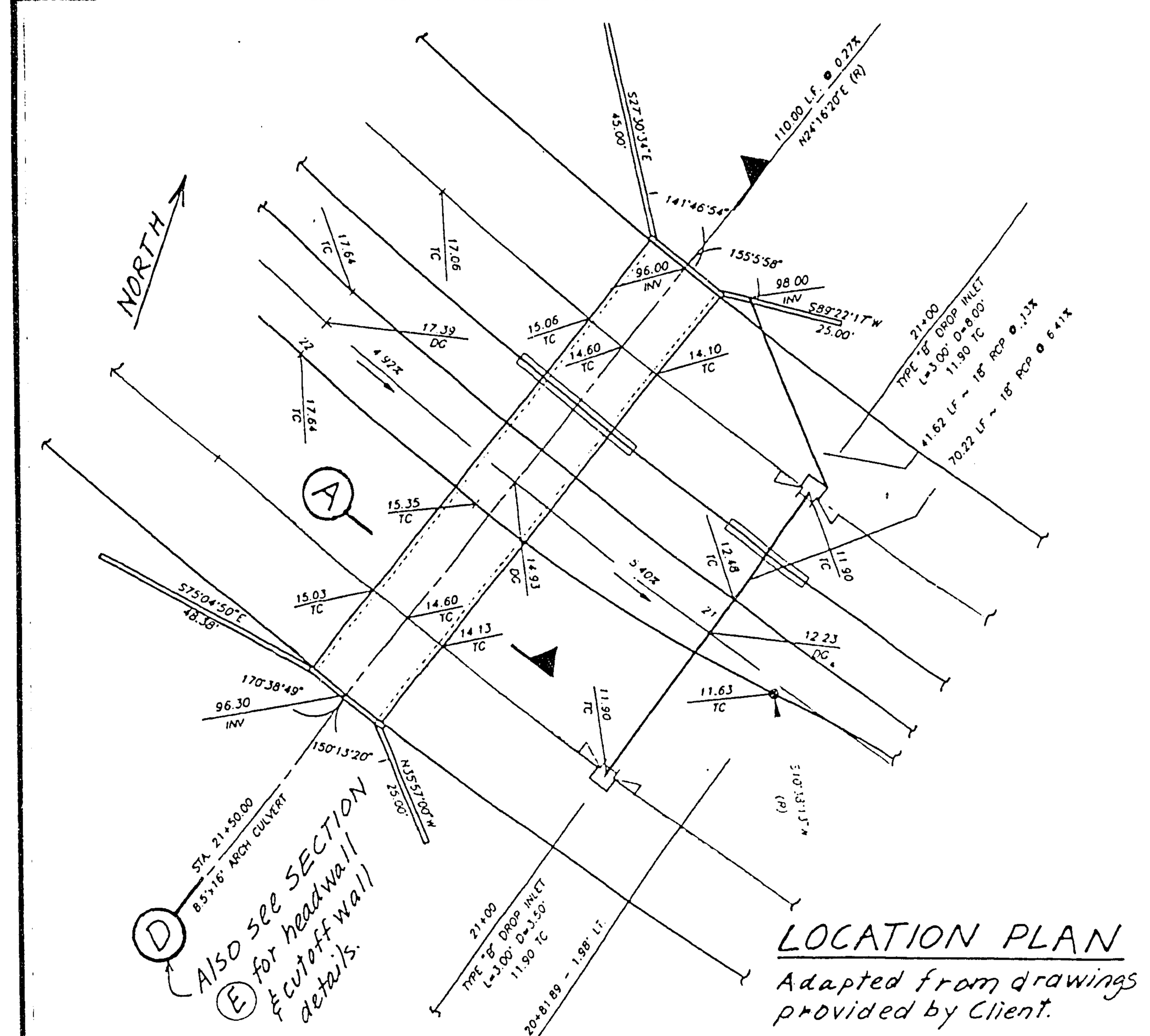
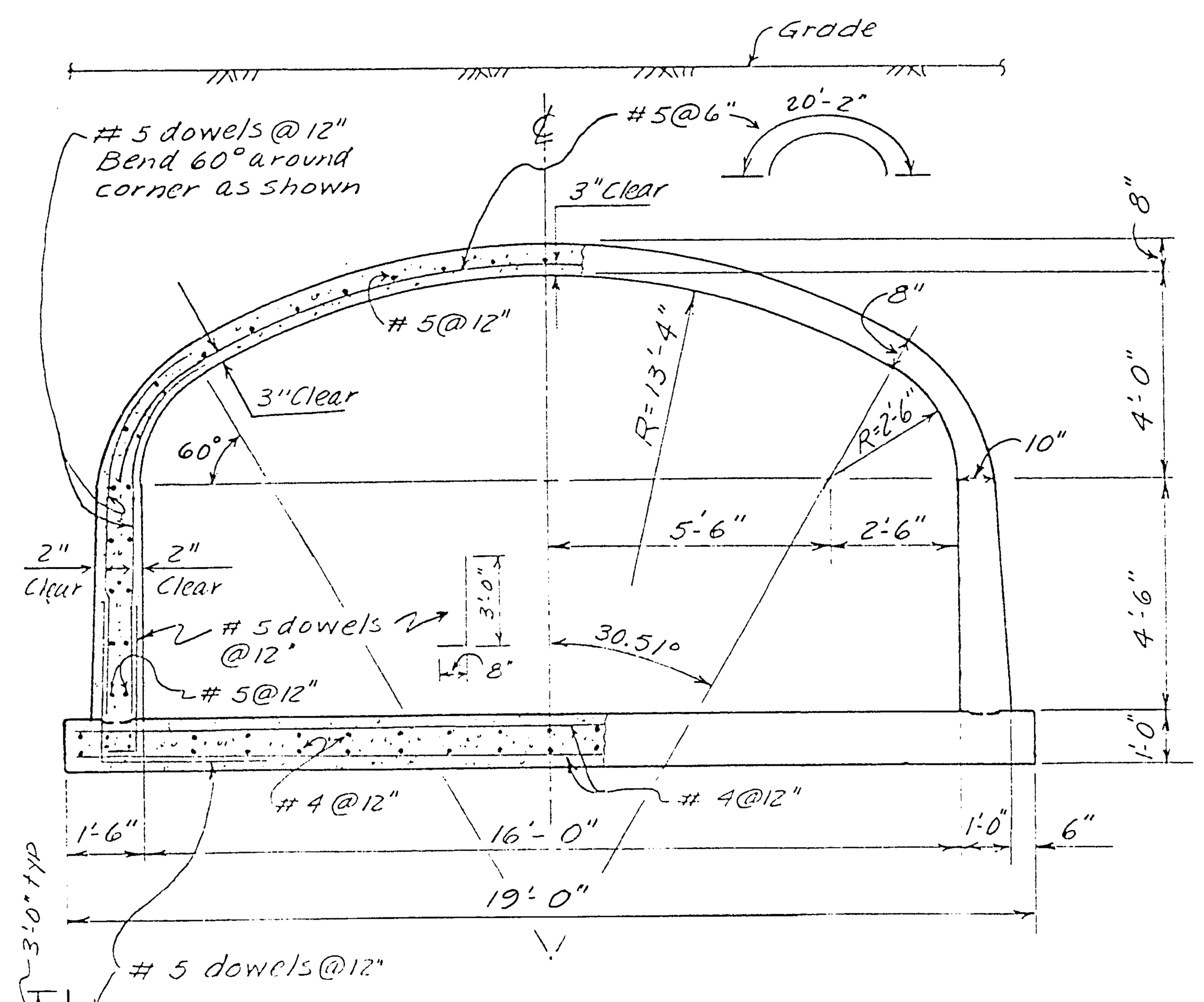
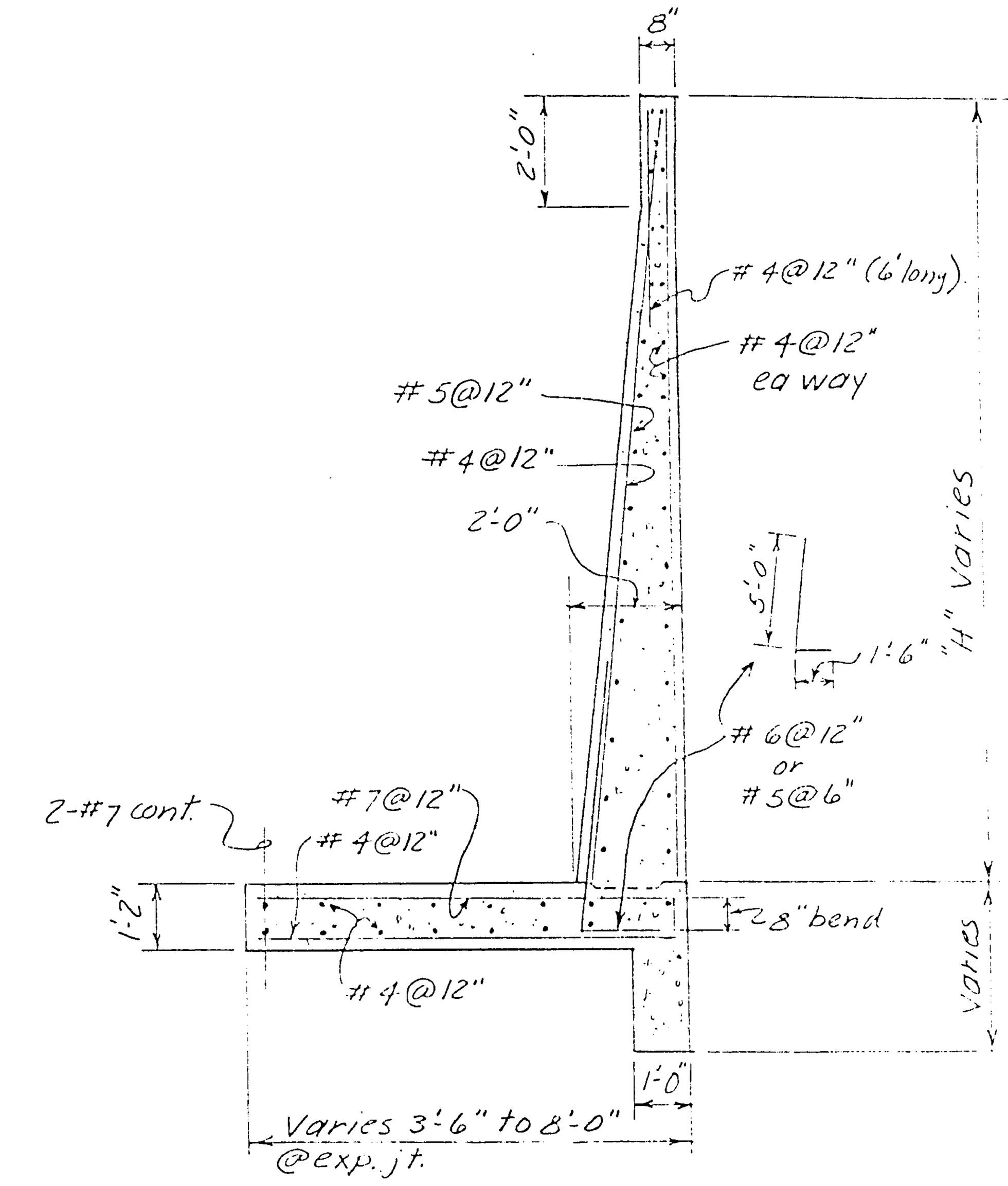
23-2-67



LOCATION PLAN
Adapted from drawings provided by Client.



SECTION (A)



WING WALL TYPICAL SEC. (B)
H > 6'

GENERAL NOTES

1.) DESIGN SPECIFICATIONS: AASHTO "Standard Specifications for Highway Bridges," 1992 ed. and revisions thereto except where noted otherwise.

2.) CONSTRUCTION SPECIFICATIONS: State of Nevada Department of Highways "Standard Specifications for Road and Bridge Construction," current edition and Special Provisions thereto except where noted otherwise.

3.) LOADING CLASS: HS20-44

4.) DEAD LOADS: For self weight of structure, reinf. concrete = 150 pounds per cubic foot (pcf), backfill around structure = 120 pcf.

5.) DESIGN METHODOLOGY:

A.) Concrete arch: Finite element soil-structure interaction computer program utilizing service load stresses. Program calculates design moments for arch, walls, and slab acting as a unit with surrounding soil.

B.) Concrete reinforcing requirements computed by the Service Load method.

6.) REINFORCING STEEL: ASTM A615 Grade 60. Minimum cover 3 inches where concrete cast against earth, 2 inches for #6 through #11 or 1 1/2 inches for #5 and smaller bars where concrete surface is exposed to earth backfill or weather U. N. O. (unless noted otherwise).

7.) REINFORCING BAR BENDS AND LAPS: Bends and hooks shall conform to A. C. I. Std. 315-80 U. N. O. Bend dimensions are from out to out and laps shall be 40 bar diameters minimum U. N. O.

8.) CONCRETE AND SHOTCRETE:

A.) Shotcrete arches: fc' = 4,000 psi @ 28 days mixed for and placed by the wet mix placement process.

B.) All other concrete: fc' = 3,000 psi @ 28 days.

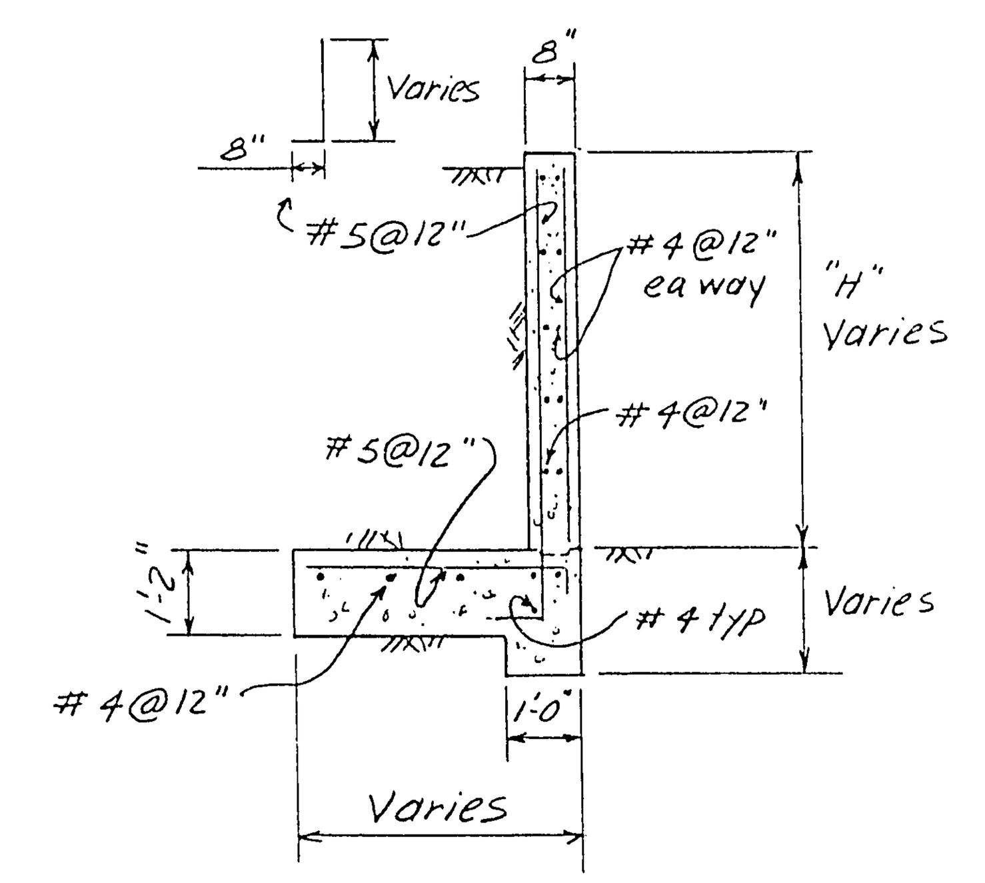
9.) WORKMANSHIP: Chamfer exposed corners 3/4 in. U. N. O. Finish exposed conc. surfaces per NDOT box culvert practice or per the instruction of the owner.

10.) SCALE: Do not scale dimensions from drawings.

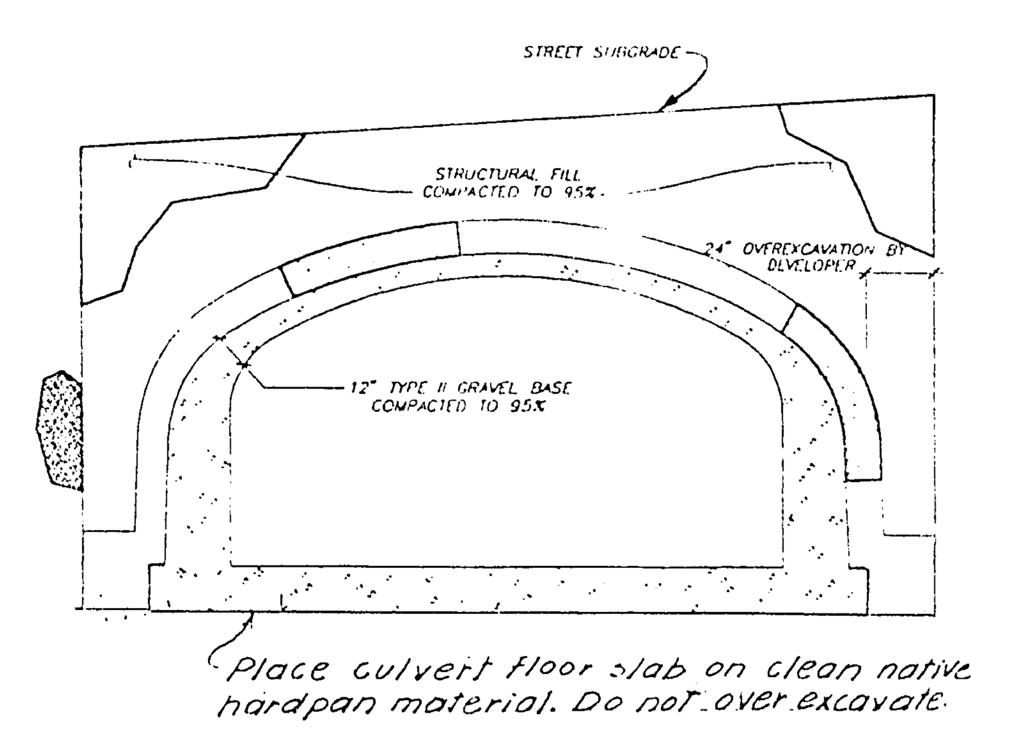
11.) SHRINKAGE REINF: Provide Fibermesh or eqiv. in floor concrete and arch shotcrete.

12.) BACKFILLING: Backfilling may proceed when arch shotcrete cylinder strength has reached f'_c = 2,000 psi. Place Type II gravel base to a distance of one foot outside the arch perimeter. Remainder of backfill may be six inch minus material. Backfill material shall be placed in no greater than one foot lifts with no greater than a one foot differential in backfill height to each side of the arch.

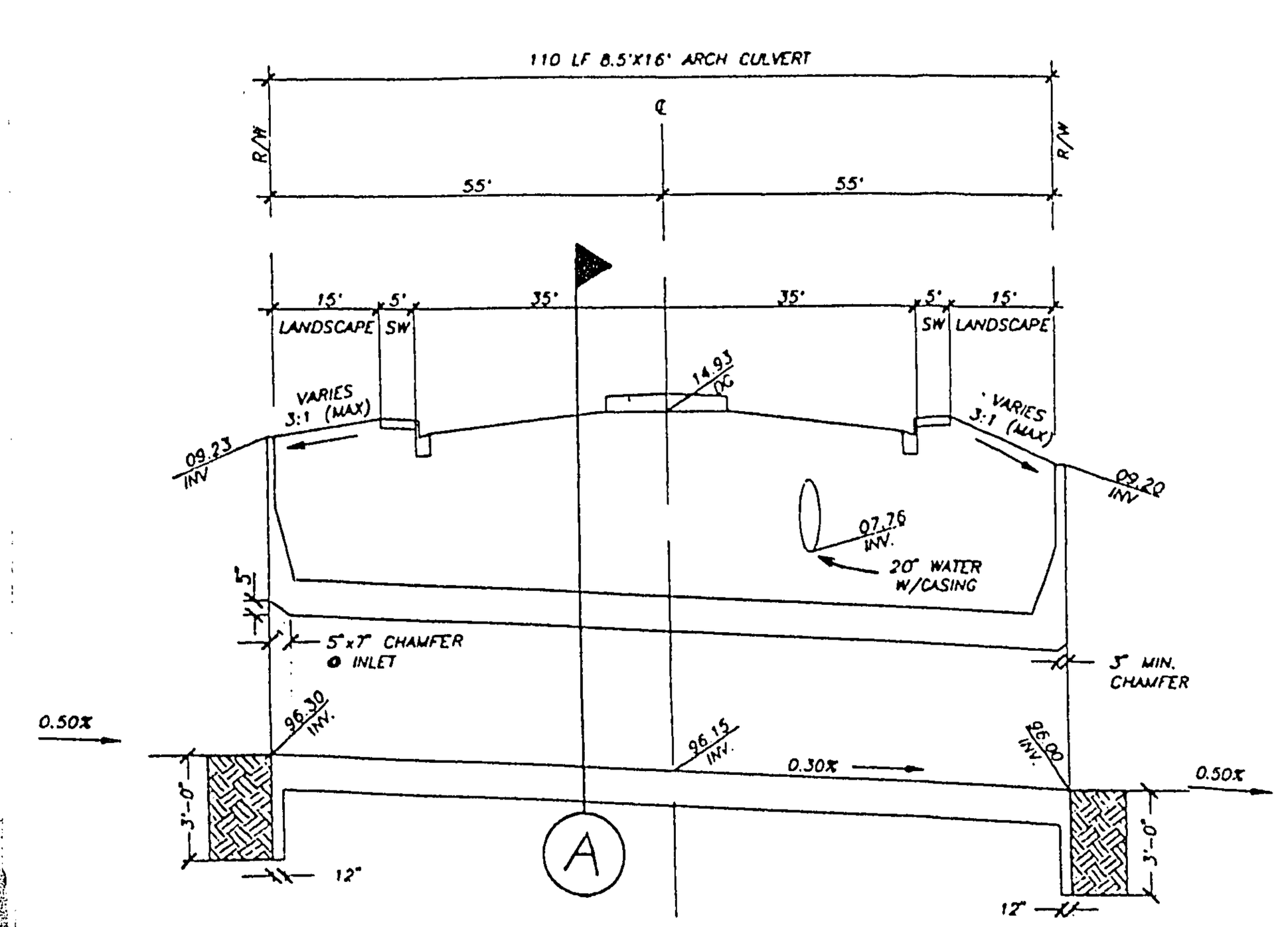
THOMAS A. SACRA III — CIVIL — No. 10039 — PROFESSIONAL ENGINEER — STATE OF NEVADA — 9/29/94



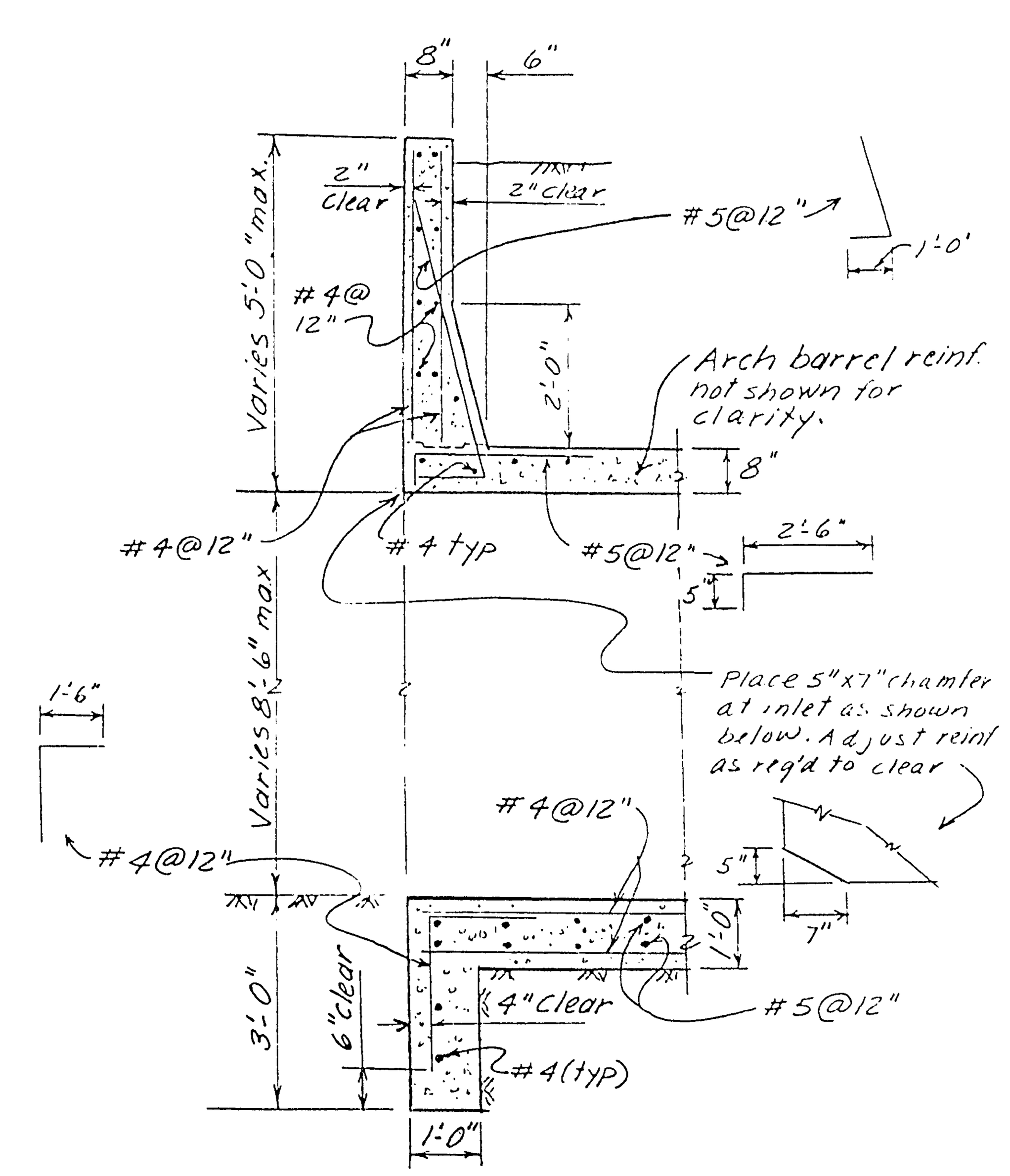
WING WALL TYPICAL SEC. (C)
H<6'



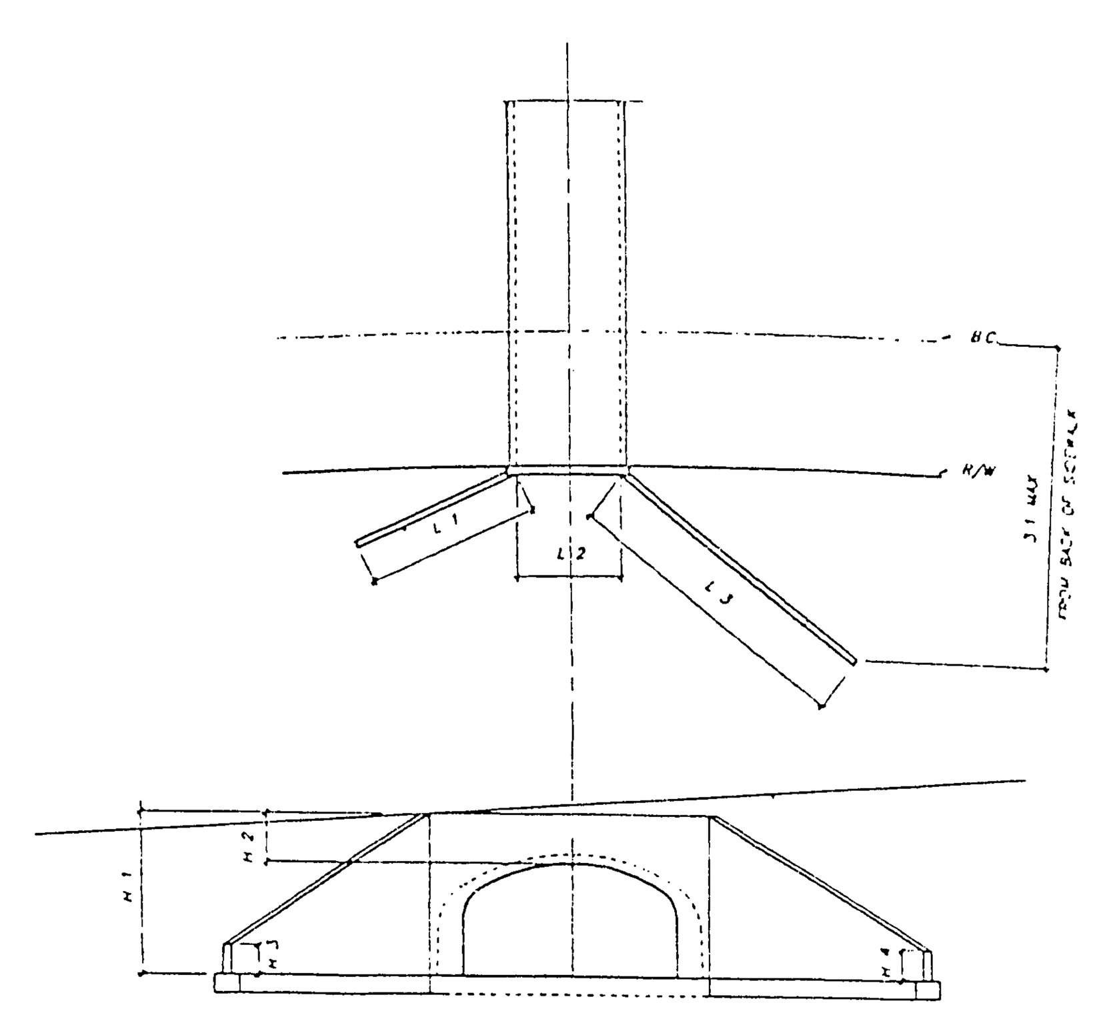
BACKFILL DIAGRAM
Adapted from drawing provided by Client (Phoenix Gunite)



SECTION (D)
Adapted from drawing provided by Client.



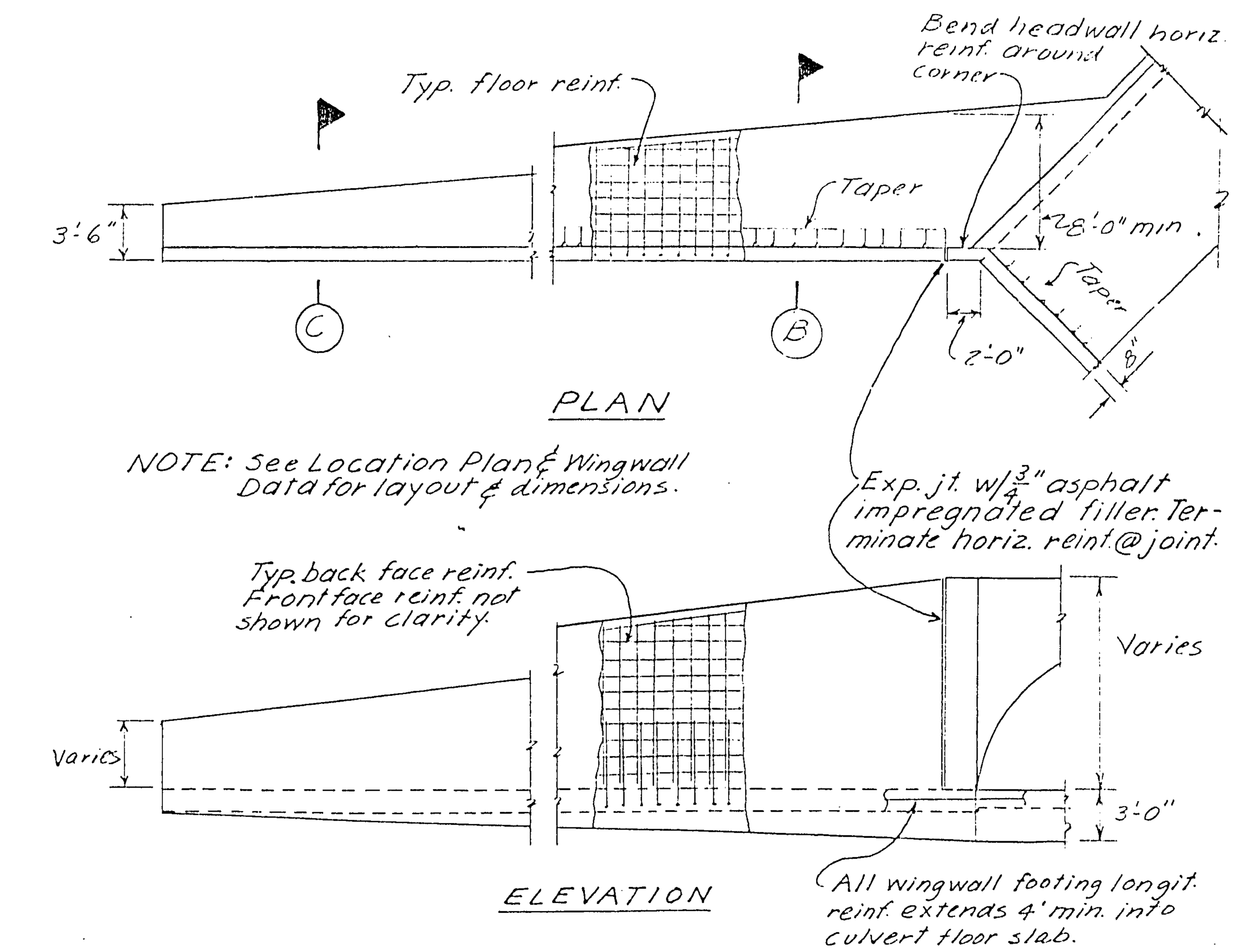
SECTION (E)



HEADWALL
NORTH ELEVATION
8.5' X 16' ARCH CULVERT
SCALE NONE

CULVERT ℄ STA & SIZE	RISE	SPAN	HEADWALL	L 1	L 2	L 3	H 1	H 2	H 3	H 4
THOMAS W. RYAN BLVD.			UPSTREAM	25'-0"	16'-0"	45'-0"	12'-11"	4'-5"	2'-0"	4'-0"
21+50.00	8.5'	16'	DOWNSTREAM	25'-0"	16'-0"	45'-0"	13'-2"	4'-8"	2'-0"	4'-0"

WINGWALL DATA
Adapted from drawing provided by Client.



TYPICAL WINGWALL

SACRA ENGINEERING
312 South Convent Avenue
Tucson, Arizona 85701
(602) 792-2523

G.C. WALLACE, INC.
Engineering/Architecture

DEL WEBB COMMUNITIES, INC.
SUN CITY LAS VEGAS
THOMAS W. RYAN BLVD. - PHASE III
ARCH. CULVERT DETAILS - STA. 21+50

REV | DATE | DESCRIPTION

RECOMMENDED

SHEET 13 OF 13 SHEETS

107 - V2341