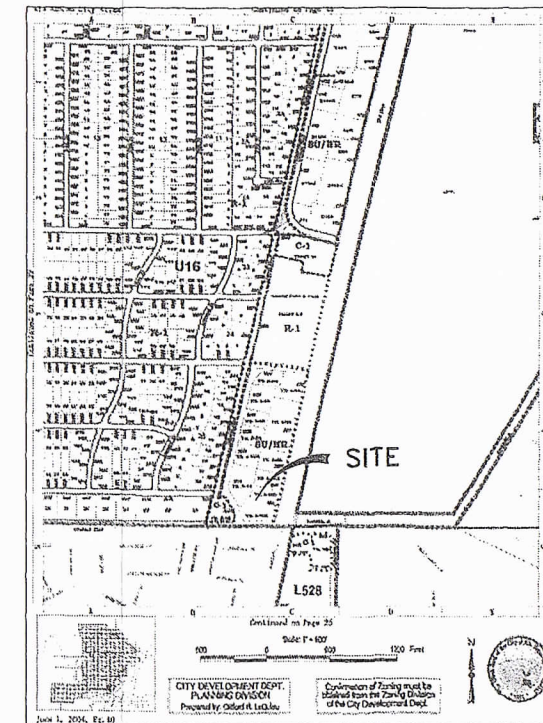


GATEWAY SOUTH DETENTION POND MODIFICATION CITY OF RIO RANCHO, NEW MEXICO GRADING AND DRAINAGE

INDEX TO DRAWINGS

SHEET No.	DESCRIPTION
1	COVER SHEET
2	SITE LAYOUT & TEMP. GRADING PLAN
3	RETAINING WALLS ELEVATIONS & DETAILS
4	INLET STRUCTURE LAYOUT & DETAILS
5	INLET STRUCTURE REINFORCEMENT DETAILS
6	DETAILS OF 6'x4' C.B.C. CONNECTION TO THE EXISTING "TRANSITION STRUCTURE #1" IN NM 528

SHEET No.	DESCRIPTION
7	NMDOT SER. 511-01-1/2
8	NMDOT SER. 623-01-1/1
9	NMDOT SER. 511-59-1/2
10	NMDOT SER. 511-59-2/2
11	NMDOT SER. 511-60-1/2
12	NMDOT SER. 511-60-2/2
13	NMDOT SER. 511-66-1/6
14	NMDOT SER. 511-66-2/6



VICINITY MAP

GENERAL NOTES

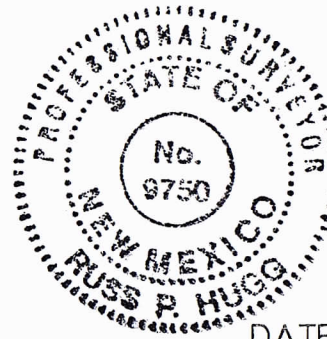
- ALL WORK SHOWN ON THESE PLANS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APWA NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1987 EDITION, AS AMENDED THROUGH APRIL 20, 1994, AND THE PROJECT CONSTRUCTION CONTRACT DOCUMENTS.
- A COPY OF THE APWA NEW MEXICO STANDARD SPECIFICATIONS, THE CONTRACT DOCUMENTS, AND THE PROJECT PLANS SHALL BE KEPT AT THE JOB SITE BY THE CONTRACTOR AT ALL TIMES.
- THE CONTRACTOR AGREES THAT HE SHALL ASSUME THE SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE ENGINEER AND CITY HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE ENGINEER OR CITY.
- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT ONE CALL SYSTEM, INC., 260-1990 AND CITY OF RIO RANCHO DEPT. OF UTILITIES (801-1200) FOR LOCATION OF EXISTING UTILITIES.
- ALL GAS, ELECTRIC, TELEPHONE LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION SHALL BE RELOCATED BY THE RESPECTIVE UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY RELOCATIONS AND ADJUSTMENTS TO GRADE.
- IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND MAINTAIN IN SERVICE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL ADEQUATELY SUPPORT AND PROTECT EXISTING UTILITIES AFFECTED BY THE CONTRACTOR'S TRENCHING ACTIVITY. IN THE EVENT THAT EXISTING UTILITIES ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS, THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE PROMPT REPAIR BY THE RESPECTIVE UTILITY AND SHALL BEAR THE COST OF REPAIRS.
- ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
- THE CONTRACTOR SHALL EXERCISE REASONABLE CARE DURING CONSTRUCTION TO PREVENT THE MOVEMENT OF SEDIMENT FROM THE SITE ONTO EXISTING STREETS OR ADJUTING PROPERTY. LOOSE SOIL STOCKPILED DURING CONSTRUCTION ACTIVITIES SHALL BE PROMPTLY CLEANED UP OR PROTECTED FROM BEING CARRIED DOWNSTREAM BY FLOWING WATER.
- A DISPOSAL SITE FOR ALL EXCESS EXCAVATION MATERIAL, ASPHALTIC PAVING, CONCRETE CURBS AND SIDEWALKS, WASTE MATERIAL, DEBRIS, ETC., SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE, DISPOSAL AND HAUL THERE TO SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFOR.
- THE CONTRACTOR WILL BE REQUIRED TO CONFINE HIS WORK TO WITHIN THE LIMITS OF CONSTRUCTION AND/OR PUBLIC RIGHT-OF-WAY TO PRESERVE EXISTING VEGETATION AND PRIVATE PROPERTY. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE RIGHT-OF-WAY UNLESS THE EQUIPMENT OR MATERIAL IS PROPERLY SHIELDED UTILIZING CURRENT SAFETY DESIGN AND INSTALLATION METHODS. THERE WILL BE NO SEPARATE MEASUREMENT OR PAYMENT FOR THE DESIGN, MATERIALS, INSTALLATION AND REMOVAL OF THE SAFETY BARRIERS.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ADJACENT PROPERTIES DURING CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE WITH CITY OF RIO RANCHO DEPT. OF UTILITIES A MINIMUM OF 24 HOURS PRIOR TO INITIATING ANY WORK AFFECTING ANY EXISTING PUBLIC OR PRIVATE WATER LINES OR SEWER LINES.
- CONTRACTOR SHALL NOTIFY THE ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE ENGINEER MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE ENGINEER AND SHALL NOTIFY THE ENGINEER AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. REPLACEMENT SHALL BE DONE ONLY BY THE ENGINEER. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATION OF THE PAVEMENT OR ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL REMOVE AND REPLACE ALL SECTIONS OF EXISTING PAVING, CURB, AND GUTTER, AND/OR SIDEWALK DAMAGED DURING CONSTRUCTION OF THE PROJECT WHICH ARE OUTSIDE OF THE AREAS DESIGNATED IN THE PLANS TO BE REMOVED AND REPLACED. THIS WORK SHALL BE PERFORMED AT NO COST TO THE OWNER.

Surveyors Certification

I, Russ P. Hugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

[Signature]

6.25.2015



Certificate of Substantial Compliance on Plans

I, Hugh W. Floyd, a Registered Professional Engineer in the State of New Mexico, have reviewed the Gateway South Detention Pond Modification located on Lot 16A of Gateway South and related relevant drainage plans, street plans and profiles, design and construction plans, and other improvement plans. I do hereby certify that I have made an inspection of those improvements described herein and find same to be built in accordance with the Construction Plans except for the modifications specifically noted. I have attached hereto reasons for the modifications and relevant "Record Drawings" plans detailing modifications.



NOTE:

THE ENGINEER HAS UNDERTAKEN LIMITED FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY, AND PRESERVE ANY AND ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "BLUE STAKES" PROCEDURES, OR OTHERWISE.

NOTE:

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY AND HEALTH WHICH SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR.

NOTE:

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, ARE INTENDED FOR USE ON THIS PROJECT AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF EASTERLING CONSULTANTS LLC. IN THE EVENT OF UNAUTHORIZED USE, THE USER ASSUMES ALL RESPONSIBILITY AND LIABILITY WHICH RESULTS.

DEVELOPER:

CLEAN MACHINE CARWASH III, LLC

CITY OF
RIO RANCHO:

DEVELOPMENT SERVICES

DATE: 5-30-14

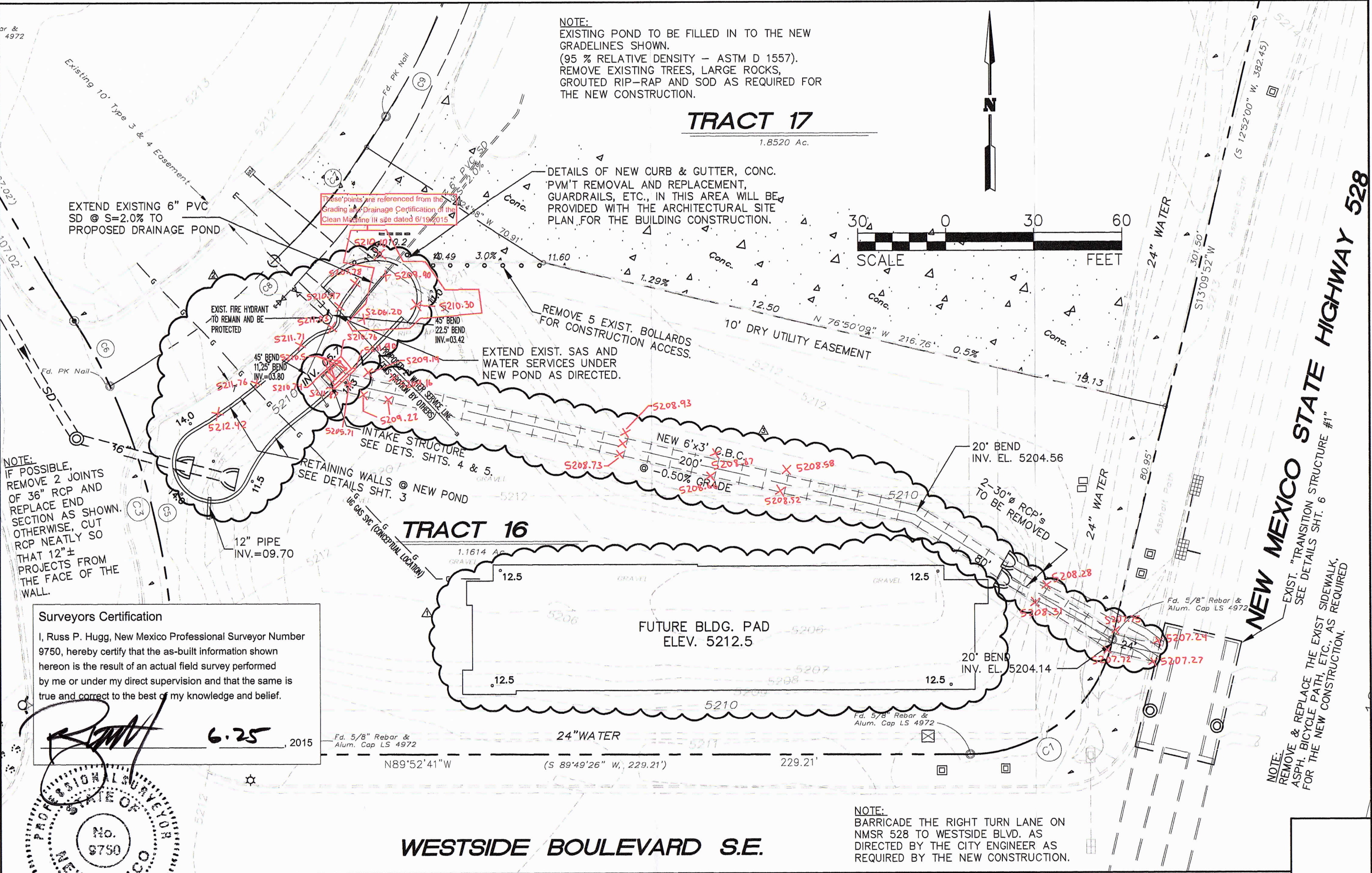
DATE: 6-5-14

Easterling Consultants LLC
Engineering and Environmental Consulting
3613 NMSR 528 NW, Suite E-2
Albuquerque, New Mexico 87114
(505) 821-6646 FAX (505) 897-2965

Designed By: HC-A	Drawn By: HC-A	Checked By: HWF
File No. 179-14-01	Date: MAY 2014	



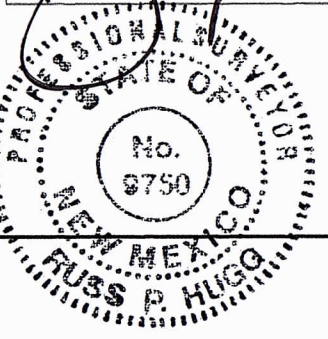
Y:\PROJECTS\TERLING PROJECTS\Clean Machine Carwash\02SITE-DANNYS F -red.dwg, 9/16/2014 7:05:14 PM



Surveyors Certification

I, Russ P. Hugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

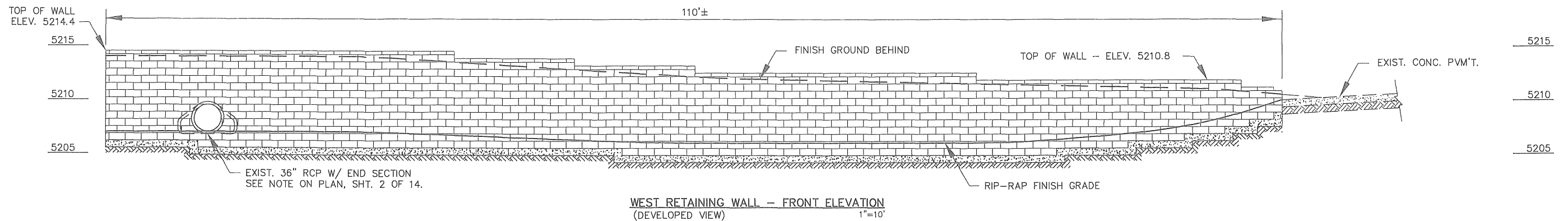
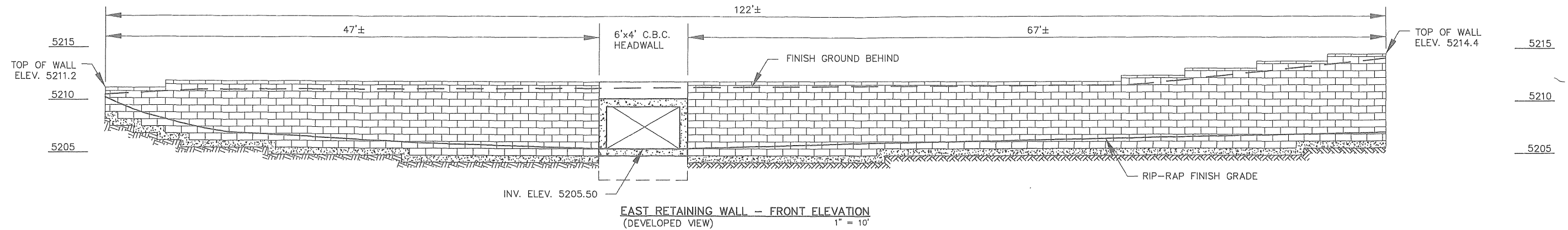
[Signature] 6.25, 2015



BENCHMARK		NEW BUILDING LAYOUT	HWF 9-17-14	SCALES: 1" = 30' CONT. INT. = 1'	Easterling Consultants LLC Engineering and Environmental Consulting 3613 NMSR 528 NW, Suite E-2 Albuquerque, New Mexico 87114 (505) 821-6646 FAX (505) 897-2965	GATEWAY SOUTH RIO RANCHO, NEW MEXICO
PROJECT MODIFIED SURFACE COORDINATES 60D NAIL w/ BRASS DISK STAMPED: "SURV-TEK CONTROL L.S. 9750" N = 1,535,395.3280, E = 1,517,642.764 ELEV. = 5211.91		POND WEST WALL MOVED 1 FOOT EAST AND AROUND HYDRANT	HWF 9-17-14			
		REALIGNED CULVERT BOX AWAY FROM NEW BUILDING LAYOUT	HWF 9-17-14	Designed By: HC-A Drawn By: DEM Checked By: HWF File No. 179-14-01 Date: SEPTEMBER 2014		
		NO. REVISIONS	BY DATE			

DETENTION POND MODIFICATION
SITE LAYOUT & TEMP. GRADING PLAN

E:\Land Projects 2005\Bob Powers\dwg\03WALLS.dwg 5/22/2014 6:37:01 AM MDT



RETAINING WALLS

RETAINING WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TAN COLORED THREE-PLANE SPLIT FACE "COMPAC" CONCRETE UNITS MEETING THE SPECIFICATIONS FOR "KEYSTONE RETAINING WALL SYSTEMS," OR AN APPROVED EQUAL.

RIP-RAP

RIP-RAP SHALL CONSIST OF CRUSHED BASALT ROCK MEETING THE FOLLOWING GRADATION.

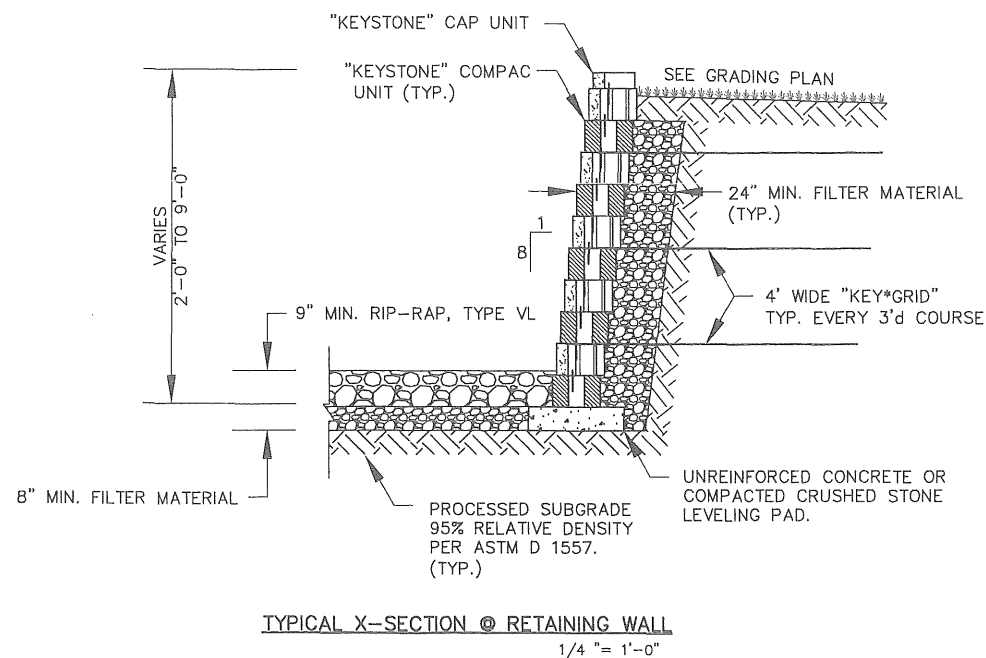
MAX. DIMENSION	% SMALLER
12"	100
9"	50-70
6"	35-55
3"	10

FILTER MATERIAL

FILTER MATERIAL SHALL BE CONSIST OF CRUSHED BASALT ROCK MEETING THE FOLLOWING GRADATION.

U.S. STANDARD SIEVE SIZE	PASSING BY WEIGHT
1"	100
3/4"	45-65
#4	25-45
#40	0-20
#200	0-5

FILTER MATERIAL SHALL BE PLACED IN AND BEHIND THE RETAINING WALLS AND UNDER THE RIP-RAP CHANNEL PAVEMENT AS SHOWN HEREON. THE CHANNEL AND WALL SUBGRADES SHALL BE PROCESSED TO A 12" MIN. DEPTH AND COMPACTED TO 95% MIN. RELATIVE DENSITY PER ASTM D 1557. THE FILTER MATERIAL SHALL BE TAMPED AND SHAPED TO FORM A SMOOTH, EVEN, AND FIRM FOUNDATION FOR THE OVERLYING RIP-RAP. THE CONTRACTOR'S OPERATIONS AND METHODS OF PLACING SHALL PREVENT SEGREGATION OF THE MATERIALS.



BENCHMARK
PROJECT MODIFIED SURFACE COORDINATES
60D NAIL w/ BRASS DISK STAMPED:
"SURV-TEK CONTROL L.S. 9750"
N = 1,535,395.3280, E = 1,517,642.764
ELEV. = 5211.91

NO. REVISIONS BY DATE

SCALES AS SHOWN

Designed By: HC-A
Drawn By: HC-A
Checked By: HWF
File No. 179-14-01
Date MAY 2014

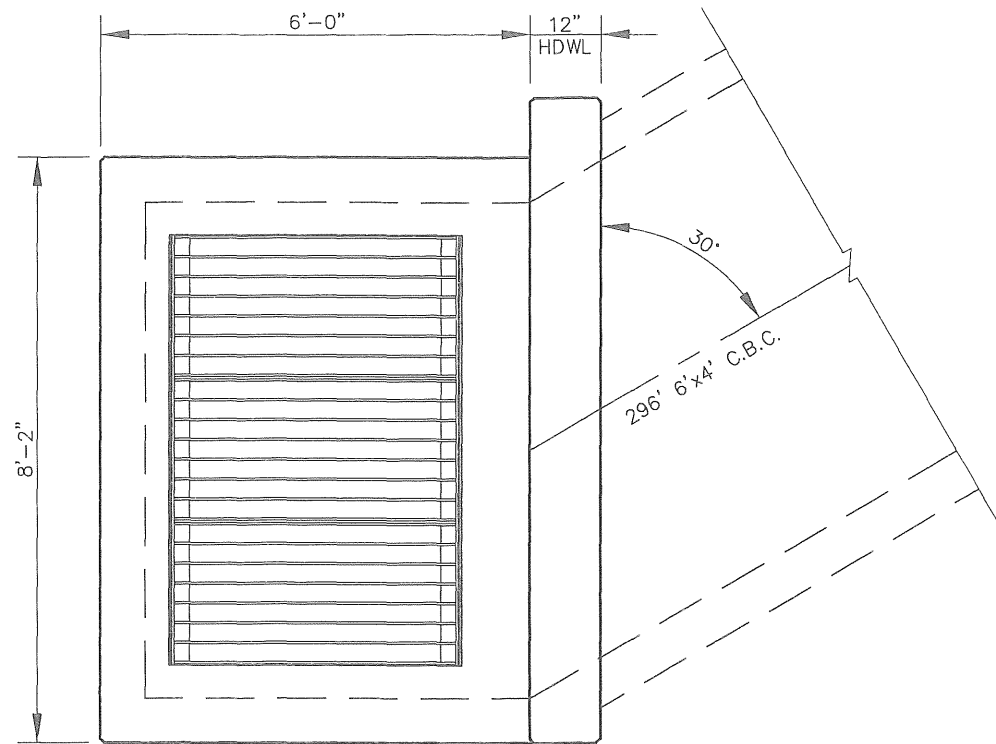
Easterling Consultants LLC
Engineering and Environmental Consulting
3613 NMSR 528 NW, Suite E-2
Albuquerque, New Mexico 87114
(505) 821-6646 FAX (505) 897-2965

GATEWAY SOUTH RIO RANCHO, NEW MEXICO

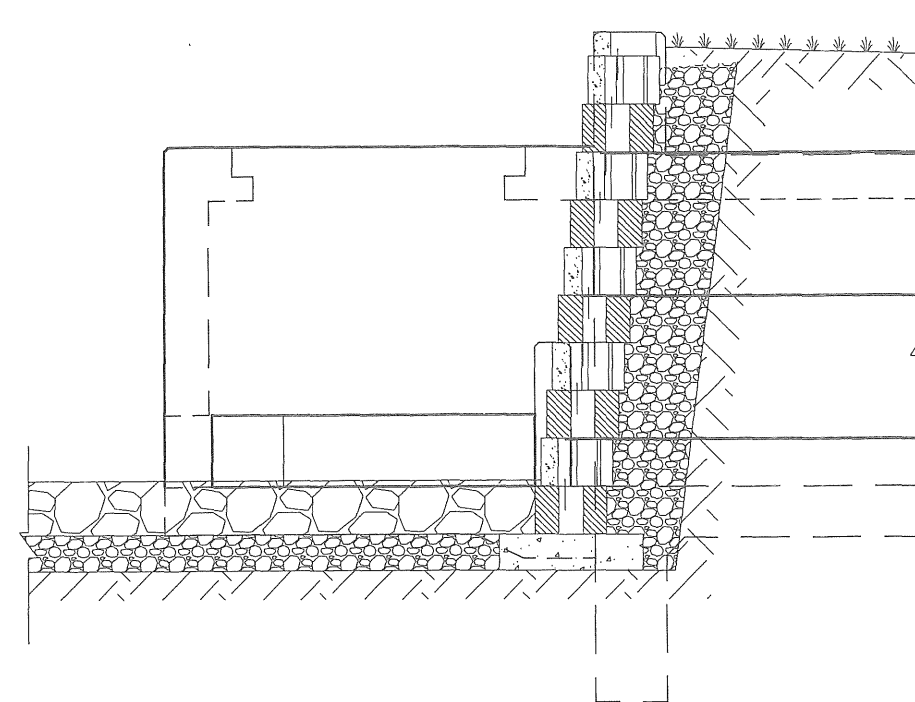
DETENTION POND MODIFICATION
RETAINING WALLS
ELEVATIONS & DETAILS

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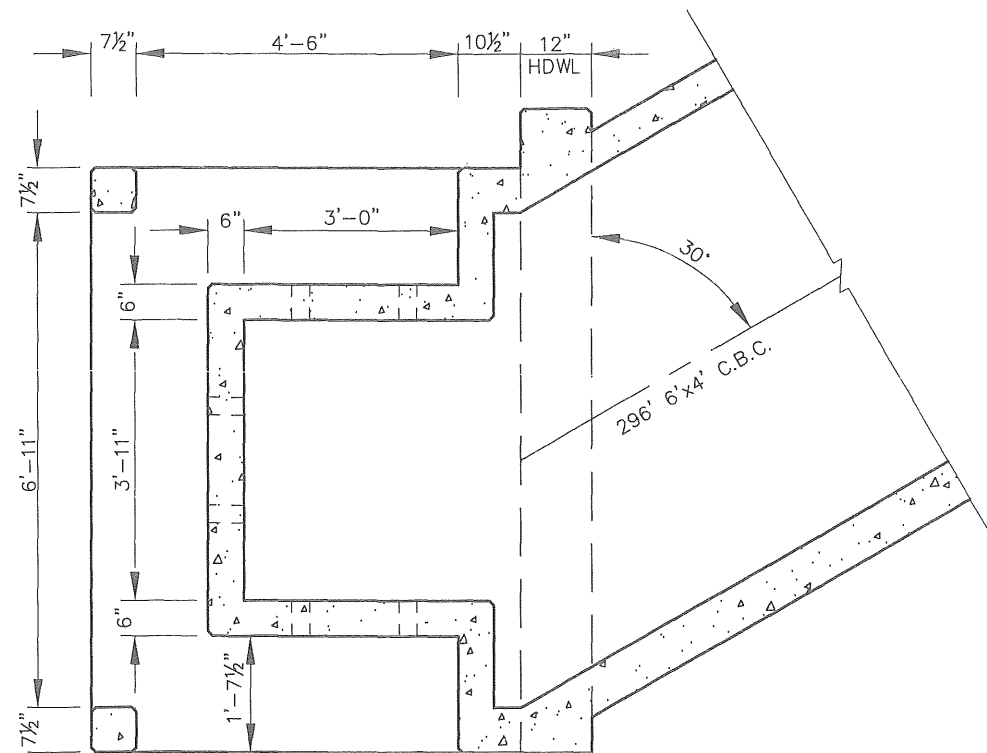
Sheet 3 of 14



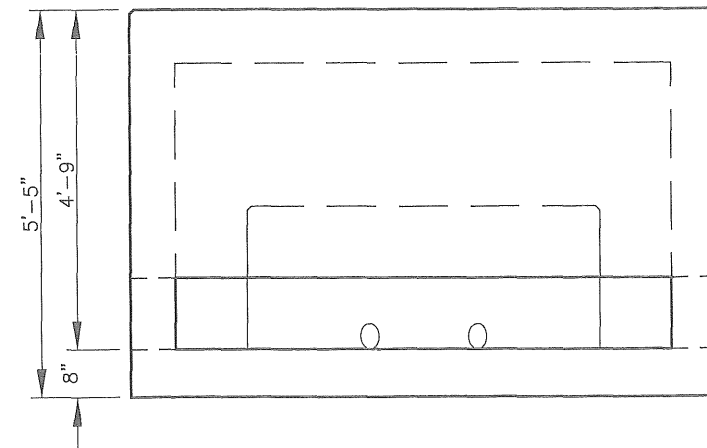
INLET STRUCTURE TOP PLAN VIEW
3/8" = 1'-0"



INLET STRUCTURE SIDE WALL ELEVATION
(2 THUS - 1 OPP. HAND) 3/8" = 1'-0"



INLET STRUCTURE FLOOR PLAN VIEW
3/8" = 1'-0"



INLET STRUCTURE FRONT WALL ELEVATION
3/8" = 1'-0"



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BENCHMARK
PROJECT MODIFIED SURFACE COORDINATES
60D NAIL w/ BRASS DISK STAMPED:
"SURV-TEK CONTROL L.S. 9750"
N = 1,535,395.3280, E = 1,517,642.764
ELEV. = 5211.91

NO. REVISIONS BY DATE

SCALES: AS SHOWN

Designed By: HC-A Drawn By: HC-A Checked By: HWF
File No. 179-14-01 Date: MAY 2014

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Engineering and Environmental Consulting
3613 NMSR 528 NW, Suite E-2
Albuquerque, New Mexico 87114
(505) 821-6646 FAX (505) 897-2965

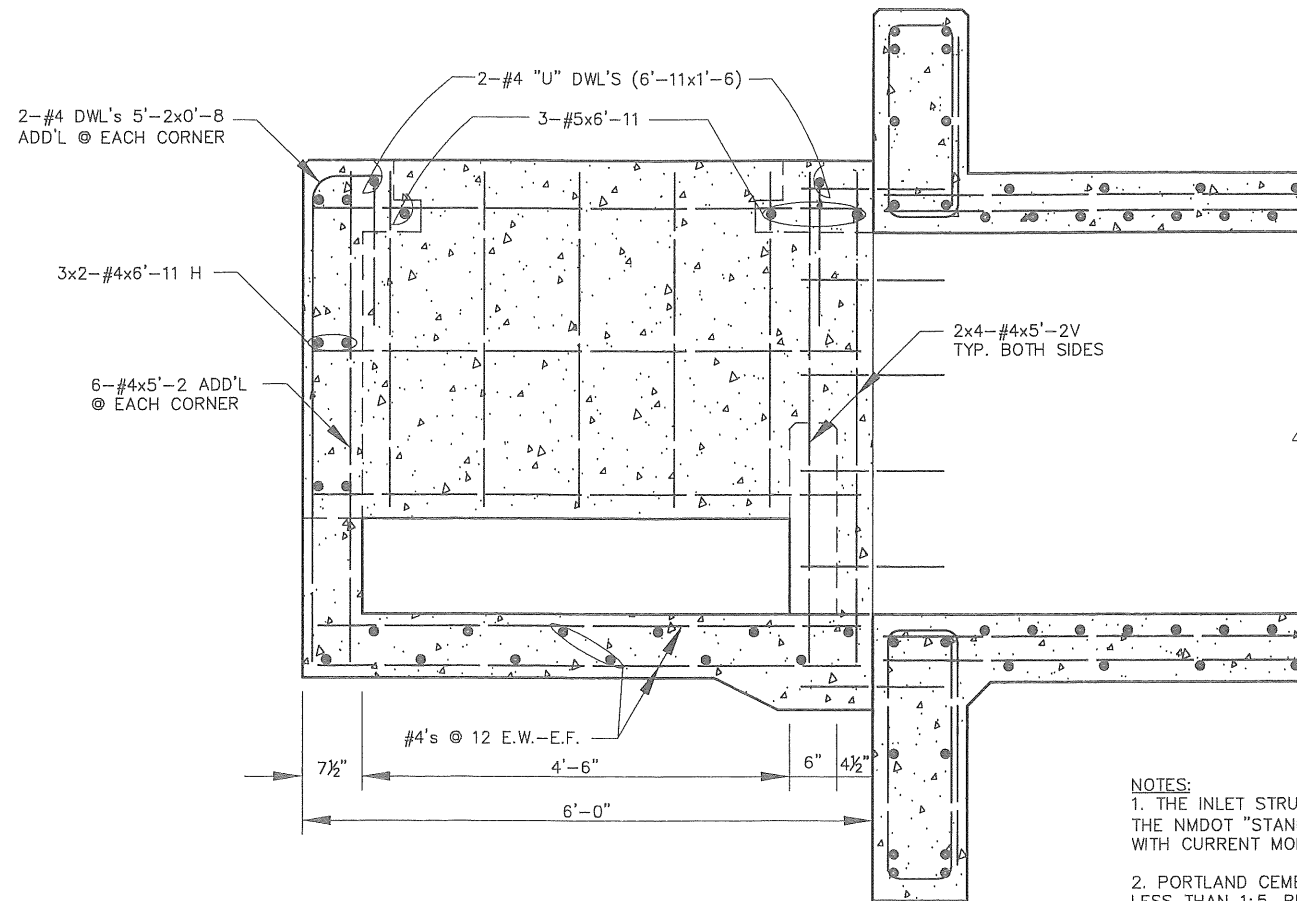
GATEWAY SOUTH RIO RANCHO, NEW MEXICO

DETENTION POND MODIFICATION
INLET STRUCTURE LAYOUT & DETAILS

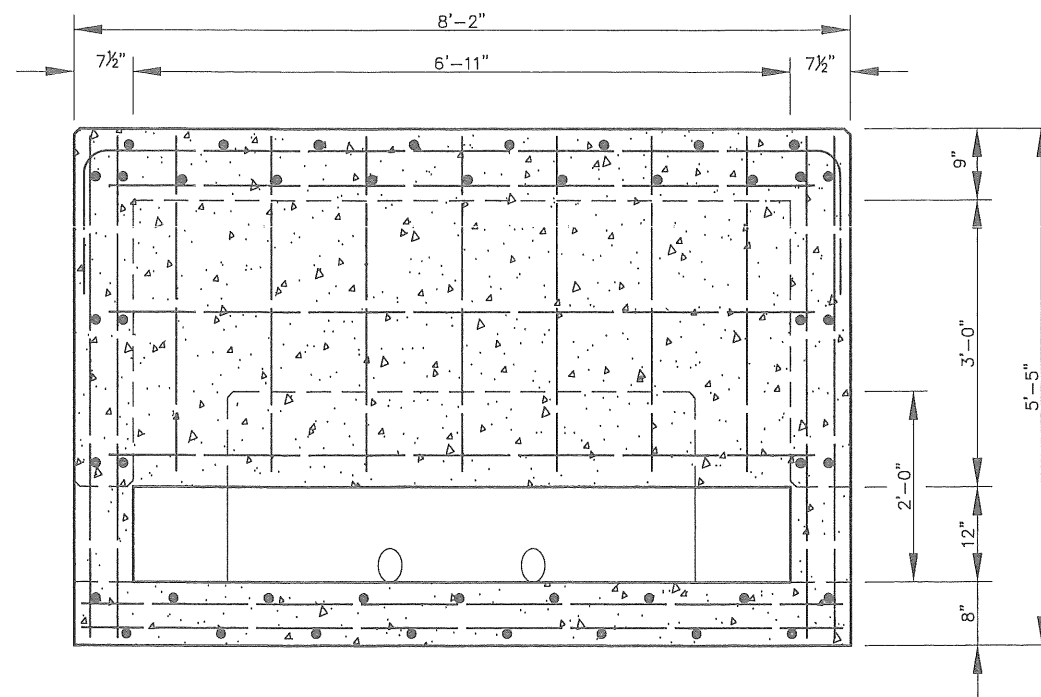
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Sheet 4 of 14

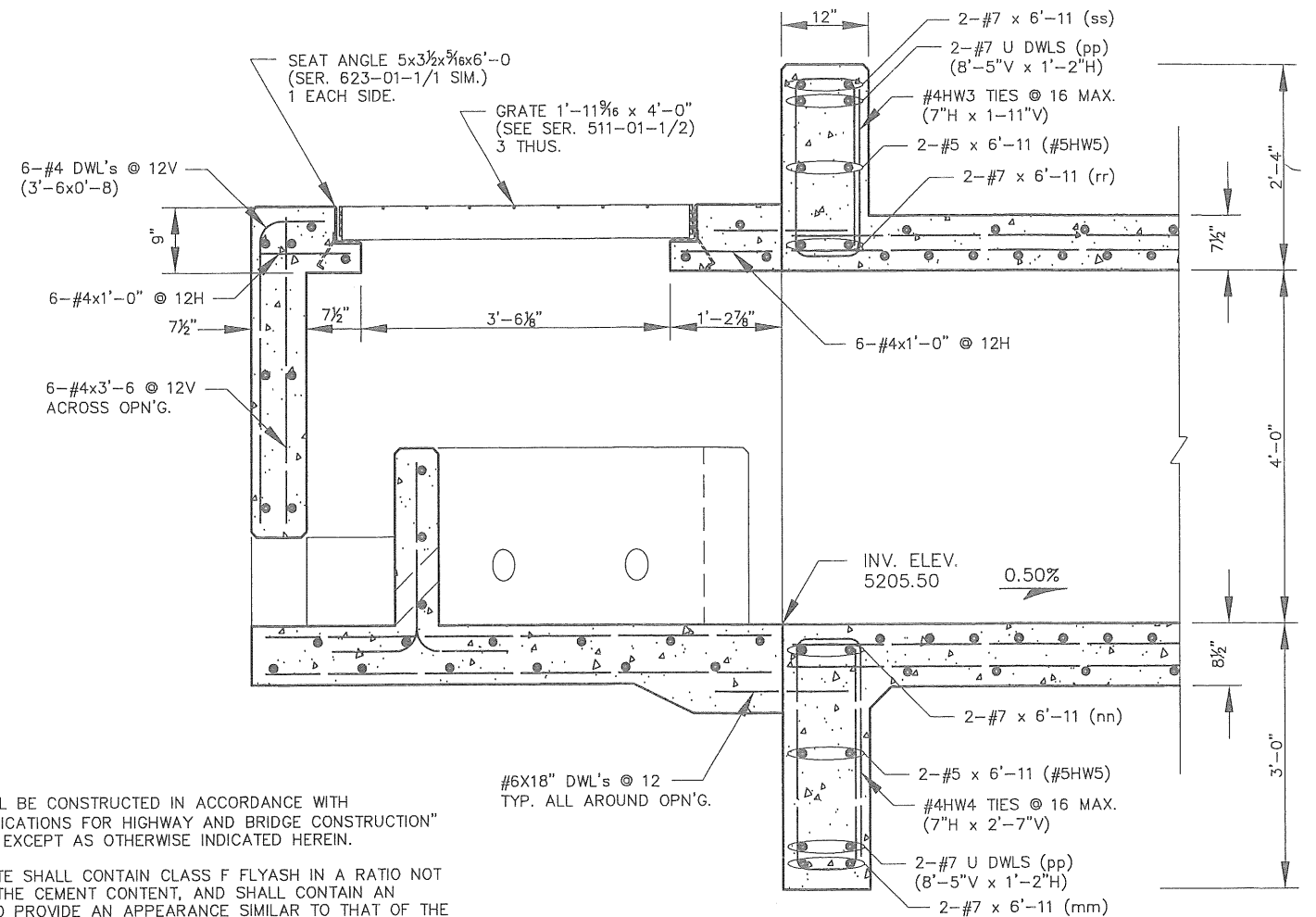
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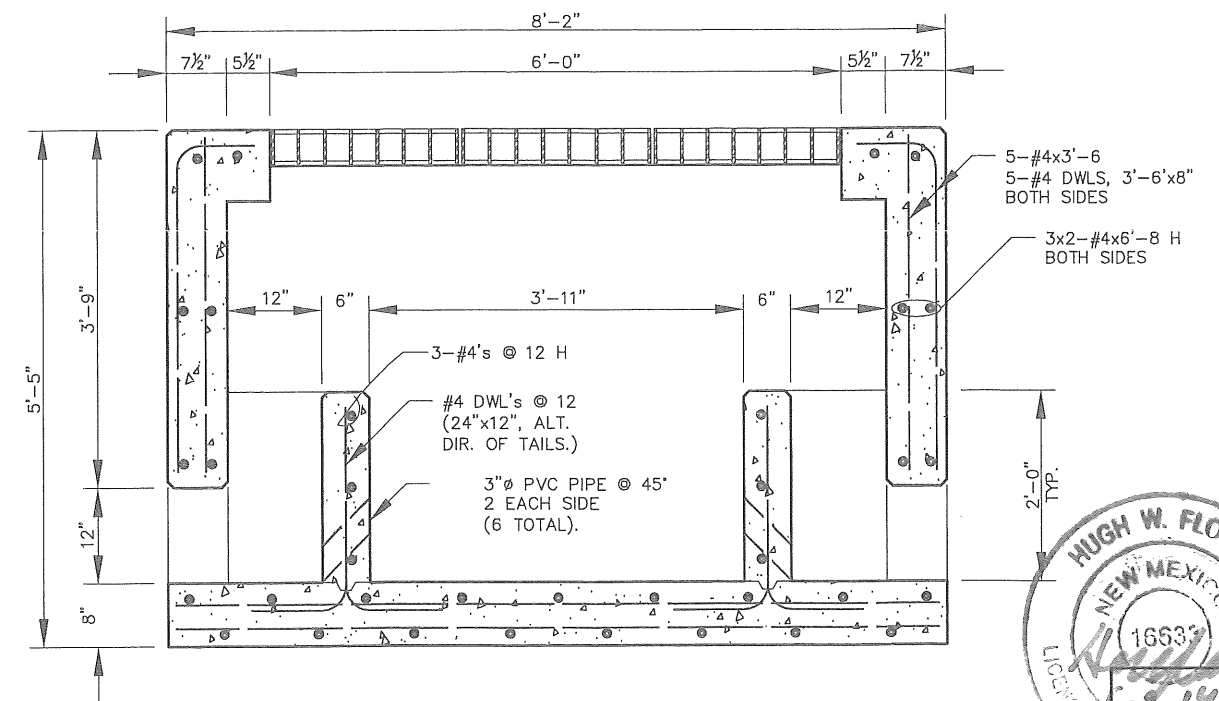
INLET STRUCTURE SIDE WALL ELEVATION
(2 THUS - 1 OPP. HAND) 1/2" = 1'-0"



INLET STRUCTURE FRONT WALL ELEVATION
1/2" = 1'-0"



SECTION @ INLET STRUCTURE C
1/2" = 1'-0"



TRANSVERSE SECTION THRU INLET STRUCTURE
1/2" = 1'-0"

NOTES:

1. THE INLET STRUCTURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NMDOT "STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION" WITH CURRENT MODIFICATIONS, EXCEPT AS OTHERWISE INDICATED HEREIN.

2. PORTLAND CEMENT CONCRETE SHALL CONTAIN CLASS F FLYASH IN A RATIO NOT LESS THAN 1:5, RELATIVE TO THE CEMENT CONTENT, AND SHALL CONTAIN AN APPROVED COLORING AGENT TO PROVIDE AN APPEARANCE SIMILAR TO THAT OF THE PRECAST CONCRETE UNIT RETAINING WALLS.

BENCHMARK
PROJECT MODIFIED SURFACE COORDINATES
60D NAIL w/ BRASS DISK STAMPED:
SURV-TEK CONTROL L.S. 9750
N = 1,535,395.3280, E = 1,517,642.764
ELEV. = 5211.91

NO.

REVISIONS

BY

DATE

SCALES: AS SHOWN

Designed By: HC-A
Drawn By: HC-A
Checked By: HWF
File No: 179-14-01
Date: MAY 2014

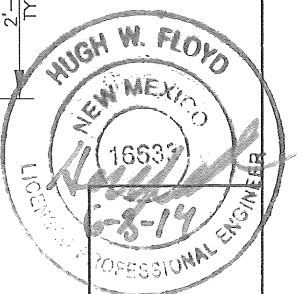
Easterling Consultants LLC
Engineering and Environmental Consulting
3613 NMSR 528 NW, Suite E-2
Albuquerque, New Mexico 87114
(505) 821-6646 FAX (505) 897-2965

GATEWAY SOUTH RIO RANCHO, NEW MEXICO

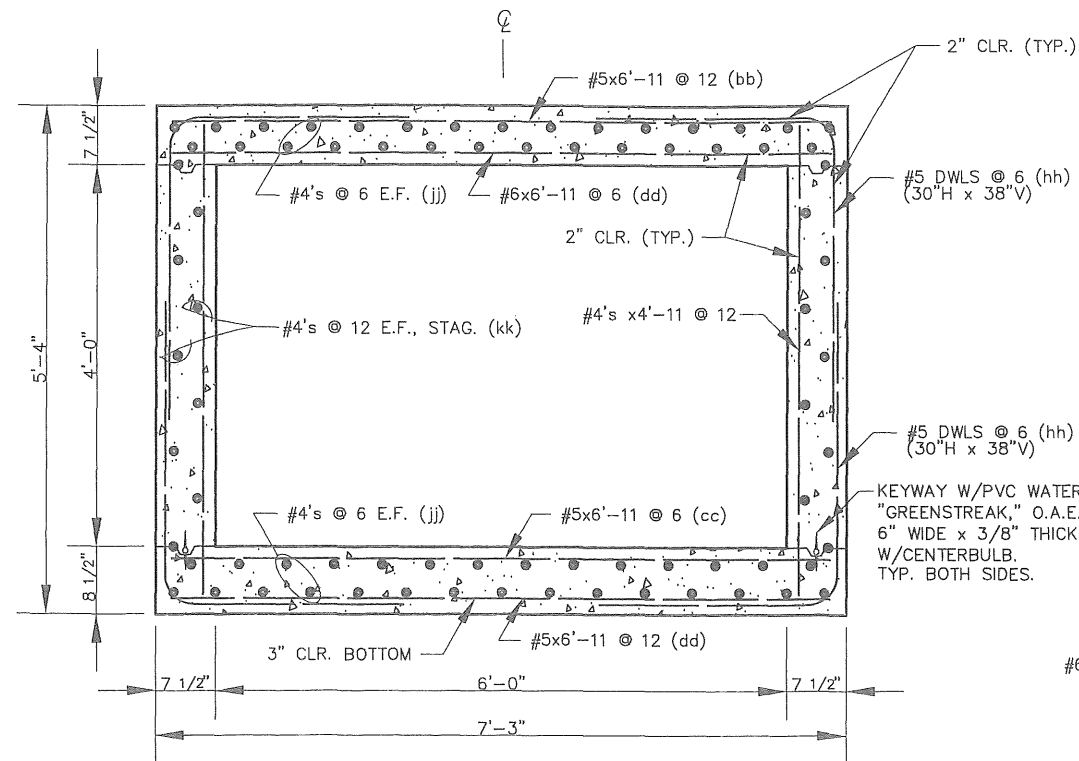
DETENTION POND MODIFICATION
INLET STRUCTURE REINFORCEMENT DETAILS

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Sheet 5 of 14

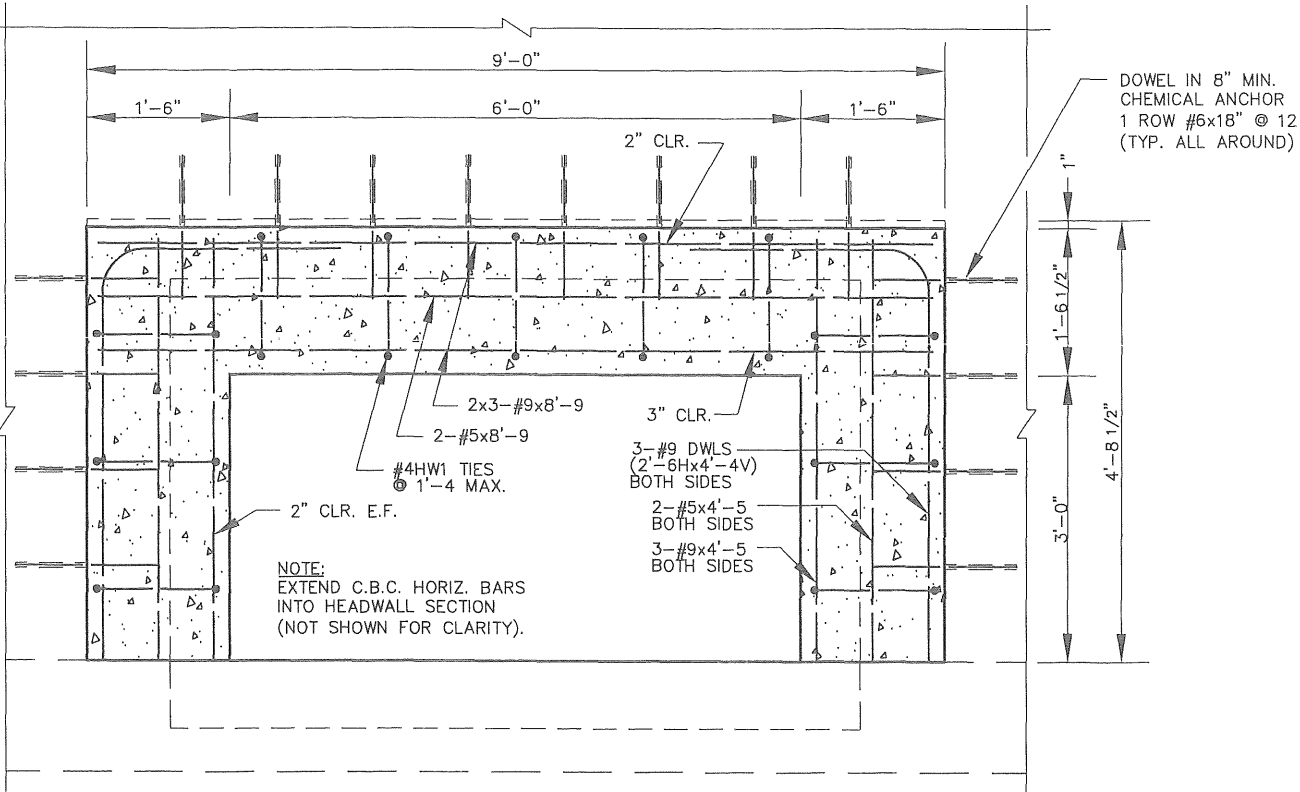


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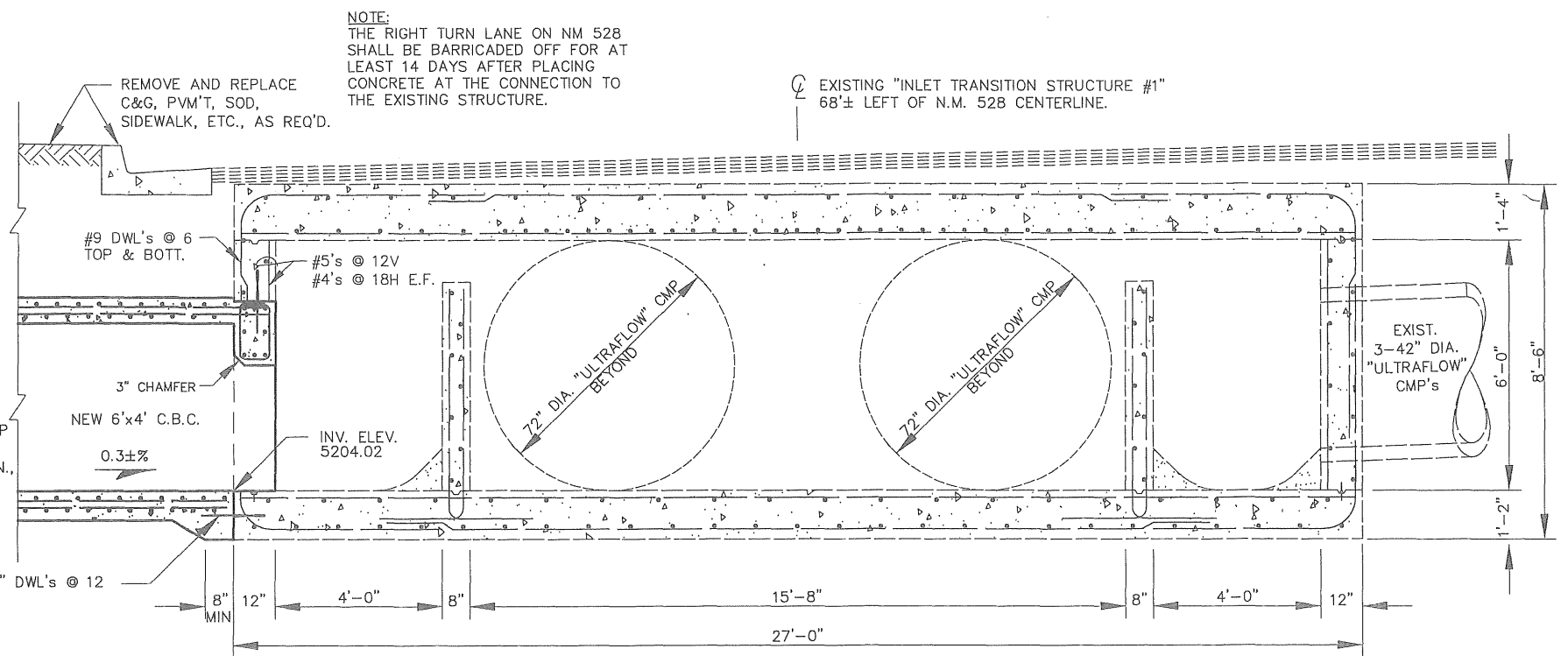
TYPICAL SECTION THRU 6'x4' C.B.C.
(NMDOT SER. #511-60-1&2 OF 2) 1/2" = 1'-0"

- NOTES:
1. THE CONCRETE BOX CULVERT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NMDOT "STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION" WITH CURRENT MODIFICATIONS EXCEPT AS OTHERWISE INDICATED HEREIN.
 2. PORTLAND CEMENT CONCRETE SHALL CONTAIN CLASS F FLYASH IN A RATIO NOT LESS THAN 1:5, RELATIVE TO THE CEMENT CONTENT.



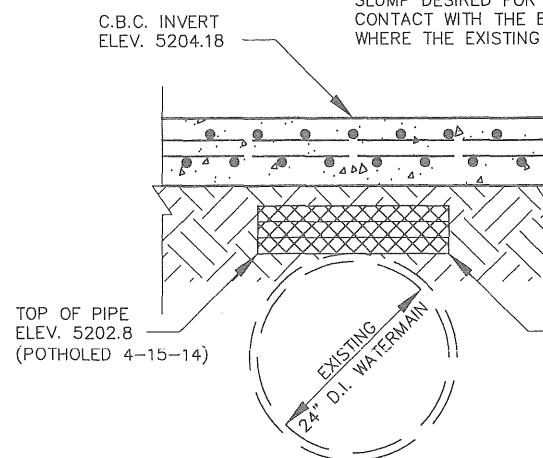
SECTION THRU 6'x4' C.B.C. HEADWALL
1/2" = 1'-0"

NOTE:
EXISTING STRUCTURE'S BARS
NOT SHOWN FOR CLARITY.



TYPICAL SECTION @ "TRANSITION STRUCTURE #1"
1/4" = 1'-0"

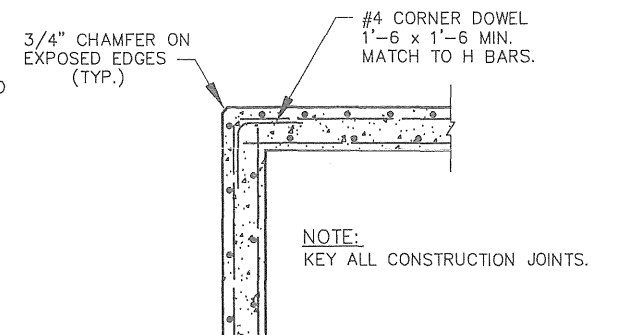
- NOTES:
1. NEATLY SAWCUT 7'-3"x 4'-7 1/2" OPENING IN THE EXISTING "TRANSITION STRUCTURE #1", CENTERED BETWEEN THE EXISTING 30" RCP'S TO BE REMOVED, AS SHOWN, AND REMOVE THE EXISTING GROUT FILL IN FRONT OF THE OPENING AS REQUIRED.
 2. CONCRETE PLACED NEXT TO "TRANSITION STRUCTURE #1" SHALL BE BROUGHT TO THE SITE WITH LESS THAN 2" SLUMP. ADD "SUPER-PLASTICIZER" TO ACHIEVE THE SLUMP DESIRED FOR PLACEMENT. VIBRATE THOROUGHLY TO ENSURE COMPLETE CONTACT WITH THE EXISTING STRUCTURE AND ELIMINATE AIR BUBBLES, ESPECIALLY WHERE THE EXISTING STRUCTURE WILL BEAR ON THE NEW HEADWALL.



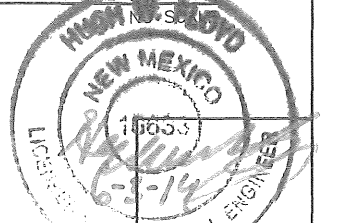
**DETAIL @ NEW C.B.C. CROSSING
OVER EXIST. 24" D.I. WATERMAIN**
1/2" = 1'-0"

NOTE:
THE CONNECTION TO THE EXISTING "TRANSITION STRUCTURE #1". MUST
BE CONSTRUCTED AS SHOWN HEREON.

FROM A CONVENIENT POINT, DISTINCT FROM THE CONNECTION, TO THE HEADWALL AT THE INTAKE STRUCTURE, 6'x3' PRECAST CONCRETE BOX CULVERT SECTIONS (ASTM C 789) MAY BE SUBSTITUTED AT THE CONTRACTOR'S OPTION. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND DETAILS OF THE PROPOSED CONSTRUCTION AT THE JUNCTURES, IF THIS OPTION IS CHOSEN. THE LAYOUT SHALL BE ARRANGED SUCH THAT A BOX UNIT WILL BE APPROXIMATELY CENTERED OVER THE 24" WATERMAIN CROSSING.



TYPICAL CORNER DETAIL



BENCHMARK
PROJECT MODIFIED SURFACE COORDINATES
60D NAIL w/ BRASS DISK STAMPED:
"SURV-TEK CONTROL L.S. 9750"
N = 1,535,395.3280, E = 1,517,642.764
ELEV. = 5211.91

SCALE: AS SHOWN

Designed By: HC-A
Drawn By: HC-A
Checked By: HWP
File No. 179-14-01
Date: MAY 2014

Easterling Consultants LLC
Engineering and Environmental Consulting
3613 NMSR 528 NW, Suite E-2
Albuquerque, New Mexico 87114
(505) 821-6646 FAX (505) 897-2965

GATEWAY SOUTH

RIO RANCHO, NEW MEXICO

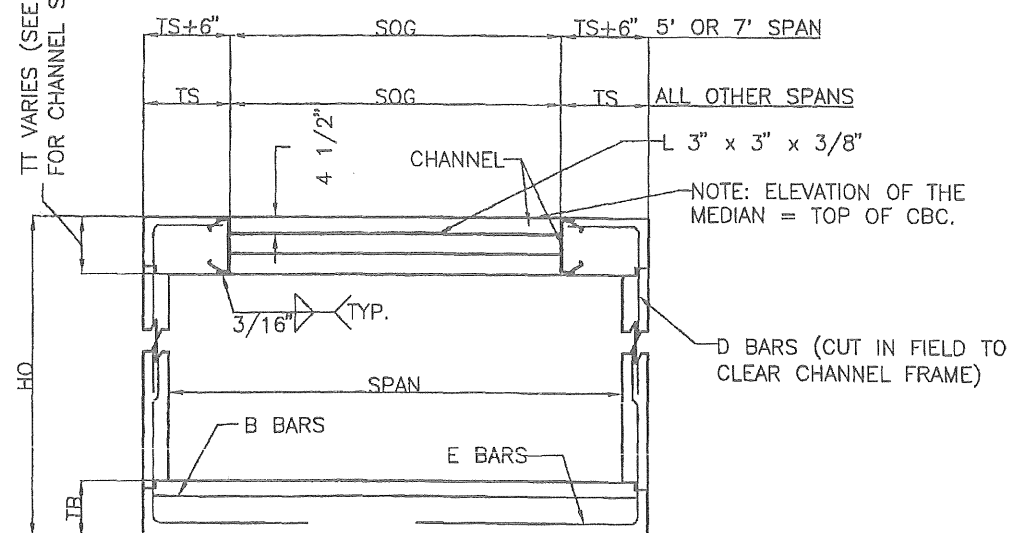
DETENTION POND MODIFICATION
DETAILS OF 6'x4' C.B.C. CONNECTION TO THE
EXISTING "TRANSITION STRUCTURE #1" IN NM 528

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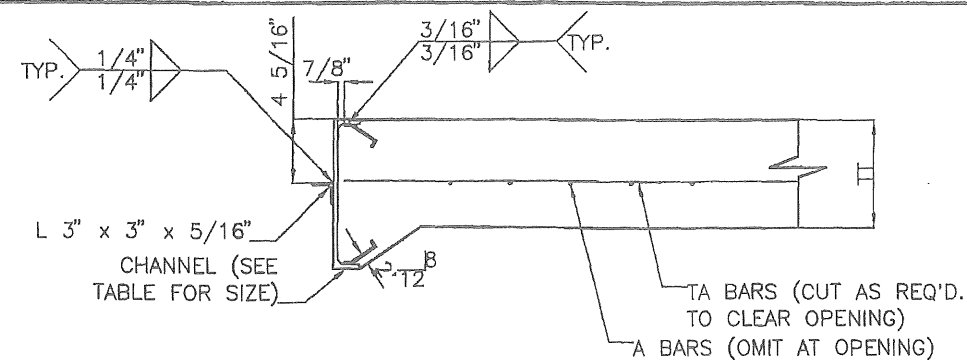
Sheet 6 of 14



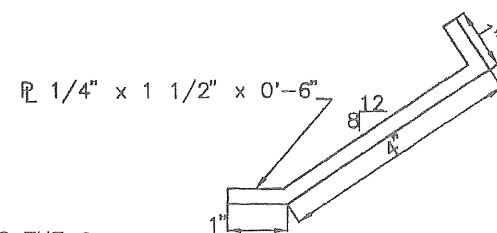
TT VARIES (SEE TABLE FOR CHANNEL SIZE)



SECTION A-A



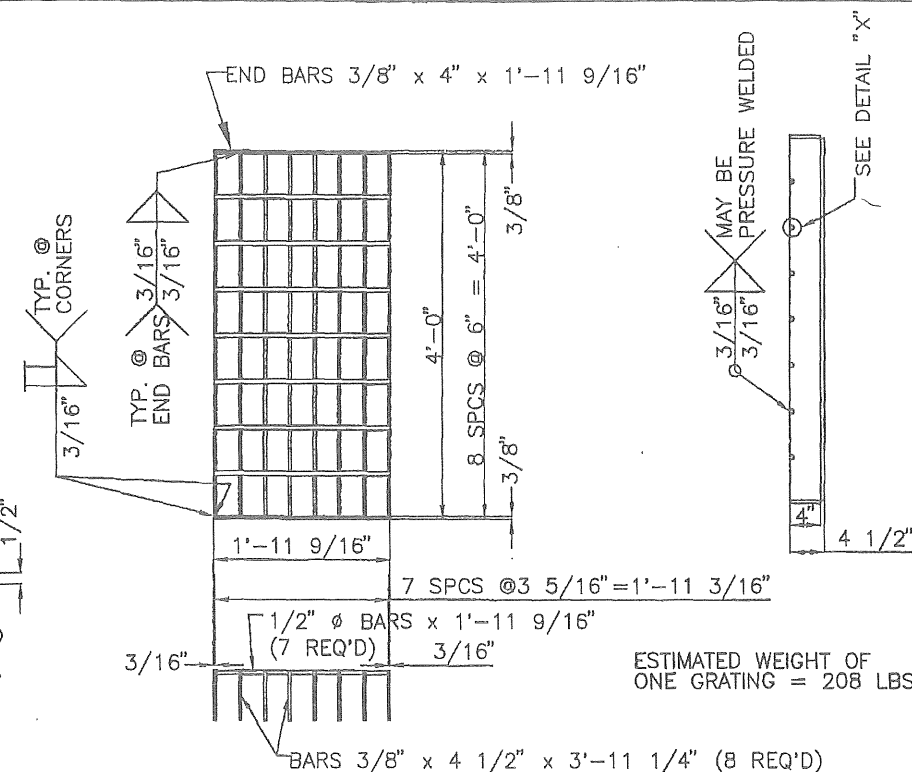
SECTION B-B



ANCHOR DETAIL

Technical drawing of a cross-section of a metal plate. The plate has a total thickness of 9/16" O.H. (Overall Height). It features two slots, each 9/16" wide. The distance between the centers of the slots is 1/2". The plate is shown with a wavy bottom edge, indicating it is a cross-section of a larger part. Dimensions are given in inches.

DETAIL "X"
(ALTERNATE METHODS)



GRATING DETAILS

7'x7' CBC DESIGN I
TS= 7" TT= 8 1/2" 12-#4 Td BARS "a" BARS #7x8'-0" @ 9"
QUANTITY DEDUCTION= .522 CY (CONCRETE)
STRUCTURAL STEEL ADDITION= 1206 lb.
48/9= #5 "a" BARS
DEDUCT 12-2= 10 "Td" BARS
QUANTITY=

5x8.0'x2.044 lb./ft= 81.67
10x4.33x.668 lb./ft.= 28.92
TOTAL DEDUCTION 110.59 lb. (REINFORCING STEEL)

GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS "A". CHAMFER EXPOSED EDGES $\frac{3}{4}$ " UNLESS OTHERWISE NOTED.
2. ALL REINFORCING BARS SHALL CONFORM TO AASHTO SPECIFICATION M 31, GRADE 60. DIMENSIONS REFER TO THE CENTERLINE OF THE BARS.
3. STRUCTURAL STEEL SHALL CONFORM TO AASHTO SPECIFICATION M 183., GRADE 36.
4. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS SPECIFICATION D1.1.
5. ALL STRUCTURAL STEEL SHALL BE COATED IN ACCORDANCE WITH SECTION 545.
6. QUANTITIES SHOWN INCLUDE DEDUCTIONS FOR CONCRETE AND REINFORCING BARS FROM THE BARREL OF THE CONCRETE BOX CULVERT.


DESIGN DATA

DESIGNED IN ACCORDANCE WITH AASHTO SPECIFICATIONS, DATED 1996.

DESIGN STRESSES:
 REINFORCED CONCRETE: $f_c = 1200$ p.s.i., $f_s = 20,000$ p.s.i.,
 $n = 10$
 STRUCTURAL STEEL: $f_s = 20,000$ p.s.i.
 HORIZONTAL EARTH PRESSURE: 36 LB/CU. FT. EQUIVALENT FLUID
 PRESSURE 2' SURCHARGE
 LIVE LOAD ON GRATING: ONE 12,000 LBF WHEEL PLUS 30%
 IMPACT, 50% OVERSTRESS.

DETAILS OF MEDIAN OPENING FLUSH WITH TOP OF CBC

TABLE OF DIMENSIONS AND QUANTITY ADJUSTMENTS																					
SPAN (FT)	SOG (FT)	NO. OF GRATES	FRAME CHANNEL	CHANNEL LGTH. (FT)	STRUCTURAL STEEL (LBS)	TOP SLAB THICKNESS (TT) - CLASS "A" CONCRETE DEDUCTIONS - Cu. Yd.															
						6 1/2"	7"	7 1/2"	8"	8 1/2"	9"	9 1/2"	10"	10 1/2"	11"	11 1/2"	12"	12 1/2"	13"	13 1/2"	14"
5'	4'	2	C 9 X 15	5'-9"	776	0.265	0.304														
6'	6'	3	C 10 X 15.3	6'-9"	1048	0.430	0.479	0.527	0.573												
7'	6'	3	C 12 X 20.7	7'-9"	1206		0.340	0.402		0.522											
8'	8'	4	C 12 X 20.7	8'-9"	1484			0.630	0.700	0.767	0.833										
10'	10'	5	C 12 X 30	10'-9"	2077						1.040	1.121	1.200								
12'	12'	6	C 15 X 33.9	12'-9"	2564								1.277	1.384	1.438	1.582	1.692				
14'	14'	7	C 15 X 40	14'-9"	3165										1.734	1.854	1.971	2.086	2.193	2.305	2.414



5/01/07

TM

NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			

NEW MEXICO

DEPARTMENT OF TRANSPORTATION

STANDARD DRAWING

CATTLE PASS DETAILS OF MEDIAN OPENING FOR SINGLE OPENING CONCRETE BOX CULVERT

APPROVED _____
DESIGN ENGINEER

5-2-07
DATE


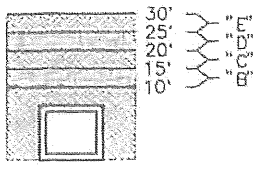
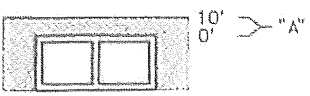
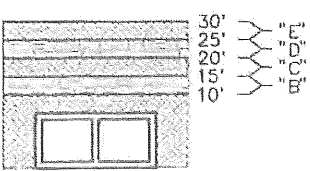
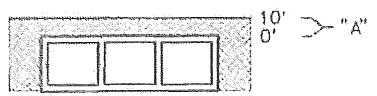
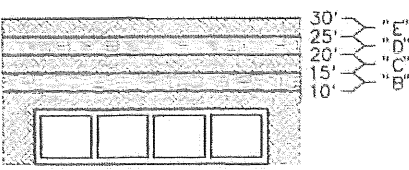
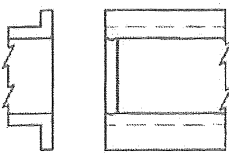
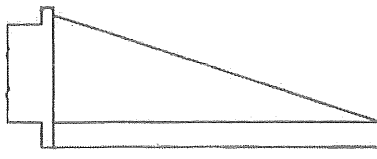
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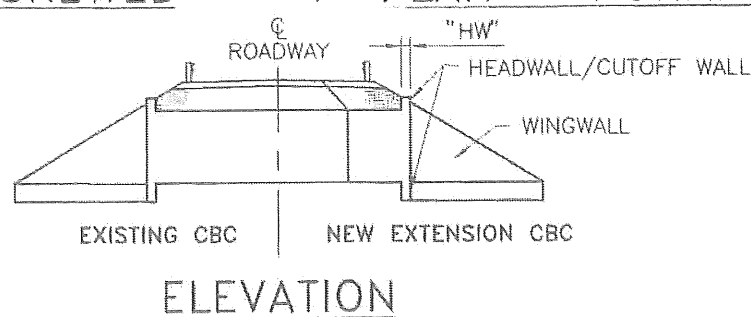
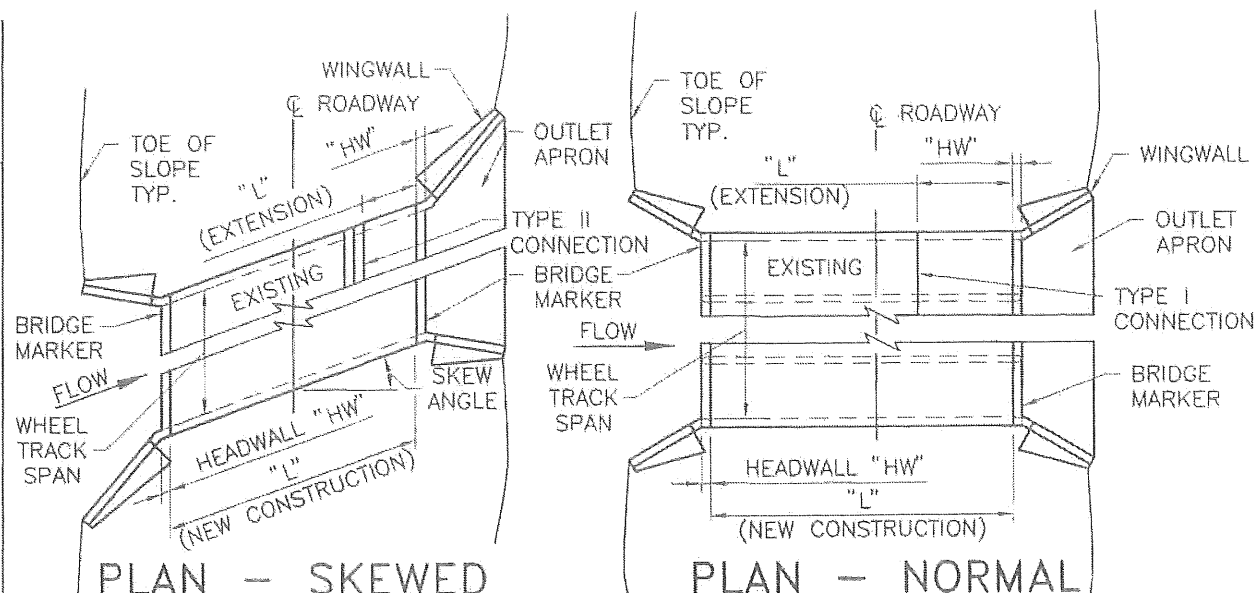
DRAWN BY LAT _____

CHECKED BY _____

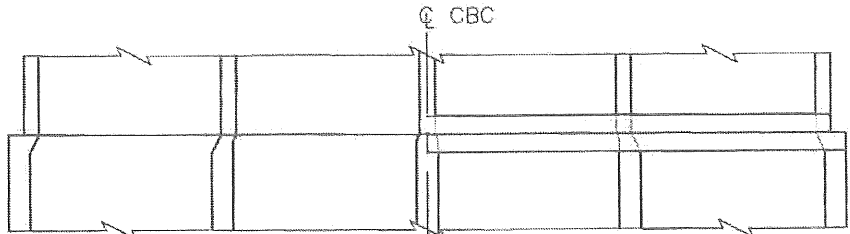
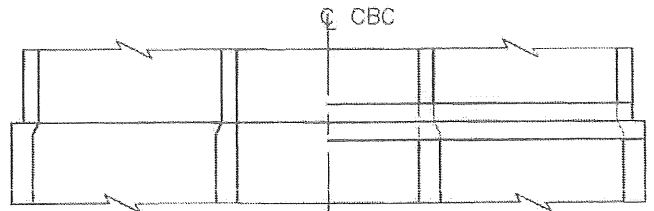
511-01-1/2

SHEET 1 OF

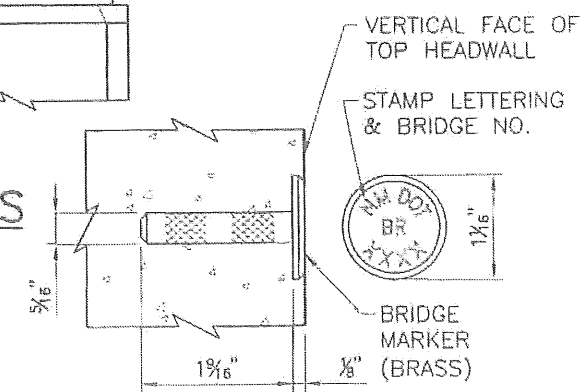
BOX TYPE	CONFIGURATION	DESIGN FILL	DRAWINGS
SINGLE BARREL CBC		"A"	511-60-1/2 511-60-2/2
SINGLE BARREL CBC		"B" "C" "D" "E"	511-61-1/2 511-61-2/2
DOUBLE BARREL CBC		"A"	511-62-1/2 511-62-2/2
DOUBLE BARREL CBC		"B" "C" "D" "E"	511-63-1/2 511-63-2/2
TRIPLE AND QUADRUPLE BARREL CBC		"A"	511-64-1/3 511-64-2/3 511-64-3/3
TRIPLE AND QUADRUPLE BARREL CBC		"B" "C" "D" "E"	511-65-1/3 511-65-2/3 511-65-3/3
CBC HEADWALL/CUTOFF WALL & MISC. DETAILS		"A" "B" "C" "D" "E"	511-66-1/6 511-66-2/6 511-66-3/6 511-66-4/6 511-66-5/6 511-66-6/6
WINGWALL & APRON		"A" "B" "C" "D" "E"	511-67-1/2 511-67-2/2



NOTE: IF THE WHEEL TRACK SPAN DIMENSION (PARALLEL TO ϕ OF ROADWAY AS SHOWN ABOVE) IS GREATER THAN 20' THE CBC IS CONSIDERED A BRIDGE AND A MAJOR STRUCTURE. FOR CBC EXTENSIONS RE-MARK BRIDGE NUMBER. NEW CBC SHALL BE MARKED AS PER DETAIL ON THIS SHEET. BRIDGE NUMBER SHALL BE OBTAINED BY REQUEST AT THE NMDOT BRIDGE MANAGEMENT SECTION. MARK SHALL BE PLACED AT UPPER LEFT SIDE OF VERTICAL FACE OF HEADWALL, BOTH INLET AND OULET.



METHOD OF EXTENDING UNEQUAL BOX DIMENSIONS
FOR DETAILS SEE SHEET 511-66-4/6



BRIDGE MARK DETAIL

PAYMENT

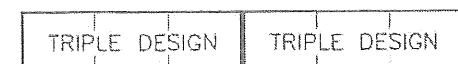
PAYMENT FOR CBC'S IS BASED ON "LIN. FT." UNIT OF MEASUREMENT FOR THE TOTAL LENGTH OF ALL NEW BARRELS CONSTRUCTED AT THE CENTERLINE OF BARREL. LENGTH OF BARREL SHALL NOT INCLUDE "HW" WHICH SHALL BE PAID FOR SEPARATELY.

PAYMENT FOR HEADWALL/CUTOFF WALL IS BASED ON "EACH" UNIT OF MEASUREMENT FOR EACH NEW BARREL CONSTRUCTED. IN CASE OF TYPE II CONNECTION EACH HEAD/CUTOFF WALL UNIT SHALL BE PAID FOR, I.E. TWO PER BARREL PER CULVERT EXTENSION.

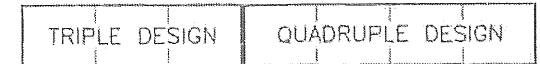
PAYMENT FOR WINGWALL IS BASED ON "SQ. FT." UNIT OF MEASUREMENT BASED ON SOIL SIDE VERTICAL FACE AREA FOR EACH INDIVIDUAL HEIGHT OF INTERIOR BARREL DIMENSION. PAYMENT FOR OUTLET APRON IS BASED ON "SQ. FT." UNIT OF MEASUREMENT BASED ON PLAN AREA OF APRON.

ALTERNATIVELY, A COMPLETE CONCRETE BOX CULVERT MAY BE PAID FOR UNDER CLASS "AA" CONCRETE BY "CU. YD." ITEM 511030 AND GRADE 60 REBAR BY "LBS." ITEM 540060.

REBAR, CONCRETE, FORMING, DEMOLITION, AND ALL OTHER WORK AND MATERIAL REQUIRED FOR A COMPLETE CBC, HEADWALL/CUTOFF WALL, WINGWALL, AND APRON CONSTRUCTION SHALL BE INCLUDED IN THE UNIT COST FOR EACH AND NO FURTHER PAYMENT SHALL BE MADE FOR THESE INCIDENTAL ITEMS.




SEE DETAIL SHEET
511-66-3/6
SIX BARREL CBC



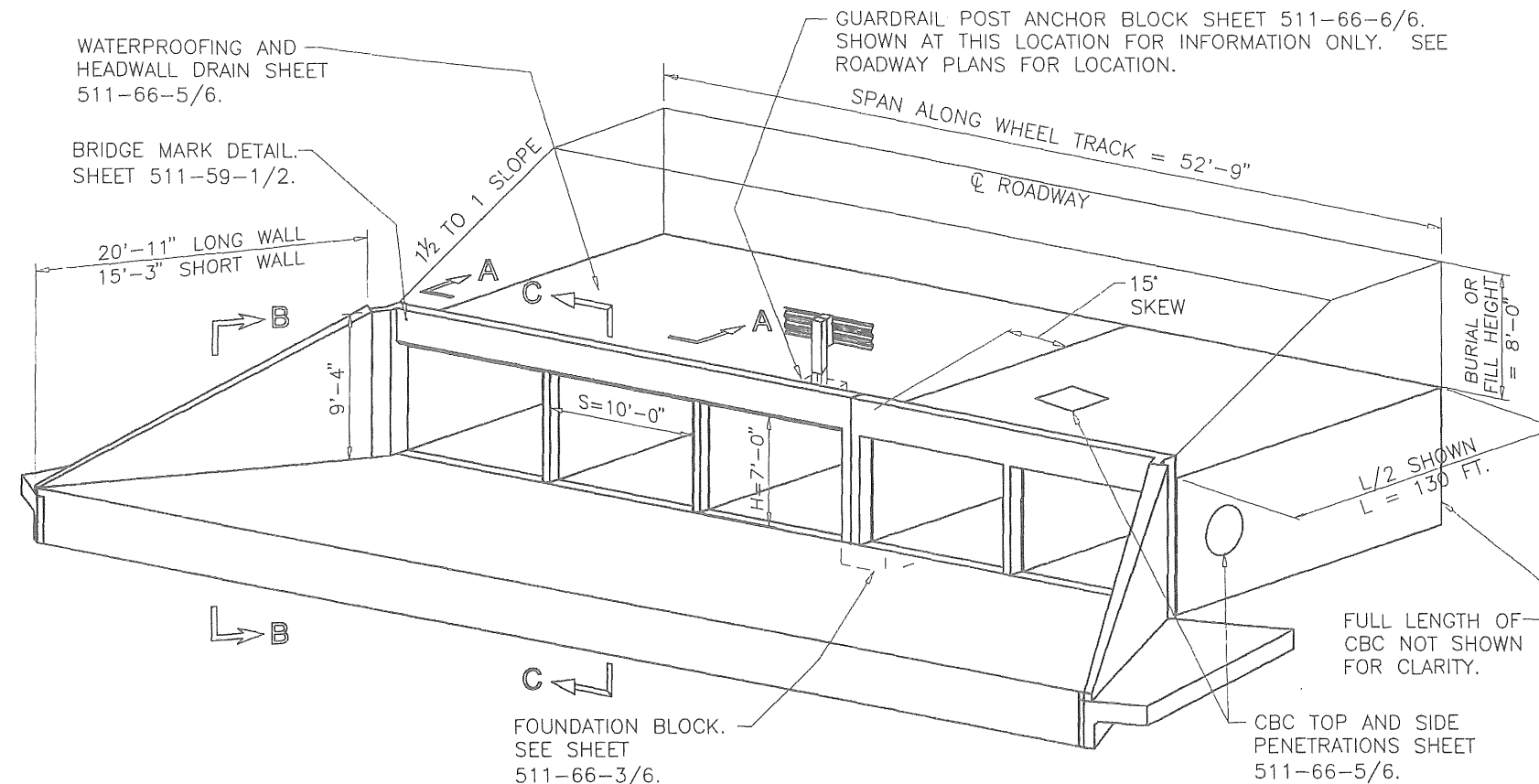
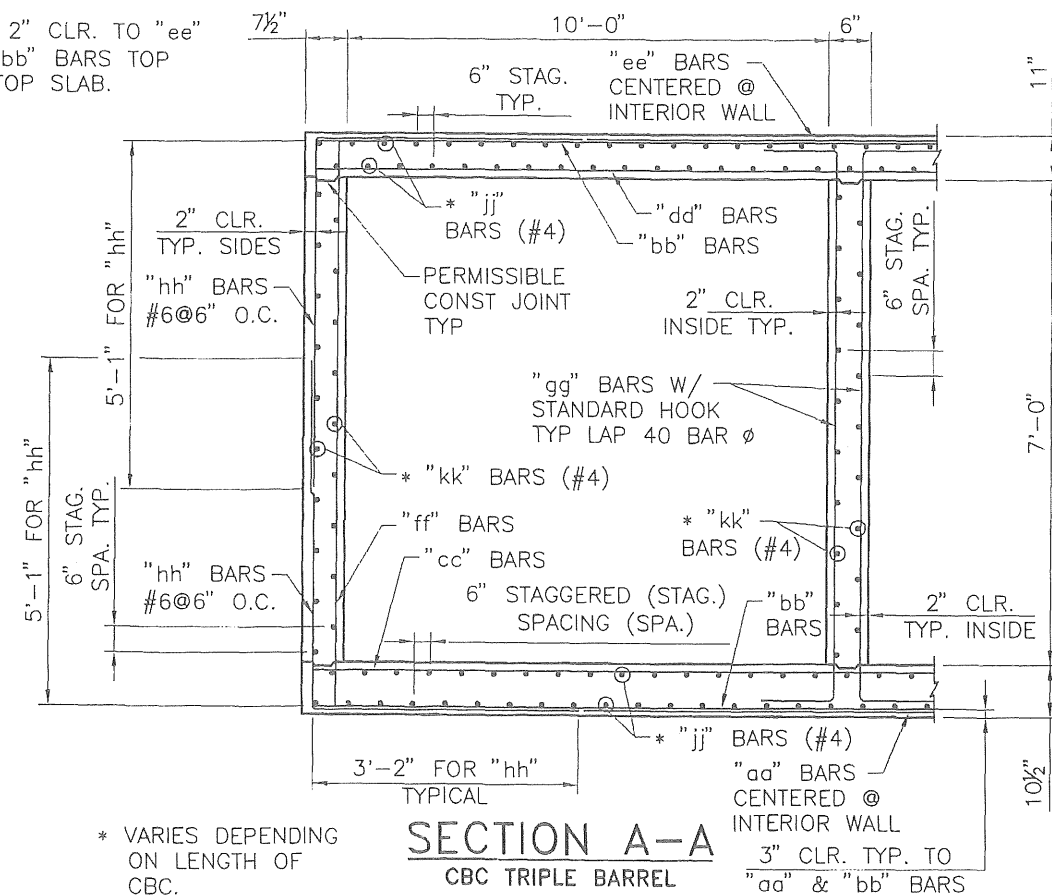
SEE DETAIL SHEET
511-66-3/6
SEVEN BARREL CBC

EXAMPLE CONFIGURATIONS OF CBC W/MORE THAN 4 BARRELS

NOTE: USE SAME BARREL CONFIGURATION IF POSSIBLE

NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			
NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING			
CONCRETE BOX CULVERT INDEX OF SHEETS EXPLANATION OF USE OF DRAWINGS			
APPROVED			APR 9, 07 DATE
DESIGNED BY <u>TLB</u> DRAWN BY <u>SGL</u> CHECKED BY <u>HDR</u>			
511-59-1/2			
1 OF 2			

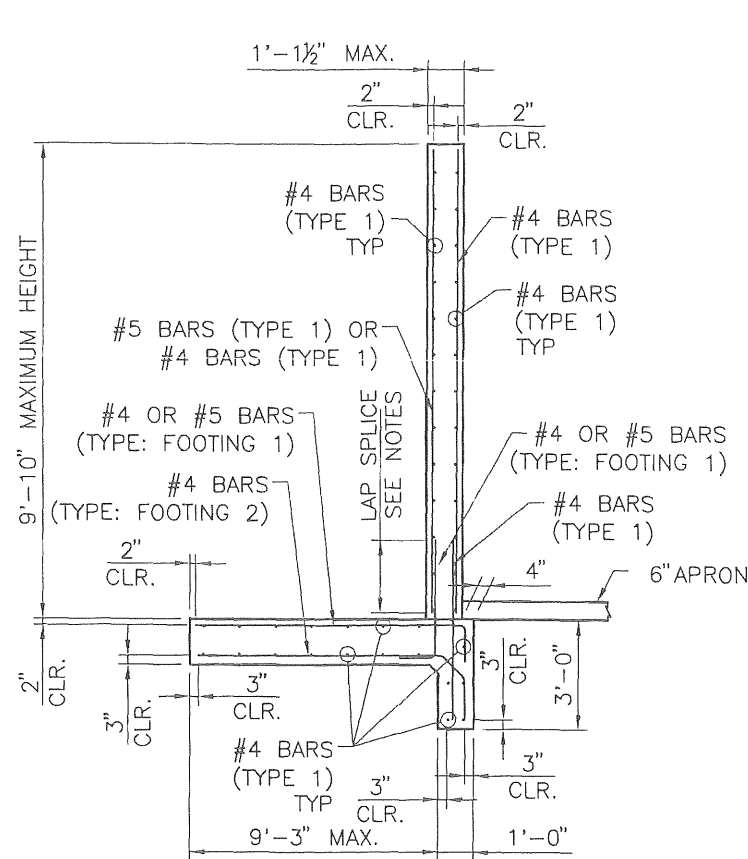
NOTE: 2" CLR. TO "ee" AND "bb" BARS TOP MAT, TOP SLAB.



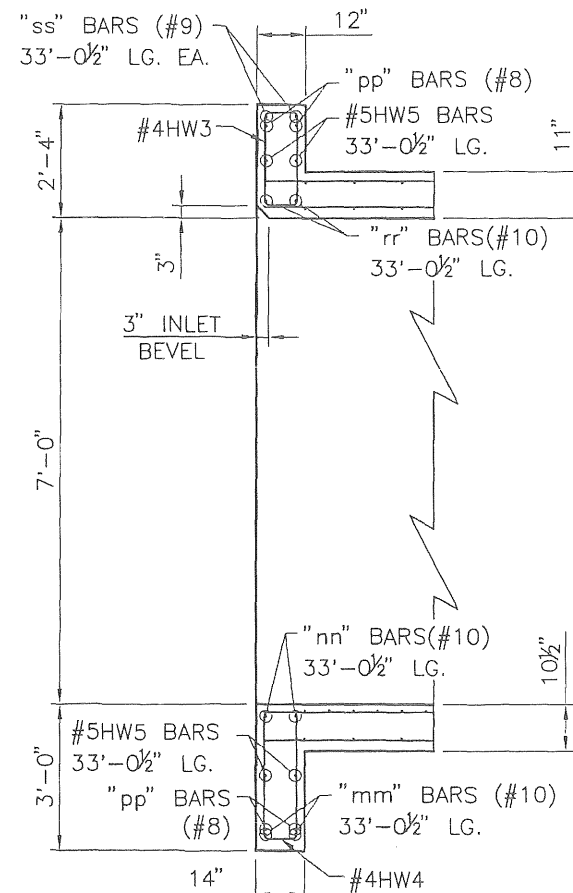
PERSPECTIVE OF 5 BARREL CBC
10' SPAN, 7' HEIGHT, 15° SKEW, 8' FILL HT.

NOTES

1. THE PURPOSE OF THIS DRAWING IS TO PROVIDE AN EXAMPLE OF USE OF THESE SERIAL CBC DRAWINGS. THIS EXAMPLE IS BASED ON A 5 BARREL, 10'S X 7'H, 15° SKEW, W/ 8' BURIAL DEPTH TO FINISHED ϕ ROADWAY. THIS 8' BURIAL REQUIRES THE DESIGN FILL "A" 0'-10' CATEGORY. INFORMATION PRESENTED ON THIS SHEET IS FROM DRAWINGS 511-62-1/2 & 2/2, 511-64-1/3 & 2/3, 511-66-1/6 THRU 6/6, AND 511-67-1/2 THRU 2/2. PLEASE REFER TO THESE SHEETS TO FOLLOW THE EXAMPLE.
2. PAYMENT FOR THE CBC BARREL CONSTRUCTION IS BY THE LINEAL FOOT OF BARREL. PAYMENT FOR THE FIVE BARREL IS 5*L, UNDER PAY ITEM 511668, CBC DESIGN "A" 10X7, "L" BEING 130FT, FOR A TOTAL LINEAL FOOT PAYMENT UNDER THIS ITEM OF 650 FT. PAYMENT FOR THE WINGWALLS CONSTRUCTION IS BY THE SQUARE FOOT OF SOIL SIDE VERTICAL FACE. UNDER PAY ITEM 511868, CBC WINGWALL BARREL HEIGHT 7FT, QUANTITY EQUALS $[(20'-11'') \times (9'-10'') + (15'-3'') \times (9'-10'')]/2$, TOTALING 178 SQ. FT. FOR THE OUTLET WINGS. PAYMENT FOR THE HEADWALL/CUTOFF WALL CONSTRUCTION IS UNDER ITEM 511845, CBC HEADWALL/CUTOFF WALL 15 DEG SKEW 10X3 THRU 10X7, UNIT OF EACH PER BARREL, TOTALING 5 EACH FOR THE OUTLET SIDE. OUTLET APRON IS MEASURED BY THE PLAN SQ. FT. UNDER ITEM 511876, CBC OUTLET APRON.
3. NO REBAR DIMENSIONS ARE SHOWN ON SECTION B-B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETAIL THE LENGTH OF BARS DUE TO THE CONSTANT CHANGE IN LENGTH DUE TO SLOPE AND FOOTING DIMENSION CHANGE.



SECTION B-B
WINGWALL & FOOTING

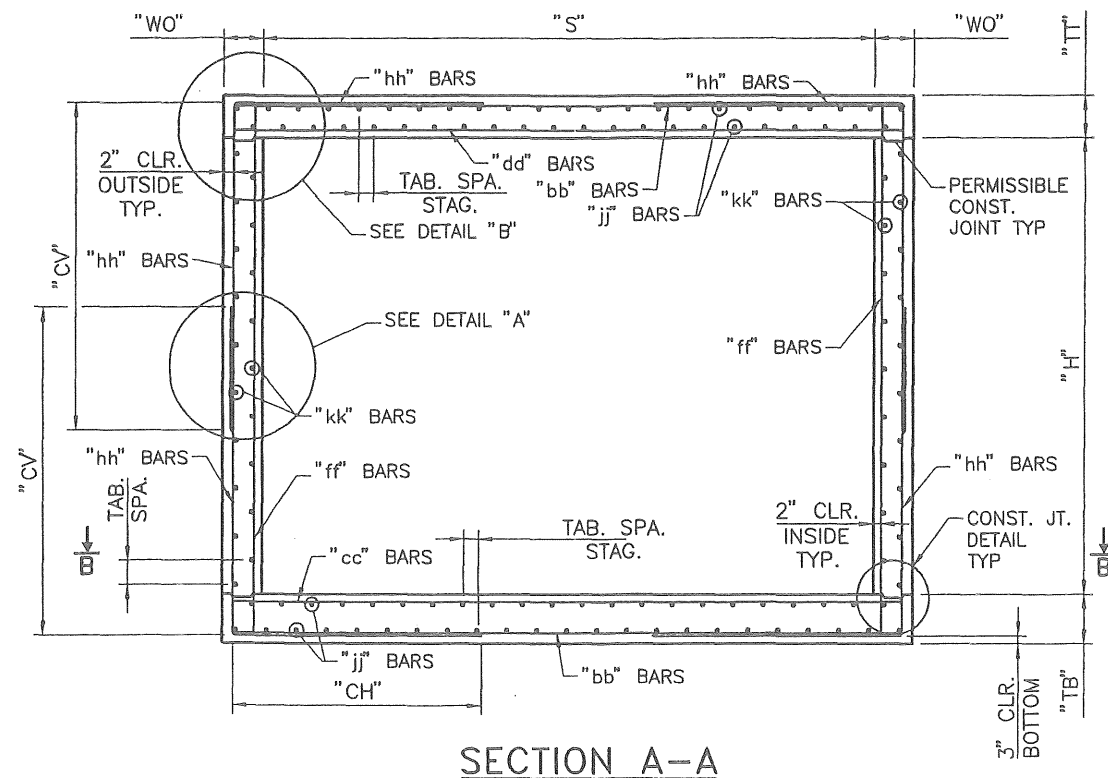


SECTION C-C
HEADWALL/CUTOFF WALL @ TRIPLE BARREL

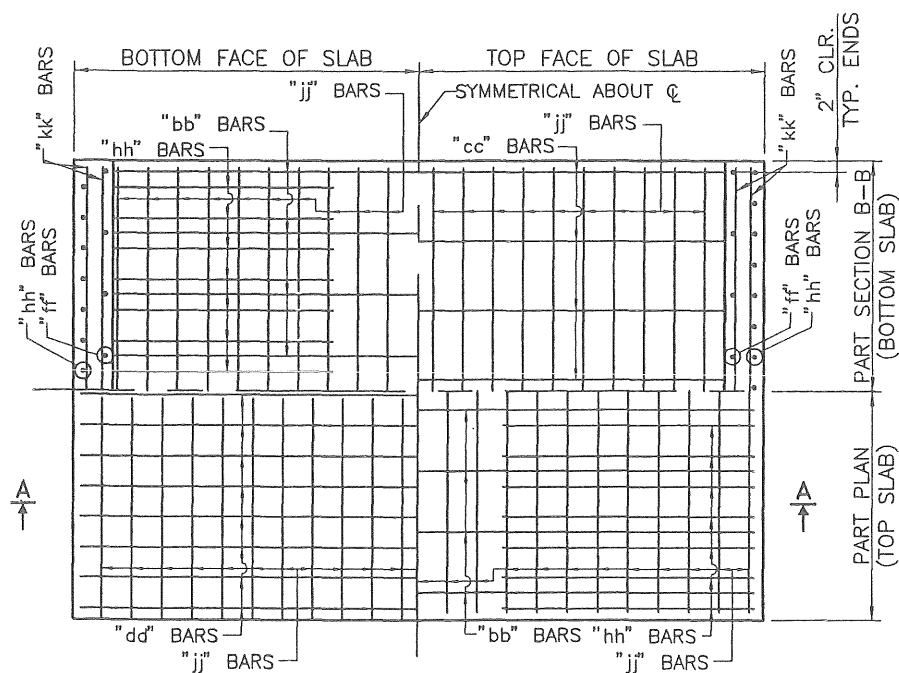
REBAR DETAILS						
BAR	2 BARREL			3 BARREL		
	LENGTH	SIZE	SPA.	LENGTH	SIZE	SPA.
"aa" BARS	10'-9"	#8	12"	10'-9"	#8	12"
"bb" BARS	21'-5"	#8	12"	31'-11"	#8	12"
"cc" BARS	21'-5"	#6	6"	31'-11"	#6	6"
"dd" BARS	21'-5"	#6	6"	31'-11"	#6	6"
"ee" BARS	10'-9"	#7	12"	10'-9"	#7	12"
"ff" BARS	8'-4"	#6	6"	8'-4"	#6	6"
"gg" BARS	**	#4	12"	**	#4	12"

** SEE NOTES ON SHEETS 511-62-2/2 & 511-64-2/3

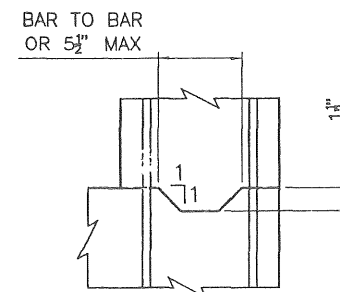
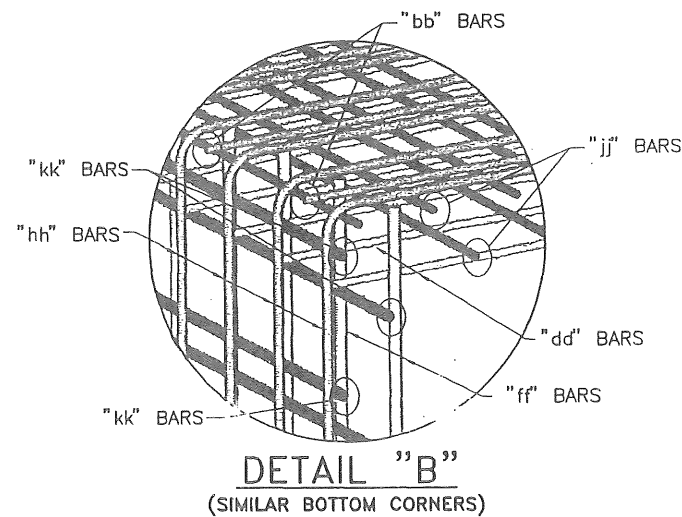
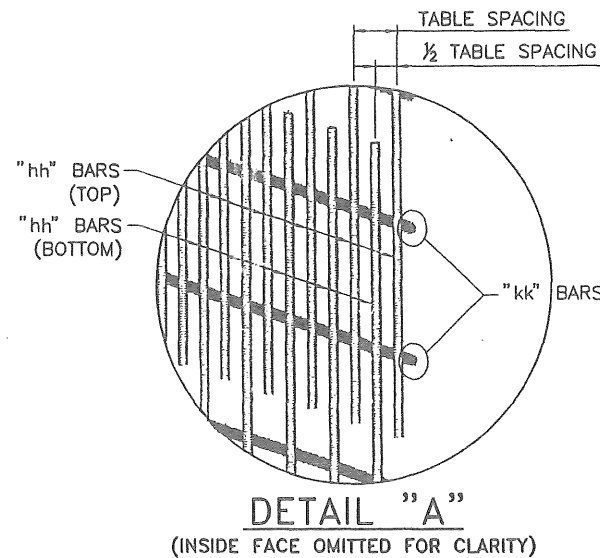
NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			
NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING			
CONCRETE BOX CULVERT EXAMPLE OF USE OF DRAWINGS			
APPROVED	DESIGN ENGINEER		DATE
DESIGNED BY	TLB	DRAWN BY	SGL
CHECKED BY	HDR		
511-59-2/2			2 OF 2



SECTION A-A



REBAR LAYOUT - PLAN VIEW



CONSTRUCTION JOINT DETAIL

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE NEW MEXICO DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SPECIAL PROVISIONS.
2. ALL CONCRETE SHALL BE CLASS "AA" (4000 psi). CHAMFER ALL EXPOSED EDGES $\frac{3}{4}$ ".
3. ALL REINFORCING STEEL TO BE DEFORMED BARS, CONFORMING TO AASHTO M-31, GRADE 60. ALL DIMENSIONS REFER TO THE CENTERLINE OF BAR.
4. "COVER" IS HEIGHT OF FILL FROM TOP OF BOX TO THE TOP OF PAVEMENT. ORIGINAL HEIGHT OF COVER MAY NOT BE EXCEEDED IN THE FUTURE OR WILL REQUIRE REMOVAL AND REPLACEMENT WITH PROPER DESIGN FILL CBC. IN CASE OF COVER EQUAL TO 10', 15', 20', OR 25' USE HIGHER DESIGN FILL IN CASE OF FUTURE AC OVERLAY.
5. "jj" AND "kk" BARS MAY BE SPICED WHEN NECESSARY BY LAPPING AT LEAST 40 BAR DIAMETERS. NO OTHER SPICING OF BARS WILL BE PERMITTED. LENGTH OF THESE BARS SHALL EQUAL THE LENGTH OF BARREL "L" PLUS (2 X "HW") MINUS 4" FOR TOTAL NEW CONSTRUCTION, NOT INCLUDING LAP LENGTH. FOR CULVERT EXTENSION, LENGTH OF THESE BARS SHALL BE "L" PLUS "HW" MINUS 2".
6. REINFORCING SHOWN IS FOR PLACEMENT LOCATION ONLY. USE APPROPRIATE SHEETS AND CORRESPONDING TABLES TO DETERMINE THE REINFORCING REQUIREMENTS AND SPACINGS.
7. ALL CONSTRUCTION JOINTS SHALL BE AS PER DETAIL THIS SHEET. CONSTRUCTION JOINTS ARE PERMISSIBLE AND SHALL BE LOCATED AT WALL/SLAB HORIZONTAL INTERFACE.
8. DO NOT BACKFILL WALLS UNTIL TOP SLAB HAS REACHED 4000 psi DESIGN STRENGTH.
9. CBC'S SHALL BE CONSTRUCTED TO THE SPAN, HEIGHT, NUMBER OF BARRELS, SKEW, ALIGNMENT, AND FLOWLINE GRADE AS SPECIFIED ON THE PLAN AND PROFILE AND STRUCTURE PLACEMENT SECTIONS.
10. EXCAVATION AND BACKFILL OF CBC'S SHALL BE IN ACCORDANCE WITH STANDARD DRAWING 210-01-1/1.

DESIGN

DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, THIRD EDITION.

PAYMENT

PAYMENT FOR CBC'S IS BASED ON "LIN. FT." UNIT OF MEASUREMENT FOR THE TOTAL LENGTH OF ALL NEW BARRELS CONSTRUCTED AT THE CENTERLINE OF BARREL. I.E. SINGLE BARREL SHALL BE 1 X "L" AND TRIPLE BARREL SHALL BE 3 X "L" FOR PAYMENT. LENGTH OF BARREL SHALL NOT INCLUDE "HW" WHICH SHALL BE PAID FOR SEPARATELY. CONCRETE, REBAR, FORMING, AND OTHER WORK AND MATERIAL SHALL BE INCLUDED IN THE LIN. FT. COST FOR THE CBC AND NO FURTHER PAYMENT SHALL BE MADE FOR THESE INCIDENTAL ITEMS.

ALTERNATIVELY, A COMPLETE CONCRETE BOX CULVERT MAY BE PAID FOR UNDER CLASS "AA" CONCRETE BY "CU. YD." ITEM 511030 AND GRADE 60 REBAR BY "LBS." ITEM 540060.


NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			
NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING			
CONCRETE BOX CULVERT SINGLE OPENING - DESIGN FILL "A" 0-10 FT STRUCTURAL SECTIONS AND REBAR			
APPROVED	DESIGN ENGINEER	DATE	Apr 9, 07
DESIGNED BY	TLB	DRAWN BY	SGL
CHECKED BY	HDR		
511-60-1/2			
1 OF 2			

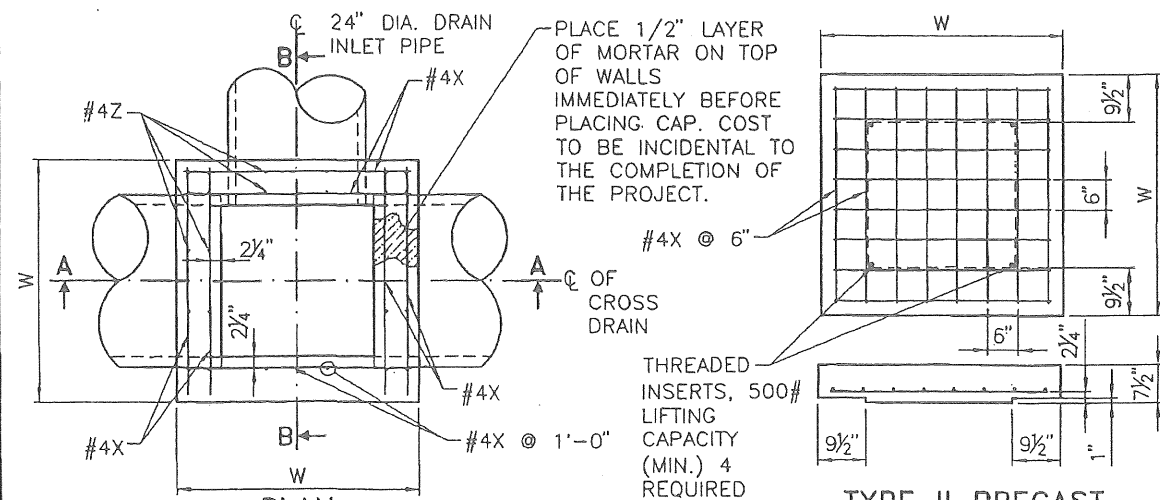
SINGLE OPENING BOX CULVERT STRUCTURE DIMENSIONS					GRADE 60 REINFORCING BAR SCHEDULE (BAR SIZE, SPACING AND LENGTH DIMENSIONS)																		
DIM		0-10 FT BURIAL DESIGN FILL "A"			"bb"		"cc"		"dd"		"bb" & "cc" "dd"		"ff"			"hh"				"jj"		"kk"	
SPAN "S" INSIDE	HEIGHT "H" INSIDE	TOP SLAB "T"	BOTTOM SLAB "TB"	WALLS OUTER "WO"	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING	LENGTH	SIZE	SPACING	LENGTH	SIZE	SPACING	"CH" LENGTH	"CV" LENGTH	SIZE	STAGGERED SPACING	SIZE	STAGGERED SPACING	
4'	2'	7.5"	8.5"	7.5"	#4	12"	#4	6"	#4	6"	4'-11"	#4	12"	2'-11"	#4	6"	25"	25"	#4	6"	#4	6"	
4'	3'	7.5"	8.5"	7.5"	#4	12"	#4	6"	#4	6"	4'-11"	#4	12"	3'-11"	#4	6"	25"	31"	#4	6"	#4	6"	
4'	4'	7.5"	8.5"	7.5"	#4	12"	#4	6"	#4	6"	4'-11"	#4	12"	4'-11"	#4	6"	25"	37"	#4	6"	#4	6"	
6'	2'	7.5"	8.5"	7.5"	#5	12"	#5	6"	#6	6"	6'-11"	#4	12"	2'-11"	#5	6"	30"	26"	#4	6"	#4	6"	
6'	3'	7.5"	8.5"	7.5"	#5	12"	#5	6"	#6	6"	6'-11"	#4	12"	3'-11"	#5	6"	30"	32"	#4	6"	#4	6"	
6'	4'	7.5"	8.5"	7.5"	#5	12"	#5	6"	#6	6"	6'-11"	#4	12"	4'-11"	#5	6"	30"	38"	#4	6"	#4	6"	
6'	5'	7.5"	8.5"	7.5"	#5	12"	#5	6"	#6	6"	6'-11"	#4	12"	5'-11"	#5	6"	30"	44"	#4	6"	#4	6"	
6'	6'	7.5"	8.5"	7.5"	#5	12"	#5	6"	#6	6"	6'-11"	#4	12"	6'-11"	#5	6"	30"	50"	#4	6"	#4	6"	
6'	7'	7.5"	8.5"	7.5"	#5	12"	#5	6"	#6	6"	6'-11"	#4	12"	7'-11"	#5	6"	30"	56"	#4	6"	#4	6"	
8'	4'	9.0"	9.5"	7.5"	#6	12"	#6	6"	#7	6"	8'-11"	#4	12"	5'-11"	#6	6"	36"	41"	#4	6"	#4	6"	
8'	5'	9.0"	9.5"	7.5"	#6	12"	#6	6"	#7	6"	8'-11"	#4	12"	6'-11"	#6	6"	36"	47"	#4	6"	#4	6"	
8'	6'	9.0"	9.5"	7.5"	#6	12"	#6	6"	#7	6"	8'-11"	#4	12"	7'-11"	#6	6"	36"	53"	#4	6"	#4	6"	
8'	7'	9.0"	9.5"	7.5"	#6	12"	#6	6"	#7	6"	8'-11"	#4	12"	8'-11"	#6	6"	36"	59"	#4	6"	#4	6"	
8'	8'	9.0"	9.5"	7.5"	#6	12"	#6	6"	#7	6"	8'-11"	#4	12"	9'-11"	#6	6"	36"	65"	#4	6"	#4	6"	
10'	3'	9.0"	9.5"	7.5"	#7	12"	#8	6"	#8	6"	10'-11"	#4	12"	4'-11"	#7	6"	43"	38"	#4	6"	#4	6"	
10'	4'	9.0"	9.5"	7.5"	#7	12"	#8	6"	#8	6"	10'-11"	#4	12"	5'-11"	#7	6"	43"	44"	#4	6"	#4	6"	
10'	5'	9.0"	9.5"	7.5"	#7	12"	#8	6"	#8	6"	10'-11"	#4	12"	6'-11"	#7	6"	43"	50"	#4	6"	#4	6"	
10'	6'	9.0"	9.5"	7.5"	#7	12"	#8	6"	#8	6"	10'-11"	#4	12"	7'-11"	#7	6"	43"	56"	#4	6"	#4	6"	
10'	7'	9.0"	9.5"	7.5"	#7	12"	#8	6"	#8	6"	10'-11"	#4	12"	8'-11"	#7	6"	43"	62"	#4	6"	#4	6"	
10'	8'	9.5"	10.0"	9.0"	#8	12"	#8	6"	#8	6"	11'-2"	#5	6"	9'-2"	#8	6"	53"	72"	#4	6"	#4	6"	
10'	9'	9.5"	10.0"	9.0"	#8	12"	#8	6"	#8	6"	11'-2"	#5	6"	10'-2"	#8	6"	53"	78"	#4	6"	#4	6"	
10'	10'	9.5"	10.0"	9.0"	#8	12"	#8	6"	#8	6"	11'-2"	#5	6"	11'-2"	#8	6"	53"	84"	#4	6"	#4	6"	
10'	11'	9.5"	10.0"	9.0"	#8	12"	#8	6"	#8	6"	11'-2"	#5	6"	12'-2"	#8	6"	53"	90"	#4	6"	#4	6"	
10'	12'	9.5"	10.0"	9.0"	#8	12"	#8	6"	#8	6"	11'-2"	#5	6"	13'-2"	#8	6"	53"	96"	#4	6"	#4	6"	
12'	6'	10.0"	11.0"	9.5"	#8	12"	#9	6"	#9	6"	13'-3'	#4	6"	7'-4"	#8	6"	56"	61"	#4	6"	#4	6"	
12'	7'	10.0"	11.0"	9.5"	#8	12"	#9	6"	#9	6"	13'-3'	#4	6"	8'-4"	#8	6"	56"	67"	#4	6"	#4	6"	
12'	8'	10.0"	11.0"	9.5"	#8	12"	#9	6"	#9	6"	13'-3'	#4	6"	9'-4"	#8	6"	56"	73"	#4	6"	#4	6"	
12'	9'	10.0"	11.0"	9.5"	#8	12"	#9	6"	#9	6"	13'-3'	#4	6"	10'-4"	#8	6"	56"	79"	#4	6"	#4	6"	
12'	10'	10.0"	11.0"	9.5"	#8	12"	#9	6"	#9	6"	13'-3'	#4	6"	11'-4"	#8	6"	56"	85"	#4	6"	#4	6"	
12'	12'	10.0"	11.0"	9.5"	#8	12"	#9	6"	#9	6"	13'-3'	#4	6"	13'-4"	#8	6"	56"	97"	#4	6"	#4	6"	
14'	8'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	9'-6"	#9	6"	101"	79"	#4	6"	#4	6"	
14'	9'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	10'-6"	#9	6"	101"	85"	#4	6"	#4	6"	
14'	10'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	11'-6"	#9	6"	101"	91"	#4	6"	#4	6"	
14'	11'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	12'-6"	#9	6"	101"	97"	#4	6"	#4	6"	
14'	12'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	13'-6"	#9	6"	101"	103"	#4	6"	#4	6"	
14'	13'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	14'-6"	#9	6"	101"	109"	#4	6"	#4	6"	
14'	14'	11.0"	12.0"	10.5"	#9	12"	#9	6"	#9	6"	15'-5"	#5	6"	15'-6"	#9	6"	101"	115"	#4	6"	#4	6"	

FOR EXTENSIONS OF EXISTING CBC'S OF S=5', S=7', AND S=9' SIZE SPANS NOT INCLUDED IN THIS TABLE, USE DIMENSIONS FOR NEXT GREATER SPAN TO BUILD. FOR EXAMPLE: FOR S=5' USE DESIGN DIMENSIONS FROM THE TABLE FOR S=6'. ALSO REDUCE THE S=6' TABLE LENGTH OF BARS "bb", "cc" AND "dd" BY ONE FOOT TO ACCOMMODATE THE SHORTER SPAN. SEE DETAILS ON SHEET 511-66-4/6. ANY OTHER SIZES OF BOX EXTENSIONS NOT COVERED BY THIS MODIFICATION SHALL BE DONE THROUGH SPECIAL DESIGNS INCLUDED IN THE PROJECT PLANS.

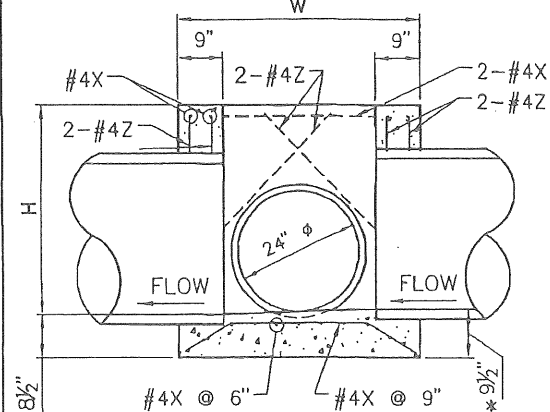
* EXAMPLE OF USE OF THIS TABLE:
PROPOSED STRUCTURE - SINGLE BARREL, 10 FT. SPAN/7 FT. HEIGHT, CBC WITH 2 FT. DEPTH OF COVER.
USE THE FOLLOWING BUILD INFORMATION FROM THE TABLE ABOVE:

DIM		0-10 FT BURIAL DESIGN FILL "A"			"bb"		"cc"		"dd"		"bb" & "cc" "dd"	"ff"			"hh"			"jj"		"kk"		
SPAN "S" INSIDE	HEIGHT "H" INSIDE	TOP SLAB "TT"	BOTTOM SLAB "TB"	WALLS OUTER "WO"	SIZE	SPACING	SIZE	SPACING	SIZE	SPACING	LENGTH	SIZE	SPACING	LENGTH	SIZE	SPACING	"CH" LENGTH	"CV" LENGTH	SIZE	STAGGERED SPACING	SIZE	STAGGERED SPACING
10'	7'	9.0"	9.5"	7.5"	#7	12"	#8	6"	#8	6"	10'-11"	#4	12"	8'-1"	#7	6"	43"	62"	#4	6"	#4	6"

NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			
NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING			
CONCRETE BOX CULVERT SINGLE OPENING - DESIGN FILL "A" 0-10 FT DIMENSIONS AND REBAR SCHEDULE			
APPROVED			DATE APR 9, 07
DESIGNED BY TLB DRAWN BY SGL CHECKED BY HDR			
511-60-2/2			2 OF 2

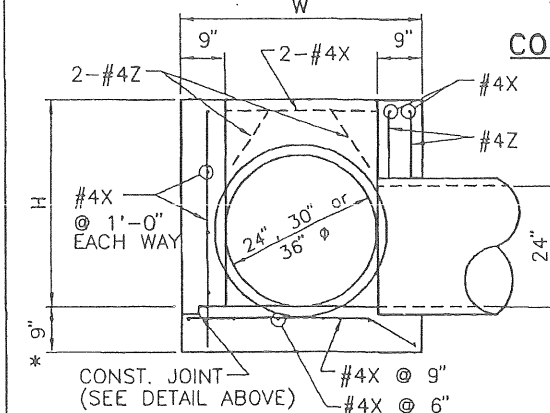


PLAN



SECTION A-A

AVERAGE BOTTOM THICKNESS USE 8 1/2" AT OUTLET AND 9 1/2" AT INLETS.



SECTION B-B

JUNCTION BOX DETAILS

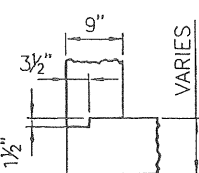
DATA FOR JUNCTION BOX (FOR CONTRACTOR'S INFORMATION ONLY, NOT A BID ITEM)									
REINFORCING STEEL QUANTITY AND LENGTH					ESTIMATED QUANTITIES				
CROSS DRAIN PIPE DIAMETER	W	H	#4X NO.	#4Z LENGTH	CLASS "A" CONCRETE R.C. PIPE	REINF. STEEL	TYPE II PRECAST CONC. CAP EST. WT.	TYPE III PRECAST CONC. CAP EST. WT.	
24"	4'-0"	2'-11"	43	3'-9"	1.43 Cu.Yd.	126 LBS.	1373 LBS.	914 LBS.	
30"	4'-0"	3'-5"	43	3'-9"	1.47 Cu.Yd.	126 LBS.	1373 LBS.	914 LBS.	
36"	4'-6"	3'-11"	46	4'-3"	1.90 Cu.Yd.	151 LBS.	1752 LBS.	1294 LBS.	

NOTE: CONCRETE AND REINFORCING STEEL QUANTITIES INCLUDE TYPE II CAP AND DEDUCTIONS FOR CONCRETE INLET PIPE AND CROSSLRAIN PIPE

TYPE II PRECAST CONCRETE CAP

EXTRA #4X FOR "W" = 4'-6" LONG

THREADED INSERTS, 500# LIFTING CAPACITY (MIN.) 4 REQUIRED



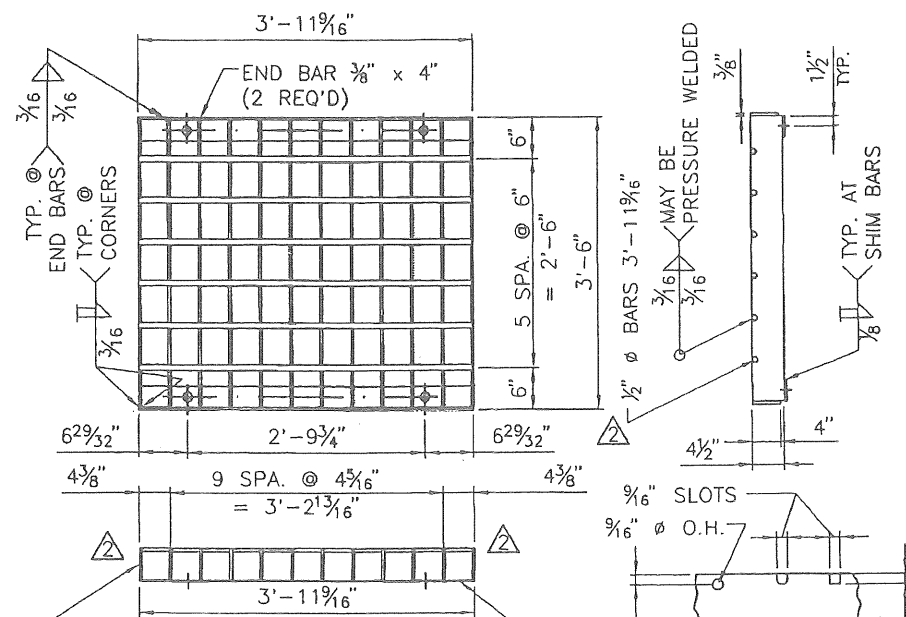
CONST. JOINT DETAIL

STRUCTURAL STEEL FOR URBAN USE (GRATE AND SEAT ANGLES W/ BOLTS)	STRUCTURAL STEEL FOR RURAL USE (GRATE AND SEAT ANGLES W/ BOLTS)
384 LBS.	359 LBS.

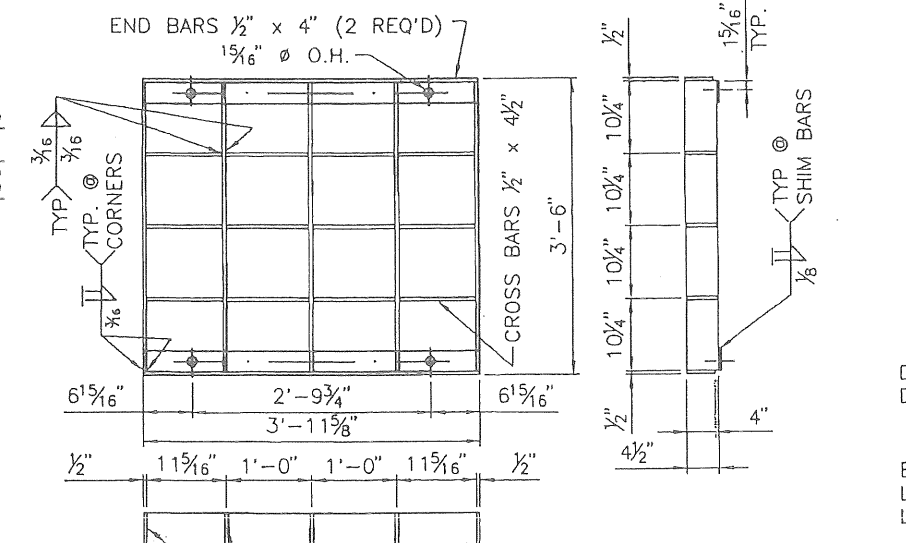
FOR CONTRACTOR'S INFORMATION ONLY.

CLASS "A" CONCRETE DEDUCTIONS (FOR ONE PIPE)				
PIPE DIAMETER	9" WALL	7 1/2" PRECAST CONC. CAP		
	R.C. PIPE	C.M. PIPE	R.C. PIPE	C.M. PIPE
24"	.136 Cu.Yd.	.087 Cu.Yd.	.113 Cu.Yd.	.073 Cu.Yd.
30"	.207 Cu.Yd.	.136 Cu.Yd.	-----	-----
36"	.293 Cu.Yd.	.196 Cu.Yd.	-----	-----

FOR PIPES SKEWED INTO WALL, MULTIPLY DEDUCTION BY THE SECANT OF THE SKEW ANGLE.



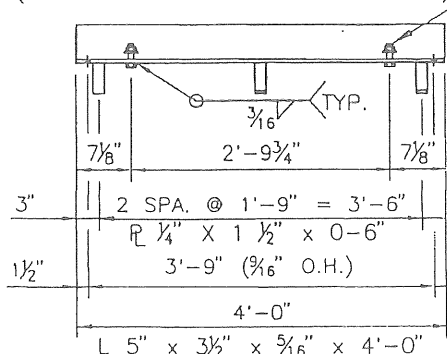
URBAN USE



RURAL USE

GRATING DETAILS

5/8" x 2 1/2" M.B. w/ NUT & WASHER (USED TO SECURE GRATE IN PLACE)



SEAT ANGLE DETAILS

GENERAL NOTES

- WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGE CONSTRUCTION, CURRENT EDITION.
- ALL CONCRETE SHALL BE CLASS "A". CHAMFER EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED ON THE DETAILS.
- REINFORCING BARS SHALL CONFORM TO A.A.S.H.T.O. SPECIFICATION M 31, GRADE 60. DIMENSIONS REFER TO THE CENTERLINE OF BAR UNLESS OTHERWISE NOTED ON THE DETAILS.
- STRUCTURAL STEEL SHALL CONFORM TO A.A.S.H.T.O. SPECIFICATION M 183 AND SHALL BE GIVEN A PROTECTIVE COATING IN CONFORMANCE WITH THE SPECIFICATIONS.
- DROP INLETS MAY BE USED WITH EITHER R.C.P. OR C.M.P. R.C.P. IS SHOWN IN THE DETAILS.
- QUANTITIES SHOWN ARE FOR INFORMATION ONLY.
- INSTALLATIONS SHOWN ARE FOR DROP INLETS LOCATED WHERE THE MEDIAN DITCH LINE IS ON A CONTINUOUS SLOPE. IF THE DROP INLET IS LOCATED AT A LOW POINT IN THE MEDIAN DITCH LINE, NO DIKE WILL BE REQUIRED AND DETAILS FOR SLOPES SHOULD BE SHOWN ON THE UPGRADE SIDE. THE TOP OF THE INLET GRATE FOR ALL MEDIAN DROP INLETS SHALL BE SET AT AN ELEVATION THAT WILL PERMIT THE USE OF 6:1 OR FLATTER ROADWAY SLOPES OUTSIDE THE INLET GRATE. THE MEDIAN DITCH SHALL BE GRADED TO DRAIN TO THE DROP INLET.
- THE URBAN GRATING DETAIL SHALL BE USED IN ALL CASES UNLESS NOTED ON THE PLANS AS ALTERNATE.

DRAWINGS REQUIRED

- SERIAL 623-01-1/1: JUNCTION BOX, GRATES, NOTES, AND QUANTITIES.
- SERIAL 623-02-1/1: DROP INLETS TYPE I AND II.
- SERIAL 623-03-1/1: DROP INLET TYPE III.
- ROADWAY DESIGN DRAWINGS: FOR TYPE, LOCATION, HEIGHT, AND NUMBER REQUIRED.

DESIGN DATA

DESIGN ACCORDING TO AASHTO SPECIFICATIONS CURRENT EDITION. DESIGN STRESSES:

REINFORCED CONCRETE: $f'_c = 3,000$ psi, $f_y = 60,000$ psi, $n = 10$
 STRUCTURAL STEEL: $f_s = 20,000$ psi, $f_y = 36,000$ psi
 EARTH PRESSURE: 36 lb./cu.ft. EQUIV. FLUID PRESSURE, 2'-0" SURCHARGE.
 LIVE LOAD ON URBAN GRATING: ONE 16,000 lbs. WHEEL PLUS 30% IMPACT.
 LIVE LOAD ON RURAL GRATING: ONE 16,000 lbs. WHEEL PLUS 30% IMPACT, 35% OVERSTRESS.

NOTE: MEDIAN DROP INLETS, COMPLETE IN PLACE, WILL BE PAID FOR AT THE UNIT PRICE BID PER EACH.

NO.	DATE	REV. BY	DESCRIPTION
1	2/10/09	YML	MADE 1/2" DIA. BAR FROM 3'-11 3/16" TO 3'-11 9/16" & REMOVED 3/16" DIM.
2	2/11/09	YML	MADE GENERAL REVISIONS

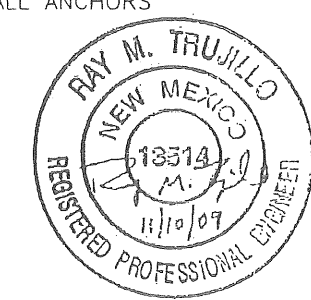
NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING

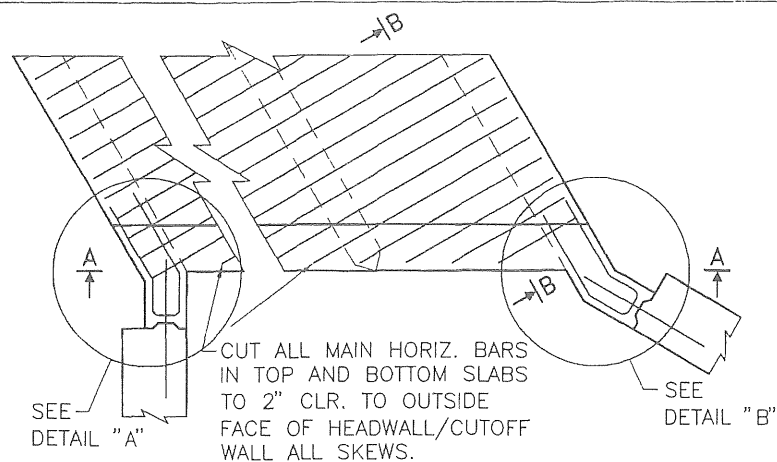
MEDIAN DROP INLET JUNCTION BOX, GRATES, NOTES, AND QUANTITIES

DESIGNED BY _____ DRAWN BY SKL CHECKED BY YML/TM

623-01-1/1

1 of 1

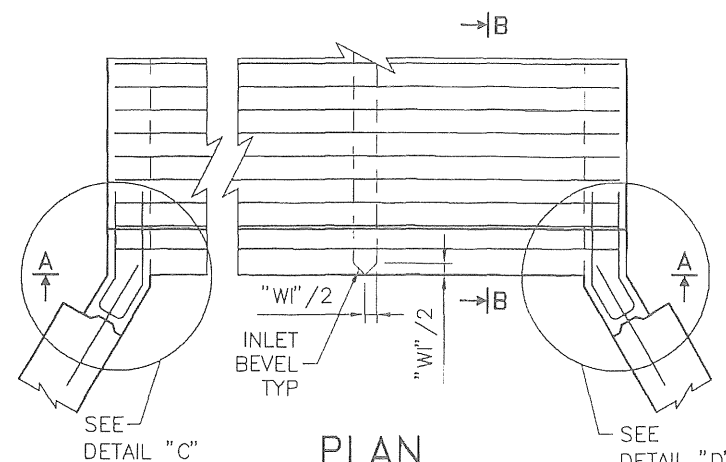




PLAN

(SKEWED)

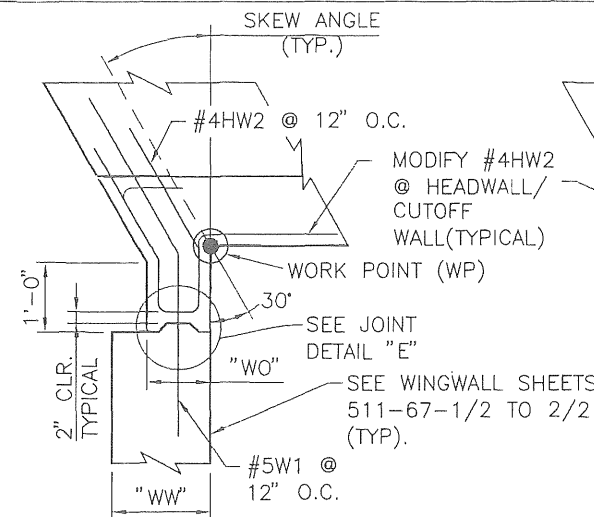
SIMILAR FOR SINGLE BARREL
(NOT TO BE USED FOR SKEWS OVER 45°)



PLAN

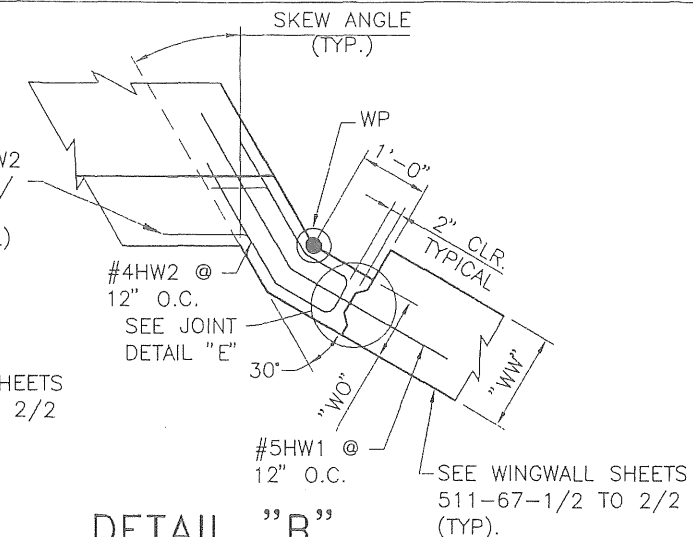
(NORMAL)

SIMILAR FOR SINGLE BARREL



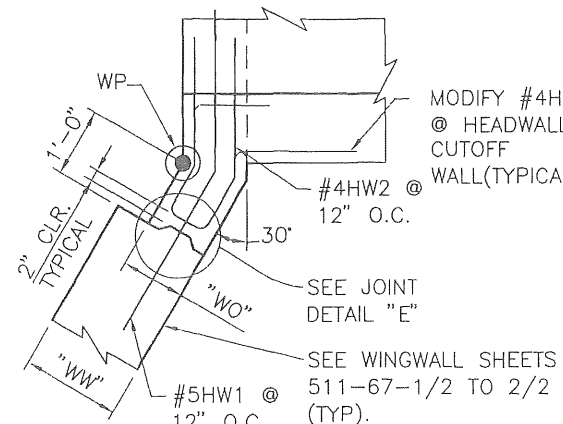
DETAIL "A"

(SKEWED)



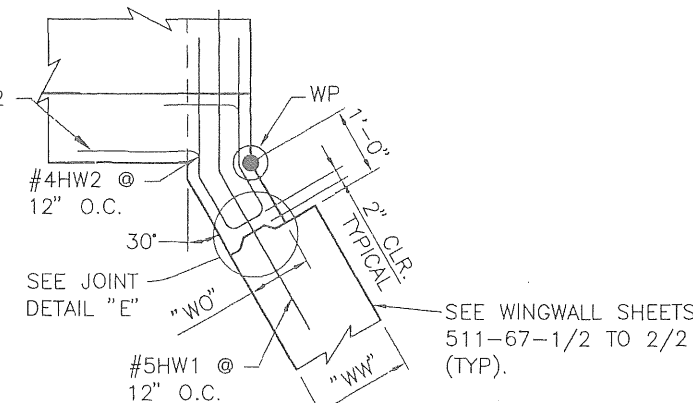
DETAIL "B"

(SKEWED)



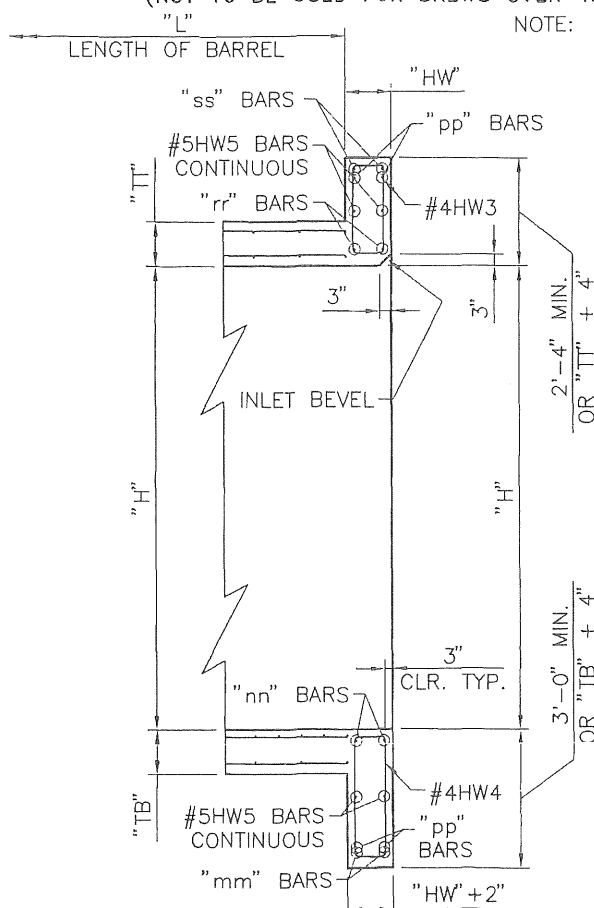
DETAIL "C"

(NORMAL)

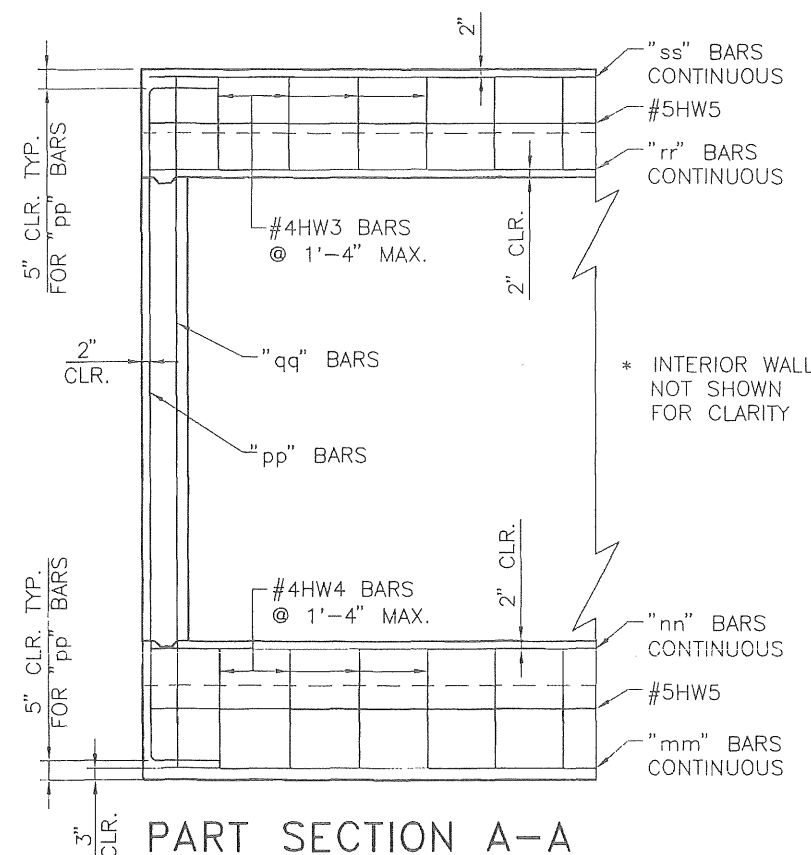


DETAIL "D"

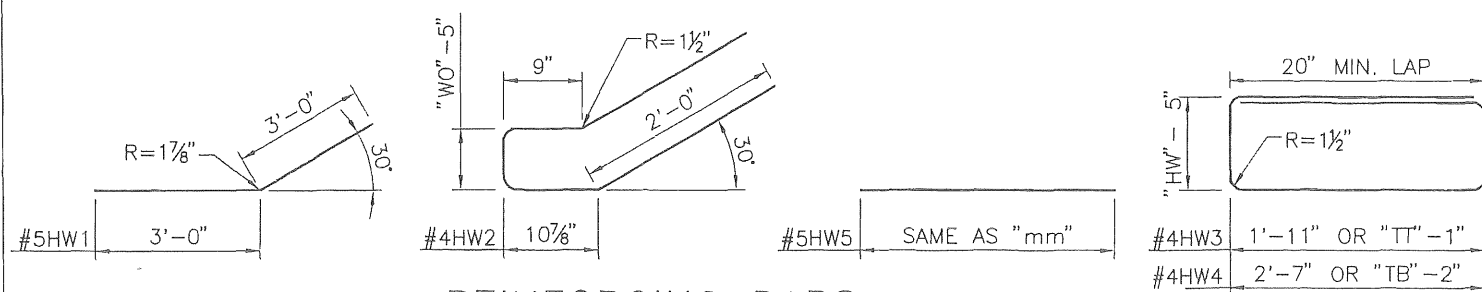
(NORMAL)



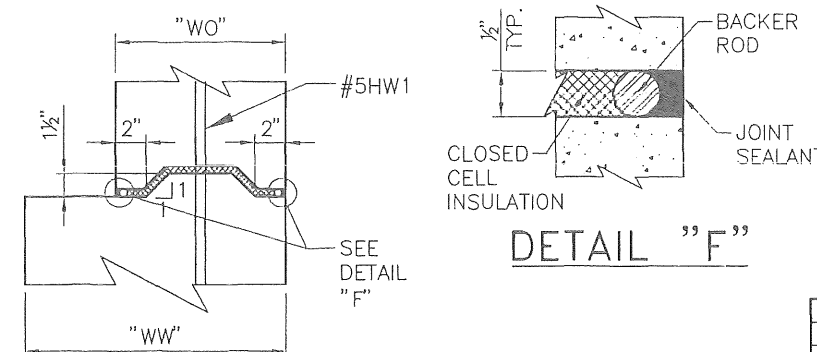
PART SECTION B-B



PART SECTION A-A



REINFORCING BARS



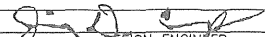
JOINT DETAIL "E"

PAYMENT

PAYMENT FOR HEADWALL/CUTOFF WALL IS BASED ON "EACH" UNIT OF MEASUREMENT FOR EACH NEW BARREL CONSTRUCTED. IN CASE OF TYPE II CONNECTION EACH HEADWALL/CUTOFF WALL UNIT SHALL BE PAID FOR, I.E. TWO PER CULVERT EXTENSION.

ALTERNATIVELY, A COMPLETE CONCRETE BOX CULVERT MAY BE PAID FOR UNDER CLASS "AA" CONCRETE BY "CU.YD." ITEM 511030 AND GRADE 60 REBAR BY "LBS." ITEM 540060.

NOTE: DETAILS "A", "B", "C", & "D" EXTEND FULL HEIGHT FROM TOP OF PARAPET TO BOTTOM OF CUTOFF WALL. THESE EXTENSIONS SHALL BE CAST INTEGRALLY WITH HEADWALL/CUTOFF WALL (NO CONSTRUCTION JOINT). ELEVATION AT EXTENSION SHALL BE EQUAL TO PARAPET.

NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			
NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING			
CBC HEAD/CUTOFF WALLS - ALL DESIGN FILLS-0° 15° 30° 45° SKEWS STRUCTURAL SECTIONS AND REBAR			
APPROVED			APR 9, 07 DATE
DESIGNED BY TLB		DRAWN BY SGL	CHECKED BY HDR
511-66-1/6			
1 OF 6			

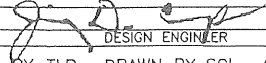
[illegible]

BOX CULVERT NOMINAL DIMENSIONS			HEADWALL AND CUTOFF WALL DIMENSION GRADE 60 REINFORCING BAR SCHEDULE (BAR SIZE AND NUMBER OF BARS REQUIRED)									
			30 DEGREE SKEW									
SPAN "S" INSIDE	HEIGHT "H" INSIDE	WIDTH HEAD WALL "HW"	"mm"	"nn"	"pp"	"qq"	"rr"	"ss"				
			SIZE NUMBER OF BARS	SIZE NUMBER OF BARS	SIZE NUMBER OF BARS	SIZE NUMBER OF BARS	SIZE NUMBER OF BARS	SIZE NUMBER OF BARS				
12'	10'	24"	#11 3	#11 3	#11 2	#6 2	#11 3	#9 3				

$$\text{LENGTH} = \frac{[["WO" * 2] + ["S" * N] + ["WI" * (N - 1)]]}{\cos(\text{SKEW ANGLE})} - 4"$$

(ROUND DOWN TO NEAREST 1/2")

N = NUMBER OF BARRELS (1, 2, 3, OR 4)

NO.	DATE	REV. BY	DESCRIPTION
REVISIONS (OR CHANGE NOTICES)			
<p style="text-align: center;">NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING</p> <p style="text-align: center;">CONCRETE BOX CULVERT HEADWALL ALL DESIGN FILLS-0° 15° 30° 45° SKEWS DIMS AND REBAR SCHEDULE</p>			
APPROVED	 DESIGN ENGINEER		APR 9, 07 DATE
DESIGNED BY <u>TLB</u>		DRAWN BY <u>SLG</u> CHECKED BY <u>HDR</u>	
511-66-2/6			2 OF 6