

GENERAL

1. CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS OF ALL DRAWINGS INTO SHOP DRAWINGS.
2. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOADS IMPOSED UPON THE STRUCTURE. CONSTRUCTION LOADS SHALL NOT EXCEED THE CAPACITY OF THE CULVERT MEMBERS AT THE TIME THE LOADS ARE IMPOSED. MAXIMUM WOULD BE THE WHEEL LOADS SHOWN BELOW.
3. ALL THINGS WHICH, IN THE OPINION OF THE CONTRACTOR, APPEAR TO BE DEFICIENCIES, CONTRADICTIONS, OMISSIONS, OR AMBIGUITIES IN THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE CLIENT.
4. NO CHANGE IN SIZE OR DIMENSION OF THE STRUCTURAL MEMBERS SHALL BE MADE WITHOUT A WRITTEN APPROVAL FROM THE ENGINEER.
5. USE ONLY DIMENSIONS INDICATED ON THE DRAWINGS. DO NOT SCALE DRAWINGS OR USE ANY DIMENSIONS TAKEN FROM ELECTRONIC DRAWING FILES.
6. ALL DIMENSIONS ARE IN 'MM' U.N.O.
7. GEOTECHNICAL INFORMATION WAS NOT PROVIDED BY THE CLIENT, HENCE ASSUMPTIONS MADE WITH RESPECT TO THE SUPPORT CONDITIONS OF THE BASE SLAB OF CULVERT. PLATE BEARING TEST AS REQUIRED BY THE CLIENT SHOULD BE CONDUCTED BEFORE CONSTRUCTION.

GEOTECHNICAL INFORMATION

1. SOIL EXPLORATION SHOULD BE CARRIED OUT TO EVALUATE THE FOUNDATION MATERIAL TO RESIST THE APPLIED LOADS AND TO SATISFY THE MOVEMENT REQUIREMENTS OF THE STRUCTURE. THE DESIGN DRAWINGS WERE PREPARED ASSUMING THE WORST CASE SOIL PROPERTIES, WITH A SOIL SUBGRADE REACTION OF 76 KSF/FT.

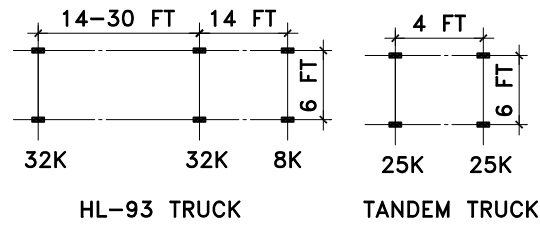
CODES

THE PROJECT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS, U.N.O.:

BRIDGE CODE: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 2012

STRUCTURAL CONCRETE: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, THE AMERICAN CONCRETE INSTITUTE (ACI 318-11)

DESIGN TRUCK LOAD



CONCRETE NOTES

1. ALL CONCRETE SHALL BE NORMAL WEIGHT AND WITH A MINIMUM 28 DAY CYLINDER COMPRESSIVE STRENGTH, $f'_c=4000$ PSI UNLESS NOTED OTHERWISE. IDEAL TEMPERATURE OF CONCRETE AT PLACING SHALL BE 60 DEGREES FAHRENHEIT (16 DEGREES CENTIGRADE). TEMPERATURE OF CONCRETE AT PLACING SHALL NOT EXCEED 90 DEGREES FAHRENHEIT (32 DEGREES CENTIGRADE). ELSE PROPOSED PRECAUTIONARY MEASURES SHOULD BE SUBMITTED BY THE CONTRACTOR.
2. CEMENT SHALL CONFORM TO ASTM C150 TYPE I OR II. USE ONLY ONE BRAND OF CEMENT FOR ALL CONCRETE EXPOSED TO VIEW.
3. ALL CONCRETE SHALL BE NORMAL WEIGHT (145 PCF) UNLESS NOTED OTHERWISE. AGGREGATE, FOR NORMAL WEIGHT CONCRETE, SHALL CONFORM TO ASTM C55.
4. ALL REINFORCING (DEFORMED BARS) SHALL CONFORM TO ASTM A615.
5. ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED AND SPACED IN FORMS AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 315. BAR SUPPORTS IN CONTACT WITH EXPOSED SURFACES SHALL BE PLASTIC TIPPED.
6. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE PROVIDED BY CLEAR COVER, FROM FACE OF THE CONCRETE TO THE OUTSIDE OF THE BAR.
7. CHECKED SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING STEEL SIZES, SPACING AND PLACEMENT SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION.
8. THE CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS 2 WEEKS BEFORE THE START OF THE WORKS, SHOWING THE LOCATION OF ALL CONSTRUCTION JOINTS, REVEALS, CURBS, SLAB DEPRESSIONS, SLEEVES, OPENINGS, ETC.
9. ALL REINFORCING SPLICES SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-11. ALL WELDED WIRE FABRIC SHALL BE LAPPED TWO FULL MESH PANELS AND TIED SECURELY. WHERE REQUIRED, DOWELS SHALL MATCH THE SIZE AND SPACING OF THE MAIN REINFORCING, UNLESS NOTED OTHERWISE.
10. ALL CONSTRUCTION JOINTS SHALL BE WIRED BRUSHED, CLEANED AND MOISTENED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE. ALL CONSTRUCTION JOINTS SHALL HAVE A WATER BAR.
11. CONCRETE TESTING SHALL BE PERFORMED BY INDEPENDENT TESTING LAB IN ACCORDANCE WITH ACI 301-05 CHAPTER 1.6 AND THE CONCRETE SPECIFICATIONS. THE SELECTION OF THE LAB TO BE AGREED BY THE OWNER/OWNER'S REPRESENTATIVE. THE CONTRACTOR SHOULD ALLOW FOR ALL ASSOCIATED COST.

ASSUMPTIONS:

1. HIGHEST ANTICIPATED GROUND WATER LEVEL IS BELOW THE STRUCTURE.
2. DIMENSIONS OF WINGWALLS PROVIDED TO SECURE THE ENDS OF THE BOX CULVERT STRUCTURE.
3. NO BACKFILL CONSIDERED ON TOP OF CULVERT SLAB AS CLIENTS REQUIREMENT. HOWEVER THERE IS NO LIMIT IN DEPTH OF FILL ON TOP OF THE SLAB WITH RESPECT TO STRUCTURAL STRENGTH OF CULVERT.
4. WINGWALLS AND SCOUR SLABS ARE PROVIDED AS SCOUR CONCERN.
5. USED LIVE LOAD EVEN THOUGH THESE CULVERTS ARE NOT FOR HIGHWAY USAGE.
6. SOIL SUBGRADE REACTION OF 76 KSF/FT.
7. WITH THE TOP SLAB OF THE CULVERT BEING THE ROAD, MAXIMUM HEIGHT OF FLOOD WATER THROUGH CULVERT IS ASSUMED TO BE LIMITED TO THE SOFFIT OF THE TOP SLAB. FOR A 3.5 M (11.48 FT.) SQUARE SINGLE CELL R.C. BOX CULVERT THE DISCHARGE CAPACITY IS 2300 CUSEC WITH A FLOW VELOCITY OF 19.05 FT/SEC.

1-CELL BOX CULVERT DRAWINGS

1. S-1 NOTES
2. S-2 LAYOUT & SECTION
3. S-3 SECTIONS
4. S-4 REINFORCEMENT DETAILS
5. S-5 DETAILS
6. S-6 DETAILS
7. S-7 DETAILS

KEY PLAN

NOTES


FIRST ISSUE

08 MAR. 2019

REVISIONS


REV	DESCRIPTION	DATE	BY

CLIENT:



UNITED NATIONS OFFICE
FOR PROJECT SERVICES

ENGINEER:



INTERNATIONAL PROJECT INITIATIVES LTD.
11, ROBINSONVILLE, BELMONT
TRINIDAD & TOBAGO

PROJECT:

R.C. BOX CULVERTS
HAITI

DRAWING TITLE:

NOTES

DATE:

04 APR. 2019

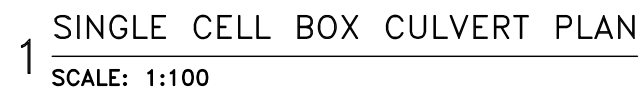
DRAWN BY:



RS

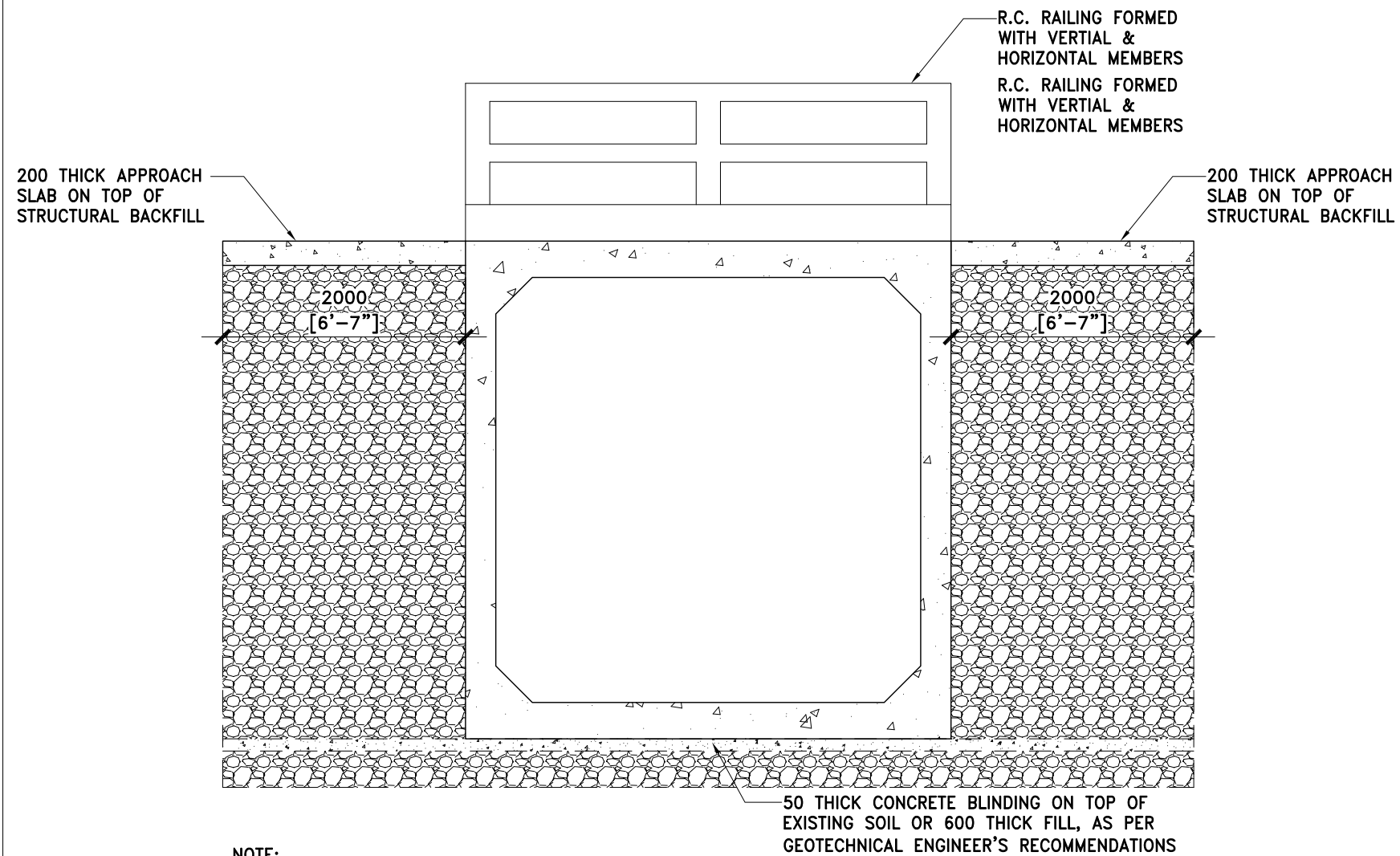
DRAWING NO:

S-1

ONE CELL R.C. BOX CULVERT



KEY PLAN:			
NOTES			
FIRST ISSUE		08 MAR. 2019	
REVISIONS			
REV	DESCRIPTION	DATE	BY
CLIENT:			
		UNITED NATIONS OFFICE FOR PROJECT SERVICES	
ENGINEER:			
		INTERNATIONAL PROJECT INITIATIVES LTD. 11, ROBINSONVILLE, BELMONT TRINIDAD & TOBAGO	
PROJECT:			
R.C. BOX CULVERTS HAITI			
DRAWING TITLE:			
BOX CULVERT LAYOUT & SECTION			
DATE: 04 APR. 2019		DRAWN BY: RS	
DRAWING NO:			
S-2			

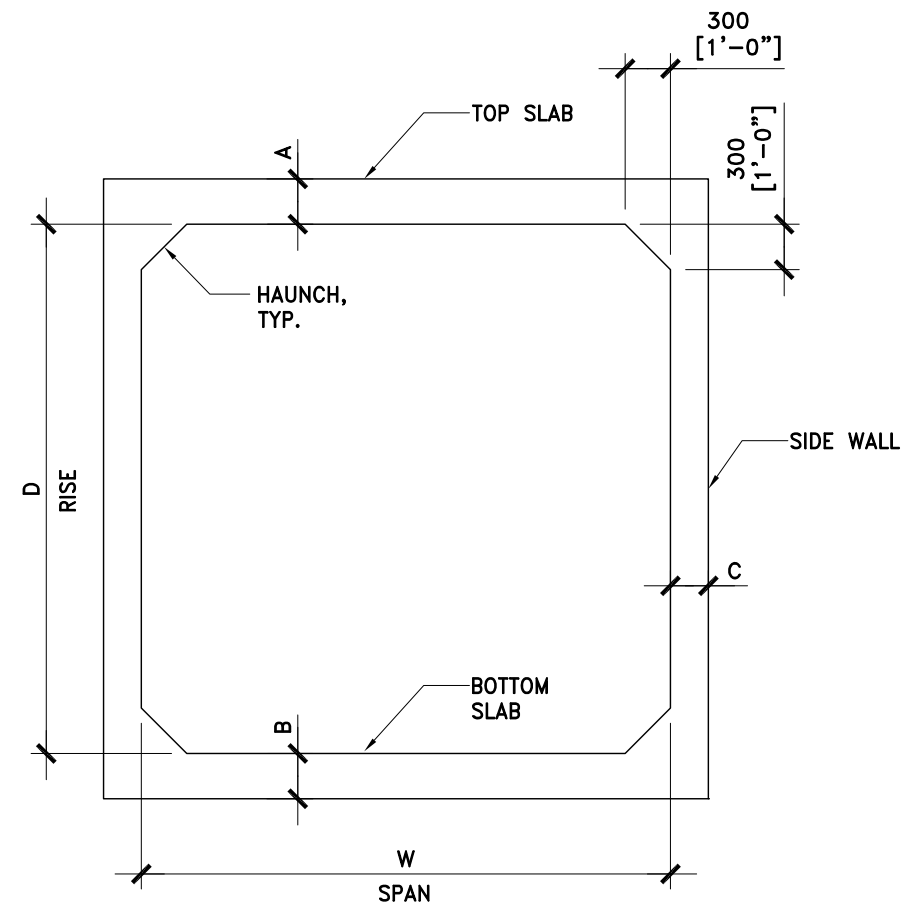


NOTE:

1. GEOTECHNICAL ENGINEER SHOULD RECOMMEND THE TYPE OF SELECT GRANULAR BACKFILL MATERIAL ADJACENT TO SIDE WALLS AND THE TYPE OF BASE COURSE FOR CULVERT BOTTOM SLAB (OR) FOUNDATION, INCLUDING THE COMPACTION CRITERIA, ELSE SEE NOTE.2
2. STRUCTURAL FILL MATERIAL SHOULD BE PLACED IN LIFTS NOT EXCEEDING 200 MM THICKNESS EXCEPT FOR THE TOP 600 MM, WHICH SHOULD BE PLACED IN LIFTS NOT EXCEEDING 150 MM THICK. EACH LIFT OF MATERIAL SHOULD BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY UNIT WEIGHT BEFORE NEXT LAYER IS PLACED. THE TOP 150 MM THICK LAYERS SHOULD BE COMPACTED TO 100% OF THE MAXIMUM DRY UNIT WEIGHT.
3. MINIMUM THICKNESS OF SELECT GRANULAR FILL/BACKFILL TO THE UNDERSIDE OF BOTTOM SALB AND SIDES OF CULVERT WALLS SHOULD BE 600 MM.
4. IMPORTED FILL SHOULD BE FREE FROM ORGANIC MATTER, TOP SOIL AND OTHER SUCH OBJECTIONABLE DEBRIS.
5. STRUCTURAL FILL SHOULD BE WELL GRADED GRANULAR MATERIAL WITH ALL MATERIAL PASSING 75MM SEIVE.
6. 200 THICK CONCRETE APPROACH SLAB IS REINFORCED WITH 2 LAYERS OF 16 ϕ /200 O.C. BOTH WAYS.



2 TYPICAL BOX CULVERT WITH NO-FILL

SCALE: 1:50

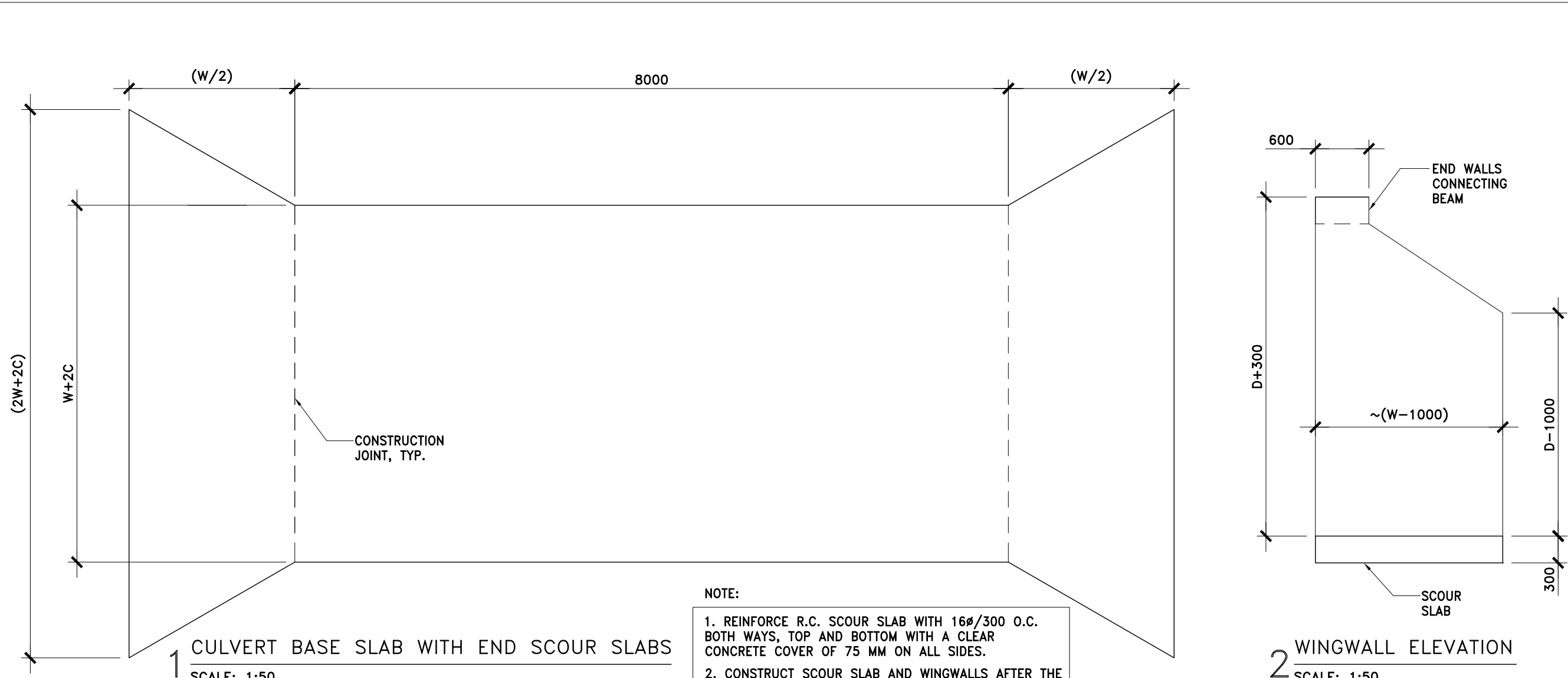


1 SINGLE CELL BOX CULVERT DIMENSIONS

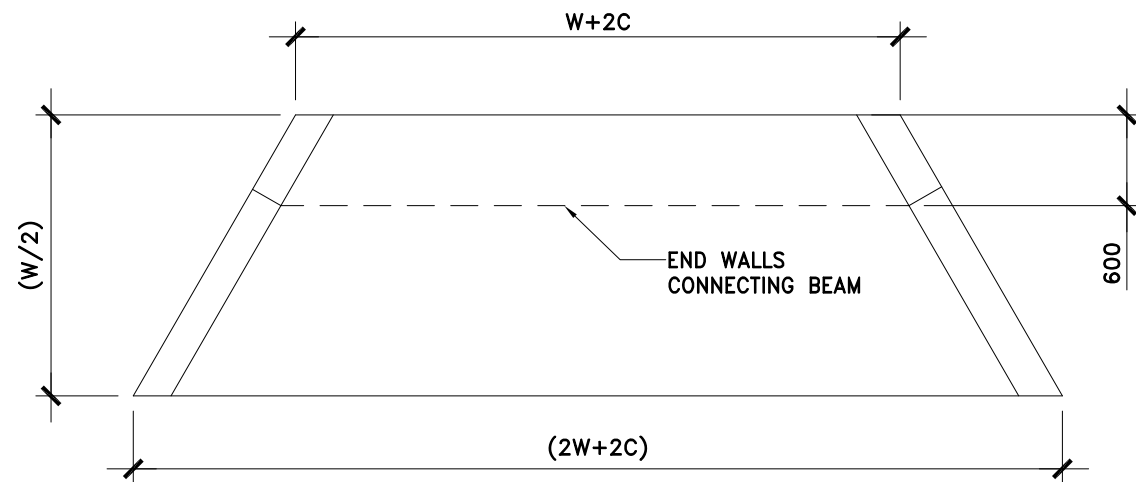
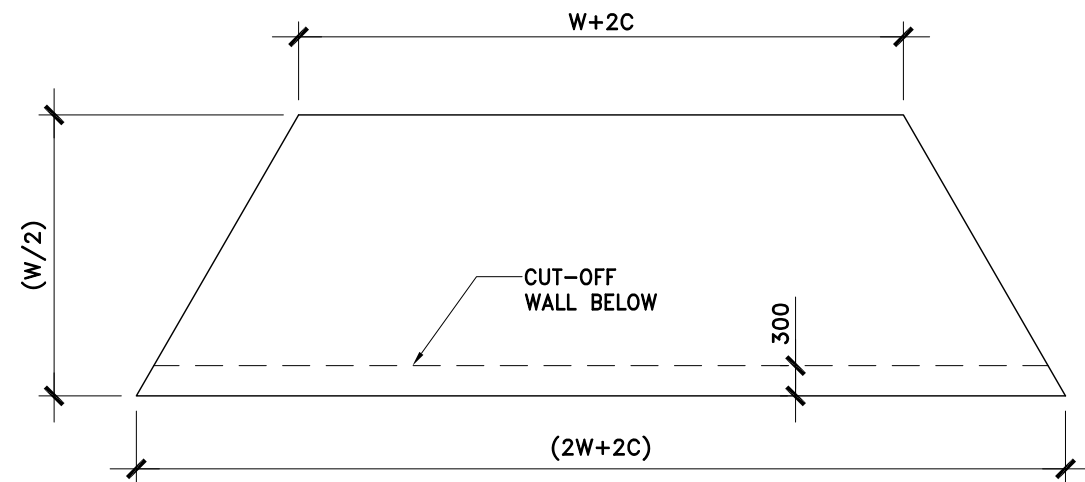
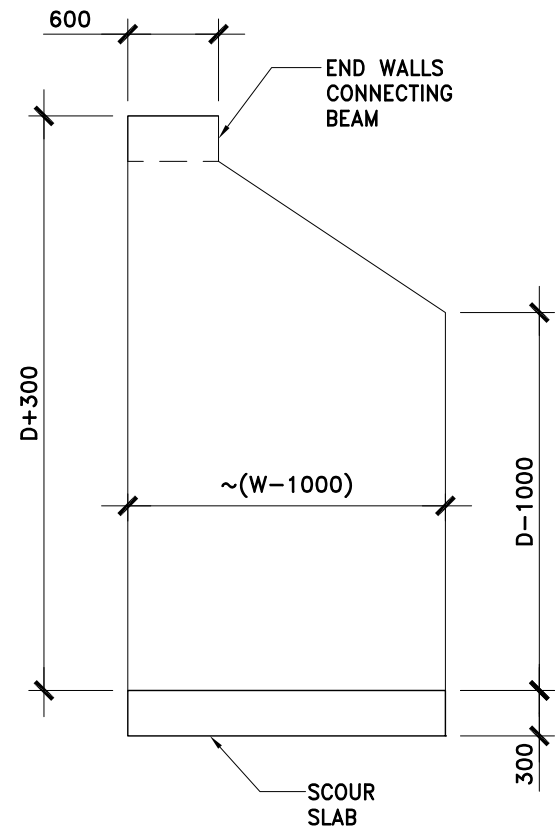
SCALE: 1:50

KEY PLAN:			
NOTES			
FIRST ISSUE		08 MAR. 2019	
REVISIONS			
REV	DESCRIPTION	DATE	BY
CLIENT:			
		UNITED NATIONS OFFICE FOR PROJECT SERVICES	
ENGINEER:			
		INTERNATIONAL PROJECT INITIATIVES LTD. 11, ROBINSONVILLE, BELMONT TRINIDAD & TOBAGO	
PROJECT:			
R.C. BOX CULVERTS HAITI			
DRAWING TITLE:			
BOX CULVERT SECTIONS			
DATE:		DRAWN BY:	
04 APR. 2019		RS	
DRAWING NO:			
S-3			

ONE CELL R.C. BOX CULVERT

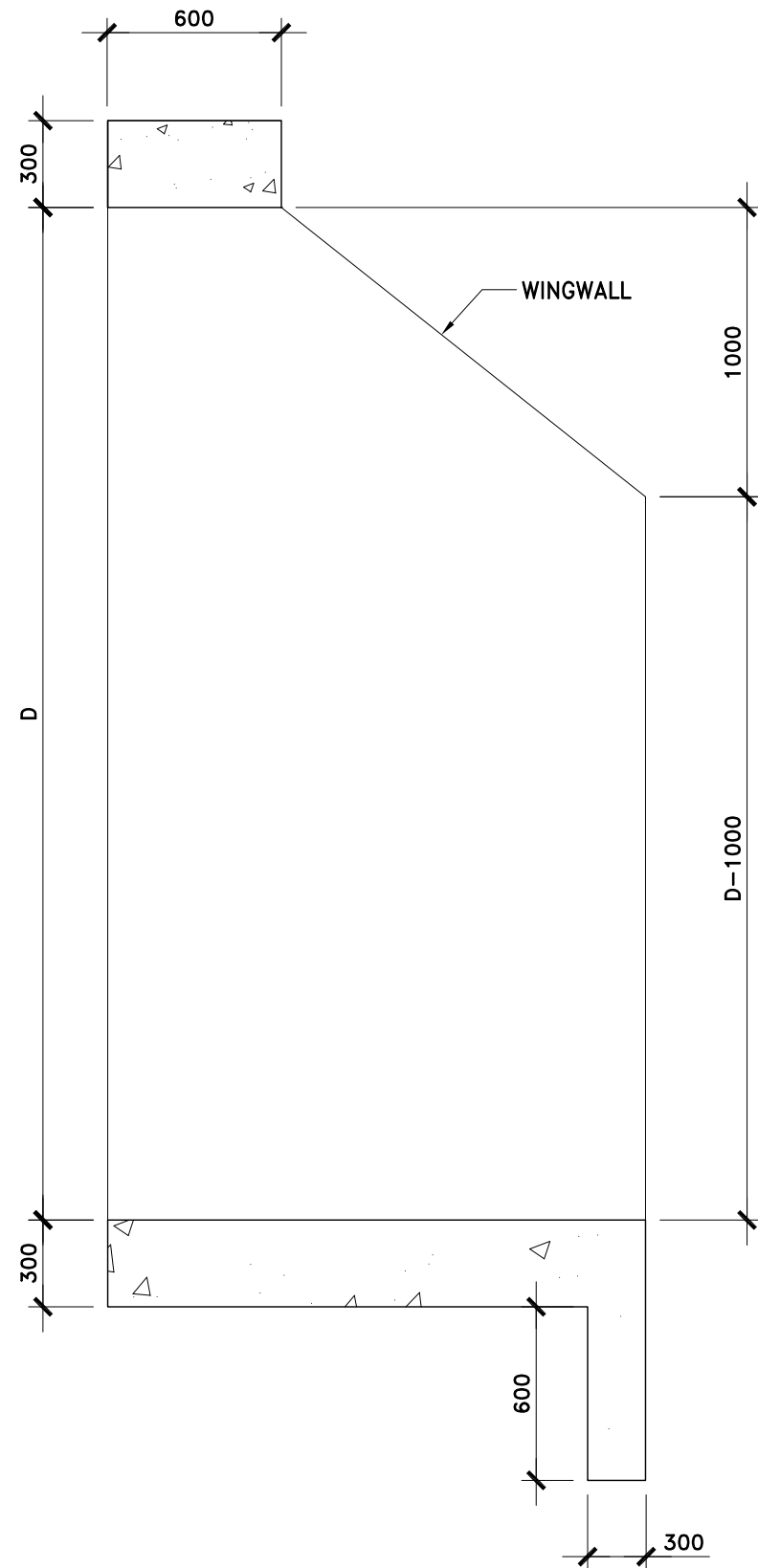


- NOTE:
1. REINFORCE R.C. SCOUR SLAB WITH 16#/300 O.C. BOTH WAYS, TOP AND BOTTOM WITH A CLEAR CONCRETE COVER OF 75 MM ON ALL SIDES.
 2. CONSTRUCT SCOUR SLAB AND WINGWALLS AFTER THE MAIN BOX CULVERT CONSTRUCTION IS COMPLETED.
 3. SEE ATTACHED DETAIL OF WINGWALL REINFORCEMENT.

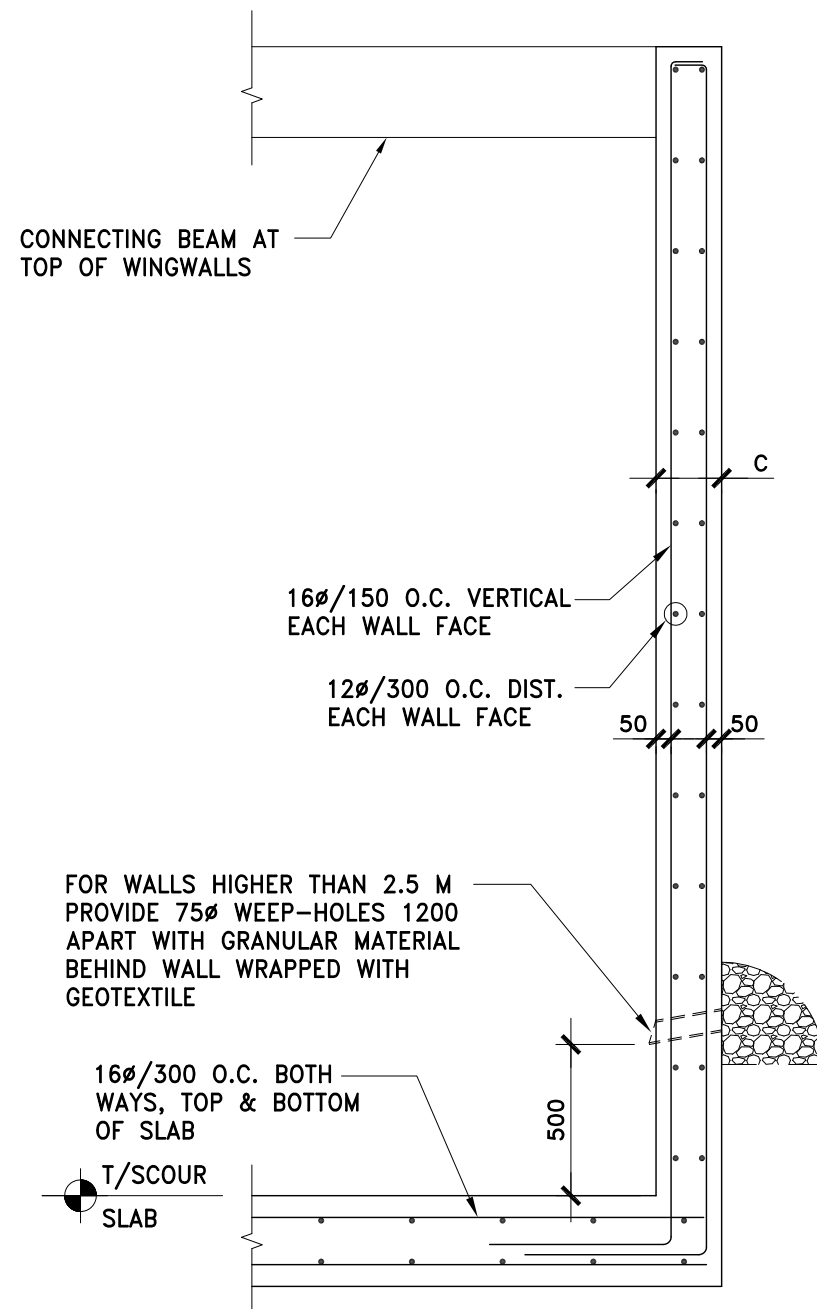


KEY PLAN:			
NOTES			

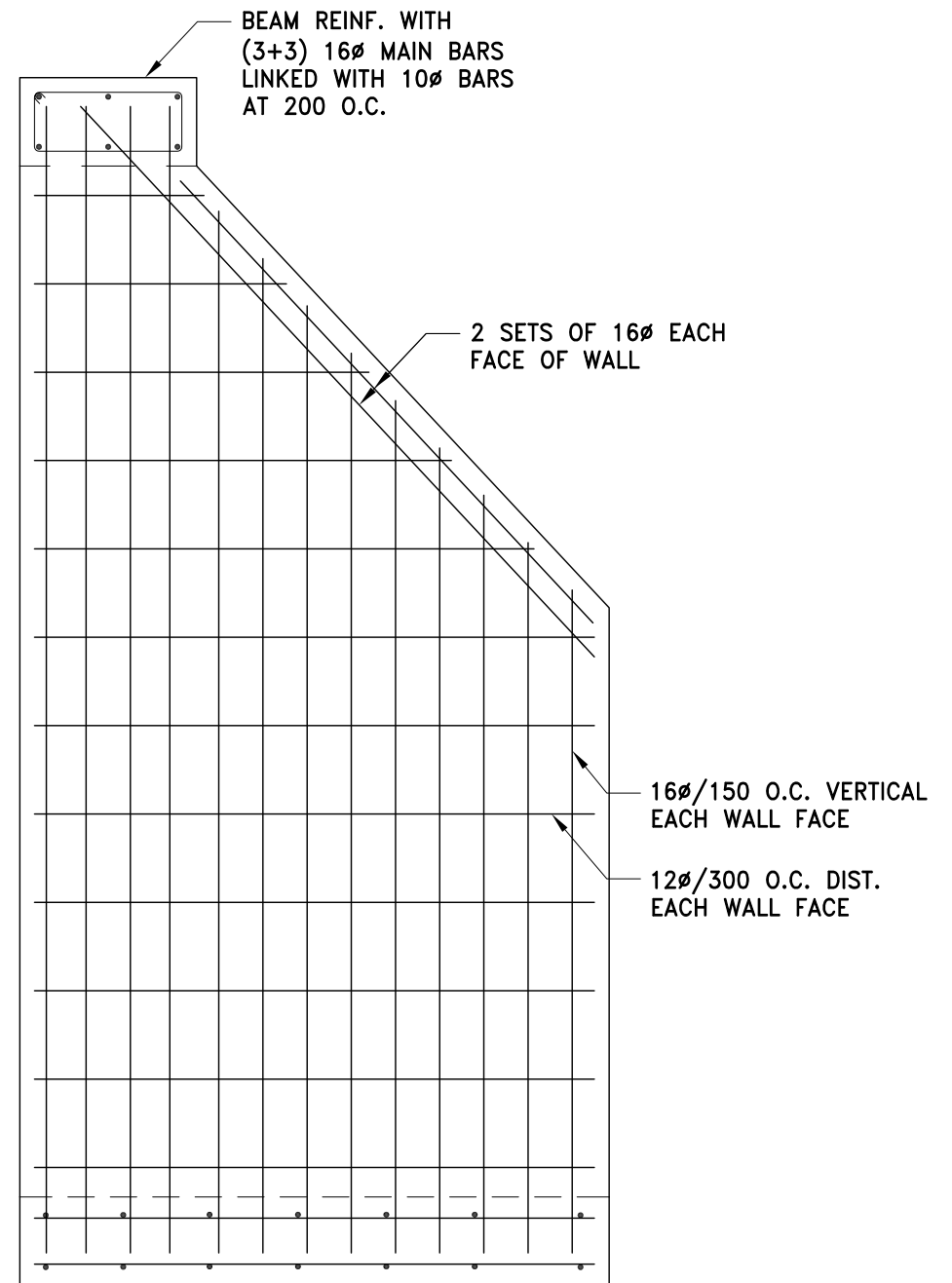
ONE CELL R.C. BOX CULVERT



1 WINGWALL WITH TOP BEAM AND BASE SLAB
SCALE: 1:25



2 WINGWALL REINFORCEMENT SECTION
SCALE: 1:25



3 WINGWALL REINFORCEMENT ELEVATION
SCALE: 1:25

KEY PLAN:

NOTES:

REV	DESCRIPTION	DATE	BY

CLIENT: UNITED NATIONS OFFICE FOR PROJECT SERVICES

ENGINEER: INTERNATIONAL PROJECT INITIATIVES LTD. 11, ROBINSONVILLE, BELMONT TRINIDAD & TOBAGO

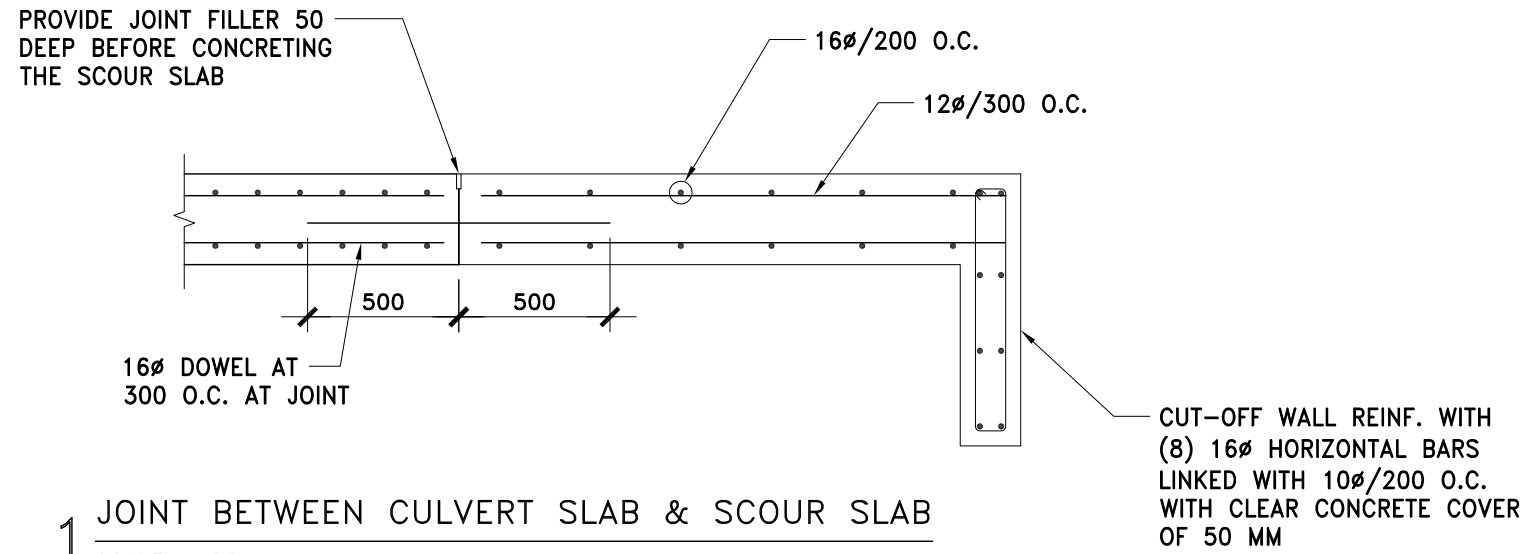
PROJECT: R.C. BOX CULVERTS HAITI

DRAWING TITLE: DETAILS

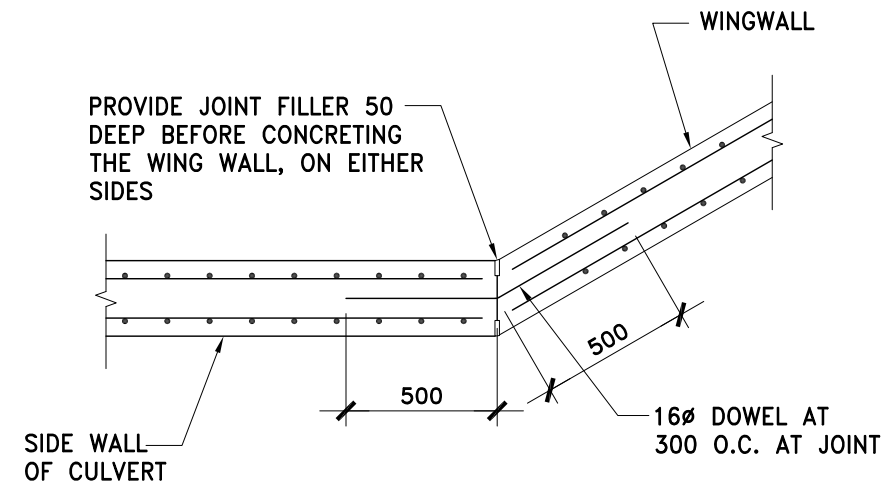
DATE: 04 APR. 2019 DRAWN BY: RS

DRAWING NO: S-6

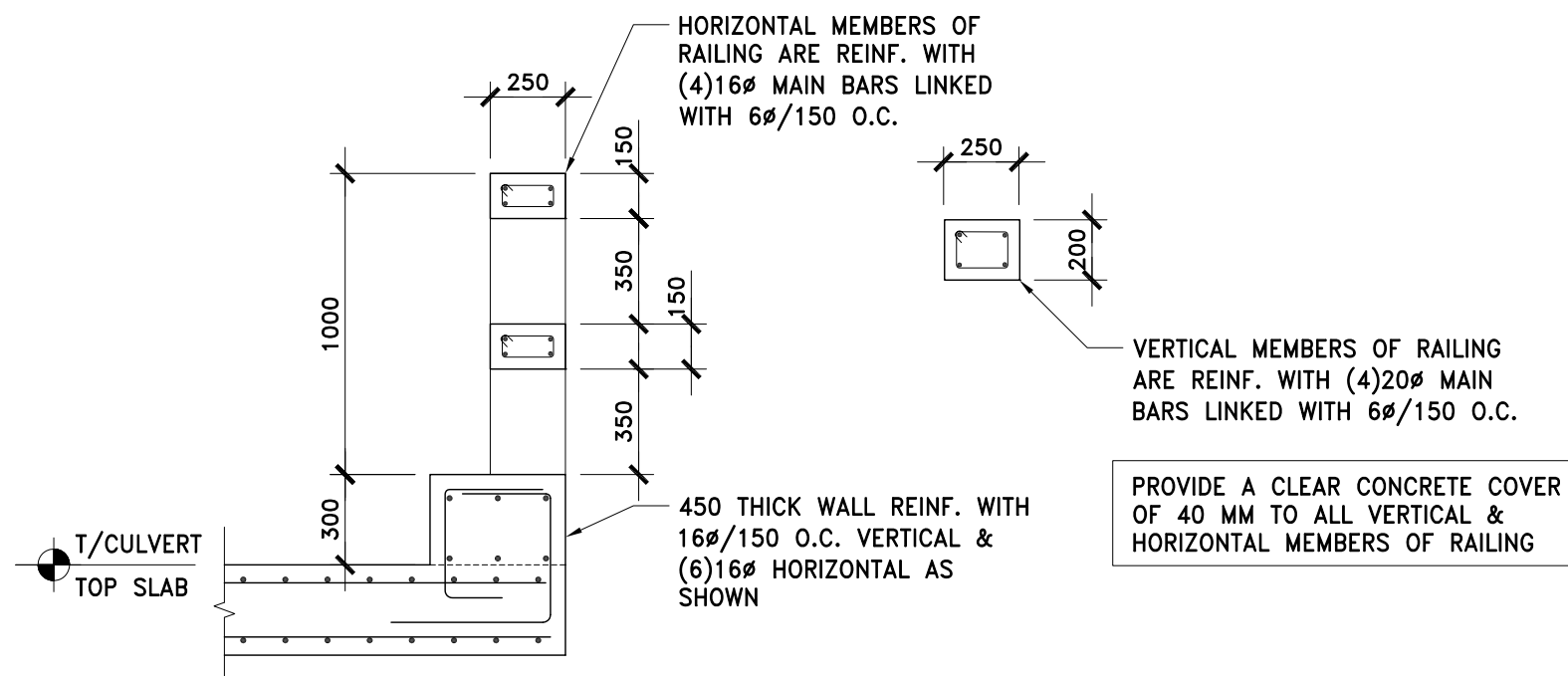
ONE CELL R.C. BOX CULVERT





1 JOINT BETWEEN CULVERT SLAB & SCOUR SLAB
SCALE: 1:25



2 JOINT BETWEEN CULVERT SIDE WALL & WINGWALL
SCALE: 1:25



3 HEADER WALL WITH RAIL DETAIL
SCALE: 1:25

KEY PLAN:			
NOTES			
FIRST ISSUE		08 MAR. 2019	
REVISIONS			
REV	DESCRIPTION	DATE	BY
CLIENT:			
		UNITED NATIONS OFFICE FOR PROJECT SERVICES	
ENGINEER:			
		INTERNATIONAL PROJECT INITIATIVES LTD. 11, ROBINSONVILLE, BELMONT TRINIDAD & TOBAGO	
PROJECT:			
R.C. BOX CULVERTS HAITI			
DRAWING TITLE:			
DETAILS			
DATE: 04 APR. 2019		DRAWN BY: RS	
DRAWING NO:			
S-7			

ONE CELL R.C. BOX CULVERT