HYDROLOGY

G22/D1A

THREE PLANS

MONTGOMERY / TRAMWAY

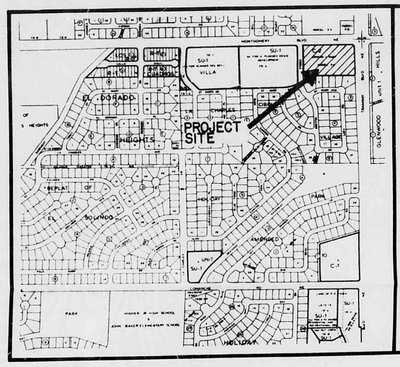
SHOP CTR.

G22 / DIA

3 PLANS

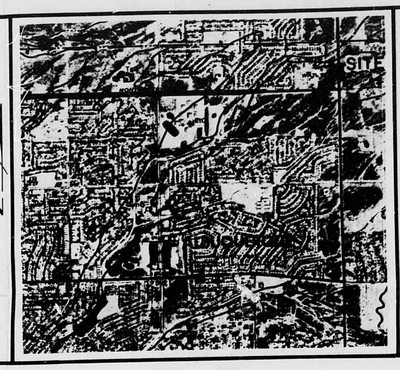
# DRAINAGE / GRADING PLAN FOR :

# MONTGOMERY / TRAMWAY SHOPPING CENTER




LOCATION MAP

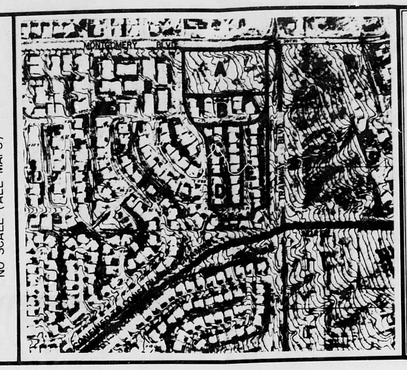
ZONE ATLAS PAGE G 22-Z




SOILS MAP

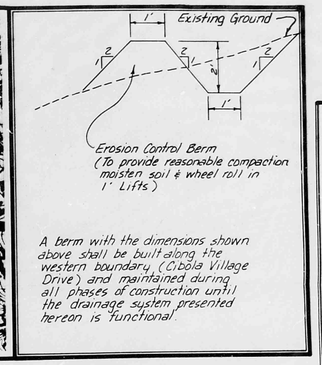
REFERENCE: SCS BERNALILLO COUNTY SOIL SURVEY

NO SCALE (ALL MAPS)




FLOOD INSURANCE MAP & DRAINAGE BASINS

REFERENCE: FLOOD INSURANCE STUDY, SHEET 25 of 50




EROSION CONTROL PLAN

## TEXT

**Site Location**

The site is located at the southwest corner of Montgomery and Tramway Blvds. It is bordered on the north by Montgomery Blvd., on the east by Tramway Blvd., on the west by Cibola Village Drive and on the south by a developed subdivision (see Vicinity Map).

**Existing Conditions**

The site is presently undeveloped and slopes from east to west at approximately 5%. The SCS soil type for the site is Embudo, and the hydrologic soil group is type 'B' (see Soils Map).

Tramway Blvd. and Montgomery Blvd. effectively protect the site from off-site flows. Currently, the runoff from the site is discharged directly to Cibola Village Drive. It is then conveyed to the North Glenwood Hills Channel through an existing rundown located at the Cibola Village Drive cul-de-sac. A portion of the Cibola Village Subdivision also discharges to this rundown.

**Proposed Conditions**

The discharge from the developed site will be conveyed to Cibola Village in a free discharge manner. Cibola Village Drive and the concrete rundown have adequate capacity to safely convey developed runoff from the site and existing subdivision to the Glenwood Hills Channel. Computations verifying this statement are included below. The total 100-year developed runoff at the rundown is 65.4 cfs.

**Erosion Control**

Erosion during construction will be controlled by constructing wind rows around susceptible areas. The locations and a detail showing these wind rows are shown on the grading plan.

## CALCULATIONS

### On-Site Hydrology

1. Existing Condition

| | | |
|---|---|---|
| Area (ac.) | = | 4.13 |
| % Impervious | = | 0% |
| (C) Coefficient | = | .34 (DPM Plate 22.2 C-1) |
| 6-hr. Rain Volume (in.) | = | 2.55 |
| (I) Intensity (in/hr) | = | 5.59 |
| ($T_c$) Time of Concentration | = | 10 min. |

2. Developed Condition

| | | |
|---|---|---|
| Area (ac.) | = | 4.13 |
| % Impervious | = | 100% |
| 6-hr. Rain Volume (in.) | = | 2.55 |
| (c) Coefficient | = | 1.0 (DPM Plate 22.2 C-1) |
| (I) Intensity (in/hr) | = | 5.59 |
| ($T_c$) Time of Concentration | = | 10 min. |

3. Rational Method

Discharge $Q = CIA$

Volume $V = \frac{(6\text{-hr. Rain})(C)(A)}{12}$

Existing Condition

$Q_{100}$ = 7.6 $ft^3$/sec.

$V_{100}$ = .30 ac. ft.

Developed Condition

$Q_{100}$ = 22.3 $ft^3$/sec.

$V_{100}$ = .88 ac. ft.

### Downstream Capacity Check

1. Off-Site Basins

| Basin | Area (ac) | C | I (in/hr) | $Q_{100}$ (cfs) | $V_{100}$ (ac. ft.) |
|---|---|---|---|---|---|
| B | 2.65 | .76 | 5.39 | 10.9 | .43 |
| C | 2.47 | .76 | 5.39 | 10.1 | .40 |
| D | 1.68 | .76 | 5.39 | 6.9 | .27 |
| E | 3.71 | .76 | 5.39 | 15.2 | 1.27 |

2. Street Capacity in Cibola Village Drive

| Street Slope | Basins Impacting | Street Capacity* (cfs) | Q Developed (cfs) |
|---|---|---|---|
| 7% | A | 130 | 22.3 |
| .5% | A,B,C | 80 | 43.2 |
| 4% | A,B,C,D | 136 | 50.1 |

* Street capacities taken from DPM Plates 22.3 D-1 and 22.3 D-2 at a depth of .87'

3. Rundown Capacity

a. Existing Dimensions

| | | |
|---|---|---|
| Width of opening | – | 16' |
| Ht. of channel walls | – | 1' |
| Slope of channel | – | 4% |
| Width of channel | – | 9' |

b. Width of Opening Required Using Weir Equation

$Q = C L H^{3/2}$

Q = 65.4 cfs
C = 3.2
H = .25'

Solve for L

$L = \frac{65.32}{(3.2)(2.5)^{3/2}} = 11' < 16'$ OK

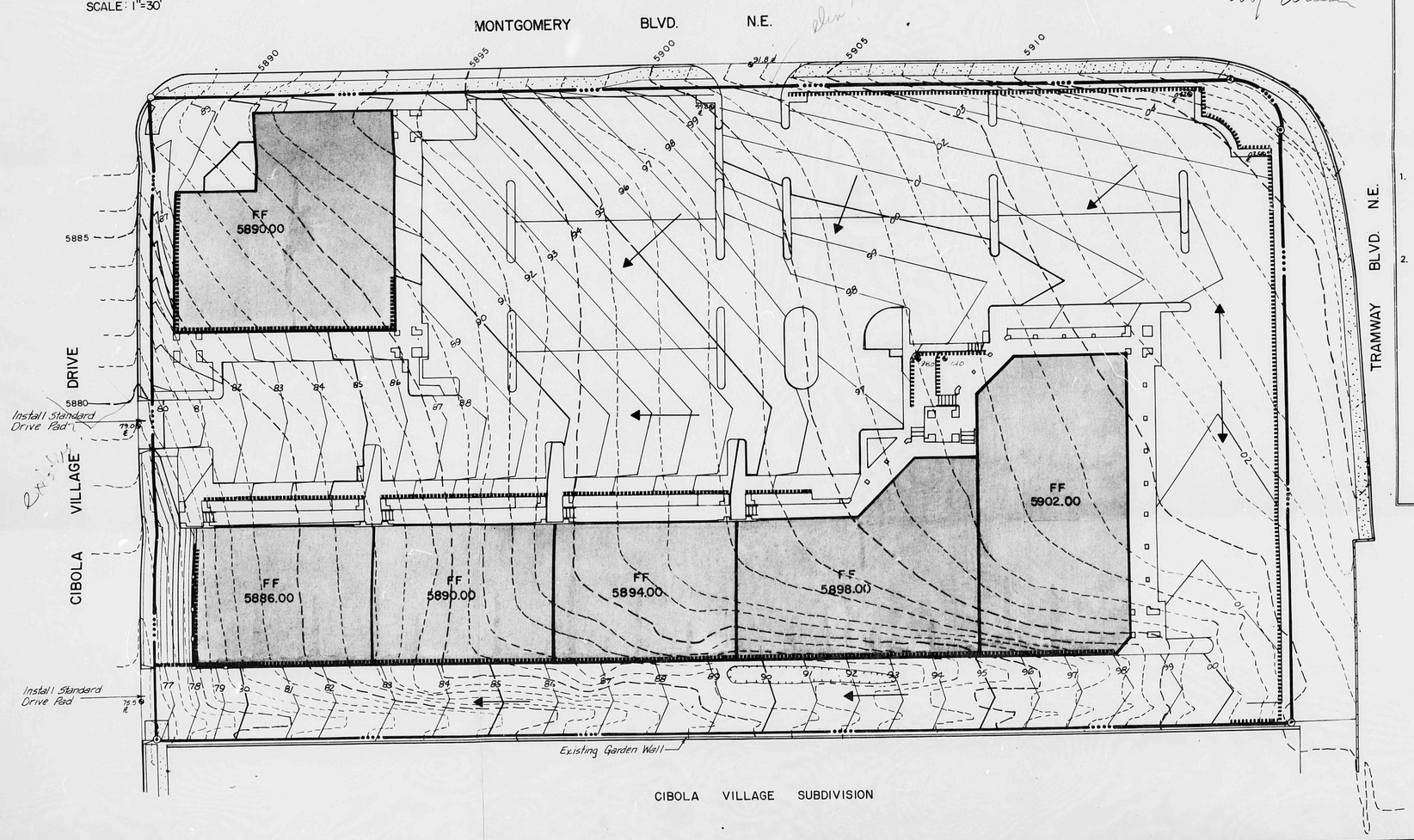
c. Depth of Flow in Channel

$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$

Q = 65.32 cfs
S = .0400
n = .013
A = 9d
R = $\frac{9}{2d + 9}$

Solve for d
d = .50' < 1'0" OK

SCALE: 1"=30'




## LEGEND

- EXISTING CONTOUR (1 ft. Interval)
- PROPOSED CONTOUR (1 ft. Interval)
- PROPOSED SPOT ELEVATION
- PROPOSED RETAINING WALL
- PROJECT BOUNDARY
- DIRECTION OF FLOW
- EXISTING SIDEWALK
- EXISTING STANDARD CURB & GUTTER

## BENCHMARK

THE STATION MARK IS A STANDARD GLO BRASS CAP LOCATED AT THE INTERSECTION OF TRAMWAY BLVD. & MONTGOMERY BLVD. N.E., 1' UNDER A CAST IRON "WATER METER" COVER IN THE CENTER OF THE INTERSECTION. ELEV. = 5916.14

RECEIVED JUL 18 1984 HYDROLOGY SECTION

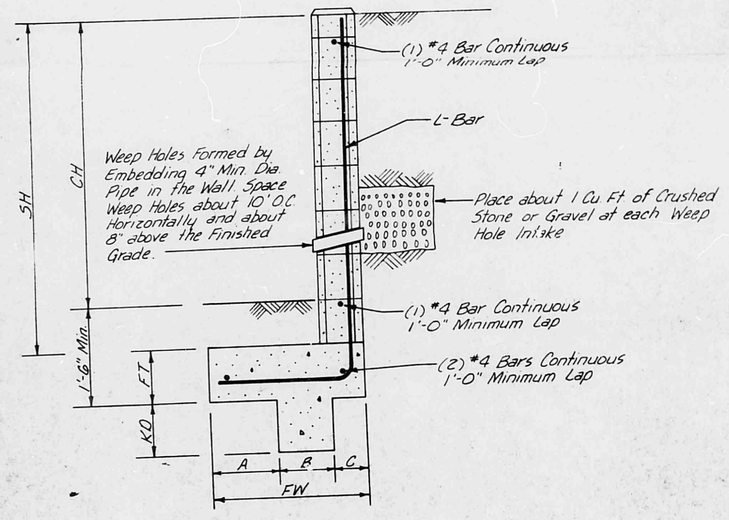
Brian D. Burnett 7-18-84

DRAINAGE / GRADING PLAN FOR:
MONTGOMERY / TRAMWAY SHOPPING CENTER

PREPARED BY: BOHANNAN-HUSTON, INC

JULY 1984
JOB No 41662

G22/D1A

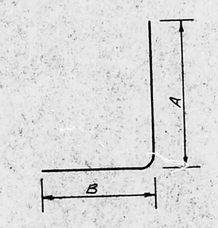



| SH | CH | FT | KD | FW | A | B | C |
|---|---|---|---|---|---|---|---|
| 3'-0" | 2'-2" | 8" | 8" | 1'-8" | 6" | 8" | 6" |
| 4'-0" | 3'-2" | 8" | 8" | 1'-10" | 8" | 8" | 6" |
| 5'-0" | 4'-4" | 10" | 10" | 2'-4" | 12" | 10" | 6" |

**WALL DIMENSION TABLE**

| SH | L - BARS | | | | |
|---|---|---|---|---|---|
| | SIZE | SPACING | LENGTH | A | B |
| 3'-0" | #4 | 16" | 4'-7" | 3'-3" | 1'-4" |
| 4'-0" | #4 | 16" | 5'-9" | 4'-3" | 1'-6" |
| 5'-0" | #5 | 16" | 7'-5" | 5'-5" | 2'-0" |

**REBAR TABLE**

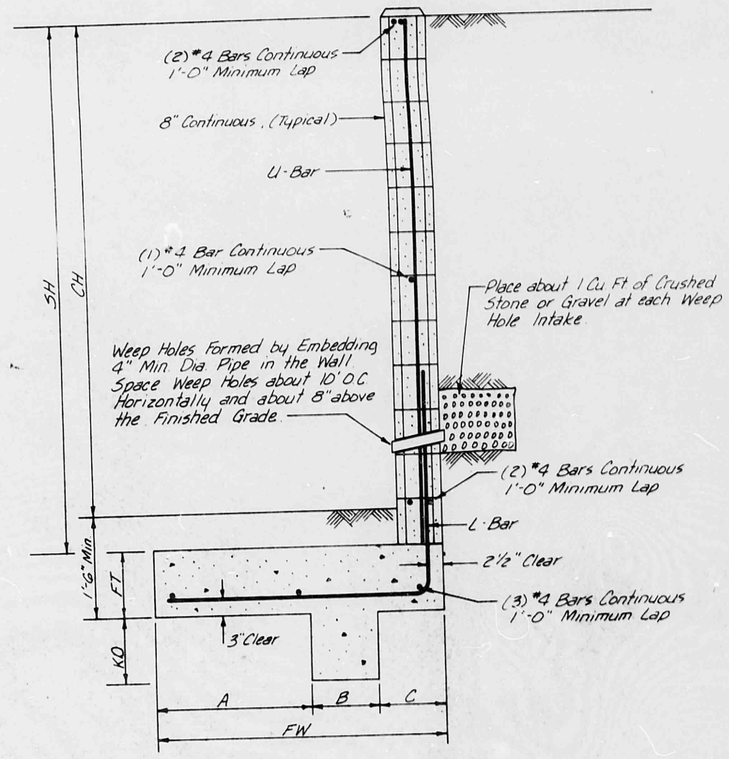



## 3'-0" to 5'-0"
## REINFORCED CONCRETE MASONRY WALL

## GENERAL NOTES

1. Walls designed for level backfill only.
2. Back filling against reinforced concrete masonry retaining walls should not be permitted until at least 7 days after placing the core fill concrete or grout. Where heavy equipment is used in back filling walls designed to resist earth pressure only, such equipment should not approach closer to the top of the wall than a distance equal to the height of the wall. Care should also be taken to avoid exerting large impact forces on the wall as could be caused by a large mass of moving earth.
3. Design Criteria

   Weight of Block 12" = 140 PSF
   Weight of Block 8" = 92 PSF
   Weight of Soil = 120 PCF
   Weight of Concrete = 150 PCF
   E.F.P. = 30 PCF
   Maximum Soil Pressure = 1500 PSF
   Minimum Soil Pressure = 0 PSF
   Minimum F.S. O.T. = 1.8
   Coefficient of Friction = 0.4
   Passive Soil Pressure = 300 PCF
   Concrete F'c = 3000 PSI
   Grout F'c = 2000 PSI
   Grade N CMU F'm = 1500 PSI
   Mortar(Type S) = 1800 PSI
   Rebar Grade 60

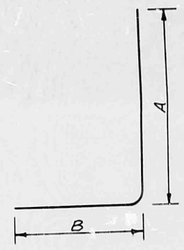



| SH | CH | FT | KD | FW | A | B | C |
|---|---|---|---|---|---|---|---|
| 6'-0" | 5'-4" | 10" | 10" | 3'-0" | 1'-6" | 10" | 8" |
| 7'-0" | 6'-4" | 10" | 10" | 3'-8" | 2'-0" | 10" | 10" |
| 8'-0" | 7'-6" | 12" | 12" | 4'-4" | 2'-4" | 12" | 12" |

**WALL DIMENSION TABLE**

| SH | L - BARS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | SIZE | SPACING | LENGTH | A | B | SIZE | SPACING | LENGTH |
| 6'-0" | #5 | 16" | 5'-1" | 2'-5" | 2'-8" | #4 | 16" | 5'-10" |
| 7'-0" | #4 | 8" | 5'-9" | 2'-5" | 3'-4" | #4 | 16" | 6'-10" |
| 8'-0" | #5 | 8" | 7'-3" | 3'-3" | 4'-0" | #4 | 16" | 7'-10" |

**REBAR TABLE**




## 6'-0" to 8'-0"
## REINFORCED CONCRETE MASONRY WALL

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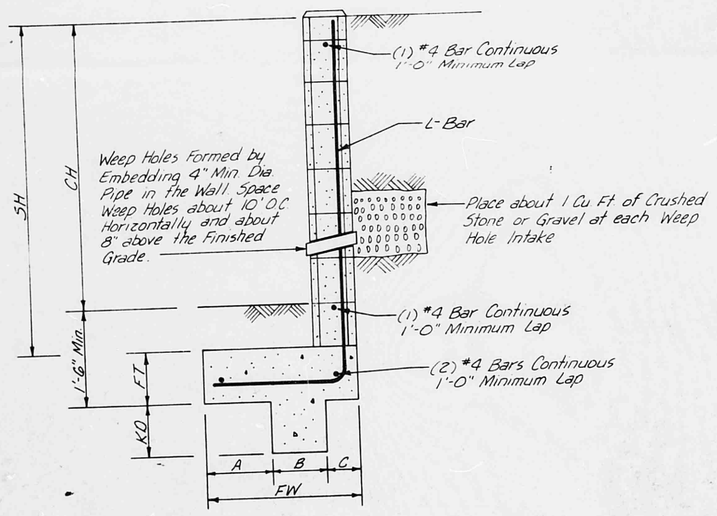
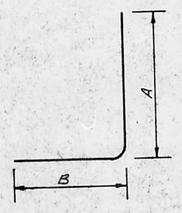



| SH | CH | FT | KD | FW | A | B | C |
|---|---|---|---|---|---|---|---|
| 3'-0" | 2'-2" | 8" | 8" | 1'-8" | 6" | 8" | 6" |
| 4'-0" | 3'-2" | 8" | 8" | 1'-10" | 8" | 8" | 6" |
| 5'-0" | 4'-4" | 10" | 10" | 2'-4" | 12" | 10" | 6" |

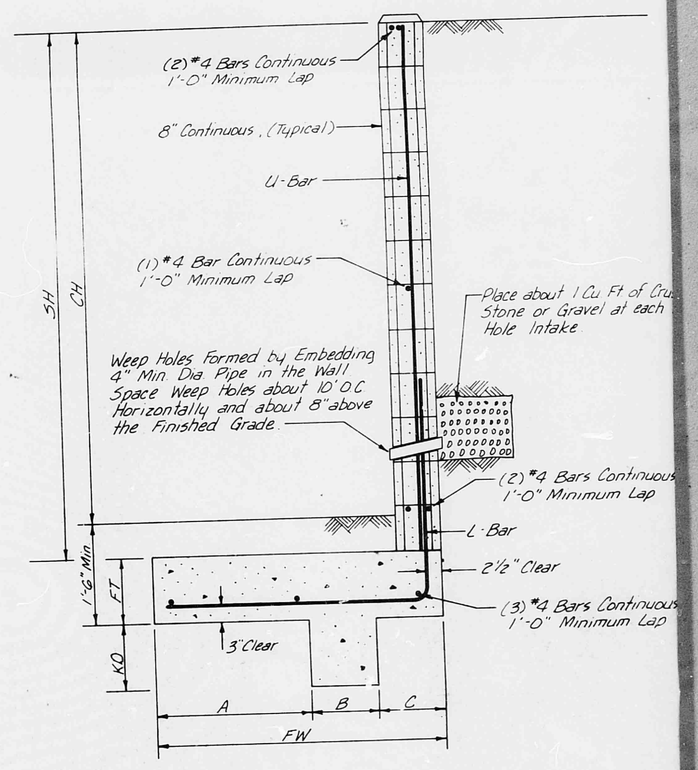
**WALL DIMENSION TABLE**

| SH | L-BARS | | | | |
|---|---|---|---|---|---|
| | SIZE | SPACING | LENGTH | A | B |
| 3'-0" | #4 | 16" | 4'-7" | 3'-3" | 1'-4" |
| 4'-0" | #4 | 16" | 5'-9" | 4'-3" | 1'-6" |
| 5'-0" | #5 | 16" | 7'-5" | 5'-5" | 2'-0" |

**REBAR TABLE**




## 3'-0" to 5'-0"
## REINFORCED CONCRETE MASONRY WALL

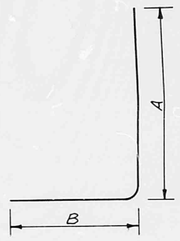



| SH | CH | FT | KD | FW | A | B | C |
|---|---|---|---|---|---|---|---|
| 6'-0" | 5'-4" | 10" | 10" | 3'-0" | 1'-6" | 10" | 8" |
| 7'-0" | 6'-4" | 10" | 10" | 3'-8" | 2'-0" | 10" | 10" |
| 8'-0" | 7'-6" | 12" | 12" | 4'-4" | 2'-4" | 12" | 12" |

**WALL DIMENSION TABLE**

| SH | L-BARS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | SIZE | SPACING | LENGTH | A | B | SIZE | SPACING | LENG |
| 6'-0" | #5 | 16" | 5'-1" | 2'-5" | 2'-8" | #4 | 16" | 5' |
| 7'-0" | #4 | 8" | 5'-9" | 2'-5" | 3'-4" | #4 | 16" | 6' |
| 8'-0" | #5 | 3" | 7'-3" | 3'-3" | 4'-0" | #4 | 16" | 7' |

**REBAR TABLE**




## 6'-0" to 8'-0"
## REINFORCED CONCRETE MASONRY WAL

## GENERAL NOTES

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   Weight of Soil = 120 PCF
   Weight of Concrete = 150 PCF
   E.F.P. = 30 PCF
   Maximum Soil Pressure = 1500 PSF
   Minimum Soil Pressure = 0 PSF
   Minimum F.S. O.T. = 1.8
   Coefficient of Friction = 0.4
   Passive Soil Pressure = 300 PCF
   Concrete F'c = 3000 PSI
   Grout F'c = 2000 PSI
   Grade N CMU F'm = 1500 PSI
   Mortar(Type S) = 1800 PSI
   Rebar Grade 60

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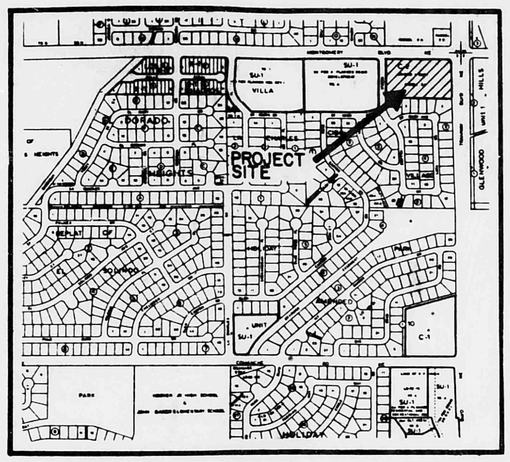
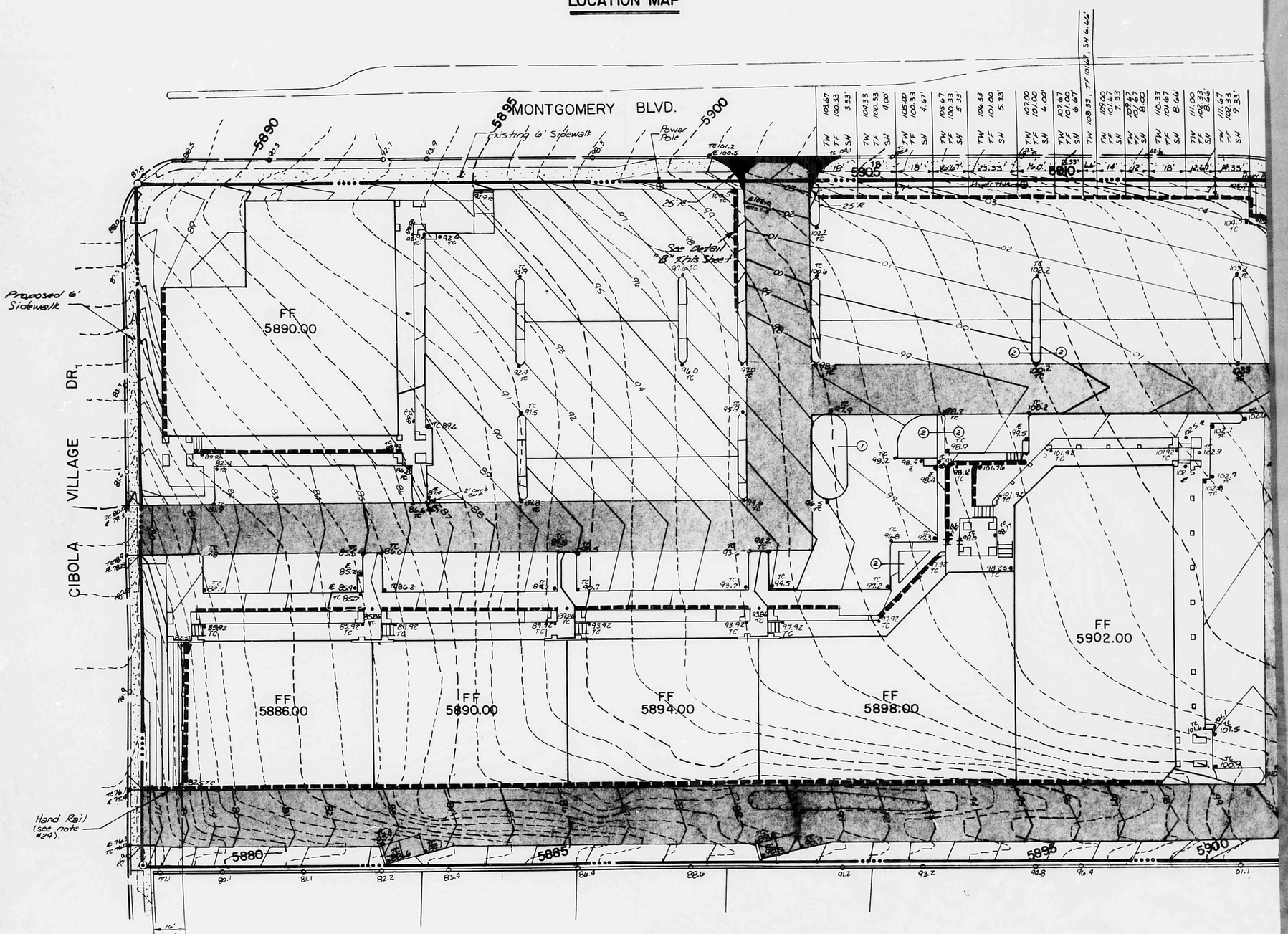


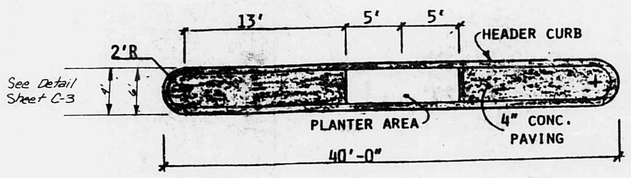

LOCATION MAP

DESCRIPTION:

A certain tract of land, lying and being situate within Section 3, To
being and comprising all of Parcel numbered Five-A (5-A) of EDMUND I.
designated on the Plat thereof, filed in the office of the County Cle
August 18, 1965, and being more particularly described by metes and b
on April 13 thru April 16, 1984, as follows:

BEGINNING at the Southeast Corner of said Parcel 5-A of the Edmund I.
Northeast Corner of Cibola Village, as the same is shown and designat
office of the County Clerk of Bernalillo County, New Mexico, on Augus
being a point on the West line of Tramway (Panorama) Blvd. NE, having
THENCE, N. 89 deg. 50' 23" W. along the North line of Lots 1, 3, 4, 5
563.01 feet to the Northwest Corner of Lot 1, Block 2 of said
Southwest Corner of said Parcel 5-A of Edmund I. Rady Propert
Cibola Village Dr. NE, having a 57 foot right-of-way;
THENCE, N. 00 deg. 11' 12" E. along the West line of said Parcel 5-A
319.74 feet to the Northwest Corner of said Parcel 5-A, being
Montgomery Blvd. NE, having a 106 foot right-of-way;
THENCE, S. 89 deg. 51' 31" E. along the South right-of-way line of Mo
said Parcel 5-A, 537.99 feet to a point of curve ;
THENCE, Southeasterly along the arc of a curve to the right having a
09" E., 35.37 feet), 39.29 feet to a point of tangent on said
Blvd. NE;
THENCE, S. 00 deg. 11' 14" W., along said West line of Tramway (Panor
Parcel 5-A, 294.90 feet to the Point of Beginning, and Contai



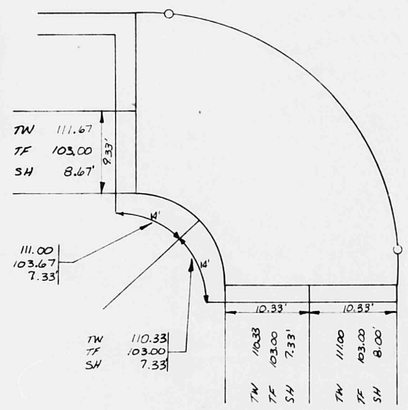

TYPICAL PLANTER DETAIL

NO SCALE

| | | |
|---|---|---|
| TW 101.67 | TF 99.00 | SH 2.67 | 8' |
| TW 101.67 | TF 98.33 | SH 4.00 | 6' |
| TW 102.33 | TF 97.67 | SH 4.33' | 7.5' |
| TW 101.67 | TF 97.67 | SH 4.00 | 7.5' |
| TW 101.00 | TF 97.00 | SH 4.00 | 12' |
| TW 100.33 | TF 96.33 | SH 4.00 | 9' |
| TW 99.67 | TF 96.33 | SH 3.33' | 6' |

DETAIL B

NO SCALE




DETAIL A

NO SCALE

Section 3, Township 10 North, Range 4 East, N.M.P.M.,
) of EDMUND I. RADY PROPERTY, as the same is shown and
the County Clerk of Bernalillo County, New Mexico, on
by metes and bounds survey made by Hall Surveying Co.

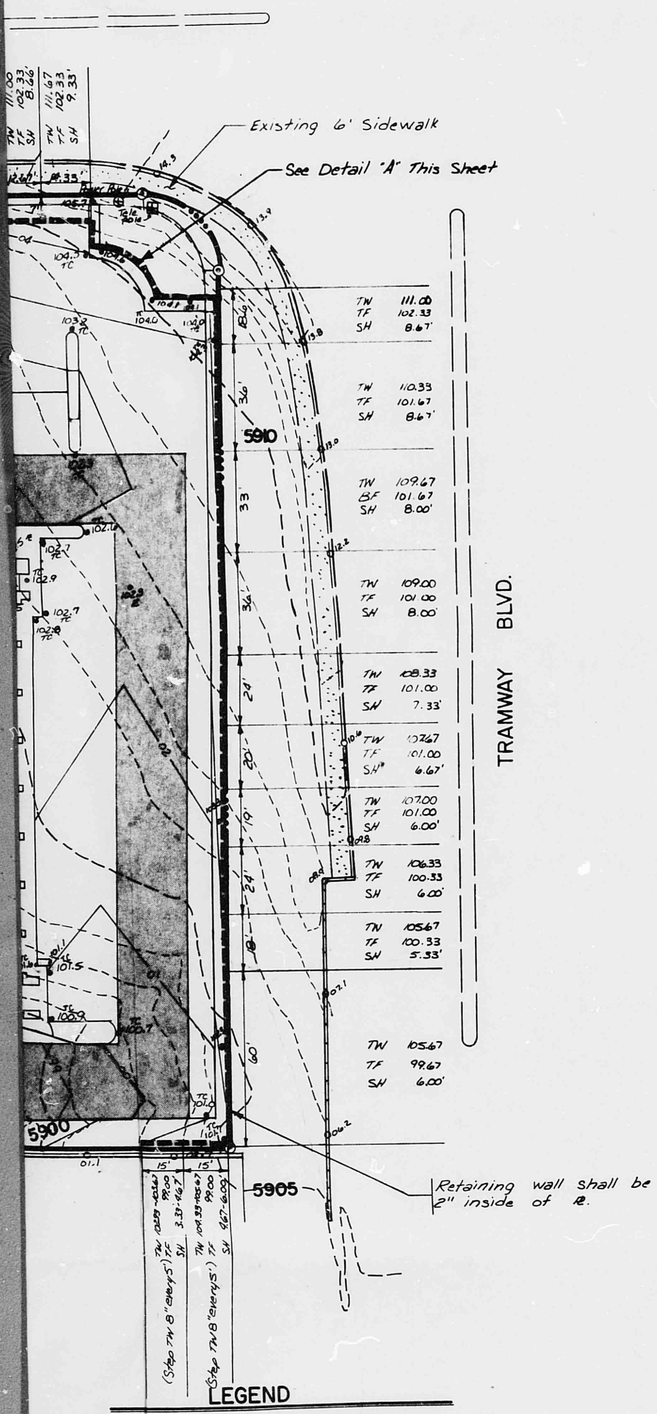
the Edmund I. Rady Property, being identical to the
n and designated on the Plat thereof, filed in the
xico, on August 19, 1975, said Beginning Point also
vd. NE, having a 131 foot right-of-way, and running -
ots 1, 3, 4, 5, 6 and 7 in Block 2 of said Cibola Village.
lock 2 of said Cibola Village, being identical to the
. Rady Property, and being a point on the East line of
f-way;
id Parcel 5-A and the East line of Cibola Village Dr. NE,
cel 5-A, being a point on the South right-of-way line of
-way;
way line of Montgomery Blvd. NE and the North line of
e ;
ight having a radius of 25.00 feet, (Ch. = S. 44 deg. 50'
angent on said West right-of-way line of Tramway (Panorama

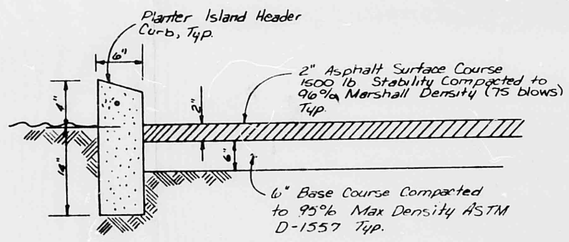
Tramway (Panorama) Blvd. NE and the East line of said
ng, and Containing 4.130 Acres, more or less.

1" = 30'

## BENCHMARK

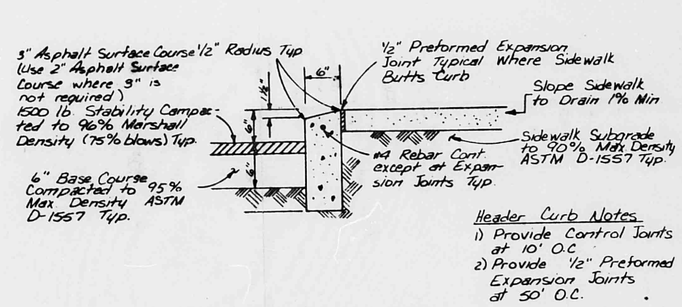
THE STATION MARK IS A STANDARD GLO BRASS CAP LOCATED AT THE INTERSECTION OF TRAMWAY BLVD. & MONTGOMERY BLVD. N.E., 1' UNDER A CAST IRON "WATER METER" COVER IN THE CENTER OF THE INTERSECTION. ELEV. = 5916.14




① TYPICAL PARKING AREA PAVEMENT SECTION

NO SCALE




Header Curb Notes
1) Provide Control Joints at 10' O.C.
2) Provide 1/2" Preformed Expansion Joints at 50' O.C.

② TYPICAL ENTRANCE PAVEMENT SECTION

NO SCALE

## LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROJECT BOUNDARY
- RETAINING WALL
- SPOT ELEVATIONS
- USE 3" ASPHALT SURFACE COURSE
- EXISTING SPOT ELEVATIONS
- TOP OF WALL
- TOP OF FOOTING
- CONCRETE VALLEY GUTTERS
- WEEP HOLES (see architectural drawing for location)

Bruce Burnett 8-20-84

## NOTES

1. NO FROZEN MATERIAL SHALL BE PLACED IN FILL.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED UNDER CONTRACT SHALL, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE "PUBLIC WORKS CONTRACT 84-3 AND THE NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION-1979 EDITION.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234 FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. PRIOR TO GRADING, ALL VEGETATION, DEBRIS AND NEAR SURFACE ORGANICALLY CONTAMINATED SOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED. VEGETATION AND DEBRIS SHALL BE DISPOSED OF OFF-SITE. TOPSOIL STRIPPINGS SHALL BE DISPOSED OF OFF-SITE OR STOCKPILED FOR USE IN PLANTERS AND NON-STRUCTURAL FILLS.
6. ALL MATERIAL PLACED IN FILL SHALL HAVE BEEN EXCAVATED ON-SITE OR FROM AN APPROVED BORROW AREA.
7. FINISHED PAD ELEVATIONS ARE 4" BELOW FINISH FLOOR ELEVATIONS.
8. DURING ROUGH GRADING OF THE SITE, ALL BUILDING PADS SHALL BE GRADED TO THREE FEET BEYOND SPECIFIED HORIZONTAL DIMENSIONS.
9. SUBGRADE TOLERANCE ON ALL BUILDING PADS, PARKING AREAS, ROADWAYS, DRAINAGE IMPROVEMENTS ETC SHALL BE ±.05 FEET.
10. FINISHED TOP OF ASPHALT TOLERANCE FOR ALL AREAS WITH SLOPES LESS THAN 1% IS ±.02 FEET. FINISHED TOP OF ASPHALT TOLERANCE FOR ALL AREAS WITH SLOPES GREATER THAN 1% IS ±.05 FEET.
11. EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL.
12. GRADING AND EARTHWORK OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH ALL CURRENT CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL REGULATIONS.
13. BACKFILL AND ANY SOIL DISTURBED AROUND THE FOUNDATION WALLS SHOULD BE MOISTENED AND COMPACTED TO 90% OF MAXIMUM DENSITY PRIOR TO PLACING EXTERIOR SLABS OR SIDEWALKS.
14. ANY FILL REQUIRED BELOW PAVED AREAS SHOULD BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.
15. DO NOT PUDDLE OR JET BACKFILL.
16. THE TOP 6" OF SUBGRADE BENEATH THE PAVEMENT AND BUILDINGS SHALL BE SCARIFIED AND COMPACTED, WITH A MINIMUM OF 20 PASSES USING HEAVY VIBRATORY EQUIPMENT, TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.
17. PRIOR TO PLACEMENT OF SITE FILL, AND SUBSEQUENT TO FINAL GRADING IN CUT SECTIONS, THE NATURAL GROUND SHALL BE SCARIFIED, BROUGHT TO OPTIMUM MOISTURE CONTENT (±2%) FOR AS DEEP AS PRACTICABLE AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557.
18. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH THE SOILS REPORT DONE BY FOX CONSULTING ENGINEERS AND GEOLOGISTS.
19. VALLEY GUTTER PER CITY STANDARD DRAWING P-9-2.
20. MINIMUM COVER ON FOOTINGS SHALL BE 2' IN LANDSCAPED AREAS.
21. IF SH IS OVER AN EVEN FOOT USE NEXT HIGHEST SECTION.
22. SH REFERS TO DIMENSIONS ON DETAIL SHEET C-2.
23. DRIVEPADS PER CITY STANDARD DRAWING P-11-2.

G22/D1A

APPROVED FOR ROUGH GRADING

HYDROLOGIST — DATE 8-21-84

job title: CARACOL PLAZA

job no: 2584 — date: 8/20/84

sheet title: GRADING PLAN — by

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