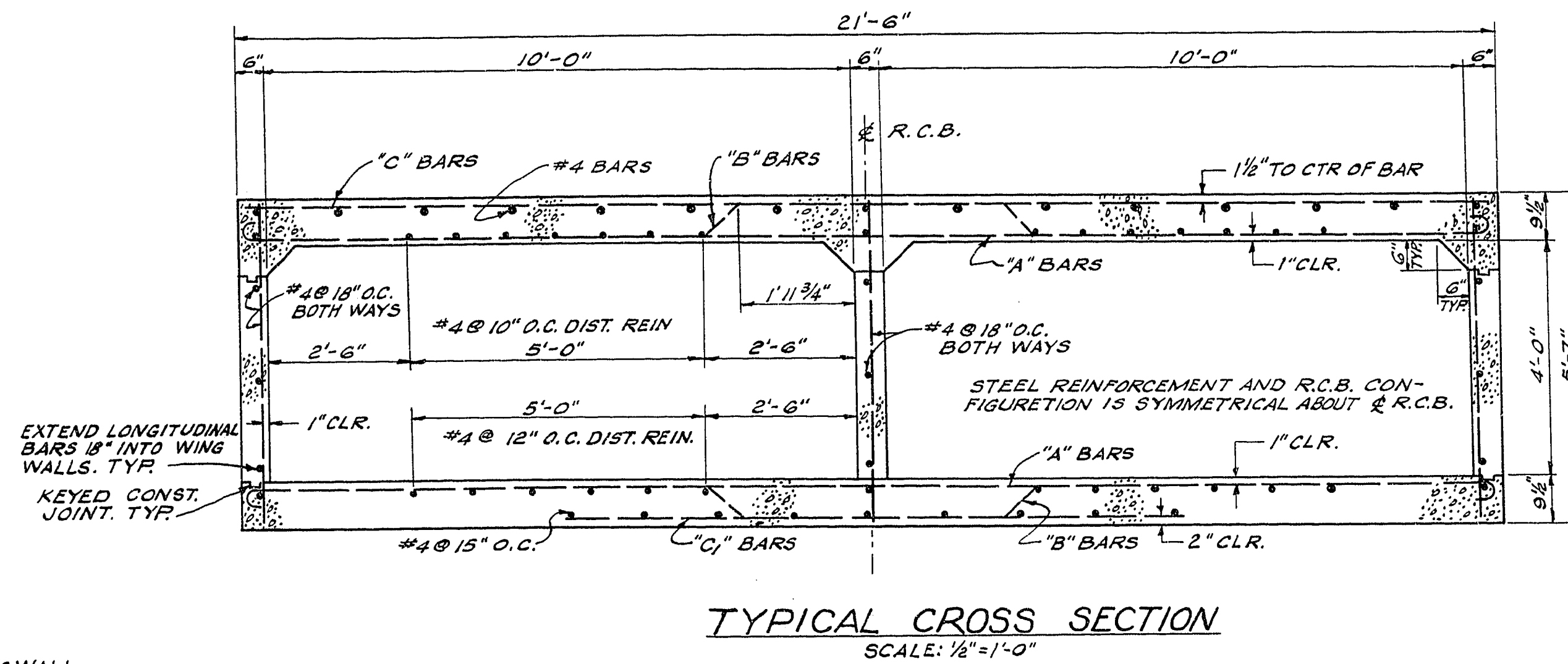
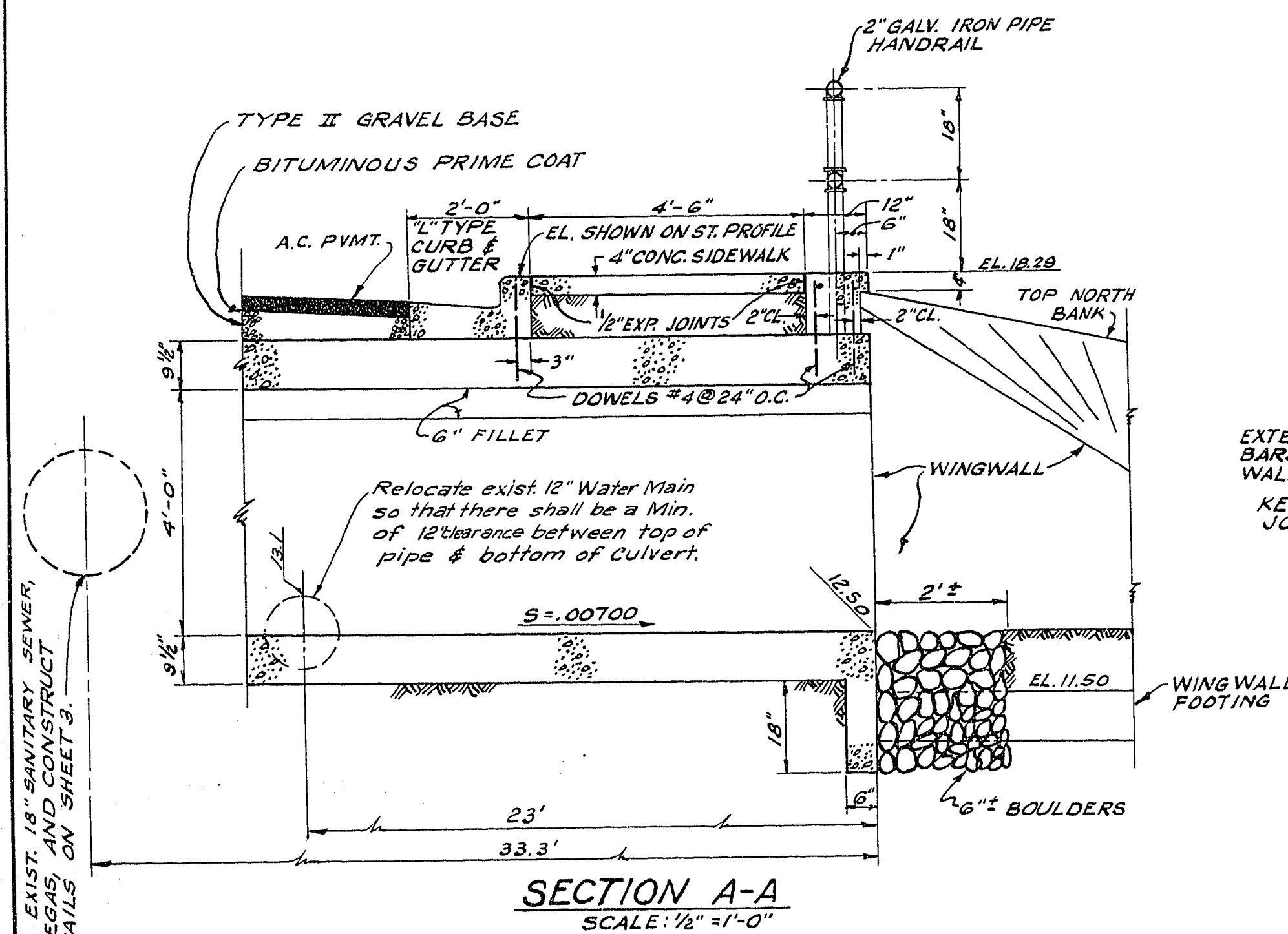




BAR DESIGNATION	SIZE	SPACING	SHAPE
"A" BARS	#5	12"	21'-4"
"B" BARS	#6	12"	4'-5 1/2" 5'-7" 7'-10 1/2"
"C" BARS	#6	12"	21'-4"
"C1" BARS	#6	12"	10'-6"

- STRUCTURAL NOTES**
- CONCRETE SHALL DEVELOP A STRENGTH OF AT LEAST 3000 P.S.I. AT 28 DAYS.
 - REINFORCING STEEL SHALL BE INTERMEDIATE GRADE STEEL DEFORMED BARS WITH DEFORMATIONS CONFORMING TO A.S.T.M. SPECIFICATIONS. BAR SIZES ARE INDICATED BY NUMBER. BAR SPACING IS CENTER TO CENTER OF BARS.
 - DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTER OF BAR UNLESS OTHERWISE SHOWN AS CLEAR.
 - LONGITUDINAL STEEL SHALL BE CONTINUOUS AND EXTEND THROUGH ALL CONSTRUCTION JOINTS AND SHALL BE LAPPED 20 DIAMETERS AT SPLICES.
 - ONLY THE LONGITUDINAL CONSTRUCTION JOINTS SHOWN IN THE DETAILS SHALL BE PERMITTED UNLESS PRIOR PERMISSION TO THE CONTRARY IS GIVEN BY THE CITY ENGINEER.
 - ALL BAR BENDS AND HOOKS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE".
 - UNLESS OTHERWISE SHOWN ON THE DRAWINGS, TRANSVERSE JOINT KEYWAYS (IN BOTH SLABS AND WALLS) AS DETAILED FOR LONGITUDINAL KEYWAYS AT BASE OF WALLS, SHALL BE PLACED AT THE END OF EACH FOUR, BUT THE SPACING THEREOF SHALL NOT BE LESS THAN 10 FEET OR MORE THAN 30 FEET. NO STAGGERING OF JOINTS WILL BE PERMITTED.
 - THE WALLS AND TOP SLAB MAY BE POURED, BUT AFTER WALLS HAVE BEEN POURED, A DELAY OF 2 HOURS SHALL BE MADE BEFORE POURING OF THE TOP SLAB IS STARTED.
 - AT THE BEGINNING AND ENDING OF ALL POURING, A LAYER OF TRANSVERSE REINFORCEMENT SHALL BE PLACED WITHIN 3 INCHES OF TRAVERSE CONSTRUCTION JOINTS.
 - PRIOR TO COMMENCING ANY WORK WITHIN THE EXISTING NATURAL CHANNEL A SOIL INVESTIGATION SHALL BE PERFORMED BY A QUALIFIED SOILS ENGINEER TO DETERMINE THE SUITABILITY OF "NATIVE" SOIL AS A BASE MATERIAL TO SUPPORT THE DESIGN LOAD AND AS FILL OR BACKFILL MATERIAL.
 - ALL LONGITUDINAL BARS SHALL BE #4 BARS. SPACING SHALL BE 18" O.C. UNLESS OTHERWISE SHOWN. LONGITUDINAL BAR IN TOP SLAB SHALL BE SPACED SYMMETRICALLY ABOUT THE CENTER LINE OF EACH SPAN. BARS IN WALLS SHALL BE SPACED SYMMETRICALLY ABOUT MID-HEIGHT OF THE WALLS.
 - BACKFILL REQUIREMENTS SHALL BE DETERMINED FROM A SOIL INVESTIGATION, BUT SHALL BE FREE FROM ORGANIC MATERIALS, BROKEN CONCRETE OR PAVEMENT, LARGE BOULDERS OR OTHER OBJECTIONABLE MATERIAL. BACKFILL SHALL BE COMPACTED TO AT LEAST 95% RELATIVE COMPACTION. COMPACTION OF BACKFILL BY "PONDING" OR CONSOLIDATION BY "FLOODING", "POLING", "SLUICING" OR "JETTING" SHALL NOT BE PERMITTED.
 - THE CONTRACTOR SHALL MAKE ALLOWANCE FOR THE DEFLECTION OF THE FORMS AND FOR SHRINKAGE AND SETTLEMENT OF FALSEWORK. FALSEWORK SHALL NOT BE REMOVED UNTIL THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. AS DETERMINED BY BREAKING CYLINDERS, AND NOT LESS THAN 7 DAYS FROM THE TIME THE POURING OF THE STRUCTURE IS COMPLETED. THE RAILING BASE SHALL NOT BE POURED UNTIL AFTER THE FALSEWORK IS REMOVED.
 - CONCRETE SHALL BE SUFFICIENTLY VIBRATED AND OTHERWISE WORKED SO AS TO PRECLUDE THE PRESENCE OF ROCK POCKETS OR OTHER VOIDS. ALL CHANNEL EXPOSED CONCRETE SURFACES SHALL BE SMOOTH AND ALL FORM SPACERS AND TIES SHALL BE CUT AND VOIDS AROUND THEM SHALL BE GRouted AFTER FORMS HAVE BEEN REMOVED.
 - ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4 INCH.
 - AFTER CONSTRUCTION, THE CHANNEL SHALL BE LEFT IN A NEAT AND ORDERLY CONDITION.

DESIGN DATA

A.A.S.H.O. SPECIFICATIONS

LIVE LOAD = 1-H20-S16-44 TRUCK

WEIGHT OF CONCRETE = 150 P.C.F.

$f'_c = 3000$ P.S.I. $f'_t = 1000$ P.S.I.

$f_s = 20,000$ P.S.I. $n = 10$

$v = 90$ P.S.I. $u = 300$ P.S.I. (DEFORMED)

BARS COMPLYING WITH A.S.T.M. A305-50T.

QUANTITY ESTIMATE

FOR

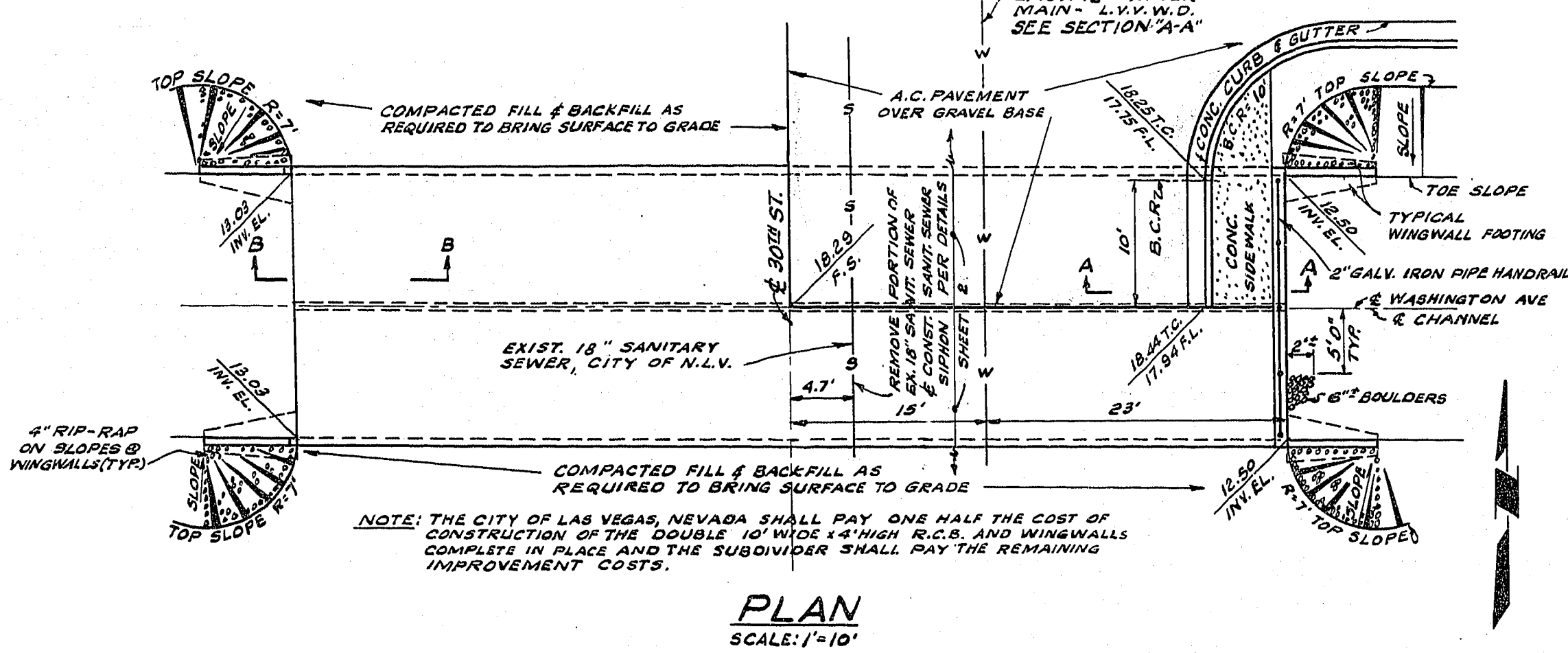
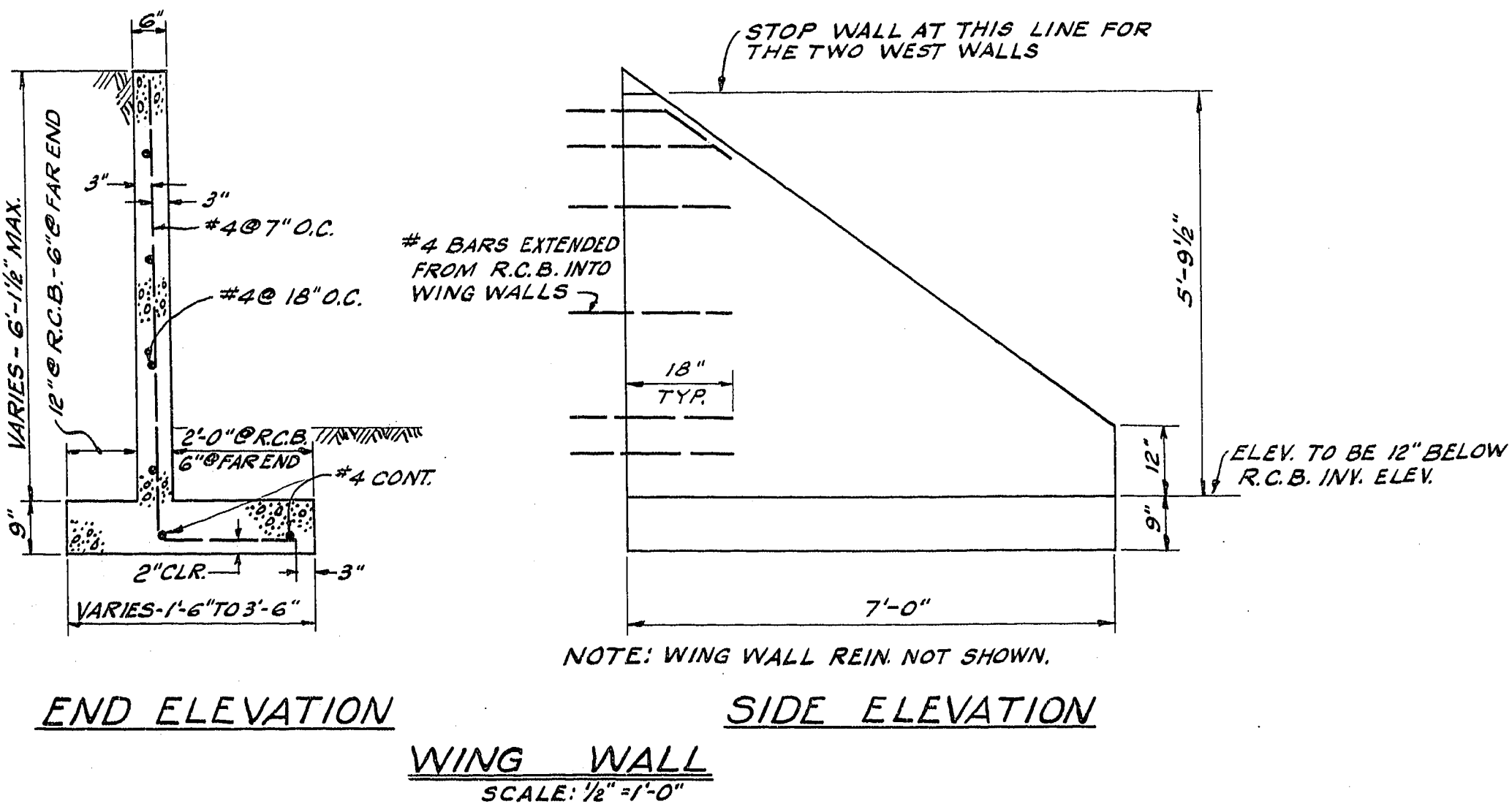
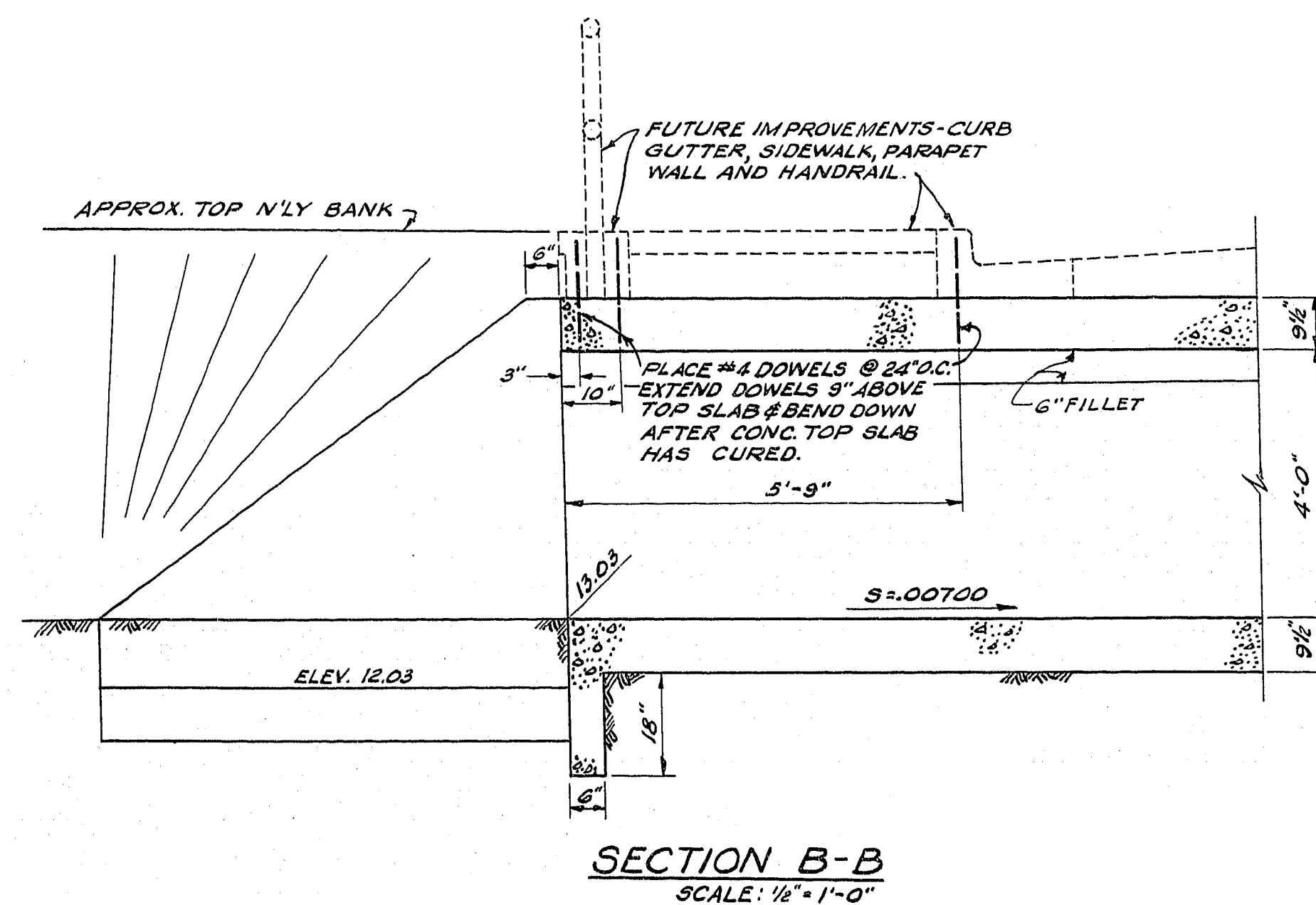
REINFORCED CONCRETE BOX AND WINGWALLS

CONCRETE 120 C.Y.

STEEL 15,700 LBS.

NOTE: THE INTERFERING PORTIONS OF THE EXISTING 18" SANITARY SEWER SHALL BE REMOVED AS SHOWN FOR THE CONSTRUCTION OF THE BOX CULVERT & SIPHON ONLY AFTER 72 HOURS ADVANCE NOTICE HAS BEEN GIVEN TO THE CITY ENGINEER OF THE CITY OF NORTH LAS VEGAS, NEVADA AND THE SAID CITY ENGINEER HAS GIVEN PERMISSION TO DO SO.

Tommy Torgue
CITY ENGINEER R.C.E. #1118
CITY OF NORTH LAS VEGAS, NEVADA



SUBMITTED BY:
Victor G. Krametbauer
VICTOR G. KRAMETBAUER
R.C.E. N° 1511

APPROVED BY:
R. S. Smith
CITY ENGINEER R.C.E. N° 398

COLLEGE PARK
23
CULVERT DETAILS

SHEET
2
OF 19