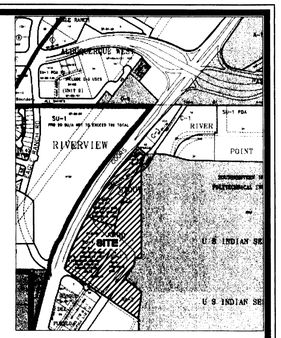
CORRALES MAIN CANAL RELOCATION

LOT 1, STOUT SUBDIVISION

CITY OF ALBUQUERQUE,

BERNALILLO COUNTY, NM



VICINITY MAP ZONE ATLAS C/D-13

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MRGCD GENERAL CONSTRUCTION NOTES

1. ANY WORK TO BE PERFORMED WITHIN THE MIDDLE RIO GRANDE CONSERVANCY DISTRICT (M.R.G.C.D.) RIGHT-OF-WAY SHALL BE CLOSELY COORDINATED WITH THE M.R.G.C.D ENGINEERING DEPARTMENT AND APPROPRIATE FIELD OFFICE. PHONE: (505) 247-0234.
2. NO WORK IS TO BE DONE ON FACILITIES OR STRUCTURES BELONGING TO, OR OPERATED BY, THE M.R.G.C.D. BETWEEN MARCH 1 AND OCTOBER 31 INCLUSIVE. HOWEVER, WORK MAY BE PERMITTED BY THE M.R.G.C.D. IF IT CAN BE SHOWN THAT THE WORK WILL NOT INTERFERE WITH OPERATIONS OF THE M.R.G.C.D. FACILITY. ALL WORK TO BE DONE WITHIN THE M.R.G.C.D. FACILITIES MUST BE APPROVED BY THE M.R.G.C.D. ENGINEER PRIOR TO COMMENCING WORK.
3. THE CONTRACTOR SHALL NOT STORE EQUIPMENT, NEW MATERIALS OR DEBRIS WITHIN DISTRICT RIGHT-OF-WAY WHICH MAY INTERFERE WITH OPERATIONS AND MAINTENANCE OF THE M.R.G.C.D. FACILITY.
4. THE CONTRACTOR SHALL NOT SERVICE VEHICLES OR EQUIPMENT WITHIN M.R.G.C.D. RIGHT-OF-WAY.
5. SEEDING OF DISTURBED AREA WITHIN M.R.G.C.D. RIGHT-OF-WAYS IS REQUIRED PER THE M.R.G.C.D. SEEDING SPECIFICATIONS.
6. THE CONTRACTOR MUST MAINTAIN A MINIMUM COVER OF 3' OVER ALL CULVERT CROSSINGS USED FOR ACCESS TO THE PROJECT SITE.
7. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING AND/OR REPLACEMENT OF ANY STRUCTURES REMOVED AND/OR DAMAGED DUE TO THE CONTRACTORS ACTIVITIES WITHIN THE DISTRICTS RIGHT-OF-WAY. SHOULD ANY TURNOUTS, CULVERT PIPES AND/OR STRUCTURES REQUIRE REPLACEMENT DUE TO LEAKAGE AND/OR DAMAGE BY THE CONTRACTOR, NEW TURNOUTS, AND NEW CULVERT PIPES AND OR NEW STRUCTURES SHALL REPLACE THE DAMAGED ITEM. REPAIRS AND/OR REPLACEMENTS WITHIN THE DISTRICTS RIGHT-OF-WAY MUST COMPLY WITH THE DISTRICTS SPECIFICATIONS.
8. ALL DAMAGED CULVERT CROSSINGS AND CULVERT CROSSINGS REMOVED AND/OR DISTURBED MUST BE RESTORED AND/OR REPLACED TO THE SATISFACTION OF THE M.R.G.C.D. AND COMPLY WITH M.R.G.C.D. SPECIFICATIONS.
9. ALL SALVAGEABLE CULVERTS, IRRIGATION GATES, ETC. MUST BE RETURNED TO THE M.R.G.C.D.
10. THE CONTRACTOR IS RESPONSIBLE FOR EXECUTING A "SPECIAL USE LICENSE AGREEMENT" WITH THE M.R.G.C.D. PRIOR TO CONSTRUCTION.

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPT.	DATE	USER DEPT.	DATE

4/29/03
APPROVED FOR CONSTRUCTION (MRGCD) DATE

Lynn M. Mason 4-16-03
APPROVED FOR CONSTRUCTION (MRGCD) DATE

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BRUCE C. McCARTY NEW MEXICO 13674 REGISTERED PROFESSIONAL ENGINEER

PROJECT NO.

SHEET OF 1 7

GENERAL CONSTRUCTION NOTES

GENERAL

CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED CONSTRUCTION PERMITS, INCLUDING A TOP SOIL DISTURBANCE PERMIT, PRIOR TO START OF CONSTRUCTION.

ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.

REFERENCES MADE TO STANDARD SPECIFICATIONS REFER TO NEW MEXICO STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1994 EDITION.

THE CONTRACTOR SHALL NOT INSTALL ITEMS AS SHOWN ON THESE PLANS WHEN IT IS OBVIOUS THAT FIELD CONDITIONS ARE DIFFERENT THAN SHOWN IN THE PLANS. SUCH CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN A TIMELY MANNER. IN THE EVENT THE CONTRACTOR DOES NOT NOTIFY THE ENGINEER IN A TIMELY MANNER, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY AND EXPENSE FOR ANY REVISIONS NECESSARY, INCLUDING ENGINEERING DESIGN FEES.

EXISTING SITE IMPROVEMENTS WHICH ARE DAMAGED OR DISPLACED BY THE CONTRACTOR SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. REPAIRS SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION OF THE REPAIRS. REPAIRS SHALL BE ACCEPTED BY THE OWNER PRIOR TO FINAL PAYMENT.

EXISTING FENCING THAT IS NOT DESIGNATED FOR REMOVAL SHALL NOT BE DISTURBED. ANY FENCING THAT IS DISTURBED OR ALTERED BY THE CONTRACTOR SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE. IF THE CONTRACTOR DESIRES TO REMOVE FENCING TO ACCOMMODATE CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL OBTAIN THE OWNER'S WRITTEN PERMISSION BEFORE THE FENCE IS REMOVED. CONTRACTOR SHALL RESTORE THE FENCE TO ITS ORIGINAL CONDITION AT THE EARLIEST OPPORTUNITY. WHILE ANY FENCING IS REMOVED, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SECURITY OF THE SITE UNTIL THE FENCE IS RESTORED.

WORK WITHIN ADJACENT RIGHT-OF-WAY

PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES WITHIN ADJACENT RIGHT-OF-WAYS OR WITHIN PROPERTY NOT OWNED BY THE OWNER OF THE PROJECT SITE, THE CONTRACTOR SHALL ASSURE THAT ALL PERMITS AND PERMISSIONS REQUIRED HAVE BEEN OBTAINED IN WRITING.

SURVEY MONUMENTS, PROPERTY CORNERS, BENCHMARKS

THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST SEVEN DAYS BEFORE BEGINNING ANY CONSTRUCTION ACTIVITY THAT COULD DAMAGE OR DISPLACE SURVEY MONUMENTS, PROPERTY CORNERS, OR PROJECT BENCHMARKS SO THESE ITEMS MAY BE RELOCATED.

ANY SURVEY MONUMENTS, PROPERTY CORNERS, OR BENCHMARKS THAT ARE NOT IDENTIFIED FOR RELOCATION ARE THE RESPONSIBILITY OF THE CONTRACTOR TO PRESERVE AND PROTECT. RELOCATION OR REPLACEMENT OF THESE ITEMS SHALL BE DONE BY THE OWNER'S SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.

DIMENSIONS

ALL DIMENSIONS TO CURBS ARE TO THE FLOWLINE UNLESS OTHERWISE NOTED.

ALL STATIONING IS TO THE CENTERLINE OF THE RIGHT-OF-WAY UNLESS OTHERWISE NOTED.

ALL SLOPES AND GRADES ARE IN PERCENT UNLESS OTHERWISE NOTED.

CURB ELEVATIONS ARE SHOWN AT THE FLOW LINE UNLESS OTHERWISE NOTED. SEE THE DETAIL SHEET TO DETERMINE THE CURB HEIGHT ABOVE FLOW LINE.

SOILS

UNLESS OTHERWISE SPECIFIED, SUBGRADE, ENGINEERED FILL, AND STRUCTURAL FILL SHALL BE COMPACTED TO THE FOLLOWING SPECIFICATIONS OF THE ASTM D-1557 MAXIMUM DRY DENSITY.

MATERIAL/LOCATION	PERCENT COMPACTION
STRUCTURAL FILL IN THE BUILDING AREA	95%
SUBBASE FOR SLAB SUPPORT	95%
MISCELLANEOUS BACKFILL BELOW STRUCTURAL FILL OR ROADWAY PAVEMENT	95%
MISCELLANEOUS BACKFILL BELOW UNPAVED, NON-BUILDING AREAS	90%
ROADWAY PAVEMENT SUBGRADE	95%
SIDEWALK SUBGRADE	90%
CURB AND GUTTER SUBGRADE	95%

PAVEMENT

WHEN ABUTTING NEW PAVEMENT TO EXISTING PAVEMENT, CUT EXISTING PAVEMENT EDGE TO A NEAT, STRAIGHT LINE AS NECESSARY TO REMOVE ANY BROKEN OR CRACKED PAVEMENT AND MATCH NEW PAVEMENT ELEVATION TO EXISTING.

ALL UTILITIES AND UTILITY SERVICE LINES SHALL BE INSTALLED AND APPROVED PRIOR TO PAVING.

ALL WATER VALVE BOXES AND ELECTRICAL, TELEPHONE, TELEVISION, AND SEWER MANHOLES IN THE CONSTRUCTION AREA SHALL BE ADJUSTED TO FINISHED GRADE BEFORE PAVING.

WHEN SIDEWALK OR CURB AND GUTTER IS REMOVED, IT SHALL BE REMOVED TO EXISTING CONSTRUCTION JOINTS. CUTTING OR BREAKING SHALL NOT BE ALLOWED.

UTILITIES

IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE LOCATION ONLY BASED ON THE INFORMATION PROVIDED TO THE ENGINEER BY OTHERS. THIS INFORMATION MAY BE INACCURATE OR INCOMPLETE. ADDITIONALLY, UNDERGROUND LINES MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ACCORDANCE WITH CHAPTER 62, ARTICLE 14-1, THROUGH 14-8, NMSA 1978.

THE CONTRACTOR SHALL CONTACT THE STATEWIDE UTILITY LOCATOR SERVICE AT 1-800-321-2537 AT LEAST TWO WORKING DAYS BEFORE BEGINNING CONSTRUCTION. AFTER THE UTILITIES ARE SPOTTED, THE CONTRACTOR SHALL EXPOSE ALL PERTINENT UTILITIES TO VERIFY THEIR VERTICAL AND HORIZONTAL LOCATION. IF A CONFLICT EXISTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH MINIMAL DELAY.

THE CONTRACTOR SHALL EXERCISE DUE CARE TO AVOID DISTURBING ANY EXISTING UTILITIES, ABOVE OR BELOW GROUND. UTILITIES THAT ARE DAMAGED BY CARELESS CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

EXISTING VALVES SHALL ONLY BE OPERATED BY THE UTILITY COMPANY. CONTRACTOR SHALL NOTIFY THE UTILITY A MINIMUM OF TWO WORKING DAYS BEFORE ANY VALVE, NEW OR EXISTING, NEEDS TO BE OPERATED.

THE CONTRACTOR SHALL COORDINATE ANY REQUIRED UTILITY INTERRUPTIONS WITH THE OWNER AND AFFECTED UTILITY COMPANY A MINIMUM OF THREE WORKING DAYS BEFORE THE INTERRUPTION.

THE CONTRACTOR SHALL MAINTAIN A RECORD DRAWING SET OF PLANS AND PROMPTLY LOCATE ALL UTILITIES, EXITING OR NEW, IN THEIR CORRECT LOCATION, HORIZONTAL AND VERTICAL. THIS RECORD SET OF DRAWINGS SHALL BE MAINTAINED ON THE PROJECT SITE AND SHALL BE AVAILABLE TO THE OWNER AND ENGINEER AT ANY TIME DURING CONSTRUCTION.

EROSION CONTROL, ENVIRONMENTAL PROTECTION, AND STORM WATER POLLUTION PREVENTION PLAN

THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST AND EROSION CONTROL REGULATIONS. THE CONTRACTOR SHALL OBTAIN AND PREPARE ANY DUST CONTROL OR EROSION CONTROL PERMITS REQUIRED FROM THE REGULATORY AGENCIES.

THE CONTRACTOR SHALL PROMPTLY REMOVE ANY MATERIAL EXCAVATED WITH THE PUBLIC RIGHT-OF-WAY OR ADJACENT PROPERTY TO KEEP IT FROM WASHING OFF THE PROJECT SITE.

THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY BY CONSTRUCTION OF TEMPORARY EROSION CONTROL BERMS OR INSTALLING SILT FENCES AT THE PROPERTY LINES AND WETTING THE SOIL TO PREVENT IT FROM BLOWING.

WATERING, AS REQUIRED FOR CONSTRUCTION DUST CONTROL, SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO MEASUREMENT OR PAYMENT SHALL BE MADE. CONSTRUCTION AREAS SHALL BE WATERED FOR DUST CONTROL IN COMPLIANCE WITH GOVERNMENT ORDINANCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SUPPLYING WATER AS REQUIRED.

ANY AREAS DISTURBED BY CONSTRUCTION AND NOT COVERED BY LANDSCAPING OR IMPERVIOUS SURFACES SHALL BE REVEGETATED WITH RECLAMATION SEEDING.

THE CONTRACTOR SHALL PROPERLY HANDLE AND DISPOSE OF ALL ASPHALT REMOVED ON THE PROJECT BY HAULING IT TO AN APPROVED DISPOSAL SITE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEW MEXICO SOLID WASTE ACT.

ALL WASTE PRODUCTS FROM THE CONSTRUCTION SITE, INCLUDING ITEMS DESIGNED FOR REMOVAL, CONSTRUCTION WASTE, CONSTRUCTION EQUIPMENT WASTE PRODUCTS (OIL, GAS, TIRES, ETC.), GARBAGE, GRUBBING, EXCESS CUT MATERIAL, VEGETATIVE DEBRIS, ETC.. SHALL BE APPROPRIATELY DISPOSED OF OFFSET AT NO ADDITIONAL COST TO THE OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY PERMITS REQUIRED FOR HAUL OR DISPOSAL OF WASTE PRODUCTS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE WASTE DISPOSAL SITE COMPLIES WITH GOVERNMENT REGULATIONS REGARDING THE ENVIRONMENT, ENDANGERED SPECIES, AND ARCHAEOLOGICAL RESOURCES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP AND REPORTING OF SPILLS OF HAZARDOUS MATERIALS ASSOCIATED WITH THE CONSTRUCTION SITE. HAZARDOUS MATERIALS INCLUDE GASOLINE, DIESEL FUEL, MOTOR OIL, SOLVENTS, CHEMICALS, PAINT, ETC. WHICH MAY BE A THREAT TO THE ENVIRONMENT. THE CONTRACTOR SHALL REPORT THE DISCOVERY OF PAST OR PRESENT SPILLS TO THE NEW MEXICO EMERGENCY RESPONSE AT 1-800-219-6157.

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS CONCERNING SURFACE AND UNDERGROUND WATER. CONTACT WITH SURFACE WATER BY CONSTRUCTION EQUIPMENT AND PERSONNEL SHALL BE MINIMIZED. EQUIPMENT MAINTENANCE AND REFUELING OPERATIONS SHALL BE PERFORMED IN AN ENVIRONMENTALLY SAFE MANNER IN COMPLIANCE WITH GOVERNMENT REGULATIONS.

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS CONCERNING CONSTRUCTION NOISE AND HOURS OF OPERATION.

ACCESSIBLE FACILITIES

ALL SURFACES ALONG ACCESSIBLE ROUTES AND FOR HANDICAP RAMPS SHALL BE STABLE FIRM, SLIDE RESISTANT AND SHALL COMPLY WITH UNIFORM FEDERAL ACCESSIBILITY STANDARDS, PARAGRAPH 4.5.

LONGITUDINAL SLOPES ALONG ACCESSIBLE ROUTE SIDEWALKS, EXCEPT AT HANDICAP RAMPS, SHALL NOT BE STEEPER THAN 1:20. CROSS SLOPES ALONG ACCESSIBLE ROUTE SIDEWALKS EXCEPT AT HANDICAP RAMPS, SHALL NOT BE STEEPER THAN 1:48. SLOPES IN ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND PASSENGER LOADING ZONES SHALL NOT BE STEEPER THAN 1:48 IN ALL DIRECTIONS.

THE SITE SHALL COMPLY WITH ANSI A117.1-1992, "ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES".

TRAFFIC CONTROL

THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TRAFFIC CONTROL PLANS. ALL SIGNS, BARRICADES, CHANNELIZATION DEVICES, SIGN FRAMES AND ERECTION OF SUCH DEVICES SHALL CONFORM TO THE REQUIREMENTS OF " MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" LATEST EDITION. PRIOR TO CONSTRUCTION, TRAFFIC CONTROL PLANS SHALL BE APPROVED BY THE GOVERNING AUTHORITY.

LEGEND

Symbol	Description
(S 83°39'25" W)	RECORD BEARING AND DISTANCES
N 00°07'27" W	MEASURED BEARING AND DISTANCES
	FOUND AND USED MONUMENT
—//—	EX WOOD FENCE
	EX RAILROAD RETAINING WALL
× G 89.5	EX SPOT ELEV.
FL 09.3	PROP SPOT ELEV.
—5160—	EX CONTOUR LINE
	POWER POLE
	DOWN GUY
LP	LIGHT POLE
	YARD LIGHT
UG	UNDERGROUND
—W—S—G—E—	UTILITY (WATER, SEWER, ELEC., GAS, ETC.)
— — —	FIBER OPTIC COMMUNICATION 4" CONDUIT
	UTILITY RISER
FP	FLAG POLE
V	VENT
GM	GAS METER
	EX FIRE HYDRANT
	PROP FIRE HYDRANT
WV	EX WATER VALVE
	PROP WATER VALVE
	EX SD MANHOLE
	PROP SD MANHOLE
	EX SAS MANHOLE
	PROP SAS MANHOLE
	EX SD INLET
	PROP SD INLET
	CONCRETE
	EX SIGN
	EX WATER METER
	PROP WATER METER
	PLANTER
	PROPOSED TREE
	EXIST. TREE

ABBREVIATIONS

Abbr.	Meaning
BM	BENCHMARK
CATV	CABLE TELEVISION LINE
CMP	CORRUGATED METAL PIPE
COA	CITY OF ALBUQUERQUE
CONC	CONCRETE
CL	CENTERLINE
DIA	DIAMETER
DTL	DETAIL
DWG	DRAWING
ELEV	ELEVATION
EX	EXISTING
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
G	GAS PIPE
GV	GATE VALVE
INV	INVERT ELEVATION
LF	LINEAL FEET
MH	MANHOLE
NG	NATURAL GROUND
OE	OVERHEAD ELECTRIC LINE
OT	OVERHEAD TELEPHONE LINE
PCC	PORTLAND CEMENT CONCRETE
PP	POWER POLE
PROP	PROPOSED
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
R/W	RIGHT-OF-WAY
S	SLOPE
SAS	SANITARY SEWER
SD	STORM DRAIN
STA	STATION
STD	STANDARD
SW	SIDEWALK
TA	TOP OF ASPHALT PAVEMENT
TC	TOP OF CONCRETE SLAB (PAVEMENT)
TCC	TOP OF CONCRETE CURB
TG	TOP OF GRATE
TS	TOP OF SIDEWALK
TSC	TOP OF SHOT CRETE
TOW	TOP OF WALL
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
W	WATER
WM	WATER METER
WV	WATER VALVE

AS BUILT INFORMATION | CONTRACTOR | DATE | WORK STARTED BY | DATE | INSPECTOR'S ACCEPTANCE BY | DATE | FIELD VERIFICATION BY | DATE | DRAWINGS CORRECTED BY | DATE | MICROFILM INFORMATION | RECORDED BY | NO. | DATE

BENCH MARKS

SURVEY INFORMATION | FIELD NOTES | NO. | BY | DATE

ENGINEER'S SEAL

REVISIONS | NO. | DATE | REMARKS | BY

DESIGN | DESIGNED BY BCM | DATE FEB. 2003 | DRAWN BY BCM | DATE FEB. 2003 | CHECKED BY BCM | DATE FEB. 2003

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ALBUQUERQUE METROPOLITAN FLOOD CONTROL AUTHORITY (AMAFCA)
AND
MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD)

TITLE: LOT 1, STOUT SUBDIVISION
CORRALES MAIN CANAL RELOCATION
GENERAL NOTES

4/29/03 — APPROVED FOR CONSTRUCTION (MRGCD) — DATE

4-16-03 — APPROVED FOR CONSTRUCTION (AMAFCA) — DATE

LAST DESIGN DATE | MO./DAY/YR. | MO./DAY/YR.

PROJECT NO. | MAP NO. CD-13 | SHEET 2 OF 7

CANAL-DTL(final1A).DWG 04/10/03

EXISTING CANAL CENTERLINE CURVE DATA

CURVE NUMBER	ARC LENGTH (FT)	DELTA	RADIUS (FT)	CH. LENGTH (FT)	CH. BRNG	TANGENT (FT)
CE1	142.87	23°23'17"	350.00	141.88	S 49°14'05" W	72.44
CE2	91.00	36°23'59"	143.24	89.48	S 42°43'44" W	47.09
CE3	119.03	71°25'01"	95.49	111.47	S 11°10'47" E	68.64
CE4	139.12	83°28'23"	95.49	127.14	S 05°09'06" E	85.19

PROPOSED CANAL CENTERLINE CURVE DATA

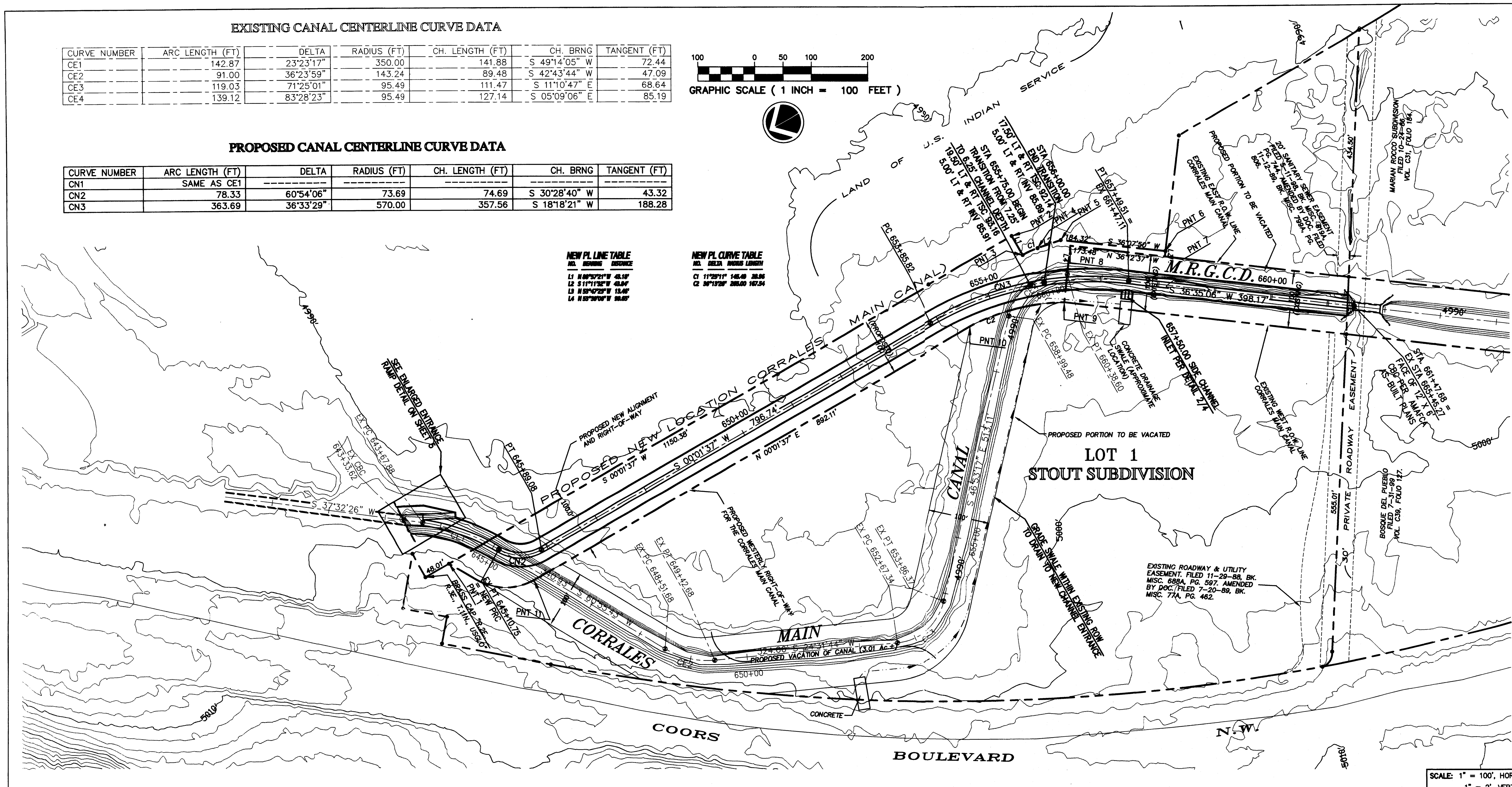
CURVE NUMBER	ARC LENGTH (FT)	DELTA	RADIUS (FT)	CH. LENGTH (FT)	CH. BRNG	TANGENT (FT)
CN1	SAME AS CE1	----------	----------	----------	----------	----------
CN2	78.33	60°54'06"	73.69	74.69	S 30°28'40" W	43.32
CN3	363.69	36°33'29"	570.00	357.56	S 18°18'21" W	188.28

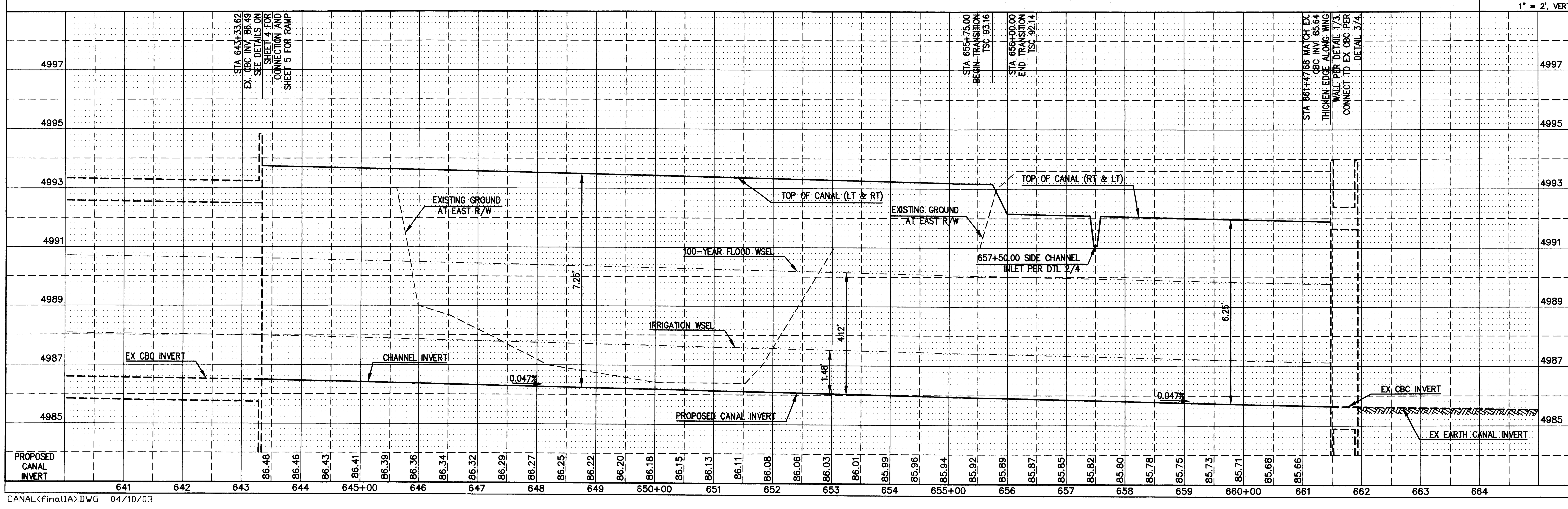
NEW PL LINE TABLE

NO.	BEARING	DISTANCE
L1	N 88°57'21" W	43.18'
L2	S 11°11'32" W	43.84'
L3	N 53°47'25" W	13.46'
L4	N 53°39'06" W	98.65'

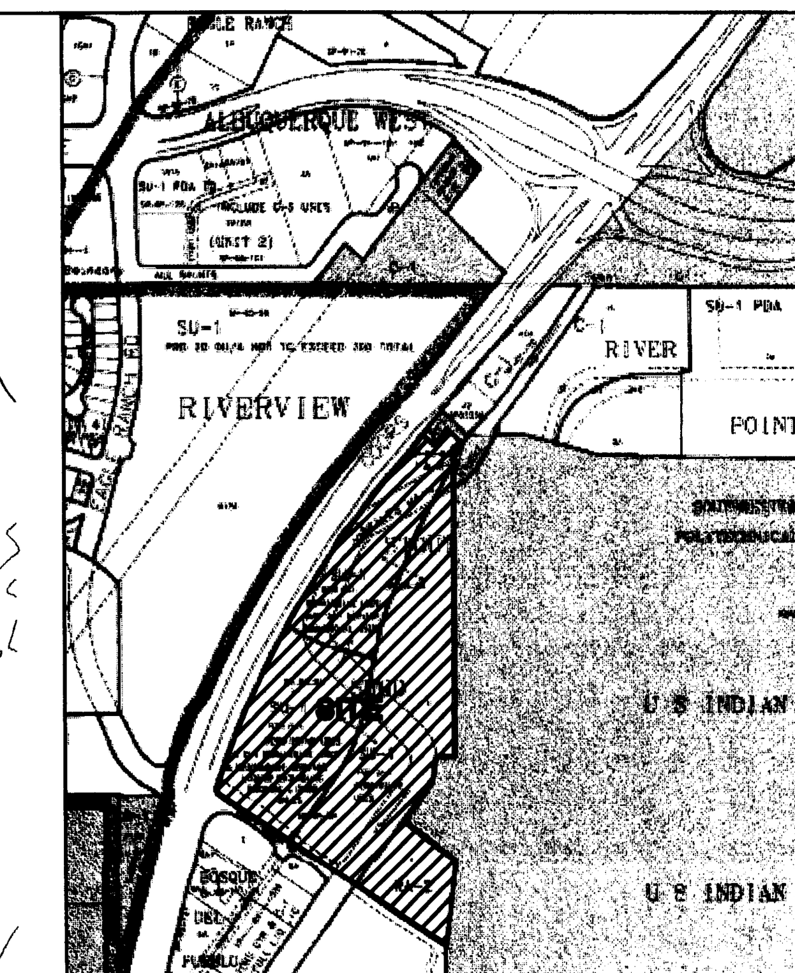
NEW PL CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
C1	11°25'11"	145.40	28.96
C2	36°13'26"	265.00	167.54





CANAL(final1A).DWG 04/10/03



VICINITY MAP C/D-13

PROPOSED RELOCATION OF THE M.R.G.C.D. CORRALES MAIN CANAL WITHIN LOT 1 (ONE) OF THE CORRECTED SUBDIVISION PLAT FOR STOUT SUBDIVISION, SECTIONS 18 & 19, T.11N., R.3E., N.M.P.M. BERNALILLO COUNTY, NEW MEXICO

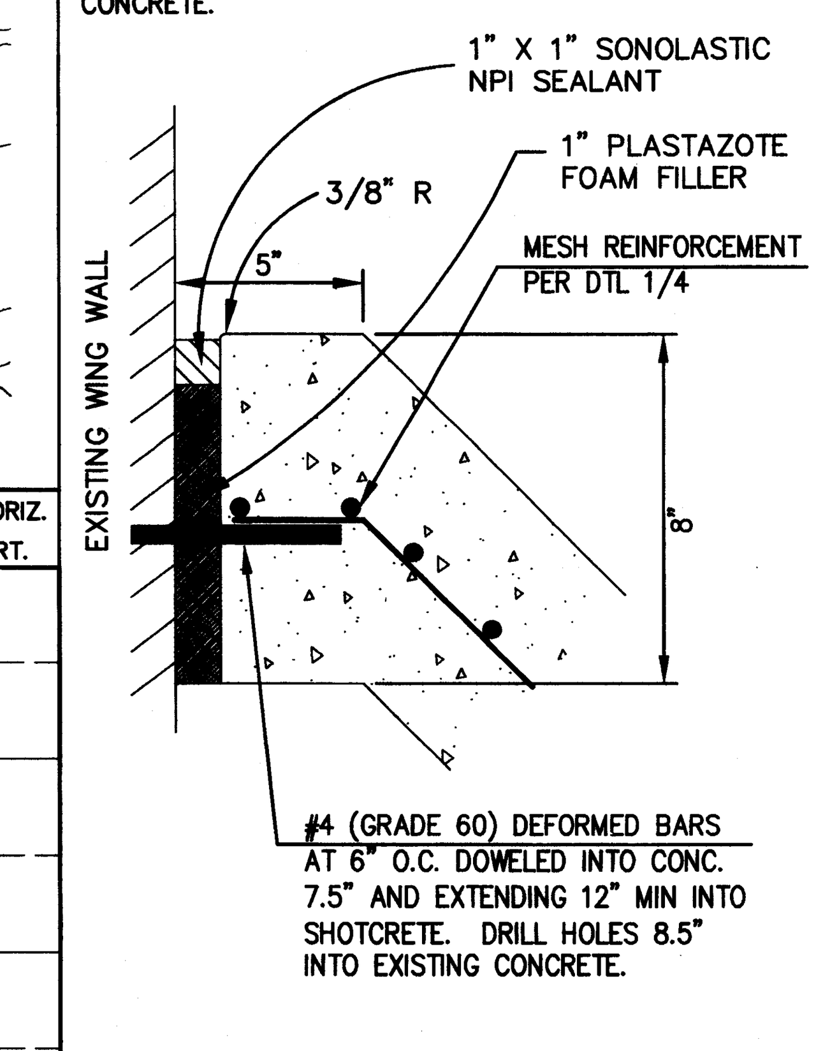
CONTOUR/DESIGN NOTE

EXISTING CONTOURS ARE APPROXIMATELY 3' HIGHER IN ELEVATION THAN ELEVATIONS SHOWN ON EXISTING CHANNEL AS-BUILT DRAWINGS. THIS DESIGN IS BASED ON THE AS-BUILT DRAWINGS AND SUBTRACTING 3' FROM EXISTING CONTOURS.

CONSTRUCTION NOTES:

DOWELS SHALL BE DRILLED PARALLEL TO CHANNEL CENTERLINE.

DOWELS SHALL NOT BE EPOXIED INTO EXISTING CONCRETE.



CONNECTION TO EXITING 7" WING WALL (1/3)
N. T. S.

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DESIGNED BY BOM — DRAWN BY BOM — CHECKED BY BOM

DESIGN FEB. 2003

ALBUQUERQUE METROPOLITAN FLOOD CONTROL AUTHORITY (AMAFCA)
AND
MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD)

TITLE: LOT 1, STOUT SUBDIVISION
CORRALES MAIN CANAL RELOCATION
CHANNEL PLAN & PROFILE

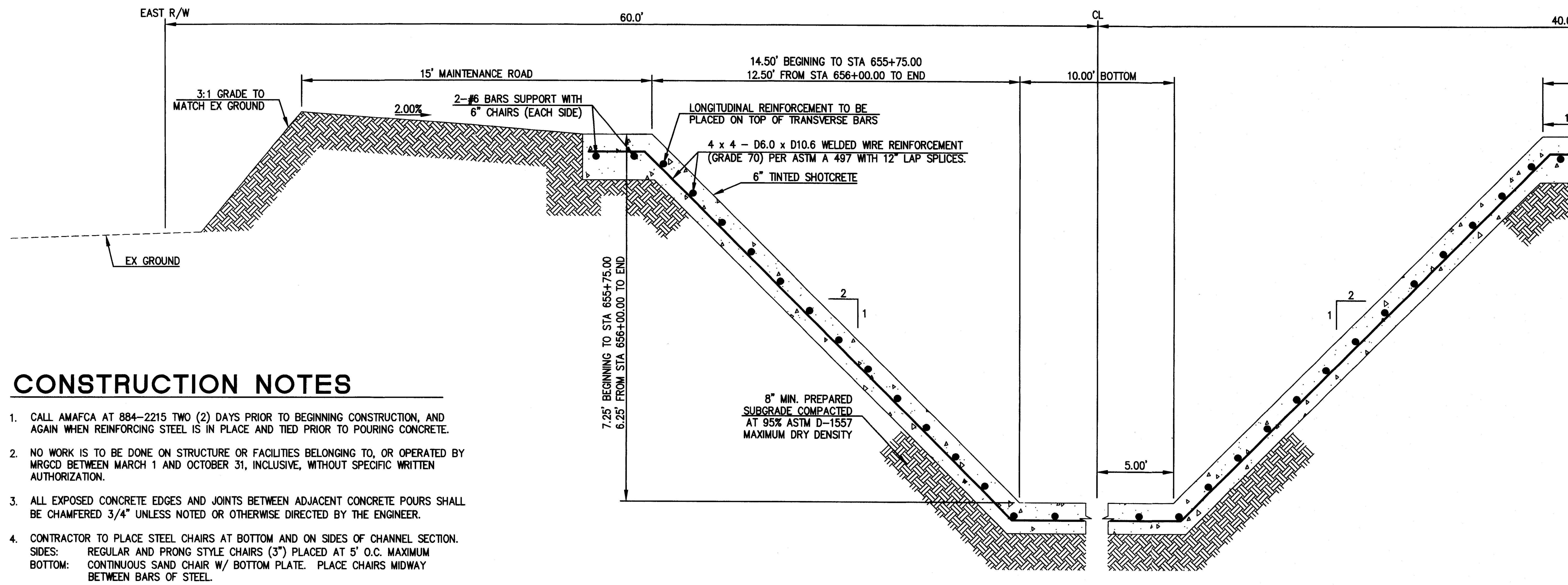
APPROVED FOR CONSTRUCTION (MRGCD) — DATE 4/29/03

APPROVED FOR CONSTRUCTION (AMAFCA) — Lynn M. Mazur — DATE 4-16-03

PROJECT NO.

MAP NO. C,D-13

SHEET 3 OF 7



1/4 SHOTCRETE CHANNEL DETAIL
N. T. S.

CONSTRUCTION NOTES

1. CALL AMAFCA AT 884-2215 TWO (2) DAYS PRIOR TO BEGINNING CONSTRUCTION, AND AGAIN WHEN REINFORCING STEEL IS IN PLACE AND TIED PRIOR TO POURING CONCRETE.
2. NO WORK IS TO BE DONE ON STRUCTURE OR FACILITIES BELONGING TO, OR OPERATED BY MRGCD BETWEEN MARCH 1 AND OCTOBER 31, INCLUSIVE, WITHOUT SPECIFIC WRITTEN AUTHORIZATION.
3. ALL EXPOSED CONCRETE EDGES AND JOINTS BETWEEN ADJACENT CONCRETE POURS SHALL BE CHAMFERED 3/4" UNLESS NOTED OR OTHERWISE DIRECTED BY THE ENGINEER.
4. CONTRACTOR TO PLACE STEEL CHAIRS AT BOTTOM AND ON SIDES OF CHANNEL SECTION.
   SIDES: REGULAR AND PRONG STYLE CHAIRS (3") PLACED AT 5' O.C. MAXIMUM
   BOTTOM: CONTINUOUS SAND CHAIR W/ BOTTOM PLATE. PLACE CHAIRS MIDWAY BETWEEN BARS OF STEEL.
5. ALL CONSTRUCTION JOINTS TO INCLUDE 1" MIN PLASTAZOTE FOAM FILLER SEALED WITH 1" X 1" SONOLASTIC NPI SEALANT (SEE DETAILS 3, 4, AND 5 THIS SHEET)
6. WHERE TRADE NAME ITEMS ARE CALLED OUT ON THESE PLANS, ALTERNATE EQUAL PRODUCTS OR MATERIALS MAY BE SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL.
7. DENSITY TESTS SHALL BE TAKEN FOR EVERY 1000 CUBIC YARDS OF MATERIAL PLACED, OR PORTION THEREOF, PER DAY FOR COMPACTION TO 95% (MODIFIED PROCTOR).

IRRIGATION PLUS 100-YEAR STORM

MANNING'S EQUATION FOR UNIFORM FLOW IN TRAPEZOIDAL CHANNELS

```
*INPUT*
DEPTH (FT):                          4.12
MANNING'S "n" VALUE:                 0.017
BED SLOPE (FT/FT):                   0.00047
BOTTOM WIDTH (FT):                   10.00
SIDE SLOPE #1 (HORZ:VERT):           2.00
SIDE SLOPE #2 (HORZ:VERT):           2.00
CROWN--NEG. FOR INVERTED (FT):       0.00

*OUTPUT*
FLOW RATE (CFS):                     273.00
CROSS SECT. AREA (SF):               75.15
TOP WIDTH (FT):                      26.48
WETTED PERIMETER (FT):               28.42
HYDRAULIC RADIUS (FT):               2.64
VELOCITY (FPS):                      3.63
FROUDE NUMBER:                       0.38
ENERGY GRADE:                        4.32

FREEBOARD (FB)
FB = 0.7(2.0+0.025VD^0.33)
FB = 0.7(2.0+ 0.025(3.63)(4.12^0.33))
FB = 1.50'

SUPERELEVATION(S)
S = 1.15(V^2)(B+2ZD)/2GR           Z = 2
S = 1.15(3.63^2)(10+2*2*4.12)/(64.4*37.5)
S = 0.17' (FOR R = 37.5')

DPM CHANNEL DEPTH =
4.12+1.50+0.17 = 5.79'
```

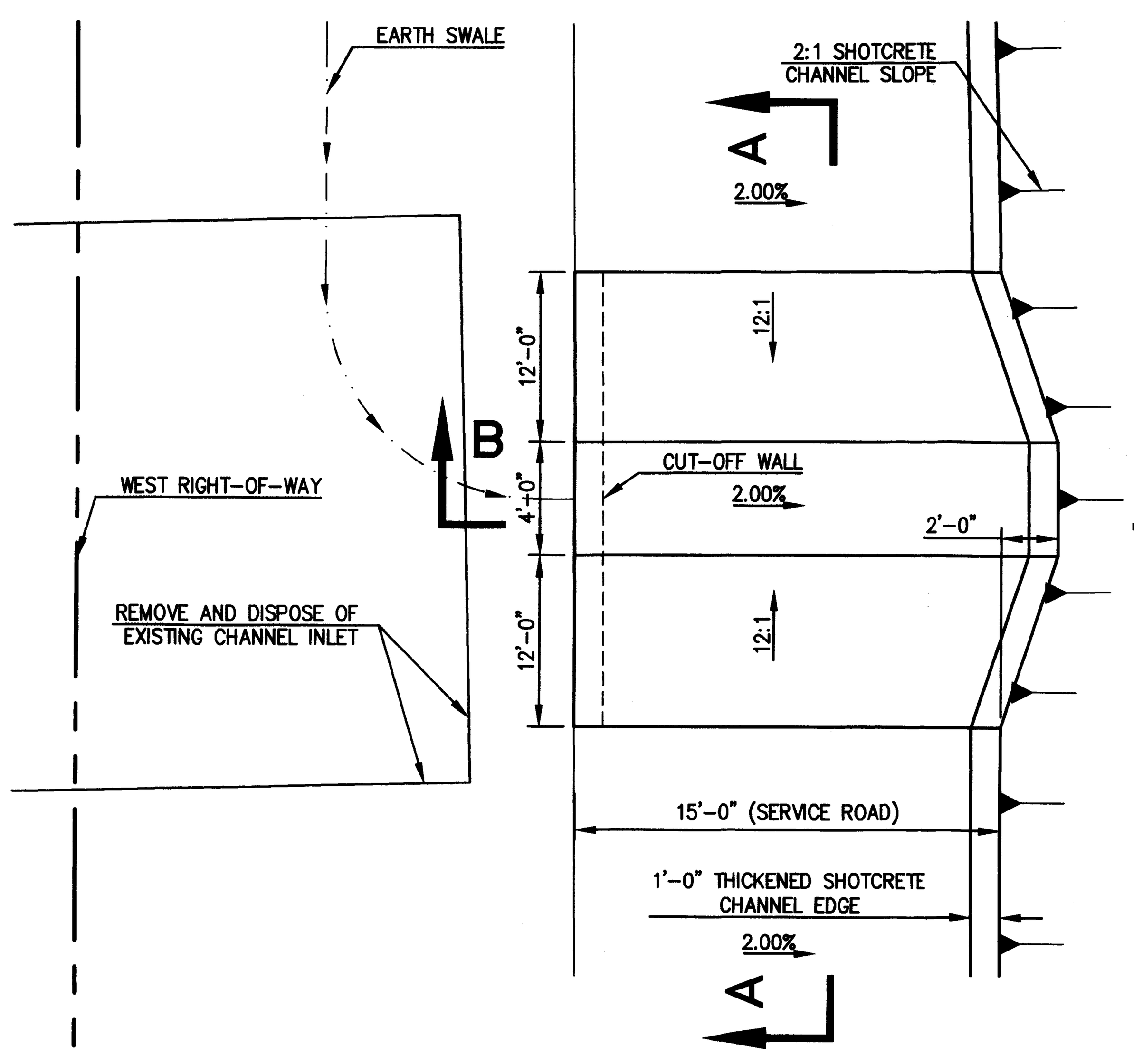
IRRIGATION FLOW

MANNING'S EQUATION FOR UNIFORM FLOW IN TRAPEZOIDAL CHANNELS

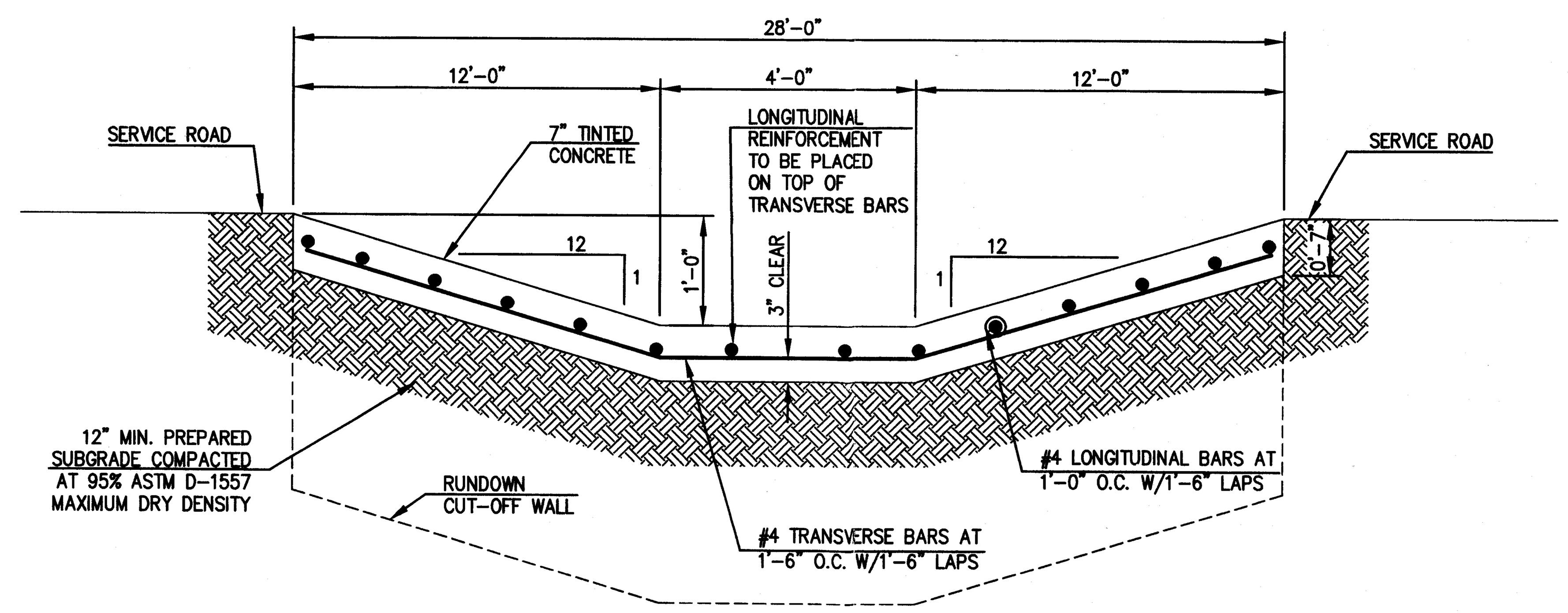
```
*INPUT*
DEPTH (FT):                          1.48
MANNING'S "n" VALUE:                 0.017
BED SLOPE (FT/FT):                   0.00047
BOTTOM WIDTH (FT):                   10.00
SIDE SLOPE #1 (HORZ:VERT):           2.00
SIDE SLOPE #2 (HORZ:VERT):           2.00
CROWN--NEG. FOR INVERTED (FT):       0.00

*OUTPUT*
FLOW RATE (CFS):                     40.00
CROSS SECT. AREA (SF):               19.15
TOP WIDTH (FT):                      15.91
WETTED PERIMETER (FT):               16.61
HYDRAULIC RADIUS (FT):               1.15
VELOCITY (FPS):                      2.09
FROUDE NUMBER:                       0.34
ENERGY GRADE:                        1.55
```

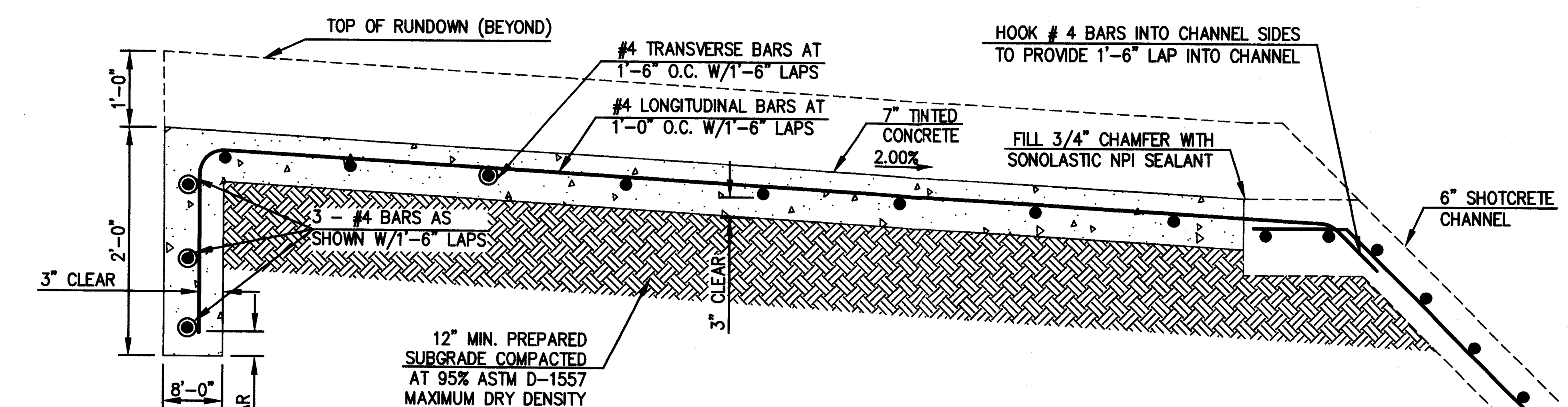
AMAFCA FREEBOARD CRITERIA OF 2.00' FOR NON-LEVEE AREAS AND FEMA FREEBOARD OF 3.00' CONTROLS FOR LEVEE AREAS. UTILIZE CHANNEL DEPTHS OF 6.25' AND 7.25', RESPECTIVELY.



SIDE CHANNEL INLET (PLAN VIEW 1" = 5')



SECTION A-A (PARALLEL TO CHANNEL) (N. T. S.)



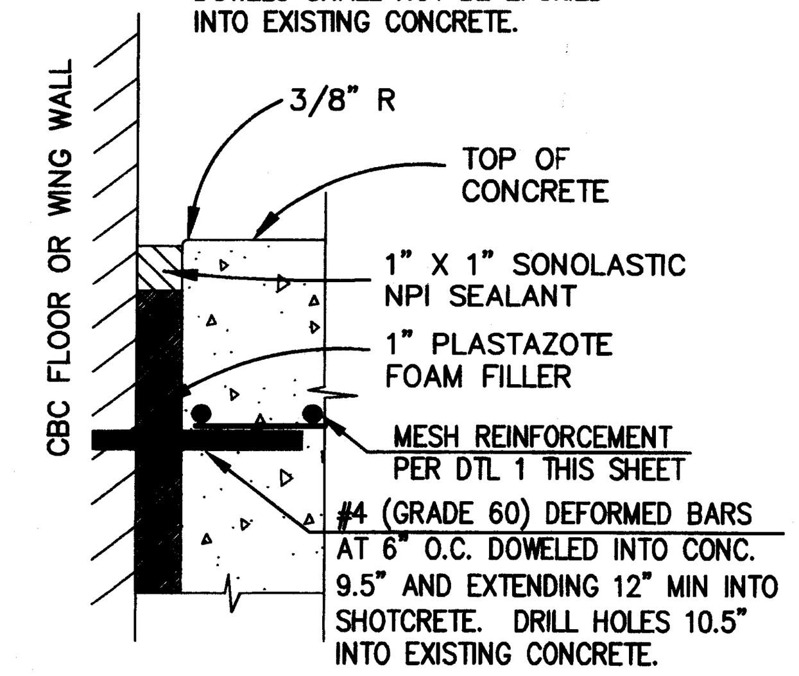
SECTION B-B (PROFILE) (N. T. S.)

2/4 CHANNEL RUNDOWN DETAILS
N. T. S.

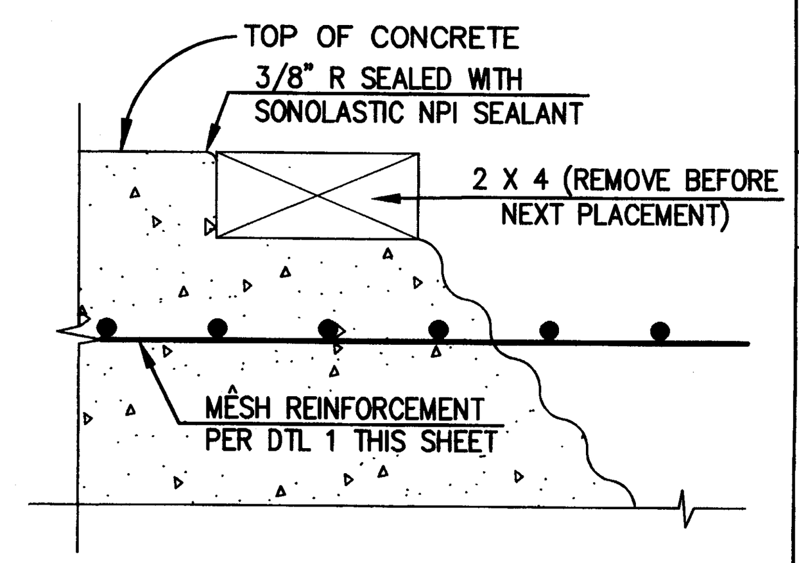
CONSTRUCTION NOTES:

DECREASE DOWEL LENGTH INTO WING WALL ON SOUTH CBC BY 2".

DOWELS SHALL NOT BE EPOXIED INTO EXISTING CONCRETE.



3/4 CONNECTION TO EXISTING CONC. BOX CULVERTS
N. T. S.



4/4 CONSTRUCTION JOINT DETAIL
N. T. S.

AS BUILT INFORMATION | BENCH MARKS | SURVEY INFORMATION | FIELD NOTES | ENGINEER'S SEAL | MICROFILM INFORMATION

NO.	REVISIONS	DATE	BY
	REMARKS		
	DESIGN	FEB. 2003	

BUILDING ENGINEERING AND MUNICIPAL DESIGNS — BEAM DESIGNS

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DESIGNED BY BDM · DRAWN BY BDM · CHECKED BY BDM

ALBUQUERQUE METROPOLITAN FLOOD CONTROL AUTHORITY (AMAFCA)
AND
MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD)

TITLE: LOT 1, STOUT SUBDIVISION
CORRALES MAIN CANAL RELOCATION
DETAILS

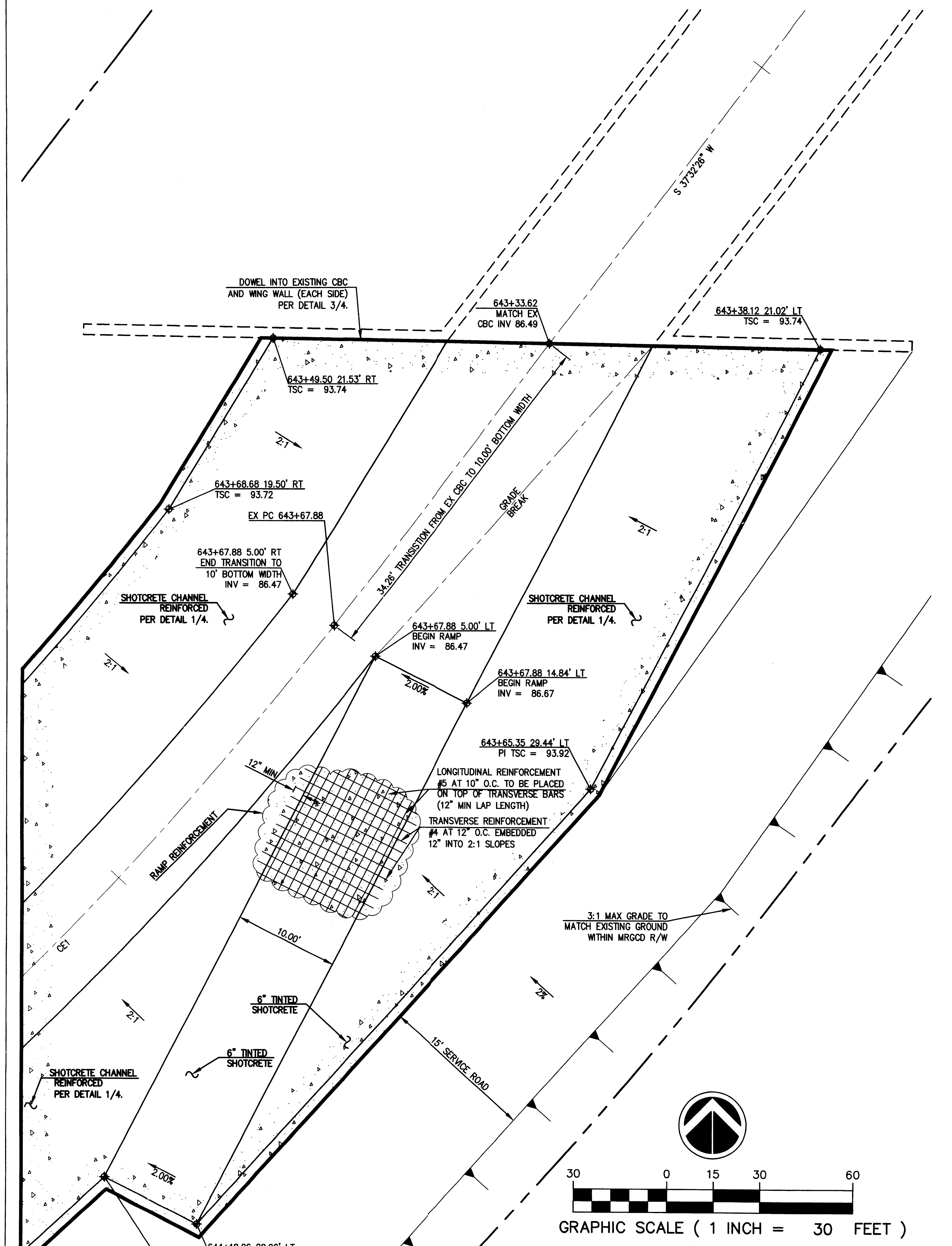
APPROVED FOR CONSTRUCTION (MRGCD) — DATE 4/29/03

Lynn M. Mazur — APPROVED FOR CONSTRUCTION (AMAFCA) — DATE 4-16-03

LAST DESIGN DATE · MO./DAY/YR.

PROJECT NO. · MAP NO. C,D-13 · SHEET 4 OF 7

CANAL-DTL(final1A).DWG 04/10/03



1/5 CBC CONNECTION AND RAMP AT NORTH END
1" = 30'

SUPPLEMENTAL TECHNICAL SPECIFICATIONS

The following revisions and/or additions to the Technical Specification of the Standard Specifications are hereby made a part of the contract document.

COMPACTION REQUIREMENTS: The following special compaction test reference modifies all sections of the New Mexico State Highway and Transportation Department Standard Specifications for Highway and Bridge Construction, 1994 Edition.

Reference to AASHTO T-99 and AASHTO T-224 for establishing laboratory density for compaction control is hereby amended to read as ASTM D-1557 (Modified Proctor). ASTM D-1557 (Modified Proctor) will be the method used for establishing laboratory density for compaction control for this project.

Supplemental Technical Specifications
To New Mexico State Highway and Transportation Department
Standard Specifications, 1994 Edition

Table of Contents

SECTION 201
CLEARING AND GRUBBING

201.33 SCALPING

1) Delete the first sentence and replace with the following: The Contractor shall scalp areas where excavations, foundation treatment or embankment is to be performed.
2) Add the following to the end of Section **201.33**:
All material scalped shall be salvaged and stockpiled. The Contractor shall not scalp the stockpile area. The stockpiling of the scalped material will be directed by the Project Manager.

201.5 BASIS OF PAYMENT

1) Delete the wording in this section and replace with the following: The accepted quantity of clearing and grubbing will be paid for at the contract unit price per acre.

Payment will be made under:

Pay Item	Pay Unit
Clearing and Grubbing	AC

SECTION 203
EXCAVATION, BORROW AND EMBANKMENT

203.11
1) In the first sentence add the words "backfill, fill construction" following the phrase "construction embankment".

203.3 CONSTRUCTION REQUIREMENTS
1) In the first sentence remove "roadway, intersections and entrances" and replace with "channel and storm drain appendances".

203.32 EXCAVATION
1) Delete the entire section and substitute the following: Unclassified excavation shall be to the lines and grades shown on the plans and shall be finished to reasonably smooth and uniform surfaces. The Contractor shall notify the Project Manager sufficiently in advance of beginning excavation operations so cross section elevations and measurements of ground surfaces may be taken per Section 105-Control of Work, Supplemental General Provisions.
2) All clearing and grubbing shall be done before excavation operations begin. No material may be stockpiled within 20 feet of an area designated for unclassified excavation.
3) Cut sections shall be finished to reasonably smooth and uniforms surfaces. The Project Manager may require the Contractor to remove unsuitable materials beyond the lines of cut shown on the plans, and backfill these areas with approved material. The Contractor shall conduct his operations for the removal of unsuitable materials in such a way that the Project Manager can take the necessary cross-sections before the backfill is placed.

203.33 ROCK CUTS
1) Delete this section in its entirety.

203.34 BORROW
1) Add to the first paragraph: Prior to the removal of any embankment material from a borrow area, the Contractor shall scalp the area according to the provisions of Section 201 – CLEARING AND GRUBBING and then take the necessary cross-sections. Measurement of the borrow quantity shall not include the volume of material removed by the clearing and grubbing. Borrow will not be paid as a separate bid item.

203.35 EMBANKMENT
1) Add the following paragraph: (c) Channel Embankment. Prior to construction of embankment, scalping shall be accomplished as required by Section 201.33 SCALPING.
2) The embankment fill materials should be free of vegetation, debris, and other deleterious material and otherwise meet the following requirements as determined in accordance with ASTM D-422. Prior to placing any fill material the contractor shall scarify and compact the existing ground to a depth of 8 inches. This treatment shall be incidental to channel excavation and bridge work. No fill material shall be placed on any part of the embankment foundation until such areas have been inspected and approved. Maximum aggregate sizes shall not exceed 4" in diameter and a minimum 5 to 10 percent material passing the No. 200
3) This graduation shall be obtained by blending the excavated materials as required. The plasticity index shall not exceed 12 as determined by ASTM D-4318.
4) Prior to compaction, all selected fill materials shall be brought to or above optimum moisture. This shall be accomplished by either presoaking the excavation area or mechanically mixing water with the embankment materials on-grade.
5) All fill material shall be placed in continuous horizontal lifts and properly compacted. The rolled surfaces of all layers of earth fill shall be so constructed as to provide a firm bond with the overlaying layer and prevent development of a stratified structure.
6) The difference in elevations between adjacent areas of compacted fill shall not exceed 5 feet at any time during embankment construction.
7) Materials designated by the Project Manager as unsuitable for use in the channel embankment shall be removed and disposed of at a site selected by the Project Manager. Any boulders greater than two feet in diameter shall be stockpiled on site as directed by the Project Manager.

203.36 SUB EXCAVATION
1) Delete the wording in this paragraph in its entirety and substitute the following: All excess or unsuitable excavated material that cannot be used in embankment shall be disposed of at locations approved by the Project Manager. The cost of disposal of waste material shall be included in the unit price for unclassified excavation.

203.37 MOISTURE AND DENSITY CONTROL
1) Delete the wording in paragraph one and substitute the following: All embankments, except spoil or stockpiled areas shall be constructed with moisture control.
2) Delete the second, third, fourth, fifth, sixth and seventh paragraphs. Add the following section: **203.371 MOISTURE AND DENSITY CONTROL FOR CHANNEL CONSTRUCTION.**

(a) Moisture Conditioning. Fill materials shall be moistened prior to compacting. Moisture content shall range between optimum moisture and + 2% of optimum moisture content as determined by ASTM D-1557. Moisture shall be distributed uniformly throughout each lift.

(b) Fill Placement. Fill material shall be blended as necessary to produce a homogeneous material. Fill material shall be spread in horizontal lifts no greater than eight inches in uncompacted thickness and in no case thicker than can be properly compacted with the equipment to be utilized. If fill is to be placed on slopes steeper than 5:1 (horizontal: vertical) the natural ground shall be benched with minimum three foot wide benches at maximum two foot vertical intervals.

(c) Compaction. Structural fill shall be mechanical compacted to a minimum relative density of 95% of the maximum dry density as determined by ASTM D-1557. Compaction by flooding and jetting is specifically prohibited unless authorized in advance by the Owner or his representative and the Geotechnical Engineer.

203.372 BASIS OF PAYMENT
1) Delete the wording in this section in its entirety and substitute the following: All items in this section will be paid for as Unclassified Excavation. Unclassified Excavation payment will only be made for the excavation of in-place materials. No payment will be made for excavation of stockpiled materials, structural excavation of previously placed materials and over depth cuts. No payment will be paid for haul. Payment for unclassified excavation will include the cost for all earthwork including excavation compaction, structural backfill, foundation treatment, moisture control, and hauling material to the embankment, disposing of excess excavation material off site or as designated on the plans. Quantities will be measured by the average end area method. Measurements may be made by field survey or aerial photography. Survey shall be taken after completion of the clearing and grubbing has been approved. Any excess material will be disposed of off-site at the direction of the Project Engineer. For Unclassified Excavation, payment will be under:

Pay Item	Pay Unit
Unclassified Excavation	CY

SECTION 205
STRIPPING

205.31 DESCRIPTION
1) Delete in entirety and substitute the following: The stripping material shall be salvaged and stockpiled. The salvaged stripping material shall be spread in a uniform layer on the earthen slopes and embankment prior to seeding embankment.

205.5 BASIS OF PAYMENT
1) Delete subparagraphs 205.051 and replace with the following: No separate payment will be made for stripping or placement of stripping material.

SECTION 207
SUBGRADE PREPARATION

1) In Section **207.31** replace the words 'AASHTO T 99 and AASHTO 224' with the words ASTM D-1557 (Modifier Proctor).
2) In the first sentence of Section **207.31** replace '100' with 95 and replace '95' with 90.
3) Add the following section:
207.33 Subgrade Preparation for Channel Lining. All earth surfaces that will receive concrete shall be first compacted to minimum relative density of : 95% of the maximum dry density as determined by ASTM D-1557. Subgrade preparation for channel lining shall be a minimum of 8 inches below the lines and grades shown on the plan. Subgrade preparation for the roadway shall be 6 inches minimum below the lines and grades shown on the plan. Where it becomes necessary to excavate beyond normal lines of excavation in order to remove boulders, unsuitable materials or other interfering objects, the voids remaining after the removal of such boulders, unsuitable materials or interfering objects shall be backfilled with suitable material or lean fill, as approved by the Project Manager, compacted to a density of not less than 95%.

SECTION 510
PORTLAND CEMENT CONCRETE

510.11 GENERAL
1) In the second sentence, replace "Central Materials Laboratory" with "Project Manager".
2) Tint shall be Bayferrox, Sand Beige, at 1 lb. per sack of cementitious material for concrete slope paving and 4000 psi tinted structural concrete as shown on the plan.

510.121 CONCRETE CLASS SUBSTITUTIONS
1) Delete this section in its entirety.

510.13 MIX DESIGN
1) Delete this section in its entirety and substitute the following: The Contractor shall be responsible for the concrete mix design. Failure of all mixed concrete to meet specification requirements will be considered grounds to reject said concrete. Proportioning of the concrete mix must be based on Section 510.312 Design Option B.

510.2 MATERIALS
1) Replace reference to the "Central Materials Laboratory" with "Project Manager".

510.25 WATER
1) Delete the first paragraph in its entirety.

510.28 FLY ASH
1) Delete this section in its entirety and substitute the following: Fly ash must be added in the proportion of 25 lbs. of fly ash to 100 lbs. of cement.

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ALBUQUERQUE METROPOLITAN FLOOD CONTROL AUTHORITY (AMAFCA)
AND
MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD)

TITLE: LOT 1, STOUT SUBDIVISION
CORRALES MAIN CANAL RELOCATION
DETAILS AND SPECIFICATIONS

APPROVED FOR CONSTRUCTION (MRGCD) DATE 4/21/03
APPROVED FOR CONSTRUCTION (AMAFCA) DATE 4-16-03

PROJECT NO. | MAP NO. C,D-13 | SHEET 5 OF 7

AS BUILT INFORMATION | BENCH MARKS | SURVEY INFORMATION | FIELD NOTES | NO. | BY | DATE | ENGINEER'S SEAL

REVISIONS | REMARKS | BY | DATE
DESIGN | DESIGNED BY BDM | DRAWN BY BDM | CHECKED BY BDM | DATE FEB. 2003

CANAL-DTL(final1A).DWG 04/10/03

2) Fly ash shall meet the requirements of ASTM C–618, Pozzolan Class F, except the requirements shown on Table 2, "Physical Requirements" shall be amended as follows:

Fineness:	
Surface area, min. cm2/cm3	5000
Pozzolanic Activity Index:	
with Portland Cement at 28 days minimum percent of control	50
Reactivity with cement alkali's:	
Reduction of Mortar expansion at 14 days, minimum center	60

510.281 SOURCE APPROVAL AND ACCEPTANCE
1) Delete the last sentence of this section.

510.282 SOURCES ON APPROVED LIST
1) Delete this section in its entirety and substitute the following: Fly ash that is on the current NMSHTD Central Materials Laboratory approved list will be considered to be pre–approved provided that a copy of such approval is included in the mix design submittal.

510.29 AGGREGATE TESTING
1) Delete this section in its entirety.

510.31 PROPORTIONING
1) Delete the wording in the first paragraph and substitute the following: After the component materials have been approved, the concrete mix design will be determined.
2) Delete the last paragraph.

510.311 MIX DESIGN OPTION A
1) Delete this section in its entirety.

510.312 MIX DESIGN OPTION B
1) Delete this section in its entirety and substitute the following: The Contractor shall make arrangements with an independent testing laboratory to determine the proportions by means of trial mixes, including air–entrainment agent and fly ash, which will be necessary to meet the requirements of Section 510 – Portland Cement Concrete. Each mix design must be certified as correct by a professional civil engineer licensed by the State of New Mexico. Prior to any concrete being placed, copies of all test data, including the 28 day flexural and compressive strengths, shall be submitted to the Project Manager for review. If the concrete is being supplied by a commercial supplier (a concrete supplier that has been producing and selling concrete from a fixed location for a period of five years), mix designs may be established on an annual basis for each class of concrete.
2) Concrete mix design submittals shall include but not be limited to:
   1. Class of Concrete
   2. List of Materials
   3. Material Test Results for the Following:
      a. Graduations
      b. Bulk SSD specific quantities
      c. Fineness modulus (fine aggregate)
      d. Soundness Loss (coarse aggregate)
      e. Concrete temperature
      f. Slump
      g. Unit weights
      h. Cylinder breaks at 7, 14 and 28 days
   4. Water/cementitious material ratio
   5. Condition of aggregate source
   6. Procedure

510.313 ADJUSTMENTS TO APPROVED MIX DESIGNS
1) Delete this section in its entirety.

510.4 CONCRETE STRENGTH
1) Delete this section in its entirety.

510.5 PRICE ADJUSTMENTS
1) Delete this section in its entirety.

510.6 MEASUREMENT AND PAYMENT
1) For Structural Concrete, payment will be made under:

Pay Item	Pay Unit
Structural Concrete 4000 psi (tinted)	CY
Structural Concrete 4000 psi	CY

SECTION 516
4000 PSI TINTED SLOPE PAVING
(Added Section)

516.102 DESCRIPTION
1) This work shall consist of the construction of six and eight inch tinted thick concrete slope pavement, in substantial compliance with the specifications and the lines and grades shown on the plans or established by the Project Manager.

516.20 CONSTRUCTION REQUIREMENTS

516.21 GENERAL
1) All excavation shall be made in accordance with Section 203. All sub–grade preparation required for concrete slope pavement shall be done in accordance with applicable provisions of Section 207. The concrete, reinforcing steel, curing compound, Urethane sealant, Eva–Seal, Plastazote or approved equals, and other materials used in the construction of concrete channel lining shall conform to applicable requirements of these specifications.
2) Rebar for channel lining shall be supported on individual high chairs with sand plates. The chairs shall be on, a maximum spacing of five foot centers in all directions.
3) All rebar shall be grade 60 rebar and conform to Section 540 STEEL REINFORCEMENT.
4) All bar reinforcement shall be deformed bars of Grade 60 and shall conform to the requirements of AASHTO M31, including supplementary requirements. Reinforcement size and grade shall conform to that shown on the plan set for each application.
5) The primary bar reinforcement for the reinforced concrete channel shall be that shown on the plan set. The use of deformed Welded Wire Reinforcement (WWR) will be allowed for channel reinforcement. Maximum yield strength of 80,000 psi will be allowed for the WWR in the calculation of reduction in steel cross–sectional area using the equivalent strength procedure. All lapped splices shall be calculated using Grade 60 rebar diameters. All WWR shall be approved by the Project Manager prior to installation. The surface of all WWR shall be free of rust and debris prior to concrete placement.

516.22 FORMS
1) Form material shall be free from warp, with smooth and straight upper edges. Timber forms may be used for forming curved sections but shall not be used for straight work unless authorized in writing by the Project Manager. Metal forms for such work being of a gauge that will provide proper rigidity and strength for the purpose for which they intended. The forms shall be of sufficient rigidity and strength and braced such that the forms remain in both horizontal and vertical alignment until their removal.
2) Form material shall be thoroughly clean at the time it is used and shall be given a coating of light oil or other suitable material immediately prior to the placing of the concrete.

516.23 PLACING AND FINISHING CONCRETE
1) The concrete shall be placed on a thoroughly dampened subgrade sufficiently moist to insure that no moisture will be absorbed from the fresh concrete. After placement, the concrete shall be screeded, floated and given a double tined finish. The plane surfaces shall not vary more than 1/2 inch when measured with a 10 foot straight edge. The finish surface shall not vary more than 0.1" from the established finish grade.
2) Concrete shall be placed by means of a concrete pump with sufficient boom length to reach all portions of the channel at each set up.
3) The temperature of the mixed concrete shall be not more than 90 degrees F at the time of placing.
4) Slope paving concrete shall not be cast unless the combination of air temperature, temperature of fresh concrete, relative humidity and wind velocity at the site are such that the rate of evaporation is less than 0.20 pounds per square foot per hour as determined by the procedure in Section 509.034.
5) Concrete mixing placement and finishing shall be in accordance with Section 451.033 paragraph (d) Handling, Measuring and Batching Materials except as modified herein.
6) If a sawed joint is utilized for the longitudinal joint in the channel lining, this joint shall be constructed in accordance with the following:
   a) Longitudinal Contraction Joint: Longitudinal contraction joints shall consist of planes of weakness created by forming or cutting grooves in the surface of the pavement and shall include reinforcing as shown on the plans.
   b) Sawed contraction joints shall be created by sawing grooves in the surface of the pavement, of the dimensions and at the spacing and lines shown on the plans, with an approved concrete saw. After each joint is sawed, the saw cut and adjacent concrete surface shall be thoroughly cleaned and sealed with urethane sealant. Sonolastic NP–1 sealant or approved equal.
   c) Sawing of the joints shall commence as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling, usually 4 to 12 hours. All joints shall be sawed before uncontrolled shrinkage cracking takes place. If necessary, the sawing operations shall be carried on both during the day and night, regardless of whether conditions. The sawing of any joint shall be omitted if a crack occurs at or near the joint location prior to sawing. Sawing shall be discontinued when a crack develops ahead of the saw. In general, all joints should be sawed in sequence. If extreme conditions exist which make it impractical to prevent erratic cracking by early sawing, the contraction joint groove shall be formed.
7) Concrete curing shall be in accordance with Section 510.240, paragraph 510.241 Liquid Membrane Forming Curing Compound, and Curing Concrete Pavement in Cold Water.
8) The use of a canal or slope paving machine is encouraged. Such machine must meet the following conditions:
   a) It shall be of the type having rollers and augers and shall also have vibrating pans, or spud–type vibrators capable of vibrating at 3500 impulses per minute.
   b) The machine shall be in good repair and properly maintained. Fuel tanks must be full before placing over concrete, and should be of sufficient capacity to preclude refueling during concrete placement.
   c) Rails must be strong enough and sufficiently anchored to prevent flexing or bending when the machine is operated. Rails must be kept clean during paving operations.
   d) Only authorized operation(s) will be allowed on the machine while in operation.
   e) Follow manufacture's guidance regarding set–up and operation.
9) A dry run shall be made before concrete is placed to check grades and lines and proper operation.
10) Concrete placement shall include the following techniques:
   a) Concrete must be placed starting downstream and working upstream. This requirement is intended for each concrete placement when applicable and not intended to direct the activities for the overall project.
   b) A concrete pump shall be used. Provision shall be made for a spare pump or crane with bucket. Placement on slopes shall be from toe of slope to top after bottom section has been placed.
   c) Concrete shall be placed close to the final position, and to its full thickness.
   d) Do not place concrete more than 12 feet in front of the machine.
11) The heights of the concrete roll in front of the augers shall be at least one–half the diameter of the auger.
12) Augers shall be adjusted up or down to maintain a roll of concrete one–inch high on the front or leading end of the finished rollers.
13) The rear of the machine should be raised slightly (about 1/8 inch) to allow grout on the side of the finishing rollers to feather itself out and leave a smooth finish.
14) The machine shall be advanced such that all concrete receives at least three passes of the rollers.

516.24 TOLERANCE IN PAVEMENT THICKNESS

516.24.1
1) Acceptance of the finished channel lining with respect to thickness shall be on the basis of random core sampling, as designated by the Project Manager. A minimum of two core samples will be taken from longitudinal lengths of channel not to exceed 300 linear feet, or from a one day's placement of concrete not to exceed 300 linear feet. If deficiencies are noted, the Project Manager may require additional core samples to be taken. All coring required by the Project Manager shall be at the Owner's expense.
2) Should the Contractor desire to have additional core samples taken these samples would be taken at the Contractor's expense.

516.24.3
1) Deduction for a deficiency in thickness shall be made according to Table 516.24.3. Thickness deficiency shall be based on the average thickness of the number of samples taken within the specified length of channel.

516.24.4
1) It shall be the responsibility of the person requesting the core sampling to have the core holes immediately filled with fresh concrete. This concrete shall be of the same concrete mix and of equal compressive strength as the original concrete.

516.24.5
1) Any concrete lining that is noted to be deficient in thickness at or more than the reject level on Table 516.24.3 shall be removed and replaced at the Contractor's expense.

516.24.6
1) For information purposes only, the Project Manager may have the core samples tested for compressive strength.

TABLE 516.24.3 DEDUCTIONS FOR DEFICIENCY IN THICKNESS
(Average thickness per core measured in accordance with ASTM C–174)

Design thickness shown on the plan set	
Bridge Deck	5"*
Tinted Slope Paving	6"*
Tinted Slope Paving	8"*

Thickness Deficiency	Percentage of Contract Price Allowed
0 to 1/4 inch	100
1/4 to 1/2 inch	94
1/2 to 3/4 inch	88
3/4 to 1 inch	82
Greater than 1 inch	Reject

*Design Thickness

516.30 METHOD OF MEASUREMENT
1) All portions of the trapezoidal channel lining and any slabs less than or equal to one–foot thick shall be considered slope paving and be governed by this section of the specifications. Concrete slope paving shall be measured by the square yard of exposed surface area.
2) Concrete rundowns shall be measured be each square yard of exposed surface area. Cut off walls associated with concrete rundowns shall be measured by the cubic yard of non–tinted structural concrete calculated by the line and grades shown on the plan set. All payments shall include all labor, material, excavation, backfill, and jointing material required to complete the work in place to the interface with the slope paving.

516.40 BASIS OF PAYMENT
1) The accepted quantities of tinted slope paving and rundowns will be paid for at the contract unit price per square yard constructed excluding cutoff walls and shall include the Portland Cement, aggregate, concrete coloring (when required), admixtures, reinforcing steel, earthwork, curing compound and any other operations necessary to complete the concrete in place not separately paid for. Tinted concrete is required for all exposed slope paving. It is also required for all rundowns and rundown access ramp.
2) The accepted quantities of tinted slope paving shall be paid for at the contract price per square yard exposed surface. Payment for concrete slope paving shall be considered just compensation for completing the concrete slope paving in place including thickened sections of joints, top and toe of slopes, joint materials and materials and operations and reinforcing steel.

Payment shall be made under:

Pay Item	Pay Unit
4000 psi Tinted Channel Lining 8 inches thick	SY
4000 psi Tinted Channel Lining 6 inches thick	SY

SECTION 540
STEEL REINFORCEMENT

540.21 BAR REINFORCEMENT
1) Delete this section in its entirety and replace as follows:
Primary bar reinforcement shall be deformed bars of Grade 60 and shall conform to the requirements of AASHTO M31, including supplementary requirements. Field bending of Grade 60 bars will not be permitted. All ties and stirrup bar reinforcement shall be deformed bars of Grade 40 or Grade 60 and shall conform to the requirements of AASHTO M31, including supplementary requirements. Reinforcement size and grade shall conform to that shown on the plat set for each application.

The primary bar reinforcement concrete channel shall be that shown on the plan set. The use of deformed Welded Wire Reinforcement (WWR) will be allowed for channel reinforcement. Maximum yield strength of 80,000 psi will be allowed for the WWR in the calculation of reduction in steel cross–sectional area using the equivalent strength procedure. The use of WWR will decrease the rebar spacing of the channel reinforcement. All lapped splices shall be calculated using Grade 60 rebar diameters. All WWR shall be approved by the Project Manager prior to installation. The surface of all WWR shall be free or rust and debris prior to concrete placement.

540.34 SPLICING
1) Delete this section in its entirety and replace as follows:
Reinforcement shall be furnished in the full length indicated on the plans, unless otherwise included in a reinforcing bar submittal by the Contractor and approved by the Project Manager. Bars in lapped splices shall be placed and securely tied in a manner that will maintain not less than the minimum distance to the surface of the concrete shown on the plans.

540.36. REINFORCING BAR PLACEMENT
1) Delete the fourth paragraph and add the following sentence:
Steel chairs used to support the bottom mat shall have individual sand plates and be on a maximum of 5' x 5' spacing.

540.361 REINFORCING BAR PLACEMENT TOLERANCES
1) Delete this section in its entirety and substitute the following:
With the exception of slabs and footings cast on earth and of tie bars where specified, the minimum clear coverage of reinforcement shall be two (2) inches, and the structures shall be formed. The minimum clear coverage for all slabs and footings cast on earth shall be three (3) inches.

Variations in spacing between adjacent bars shall not exceed ¢ inch or one twenty–fourth (1/24) of the spacing dimension shown in the plans, whichever is greater.

540.4 and 540.5
1) Delete this section entirely and replace with the following:
540.4 and 540.5 MEASUREMENT AND PAYMENT. Steel reinforcement, fabrication, and installation will not be paid for separately but will be considered incidental to other contract items to which it relates.

SECTION 603
TEMPORARY EROSION AND SEDIMENT CONTROL

603.12. POLLUTION PREVENTION PLAN
1) Add the following to the second paragraph:
This work includes the filing of the Notice of Intent, building structural measures as required by the contract documents, maintaining structural measures, monitoring and inspection of structural measures and inspection of the entire site, recording keeping and filing the Notice of Termination after acceptance of the project.

603.13. NOTICE OF INTENT
1) Delete this paragraph and substitute the following paragraph:
The Contractor shall comply with the United States Environmental Protection Agency NPDES General Permits for Storm Water Discharges from Construction Sites. The Contractor shall submit to the Project Manager, two days prior to the pre–construction conference, a "Notice of Intent" form (NOI) as contained in the EPA regulations. Work may begin 48 hours after submittal of NOI. After completion and acceptance of the project, and prior to the final payment, the Contractor shall submit a "Notice of Termination" (NOT) to EPA. A blank NOI and NOT are contained in the SWPPP section.

603.32. CONTRACTOR'S OPERATIONS
1) Add the following paragraph to the end of the section:
The Contractor agrees to maintain existing silt fence on the Project at no additional costs. The Contractor agrees to install additional erosion control measures as conditions indicate, or as directed by other regulatory agencies, in a timely manner as dictated by the circumstances. Contractor and Owner will negotiate in good faith for equitable compensation for furnishing, installing and maintaining such additional erosion control measures.

603.38. CHANGES AND REVISIONS REQUIRED BY OTHER REGULATORY AGENCIES (New Section)
If, during the course of the project, meetings are required to address changes or revisions to the Storm Water Pollution Prevention Plan, that are due to circumstances beyond the Contractor's control, Owner and the Contractor's representative shall both attend such meetings and work together with the regulatory agencies for resolutions of any such problems. The Contractor's representative shall have authority to enter into agreements, approve change orders and commit contractor resources to comply with the NPDES General Permit Provisions.

603.39. COMPLIANCE WITH NPDES PERMIT REQUIREMENTS (New Section)
In the event the Contractor fails to comply with the permit requirements after written notice to comply with such, AMAFCA retains the right to enter upon the project site and perform corrective measures. The cost of such corrective measures shall be the responsibility of, and shall be paid by, the Contractor. AMAFCA shall be entitled to deduct such costs from remaining contract amounts, and if insufficient contract amounts exist, the Contractor shall reimburse AMAFCA for any deficiency.

603.41. METHOD OF MEASUREMENT
1) Delete the section and substitute the following paragraph:
The compliance with the Storm Water Pollution Prevention Plan, filing of Notice of Intent, maintenance and inspection of structural measures included in the Bid Proposal, inspection of the site, record keeping, and filing of Notice Termination will be paid on a lump sum basis with one half the lump sum paid when the Notice of Intent is filed, and with the remaining amount paid as a percentage of the contract. Payment for this item is limited to a total of one percent (1%) of the contract.

603.51. BASIS OF PAYMENT
1) Delete the section and substitute the following paragraph:
Items of work defined herein must comply with the United States Environmental Protection Agency NPDES General Permits for Storm Water Discharges from Construction Sites, will be described on the bid proposal as "NPDES Storm Water Permitting." They will be paid for as follows:

Payment Item:	Pay Unit:
NPDES Permitting	Lump Sum
Silt Fence	Linear Feet
Straw Bale	Each

SECTION 624
DRAINAGE CHANNEL EXPANSION JOINTS
(Added Section)

624.01 GENERAL
1) All joint sealing compounds shall be used when shown on the plans and be installed based on the following criteria and the manufacturer's instructions. All suggested materials may be replaced by other materials if approved equal by the Engineer.

624.02. MATERIALS

624.021. URETHANE SEALANT
1) Sonolastic NPI or SL–1 a two–component, self–priming urethane sealant produced by Sonneborne Building Projects Divisions of Contech, Inc., or approved equal by the Project Manager, shall be used where called out on the plan. The sealant shall conform to specification ASTM C–920–72.
   (a) Preparation and Application. Immediately prior to application, joints shall be cleaned with power driven wire brushes to remove laitance, curing compound, or other bond inhibitors. If the joins are backed with anything other then closed cell Polyethylene rod, a bond breaker such as polyethylene sheeting must be used to prevent third surface adhesion.

   Joint surfaces must be primed and dry to the touch before the sealant is applied. Sealant shall be extruded at the bottom of the joint groove and tooled to work the sealant into close contact with the joint surfaces to eliminate air bubbles. Any sealant that does not cure properly, fails to establish a satisfactory bond, is damaged by the Contractor's operations, or is not satisfactory in the opinion of the Project Manager, must be removed and the joint re–cleaned and resealed. The sealant shall not be applied when the air temperature is below 40 degree Fahrenheit.

   (b) Bonding Agent. The bonding agent to be used to bond Sonolastic NP to the concrete or mortar nosing shall be No. 1993 Primer, a one–component solvent based system, or approved equal by the Project Manager.

624.03 MEASUREMENT AND PAYMENT
There shall be no separate measurement or payment for the concrete joint material and shall be considered incidental to other contract items.

SECTION 625
SHOTCRETE

Delete Section 625 and replace with the following:

625.1 DESCRIPTION

625.11 This work shall consist of construction of the concrete emergency spillway lining utilizing the shotcrete process, including mixing, placing, finishing, testing and curing as shown in the contract in compliance with these specifications:

625.12 The requirements of Section 510 – Portland Cement Concrete and Section 511 – Concrete Structures shall apply where appropriate and not expressly modified by these specifications.

625.2 MATERIALS

625.21 All requirements of Section 510 – Portland Cement Concrete shall apply except as modified herein. Shotcrete shall have a minimum compressive strength of 3,500 PSI at 28 days, 5–8% air content at the pump and a slump of 1–1/2" to 3" at the pump. Shotcrete shall be tinted in accordance with Subsection 625.211 of these specifications.

625.211 Tinted concrete will be made by the addition of an approved concrete coloring agent to the concrete mix. The coloring agent will be added in addition to other concrete ingredients and no reductions to other ingredients will be made.

The concrete coloring for use on this project shall be Bayferrox, Sand Beige, Color numer CC64, or Approved Equal. The coloring agent shall be added at a rate of one (1) pound per sack of cement, per the manufactures specificartions.

The design mixes must be submitted by the Contractor for approval by the Project Manager prior to placement.

Coordination with the General contractor, shotcrete subcontractor, AMAFCA Project Manager will be required prior to any shotcrete placement.

625.22 Coarse Aggregate. Coarse aggregate shall meet the following gradation requirements.

Sieve Size	1.1. Percent Passing
1/2 inch	100
3/8 inch	85–100
No. 4	10–30
No. 8	0–10
No. 16	0–5

AS BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY — DATE
ACCEPTANCE BY — DATE
FIELD REVISIONS BY — DATE
DRAWINGS CORRECTED BY — DATE
MICROFILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS
		DESIGN — DESIGNED BY — RDM — DATE — FEB. 2003
		REVISIONS — DRAWN BY — RDM — DATE — FEB. 2003
		CHECKED BY — RDM — DATE — FEB. 2003

BUILDING ENGINEERING AND MUNICIPAL DESIGNS
BEAM DESIGNS
855 POLARIS BLVD., SE
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beamdesigns@qwest.net

ALBUQUERQUE METROPOLITAN FLOOD CONTROL AUTHORITY (AMAFCA)
AND
MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD)

TITLE: LOT 1, STOUT SUBDIVISION
CORRALES MAIN CANAL RELOCATION
SPECIFICATIONS

		LAST DESIGN DATE	NO./DAY/YR.	NO./DAY/YR.
APPROVED FOR CONSTRUCTION (MRGCD)	4/29/03 DATE			
APPROVED FOR CONSTRUCTION (AMAFCA)	4-16-03 DATE			

PROJECT NO. | MAP NO. C,D-13 | SHEET OF 6 7

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625.23 Proportioning. Shotcrete shall be mixed and pneumatically applied by the wet–mix process and shall consist of not less than 611 pounds of Portland Cement per cubic yard, fine aggregate, coarse aggregate, water, air entrainment and coloring agent admixtures. A maximum of 30 percent coarse aggregate may be substituted for fine aggregate.

625.24 The design mixes must be submitted by the Contractor for approval by the Project Manager.

625.25 Preconstruction Testing:

Test panels simulating actual field conditions shall be fabricated prior to start of construction.

The panels shall be at least 36" square and 6" thick with a back form of heavy plywood. The forms should be set for each shooting position to be encountered in the structure. Part of the panel should contain the same reinforcement as the structure, to show whether sound shotcrete is obtained behind the reinforcing bars. The panel is fabricated by gunning the proposed shotcrete design mix, including all materials and additives, to simulate actual field conditions. Curing will be field cured as specified. Cores shall be obtained for compression test and tested at 7, 14, and 28 days.

Prior to gunning the mixture three concrete test cylinders shall be taken from the design mix and tested at 7, 14, and 28 days. Cylinders to be field cured.

625.26 Quality Acceptance Tests:

A minimum of three cores shall be taken for each 500 linear feet of channel. Cores shall be obtained and tested in accordance with ASTM C–42–90. One core shall be removed and tested at 7 days, one at 14 days, and one at 28 days. Minimum compression strengths shall be as follows:

7 day	14 day	28 day
2,400 PSI	3,000 PSI	3,500 PSI

If shotcrete cores at 28 days show deficient strength, additional cores shall be taken at the contractor's expense form adjacent areas. Two cores shall be required for each deficient core. Should either additional core prove deficient, the defective shotcrete shall be removed and replaced at the Contractor's expense. No additional shotcreting shall be done until the shotcrete mixture is revised and approved by the Project Manager.

Should a strength deficiency be evident in 7–day or 14–day cores, on approval of Project Manager, the Contractor may proceed with the work on his own responsibility until the 28 day cores are tested. These cores shall also be used for determining shotcrete thickness.

625.3 CONSTRUCTION

625.31 Equipment and Workmen. Shotcreting shall be done only by experienced personnel. When requested by the Project Manager, the Contractor shall furnish evidence that each foreman, nozzle operator and delivery equipment operator has done satisfactory work in a similar capacity elsewhere and is fully qualified to perform the work.

The Contractor shall furnish the Project Manager with copies of the manufacturer's specifications and operating instructions for the equipment used. No shotcrete shall be placed until the type of equipment and method of operation have been approved by the Project Manager.

625.311 Premixed Shotcrete. The mixing equipment shall be capable of thoroughly mixing the specified materials in sufficient quantity to maintain continuous placing.

625.32 Surface Preparation. The foundation for areas to receive shotcrete shall be evenly graded to the required elevation before the shotcrete is applied. The areas shall be thoroughly compacted with sufficient mixture to provide a firm foundation and to prevent absorption of water form the shotcrete. No high subgrade will be permitted. Refer to subsection 207.033 of these specifications for subgrade preparation.

Surfaces shall not contain free surface water, loose material or frozen material at the time of shotcrete application.

625.33 Forms and Reinforcement. Forms, headers, and shooting strips shall be provided and rigidly braced as required for backing. Ground or gaging wires and depth gages shall be used where necessary to establish and insure thickness, surface and finish lines.

Steel reinforcement shall be rigidly supported in the position shown in the contract. Mortar blocks, metal chairs, clips or spacers with tie wires or other acceptable means shall be used to properly anchor and place the reinforcement. All reinforcement shall be clean and free from loose mill scale, loose rust, overspray from previous shotcrete application, soil and other undesirable materials that interfere with bonding.

625.34 Placing. Each layer of shotcrete shall be built up by making several passes of the nozzle over the working area. When enclosing steel reinforcement, the nozzle shall be held so as to direct the material around the bars. The shotcrete shall emerge from the nozzle in a steady, uninterrupted flow. The nozzle shall be directed so as to result in minimum rebound. The velocity of the material as it leaves the nozzle shall be maintained uniform and at a rate determined for the given job conditions.

Contractor shall use appropriate form work to separate areas of different tinting, and shall prevent adjacent areas from being discolored by overspray and rebound.

Rebound shall not be worked back into the construction or salvaged. Rebound that does not fall clear of the work shall be removed.

Shotcrete shall not be placed when the air temperature is below forty degrees (40°)F unless the air temperature is at least thirty–five degrees (35°)F and rising.

The mixing, transporting, and placement time for shotcrete materials, shall not exceed two hours or 250 revolutions of the mixer drum whichever comes first. Additional water may be added at job site only if requested by the Project Manager. When additional water is added, the drum shall be rotated a minimum of 30 additional revolutions. The ready–mix plant shall certify the material for weight, water, admixtures and mixing time.

625.35 Finishing. After the shotcrete has been placed as nearly as practical to the required thickness, the ground wires may be removed, the surfaces shall be checked with a straight edge, and low spots or depressions shall be corrected by placing additional shotcrete in such a manner that the finished surface is natural as left by the nozzle and will be reasonably smooth and uniform.

Loose areas of shotcrete shall be removed and replaced by the Contractor at no additional cost.

625.36 Curing. Shotcrete shall be cured in accordance with Subsection 503.039 (f)(9). In all cases, the period of protection shall be not less than 7 days.

625.37 Tolerance in Shotcrete Thickness. Acceptance of the finished channel lining with respect to thickness shall be on the basis of random core sampling, as designated by the Project Manager. A minimum of two core samples will be taken form longitudinal lengths of channel not exceed 500 linear feet. If deficiencies are noted, the Project Manager may require additional core samples. All coring required by the Project Manager shall be at the Owner's expense.

Should the Contractor desire to have additional core samples taken these samples would be taken at the Contractor's expense.

Deduction for a deficiency in thickness shall be made according to the following: Thickness deficiency shall be based on the average thickness of the number of samples taken within each 500 or less linear feet of channel.

Thickness Deficiency	1.1.1. Percent of Contract Price Allowed
0–1/2"	100%
Greater than 1/2"	Reject

Any 500 linear foot span of channel lining that is noted to be deficient in thickness by more than the reject level shall be removed and replaced at the Contractor's expense.

It shall be the responsibility of the Contractor to have the core holes immediately filled with fresh shotcrete. This shotcrete shall be of the same mix and of equal compressive strength as the original.

For quality acceptance, the Project Manager may have the core samples tested for compressive strength.

All cores will be measured in accordance with ASTM C–174.

625.38 Method of Measurement. Shotcrete will be measured by the square yard parallel to the surface.

Basis for Payment. The accepted quantities of shotcrete will be paid for at the contract unit price per square yard. Such payment shall constitute full reimbursement for all materials, labor and equipment used in the placement of all shotcrete, steel reinforcement, forms, joints, tinting, finishing, curing, and all other necessary operations to complete the shotcrete in place. No extra payment will be made for additional shotcrete placed in excess of that shown on the plans unless directed by the Project Manager.

Pay Item	Pay Unit
6–Inch Colored Shotcrete	SY

SECTION 628
PROTECTION OF PROJECT FROM WATER DURING CONSTRUCTION
(Added Section)

628.1 DESCRIPTION

628.11 This work covers the handling of storm and nuisance flow water in the vicinity of this project.

628.2 CONSTRUCTION REQUIREMENTS

The Contractor will, and will cause his subcontractor(s), to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Project Manager, any work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of his subcontractors so to protect his work, such materials, shall be removed and replaced at the expense of the Contractor.

Until the project is accepted by AMAFCA, the Contractor shall be responsible for protecting completed work, work in progress, equipment, materials and property from storm water, erosion, sediment, and related elements. Damage resulting from storm water, erosion, sediment, and related elements shall be the Contractor's responsibility to replace, repair, or otherwise rectify.

The Contractor shall construct and maintain all dikes and drainage ditches necessary for the elimination of water from all work areas and shall furnish, install, maintain and operate all necessary pumping and other dewatering equipment required for dewatering the various work areas. These measures shall be confined within the construction area. The Contractor is responsible for adequacy of the scheme or plans and for furnishing all equipment, labor and materials necessary for dewatering the work areas and breaking up and removing such ice as may have formed in the work areas.

Diversion methods that may be used include the use of sand bag diversion channels, sand bag dams, pumping or piping around or over the work areas or any method or combination of said methods. Storm water shall leave the project site by discharging to the existing flood plain.

The contractor shall construct and maintain dikes and ditches necessary for the care and diversion of storm water and the elimination of water from work areas. The Contractor will not be allowed to construct dikes and ditches that would divert flows out of the Project limits. However, the Contractor will be allowed to divert storm flows into the existing canal during the duration of the Project. The Contactor is not required to accept flows in the channel as long as diversion of water does not move out of the existing cancal. The Contractor shall not fill any portion of the existing canal outside of the project right–of–way. The Contractor will be allowed to fill upland areas of the existing canal within Lot 1, Stout Subdivision as long as the new canal alignment has been excavated to a minimum depth of four feet as approved by the Project Manager.

628.3 BASIS OF PAYMENT

Providing and maintaining the diversion and care of water, regardless of the amount of water actually handled, shall be paid for as follows for each project as indicated on the bid form:

Pay Item:	Pay Unit:
Protection of Project from Water During Construction	LS

SECTION 902
SUBMITTALS
(Added Section)

902.1 DESCRIPTION

The requirements of this section of the specifications consists of furnishing all manufacturer's data, shop drawings, samples, certifications, guarantees, reports, operation manuals, maintenance manuals, lubrication charts, spare parts lists, special tools, and factory representative required for installation of special items, and providing an updated monthly schedule in strict accordance with the specifications and the applicable drawings, and subject to the terms and conditions of the contract.

902.2 GENERAL

All literature submitted by the Contractor to the Project Manager for review shall be submitted in five (5) copies, with the Project Manager retaining two (2) copies. If, after review, the Project Manager determines that the submittal requires changes or major revisions, the Contractor shall supply the Project Manager with five (5) corrected copies of that submittal. All submittals required on this project shall be submitted within 30 days prior to the date of the expected use of the product. All submittals shall have the project name, the intended location, and reference specification number on all copies of that submittal. Should the submittal time and/or procedure not be followed, the Contractor shall make no claim for loss of time or money as a result of the delay in receiving approved submittal data.

The purpose of the preliminary project schedule and the monthly updates demonstrate to the Project Manager that Contractor has identified the critical path and has identified key milestones that will affect the Project schedule.

The purpose of the shop drawings is to demonstrate to the Project Manager that the Contractor understands the design concept; that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install, and by detailing the fabrication and installation he intends to use. All data submitted shall be complete including type, size, number required, etc., as called for in the contract, plans and specifications. If material or equipment other than that specified is submitted for approval, the submittal data shall clearly show and point out any differences with adequate information to determine its equality.

The approval of the shop drawings by the Project Manager shall not be construed as a complete check but will indicate only the general method of construction is satisfactory. Approval of the shop drawings will note relieve the Contractor of the responsibility for any errors or omissions which may exist on the approved shop drawings as the Contractor will be responsible for the satisfactory construction of all work covered under this contract. If deviations, discrepancies or conflicts between shop drawings and specification are discovered either prior to or after shop drawing submittals are processed by the Project Manager, the design drawings and specifications shall control and shall be followed.

Submittals should preferably be made in groups of items which are related to facilitate cross checking and coordination.

Materials shall not be purchased or fabricated prior to the Contractor receiving approved submittal from the Project Manager. Items delivered to the site or fabricated before the approval of the submitted data shall be subject to rejection by the Project Manager.

The following paragraph lists the items which will be required to construct the project for which submittals will be required by the Project Manager. This list of submittals is for the convenience of the Contractor and should not be taken as the complete and final requirements. Additional submittals may be required by the Project Manager as the project progresses.

902.3 LIST OF SUBMITTALS

- Preliminary Project Schedule
- Monthly Updates of the Project Schedule
- Reinforcing Steel – Grade 60 and welded wire refinforcement
- Concrete Mix Designs
- Concrete Test Results
- Seed(s) and Appurtenances
- Mulches
- All Fillers, Paints, Coatings and Sealants
- Fencing Materials
- Channel Lining Equipment

MIDDLE RIO GRANDE CONSERVANCY DISTRICT
NATIVE GRASS SEEDING

1012.1 GENERAL:

Work under this section consists of preparing all area indicated on the plans for native grass seeding, furnishing and installing all seed, fertilizer and soil amendments as specified herein and on the plans, or as authorized by the MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD) ENGINEER.

1012.2.1 This Publication:

1012.3 WORK AREA/TIMING:

1012.3.1 Areas that are disturbed by the CONTRACTOR that are within and outside the construction limits shown on the plans or authorized by the MRGCD ENGINEER shall be seeded with native grasses as specified herein at no cost to MRGCD.

1012.3.2 The seeding of disturbed areas shall commence upon completion of the other work in the area.

1012.4 MATERIALS:

1012.4.1 Native Seed: The native seed species and rate of application shall be as shown below and shall ve used based on the type of soil or as specified on the plans or in the Supplemental Technical Specification.

1012.4.1.1 Sandy Soils: Seed rate is given in pounds of pure live seed (P.L.S.) per acre.

Variety/ Common Name	Genus/ Species	P.L.S./Acre
"Paloma" Indian Rice Grass	Oryzopsis hymenoides	5.0
"Viva" Galleta Grass	Halaria jamesii	1.0
"Niner" Side Oats Grama	Bouteloua curtipendula	3.0
"Hatchita" Blue Grama	Bouteloua gracilis	1.0
Sand dropseed (NM Region)	Sporobolus cryptandrus	1.0
Total Rate		11.0 lbs/acre

1012.4.1.2 Clay, Clay Loam, and Sandy gravelly clay loam soils: Seed rate is given in pounds of pure live seed (P.L.S.) per acre.

Variety/ Common Name	Genus/ Species	P.L.S./Acre
"Paloma" Indian Rice Grass	Oryzopsis hymenoides	2.0
"Viva" Galleta Grass	Halaria jamesii	2.0
"Niner" Side Oats Grama	Bouteloua curtipendula	2.0
"Hatchita" Blue Grama	Bouteloua gracilis	3.0
Sand dropseed (NM Region)	Sporobolus cryptandrus	1.0
Total Rate		10.0 lbs/acre

1012.4.1.2a Areas within the ditch/canal area (side slopes) that are disturbed by the CONTRACTOR shall be seeded with HULLED BERMUDA seed at a rate of FOUR (4) POUNDS PER 1000 SQ. FT.. with 1/4" thick Peat Moss covering.

1012.4.1.3 Seeds may be pre–mixed by a seed dealer. Each bag of seed shall be sealed and labeled by the seed dealer in accordance with Federal Seed Laws and New Mexico Department of Agriculture Labeling Laws. This includes: variety, kind of seed, lot number, purity, germination, percent crop, percent inert, percent weed (including noxious weeds), origin, test data and net weight. Federal Seed Laws require that analysis shall be no older than 5 months for seed shipped interstate and no older that 9 months for seed shipped intrastate. The MRGCD ENGINEER shall receive all labels from all bags of seed used for verification.

1012.4.2 Fertilized and Soil Amendments: Unless otherwise specified on the plans or in the Supplemental Technical Specification, no fertilizer or other soil amendments are required on areas specified to receive native seeding. If fertilizer and/or other soil amendments are required they shall be in accordance with Section 1011 of these specifications.

1012.4.3 MULCH:

1012.4.3.1 Hay Mulch: Perennial native or introduced grasses of fine–stemmed varieties shall be used unless otherwise specified on the plans. At least 65 percent of the herbage by weight of each bale of hay shall be 10 inches in length or longer. Hay with noxious seed or plants will not be acceptable. Rotted, brittle, or moldy hay will not be acceptable. Marsh grass or prairie hay composed of native grass of species to be seeded will be acceptable. Tall wheat grass, intermediate wheat grass, switch grass or orchard hay will be acceptable if cut prior to seed formation. Marsh grass hay shall be composed of mid and tall native, usually tough and wiry grass and grass–like plants found in the lowland areas within the Rocky Mountain region. Hay shall be properly cured prior to use. Hay which is brittle, short fibered or improperly cured is not acceptable.

1012.4.3.2 Straw Mulch: Small Grain such as wheat, barley, rye or oats will not be allowed except by prior approval of the MRGCD ENGINEER and with the concurrence of the Air Division, Environmental Health Department. Alfalfa or the stalks of corn, maize or sorghum is not acceptable. Material which is brittle, shorter than 10 inches or which breaks or fragments during the crimping operation will not be acceptable.

1012.5 SEED BED PREPARATION:

1012.5.1 General:

1012.5.1.1 Prior to the starting of any seed bed preparation the final grades of all earth work shall be inspected and approved by the MRGCD ENGINEER.

1012.5.1.2 No preparation shall be performed when the surface is wet or muddy or when soil moisture content is such that the soil is not fully loosened by the discing operation.

1012.5.1.3 The extent of seed bed preparation shall not exceed the area on which seeding, mulching and crimping operations can be completed prior to crusting or wind or water erosion of the prepared surface – if erosion, crusting or re–compaction occurs, the affected area shall be re–worked beginning with seed bed preparation. Depth of preparation must be approved by the MRGCD ENGINEER prior to the seeding and mulching operations.

1012.5.2 Mechanical preparation: The seed bed shall be loosened to minimum depth of 6" (six inches) by means of disc or harrow. Area of heavy or compacted soil may require additional preparation such as chiseling or ripping if discing alone does not result in preparation to the full minimum depth of 6". The soil shall be worked to a smooth surface free of clods, stones 4" and larger or any other debris or foreign material that could interfere with seeding or crimping equipment operations.

1012.5.3 Hand Preparation: Areas which cannot be prepared with mechanized equipment because of small size irregular shape or slope angle may be prepared to a minimum depth of 2" using tools or a rototiller.. Any such areas will be specified on the plans.

1012.6 SEEDING:

1012.6.1 General:

1012.6.1.1 Seeding shall not start untol the seed bed preparation has been inspected and approved by the MRGCD ENGINEER.

1012.6.2.1 No more area may be seeded than can be covered with mulch and crimped by the end of the work day. No seeding operations may be conducted when steady wind speed exceeds 10 miles per hour. If winds exceed 10 mph while seeding is underway, seeding operations will be halted and any areas seeded to that point completed.

1012.6.2 SEED APPLICATION:

1012.6.2.1 Drill Seeding: Drill seeding is required unless otherwise specified on the plans or in the Supplemental Technical Specifications. Seed shall be applied with a "rangeland" type seed drill equipped with packer wheels. Seed shall be drilled to a maximum depth of «" unless otherwise specified. Direction of seeding shall be across slopes and on the contour whenever possible.

1012.6.2.2 Broadcast Seeding: Seed may be applied using the broadcast method when size irregular shape or slope angle exceeding 3.1 prevents the use of a seed drill. Seed may be broadcast by hand or by means of a mechanical seeder provided that the seed is evenly distributed over the seeding area. Areas of broadcast seeding will be hand raked to cover seed. Areas which are broadcast seeded shall be seeded at rate which is double that used for drill seeding.

1012.6.2.4 Hydro Seeding: Hydro seeding will not be allowed on areas of non–irrigated native grass seeding unless specified on the plans or in the Supplemental Technical specifications or authorized by the MRGCD ENGINEER.

1012.7 MULCHING:

1012.7.1 General:

1012.7.1.1 All seeded areas shall be mulched unless otherwise specified on the plans or in the Supplemental Technical Specifications.

1012.7.1.2 On seeded areas that are level or have slopes 3:1 or less, hay or straw or mulch may be used. On seeded areas that have slopes steeper that 3:1 only travel mulch or erosion control materials may be used at specified on the plans, Supplemental Technical Specifications, or by the MRGCD ENGINEER.

1012.7.2 Hay Mulch: Hay mulch shall be applied at a minimum rate of 1.5 tons per acre of air dry hay.

1012.7.3 Straw Mulch: Straw mulch shall be applied at a minimum rate of 2.5 tons per acre of air dry straw.

1012.7.4 Crimping: Hay and/or Straw mulch shall be crimped into the soil. The mulch shall be spread uniformly over the area either by hand or with a mechanical mulch spreader. When spread by hand, the bales of mulch shall be torn apart and fluffed before spreading. Mulching will not be permitted when wind velocity exceeds 15 miles per hour. The mulch shall be wetted down and allowed to soften for 15 to 20 minutes prior the crimping. A heavy disc such as a mulch–tiller, with flat serrated discs at least 1/4 inch in thickness, having dull edges and the disc spaced 6 inches to 8 inches apart shall be used to crimp (or anchor) the mulch into the soil to a minimum depth of 2 inches or as specified on the plans or the Supplemental Technical Specifications. The discs shall be of sufficient diameter to prevent the frame of the equipment from dragging the mulch.

The crimping operations shall be across the slope where practical but not be parallel to prevailing westerly winds (270 degrees magnetic). Crimping shall be in the general north–south direction or by tight interlocking "S" curves to avoid straight east–west crimp lines.

If small grain straw mulch is used it shall be crimped in two (2) directions in a cross–hatch pattern.

1012.8 PROTECTION OF NATIVE GRASS SEEDED AREA:

1012.8.1 General:

1012.8.1.1 The CONTRACTOR shall be responsible for protecting and caring for seeded areas until final acceptance of the work and shall repair at his expense and damage to seeded areas caused by pedestrian or vehicular traffic or vandalism.

1012.9 INSPECTION FOR NATIVE GRASS AREA:

1012.9.2 It shall be the responsibility of the CONTRACTOR to nitify the MRGCD ENGINEER 24 hours in advance of each required inspection.

1012.9.3 The CONTRACTOR shall notify the MRGCD ENGINEER of the completion of each phase of construction per the following schedule:

Each phase of soil preparation shall be inspected in process.

Finish grade shall be inspected.

Seed shall be inspected prior to seeding.

Seeded area shall be inspected after completion.

Final inspection of the project and acceptance.

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ALBUQUERQUE METROPOLITAN FLOOD CONTROL AUTHORITY (AMAFCA)
AND
MIDDLE RIO GRANDE CONSERVANCY DISTRICT (MRGCD)

TITLE: LOT 1, STOUT SUBDIVISION
CORRALES MAIN CANAL RELOCATION
SPECIFICATIONS

APPROVED FOR CONSTRUCTION (MRGCD) — DATE 4/29/03
APPROVED FOR CONSTRUCTION (AMAFCA) — DATE 4-16-03

PROJECT NO. | MAP NO. C,D-13 | SHEET 7 OF 7

AS BUILT INFORMATION | BENCH MARKS | SURVEY INFORMATION | ENGINEER'S SEAL | REMARKS | REVISIONS | DESIGN

DESIGNED BY BDN | DRAWN BY BDN | CHECKED BY BDN | DATE FEB. 2003

CANAL–DTL(final1A).DWG 04/10/03