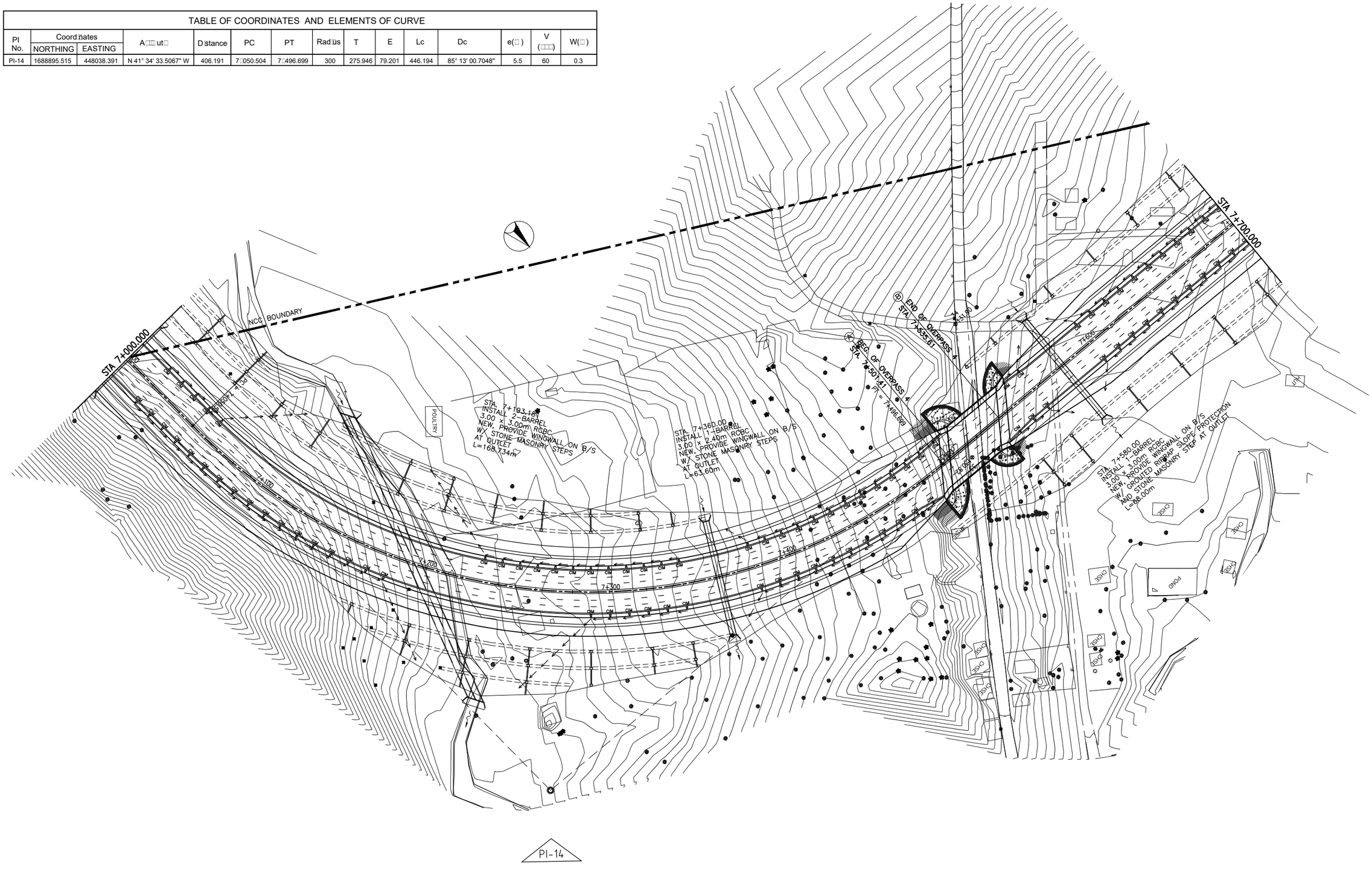
PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD

KEY MAP AND LAYOUT PLAN

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
	R-1	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

TABLE OF COORDINATES AND ELEMENTS OF CURVE															
PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-14	1688895.515	448038.391	N 41° 34' 33.5067" W	406.191	7+050.504	7+496.699	300	275.946	79.201	446.194	85° 13' 00.7048"	5.5	60	0.3



CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 7 □000.000 - STA. 7 □700.000	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. / SIZE
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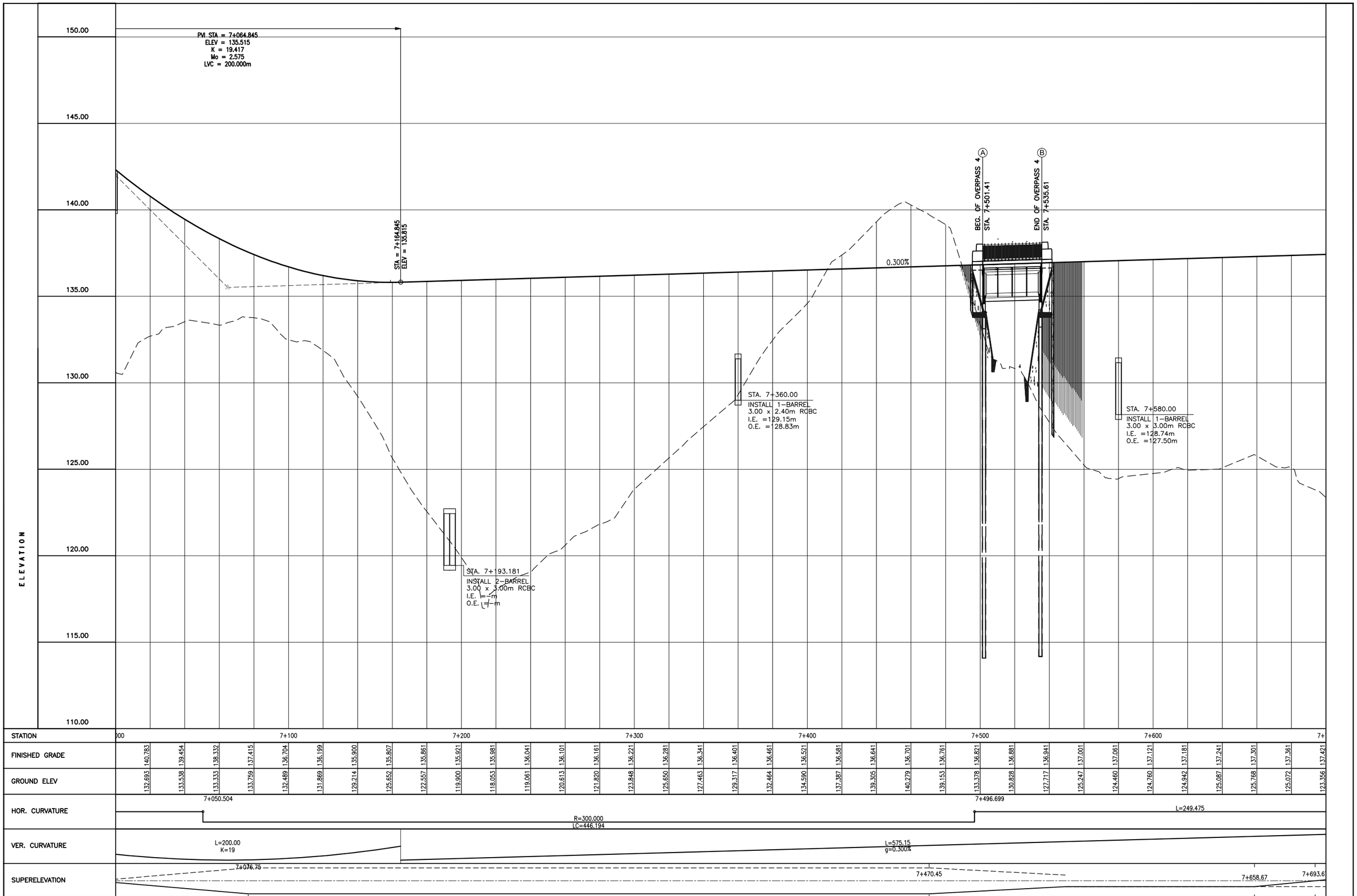
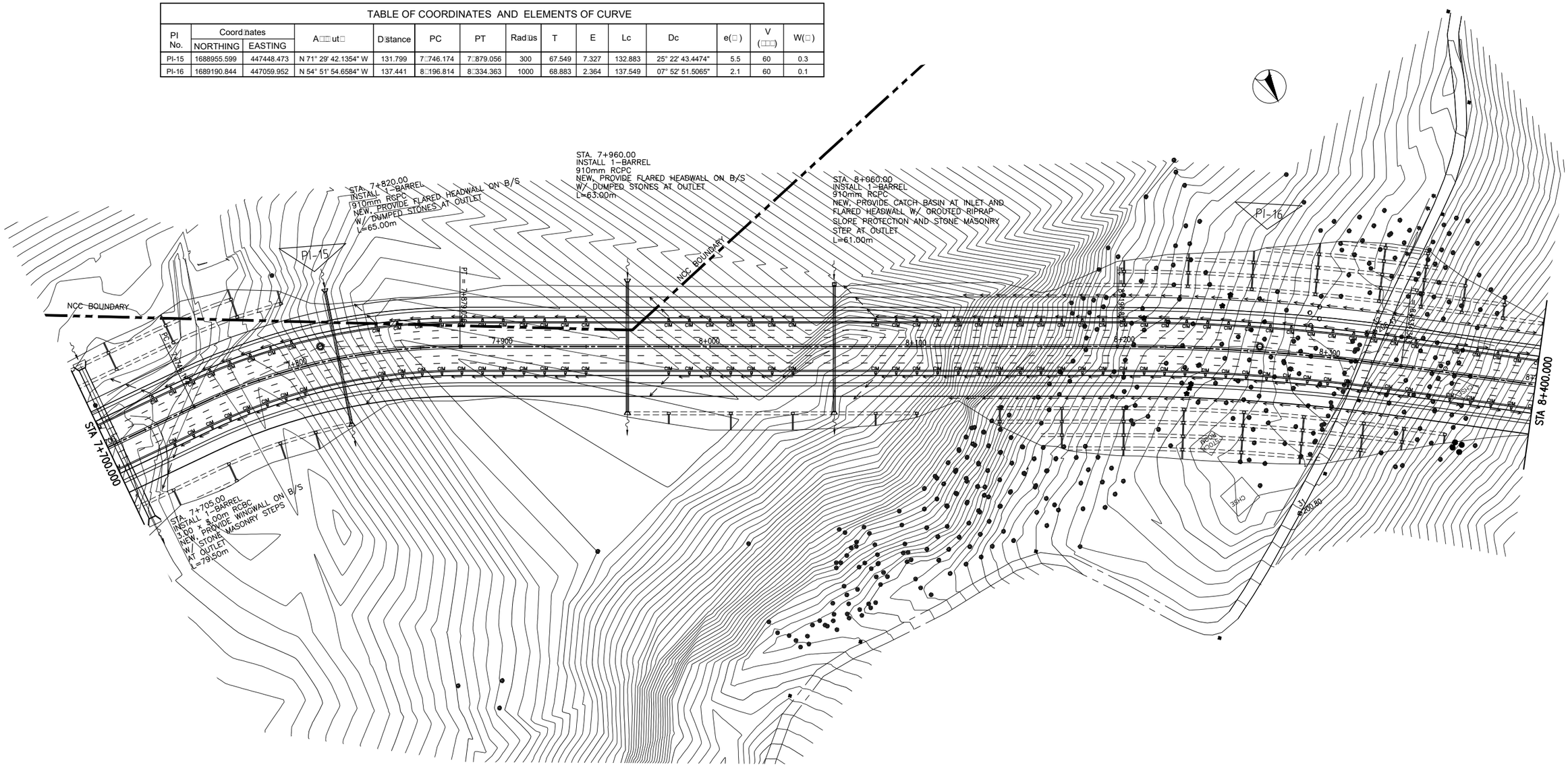
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER APPROVED BY: JOVITO M. SUNGA, OIC - PMD DATE: - DATE: -	A B C D E F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	FINAL DRAWINGS
SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD	PROJECT CODE	DRAWING NO. / SIZE
PROFILE STA. 7 □000.000 - STA. 7 □700.000		R-15 / A1
	DATE APPROVED	DATE REVISED / REV.
	-	- / -

TABLE OF COORDINATES AND ELEMENTS OF CURVE														
PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-15	1688955.599	447448.473	N 71° 29' 42.1354" W	131.799	7+746.174	7+879.056	300	67.549	7.327	132.883	25° 22' 43.4474"	5.5	60	0.3
PI-16	1689190.844	447059.952	N 54° 51' 54.6584" W	137.441	8+196.814	8+334.363	1000	68.883	2.364	137.549	07° 52' 51.5065"	2.1	60	0.1



CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 7+700.000 - STA. 8+400.000	AS SHOWN	FINAL DRAWINGS
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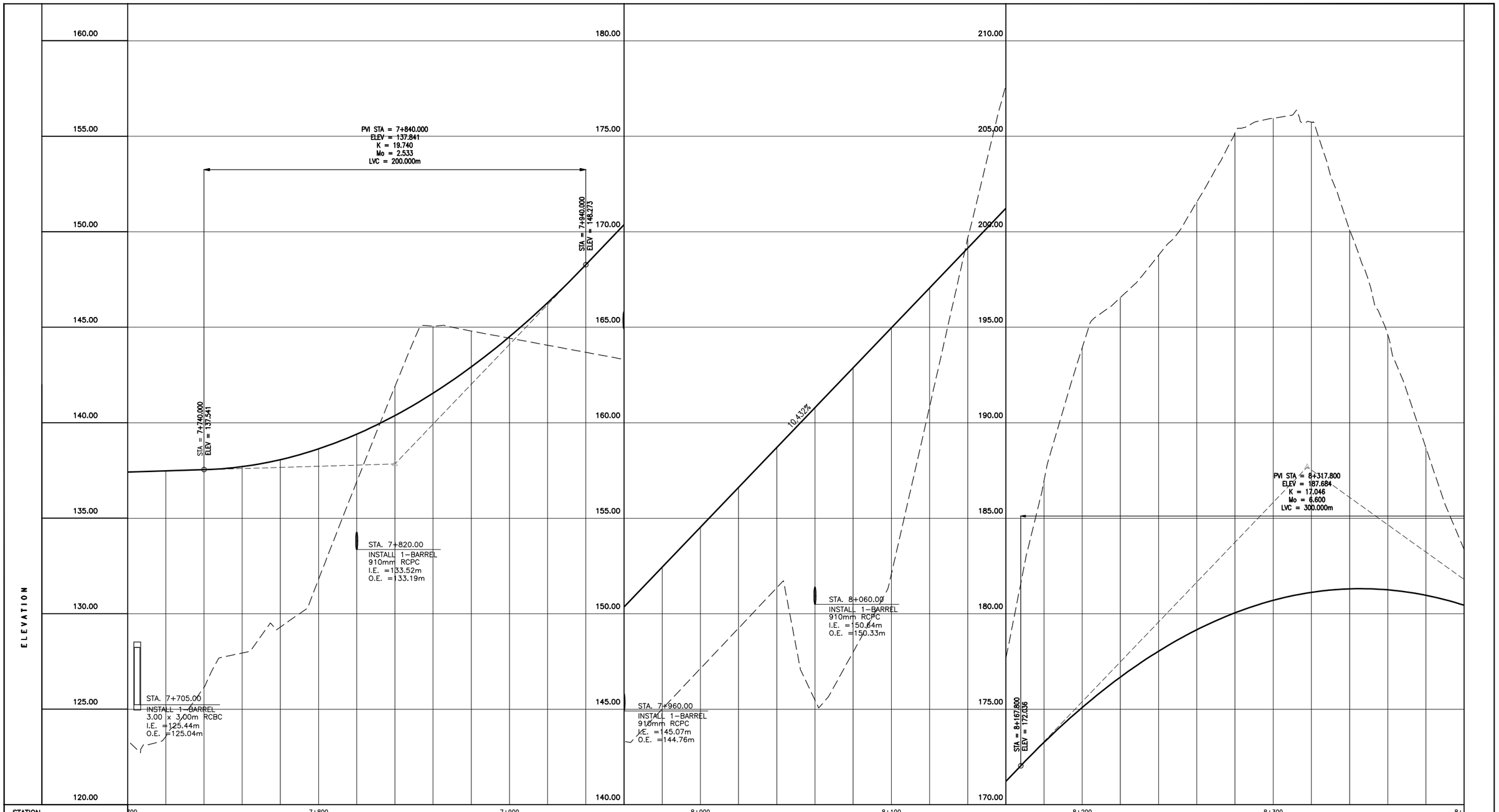
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



STATION	700	7+800	7+900	8+000	8+100	8+200	8+300	8+
FINISHED GRADE	137.481	137.541	137.702	138.066	138.633	139.402	140.374	141.548	142.926	144.505	146.288	148.273	150.359	152.445	154.532	156.618	158.705	160.791	162.877	164.964	167.050	169.136	171.223	173.265	175.091	176.683	178.039	179.161	180.048	180.701	181.119	181.302	181.251	180.965	180.444
GROUND ELEV	123.566	126.143	127.945	129.302	131.794	136.912	141.898	145.059	141.548	144.429	144.059	143.688	143.317	145.013	147.129	149.246	151.362	145.475	147.999	152.088	160.826	169.685	177.674	186.958	193.918	196.554	198.771	201.557	205.177	205.943	205.741	200.111	194.612	188.677	183.363
HOR. CURVATURE			7+746.174 R=300.000 LC=132.883							7+879.056 L=317.757																8+196.814 R=1000.000 LC=137.549						8+334.363		
VER. CURVATURE			L=200.00 K=20											L=227.80 g=10.432%															L=300.00 K=17					
SUPERELEVATION		7+728.67	7+772.42			7+852.81			7+896.56	7+931.56			7+966.56									8+138.48	8+173.48		8+208.48						8+322.70	8+357.70		8+392.70

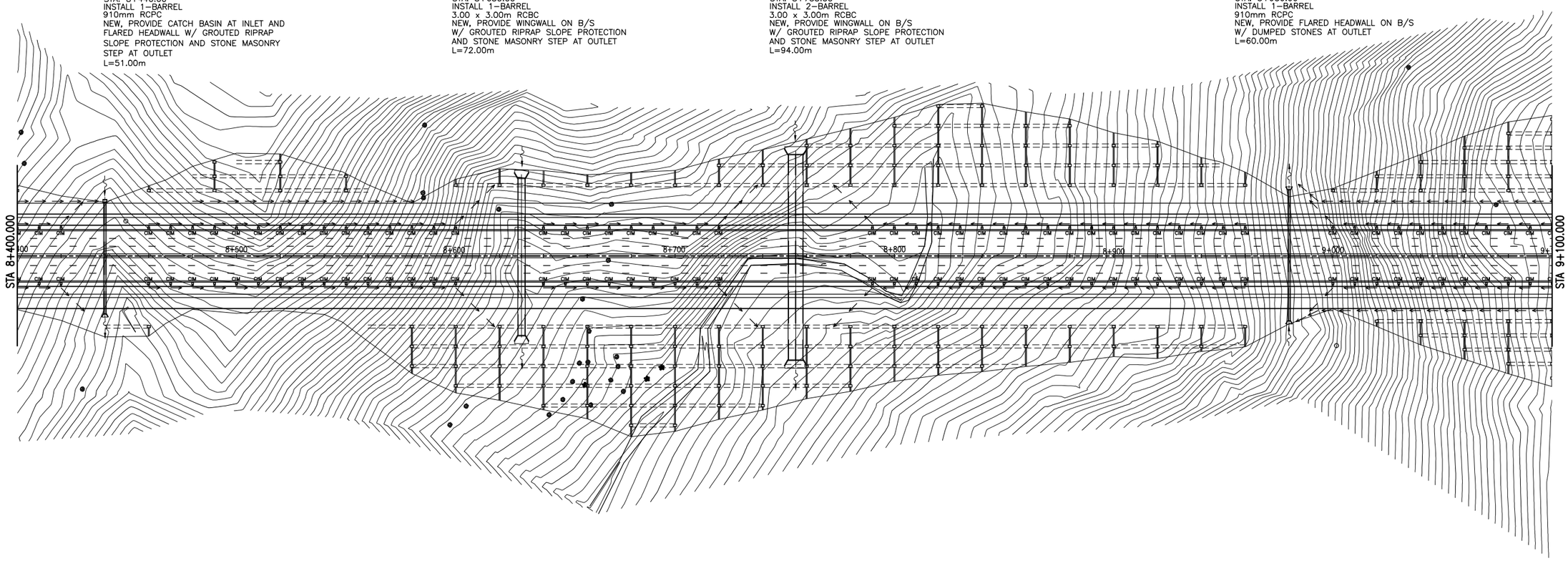
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PROFILE STA. 7 □700.000 - STA. 8 □400.000	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. R-17	SIZE A1
							DATE APPROVED: -	DATE REVISED: -	REV. -

STA. 8+440.00
INSTALL 1–BARREL
910mm RCPC
NEW, PROVIDE CATCH BASIN AT INLET AND FLARED HEADWALL W/ GROUTED RIPRAP SLOPE PROTECTION AND STONE MASONRY STEP AT OUTLET
L=51.00m

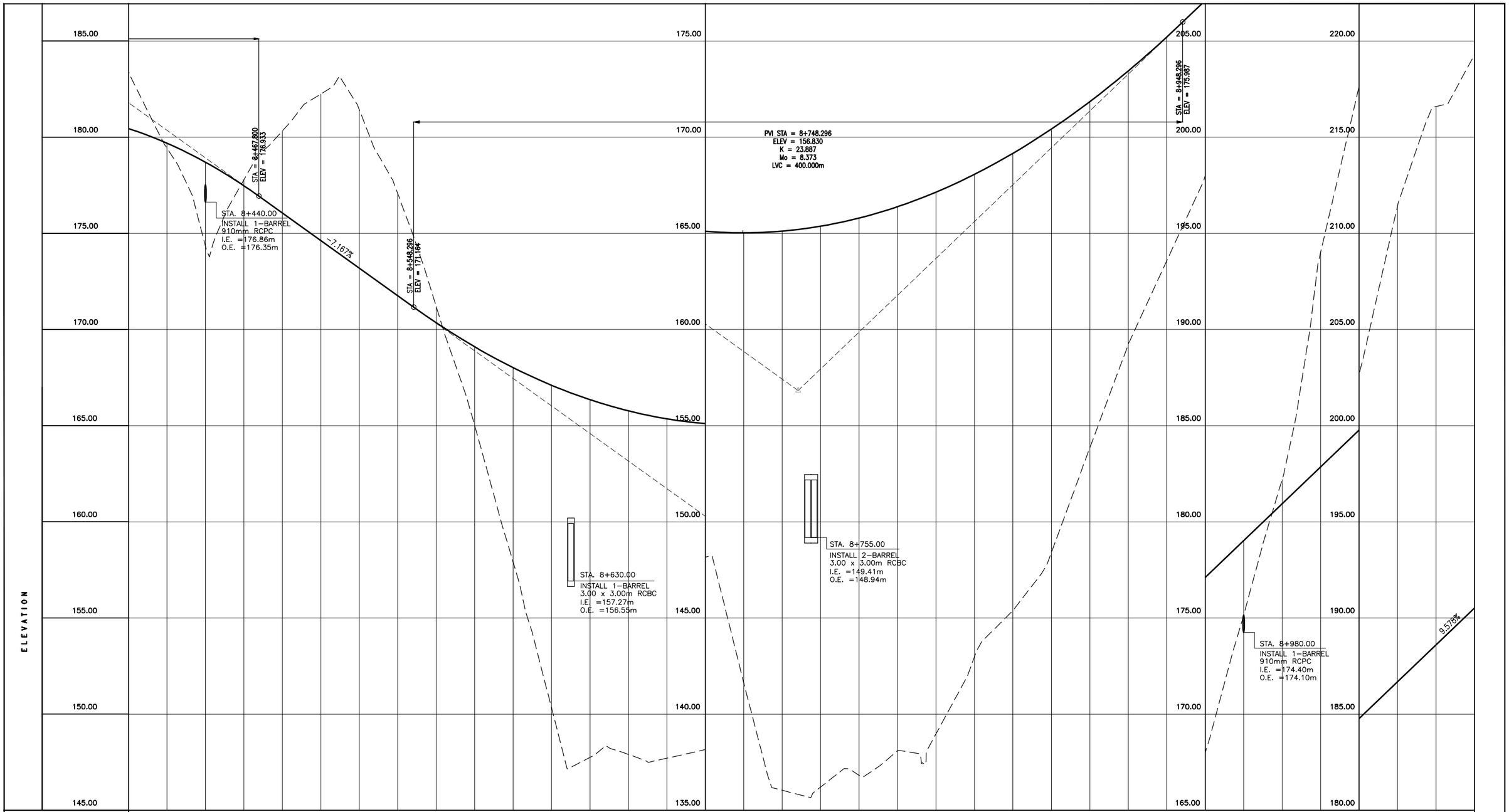
STA. 8+630.00
INSTALL 1–BARREL
3.00 x 3.00m RCBC
NEW, PROVIDE WINGWALL ON B/S
W/ GROUTED RIPRAP SLOPE PROTECTION AND STONE MASONRY STEP AT OUTLET
L=72.00m

STA. 8+755.00
INSTALL 2–BARREL
3.00 x 3.00m RCBC
NEW, PROVIDE WINGWALL ON B/S
W/ GROUTED RIPRAP SLOPE PROTECTION AND STONE MASONRY STEP AT OUTLET
L=94.00m

STA. 8+980.00
INSTALL 1–BARREL
910mm RCPC
NEW, PROVIDE FLARED HEADWALL ON B/S
W/ DUMPED STONES AT OUTLET
L=60.00m



CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 8 □400.000 - STA. 9 □100.000	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: R-18 SIZE: A1 DATE REVISED: - REV.: -



STATION	400	8+500	8+600	8+700	8+800	8+900	9+000	9+
FINISHED GRADE	179.689	178.699	177.475	176.059	174.626	173.192	171.759	170.354
GROUND ELEV	179.431	174.332	177.785	180.323	182.244	181.434	177.063	171.200
HOR. CURVATURE	L=1179.495							
VER. CURVATURE	L=80.50 g=-7.167%	L=400.00 K=24	L=281.70 g=9.578%					
SUPERELEVATION								

| | | | | | | | |

HORIZONTAL & VERTICAL CONTROLS

No.	NORTHING	EASTING	AMSL	DESCRIPTION
BM – 01.	1699079.389	448617.881	92.748	Concrete na□centered on a 20□20□150 c□ concrete □utt□ □rotrud□ng 50 c□ on ground □t□ □ar□ng CGC 01.
BM – 02.	1699060.629	448704.496	91.6845	Concrete na□centered on a 20□20 c□ concrete □utt□set □us□ed and dr□led on concrete □edestal □t□ □ar□ngs CGC,BM-02 2017.
BM - 03.	1697963.203	448894.675	65.129	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-03 2017.
BM - 04.	1697834.737	448992.144	64.4673	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-04 2017.
BM - 05.	1697406.647	448599.000	79.282	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-05 2017.
BM - 06.	1697445.249	448682.773	80.711	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-06 2017.
BM - 08.	1696262.273	448672.867	58.764	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-08 2017.
BM - 09.	1695356.731	448268.725	69.7285	Concrete na□centered on a 20□20 c□ concrete □utt□set □us□ed and dr□led on concrete □a□e□ent □t□ □ar□ngs CGC,BM-09 2017.
BM - 10.	1695287.878	448167.898	71.163	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-10 2017.
BM - 11.	1694543.640	447493.744	69.1675	Concrete na□centered on a 20□20 c□ concrete □utt□set □us□ed and dr□led on concrete □ead□all □t□ □ar□ngs CGC, BM-11 2017.
BM - 12.	1694447.189	447368.522	71.163	Concrete na□centered on a 20□20 c□ concrete □utt□set □us□ed and dr□led on concrete □ead□all □t□ □ar□ngs CGC,BM-12 2017.
BM - 28.	1690516.022	445347.922	156.633	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-28 2017.
BM - 29.	1689881.717	445931.033	255.213	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-29 2017.
BM - 30.	1686394.717	450792.716	87.608	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng CGC, BM-30 2017.
BM - 31.	1689269.822	447085.127	200.796	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-31"

HORIZONTAL & VERTICAL CONTROLS

No.	NORTHING	EASTING	AMSL	DESCRIPTION
BM - 32.	1689213.539	447008.667	206.467	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-32"
BM - 33.	1688932.019	447750.355	130.819	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-33"
BM - 34.	1688875.025	447705.247	131.903	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-34"
BM - 35.	1687954.288	448462.969	201.052	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-35"
BM - 36.	1687872.637	448421.245	206.638	Concrete na□centered on a 25□25□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng "BCDA-7, 2014".
BM - 38.	1687279.504	449998.305	86.481	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng "CGC, BM-38 2017".
BM - 39A.	1687134.174	450569.67	89.29	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-39A"
BM - 40A.	1687177.452	450652.532	87.52	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-40A"
BM - 41A.	1686331.395	450673.842	89.943	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-41A"
BM - 42A.	1689709.066	445900.569	258.402	Mar□s t□e □ead o□a concrete na□enc□rcled □t□red □a□t and dr□led on concrete □edestal □t□ □ar□ng "BM-42A"
BM - 44A.	1685320.276	450941.615	94.515	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng "CGC, BM-44A 2017".
BM - 45.	1684308.342	451255.143	122.5798	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng "CGC, BM-45 2017".
BM - 46.	1684404.775	451367.177	121.654	Concrete na□centered on a 20□20□100 c□ concrete □utt□ □rotrud□ng 20 c□ on ground □t□ □ar□ng "CGC, BM-46 2017".
BM - 47.	1683402.967	451766.466	124.735	Concrete na□centered on a 20□20 c□ concrete □utt□set □us□ed and dr□led on concrete □edestal □t□ □ar□ngs "CGC,BM-47 2017".
BM - 48.	1683287.959	451675.780	126.5916	Concrete na□centered on a 20□20 c□ concrete □utt□set □us□ed and dr□led on concrete □edestal □t□ □ar□ngs "CGC,BM-48 2017".

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

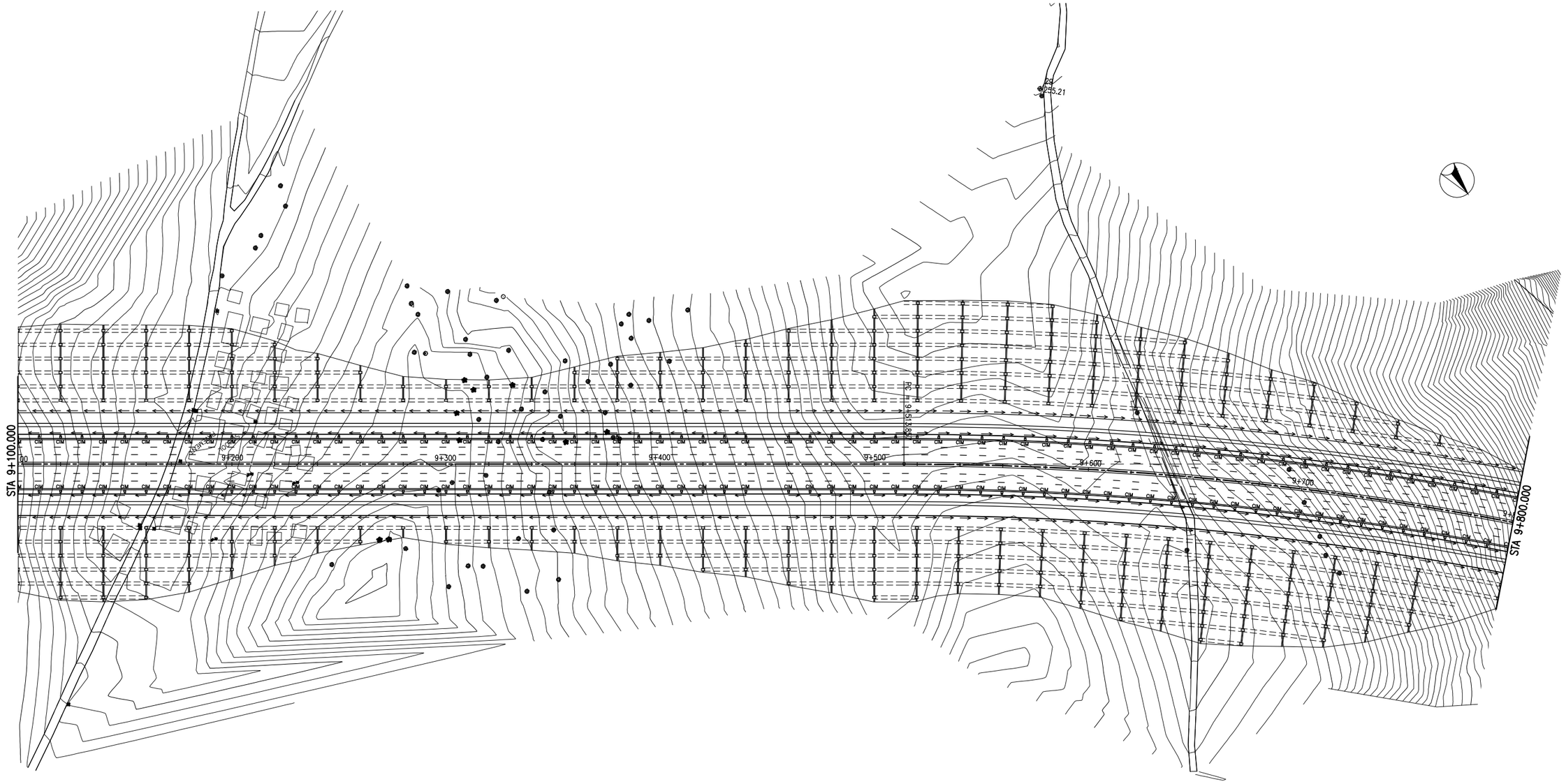
APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

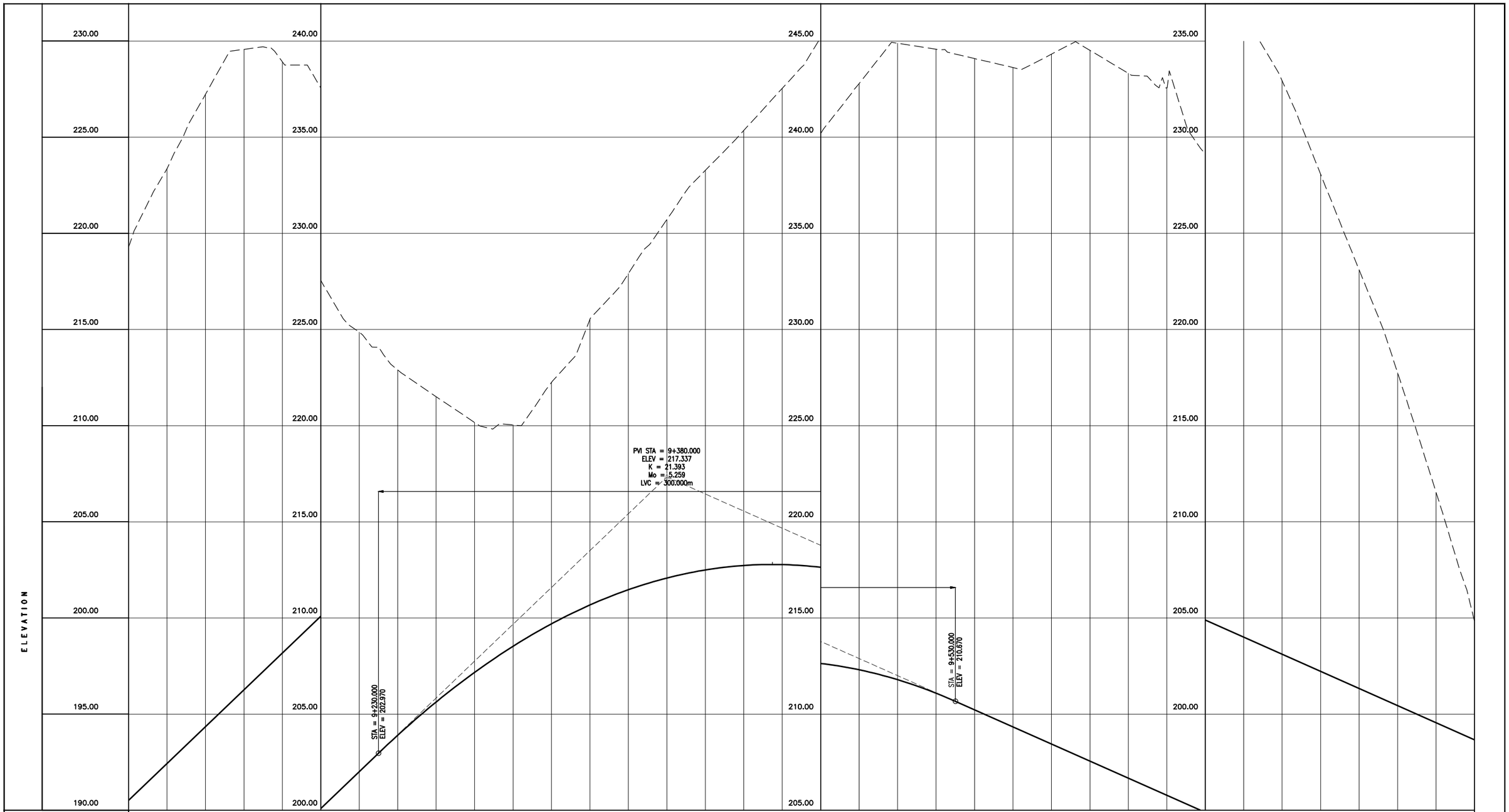
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD

HORIZONTAL AND VERTICAL CONTROLS

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
-	R-2	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



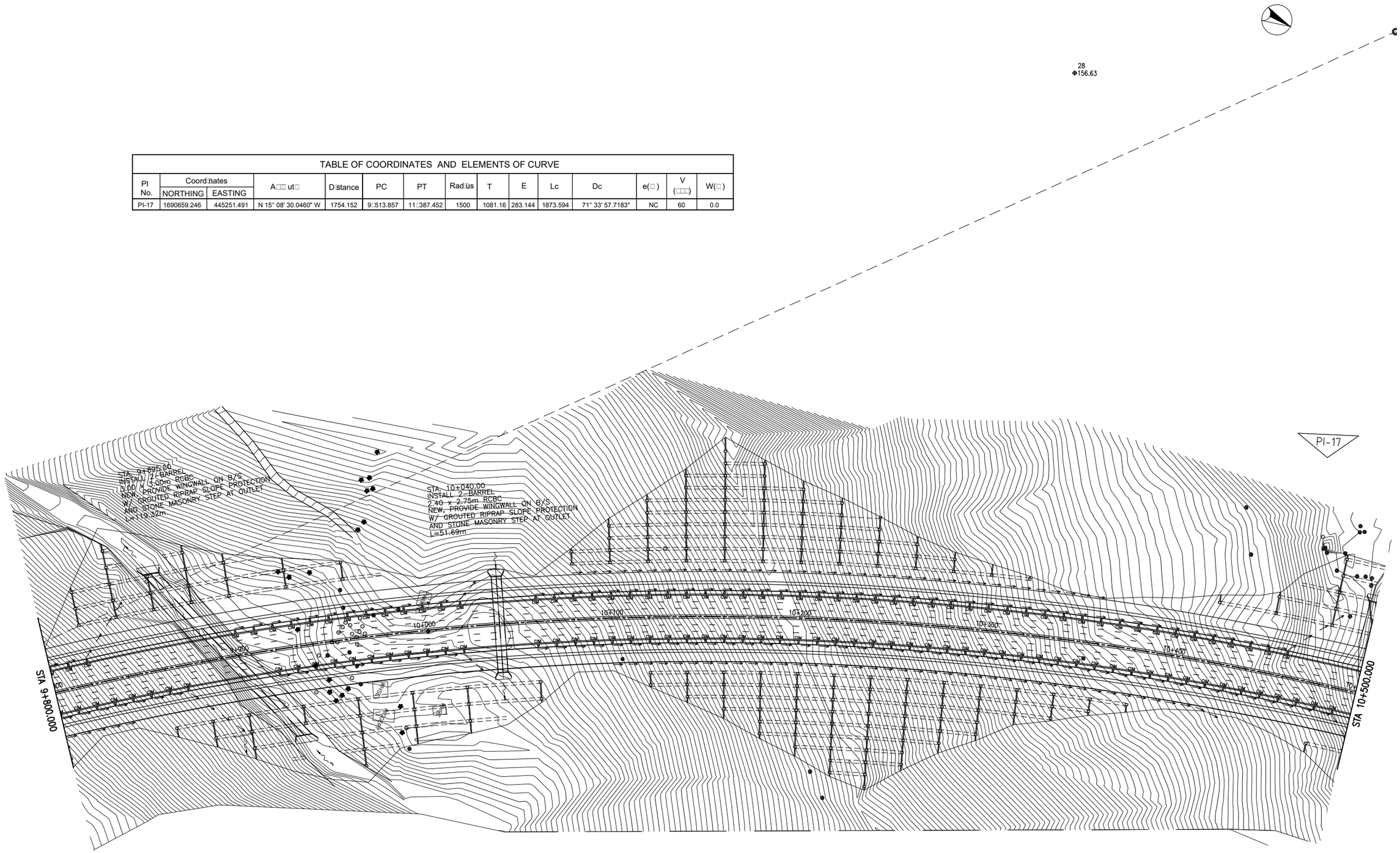
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 9 + 100.000 - STA. 9 + 800.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								R-20 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



STATION	00	9+200	9+300	9+400	9+500	9+600	9+700	9+
FINISHED GRADE	192.433	194.349	196.265	198.180	200.096	202.012	203.904	205.633
	207.174	208.529	209.697	210.678	211.472	212.078	212.498	212.731
	212.777	212.636	212.308	211.793	211.091	210.225	209.336	208.447
	207.558	206.669	205.780	204.891	204.002	203.114	202.225	201.336
	200.447	199.558	198.669					
GROUND ELEV	223.358	227.230	229.568	228.908	227.548	224.862	222.900	221.507
	220.171	220.040	222.249	225.522	227.910	230.716	233.273	235.347
	237.535	240.188	242.789	244.886	244.571	244.087	243.621	244.320
	244.519	243.317	242.563	239.133	236.371	232.922	228.063	223.101
	217.750	211.529	204.808					
HOR. CURVATURE					9+513.857			
VER. CURVATURE			L=300.00 K=21					
SUPERELEVATION								

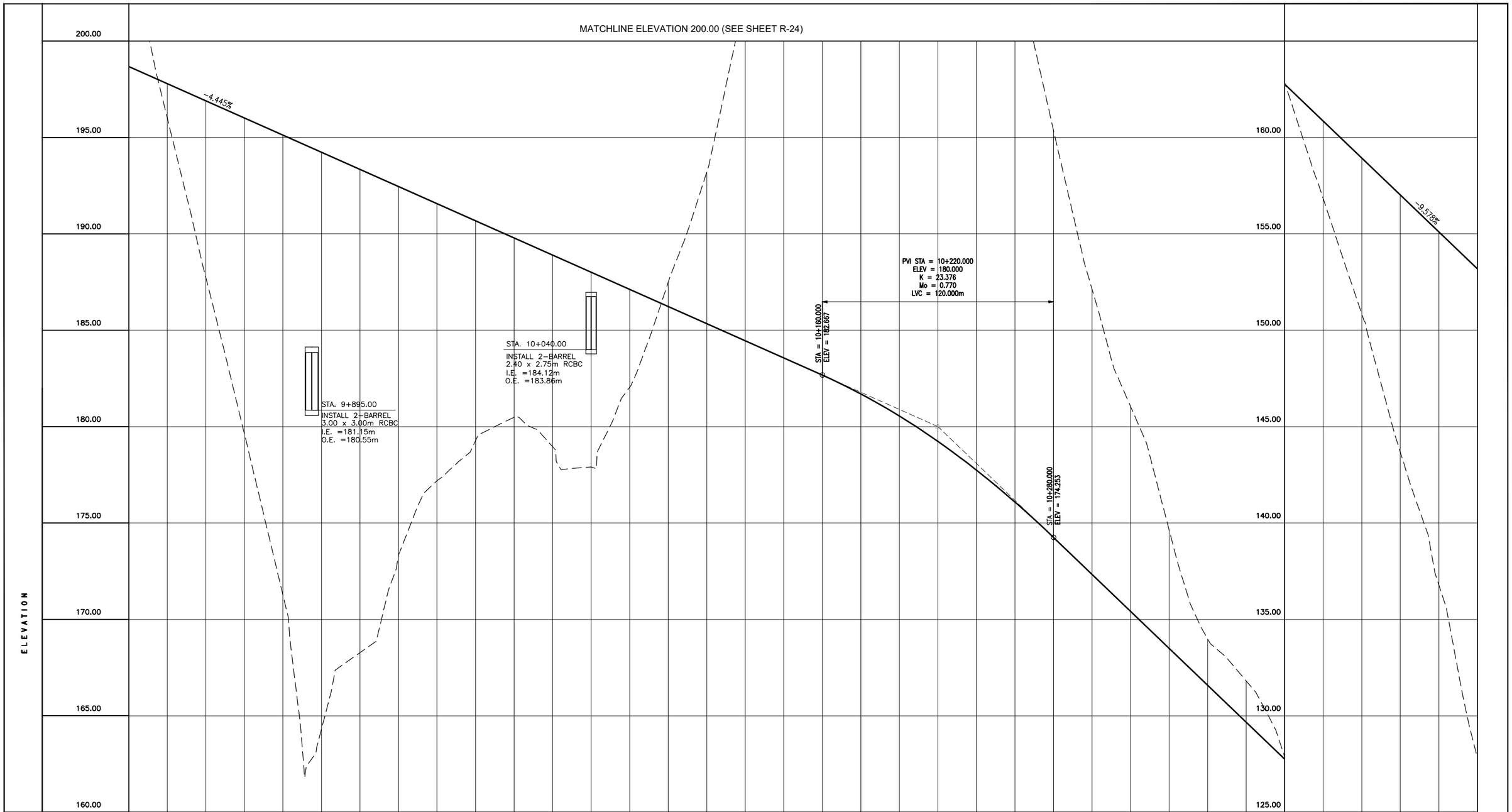
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PROFILE STA. 9 □ 100.000 - STA. 9 □ 800.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								R-21 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -

TABLE OF COORDINATES AND ELEMENTS OF CURVE														
PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (KPH)	W(m)
	NORTHING	EASTING												
PI-17	1690659.246	445251.491	N 15° 08' 30.0460" W	1754.152	9+513.857	11+387.452	1500	1081.16	283.144	1873.594	71° 33' 57.7183"	NC	60	0.0



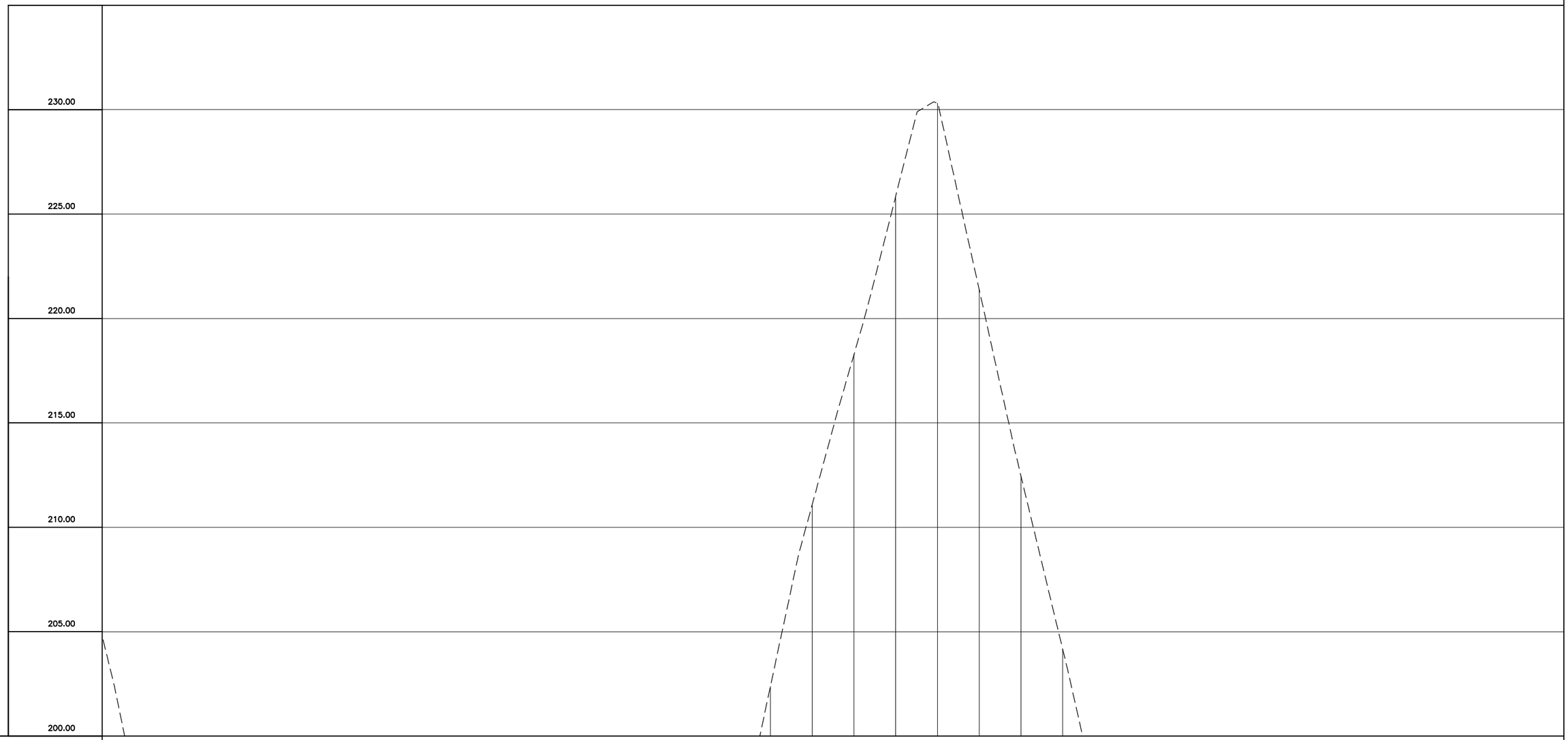
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 9+800.000 - STA. 10+500.000	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: R-22 SIZE: A1 DATE REVISED: - REV.: -

MATCHLINE ELEVATION 200.00 (SEE SHEET R-24)



STATION	800	9+900	10+000	10+100	10+200	10+300	10+400	10+
FINISHED GRADE	197.780	196.891	196.002	195.113	194.224	193.335	192.446	191.557
	190.668	189.779	188.890	188.001	187.112	186.223	185.334	184.445
	183.556	182.667	181.692	180.547	179.230	177.742	176.083	174.253
	172.337	170.422	168.506	166.590	164.674	162.759	160.843	158.927
	157.012	155.096	153.180					
GROUND ELEV	196.002	187.726	179.630	171.276	164.306	168.276	173.312	177.198
	179.274	180.485	178.957	177.909	182.047	187.485	193.197	202.380
	211.084	218.267	225.855	230.305	221.377	212.453	204.147	195.365
	187.134	181.038	174.646	168.985	166.809	162.857	156.843	150.851
	143.678	136.780	127.815					
HOR. CURVATURE							R=1500.000 LC=1873.594	
VER. CURVATURE	L=630.00 g=-4.445%				L=120.00 K=23		L=383.34 g=-9.578%	
SUPERELEVATION								

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PROFILE STA. 9 □ 800.000 - STA. 10 □ 500.000	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: R-23 SIZE: A1 DATE REVISED: - REV.: -



STATION	800	9+900	10+000	10+100	10+200	10+300	10+400	10+
FINISHED GRADE								
GROUND ELEV	196.002	187.726	179.630	171.276	164.306	168.276	173.312	177.198	179.274	180.485	178.957	177.909	182.047	187.485	193.197	202.380	211.084	218.267	225.855	230.305	221.377	212.453	204.147	195.365	187.134	181.038	174.646	168.985	166.809	162.857	156.843	150.851	143.678	136.780	127.815
HOR. CURVATURE																																			
VER. CURVATURE																																			
SUPERELEVATION																																			

CONSULTANTS

Urban Integrated Consultants, Inc.
UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
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D	
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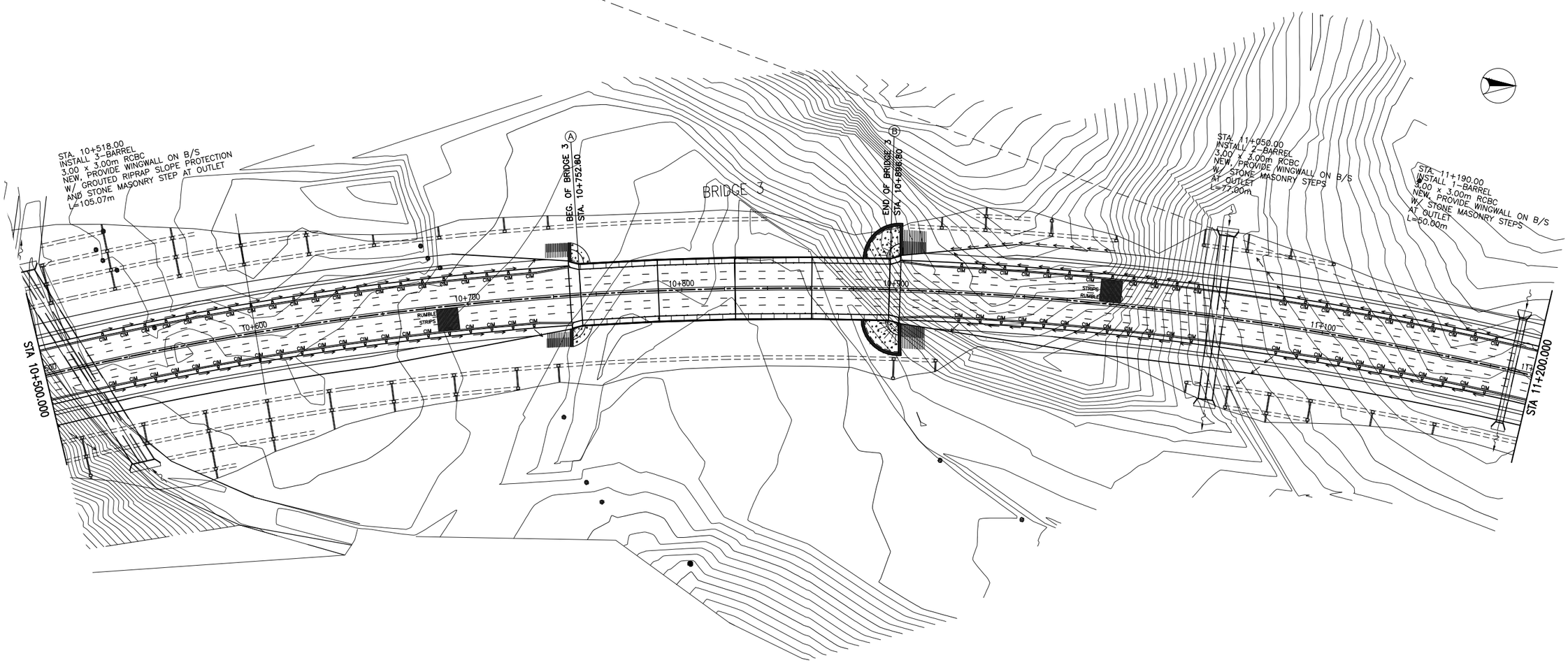
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT PACKAGE 3 - AIRPORT - NCC ACCESS ROAD

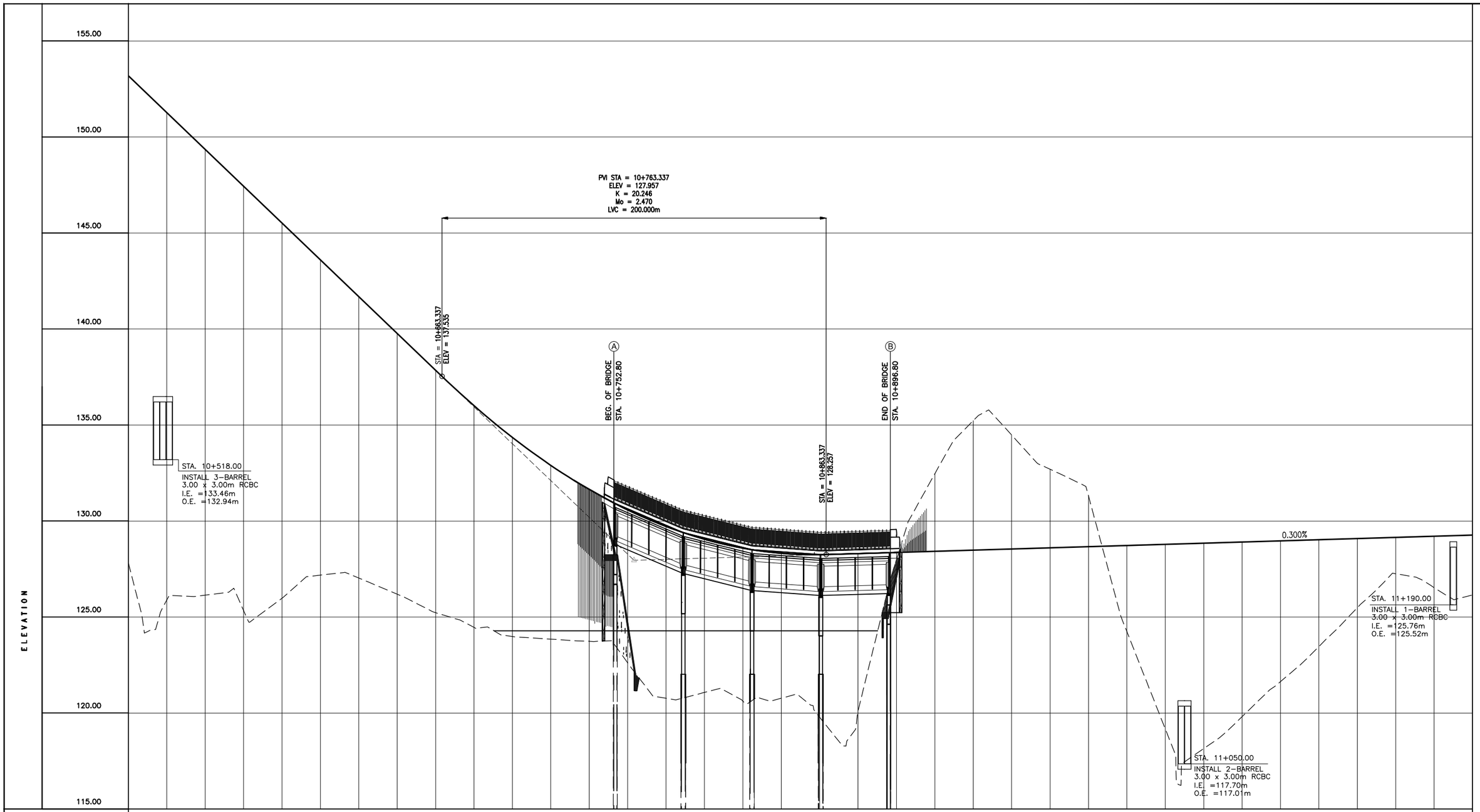
PROFILE MATCHLINE ELEVATION 200.00
STA. 9 □800.000 - STA. 10 □500.000

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
	R-24	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

TABLE OF COORDINATES AND ELEMENTS OF CURVE														
PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-17	1690659.246	445251.491	N 15° 08' 30.0460" W	1754.152	9+513.857	11+387.452	1500	1081.16	283.144	1873.594	71° 33' 57.7183"	NC	60	0.0



CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 10+500.000 - STA. 11+200.000	AS SHOWN PROJECT CODE DATE APPROVED -	FINAL DRAWINGS DRAWING NO.: R-25 SIZE: A1 DATE REVISED: - REV.: -



STATION	500	10+600	10+700	10+800	10+900	11+000	11+100	11+
FINISHED GRADE	151.265	149.349	147.433	145.517	143.602	141.686	139.770	137.855	136.008	134.355	132.901	131.643	130.584	129.722	129.057	128.590	128.321	128.249	128.307	128.367	128.427	128.487	128.547	128.607	128.667	128.727	128.787	128.847	128.907	128.967	129.027	129.087	129.147	129.207	129.267
GROUND ELEV	125.892	126.140	125.347	125.977	127.183	127.032	126.195	125.227	124.463	123.989	123.849	123.736	122.620	120.770	121.073	120.625	120.771	119.780	120.117	127.993	132.469	135.225	134.479	132.697	131.306	124.239	119.172	118.150	119.815	121.638	123.467	125.486	127.256	126.529	126.152
HOR. CURVATURE																																			
VER. CURVATURE															L=200.00 K=20																		L=488.14 g=0.300%		
SUPERELEVATION																																			

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
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PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD

PROFILE
STA. 10 □ 500.000 - STA. 11 □ 200.000

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO.	SIZE
	R-26	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

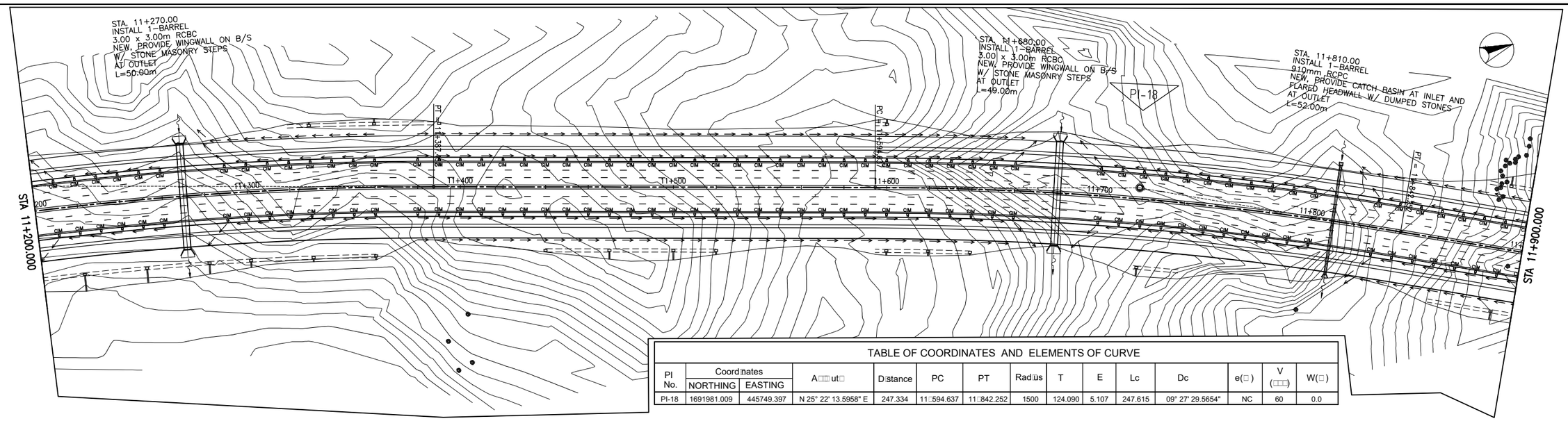
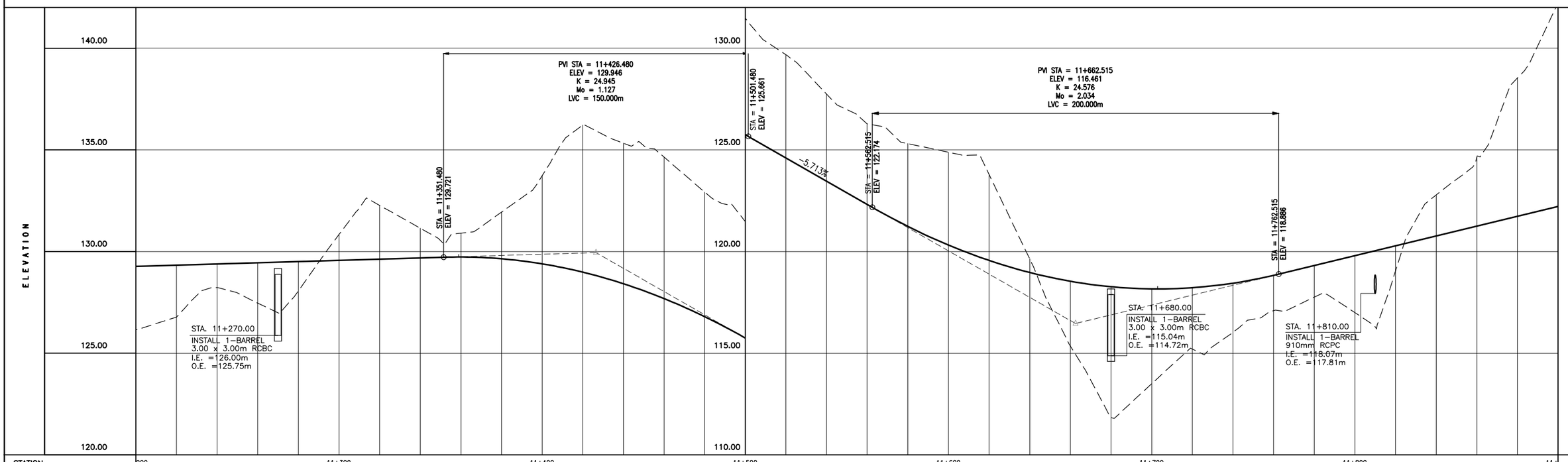


TABLE OF COORDINATES AND ELEMENTS OF CURVE

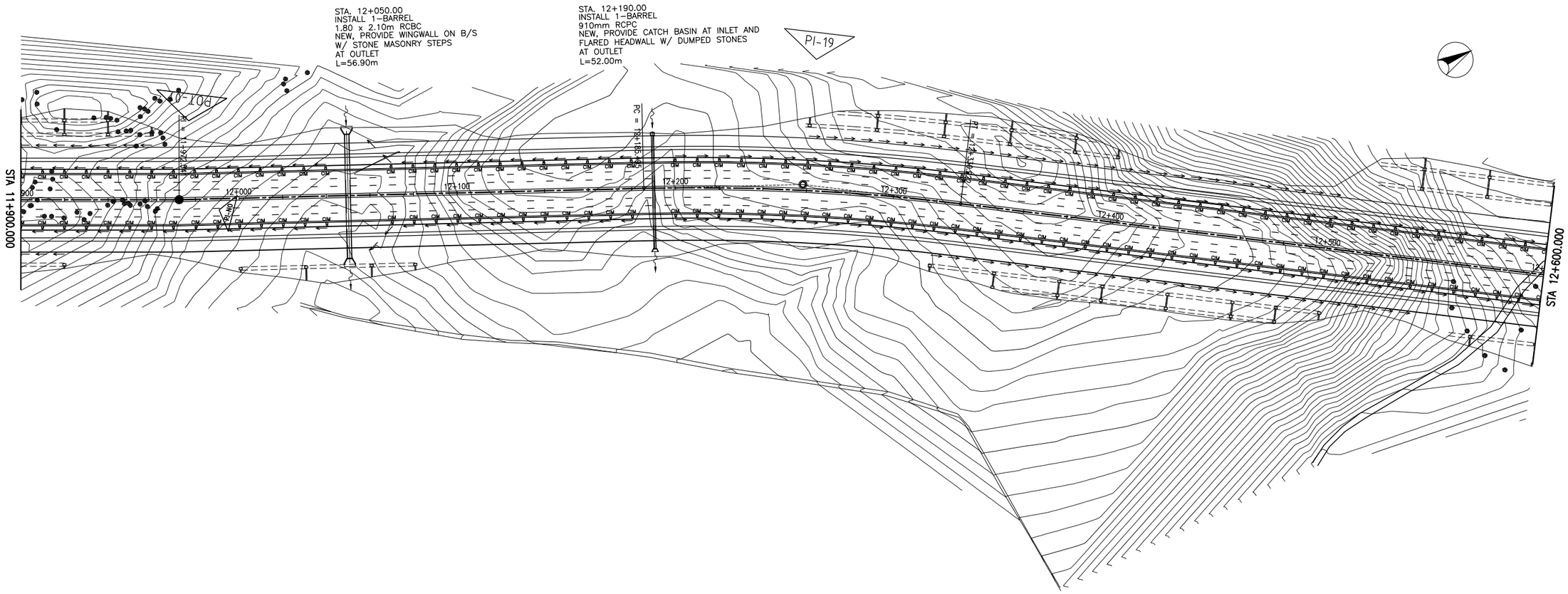
PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-18	1691981.009	445749.397	N 25° 22' 13.5958" E	247.334	11+594.637	11+842.252	1500	124.090	5.107	247.615	09° 27' 29.5654"	NC	60	0.0



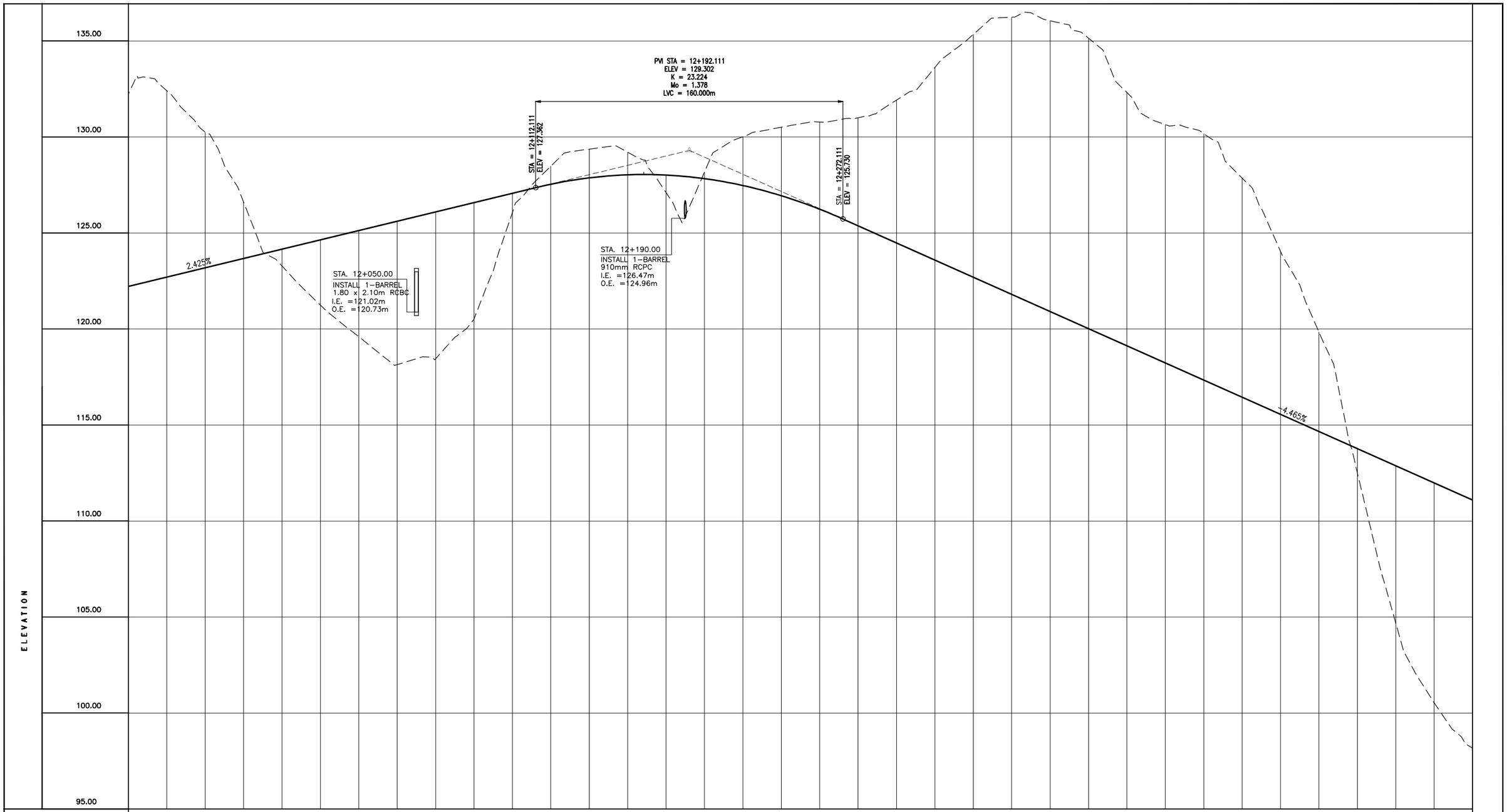
STATION	200	11+300	11+400	11+500	11+600	11+700	11+800	11+
FINISHED GRADE	129.327 129.387 129.447 129.507 129.567 129.627 129.687 129.732 129.644 129.395 128.986 128.416 127.686 126.796 125.745 124.603 123.460 122.318 121.237 120.318 119.562 118.969 118.538 118.270 118.165 118.222 118.443 118.826 119.309 119.794 120.279 120.764 121.249 121.734 122.219							
GROUND ELEV	126.774 128.225 127.466 128.065 130.837 132.269 131.148 130.901 131.940 133.728 136.218 135.325 134.640 132.919 131.470 129.674 127.747 126.281 125.307 124.882 123.788 119.639 115.351 111.836 113.501 115.208 116.017 117.092 117.757 116.997 119.047 122.782 124.625 128.531 132.239							
HOR. CURVATURE			11+387.452 L=207.185		11+594.637 R=1500.000 LC=247.615		11+842.252	
VER. CURVATURE			L=150.00 K=25	L=61.04 g=-5.713%		L=200.00 K=25		
SUPERELEVATION								

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN AND PROFILE STA. 11+200.000 - STA. 11+900.000	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. / SIZE: R-27 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -

TABLE OF COORDINATES AND ELEMENTS OF CURVE														
PI No.	Coordinates		Adjust	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-19	1692451.752	446014.247	N 32° 52' 25.2814" E	145.299	12+185.495	12+330.922	1000	72.842	2.642	145.427	08° 19' 56.5567"	2.1	60	0.1



CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN STA. 11+900.000 - STA. 12+600.000	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: R-28 DATE REVISED: - SIZE: A1 REV.: -

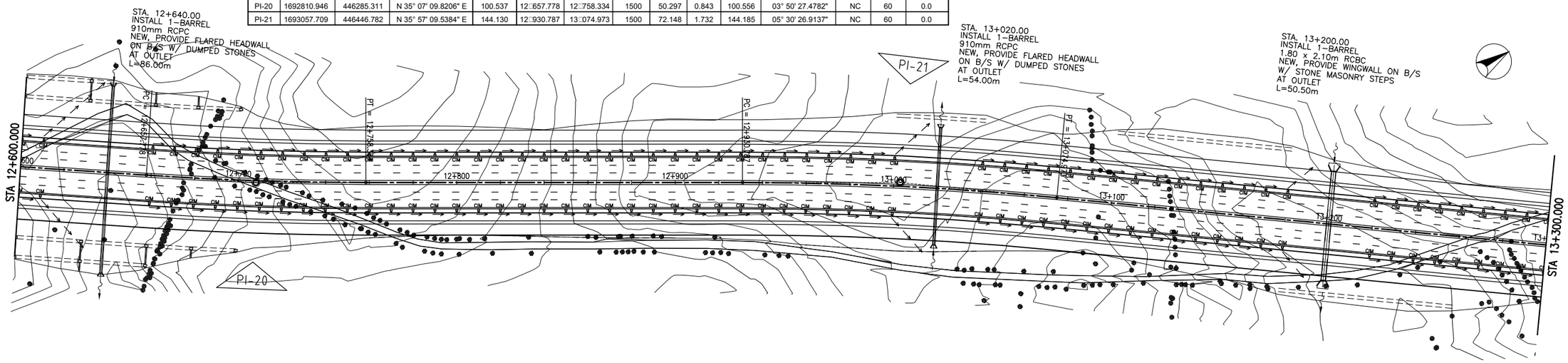


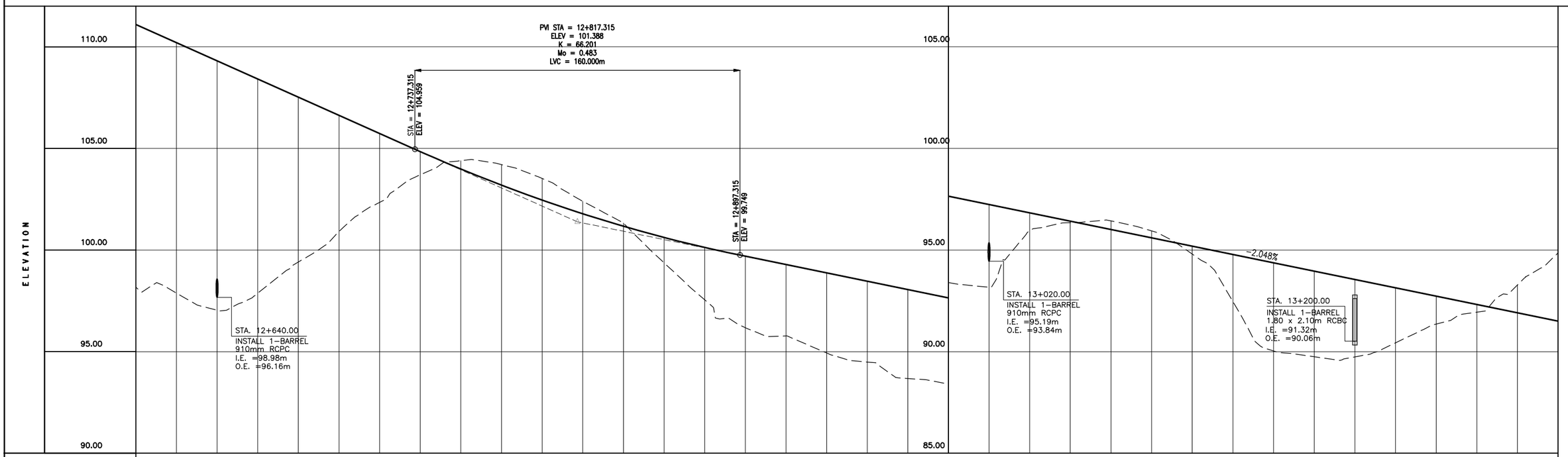
STATION	900	12+000	12+100	12+200	12+300	12+400	12+500	12+
FINISHED GRADE	122.704	123.189	123.674	124.159	124.644	125.129	125.614	126.099	126.584	127.069	127.540	127.871	128.030	128.016	127.830	127.472	126.942	126.239	125.378	124.485	123.592	122.699	121.806	120.913	120.020	119.127	118.234	117.341	116.448	115.555	114.662	113.769	112.876	111.983	111.090
GROUND ELEV	132.411	130.242	126.613	123.285	121.245	119.599	118.147	118.450	120.527	126.061	128.480	129.368	129.209	127.104	128.175	130.009	130.507	130.774	131.001	131.923	133.621	135.343	136.236	136.053	135.146	132.314	130.644	130.173	127.865	124.041	119.841	112.512	104.678	100.527	98.169
HOR. CURVATURE	=130.289			11+972.541	L=212.954										12+185.495	R=1000.000 LC=145.427						12+330.922	L=326.856												
VER. CURVATURE	L=349.60 g=2.425%													L=160.00 K=23																					L=465.20 g=-4.465%
SUPERELEVATION															12+127.16	12+162.16	12+197.16					12+319.26	12+354.26	12+389.26											

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PROFILE STA. 11 □900.000 - STA. 12 □600.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. R-29	SIZE A1
							DATE APPROVED: -	DATE REVISED: -	REV.: -

TABLE OF COORDINATES AND ELEMENTS OF CURVE

PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-20	1692810.946	446285.311	N 35° 07' 09.8206" E	100.537	12+657.778	12+758.334	1500	50.297	0.843	100.556	03° 50' 27.4782"	NC	60	0.0
PI-21	1693057.709	446446.782	N 35° 57' 09.5384" E	144.130	12+930.787	13+074.973	1500	72.148	1.732	144.185	05° 30' 26.9137"	NC	60	0.0



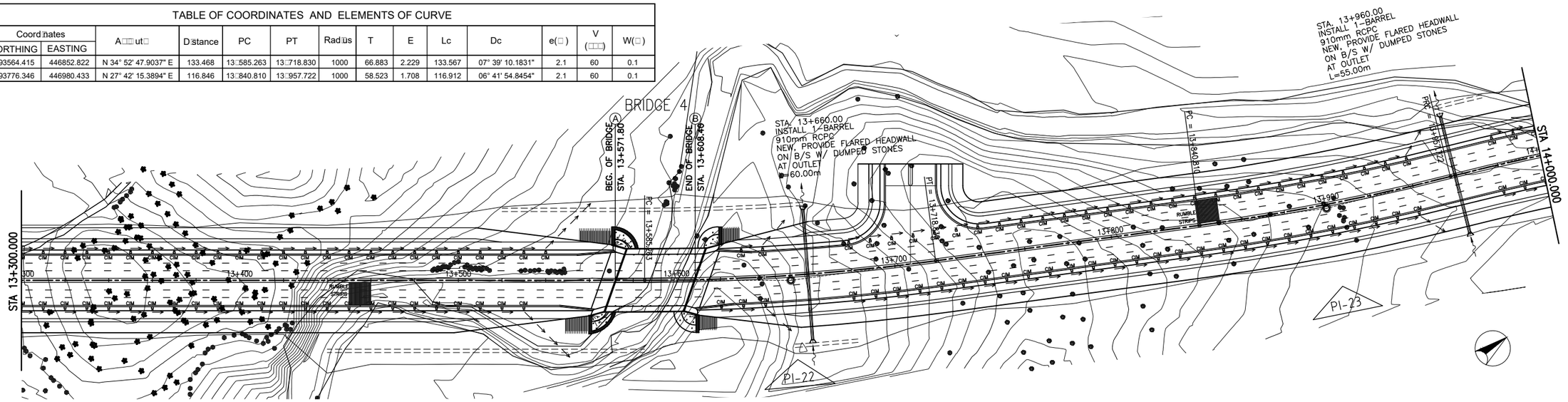


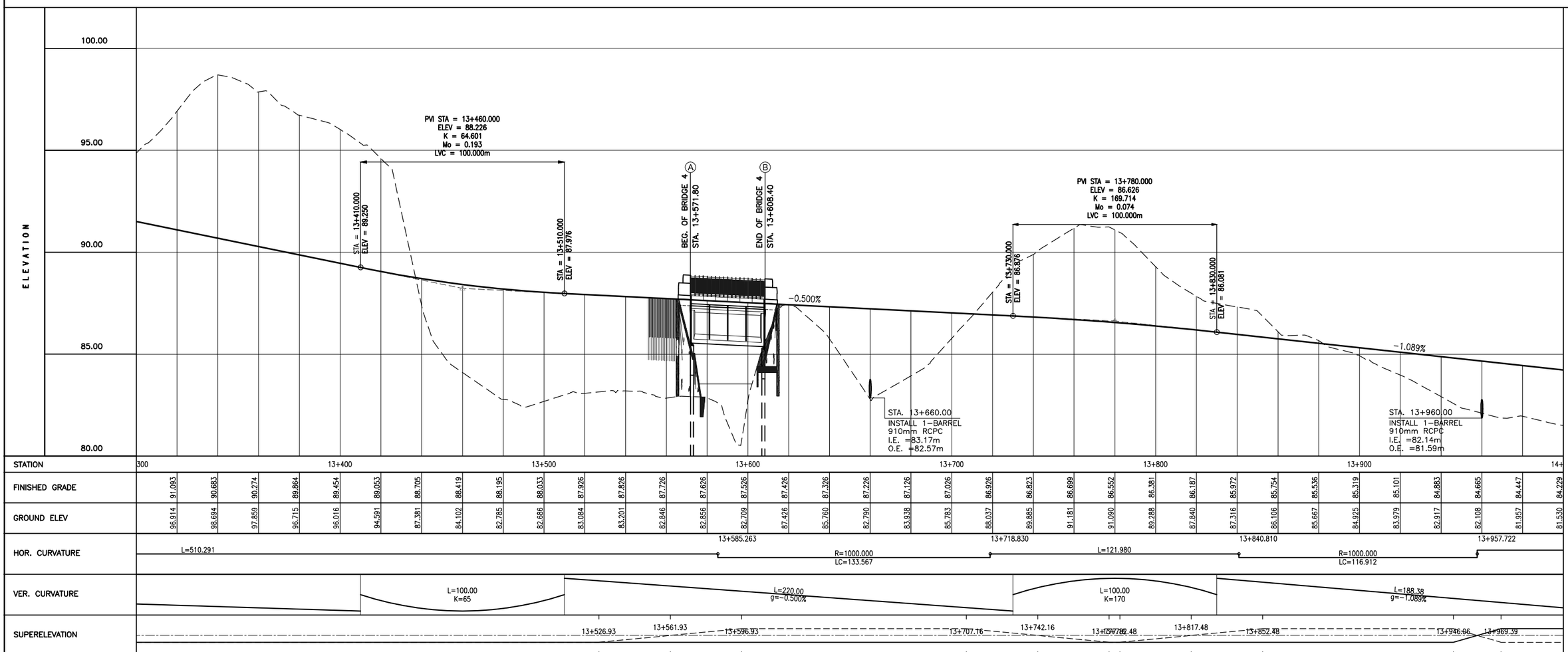
STATION	600	12+700	12+800	12+900	13+000	13+100	13+200	13+
FINISHED GRADE	110.197 109.304 108.411 107.518 106.625 105.733 104.840 103.985 103.191 102.457 101.784 101.171 100.619 100.126 99.694 99.285 98.875 98.465 98.056 97.646 97.237 96.827 96.417 96.008 95.598 95.189 94.779 94.370 93.960 93.550 93.141 92.731 92.322 91.912 91.502							
GROUND ELEV	97.881 97.039 97.875 99.411 100.907 102.341 103.699 104.395 104.202 103.520 102.395 101.322 99.369 97.548 96.180 95.773 94.933 94.488 93.678 93.401 93.166 95.940 96.341 96.433 95.940 94.799 92.460 90.034 89.750 89.742 90.432 91.355 91.942 93.283 94.863							
HOR. CURVATURE		12+657.778 R=1500.000 LC=100.556	12+758.334 L=172.453	12+930.787 R=1500.000 LC=144.185	13+074.973			
VER. CURVATURE			L=160.00 K=66		L=512.69 g=-2.048%			
SUPERELEVATION								

CONSULTANTS	SUBMITTED BY			REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	BCDA CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN AND PROFILE STA. 12+600.000 - STA. 13+300.000	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: R-30 SIZE: A1 DATE REVISED: - REV.: -

TABLE OF COORDINATES AND ELEMENTS OF CURVE

PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-22	1693564.415	446852.822	N 34° 52' 47.9037" E	133.468	13+585.263	13+718.830	1000	66.883	2.229	133.567	07° 39' 10.1831"	2.1	60	0.1
PI-23	1693776.346	446980.433	N 27° 42' 15.3894" E	116.846	13+840.810	13+957.722	1000	58.523	1.708	116.912	06° 41' 54.8454"	2.1	60	0.1





STATION	300	13+400	13+500	13+600	13+700	13+800	13+900	14+
FINISHED GRADE	91.093	90.683	90.274	89.864	89.454	89.053	88.705	88.419
	88.195	88.033	87.926	87.826	87.726	87.626	87.526	87.426
	87.326	87.226	87.126	87.026	86.926	86.823	86.699	86.552
	86.381	86.187	85.972	85.754	85.536	85.319	85.101	84.883
	84.665	84.447	84.229					
GROUND ELEV	96.914	98.694	97.859	96.715	96.016	94.591	87.381	84.102
	82.785	82.686	83.084	83.201	82.846	82.856	82.709	87.426
	85.760	82.790	83.938	85.783	88.037	89.885	91.181	91.090
	89.288	87.840	87.316	86.106	85.667	84.925	83.979	82.917
	82.108	81.957	81.530					
HOR. CURVATURE	L=510.291			13+585.263 R=1000.000 LC=133.567		13+718.830 L=121.980		13+840.810 R=1000.000 LC=116.912
								13+957.722
VER. CURVATURE		L=100.00 K=65		L=220.00 g=-0.500%		L=100.00 K=170		L=188.38 g=-1.089%
SUPERELEVATION			13+526.93	13+561.93	13+596.93	13+707.16	13+742.16	13+777.16 13+782.48 13+817.48 13+852.48 13+946.96 13+969.39

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN AND PROFILE STA. 13+300.000 - STA. 14+000.000	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: R-31 SIZE: A1 DATE REVISED: - REV.: -

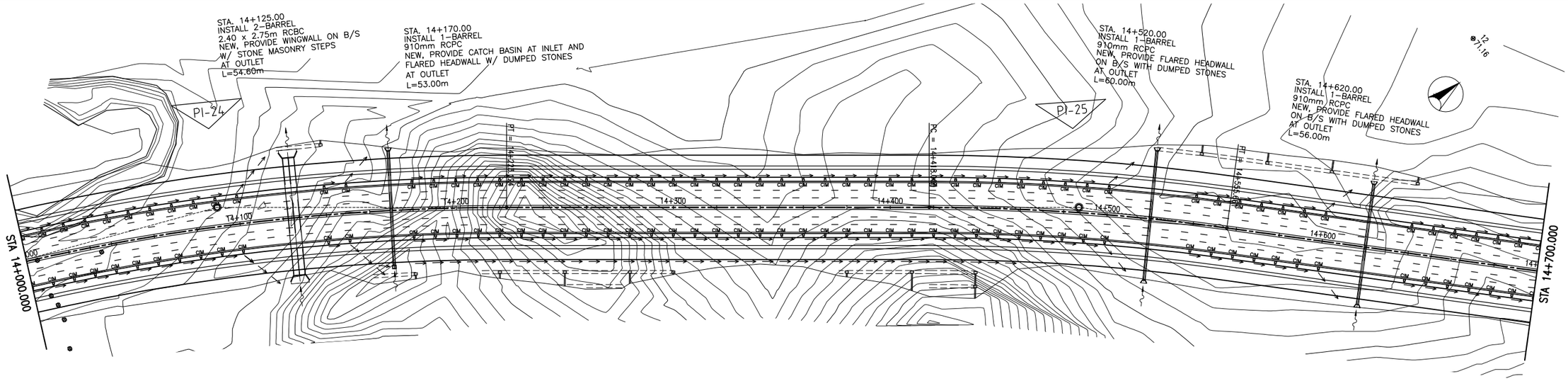
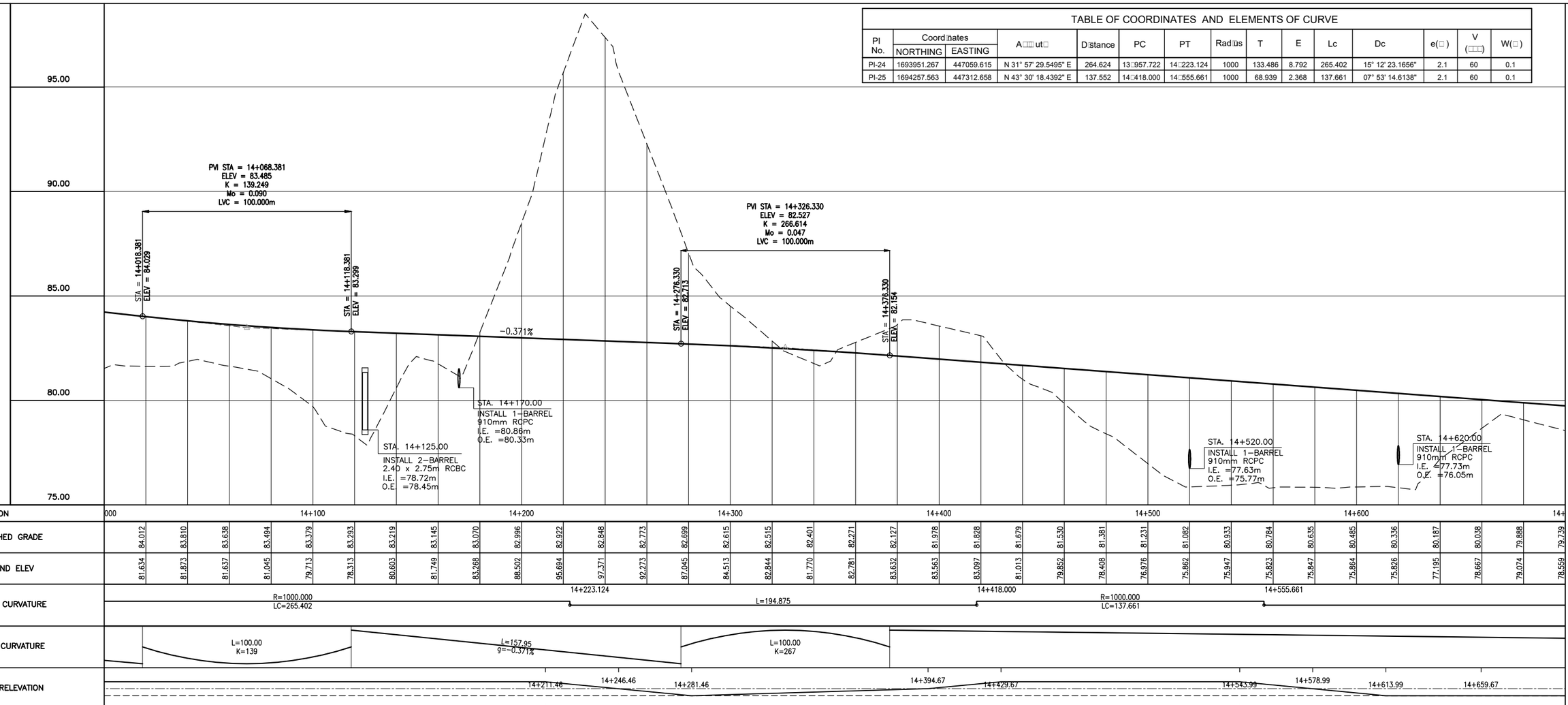


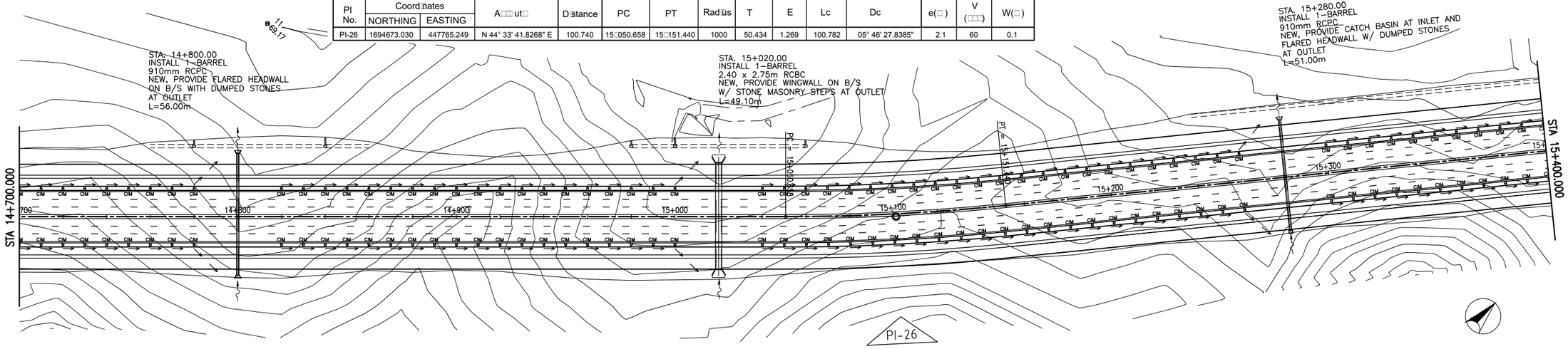
TABLE OF COORDINATES AND ELEMENTS OF CURVE														
PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (kph)	W(m)
	NORTHING	EASTING												
PI-24	1693951.267	447059.615	N 31° 57' 29.5495" E	264.624	13+957.722	14+223.124	1000	133.486	8.792	265.402	15° 12' 23.1656"	2.1	60	0.1
PI-25	1694257.563	447312.658	N 43° 30' 18.4392" E	137.552	14+418.000	14+555.661	1000	68.939	2.368	137.661	07° 53' 14.6138"	2.1	60	0.1

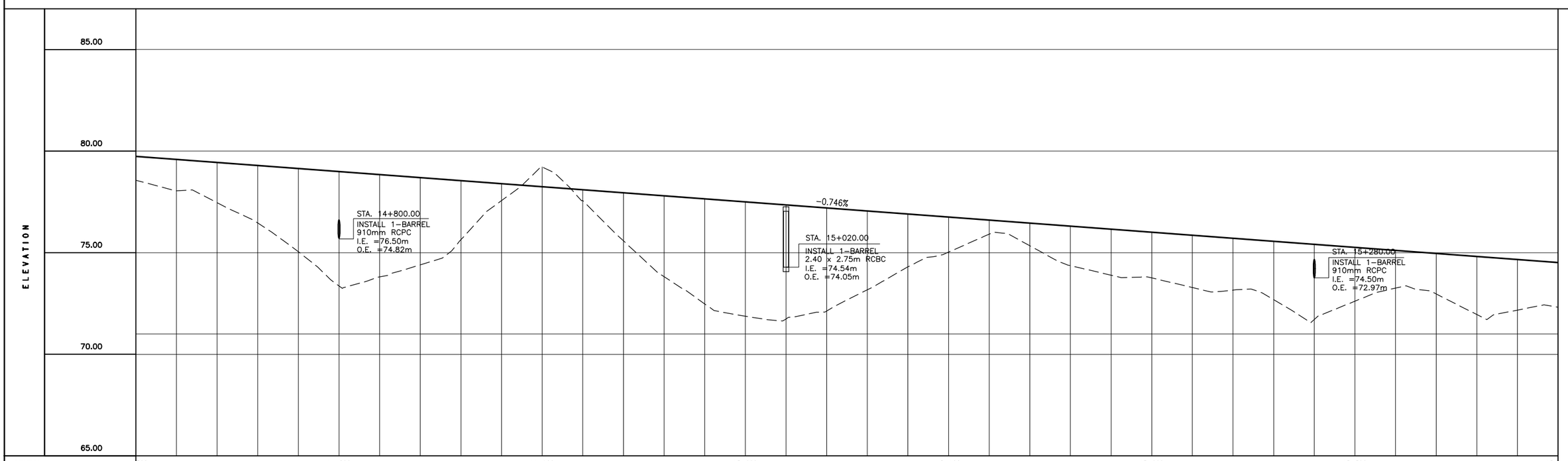


CONSULTANTS	SUBMITTED BY		CHECKED BY	APPROVED BY	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN AND PROFILE STA. 14+000.000 - STA. 14+700.000	AS SHOWN	FINAL DRAWINGS
								PROJECT CODE	DRAWING NO. / SIZE
									R-32 / A1
								DATE APPROVED	DATE REVISED / REV.
								-	- / -

TABLE OF COORDINATES AND ELEMENTS OF CURVE

PI No.	Coordinates		Azimuth	Distance	PC	PT	Radius	T	E	Lc	Dc	e(%)	V (KPH)	W(m)
	NORTHING	EASTING												
PI-26	1694673.030	447765.249	N 44° 33' 41.8268" E	100.740	15+050.658	15+151.440	1000	50.434	1.269	100.782	05° 46' 27.8385"	2.1	60	0.1





STATION	700	14+800	14+900	15+000	15+100	15+200	15+300	15+
FINISHED GRADE	79.590	79.441	79.291	79.142	78.993	78.844	78.694	78.545	78.396	78.247	78.098	77.948	77.799	77.650	77.501	77.351	77.202	77.053	76.904	76.754	76.605	76.456	76.307	76.158	76.008	75.859	75.710	75.561	75.411	75.262	75.113	74.964	74.814	74.665	74.516
GROUND ELEV	78.042	77.459	76.462	75.045	73.364	73.810	74.399	75.636	77.561	79.215	77.559	75.581	73.817	72.480	71.871	71.739	72.131	73.176	74.300	75.027	75.914	75.342	74.362	73.891	73.761	73.284	73.158	72.689	71.714	72.614	73.256	72.972	71.956	72.176	72.316
HOR. CURVATURE		L=494.997																15+050.658 R=1000.000 LC=100.782					15+151.440												
VER. CURVATURE																		L=1332.28 g=-0.746%																
SUPERELEVATION																		14+992.32	15+027.32	15+062.32			15+139.77		15+174.77		15+209.77							

CONSULTANTS

Urban Integrated Consultants, Inc.
UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

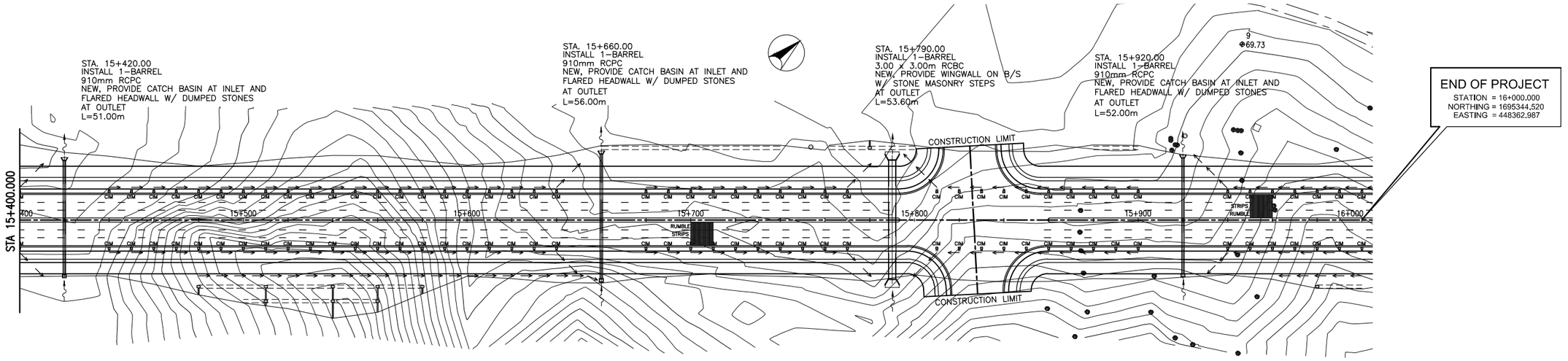
REVISIONS	DATE
A	
B	
C	
D	
E	
F	

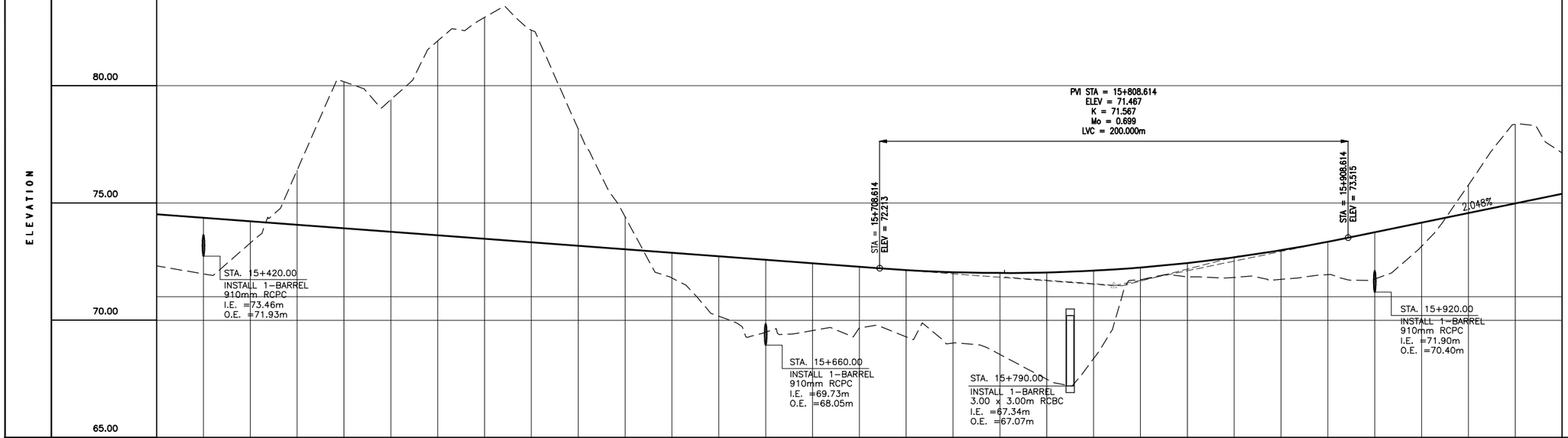
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD

PLAN AND PROFILE
STA. 14 □ 700.000 - STA. 15 □ 400.000

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
	R-33	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-





STATION	400	15+500	15+600	15+700	15+800	15+900	16+
FINISHED GRADE	74.367	74.217 74.068 73.919 73.770 73.621 73.471 73.322 73.173 73.024 72.874 72.725 72.576 72.427 72.277 72.137 72.048 72.014 72.037 72.115 72.249 72.439 72.685 72.987 73.344 73.749 74.158 74.568 74.978 75.387					
GROUND ELEV	71.976	73.292 76.397 80.166 79.400 81.905 82.906 82.366 78.143 74.405 71.797 70.168 69.488 69.559 69.869 69.290 69.026 68.541 67.481 68.363 71.734 71.850 71.825 71.743 71.944 71.751 73.150 75.761 78.354 77.129					
HOR. CURVATURE	L=1064.883						
VER. CURVATURE				L=200.00 K=72		L=111.39 g=2.048%	
SUPERELEVATION							

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT - NCC ACCESS ROAD PLAN AND PROFILE STA. 15 □400.000 - STA. 16 □000.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								R-34 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -

SCHEDULE OF GUARD RAIL

Station		Location
From	To	
1+735.00	1+745.00	R/S
1+735.00	1+745.00	L/S
1+931.00	1+941.00	R/S
1+931.00	1+941.00	L/S
2+215.00	2+225.00	R/S
2+215.00	2+225.00	L/S
2+400.00	2+410.00	R/S
2+400.00	2+410.00	L/S
2+895.00	2+905.00	R/S
2+895.00	2+905.00	L/S
3+035.00	3+045.00	R/S
3+035.00	3+045.00	L/S
3+115.00	3+125.00	R/S
3+115.00	3+125.00	L/S
3+215.00	3+225.00	R/S
3+215.00	3+225.00	L/S
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3+655.00	3+665.00	R/S
3+655.00	3+665.00	L/S
3+815.00	3+825.00	R/S
3+815.00	3+825.00	L/S
3+904.00	3+914.00	R/S
3+904.00	3+914.00	L/S
3+946.00	3+956.00	R/S
3+946.00	3+956.00	L/S
4+115.00	4+125.00	R/S
4+115.00	4+125.00	L/S
4+305.00	4+315.00	R/S
4+305.00	4+315.00	L/S
4+595.00	4+605.00	R/S
4+595.00	4+605.00	L/S
5+045.00	5+055.00	R/S
5+045.00	5+055.00	L/S
5+315.00	5+325.00	R/S
5+315.00	5+325.00	L/S
5+540.00	5+550.00	R/S
5+540.00	5+550.00	L/S
6+735.00	6+745.00	R/S
6+735.00	6+745.00	L/S
6+855.00	6+865.00	R/S
6+855.00	6+865.00	L/S
6+995.00	7+005.00	R/S
6+995.00	7+005.00	L/S
7+210.00	7+220.00	R/S
7+210.00	7+220.00	L/S

Station		Location
From	To	
7+355.00	7+365.00	R/S
7+355.00	7+365.00	L/S
7+491.00	7+501.00	R/S
7+491.00	7+501.00	L/S
7+536.00	7+546.00	R/S
7+536.00	7+546.00	L/S
7+575.00	7+585.00	R/S
7+575.00	7+585.00	L/S
6+995.00	7+005.00	R/S
6+995.00	7+005.00	L/S
7+210.00	7+220.00	R/S
7+210.00	7+220.00	L/S
7+355.00	7+365.00	R/S
7+355.00	7+365.00	L/S
7+575.00	7+585.00	R/S
7+575.00	7+585.00	L/S
7+700.00	7+710.00	R/S
7+700.00	7+710.00	L/S
7+815.00	7+825.00	R/S
7+815.00	7+825.00	L/S
7+955.00	7+965.00	R/S
7+955.00	7+965.00	L/S
8+055.00	8+065.00	R/S
8+055.00	8+065.00	L/S
8+435.00	8+445.00	R/S
8+435.00	8+445.00	L/S
8+625.00	8+635.00	R/S
8+625.00	8+635.00	L/S
8+750.00	8+760.00	R/S
8+750.00	8+760.00	L/S
8+975.00	8+985.00	R/S
8+975.00	8+985.00	L/S
9+775.00	9+785.00	R/S
9+775.00	9+785.00	L/S
9+886.00	9+896.00	R/S
9+886.00	9+896.00	L/S
10+035.00	10+045.00	R/S
10+035.00	10+045.00	L/S
10+435.00	10+445.00	R/S
10+435.00	10+445.00	L/S
10+743.00	10+753.00	R/S
10+743.00	10+753.00	L/S
10+897.00	10+907.00	R/S
10+897.00	10+907.00	L/S
11+045.00	11+055.00	R/S
11+045.00	11+055.00	L/S
11+185.00	11+195.00	R/S

Station		Location
From	To	
11+185.00	11+195.00	L/S
11+265.00	11+275.00	R/S
11+265.00	11+275.00	L/S
11+675.00	11+685.00	R/S
11+675.00	11+685.00	L/S
11+805.00	11+815.00	R/S
11+805.00	11+815.00	R/S
12+045.00	12+055.00	R/S
12+045.00	12+055.00	L/S
12+185.00	12+195.00	R/S
12+185.00	12+195.00	L/S
12+635.00	12+645.00	R/S
12+635.00	12+645.00	L/S
13+015.00	13+025.00	R/S
13+015.00	13+025.00	L/S
13+195.00	13+205.00	R/S
13+195.00	13+205.00	L/S
13+561.00	13+571.00	R/S
13+561.00	13+571.00	R/S
13+609.00	13+619.00	R/S
13+609.00	13+619.00	L/S
13+655.00	13+665.00	R/S
13+655.00	13+665.00	L/S
13+955.00	13+965.00	R/S
13+955.00	13+965.00	L/S
14+120.00	14+130.00	R/S
14+120.00	14+130.00	L/S
14+165.00	14+175.00	R/S
14+165.00	14+175.00	L/S
14+515.00	14+525.00	R/S
14+515.00	14+525.00	L/S
14+615.00	14+625.00	R/S
14+615.00	14+625.00	L/S
14+795.00	14+805.00	R/S
14+795.00	14+805.00	L/S
15+015.00	15+025.00	R/S
15+015.00	15+025.00	L/S
15+275.00	15+285.00	R/S
15+275.00	15+285.00	L/S
15+415.00	15+425.00	R/S
15+415.00	15+425.00	L/S
15+655.00	15+665.00	R/S
15+655.00	15+665.00	L/S
15+785.00	15+795.00	R/S
15+785.00	15+795.00	L/S
15+915.00	15+925.00	R/S
15+915.00	15+925.00	L/S

SCHEDULE OF WARNING SIGN

Station	Location	Reference
1+670.00	Left Side	W1-3 (L)
1+852.00	Right Side	W1-3 (R)
2+080.00	Left Side	W1-3 (L)
2+110.00	Right Side	W1-3 (R)
2+396.00	Left Side	W1-3 (L)
2+721.00	Right Side	W1-3 (R)
2+922.00	Left Side	W1-3 (L)
2+936.00	Right Side	W1-3 (R)
3+236.00	Left Side	W1-3 (L)
3+631.00	Right Side	W1-3 (R)
3+841.00	Left Side	W1-3 (L)
3+799.00	Right Side	W1-3 (R)
4+054.00	Left Side	W1-3 (L)
4+606.00	Right Side	W1-3 (R)
4+780.00	Left Side	W1-3 (L)
4+762.00	Right Side	W1-3 (R)
5+009.00	Left Side	W1-3 (L)
5+426.00	Right Side	W1-3 (R)
5+684.00	Left Side	W1-3 (L)
6+241.00	Right Side	W1-3 (R)
6+509.00	Left Side	W1-3 (L)
6+638.00	Right Side	W1-3 (R)
6+977.00	Left Side	W1-3 (L)
7+000.00	Right Side	W1-3 (R)
7+546.00	Left Side	W1-3 (L)
7+696.00	Right Side	W1-3 (R)
7+929.00	Left Side	W1-3 (L)
8+146.00	Right Side	W1-3 (R)
8+384.00	Left Side	W1-3 (L)
9+463.00	Right Side	W1-3 (R)
11+437.00	Left Side	W1-3 (L)
11+544.00	Right Side	W1-3 (R)
11+892.00	Left Side	W1-3 (L)
12+135.00	Right Side	W1-3 (R)
12+380.00	Left Side	W1-3 (L)
12+607.00	Right Side	W1-3 (R)
12+808.00	Left Side	W1-3 (L)
12+880.00	Right Side	W1-3 (R)
13+124.00	Left Side	W1-3 (L)
13+535.00	Right Side	W1-3 (R)
13+768.00	Left Side	W1-3 (L)
13+790.00	Right Side	W1-4 (R)
13+800.00	Left Side	W2-4 (L)
14+273.00	Left Side	W1-4 (L)
14+368.00	Right Side	W1-3 (R)
14+605.00	Left Side	W1-3 (L)
15+000.00	Right Side	W1-3 (R)
15+201.00	Left Side	W1-3 (L)
15+700.00	Right Side	W2-1
15+920.00	Left Side	W2-1

SCHEDULE OF RUMBLE STRIPS

Station		Location
From	To	
3+278.00	3+288.00	Right Side
3+800.00	3+810.00	Left Side
10+685.00	10+695.00	Right Side
10+995.00	11+005.00	Left Side
13+450.00	13+460.00	Right Side
13+840.00	13+850.00	Left Side
15+700.00	15+710.00	Right Side
15+950.00	15+960.00	Left Side

SCHEDULE OF GROUTED RIPRAP

From	To	Length (m)	Location
3+334.00	3+385.00	51.00	Both Sides
3+528.00	3+578.00	50.00	Both Sides
3+864.00	3+914.00	50.00	Both Sides
3+945.00	3+995.00	50.00	Both Sides
7+451.00	7+501.00	50.00	Both Sides
7+535.00	7+585.00	50.00	Both Sides
10+702.00	10+752.00	50.00	Both Sides
10+896.00	10+946.00	50.00	Both Sides
13+521.00	13+572.00	51.00	Both Sides
13+608.00	13+658.00	50.00	Both Sides

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

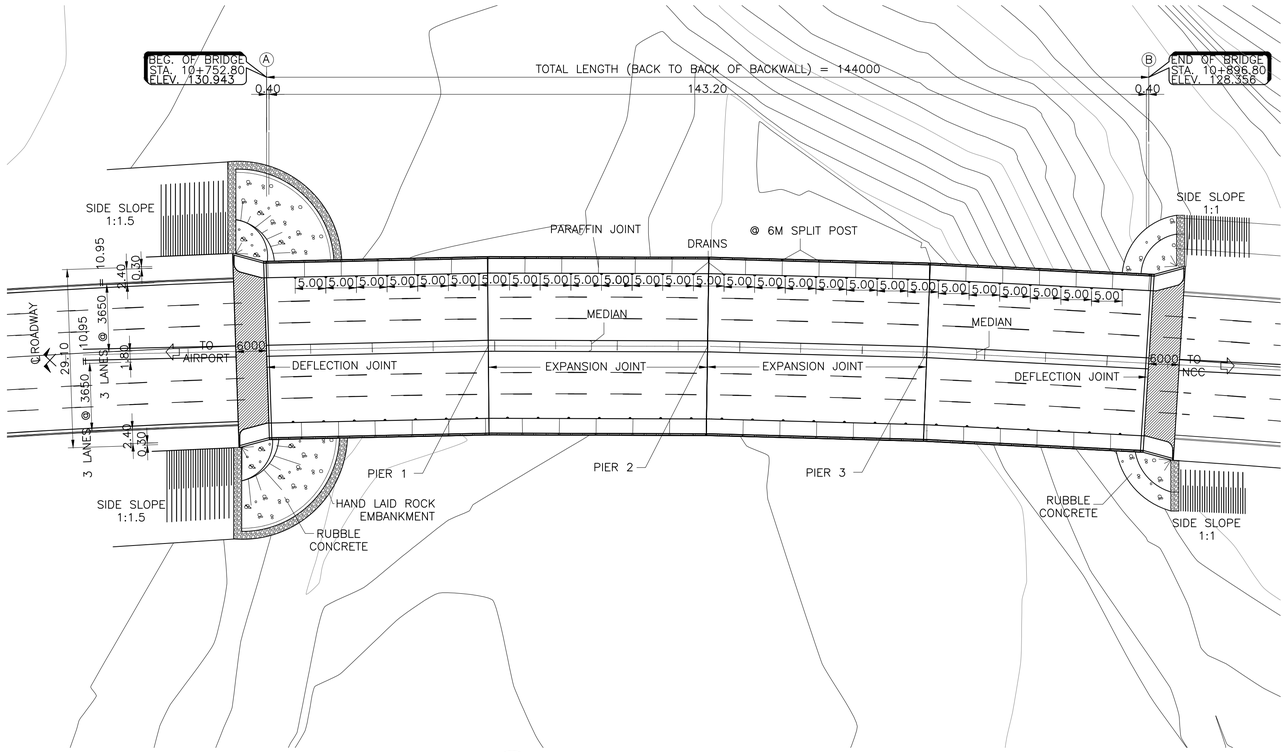
REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

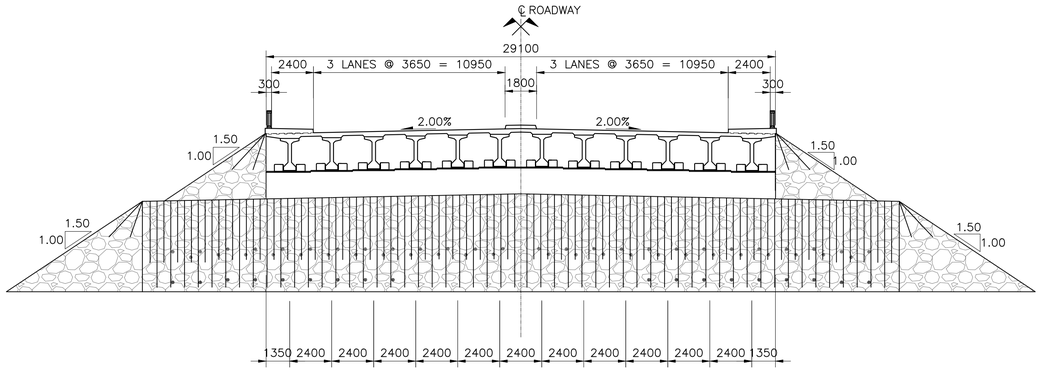
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

SCHEDULES

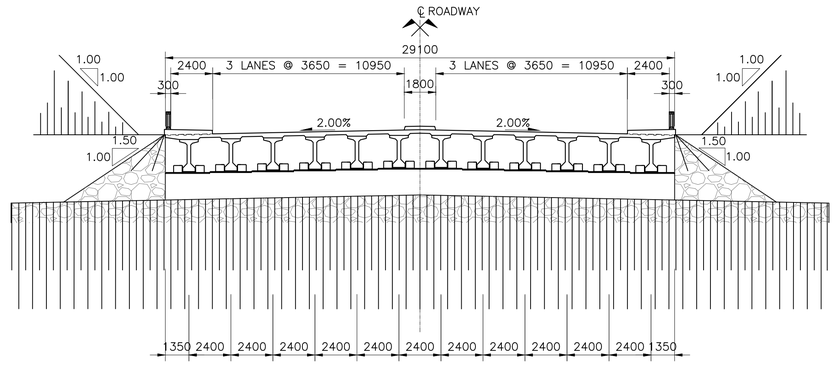
SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
-	R-35	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



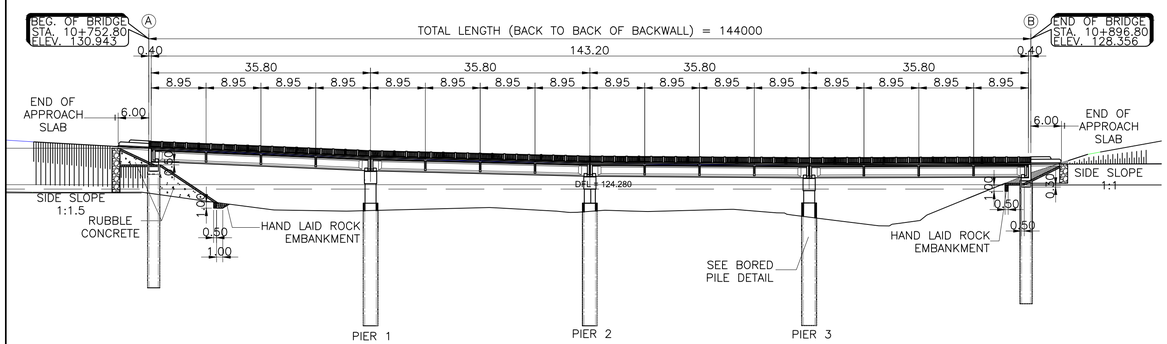
1 GENERAL PLAN
SCALE 1:500



3 GENERAL SECTION @ ABUTMENT A
SCALE 1:175



4 GENERAL SECTION @ ABUTMENT B
SCALE 1:175



2 GENERAL ELEVATION
SCALE 1:500

HYDRAULIC DESIGN DATA:

DRAINAGE AREA = 11.291 km^2
DESIGN DISCHARGE Q50 = 392.557 m^3/s
DESIGN DISCHARGE Q100 = 434.164 m^3/s
DESIGN VELOCITY = 2.242 m/s
DESIGN FLOOD LEVEL =
ORDINARY WATER LEVEL =

BRIDGE 3 STRUCTURES QUANTITY ESTIMATE(6-LANE)

ITEM NO.	DESCRIPTION	UNITS	ABUTMENTS		PIER	SUPERSTRUCTURE	TOTAL
			A	B			
103(2)a	BRIDGE EXCAVATION	cu.m.	258.00	424.00			682
104(1)a	EMBANKMENT (FROM ROADWAY EXCAVATION)	cu.m.	4135.00	357.00			4492
202(1)	CRUSHED AGGREGATE BASE COURSE	cu.m.	58.00	58.00			116
400(23)a13	BORED PILES (2.0 DIAMETER)	l.m	180.00	180.00			360
400(23)a21	BORED PILES (2.8 DIAMETER)	l.m			360		360
400(24)m1	PERMANENT CASING (2.0M DIA.X12MM THK)	l.m	54.00	54.00			108
400(24)u1	PERMANENT CASING (2.8M DIA.X16MM THK)	l.m			108		108
400(27)a	LOAD TEST (LOW STRAIN DYNAMIC METHOD, PIT)	each	5	5	9		19
400(28)	LOAD TEST (PILE DYNAMIC METHOD PDA)	each	1	1	3		5
401(2)b	REINFORCEMENT CONCRETE RAILING (BALUSTER), PAINTED	l.m				292	292
404(1)a	REINFORCEMENT STEEL BAR (GRADE 40)	Kg	649.00	649.00		35516.00	36814
404(1)b	REINFORCEMENT STEEL BAR (GRADE 60)	Kg	24747	24747	121908	206896.00	378298
405(1)b2	STRUCTURAL CONCRETE CLASS "A''(f'c=27.58 Mpa), 14DAYS	cu.m.	58.00	58.00			116
405(1)b3	STRUCTURAL CONCRETE CLASS "A''(f'c=27.58 Mpa), 28DAYS	cu.m.	193.00	193.00	533	1784.00	2703
406(1)h4	PRE-STRESS STRUCTURAL CONCRETE MEMBERS (TYPE VI, L=35.8M, I-GIRDER)	each				48	48
407(8)	LEAN CONCRETE (CLASS B, 16.50Mpa)	cu.m.	26.00	26.00			52
412(1)	ELASTOMERIC BEARING PAD DURO 60	each	12	12	72		60
507(1)	RUBBLE CONCRETE	cu.m.	593.00	293.00			845
508(1)	HAND LAID ROCK EMBANKMENT	cu.m.	234.00	39.00			273
517(1)a	DRAIN PIPE 100MM DIA. GALVANIZED PIPE INCLUDING PIPE FITTINGS	l.m.				280	280
SPL-801	PREMOLDED EXPANSION JOINT FILLER WITH SEALANT	sq.m.	81.00	81.00	227		389

NOTE: REINFORCING BAR QUANTITIES FOR PRESTRESSED GIRDERS ARE NOT INCLUDED

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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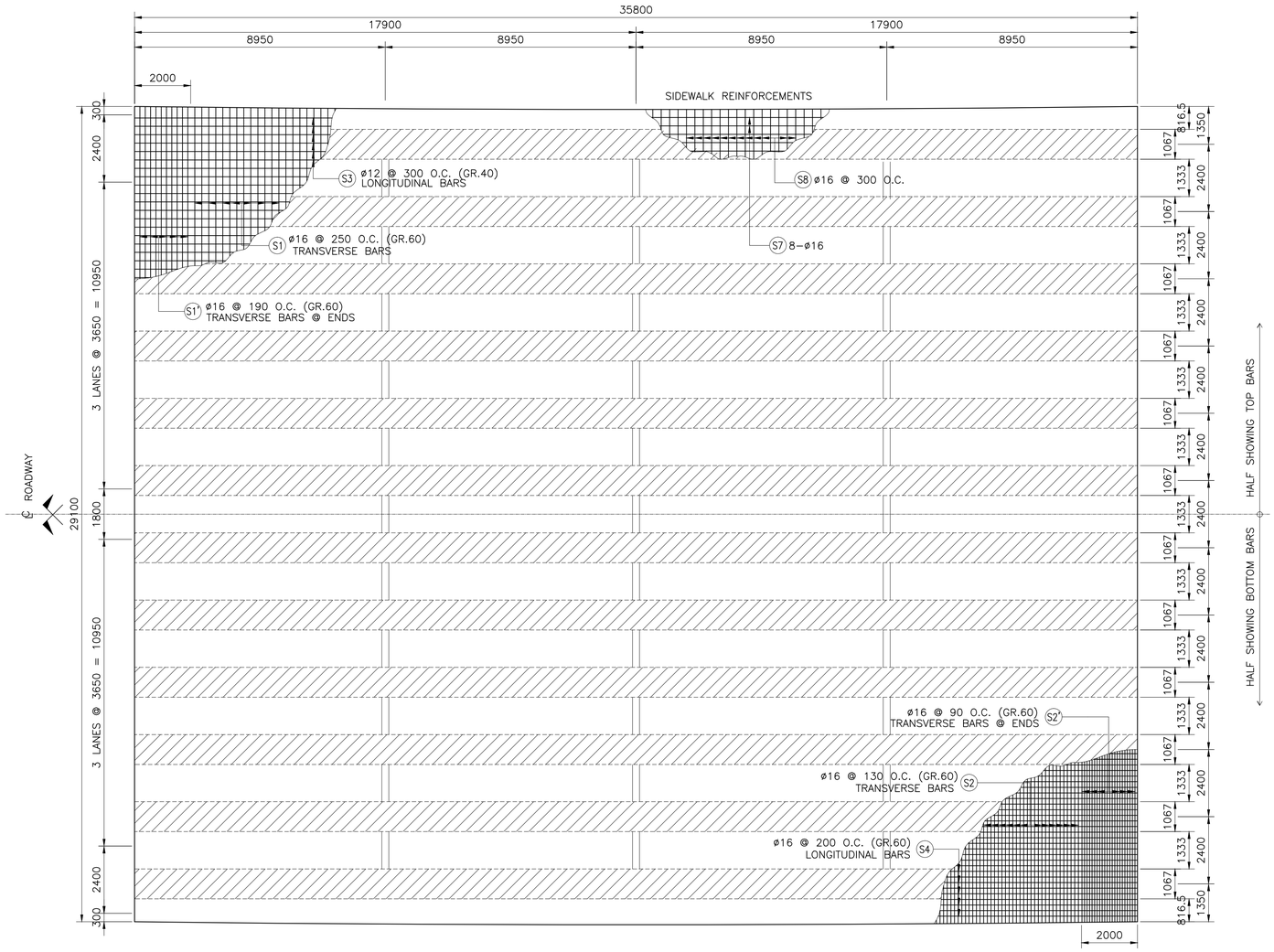
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANZIS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC! DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC! DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

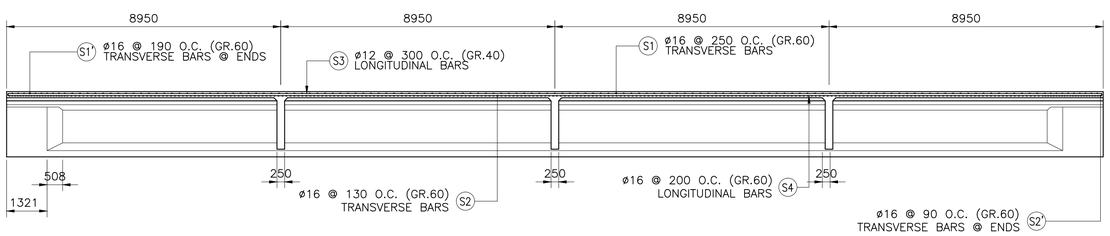
BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

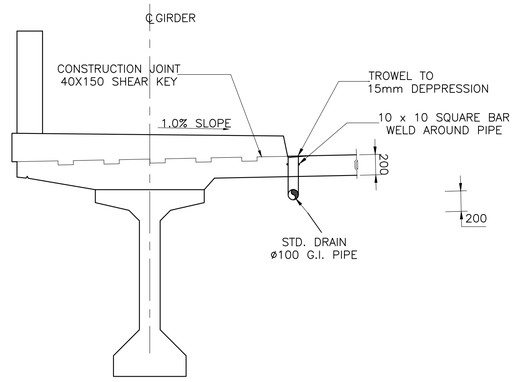
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3	PROJECT CODE	DRAWING NO. / SIZE
		P3B3-01 / A1
GENERAL PLAN GENERAL ELEVATION GENERAL SECTION	DATE APPROVED	DATE REVISED / REV.
	-	- / -



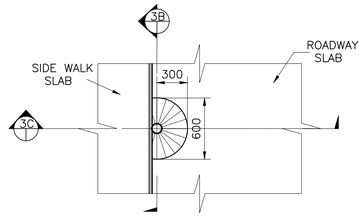
1 DECK SLAB PLAN
SCALE 1:100



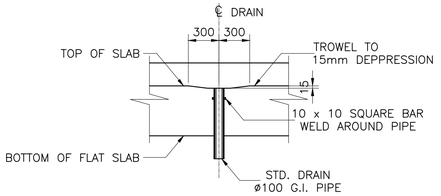
2 LONGITUDINAL SECTION
SCALE 1:100



3A SECTION
SCALE 1:30



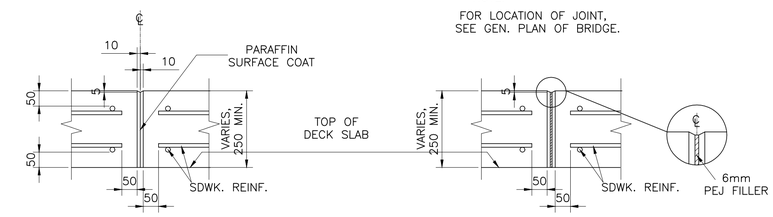
3B PLAN
SCALE 1:20



3C ELEVATION
SCALE 1:20

3 TYPICAL DRAIN DETAILS
SCALE NTS

NOTE:
FOR LOCATION OF JOINT,
SEE GEN. PLAN OF BRIDGE.



4A PARAFFIN JOINT
SCALE 1:10

4B DEFLECTION JOINT
SCALE 1:10

4 JOINT DETAILS
SCALE 1:10

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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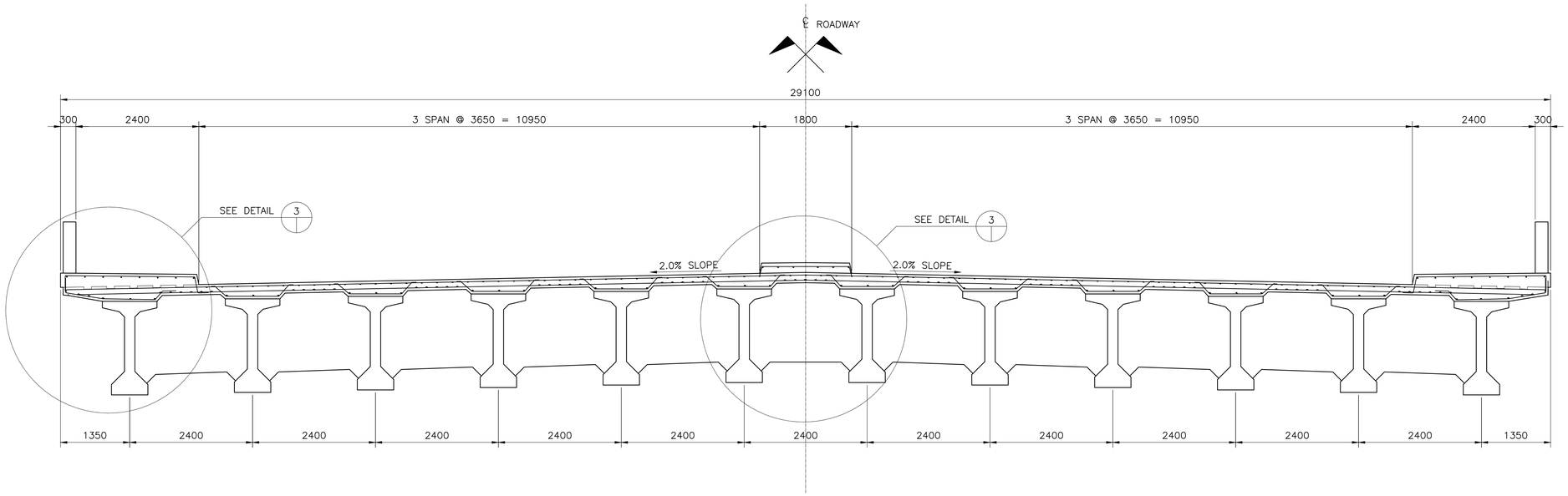
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC!	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC!	BCDA Bases Conversion and Development Authority	A		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	DATE: -	DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER; DATE: -	B			PROJECT CODE	DRAWING NO. / SIZE
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD; DATE: -	C		SHEET CONTENT: AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3		P3B3-02 / A1
				D		DECK SLAB PLAN LONGITUDINAL SECTION TYPICAL DRAIN & JOINTS DETAILS	DATE APPROVED	DATE REVISED / REV.
				E			-	- / -
				F				



1 CROSS SECTION @ MIDSPAN
SCALE 1:50

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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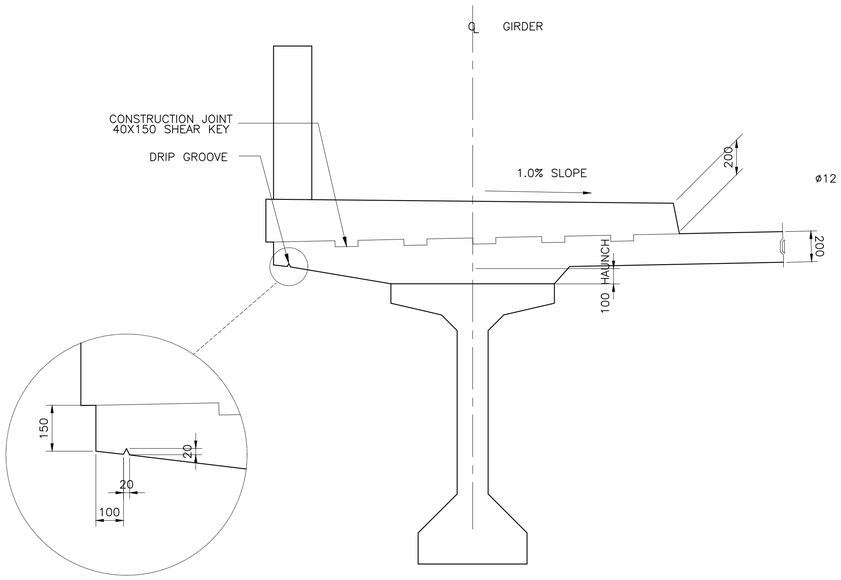
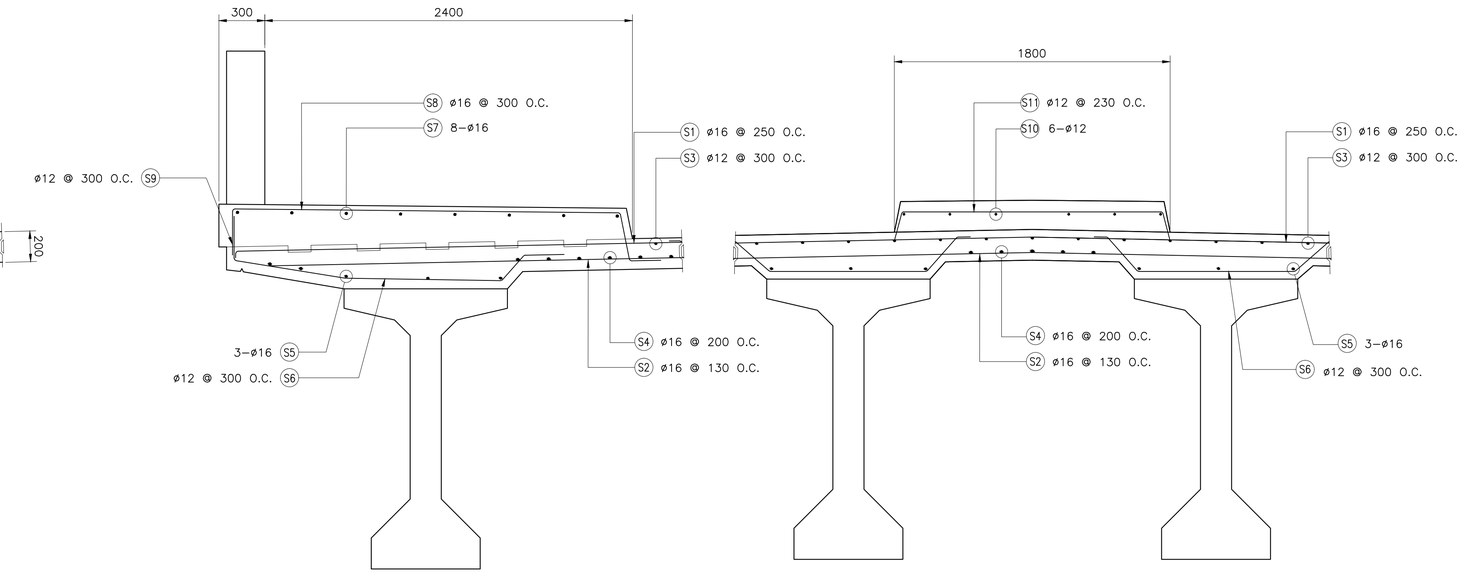
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

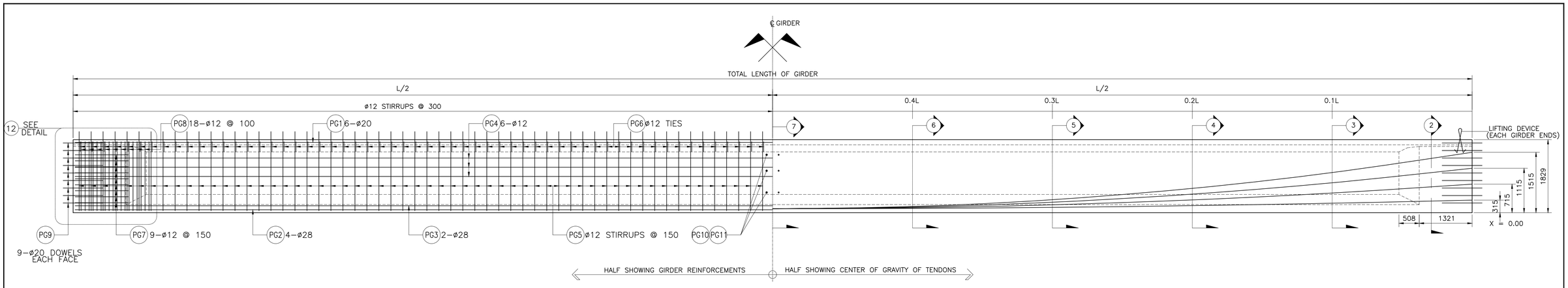


2 SHEAR KEY & DRIP GROOVE DETAIL
SCALE 1:20

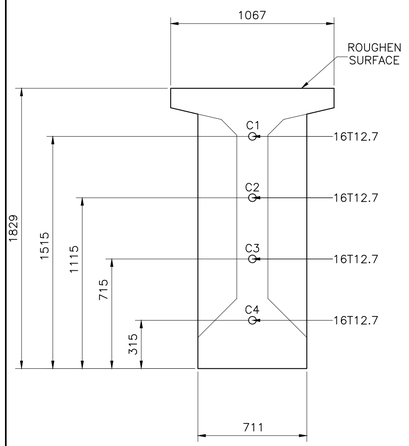


3 TRANSVERSE SECTION
SCALE 1:20

CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3 CROSS SECTION TRANSVERSE SECTION SHEAR KEY & DRIP GROOVE DETAIL	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B3-03 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -

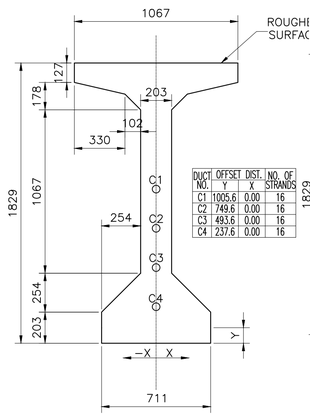


1 PRESTRESSED GIRDER ELEVATION
SCALE 1:45



SHOWING TENDONS

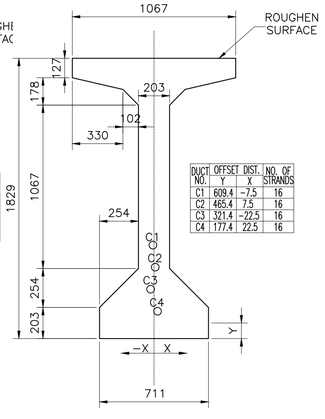
2 SECTION @ ENDS
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	1005.6	0.00	16
C2	749.6	0.00	16
C3	493.6	0.00	16
C4	237.6	0.00	16

SHOWING TENDONS

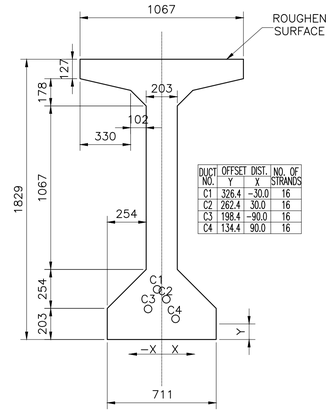
3 SECTION @ 0.1L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	609.4	-7.5	16
C2	465.4	7.5	16
C3	321.4	-22.5	16
C4	177.4	22.5	16

SHOWING TENDONS

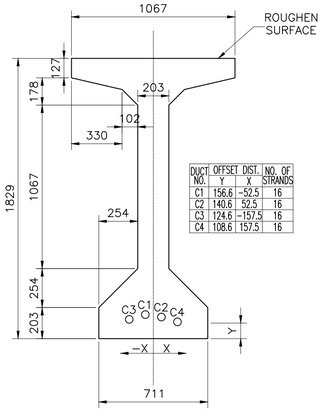
4 SECTION @ 0.2L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	326.4	-30.0	16
C2	262.4	30.0	16
C3	198.4	-90.0	16
C4	134.4	90.0	16

SHOWING TENDONS

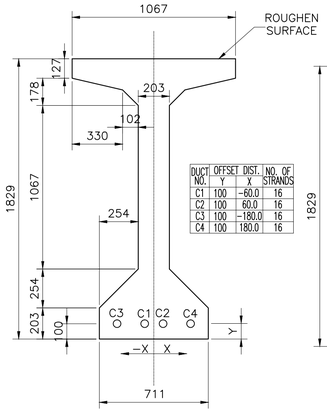
5 SECTION @ 0.3L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	156.6	-52.5	16
C2	140.6	52.5	16
C3	124.6	-157.5	16
C4	108.6	157.5	16

SHOWING TENDONS

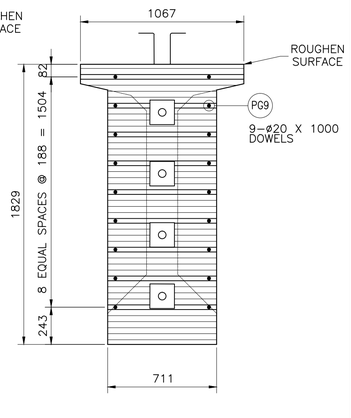
6 SECTION @ 0.4L
SCALE 1:20



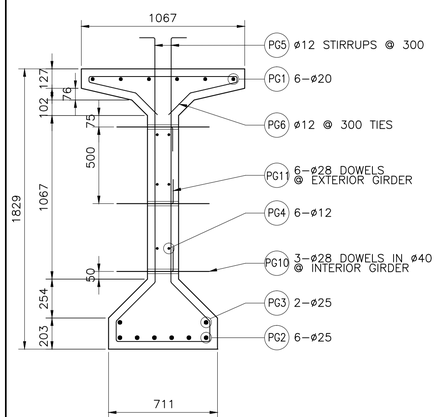
DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	100	-60.0	16
C2	100	60.0	16
C3	100	-180.0	16
C4	100	180.0	16

SHOWING TENDONS

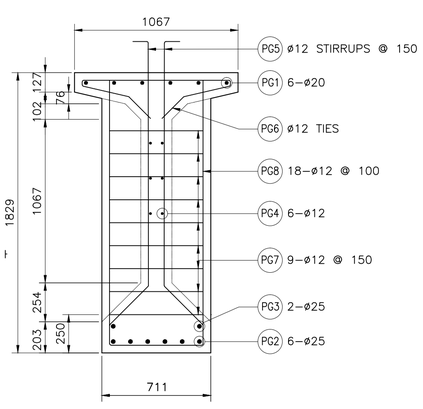
7 SECTION @ MIDSPAN
SCALE 1:20



8 TOOTH AT END VIEW
SCALE 1:20

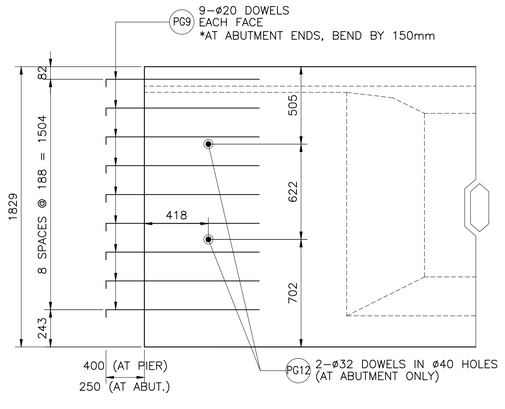


SHOWING REINFORCEMENTS

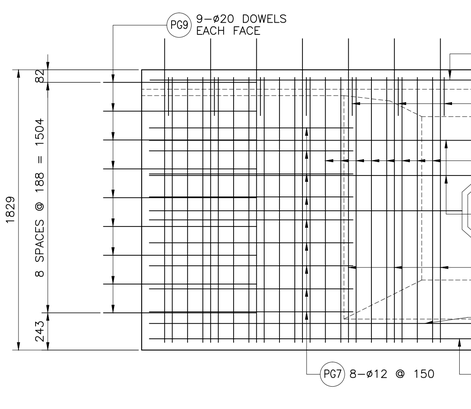


SHOWING REINFORCEMENTS

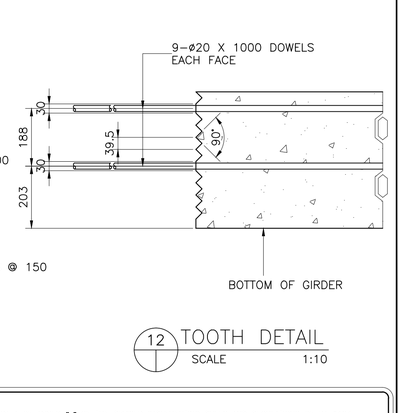
9 REINFORCEMENT DETAILS
SCALE 1:20



10 DOWELS AT END BLOCK
SCALE 1:20



11 REINFORCEMENT DETAILS
SCALE 1:20



12 TOOTH DETAIL
SCALE 1:10

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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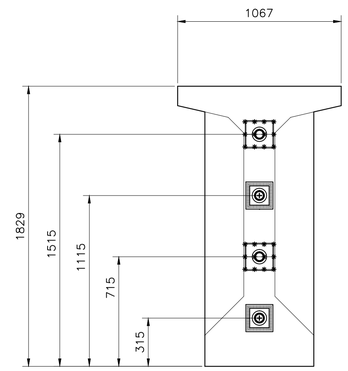
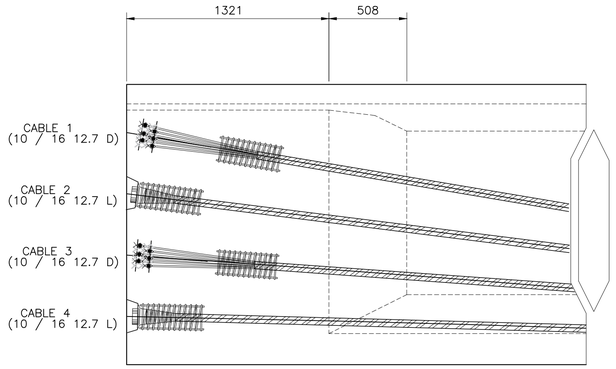
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

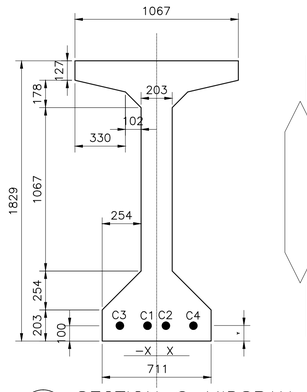
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3 TYPE VI GIRDER ELEVATION AND SECTIONS	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE: P3B3-04 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



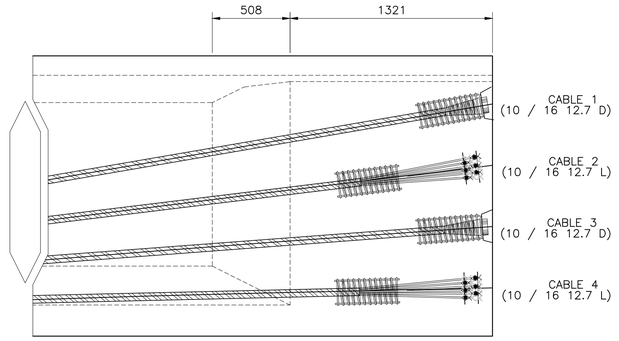
1 SECTION @ LEFT
SCALE 1:20



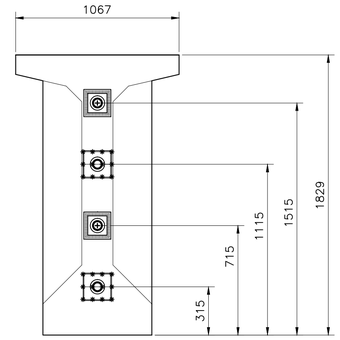
2 ELEVATION @ LEFT
SCALE 1:20



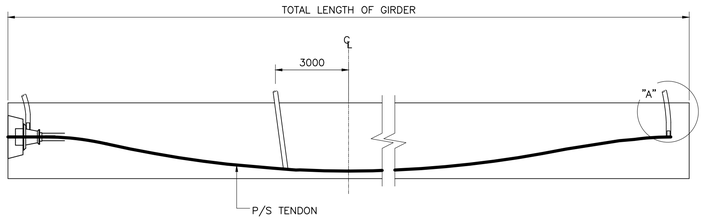
3 SECTION @ MIDSPAN
SCALE 1:20

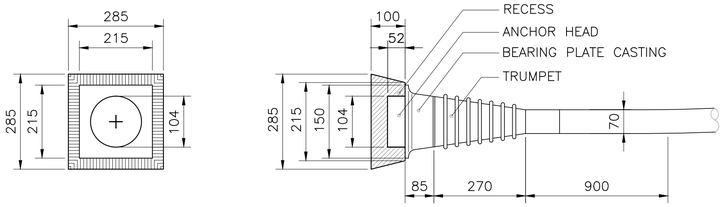


4 ELEVATION @ RIGHT
SCALE 1:20



5 SECTION @ RIGHT
SCALE 1:20

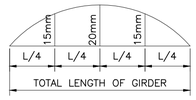




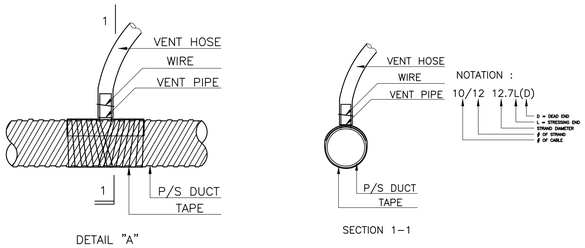
7 COMPACT STRESSING ANCHORAGE
SCALE NTS

CABLE NO.	NO. OF STRANDS	JFORCE
1	16	2168.00
2	16	2168.00
3	16	2168.00
4	16	2168.00

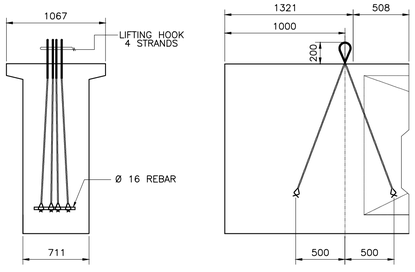
TOTAL JACKING FORCE = 8672.00kN



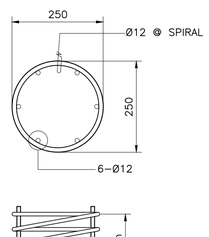
11 CAMBER DIAGRAM
SCALE NTS

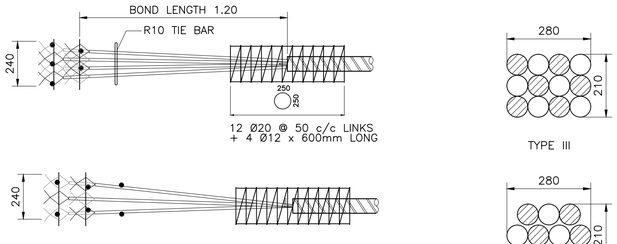


6 TYP. SPACING FOR GROUTING VENTS
SCALE NTS

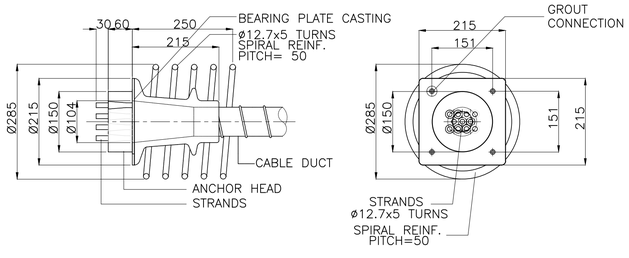


8 LIFTING HOOK DETAILS
SCALE NTS





9 BURSTING STEEL DEAD-END ANCHORAGE
SCALE NTS



10 PRIMARY BURSTING STEEL
SCALE NTS

GIRDER DESIGN GUIDE:

1. POST TENSIONING STEEL: THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST TENSIONED DESIGN, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES. METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED SHALL BE AS APPROVED BY THE ENGINEER. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS. ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST TENSION FORCE AFTER LOSSES REQUIRED AT MID SPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGN . THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR PLASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION,FRICTION AND EFFICIENCY OF END ANCHORAGE. ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH SPECIFICATIONS.

2. CONCRETE FOR GIRDERS SHALL HAVE AN INITIAL STRENGTH OF 35 N/mm^2 (5,000 PSI) AND A MINIMUM STRENGTH OF 41 N/mm^2 (6,000 PSI) AT THE AGE OF 28 DAYS.

3. CONCRETE FOR CAST-IN-PLACE SLAB HAVE A MINIMUM STRENGTH OF 28 N/mm^2 (4,000 PSI) AT THE AGE OF 28 DAYS.

4. THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDONS SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

5. THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 35 MPa (5,000 PSI). A GRID CONSISTING OF Ø 12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST-TENSIONING SYSTEM. POST-TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K = 0.0066/m AND u = 0.25 WITH AN ANCHORAGE DEFORMATION OF 6mm.

6. HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTOR'S PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL.THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

7. CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES.

8. ALL REINFORCING BARS SHALL BE GRADE 60.

NOTE:

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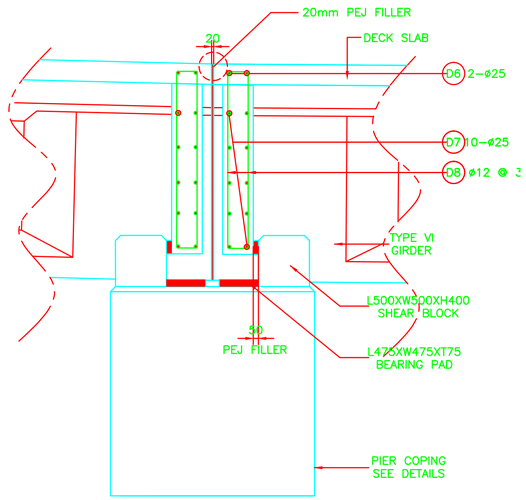
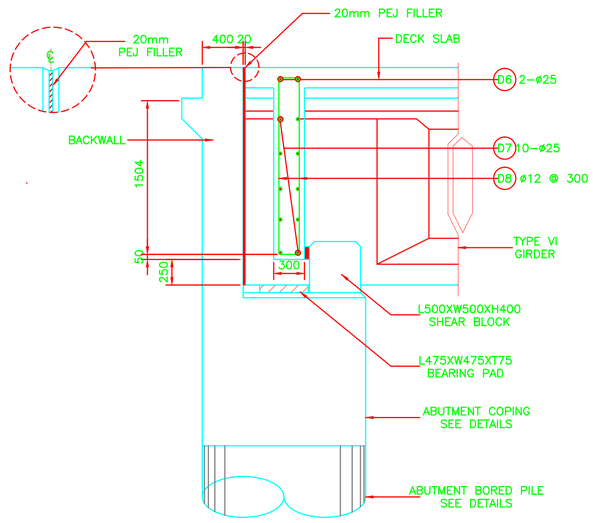
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

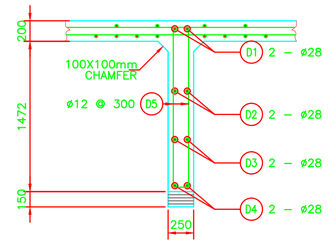
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC1 DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC1 DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3 TYPE VI GIRDER DETAILS	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B3-05 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



4 DIAPHRAGM @ ABUTMENT
SCALE 1:30



3 DIAPHRAGM @ ABUTMENT
SCALE 1:30



2 INTERMEDIATE DIAPHRAGM
SCALE 1:30

NOTE:
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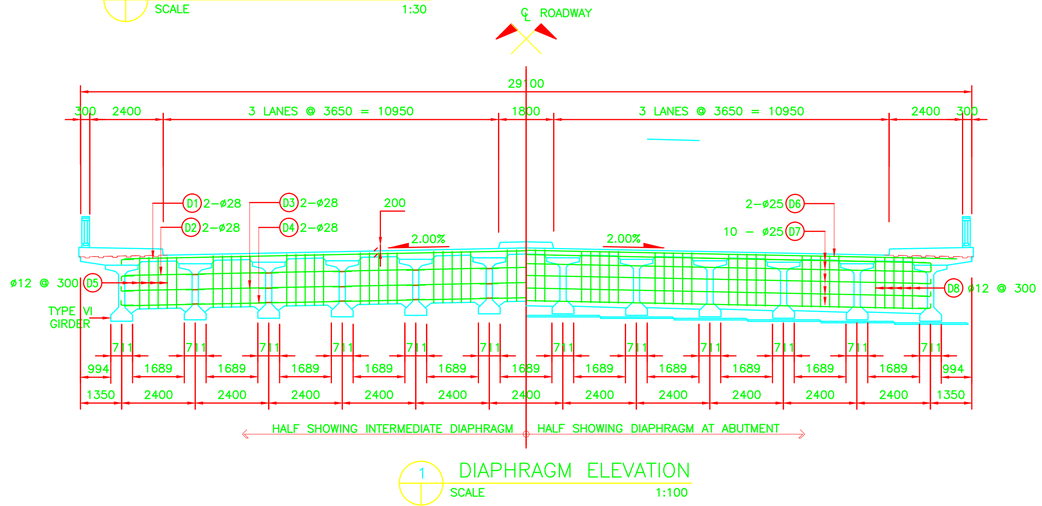
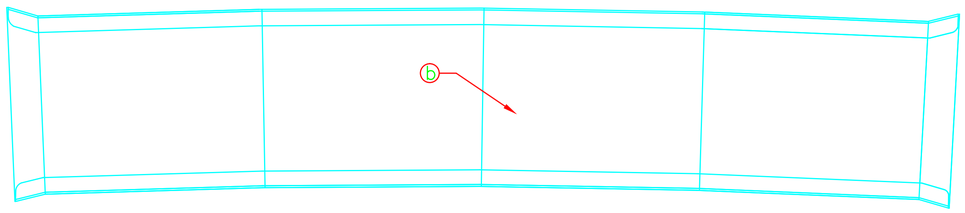
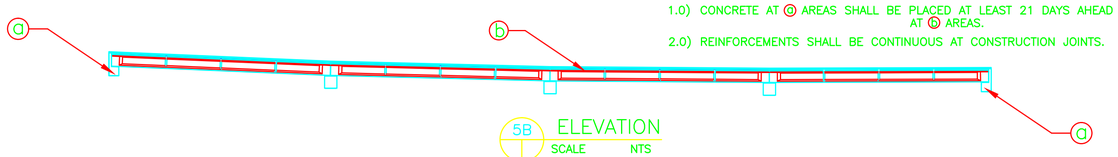
ENGR. ALBERTO C. CAÑETE
TEAM LEADER



1 DIAPHRAGM ELEVATION
SCALE 1:100



5A PLAN
SCALE NTS



5B ELEVATION
SCALE NTS

NOTES:
1.0) CONCRETE AT (a) AREAS SHALL BE PLACED AT LEAST 21 DAYS AHEAD OF CONCRETE AT (b) AREAS.
2.0) REINFORCEMENTS SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.

5 CONCRETE POURING SEQUENCE
SCALE NTS

SCHEDULE OF REINFORCEMENTS & SUMMARY OF QUANTITIES FOR ONE (1) PRESTRESSED GIRDER ONLY

BAR BENDING DIAGRAM	GIRDER LENGTH (m)	REINFORCING STEEL BARS MARK	SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS a	b	c	d	e	TYPE	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
A	17.00	PG1	20	AS SHOWN	6	35.80	0.075	0.075			C	35.95	215.70	2.466	534
B		PG2	25	AS SHOWN	6	35.80	0.14	0.14			C	36.08	216.48	3.854	840
C		PG3	25	AS SHOWN	2	35.80	0.14	0.14			C	36.08	72.16	3.854	283
D		PG4	12	AS SHOWN	6	35.80					A	35.80	214.80	0.888	196
E		PG5	12	300	119.33	0.45	1.60	0.36	0.16	0.60	G	3.17	378.29	0.888	338
F		PG6	12	300	119.33	0.20	0.30	1.00	0.30	0.20	F	2.00	238.67	0.888	212
		PG7	12	150	18	0.611	1.33	0.611			D	2.552	45.936	0.888	47
		PG8	12	100	36	0.60	1.75	1.75			C	4.10	147.6	0.888	133
		PG9	20	AS SHOWN	36	1.00					A	1.00	36.00	2.466	94
		PG10	28	AS SHOWN	6	0.603					A	0.603	3.618	4.834	24
		PG11	28	AS SHOWN	6	0.25	0.40				H	0.65	3.90	4.834	24
		PG12	32	AS SHOWN	2	1.467					A	1.467	2.934	7.990	24
														TOTAL	2749 Kgs

NOTES:
1. QUANTITIES ARE FOR 1 GIRDER ONLY.
2. PG10 IS FOR INTERIOR GIRDER ONLY.
3. PG11 IS FOR EXTERIOR GIRDER ONLY.
4. PG12 FOR ABUT. ONLY
5. PG13 FOR PIER ONLY
6. VERIFY ACTUAL LENGTH OF THE BRIDGE

SCHEDULE OF REINFORCEMENTS FOR DECK SLAB & DIAPHRAGMS

BAR BENDING DIAGRAM	MARK	SIZE (mm)	SPACING (mm)	QUANTITY	a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
	DECKSLAB															
A	S1	16	250	509	0.192	29.10	0.192				C	DECKSLAB	29.484	15001.46	1.579	23684
B	S1'	16	190	84	0.192	29.10	0.192				C		29.484	2482.86	1.579	3925
C	S2	16	130	978	0.58	29.10	0.58				C		30.26	29608.25	1.579	46739
D	S2'	16	90	178	0.192	29.10	0.192				C		29.484	5241.60	1.579	8274
E	S3	12	300	388	0.144	35.80	0.144				C		36.088	14002.14	0.888	12435
F	S4	16	200	582	0.192	35.80	0.192				C		36.184	21059.09	1.579	33245
G	S5	16	AS SHOWN	144	35.8						A		30.36	5155.2	1.579	8141
	S6	12	300	480	0.32	1.10	0.32				B		1.74	835.20	1.579	746
	S7	16	AS SHOWN	22	144						A		144	3168.00	1.579	5000
	S8	16	300	960	2.60	0.30	0.30	0.73			E		3.93	3772.80	1.579	5958
	S9	12	300	960	0.30	0.75					D	SIDEWALK	1.05	1008.00	0.888	903
	S10	12	AS SHOWN	6	144						A		144	864.00	0.888	769
	S11	12	230	626	0.20	1.80	0.20				B		2.2	1377.39	0.888	1225
															Grade 60 bar	134965 Kgs
															Grade 40 bar	16077 Kgs
	DIAPHRAGMS															
	D1	28	AS SHOWN	24	29.1						F		87.3	2095.20	4.833	10134
	D2	28	AS SHOWN	24	29.1						A		87.3	2095.20	4.833	10134
	D3	28	AS SHOWN	24	29.1						A	INT. DIAPHRAGM	87.3	2095.20	4.833	10134
	D4	28	AS SHOWN	24	29.1						A		87.3	2095.20	4.833	10134
	D5	12	300	1164	0.15	1.55	0.15	1.55	0.10	0.10	G		10.8	12570.20	0.888	11163
	D6	25	AS SHOWN	16	29.1						C		58.2	931.20	3.854	3595
	D7	25	AS SHOWN	80	29.1						A	END DIAPHRAGM AT ABUT.	58.2	4656.00	3.854	17945
	D8	12	300	776	0.18	1.55	0.18	1.55	0.10	0.10	G		7.32	5680.32	0.888	5048
															Grade 60 bar	62078 Kgs
															Grade 40 bar	16210 Kgs
	NOTE: 40db SPLICES ARE NOT INCLUDED															
	* 12 mm dia. and below are Grade 40											GRAND TOTAL			Grade 60 bar	197043 Kgs
	* 16 mm dia. and above are Grade 60											GRAND TOTAL			Grade 40 bar	32287 Kgs

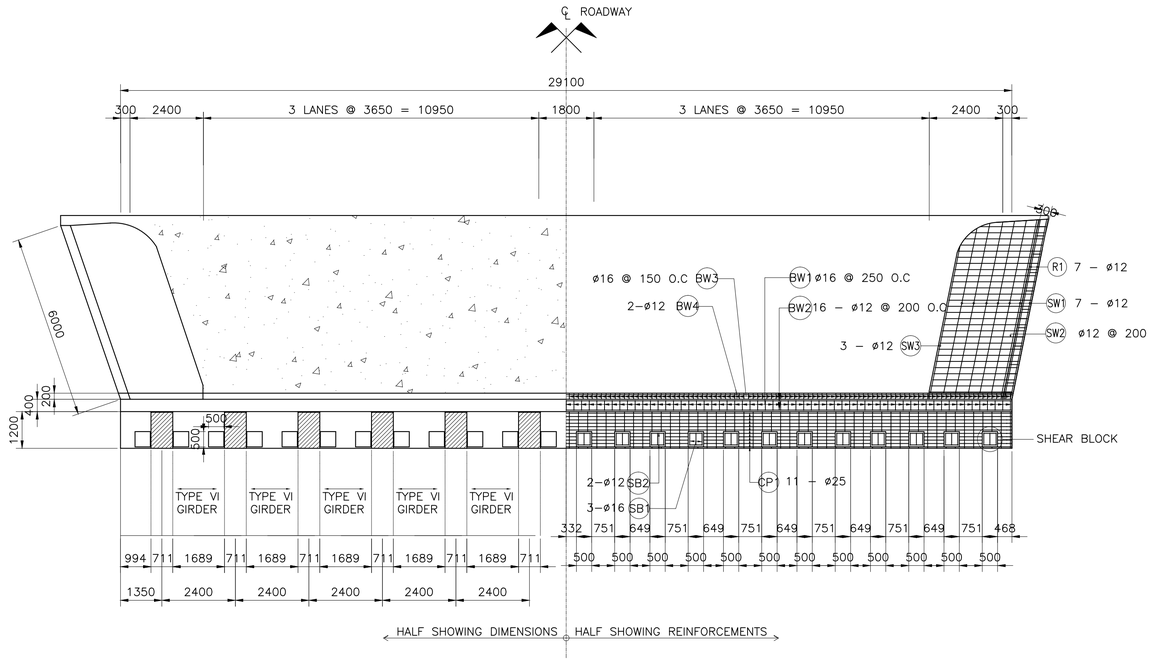
CONSULTANTS
Urban Integrated Consultants, Inc.
UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY: EFREN L. DAVID, PRESIDENT - UIC1, DATE: -
DESIGNED BY: ALBERTO C. CAÑETE P.P.,F.ASEP, PROJECT MANAGER - UIC1
BCDA Bases Conversion and Development Authority
CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -
APPROVED BY: JOVITO M. SUNGA, OIC - PMO, DATE: -

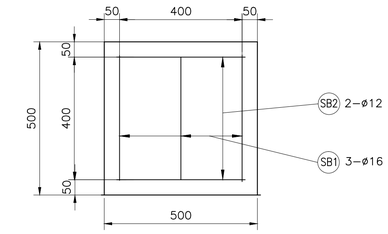
REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE:
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT TO NCC: (KM.10+500-KM.16+000) - BRIDGE 3
DIAPHRAGM ELEVATION AND DETAILS
CONCRETE POURING SEQUENCE
SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES

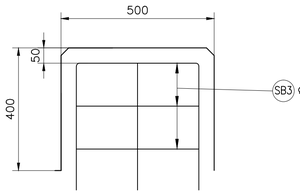
SCALE	DRAWING STATUS
AS SHOWN	DRAFT DRAWING
PROJECT CODE	DRAWING NO. / SIZE
	P3B3-06 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -



1 PLAN
SCALE 1:100

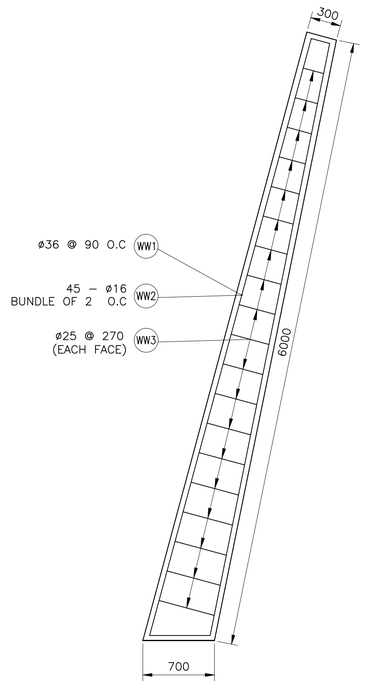


3A PLAN
SCALE 1:10

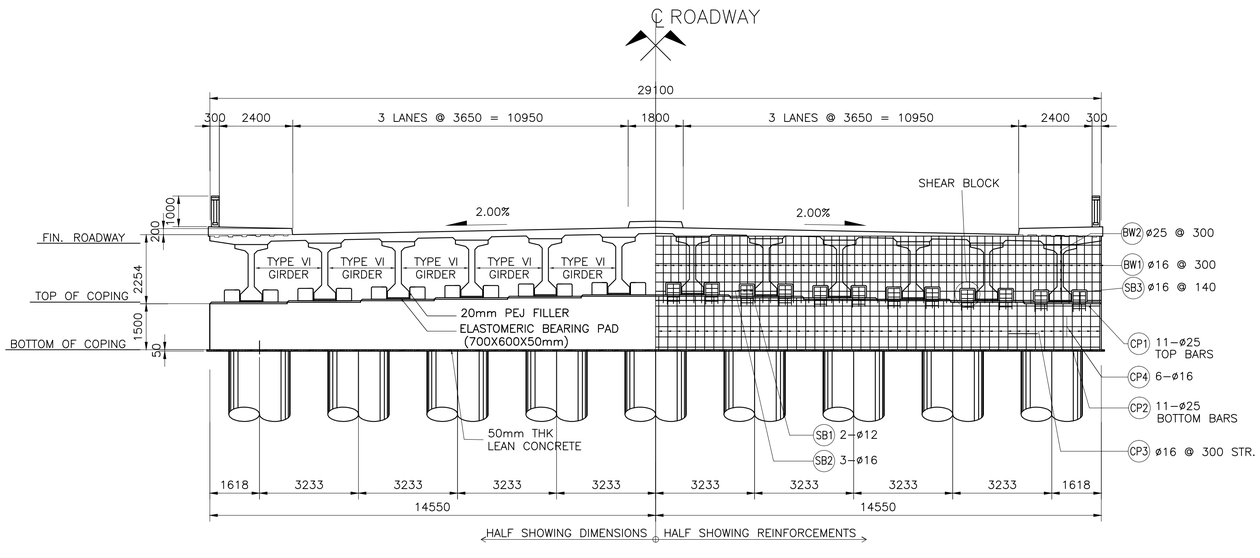


3B ELEVATION
SCALE 1:10

3 SHEAR BLOCK DETAIL
SCALE 1:10



4 WINGWALL PLAN
SCALE 1:30



2 ELEVATION
SCALE 1:100

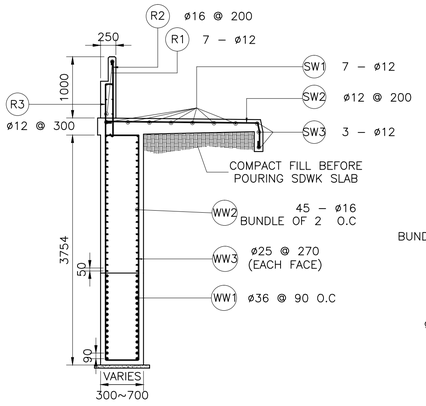
NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

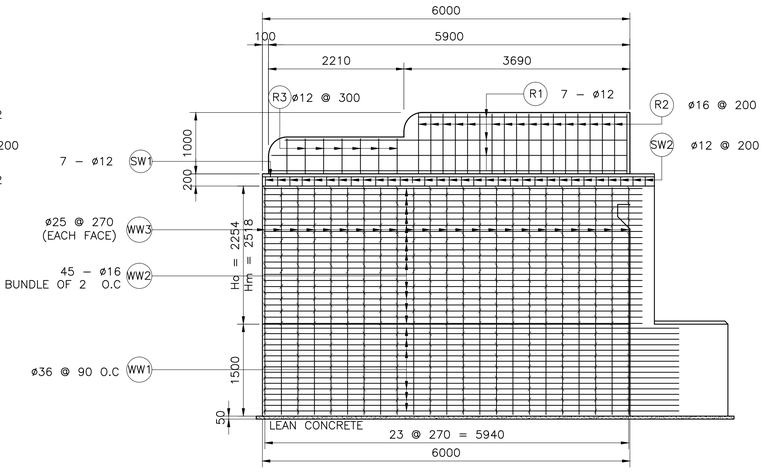
THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

ENGR. ALBERTO C. CAÑETE
TEAM LEADER

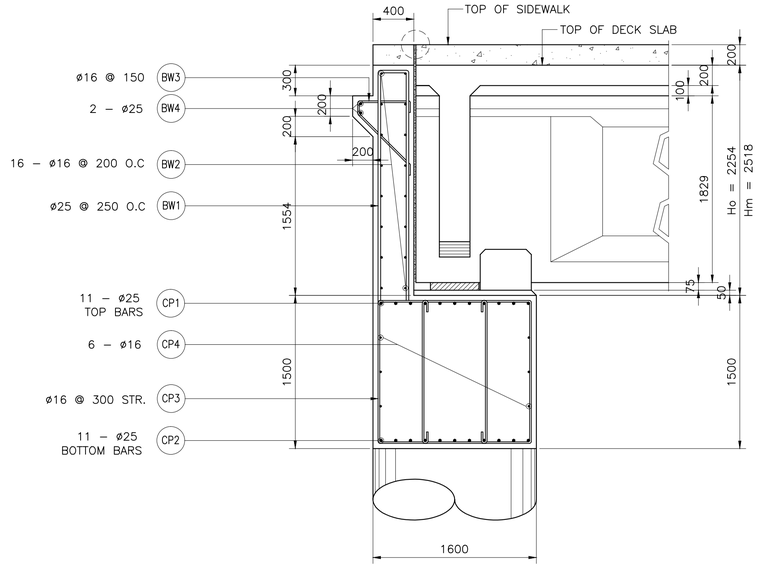
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3 ABUTMENT PLAN AND ELEVATION SHEAR BLOCK DETAIL WINGWALL PLAN	AS SHOWN PROJECT CODE P3B3-07 DATE APPROVED -	DRAFT DRAWING DRAWING NO. A1 DATE REVISED - REV. -



5 SECTION OF WINGWALL
SCALE 1:50



6 ELEVATION OF WINGWALL
SCALE 1:50



3 BACKWALL AND COPING SECTION
SCALE 1:30

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

ENGR. ALBERTO C. CAÑETE
TEAM LEADER

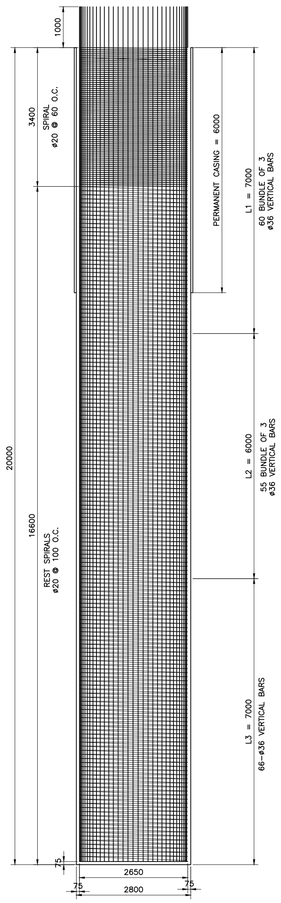
SCHEDULE OF REINFORCEMENTS FOR SUBSTRUCTURE FOR ABUTMENT "A" ONLY

BAR BENDING DIAGRAM	MARK	SIZE (mm)	SPACING (mm)	QUANTITY	a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (cu.m)
	FOR ABUTMENT A ONLY																
B	CP1	25	AS SHOWN	11	0.5	29.10	0.50				A	COPING	30.10	331.10	3.853	1280	70
	CP2	25	AS SHOWN	11	0.5	29.10	0.50				A		30.10	331.10	3.853	1280	
	CP3	16	300	97	1.5	1.575	1.50	1.6	0.1	0.1	B		6.375	618.38	1.578	981	
	CP4	16	AS SHOWN	6	0.5	29.10	0.50				A		30.10	180.60	1.578	290	
C	BW1	25	250	117	2.6	0.35	2.6				C	BACKWALL	5.30	649.35	3.853	2504	29
	BW2	16	300	16	29.10						STR.		30.86	465.60	1.578	738	
	BW3	16	150	194	0.1	0.75	0.1	0.95	0.1		D		1.90	388.00	1.578	620	
	BW4	25	AS SHOWN	2	29.10						STR		29.56	58.20	3.853	228	
D	WW1	36	90	68	6.3						STR	WINGWALL	6.3	428.40	7.990	3430	27
	WW2	16	50	204	6.0	1.50					H		7.5	1530	1.578	2418	
	WW3	16	270	28	0.7	3.8	0.7	3.8	0.1	0.1	B		9.2	257.60	1.578	408	
	TIES	12	AS SHOWN	352	0.2	0.40	0.2				G		0.8	281.60	0.888	251	
E	SB1	16	AS SHOWN	72	0.50	0.60	0.50				C	SHEAR BLOCK	1.6	115.20	1.578	188	2
	SB2	12	AS SHOWN	48	0.50	0.60	0.50				C		1.6	76.80	0.888	71	
	SB3	16	140	4	0.475	0.475	0.475	0.475	0.10	0.10	B		2.1	8.40	1.578	16	
F	R1	12	AS SHOWN	14	7.0						E	APPROACH RAILING	7.0	98.00	0.888	94	3
	R2	16	200	19	0.1	1.25	0.2				G		1.55	29.45	1.578	47	
	R3	12	300	8	0.75	0.2	0.1	0.1			I		1.15	9.20	0.888	16	
G	SW1	12	AS SHOWN	14	6.0						E	APPROACH SIDEWALK	6.0	84.00	0.888	79	78
	SW2	12	200	28	0.1	1.25	0.2				G		1.55	43.40	0.888	39	
	SW3	12	AS SHOWN	6	6.0						I		6.0	36.00	0.888	39	
												GRAND TOTAL		Grade 40 bar		1406	84 CU.M.
														SAY		1406 Kgs	
I	* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		11635	
	* 16 mm dia. and above are Grade 60													SAY		11635 Kgs	

SCHEDULE OF REINFORCEMENTS FOR SUBSTRUCTURE FOR ABUTMENT "B" ONLY

BAR BENDING DIAGRAM	MARK	SIZE (mm)	SPACING (mm)	QUANTITY	a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (cu.m)
	FOR ABUTMENT B ONLY																
B	CP1	25	AS SHOWN	11	0.5	29.10	0.50				A	COPING	30.10	331.10	3.853	1280	70
	CP2	25	AS SHOWN	11	0.5	29.10	0.50				A		30.10	331.10	3.853	1280	
	CP3	16	300	97	1.5	1.575	1.50	1.6	0.1	0.1	B		6.375	618.38	1.578	981	
	CP4	16	AS SHOWN	6	0.5	29.10	0.50				A		30.10	180.60	1.578	290	
C	BW1	25	250	117	2.6	0.35	2.6				C	BACKWALL	5.30	649.35	3.853	2504	29
	BW2	16	300	16	29.10						STR.		30.86	465.60	1.578	738	
	BW3	16	150	194	0.1	0.75	0.1	0.95	0.1		D		1.90	388.00	1.578	620	
	BW4	25	AS SHOWN	2	29.10						STR		29.56	58.20	3.853	228	
D	WW1	36	90	68	6.3						STR	WINGWALL	6.3	428.40	7.990	3430	27
	WW2	16	50	204	6.0	1.50					H		7.5	1530	1.578	2418	
	WW3	16	270	28	0.7	3.8	0.7	3.8	0.1	0.1	B		9.2	257.60	1.578		
	TIES	12	AS SHOWN	352	0.2	0.40	0.2				G		0.8	281.60	0.888	251	
E	SB1	16	AS SHOWN	72	0.50	0.60	0.50				C	SHEAR BLOCK	1.6	115.20	1.578	188	2
	SB2	12	AS SHOWN	48	0.50	0.60	0.50				C		1.6	76.80	0.888		
	SB3	16	140	4	0.475	0.475	0.475	0.475	0.10	0.10	B		2.1	8.40	1.578		
F	R1	12	AS SHOWN	14	7.0						E	APPROACH RAILING	7.0	98.00	0.888	94	3
	R2	16	200	19	0.1	1.25	0.2				G		1.55	29.45	1.578	47	
	R3	12	300	8	0.75	0.2	0.1	0.1			I		1.15	9.20	0.888	16	
G	SW1	12	AS SHOWN	14	6.0						E	APPROACH SIDEWALK	6.0	84.00	0.888	79	78
	SW2	12	200	28	0.1	1.25	0.2				G		1.55	43.40	0.888		
	SW3	12	AS SHOWN	6	6.0						I		6.0	36.00	0.888	39	
												GRAND TOTAL		Grade 40 bar		1406	84 CU.M.
														SAY		1406 Kgs	
I	* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		11635	
	* 16 mm dia. and above are Grade 60													SAY		11635 Kgs	

CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANZIS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3 BACKWALL, COPING AND WINGWALL DETAILS SCHEDULE OF REINFORCEMENTS FOR ABUTMENT "A" AND "B"	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B3-08 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



1 VERTICAL SECTION
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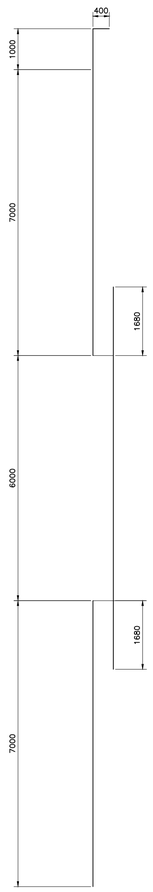
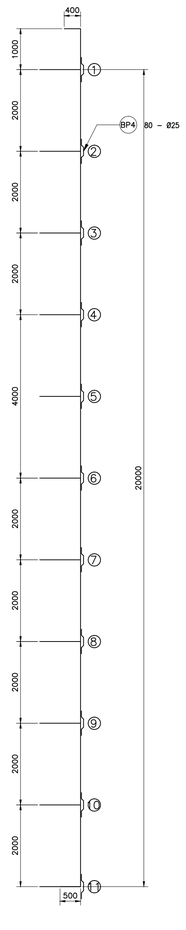
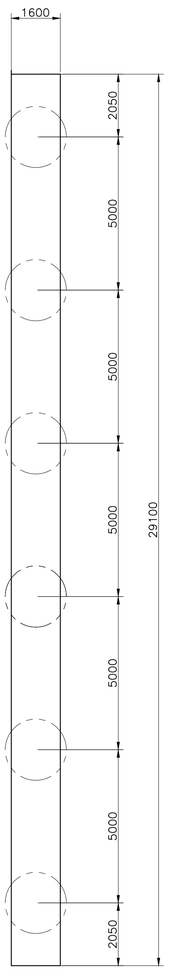


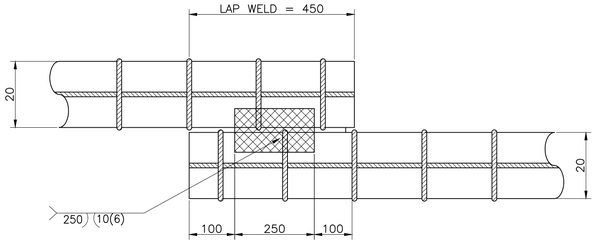
2 SCHEMATIC DETAIL
SCALE 1:75



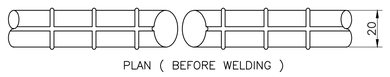
3 STIFFENER LAYOUT
SCALE 1:75



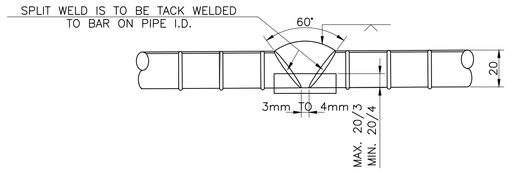
4 PIER COPING PLAN
SCALE 1:100



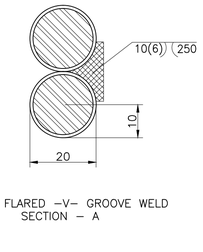
DIRECT LAP JOINT WITH BARS IN CONTACT



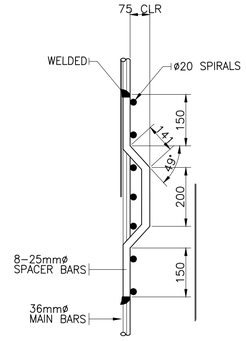
PLAN (BEFORE WELDING)

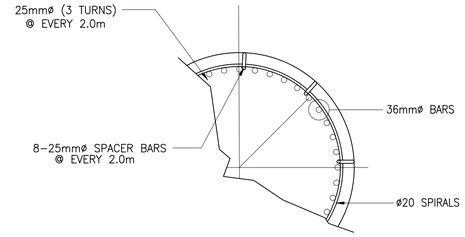


DETAILS OF SINGLE-V-GROOVE BUTT WELD



DOUBLE FLARED -V- GROOVE WELD
SECTION - A

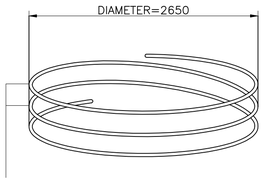




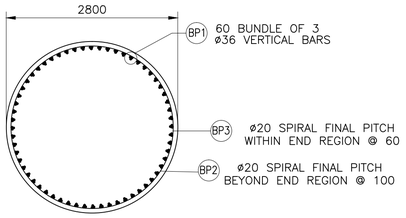
6 BORED PILE CONFINEMENT RING & SPACER DETAIL
SCALE NTS

NOTES:

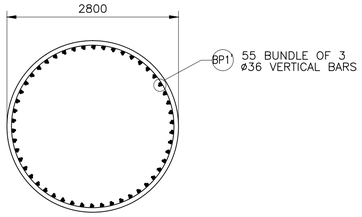
1. THE REINFORCEMENT ARE LAP-WELD CONNECTED (FLARED-V-GROOVE TYPE)
2. SPIRAL REINFORCEMENT ARE LAP WELD CONNECTED. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS. D1.4-92, STRUCTURAL WELDING CODE REINFORCEMENT STEEL, USE ELECTRODE E90XX-X.
3. CARE SHOULD BE TAKEN NOT TO DAMAGE BORED PILE/COLUMN MAIN BARS DURING WELDING.
4. SPIRAL REINFORCEMENT SHOULD BE BUTT WELDED WHERE SPIRAL PITCH IS 50mm OR LESS. OTHERWISE USE LAP WELD SPLICE.
5. ADDITIONAL STIFFENERS/GUIDE BARS MAY BE PROVIDED TO STABILIZE THE PILE REINFORCEMENT DURING FABRICATION/ ERECTION SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. DIRTY CONCRETE (MINIMUM 600mm HEIGHT) SHOULD BE REMOVED PRIOR TO CONSTRUCTION OF BACKWALL AND COPING BEAM.
7. CONCRETE - CONCRETE SHALL CONFORM TO THE REQUIREMENT OF CLASS AA CONCRETE WITH 28MPa. CYLINDER STRENGTH AND 19mm MAXIMUM AGGREGATE SIZE.
8. REINFORCEMENT - ALL REINFORCEMENT STEEL SHALL BE DEFORMED BAR CONFORMING TO AASHTO M31 (ASTM 315) GRADE 60. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 100 BAR DIAMETER APART, LENGTH OF SPLICES SHALL BE 2200mm.
9. THE STABILIZATION FOR BORED PILE EXCAVATION (SUCH AS USING BENTONITE SLURRY OR TEMPORARY STEEL CASING ETC.) SHALL BE CONSIDERED BY THE CONTRACTOR AND THE COST IS SUBSIDIARY IN PAY ITEM 400(17). THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION METHOD FOR ENGINEERS APPROVAL BEFORE CONSTRUCTION.



ø20 SPIRAL FINAL PITCH BEYOND END
REGION @ 100 WITHIN END REGION @ 60



5A PILE SECTION THRU L1
SCALE 1:50



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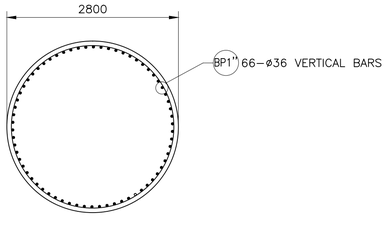
SCALE 1:50



5C PILE SECTION THRU L3
SCALE 1:50

5 BORED PILE SECTION DETAIL
SCALE 1:50

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

ENGR. ALBERTO C. CAÑETE
TEAM LEADER

7 DETAILS OF TIES REINFORCEMENT LAP-WELD CONNECTION
SCALE NTS

SCHEDULE OF REINFORCEMENT FOR ONE (1) BORED PILE AT PIER ONLY

BAR BENDING DIAGRAM	BAR MARK	SIZE (□□)	SPACING (□□)	QTY	BAR SHAPE	BAR DIMENSION (ALL DIMENSIONS ARE OUT TO OUT OF BARS) a	b	c	d	e	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g/□.)	TOTAL WEIGHT (□g.)	VOLUME CONCRETE (cu.□.)
	FOR ONE (1) BORED PILE AT ABUTMENT (L=20m, Ø2400mm)															
a, b (A)	BP1	36	AS SHOWN	180	A	0.25	7	–	–	–	BORED PILE	7.25	1305.00	7.991	10433	124
a, b (A)	BP1'	36	AS SHOWN	165	A	0.25	6	–	–	–		6.25	1031.25	7.991	8243	
a, b (A)	BP1"	36	AS SHOWN	66	A	0.25	7	–	–	–		7.25	478.50	7.991	3831	
a (B)	BP2	20	60	57	D	0.15	2.65	–	–	–		2.8	159.60	2.467	401	
a (B)	BP3	20	100	166	D	0.15	2.65	–	–	–		2.8	464.80	2.467	1154	
a (B)	BP4	25	AS SHOWN	80	C	0.15	0.141	0.20	0.141	0.15		0.782	62.560	3.854	244	
a, b, c, d, e (C)																
D																
a, b (E)																
														SUBTOTAL	24304	124

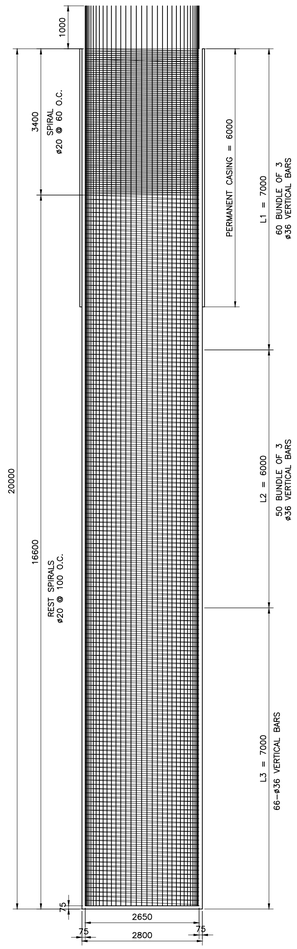
NOTE: 40db SPLICES ARE NOT INCLUDED
* 12 mm dia. and below are Grade 40
* 16 mm dia. and above are Grade 60

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANZS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

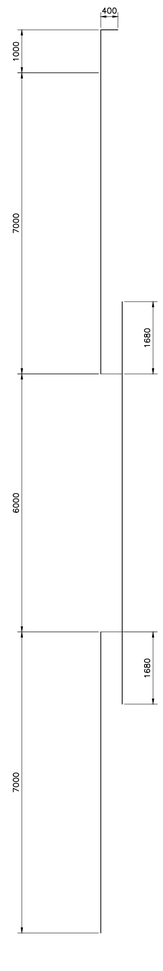
BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

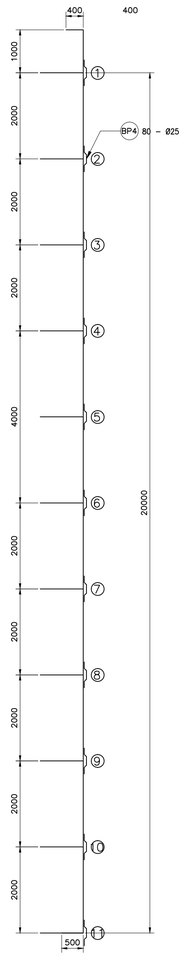
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - BRIDGE 3	PROJECT CODE	DRAWING NO. / SIZE
		P3B3-09 / A1
PIER 1 BORED PILE SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES	DATE APPROVED	DATE REVISED / REV.
	-	- / -



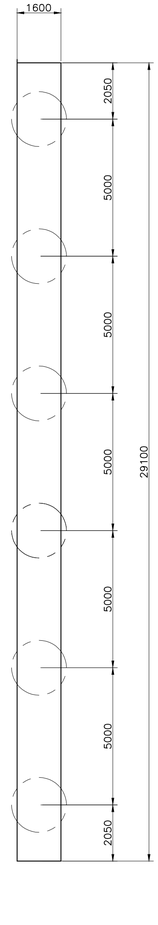
1 VERTICAL SECTION
SCALE 1:75



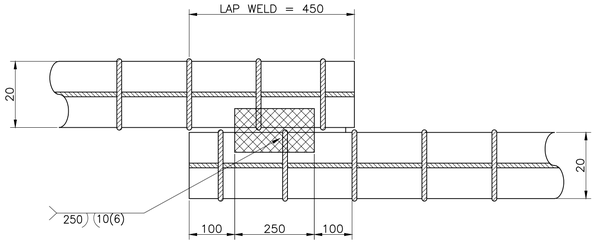
2 SCHEMATIC DETAIL
SCALE 1:75



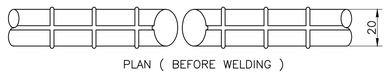
3 STIFFENER LAYOUT
SCALE 1:75



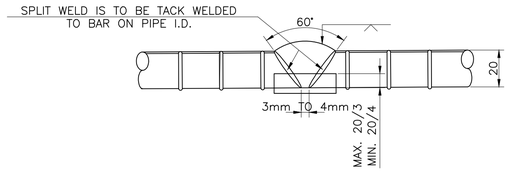
4 PIER COPING PLAN
SCALE 1:100



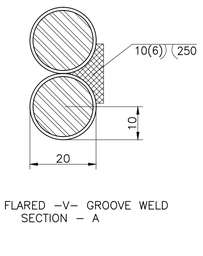
DIRECT LAP JOINT WITH BARS IN CONTACT



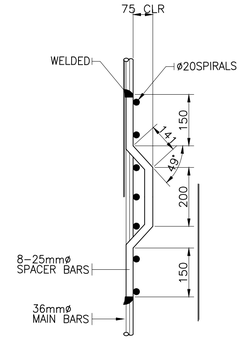
PLAN (BEFORE WELDING)

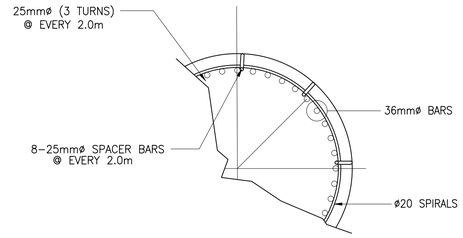


DETAILS OF SINGLE-V-GROOVE BUTT WELD



DOUBLE FLARED -V- GROOVE WELD
SECTION - A





6 BORED PILE CONFINEMENT RING & SPACER DETAIL
SCALE NTS

NOTES:

1. THE REINFORCEMENT ARE LAP-WELD CONNECTED (FLARED-V-GROOVE TYPE)
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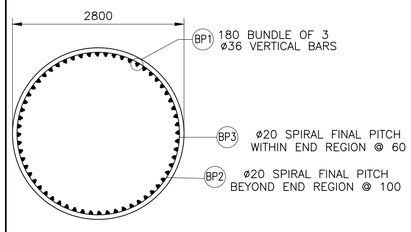
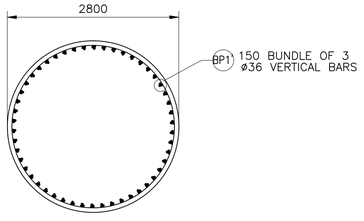
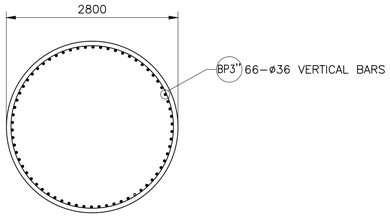
ø20 SPIRAL FINAL PITCH BEYOND END
REGION @ 100 WITHIN END REGION @ 60







5A PILE SECTION THRU L1
SCALE 1:50

5B PILE SECTION THRU L2
SCALE 1:50

5C PILE SECTION THRU L3
SCALE 1:50

5 PIER BORED PILE DETAIL
SCALE 1:50

7 DETAILS OF TIES REINFORCEMENT LAP-WELD CONNECTION
SCALE NTS

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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ENGR. ALBERTO C. CAÑETE
TEAM LEADER

SCHEDULE OF REINFORCEMENT FOR ONE (1) BORED PILE AT PIER ONLY

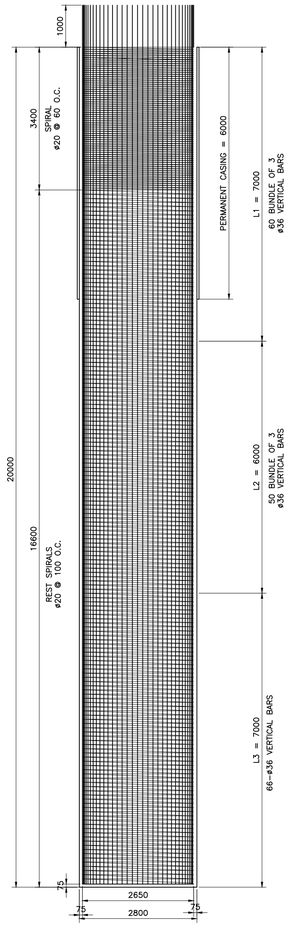
BAR BENDING DIAGRAM	BAR MARK	SIZE (□□)	SPACING (□□)	QTY	BAR SHAPE	BAR DIMENSION (ALL DIMENSIONS ARE OUT TO OUT OF BARS) a	b	c	d	e	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g/□.)	TOTAL WEIGHT (□g.)	VOLUME CONCRETE (cu.□.)
	FOR ONE (1) BORED PILE AT ABUTMENT (L=20m, Ø2400mm)															
a, b (A)	BP1	36	AS SHOWN	180	A	0.25	7	–	–	–	BORED PILE	7.25	1305.00	7.991	10433	124
a, b (A)	BP1'	36	AS SHOWN	150	A	0.25	6	–	–	–		6.25	937.50	7.991	7497	
a, b (A)	BP1''	36	AS SHOWN	66	A	0.25	7	–	–	–		7.25	478.50	7.991	3831	
B	BP2	20	60	57	D	0.15	2.65	–	–	–		2.8	159.60	2.467	401	
B	BP3	20	100	166	D	0.15	2.65	–	–	–		2.8	464.80	2.467	1154	
C	BP4	25	AS SHOWN	80	C	0.15	0.141	0.20	0.141	0.15		0.782	62.560	3.854	244	
D																
E	NOTE: 40db SPLICES ARE NOT INCLUDED												SUBTOTAL		23314	124
	* 12 mm dia. and below are Grade 40															
	* 16 mm dia. and above are Grade 60															

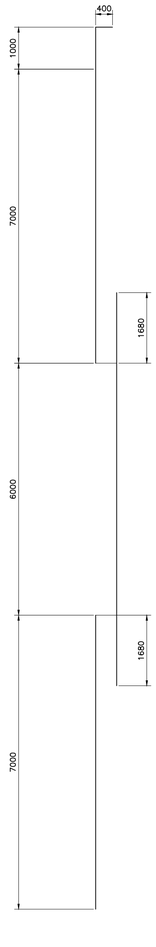
CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC! DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC! DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

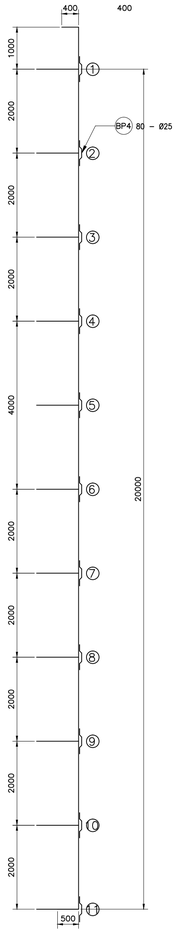
BCDA Bases Conversion and Development Authority

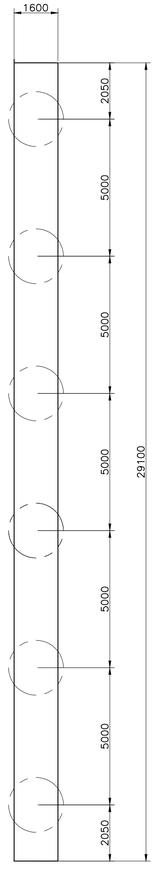
REVISIONS	DATE
A	
B	
C	
D	
E	
F	

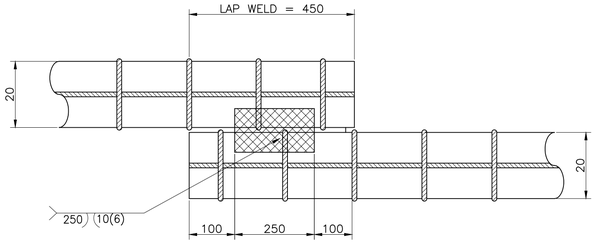
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - BRIDGE 3	PROJECT CODE	DRAWING NO. / SIZE
PIER 2 BORED PILE SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES		P3B3-10 / A1
	DATE APPROVED	DATE REVISED / REV.
	-	- / -





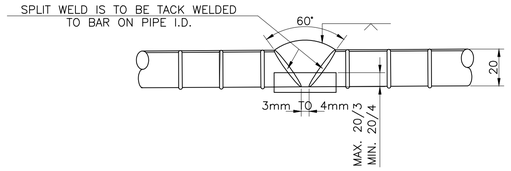




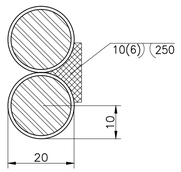


DIRECT LAP JOINT WITH BARS IN CONTACT

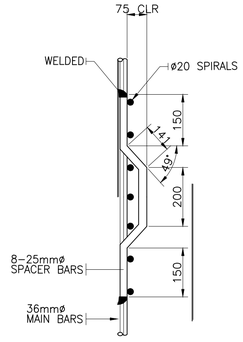
PLAN (BEFORE WELDING)

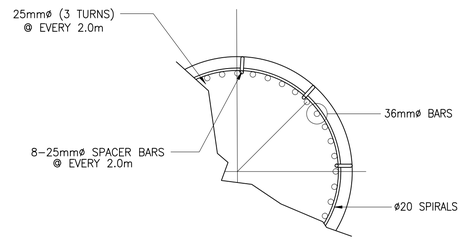


DETAILS OF SINGLE-V-GROOVE BUTT WELD



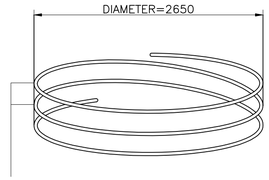
DOUBLE FLARED -V- GROOVE WELD
SECTION - A





6 BORED PILE CONFINEMENT RING & SPACER DETAIL

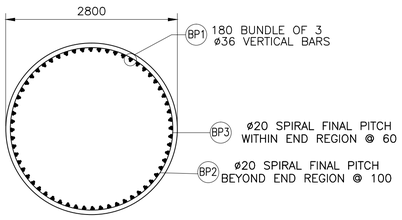
SCALE NTS



ø20 SPIRAL FINAL PITCH BEYOND END
REGION @ 100 WITHIN END REGION @ 60

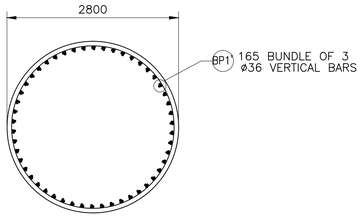
NOTES:

1. THE REINFORCEMENT ARE LAP-WELD CONNECTED (FLARED-V-GROOVE TYPE)
2. SPIRAL REINFORCEMENT ARE LAP WELD CONNECTED. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS. D1.4-92, STRUCTURAL WELDING CODE REINFORCEMENT STEEL, USE ELECTRODE E90XX-X.
3. CARE SHOULD BE TAKEN NOT TO DAMAGE BORED PILE/COLUMN MAIN BARS DURING WELDING.
4. SPIRAL REINFORCEMENT SHOULD BE BUTT WELDED WHERE SPIRAL PITCH IS 50mm OR LESS. OTHERWISE USE LAP WELD SPLICE.
5. ADDITIONAL STIFFENERS/GUIDE BARS MAY BE PROVIDED TO STABILIZE THE PILE REINFORCEMENT DURING FABRICATION/ ERECTION SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. DIRTY CONCRETE (MINIMUM 600mm HEIGHT) SHOULD BE REMOVED PRIOR TO CONSTRUCTION OF BACKWALL AND COPING BEAM.
7. CONCRETE - CONCRETE SHALL CONFORM TO THE REQUIREMENT OF CLASS AA CONCRETE WITH 28MPa. CYLINDER STRENGTH AND 19mm MAXIMUM AGGREGATE SIZE.
8. REINFORCEMENT - ALL REINFORCEMENT STEEL SHALL BE DEFORMED BAR CONFORMING TO AASHTO M31 (ASTM 315) GRADE 60. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 100 BAR DIAMETER APART, LENGTH OF SPLICES SHALL BE 2200mm.
9. THE STABILIZATION FOR BORED PILE EXCAVATION (SUCH AS USING BENTONITE SLURRY OR TEMPORARY STEEL CASING ETC.) SHALL BE CONSIDERED BY THE CONTRACTOR AND THE COST IS SUBSIDIARY IN PAY ITEM 400(17). THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION METHOD FOR ENGINEERS APPROVAL BEFORE CONSTRUCTION.



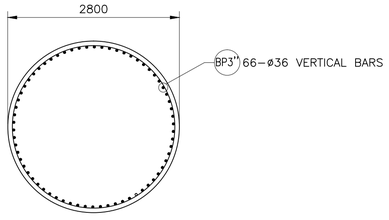
1 VERTICAL SECTION

SCALE 1:75



2 SCHEMATIC DETAIL

SCALE 1:75



3 STIFFENER LAYOUT

SCALE 1:75

4 PIER COPING PLAN

SCALE 1:100

5A PILE SECTION THRU L1

SCALE 1:50

5B PILE SECTION THRU L2

SCALE 1:50

5C PILE SECTION THRU L3

SCALE 1:50

5 PIER BORED PILE DETAIL

SCALE 1:50

7 DETAILS OF TIES REINFORCEMENT LAP-WELD CONNECTION

SCALE NTS

SCHEDULE OF REINFORCEMENT FOR ONE (1) BORED PILE AT PIER ONLY

BAR BENDING DIAGRAM	BAR MARK	SIZE (□□)	SPACING (□□)	QTY	BAR SHAPE	BAR DIMENSION (ALL DIMENSIONS ARE OUT TO OUT OF BARS) a	b	c	d	e	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g./□.)	TOTAL WEIGHT (□g.)	VOLUME CONCRETE (cu.□.)
	FOR ONE (1) BORED PILE AT ABUTMENT (L=20m, Ø2400mm)															
A	BP1	36	AS SHOWN	180	A	0.25	7	–	–	–	BORED PILE	7.25	1305.00	7.991	10432.65	124
A	BP1'	36	AS SHOWN	165	A	0.25	6	–	–	–		6.25	1031.25	7.991	8242.50	
A	BP1''	36	AS SHOWN	66	A	0.25	7	–	–	–		7.25	478.50	7.991	3830.8	
B	BP2	20	60	57	D	0.15	2.65	–	–	–		2.8	159.60	2.467	400.35	
B	BP3	20	100	166	D	0.15	2.65	–	–	–		2.8	464.80	2.467	1153.95	
C	BP4	25	AS SHOWN	80	C	0.15	0.141	0.20	0.141	0.15		0.782	62.560	3.854	244	
														SUBTOTAL	24061	124

NOTE: 40db SPLICES ARE NOT INCLUDED
* 12 mm dia. and below are Grade 40
* 16 mm dia. and above are Grade 60

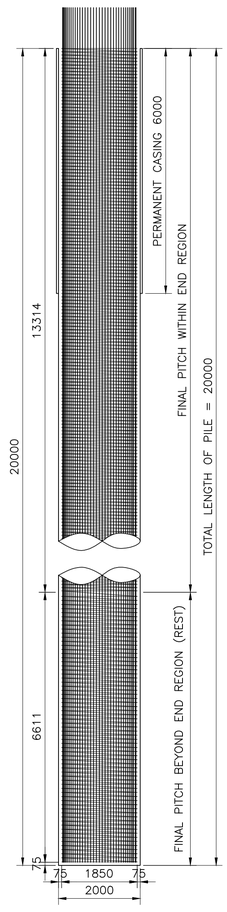
NOTE:

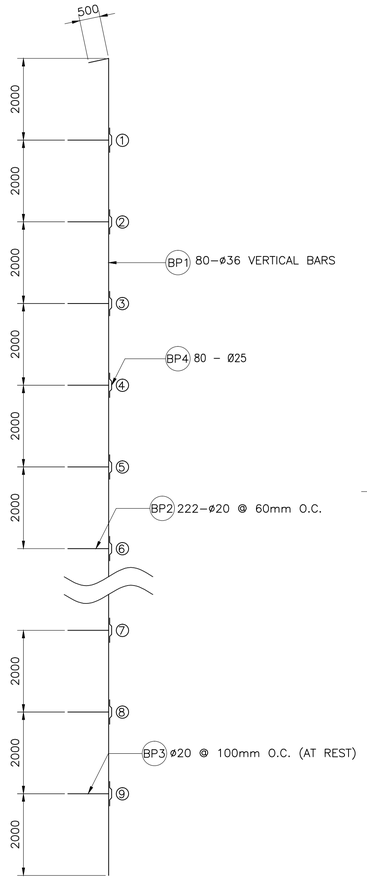
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

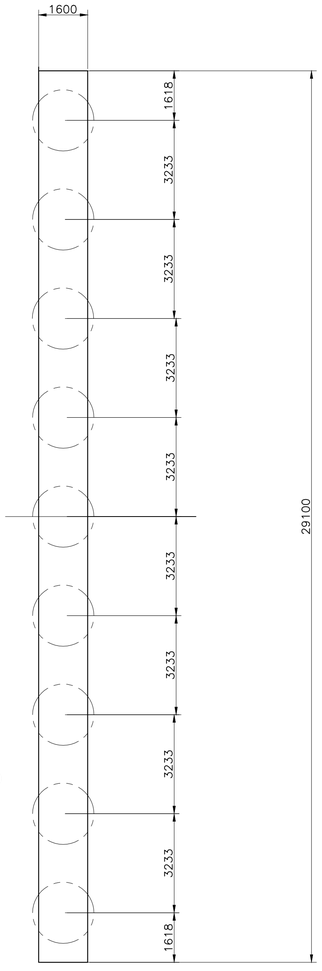
THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC!	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC!	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
DATE: -	DATE: -	DATE: -	APPROVED BY: JOVITO M. SUNGA, OIC - PMD; DATE: -			SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - BRIDGE 3	PROJECT CODE	DRAWING NO. / SIZE: P3B3-11 / A1
						PIER 3 BORED PILE SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES	DATE APPROVED: -	DATE REVISED: - / REV.: -



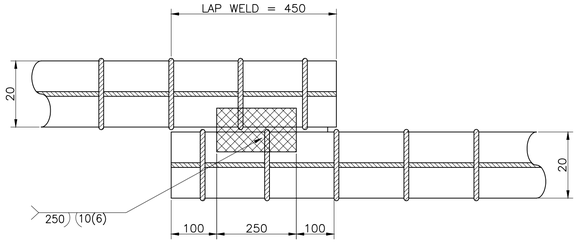




1 VERTICAL SECTION
SCALE 1:75

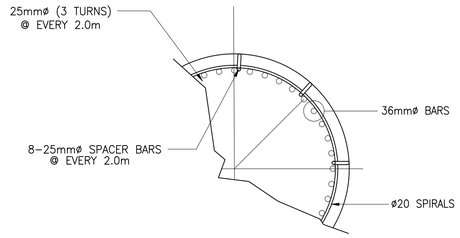
2 STIFFENER LAYOUT
SCALE 1:75

3 ABUTMENT COPING PLAN
SCALE 1:100

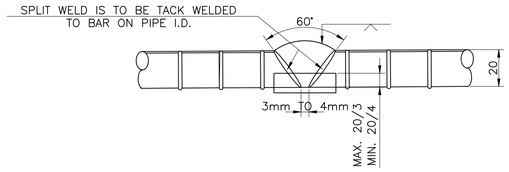


DIRECT LAP JOINT WITH BARS IN CONTACT

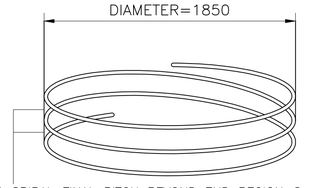
PLAN (BEFORE WELDING)



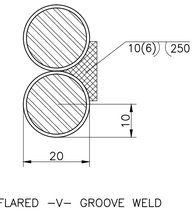
5 BORED PILE CONFINEMENT RING & SPACER DETAIL
SCALE NTS



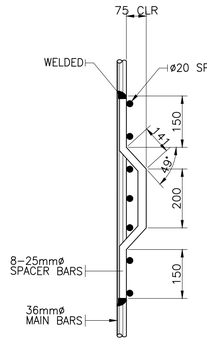
DETAILS OF SINGLE–V–GROOVE BUTT WELD



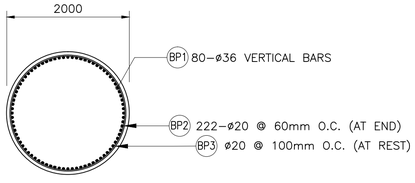
ø20 SPIRAL FINAL PITCH BEYOND END REGION @ 100
WITHIN END REGION @ 60



DOUBLE FLARED –V– GROOVE WELD
SECTION – A



6 DETAILS OF TIES REINFORCEMENT LAP–WELD CONNECTION
SCALE NTS



4 ABUTMENT BORED PILE SECTION
SCALE 1:50

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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ENGR. ALBERTO C. CAÑETE
TEAM LEADER

NOTES:
1. THE REINFORCEMENT ARE LAP–WELD CONNECTED (FLARED–V–GROOVE TYPE)
2. SPIRAL REINFORCEMENT ARE LAP WELD CONNECTED. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS. D1.4–92, STRUCTURAL WELDING CODE REINFORCEMENT STEEL, USE ELECTRODE E90XX–X.
3. CARE SHOULD BE TAKEN NOT TO DAMAGE BORED PILE/COLUMN MAIN BARS DURING WELDING.
4. SPIRAL REINFORCEMENT SHOULD BE BUTT WELDED WHERE SPIRAL PITCH IS 50mm OR LESS. OTHERWISE USE LAP WELD SPLICE.
5. ADDITIONAL STIFFENERS/GUIDE BARS MAY BE PROVIDED TO STABILIZE THE PILE REINFORCEMENT DURING FABRICATION/ ERECTION SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. DIRTY CONCRETE (MINIMUM 600mm HEIGHT) SHOULD BE REMOVED PRIOR TO CONSTRUCTION OF BACKWALL AND COPING BEAM.
7. CONCRETE – CONCRETE SHALL CONFORM TO THE REQUIREMENT OF CLASS AA CONCRETE WITH 28MPa. CYLINDER STRENGTH AND 19mm MAXIMUM AGGREGATE SIZE.
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9. THE STABILIZATION FOR BORED PILE EXCAVATION (SUCH AS USING BENTONITE SLURRY OR TEMPORARY STEEL CASING ETC.) SHALL BE CONSIDERED BY THE CONTRACTOR AND THE COST IS SUBSIDIARY IN PAY ITEM 400(17). THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION METHOD FOR ENGINEERS APPROVAL BEFORE CONSTRUCTION.

SCHEDULE OF REINFORCEMENT FOR ONE (1) BORED PILE AT ABUTMENT ONLY

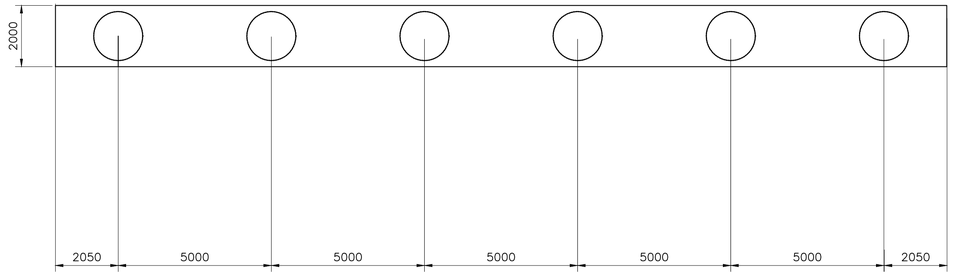
BAR BENDING DIAGRAM	BAR MARK	SIZE (□□)	SPACING (□□)	QTY	BAR SHAPE	BAR DIMENSION (ALL DIMENSIONS ARE OUT TO OUT OF BARS) a	b	c	d	e	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g./□.)	TOTAL WEIGHT (□g.)	VOLUME CONCRETE (cu.□.)
	FOR ONE (1) BORED PILE AT ABUTMENT (L=20m, Ø1800mm)															
a, b (A)	BP1	36	AS SHOWN	80	A	0.25	20	–	–	–	BORED PILE	20.25	1620.1	7.991	12945	63
	BP2	20	60	222	D	0.15	6	–	–	–		6.15	1365.3	2.466	3368	
	BP3	20	100	70	D	0.15	6	–	–	–		6.15	412.05	2.466	1021	
a (B)	BP4	25	AS SHOWN	80	C	0.15	0.141	0.20	0.141	0.15		0.782	62.560	3.854	244	
a, b, c, d, e (C)																
(D)																
a, b (E)																
	NOTE: 40db SPLICES ARE NOT INCLUDED												SUBTOTAL		17578	63
	* 12 mm dia. and below are Grade 40															
	* 16 mm dia. and above are Grade 60															

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

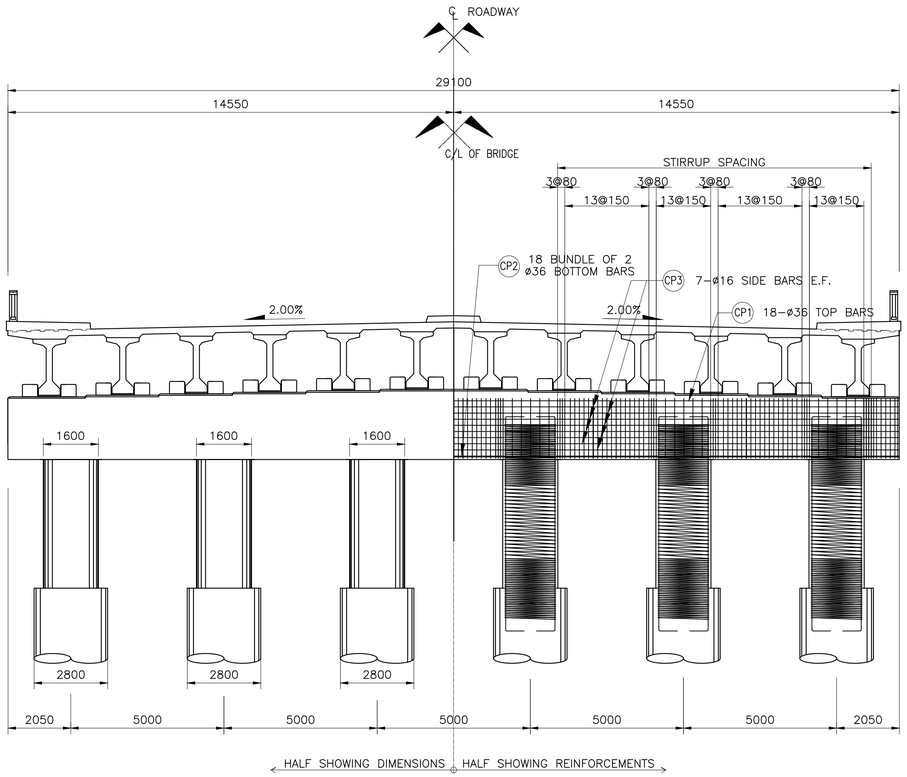
BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

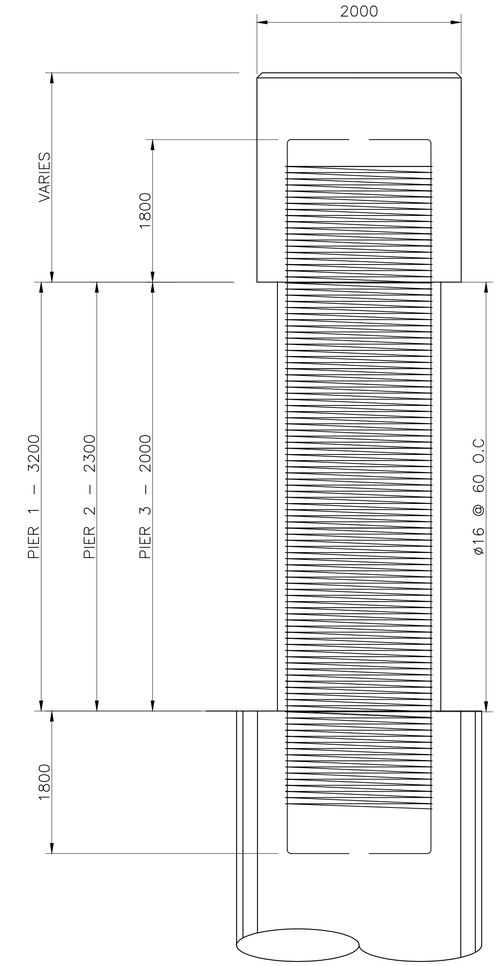
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - BRIDGE 3		P3B3-12 / A1
ABUTMENT BORED PILE SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES	DATE APPROVED	DATE REVISED / REV.
	-	- / -



1 PIER COPING PLAN
SCALE 1:100



2 PIER COPING ELEVATION
SCALE 1:100



3 PIER TYPICAL SECTION
SCALE 1:40

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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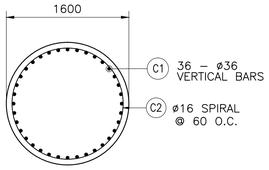
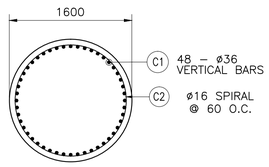
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

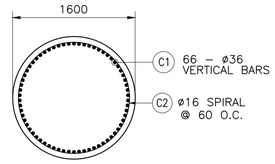
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA Bases Conversion and Development Authority	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC!	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC!	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER	A		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	DATE: -	DATE: -	DATE: -	B			PROJECT CODE	DRAWING NO. / SIZE
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD	C		SHEET CONTENT: AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3		P3B3-13 / A1
			DATE: -	D		PIER COLUMN PLAN AND ELEVATION COLUMN SECTION COPING SECTION	DATE APPROVED	DATE REVISED / REV.
				E			-	- / -
				F				



4A PIER 1 COLUMN DETAIL
SCALE 1:40

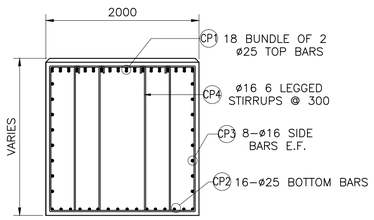


4B PIER 2 COLUMN DETAIL
SCALE 1:40

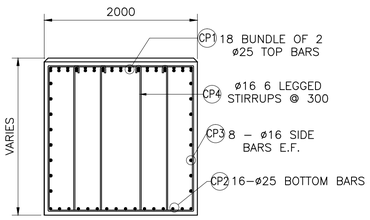


4C PIER 3 COLUMN DETAIL
SCALE 1:40

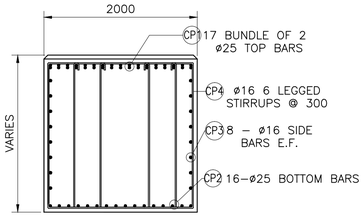
4 PIER COLUMN DETAIL
SCALE 1:40



5A PIER 1 COPING SECTION
SCALE 1:40



5B PIER 2 COPING SECTION
SCALE 1:40



5C PIER 3 COPING SECTION
SCALE 1:40

5 PIER COPING SECTION
SCALE 1:40

SCHEDULE OF REINFORCEMENTS FOR COLUMN AND SHEAR BLOCK FOR PIER 1

BAR BENDING DIAGRAM	MARK	REINFORCING STEEL BARS: SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS: a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (cu.m)
A	SB1	25	AS SHOWN	44	0.55	0.4	0.55				C	SHEAR BLOCK	1.5	66.00	3.853	260	3
B	SB2	25	200	66	0.55	0.4	0.55				C		1.5	99.00	3.853	385	
	SB3	16	120	88	0.4	0.4	0.4	0.4	0.1	0.1	B		1.8	158.40	1.579	252	
C	C1	36	AS SHOWN	216	0.50	5.2					A	COLUMN	5.7	1231.20	7.990	9844	49
	C2	16	60	320	0.15	5.03					A		5.03	1608.49	1.578	2544	
D																	
E																	
F	* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		13285	52
	* 16 mm dia. and above are Grade 60																

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR COPING 1

BAR MARK	BAR SIZE (mm)	QUANTITY	SPACING (mm)	SHAPE	DIMENSIONS (m): a	b	c	d	e	f	LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT fy (MPa): 276	414	CONC. VOL. (cu.m)	REMARKS
CP1	25	36	AS SHOWN	C	1.0	29.10					30.10	1083.60	7.990		8659	117	QUANTITIES ARE FOR SINGLE COPING ONLY
CP2	25	36	AS SHOWN	C	1.0	29.10					30.10	481.60	6.313		3046		
CP3	16	14	AS SHOWN	A	29.1						29.10	465.60	1.578		738		
CP4	16	582	AS SHOWN	A	0.1	3	0.1				2.20	1280.40	1.578		2026		
													TOTAL		14469 Kgs		

BAR BENDING DIAGRAM (DIMENSIONS ARE OUT–TO–OUT REBAR)

SCHEDULE OF REINFORCEMENTS FOR COLUMN AND SHEAR BLOCK FOR PIER 2

BAR BENDING DIAGRAM	MARK	REINFORCING STEEL BARS: SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS: a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (cu.m)
A	SB1	25	AS SHOWN	44	0.55	0.4	0.55				C	SHEAR BLOCK	1.5	66.00	3.853	260	2.40
B	SB2	25	200	66	0.55	0.4	0.55				C		1.5	99.00	3.853	385	
	SB3	16	120	88	0.4	0.4	0.4	0.4	0.1	0.1	B		1.8	158.40	1.579	252	
C	C1	36	AS SHOWN	288	0.50	4.3						COLUMN	4.8	1382.40	7.990	11053	49
	C2	16	60	236	5.03								5.03	1186.26	1.578	1877	
D																	
E																	
F	* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		13827 Kgs	67
	* 16 mm dia. and above are Grade 60																

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR COPING 2

BAR MARK	BAR SIZE (mm)	QUANTITY	SPACING (mm)	SHAPE	DIMENSIONS (m): a	b	c	d	e	f	LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT fy (MPa): 276	414	CONC. VOL. (cu.m)	REMARKS
CP1	25	36	AS SHOWN	C	1.0	29.10					30.10	1083.60	7.127		8659	117	QUANTITIES ARE FOR SINGLE COPING ONLY
CP2	25	36	AS SHOWN	C	1.0	29.10					30.10	481.60	6.313		3046		
CP3	16	14	AS SHOWN	A	29.1						29.10	465.60	1.578		738		
CP4	16	582	AS SHOWN	A	0.1	3	0.1				2.20	1280.40	1.578		2026		
													TOTAL		14469 Kgs		

BAR BENDING DIAGRAM (DIMENSIONS ARE OUT–TO–OUT REBAR)

SCHEDULE OF REINFORCEMENTS FOR COLUMN AND SHEAR BLOCK FOR PIER 3

BAR BENDING DIAGRAM	MARK	REINFORCING STEEL BARS: SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS: a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (cu.m)
A	SB1	25	AS SHOWN	44	0.55	0.4	0.55				C	SHEAR BLOCK	1.5	66.00	3.853	260	2.40
B	SB2	25	200	66	0.55	0.4	0.55				C		1.5	99.00	3.853	385	
	SB3	16	120	88	0.4	0.4	0.4	0.4	0.1	0.1	B		1.8	158.40	1.579	252	
C	C1	36	AS SHOWN	396	0.5	4						COLUMN	4.5	1782	7.990	14240	49
	C2	16	60	206	5.03								5.03	1035.46	1.578	1641	
D																	
E																	
F	* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		16778 Kgs	52
	* 16 mm dia. and above are Grade 60																

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR COPING 3

BAR MARK	BAR SIZE (mm)	QUANTITY	SPACING (mm)	SHAPE	DIMENSIONS (m): a	b	c	d	e	f	LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT fy (MPa): 276	414	CONC. VOL. (cu.m)	REMARKS
CP1	25	34	AS SHOWN	C	1.0	29.10					30.10	1023.10	7.127		8180	117	QUANTITIES ARE FOR SINGLE COPING ONLY
CP2	25	16	AS SHOWN	C	1.0	29.10					30.10	481.60	6.313		3046		
CP3	16	16	AS SHOWN	A	29.1						29.10	465.60	1.578		738		
CP4	16	582	AS SHOWN	A	20.7						2.20	1280.40	1.578		2026		
													TOTAL		13990		

BAR BENDING DIAGRAM (DIMENSIONS ARE OUT–TO–OUT REBAR)

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

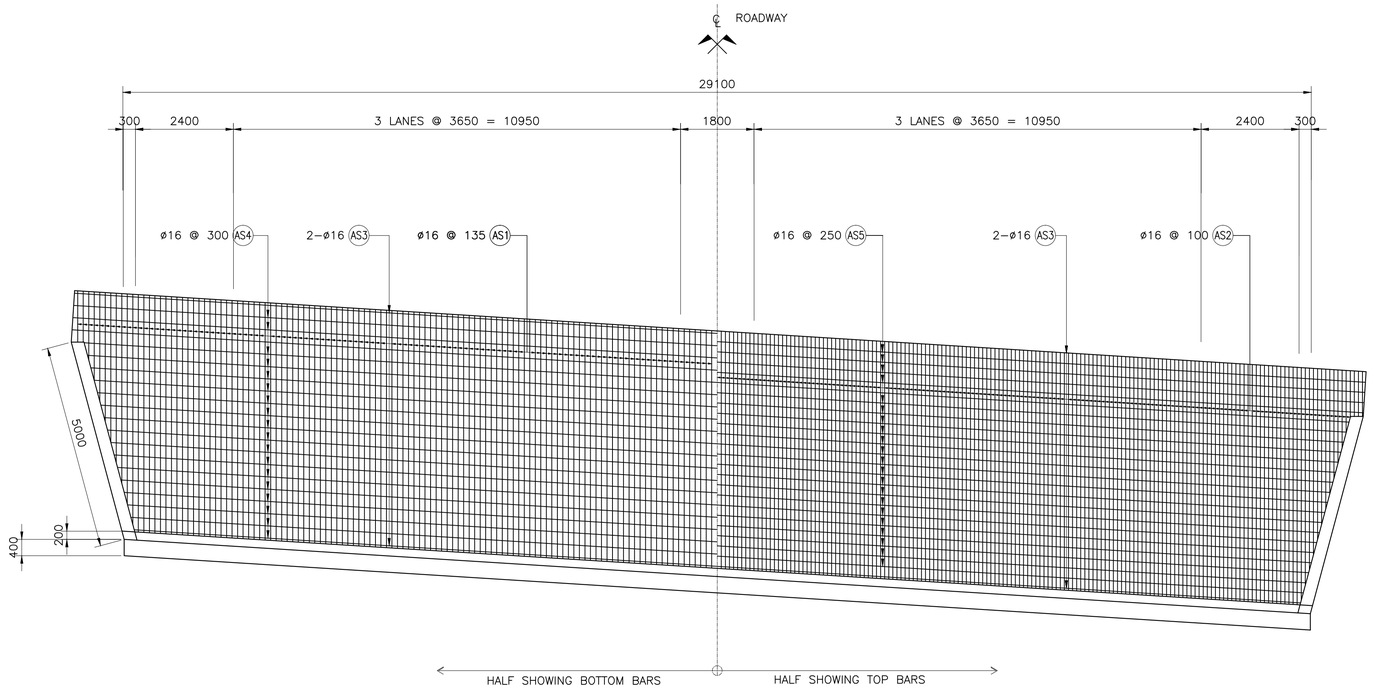
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANZIS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC! DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC! DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3		P3B3-14 / A1
PIER COLUMN AND COPING SECTION SCHEDULE OF REINFORCEMENT AND SUMMARY OF QUANTITIES	DATE APPROVED	DATE REVISED / REV.
	-	- / -



NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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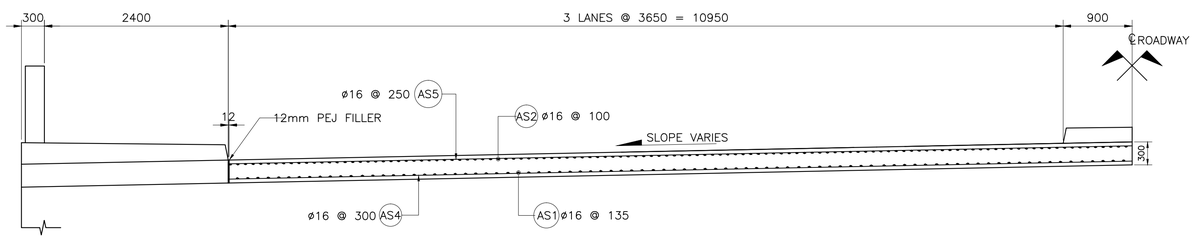
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

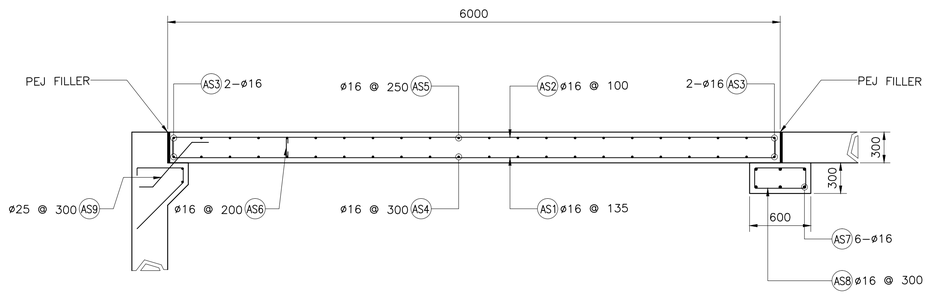
SCHEDULE OF REINFORCEMENTS FOR ONE APPROACH SLAB ONLY

BAR BENDING DIAGRAM	BAR MARK	SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	REINFORCING BARS — BAR DIMENSIONS a	b	c	d	e	f	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
A	AS1	16	235	135	A	6.00	0.27	0.27				6.54	1535.69	1.579	2425
	AS2	16	317	100	A	6.00	0.27	0.27				6.54	2073.18	1.579	3274
B	AS3	16	4	AS SHOWN	A	31.7	0.27	0.27				32.24	128.96	1.579	204
	AS4	16	20	300	A	31.7	0.27	0.27				32.24	644.8	1.579	1018
	AS5	16	24	250	A	31.7	0.27	0.27				32.24	773.76	1.579	1222
	AS6	16	145.5	200	A	0.30	0.27	0.27				0.84	122.22	1.579	193
	AS7	16	6	AS SHOWN	A	31.70	0.27	0.27				32.24	193.44	1.579	305
C	AS8	16	105.67	300	B	0.50	0.50	0.10	0.10			1.20	126.80	1.579	200
	AS9	16	97	300	C	0.13	0.60	0.13				0.86	83.42	1.579	299
													TOTAL GRADE 60		8935 Kg

1 PLAN
SCALE 1:75

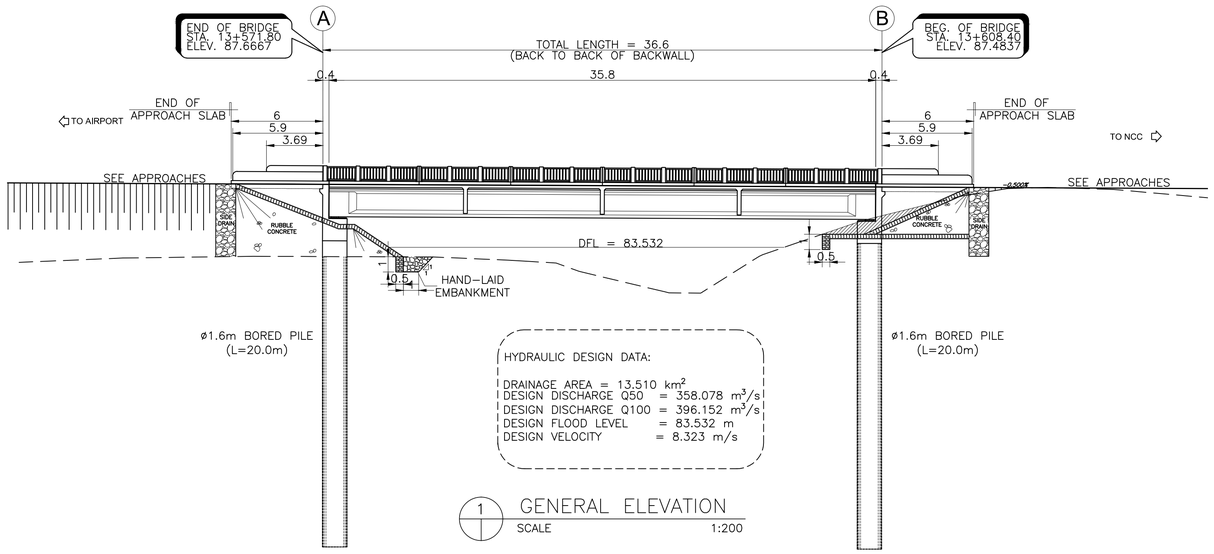


3 SECTION "B"
SCALE 1:30

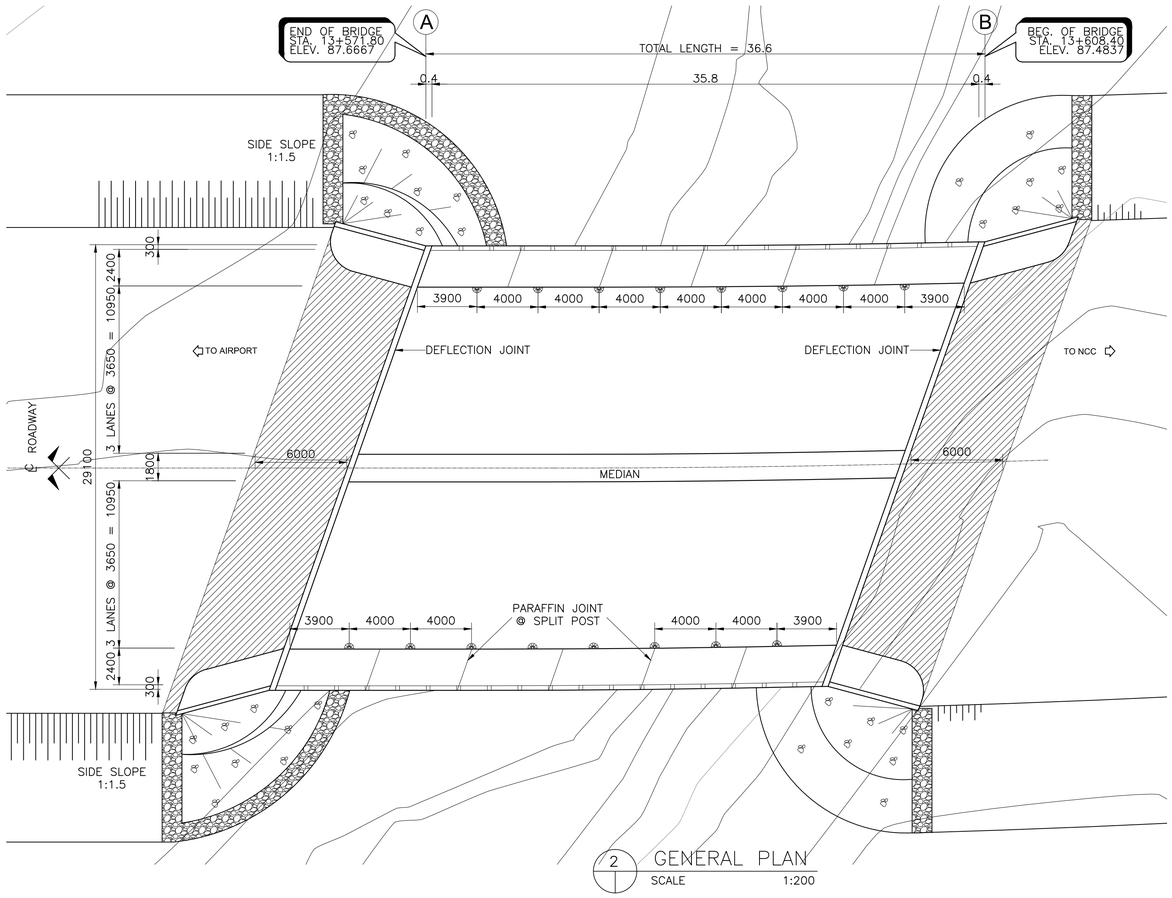


2 ELEVATION
SCALE 1:30

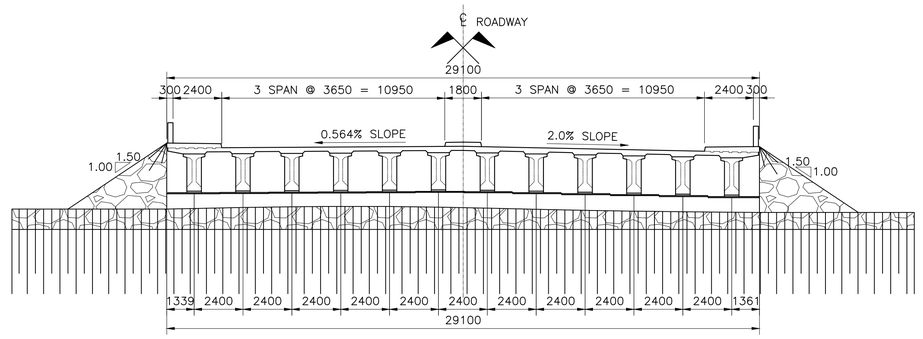
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC!	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC!	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER	A		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	DATE: -	DATE: -	DATE: -	B			PROJECT CODE	DRAWING NO. / SIZE
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD	C		SHEET CONTENT AIRPORT TO NCC (KM.10+500-KM.16+000) - BRIDGE 3		P3B3-15 / A1
			DATE: -	D		APPROACH SLAB DETAILS SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES	DATE APPROVED	DATE REVISED / REV.
				E			-	- / -
				F				



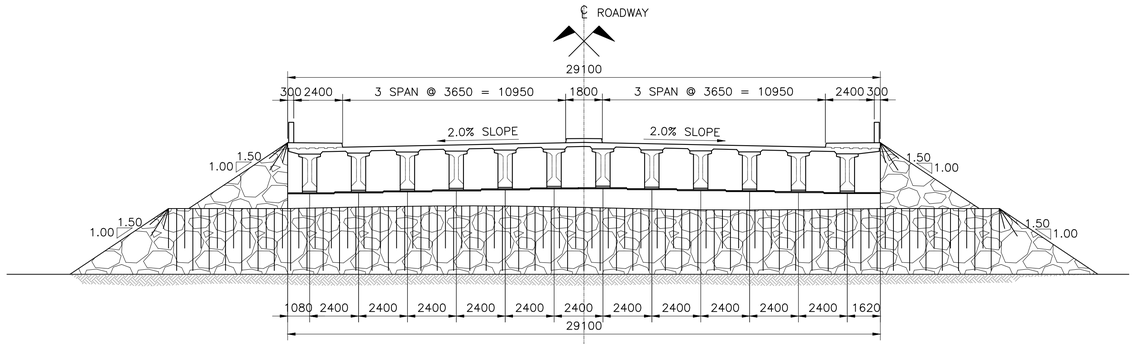
1 GENERAL ELEVATION
SCALE 1:200



2 GENERAL PLAN
SCALE 1:200



3A SECTION @ ABUTMENT A
SCALE 1:150



3B SECTION @ ABUTMENT B
SCALE 1:150

BRIDGE 4 QUANTITY ESTIMATE

ITEM NO.	DESCRIPTION	UNITS	ABUTMENTS		SUPERSTRUCTURE	TOTAL
			A	B		
103 (2) a	Bridge Excavation (Common Soil)	cu.m.	108.00	323.00		431
104 (2) a	Embankment From Borrow (Common Soil)	cu.m.	1558.00	699.00		2257
202 (1)	Crushed Aggregate Base Course	cu.m.	62.00	62.00		124
400 (23) a8	Bored Pile (1.60m Diameter)	l.m.	180.00	180.00		360
400 (24) h1	Permanent Casing (1.60 dia. x 12mm thk)	l.m.	54.00	54.00		108
400 (27) a	Load Test (Low Strain Dynamic Method, PIT)	ea.	5.00	5.00		10
400 (28)	Load Test (Pile Dynamic Method, PDA)	ea.	1.00	1.00		2
401 (2) a	Concrete Railing (Standard)	l.m.			72.00	72
404 (1) a	Reinforcing Steel Bar (GRADE 40)	kgs.	1494.00	1494.00	9689.00	12677
404 (1) b	Reinforcing Steel Bar (GRADE 60)	kgs.	27954.00	27954.00	55580.00	111488
405 (1) b2	Structural Concrete Class "A" (f'c=27.58 Mpa), 14days	cu.m.	62.00	62.00		124
405 (1) b3	Structural Concrete Class "A" (f'c=27.58 Mpa), 28days	cu.m.	153.00	153.00	407.00	713
406 (1) h6	Prestressed Strcutural Concrete Members (Type VI, L=35.00m, I-Girders)	ea.			12.00	12
407 (8)	Lean Concrete (Class B, 16.50 Mpa)	cu.m.	28.00	28.00		56
412 (1)	Elastomeric Bearing Pad DURO 60	ea.	12.00	12.00		24
507 (1)	Rubble Concrete	cu.m.	215.00	269.00		484
508 (1)	Hand-Laid Rock Embankment	cu.m.	108.00	54.00		162
517 (1) a	Drain Pipe 100mm dia. Galvanized Pipe Including Pipe Fittings	l.m.			56.00	56
SPL - 801	Premolded Expansion Joint Filler with Sealant	sq.m.	94.00	94.00		188

NOTE: REINFORCING BAR QUANTITIES FOR PRESTRESSED GIRDERS ARE NOT INCLUDED.

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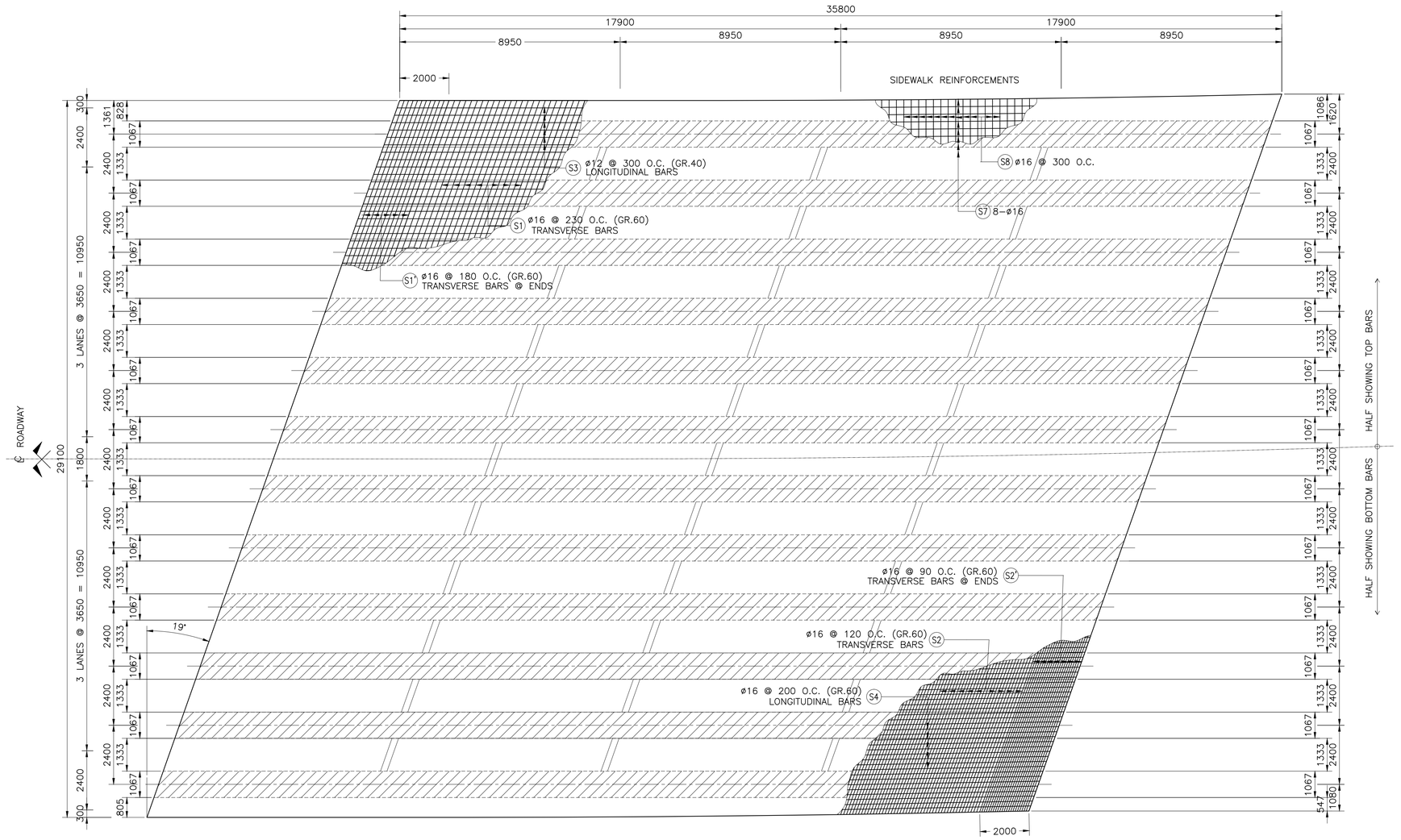
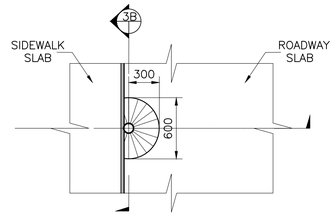
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

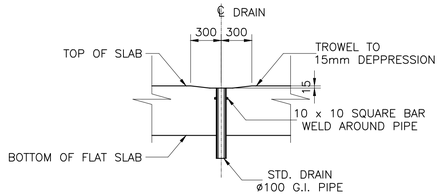
CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
			CHECKED BY RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	APPROVED BY JOVITO M. SUNGA OIC - PMD DATE: -		SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 GENERAL ELEVATION GENERAL PLAN GENERAL SECTION	PROJECT CODE DATE APPROVED -	DRAWING NO. / SIZE P3B4-01 / A1 DATE REVISED / REV. - / -



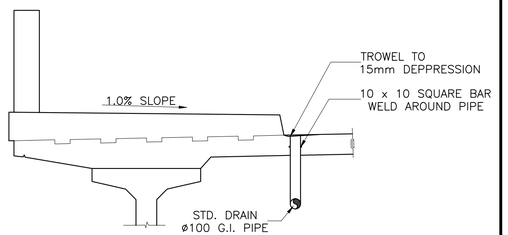
1 DECK SLAB PLAN
SCALE 1:100



3A PLAN
SCALE 1:20

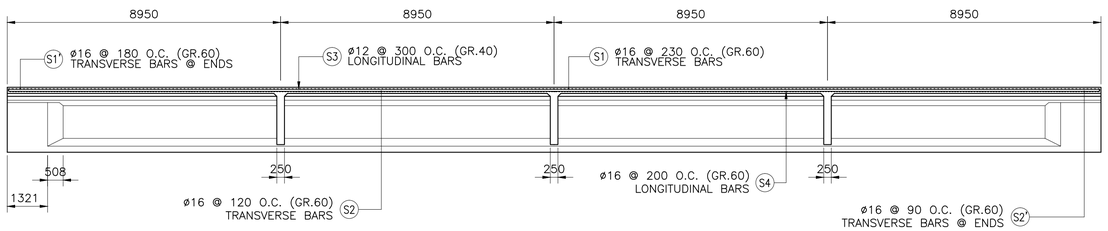


3B ELEVATION
SCALE 1:20

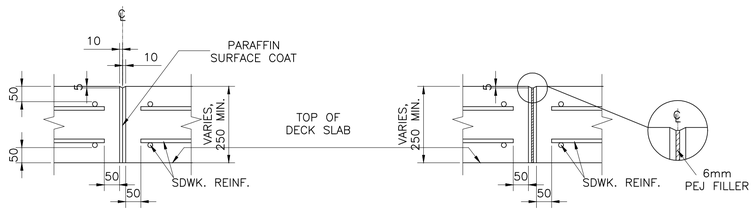


3C SECTION
SCALE 1:30

3 TYPICAL DRAIN DETAILS
SCALE NTS



2 LONGITUDINAL SECTION
SCALE 1:100



4A PARAFFIN JOINT
SCALE 1:10

4A DEFLECTION JOINT
SCALE 1:10

4 JOINT DETAILS
SCALE NTS

NOTE:
FOR LOCATION OF JOINT, SEE GEN. PLAN OF BRIDGE.

NOTE:
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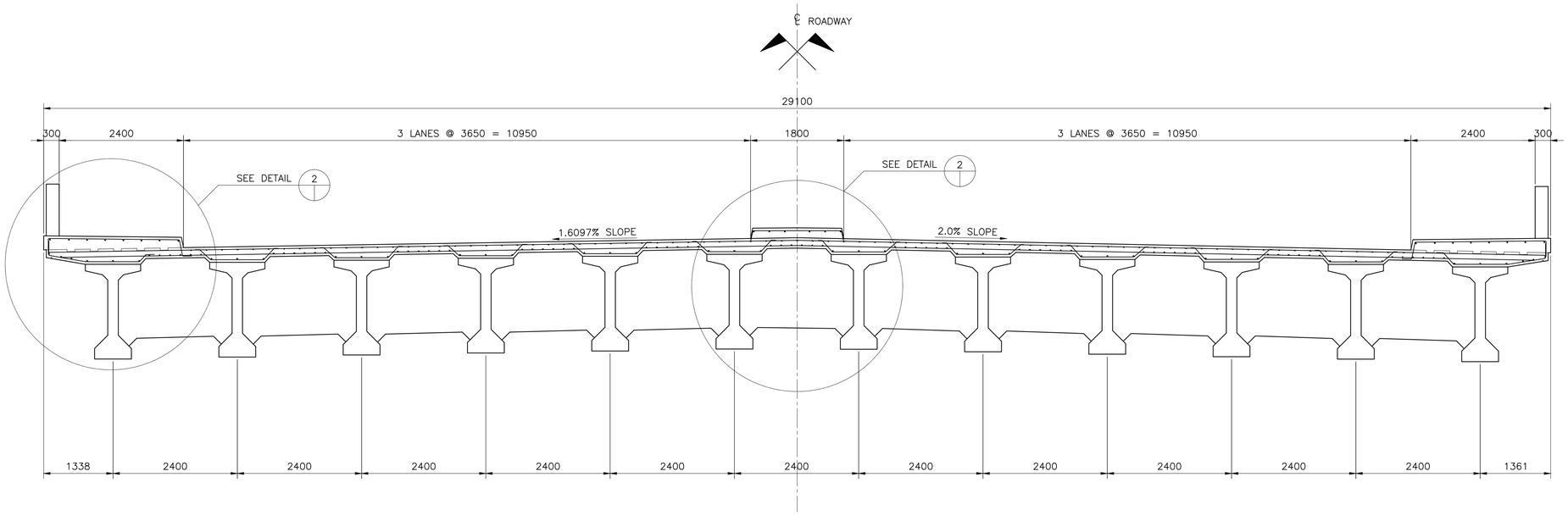
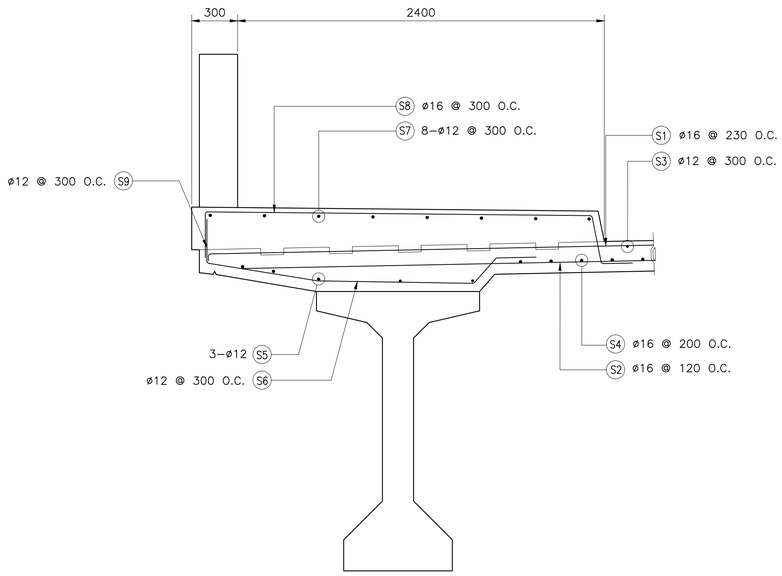
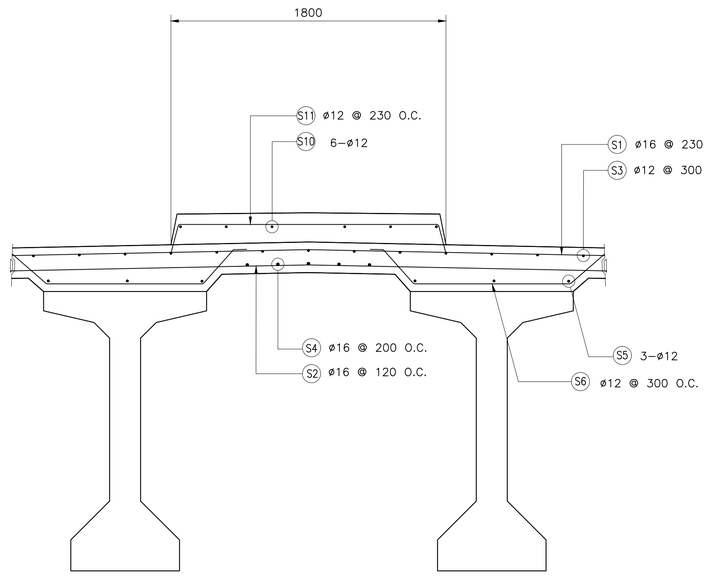
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 DECK SLAB PLAN LONGITUDINAL SECTION TYPICAL DRAIN AND JOINT DETAILS	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B4-02 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



1 CROSS SECTION @ MIDSPAN
SCALE 1:50





2 TRANSVERSE SECTION
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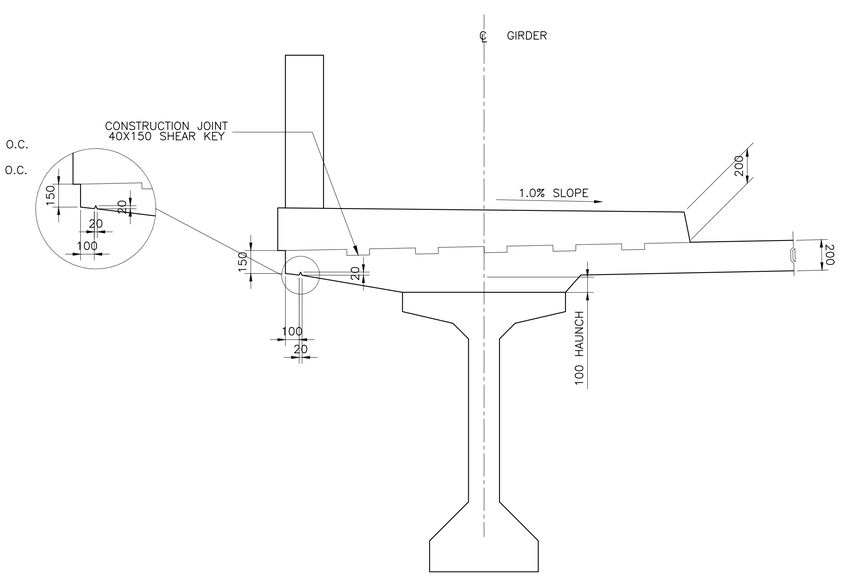


3 SHEAR KEY & DRIP GROOVE DETAIL
SCALE 1:20

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

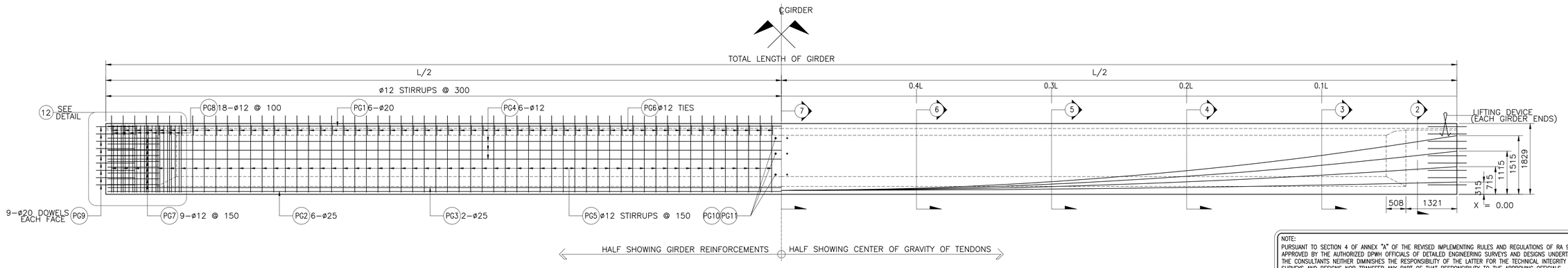
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4	PROJECT CODE	DRAWING NO. / SIZE
CROSS SECTION TRANSVERSE SECTION SHEAR KEY AND DRIP GROOVE DETAIL		P3B4-03 / A1
	DATE APPROVED	DATE REVISED / REV.
	-	- / -



1 PRESTRESSED GIRDER ELEVATION
SCALE 1:55

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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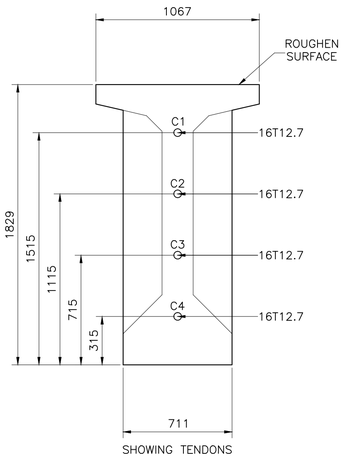
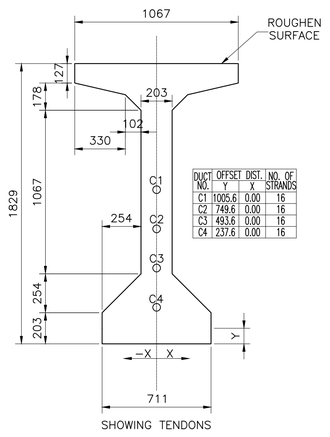
ENGR. ALBERTO C. CAÑETE
TEAM LEADER



SHOWING TENDONS

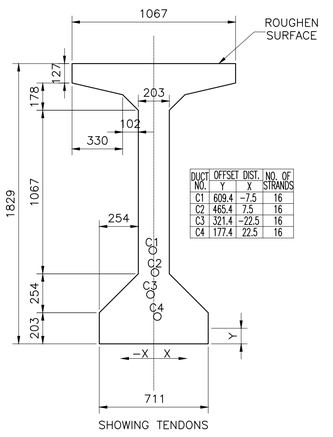
2 SECTION @ ENDS
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	1005.6	0.00	16
C2	749.6	0.00	16
C3	493.6	0.00	16
C4	237.6	0.00	16

SHOWING TENDONS

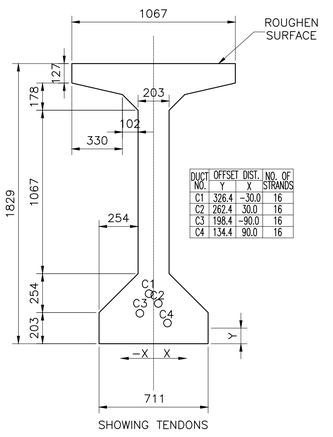
3 SECTION @ 0.1L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	609.4	–7.5	16
C2	465.4	7.5	16
C3	321.4	–22.5	16
C4	177.4	22.5	16

SHOWING TENDONS

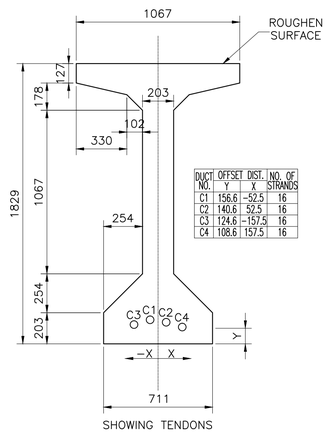
4 SECTION @ 0.2L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	326.4	–30.0	16
C2	262.4	30.0	16
C3	198.4	–90.0	16
C4	134.4	90.0	16

SHOWING TENDONS

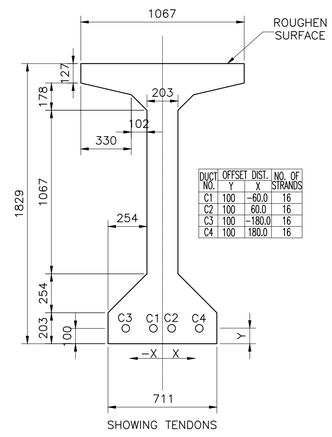
5 SECTION @ 0.3L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	156.6	–52.5	16
C2	140.6	52.5	16
C3	124.6	–157.5	16
C4	108.6	157.5	16

SHOWING TENDONS

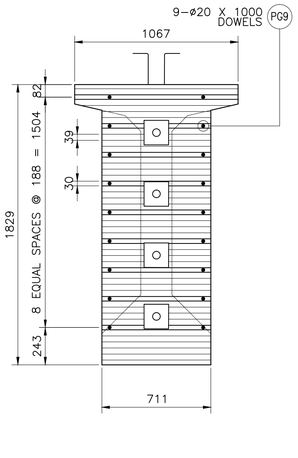
6 SECTION @ 0.4L
SCALE 1:20



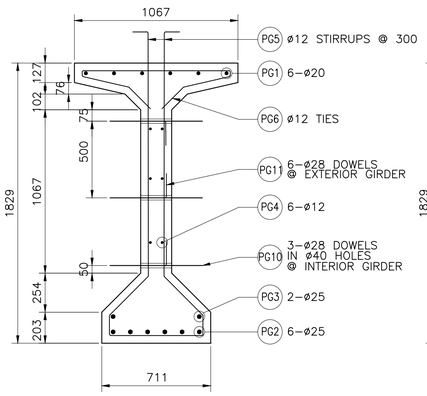
DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	100	–60.0	16
C2	100	60.0	16
C3	100	–180.0	16
C4	100	180.0	16

SHOWING TENDONS

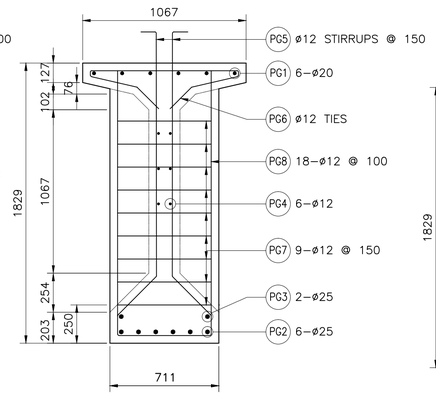
7 SECTION @ MIDSPAN
SCALE 1:20



8 TOOTH AT END VIEW
SCALE 1:20

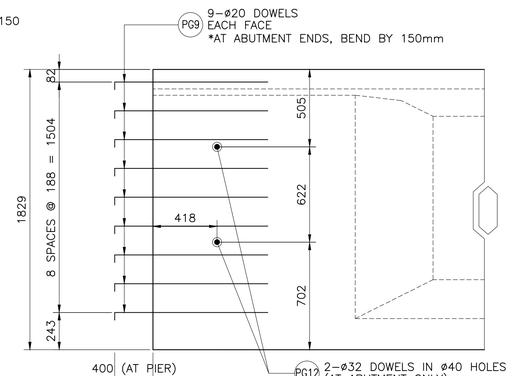


SHOWING REINFORCEMENTS @ INTERMEDIATE SECTION

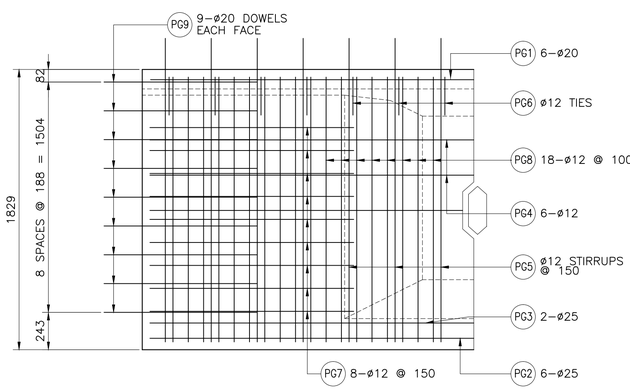


SHOWING REINFORCEMENTS @ END SECTION

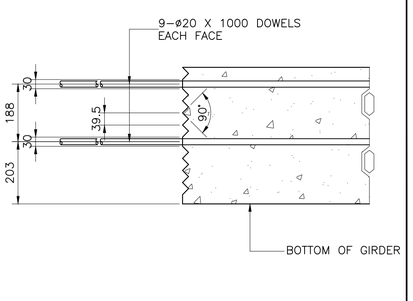
9 REINFORCEMENT DETAILS
SCALE 1:20



10 DOWELS AT END BLOCK
SCALE 1:20

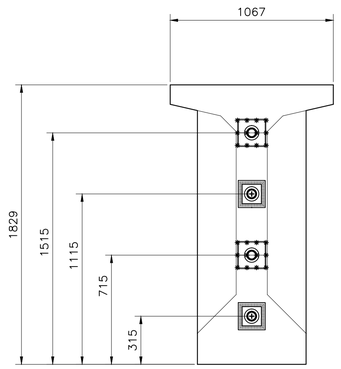


11 END BLOCK REINF. DETAILS
SCALE 1:20

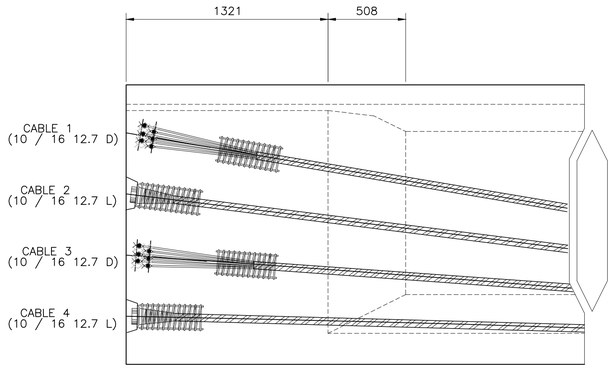


12 TOOTH DETAIL
SCALE NTS

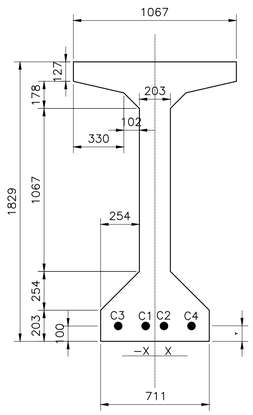
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA Bases Conversion and Development Authority	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, M.Eng., P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 TYPE VI GIRDER DETAILS	AS SHOWN PROJECT CODE DATE APPROVED -	DRAFT DRAWING DRAWING NO. P3B4-04 DATE REVISED -
								SIZE: A1 REV.: -



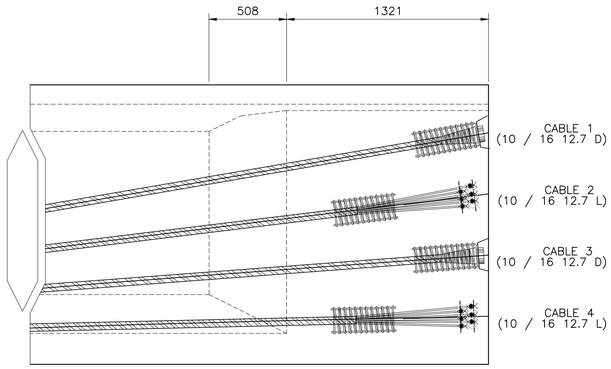
1 SECTION @ LEFT
SCALE 1:20



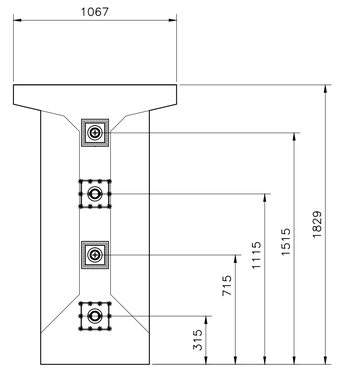
2 ELEVATION @ LEFT
SCALE 1:20



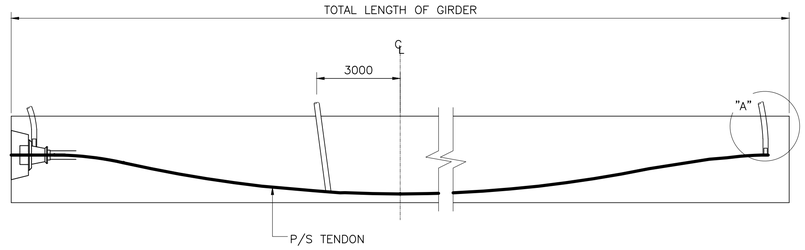
3 SECTION @ MIDSPAN
SCALE 1:20

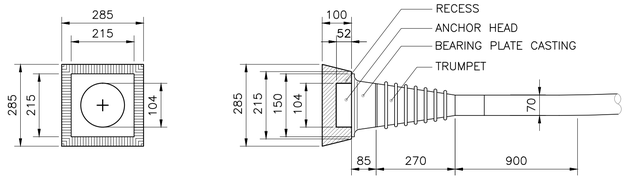


4 ELEVATION @ RIGHT
SCALE 1:20



5 SECTION @ RIGHT
SCALE 1:20

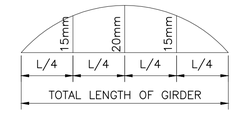




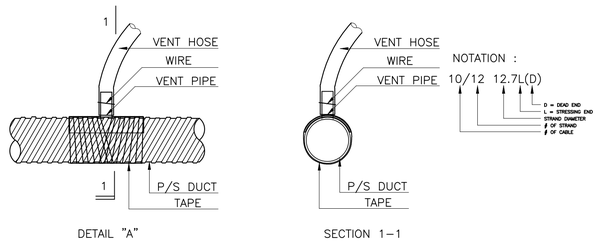
7 COMPACT STRESSING ANCHORAGE
SCALE NTS

CABLE NO.	NO. OF STRANDS	JFORCE
1	16	2168.00
2	16	2168.00
3	16	2168.00
4	16	2168.00

TOTAL JACKING FORCE = 8672.00kN

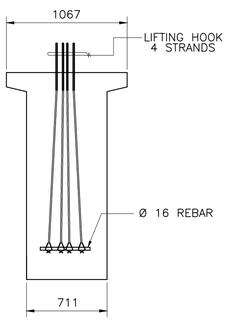


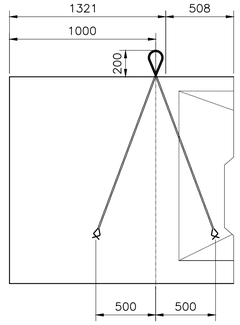
11 CAMBER DIAGRAM
SCALE NTS



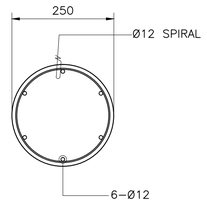
DETAIL "A" SECTION 1–1

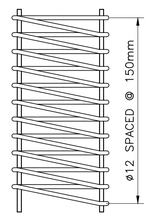
6 TYP. SPACING FOR GROUTING VENTS
SCALE NTS



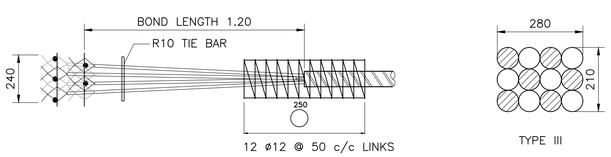


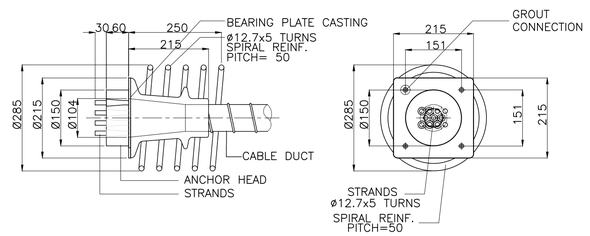
8 LIFTING HOOK DETAILS
SCALE NTS





10 PRIMARY BURSTING STEEL
SCALE NTS





9 BURSTING STEEL DEAD–END ANCHORAGE
SCALE NTS

GIRDER DESIGN GUIDE:

1. POST TENSIONING STEEL: THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST TENSIONED DESIGN, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES. METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED SHALL BE AS APPROVED BY THE ENGINEER. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS. ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST TENSION FORCE AFTER LOSSES REQUIRED AT MID SPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGN . THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR PLASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION,FRICTION AND EFFICIENCY OF END ANCHORAGE. ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH SPECIFICATIONS.

2. CONCRETE FOR GIRDERS SHALL HAVE AN INITIAL STRENGTH OF 35 N/mm^2 (5,000 PSI) AND A MINIMUM STRENGTH OF 41 N/mm^2 (6,000 PSI) AT THE AGE OF 28 DAYS.

3. CONCRETE FOR CAST–IN–PLACE SLAB HAVE A MINIMUM STRENGTH OF 28 N/mm^2 (4,000 PSI) AT THE AGE OF 28 DAYS.

4. THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDONS SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

5. THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 35 MPa (5,000 PSI). A GRID CONSISTING OF Ø 12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST–TENSIONING SYSTEM. POST–TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K = 0.00066/m AND u = 0.25 WITH AN ANCHORAGE DEFORMATION OF 6mm.

6. HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTOR'S PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL.THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

7. CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES.

8. ALL REINFORCING BARS SHALL BE GRADE 60.

NOTE:
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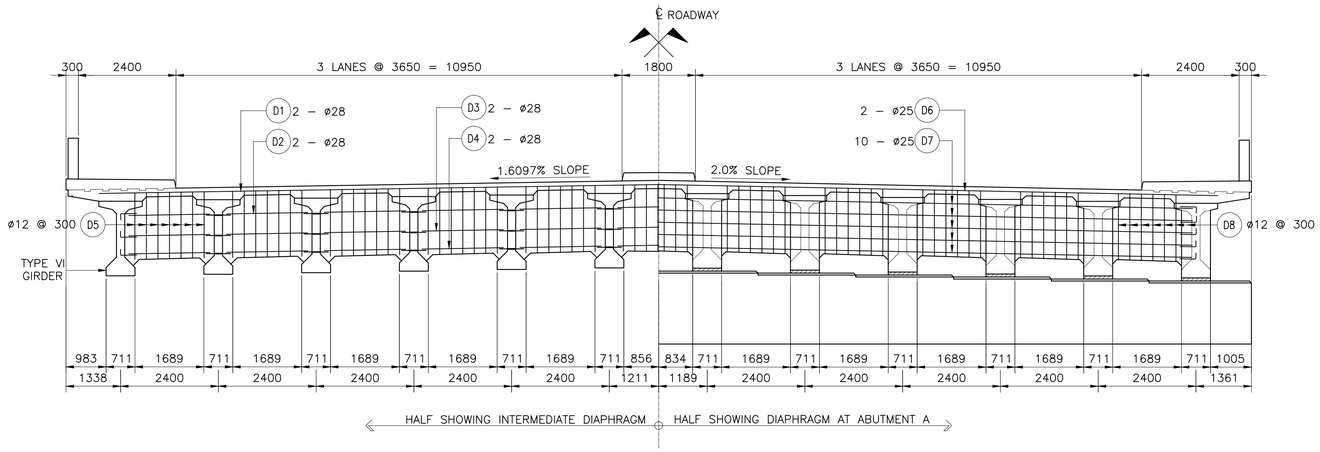
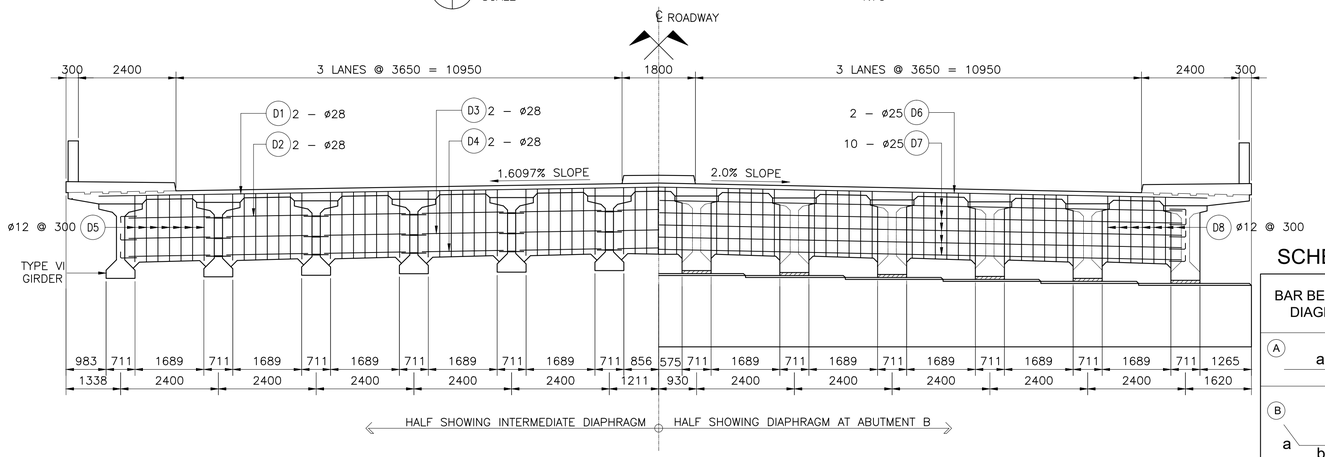
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

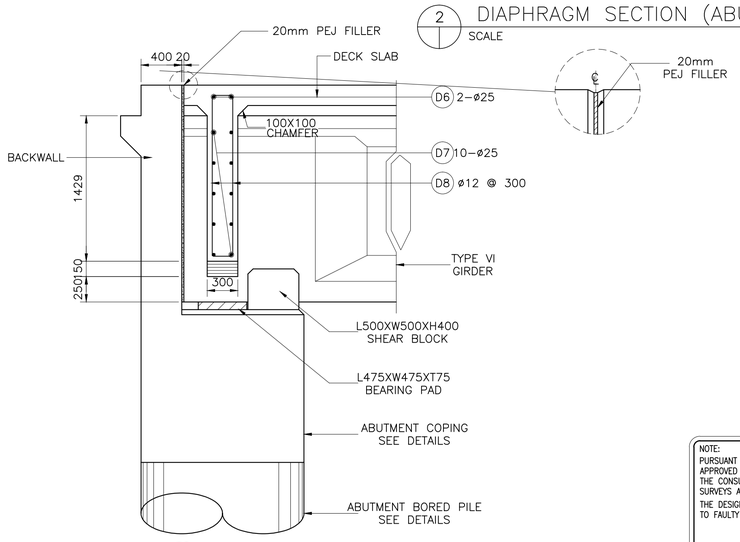
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC1 DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UIC1 DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 TYPE VI GIRDER DETAILS	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B4-05 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



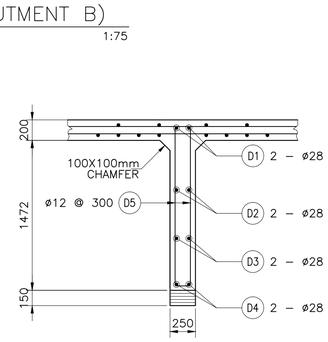
1 DIAPHRAGM SECTION (ABUTMENT A)
SCALE 1:75



2 DIAPHRAGM SECTION (ABUTMENT B)
SCALE 1:75



3 DIAPHRAGM @ ABUTMENT
SCALE 1:30



4 INTERMEDIATE DIAPHRAGM
SCALE NTS

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.
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ENGR. ALBERTO C. CAÑETE
TEAM LEADER

SCHEDULE OF REINFORCEMENTS & SUMMARY OF QUANTITIES FOR ONE (1) PRESTRESSED GIRDER ONLY

BAR BENDING DIAGRAM	GIRDER LENGTH (m)	REINFORCING STEEL BARS				ALL DIMENSIONS ARE OUT TO OUT OF REBARS					TYPE	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
		MARK	SIZE (mm)	SPACING (mm)	QUANTITY	a	b	c	d	e					
A	35.00	PG1	20	AS SHOWN	6	35.80					C	35.95	215.70	2.466	534
		PG2	25	AS SHOWN	6	35.80					C	36.08	216.48	4.833	840
B		PG3	25	AS SHOWN	2	35.80					C	36.08	72.16	2.466	283
		PG4	12	AS SHOWN	6	35.80					A	35.80	214.80	0.888	196
C		PG5	12	300	119.33	0.45	1.60	0.36	0.16	0.635	G	3.205	382.46	0.888	345
		PG6	12	300	119.33	1.00	0.05	0.32	0.20		F	1.57	187.35	0.888	173
D		PG7	12	150	18	0.50	1.33	0.52			D	2.35	42.30	0.888	39
		PG8	12	100	36	1.75	0.60	0.60			C	2.95	106.2	0.888	102
		PG9	20	AS SHOWN	18	1.00					A	1.00	18.00	2.466	47
E		PG10	28	AS SHOWN	6	0.603					A	0.603	3.618	4.834	24
		PG11	28	AS SHOWN	6	0.25	0.40				H	0.65	3.90	4.834	24
		PG12	32	AS SHOWN	2	1.467					A	1.467	2.934	6.313	24
													TOTAL	GRADE 40	856 Kgs
														GRADE 60	1774 Kgs
F															

NOTES:
1. QUANTITIES ARE FOR 1 GIRDER ONLY.
2. PG10 IS FOR INTERIOR GIRDER ONLY.
3. PG11 IS FOR EXTERIOR GIRDER ONLY.
4. PG12 FOR ABUT. ONLY
5. PG13 FOR PIER ONLY
6. VERIFY ACTUAL LENGTH OF THE BRIDGE

SCHEDULE OF REINFORCEMENTS FOR DECK SLAB & DIAPHRAGMS

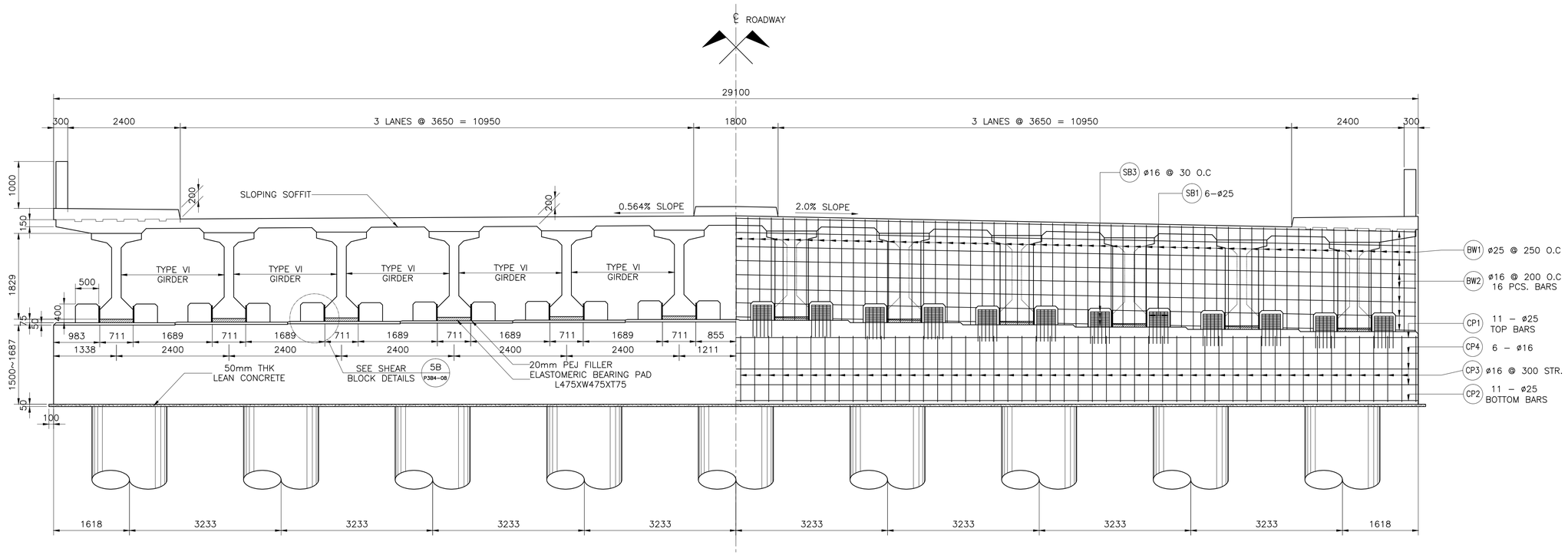
BAR BENDING DIAGRAM	MARK	REINFORCING STEEL BARS SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
A a	DECKSLAB															
	S1	16	230	156	0.192	30.76	0.192				C	DECKSLAB	31.144	4847.63	1.579	7654
	S1'	16	180	22	0.192	30.76	0.192				C		31.144	692.09	1.579	1099
B a b a	S2	16	120	298	0.58	29.70	0.58				C		30.86	9206.57	1.579	14538
	S2'	16	90	44	0.192	30.76	0.192				C		31.144	1384.18	1.579	2190
	S3	12	300	103	0.144	35.60	0.144				C		35.888	3691.68	0.888	3281
	S4	16	200	154	0.192	35.60	0.192				C		35.984	5552.33	1.579	8768
C b a a	S5	16	AS SHOWN	36	35.80						A		35.80	1288.80	1.579	2041
	S6	12	300	1234	1.00	0.30					B		1.30	1604.72	1.579	1429
	S7	16	AS SHOWN	16	35.80						A		35.80	572.80	1.579	911
	S8	16	300	239	0.30	2.50	0.30	0.20			E		3.30	787.60	1.579	1248
	S9	12	300	239	0.27	0.72	0.90				D	SIDEWALK	1.89	451.08	0.888	408
D a b c	S10	12	AS SHOWN	6	35.80						A		35.80	214.80	0.888	196
	S11	12	230	156	0.20	1.70					B		1.90	295.74	0.888	267
														Grade 60 bar		38449 Kgs
														Grade 40 bar		5581 Kgs
E a b c d	DIAPHRAGMS															
	D1	28	AS SHOWN	6	15.4	15.4					F		92.4	554.40	4.833	2685
	D2	28	AS SHOWN	66	2.40						A		7.20	475.20	4.833	2300
	D3	28	AS SHOWN	66	2.40						A	INT. DIAPHRAGM	7.20	475.20	4.833	2300
	D4	28	AS SHOWN	66	2.40						A		7.20	475.20	4.833	2300
	D5	12	300	205.73	0.15	1.63	0.15	1.63	0.12	0.12	G		11.4	2345.36	0.888	2088
F a b	D6	25	AS SHOWN	4	15.4	15.4					C	END DIAPHRAGM AT ABUT.	61.6	246.40	3.854	950
	D7	25	AS SHOWN	20	12.8	12.8					A		51.2	1024	3.854	3949
	D8	12	300	205.73	0.20	1.63	0.20	1.63	0.12	0.12	G		7.80	1604.72	0.888	1429
G a e b d c																
														Grade 60 bar		14483 Kgs
														Grade 40 bar		3517 Kgs
	NOTE: 40db SPLICES ARE NOT INCLUDED															
	* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		52933 Kgs
	* 16 mm dia. and above are Grade 60											GRAND TOTAL		Grade 40 bar		8808 Kgs

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4	PROJECT CODE	DRAWING NO. / SIZE
DIAPHRAGM DETAILS SCHEDULE OF REINFORCEMENTS FOR SLAB, DIAPHRAGM AND GIRDER		P3B4-06 / A1
	DATE APPROVED	DATE REVISED / REV.
	-	- / -



1 ABUTMENT SECTION
SCALE 1:50

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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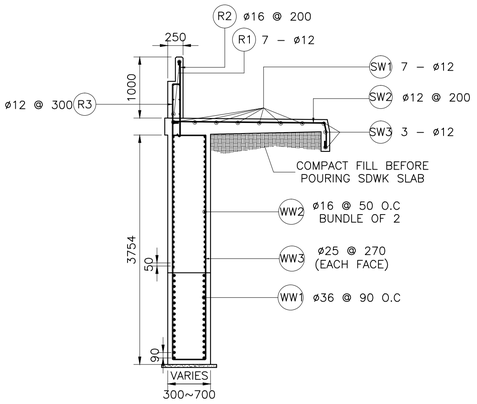
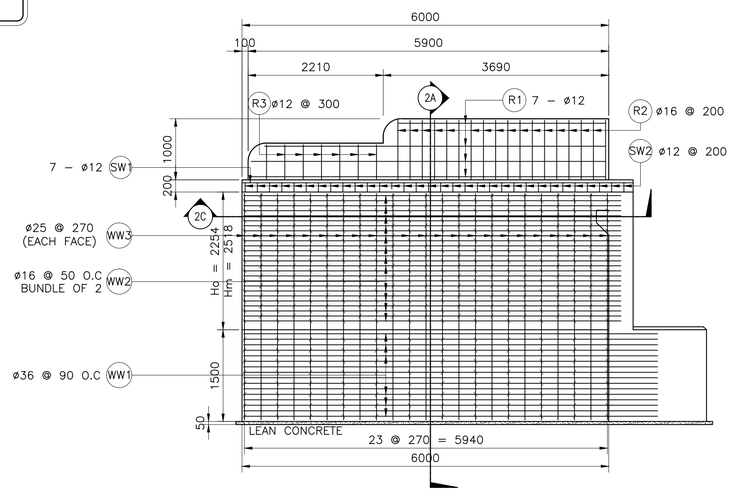
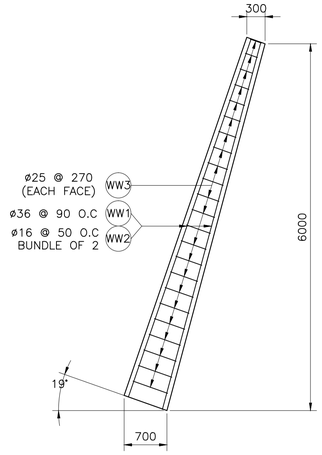
ENGR. ALBERTO C. CAÑETE
TEAM LEADER



2A SECTION
SCALE 1:50

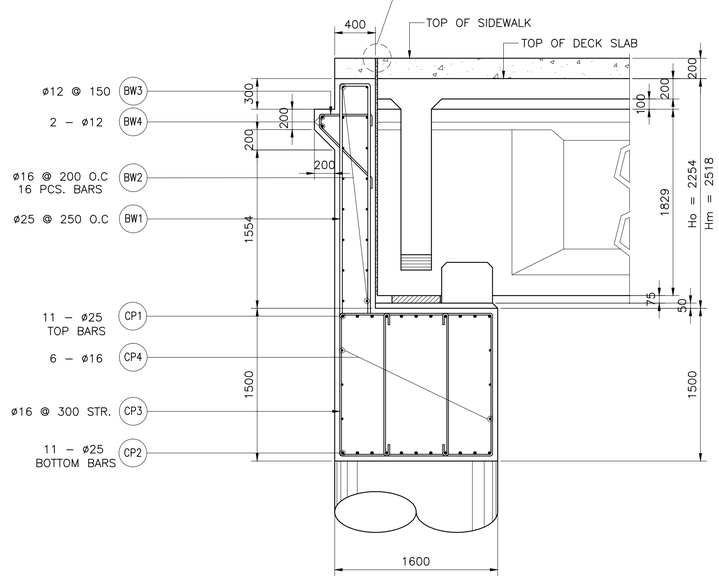


2B ELEVATION
SCALE 1:50



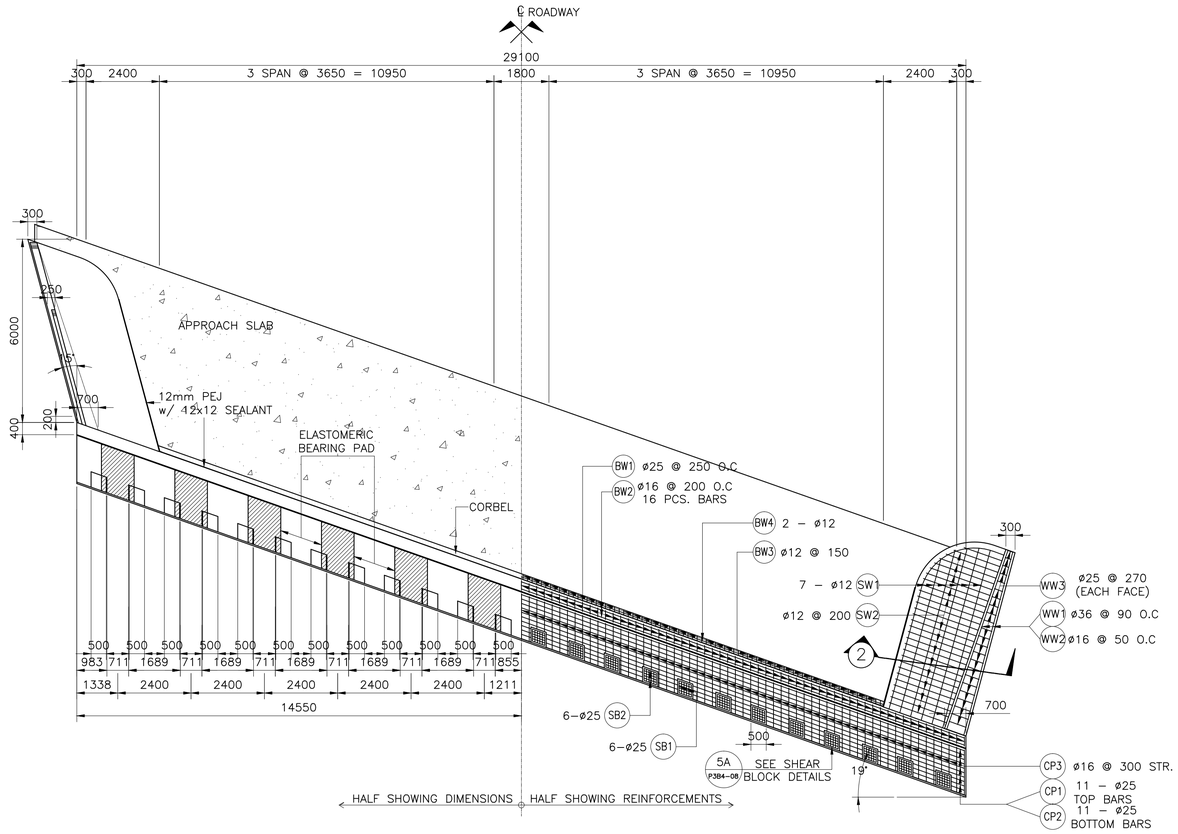
2C PLAN
SCALE 1:50

2 WINGWALL DETAILS
SCALE 1:50

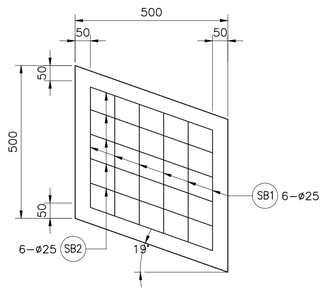


3 BACKWALL AND COPING ELEVATION
SCALE 1:30

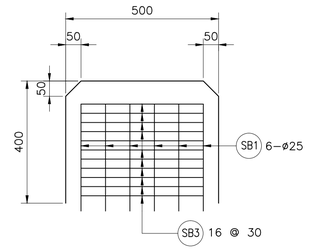
CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 ABUTMENT A DETAILS ABUTMENT SECTION, WINGWALL DETAILS BACK WALL AND COPING DETAILS	AS SHOWN PROJECT CODE: P3B4-07 DATE APPROVED: -	DRAFT DRAWING DRAWING NO.: P3B4-07 DATE REVISED: -	SIZE: A1 REV.: -



4 ABUTMENT PLAN
SCALE 1:100



5A SHEAR BLOCK PLAN
SCALE 1:10



5B SHEAR BLOCK SECTION
SCALE 1:10

5 SHEAR BLOCK DETAILS
SCALE 1:10

SCHEDULE OF REINFORCEMENTS FOR SUBSTRUCTURE FOR ABUTMENT "A" ONLY

BAR BENDING DIAGRAM: A, B, C, D, E, F, G, H, I

REINFORCING STEEL BARS				ALL DIMENSIONS ARE OUT TO OUT OF REBARS												
MARK	SIZE (□□)	SPACING (□□)	QUANTITY	a	b	c	d	e	□	TYPE	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g/□)	TOTAL WEIGHT (□g)	CONCRETE VOLUME (cu.□)
FOR ABUTMENT A ONLY																
CP1	25	AS SHOWN	11	0.5	30.76					A	COPING	31.76	349.36	7.991	1350	74
CP2	25	AS SHOWN	11	0.5	30.76					A		31.76	349.36	7.991	1350	
CP3	16	300	120	1.5	1.4	1.5	1.4	0.1	0.1	B		6.00	720.00	3.854	1138	
CP4	16	AS SHOWN	8	0.5	30.76					A		31.76	254.08	1.579	408	
BW1	25	250	144	2.5	0.6	1.9				C	BACKWALL	5.30	763.20	1.579	2944	31
BW2	16	200	14	30.86						STR.		30.86	432.04	1.579	683	
BW3	12	150	240	0	0.75	0.1	0.95	0.1		D		1.90	456.00	0.888	408	
BW4	12	AS SHOWN	2	29.56						STR		29.56	59.12	0.888	55	
WW1	36	90	68	6.3						STR	WINGWALL	6.3	428.40	0.888	3430	29
WW2	16	50	204	6.0	1.50					H		7.5	1530	0.888	2418	
WW3	25	270	46	0.5	3.4	0.5	3.4	0.1	0.1	B		8.0	368.00	0.888	1421	
TIES	12	AS SHOWN	692	0.2	0.40	0.2				G		0.8	553.60	0.888	495	
SB1	25	AS SHOWN	144	0.55	0.40					C	SHEAR BLOCK	1.5	216.00	0.888	840	2
SB2	25	AS SHOWN	144	0.55	0.40					C		1.5	216.00	0.888	840	
SB3	16	30	320	0.40	0.40		0.40	0.10	0.10	B		1.8	576.00	0.888	911	
R1	12	AS SHOWN	14	6.0	1.0					E	APPROACH RAILING	7.0	98.00	0.888	94	3
R2	16	200	19	0.1	1.25	0.2				G		1.55	29.45	0.888	47	
R3	12	300	8	0.75	0.2	0.1	0.1			I		1.15	9.20	0.888	16	
SW1	12	AS SHOWN	14	6.0						STR	APPROACH SIDEWALK	6.0	84.00	0.888	79	6
SW2	12	200	60	0.1	1.25	0.4	0.1			F		3.1	186.00	0.888	173	
SW3	12	AS SHOWN	6	6.0						STR		6.0	36.00	0.888	39	
											GRAND TOTAL		Grade 40 bar		1358	84 CU.M.
													SAY		1358 Kgs	
* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		17780	
* 16 mm dia. and above are Grade 60													SAY		17780 Kgs	

NOTE:
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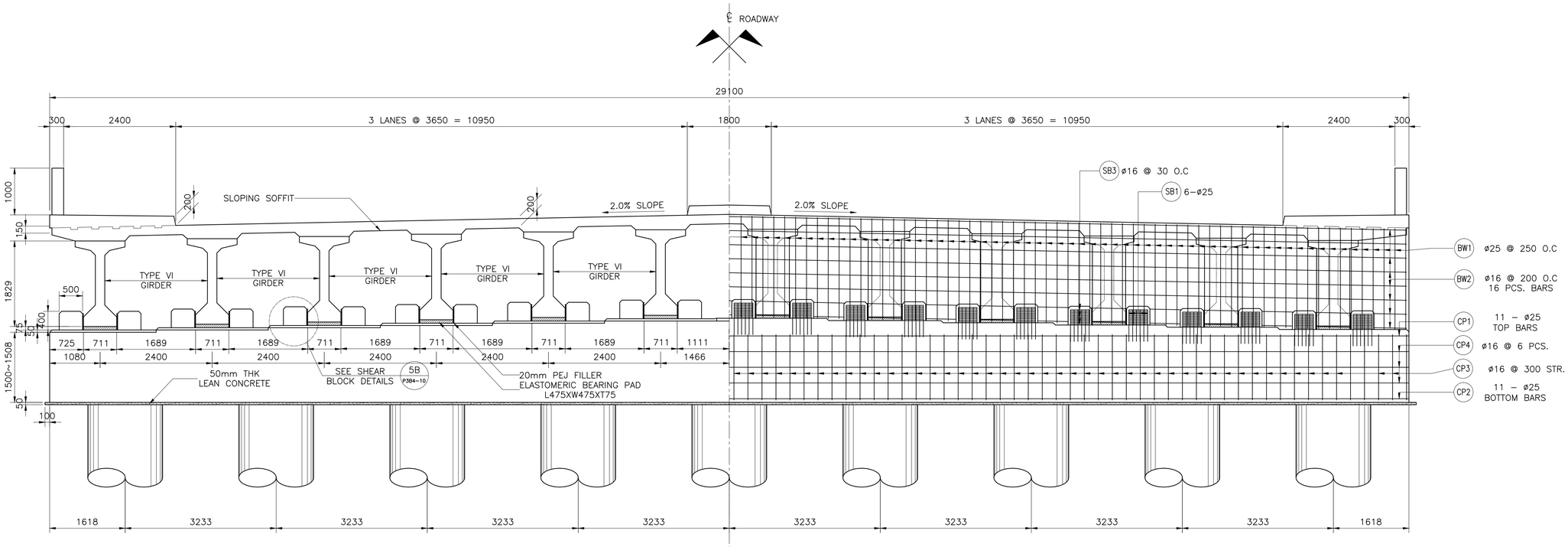
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 ABUTMENT PLAN SHEAR BLOCK DETAILS SCHEDULE OF REINFORCEMENT FOR ABUT. A	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B4-08 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



1 ABUTMENT SECTION
SCALE 1:50

NOTE:
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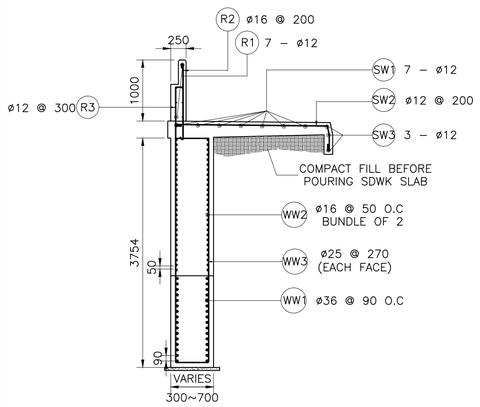
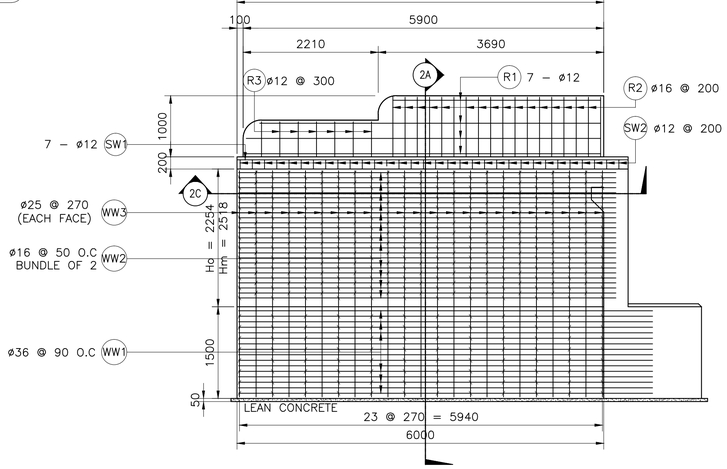
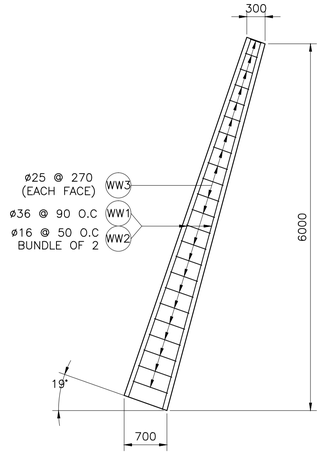
TEAM LEADER



2A SECTION
SCALE 1:50

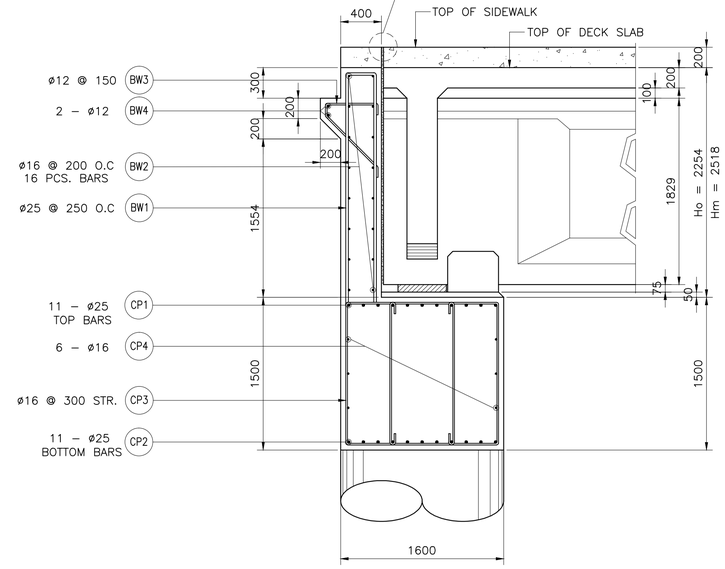


2B ELEVATION
SCALE 1:50



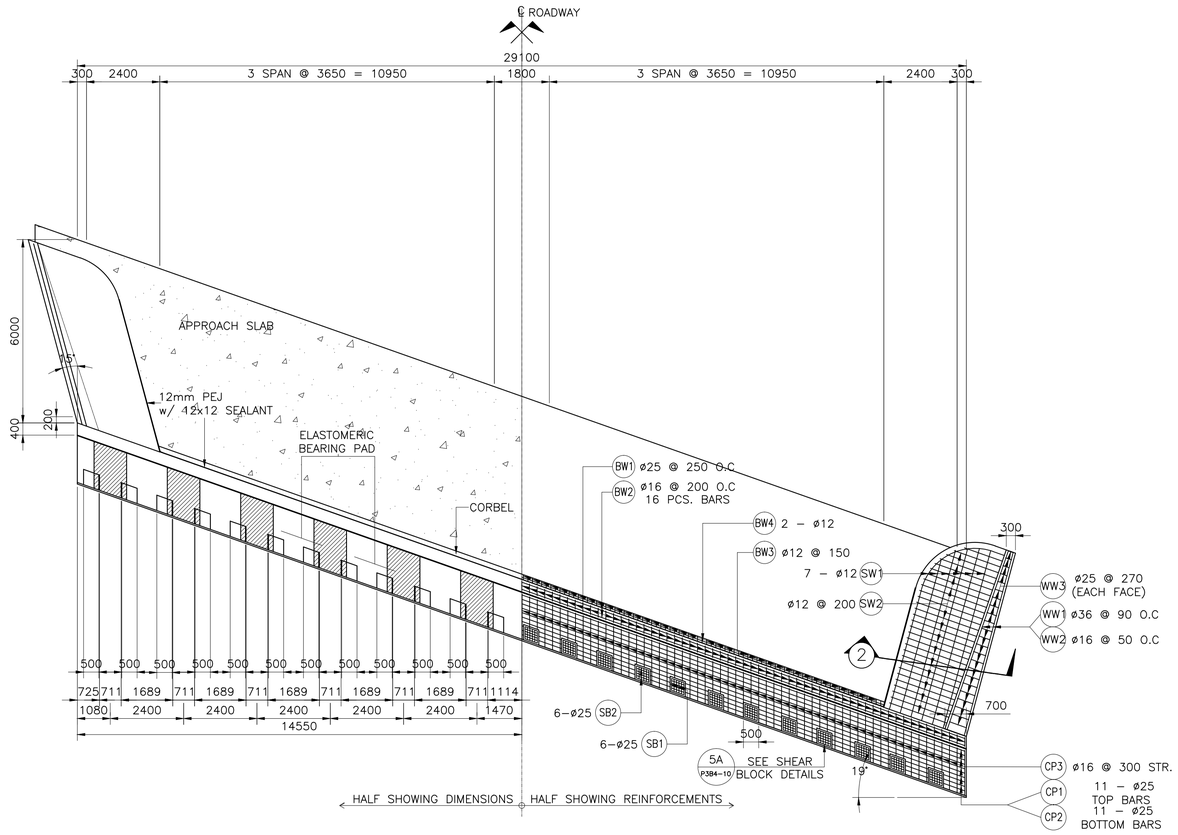
2C PLAN
SCALE 1:50

2 WINGWALL DETAILS
SCALE 1:50

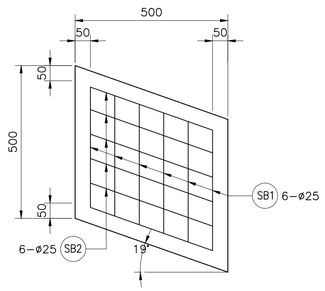


3 BACKWALL AND COPING ELEVATION
SCALE 1:30

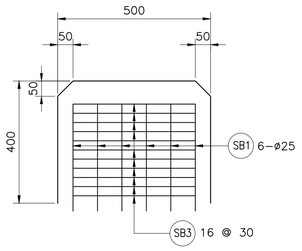
CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 ABUTMENT B DETAILS ABUTMENT SECTION, WINGWALL DETAILS BACK WALL AND COPING DETAILS	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3B4-09 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



4 ABUTMENT PLAN
SCALE 1:100



5A SHEAR BLOCK PLAN
SCALE 1:10

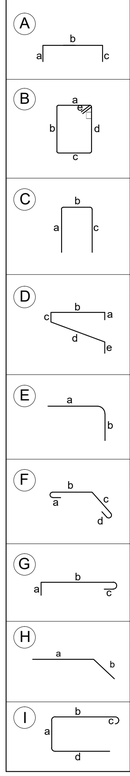


5B SHEAR BLOCK SECTION
SCALE 1:10

5 SHEAR BLOCK DETAILS
SCALE 1:10

SCHEDULE OF REINFORCEMENTS FOR SUBSTRUCTURE FOR ABUTMENT "A" ONLY

BAR BENDING DIAGRAM



REINFORCING STEEL BARS — ALL DIMENSIONS ARE OUT TO OUT OF REBARS

MARK	SIZE (□□)	SPACING (□□)	QUANTITY	a	b	c	d	e	□	TYPE	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g/□)	TOTAL WEIGHT (□g)	CONCRETE VOLUME (cu.□)
FOR ABUTMENT B ONLY																
CP1	25	AS SHOWN	11	0.5	30.76					A	COPING	31.76	349.36	7.991	1350	74
CP2	25	AS SHOWN	11	0.5	30.76					A		31.76	349.36	7.991	1350	
CP3	16	300	120	1.5	1.4	1.5	1.4	0.1	0.1	B		6.00	720.00	3.854	1138	
CP4	16	AS SHOWN	8	0.5	30.76					A		31.76	254.08	1.579	408	
BW1	25	250	144	2.5	0.6	1.9				C	BACKWALL	5.30	763.20	1.579	2944	31
BW2	16	200	14	30.86						STR.		30.86	432.04	1.579	683	
BW3	12	150	240	0	0.75	0.1	0.95	0.1		D		1.90	456.00	0.888	408	
BW4	12	AS SHOWN	2	29.56						STR		29.56	59.12	0.888	55	
WW1	36	90	68	6.3						STR	WINGWALL	6.3	428.40	0.888	3430	29
WW2	16	50	204	6.0	1.50					H		7.5	1530	0.888	2418	
WW3	25	270	46	0.5	3.4	0.5	3.4	0.1	0.1	B		8.0	368.00	0.888	1421	
TIES	12	AS SHOWN	692	0.2	0.40	0.2				G		0.8	553.60	0.888	495	
SB1	25	AS SHOWN	144	0.55	0.40					C	SHEAR BLOCK	1.5	216.00	0.888	840	2
SB2	25	AS SHOWN	144	0.55	0.40					C		1.5	216.00	0.888	840	
SB3	16	30	320	0.40	0.40		0.40	0.10	0.10	B		1.8	576.00	0.888	911	
R1	12	AS SHOWN	14	6.0	1.0					E	APPROACH RAILING	7.0	98.00	0.888	94	3
R2	16	200	19	0.1	1.25	0.2				G		1.55	29.45	0.888	47	
R3	12	300	8	0.75	0.2	0.1	0.1			I		1.15	9.20	0.888	16	
SW1	12	AS SHOWN	14	6.0						STR	APPROACH SIDEWALK	6.0	84.00	0.888	79	6
SW2	12	200	60	0.1	1.25	0.4	0.1			F		3.1	186.00	0.888	173	
SW3	12	AS SHOWN	6	6.0						STR		6.0	36.00	0.888	39	
											GRAND TOTAL		Grade 40 bar		1358	84 CU.M.
													SAY		1358 Kgs	
* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		17780	
* 16 mm dia. and above are Grade 60													SAY		17780 Kgs	

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.
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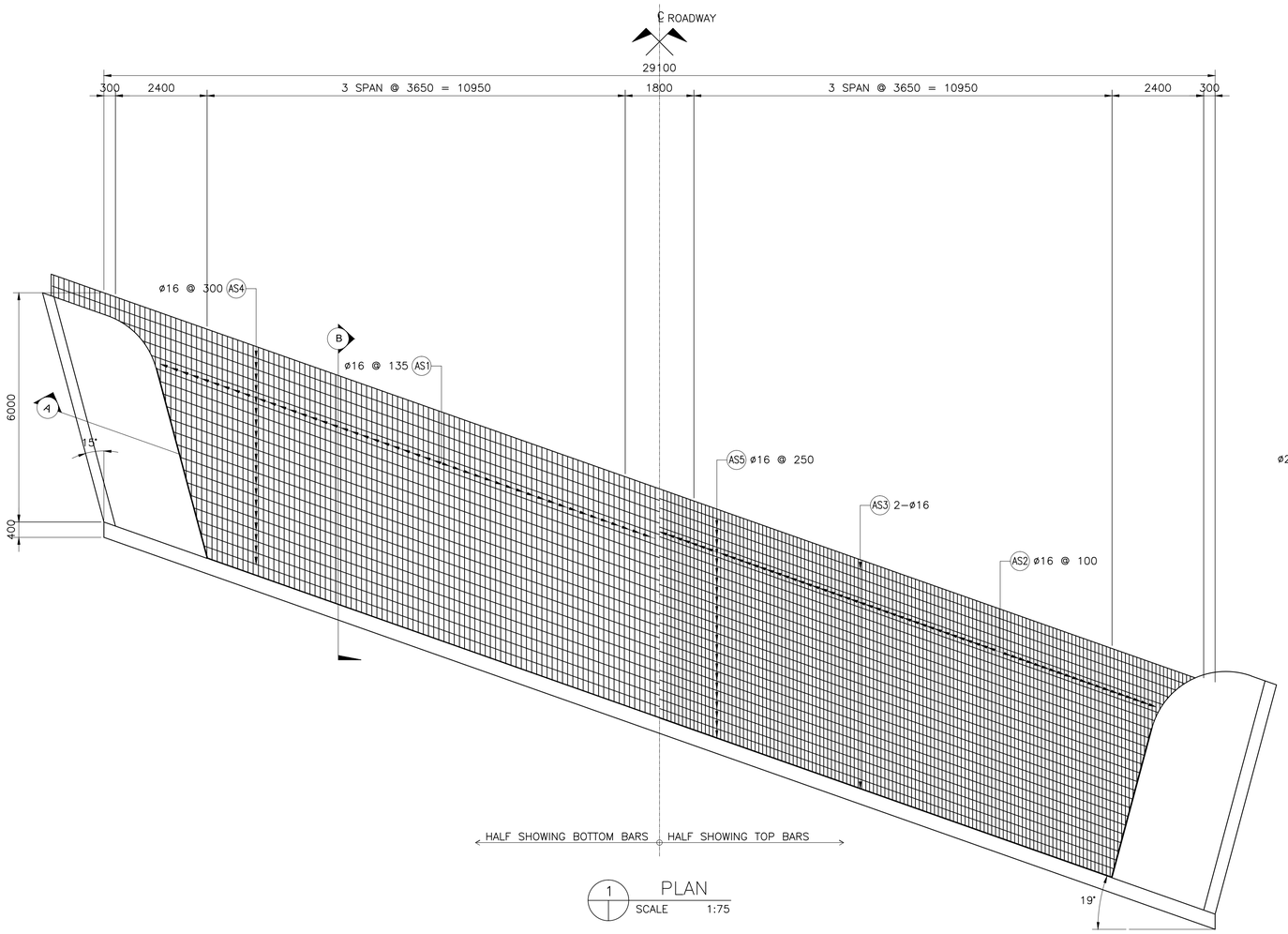
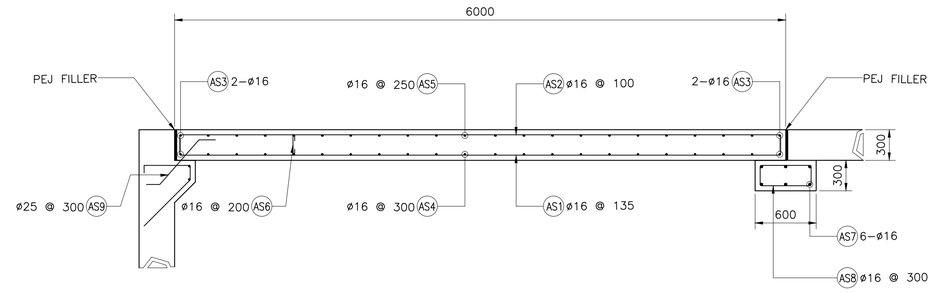
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

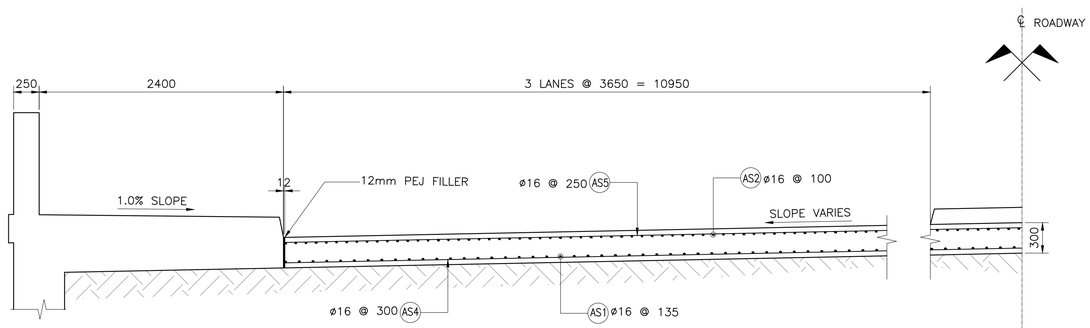
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC!	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UIC!	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER	A		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	DATE: -	DATE: -	APPROVED BY: JOVITO M. SUNGA, OIC - PMD	B			PROJECT CODE	DRAWING NO. / SIZE
			DATE: -	C		SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4		P3B4-10 / A1
				D		ABUTMENT PLAN SHEAR BLOCK DETAILS SCHEDULE OF REINFORCEMENT FOR ABUT. B	DATE APPROVED	DATE REVISED / REV.
				E			-	- / -
				F				



1 PLAN
SCALE 1:75



3 SECTION "B"
SCALE 1:30



2 SECTION "A"
SCALE 1:30

SCHEDULE OF REINFORCEMENTS FOR ONE APPROACH SLAB ONLY

BAR BENDING DIAGRAM	BAR MARK	SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	REINFORCING BARS								
						BAR DIMENSIONS						BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
						a	b	c	d	e	f				
A	AS1	16	235	135	A	5.85	0.27	0.27				6.39	1502.83	1.579	2373
B	AS2	16	317.5	100	A	5.85	0.27	0.27				6.39	2028.83	1.579	3204
	AS3	16	4	AS SHOWN	A	30.86	0.27	0.27				31.4	125.6	1.579	198
	AS4	16	20	300	A	30.86	0.27	0.27				31.4	628	1.579	992
C	AS5	16	24	250	A	30.86	0.27	0.27				31.4	753.6	1.579	1190
	AS6	16	30	200	A	0.30	0.27	0.27				0.84	25.2	1.579	40
	AS7	16	6	AS SHOWN	A	30.86	0.27	0.27				31.4	188.4	1.579	297
	AS8	16	102.87	300	B	0.50	0.20	0.10				0.80	82.293	1.579	130
D	AS9	25	102.87	300	C	0.40	0.40	0.30	0.40	0.40	0.30	2.20	226.31	3.584	811
													TOTAL GRADE 60		9235 Kgs

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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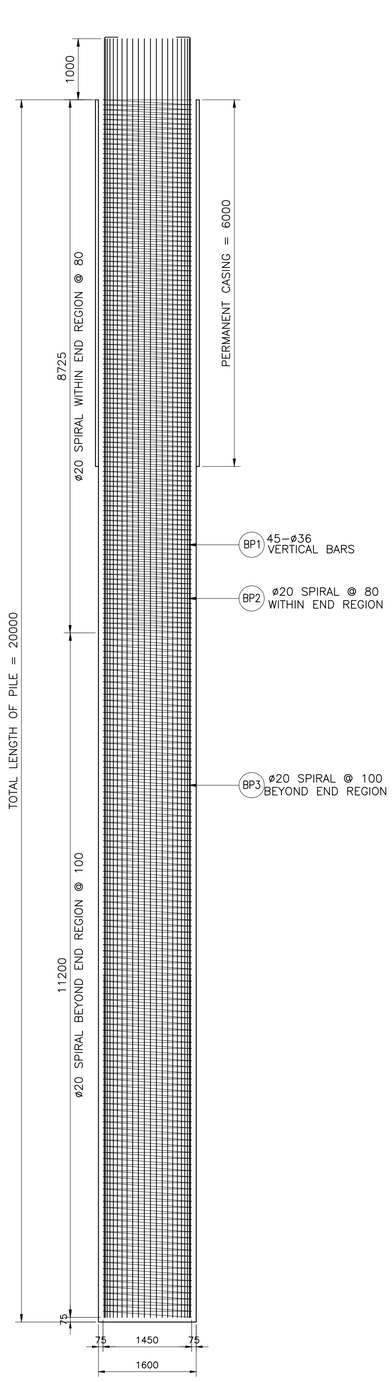
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

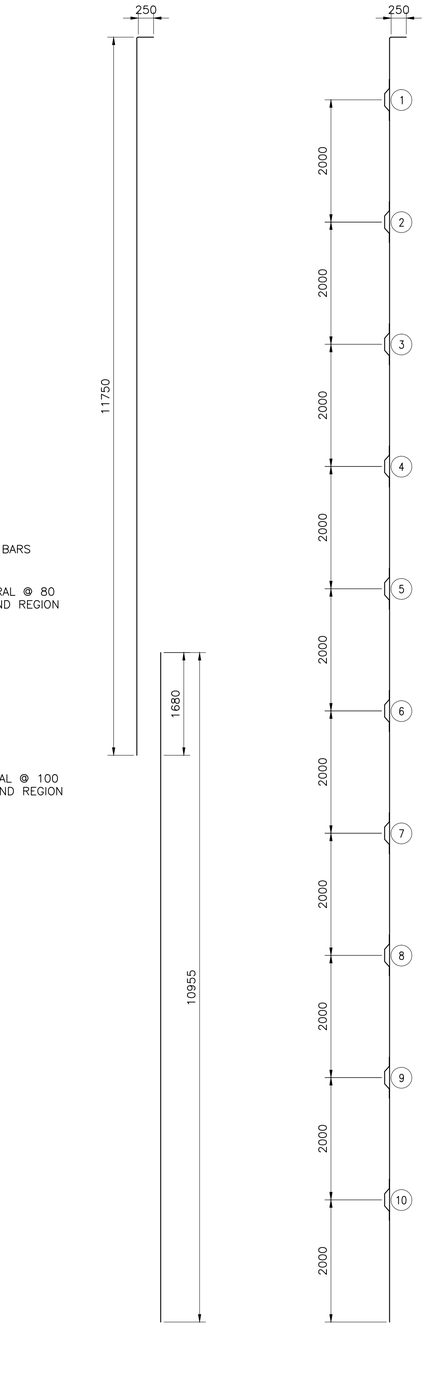
BCDA Bonifacio Conservation and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4		P3B4-11 / A1
APPROACH SLAB DETAILS SCHEDULE OF REINFORCEMENT FOR APPROACH SLAB	DATE APPROVED	DATE REVISED / REV.
	-	- / -

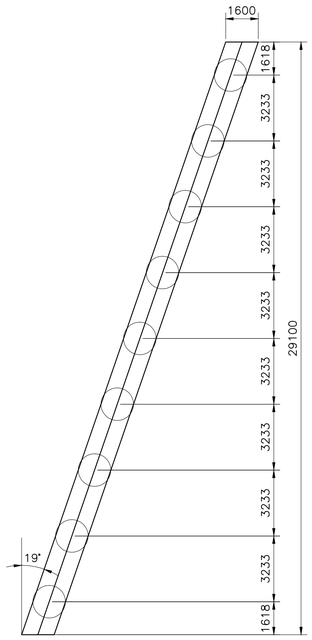


1 VERTICAL SECTION
SCALE 1:50

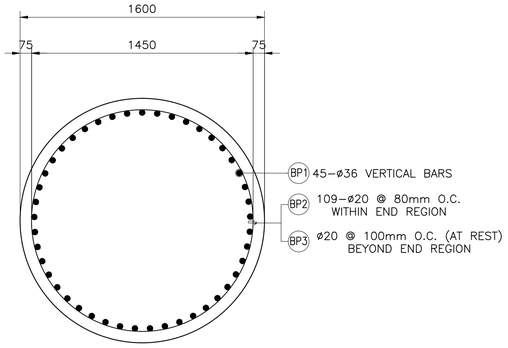


2 SCHEMATIC DETAIL
SCALE 1:50

3 STIFFENER LAYOUT
SCALE 1:50



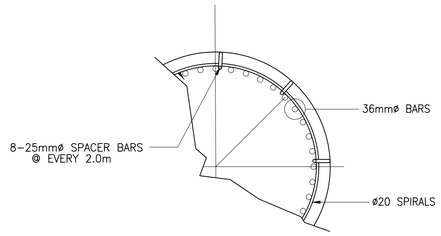
4 COLUMN–COPING PLAN
SCALE NTS

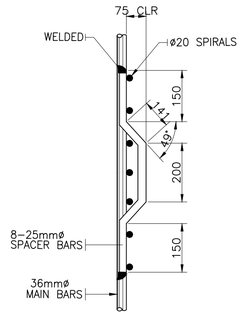


5 COLUMN SECTION
SCALE 1:20

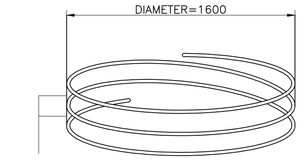
NOTES:

1. THE REINFORCEMENT ARE LAP–WELD CONNECTED (FLARED–V–GROOVE TYPE)
2. SPIRAL REINFORCEMENT ARE LAP WELD CONNECTED. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS. D1.4–92, STRUCTURAL WELDING CODE REINFORCEMENT STEEL, USE ELECTRODE E90XX–X.
3. CARE SHOULD BE TAKEN NOT TO DAMAGE BORED PILE/COLUMN MAIN BARS DURING WELDING.
4. SPIRAL REINFORCEMENT SHOULD BE BUTT WELDED WHERE SPIRAL PITCH IS 50mm OR LESS. OTHERWISE USE LAP WELD SPLICE.
5. ADDITIONAL STIFFENERS/GUIDE BARS MAY BE PROVIDED TO STABILIZE THE PILE REINFORCEMENT DURING FABRICATION/ ERECTION SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. DIRTY CONCRETE (MINIMUM 600mm HEIGHT) SHOULD BE REMOVED PRIOR TO CONSTRUCTION OF BACKWALL AND COPING BEAM.
7. CONCRETE – CONCRETE SHALL CONFORM TO THE REQUIREMENT OF CLASS AA CONCRETE WITH 28MPa. CYLINDER STRENGTH AND 19mm MAXIMUM AGGREGATE SIZE.
8. REINFORCEMENT – ALL REINFORCEMENT STEEL SHALL BE DEFORMED BAR CONFORMING TO AASHTO M31 (ASTM 315) GRADE 60. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 1200 BAR DIAMETER APART, LENGTH OF SPLICES SHALL BE 2200mm.
9. THE STABILIZATION FOR BORED PILE EXCAVATION (SUCH AS USING BENTONITE SLURRY OR TEMPORARY STEEL CASING ETC.) SHALL BE CONSIDERED BY THE CONTRACTOR AND THE COST IS SUBSIDIARY IN PAY ITEM 400(17). THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION METHOD FOR ENGINEERS APPROVAL BEFORE CONSTRUCTION.

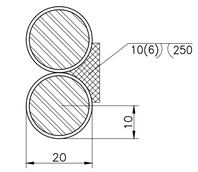




6 BORED PILE CONFINEMENT RING & SPACER DETAIL
SCALE NTS

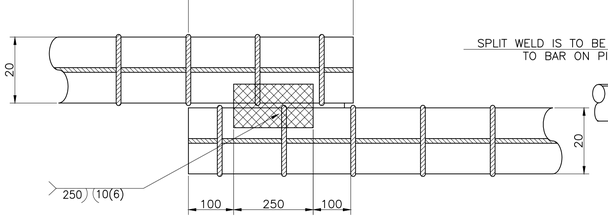


ø20 SPIRAL FINAL PITCH BEYOND END REGION @ 100 WITHIN END REGION @ 80

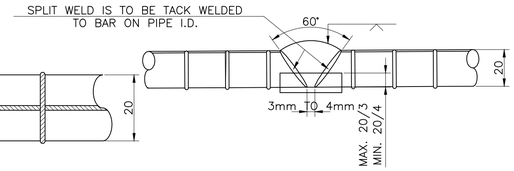


DOUBLE FLARED –V– GROOVE WELD
SECTION – A

PLAN (BEFORE WELDING)



DIRECT LAP JOINT WITH BARS IN CONTACT



DETAILS OF SINGLE–V–GROOVE BUTT WELD

7 DETAILS OF TIES REINFORCEMENT LAP–WELD CONNECTION
SCALE NTS

SCHEDULE OF REINFORCEMENT FOR BORED PILE AT ABUTMENT

BAR BENDING DIAGRAM	BAR MARK	SIZE (□□)	SPACING (□□)	QTY	BAR SHAPE	BAR DIMENSION (ALL DIMENSIONS ARE OUT TO OUT OF BARS) a	b	c	d	e	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g./□.)	TOTAL WEIGHT (□g.)	VOLUME CONCRETE (cu.□.)
	FOR ONE (1) BORED PILE AT ABUTMENT (L=20m, Ø1600mm)															
A	BP1	36	AS SHOWN	45	A	0.25	20	–	–	–	BORED PILE	20.25	911.25	7.991	7285	41
B	BP2	20	AS SHOWN	109	D	0.15	1.45	–	–	–		1.60	174.40	2.486	432	
C	BP3	20	AS SHOWN	113	D	0.15	1.45	–	–	–		1.60	180.80	2.486	448	
D	BP4	25	AS SHOWN	80	C	0.15	0.141	0.20	0.141	0.15		0.782	62.56	3.854	244	
E																
													TOTAL		8409 Kgs	41 cu.m

NOTE:
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TEAM LEADER

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Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC1 DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UIC1 DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS	
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING	
SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4	PROJECT CODE	DRAWING NO.	SIZE
BORED PILE DETAILS		P3B4-12	A1
	DATE APPROVED	DATE REVISED	REV.
	-	-	-

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.
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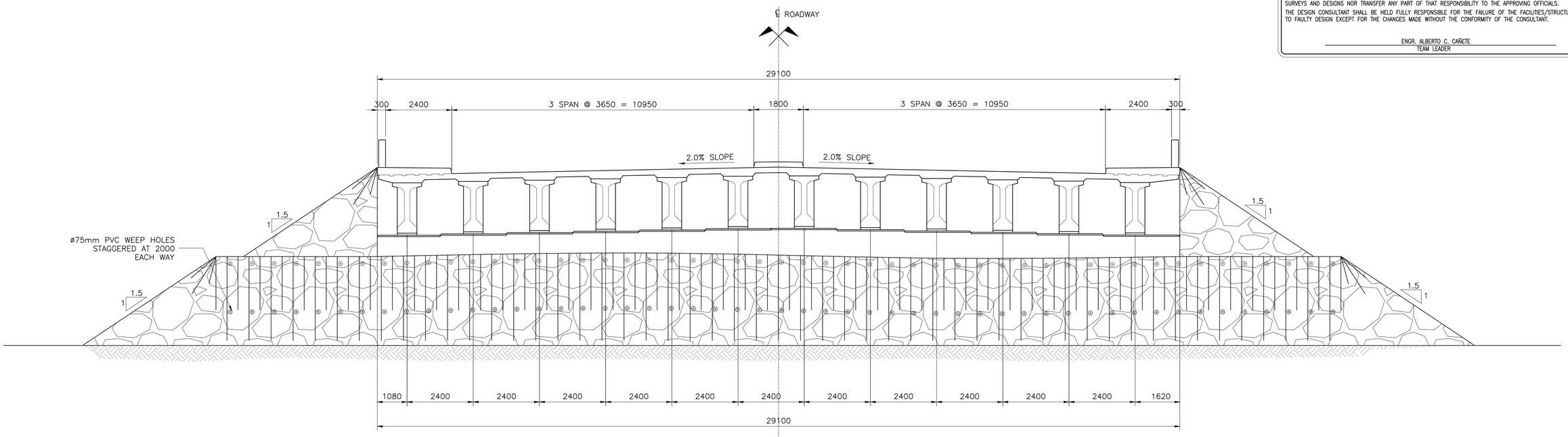
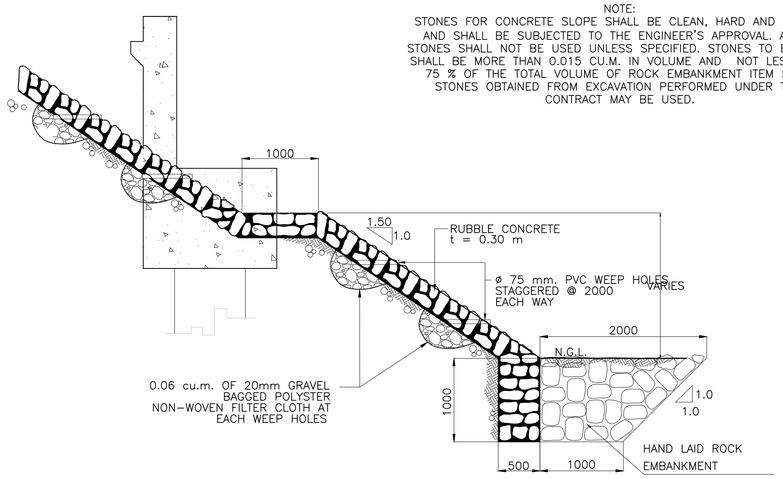
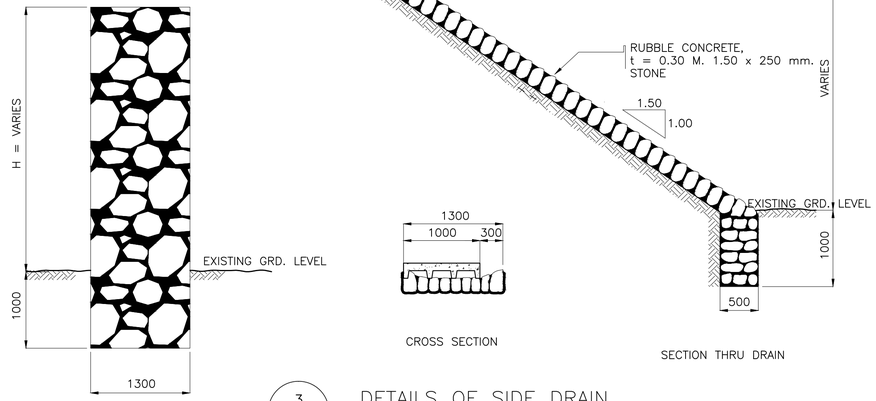


1 TYPICAL SECTION AT ABUTMENT
SCALE: 1:75

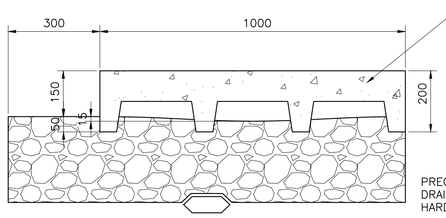
NOTE:
STONES FOR CONCRETE SLOPE SHALL BE CLEAN, HARD AND DURABLE AND SHALL BE SUBJECTED TO THE ENGINEER'S APPROVAL. ADOBE STONES SHALL NOT BE USED UNLESS SPECIFIED. STONES TO BE USED SHALL BE MORE THAN 0.015 CU.M. IN VOLUME AND NOT LESS THAN 75 % OF THE TOTAL VOLUME OF ROCK EMBANKMENT ITEM 506.2 STONES OBTAINED FROM EXCAVATION PERFORMED UNDER THIS CONTRACT MAY BE USED.



2 DETAILS OF RUBBLE CONCRETE AND MASONRY WALL
SCALE: 1:40

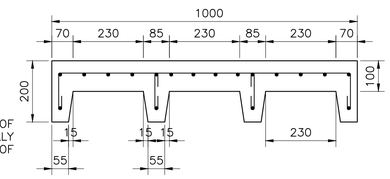


3 DETAILS OF SIDE DRAIN
SCALE: 1:40



4 DETAILS THRU DRAIN
SCALE: 1:10

NOTE:
PRECAST SLAB MUST BE PLACED AFTER CONCRETE POURING OF DRAINS, IN THE MOMENT WHERE THE CONCRETE IS NOT YET TOTALLY HARDENED. CONTRACTOR MUST ENSURE THAT 50mm THICKNESS OF PRECAST SLAB IS IMMERSED WITHIN THE CONCRETE.



5 DETAILS OF PRECAST SLAB
SCALE: 1:10

CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA Bases Conversion and Development Authority	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE, P.P., F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (STA.1+500-STA.16+000) - BRIDGE 4 TYPICAL SECTION AT ABUTMENT DETAILS OF RUBBLE CONCRETE DETAILS OF SIDE DRAIN	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. P3B4-13 / SIZE A1
							DATE APPROVED -	DATE REVISED - / REV. -

GENERAL INDEX OF DRAWINGS

BRIDGE NAME	SHEET CONTENTS	SHEET NO.
BRIDGE 2	GENERAL NOTES	P3B2GN–01
	GENERAL NOTES	P3B2GN–02
	GENERAL ELEVATION, GENERAL PLAN	P3B2–01
	GENERAL SECTION	P3B2–02
	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3B2–03
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3B2–04
	TYPE VI GIRDER DETAILS	P3B2–05
	TYPE VI GIRDER DETAILS	P3B2–06
	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3B2–07
	ABUTMENT DETAILS (COPING, BACKWALL, WINGWALL)	P3B2–08
	ABUTMENT PLAN, SHEAR BLOCK DETAILS, SCHEDULE OF REINFORCEMENT	P3B2–09
	ABUTMENT BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B2–10
	PIER 1 COPING AND COLUMN DETAILS	P3B2–11
	PIER 1 BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B2–12
	PIER 2 COPING AND COLUMN DETAILS	P3B2–13
	PIER 2 BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B2–14
	PIER 3 COPING AND COLUMN DETAILS	P3B2–15
	PIER 3 BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B2–16
	APPROACH SLAB DETAILS	P3B2–17
BRIDGE 3	GENERAL NOTES	P3B3GN–01
	GENERAL NOTES	P3B3GN–02
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	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3B3–02
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3B3–03
	TYPE VI GIRDER DETAILS	P3B3–04
	TYPE VI GIRDER DETAILS	P3B3–05
	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3B3–06
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	BACKWALL, COPING & WINGWALL DETAILS, SCHEDULE OF REINFORCEMENTS	P3B3–08
	PIER 1 BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B3–09
	PIER 2 BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B3–10
	PIER 3 BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B3–11
	ABUTMENT BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3B3–12
	PIER COPING PLAN & ELEVATION, PIER SECTION	P3B3–13
	PIER COLUMN DETAILS, COPING SECTION, SCHEDULE OF REINFORCEMENTS	P3B3–14
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BRIDGE 4	GENERAL NOTES	P3B4GN–01
	GENERAL NOTES	P3B4GN–02
	GENERAL ELEVATION, GENERAL PLAN, GENERAL SECTION	P3B4–01
	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3B4–02
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3B4–03
	TYPE VI GIRDER DETAILS	P3B4–04
	TYPE VI GIRDER DETAILS	P3B4–05
	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3B4–06
	ABUTMENT A DETAILS (COPING, BACKWALL, WINGWALL)	P3B4–07
	ABUTMENT PLAN, SHEAR BLOCK DETAILS, SCHEDULE OF REINFORCEMENT	P3B4–08
	ABUTMENT B DETAILS (COPING, BACKWALL, WINGWALL)	P3B4–09
	ABUTMENT PLAN, SHEAR BLOCK DETAILS, SCHEDULE OF REINFORCEMENT	P3B4–10
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	BORED PILE DETAILS	P3B4–12

BRIDGE NAME	SHEET CONTENTS	SHEET NO.
OVERPASS 1	PLAN AND PROFILE ROAD CROSSING @ STA. 3+100.780 (ROAD 1)	PP–1
	STA. –0+200.00 TO STA. –0+100.00	CS–1
	STA. –0+080.00 TO STA. 0+020.00	CS–2
	STA. 0+040.00 TO STA. 0+140.00	CS–3
	STA. 0+160.00 TO STA. 0+260.00	CS–4
	STA. 0+280.00	CS–5
	GENERAL NOTES	P3O1GN–01
	GENERAL NOTES	P3O1GN–02
	GENERAL ELEVATION, GENERAL PLAN, GENERAL SECTION	P3O1–01
	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3O1–02
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3O1–03
	TYPE V GIRDER DETAILS	P3O1–04
	TYPE V GIRDER DETAILS	P3O1–05
	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3O1–06
	ABUTMENT PLAN AND ELEVATION, SHEAR BLOCK DETAILS	P3O1–07
	BACKWALL, COPING AND WINGWALL DETAILS	P3O1–08
	APPROACH SLAB DETAILS	P3O1–09
	ABUTMENT BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3O1–10
	PIER COLUMN DETAILS, COPING SECTION, SCHEDULE OF REINFORCEMENTS	P3O1–11
	PIER BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3O1–12
OVERPASS 2	GENERAL NOTES	P3O2GN–01
	GENERAL NOTES	P3O2GN–02
	GENERAL ELEVATION, GENERAL PLAN, GENERAL SECTION	P3O2–01
	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3O2–02
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3O2–03
	TYPE V GIRDER DETAILS	P3O2–04
	TYPE V GIRDER DETAILS	P3O2–05
	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3O2–06
	ABUTMENT PLAN AND ELEVATION, SHEAR BLOCK DETAILS	P3O2–07
	BACKWALL, COPING AND WINGWALL DETAILS	P3O2–08
	ABUTMENT BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3O2–09
	APPROACH SLAB DETAILS	P3O2–10
OVERPASS 3	PLAN AND PROFILE ROAD CROSSING @ STA. 6+213.20 (ROAD 1)	PP–1
	STA. –0+160.00 TO STA. –0+060.00	CS–1
	STA. –0+040.00 TO STA. 0+060.00	CS–2
	STA. 0+080.00 TO STA. 0+180.00	CS–3
	GENERAL NOTES	P3O3GN–01
	GENERAL NOTES	P3O3GN–02
	GENERAL ELEVATION, GENERAL PLAN, GENERAL SECTION	P3O3–01
	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3O3–02
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3O3–03
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	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3O3–06
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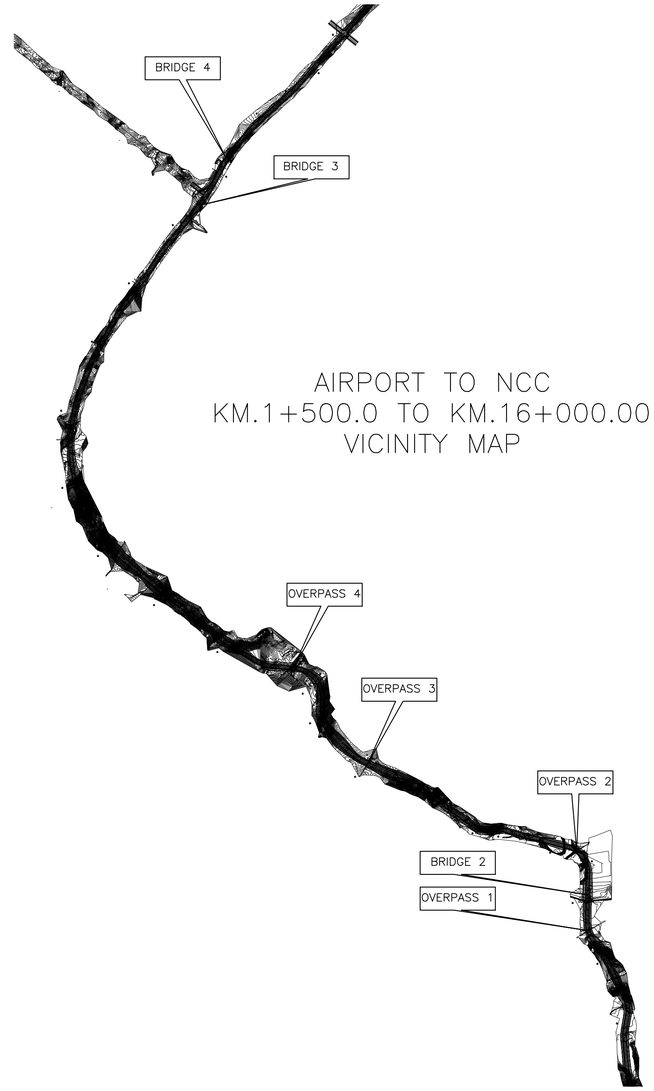
	ABUTMENT BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3O3–09
	PIER COLUMN DETAILS, COPING SECTION, SCHEDULE OF REINFORCEMENTS	P3O3–10
	PIER BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3O3–11
	APPROACH SLAB DETAILS	P3O3–12
OVERPASS 4	GENERAL NOTES	P3O4GN–01
	GENERAL NOTES	P3O4GN–02
	GENERAL ELEVATION, GENERAL PLAN, GENERAL SECTION	P3O4–01
	FRAMING PLAN, LONGITUDINAL SECTION, TYPICAL DRAIN AND JOINT DETAILS	P3O4–02
	CROSS SECTION AT MIDSPAN, SLAB REINFORCEMENT DETAIL, SHEAR KEY AND DIP GROOVE DETAIL	P3O4–03
	TYPE VI GIRDER DETAILS	P3O4–04
	TYPE VI GIRDER DETAILS	P3O4–05
	DIAPHRAGM DETAILS, SCHEDULE OF REINFORCEMENTS FOR DECK SLAB, DIAPHRAGM AND GIRDER	P3O4–06
	ABUTMENT A PLAN AND ELEVATION, SHEAR BLOCK DETAILS	P3O4–07
	BACKWALL, COPING AND WINGWALL DETAILS (ABUTMENT A)	P3O4–08
	ABUTMENTB PLAN AND ELEVATION, SHEAR BLOCK DETAILS	P3O4–09
	BACKWALL, COPING AND WINGWALL DETAILS (ABUTMENT B)	P3O4–10
	ABUTMENT BORED PILE DETAILS, SCHEDULE OF REINFORCEMENTS	P3O4–11
	APPROACH SLAB DETAILS	P3O4–12



AIRPORT TO NCC
KM.1+500.0 TO KM.16+000.00
VICINITY MAP

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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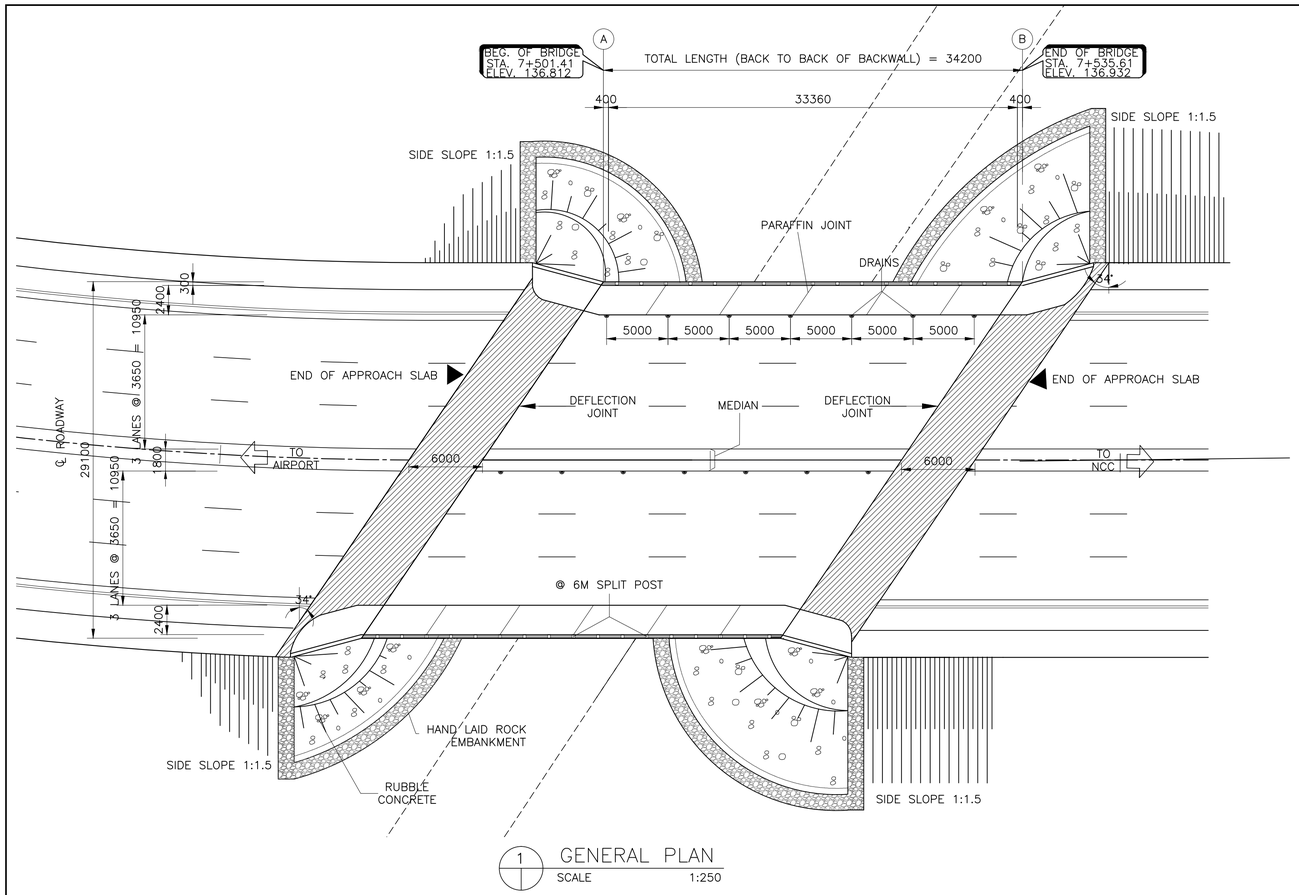
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC! CORPORATE BLDG., 8 LANZIS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC! DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UIC! DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

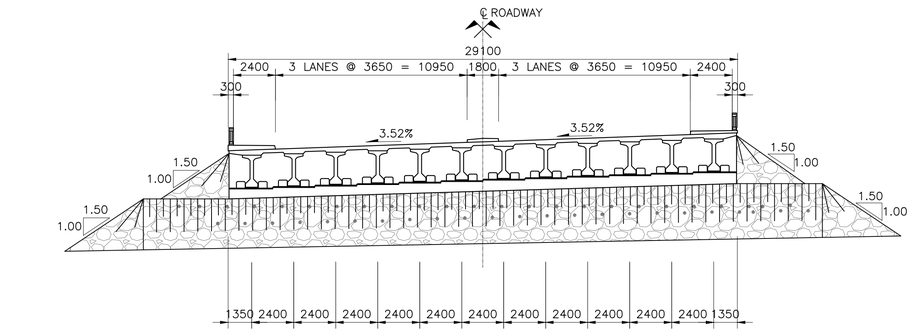
BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

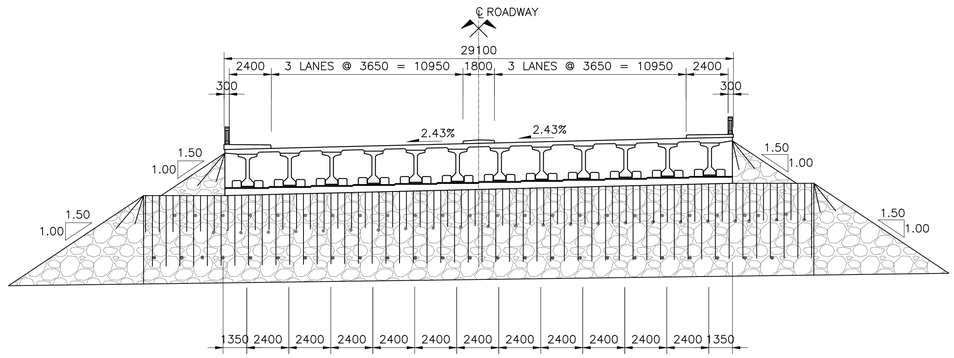
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.1+500.00 TO KM.16+000.00)		- / A1
GENERAL INDEX OF DRAWINGS VICINITY MAP	DATE APPROVED	DATE REVISED / REV.
	-	- / -



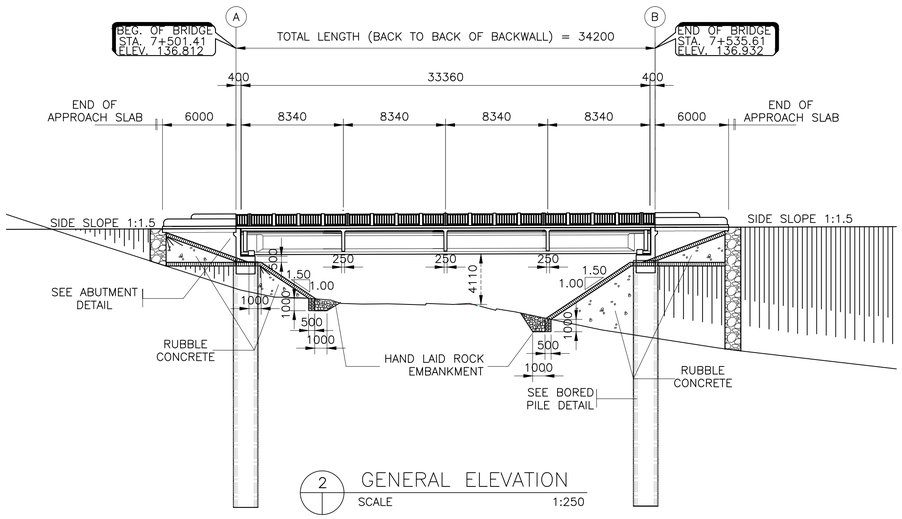
1 GENERAL PLAN
SCALE 1:250



3 GENERAL SECTION @ ABUTMENT A
SCALE 1:175



4 GENERAL SECTION @ ABUTMENT B
SCALE 1:175



2 GENERAL ELEVATION
SCALE 1:250

OVERPASS 4 STRUCTURES QUANTITY ESTIMATE(6–LANE)

ITEM NO.	DESCRIPTION	UNITS	ABUTMENTS		SUPERSTRUCTURE	TOTAL
			A	B		
103(2)a	BRIDGE EXCAVATION (COMMON SOIL)	M3	116.00	152.00		268.00
104(2)a	EMBANKMENT (FROM ROADWAY EXCAVATION)	M3	1183.00	4661.00		5844.00
202(1)	CRUSHED AGGREGATE BASE COURSE	M3	51.00	51.00		102.00
400(23)a13	BORED PILES (2.0M DIAMETER)	LM	180.00	180.00		360.00
400(24)m1	PERMANENT CASING (2.0M DIA. X 12MM THK)	LM	54.00	54.00		108.00
400(27)a	LOAD TEST (LOW STRAIN DYNAMIC METHOD, PIT)	EACH	5.00	5.00		10.00
400(28)	LOAD TEST (PILE DYNAMIC METHOD, PDA)	EACH	1.00	1.00		2.00
401(2)a	CONCRETE RAILING (STANDARD)	LM			69.00	69.00
404(1)a	REINFORCING STEEL BAR (GRADE 40)	KG	1071.00	1071.00	8385.00	10527.00
404(1)b	REINFORCING STEEL BAR (GRADE 60)	KG	29545.00	28655.00	144401.00	202601.00
405(1)b2	STRUCTURAL CONCRETE CLASS "A"(f'c=27.58 Mpa), 14DAYS	M3	51.00	51.00		102.00
405(1)b3	STRUCTURAL CONCRETE CLASS "A"(f'c=27.58 Mpa), 28DAYS	M3	229.00	229.00	504.00	962.00
406(1)h2	PRESTRESSED STRUCTURAL CONCRETE MEMBERS (TYPE VI, L=34.20, I–GIRDERS)	EACH			12.00	12.00
407(8)	LEAN CONCRETE (CLASS B, 16.50 MPA)	M3	28.00	28.00		56.00
412(1)	ELASTOMERIC BEARING PAD DURO 60	EACH	12.00	12.00		24.00
507(1)	RUBBLE CONCRETE	M3	359.00	450.00		809.00
508(1)	HAND LAID ROCK EMBANKMENT	M3	121.00	159.00		280.00
517(1)a	DRAIN PIPE 100M DIA. GALVANIZED PIPE INCLUDING PIPE FITTINGS	LM			194.00	194.00
SPL–801	PRE–MOLDED EXPANSION JOINT FILLER WITH SEALANT	SQM	109.00	109.00		218.00

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
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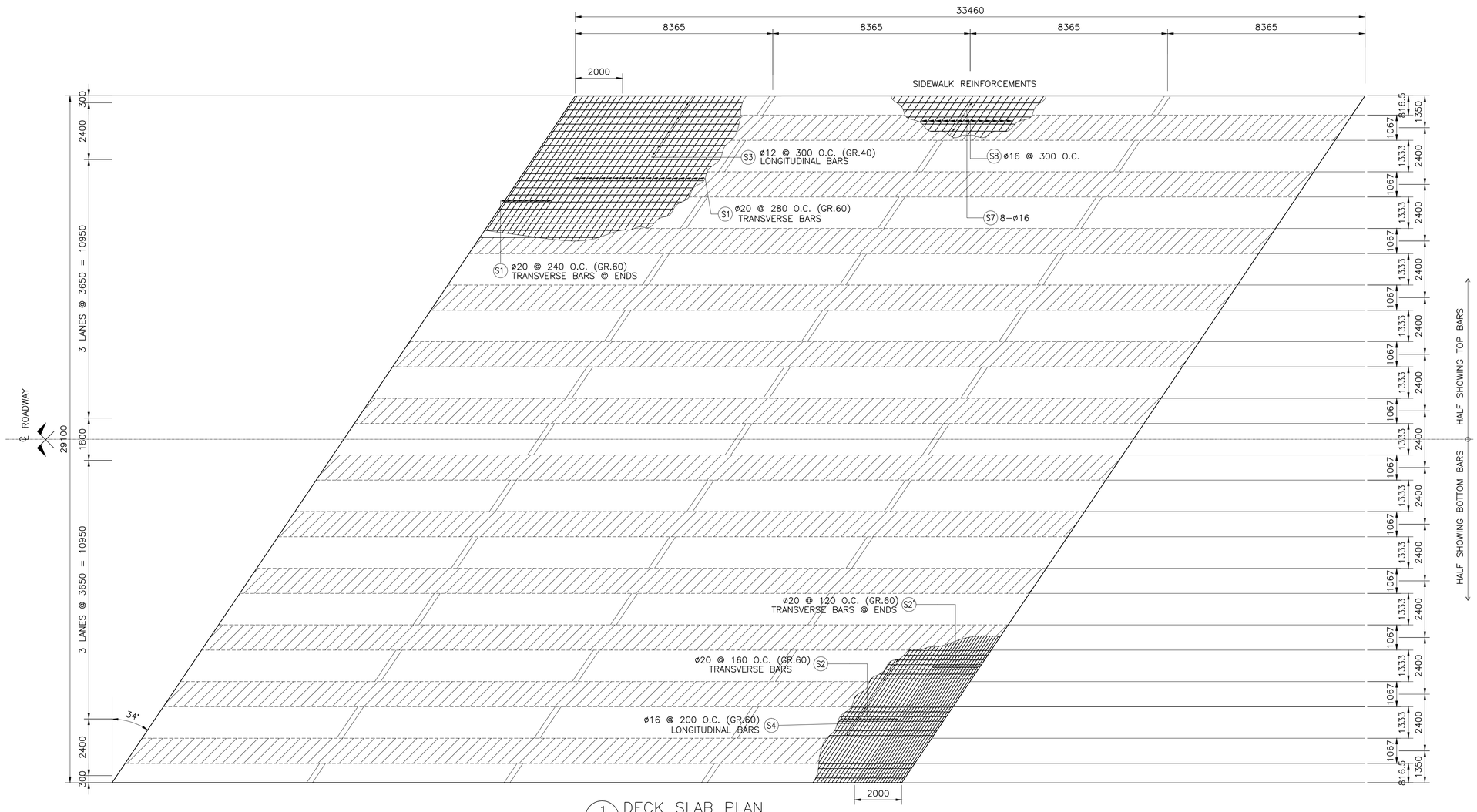
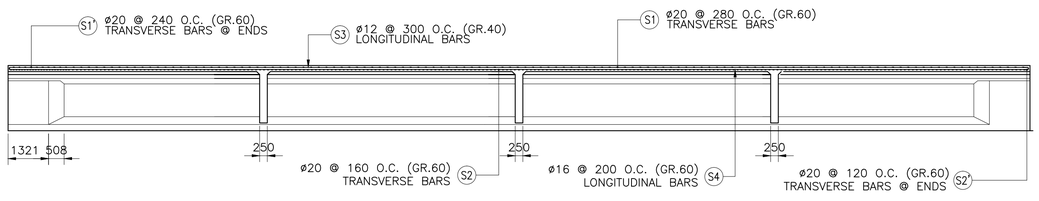
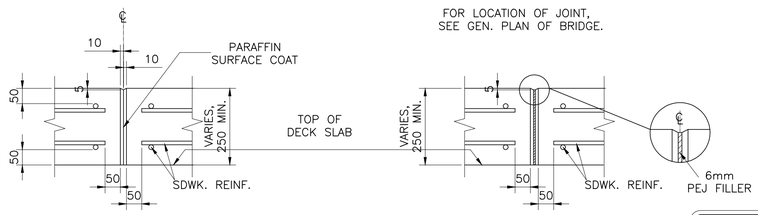
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - OVERPASS 4		P3O4-01 / A1
GENERAL PLAN GENERAL ELEVATION GENERAL SECTION	DATE APPROVED	DATE REVISED / REV.
	-	- / -



1 DECK SLAB PLAN
SCALE 1:100



2 LONGITUDINAL SECTION
SCALE 1:100

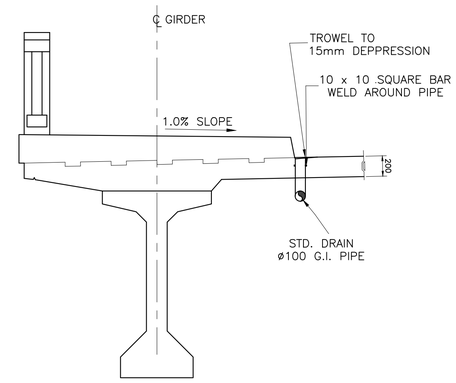


4A PARAFFIN JOINT
SCALE 1:10

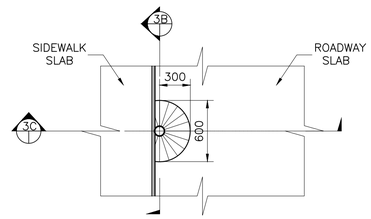
4B DEFLECTION JOINT
SCALE 1:10

NOTE:
FOR LOCATION OF JOINT, SEE GEN. PLAN OF BRIDGE.

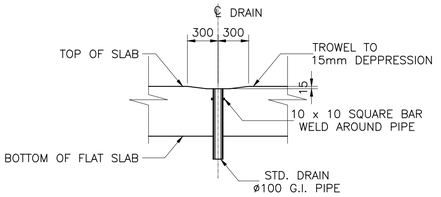
4 JOINTS DETAILS
SCALE 1:10



3A SECTION
SCALE 1:30



3B PLAN
SCALE 1:20



3C ELEVATION
SCALE 1:20

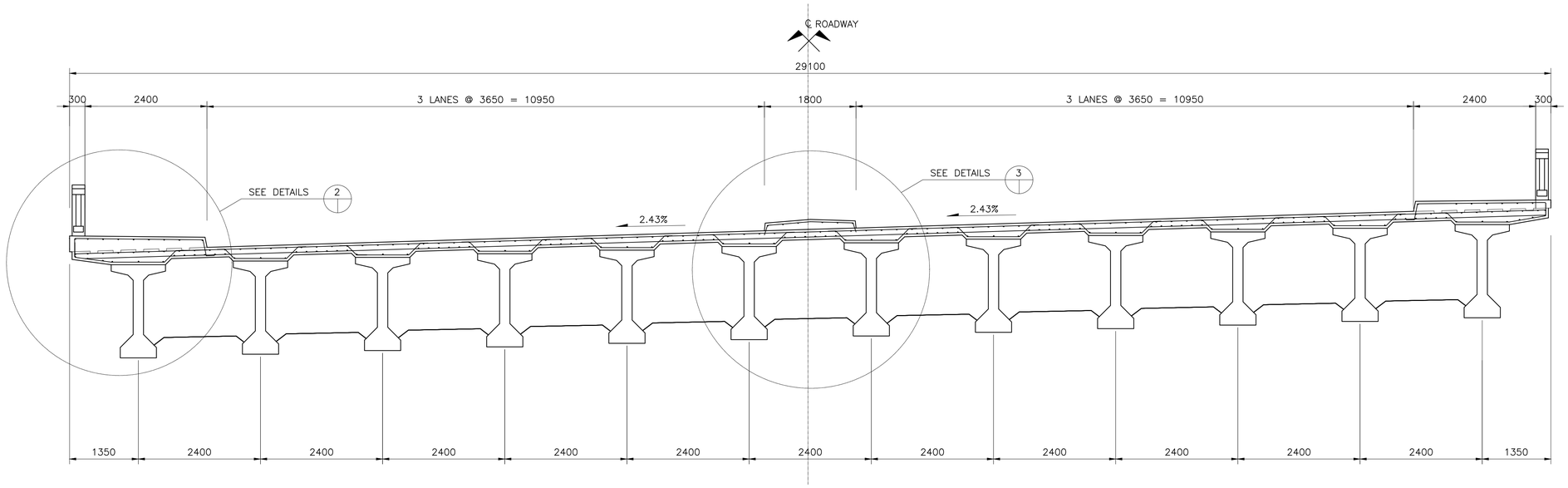
3 TYPICAL DRAIN DETAILS
SCALE NTS

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITIES/STRUCTURES DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4 DECK SLAB PLAN LONGITUDINAL SECTION TYPICAL DRAINS AND JOINTS DETAILS	AS SHOWN PROJECT CODE DATE APPROVED -	DRAFT DRAWING DRAWING NO. P3O4-02 DATE REVISED - SIZE A1 REV. -



1 CROSS SECTION @ MIDSPAN
SCALE 1:50

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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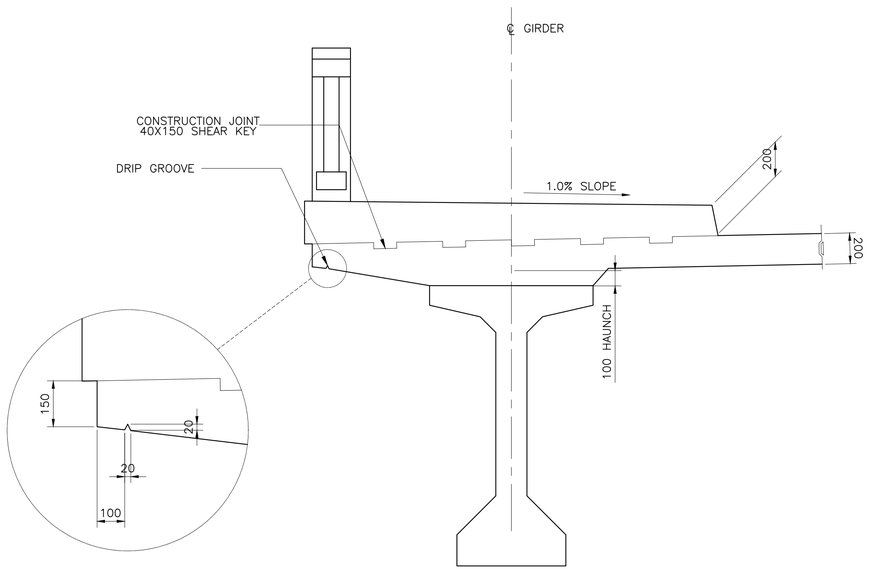
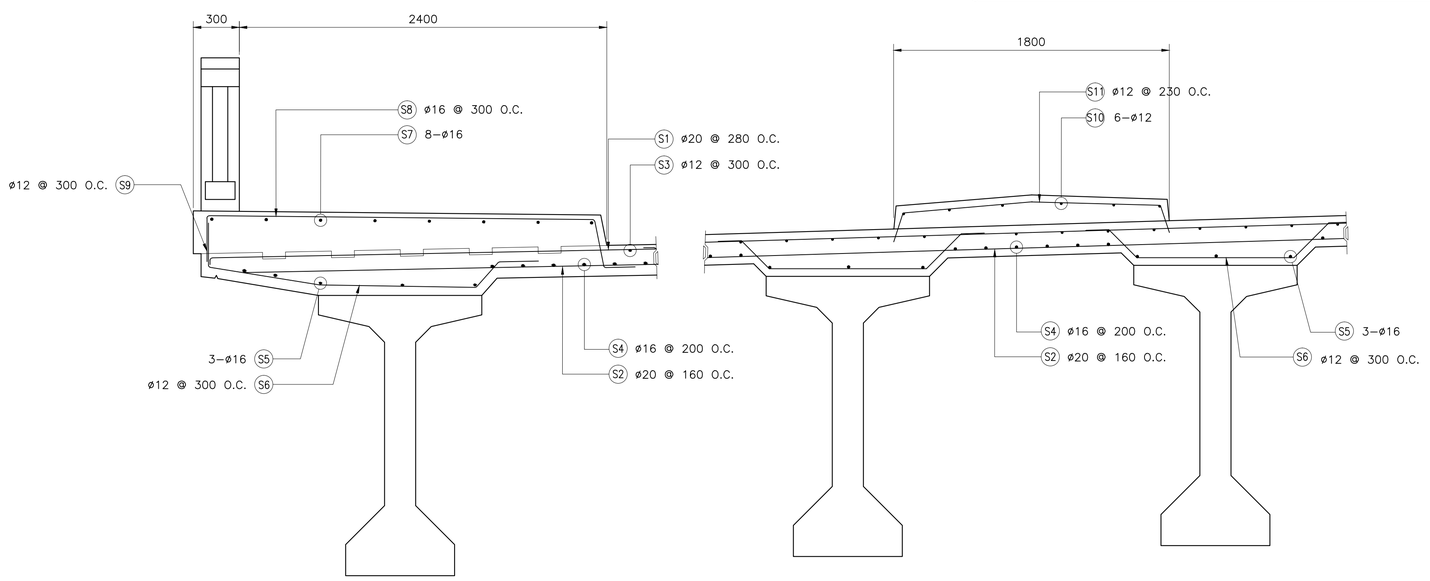
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

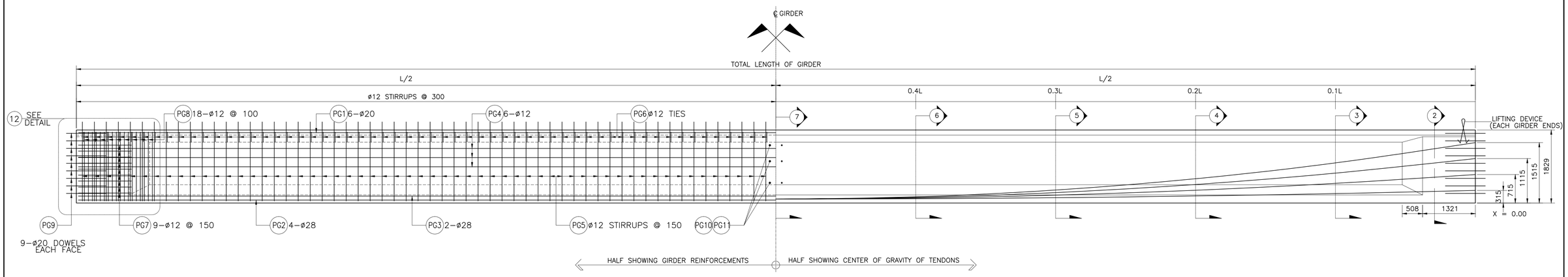


2 SHEAR KEY & DRIP GROOVE DETAIL
SCALE 1:20

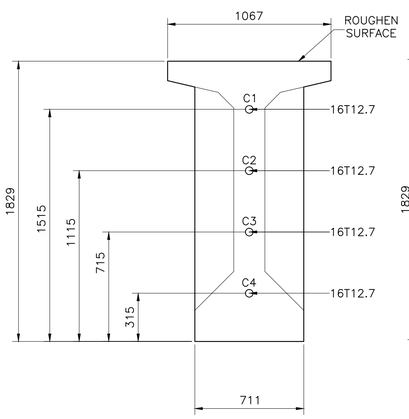


3 TRANSVERSE SECTION
SCALE 1:20

CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA Bases Conversion and Development Authority	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4 CROSS SECTION TRANSVERSE SECTION SHEAR KEY & DRIP GROOVE DETAIL	AS SHOWN	DRAFT DRAWING
							PROJECT CODE	DRAWING NO. / SIZE
								P3O4-03 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -

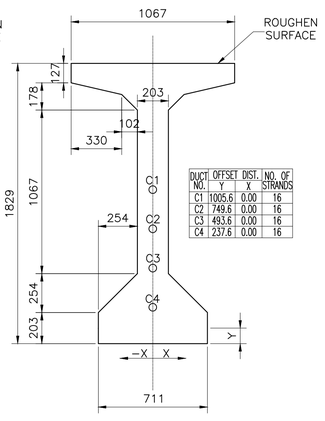


1 PRESTRESSED GIRDER ELEVATION
SCALE 1:45



SHOWING TENDONS

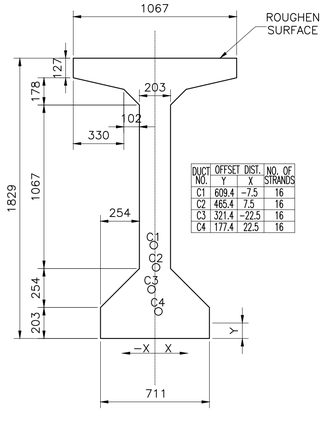
2 SECTION @ ENDS
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	1005.6	0.00	16
C2	749.6	0.00	16
C3	493.6	0.00	16
C4	237.6	0.00	16

SHOWING TENDONS

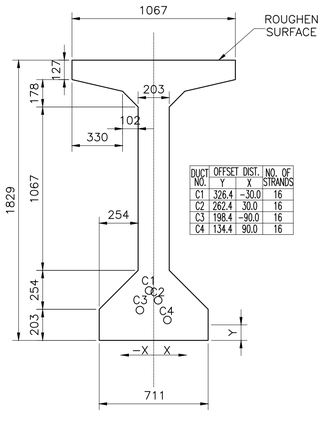
3 SECTION @ 0.1L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	609.4	-7.5	16
C2	465.4	7.5	16
C3	321.4	-22.5	16
C4	177.4	22.5	16

SHOWING TENDONS

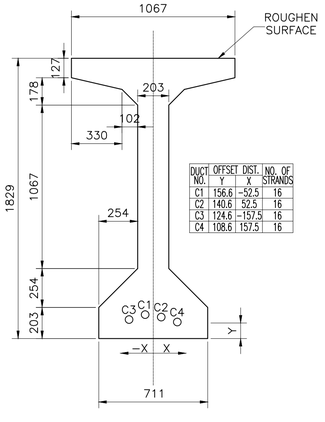
4 SECTION @ 0.2L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	326.4	-30.0	16
C2	262.4	30.0	16
C3	198.4	-90.0	16
C4	134.4	90.0	16

SHOWING TENDONS

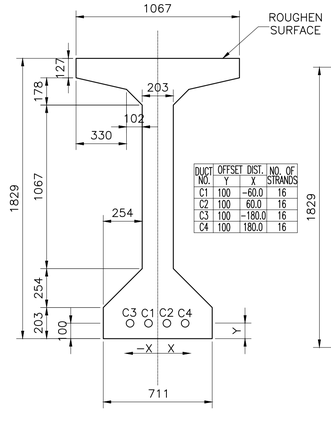
5 SECTION @ 0.3L
SCALE 1:20



DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	156.6	-52.5	16
C2	140.6	52.5	16
C3	124.6	-157.5	16
C4	108.6	157.5	16

SHOWING TENDONS

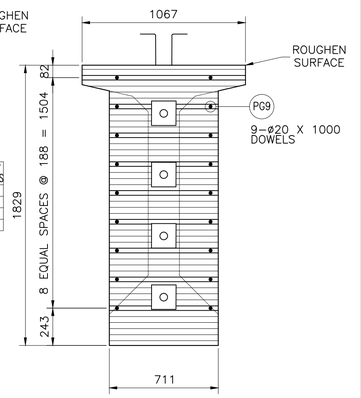
6 SECTION @ 0.4L
SCALE 1:20



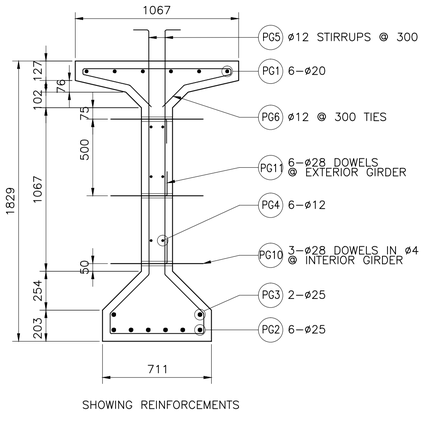
DUCT NO.	OFFSET DIST. Y	X	NO. OF STRANDS
C1	100	-60.0	16
C2	100	60.0	16
C3	100	-180.0	16
C4	100	180.0	16

SHOWING TENDONS

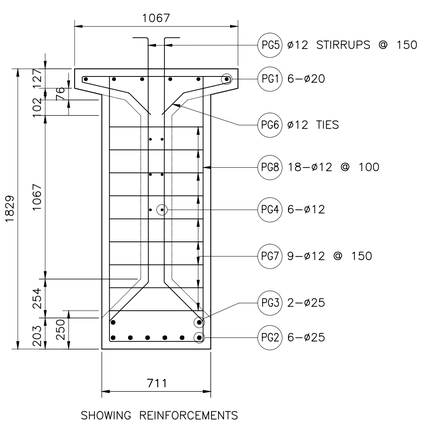
7 SECTION @ MIDSPAN
SCALE 1:20



8 TOOTH AT END VIEW
SCALE 1:20

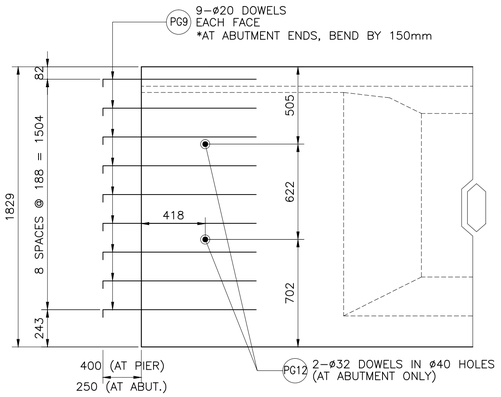


SHOWING REINFORCEMENTS

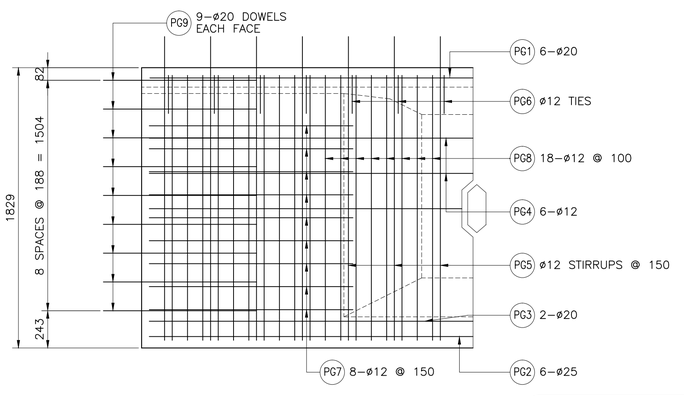


SHOWING REINFORCEMENTS

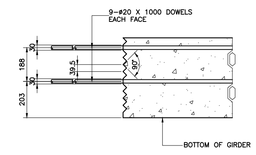
9 REINFORCEMENT DETAILS
SCALE 1:20



10 DOWELS AT END BLOCK
SCALE 1:20



11 REINFORCEMENT DETAILS
SCALE 1:20



12 TOOTH DETAIL
SCALE NTS

NOTE:

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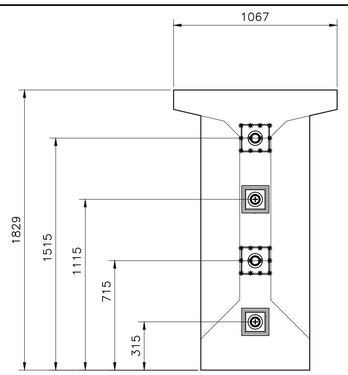
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

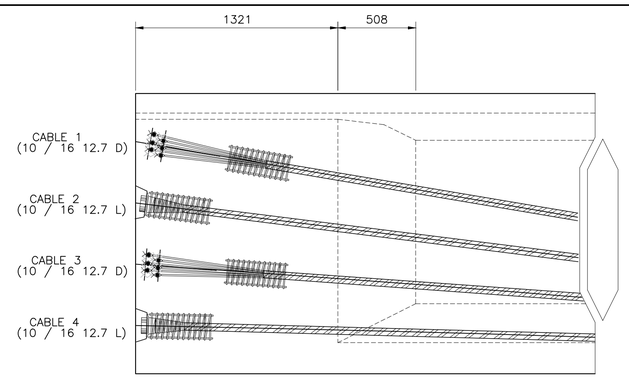
BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

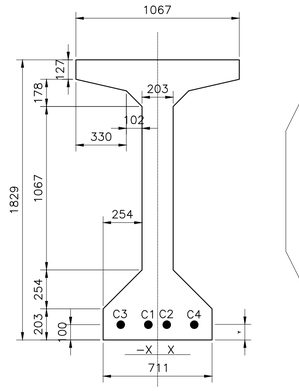
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - OVERPASS 4		P304-04 / A1
TYPE VI GIRDER ELEVATION AND SECTIONS	DATE APPROVED	DATE REVISED / REV.
	-	- / -



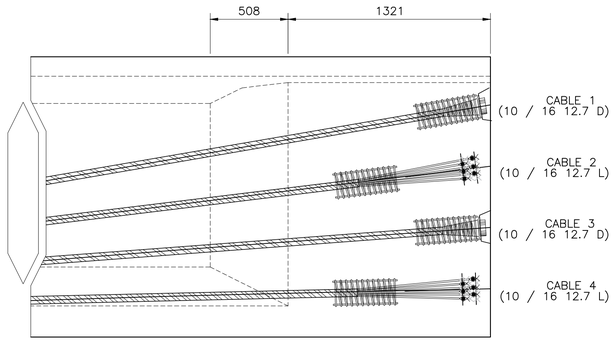
1 SECTION @ LEFT
SCALE 1:20



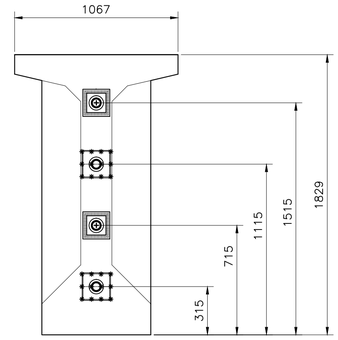
2 ELEVATION @ LEFT
SCALE 1:20



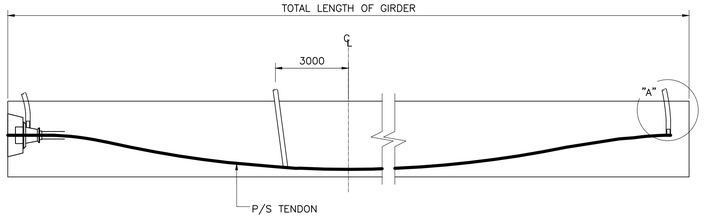
3 SECTION @ MIDSPAN
SCALE 1:20

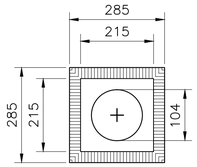


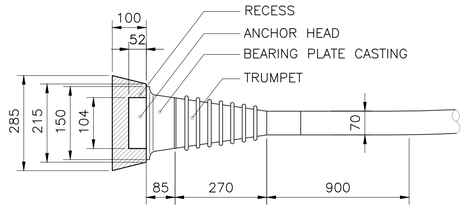
4 ELEVATION @ RIGHT
SCALE 1:20



5 SECTION @ RIGHT
SCALE 1:20



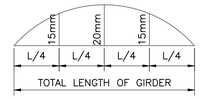




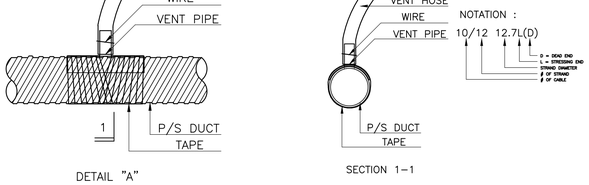
7 COMPACT STRESSING ANCHORAGE
SCALE NTS

CABLE NO.	NO. OF STRANDS	JFORCE
1	15	2032.50
2	15	2032.50
3	16	2168.00
4	16	2168.00

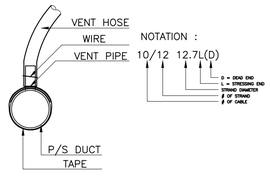
TOTAL JACKING FORCE = 8401.00kN



11 CAMBER DIAGRAM
SCALE NTS

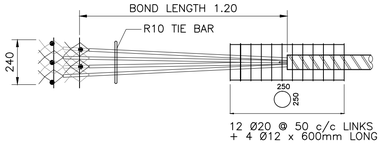


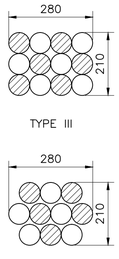
DETAIL "A"



SECTION 1–1

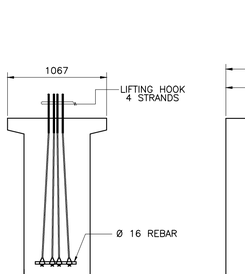
6 TYP. SPACING FOR GROUTING VENTS
SCALE NTS

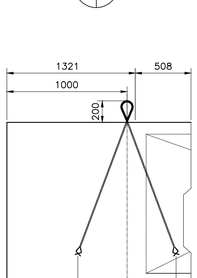


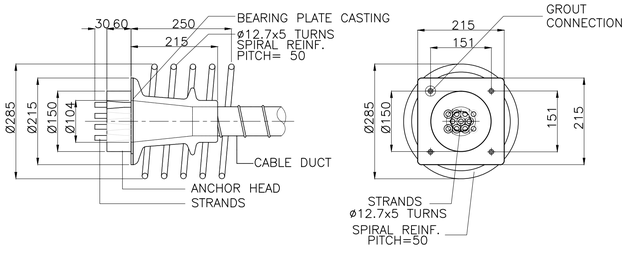


9 BURSTING STEEL DEAD–END ANCHORAGE
SCALE NTS

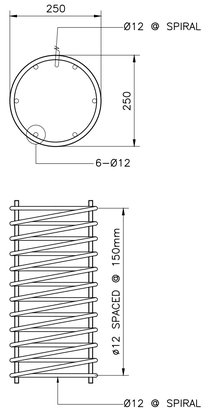
8 LIFTING HOOK DETAILS
SCALE NTS







10 PRIMARY BURSTING STEEL
SCALE NTS



GIRDER DESIGN GUIDE:

1. POST TENSIONING STEEL: THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST TENSIONED DESIGN, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES. METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED SHALL BE AS APPROVED BY THE ENGINEER. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS. ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST TENSION FORCE AFTER LOSSES REQUIRED AT MID SPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGN . THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR PLASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION,FRICTION AND EFFICIENCY OF END ANCHORAGE. ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH SPECIFICATIONS.

2. CONCRETE FOR GIRDERS SHALL HAVE AN INITIAL STRENGTH OF 35 N/mm^2 (5,000 PSI) AND A MINIMUM STRENGTH OF 41 N/mm^2 (6,000 PSI) AT THE AGE OF 28 DAYS.

3. CONCRETE FOR CAST–IN–PLACE SLAB HAVE A MINIMUM STRENGTH OF 28 N/mm^2 (4,000 PSI) AT THE AGE OF 28 DAYS.

4. THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDONS SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

5. THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 35 MPa (5,000 PSI). A GRID CONSISTING OF Ø 12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST–TENSIONING SYSTEM. POST–TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K = 0.00066/m AND u = 0.25 WITH AN ANCHORAGE DEFORMATION OF 6mm.

6. HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTOR'S PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL.THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

7. CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES.

8. ALL REINFORCING BARS SHALL BE GRADE 60.

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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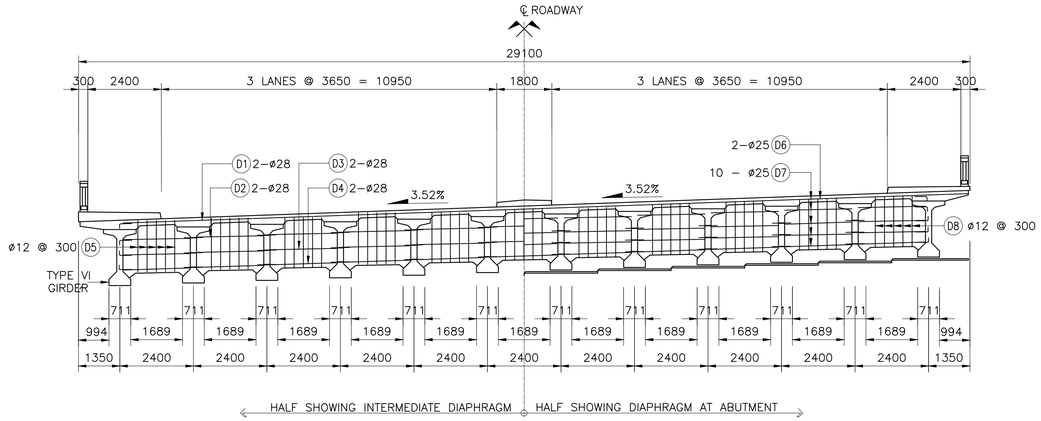
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

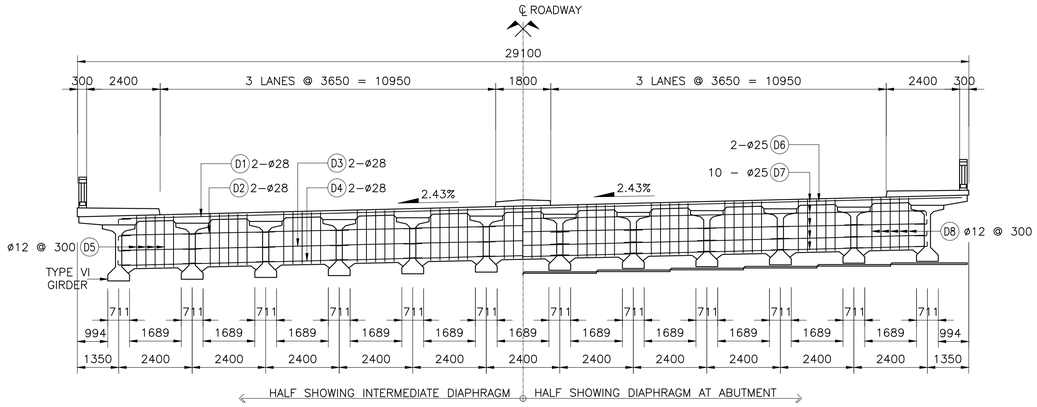
BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4	PROJECT CODE: P3O4-05	DRAWING NO.: A1
TYPE VI GIRDER DETAILS	DATE APPROVED: -	DATE REVISED: - REV.: -



1 DIAPHRAGM ELEVATION AT ABUTMENT A
SCALE 1:100



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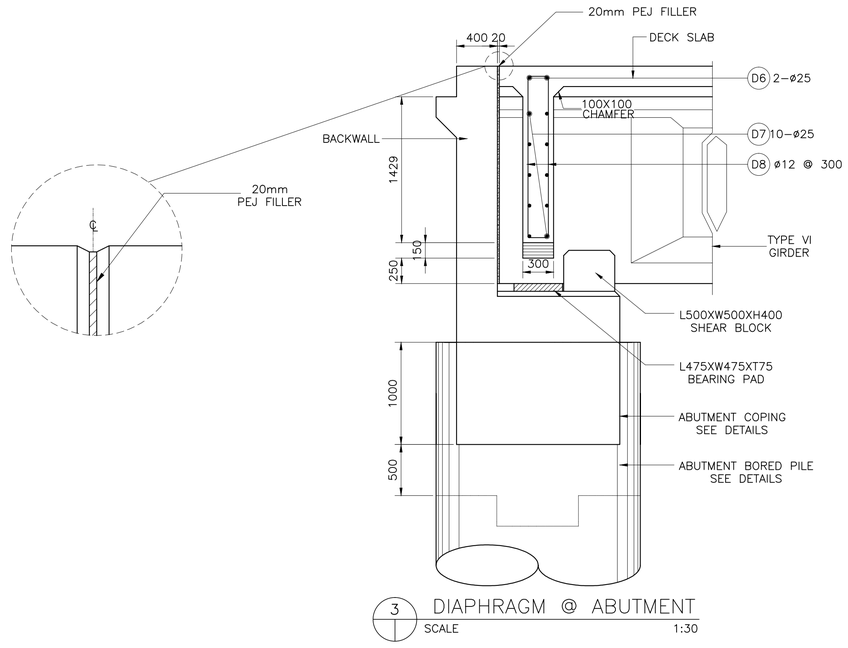

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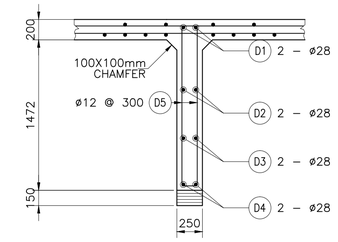
SCALE 1:30



4 INTERMEDIATE DIAPHRAGM
SCALE 1:30

NOTE:

PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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ENGR. ALBERTO C. CAÑETE
TEAM LEADER

SCHEDULE OF REINFORCEMENTS & SUMMARY OF QUANTITIES FOR ONE (1) PRESTRESSED GIRDER ONLY

BAR BENDING DIAGRAM	GIRDER LENGTH (m)	REINFORCING STEEL BARS MARK	SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS a	b	c	d	e	TYPE	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
A, B, C, D, E, F, G, H	29.00	PG1	20	AS SHOWN	6	34.2	0.075	0.075			C	34.35	206.1	2.466	510	1. QUANTITIES ARE FOR 1 GIRDER ONLY. 2. PG10 IS FOR INTERIOR GIRDER ONLY. 3. PG11 IS FOR EXTERIOR GIRDER ONLY 4. PG12 FOR ABUT. ONLY 5. PG13 FOR PIER ONLY 6. VERIFY ACTUAL LENGTH OF THE BRIDGE
		PG2	25	AS SHOWN	6	34.2	0.14	0.14			C	34.48	206.88	3.853	801	
		PG3	25	AS SHOWN	2	34.2	0.14	0.14			C	34.48	68.96	3.853	267	
		PG4	12	AS SHOWN	4	34.2					A	34.2	136.8	0.888	126	
		PG5	12	300	114	0.45	1.35	0.6	0.16	0.635	G	3.195	364.23	0.888	330	
		PG6	12	300	114	1	0.5	0.32	0.2		F	2.02	230.28	0.888	212	
		PG7	12	150	1596	0.5	1.1	0.52			D	2.12	3383.52	0.888	3007	
		PG8	12	100	5472	1.52	0.6	1.14			C	3.26	17838.72	0.888	15841	
		PG9	20	AS SHOWN	24	1					A	1	24	2.466	63	
		PG10	28	AS SHOWN	4	0.603					A	0.603	2.412	4.834	16	
		PG11	28	AS SHOWN	4	0.25	0.4				H	0.65	2.6	4.834	16	
		PG12	32	AS SHOWN	2	1.467					A	1.467	2.934	6.313	24	
													TOTAL	GRADE 60	19515	
														GRADE 40	1696	

SCHEDULE OF REINFORCEMENTS FOR DECK SLAB & DIAPHRAGMS

BAR BENDING DIAGRAM	MARK	SIZE (mm)	SPACING (mm)	QUANTITY	ALL DIMENSIONS ARE OUT TO OUT OF REBARS a	b	c	d	e	f	TYPE	LOCATION	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
	DECKSLAB															
A	S1	16	280	122	0.1	35.11					C	DECKSLAB	35.31	4312.86	1.578	6814
	S1'	16	240	17	0.1	35.11					C		35.31	588.50	1.578	934
B	S2	16	160	214	0.1	35.11					C		35.31	7547.51	1.578	11916
	S2'	16	120	33	0.1	35.11					C		35.31	1177.00	1.578	1860
	S3	12	300	117	0.1	34.2	0.1				C		34.4	4025.95	0.888	3580
	S4	16	200	176	0.1	34.2					C		34.4	6038.92	1.578	9538
C	S5	16	AS SHOWN	38	34.2						A		34.2	1299.60	1.578	2057
	S6	16	300	1368	34.2	1.025	0.25				B		35.475	4829.80	1.578	76600
	S7	16	AS SHOWN	16	34.2						A		34.2	547.20	1.578	871
	S8	16	300	114	0.2	2.6	0.2				B		3	342.00	1.578	542
D	S9	12	300	114	0.2	0.2	0.2				B		0.6	68.40	0.888	63
	S10	12	AS SHOWN	6	34.2						A		34.2	205.20	0.888	188
	S11	12	230	149	0.2	1.7	0.2				B		2.1	282.6	0.888	283
														Grade 60 bar		111132 Kg
														SAY		
														Grade 40 bar		4113 Kg
														SAY		
	DIAPHRAGMS															
E	D1	28	AS SHOWN	6	34.5						F	INT. DIAPHRAGM	103.5	621.00	4.834	3007
	D2	28	AS SHOWN	6	34.5						F		103.5	621.00	4.834	3007
	D3	28	AS SHOWN	6	34.5						F		103.5	621.00	4.834	3007
	D4	28	AS SHOWN	6	34.5						F		103.5	621.00	4.834	3007
	D5	12	300	345	1.592	0.17	1.592	0.17	0.144	0.144	G	END DIAPHRAGM AT ABUT.	11.436	3945.42	0.888	3509
F	D6	25	AS SHOWN	6	34.5						F		103.5	621.00	3.853	2394
	D7	25	AS SHOWN	30	34.5						F		103.5	3105.00	3.853	11971
	D8	12	300	345	1.592	0.22	1.592	0.22	0.144	0.144	G		3.42	444.60	0.888	3596
G	NOTE: 40db SPLICES ARE INCLUDED															
	* 16 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		137524 kg
	* 20 mm dia. and above are Grade 60											GRAND TOTAL		Grade 40 bar		7622 kg

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
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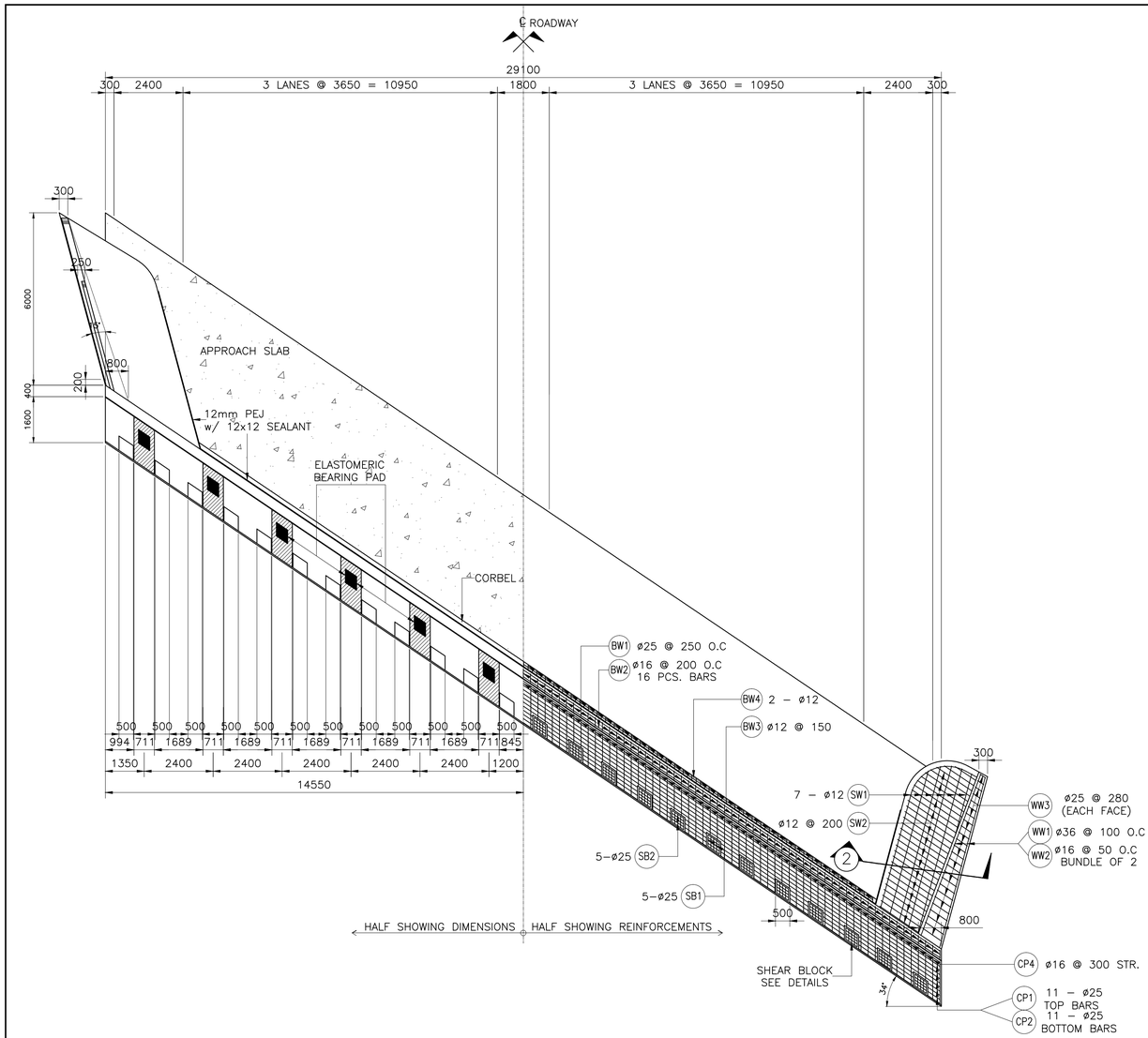
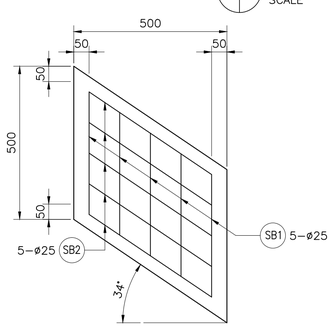
F	

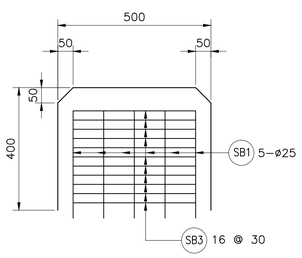
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4	PROJECT CODE	DRAWING NO. / SIZE
DIAPHRAGM ELEVATION AND DETAILS CONCRETE POURING SEQUENCE SCHEDULE OF REINFORCEMENTS AND SUMMARY OF QUANTITIES		P3O4-06 / A1
	DATE APPROVED	DATE REVISED / REV.
	-	- / -



4 ABUTMENT "A" PLAN
SCALE 1:100



5A SHEAR BLOCK PLAN
SCALE 1:10

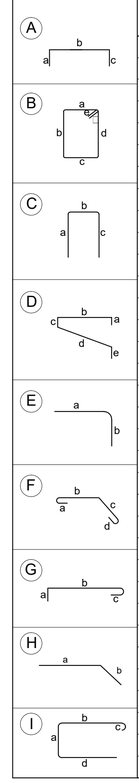


5B SHEAR BLOCK SECTION
SCALE 1:10

5 SHEAR BLOCK DETAILS
SCALE 1:10

SCHEDULE OF REINFORCEMENTS FOR SUBSTRUCTURE FOR ABUTMENT "A" ONLY

BAR BENDING DIAGRAM



REINFORCING STEEL BARS				ALL DIMENSIONS ARE OUT TO OUT OF REBARS												
MARK	SIZE (□□)	SPACING (□□)	QUANTITY	a	b	c	d	e	□	TYPE	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g/□)	TOTAL WEIGHT (□g)	CONCRETE VOLUME (cu.□)
FOR ABUTMENT A ONLY																
CP1	25	AS SHOWN	11	0.5	35.11	0.5				A	COPING	36.11	397.21	7.991	1531	70
CP2	25	AS SHOWN	11	0.5	35.11	0.5				A		36.11	397.21	7.991	1531	
CP3	16	AS SHOWN	12	35.11								35.11	421.32	3.854	667	
CP4	16	300	118	1.5	1.6	1.5	1.6	0.1	0.1			6.4	755.41	1.579	1193	
BW1	25	300	188	2.3	0.4	2.3				C	BACKWALL	5	590.00	1.579	2277	36
BW2	16	AS SHOWN	16	35.11						STR.		35.11	561.76	1.579	887	
BW3	12	150	235	0.5	0.1	0.65	0.1	0.1		D		1.45	340.75	0.888	306	
BW4	12	AS SHOWN	2	35.11						STR		35.11	70.22	0.888	63	
WW1	16	100	104	6							WINGWALL	6	624.00	0.888	989	29
WW2	16	50	112	6								6	672.00	0.888	5377	
WW3	36	300	80	0.5	3.43	0.5	3.2	0.1	0.1			7.825	626.00	0.888	989	
TIES	12	AS SHOWN	7.4	0.2	0.4	0.2				G		0.8	563.20	0.888	502	
SB1	25	AS SHOWN	120	0.65	0.5					C	SHEAR BLOCK	1.15	138.00	0.888	534	3
SB2	25	200	144	0.65	0.5					C		1.15	165.60	0.888	644	
SB3	16	30	264	0.45	0.45	0.45	0.45	0.2	0.2	B		2.2	580.80	0.888	918	
R1	12	AS SHOWN	14	5.9	1					E	APPROACH RAILING	6.9	96.60	0.888	86	3
R2	16	200	19	0.2	1	0.2				G		1.4	26.60	0.888	47	
R3	12	300	8	0.6	1	0.2				I		1.8	14.40	0.888	16	
SW1	12	AS SHOWN	14	6.0						STR	APPROACH SIDEWALK	6.0	84.00	0.888	79	6
SW2	12	200	60	0.1	1.25	0.4	0.1			F		3.1	186.00	0.888	173	
SW3	12	AS SHOWN	6	6.0						STR		6.0	36.00	0.888	39	
											GRAND TOTAL		Grade 40 bar		973.40	147 CU.M.
													SAY		974 Kgs	
* 12 mm dia. and below are Grade 40											GRAND TOTAL		Grade 60 bar		17584.00	
* 16 mm dia. and above are Grade 60													SAY		17584 kgs	

NOTE:
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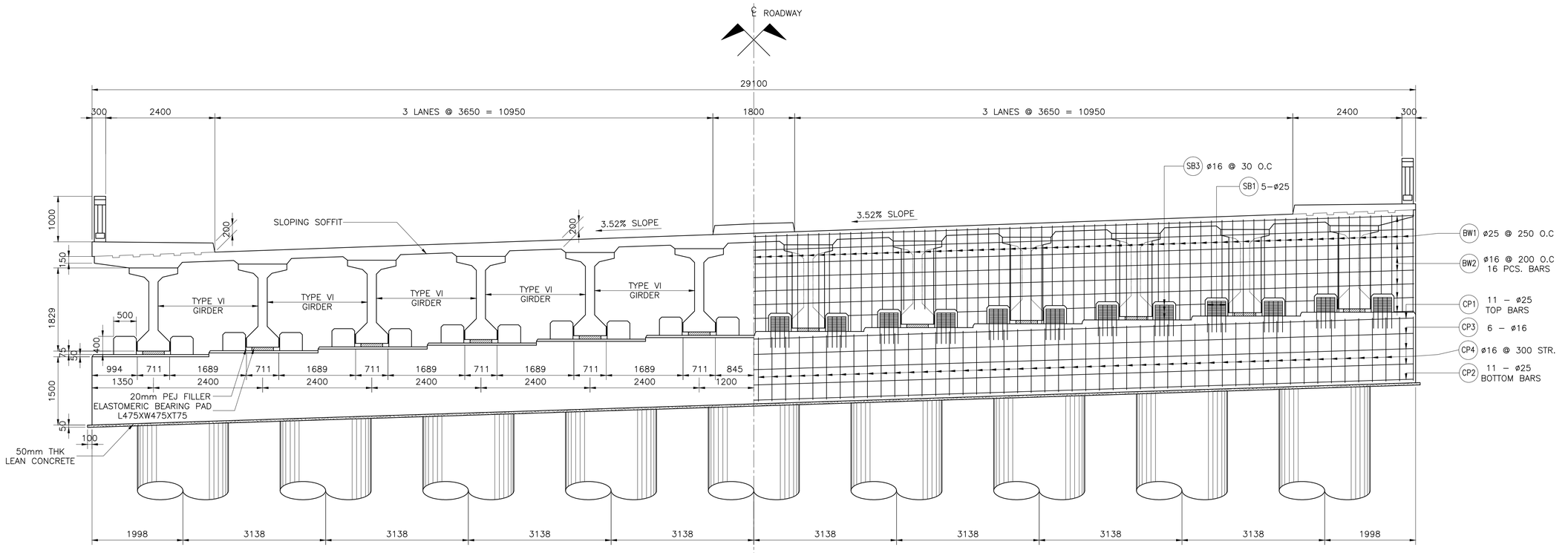
CONSULTANTS	SUBMITTED BY	DESIGNED BY	BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - OVERPASS 4 ABUTMENT PLAN SHEAR BLOCK DETAILS SCHEDULE OF REINFORCEMENT FOR ABUT. A	AS SHOWN PROJECT CODE DATE APPROVED -	DRAFT DRAWING DRAWING NO. P3O4-07 SIZE A1 DATE REVISED - REV. -



HALF SHOWING INTERMEDIATE DIAPHRAGM | HALF SHOWING DIAPHRAGM @ ABUTMENT

1 ABUTMENT "A" SECTION
SCALE 1:50

NOTE:

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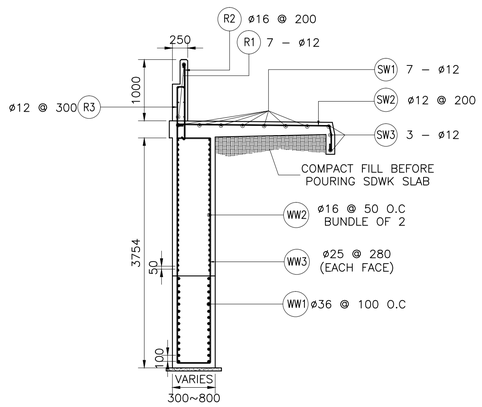
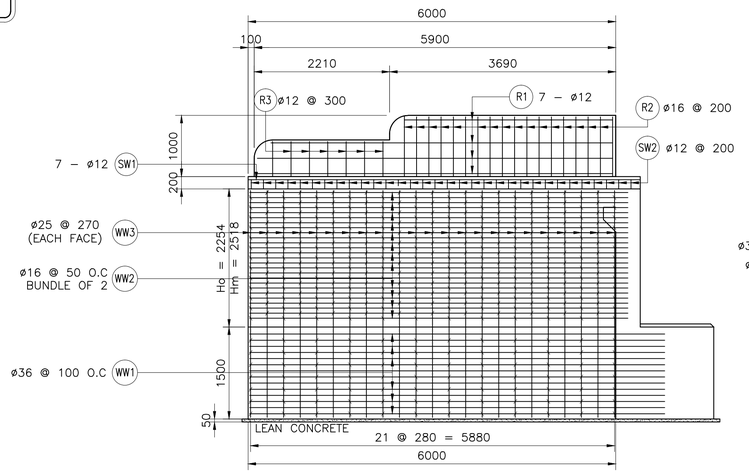
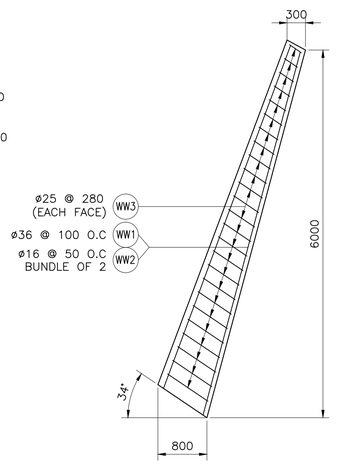


2A SECTION
SCALE 1:50

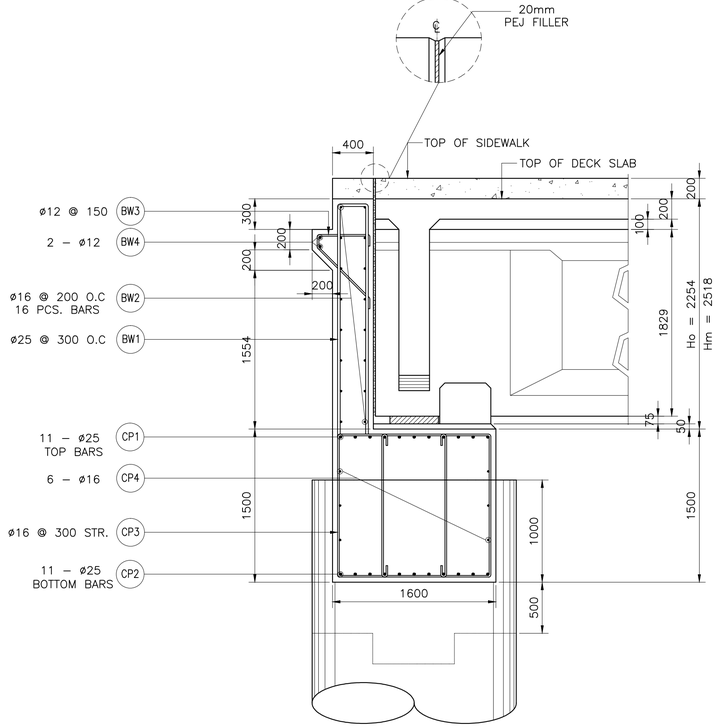


2B ELEVATION
SCALE 1:50



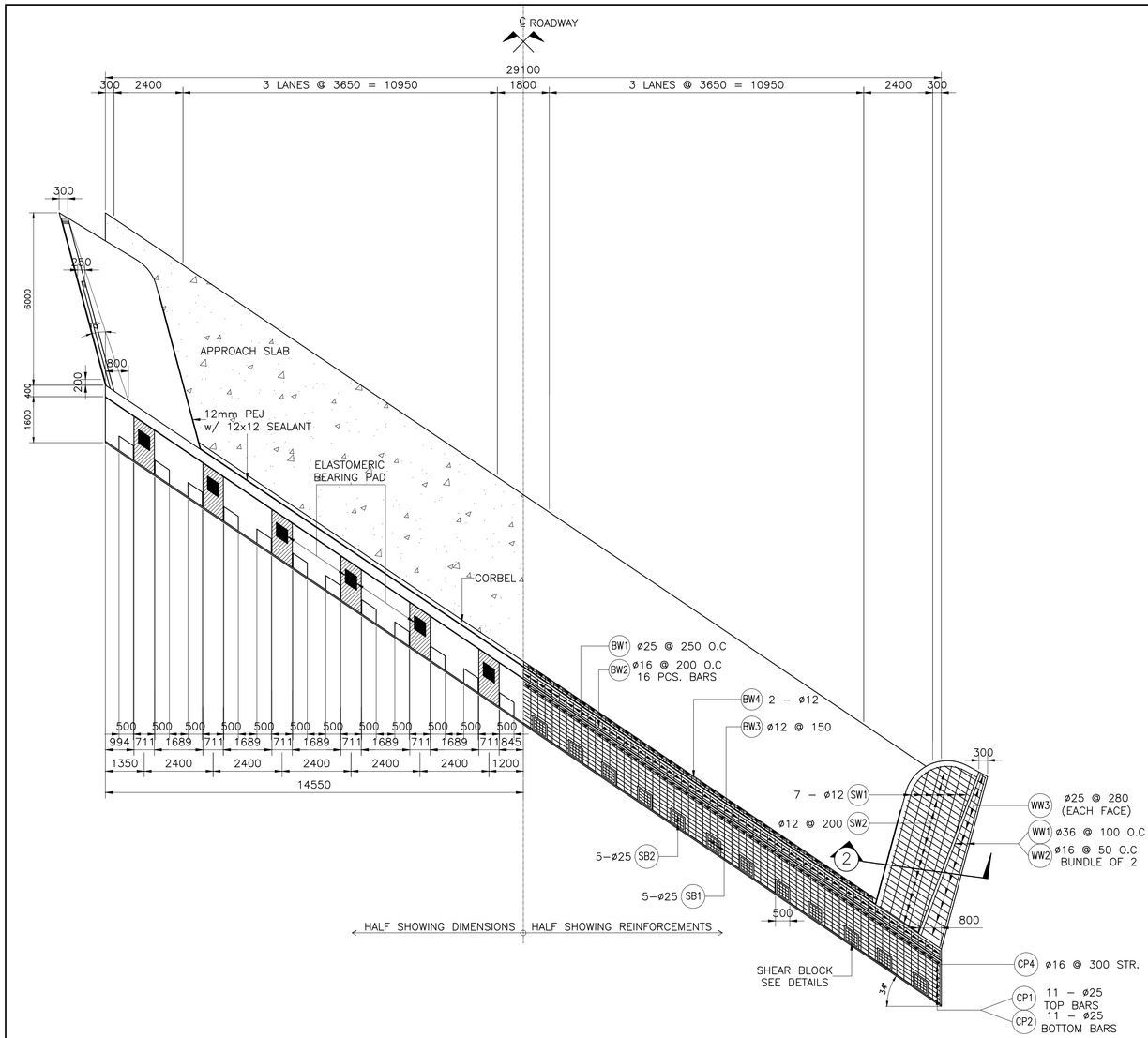
2C PLAN
SCALE 1:50

2 WINGWALL DETAILS
SCALE 1:50

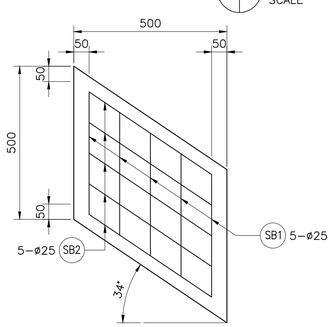


3 BACKWALL AND COPING ELEVATION
SCALE 1:30

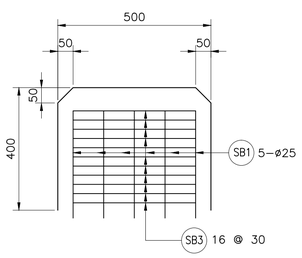
CONSULTANTS	SUBMITTED BY	DESIGNED BY		REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4 ABUTMENT A DETAILS ABUTMENT SECTION, WINGWALL DETAILS BACK WALL AND COPING DETAILS	AS SHOWN PROJECT CODE P3O4-08 DATE APPROVED -	DRAFT DRAWING DRAWING NO. SIZE A1 DATE REVISED - REV. -



4 ABUTMENT PLAN
SCALE 1:100



5A SHEAR BLOCK PLAN
SCALE 1:10

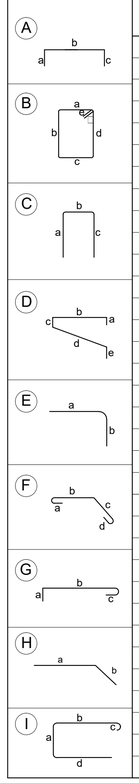


5B SHEAR BLOCK SECTION
SCALE 1:10

5 SHEAR BLOCK DETAILS
SCALE 1:10

SCHEDULE OF REINFORCEMENTS FOR SUBSTRUCTURE FOR ABUTMENT "B" ONLY

BAR BENDING DIAGRAM



REINFORCING STEEL BARS — ALL DIMENSIONS ARE OUT TO OUT OF REBARS

MARK	SIZE (□□)	SPACING (□□)	QUANTITY	a	b	c	d	e	□	TYPE	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g/□)	TOTAL WEIGHT (□g)	CONCRETE VOLUME (cu.□)
FOR ABUTMENT B ONLY																
CP1	25	AS SHOWN	11	0.5	35.11	0.5				A	COPING	36.11	397.21	7.991	1531	70
CP2	25	AS SHOWN	11	0.5	35.11	0.5				A		36.11	397.21	7.991	1531	
CP3	16	AS SHOWN	12	35.11								35.11	421.32	3.854	667	
CP4	16	300	34	1.5	1.6	1.5	1.6	0.1	0.1			6.4	216.32	1.579	345	
BW1	25	300	118	2.3	0.4	2.3				C	BACKWALL	5	590.00	1.579	2277	36
BW2	16	AS SHOWN	16	35.11						STR.		35.11	561.76	1.579	887	
BW3	12	150	235	0.5	0.1	0.65	0.1	0.1		D		1.45	340.75	0.888	306	
BW4	12	AS SHOWN	2	35.11						STR		35.11	70.22	0.888	63	
WW1	16	100	104	6							WINGWALL	6	624.00	0.888	989	29
WW2	36	50	112	6								6	672.00	0.888	5377	
WW3	16	300	80	0.5	3.43	0.5	3.4	0.1	0.1			7.825	626.00	0.888	989	
TIES	12	AS SHOWN	704	0.2	0.4	0.2				G		0.8	563.20	0.888	502	
SB1	25	AS SHOWN	120	0.65	0.5					C	SHEAR BLOCK	1.15	138.00	0.888	534	3
SB2	25	200	144	0.65	0.5					C		1.15	165.00	0.888	644	
SB3	16	30	264	0.45	0.45	0.45	0.45	0.2	0.2	B		2.2	580.80	0.888	989	
R1	12	AS SHOWN	14	5.9	1					E	APPROACH RAILING	6.9	96.60	0.888	94	3
R2	16	200	19	0.2	1	0.2				G		1.4	26.60	0.888	47	
R3	12	300	8	0.6	1	0.2				I		1.8	14.40	0.888	16	
SW1	12	AS SHOWN	14	6.0						STR	APPROACH SIDEWALK	6.0	84.00	0.888	79	6
SW2	12	200	60	0.1	1.25	0.4	0.1			F		3.1	186.00	0.888	173	
SW3	12	AS SHOWN	6	6.0						STR		6.0	36.00	0.888	39	

GRAND TOTAL	Grade 40 bar	973.40	147 CU.M.
	SAY	974 kgs	
GRAND TOTAL	Grade 60 bar	16736.20	
	SAY	16737 kgs	

* 12 mm dia. and below are Grade 40
* 16 mm dia. and above are Grade 60

NOTE:
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF RA 9184, APPROVED BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGNS UNDERTAKEN BY THE CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGNS NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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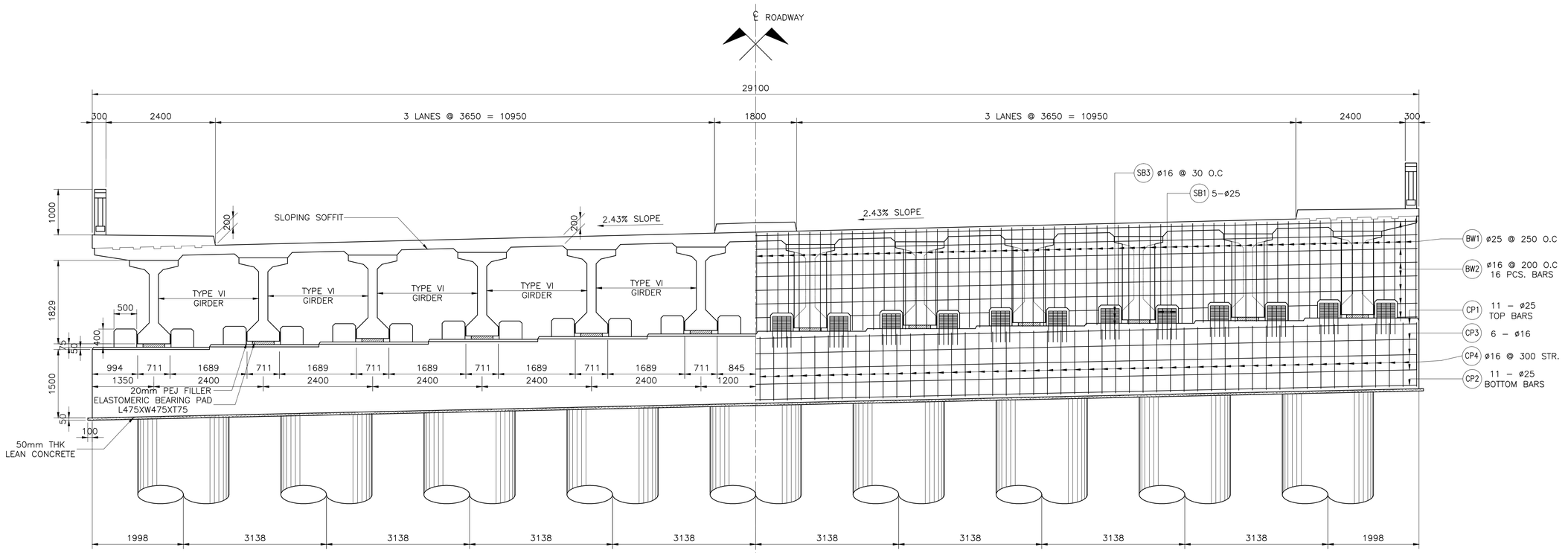
ENGR. ALBERTO C. CAÑETE
TEAM LEADER

CONSULTANTS	SUBMITTED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE P.P.,F.ASEP PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

BCDA Bases Conversion and Development Authority

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - OVERPASS 4		P3O4-09 / A1
ABUTMENT B PLAN SHEAR BLOCK DETAILS SCHEDULE OF REINFORCEMENT FOR ABUT. B	DATE APPROVED	DATE REVISED / REV.
	-	- / -



HALF SHOWING INTERMEDIATE DIAPHRAGM ℄ HALF SHOWING DIAPHRAGM @ ABUTMENT

1 ABUTMENT "B" SECTION
SCALE 1:50

NOTE:

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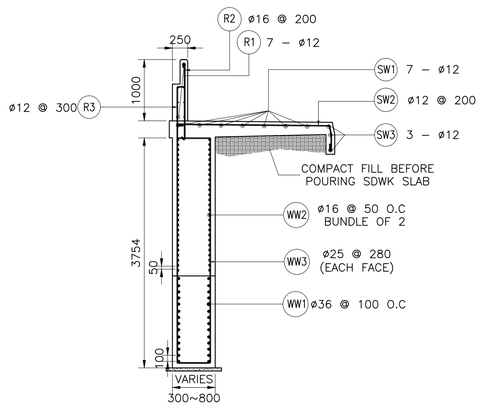
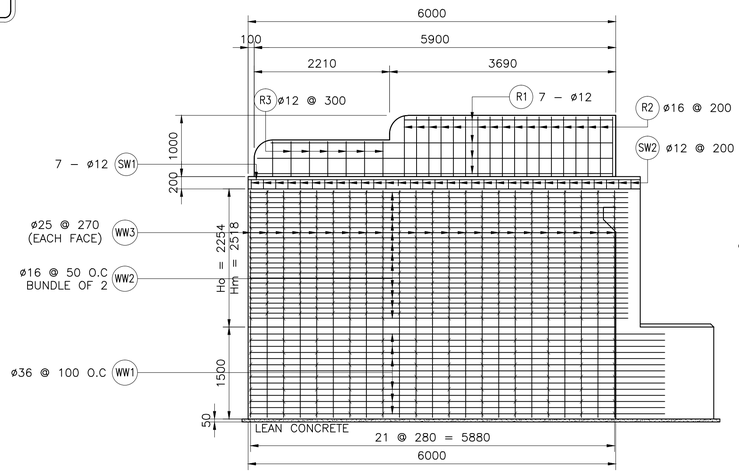
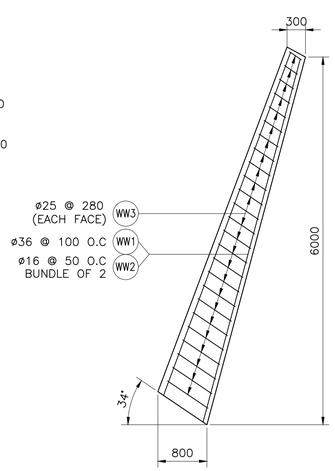


2A SECTION
SCALE 1:50

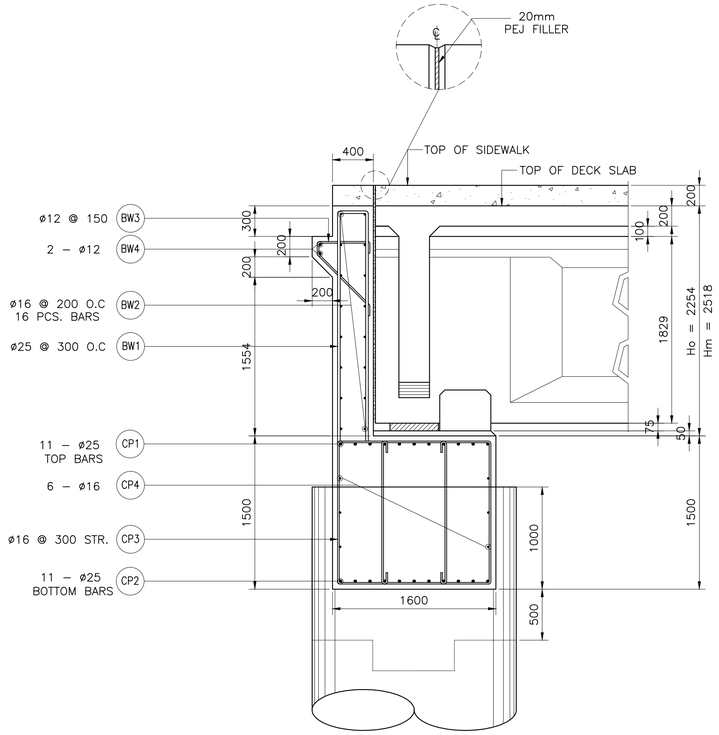


2B ELEVATION
SCALE 1:50



2C PLAN
SCALE 1:50

2 WINGWALL DETAILS
SCALE 1:50



3 BACKWALL AND COPING ELEVATION
SCALE 1:30

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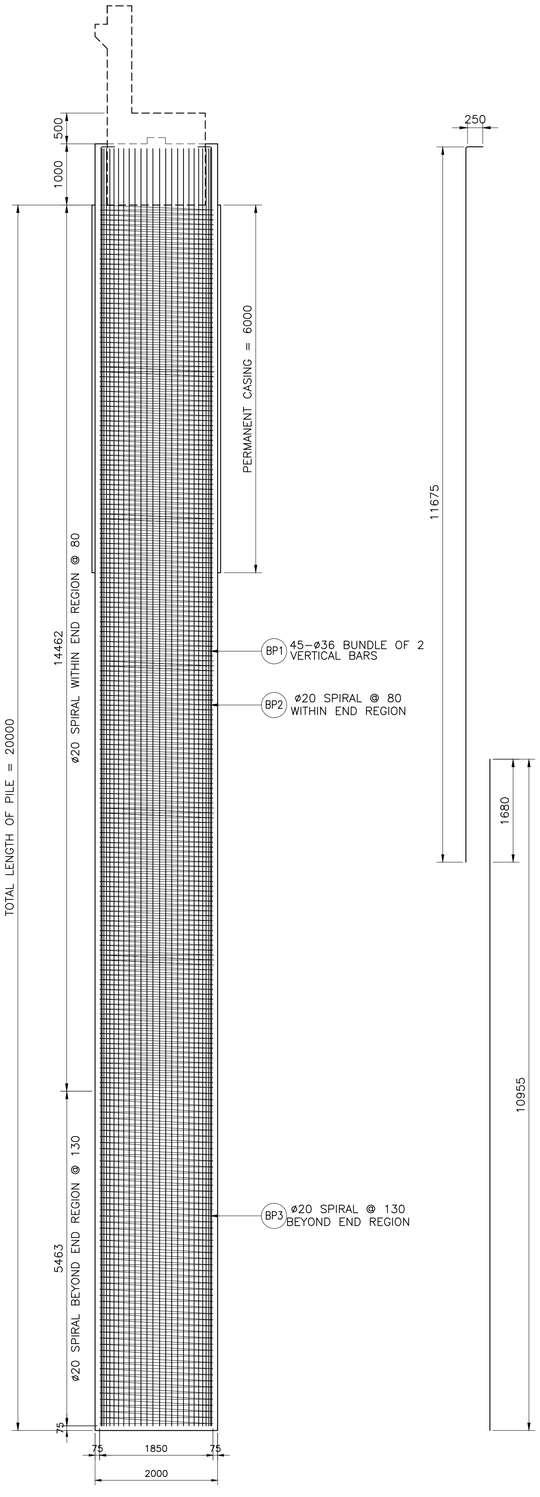
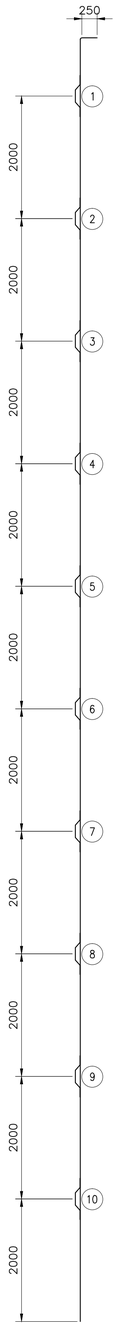
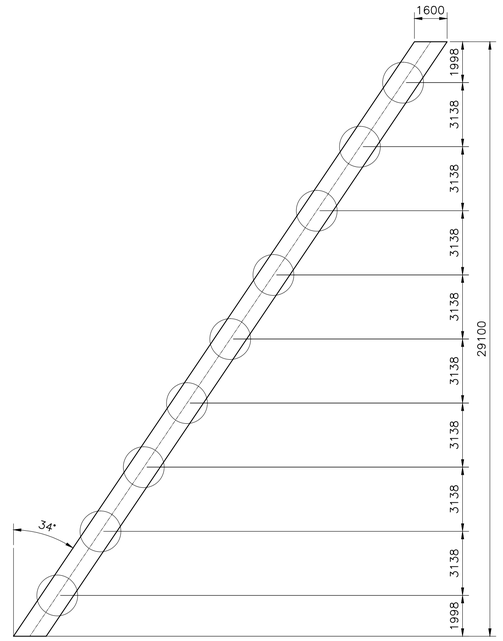
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	DRAFT DRAWING
	PROJECT CODE	DRAWING NO. / SIZE
SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4		P3O4-10 / A1
ABUTMENT B DETAILS ABUTMENT SECTION, WINGWALL DETAILS BACK WALL AND COPING DETAILS	DATE APPROVED	DATE REVISED / REV.
	-	- / -



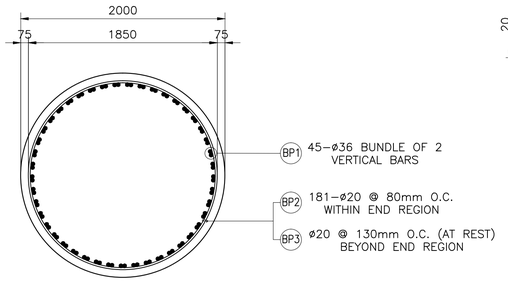
1 VERTICAL SECTION
SCALE 1:50



2 SCHEMATIC DETAIL
SCALE 1:50



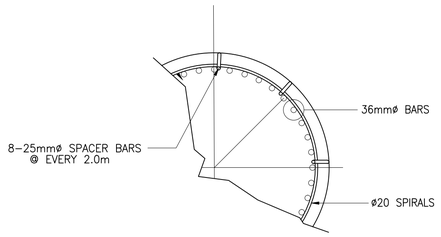
4 BORED PILE – COPING PLAN
SCALE NTS

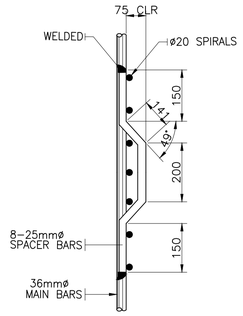


5 BORED PILE SECTION
SCALE 1:20

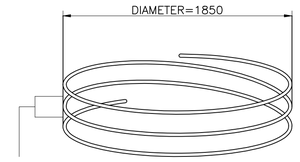
3 STIFFENER LAYOUT
SCALE 1:50

NOTES:
1. THE REINFORCEMENT ARE LAP–WELD CONNECTED (FLARED–V–GROOVE TYPE)
2. SPIRAL REINFORCEMENT ARE LAP WELD CONNECTED. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS. D1.4–92, STRUCTURAL WELDING CODE REINFORCEMENT STEEL, USE ELECTRODE E90XX–X.
3. CARE SHOULD BE TAKEN NOT TO DAMAGE BORED PILE/COLUMN MAIN BARS DURING WELDING.
4. SPIRAL REINFORCEMENT SHOULD BE BUTT WELDED WHERE SPIRAL PITCH IS 50mm OR LESS. OTHERWISE USE LAP WELD SPLICE.
5. ADDITIONAL STIFFENERS/GUIDE BARS MAY BE PROVIDED TO STABILIZE THE PILE REINFORCEMENT DURING FABRICATION/ ERECTION SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. DIRTY CONCRETE (MINIMUM 600mm HEIGHT) SHOULD BE REMOVED PRIOR TO CONSTRUCTION OF BACKWALL AND COPING BEAM.
7. CONCRETE – CONCRETE SHALL CONFORM TO THE REQUIREMENT OF CLASS AA CONCRETE WITH 28MPa. CYLINDER STRENGTH AND 19mm MAXIMUM AGGREGATE SIZE.
8. REINFORCEMENT – ALL REINFORCEMENT STEEL SHALL BE DEFORMED BAR CONFORMING TO AASHTO M31 (ASTM 315) GRADE 60. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 100 BAR DIAMETER APART, LENGTH OF SPLICES SHALL BE 2200mm.
9. THE STABILIZATION FOR BORED PILE EXCAVATION (SUCH AS USING BENTONITE SLURRY OR TEMPORARY STEEL CASING ETC.) SHALL BE CONSIDERED BY THE CONTRACTOR AND THE COST IS SUBSIDIARY IN PAY ITEM 400(17). THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION METHOD FOR ENGINEERS APPROVAL BEFORE CONSTRUCTION.

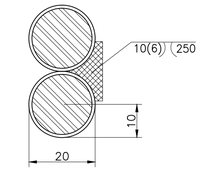




6 BORED PILE CONFINEMENT RING & SPACER DETAIL
SCALE NTS

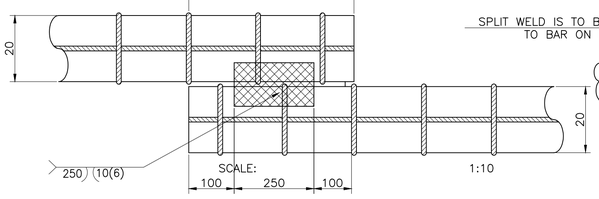


ø20 SPIRAL FINAL PITCH BEYOND END REGION @ 130
WITHIN END REGION @ 80

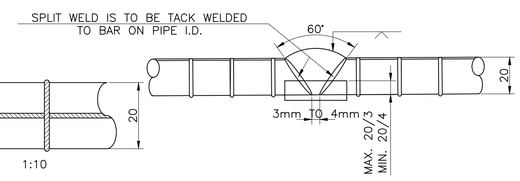


DOUBLE FLARED –V– GROOVE WELD
SCALE SECTION – A

PLAN (BEFORE WELDING)



DIRECT LAP JOINT WITH BARS IN CONTACT



DETAILS OF SINGLE–V–GROOVE BUTT WELD

7 DETAILS OF TIES REINFORCEMENT LAP–WELD CONNECTION
SCALE NTS

SCHEDULE OF REINFORCEMENT FOR BORED PILE AT ABUTMENT

BAR BENDING DIAGRAM	BAR MARK	SIZE (□□)	SPACING (□□)	QTY	BAR SHAPE	BAR DIMENSION (ALL DIMENSIONS ARE OUT TO OUT OF BARS) a	b	c	d	e	LOCATION	BAR LENGTH (□)	TOTAL LENGTH (□)	UNIT WEIGHT (□g./□.)	TOTAL WEIGHT (□g.)	VOLUME CONCRETE (cu.□.)
	FOR ONE (1) BORED PILE AT ABUTMENT (L=20m, Ø1600mm)															
	BP1	36	AS SHOWN	90	A	0.40	20	–	–	–	BORED PILE	20.40	1836.00	7.991	14672	63
	BP2	20	AS SHOWN	181	D	18.85	–	–	–	–		18.85	3411.77	2.486	8415	
	BP3	20	AS SHOWN	43	D	18.85	–	–	–	–		18.85	810.97	2.486	2002	
	BP4	25	AS SHOWN	80	C	0.15	0.141	0.20	0.141	0.15		0.782	62.56	3.854	243	
													TOTAL		25332 Kgs	63 cu.m

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SUBMITTED BY
EFREN L. DAVID
PRESIDENT - UIC
DATE: -

DESIGNED BY
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PROJECT MANAGER - UIC
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BCDA Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

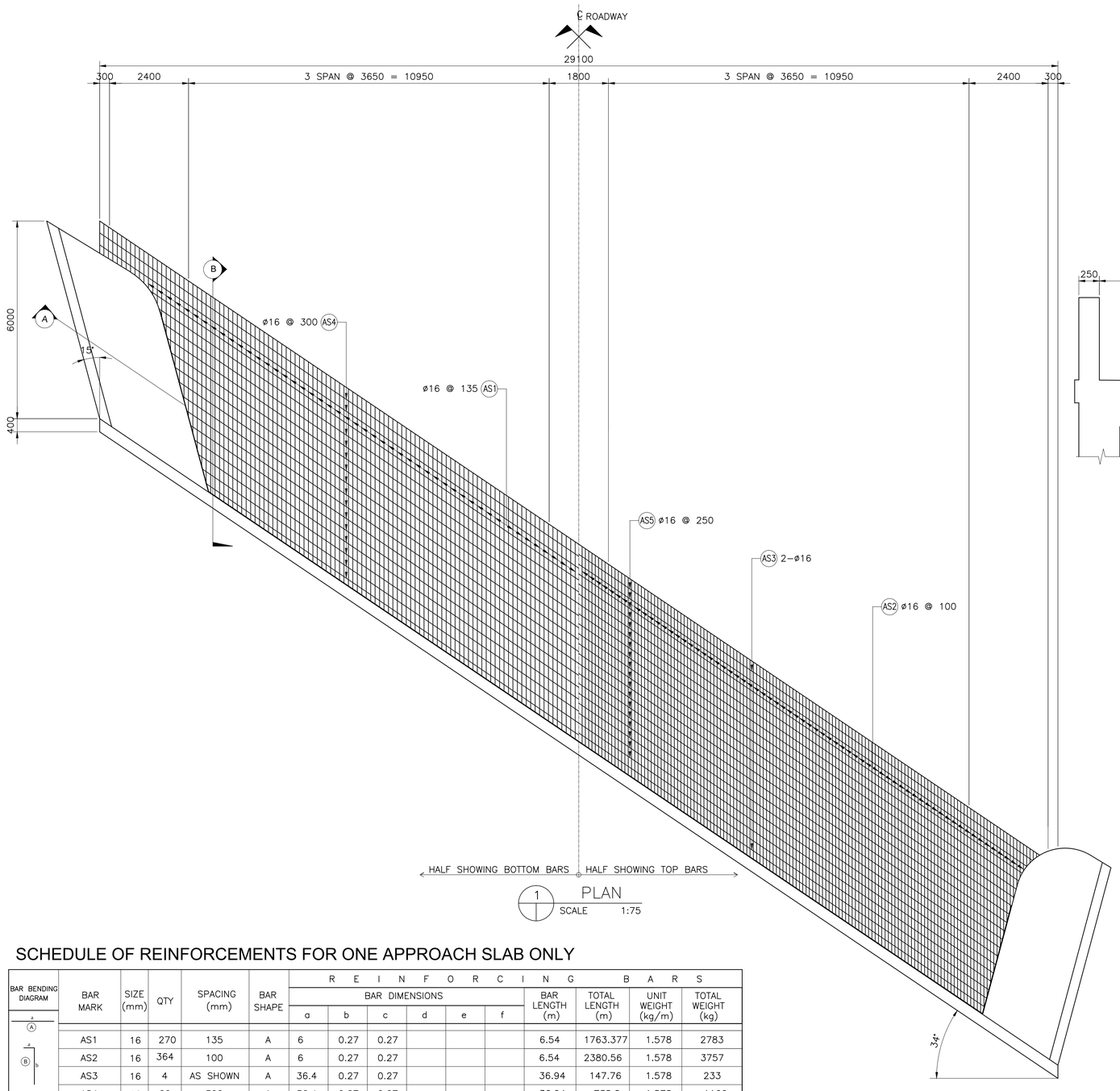
APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

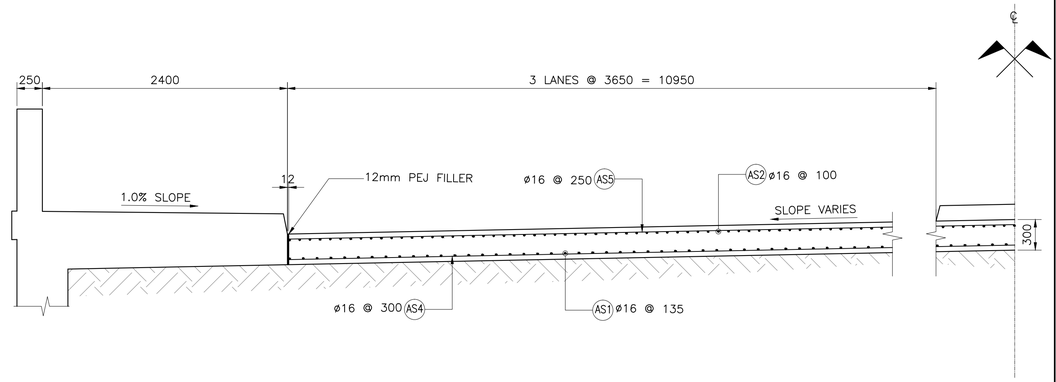
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT AIRPORT TO NCC (KM.1□500-KM.16□000) - OVERPASS 4

BORED PILE DETAILS

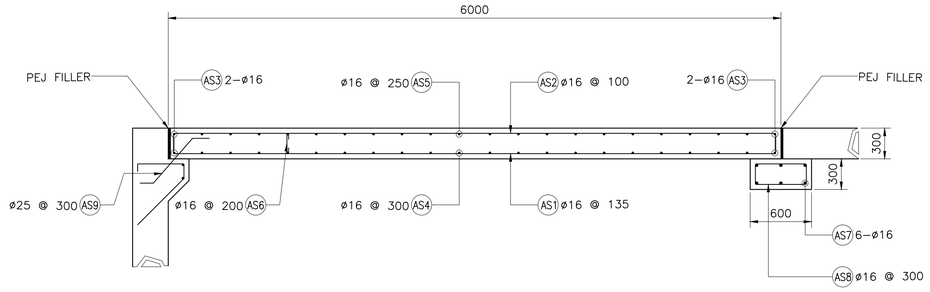
SCALE	DRAWING STATUS
AS SHOWN	DRAFT DRAWING
PROJECT CODE	DRAWING NO. / SIZE
	P3O4-11 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -



1 PLAN
SCALE 1:75



2 SECTION "A"
SCALE 1:30



3 SECTION "B"
SCALE 1:30

SCHEDULE OF REINFORCEMENTS FOR ONE APPROACH SLAB ONLY

BAR BENDING DIAGRAM	BAR MARK	SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	REINFORCING BAR DIMENSIONS a	b	c	d	e	f	BAR LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
	AS1	16	270	135	A	6	0.27	0.27				6.54	1763.377	1.578	2783
	AS2	16	364	100	A	6	0.27	0.27				6.54	2380.56	1.578	3757
	AS3	16	4	AS SHOWN	A	36.4	0.27	0.27				36.94	147.76	1.578	233
	AS4	16	20	300	A	36.4	0.27	0.27				36.94	738.8	1.578	1166
	AS5	16	24	250	A	36.4	0.27	0.27				36.94	886.56	1.578	1399
	AS6	16	176	200	A	0.3	0.27	0.27				0.84	147.462	1.578	233
	AS7	16	6	AS SHOWN	A	36.4	0.27	0.27				36.94	221.64	1.578	350
	AS8	16	121	300	B	0.5	0.5	0.1	0.1			1.2	145.6	1.578	230
	AS9	25	121	300	C	0.13	0.6	0.13				0.86	104.3466	3.853	402
													TOTAL GRADE 60		10554 Kgs

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BCDA Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS		DATE
A		
B		
C		
D		
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PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT AIRPORT TO NCC (KM.1+500-KM.16+000) - OVERPASS 4

APPROACH SLAB DETAILS
SCHEDULE OF REINFORCEMENT FOR APPROACH SLAB

SCALE	DRAWING STATUS	
AS SHOWN	DRAFT DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
	P304-12	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC ACCESS ROADS

KM. 1□500.00 TO KM. 16□000.00

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
BRIDGE NO. 2

APPROACH SLAB	"A"	:	STA. 3□378.70 - STA. 3□384.70	□ 6.00 □
BRIDGE		:	STA. 3□384.70 - STA. 3□528.70	□ 144.0 □
APPROACH SLAB	"B"	:	STA. 3□528.70 - STA. 3□534.70	□ 6.00 □
			TOTAL LENGTH	□ 156.0 □

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
BRIDGE NO. 3

APPROACH SLAB	"A"	:	STA. 10□746.80 - STA. 10□752.80	□ 6.00 □
BRIDGE		:	STA. 10□752.80 - STA. 10□896.80	□ 144.0 □
APPROACH SLAB	"B"	:	STA. 10□896.80 - STA. 10□902.80	□ 6.00 □
			TOTAL LENGTH	□ 156.0 □

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
BRIDGE NO. 4

APPROACH SLAB	"A"	:	STA. 13□565.80 - STA. 13□571.80	□ 6.00 □
BRIDGE		:	STA. 13□571.80 - STA. 13□608.40	□ 36.60 □
APPROACH SLAB	"B"	:	STA. 13□608.40 - STA. 13□614.40	□ 6.00 □
			TOTAL LENGTH	□ 48.60 □

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
OVERPASS 1

BRIDGE CROSSING ROAD 1 : STA. 3□100.00

APPROACH SLAB	"A"	:	STA. -0□026.93 - STA. -0□032.93	6.00
BRIDGE		:	STA. -0□032.93 - STA. 0□032.93	65.86
APPROACH SLAB	"B"	:	STA. 0□032.93 - STA. 0□038.93	6.00
			TOTAL LENGTH	77.86

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
OVERPASS 2

APPROACH SLAB	"A"	:	STA. 3□908.10 - STA. 3□914.10	□	6.00 □
BRIDGE		:	STA. 3□914.10 - STA. 3□945.40	□	31.30 □
APPROACH SLAB	"B"	:	STA. 3□945.40 - STA. 3□951.40	□	6.00 □
			TOTAL LENGTH	□	43.3 □

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
OVERPASS 3

BRIDGE CROSSING ROAD 1 : STA. 6□213.00

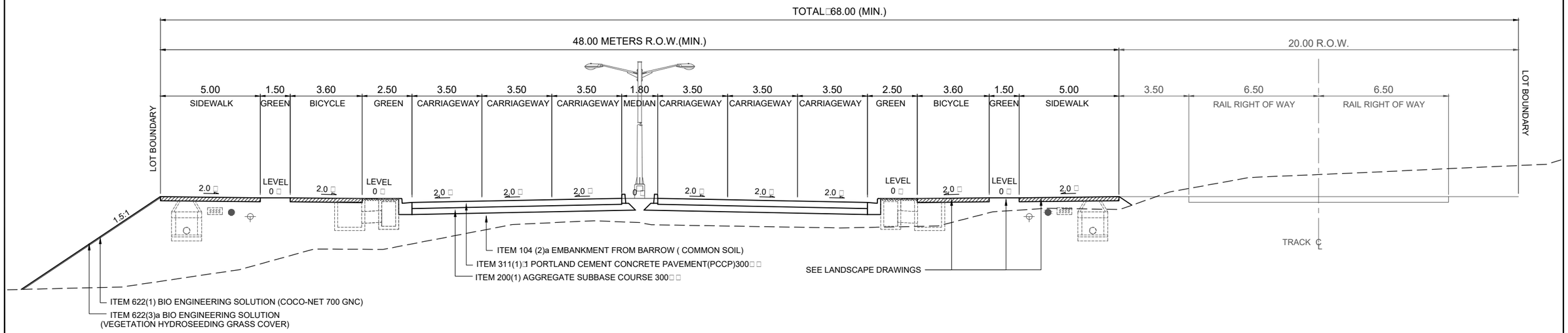
APPROACH SLAB	"A"	:	STA. -0□026.43 - STA. -0□032.43	6.00
BRIDGE		:	STA. -0□032.43 - STA. 0□032.43	64.86
APPROACH SLAB	"B"	:	STA. 0□032.43 - STA. 0□038.43	6.00
			TOTAL LENGTH	76.86

DETAILED ENGINEERING DESIGN OF THE
PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD,
MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

AIRPORT TO NCC (KM. 1□500.00 - KM. 16□000.00)
OVERPASS 4

APPROACH SLAB	"A"	:	STA. 7□495.41 - STA. 7□501.41	□ 6.00 □
BRIDGE		:	STA. 7□501.41 - STA. 7□535.61	□ 34.20 □
APPROACH SLAB	"B"	:	STA. 7□535.61 - STA. 7□541.61	□ 6.00 □
			TOTAL LENGTH	□ 46.20 □

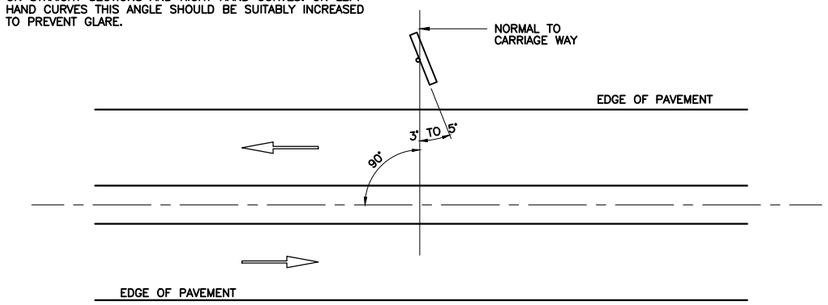
ROAD STANDARDS AND DETAILS



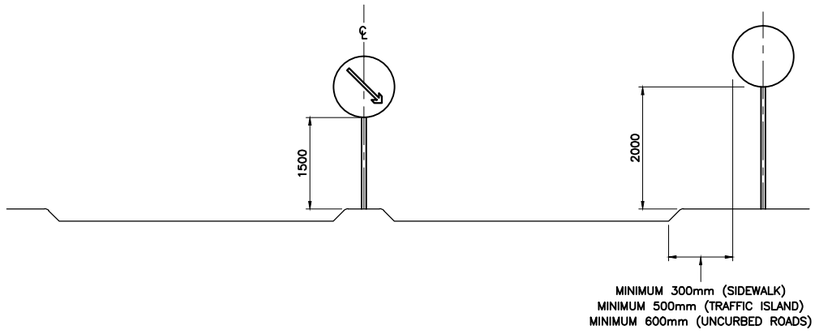
TYPICAL CROSS SECTION (INSIDE & OUTSIDE THE CITY)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD TYPICAL ROAD CROSS SECTION	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: RS-1 DATE REVISED: -

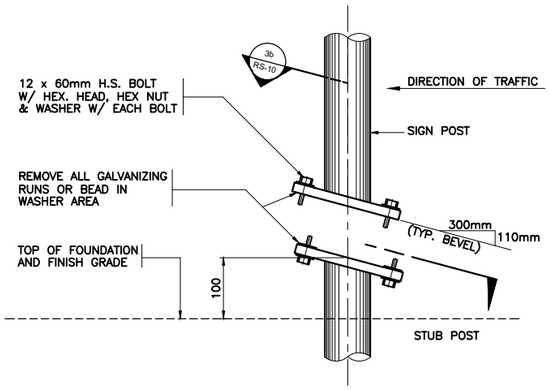
NOTE:
SIGN SHALL BE TURNED 3° TO 5° FROM ONCOMING TRAFFIC ON STRAIGHT SECTIONS AND RIGHT HAND CURVES. ON LEFT HAND CURVES THIS ANGLE SHOULD BE SUITABLY INCREASED TO PREVENT GLARE.



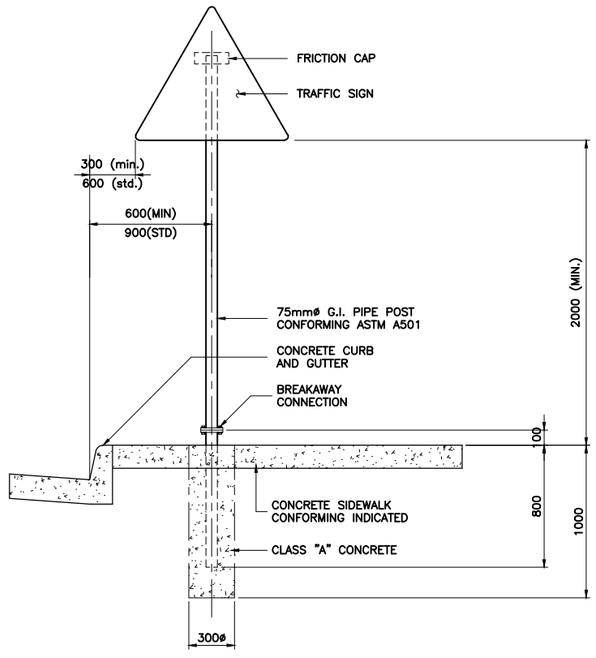
1 RS-10 PLAN VIEW



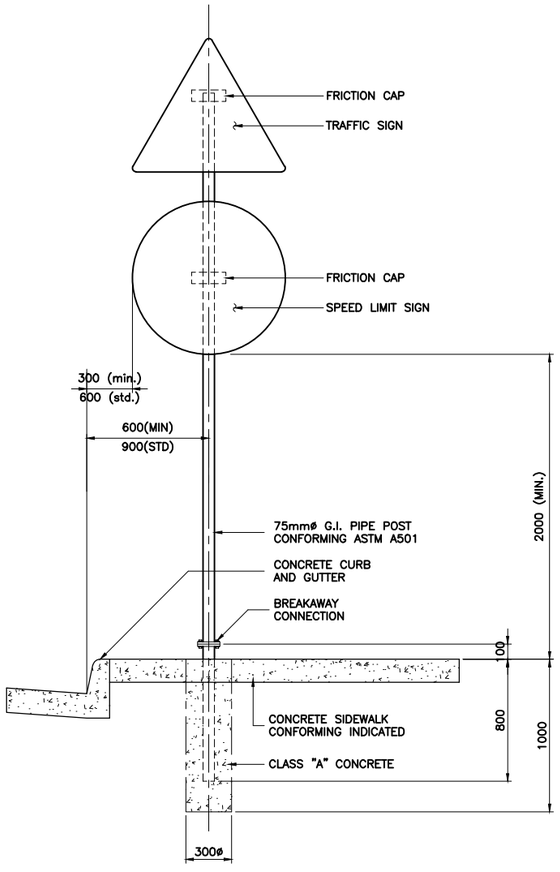
2 RS-10 SIGN POSITIONS NOT TO SCALE



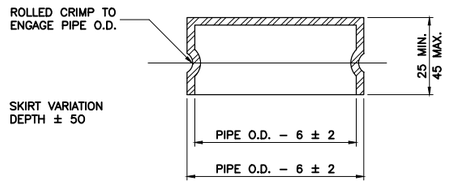
3a RS-10 ELEVATION



6 RS-10 INSTALLATION DETAILS (TYPE A)



7 RS-10 INSTALLATION DETAILS (TYPE B)



4 RS-10 FRICTION CAP DETAIL

NOTES:

FRICTION CAPS MAY BE MANUFACTURED FROM EITHER HOT ROLLED OR COLD ROLLED STEEL SHEETS MINIMUM SHEET THICKNESS SHALL BE GAUGE 24.

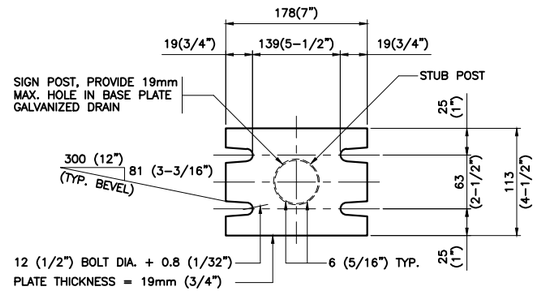
THE RIM EDGE SHALL BE REASONABLY STRAIGHT AND SMOOTH.

CAPS SHALL BE SIZED AND FORMED IN SUCH MANNER AS TO PRODUCE A DRIVE–ON FRICTION FIT AND HAVE NO TENDENCY TO ROCK WHEN SEATED ON THE PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST THE ENTRANCE OF RAIN WATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATION AND SHOW NO EVIDENCE OF METAL FAILURE.

CAPS SHALL HAVE AN ELECTRO DEPOSITED COATING OF ZINC IN ACCORDANCE WITH REQUIREMENTS OF ASTM SPECS. A164, TYPE G.S.

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

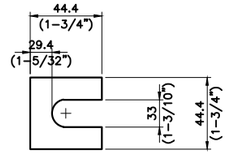
1. ASSEMBLE POST TO STUB WITH BOLTS AND ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES.
2. SHIM AS REQUIRED TO PLUMB POST.
3. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH 300 TO 380mm WRENCH TO BED WASHER AND SHIMS AND CLEAN BOLT TREADS THEN LOOSEN.
4. RETIGHTEN BOLT IN A SYSTEMATIC ORDER TO A TORQUE OF 200in–lb (266.016×10^{-4} KN–M).
5. LOOSEN EACH BOLT AND RETIGHTEN TO THE PRESCRIBED TORQUE IN THE SAME ORDER AS INITIAL TIGHTENING.
6. BURR TREADS AT JUNCTION WITH NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.



3b RS-10 SECTION

SECTION SHOWN ARE FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOTS BEVELS ARE OPPOSITE HAND FROM THAT SHOW FOR INSTALLATIONS ON LEFT SHOULDER. PLATES FOR BASE CONNECTION SHALL CONFORM W/ THE REQUIREMENTS OF ASTM A 36.

3 RS-10 SIGN POST & STUB POST DETAIL



FURNISH 2~012" ± THICK & 2~032" ± THICK SHIMS POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM B 36.

5 RS-10 SHIM DETAIL

NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.

MATERIAL AND FABRICATION SHALL CONFORM TO THE REQUIREMENTS OF GENERAL SPECIFICATIONS.

ALL PIPE POST, STRUCTURAL STEEL, BOLTS AND WASHER SHALL BE GALVANIZED AS PER AASHTO M III.

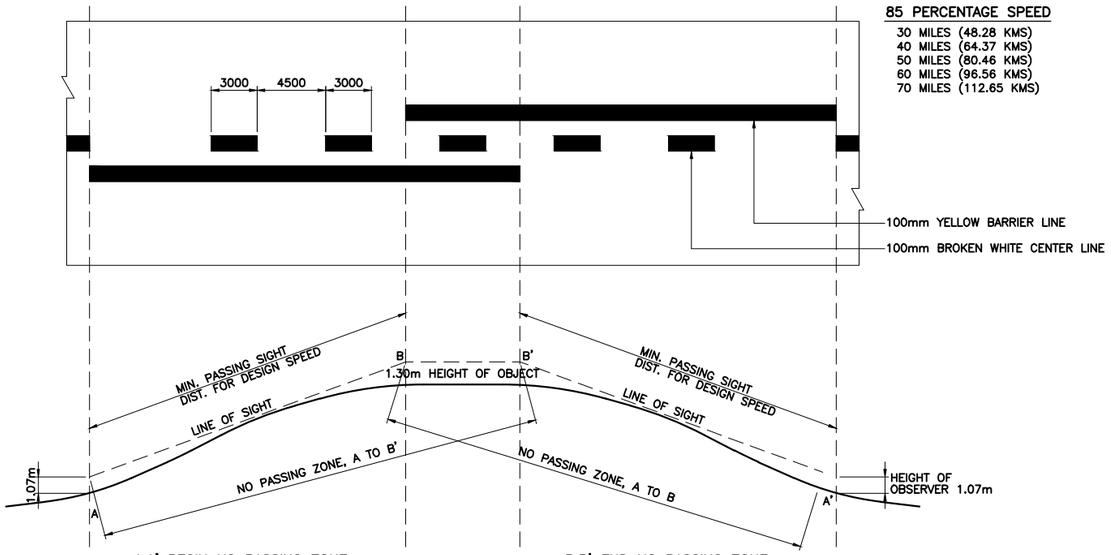
ALL HIGH STRENGTH BOLTS AND WASHER SHALL CONFORM TO ASTM–325 AND ALL HIGH STRENGTH NUTS SHALL BE OF SUCH CAPACITY AS TO DEVELOP THE BOLT STRENGTH.

TIGHTEN THE HIGH STRENGTH BOLTS IN THE BASE CONNECTION BY THE USE OF TORQUE, DO NOT OVERTIGHTEN.

DESIGN TORQUE EQUALS TO 200in–lb(266.016×10^{-4}KN–m)

TYPICAL SIGN MOUNTING DETAILS
NOT TO SCALE

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UIC DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMO, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD MOUNTING/SUPPORT FOR ROAD SIGN TYPICAL SIGN MOUNTING DETAILS	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE: RS-10 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



85 PERCENTAGE SPEED

30 MILES (48.28 KMS)
40 MILES (64.37 KMS)
50 MILES (80.46 KMS)
60 MILES (96.56 KMS)
70 MILES (112.65 KMS)

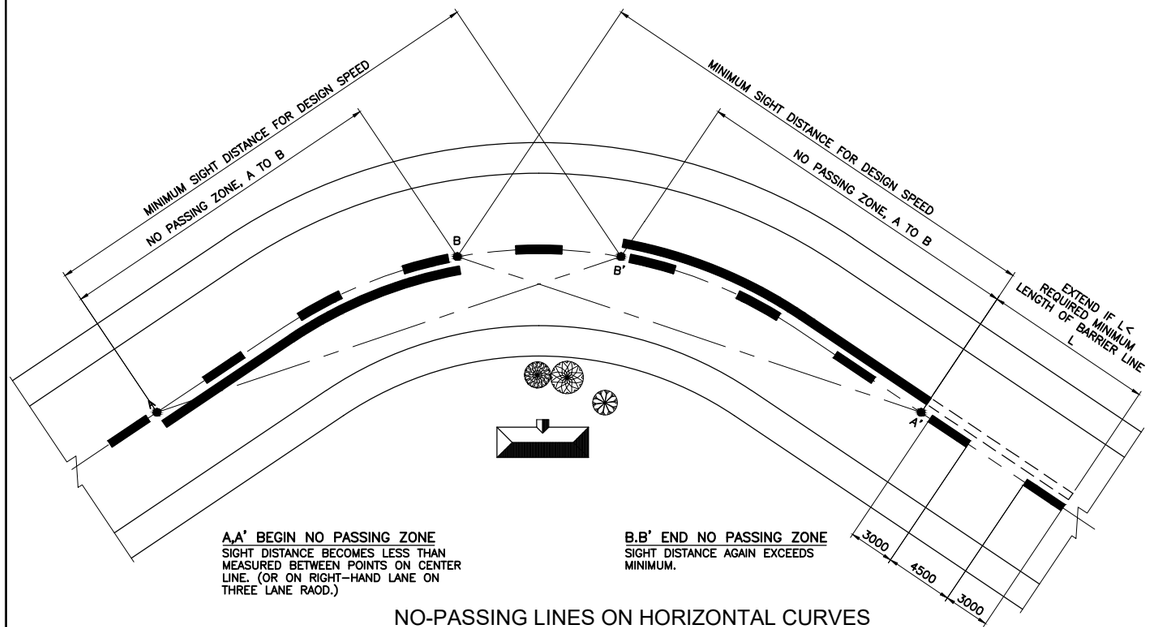
A,A' BEGIN NO PASSING ZONE
SIGHT DISTANCE BECOMES LESS THAN MIN. MEASURED BETWEEN POINTS 1.30 METER ABOVE PAVEMENT.

B.B' END NO PASSING ZONE
SIGHT DISTANCE AGAIN EXCEEDS MINIMUM.

85 PERCENTILE SPEED (K□/□)	MIN. SIGHT DISTANCE (1.15□ to 1.15□) (□)	MIN. LENGTH OR BARRER LINE L (□)	MIN. DISTANCE BETWEEN BARRER LINE (□)
50	150	75	150
60	180	90	175
70	210	105	200

NOTE:
NO PASSING ZONE IN OPPOSITE DIRECTION MAY OR MAY NOT OVERLAP DEPENDING ON VERTICAL ALIGNMENT AND DESIGN SPEED, FOR NO OVERLAPPING TYPE. REFER TO FIGURE 6 OF DPWH MANUAL ON PAVEMENT MARKINGS (1980), IF REQUIRED.

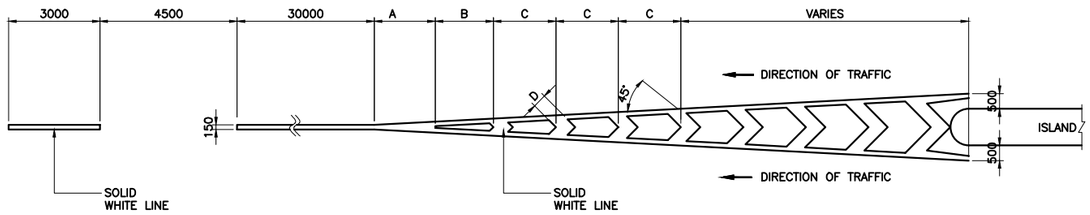
NO-PASSING LINES ON HORIZONTAL CURVES (OVERLAPPING TYPE)
NOT TO SCALE

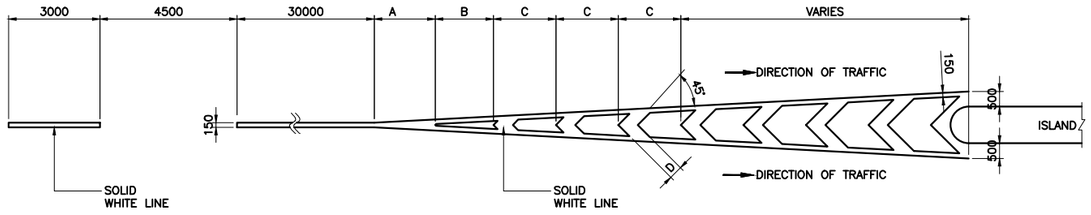


A,A' BEGIN NO PASSING ZONE
SIGHT DISTANCE BECOMES LESS THAN MEASURED BETWEEN POINTS ON CENTER LINE. (OR ON RIGHT-HAND LANE ON THREE LANE RAOD.)

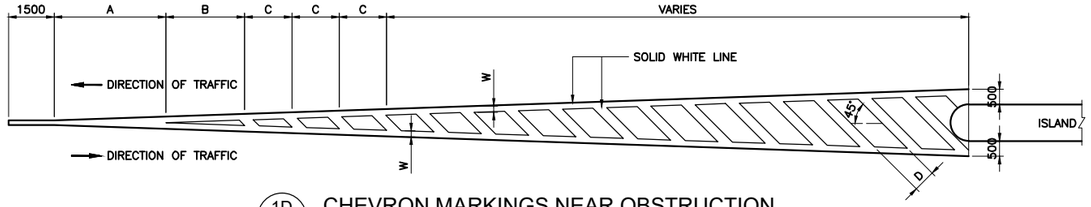
B.B' END NO PASSING ZONE
SIGHT DISTANCE AGAIN EXCEEDS MINIMUM.

NO-PASSING LINES ON HORIZONTAL CURVES
NOT TO SCALE





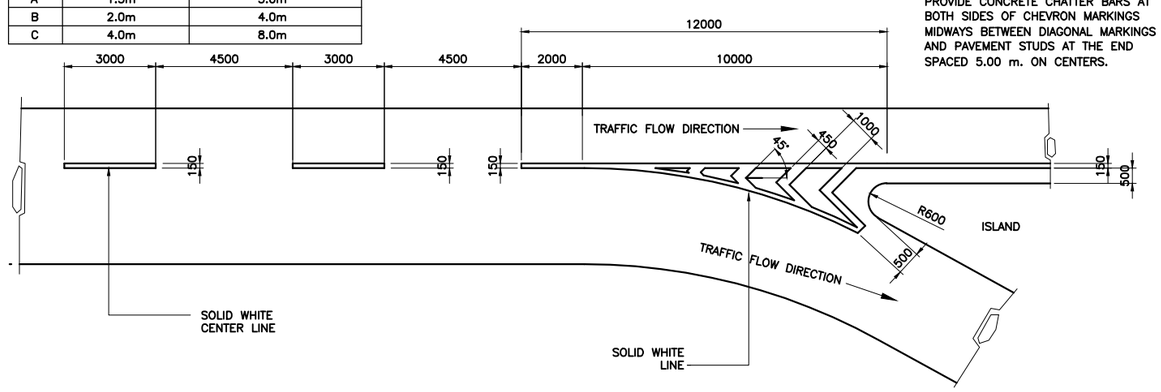
1E / RS-11 — CHEVRON MARKINGS
NOT TO SCALE



1D / RS-11 — CHEVRON MARKINGS NEAR OBSTRUCTION
NOT TO SCALE

	RAMPS & OTHER ROADS (60 KPH OR LESS)	BYPASS MAINLINE (GREATER THAN 60 KPH)
W	150mm	150mm
D	500mm	1000mm
A	1.5m	3.0m
B	2.0m	4.0m
C	4.0m	8.0m

NOTE:
PROVIDE CONCRETE CHATTER BARS AT BOTH SIDES OF CHEVRON MARKINGS MIDWAYS BETWEEN DIAGONAL MARKINGS AND PAVEMENT STUDS AT THE END SPACED 5.00 m. ON CENTERS.



1C / RS-11 — CHEVRON MARKINGS AT INTERSECTION
NOT TO SCALE

1 / RS-11 — STANDARD PAVEMENT MARKINGS
NOT TO SCALE

CONSULTANTS	SUBMITTED BY		CHECKED BY	APPROVED BY
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	JOVITO M. SUNGA OIC - PMD DATE: -

REVISIONS	DATE
A	
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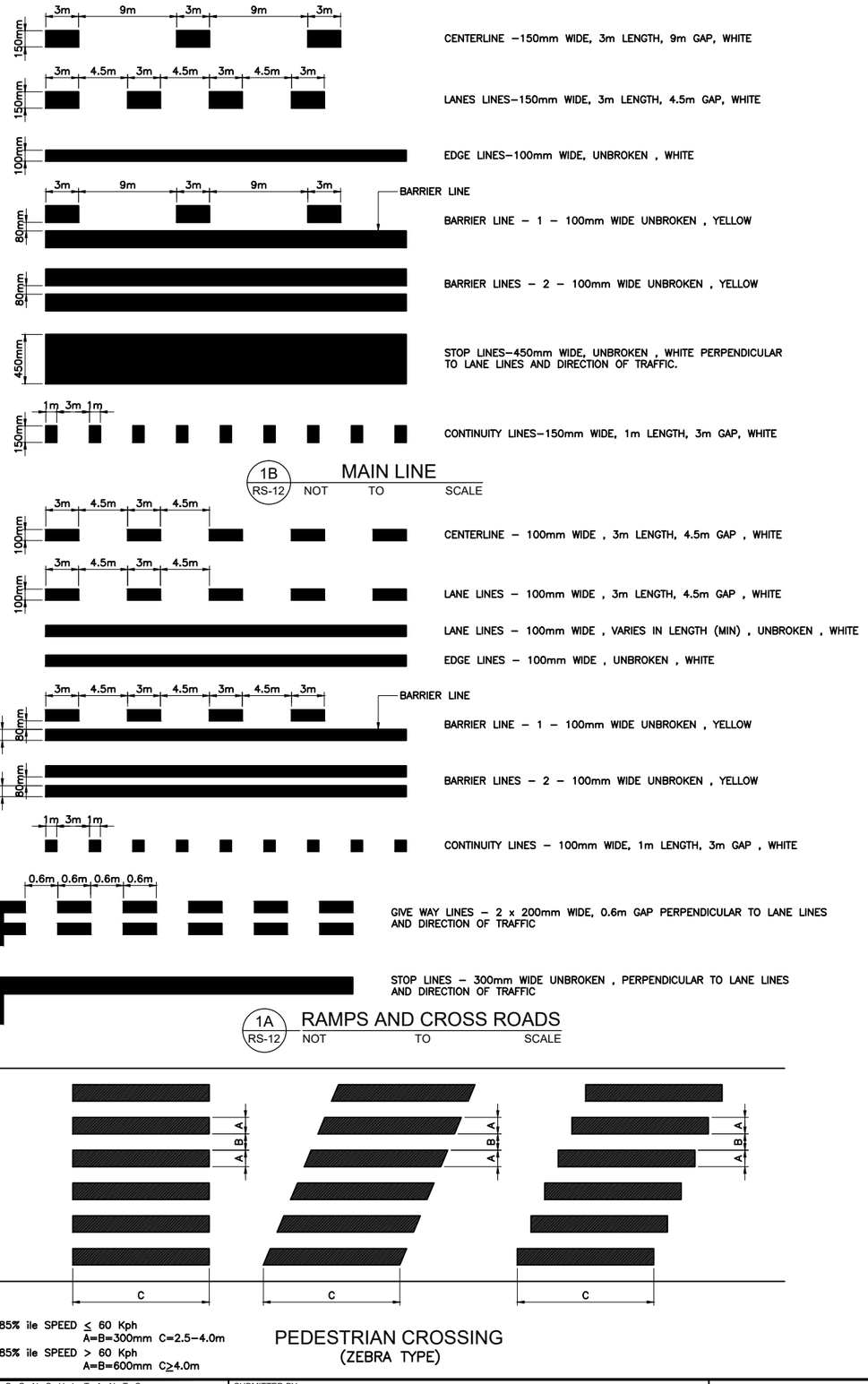
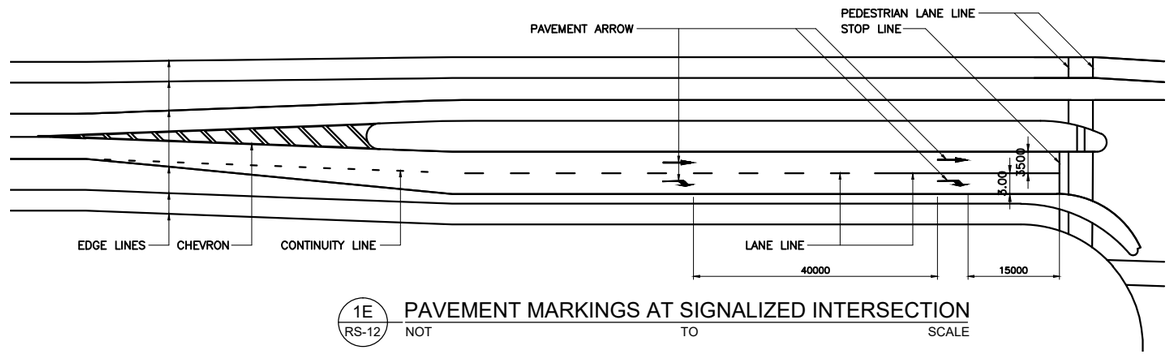
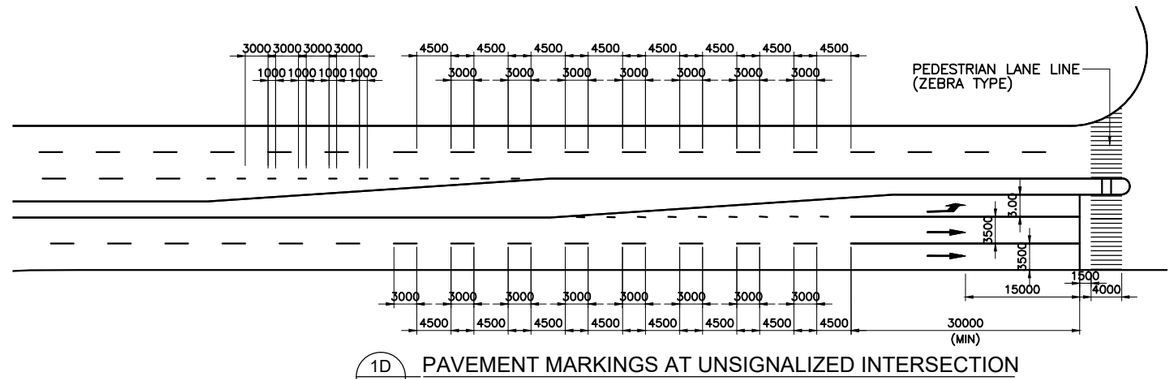
PROJECT TITLE	SCALE	DRAWING STATUS
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	FINAL DRAWINGS
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD	PROJECT CODE	DRAWING NO. / SIZE
STANDARD PAVEMENT MARKINGS Sheet 1 of 2		RS-11 / A1
	DATE APPROVED	DATE REVISED / REV.
	-	- / -

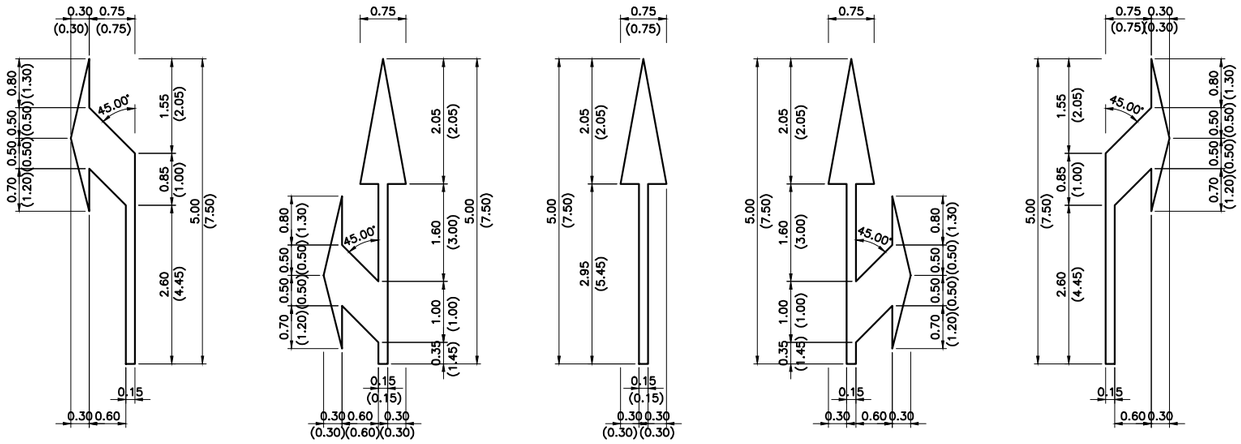




1E RS-12 PAVEMENT MARKINGS AT SIGNALIZED INTERSECTION NOT TO SCALE



1D RS-12 PAVEMENT MARKINGS AT UNSIGNALIZED INTERSECTION NOT TO SCALE



1C RS-12 STANDARD PAVEMENT ARROWS NOT TO SCALE

STANDARD PAVEMENT MARKINGS

NOT TO SCALE

NOTE:

VALUES IN PARENTHESIS ( ) ARE FOR SPEED LIMIT OVER 60 KPH.

MATERIALS, DIMENSIONS AND COLOR OF STANDARD PAVEMENT ARROWS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION DEFINED IN THE DPWH MANUAL FOR PAVEMENT MARKINGS, 2004 EDITION.

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
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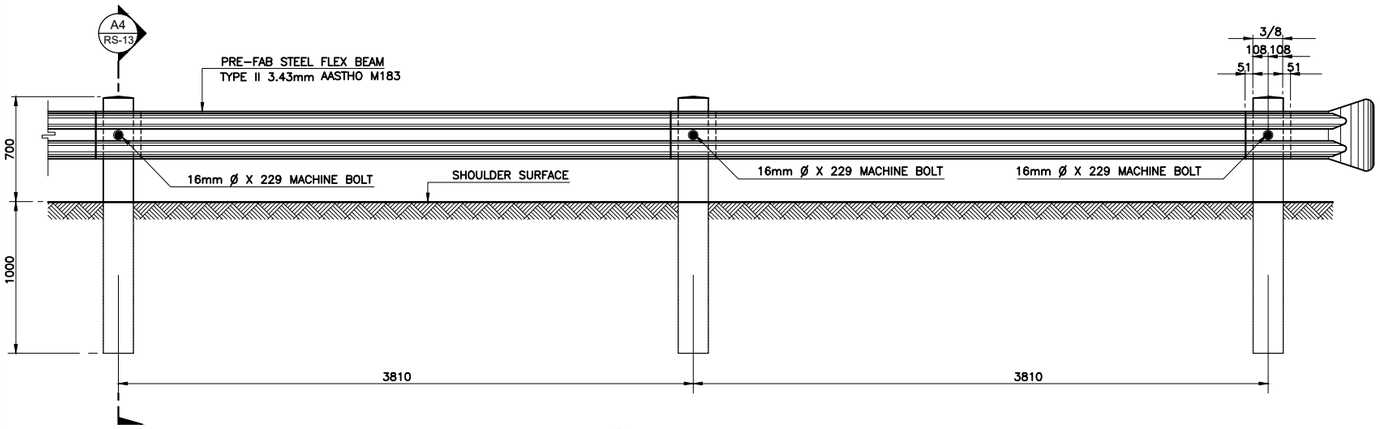
PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

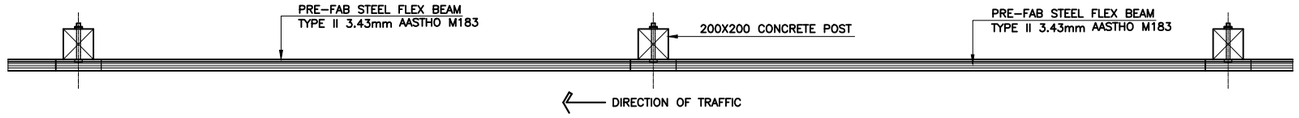
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

STANDARD PAVEMENT MARKINGS
Sheet 2 of 2

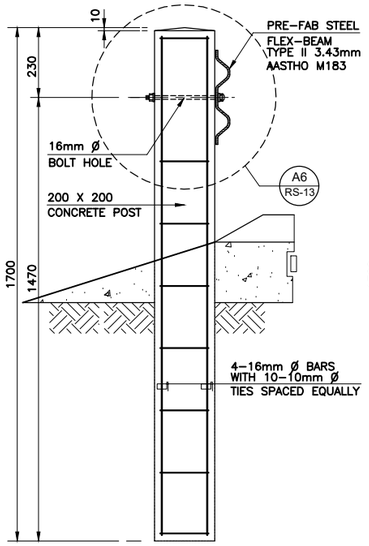
SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO. / SIZE
	RS-12 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -



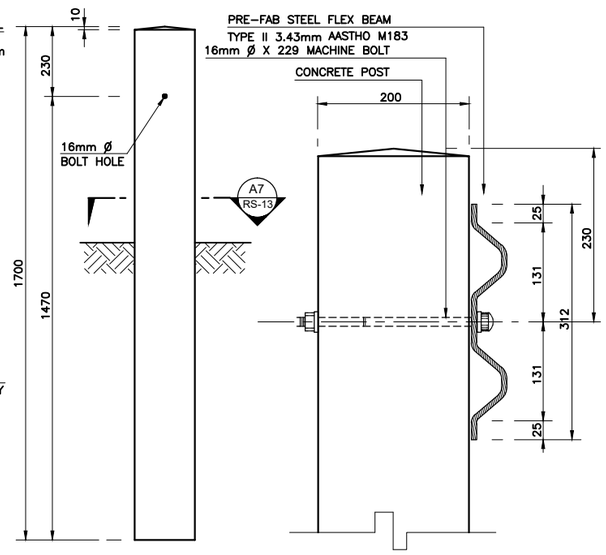
A3 RS-13 ELEVATION SCALE 1:20



A2 RS-13 P L A N SCALE 1:20

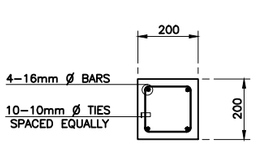


A4 RS-13 SECTION SCALE 1:10

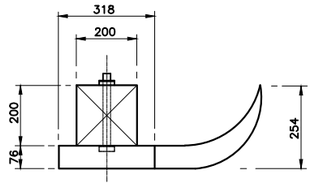


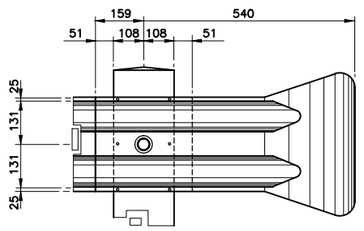
A5 RS-13 ELEVATION POST SCALE 1:10

A6 RS-13 ELEVATION POST SCALE 1:4

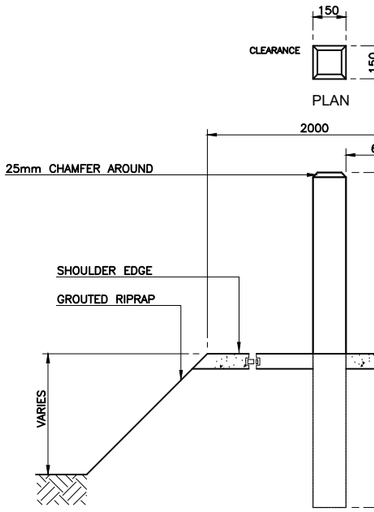


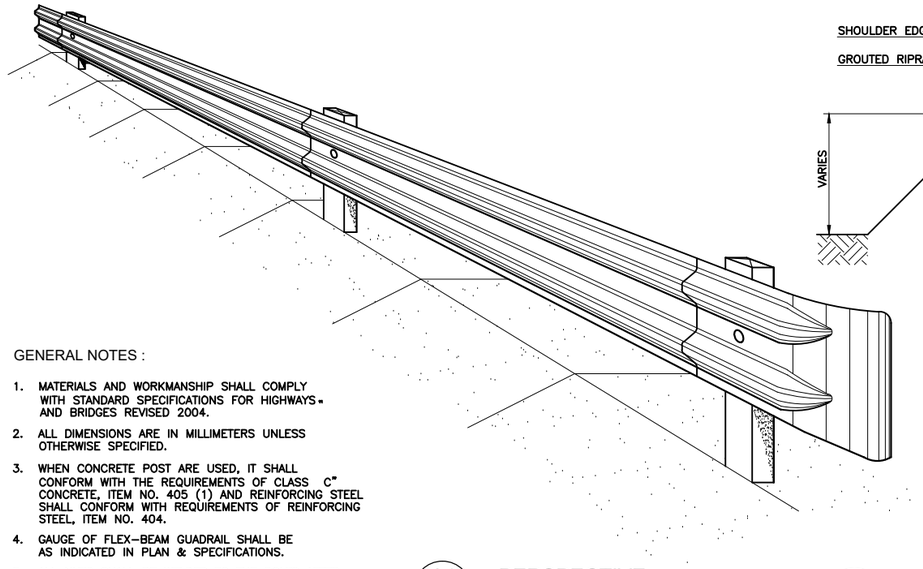
A7 RS-13 SECTION POST SCALE 1:10





A8 RS-13 FLEX-BEAM END DETAIL SCALE 1:10



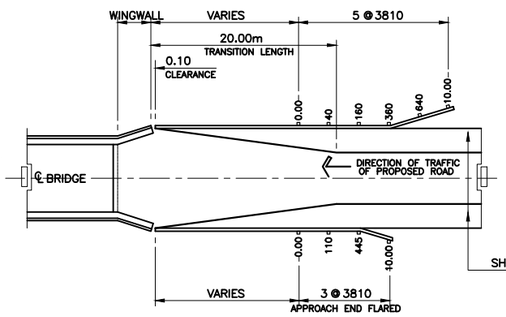


GENERAL NOTES :

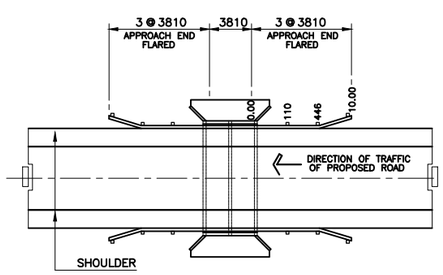
1. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES REVISED 2004.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. WHEN CONCRETE POST ARE USED, IT SHALL CONFORM WITH THE REQUIREMENTS OF CLASS C" CONCRETE, ITEM NO. 405 (1) AND REINFORCING STEEL SHALL CONFORM WITH REQUIREMENTS OF REINFORCING STEEL, ITEM NO. 404.
4. GAUGE OF FLEX-BEAM GUADRAIL SHALL BE AS INDICATED IN PLAN & SPECIFICATIONS.
5. ALL NUTS SHALL BE WELDED TO THE BOLTS AFTER TIGHTENING.

A1 RS-13 PERSPECTIVE N T S

A9 RS-13 GUIDE POST DETAIL NOT TO SCALE



PLAN B (BRIDGE)

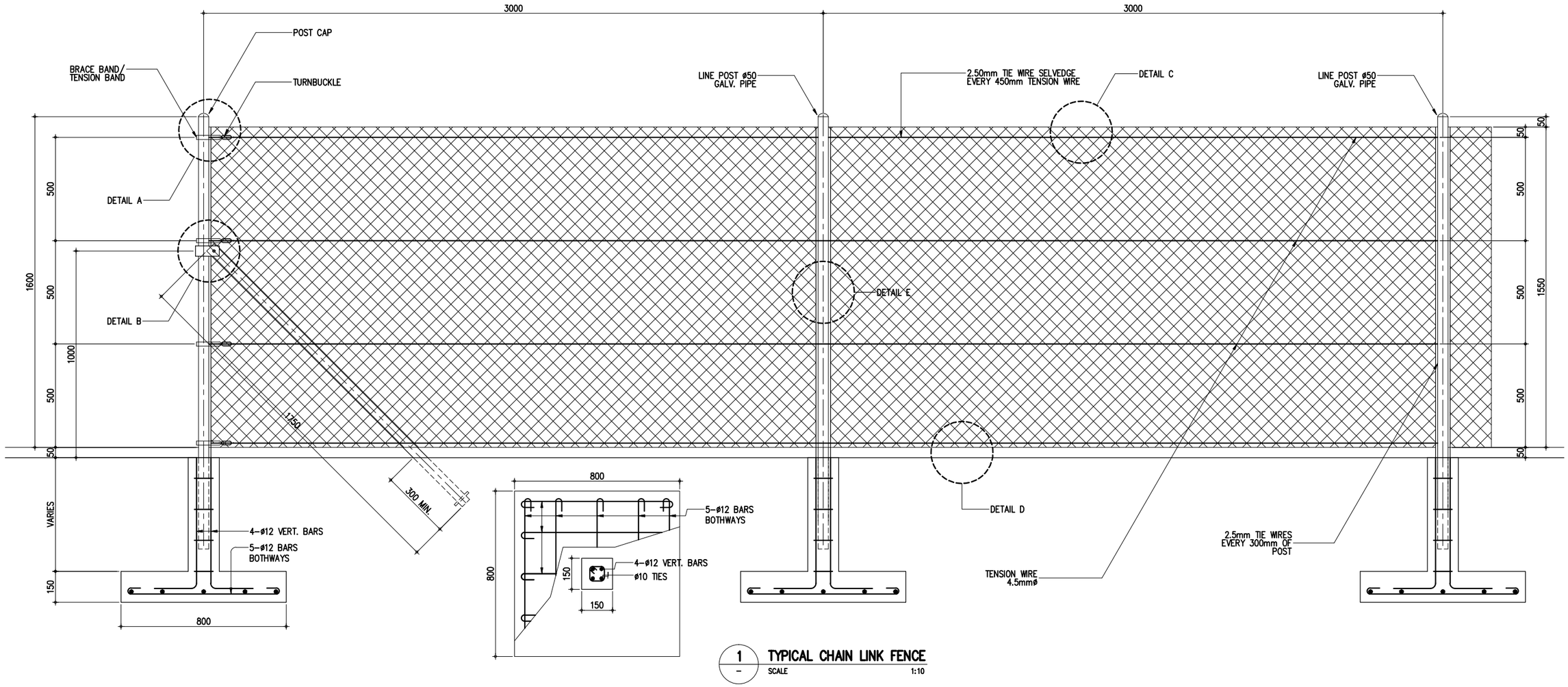


PLAN A (BOX CULVERT)

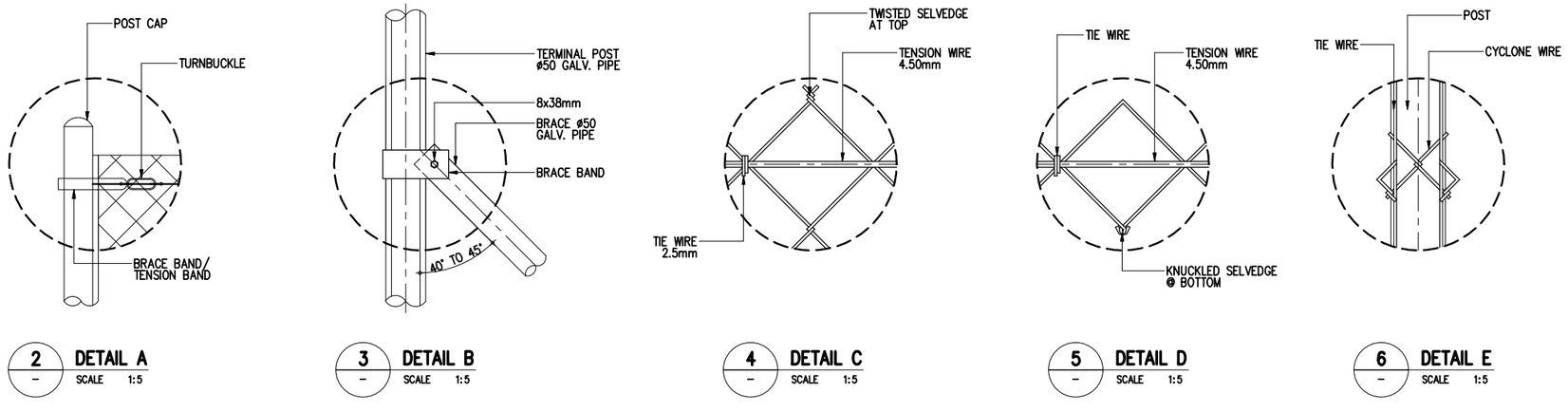
A10 RS-13 GUARDRAILS ALONG BOX CULVERT AND BRIDGE APPROACHES NOT TO SCALE

A RS-13 STANDARD FLEX-BEAM GUARDRAIL AND GUIDE POST SCALE AS SHOWN

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD STANDARD FLEX-BEAM, GUARDRAIL AND GUIDE POST	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE: -	DRAWING NO.: RS-13 / SIZE: A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



1 – TYPICAL CHAIN LINK FENCE
SCALE 1:10



2 – DETAIL A SCALE 1:5

3 – DETAIL B SCALE 1:5

4 – DETAIL C SCALE 1:5

5 – DETAIL D SCALE 1:5

6 – DETAIL E SCALE 1:5

DESCTRIPTION	SIZE
LINE POST	50mmø x 1.5mm THK. x 2150mm LONG
LINE BRACE POST	50mmø x 1.5mm THK. x 1750mm LONG
TENSION BAND	19mm — GALVANIZED 2.2mm THICKNESS (MIN.)
STRETCHER BAND	19mm — GALVANIZED 2.2mm THICKNESS (MIN.)
CARRIAGE BOLT	8 x 38mm
TURNBUCKLE	8 x 127mm
TENSION WIRE	4.5mmø GALVANIZED
STRETCHER BAR	18 x 6 x 1800mm
TIE WIRE	2.5mm CORE WIRE W/ PVC COATING OF 0.5mm THICKNESS FINAL COATED WIRE DIAMETER 3.5mm
CHAIN LINK FABRIC	2.5mm CORE WIRE W/ PVC COATING OF 0.5mm THICKNESS FINAL COATED WIRE DIAMETER 3.5mm ALTERNATIVELY GALVANIZED WIRE W/O PVC COATING (50mm x 50mm WIRE MESH OPENING)
BRACE BAND	50 — GALVANIZED THICKNESS 2.7mm (MIN.)

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT AIRPORT - NCC ACCESS ROAD

TYPICAL CHAIN LINK FENCE

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO.	SIZE
-	RS-14	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

WHERE :

PI = POINT OF HORIZONTAL INTERSECTION
I = INTERSECTION ANGLE (CENTRAL ANGLE)
T = LENGTH OF TANGENT
R = HORIZONTAL RADIUS
Lc = LENGTH OF CIRCULAR CURVE
E = TOTAL EXTERNAL DISTANCE
BCC = BEGINNING OF CIRCULAR CURVE
ECC = END OF CIRCULAR CURVE

NOTE:

NO HORIZONTAL CURVE IS REQUIRED WHEN THE INTERSECTION (CENTRAL) ANGLE (I) IS LESS THAN ONE DEGREE (1° 0' 0")

1 – HORIZONTAL CURVE
SCALE NTS

FORMULA:

$T = R(\tan I/2)$

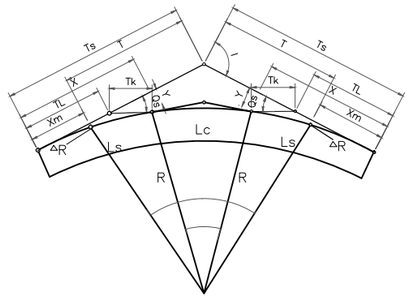
$LC = IR\ (\pi/180)$

$E = T(\tan I/4)$

STA. BCC = STA. PI − T

STA. ECC = STA. BCC + LC

$D = \frac{1145.916}{R}$



CURVE DIAGRAM (SYMMETRICAL CLOTHOIDS)

CLOTHOIDS FORMULAS (SYMMETRICAL METHOD)

$A^2 = Ls \times R$

$Qs = Ls/2R$ (RADIUS)

$X = (I - Qs/2Ix5 + Qs/4Ix9 - QsIx13^4 + QsIx17^4)xI$

$Y = (Qs/11x3 - Qs/3Ix7 + Qs/5x11 - Qs/7Ix15 + ...xLs$

$R = (R \cos Qs + Y) - R$

$Xm = X - (R \sin Qs)$

$TL = X - Y/\tan Qs$

$Tk = Y/\sin Qs$

$Ic = I - 2Qs$

$Lc = \frac{20\ Ic}{D} \times \frac{Ic \times R}{57.298}$

$Ts = (R + R) \tan I/2 + Xm$

$E = \frac{(R + R)}{\cos I/2} - R$

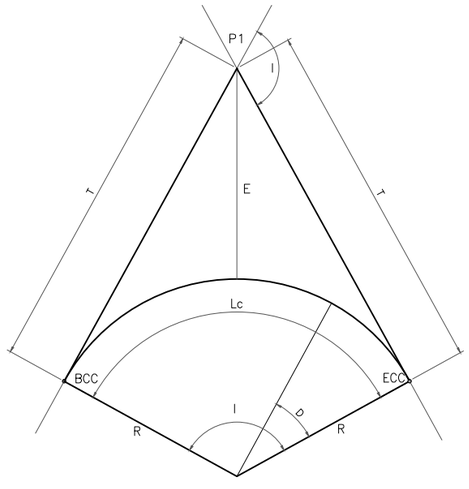
WHERE :

PVI = POINT OF VERTICAL INTERSECTION
PVC = POINT OF VERTICAL CURVE
PVT = POINT OF VERTICAL TANGENCY
LVC = LENGTH OF VERTICAL CURVE IN METERS
g1,g2 = GRADIENT (in %)
Mo = MIDDLE ORDINATE
A = ALGEBRAIC DIFFERENCE OF GRADIENT IN PERCENT (%)
X1,X2 = DISTANCE FROM PVC OR PVT TO ANY POINT OF CURVE.
Y1,Y2 = VERTICAL OFFSET W/ RESPECT TO DISTANCE X.

NOTE:

NO VERTICAL CURVE IS REQUIRED WHEN THE ALGEBRAIC DIFFERENCE IN GRADES IS LESS THAN 0.50 %

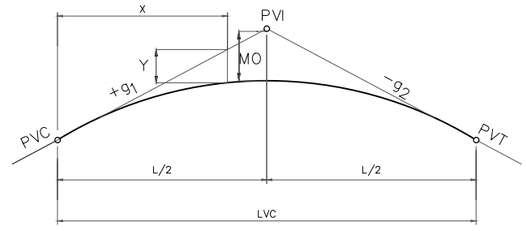
3 – VERTICAL CURVE
SCALE NTS



2 – SECTION
SCALE NTS

CLOTHOIDS DEFINITIONS

A = PARAMETER OF THE CLOTHOIDS
R = RADIUS OF THE CIRCULAR CIRCLE
Ls = LENGTH OF TRANSITION
X = ABSCISSA OF THE TRANSITION END
Y = ORDINATE OF THE TRANSITION END
R = OFFSET OF THE CIRCULAR CIRCLE
Xm = SHIFT OF THE POINT OF TRANSITION
TL = LONG TANGENT OF THE TRANSITION
Tk = SHORT TANGENT OF THE TANGENCY
I = DEFLECTION ANGLE
Qs = ANGLE OF THE CLOTHOID AT R
Ic = ANGLE AT THE CENTER OF THE CIRCULAR CURVE
Ts = TANGENT LENGTH OF THE CLOTHOID CURVE
E = EXTERNAL DISTANCE BETWEEN MIDDLE OF CURVE PI
Lc = LENGTH OF CIRCULAR CURVE
L = TOTAL LENGTH OF THE CURVE



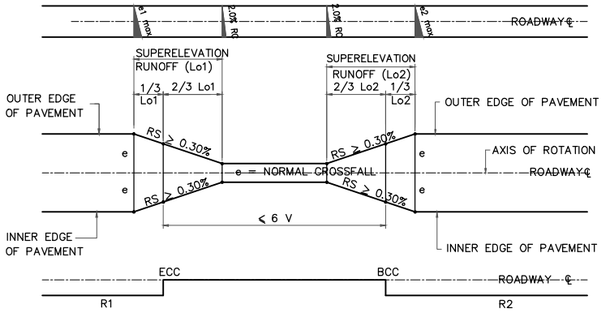
FORMULA:

$Mo = \frac{LVC\ (A)}{800}$

$Y = \frac{X^2\ (Mo)}{(L/2)^2}$

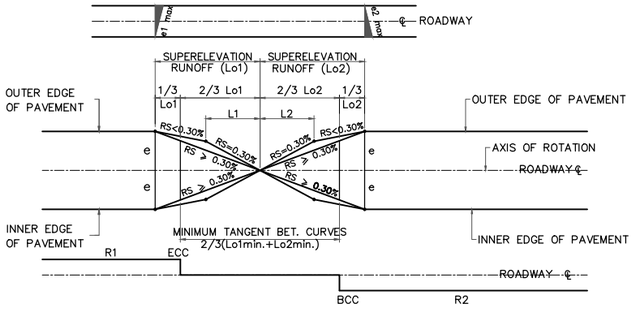
4 – SYMMETRICAL PARABOLIC CURVE
SCALE NTS

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD HORIZONTAL AND VERTICAL CURVES	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE: -	DRAWING NO.: RS-2 / SIZE: A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



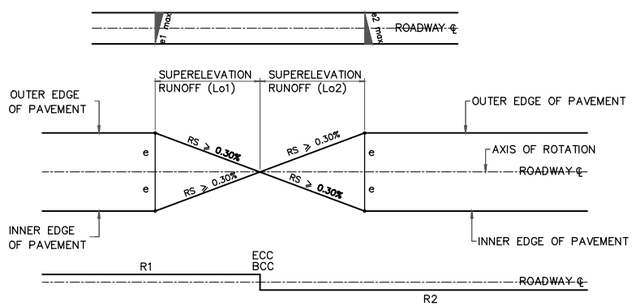
2 RS-3 TRANSITION: CIRCULAR CURVE-STRAIGHT-CIRCULAR CURVE CASE 2

SCALE NTS



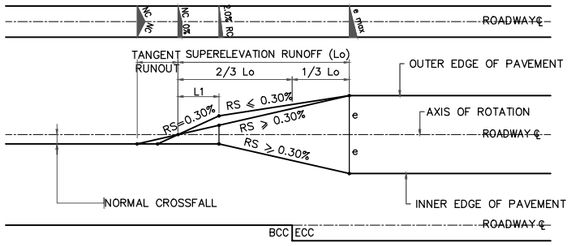
3 RS-3 TRANSITION: CIRCULAR CURVE-MINIMUM STRAIGHT-CIRCULAR CURVE CASE 3

SCALE NTS



4 RS-3 TRANSITION: CIRCULAR CURVE-CIRCULAR CURVE CASE 4

SCALE NTS



1 RS-3 TRANSITION: STRAIGHT-CIRCULAR CURVE CASE 1

SCALE NTS

NOTES :

1. e CAN BE TAKEN FROM RATE OF SUPERELEVATION TABLE.
2. RS SHOULD NOT BE LESS THAN 0.30 % FOR EFFECTIVE DRAINAGE.
3. THE SLOPE OF SHOULDERS SHALL ALWAYS BE IN THE DIRECTION AWAY FROM CENTERLINE OF THE ROAD.
4. THE SLOPE OF THE SHOULDER SHALL BE THE SAME AS FOR THE TRAVELLED WAY.
5. SUPERELEVATION CAN BE ATTAINED BY REVOLVING THE PAVEMENT ABOUT THE ROADWAY CENTERLINE.
6. IN ORDER TO DISTINGUISH WHICH EDGE OF THE CURVE IS TO BE SUPERELEVATED OR TILTED, THE FULL LINE (———) REPRESENTS THE RIGHTSIDE, AND THE BROKEN LINES (– – – – – – –) REPRESENTS THE LEFT SIDE.
7. REPRESENTS RIGHT TURNING CURVE — BCC ECC RADIUS

   REPRESENTS LEFT TRUNING CURVE — RADIUS BCC ECC

METRIC

e (%)	Vd=20km/h R (m)	Vd=30km/h R (m)	Vd=40km/h R (m)	Vd=50km/h R (m)	Vd=60km/h R (m)	Vd=70km/h R (m)	Vd=80km/h R (m)	Vd=90km/h R (m)	Vd=100km/h R (m)	Vd=110km/h R (m)	Vd=120km/h R (m)	Vd=130km/h R (m)
1.50	184	443	784	1090	1490	1970	2440	2970	3630	4180	4900	5360
2.00	133	322	571	791	1090	1450	1790	2190	2580	3090	3640	4000
2.20	119	288	512	711	976	1300	1620	1980	2420	2790	3290	3620
2.40	17	261	463	644	885	1190	1470	1800	2200	2550	3010	3310
2.60	97	237	421	587	808	1080	1350	1650	2020	2340	2760	3050
2.80	88	216	385	539	742	992	1240	1520	1860	2160	2550	2830
3.00	81	199	354	496	684	916	1150	1410	1730	2000	2370	2630
3.20	74	183	326	458	633	849	1060	1310	1610	1870	2220	2460
3.40	68	169	302	425	588	790	988	1220	1500	1740	2080	2310
3.60	62	156	279	395	548	733	924	1140	1410	1640	1950	2180
3.80	57	144	259	368	512	690	866	1070	1320	1540	1840	2060
4.00	52	134	241	344	479	648	813	1010	1240	1450	1740	1950
4.20	48	124	224	321	449	606	766	948	1180	1380	1650	1850
4.40	43	115	208	301	421	573	722	895	1110	1300	1570	1760
4.60	38	106	192	281	395	540	682	847	1050	1240	1490	1680
4.80	33	96	178	263	371	509	645	803	996	1180	1420	1610
5.00	30	87	163	246	349	480	611	762	947	1120	1360	1540
5.20	27	78	148	229	328	454	579	724	901	1070	1300	1480
5.40	24	71	136	213	307	429	549	689	859	1020	1250	1420
5.60	22	65	125	198	288	405	521	656	819	975	1200	1360
5.80	20	59	115	185	270	382	494	625	781	933	1150	1310
6.00	19	55	106	172	253	360	469	595	746	894	1100	1260
6.20	17	50	98	161	238	340	445	567	713	857	1060	1220
6.40	16	46	91	151	224	322	422	540	681	823	1020	1180
6.60	15	43	85	141	210	304	400	514	651	789	982	1140
6.80	14	40	79	132	198	287	379	489	620	757	948	1100
7.00	13	37	73	123	185	270	358	464	591	724	914	1070
7.20	12	34	68	115	174	254	338	420	561	691	879	1010
7.40	11	31	62	107	162	237	318	415	531	657	842	998
7.60	10	29	57	99	150	221	296	389	499	621	803	962
7.80	9	26	52	90	137	202	273	359	462	579	757	919
8.00	7	20	41	73	113	168	229	304	394	501	567	832

RELATIVE SLOPE OF PAVEMENT EDGE

DESIGN SPEED (KPH)	20	30	40	50	60	70	80	90	100
MAXIMUM RS (%)	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.47	0.44

5 RS-3 SUPERELEVATION

SCALE NTS

e □a□ □ 8□
R □ radiu□ o□ cur□e
V_d □ assu□ed des□gn s□eed
e □ rate o□ su□erele□at□n
L □ □n□u□ lengt□ o□ runo□ (does not □nclude tangent runout) as d□scussed □n "Tangent-to-Cur□e Trans□t□n" sect□n
NC □ nor□al cro□n sect□n
RC □ re□o□e ad□erse cro□n, su□erele□at□n at nor□al cro□n slo□e
Use o□e □a□ □ 4□ s□ould be l□ □ted to urban cond□t□ns

LEGEND :

KPH – KILOMETER PER HOUR
Lo – SUPERELEVATION RUNOFF
e – SUPERELEVATION (%)
RC – REMOVE ADVERSE CROWN,SUPERELEVATE AT NORMAL CROWN SLOPE
BCC – BEGINNING OF CIRCULAR CURVE
ECC – END OF CIRCULAR CURVE
℄ – CENTERLINE
R – RADIUS
L1 or L2 – LENGTH BETWEEN SUPERELEVATION 0% AND ef (1.5% FOR PCCP RECONSTRUCTION)
NC – NORMAL CROWN (1.5% FOR PCCP)
RS – RELATIVE SLOPE OF PAVEMENT EDGE %
V – DESIGN SPEED

CONSULTANTS
Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

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REVISIONS	DATE
A	
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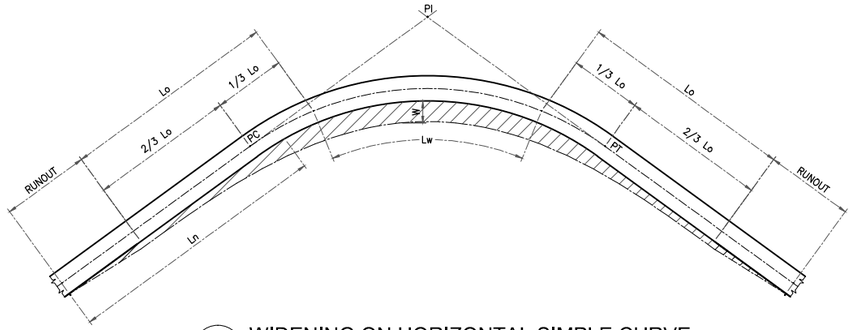
PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD
SUPERELEVATIONS

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO. / SIZE
-	RS-3 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -



1 – WIDENING ON HORIZONTAL SIMPLE CURVE

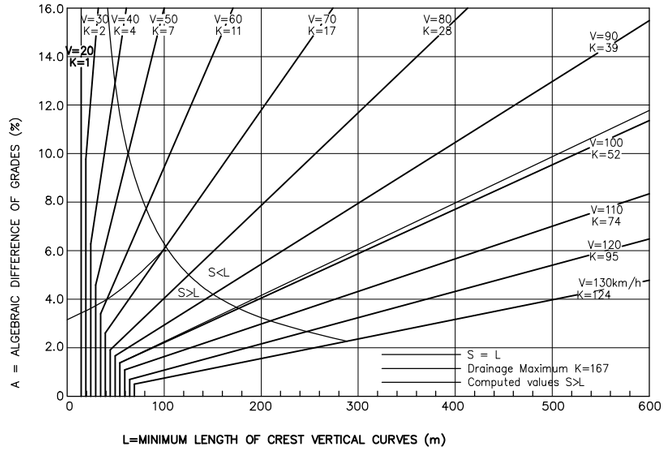
NOT TO SCALE

NOTES :

1. WIDENING SHALL BE APPLIED ON THE INNER SIDE OF THE CURVE AND SHALL BE ATTAINED LINEARLY ALONG THE REQUIRED SUPERELEVATION RUNOUT.
2. WIDENING SHALL BE APPLIED ON TWO-LANE PAVEMENT.

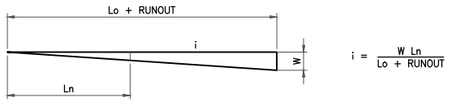
LEGEND :

W – WIDENING WIDTH (m)
Lo – LENGTH OF SUPERELEVATION RUNOFF (m)
Lw – LENGTH WIDTH OF FULL WIDENING (m)
Pvw – NORMAL PAVEMENT WIDTH (m)
Ln – LENGTH FROM THE BEGINNING OF Lo WITH WIDENING OF i (m)
i – WIDENING AT LENGTH Ln (m)



2 – MINIMUM LENGTH OF CREST VERTICAL CURVES

(BASED ON MINIMUM STOPPING SIGHT DISTANCE)



$$i = \frac{W\ Ln}{Lo + RUNOUT}$$

METHODS OF WIDENING ON TRANSITION LENGTH

WIDENING ALONG CURVE

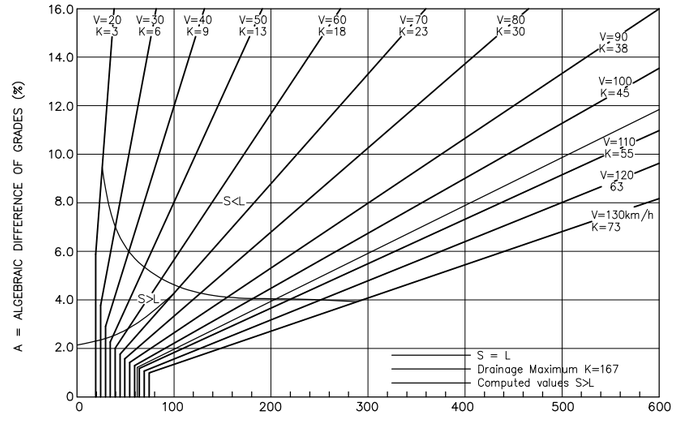
RADIUS OF CURVE (m)	SU	WB-12	WB-19	WB-20	WB-20D	WB-30T	WB-33D
3000	-0.3	-0.3	0.0	0.0	0.0	0.0	0.1
2500	-0.3	-0.3	0.0	0.0	0.0	0.0	0.1
2000	-0.3	-0.3	0.0	0.0	0.0	0.0	0.1
1500	-0.4	-0.3	0.0	0.1	0.0	0.0	0.1
1000	-0.4	-0.4	0.1	0.1	0.0	0.0	0.2
900	-0.4	-0.4	0.1	0.1	0.0	0.0	0.2
800	-0.4	-0.4	0.1	0.1	0.0	0.0	0.2
700	-0.4	-0.4	0.1	0.1	0.0	0.0	0.3
600	-0.5	-0.4	0.1	0.1	0.0	0.1	0.3
500	-0.5	-0.4	0.1	0.2	0.0	0.1	0.4
400	-0.5	-0.4	0.2	0.2	0.0	0.1	0.5
300	-0.6	-0.5	0.2	0.3	-0.1	0.1	0.6
250	-0.7	-0.5	0.2	0.3	-0.1	0.1	0.8
200	-0.8	-0.6	0.3	0.4	-0.1	0.2	1.0
150	-0.9	-0.7	0.4	0.6	-0.1	0.2	1.3
140	-0.9	-0.7	0.4	0.6	-0.1	0.2	1.4
130	-1.0	-0.7	0.5	0.6	-0.2	0.2	1.5
120	-1.1	-0.8	0.5	0.7	-0.2	0.3	1.6
110	-1.1	-0.8	0.6	0.8	-0.2	0.3	1.7
100	-1.2	-0.9	0.6	0.8	-0.2	0.3	1.9
90	-1.3	-0.9	0.7	0.9	-0.2	0.3	2.1
80	-1.4	-1.0	0.8	1.1	-0.2	0.4	2.4
70	-1.6	-1.1	0.9	1.2	-0.3	0.4	2.8
60	-1.6	-1.1	0.9	1.2	-0.3	0.5	2.8

NOTES :

1. e CAN BE TAKEN FROM RATE OF SUPERELEVATION TABLE.
2. RS SHOULD NOT BE LESS THAN 0.30% FOR EFFECTIVE DRAINAGE.
3. THE SLOPE OF SHOULDERS SHALL ALWAYS BE IN THE DIRECTION AWAY FROM CENTERLINE OF THE ROAD.
4. WHEN THE SUPERELEVATION IS GREATER THAN 4% THEN THE SLOPE OF THE LOWER SHOULDER SHALL BE THE SAME AS FOR THE TRAVELLED WAY.
5. IF THE SUPERELEVATION VARIES FROM 7% TO 8% THEN THE SLOPE OF THE HIGHER SHOULDER WILL VARY FROM 3% TO 2% RESPECTIVELY.
6. SUPERELEVATION CAN BE ATTAINED BY REVOLVING THE PAVEMENT ABOUT THE ROADWAY CENTERLINE.
7. IN ORDER TO DISTINGUISH WHICH EDGE OF THE CURVE IS TO BE SUPERELEVATED OR TILTED, THE FULL LINE (————) REPRESENTS THE RIGHTSIDE, AND THE BROKEN LINES (- - - - - - -) REPRESENTS THE LEFT SIDE.
8. REPRESENTS RIGHT TURNING CURVE — PC, RADIUS, PT
   REPRESENTS LEFT TURNING CURVE — PC, RADIUS, PT

LEGEND :

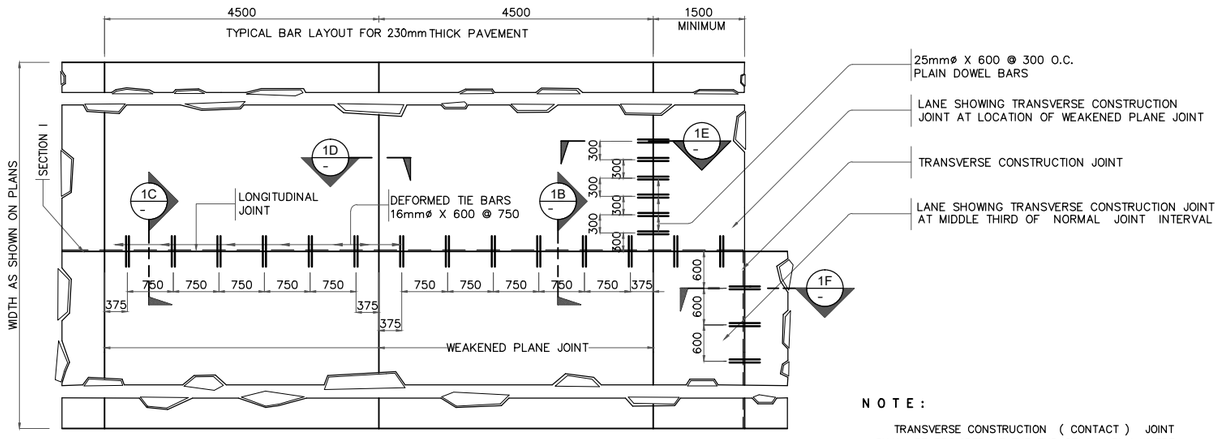
KPH – KILOMETER PER HOUR
Lo – SUPERELEVATION RUNOFF
e – SUPERELEVATION (%)
RC – REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE
PC – POINT OF CURVATURE
PT – POINT OF TANGENCY
℄ – CENTERLINE
R – RADIUS
L1 or L2 – LENGTH BETWEEN SUPERELEVATION 0% AND ef (3% ON ASPHALT PAVEMENT AND 2.0% FOR PCCP RECONSTRUCTION)
NC – NORMAL CROWN (2.0% FOR PCCP AND 3% ON ASPHALT PAVEMENT)
RS – RELATIVE SLOPE OF PAVEMENT EDGE %
V – DESIGN SPEED



3 – MINIMUM LENGTH OF SAG VERTICAL CURVES

(BASED ON MINIMUM STOPPING SIGHT DISTANCE)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD WIDENING AND SIGHT DISTANCE	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: RS-4 SIZE: A1 DATE REVISED: - REV.: -

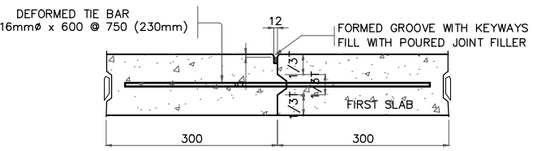


1A — TYPICAL PLAN OF A TWO OR FOUR LANE PAVEMENT
SCALE 1:100

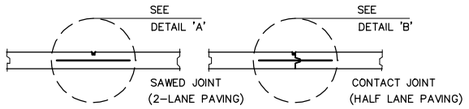
NOTE:

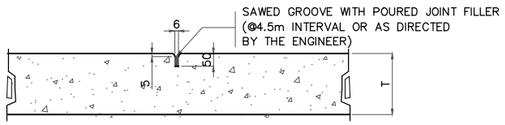
TRANSVERSE CONSTRUCTION (CONTACT) JOINT SHALL BE PROVIDED AT THE END OF ANY RUN WHERE LAYING OF CONCRETE HAS BEEN STOPPED FOR THIRTY (30) MINUTES OR LONGER.

TRANSVERSE CONSTRUCTION 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 (1500–3000mm) IT SHOULD BE KEYED JOINTS WITH TIE BARS.

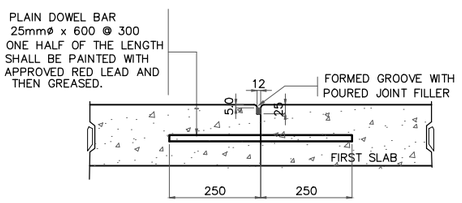


A — DETAIL "A" (TRANVERSE AND LONGITUDINAL CONSTRUCTION OR CONTRACTION JOINT)
SCALE NTS.

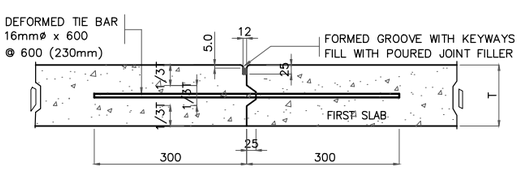




A — DETAIL "B" (WEAKENED PLANE JOINT USED IN HALF WITH CONSTRUCTION)
SCALE NTS.

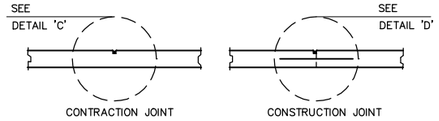


A — DETAIL "C" (BUTT TRANVERSE CONSTRUCTION OR CONTRACT JOINTS)
SCALE NTS.



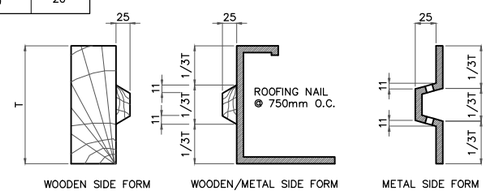
A — SECTION (KEYED TRANVERSE CONSTRUCTION OR CONTRACT JOINTS)
SCALE NTS.

1B — SECTION I (LONGITUDINAL JOINT)
SCALE NTS



T	SPACING	SIZE
300	600	25
250	600	25
230	600	25
200	600	20

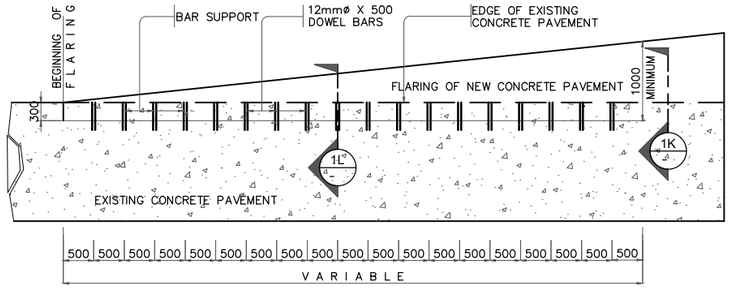
1C — SECTION II (TRANSVERSE JOINT)
SCALE NTS



DETAIL OF SIDE FORMS

1J — DETAIL OF JOINT IN RIGID PAVEMENT
SCALE 1:10

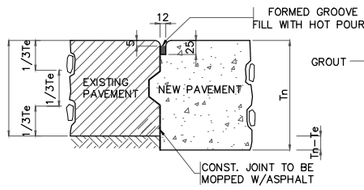
1K — STANDARD PORTLAND CEMENT CONCRETE PAVEMENT
SCALE AS SHOWN



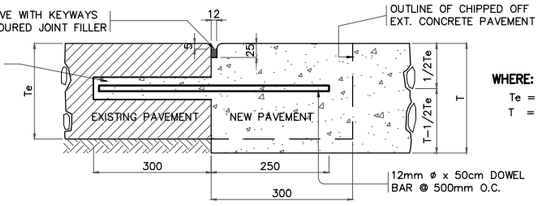
P L A N
1G — (SHOWING FLARING OF EXIST. CONC PAVEMENT)
SCALE 1:100

NOTE:

THE EXISTING CONCRETE PAVEMENT SHALL BE CHIPPED OFF PERPENDICULARLY TO THE EXISTING BASE ABOUT 300mm WIDE TO A DISTANCE WHERE THE FLARE IS LESS THAN 1000mm AND NECESSARY DOWEL BARS SHALL BE PROVIDED TO CONNECT THE NEW PAVEMENT WITH THE EXISTING PAVEMENT.

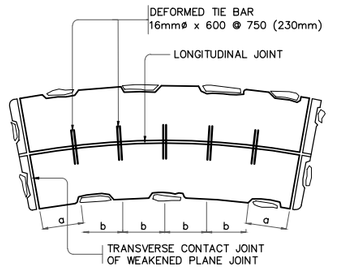


SECTION
1E — TRANSVERSE AND LONGITUDINAL CONST'N JOINT TO BE USED ONLY FOR CONNECTIONS
SCALE NTS



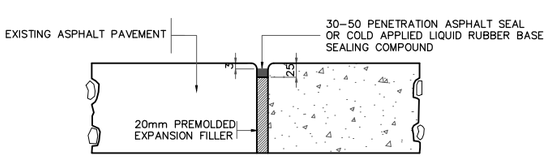
WHERE:
Te = THICKNESS OF EXISTING PAVEMENT
T = THICKNESS OF NEW PAVEMENT

SECTION
1H — CONST'N JOINT TO BE USED FOR FLARING EXISTING CONCRETE PAVEMENT
SCALE NTS



DETAIL OF BAR SPACING ALONG CURVES
1F — SCALE NTS

T	a	b	BAR ϕ
300	150	600	16
250	150	600	16
230	375	750	16
200	375	750	16

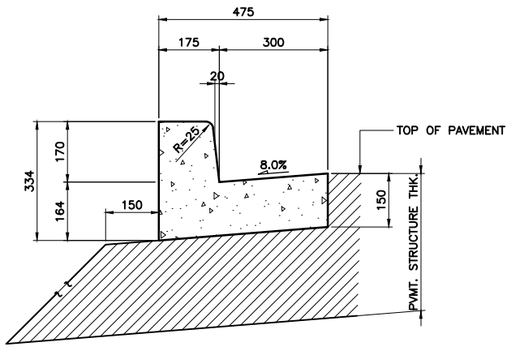


DETAIL OF JOINT AT INTERFACE OF EXISTING ASPHALT AND NEW PCCP
1I — SCALE NTS

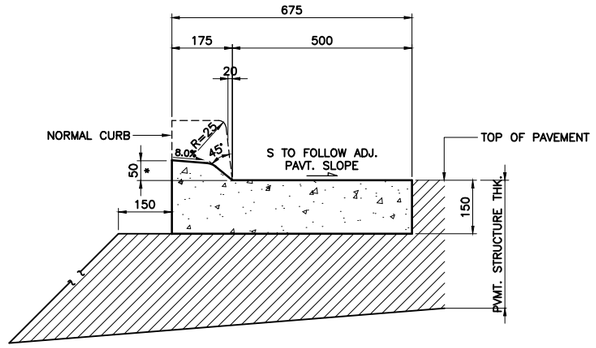
GENERAL NOTES :

1. MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE "DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS, 2004".
2. CONSTRUCTION (CONTACT) 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 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 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 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 RUBBER COMPOUND AFTER THE CONCRETE HAD BEEN CURED AND BEFORE OPENING PAVEMENT TO TRAFFIC. PENETRATION ASPHALT SEAL CONCRETE JOINTS SHOULD BE POURED IN SUCH MANNER THAT SPILLING WILL BE ELIMINATED/ PREVENTED THUS, PROVIDE A SMOOTH LEVELING SURFACE.
9. ALL TRANSVERSE JOINTS, 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 STOPPAGE OF FORMWORKS ALONG CURVES.

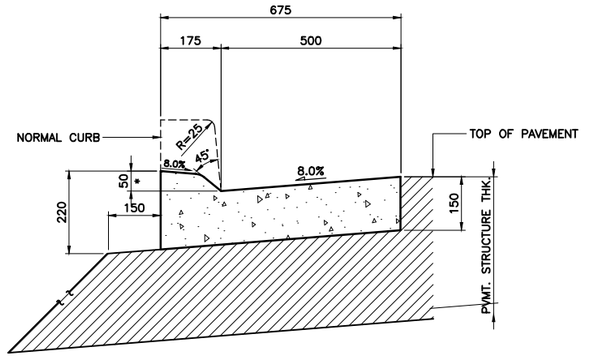
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD JOINT DETAIL DRAWINGS CEMENT CONCRETE PAVEMENT	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: RS-5 DATE REVISED: -
								SIZE: A1 REV.: -



1c RS-6 TYPE "C"

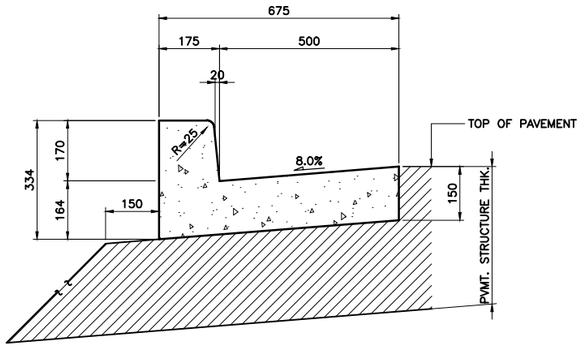


2c RS-6 TYPE "B"

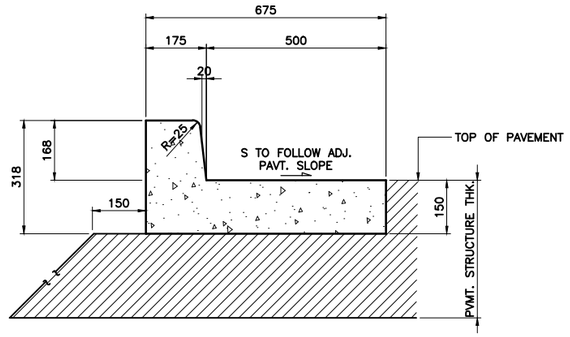


* 30 FOR RAMPS FOR PHYSICALLY HANDICAPPED

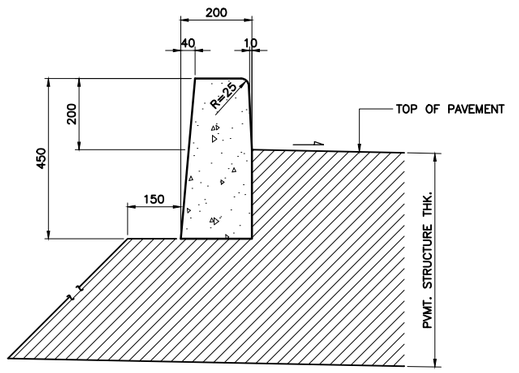
3 RS-6 CONCRETE DROP CURB AND GUTTER (MODIFIED)
NOT TO SCALE



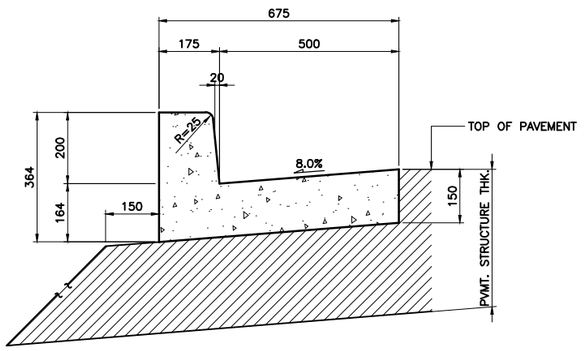
1b RS-6 TYPE "B"



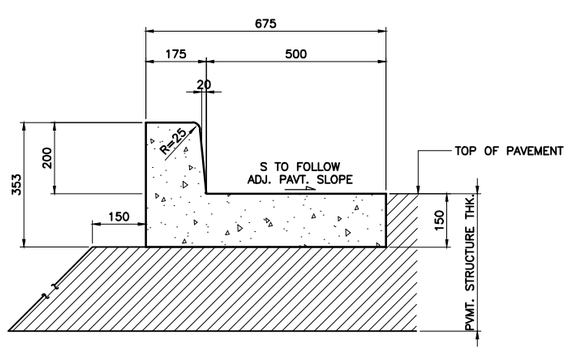
2b RS-6 TYPE "B"



4a RS-6 TYPE "A"

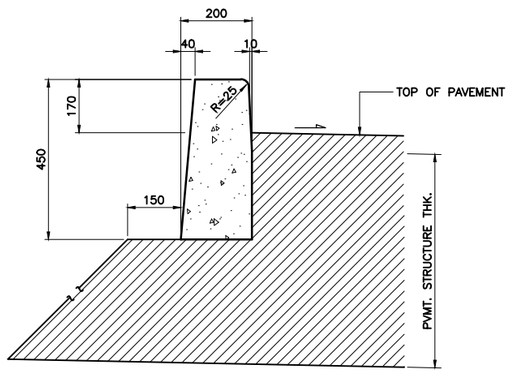


1a RS-6 TYPE "A"



2a RS-6 TYPE "A"

NOTE:
ALL CONCRETE SHALL BE IN CLASS "A"



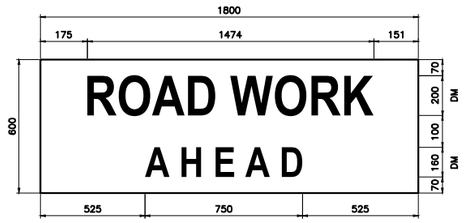
4b RS-6 TYPE "B"

1 RS-6 COMBINATION CONCRETE CURB AND GUTTER
NOT TO SCALE

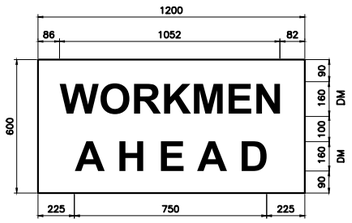
2 RS-6 COMBINATION CONCRETE CURB AND SIDE STRIP
NOT TO SCALE

4 RS-6 CONCRETE CURB
NOT TO SCALE

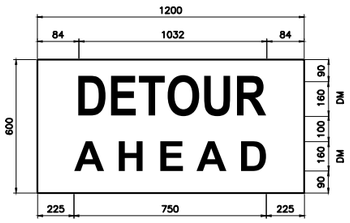
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD CONCRETE CURB AND GUTTER DETAILS	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: RS-6 DATE REVISED: -
								SIZE: A1 REV.: -



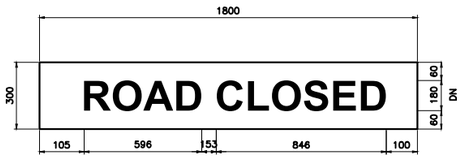
T1 - 1



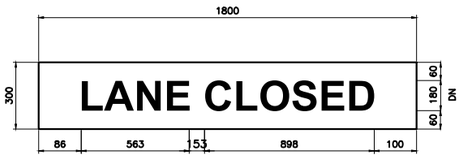
T1 - 5



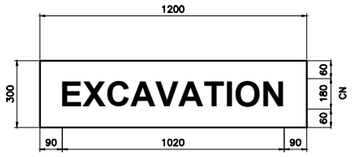
T1 - 6



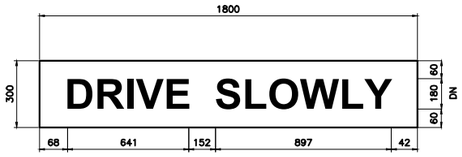
T2 - 2



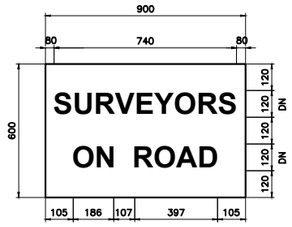
T2 - 4



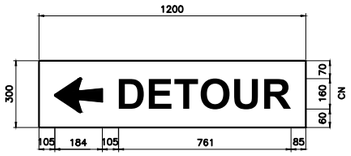
T2 - 6



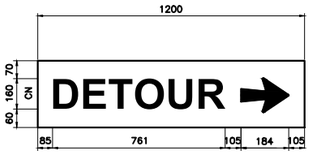
T2 - 7



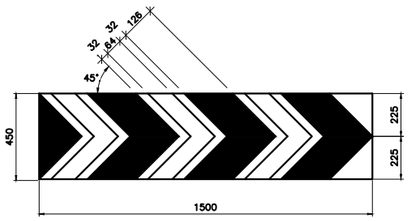
T2 - 8



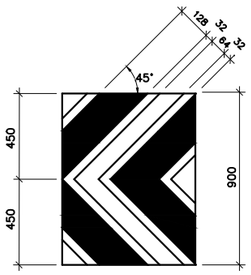
T4 - 1L



T4 - 1R



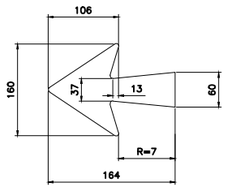
T4 - 2



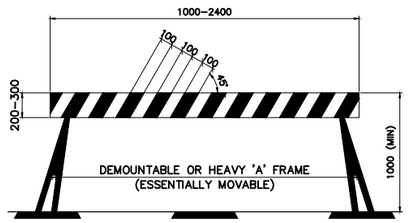
T4 - 3

NOTES :

1. BARRIER SHALL HAVE AN ALTERNATE DIAGONAL BLACK AND YELLOW STRIPES. THE YELLOW BANDS SHALL BE REFLECTORIZED.
2. BARRIER POINTS SHALL BE PRINTED YELLOW.
3. PROVISION SHALL BE MADE FOR THE HANDLING OF SIGNS BELOW THE BARRIER BARS.



DETAIL OF ARROW



NOTES :

1. ADVANCE SIGNS (T1) AND POSITION SIGNS (T2) SHALL HAVE BLACK LETTERS ON YELLOW REFLECTORIZED BACKGROUND.
2. TRAFFIC DIVERSION SIGNS (T4–1) SHALL HAVE BLACK LETTERS AND ARROW ON YELLOW REFLECTORIZED BACKGROUND.
3. TRAFFIC DIVERSION SIGNS (T4–2) & (T4–3) SHALL HAVE WHITE CHEVRONS ON BLACK BACKGROUND. WHITE REFLECTIVE MATERIAL 64mm. WIDE TO BE CENTRALLY PLACED ON WHITE BANDS.

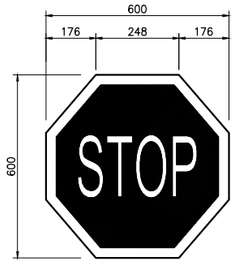
ROAD SIGNS, (LOCATION AND INSTALLATION)

BARRICADES (TYPE I, TYPE II, TYPE III) SHOULD CONFORM WITH SPECIFICATIONS MENTIONED IN PHILIPPINES. ROAD SIGNS MANUAL. (REVISED EDITION DPWH, TRAFFIC ENG'G. AND MANAGEMENT PROJECT SERIES OF 2004.

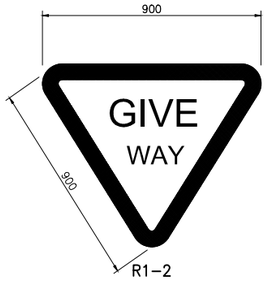
TYPE 1 BARRICADE

1 / RS-7 ROAD WORK SIGN DETAILS NOT TO SCALE

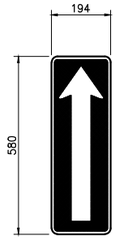
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD STANDARD ROAD WORK SIGN	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE: RS-7 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



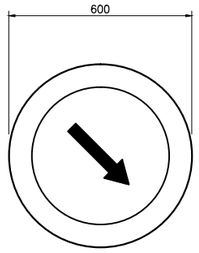
R1–1
1



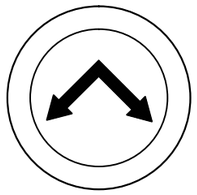
R1–2
2



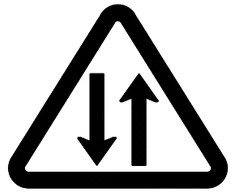
R2–1
3



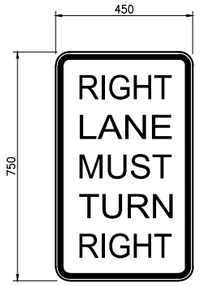
R2–3
4



R2–4
5

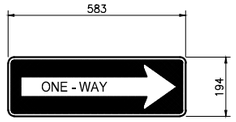


R2–6
6



R2–7(R)
7

R2–7(L)
8

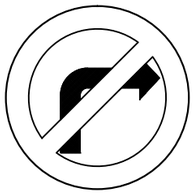


R2–8(R)
9

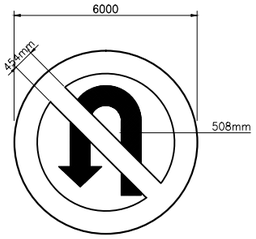
R2–8(L)
10

R3–10
11

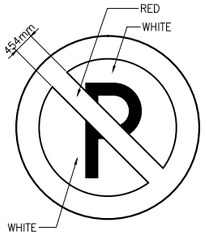
R3–13
12



R3–14
13

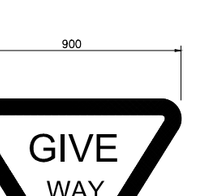


R3–15
14



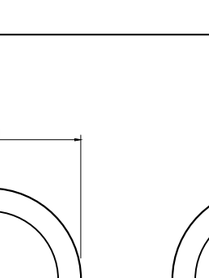
R5–1
15

R4–1B(60)



R4–2B (50)

R4–3B (40)

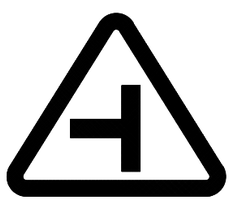


R5–8
18

R6–1
19

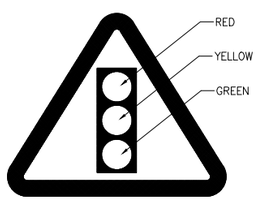
R6–4
20

A1 – REGULATORY ROAD SIGNS
SCALE NOT TO SCALE



W2–6(L)
21

W2–6(R)
22

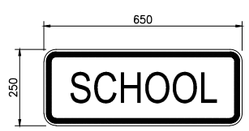


W3–1
23

W6–1
24

W6–2
25

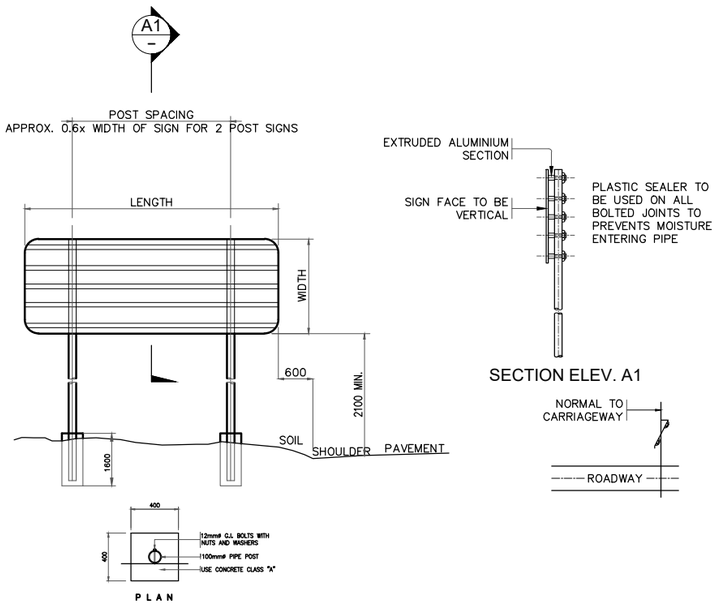
W6–3
26



W8–10
27

A2 – ROAD SIGNS
SCALE NOT TO SCALE

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMO, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD STANDARD ROAD SIGN (REGULATORY SIGNS)	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								RS-8 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



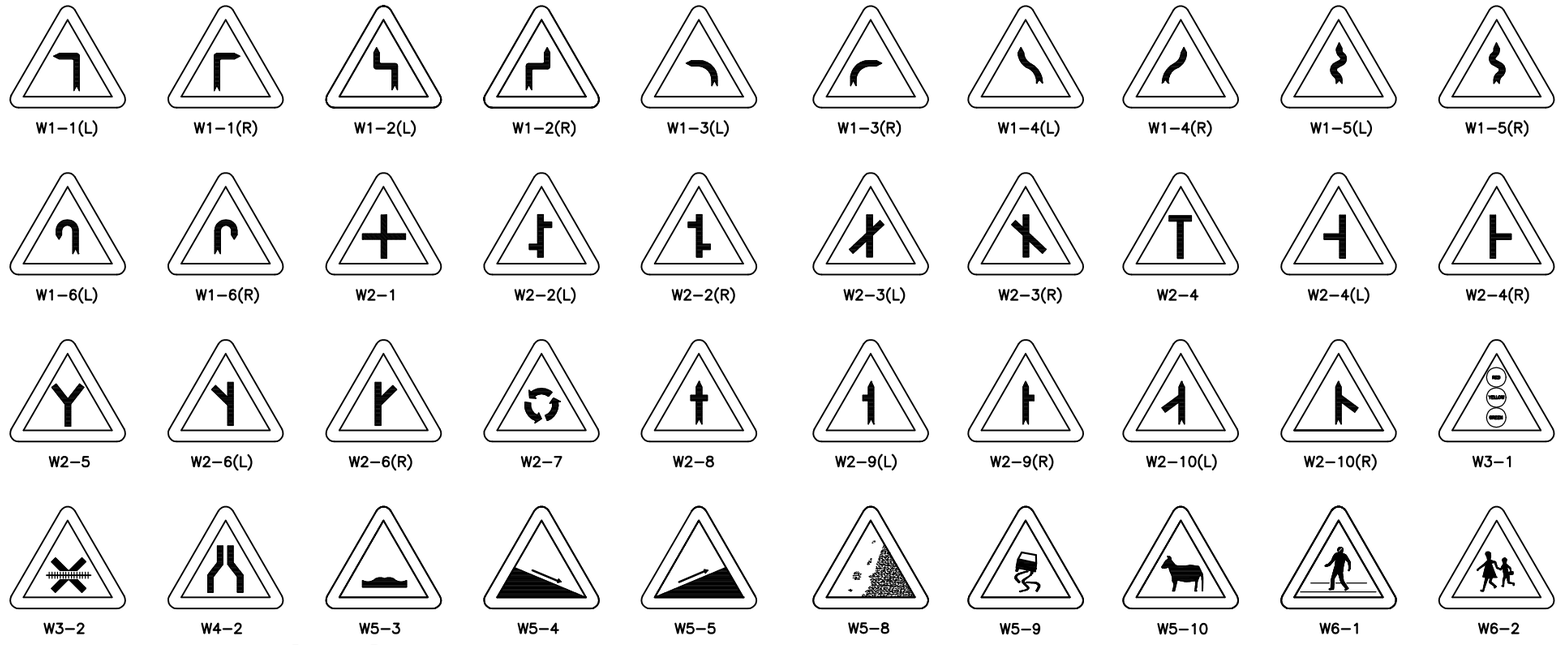
MINIMUM DEPTH OF POST IN SOIL TO BE 1600 WITH SUITABLE MASS CONCRETE SURROUND

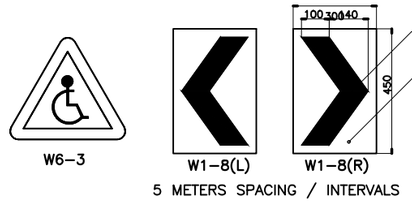
SIGN TO BE TURNED 3° TO 5° FROM ON COMING TRAFFIC ON STRAIGHT SECTIONS AND RIGHT HAND CURVES. ON LEFT HAND CURVES THIS ANGLE SHOULD BE SUITABLY INCREASED TO PREVENT GLARE.

SIGNS : THE MATERIALS, DIMENSIONS, SHAPE, COLOR SIZE OF NUMERALS, LETTER & INSTALLATION SHALL CONFORM IN ACCORDANCE WITH THE SPECIFICATION OF DPWH, PHILIPPINE ROAD SIGNS MANUAL. (2012)

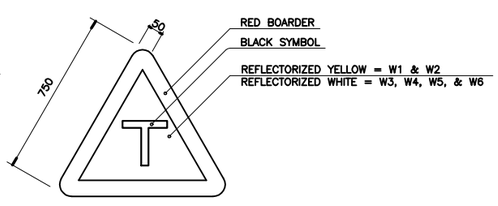
NOTE : HEIGHT OF LETTERS = 120 mm, LETTER STROKE WIDTH = 24 mm.

WARNING SIGNS

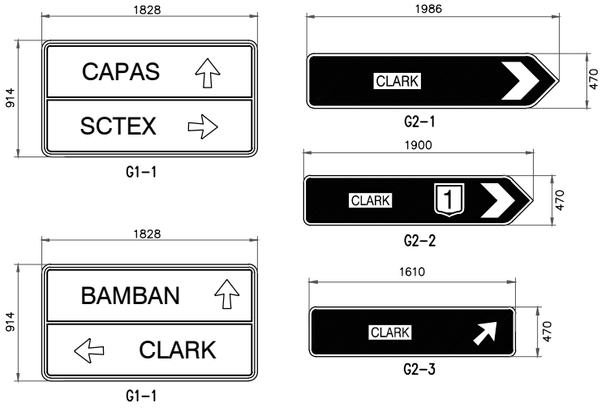




5 METERS SPACING / INTERVALS



INFORMATORY SIGNS

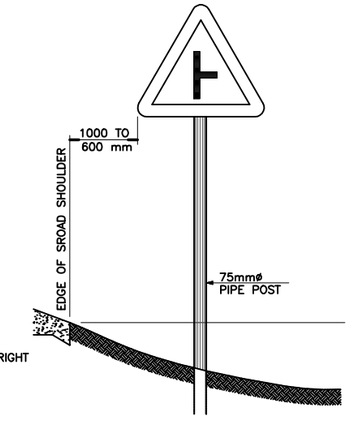


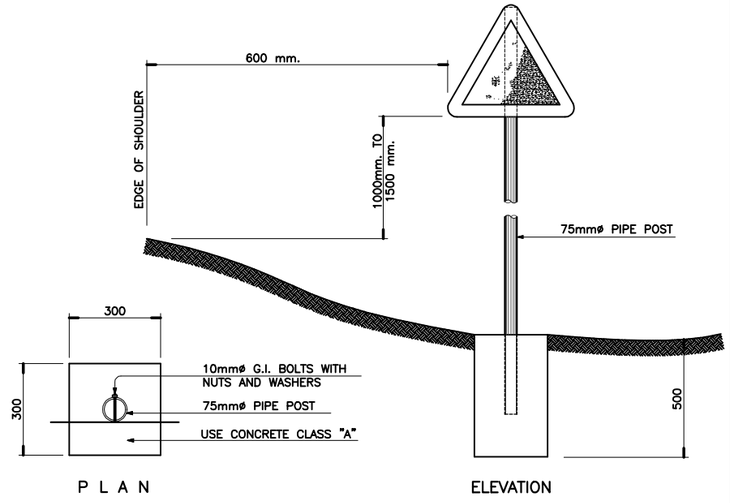
NOTE :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE MATERIALS, DIMENSIONS, SIZES OF LETTERS AND NUMERALS SHAPE, COLOR AND INSTALLATION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS OF DPWH PHILIPPINE ROAD SIGNS MANUAL, 2012.

L E G E N D :

W1-1(L)	SHARP TURN (LEFT)
W1-1(R)	SHARP TURN (RIGHT)
W1-2(L)	REVERSE TURN (LEFT)
W1-2(R)	REVERSE TURN (RIGHT)
W1-3(L)	CURVE (LEFT)
W1-3(R)	CURVE (RIGHT)
W1-4(L)	REVERSE CURVE (LEFT)
W1-4(R)	REVERSE CURVE (RIGHT)
W1-5(L)	WINDING ROAD (LEFT)
W1-5(R)	WINDING ROAD (RIGHT)
W1-6(L)	HAIRPIN BEND (LEFT
W1-6(R)	HAIRPIN BEND (RIGHT)
W2-1	CROSS ROAD
W2-2(L)	OTHER CROSS ROAD (LEFT)
W2-2(R)	OTHER CROSS ROAD (RIGHT)
W2-2(L)	OTHER CROSS ROAD (LEFT)
W2-3(R)	OTHER CROSS ROAD (RIGHT)
W2-4	T JUNCTION
W2-4(L)	SIDE ROAD JUNCTION (LEFT)
W2-4(R)	SIDE ROAD JUNCTION (RIGHT)
W2-5	Y JUNCTION
W2-6(L)	Y JUNCTION (LEFT)
W2-6(R)	Y JUNCTION (RIGHT)
W2-7	ROUNDABOUT (ROTONDA)
W2-8	PRIORITY ROAD
W2-9(L)	PRIORITY ROAD (LEFT)
W2-9(R)	PRIORITY ROAD (RIGHT)
W2-10(L)	PRIORITY ROAD (LEFT)
W2-10(R)	PRIORITY ROAD (RIGHT)
W3-1	SIGNAL AHEAD
W3-2	RAILWAY CROSSING
W4-2	NARROW ROAD
W5-3	HUMP
W5-4	STEEP DESCENT
W5-5	STEEP CLIMB
W5-8	FALLING OR FALLEN ROCKS LEFT AND RIGHT
W5-9	SLIPPERY WHEN WET
W-10	CATTLE CROSSING
W6-1	PEDESTRIANS
W6-2	CHILDREN
W6-3	WHEEL CHAIR
W1-8(L)	CHEVRON ALIGNMENT SIGN (LEFT)
W1-8(R)	CHEVRON ALIGNMENT SIGN (RIGHT)

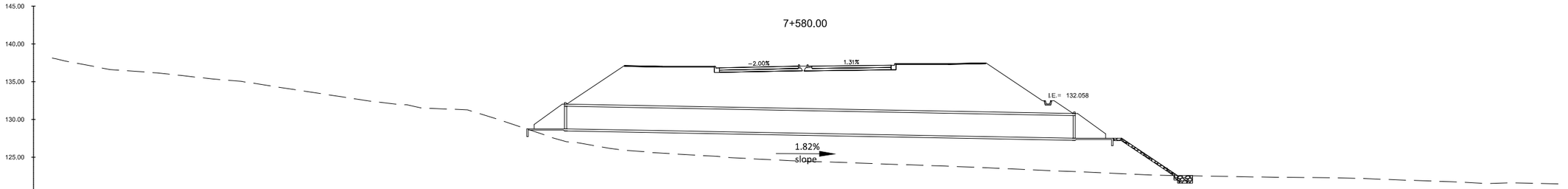




1 DETAIL OF INSTALLATION
SCALE NTS

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD STANDARD ROAD SIGNS (WARNING/INFORMATORY SIGNS)	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: RS-9 DATE REVISED: -
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -					SIZE: A1 REV.: -

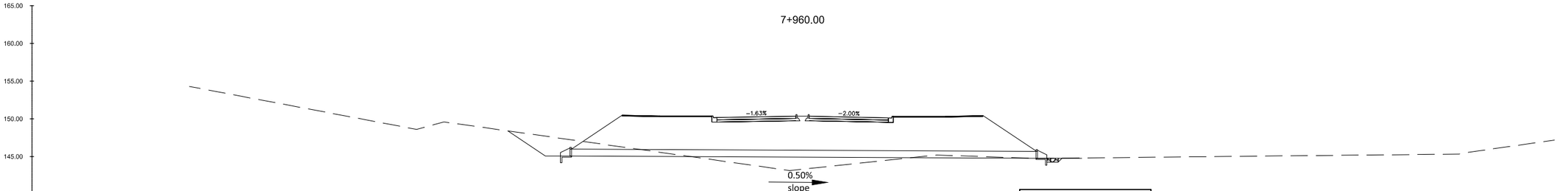
7+580.00



1-3.00 m x 3.00 m x 68.00 m RCBC	
I.I.E.	128.74
O.I.E.	127.50

| | | |

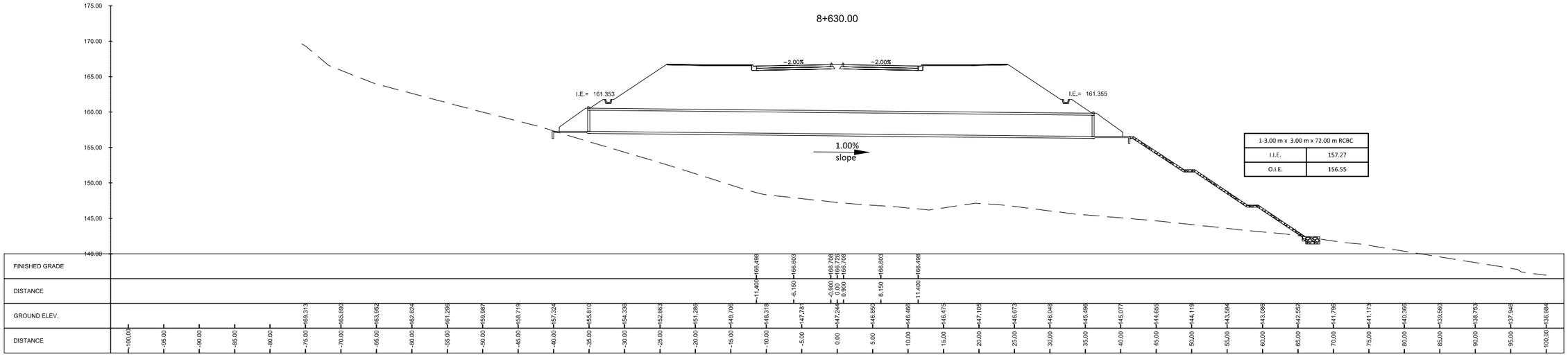
7+960.00



1-ø910 mm x 63.00 m RCPC	
I.I.E.	145.07
O.I.E.	144.76

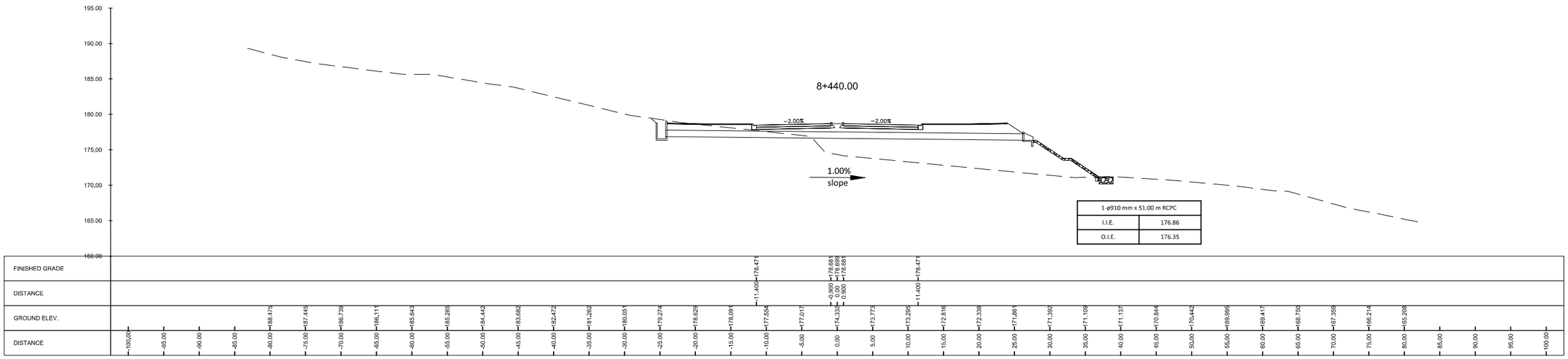
| | | |

8+630.00



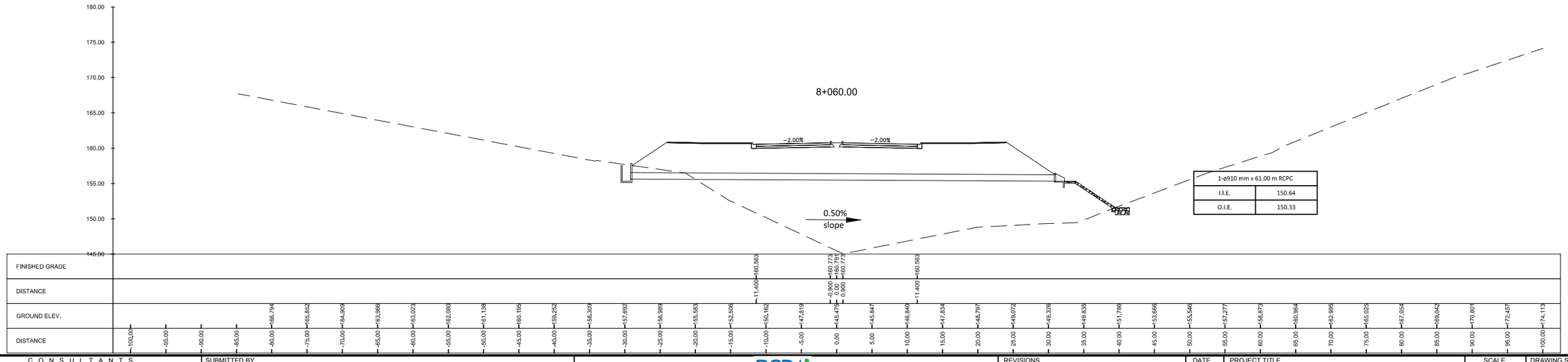
1-3.00 m x 3.00 m x 72.00 m RCBC	
I.I.E.	157.27
O.I.E.	156.55

8+440.00



1-ø910 mm x 51.00 m RCPC	
I.I.E.	176.86
O.I.E.	176.35

8+060.00



1-ø910 mm x 61.00 m RCPC	
I.I.E.	150.64
O.I.E.	150.33

C O N S U L T A N T S

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LAING STREET, VARA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE

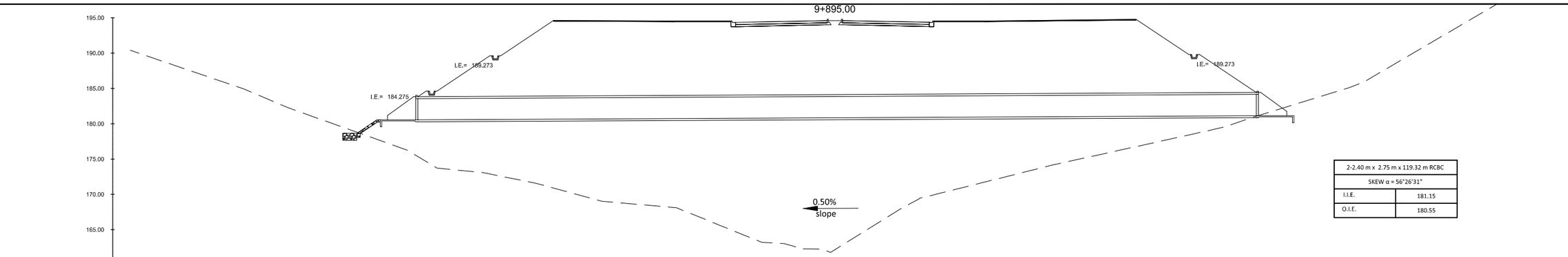
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

DRAINAGE CROSS SECTION
STA.8□060.00,STA.8□440.00,STA.8□630.00

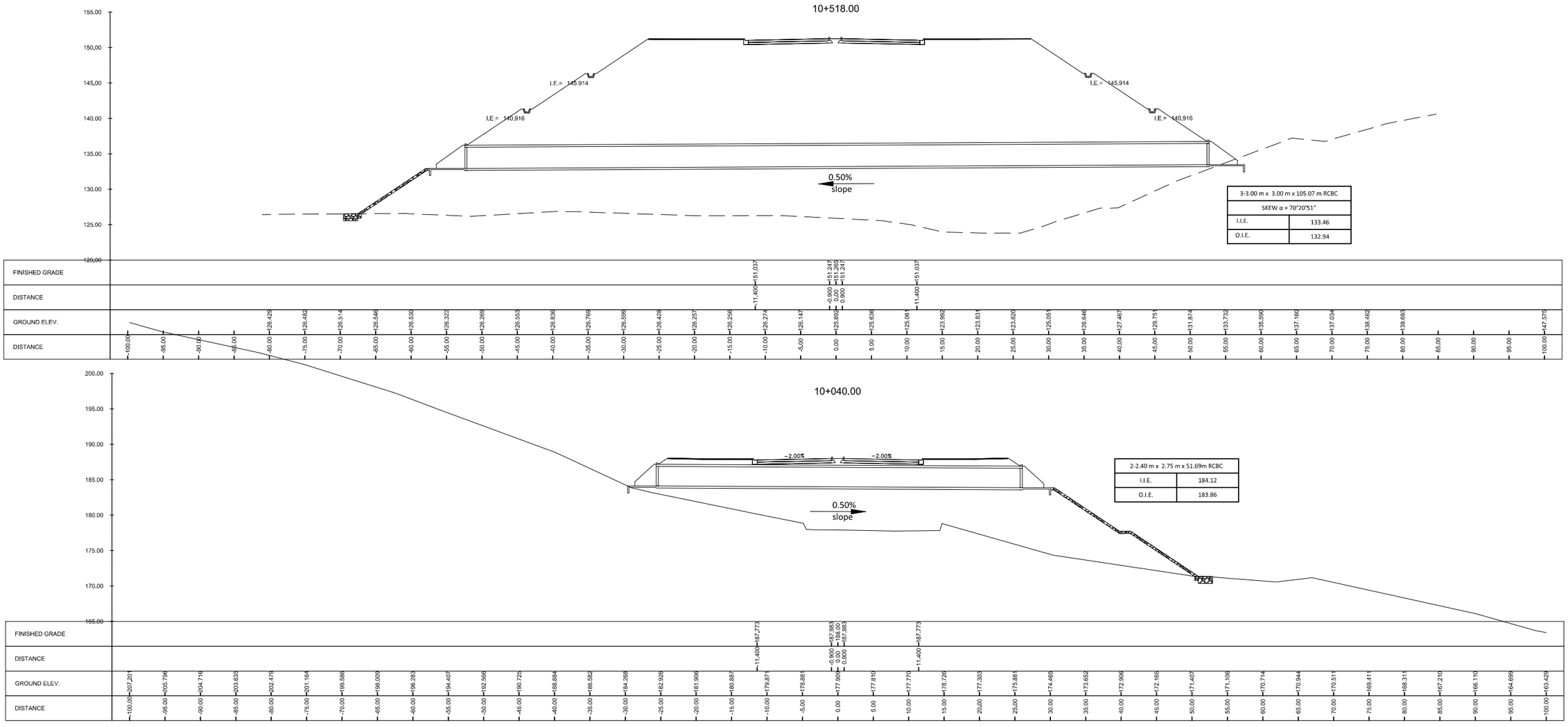
SCALE	DRAWING STATUS	
1:600 M	FINAL DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
-	DR-24	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

9+895.00

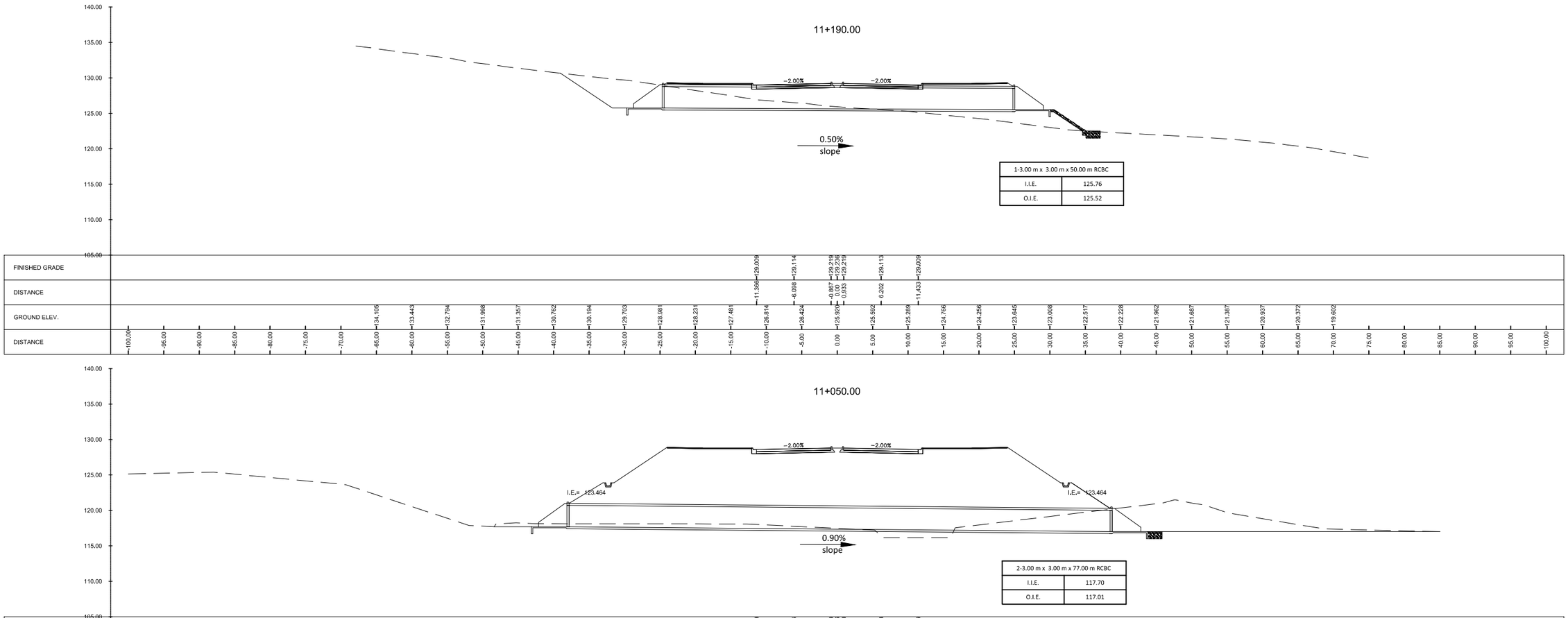


2-2.40 m x 2.75 m x 119.32 m RCBC	
SKEW α = 56°26'31"	
I.I.E.	181.15
O.I.E.	180.55

| | | |

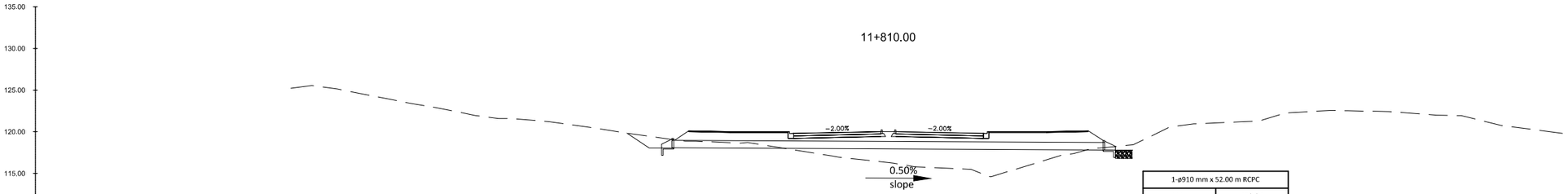


CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	CHECKED BY RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	APPROVED BY JOVITO M. SUNGA OIC - PMD DATE: -	A B C D E F	DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT - NCC ACCESS ROAD DRAINAGE CROSS SECTION STA.10□040.00,STA.10□518.00	1:600 M	FINAL DRAWING
							PROJECT CODE: -	DRAWING NO.: DR-26
							SIZE: A1	
							DATE APPROVED: -	DATE REVISED: -
							REV.: -	


11+190.00
-2.00%
-2.00%
0.50%
slope
1-3.00 m x 3.00 m x 50.00 m RCBC
I.I.E. 125.76
O.I.E. 125.52
11+050.00
-2.00%
-2.00%
I.E.= 123.464
I.E.= 123.464
0.90%
slope
2-3.00 m x 3.00 m x 77.00 m RCBC
I.I.E. 117.70
O.I.E. 117.01

| | | |

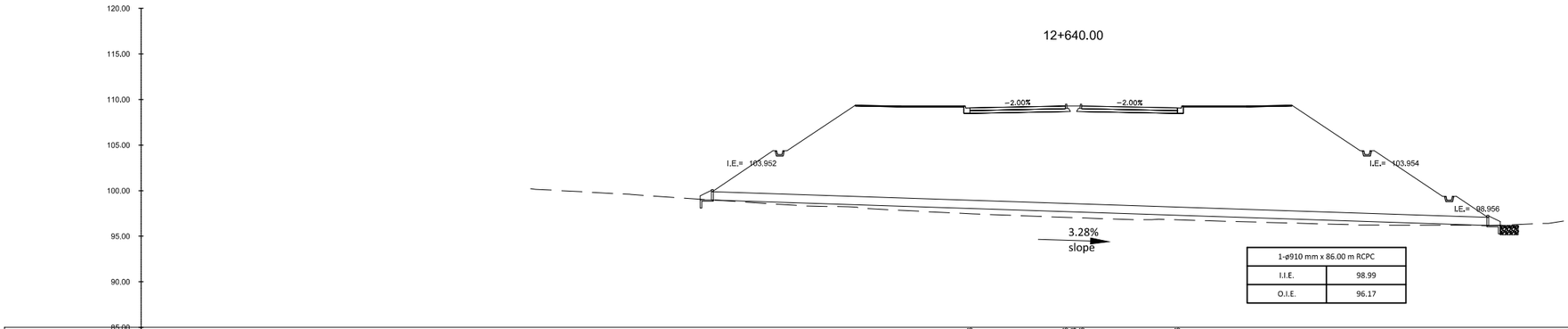
11+810.00



1-ø910 mm x 52.00 m RCPC	
I.I.E.	118.07
O.I.E.	117.81

| | | |

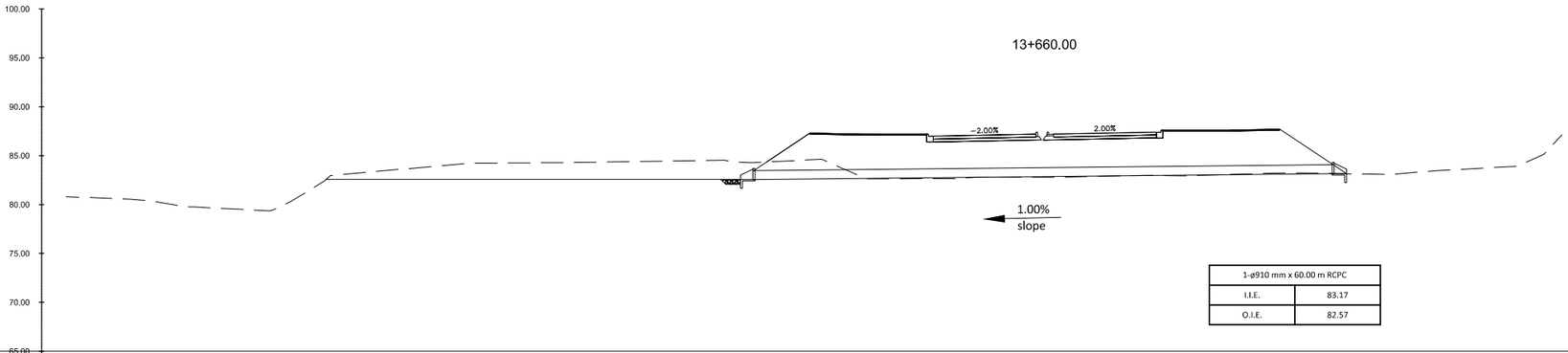
12+640.00



1-ø910 mm x 86.00 m RCPC	
I.I.E.	98.99
O.I.E.	96.17

| | | |

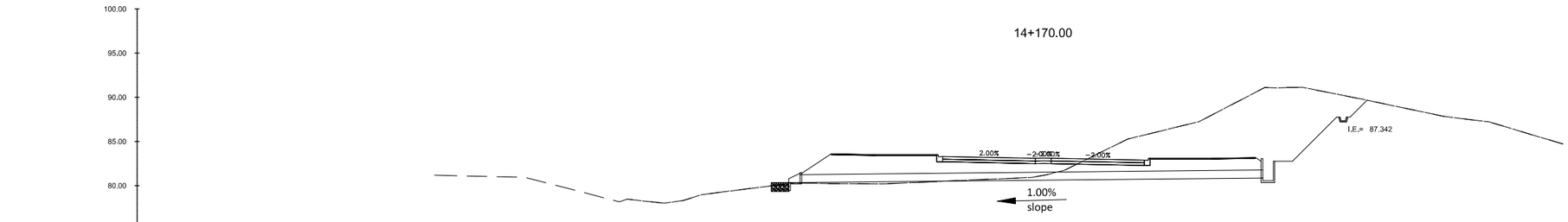
13+660.00



1-ø910 mm x 60.00 m RCPC	
I.I.E.	83.17
O.I.E.	82.57

| | | |

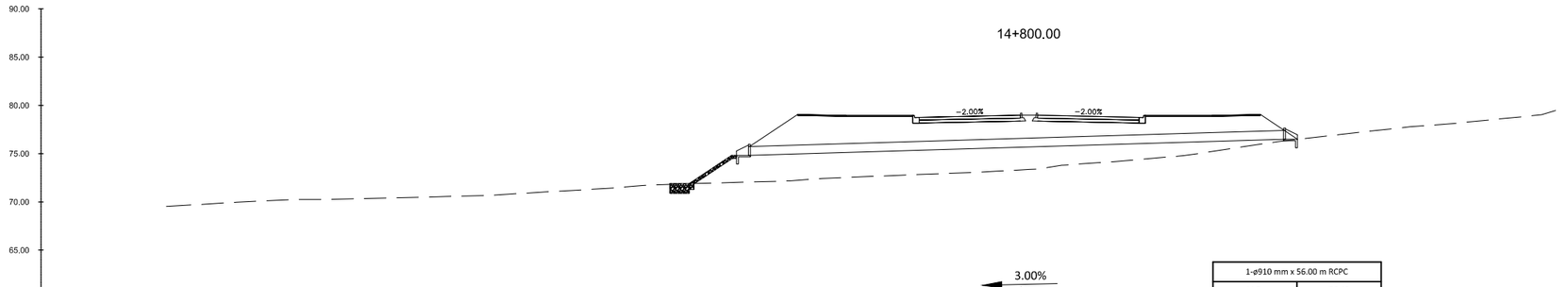
14+170.00



1-ø910 mm x 53.00 m RCPC	
I.I.E.	80.85
O.I.E.	80.33

| | | |

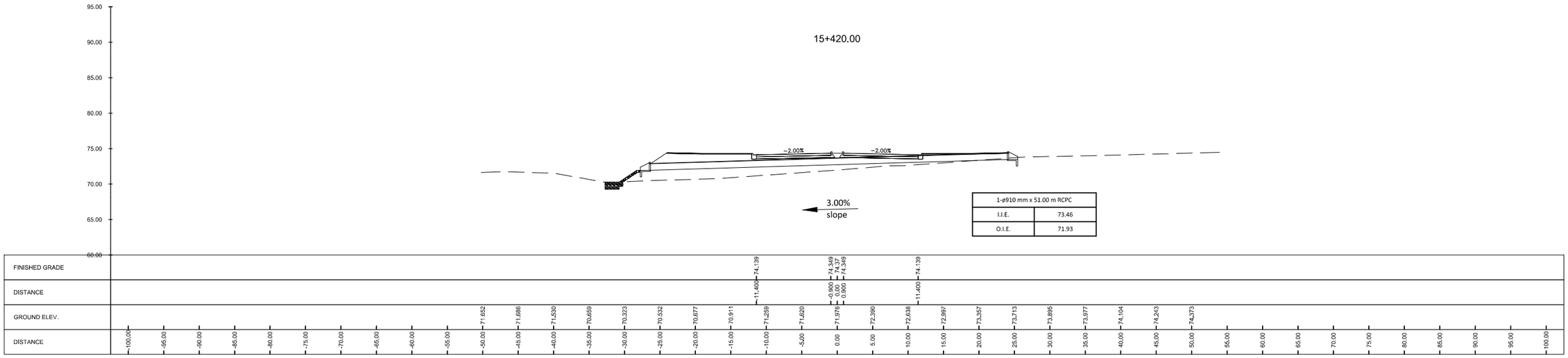
14+800.00



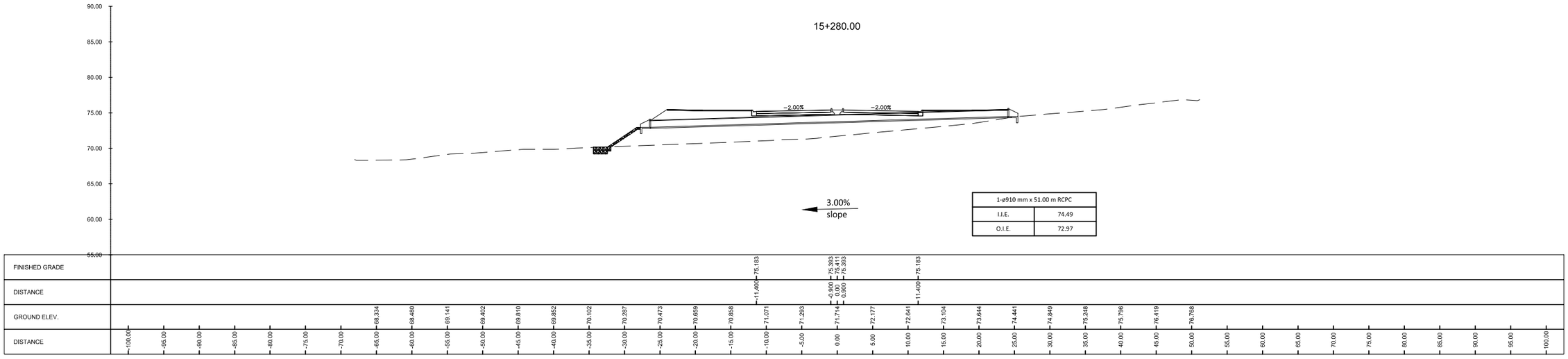
1-ø910 mm x 56.00 m RCPC	
I.I.E.	76.49
O.I.E.	74.82

| | | |

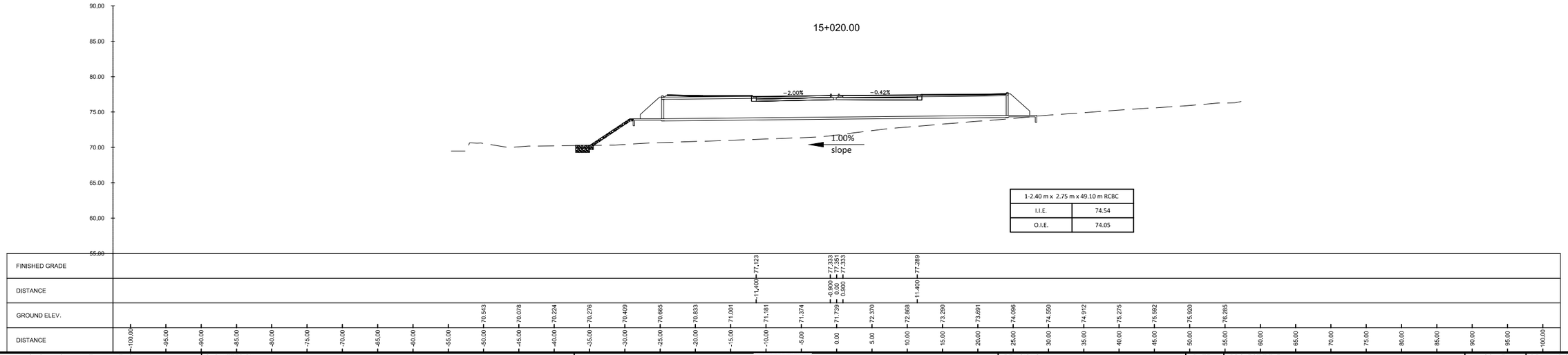
15+420.00



15+280.00



15+020.00



C O N S U L T A N T S

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LAING STREET, WACK, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

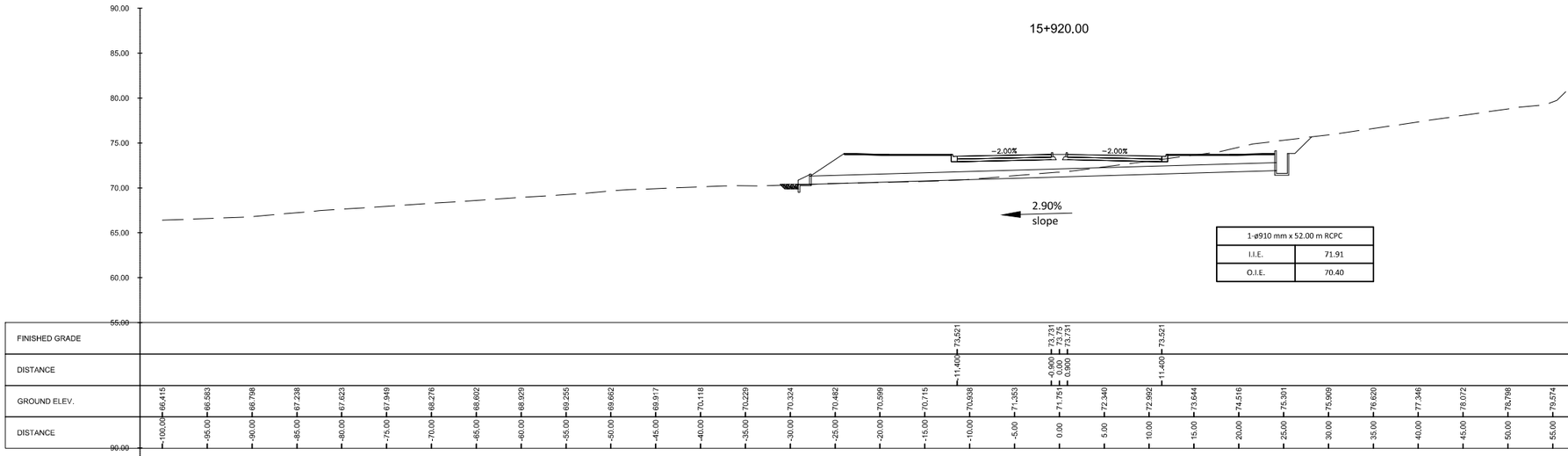
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

DRAINAGE CROSS SECTION
STA.15□020.00,STA.15□280.00,STA.15□420.00

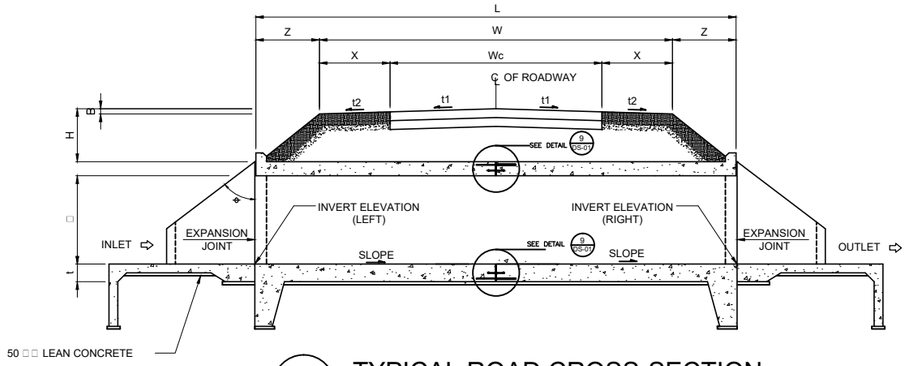
SCALE	DRAWING STATUS	
1:600 M	FINAL DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
-	DR-33	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

15+920.00



1-ø910 mm x 52.00 m RCPC	
I.I.E.	71.91
O.I.E.	70.40

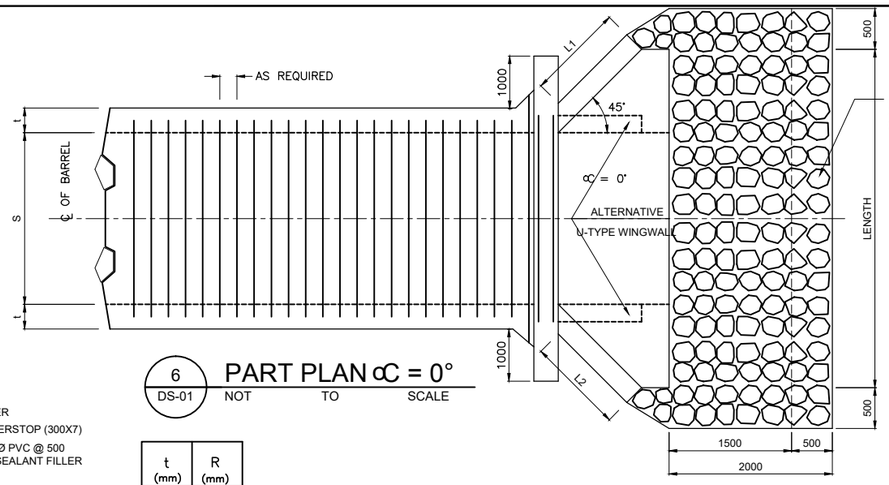
| | | |



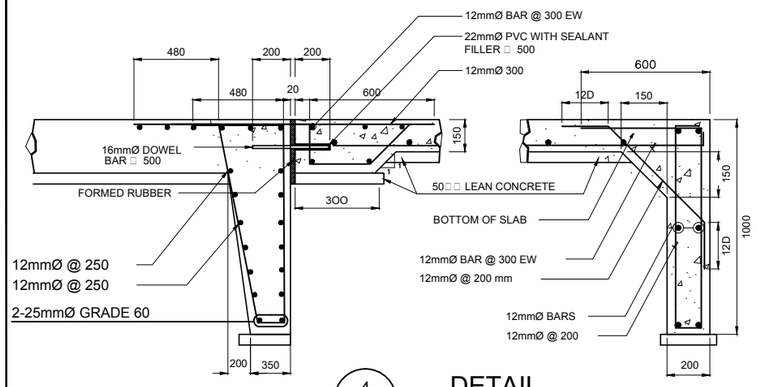
1 DS-01 TYPICAL ROAD CROSS-SECTION NOT TO SCALE

LEGEND :

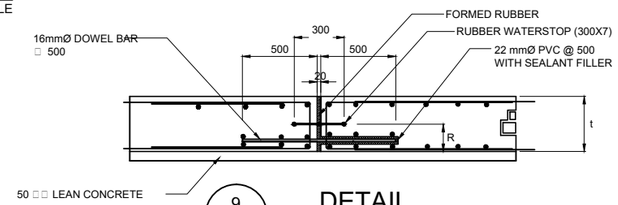
W	—	WIDTH OF ROADWAY FORMATION
X	—	WIDTH OF SHOULDER
Wc	—	WIDTH OF CARRIAGEWAY
H	—	COVER ABOVE THE CULVERT
L	—	TOTAL LENGTH OF BARREL
t1	—	SLOPE OF CARRIAGEWAY
t2	—	SLOPE OF SHOULDER
Z	—	(H□t) - (B□200)□tan O
B	—	□ ?0.5t Wc
□	—	HEIGHT OF CULVERT OPENING
t	—	THICKNESS OF CULVERT WALL OR SLAB
⊖	—	SLOPE OF EMBANKMENT
∝C	—	ANGLE OF SKEW



6 DS-01 PART PLAN ∝C = 0° NOT TO SCALE

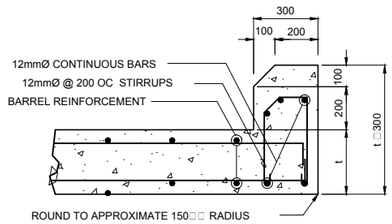


4 DS-01 DETAIL NOT TO SCALE



9 DS-01 DETAIL NOT TO SCALE

t (mm)	R (mm)
200	117
220	127
250	125
280	140
300	150
350	175



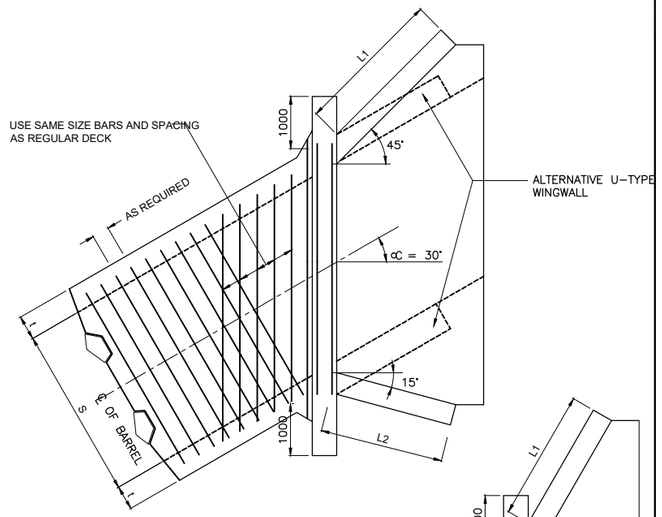
5 DS-01 DETAIL NOT TO SCALE

QUANTITIES FOR HAND-LAID STONE PROTECTION

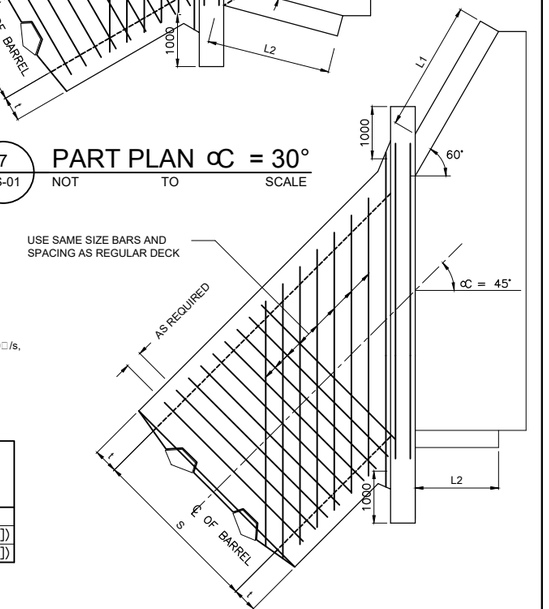
STATION	STRUCTURE	LENGTH (□)	VOLUME (□3)
19□670.00	2 - 2400 □2750	11.30	10.76
24□420.00	2 - 3000 □2750	11.00	10.50
25□260.00	2 - 3000 □3000	14.40	13.48
25□486.00	3 - 3000 □2750	15.80	14.70
26□423.00	2 - 2400 □2750	9.80	9.45
32□415.00	2 - 1800 □2100	7.80	7.70
32□830.00	3 - 4000 □4500	23.40	21.35
35□115.00	2 - 2400 □2750	12.30	11.64
35□557.00	1 - 3000 □2100	10.30	9.89
36□162.00	1 - 3000 □2750	15.50	14.44
37□450.00	3 - 3000 □2750	16.35	15.18

NOTES:

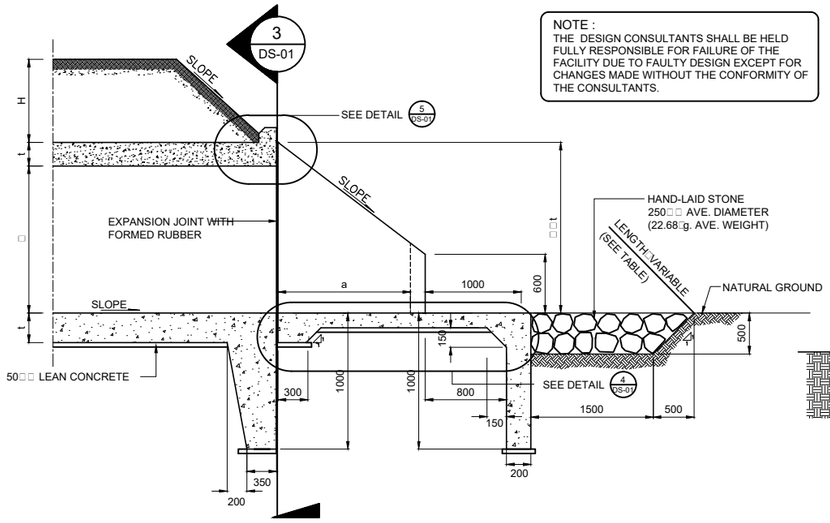
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. MINIMUM CONCRETE COVER SHALL BE 40□□ CLEAR WHEN HEIGHT OF FILL H□0 INCREASE COVER BY 30□□.
3. PROVIDE 100□□ GRANULAR BEDDING MATERIAL (FOUNDATION FILL)
4. PROVIDE EXPANSION JOINT AT AN INTERVAL EQUAL TO 20□.
5. FOR DOUBLE AND TRIPLE BARREL INSTALLATION, PROVIDE WATERSTOP AT INTERMEDIATE WALLS.
6. FOR CULVERTS WITH A VELOCITY GREATER THAN OR EQUAL TO 2.00□/s, PROVIDE HAND-LAID STONE PROTECTION AT OUTLET. SEE TABLE



7 DS-01 PART PLAN ∝C = 30° NOT TO SCALE

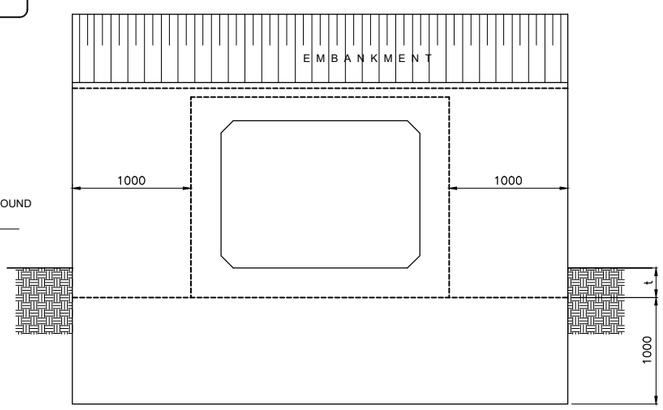


8 DS-01 PART PLAN ∝C = 45° NOT TO SCALE



2 DS-01 PART SECTION ALONG ℄ OF CULVERT NOT TO SCALE

NOTE :
THE DESIGN CONSULTANTS SHALL BE HELD FULLY RESPONSIBLE FOR FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANTS.

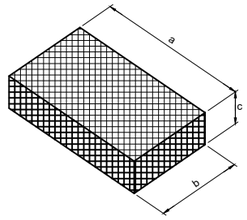


3 DS-01 SECTION NOT SCALE

HORIZONTAL SKEW ANGLE ∝C	L (mm)
0°	W+2tan ⊖ [(H+t) − (B+200)]
30°	1.1547 (W+2tan ⊖ [(H+t)−(B+200)])
45°	1.4142 (W+2tan ⊖ [(H+t)−(B+200)])

STANDARD DETAILS OF REINFORCED CONCRETE BOX CULVERT (RCBC)

CONSULTANTS	SUBMITTED BY			REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS	
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VARA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	BCDA Bases Conversion and Development Authority	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	FINAL DRAWING	
			CHECKED BY: RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	APPROVED BY: JOVITO M. SUNGA OIC - PMD DATE: -		SHEET CONTENT AIRPORT - NCC ACCESS ROAD	PROJECT CODE -	DRAWING NO. DS-01	SIZE A1
						STANDARD DETAILS OF REINFORCED CONCRETE BOX CULVERT (RCBC)	DATE APPROVED -	DATE REVISED -	REV. -

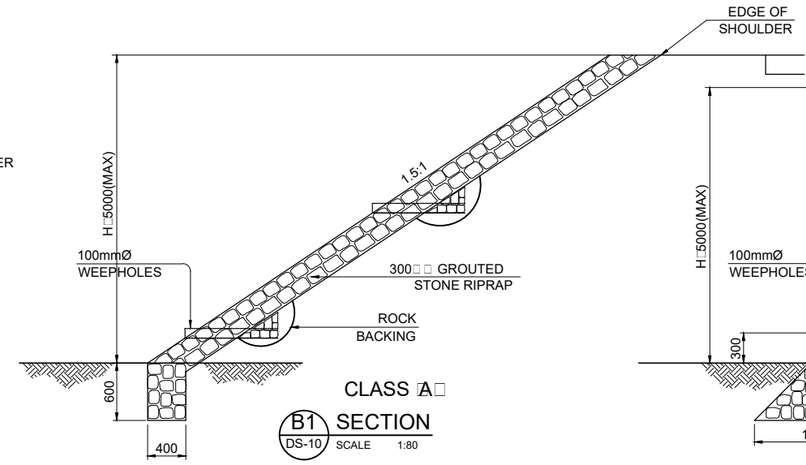


SIZE OF GABION		
a	b	c
2000	1000	1000
3000	1000	1000
4000	1000	1000
2000	1000	500
3000	1000	500
4000	1000	500

WIRE MESH GABIONS
NOT TO SCALE

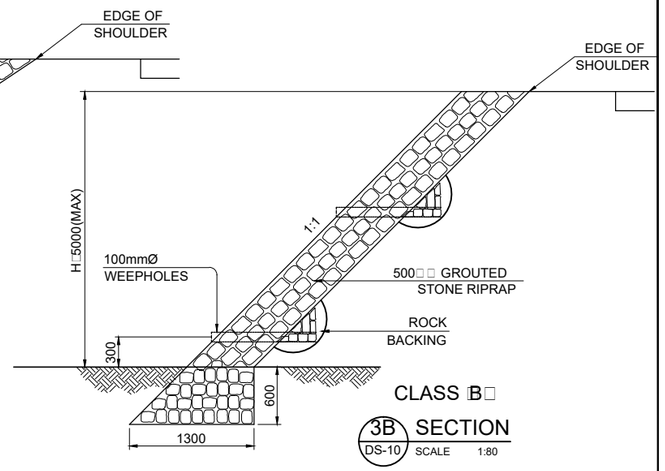
NOTES :

DSAIN OR WEEPHOLES SHALL BE PROVIDED IN SLOPE OF EMBANKMENT AT THE LOCATION SHOWN ON THE PLANS. NOT LESS THAN 600□□ OF ROCK BACKING SHALL BE PROVIDED AT EACH DSAIN OR WEEPHOLES TO INSURE PROPER OPERATION. THE DSAIN ROCK BACKING SHALL EXTEND TO AT LEAST 300□□ ABOVE THE DSAIN OR WEEPHOLES.



CLASS □A□

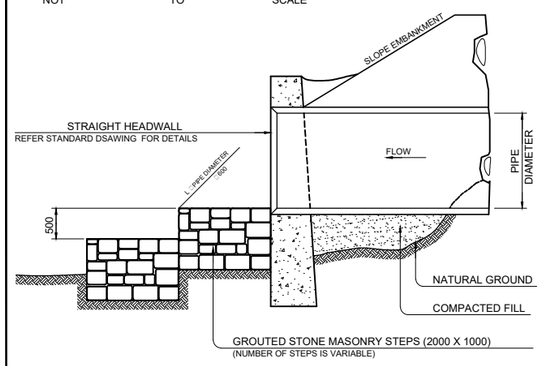
B1 DS-10 SECTION SCALE 1:80

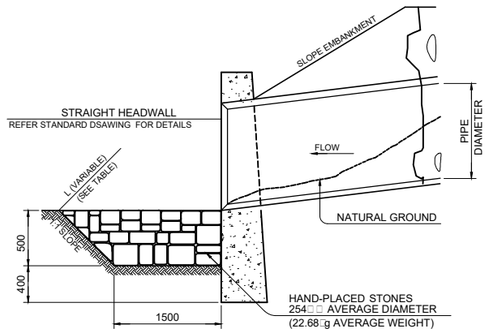


CLASS □B□

3B DS-10 SECTION SCALE 1:80

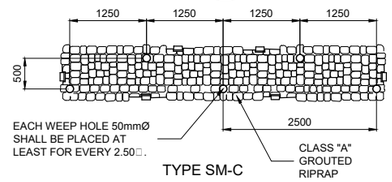
B DS-10 EMBANKMENT SLOPE PROTECTION DETAILS
SCALE AS SHOWN



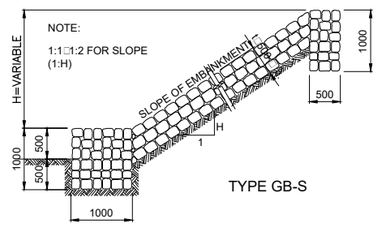


A1 DS-10 GROUTED STONE MASONRY STEP PROTECTION
NOT TO SCALE

A2 DS-10 RIPRAP (DUMPED STONES) PROTECTION
NOT TO SCALE

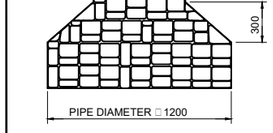


TYPE SM-C

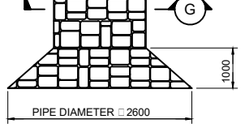


TYPE GB-S

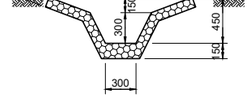
C1 DS-10 PARTIAL ELEVATION
SCALE 1:50



SECTION D

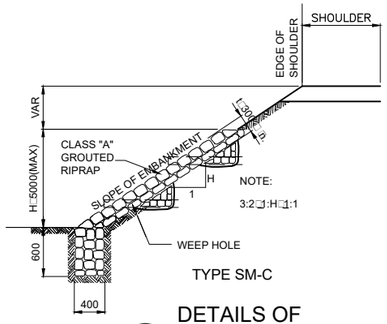


SECTION F



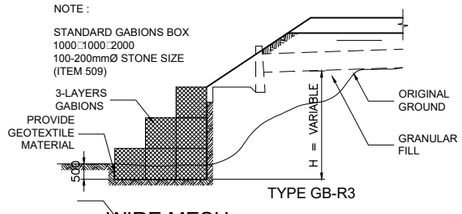
SECTION G AND H

PIPE DIAMETER	LENGTH, L	
	SINGLE	DOUBLE
610	1000	2330
910	1300	2990
1220	1600	3800



TYPE SM-C

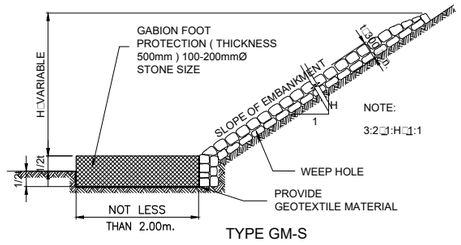
C2 DS-10 DETAILS OF GROUTED RIPRAP
SCALE 1:50



TYPE GB-R3

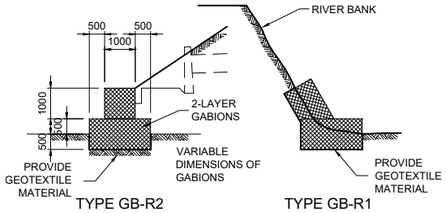
C5 DS-10 WIRE MESH GABIONS BOX IN STRUCTURES
SCALE 1:10

C3 DS-10 DETAIL OF GABIONS BOX
SCALE 1:50



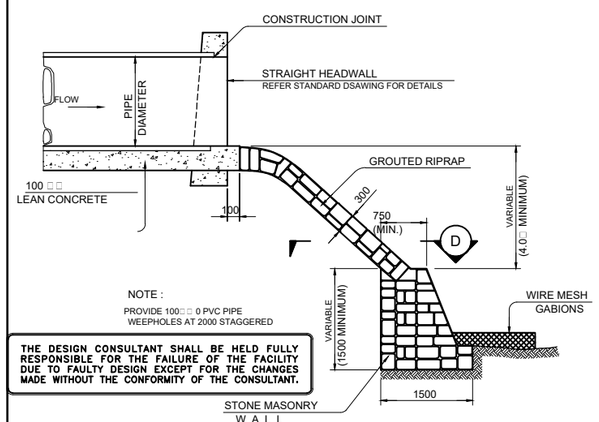
TYPE GM-S

C4 DS-10 DETAILS OF GABION MATTRESS
SCALE 1:50



TYPE GB-R2 TYPE GB-R1

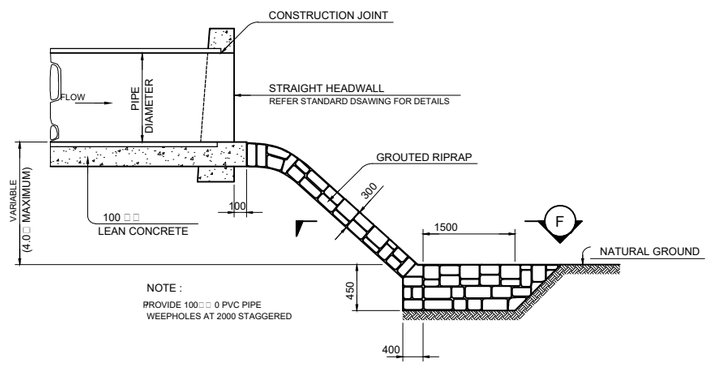
C6 DS-10 WIRE MESH GABIONS BOX UNCLASSIFIED
SCALE 1:10



NOTE :
PROVIDE 100□□ 0 PVC PIPE WEEPHOLES AT 2000 STAGGERED

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.

A3 DS-10 GROUTED RIPRAP CHUTE WITH STONE MASONRY PROTECTION
NOT TO SCALE

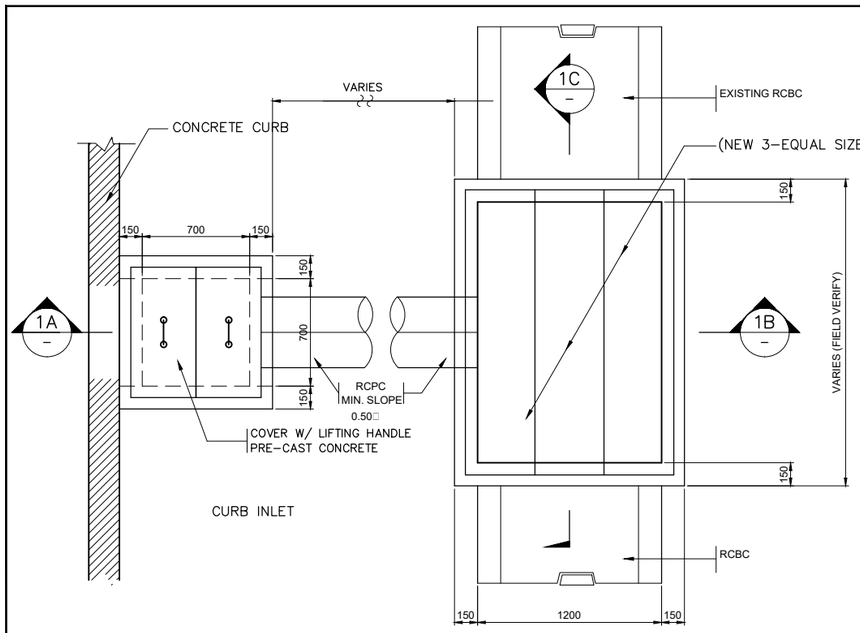


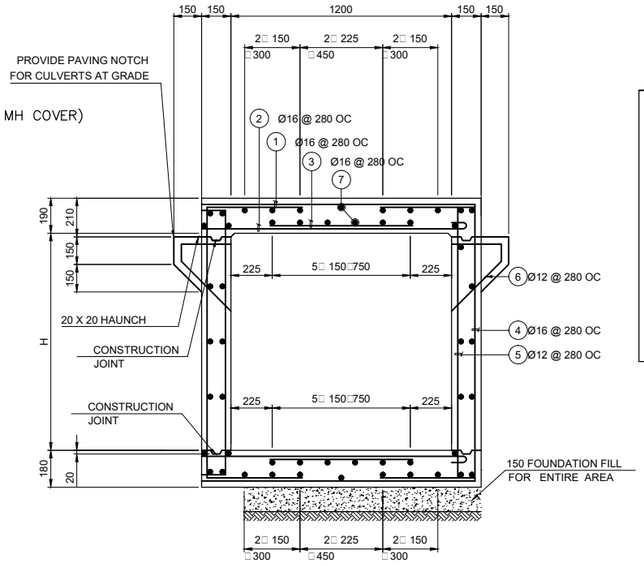
NOTE :
PROVIDE 100□□ 0 PVC PIPE WEEPHOLES AT 2000 STAGGERED

A4 DS-10 GROUTED RIPRAP CHUTE WITH HAND-PLACED DUMPED STONES PROTECTION
NOT TO SCALE

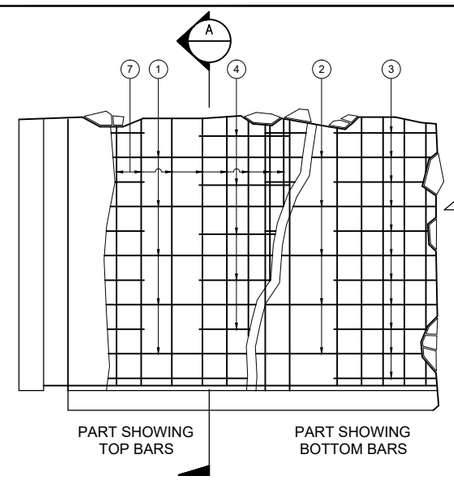
C DS-10 EMBANKMENT SLOPE PROTECTION DETAILS
SCALE AS SHOWN

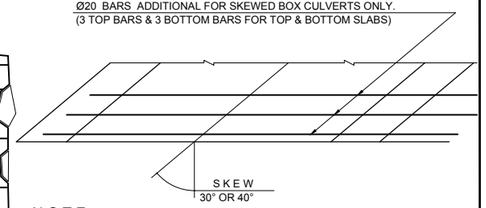
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS	
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VARIA, DILIMAN, QUEZON CITY, 1128	EFRENT. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	APPROVED BY: JOVITO M. SUNGA OIC - PMD DATE: -	A B C D E F	DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD STANDARD PROTECTION FOR DRAINAGE STRUCTURES	AS SHOWN	FINAL DRAWING	
							PROJECT CODE: -	DRAWING NO.: DS-10	SIZE: A1
							DATE APPROVED: -	DATE REVISED: -	REV.: -



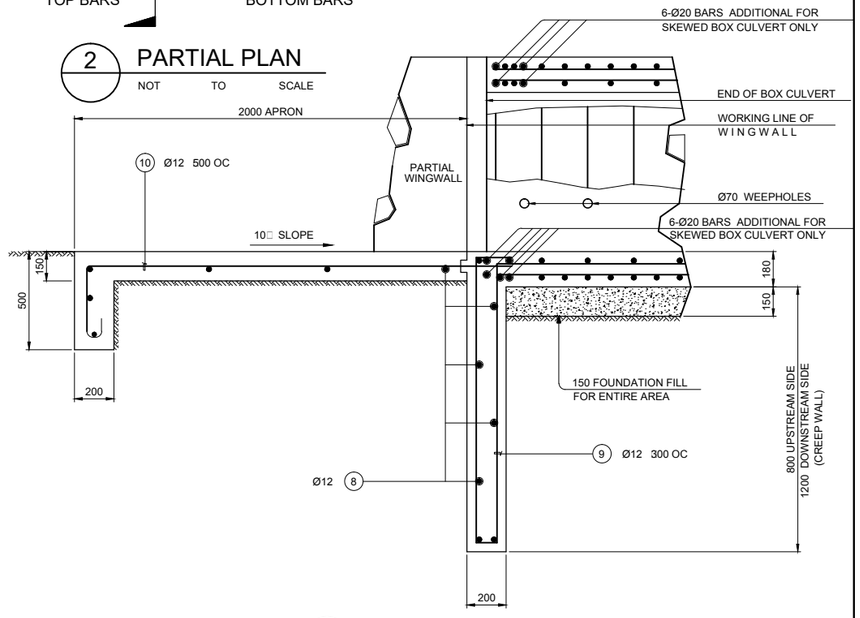


1 SECTION (RCBC)
NOT TO SCALE



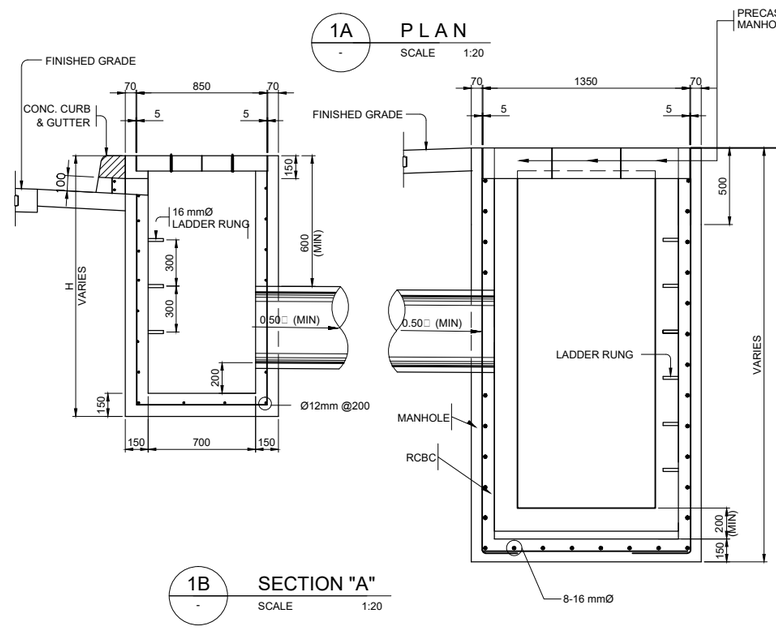


NOTE:
ALL OTHER REINFORCING BARS SHALL BE PERPENDICULAR OR PARALLEL, AS THE CASE MAYBE, TO BOX AXIS.



2 PARTIAL PLAN
NOT TO SCALE

3 PARTIAL SECTION "A"
NOT TO SCALE



1A PLAN
SCALE 1:20

1B SECTION "A"
SCALE 1:20

ESTIMATE OF QUANTITIES (PER LINEAR METER OF LENGTH)

SINGLE BARREL				
HEIGHT OF CELL "H" (METER)	CONCRETE CLASS "A" (□ ϐ	REINFORCING STEEL (□g)	EXCAVATION (□ ϐ	FOUNDATION F I L L (□ ϐ
1.20	0.95	132.59	0.67	0.27
0.90	0.85	127.30	0.67	0.27
0.60	0.75	122.01	0.67	0.27

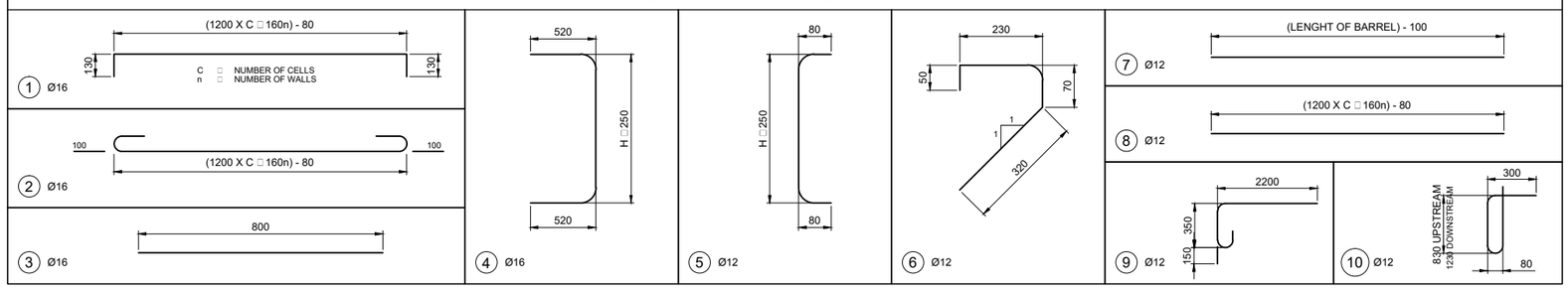
ADDITIONAL WEIGHT OF REINFORCEMENT PER END OF BOX CULVERT

30° SKEW	□ 98.5 □gs.	30° SKEW	□ 46.5 □gs.
45° SKEW	□ 120.5 □gs.	45° SKEW	□ 57.0 □gs.

WINGWALL, APRON AND END TOE FOR BOTH ENDS

SINGLE BARREL			
COMMON TO ALL HEIGHT OF CELL	CONCRETE CLASS "A" (□ ϐ	REINFORCING STEEL (□g)	EXCAVATION (□ ϐ
	1.73	57.94	3.64

BAR BENDING DIAGRAM



1 CURB INLET DETAIL
SCALE 1:20

2 RC BOX CULVERT DETAIL
SCALE AS-SHOWN

CONSULTANTS
Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VARA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY
EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

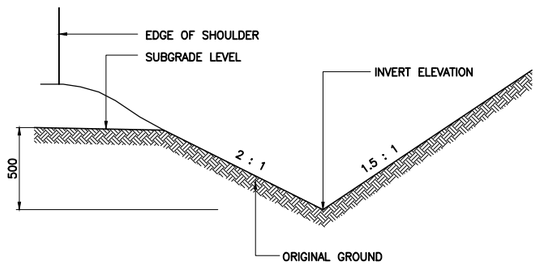
APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

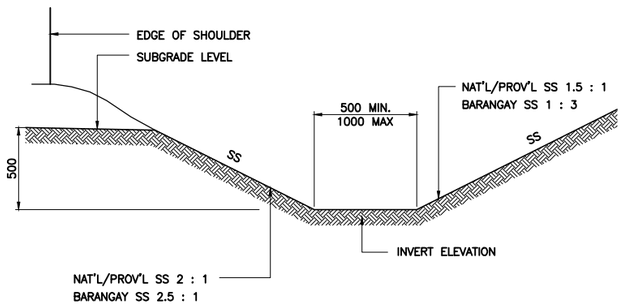
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT PACKAGE 5 - MACARTHUR TO NCC ACCESS ROAD

CURB INLET AND RCBC DETAIL

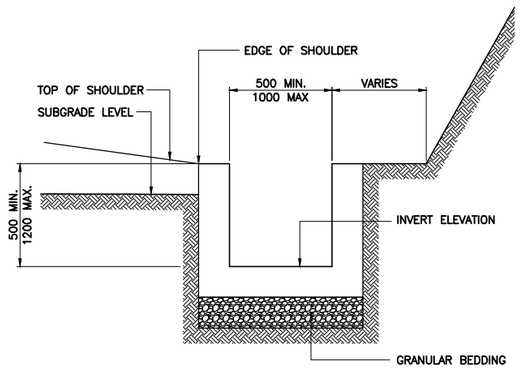
SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
-	DS-11	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



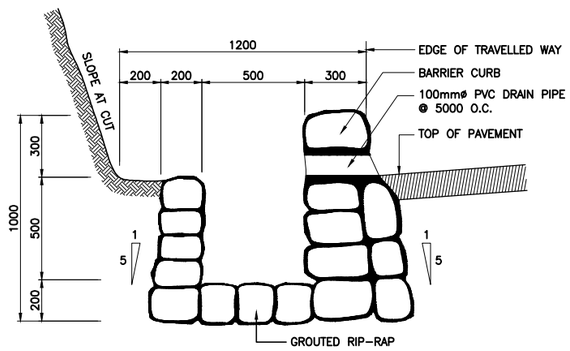
1A C-5 TYPE I – DITCH
SCALE 1:15



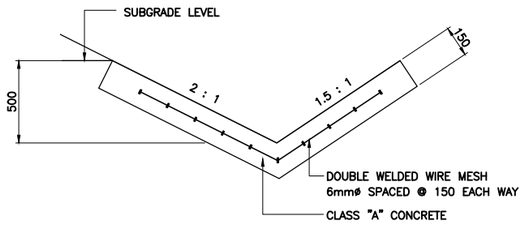
1B C-5 TYPE II – DITCH
SCALE 1:15



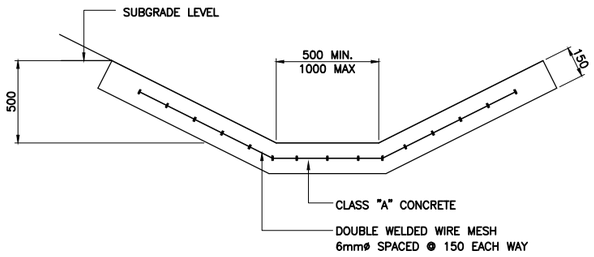
1C C-5 TYPE III – LINED DITCH
SCALE 1:15



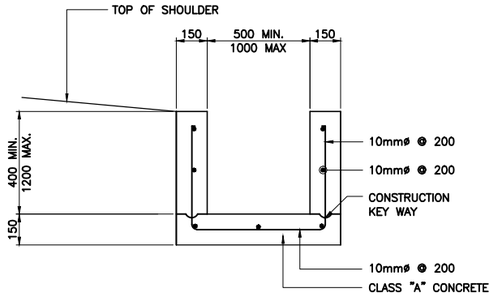
4C C-5 TYPE III – A LINED DITCH
SCALE 1:15



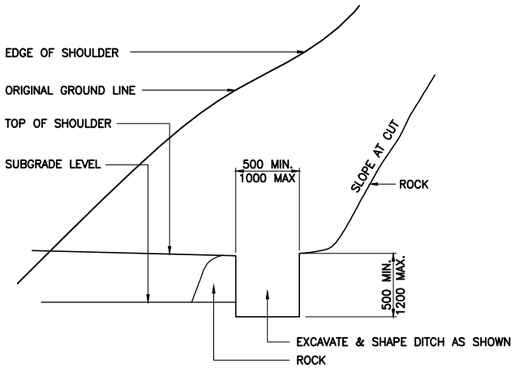
2A C-5 CONCRETE LINED DITCH
SCALE 1:15



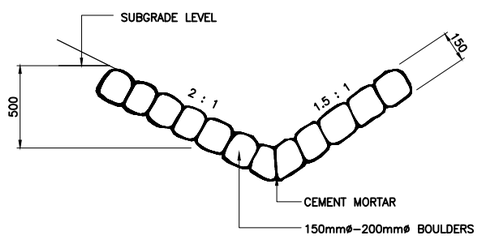
2B C-5 CONCRETE LINED DITCH
SCALE 1:15



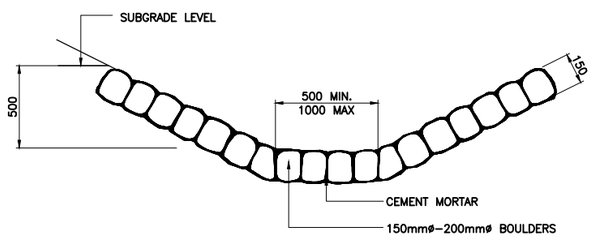
2C C-5 CONCRETE LINED DITCH
SCALE 1:15



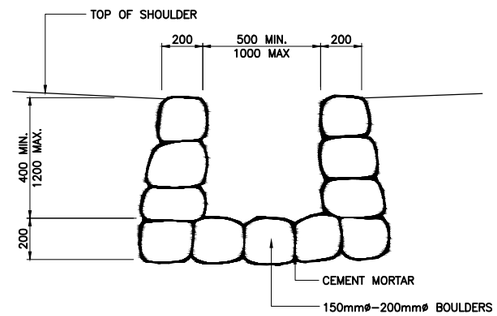
D C-5 DITCH THROUGH ROCK
SCALE NTS



3A C-5 MASORNRY LINED DITCH
SCALE 1:15



3B C-5 MASORNRY LINED DITCH
SCALE 1:15



3C C-5 MASORNRY LINED DITCH
SCALE 1:15

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. CEMENT MORTAR FOR MASONRY LINING & GROUTED RIP-RAP SHALL BE ONE PART PORTLAND CEMENT AND TWO PARTS FINE AGGREGATE.
3. LOCATIONS OF DITCH THROUGH ROCK SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD TO SUIT ACTUAL FIELD CONDITION.
4. FOR TYPE II OR TYPE II LINED DITCH AND TYPE III LINED DITCH.

TYPE II A	BASE = 500mm
TYPE II B	BASE = 1000mm
TYPE III B	BASE = 500mm
TYPE III C	BASE = 1000mm

A C-5 TYPE I – ROAD DITCH
SCALE AS SHOWN

B C-5 TYPE II – ROAD DITCH
SCALE AS SHOWN

C C-5 TYPE III – ROAD DITCH
SCALE AS SHOWN

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFRENT E. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

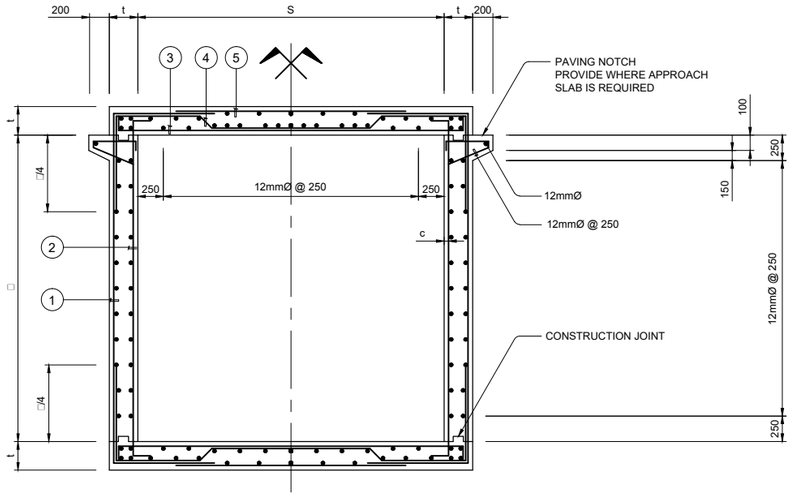
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS		DATE
A		
B		
C		
D		
E		
F		

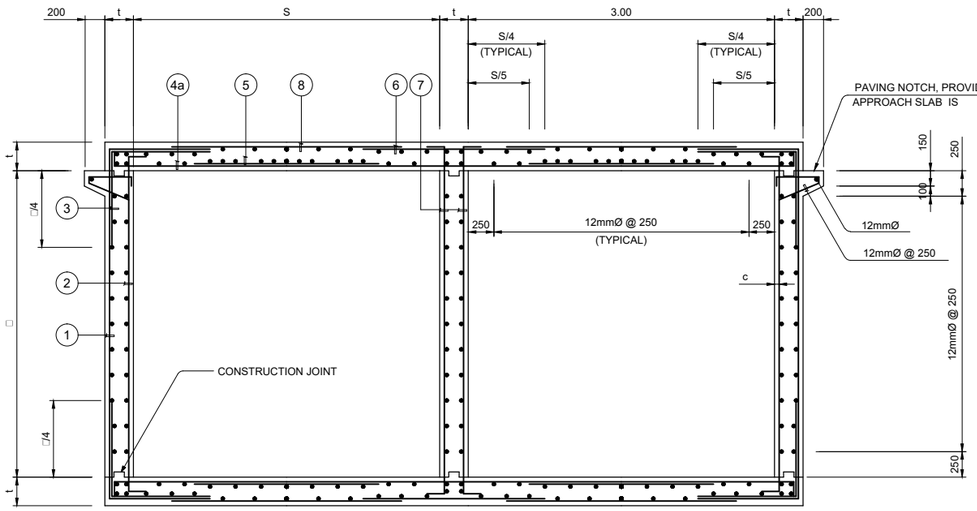
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

DETAILS OF DITCHES AND CANAL

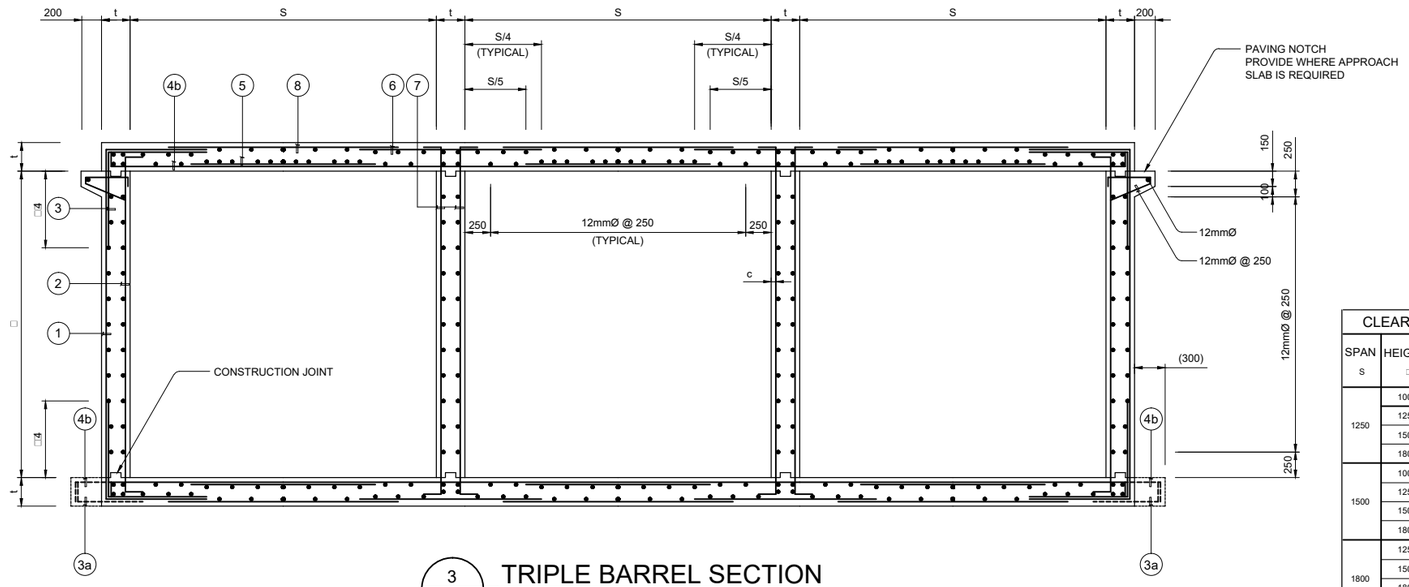
SCALE	DRAWING STATUS	
1:200 M		
PROJECT CODE	DRAWING NO.	SIZE
-	DS-12	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



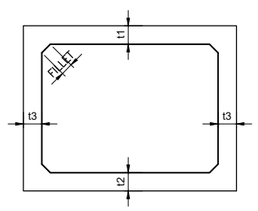
1 DS-02 **SINGLE BARREL SECTION**
NOT 1:30



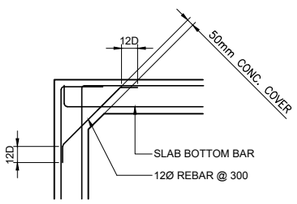
2 DS-02 **DOUBLE BARREL SECTION**
SCALE 1:30



3 DS-02 **TRIPLE BARREL SECTION**
SCALE 1:30



RCBC FILLET DETAIL



NOTE :

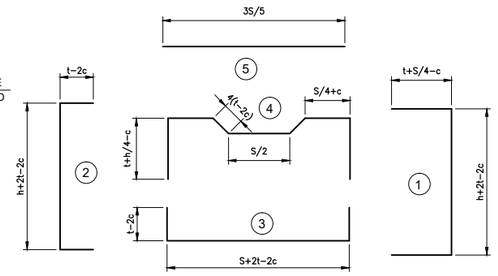
FOR WALL THICKNESS LESS THAN 240,
STAGGER HORIZONTAL REINFORCEMENT
AS SHOWN.

LEGEND :

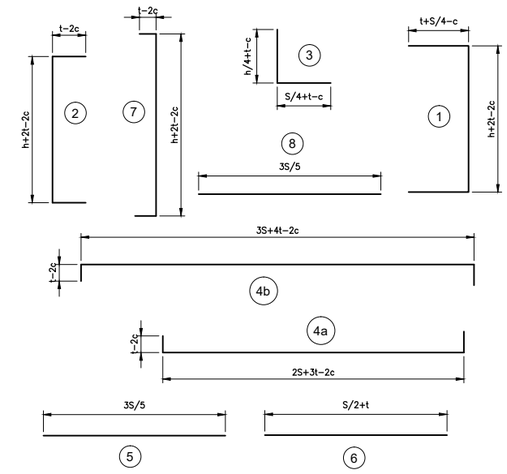
c □ CONCRETE CLEAR COVER (40mm)

o----- ADDITIONAL REBARS IF FILL IS LESS THAN 600mm

t	FILLET
t1, t2 & t3 50c□≥	20c□
t1, t2 & t3 30c□>50c□ <	15c□
t1, t2 & t3 30c□<	10c□



BAR DIAGRAMS - SINGLE BARREL



BAR DIAGRAMS - DOUBLE & TRIPLE BARREL

SCHEDULE OF REBAR FOR STANDARD BOX CULVERTS & WINGWALLS

CLEAR		SINGLE BARREL BOX CULVERT											DOUBLE AND TRIPLE BARREL BOX CULVERT															
SPAN S	HEIGHT □	t	BAR 1		BAR 2		BAR 3		BAR 4		BAR 5		t	BAR 1		BAR 2		BAR 3		BAR 4		BAR 5		BAR 6		BAR 7		BAR 8	
			Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING		Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING	Ø	SPACING
1250	1000	200	12	300	12	300	12	300	12	300	12	300	200	12	300	16	300	12	300	12	300	12	300	20	200	12	300	12	300
	1250	200	12	300	12	300	12	300	12	300	12	300	200	12	300	16	300	12	300	12	300	12	300	20	200	12	300	12	300
	1500	200	12	300	12	280	12	300	12	300	12	300	200	12	300	16	280	12	300	12	300	12	300	20	200	12	300	12	300
	1800	200	12	300	12	260	12	300	12	300	12	300	200	12	300	16	260	12	300	12	300	12	300	20	200	12	300	12	300
1500	1000	200	12	240	12	300	12	240	12	240	12	300	200	12	300	16	300	16	300	16	300	16	300	20	200	12	300	12	280
	1250	200	12	240	12	300	12	240	12	240	12	300	200	16	300	16	300	16	300	16	300	16	300	20	200	12	300	12	280
	1500	200	12	240	12	280	12	240	12	240	12	300	200	16	300	16	280	16	300	16	300	16	300	20	200	12	300	12	280
	1800	200	12	240	12	280	12	240	12	240	12	300	200	16	300	16	260	16	300	16	300	16	300	20	200	12	300	12	280
1800	1250	200	12	260	12	300	12	260	12	260	12	280	250	16	300	16	300	16	300	16	300	16	300	20	190	12	300	12	220
	1500	200	12	260	12	300	12	260	12	260	12	280	250	16	300	16	280	16	300	16	300	16	300	20	190	12	300	12	220
	1800	200	12	260	12	280	12	260	12	260	12	280	250	16	300	16	280	16	300	16	300	16	300	20	190	12	300	12	220
	2100	200	12	260	12	260	12	260	12	260	12	280	250	16	300	16	260	16	300	16	300	16	300	20	190	12	300	12	220
2400	1800	220	12	220	12	280	12	220	12	220	12	240	300	16	300	16	280	16	300	16	300	16	300	20	120	12	300	12	200
	2100	220	12	220	12	260	12	220	12	220	12	240	300	16	300	16	280	16	300	16	300	16	300	20	120	12	300	12	200
	2400	220	12	220	12	200	12	220	12	220	12	240	300	16	300	16	280	16	300	16	300	16	300	20	120	12	300	12	200
	2750	220	12	200	12	180	12	200	12	200	12	240	300	16	300	16	280	16	300	16	300	16	300	20	120	12	300	12	200
3000	2100	280	12	260	12	260	12	260	12	260	12	200	300	20	300	16	280	20	300	20	300	20	300	25	170	12	300	12	200
	2400	280	12	260	12	260	12	260	12	260	12	200	300	20	300	16	280	20	300	20	300	20	300	25	170	12	300	12	200
	2750	280	12	200	12	240	12	220	12	200	12	200	300	20	300	16	200	20	3600	20	300	20	300	25	170	16	300	12	200
	3000	280	12	200	12	220	12	200	12	200	12	200	300	20	300	16	200	20	300	20	300	20	300	25	170	16	300	12	200

SCHEDULE OF REBAR FOR SPECIAL DESIGN BOX CULVERTS & WINGWALLS

4000	4500												350	20	180	20	200	20	220	25	220	25	150	20	220	16	200		

NOTE :
THE DESIGN CONSULTANTS SHALL BE HELD FULLY RESPONSIBLE FOR FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANTS.

STANDARD DETAILS OF REINFORCED CONCRETE BOX CULVERT (RCBC) BARRELS

CONSULTANTS
Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LAING STREET, VIGAN, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY
EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD
STANDARD DETAILS OF REINFORCED CONCRETE BOX CULVERT (RCBC) BARREL

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
-	DS-02	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

QUANTITIES FOR STANDARD BOX CULVERTS

CLEAR		QUANTITY PER METER OF BARREL					
		SINGLE		DOUBLE		TRIPLE	
SPAN S	HEIGHT	CONCRETE (□³)	REINFORCEMENT (□g)	CONCRETE (□³)	REINFORCEMENT (□g)	CONCRETE (□³)	REINFORCEMENT (□g)
1250	1000	0.94	113.32	1.63	209.22	2.33	296.18
	1250	1.03	121.63	1.77	216.22	2.51	312.39
	1500	1.12	130.98	1.90	232.07	2.69	330.39
	1800	1.23	141.71	2.07	249.50	2.91	352.09
1500	1000	1.03	165.90	2.04	253.90	2.92	354.80
	1250	1.12	177.10	2.19	256.00	3.12	370.20
	1500	1.21	189.60	2.34	279.60	3.32	387.10
	1800	1.32	202.50	2.52	296.20	3.56	407.10
1800	1250	1.38	189.20	3.11	312.30	4.45	437.00
	1500	1.48	199.90	3.30	326.10	4.70	454.00
	1800	1.60	214.80	3.53	342.80	5.00	475.20
	2100	1.72	239.60	3.75	357.50	5.30	494.40
2400	1800	2.04	272.70	5.04	431.80	7.20	619.10
	2100	2.17	288.50	5.31	447.30	7.56	637.10
	2400	2.31	314.10	5.58	461.80	7.92	656.40
	2750	2.46	356.70	5.90	478.60	8.34	677.70
3000	2100	3.17	308.70	6.03	635.70	8.64	899.70
	2400	3.34	321.30	6.30	652.00	9.00	919.60
	2750	3.53	374.40	6.62	705.60	9.42	895.00
	3000	3.67	413.50	6.84	721.60	9.72	1015.40
QUANTITIES FOR SPECIAL DESIGN BOX CULVERTS							
4000	4500					15.56	2153.00

QUANTITIES FOR STANDARD WINGWALLS

□ (□eter)	□□t (□eter)	L □ L 2 (□eter)	QUANTITY PER WINGWALL AND APRON SLAB					
			SINGLE		DOUBLE		TRIPLE	
			CONCRETE (□³)	REINFORCEMENT (□g)	CONCRETE (□³)	REINFORCEMENT (□g)	CONCRETE (□³)	REINFORCEMENT (□g)
1.37	1.20	1.23	5.77	367	6.33	372	7.50	366
1.75	1.45	1.76	7.18	454	8.79	547	10.17	499
2.12	1.70	2.29	7.45	489	11.55	582	13.06	657
2.57	2.00	2.93	9.94	659	15.10	749	16.80	832
1.37	1.20	1.23	5.05	326	6.71	419	7.97	513
1.75	1.45	1.76	7.45	489	9.10	582	10.62	676
2.12	1.70	2.29	8.88	572	11.80	745	13.51	838
2.57	2.00	2.93	9.33	607	15.28	955	17.23	1071
1.78	1.45	1.80	7.07	456	8.35	557	9.89	657
2.15	1.70	2.33	9.33	607	10.62	696	12.35	796
2.60	2.00	2.97	10.14	739	13.57	894	15.53	1015
3.05	2.30	3.61	12.96	890	16.61	980	18.79	1233
2.63	2.02	3.01	9.63	698	16.30	1085	19.10	1105
3.08	2.32	3.65	12.62	913	17.39	1141	20.03	1386
3.53	2.62	4.28	12.53	1127	21.31	1442	24.27	1648
4.06	2.97	5.03	19.27	1395	22.18	1461	23.35	1967
3.17	2.38	3.78	15.87	1037	20.36	1337	23.90	1529
3.62	2.68	4.41	16.25	1055	22.25	1330	26.56	1796
4.15	3.03	5.15	20.97	1346	24.15	1605	29.60	2012
4.52	3.28	5.68	22.73	1362	28.79	1925	32.78	2427
QUANTITIES FOR SPECIAL DESIGN WINGWALLS								
6.88	4.85	9.02					66.57	2916

GENERAL NOTES :

SPECIFICATION :

AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 16th EDITION 1996.

DESIGN LOAD :

LIVE LOAD MS-18 (HS 20-44)

CONCRETE :

ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH IN 28 DAYS OF □c □20.7 MPa (3000□s□).
ALL EXPOSED CORNERS TO BE CHAMFERED 20 MINIMUM. NO CONSTRUCTION JOINT ARE TO BE MADE EXCEPT WHERE SHOWN. WHEN BOTTOM SLAB IS SUBJECT TO ABRASION ADD 25□□ TO BOTTOM SLAB TO INCREASE COVERAGE ON STEEL.

STEEL REINFORCEMENT :

ALL REINFORCING STEEL TO BE INTERMEDIATE (GRADE 40 OR HIGHER) ASTM A-615 WITH DEFORMATIONS CONFORMING TO ASTM A-305.

GENERAL :

IN STATING CULVERT SIZE, GIVE SPAN BY HEIGHT (SPAN FIRST) WHEN HEIGHT OF FILL, H□0 THE TOP OF SURFACE OF THE UPPER SLAB SHALL FOLLOW THE CROWN OF THE FINISHED ROADWAY. THE BOX CULVERT SHALL BE CONSTRUCTED ON A LAYER OF LEAN CONCRETE 50□□ MINIMUM THICKNESS.

LIVE LOAD DISTRIBUTION REINFORCEMENT :

WHEN THERE IS LESS THAN 600□□ OF FILL ABOVE TOP SLAB OF CULVERT ADDITIONAL REINFORCEMENT TRANSVERSE TO THE MAIN REINFORCEMENT IS ADDED TO THE BOTTOM OF THE TOP SLAB IN ACCORDANCE WITH AASHTO 1.3.2.E.

HEIGHT OF FILL :

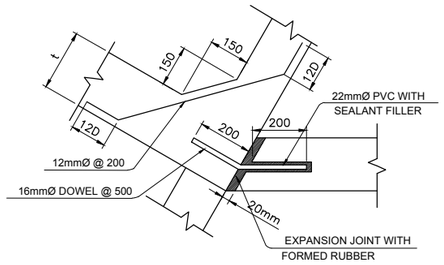
MAXIMUM HEIGHT OF FILL IS 3000□□ ABOVE TOP SLAB, FOR HEIGHT OF FILL GREATER THAN 3000□□ SPECIAL DESIGN OF BOX CULVERT SHOULD BE DONE.

HORIZONTAL SKEW ANGLE OC	LENGTH OF WINGWALLS
0°	1 L □L2 □1.414a
30°	1 L □1.414a L □1.035a
45°	1 L □2.000a L 2 a

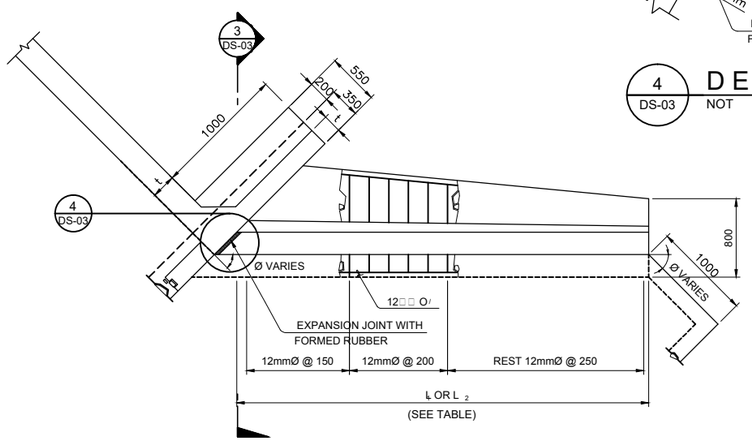
WHERE :

a □1.5 (□□t-600) FOR SLOPE 1.5:1

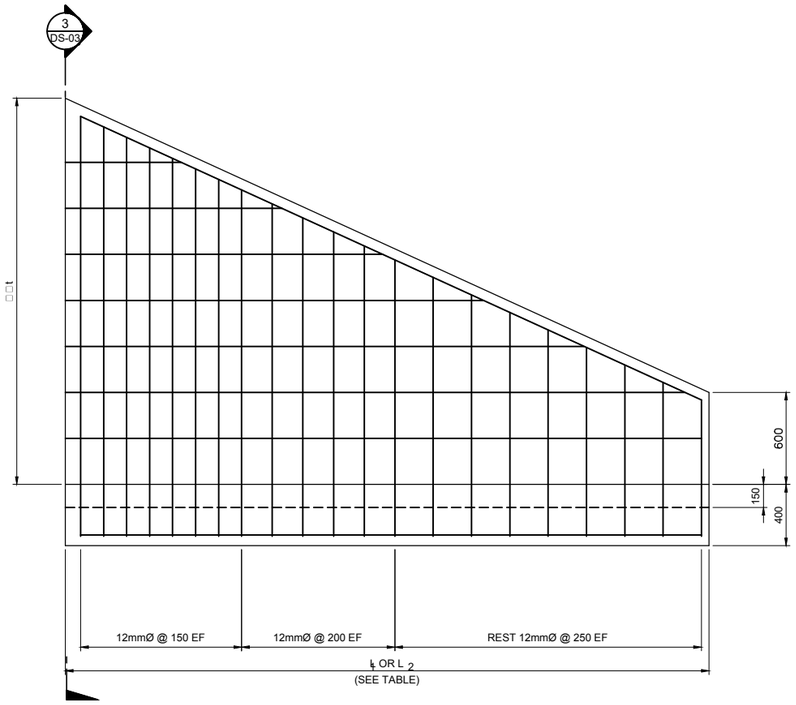
a □2.0 (□□t-600) FOR SLOPE 2:1



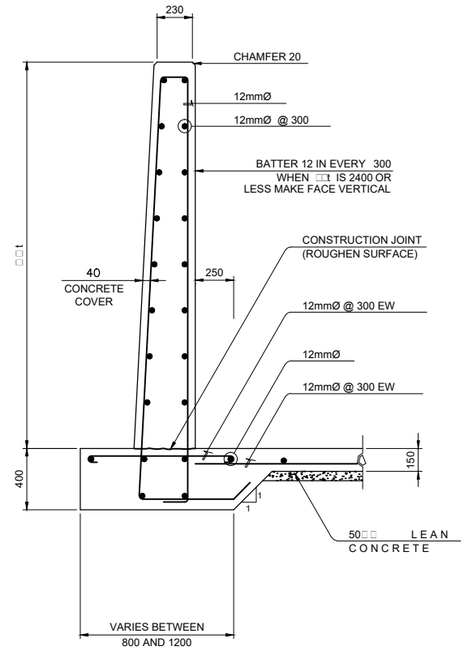
4 DS-03 DETAIL
NOT TO SCALE



4 DS-03 WINGWALL PLAN
NOT TO SCALE



2 DS-03 WINGWALL ELEVATION
SCALE 1:20



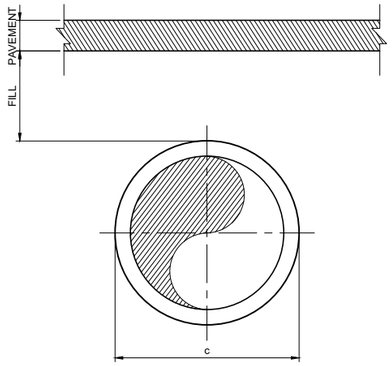
3 DS-03 SECTION
SCALE 1:20

NOTE :
THE DESIGN CONSULTANTS SHALL BE HELD FULLY RESPONSIBLE FOR FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANTS.

RCBC WINGWALL DETAILS (WW)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LAING STREET, VIGAN, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	CHECKED BY RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT - NCC ACCESS ROAD STANDARD DETAILS OF RCBC WINGWALL	AS SHOWN	FINAL DRAWING
			JOVITO M. SUNGA OIC - PMD DATE: -				PROJECT CODE	DRAWING NO. / SIZE
							-	DS-03 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -

DESIGN REQUIREMENT OF REINFORCED CONCRETE PIPE CULVERT



STANDARD STRENGTH PIPES:
FILL 1/2 E.D. FOR FLEXIBLE PAVEMENT OR MIN. OF 0.60 □
0.30 □ FOR RIGID PAVEMENT
EXTRA STRENGTH PIPES:
FILL: 0.30 □ FOR RIGID AND FLEXIBLE PAVEMENTS

MINIMUM PIPE COVERING

STANDARD STRENGTH REINFORCED CONCRETE PIPE CULVERTS

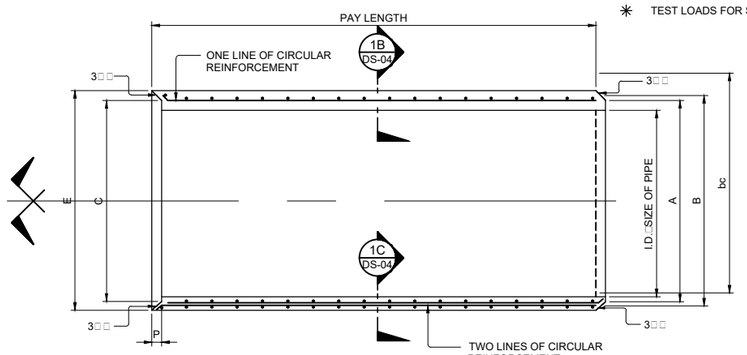
SIZE OF PIPE (□□)	CONCRETE 247 □g/c□ ² (3,500 lb/in ²)									CONCRETE 317 □g/c□ ² (4,500 lb/in ²)									STRENGTH TEST REQUIREMENTS □g/□ OF PIPE	
	WALL THICK-NESS (□□)	TONGUE (□□)		GROOVE (□□)		DEPTH (□□)	MINIMUM REINFORCEMENT c□ /□ OF PIPE			WALL THICK-NESS (□□)	TONGUE (□□)		GROOVE (□□)		DEPTH (□□)	MINIMUM REINFORCEMENT c□ /□ OF PIPE ❁			THREE-EDGE-BEARING METHOD ✳	
I.D.	t	A	B	C	E	P	CIRCULAR REINFORCEMENT	ELLIPTICAL REINFORCEMENT		t	A	B	C	E	P	CIRCULAR REINFORCEMENT	ELLIPTICAL REINFORCEMENT		0.00025□ CRACK LOAD	ULTIMATE LOAD
300	57	344	363	351	370	44	1 LINE 1.48			51	495	514	502	521	44	1 LINE 1.69			3.355	5.218
380	57	344	363	351	370	44	1 LINE 1.90			51	495	514	502	521	44	1 LINE 2.33			3.914	6.060
460	64	508	527	514	534	44	1 LINE 2.54	1 LINE 2.12		51	495	514	502	521	44	1 LINE 2.96			4.473	6.709
610	76	673	692	680	699	44	1 LINE 3.60	1 LINE 2.75		64	660	680	667	686	44	1 LINE 4.23	1 LINE 3.60		4.473	7.454
760	89	858	857	845	864	51	1 LINE 4.66	1 LINE 3.60		76	825	845	832	851	51	1 LINE 5.92	1 LINE 4.44		5.032	8.573
910	102	1003	1022	1010	1029	64	2 LINES EACH 3.81	1 LINE 3.81		86	988	1007	994	1013	64	2 LINES EACH 4.66	1 LINE 4.66		6.038	9.840
1070	114	1168	1187	1175	1194	64	2 LINES EACH 4.44	1 LINE 4.44		95	1150	1165	1156	1175	64	2 LINES EACH 5.29	1 LINE 5.29		7.045	10.958
1220	127	1334	1353	1340	1359	64	2 LINES EACH 5.29	1 LINE 5.29		108	1315	1334	1321	1340	64	2 LINES EACH 6.56	1 LINE 6.56		8.051	11.927
1520	152	1664	1683	1670	1690	64	2 LINES EACH 6.98	1 LINE 6.98		127	1639	1658	1645	1664	64	2 LINES EACH 8.68	1 LINE 8.68		8.945	14.909

EXTRA STRENGTH REINFORCED CONCRETE PIPE CULVERTS

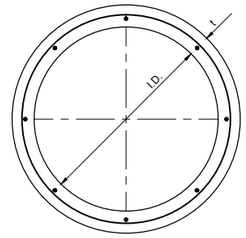
CONCRETE 317 □g/c□ ² (4,500 lb/in ²)									STRENGTH TEST REQUIREMENTS □g/□ OF PIPE	
WALL THICK-NESS (□□)	TONGUE (□□)		GROOVE (□□)		DEPTH (□□)	MINIMUM REINFORCEMENT c□ /□ OF PIPE ○			THREE-EDGE-BEARING METHOD	
t	A	B	C	E	P	CIRCULAR REINFORCEMENT	ELLIPTICAL REINFORCEMENT		0.00025□ CRACK LOAD	LOAD ULTIMATE
——	——	——	——	——						
——	——	——	——	——						
——	——	——	——	——						
76	673	692	680	699	44	1 LINE 5.50	1 LINE 4.23		5.964	8.945
89	838	857	845	864	51	1 LINE 6.56	1 LINE 5.08		7.454	11.182
102	1003	1022	1010	1029	64	2 LINES EACH 5.92	1 LINE 5.92		8.945	13.418
114	1168	1187	1175	1194	64	2 LINES EACH 6.98	1 LINE 6.98		10.436	15.655
127	1334	1353	1340	1359	64	2 LINES EACH 8.04	1 LINE 8.04		11.927	17.891
152	1664	1683	1670	1690	64	2 LINES EACH 10.58	1 LINE 10.58		13.418	22.364

❁ THE DISTANCE FROM CENTERLINE OF THE REINFORCEMENT TO THE NEAREST SURFACE OF THE CONCRETE HAS BEEN ASSUMED AS 32□□ FOR PIPES WITH A SHELL THICKNESS OF 64□□ OR MORE.

✳ TEST LOADS FOR SAND-BEARING TEST SHALL BE ONE AND ONE - HALF TIMES THOSE SPECIFIED IN THIS TABLE FOR THE THREE - EDGE BEARING TEST.

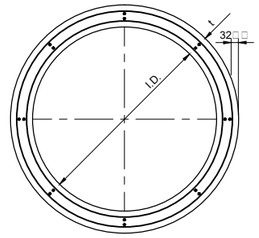


1A / DS-04 LONGITUDINAL SECTION
SCALE : NTS



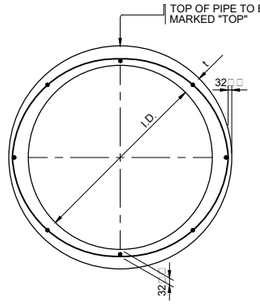
ONE LINE OF CIRCULAR REINFORCEMENT

1B / DS-04 SECTION
SCALE : NTS

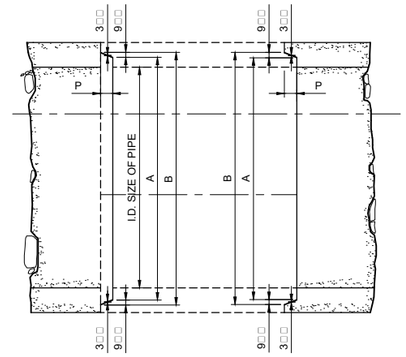


TWO LINES OF CIRCULAR REINFORCEMENT

1C / DS-04 SECTION
SCALE : NTS



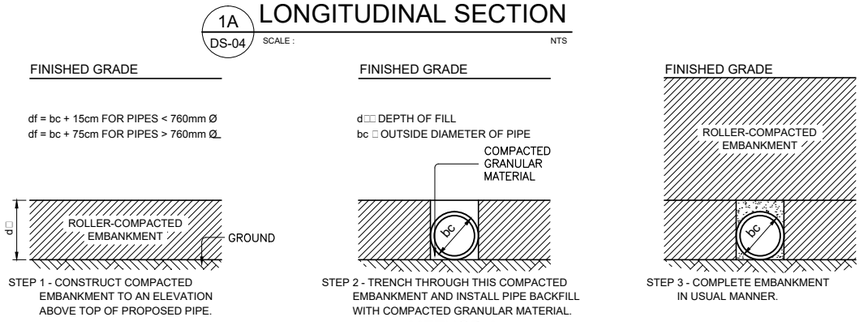
ONE LINE OF ELLIPTICAL REINFORCEMENT



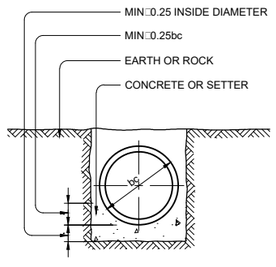
TONGUE END GROOVE END

1D / DS-04 SECTION
SCALE : NTS

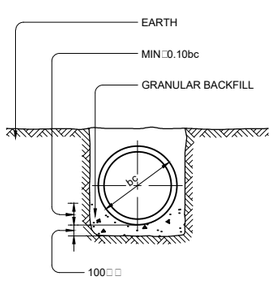
1 STANDARD REINFORCED CONCRETE PIPE CULVERTS
SCALE : NTS



2 / DS-04 METHODS OF PIPE INSTALLATION
SCALE : NTS

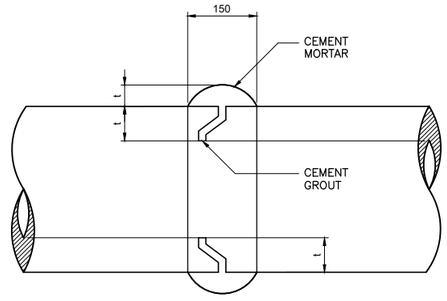


CONCRETE CRADLE BEDDING



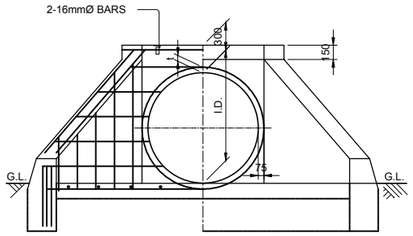
ORDINARY BEDDINGS

3 TYPICAL BEDDING FOR CONDUITS
SCALE : NTS

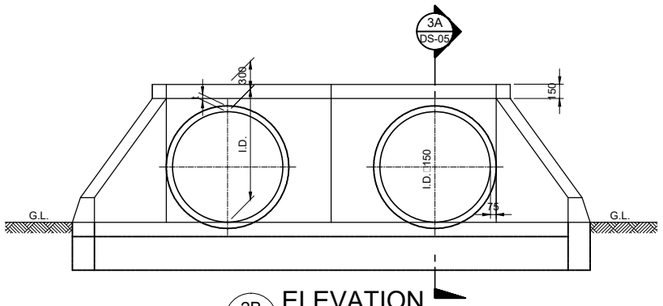


4 DETAIL OF PIPE COLLAR
SCALE : NTS

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LAUDE STREET, VARA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA PROJECT MANAGER DATE: - / APPROVED BY: JOVITO M. SUNGA OIC - PMD DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD	AS SHOWN	FINAL DRAWING
						SHEET CONTENT: AIRPORT - NCC ACCESS ROAD	PROJECT CODE: -	DRAWING NO.: DS-04 / SIZE: A1
						STANDARD RCPC, METHOD OF PIPE INSTALLATION AND TYPICAL BEDDING FOR CONDUITS	DATE APPROVED: -	DATE REVISED: - / REV.: -



1B DS-05 ELEVATION
SCALE : NTS



2B DS-05 ELEVATION
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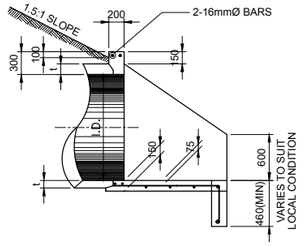

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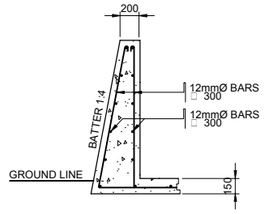

3B DS-05 SECTION
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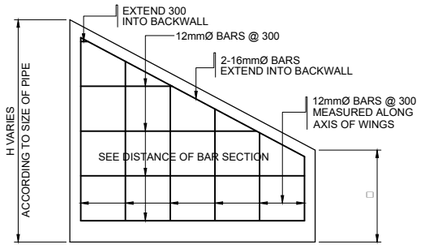

3C DS-05 SECTION
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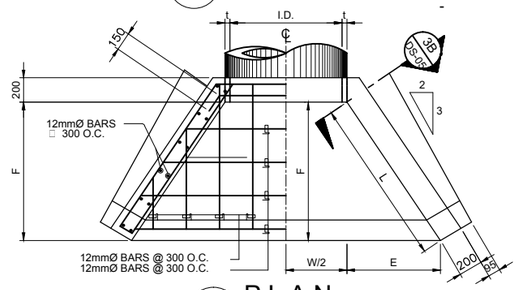
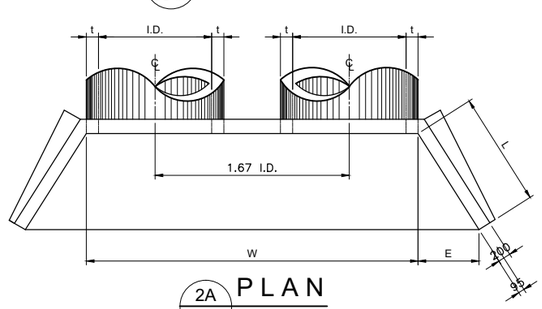


1A DS-05 PLAN
SCALE : NTS



2A DS-05 PLAN
SCALE : NTS

1 DS-05 FLARED TYPE HEADWALL (SINGLE PIPE)
SCALE : NTS

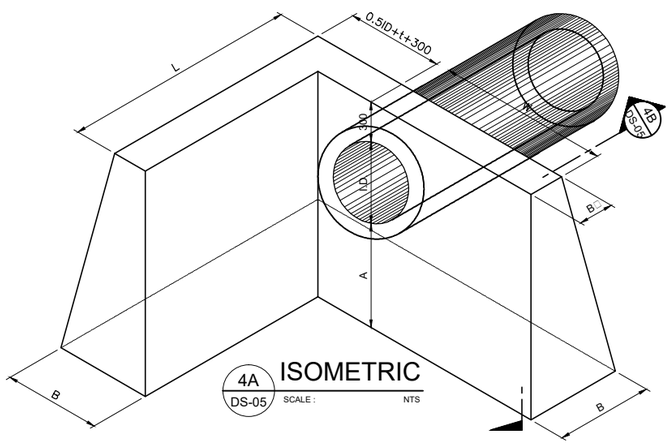
2 DS-05 FLARED TYPE HEADWALL (DOUBLE PIPE)
SCALE : NTS

TABLE A (ONE FLARED TYPE HEADWALL 1.5:1)

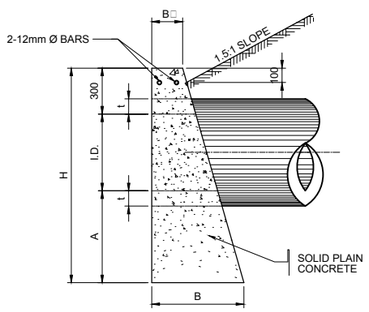
DIAMETER & THICKNESS (□ □)		DIMENSIONS (□ □)				SINGLE PIPE				DOUBLE PIPE				TRIPLE PIPE			
INTERNAL DIAMETER (I.D.)	MIN. THICKNESS SHELL (t)	L	E	F	□	AREA OF WATERWAY □ 3	W (□ □)	EST. OF QUANTITIES CONC. □ 3	EST. OF QUANTITIES REINF. STEEL □g.	AREA OF WATERWAY □ 2	W (□ □)	EST. OF QUANTITIES CONC. □ 3	EST. OF QUANTITIES REINF. STEEL □g.	AREA OF WATERWAY □ 2	W (□ □)	EST. OF QUANTITIES CONC. □ 3	EST. OF QUANTITIES REINF. STEEL □g.
460	51	710	390	590	0	0.17	610	0.57	25.65	0.32	1380	0.83	37.35	0.51	2150	1.27	57.15
610	64	960	530	800	0	0.29	760	0.82	36.46	0.58	1780	1.16	48.39	0.87	2800	1.75	78.75
910	86	1510	840	1260	600	0.65	1070	1.55	68.92	1.30	2590	2.22	92.61	1.95	4100	3.36	150.98
1070	95	1770	980	1470	600	0.90	1230	2.38	107.10	1.80	3020	3.05	137.25	2.70	4800	3.96	178.20
1220	108	2040	1130	1690	600	1.17	1370	2.66	110.27	2.34	3400	3.71	154.77	3.51	5360	5.36	241.34
1520	127	2540	1410	2110	600	1.81	1680	3.93	174.74	3.63	4229	5.47	228.18	5.43	6760	6.76	304.20

TABLE C (ONE L-TYPE HEADWALL)

DIA. & THICKNESS (□ □)		DIMENSIONS (□ □)						SINGLE PIPE	
INTERNAL DIAMETER (I.D.)	MIN. THK. SHELL (t)	A	B	B□	H	W	L	CONCRETE □ 3 □ □	REINF. STEEL □g.
460	51	310	350	200	1070	1070	1070	0.66	6
610	64	410	430	200	1320	1220	1220	1.06	8
910	86	610	610	200	1820	1820	1820	2.76	11
1070	95	710	780	300	2080	1970	VARIES	-	-
1220	108	810	870	300	2330	2120	VARIES	-	-
1520	127	1010	980	300	3030	2420	VARIES	-	-



4A DS-05 ISOMETRIC
SCALE : NTS

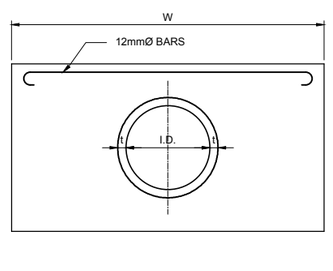


4B DS-05 SECTION
SCALE : NTS

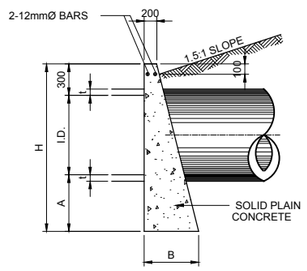
4 DS-05 L-TYPE HEADWALL
SCALE : NTS

TABLE C (ONE STRAIGHT TYPE HEADWALL)

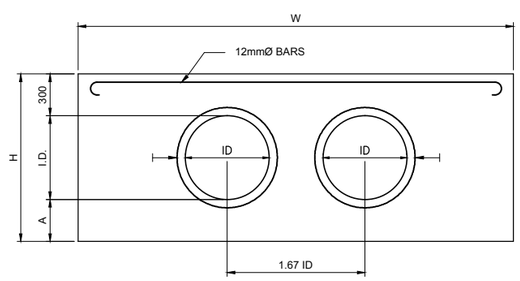
DIAMETER & THICKNESS (□ □)		DIMENSIONS (□ □)			SINGLE PIPE				DOUBLE PIPE				TRIPLE PIPE			
INTERNAL DIAMETER (I.D.)	MIN. THK. SHELL (t)	A	B	H	W (□ □)	AREA OF WATERWAY □ 2	CONCRETE □ 3 □ □	REINF. STEEL □g.	W (□ □)	AREA OF WATERWAY □ 2	CONCRETE □ 3 □ □	REINF. STEEL □g.	W (□ □)	AREA OF WATERWAY □ 2	CONCRETE □ 3 □ □	REINF. STEEL □g.
460	51	310	350	1070	1500	0.15	0.46	3.48	2600	0.33	0.63	4.90	3400	0.45	0.80	5.97
610	64	410	430	1320	2400	0.29	0.87	4.55	3500	0.58	1.20	6.50	4600	0.87	1.51	8.45
910	86	610	600	1820	3800	0.65	2.28	6.68	5200	1.30	3.16	9.52	6800	1.95	3.85	12.36
1070	95	710	780	2080	4300	0.90	3.84	7.57	6050	1.80	5.09	10.67	7900	2.70	6.43	13.96
1220	108	810	870	2330	4800	1.17	4.43	8.81	6900	2.34	6.70	12.54	9000	3.51	7.97	16.14
1520	127	1010	980	2830	6000	1.81	8.80	10.94	8600	3.63	11.93	15.56	11200	5.43	15.05	19.82



5A DS-05 SINGLE PIPE
SCALE : NTS



5B DS-05 SECTION
SCALE : NTS



5C DS-05 DOUBLE PIPE
SCALE : NTS

5 DS-05 STRAIGHT TYPE HEADWALL
SCALE : NTS

STANDARD REINFORCED CONCRETE HEADWALL FOR RCPC

C O N S U L T A N T S

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VARA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UIC
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UIC
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

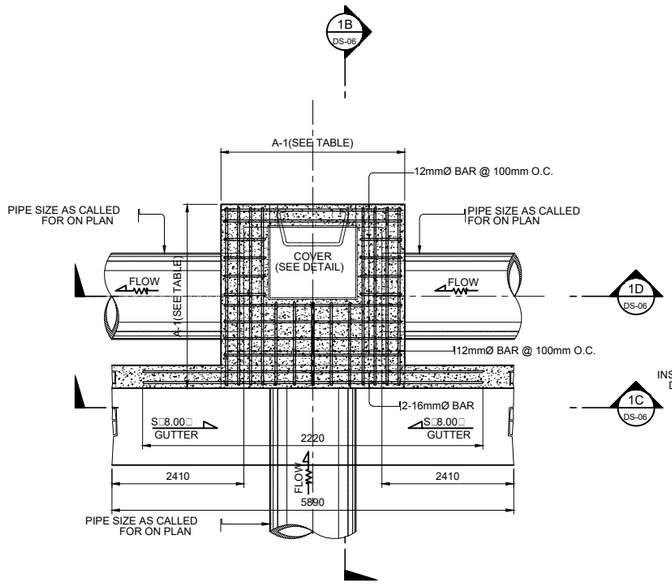
REVISIONS		DATE
A		
B		
C		
D		
E		
F		

PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

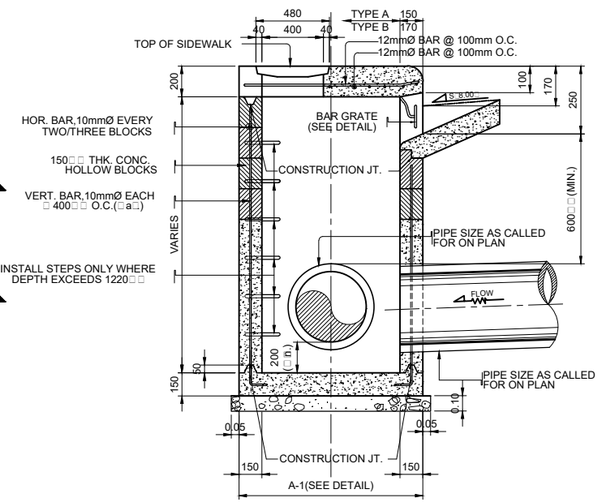
SHEET CONTENT: AIRPORT - NCC ACCESS ROAD

STANDARD REINFORCED CONCRETE HEADWALL FOR RCPC

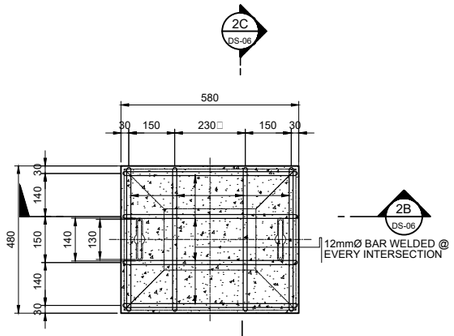
SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWING
PROJECT CODE	DRAWING NO.	SIZE
-	DS-05	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



1A DS-06 PLAN



1B DS-06 SECTION



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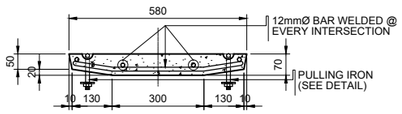
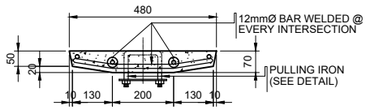
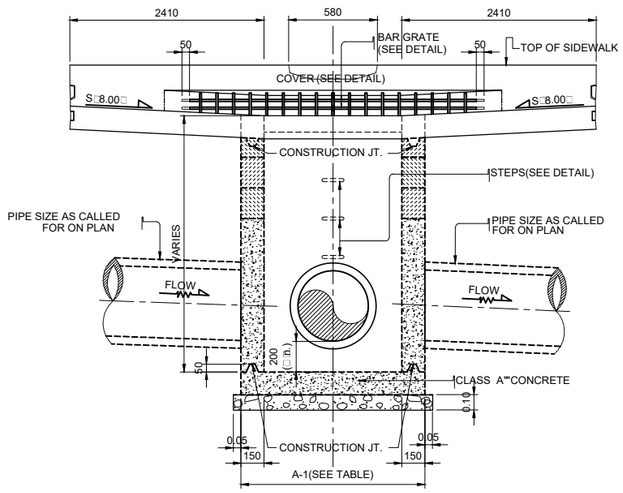


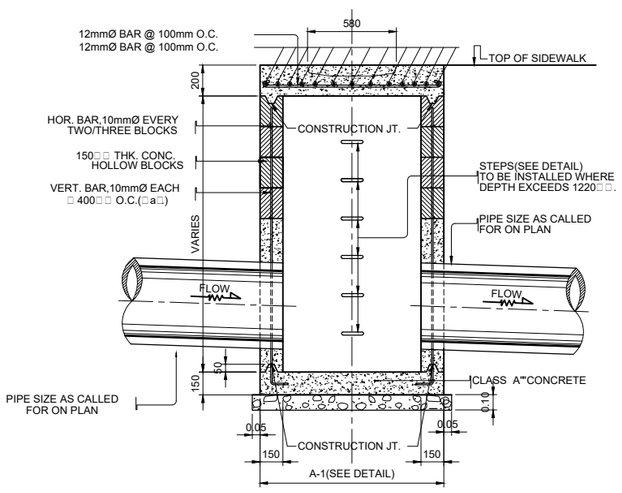
2B DS-06 SECTION



2C DS-06 SECTION



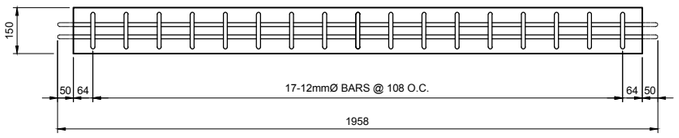
1C DS-06 SECTION
1:20



1D DS-06 SECTION

1 DS-06 CURB INLET MANHOLE
SCALE 1:20

2 DS-06 CONCRETE COVER DETAIL
SCALE 1:10



5 DS-06 DETAIL OF BAR GRATE FOR OPENING OF CURB INLET
SCALE 1:20

TABLE OF DIMENSION		
TYPE OF CIM	SIZE OF PIPE (□□)	A-1
T−1	300	1.12 M.
T−2	460	1.19 M.
T−3	610	1.37 M.
T−4	760	1.54 M.
T−5	910	1.73 M.
T−6	1070	1.90 M.
T−7	1220	2.08 M.
T−8	1520	2.43 M.

NOTES:

1. ALL CONCRETE SHALL BE CLASS A". EXPOSED EDGES SHALL BE FINISHED WITH SUITABLE EDGER.
2. PULLING IRON, STEPS AND BAR GRATE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE.
3. CONSTRUCTION JOINTS SHALL CONFORM WITH THE GROOVES OF CONCRETE HOLLOW BLOCKS.
4. CONCRETE HOLLOW BLOCKS OR DSESSED ADOBE BLOCKS SHALL HAVE AN AVERAGE COMPRESSIVE STRENGTH OF 6.865MPa.
5. IN CONCRETE HOLLOW BLOCKS STRUCTURE, ALL HOLES SHALL BE FILLED WITH CEMENT MORTAR.
6. WHERE CONCRETE HOLLOW BLOCKS STRUCTURES ATTAIN A HEIGHT OF 1.20 METER, IT SHALL BE REINFORCED STEEL BARS SPACE AT NOT MORE THAN 0.60 M. O.C. BOTHWAYS.
7. INSTALL STEPS ONLY WHERE DEPTH EXCEEDS 1.22 METERS.

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC1 CORPORATE BLDG., 8 LANDS STREET, VARIA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY
EFRENT. DAVID
PRESIDENT - UIC1
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UIC1
DATE: -

BCDA

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
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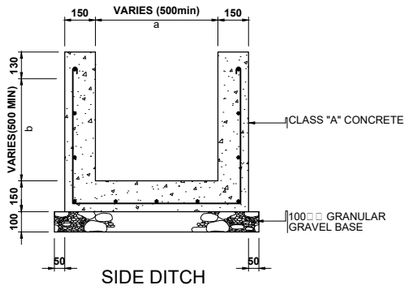
PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT AIRPORT - NCC ACCESS ROAD

STANDARD COMBINATION CURB INLET MANHOLE

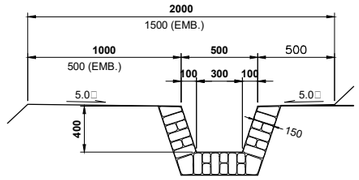
SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
-	DS-06	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



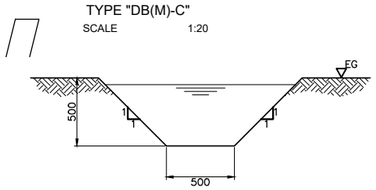
SIDE DITCH
TYPE "DS(C)- " C
SCALE 1:15

TABLE A

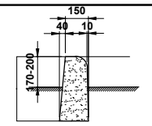
TYPE DS(C)-C	DIMENSIONS (MM)	
	a	b
1	500	500
2	500	600
3	500	800
4	600	600
5	600	800
6	600	1000
7	800	800
8	800	1000
9	800	1200
10	1000	1000
11	1000	1200



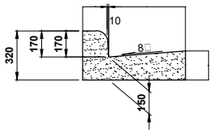
BERM DITCH
TYPE "DB(M)-C"
SCALE 1:20



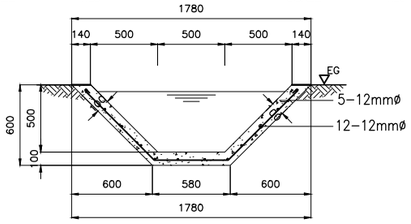
SIDE DITCH
TYPE "DS-Ad"
SCALE 1:15



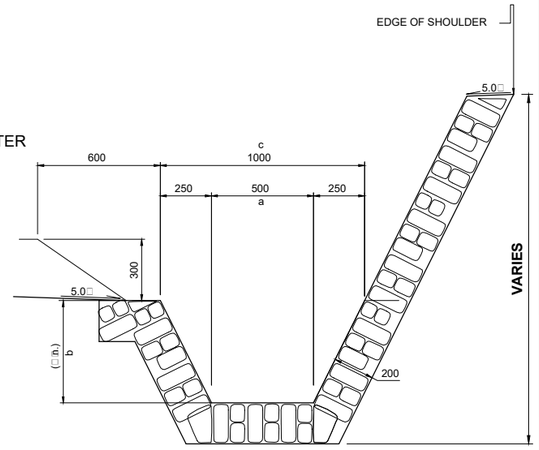
CURB & GUTTER
TYPE "Co-Cb-A"
SCALE 1:20



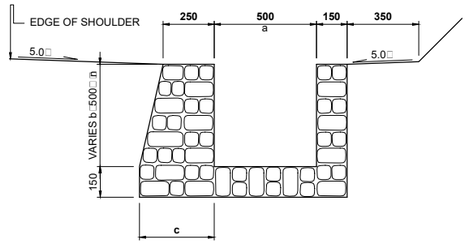
CONCRETE "BARRIER" CURB AND GUTTER
TYPE "Co-Cb-B"
SCALE 1:20



SIDE DITCH
TYPE "DS-Ac"
SCALE 1:15



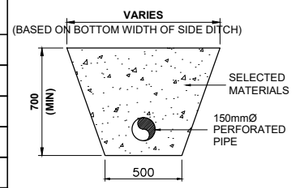
SIDE DITCH
TYPE "DS(□)-A1"
SCALE 1:15



SIDE DITCH
TYPE "DS(□)-G"
SCALE 1:15

TABLE B

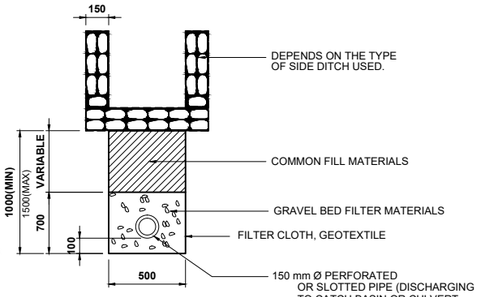
TYPE DS(□)-G	DIMENSIONS (MM)		
	a	b	c
1	500	500	366
2	500	600	388
3	500	800	435
4	600	600	412
5	600	800	435
6	600	1000	481



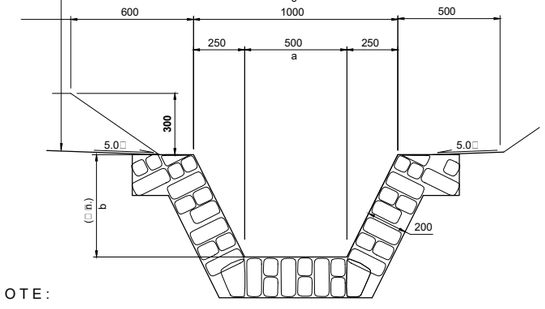
SUBSURFACE DRAIN
TYPE "SSD(G/P)-B"
SCALE 1:20

NOTE:

1. PLACE GRANULAR MATERIALS INTO SOFT MUCKY TRENCH BOTTOM FOR STABILIZATION PRIOR TO PLACING OF BEDDING MATERIALS.
2. IMPERVIOUS MATERIALS SHALL CONTAIN ENOUGH GRANULAR MATERIALS TO BE STABLE WHEN WET AND SHALL BE COMPACTED IN PLACE.
3. CONCRETE CLASS "A" SHALL BE PROVIDED FOR PLAIN CONCRETE UNDER DRAIN PIPE.



SUBSURFACE DRAIN
TYPE "DSS (G/P)"
SCALE 1:20

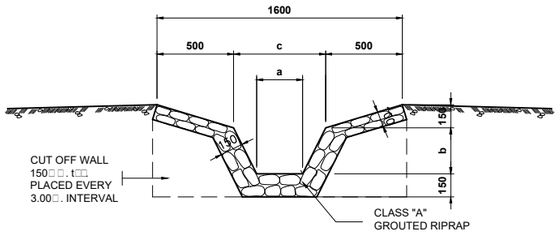


NOTE:
SMOOTH FINISH FOR SLOPE MORE THAN 4□.

SIDE DITCH
TYPE "DS(□)-A"
SCALE 1:15

TABLE C

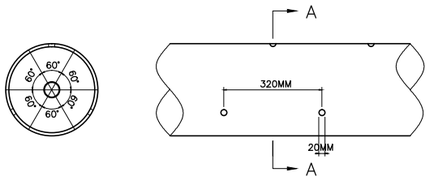
TYPE DS(□)-A	DIMENSIONS (MM)		
	a	b	c
1	300	500	800
2	400	500	800
3	500	500	1000
4	500	600	1000
5	500	800	1000
6	700	800	1200
7	700	1000	1200
8	700	1200	1200



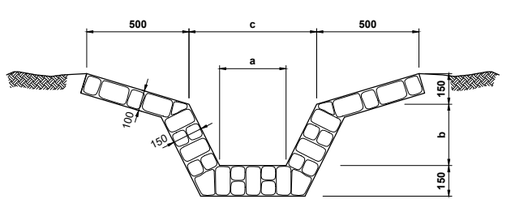
VERTICAL DITCH (ALONG EMBANKMENT/CUT SLOPES)
TYPE "DV (□)-J"
SCALE 1:20

TABLE E

TYPE DW(M)-J	DIMENSIONS (MM)		
	a	b	c
1	300	300	600
2	400	400	700
3	500	500	800



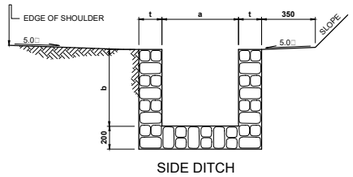
PVC PIPE PERFORATING DETAIL



VERTICAL DITCH
(FOR CROSSING DRAINAGE OUTLET)
TYPE "DV(□)-E"
SCALE 1:15

TABLE D

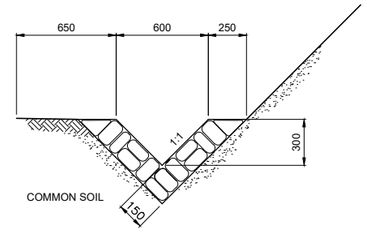
TYPE DV(□)-E	DIMENSIONS (MM)		
	a	b	c
1	910	1000	1410
2	1070	1000	1570
3	1220	1200	1720
4	1520	1400	2020



SIDE DITCH
TYPE "DS(M)-B"
SCALE 1:15

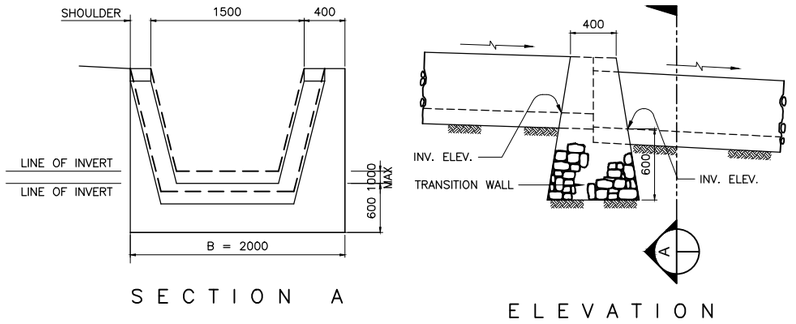
TABLE F

TYPE DS(M)-B	DIMENSIONS (MM)		
	a	b	t
1	500	500	200
2	500	600	200
3	500	800	250
4	600	800	200
5	600	800	250
6	600	1000	250



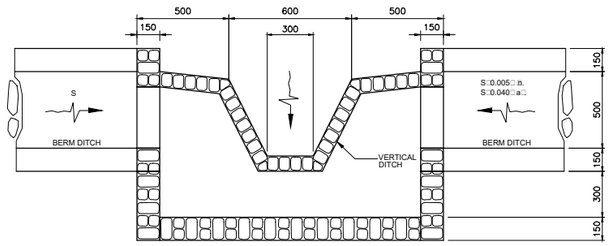
V-SHAPED LINED DITCH BERM
TYPE "D-1"
SCALE 1:15

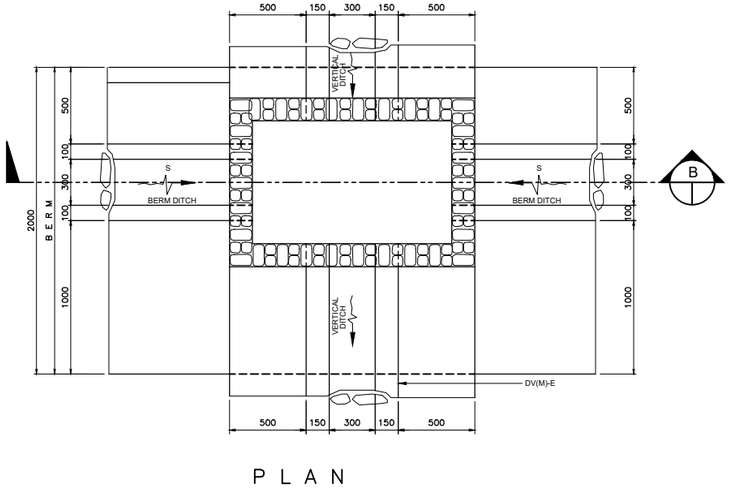
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VARIA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	CHECKED BY RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	APPROVED BY JOVITO M. SUNGA OIC - PMD DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT AIRPORT - NCC ACCESS ROAD MINOR DRAINAGE STRUCTURES (MISCELLANEOUS DETAILS)	AS SHOWN PROJECT CODE: -	FINAL DRAWING DRAWING NO.: DS-07 SIZE: A1
							DATE APPROVED: -	DATE REVISED: -	REV.: -



DETAIL OF SIDE DITCH TRANSITION

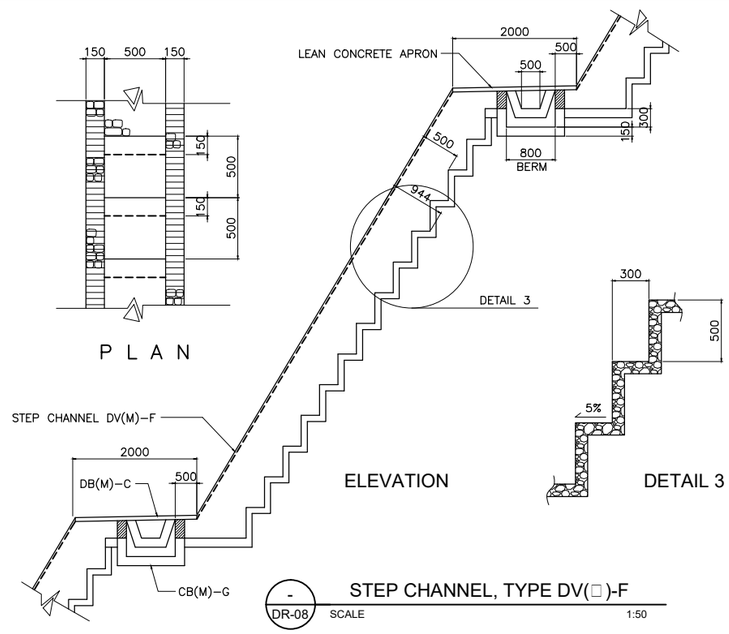
DR-08 SCALE 1:30





BERM DITCH CATCH PIT, CB(□)-G

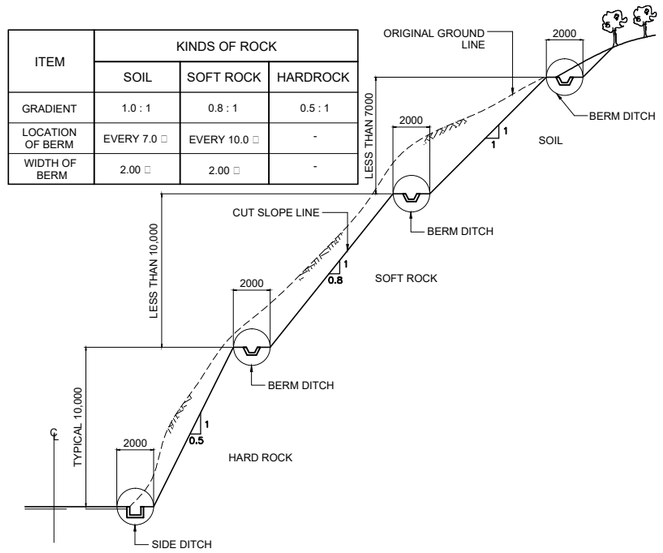
DR-08 SCALE 1:20



STEP CHANNEL, TYPE DV(□)-F

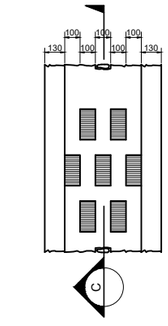
DR-08 SCALE 1:50

ITEM	KINDS OF ROCK		
	SOIL	SOFT ROCK	HARDROCK
GRADIENT	1.0 : 1	0.8 : 1	0.5 : 1
LOCATION OF BERM	EVERY 7.0 □	EVERY 10.0 □	-
WIDTH OF BERM	2.00 □	2.00 □	-

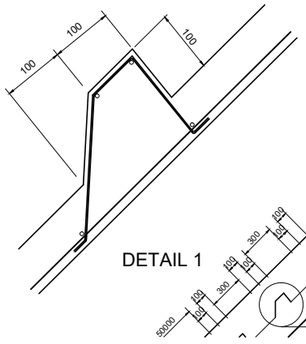


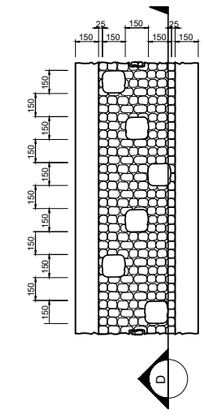
TYPICAL CROSS SECTION FOR CUT SLOPE

DR-08 NOT TO SCALE

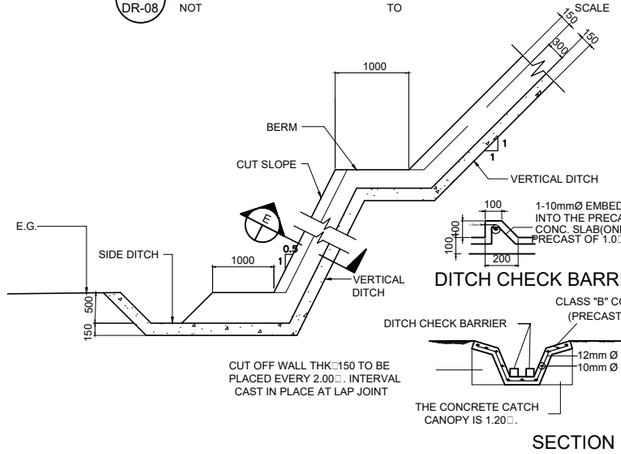


BAFFLE BLOCKS PLAN



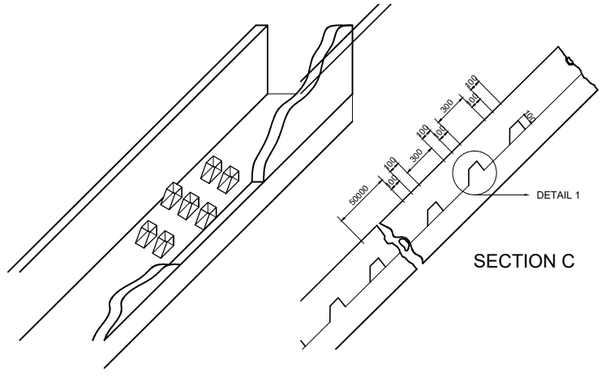


BAFFLE BLOCKS PLAN



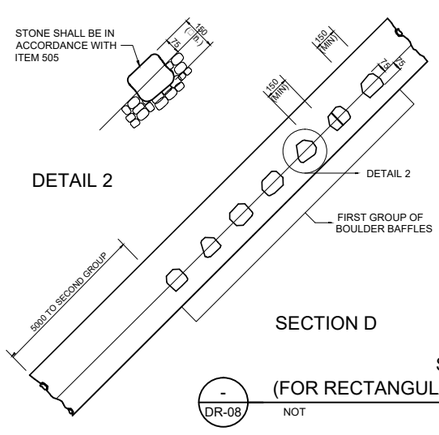
TYPICAL VERTICAL DITCH DETAILS, TYPE DS(C)-Bc

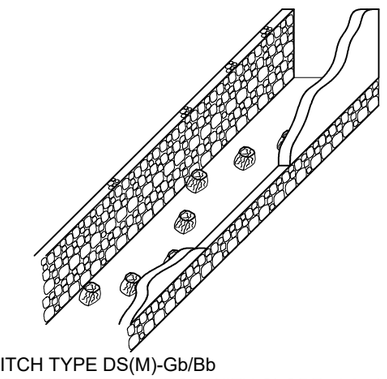
DR-08 NOT TO SCALE



SIDE DITCH TYPE DS(C)-Bb
(FOR RECTANGULAR CONCRETE DITCH WITH SLOPE□4.0□)

DR-08 NOT TO SCALE

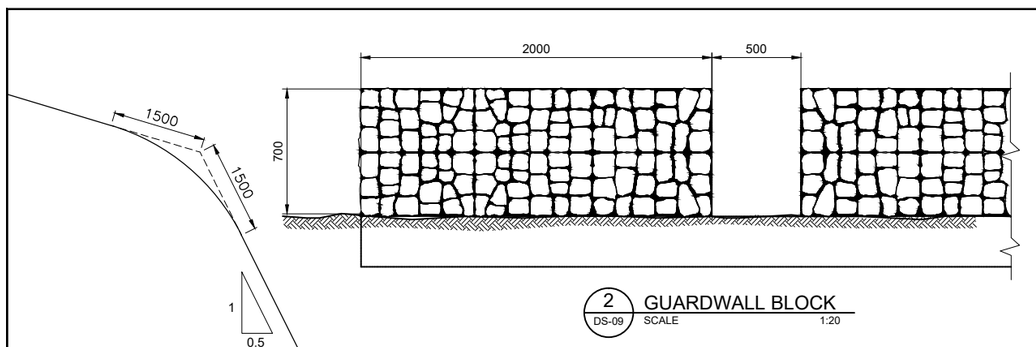




SIDE DITCH TYPE DS(M)-Gb/Bb
(FOR RECTANGULAR GROUTED RIPRAP DITCH WITH SLOPE□4.0□)

DR-08 NOT TO SCALE

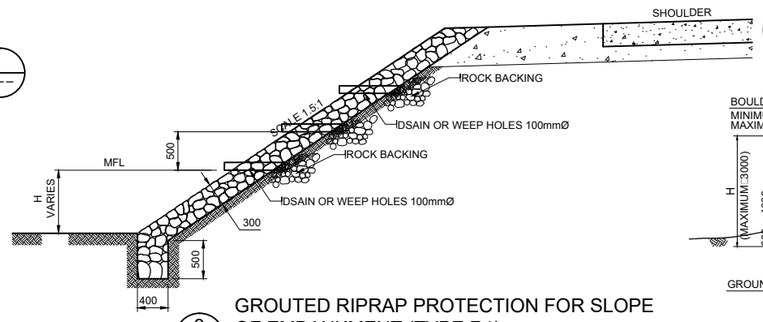
CONSULTANTS	SUBMITTED BY			REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VARA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD DRAINAGE AND PROTECTION WORKS SIDE DITCH,BERM DITCH,VERTICAL DITCH,STEP CHANNEL	AS SHOWN	FINAL DRAWING
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE: -	DRAWING NO.: DS-08 / SIZE: A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



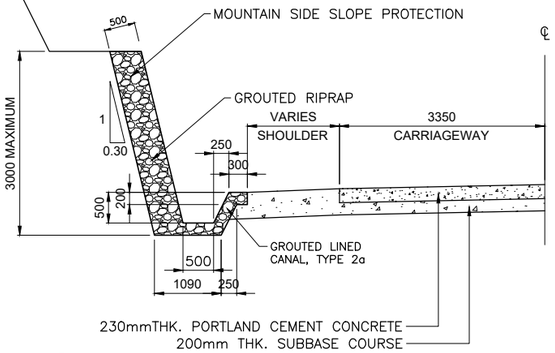
1 DS-09 STONE MASONRY FOR CUT, TYPE SM-B
SCALE 1:50

2 DS-09 GUARDWALL BLOCK
SCALE 1:20

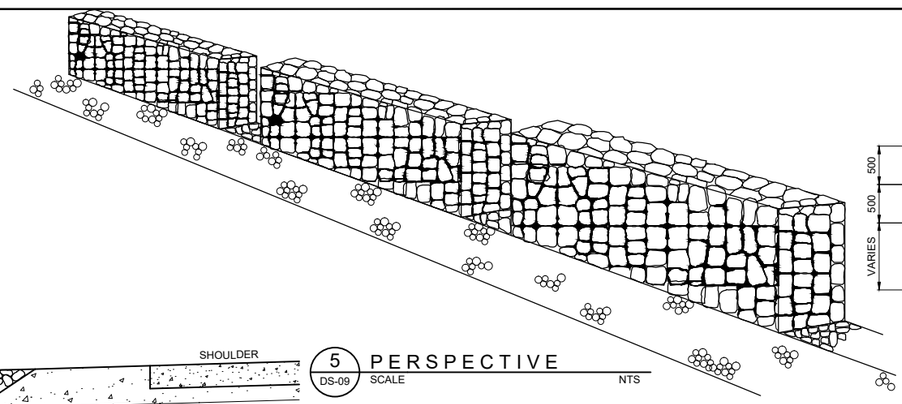
THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE CONFORMITY OF THE CONSULTANT.



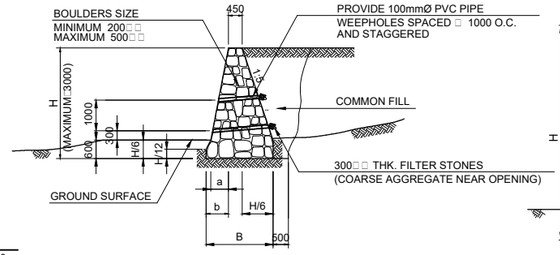
3 DS-09 GROUTED RIPRAP PROTECTION FOR SLOPE OF EMBANKMENT (TYPE R1)
SCALE 1:40



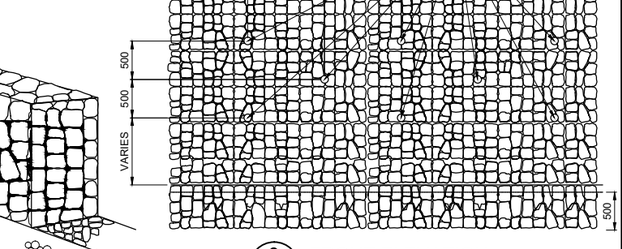
4 DS-09 TYPICAL SIDE SLOPE PROTECTION
SCALE 1:50



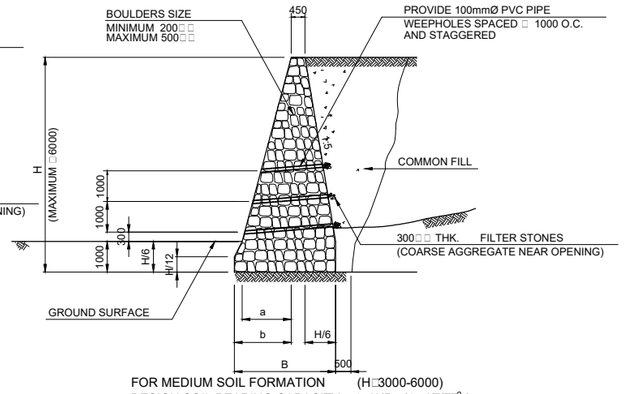
5 DS-09 PERSPECTIVE
SCALE NTS



FOR MEDIUM TO SOFT SOIL FORMATION (H□900-3000)
DESIGN SOIL BEARING CAPACITY □ 132KPa (1.25T/FT^2)

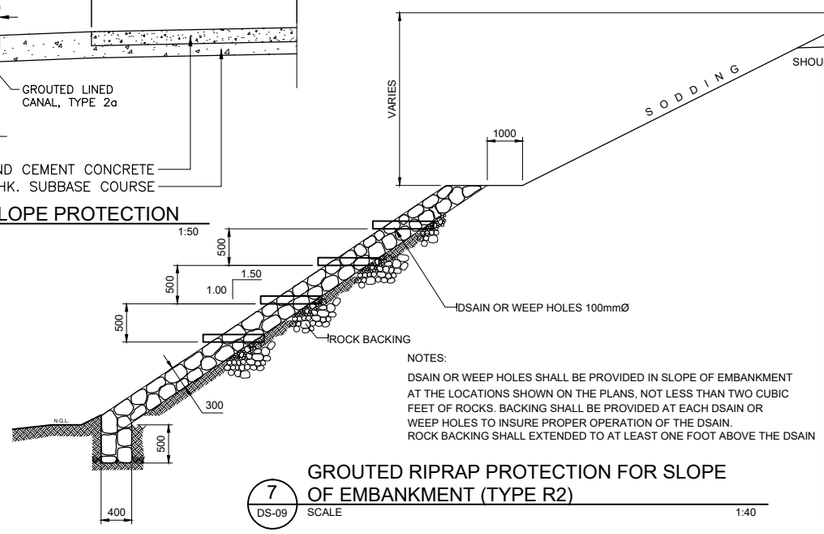


8 DS-09 FRONT ELEVATION
SCALE NTS



FOR MEDIUM SOIL FORMATION (H□3000-6000)
DESIGN SOIL BEARING CAPACITY □ 158KPa (1.50T/FT^2)

6 DS-09 STONE MASONRY TYPE II-A and TYPE II-B
SCALE 1:100



NOTES:
DSAIN OR WEEP HOLES SHALL BE PROVIDED IN SLOPE OF EMBANKMENT AT THE LOCATIONS SHOWN ON THE PLANS, NOT LESS THAN TWO CUBIC FEET OF ROCKS. BACKING SHALL BE PROVIDED AT EACH DSAIN OR WEEP HOLES TO INSURE PROPER OPERATION OF THE DSAIN. ROCK BACKING SHALL EXTENDED TO AT LEAST ONE FOOT ABOVE THE DSAIN

7 DS-09 GROUTED RIPRAP PROTECTION FOR SLOPE OF EMBANKMENT (TYPE R2)
SCALE 1:40

DESIGN PARAMETER FOR STONE MASONRY

1. DESIGN PARAMETER (TYPE II-B)
WALL STABILITY:
Ø□30
γ_{SOIL}□13 □N/□
γ_{WALL}□26 □N/□
Θ□11.31
B □0
Q_{ALL}□400 □PA

2. DESIGN PARAMETER (TYPE II-A)
WALL STABILITY:
Ø□30
γ_{SOIL}□13 □N/□
γ_{WALL}□26 □N/□
Θ□11.31
B □0
Q_{ALL}□400 □PA

3. DESIGN PARAMETER (TYPE SM-B)
WALL STABILITY:
Ø□47
γ_{SOIL}□13 □N/□
γ_{WALL}□ares
Θ□11.31
B □0
Q_{ALL}□1000 □PA

STABILITY ANALYSIS:
FACTOR OF SAFETY AGAINST SLIDING
NORMAL □1.5
SEISMIC □1.125
FACTOR OF SAFETY AGAINST OVERTURNING
NORMAL □2.00
SEISMIC □1.50

DIMENSION FOR STONE MASONRY WALL
(TYPE II-A AND TYPE II-B)

TYPE	WALL	DIMENSION (□□)				STONE MASONRY
	H (□□)	a (□□)	b (□□)	B□b□450□H/6 (□□)	H/6 (□□)	(□^{3})
II-A	900	-	-	600	150	0.518
	1500	238	300	1000	250	0.169
	1800	375	450	1200	300	1.598
	2100	513	600	1400	350	2.091
	2400	650	750	1600	400	2.650
	2700	788	900	1800	450	3.274
	3000	925	1050	2000	500	3.963
II-B	3300	1063	1200	2200	550	4.716
	3600	1200	1350	2400	600	5.535
	4200	1475	1650	2800	700	7.368
	4500	1613	1800	3000	750	8.381
	4800	1750	1950	3200	800	9.460
	5100	1888	2100	3400	850	10.604
	5400	2025	2250	3600	900	11.813
	5700	2163	2400	3800	950	13.086
	6000	2300	2550	4000	1000	14.425

QUANTITIES OF STONE MASONRY FOR CUT WALL SLOPE (TYPE SM-B)

H	N	a	b	c	B	□	SLOPE PROTECTION (cu/□) STONE MASONRY	SLOPE PROTECTION (cu/□) CONC. CLASS "B"	SLOPE PROTECTION (cu/□) COBBLE STONE	FOUNDATION (cu/□) CONC. CLASS "B"	FOUNDATION (cu/□) COBBLE STONE	TOTAL VOLUME
1000	0.3	300	50	300	435	202	0.31	0.05	0.31	0.07	0.06	0.80
2000	0.4	300	100	300	471	249	0.65	0.22	0.65	0.09	0.07	1.68
3000	0.4	300	100	300	471	249	0.97	0.32	0.97	0.09	0.07	2.42
4000	0.4	350	150	300	564	286	1.51	0.65	1.29	0.12	0.08	3.65
5000	0.5	350	150	300	547	324	1.96	0.84	1.68	0.13	0.07	4.68
6000	0.5	350	200	300	592	346	2.35	1.34	2.01	0.14	0.08	5.92
7000	0.5	350	200	300	592	346	2.60	1.51	2.33	0.14	0.08	6.66

CONSULTANTS
Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LAING STREET, VIGAN, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY
EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CANETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT AIRPORT - NCC ACCESS ROAD

SLOPE PROTECTION DETAILS

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWING	
PROJECT CODE	DRAWING NO.	SIZE
-	DS-09	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

ELECTRICAL DRAWINGS

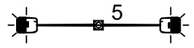
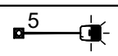
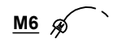
DESIGN CRITERIA:

LIGHT SOURCE, LUMINAIRE:	120 WATTS, LED ROAD LIGHTING, 85–277 Volts, CT:4000K,
TYPE OF SUPPORT:	MOUNTED ON 10.66M POST (DOUBLE ARM)
MOUNTING HEIGHT:	MH=12.0 METERS OR 40 FEET, EFFECTIVE
MAST ARM LENGTH:	3.0 METERS OR 9 FEET DOUBLE ARM
LUMINAIRE DISTRIBUTION:	MEDIUM, TYPE–II, STAGGERED (AS ADAPTED TO ROAD CURVATURE), SEMI–CUTOFF GLARE CONTROL (M–S–II)
INITIAL LAMP LUMENS (LL):	12,000 lm
COEFFICIENT OF UTILITIZATION (CU):	0.48, FROM CU CURVE FOR M–S–II LUMINAIRE
LAMP LUMEN DEPRECIATION FACTOR:	LLD= 0.90, FROM STANDARD MANUFACTURER'S DATA SHEETS
LUMINAIRE DIRT DEPRECIATION FACTOR:	LDD= 0.87, MODERATELY CLEAN ENVIRONMENT
TYPICAL ROAD CLASSIFICATION:	R1, CONRETE
AVERAGE ROAD WIDTH:	14.0 METERS ON FOUR–LANE, 7.0 METERS ON TWO–LANE
AVE. MAINTAINED HOR. ILLUMINANCE:	40.0LUX
RESULTING MEAN SPACING:	40METERS±10% OR 3.33MH APPROXIMATELY ON TWO–LANE
NUMBER OF LUMINAIRE PER CIRCUIT:	20 AVERAGE, 25 MAXIMUM
SIZE & TYPE OF CONDUCTOR:	22.0 MM^2 THW COPPER, AMPACITY (FROM PEC) = 85 AMPERES
MAXIMUM LENGTH OF CIRCUIT:	400 METERS FROM THE POWER SOURCE
GUARRANTEED MAXIMUM % VOLTAGE DROP:	5.0% OR 5.0 VOLTS

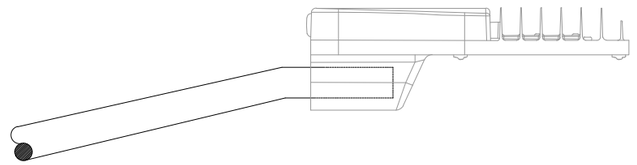
GENERAL NOTES:

1. ALL ELECTRICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE LATEST EDITION OF THE PHILIPPINE ELECTRICAL CODE, THE LAWS AND ORDINANCES OF THE LOCAL ENFORCING AUTHORITIES AND THE REQUIREMENTS OF THE LOCAL POWER COMPANY. THE ELECTRICAL WORK SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A DULY LICENSED ELECTRICAL ENGINEER.
2. THE CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE WORK AND FURNISH THE OWNER, THROUGH THE ENGINEERS FINAL CERTIFICATES OF ELECTRICAL INSPECTION AND APPROVAL FROM PROPER GOVERNMENT AUTHORITIES FOR COMPLETED WORK.
3. THE POWER SERVICE VOLTAGE SHALL BE 400V, 3ø, 4W+G, 60 Hz. ALL MATERIALS TO BE USED AND EQUIPMENT TO BE INSTALLED SHALL BE BRAND NEW AND MUST BE OF THE APPROVED TYPES FOR THE PARTICULAR LOCATION AND PURPOSE INTENDED.
4. ALL WIRES SHALL BE COPPER, THERMOPLASTIC INSULATED TYPE THW, 600V, UNLESS OTHERWISE INDICATED. PHELP DODGE, DURAFLEX BRANDS SHALL BE USED, OR APPROVED EQUIVALENT.
5. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CIRCUIT CONDUCTORS FROM STEEL POLE JUNCTION BOX/HANDHOLE TO EACH LUMINAIRE SHALL BE 2–3.5mm^2 THW & 1–3.5mm^2 TW (GND) INSIDE STEEL POLE.
6. UNLESS OTHERWISE INDICATED ALL CONDUIT PIPES SHALL BE PVC PIPE OR APPROVED TYPE THE CONDUIT SIZE INDICATED IS THE INSIDE DIAMETER OF CONDUIT.
7. THE CONTRACTOR SHALL VERIFY AND ORIENT THE ACTUAL LOCATION OF THE SERVICE ENTRANCE FOR CONNECTION TO THE POWER SUPPLY. LIKEWISE, THE CONCRETE PEDESTAL SHALL BE PROVIDED BY THE CONTRACTOR.
8. ALL NON–CURRENT CARRYING PARTS OF EVERY ELECTRICAL EQUIPMENT/FIXTURE SHALL BE GROUNDED EFFECTIVELY.
9. UNDERGROUND CONDUIT RUN SHALL BE BURIED A MINIMUM OF 1200mm BELOW GROUND LEVEL. UNLESS OTHERWISE INDICATED, CONDUIT RUN CROSSING STREET SHALL BE ENCASED IN STEEL REINFORCED 2500 PSI CONCRETE WITH MINIMUM OF 75mm (3 INCHES) THICKNESS COVERED ALL AROUND.
10. UNPROTECTED CONDUIT RISERS AND EXPOSED CONDUIT RUNS SHALL BE RIGID STEEL CONDUIT.
11. ALL PANELBOARD ENCLOSURES SHALL BE RAINTIGHT, NEMA 4X ENCLOSURE (1.5mm THICK MINIMUM GAUGE 16 FOR BOX AND COVER) WITH CONCEALED HINGE AND FLUSH LOCK KEY.
12. ALL STREET LUMINAIRE ASSEMBLY INCLUDING POLE AND FOUNDATION SHALL WITHSTAND WINDS UP TO 250 KPH PER HOUR GUSTING WITHOUT PERMANENT DEFORMATION.
13. DO NOT INSTALL POLE WITHOUT COMPLETE INSTALLATION/CONNECTION OF THE LUMINAIRE ASSEMBLY.
14. ALL CIRCUIT BREAKERS SHALL BE UL LISTED AS SWD (SWITCHING DUTY) SUITABLE FOR HIGH INITIAL INRUSH CURRENT FOR SWITCHING THE PRESSURE SODIUM LUMINAIRES. SIEMENS–ITE OR APPROVED EQUIVALENT.

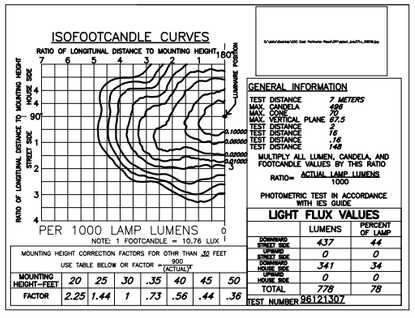
LEGEND:

	ROADWAY POST–MOUNTED LUMINAIRE, PEDESTAL FOUNDATION AS PER DETAILED ON SHEET 11 DOUBLE ARM, 3.0METERS, POST HEIGHT = 12.0METERS UNLESS OTHERWISE INDICATED 120 WATTS, LED ROAD LIGHTING, 85–277 Volts, CT:4000K,, NUMBER INDICATES LIGHTING STATION NUMBER
	ROADWAY POST–MOUNTED LUMINAIRE, PEDESTAL FOUNDATION AS PER DETAILED ON SHEET 11 SINGLE ARM, 1.5METERS, POST HEIGHT = 7.5METERS UNLESS OTHERWISE INDICATED 120 WATTS, LED ROAD LIGHTING, 85–277 Volts, CT:4000K,, NUMBER INDICATES LIGHTING STATION NUMBER
	UTILITY CONNECTION FROM CLARK ELECTRIC POWER PROVIDER M1 TO M6 ARE TYPICAL, 2–22MM^2THW & 1–8MM^2G IN 50MMø IMC THIS IS A SERVICE ENTRANCE FROM THE SERVICE CAP VIA NEMA–4X KWHR METER BASE TO THE FIRST LUMINAIRE
	STANDARD POST TO POST RUN, TYPICAL ALL–THRUGHOUT 50MMø PVC WITH 2–22MM^2THW + 1–8MM^2G COPPER WIRES
J	JUNCTION BOX, SEE SHEET 6 FOR DETAILS

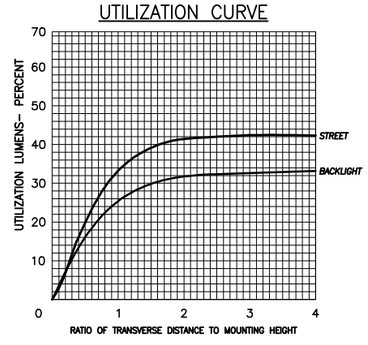
LUMINAIRE



SAMPLE TEST RESULT DATA



UTILIZATION CURVE



ROAD 1	LIGHT POST TYPE		
	12Mx3M DOUBLE ARM	12Mx3M SINGLE ARM	6Mx0.8 DOUBLE ARM (BY OTHERS)
0+000 TO 1+500 SACOBIA BRIDGE	37	0	61 (BY OTHERS)
1+500 TO 10+600	229	0	888 (BY OTHERS)
10+600 TO 19+826	224	20	871 (BY OTHERS)
TOTAL LIGHT POST	**490**	**20**	**1820** (BY OTHERS)
TOTAL LED LIGHTS	**980**	**20**	**3640** (BY OTHERS)

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC1 CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UIC1
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UIC1
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
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PROJECT TITLE

DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD

DESIGN CRITERIA, LEGENDS, GENERAL NOTES & LUMINAIRES SPECS

SCALE	DRAWING STATUS	
AS SHOWN	FINAL DRAWINGS	
PROJECT CODE	DRAWING NO.	SIZE
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DATE APPROVED	DATE REVISED	REV.
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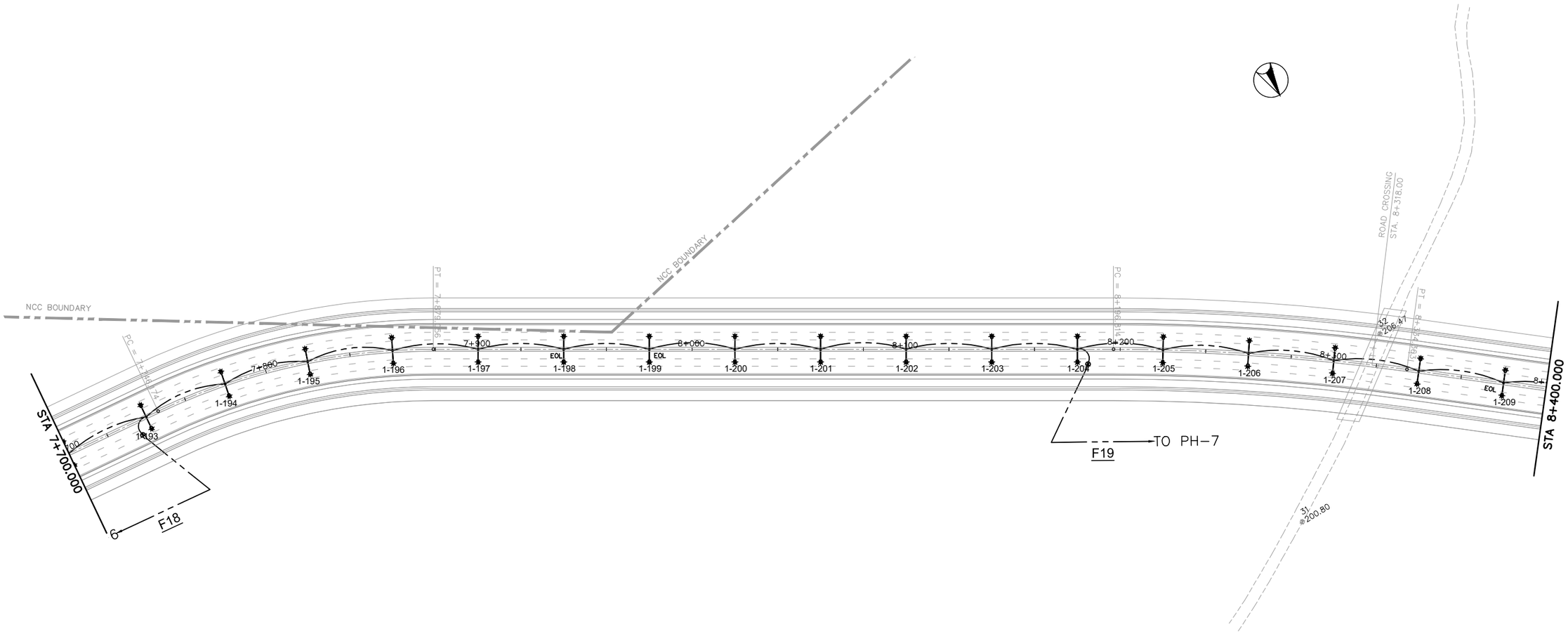
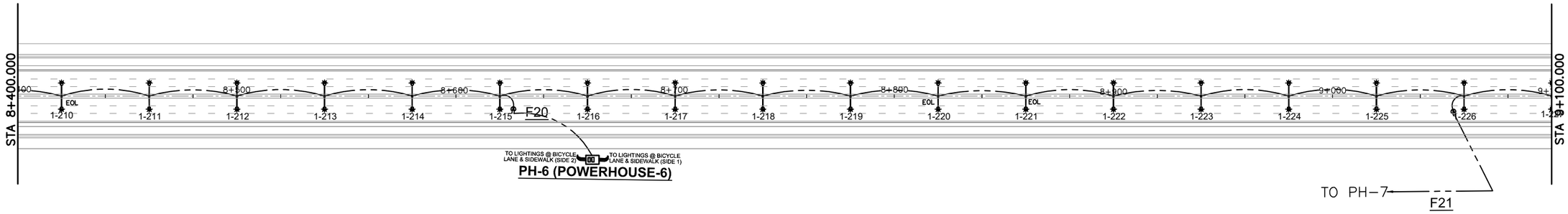


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	68

ROADWAY LIGHTING LAYOUT STA. 7 □ 700.000 - STA. 8 □ 400.000

(LIGHTING STATIONS 1-193 - 1-209)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 7 □ 700.000 - STA. 8 □ 400.000	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. / SIZE: E-10 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 8 □ 400.000 - STA. 9 □ 100.000

(LIGHTING STATIONS 1-210 - 1-227)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 8 □ 400.000 - STA. 9 □ 100.000	AS SHOWN	FINAL DRAWINGS
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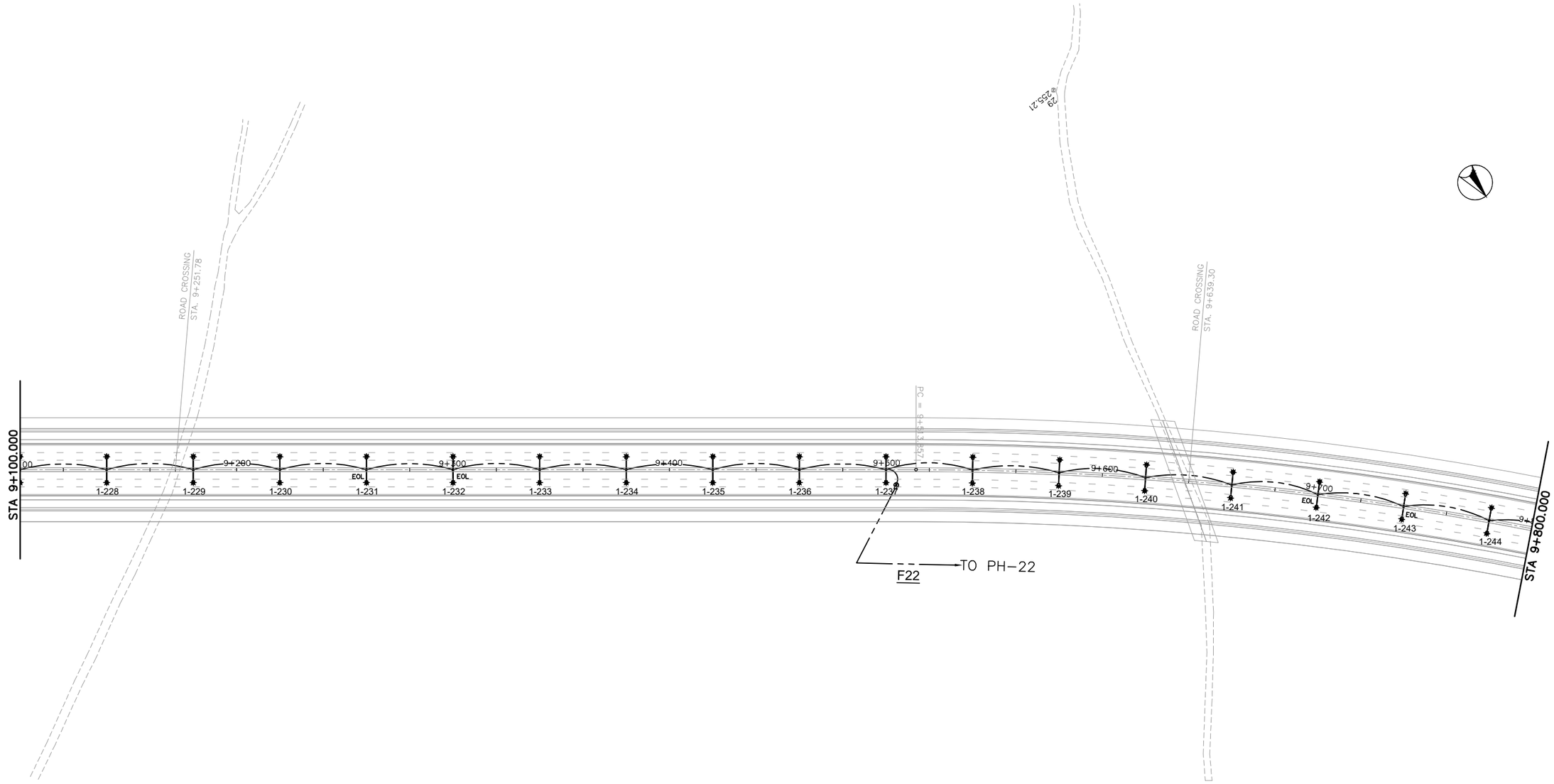

PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 9 □ 100.000 - STA. 9 □ 800.000

(LIGHTING STATIONS 1-228 - 1-244)

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
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PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD

ROADWAY LIGHTING LAYOUT
STA. 9 □ 100.000 - STA. 9 □ 800.000

SCALE	DRAWING STATUS	
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PROJECT CODE	DRAWING NO.	SIZE
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DATE APPROVED	DATE REVISED	REV.
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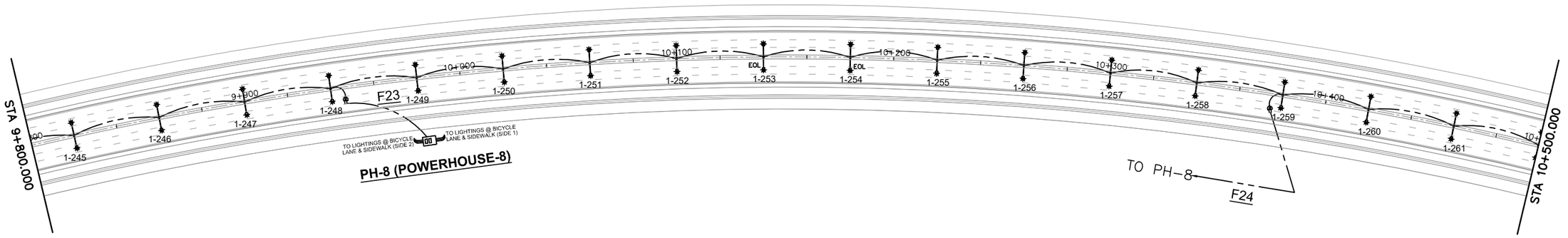

PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 9 □ 800.000 - STA. 10 □ 500.000

(LIGHTING STATIONS 1-245 - 1-261)

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

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EFREN L. DAVID
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ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
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PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD

ROADWAY LIGHTING LAYOUT
STA. 9 □ 800.000 - STA. 10 □ 500.000

SCALE	DRAWING STATUS	
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DATE APPROVED	DATE REVISED	REV.
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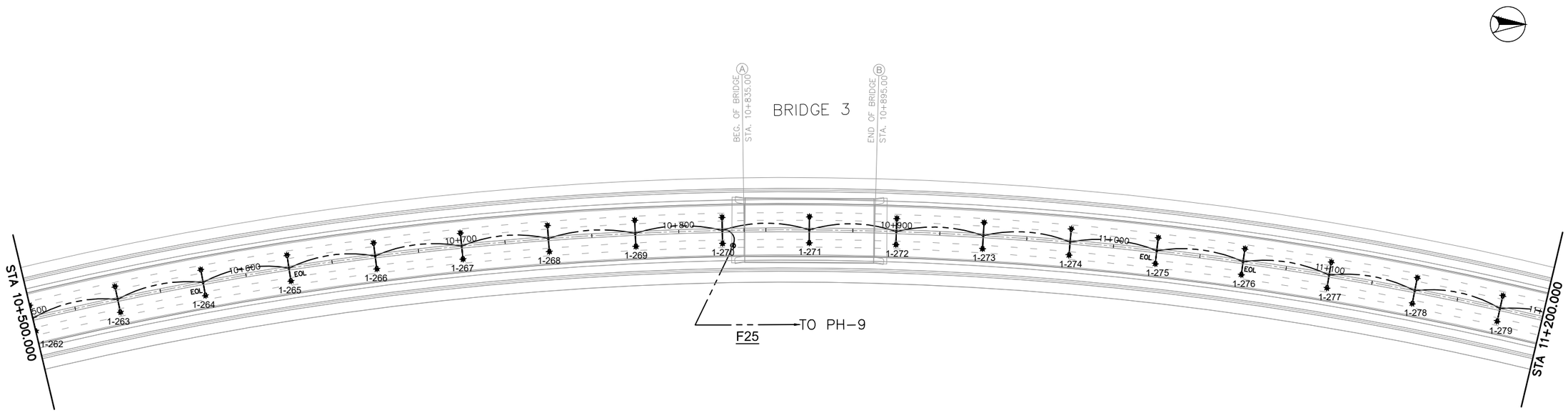

PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	62

ROADWAY LIGHTING LAYOUT STA. 10 □ 500.000 - STA. 11 □ 200.000

(LIGHTING STATIONS 1-262 - 1-279)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 10 □ 500.000 - STA. 11 □ 200.000	AS SHOWN	FINAL DRAWINGS
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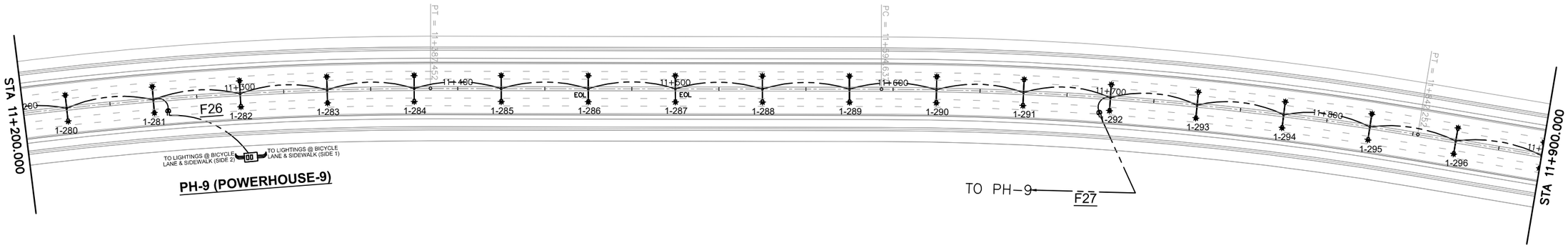

PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 11 □ 200.000 - STA. 11 □ 900.000

(LIGHTING STATIONS 1-280 - 1-296)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 11 □ 200.000 - STA. 11 □ 900.000	AS SHOWN	FINAL DRAWINGS
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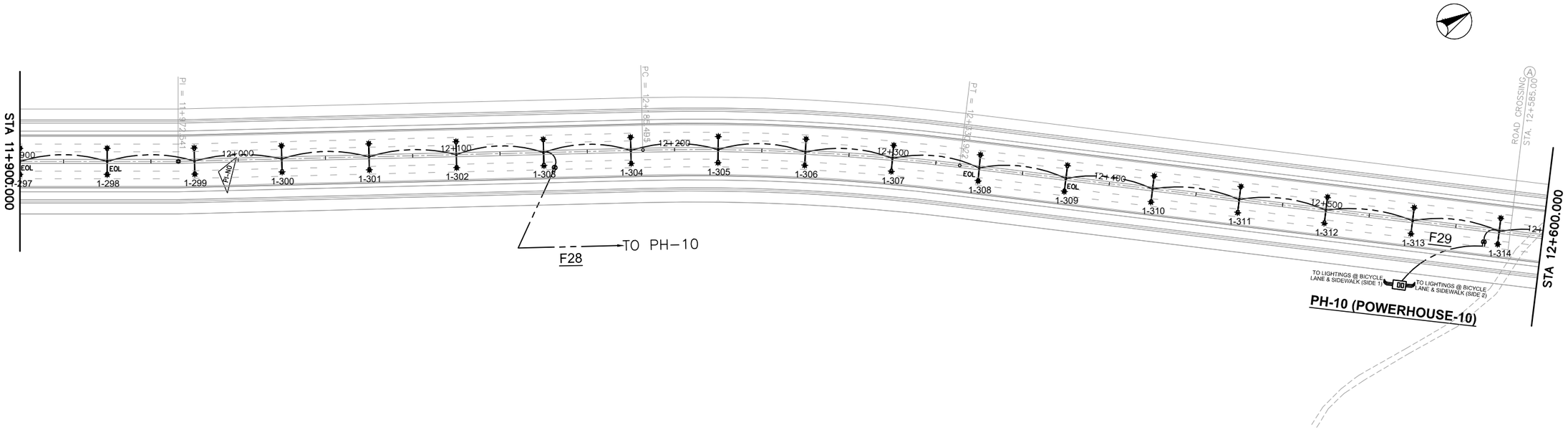

PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 11 □ 900.000 - STA. 12 □ 600.000

(LIGHTING STATIONS 1-297 - 1-314)

CONSULTANTS

Urban Integrated Consultants, Inc.
UICI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
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PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD

ROADWAY LIGHTING LAYOUT
STA. 11 □ 900.000 - STA. 12 □ 600.000

SCALE	DRAWING STATUS	
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PROJECT CODE	DRAWING NO.	SIZE
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DATE APPROVED	DATE REVISED	REV.
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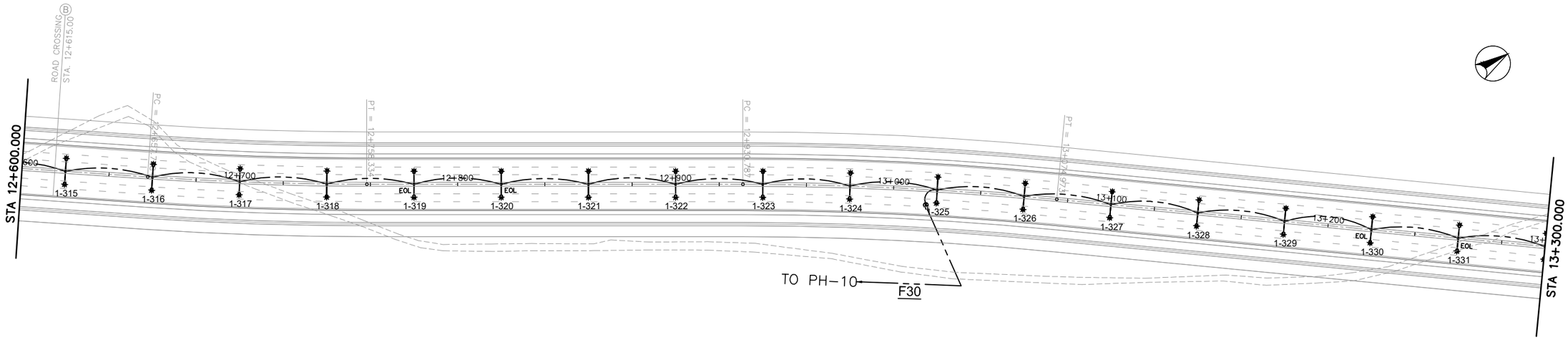
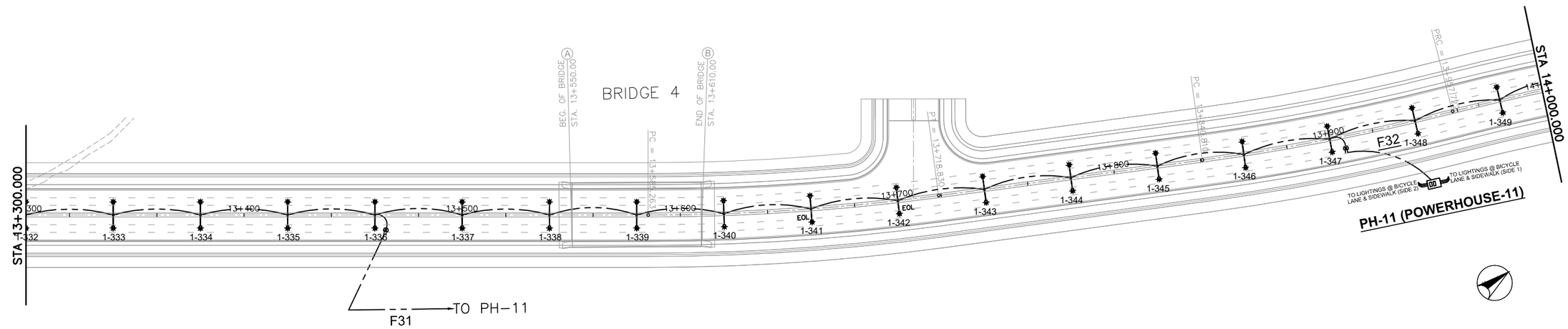


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 3.0M-HT 1.5M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 12 □ 600.000 - STA. 13 □ 300.000

(LIGHTING STATIONS 1-315 - 1-331)

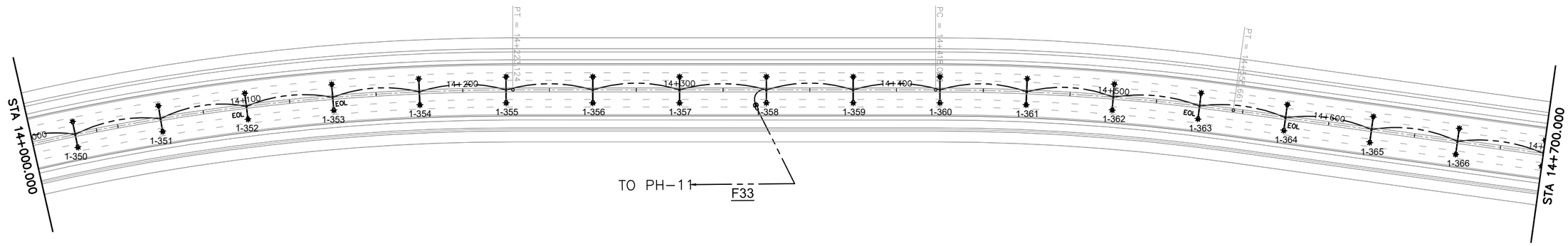


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	66

ROADWAY LIGHTING LAYOUT STA. 13 □ 300.000 - STA. 14 □ 000.000

(LIGHTING STATIONS 1-332 - 1-349)

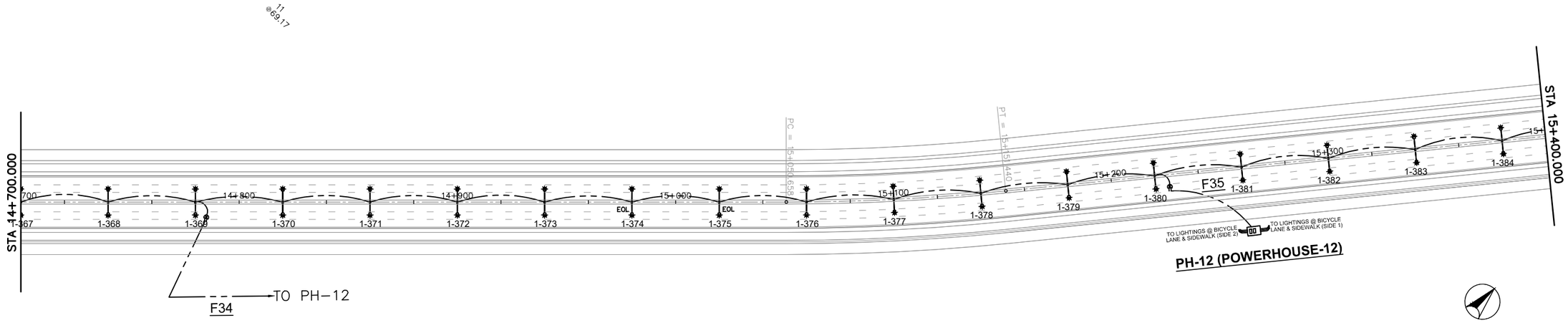
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UIC DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UIC DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 12 □ 600.000 - STA. 14 □ 000.000	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. / SIZE: E-17 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 3.0M-HT 1.5M-DOUBLE-ARM	68

ROADWAY LIGHTING LAYOUT STA. 14 □ 000.000 - STA. 14 □ 700.000

(LIGHTING STATIONS 1-350 - 1-366)

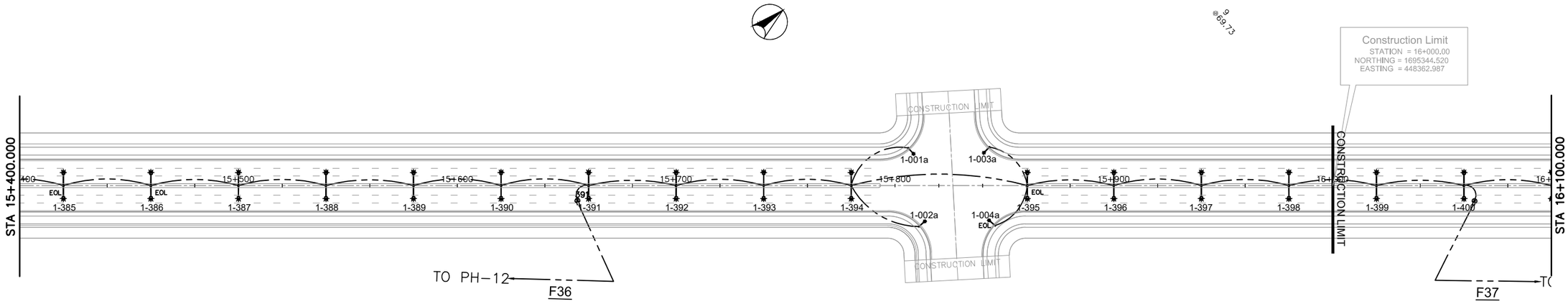


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 14 □ 700.000 - STA. 15 □ 400.000

(LIGHTING STATIONS 1-367 - 1-384)

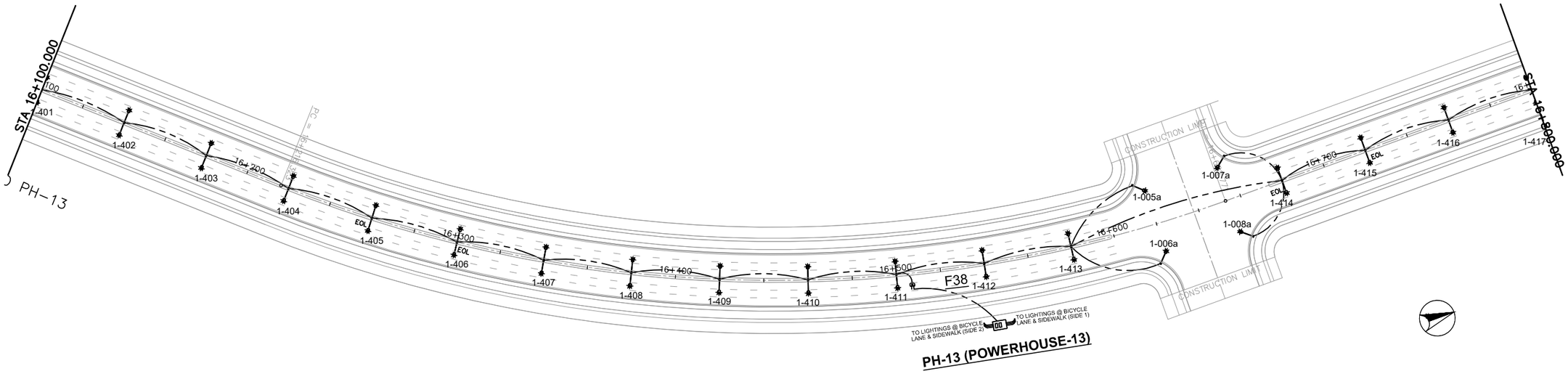
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 14 □ 000.000 - STA. 15 □ 400.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								E-18 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	16
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	16
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	4
LIGHT POSTS, 3.0M-HT 1.5M-DOUBLE-ARM	64

ROADWAY LIGHTING LAYOUT STA. 15 □400.000 - STA. 16 □100.000

(LIGHTING STATIONS 1-385 - 1-400)

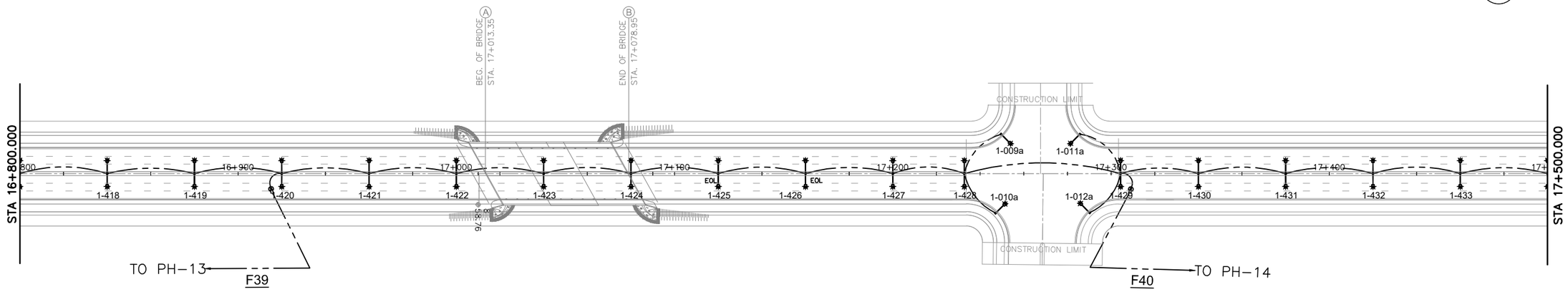


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	4
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	64

ROADWAY LIGHTING LAYOUT STA. 16 □100.000 - STA. 16 □800.000

(LIGHTING STATIONS 1-401 - 1-417)

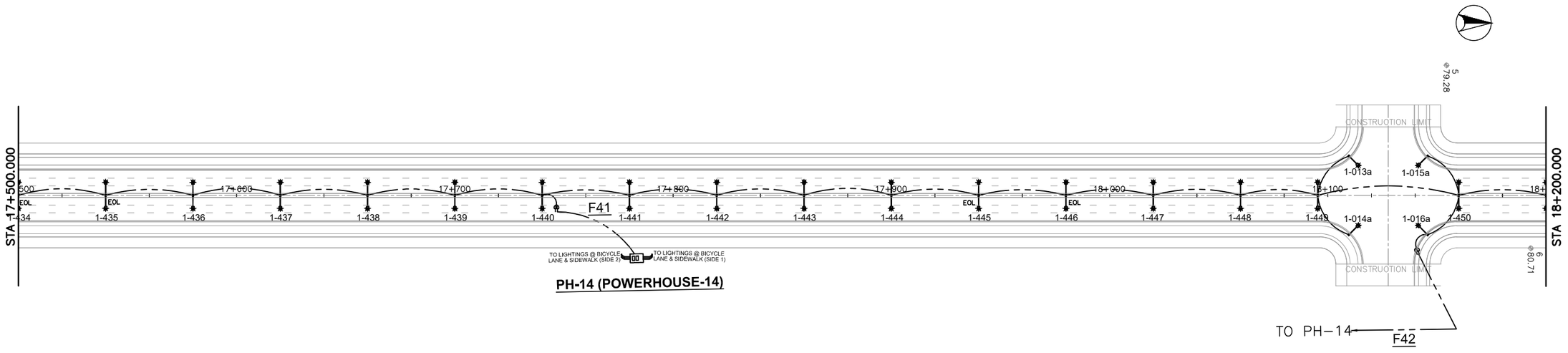
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 15 □400.000 - STA. 16 □800.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								E-19 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	16
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	16
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	4
LIGHT POSTS, 3.0M-HT 1.5M-DOUBLE-ARM	56

ROADWAY LIGHTING LAYOUT STA. 16 □ 800.000 - STA. 17 □ 500.000

(LIGHTING STATIONS 1-418 - 1-433)

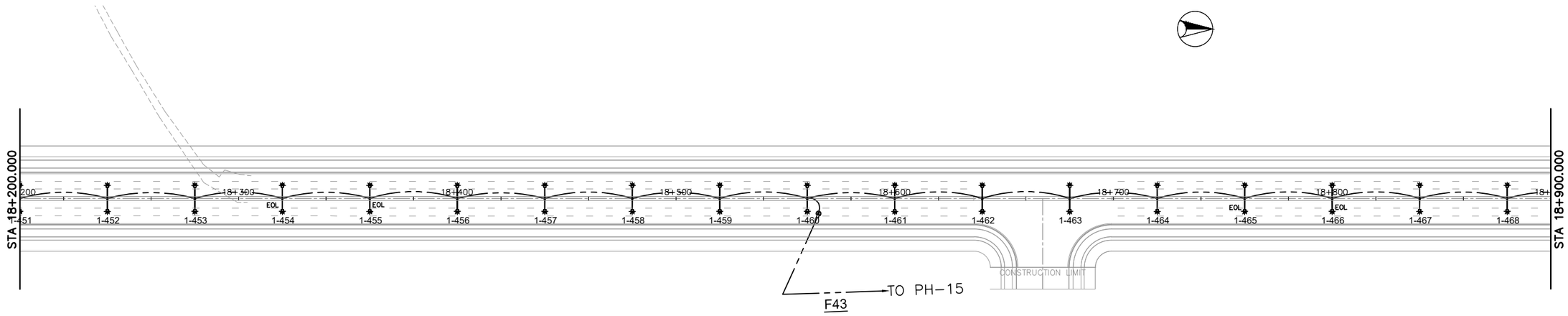


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	17
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	17
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	4
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	66

ROADWAY LIGHTING LAYOUT STA. 17 □ 500.000 - STA. 18 □ 200.000

(LIGHTING STATIONS 1-434 - 1-450)

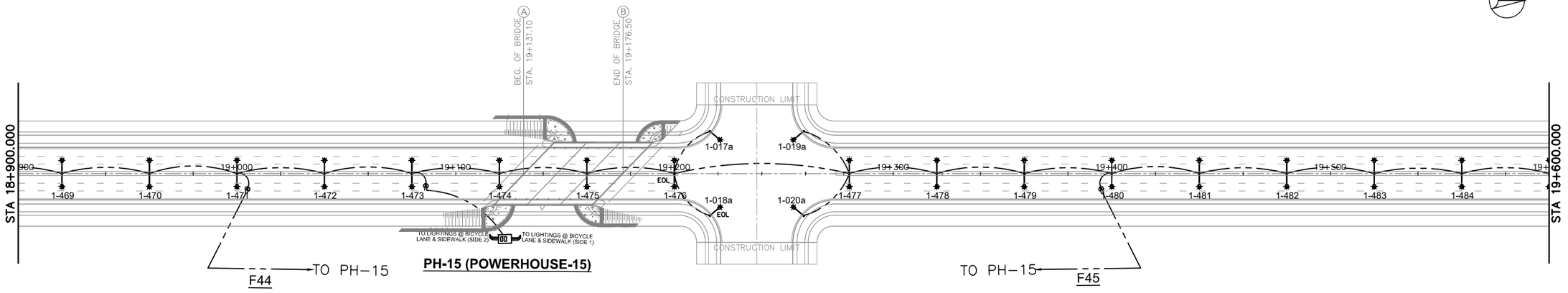
CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 16 □ 800.000 - STA. 18 □ 200.000	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. / SIZE
								E-20 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	68

ROADWAY LIGHTING LAYOUT STA. 18 □ 200.000 - STA. 18 □ 900.000

(LIGHTING STATIONS 1-451 - 1-468)



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	16
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	16
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	4
LIGHT POSTS, 3.0M-HT 1.5M-DOUBLE-ARM	62

ROADWAY LIGHTING LAYOUT STA. 18□900.000 - STA. 19 □600.000

(LIGHTING STATIONS 1-469 - 1-484)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 18 □ 200.000 - STA. 19 □ 600.000	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								E-21 / A1
							DATE APPROVED	DATE REVISED / REV.
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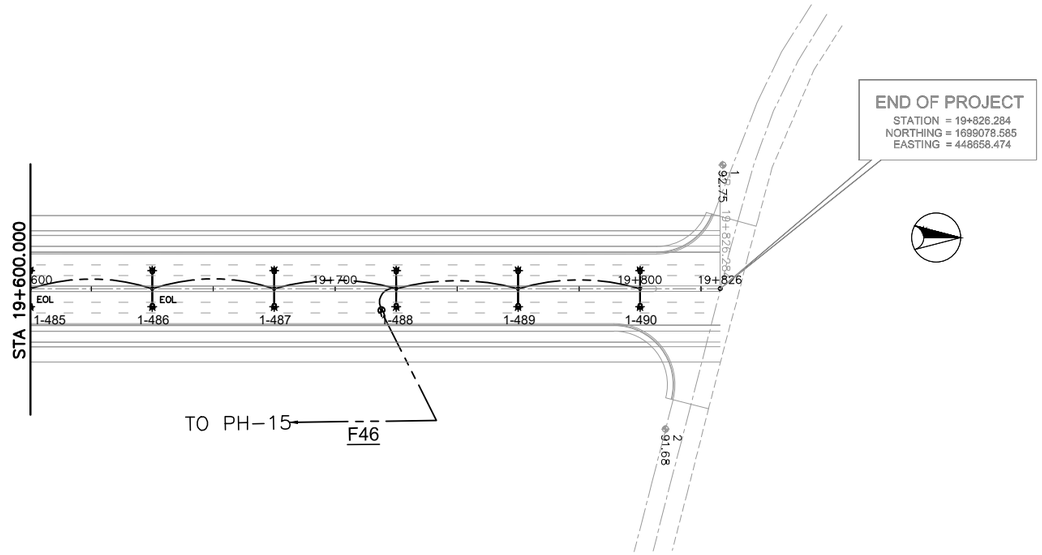
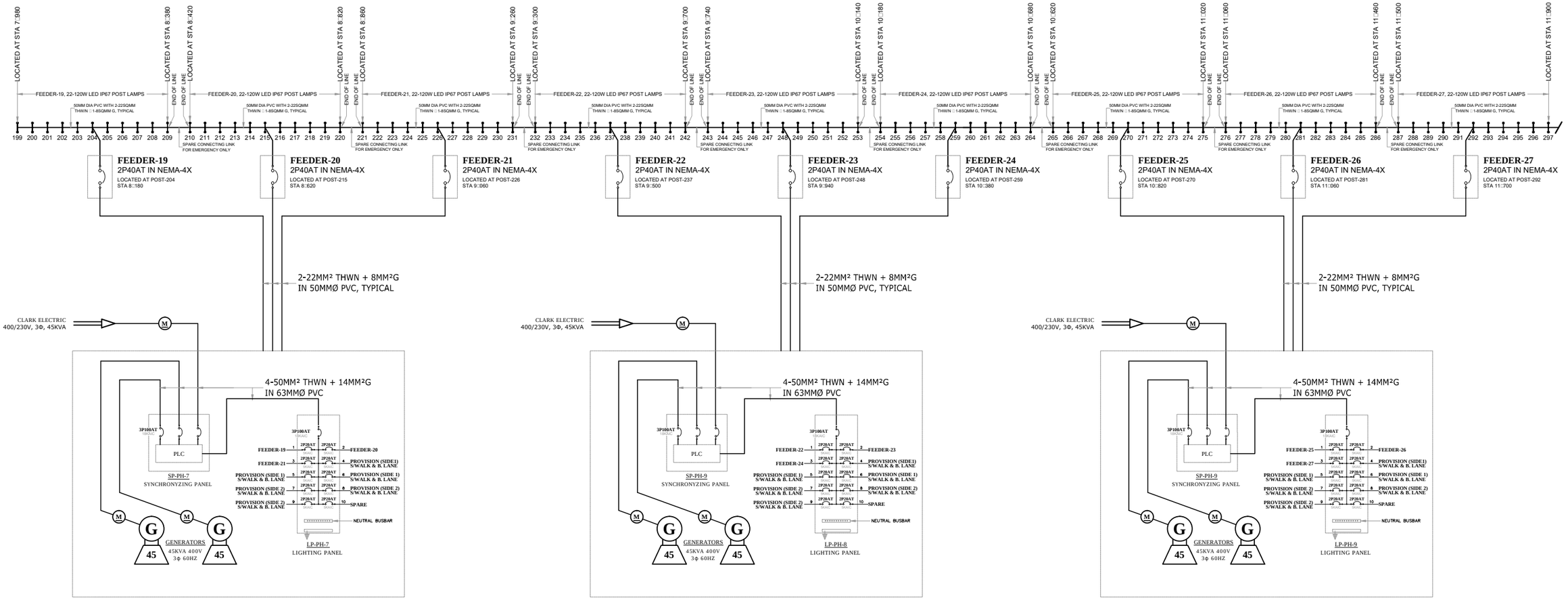


PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	6
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	6
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 3.0M-HT 1.5M-DOUBLE-ARM	20

ROADWAY LIGHTING LAYOUT STA. 19 □600.000 - STA. 19 □826.284

(LIGHTING STATIONS 1-485 - 1-490)

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD ROADWAY LIGHTING LAYOUT STA. 19 □600.000 - STA. 19 □826.284	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
								E-22 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -



PH-7 (POWER HOUSE - 7)
(LOCATED AT STA 8□620)

PH-8 (POWER HOUSE - 8)
(LOCATED AT STA 9□940)

PH-9 (POWER HOUSE - 9)
(LOCATED AT STA 11+060)

RISER DIAGRAM

POST 199–297

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD MAIN RISER DIAGRAM	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE: E-25 / A1
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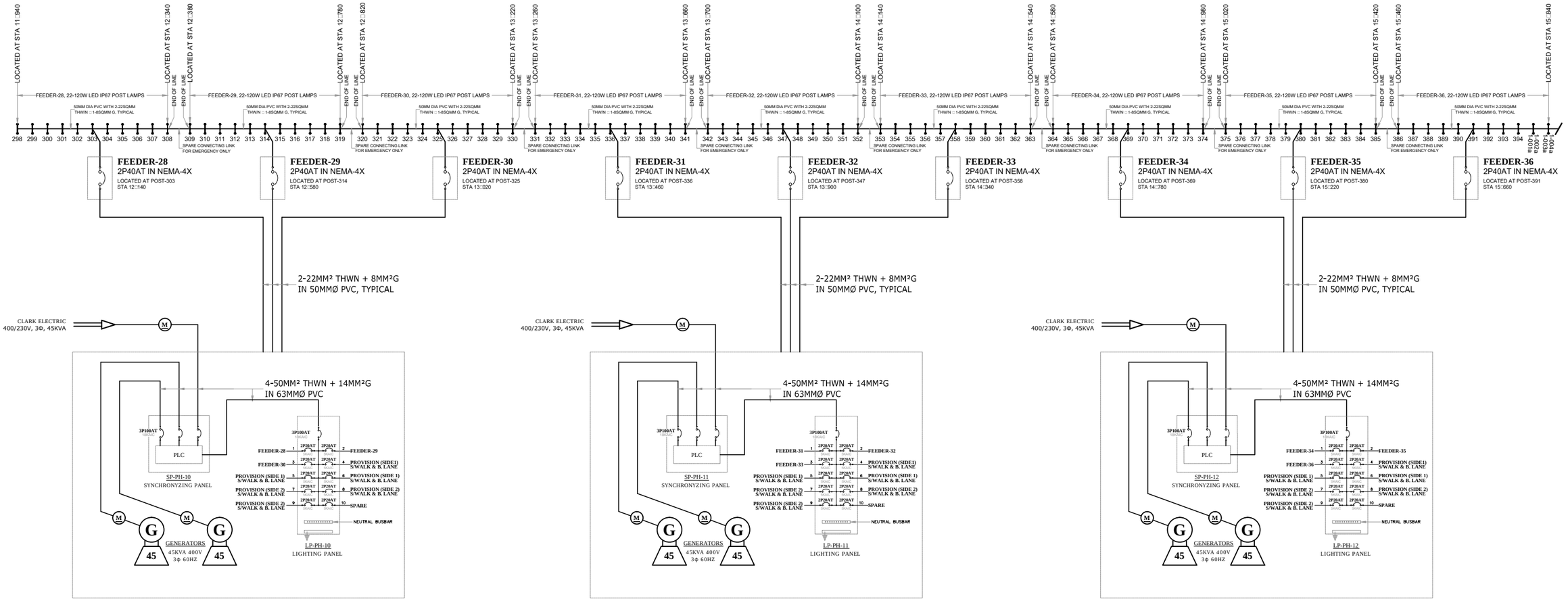


PH-10 (POWER HOUSE - 10)
(LOCATED AT STA 12□580)

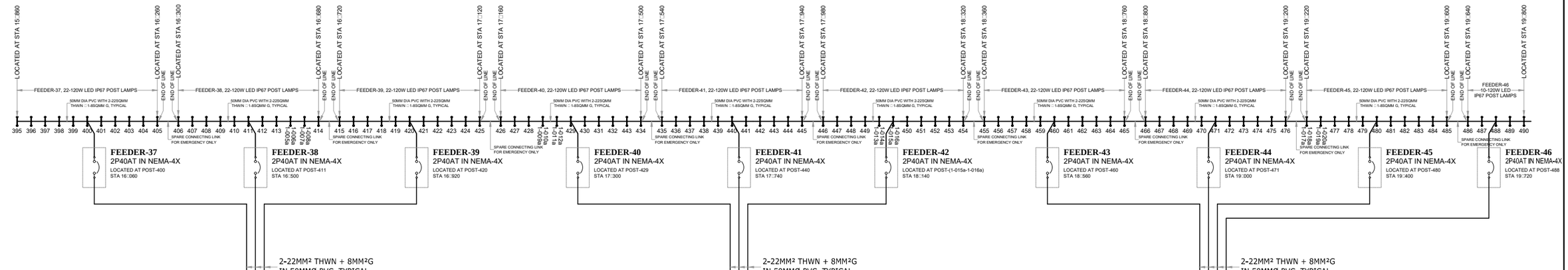
PH-8 (POWER HOUSE - 11)
LOCATED AT STA 13□900)

PH-12 (POWER HOUSE - 12)
(LOCATED AT STA 15+220)

RISER DIAGRAM

POST 298–394

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD MAIN RISER DIAGRAM	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. E-26 / SIZE A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



PH-10 (POWER HOUSE - 13)
(LOCATED AT STA 16□500)

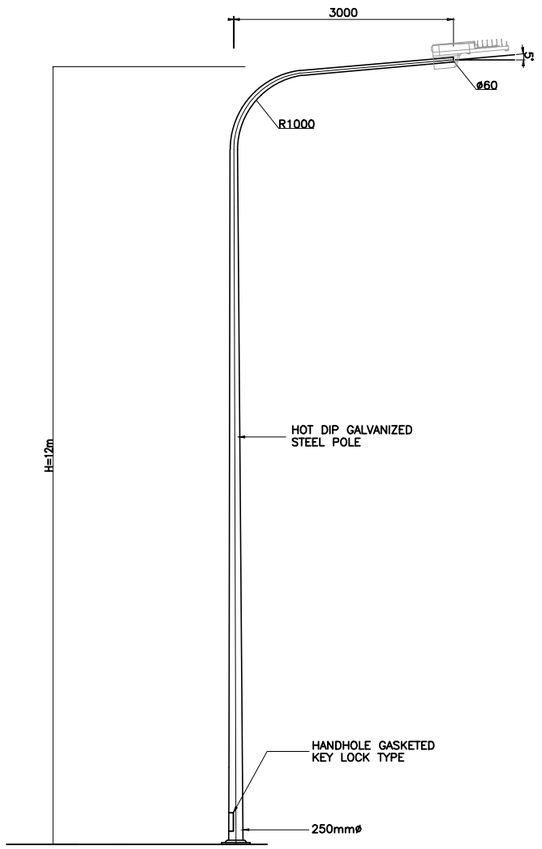
PH-8 (POWER HOUSE - 14)
(LOCATED AT STA 17□740)

PH-12 (POWER HOUSE - 15)
(LOCATED AT STA 19+080)

RISER DIAGRAM

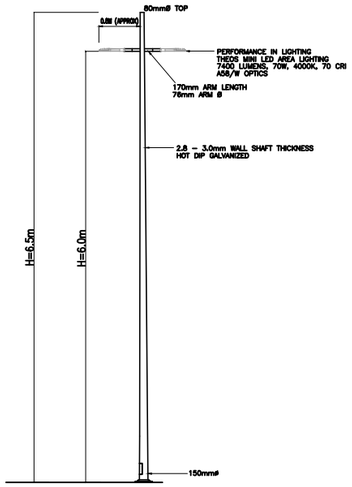
POST 395–490

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD MAIN RISER DIAGRAM	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -				PROJECT CODE	DRAWING NO. / SIZE: E-27 / A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



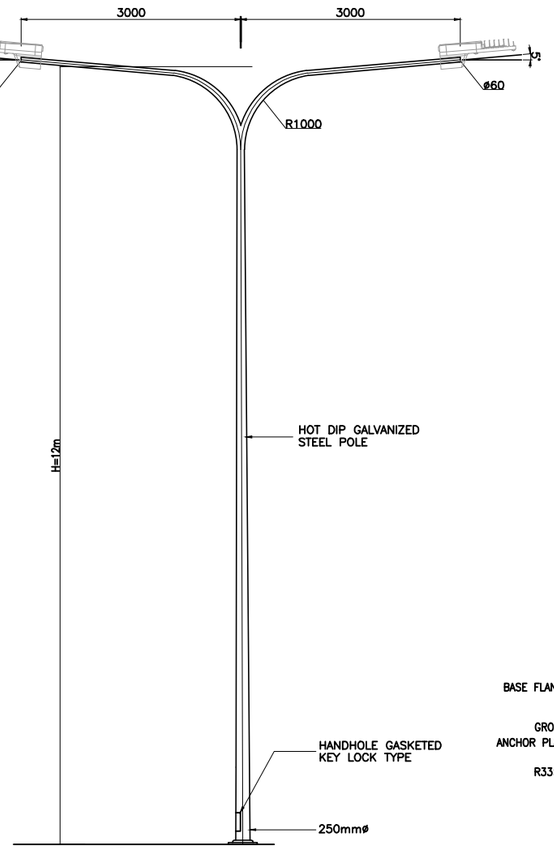
TYP. 12M LIGHT POST
NTS

INTERSECTION/ROUNDABOUT LIGHTINGS



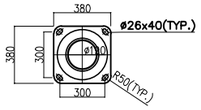
TYP. 12M LIGHT POST
NTS

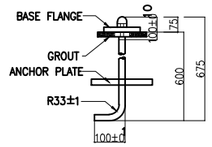
SIDEWALK & BIKE LANE LIGHTINGS (SPACED IN 20 METERS)

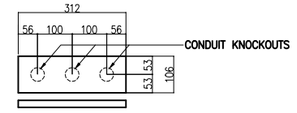


TYP. 12M LIGHT POST
NTS

R1 MAIN ROAD LIGHTINGS (SPACED IN 40 METERS)







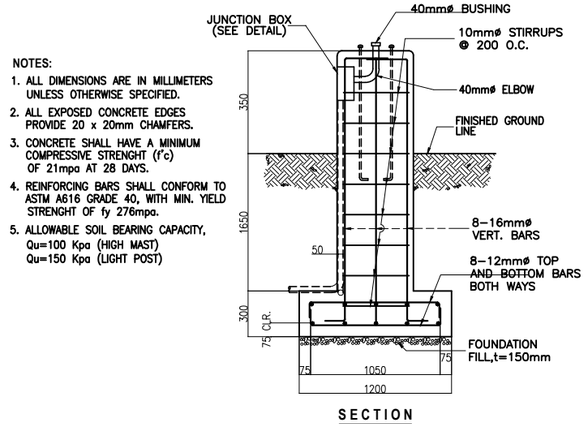
MATERIAL:

JUNCTION BOX–5mm THICK CAST ALUMINUM
FOR BOX AND COVER
ANCHOR BOLT–ASTM A–36

FINISH:

ANCHOR BOLT–ASTM A–153

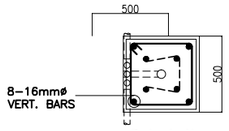
P L A N
NOT TO SCALE



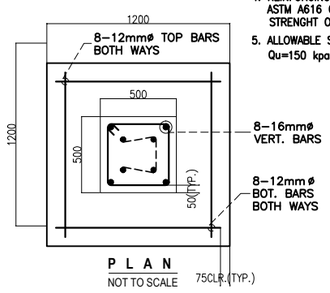
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. ALL EXPOSED CONCRETE EDGES PROVIDE 20 x 20mm CHAMFERS.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGHT (f'c) OF 21mpa AT 28 DAYS.
4. REINFORCING BARS SHALL CONFORM TO ASTM A616 GRADE 40, WITH MIN. YIELD STRENGHT OF fy 276mpa.
5. ALLOWABLE SOIL BEARING CAPACITY, Qu=100 Kpa (HIGH MAST) Qu=150 Kpa (LIGHT POST)

SECTION
NOT TO SCALE



P L A N
NOT TO SCALE

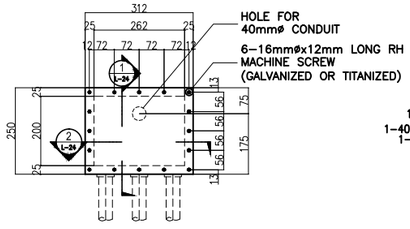


P L A N
NOT TO SCALE

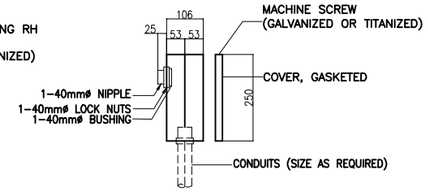
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. ALL EXPOSED CONCRETE EDGES PROVIDE 20 x 20mm CHAMFERS.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGHT (f'c) OF 21mpa AT 28 DAYS.
4. REINFORCING BARS SHALL CONFORM TO ASTM A616 GRADE 40, WITH MIN. YIELD STRENGHT OF fy 276mpa.
5. ALLOWABLE SOIL BEARING CAPACITY, Qu=150 kpa

LIGHT POST CONCRETE FOUNDATION DETAILS (FOR 12M & 9M)
NTS



ELEVATION
NOT TO SCALE



SECTION
NOT TO SCALE

JUNCTION BOX DETAILS
NTS

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD DETAILS LIGHT POSTS, LIGHT POST CONCRETE FOUNDATION AND JUNCTION BOX	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE: -	DRAWING NO.: E-28 / SIZE: A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -

ELECTRICAL LOAD ANALYSIS & LOAD SCHEDULE

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

PNL: **PH1 (POWER HOUSE-1)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HF	CVA	M.CVA	DFSF	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-1		3300			1	AN-L	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
2	1	40	50	FEEDER-2		3300			1	AN-R	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
3	1	40	50	FEEDER-3		3300			1	BN-L	14.3		3300		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
				TOTAL►		41700		30 BALANCE CHECK				16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

S ◄ODD POLES EVEN► S

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FDR TYPE FOR BRANCHES► THWN PVC
AVERAGE VA@ 13900 | FDR TYPE FOR MAINS► THWN PVC
%UNBALANCE 16.6%

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81/1000 = **38.0 KVA**

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MMTHWN IN 63MM Ø PVC**

CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

PNL: **PH4 (POWER HOUSE-4)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND N** (FIXED) | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HF	CVA	M.CVA	DFSF	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-10		3300			1	AN-L	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
2	1	40	50	FEEDER-11		3300			1	AN-R	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
3	1	40	50	FEEDER-12		3300			1	BN-L	14.3		3300		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
				TOTAL►		41700		30 BALANCE CHECK				16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

S ◄ODD POLES EVEN► S

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FDR TYPE FOR BRANCHES► THWN PVC
AVERAGE VA@ 13900 | FDR TYPE FOR MAINS► THWN PVC
%UNBALANCE 16.6%

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =2*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81/1000 = **38.0 KVA**

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MMTHWN IN 63MM Ø PVC**

CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

PNL: **PH2 (POWER HOUSE-2)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HF	CVA	M.CVA	DFSF	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-4		3300			1	AN-L	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
2	1	40	50	FEEDER-5		3300			1	AN-R	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
3	1	40	50	FEEDER-6		3300			1	BN-L	14.3		3300		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
				TOTAL►		41700		30 BALANCE CHECK				16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

S ◄ODD POLES EVEN► S

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FDR TYPE FOR BRANCHES► THWN PVC
AVERAGE VA@ 13900 | FDR TYPE FOR MAINS► THWN PVC
%UNBALANCE 16.6%

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81/1000 = **38.0 KVA**

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MMTHWN IN 63MM Ø PVC**

CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

PNL: **PH5 (POWER HOUSE-5)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HF	CVA	M.CVA	DFSF	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-10		3300			1	AN-L	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
2	1	40	50	FEEDER-11		3300			1	AN-R	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
3	1	40	50	FEEDER-12		3300			1	BN-L	14.3		3300		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
				TOTAL►		41700		30 BALANCE CHECK				16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

S ◄ODD POLES EVEN► S

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FDR TYPE FOR BRANCHES► THWN PVC
AVERAGE VA@ 13900 | FDR TYPE FOR MAINS► THWN PVC
%UNBALANCE 16.6%

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81/1000 = **38.0 KVA**

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MMTHWN IN 63MM Ø PVC**

CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

PNL: **PH3 (POWER HOUSE-3)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND N** (FIXED) | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HF	CVA	M.CVA	DFSF	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-7		3300			1	AN-L	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
2	1	40	50	FEEDER-8		3300			1	AN-R	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
3	1	40	50	FEEDER-9		3300			1	BN-L	14.3		3300		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
				TOTAL►		41700		30 BALANCE CHECK				16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

S ◄ODD POLES EVEN► S

ASSUMED DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FDR TYPE FOR BRANCHES► THWN PVC
AVERAGE VA@ 13900 | FDR TYPE FOR MAINS► THWN PVC
%UNBALANCE 16.6%

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81/1000 = **38.0 KVA**

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MMTHWN IN 63MM Ø PVC**

CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

PNL: **PH6 (POWER HOUSE-6)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HF	CVA	M.CVA	DFSF	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-16		3300			1	AN-L	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
2	1	40	50	FEEDER-17		3300			1	AN-R	14.3	3300			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
3	1	40	50	FEEDER-18		3300			1	BN-L	14.3		3300		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MMTHWN & 1-8MMTHWN IN 50MM Ø PVC		
				TOTAL►		41700		30 BALANCE CHECK				16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

S ◄ODD POLES EVEN► S

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FDR TYPE FOR BRANCHES► THWN PVC
AVERAGE VA@ 13900 | FDR TYPE FOR MAINS► THWN PVC
%UNBALANCE 16.6%

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = **54.8 AMPS**
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81/1000 = **38.0 KVA**

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MMTHWN IN 63MM Ø PVC**

CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

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DATE: -

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PROJECT MANAGER - UICI
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CHECKED BY
RYAN PAUL S. GALURA
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APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD
ELECTRICAL LOAD ANALYSIS & LOAD SCHEDULE

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO.	SIZE
-	E-29	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-

ELECTRICAL LOAD ANALYSIS & LOAD SCHEDULE

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

1	40	A 1 A	40	2	
3	40	B 2 B	40	4	
5	40	C 3 C	40	6	
7	40	A 4 A	40	8	
9	40	B 5 B	40	10	
		C 6 C			
		A 7 A			
		B 8 B			
		C 9 C			
		A 10 A			
		B 11 B			

5 ◄ODD POLES EVEN► 5

PNL: **PH7 (POWER HOUSE-7)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**

FEED: **TOP** | VOLTAGE: **400/230VAC Y-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN

SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**

AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS/F	Ø	DEMAND VOLTAMPERES SEQ	AMPS	ØAN	ØBN	ØCN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-19		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
2	1	40	50	FEEDER-20		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
3	1	40	50	FEEDER-21		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		

TOTAL► 41700 | 30 BALANCE CHECK | 16200 | 15900 | 9600 | ◄TOTAL PHASE DEMAND LOAD (@TDVA)

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FOR TYPE FOR BRANCHES► THWN PVC

AVERAGE VA@ 13900 | FOR TYPE FOR MAINS► THWN PVC

%UNBALANCE 16.6%

CALCULATIONS:

TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700

TOTAL DVA► =3*MAX(@TDVA) = =3*16200 = 48600

IL for MCB► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► GMZ

IL for MFDR► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► PEE

KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81000 = 38.0 KVA

USE: MAIN CKT BKR: **3P 100AT 100AF MCCB**

MAIN FEEDER: **4-50MM²THWN IN 63MM Ø PVC**

Main Feeder Ampacity & Loading► 145A 37.8%

Enter Length of Main Feeder► 20 meters

Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

1	40	A 1 A	40	2	
3	40	B 2 B	40	4	
5	40	C 3 C	40	6	
7	40	A 4 A	40	8	
9	40	B 5 B	40	10	
		C 6 C			
		A 7 A			
		B 8 B			
		C 9 C			
		A 10 A			
		B 11 B			

5 ◄ODD POLES EVEN► 5

PNL: **PH10 (POWER HOUSE-10)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**

FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN

SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**

AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS/F	Ø	DEMAND VOLTAMPERES SEQ	AMPS	ØAN	ØBN	ØCN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-28		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
2	1	40	50	FEEDER-29		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
3	1	40	50	FEEDER-30		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		

TOTAL► 41700 | 30 BALANCE CHECK | 16200 | 15900 | 9600 | ◄TOTAL PHASE DEMAND LOAD (@TDVA)

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FOR TYPE FOR BRANCHES► THWN PVC

AVERAGE VA@ 13900 | FOR TYPE FOR MAINS► THWN PVC

%UNBALANCE 16.6%

CALCULATIONS:

TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700

TOTAL DVA► =3*MAX(@TDVA) = =3*16200 = 48600

IL for MCB► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► GMZ

IL for MFDR► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► PEE

KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81000 = 38.0 KVA

USE: MAIN CKT BKR: **3P 100AT 100AF MCCB**

MAIN FEEDER: **4-50MM²THWN IN 63MM Ø PVC**

Main Feeder Ampacity & Loading► 145A 37.8%

Enter Length of Main Feeder► 20 meters

Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

1	40	A 1 A	40	2	
3	40	B 2 B	40	4	
5	40	C 3 C	40	6	
7	40	A 4 A	40	8	
9	40	B 5 B	40	10	
		C 6 C			
		A 7 A			
		B 8 B			
		C 9 C			
		A 10 A			
		B 11 B			

5 ◄ODD POLES EVEN► 5

PNL: **PH8 (POWER HOUSE-8)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**

FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN

SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**

AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS/F	Ø	DEMAND VOLTAMPERES SEQ	AMPS	ØAN	ØBN	ØCN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-22		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
2	1	40	50	FEEDER-23		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
3	1	40	50	FEEDER-24		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		

TOTAL► 41700 | 30 BALANCE CHECK | 16200 | 15900 | 9600 | ◄TOTAL PHASE DEMAND LOAD (@TDVA)

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FOR TYPE FOR BRANCHES► THWN PVC

AVERAGE VA@ 13900 | FOR TYPE FOR MAINS► THWN PVC

%UNBALANCE 16.6%

CALCULATIONS:

TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700

TOTAL DVA► =3*MAX(@TDVA) = =3*16200 = 48600

IL for MCB► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► GMZ

IL for MFDR► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► PEE

KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81000 = 38.0 KVA

USE: MAIN CKT BKR: **3P 100AT 100AF MCCB**

MAIN FEEDER: **4-50MM²THWN IN 63MM Ø PVC**

Main Feeder Ampacity & Loading► 145A 37.8%

Enter Length of Main Feeder► 20 meters

Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

1	40	A 1 A	40	2	
3	40	B 2 B	40	4	
5	40	C 3 C	40	6	
7	40	A 4 A	40	8	
9	40	B 5 B	40	10	
		C 6 C			
		A 7 A			
		B 8 B			
		C 9 C			
		A 10 A			
		B 11 B			

5 ◄ODD POLES EVEN► 5

PNL: **PH11 (POWER HOUSE-11)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**

FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN

SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**

AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS/F	Ø	DEMAND VOLTAMPERES SEQ	AMPS	ØAN	ØBN	ØCN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-31		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
2	1	40	50	FEEDER-32		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
3	1	40	50	FEEDER-33		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		

TOTAL► 41700 | 30 BALANCE CHECK | 16200 | 15900 | 9600 | ◄TOTAL PHASE DEMAND LOAD (@TDVA)

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FOR TYPE FOR BRANCHES► THWN PVC

AVERAGE VA@ 13900 | FOR TYPE FOR MAINS► THWN PVC

%UNBALANCE 16.6%

CALCULATIONS:

TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700

TOTAL DVA► =3*MAX(@TDVA) = =3*16200 = 48600

IL for MCB► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► GMZ

IL for MFDR► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► PEE

KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81000 = 38.0 KVA

USE: MAIN CKT BKR: **3P 100AT 100AF MCCB**

MAIN FEEDER: **4-50MM²THWN IN 63MM Ø PVC**

Main Feeder Ampacity & Loading► 145A 37.8%

Enter Length of Main Feeder► 20 meters

Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

1	40	A 1 A	40	2	
3	40	B 2 B	40	4	
5	40	C 3 C	40	6	
7	40	A 4 A	40	8	
9	40	B 5 B	40	10	
		C 6 C			
		A 7 A			
		B 8 B			
		C 9 C			
		A 10 A			
		B 11 B			

5 ◄ODD POLES EVEN► 5

PNL: **PH9 (POWER HOUSE-9)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**

FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN

SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**

AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS/F	Ø	DEMAND VOLTAMPERES SEQ	AMPS	ØAN	ØBN	ØCN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-25		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
2	1	40	50	FEEDER-26		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
3	1	40	50	FEEDER-27		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		

TOTAL► 41700 | 30 BALANCE CHECK | 16200 | 15900 | 9600 | ◄TOTAL PHASE DEMAND LOAD (@TDVA)

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FOR TYPE FOR BRANCHES► THWN PVC

AVERAGE VA@ 13900 | FOR TYPE FOR MAINS► THWN PVC

%UNBALANCE 16.6%

CALCULATIONS:

TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700

TOTAL DVA► =3*MAX(@TDVA) = =3*16200 = 48600

IL for MCB► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► GMZ

IL for MFDR► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► PEE

KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81000 = 38.0 KVA

USE: MAIN CKT BKR: **3P 100AT 100AF MCCB**

MAIN FEEDER: **4-50MM²THWN IN 63MM Ø PVC**

Main Feeder Ampacity & Loading► 145A 37.8%

Enter Length of Main Feeder► 20 meters

Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR

MAIN 3P 100 AT MCCB

1	40	A 1 A	40	2	
3	40	B 2 B	40	4	
5	40	C 3 C	40	6	
7	40	A 4 A	40	8	
9	40	B 5 B	40	10	
		C 6 C			
		A 7 A			
		B 8 B			
		C 9 C			
		A 10 A			
		B 11 B			

5 ◄ODD POLES EVEN► 5

PNL: **PH12 (POWER HOUSE-12)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**

FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN

SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** (FIXED) | MOUNTING: **SURFACE**

AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS/F	Ø	DEMAND VOLTAMPERES SEQ	AMPS	ØAN	ØBN	ØCN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-34		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
2	1	40	50	FEEDER-35		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
3	1	40	50	FEEDER-36		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MM Ø PVC		

TOTAL► 41700 | 30 BALANCE CHECK | 16200 | 15900 | 9600 | ◄TOTAL PHASE DEMAND LOAD (@TDVA)

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | MAXIMUM VA@ 16200 | FOR TYPE FOR BRANCHES► THWN PVC

AVERAGE VA@ 13900 | FOR TYPE FOR MAINS► THWN PVC

%UNBALANCE 16.6%

CALCULATIONS:

TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700

TOTAL DVA► =3*MAX(@TDVA) = =3*16200 = 48600

IL for MCB► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► GMZ

IL for MFDR► =3*MAX(@TDVA)/(√3*400*DF) =3*16,200/(√3*400*1.28) = 54.8 AMPS — CONSULT ME► PEE

KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.81000 = 38.0 KVA

USE: MAIN CKT BKR: **3P 100AT 100AF MCCB**

MAIN FEEDER: **4-50MM²THWN IN 63MM Ø PVC**

Main Feeder Ampacity & Loading► 145A 37.8%

Enter Length of Main Feeder► 20 meters

Estimated Voltage Drop and % Regulation► 0.81Volts 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

C O N S U L T A N T S

Urban Integrated Consultants, Inc.
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SUBMITTED BY

EFREN L. DAVID
PRESIDENT

ELECTRICAL LOAD ANALYSIS & LOAD SCHEDULE

PANEL SIMULATOR: MAIN 3P 100 AT MCCB

PNL: **PH13 (POWER HOUSE-13)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEUT)** | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-37		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
2	1	40	50	FEEDER-38		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
3	1	40	50	FEEDER-39		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
TOTAL►						41700						16200	13900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | 3Ø BALANCE CHECK | 16200 | 13900 | 9600
MAXIMUM VA@: 16200 | AVERAGE VA@: 13900 | %UNBALANCE: 16.6%
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DtF) =3*16,200/(√3*400*1.28) = 54.8 AMPS
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DtF) =3*16,200/(√3*400*1.28) = 54.8 AMPS
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.8/1000 = 38.0 KVA

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MM²THWN IN 63MMØ PVC**
CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A | 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volt | 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR: MAIN 3P 100 AT MCCB

PNL: **PH14 (POWER HOUSE-14)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND N** | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-40		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
2	1	40	50	FEEDER-41		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
3	1	40	50	FEEDER-42		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
4	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
8	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	AN-R	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
10	1	40	50	SPARE		3000			1	BN-R	13.0		3000		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
TOTAL►						41700						16200	15900	9600	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | 3Ø BALANCE CHECK | 16200 | 15900 | 9600
MAXIMUM VA@: 16200 | AVERAGE VA@: 13900 | %UNBALANCE: 16.6%
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 41700 + 0 = 41700
TOTAL DVA► =3*MAX(ØTDVA) = =3*16200 = 48600
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DtF) =3*16,200/(√3*400*1.28) = 54.8 AMPS
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DtF) =3*16,200/(√3*400*1.28) = 54.8 AMPS
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*54.8/1000 = 38.0 KVA

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MM²THWN IN 63MMØ PVC**
CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A | 37.8%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.81Volt | 0.35%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PANEL SIMULATOR: MAIN 3P 100 AT MCCB

PNL: **PH15 (POWER HOUSE-15)** | MAIN CB AT/AF: **3P 100AT 100AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 3Ø (FIXED) | MIN. KAIC FOR MAIN BREAKER: **10** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **3PHASE 4WIRE WYE 400/230VAC 60HZ SYSTEM (WITH GND NEU** | MOUNTING: **SURFACE**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **125** AMPS | PANEL TYPE: **DP**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	DEMAND VOLTAMPERES @AN	@BN	@CN	SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	40	50	FEEDER-43		3300			1	AN-L	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
2	1	40	50	FEEDER-44		3300			1	AN-R	14.3	3300			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
3	1	40	50	FEEDER-45		3300			1	BN-L	14.3		3300		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
4	1	40	50	FEEDER-46		750			1	BN-R	3.3		750		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
5	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
6	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	CN-R	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
7	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 1		4800			1	AN-L	20.9	4800			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
8	1	40	50	PROVISION- S/WALK & BIKE LANE LTG-SIDE 1*		2400			1	AN-R	10.4	2400			2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
9	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-L	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
10	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	BN-R	20.9		4800		2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
11	1	40	50	PROVISION-S/WALK & BIKE LANE LTG-SIDE 2		4800			1	CN-L	20.9			4800	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
12	1	40	50	PROVISION- S/WALK & BIKE LANE LTG-SIDE 2*		2400			1	CN-R	10.4			2400	2-22MM²THWN & 1-8MM²G IN 50MMØ PVC		
TOTAL►						44250						13800	13650	16800	◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.28 | 3Ø BALANCE CHECK | 13800 | 13650 | 16800
MAXIMUM VA@: 16800 | AVERAGE VA@: 14750 | %UNBALANCE: 13.9%
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 44250 + 0 = 44250
TOTAL DVA► =3*MAX(ØTDVA) = =3*16800 = 50400
IL for MCB► =3*MAX(ØTDVA)/(√3*400*DtF) =3*16,800/(√3*400*1.28) = 56.8 AMPS
IL for MFDR► =3*MAX(ØTDVA)/(√3*400*DtF) =3*16,800/(√3*400*1.28) = 56.8 AMPS
KVA REQT► =√3*230*IL for MFDR)/1000 =√3*230*56.8/1000 = 39.4 KVA

USE:
MAIN CKT BKR: **3P 100AT 100AF MCCB**
MAIN FEEDER: **4-50MM²THWN IN 63MMØ PVC**
CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 145A | 39.2%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 0.84Volt | 0.37%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

TYPICAL FEEDERS 1 TO 45 (FEEDING 22 LED LUMINAIRES)

PANEL SIMULATOR: MAIN 1P 40 AT MCCB

PNL: **FEEDER-1** | MAIN CB AT/AF: **1P 40AT 50AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 1Ø (AUTO) | MIN. KAIC FOR MAIN BREAKER: **5** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **SINGLE PHASE 2WIRE 230VAC 60HZ SYSTEM (WITH GND NEUTR** | MOUNTING: **FLUSH**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **40** AMPS | PANEL TYPE: **PB**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	SINGLE PHASE SYSTEM DVA@			SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	20	50	22-LED LUMINAIRE 120WATTS IP66		3300		1.00	1	1Ø	14.3	3300			2-3.5MM²THWN IN 20MMØ PVC	25	57.4
TOTAL►						3300						3300			◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.00
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 3300 + 0 = 3300
TOTAL DVA► =TDVA =3300 3300
IL for MCB► =TDVA/230 =3,300/230 = 14.3 AMPS
IL for MFDR► =TDVA/230 =3,300/230 = 14.3 AMPS
KVA REQT► =230*IL for MFDR)/1000 =230*14.3/1000 = 3.3 KVA

USE:
MAIN CKT BKR: **1P 40AT 50AF MCCB**
MAIN FEEDER: **2-22MM²THWN & 1-8MM²G IN 50MMØ PVC**
CONSULT ME► GMS
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 30A | 28.7%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 2.25Volt | 0.99%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PROVISION FOR SIDEWALK & BICYCLE LANE LIGHTINGS, 'SIDE 1' (POWER HOUSE 1 TO 15)

PANEL SIMULATOR: MAIN 1P 40 AT MCCB

PNL: **PROVISION-S/WALK & BIKE LANE LTG-SIDE 1** | MAIN CB AT/AF: **1P 40AT 50AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 1Ø (AUTO) | MIN. KAIC FOR MAIN BREAKER: **5** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **SINGLE PHASE 2WIRE 230VAC 60HZ SYSTEM (WITH GND NEUTR** | MOUNTING: **FLUSH**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **40** AMPS | PANEL TYPE: **PB**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	SINGLE PHASE SYSTEM DVA@			SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	20	50	48-LED LUMINAIRE 60WATTS IP66 (SIDE 1)		4800		1.00	1	1Ø	20.9	4800			2-5.5MM²THWN IN 25MMØ PVC	35	59.6
TOTAL►						4800						4800			◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.00
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 4800 + 0 = 4800
TOTAL DVA► =TDVA =4800 4800
IL for MCB► =TDVA/230 =4,800/230 = 20.9 AMPS
IL for MFDR► =TDVA/230 =4,800/230 = 20.9 AMPS
KVA REQT► =230*IL for MFDR)/1000 =230*20.9/1000 = 4.8 KVA

USE:
MAIN CKT BKR: **1P 40AT 50AF MCCB**
MAIN FEEDER: **2-22MM²THWN & 1-8MM²G IN 50MMØ PVC**
CONSULT ME► PEE
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 50A | 41.7%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 5.27Volt | 1.44%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PROVISION FOR SIDEWALK & BICYCLE LANE LIGHTINGS, 'SIDE 2' (POWER HOUSE 1 TO 15)

PANEL SIMULATOR: MAIN 1P 40 AT MCCB

PNL: **PROVISION-S/WALK & BIKE LTG-SIDE 2** | MAIN CB AT/AF: **1P 40AT 50AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 1Ø (AUTO) | MIN. KAIC FOR MAIN BREAKER: **5** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **SINGLE PHASE 2WIRE 230VAC 60HZ SYSTEM (WITH GND NEUTR** | MOUNTING: **FLUSH**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **40** AMPS | PANEL TYPE: **PB**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	SINGLE PHASE SYSTEM DVA@			SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	20	50	48-LED LUMINAIRE 60WATTS IP66 (SIDE 2)		4800		1.00	1	1Ø	20.9	4800			2-5.5MM²THWN IN 25MMØ PVC	35	59.6
TOTAL►						4800						4800			◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.00
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 4800 + 0 = 4800
TOTAL DVA► =TDVA =4800 4800
IL for MCB► =TDVA/230 =4,800/230 = 20.9 AMPS
IL for MFDR► =TDVA/230 =4,800/230 = 20.9 AMPS
KVA REQT► =230*IL for MFDR)/1000 =230*20.9/1000 = 4.8 KVA

USE:
MAIN CKT BKR: **1P 40AT 50AF MCCB**
MAIN FEEDER: **2-22MM²THWN & 1-8MM²G IN 50MMØ PVC**
CONSULT ME► PEE
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 50A | 41.7%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 3.27Volt | 1.44%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

PROVISION FOR SIDEWALK & BICYCLE LANE LIGHTINGS, 'SIDE 1 & 2' (POWER HOUSE 15 - CKT NoS. 5 TO 12)

PANEL SIMULATOR: MAIN 1P 40 AT MCCB

PNL: **PROVISION- S/WALK & BIKE LTG-SIDE 1*** | MAIN CB AT/AF: **1P 40AT 50AF MCCB** | ENCLOSURE: **NEMA-1**
FEED: **TOP** | VOLTAGE: **400/230VAC-WYE** | FORCE PHASE PANEL SETTING► 1Ø (AUTO) | MIN. KAIC FOR MAIN BREAKER: **5** OPEN
SOURCE: **MAINS** | PHASE/WIRE: **SINGLE PHASE 2WIRE 230VAC 60HZ SYSTEM (WITH GND NEUTR** | MOUNTING: **FLUSH**
AMBIENT °C: **30** | MINIMUM DESIGN SERVICE SIZE► **40** AMPS | PANEL TYPE: **PB**

CKT №	CB RATING P	AT	AF	LOAD DESCRIPTIONS (SELECT ON DROPDOWN CHOICES)	CIRCUIT PARTICULARS (AUTOMATED) HP	CVA	M.CVA	DFS@	Ø	SEQ	AMPS	SINGLE PHASE SYSTEM DVA@			SIZE OF HOMERUN (WIRE IN CONDUIT)	FEEDER LOADG AMPACITY	%
1	1	20	50	24-LED LUMINAIRE 80WATTS IP66 (SIDE 1)*		2400		1.00	1	1Ø	10.4	2400			2-3.5MM²THWN IN 20MMØ PVC	25	41.7
TOTAL►						2400						2400			◄TOTAL PHASE DEMAND LOAD (@TDVA)		

ASSUME DIVERSITY FACTOR, DF, IF APPLICABLE► 1.00
FDR TYPE FOR BRANCHES►: THWN | PVC
FDR TYPE FOR MAINS►: THWN | PVC

CALCULATIONS:
TOTAL CVA► =TOTAL CVA + TOTAL M.CVA = 2400 + 0 = 2400
TOTAL DVA► =TDVA =2400 2400
IL for MCB► =TDVA/230 =2,400/230 = 10.4 AMPS
IL for MFDR► =TDVA/230 =2,400/230 = 10.4 AMPS
KVA REQT► =230*IL for MFDR)/1000 =230*10.4/1000 = 2.4 KVA

USE:
MAIN CKT BKR: **1P 40AT 50AF MCCB**
MAIN FEEDER: **2-22MM²THWN & 1-8MM²G IN 50MMØ PVC**
CONSULT ME► PEE
CONSULT ME► PEE
Main Feeder Ampacity & Loading► 50A | 20.9%
Enter Length of Main Feeder► 20 meters
Estimated Voltage Drop and % Regulation► 1.64Volt | 0.72%

NOTE: THIS INVOLVES PHASOR QUANTITIES, WHICH ARE SINUSOIDAL WAVES, OPERATIONS ARE NOT SIMPLE ARITHMETIC, TO UNDERSTAND FULLY, KNOWLEDGE OF ELECTRICAL ENGINEERING IS REQUIRED.

CONSULTANTS: Urban Integrated Consultants, Inc. — UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY: EFREN L. DAVID — PRESIDENT - UICI — DATE: -
ALBERTO C. CAÑETE — PROJECT MANAGER - UICI — DATE: -

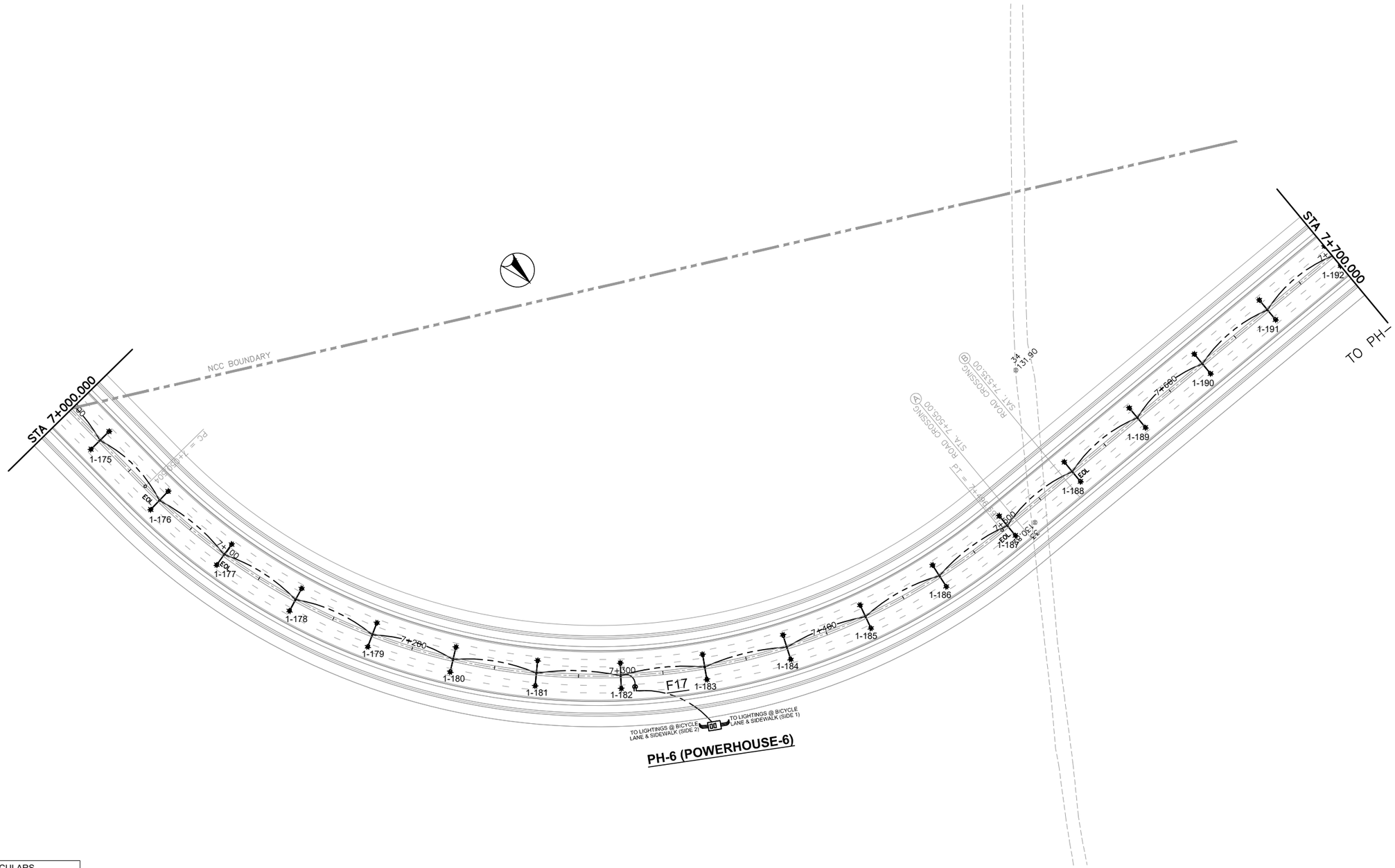
BCDA Bases Conversion and Development Authority

CHECKED BY: RYAN PAUL S. GALURA — PROJECT MANAGER — DATE: -
APPROVED BY: JOVITO M. SUNGA — OIC - PMD — DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD
ELECTRICAL LOAD ANALYSIS & LOAD SCHEDULE

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO.	SIZE
-	E-31	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



PARTICULARS	
LIGHTING STATIONS (CLUSTERS)	18
LIGHT POSTS, 12.0M-HT 3.0M-DOUBLE-ARM	18
LIGHT POSTS, 12.0M-HT 3.0M-SINGLE-ARM	0
LIGHT POSTS, 6.0M-HT 0.8M-DOUBLE-ARM	70

ROADWAY LIGHTING LAYOUT STA. 7 □000.000 - STA. 7 □700.000

(LIGHTING STATIONS 1-175 - 1-192)

CONSULTANTS

Urban Integrated Consultants, Inc.
UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA
Bases Conversion and Development Authority

CHECKED BY
RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

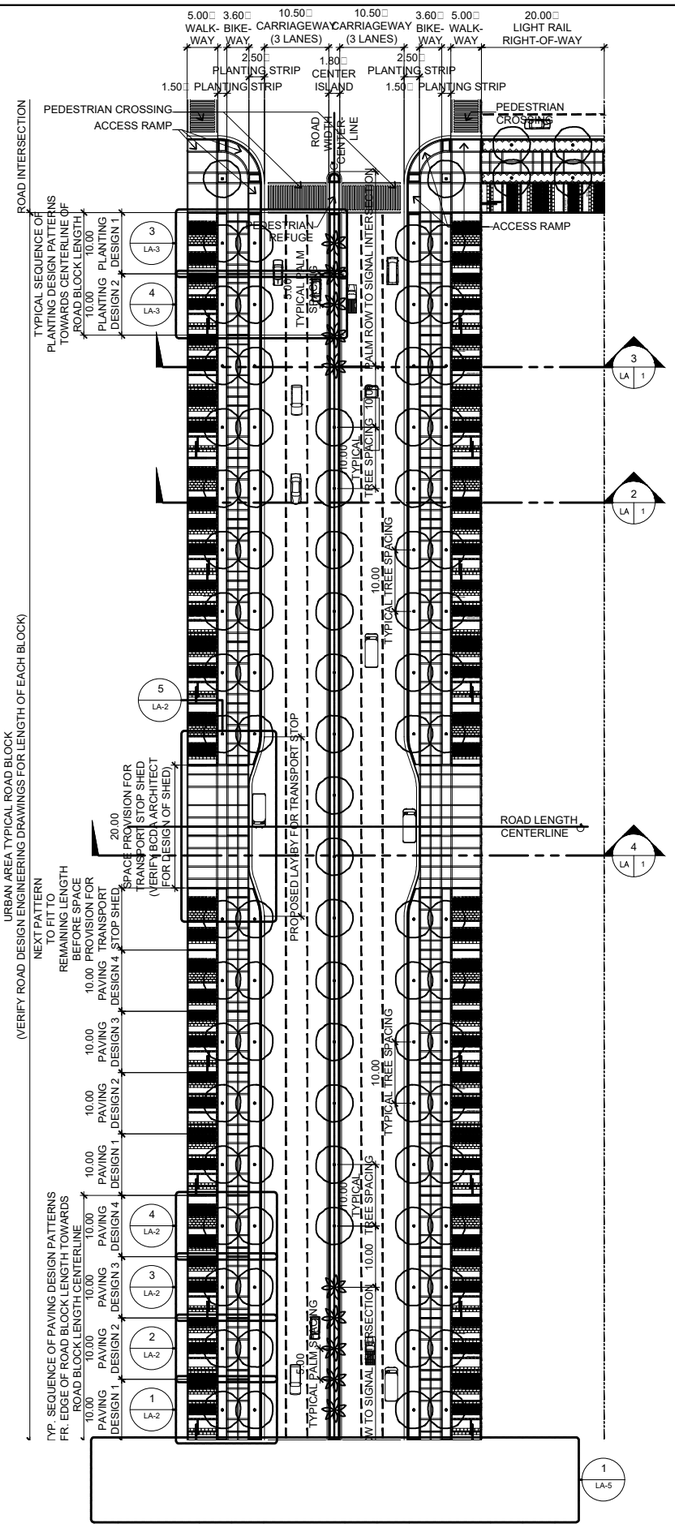
PROJECT TITLE: DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD

SHEET CONTENT: AIRPORT TO NCC ACCESS ROAD

ROADWAY LIGHTING LAYOUT
STA. 7 □000.000 - STA. 7 □700.000

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO. / SIZE
	E-9 / A1
DATE APPROVED	DATE REVISED / REV.
-	- / -

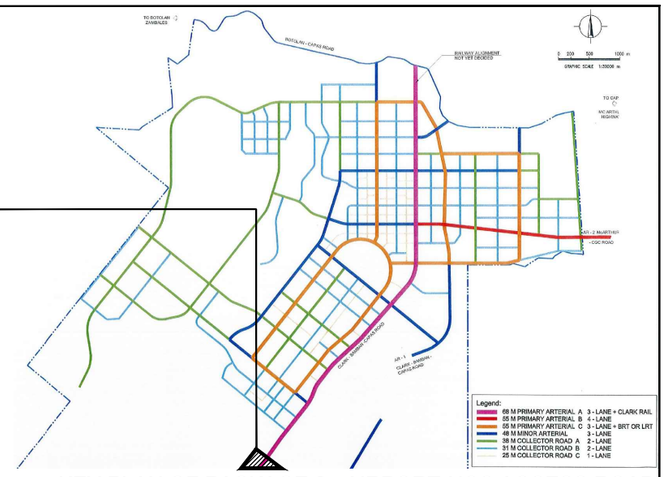
LANDSCAPE DRAWINGS



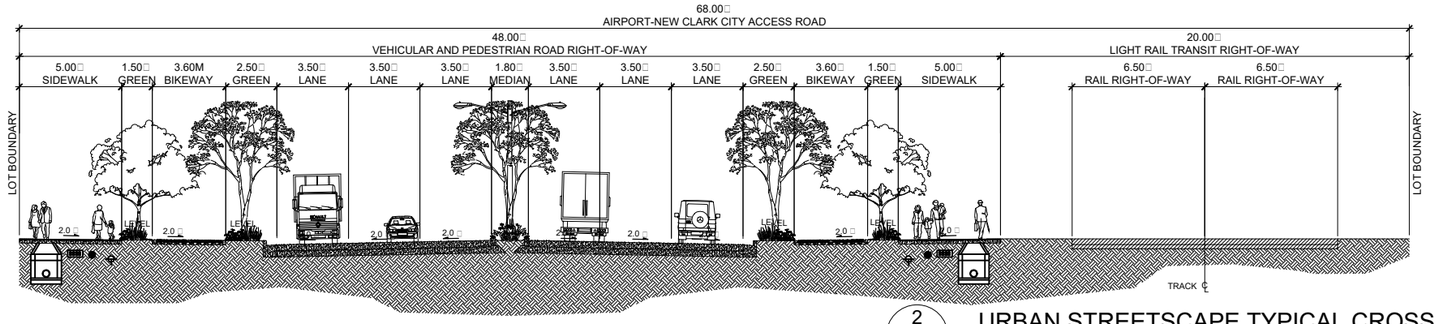
1 / LA 1 — URBAN STREETSCAPE TYPICAL ROAD BLOCK LENGTH SITE DEVELOPMENT PLAN

SCALE 1:500M

PACKAGE 3 - AIRPORT TO NEW CLARK CITY
[KM. 1+500.00 TO KM. 16+000.00]

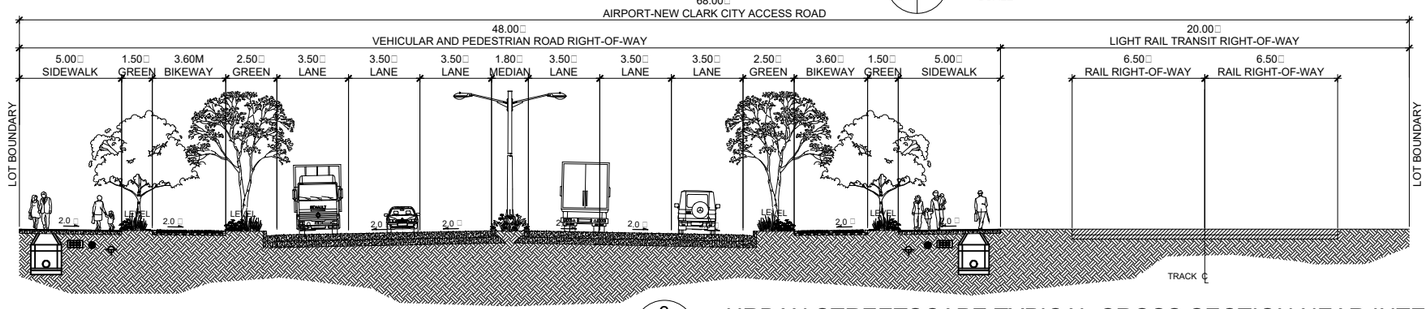


KEY PLAN OF PACKAGE 2 - AIRPORT-NCC ACCESS ROAD



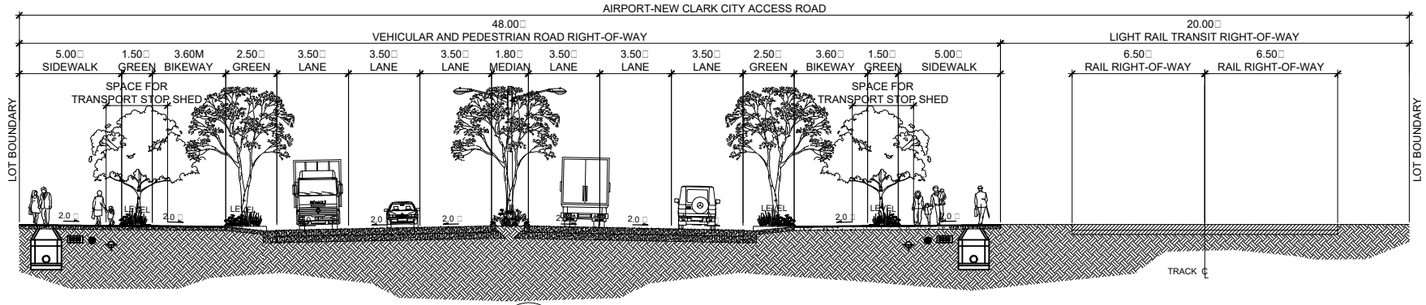
2 / LA 1 — URBAN STREETSCAPE TYPICAL CROSS SECTION

SCALE 1:150M



3 / LA 1 — URBAN STREETSCAPE TYPICAL CROSS SECTION NEAR INTERSECTION

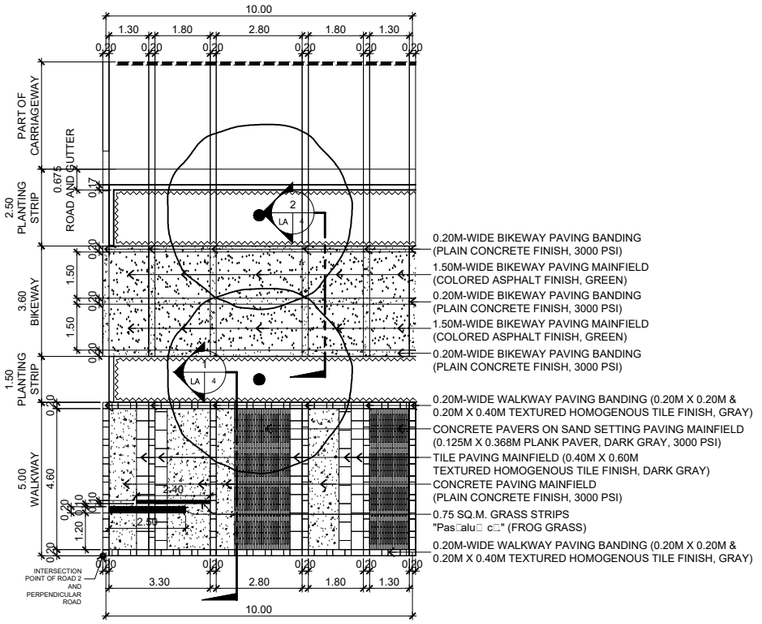
SCALE 1:150M



4 / LA 1 — URBAN STREETSCAPE TYPICAL CROSS SECTION AT TRANSPORT STOP PROVISION

SCALE 1:150M

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS	
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VISTA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	Bases Conversion and Development Authority CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER APPROVED BY: JOVITO M. SUNGA, OIC - PMD DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT-NCC ACCESS ROAD URBAN STREETSCAPE TYPICAL ROAD BLOCK LENGTH SITE DEVELOPMENT PLAN	AS SHOWN	FINAL DRAWINGS	
							PROJECT CODE: -	DRAWING NO.: LA-1	SIZE: A1
							DATE APPROVED: -	DATE REVISED: -	REV.: -

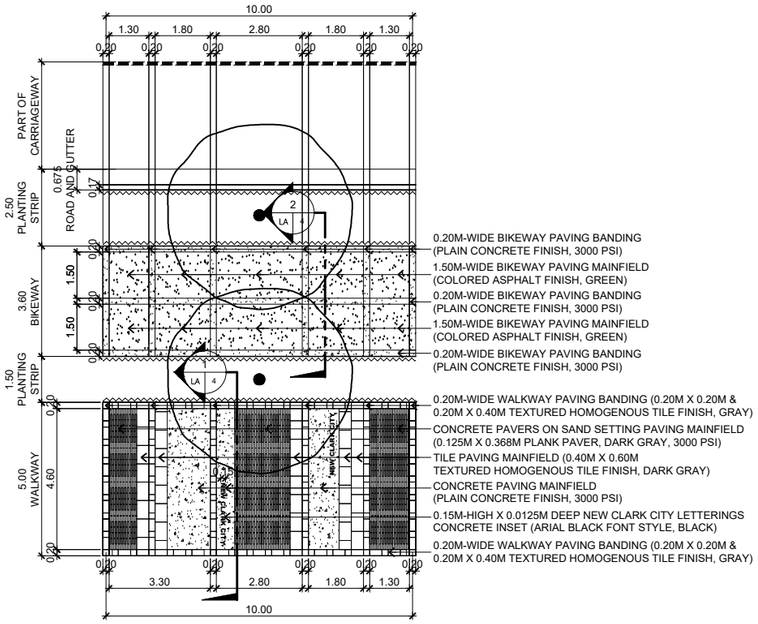


1 LA 2

URBAN STREETSCAPE PAVING PATTERN 1 DETAILED PLAN

SCALE 1:100M

NOTE: PAVING DESIGN PATTERN 1 ALWAYS STARTS AT INTERSECTION OF AIRPORT-NCC ROAD AND PERPENDICULAR ROAD OR AT END OF ROAD BLOCK LENGTH.
NOTE: FOR BRIDGE WALKWAY/BIKEWAY, PAVING DESIGN WILL BE SAME AS STREETSCAPE PAVING PATTERN.
HOWEVER, MATERIAL FINISH WILL BE STAMPED CONCRETE FINISH. GRASS STRIP SHALL BE ARTIFICIAL GRASS STRIP.

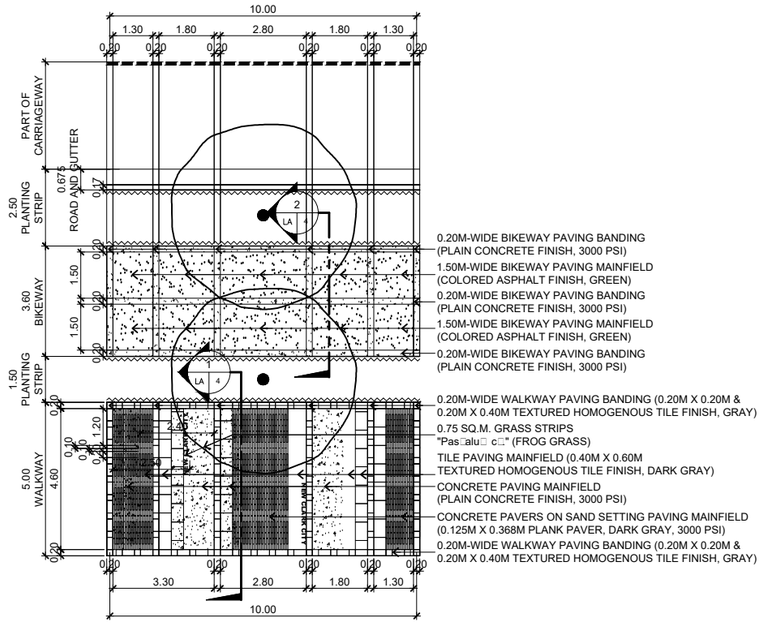


2 LA 2

URBAN STREETSCAPE PAVING PATTERN 2 DETAILED PLAN

SCALE 1:100M

NOTE: PAVING DESIGN PATTERN 2 IS NEXT TO PAVING DESIGN PATTERN 1 TOWARDS ROAD BLOCK LENGTH CENTERLINE.
NOTE: FOR BRIDGE WALKWAY/BIKEWAY, PAVING DESIGN WILL BE SAME AS STREETSCAPE PAVING PATTERN.
HOWEVER, MATERIAL FINISH WILL BE STAMPED CONCRETE FINISH. GRASS STRIP SHALL BE ARTIFICIAL GRASS STRIP.

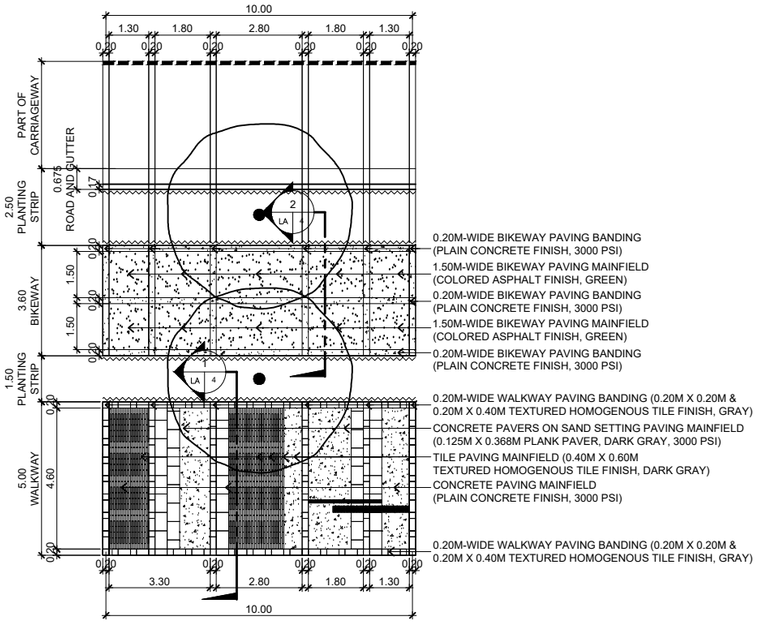


3 LA 2

URBAN STREETSCAPE PAVING PATTERN 3 DETAILED PLAN

SCALE 1:100M

NOTE: PAVING DESIGN PATTERN 3 IS NEXT TO PAVING DESIGN PATTERN 2 TOWARDS ROAD BLOCK LENGTH CENTERLINE.
NOTE: FOR BRIDGE WALKWAY/BIKEWAY, PAVING DESIGN WILL BE SAME AS STREETSCAPE PAVING PATTERN.
HOWEVER, MATERIAL FINISH WILL BE STAMPED CONCRETE FINISH. GRASS STRIP SHALL BE ARTIFICIAL GRASS STRIP.

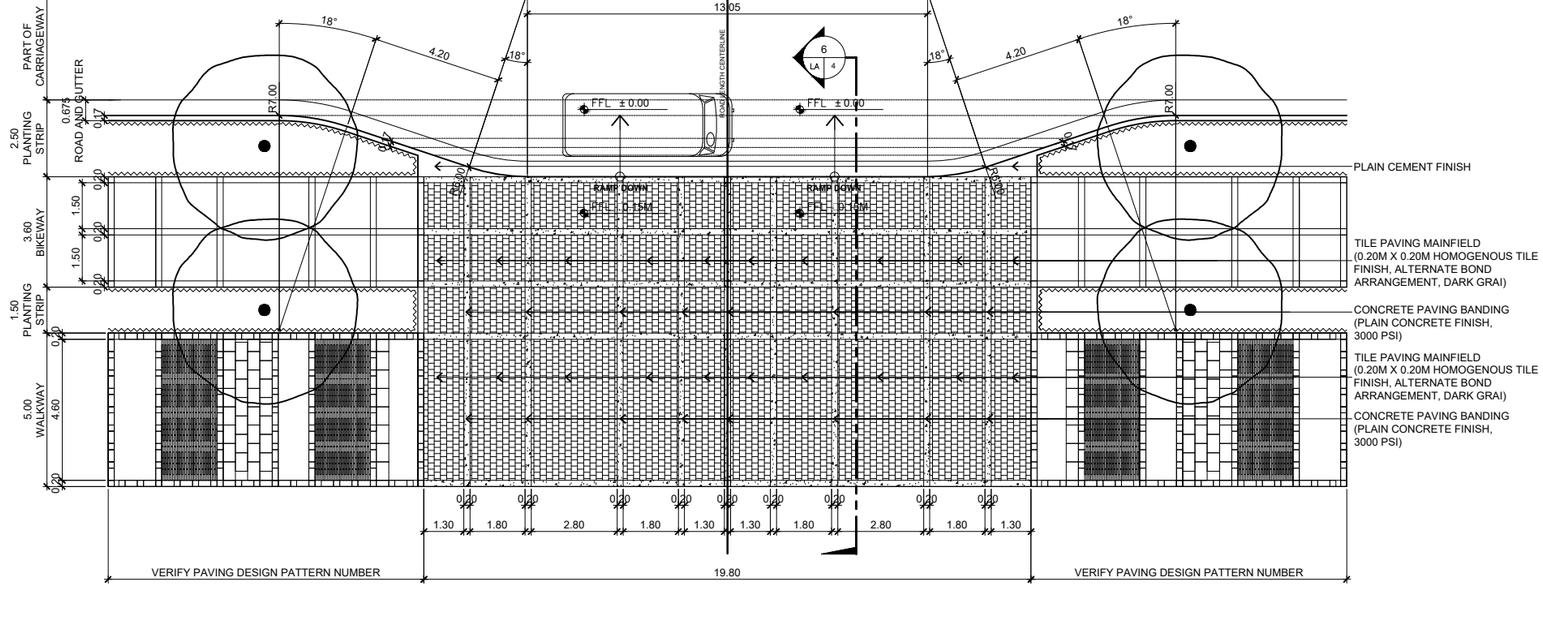


4 LA 2

URBAN STREETSCAPE PAVING PATTERN 4 DETAILED PLAN

SCALE 1:100M

NOTE: PAVING DESIGN PATTERN 4 IS NEXT TO PAVING DESIGN PATTERN 3 TOWARDS ROAD BLOCK LENGTH CENTERLINE.
NOTE: FOR BRIDGE WALKWAY/BIKEWAY, PAVING DESIGN WILL BE SAME AS STREETSCAPE PAVING PATTERN.
HOWEVER, MATERIAL FINISH WILL BE STAMPED CONCRETE FINISH. GRASS STRIP SHALL BE ARTIFICIAL GRASS STRIP.



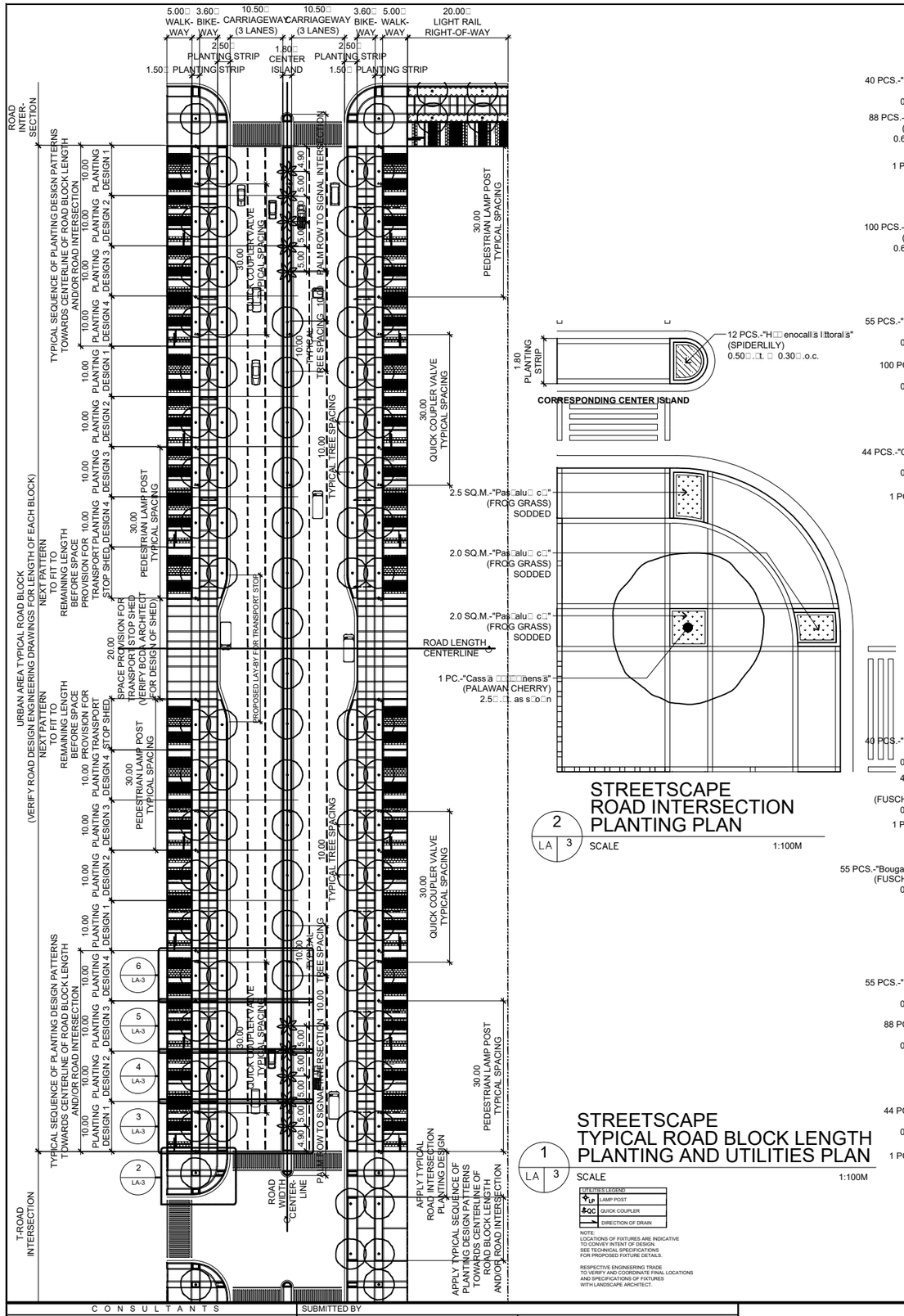
5 LA 2

SPACE FOR TRANSPORT STOP SHED PAVING DESIGN DETAILED PLAN

SCALE 1:100M

NOTE: TRANSPORT STOP SHED DESIGN BY BCDA ARCHITECT.

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPONVE BLDG., 8 LANDS STREET, VISRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: PACKAGE 3 - AIRPORT-NCC ACCESS ROAD URBAN STREETSCAPE TYPICAL WALKWAY AND BIKEWAY PAVING DETAILED PLANS	AS SHOWN	FINAL DRAWINGS
			APPROVED BY: JOVITO M. SUNGA, O/C - PMD, DATE: -				PROJECT CODE: -	DRAWING NO.: LA-2 / SIZE: A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -



STREETSCAPE ROAD INTERSECTION PLANTING PLAN

2 / LA 3

SCALE 1:100M

STREETSCAPE TYPICAL ROAD BLOCK LENGTH PLANTING AND UTILITIES PLAN

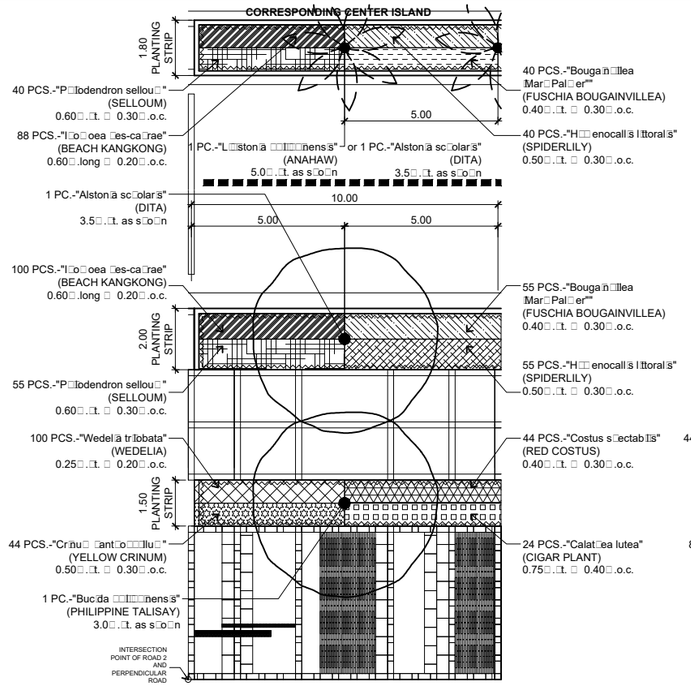
1 / LA 3

SCALE 1:100M

UTILITIES LEGEND
LP — LAMP POST
QC — QUICK COUPLER
1 — DIRECTION OF DRAIN

NOTE:
LOCATIONS OF FIXTURES ARE INDICATIVE TO CONVEY INTENT OF DESIGN. SEE TECHNICAL SPECIFICATIONS FOR PROPOSED FIXTURE DETAILS.

RESPECTIVE ENGINEERING TRADE TO VERIFY AND COORDINATE FINAL LOCATIONS AND SPECIFICATIONS OF FIXTURES WITH LANDSCAPE ARCHITECT.

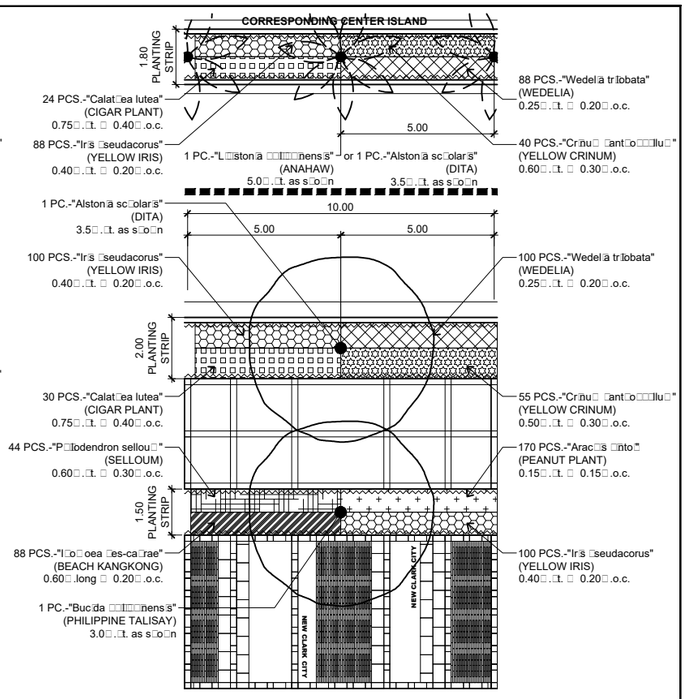


PATTERN 1 URBAN STREETSCAPE PLANTING PLAN

3 / LA 3

SCALE 1:100M

NOTE: PLANTING DESIGN PATTERN 1 ALWAY STARTS AT INTERSECTION OF AIRPORT-NCC ROAD AND PERPENDICULAR ROAD OR AT END OF ROAD BLOCK LENGTH AND/OR ROAD INTERSECTION.

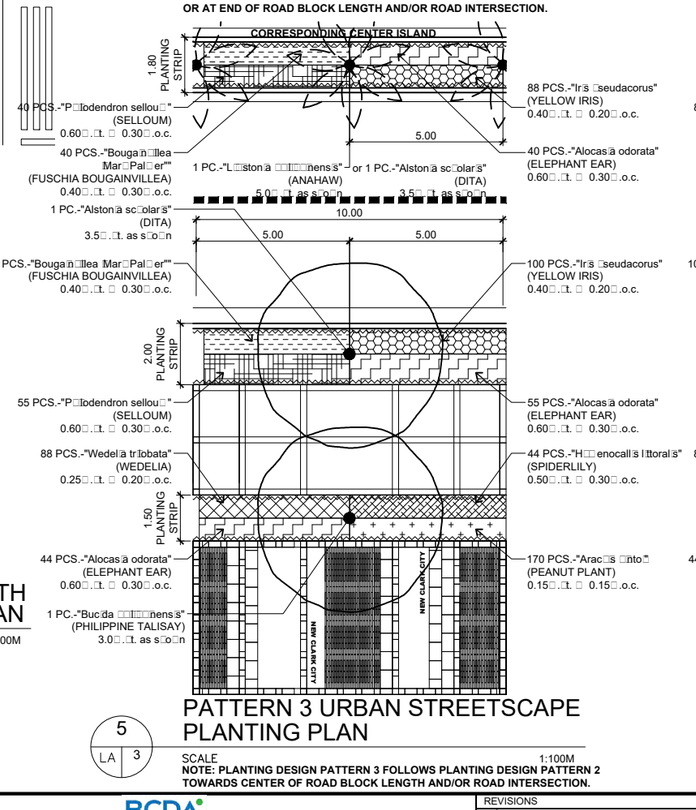


PATTERN 2 URBAN STREETSCAPE PLANTING PLAN

4 / LA 3

SCALE 1:100M

NOTE: PLANTING DESIGN PATTERN 2 FOLLOWS PLANTING DESIGN PATTERN 1 TOWARDS CENTER OF ROAD BLOCK LENGTH AND/OR ROAD INTERSECTION.

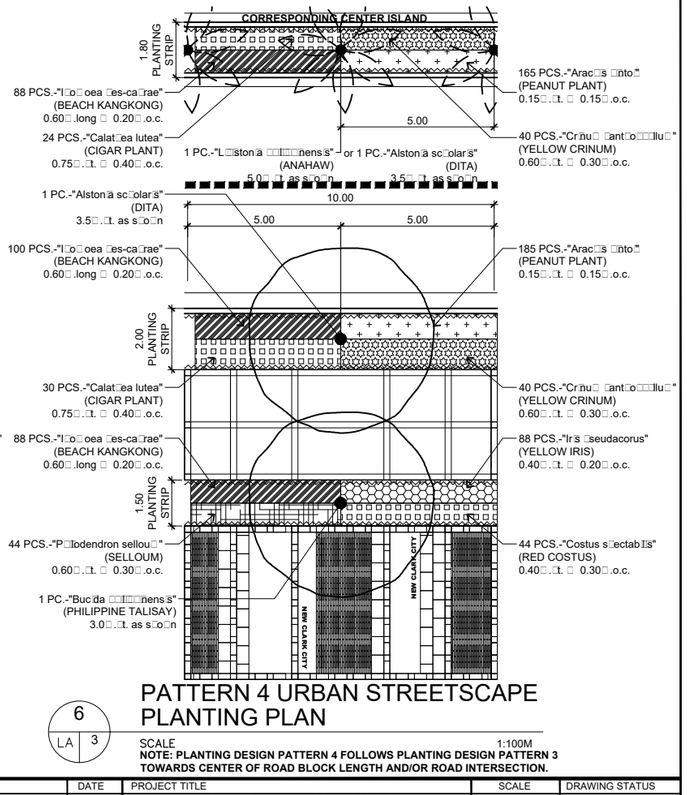


PATTERN 3 URBAN STREETSCAPE PLANTING PLAN

5 / LA 3

SCALE 1:100M

NOTE: PLANTING DESIGN PATTERN 3 FOLLOWS PLANTING DESIGN PATTERN 2 TOWARDS CENTER OF ROAD BLOCK LENGTH AND/OR ROAD INTERSECTION.



PATTERN 4 URBAN STREETSCAPE PLANTING PLAN

6 / LA 3

SCALE 1:100M

NOTE: PLANTING DESIGN PATTERN 4 FOLLOWS PLANTING DESIGN PATTERN 3 TOWARDS CENTER OF ROAD BLOCK LENGTH AND/OR ROAD INTERSECTION.

CONSULTANTS

Urban Integrated Consultants, Inc.
UCI CORPONVIE BLDG., 8 LANDS STREET, VGSPA, DILIMAN, QUEZON CITY, 1128

SUBMITTED BY

EFREN L. DAVID
PRESIDENT - UICI
DATE: -

ALBERTO C. CAÑETE
PROJECT MANAGER - UICI
DATE: -

BCDA Bases Conversion and Development Authority

CHECKED BY

RYAN PAUL S. GALURA
PROJECT MANAGER
DATE: -

APPROVED BY

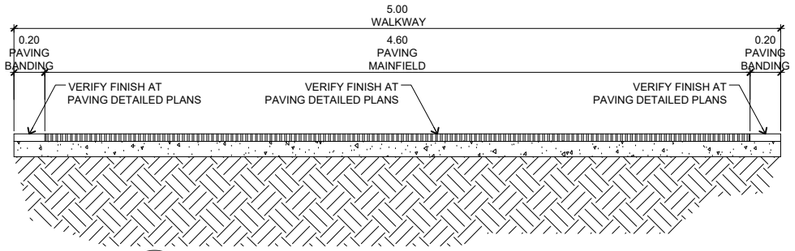
JOVITO M. SUNGA
OIC - PMD
DATE: -

REVISIONS	DATE
A	
B	
C	
D	
E	
F	

PROJECT TITLE
DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD
SHEET CONTENT PACKAGE 3 - AIRPORT-NCC ACCESS ROAD

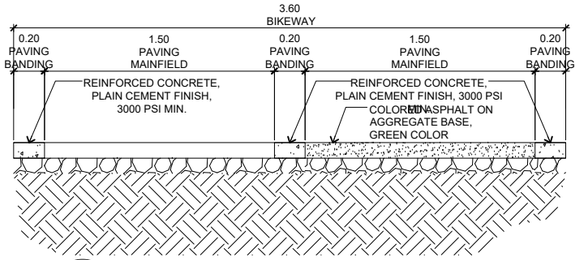
URBAN STREETSCAPE TYPICAL ROAD BLOCK LENGTH PLANTING AND UTILITIES PLAN

SCALE	DRAWING STATUS
AS SHOWN	FINAL DRAWINGS
PROJECT CODE	DRAWING NO.	SIZE
-	LA-3	A1
DATE APPROVED	DATE REVISED	REV.
-	-	-



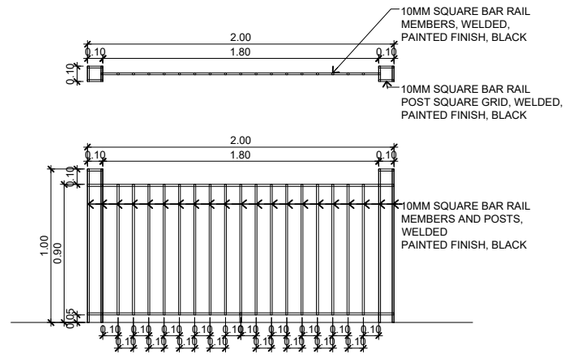
1 LA 4 **WALKWAY DETAILED SECTION**

SCALE 1:20M



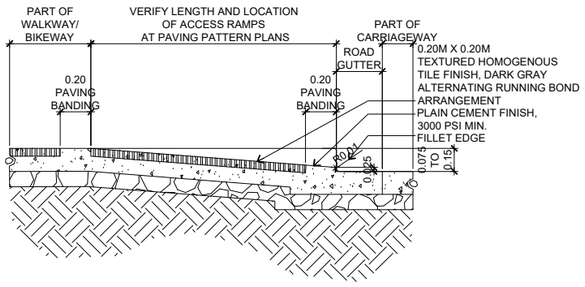
2 LA 4 **BIKEWAY DETAILED SECTION**

SCALE 1:20M



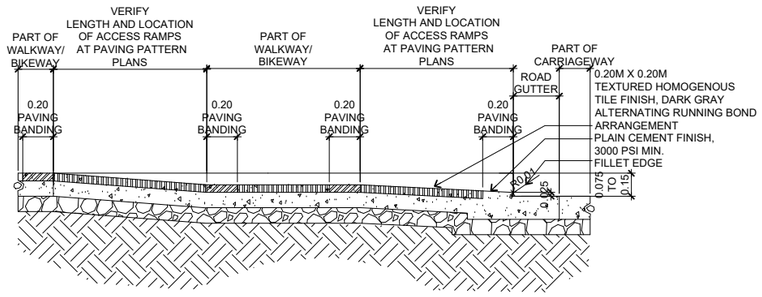
7 LA 4 **ROADSIDE RAILING GENERAL DETAILS**

SCALE 1:20M



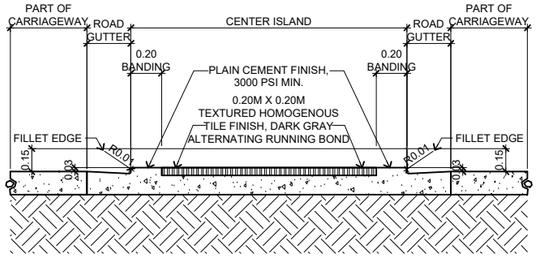
3 LA 4 **ACCESS RAMP DETAILED SECTION (FOR 1.850M IN LENGTH & ABOVE)**

SCALE 1:20M



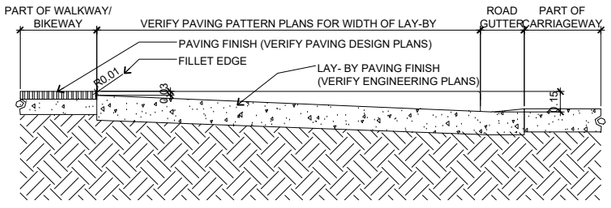
4 LA 4 **ACCESS RAMP DETAILED SECTION (FOR 1.00M TO 1.85M IN LENGTH)**

SCALE 1:20M



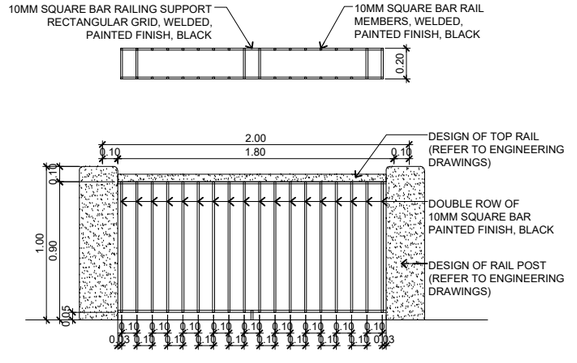
5 LA 4 **PEDESTRIAN REFUGE DETAILED SECTION**

SCALE 1:20M



6 LA 4 **LAY-BY DETAILED SECTION**

SCALE 1:20M

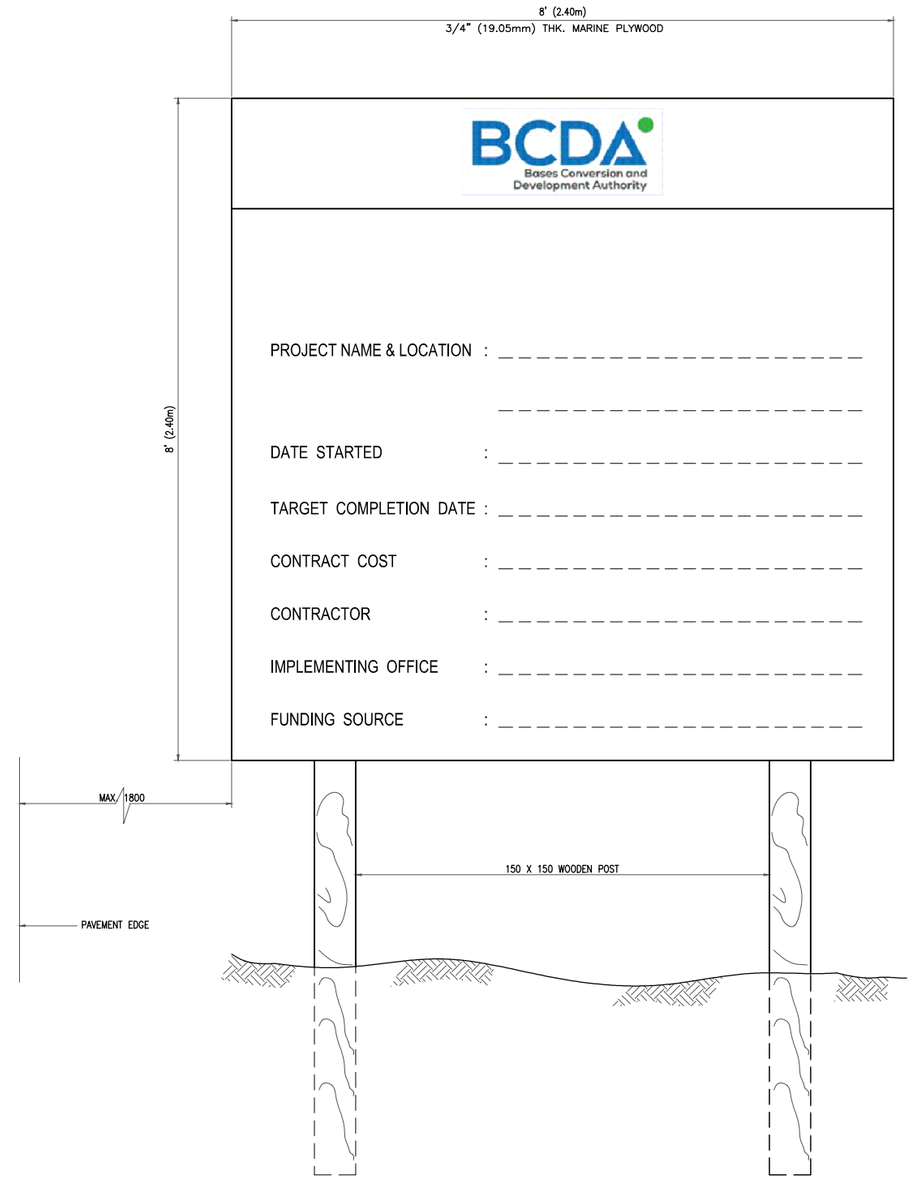


8 LA 4 **BRIDGE RAILING GENERAL DETAILS**

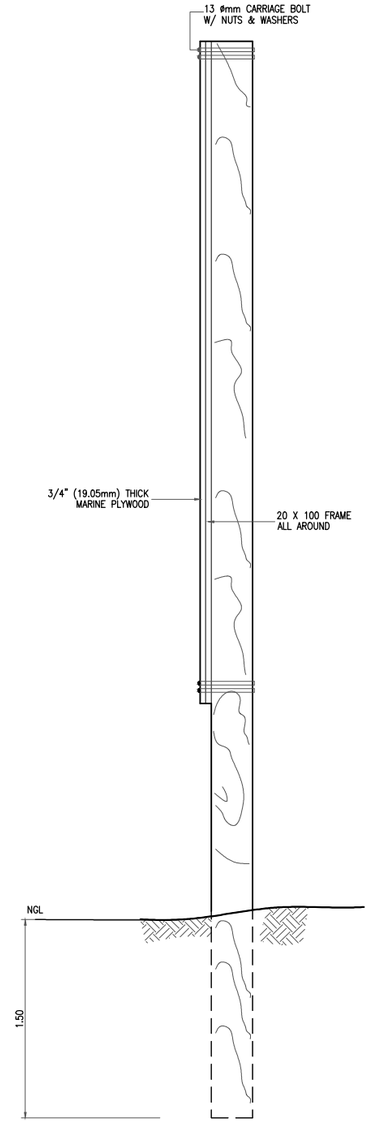
SCALE 1:20M

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC1 CORPORATE BLDG., 8 LANGS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CANETE PROJECT MANAGER - UICI DATE: -	CHECKED BY RYAN PAUL S. GALURA PROJECT MANAGER DATE: -	APPROVED BY JOVITO M. SUNGA OIC - PMD DATE: -	A B C D E F	DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT PACKAGE 3 - AIRPORT-NCC ACCESS ROAD URBAN STREETSCAPE HARSCAPE COMPONENTS DETAILED SECTIONS	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE	DRAWING NO. / SIZE
							-	LA-4 / A1
							DATE APPROVED	DATE REVISED / REV.
							-	- / -

MISCELLANEOUS



FRONT ELEVATION



SIDE ELEVATION

COLOR SCHEME:

ORANGE – FOR LETTERING
WHITE – FOR BACKGROUND

A
–

PROJECT SIGNBOARD

SCALE AS SHOWN

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UIC CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UICI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UICI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - / APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD PROJECT SIGNBOARD	AS SHOWN PROJECT CODE DATE APPROVED: -	FINAL DRAWINGS DRAWING NO.: M-1 SIZE: A1 DATE REVISED: - REV.: -

CHEZIA RIE GEN. MERCHANDIZE
San Bartolo□e, Ma□antoc
Boulders
Quant□t□: Unl□□ted

NEW CLARK CITY

CALUMPANG PIT
Calu□□ang, Mabalacat
Co□□on borro□, cla□
Quantity: 100,000 m³

JAGAL AGGREGATES CORPORATION
Sa□ang Ba□abas, Flor□dablanca
Base, subbase, concrete aggregate
Quant□t□: Unl□□ted

TAI PHIL SAND QUARRY
Gu□a□ R□er, A□alt, Flor□dablanca
F□ne aggregate
Quant□t□: Unl□□ted

RODELYN BUILDERS
CONTRUCTION CORP.
Dancol, Balanga
Base, subbase, concrete aggregates, boulders
Quant□t□: Unl□□ted

D□PRIME ROCK CRUSHING PLANT
Palacol, San Jose, Flor□dablanca
Base, subbase, concrete aggregate
Quant□t□: Unl□□ted

SUMAKBAW RIVER
P□as, General T□n□o
Boulders, gra□el, sand
Quant□t□: Unl□□ted

TOKWING CONSTRUCTION
Car□enc□a, Flor□dablanca
F□ne aggregate
Quant□t□: Unl□□ted

ROCK-MIX, INCORPORATED
Tal□sa□ R□er, P□ar
Base, subbase, concrete aggregate
Quant□t□: Unl□□ted

ACCUMEN CONSTRUCTION
& DEVELOPMENT CORP.
Tal□sa□ R□er, P□ar
Base, subbase, concrete aggregate, boulders
Quant□t□: Unl□□ted

PANGASINAN
AURORA
TARLAC
NUEVA ECIJA
ZAMBALES
PAMPANGA
BULACAN
BATAAN
RIZAL
CAVITE

1 MATERIAL SOURCES MAP
- SCALE NTS

CONSULTANTS	SUBMITTED BY		BCDA	REVISIONS	DATE	PROJECT TITLE	SCALE	DRAWING STATUS
Urban Integrated Consultants, Inc. UCI CORPORATE BLDG., 8 LANDS STREET, VASRA, DILIMAN, QUEZON CITY, 1128	EFREN L. DAVID PRESIDENT - UCI DATE: -	ALBERTO C. CAÑETE PROJECT MANAGER - UCI DATE: -	CHECKED BY: RYAN PAUL S. GALURA, PROJECT MANAGER, DATE: - APPROVED BY: JOVITO M. SUNGA, OIC - PMD, DATE: -	A B C D E F		DETAILED ENGINEERING DESIGN OF THE PROPOSED AIRPORT-NCC ACCESS ROAD, MACARTHUR-NCC ACCESS ROAD, MACARTHUR-SCTEX ACCESS ROAD & OLYMPIC VILLAGE ACCESS ROAD SHEET CONTENT: AIRPORT - NCC ACCESS ROAD MATERIAL SOURCES MAP	AS SHOWN	FINAL DRAWINGS
							PROJECT CODE: -	DRAWING NO.: M-2 / SIZE: A1
							DATE APPROVED: -	DATE REVISED: - / REV.: -