

& ASSOC., INC. AND DATED 09-25-2006, NMPS 11184. TOPOGRAPHIC INFORMATION

JMA JOB NO. 2005.049.3

SHOWN HEREON WAS TAKEN FROM THE "TOPOGRAPHIC SURVEY, TRACT 10-A, THE TRAILS, UNIT 2" PREPARED BY JEFF MORTENSEN & ASSOC., INC. AND DATED 09-25-2006,

JEFF MORTENSEN & ASSOCIATES, INC.

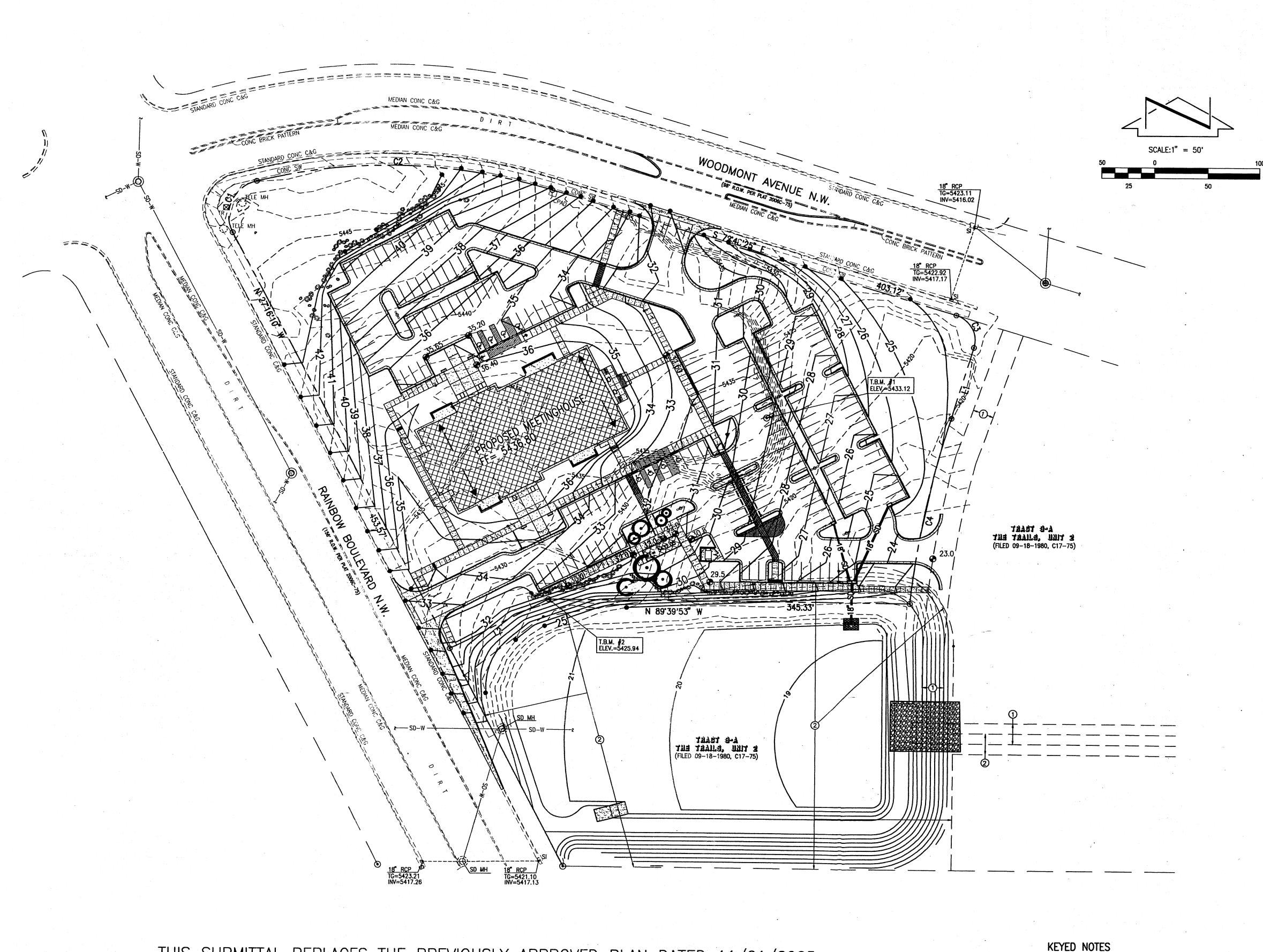
☐ 6010-B MIDWAY PARK BLVD. N.E.

☐ ALBUQUERQUE ☐ NEW MEXICO 87109

☐ ENGINEERS ☐ SURVEYORS (505) 345-4250

☐ FAX: 505 345-4254 ☐ ESTABLISHED 1977

C-1



THIS SUBMITTAL REPLACES THE PREVIOUSLY APPROVED PLAN DATED 11/01/2005 AND IS REVISED TO REFLECT CHANGED CONDITIONS AND THE REVISED SITE PLAN.

2 CITY OF ALBUQUERQUE PUBLIC DRAINAGE EASEMENT GRANTED BY PLAT 2006C-75

BOUNDARY TABLES

LINE DIRECTION DISTANCE
L1 S 1711'35" W 71.18'

| URVE | RADIUS | LENGTH | CHORD | CHORD BEARING | DELTA |
|------|---------|---------|---------|---------------|------------|
| C1 | 35.00' | 63.27' | 55.00' | N 24'30'53" E | 103'34'06" |
| C2 | 530.00' | 285.78' | 282.33' | S 88 15 22 E | 30'53'40" |
| C3 | 25.00' | 39.27' | 35.36' | S 27'48'25" E | 90'00'00" |
| C4 | 825.00 | 184.27' | 183.891 | S 12'06'45" W | 12'47'51" |

I. EXECUTIVE SUMMARY AND INTRODUCTION

THE PROPOSED LDS PARADISE HILLS MEETING HOUSE IS LOCATED IN A RAPIDLY DEVELOPING AREA OF ALBUQUERQUE'S NORTHWEST MESA. THE PROPOSED SITE LIES WITHIN THE LONGFORD HOMES TRAILS DEVELOPMENT WHICH IS PROGRAMMED TO DISCHARGE TO THE BOCA NEGRA SYSTEM SUBJECT TO DISCHARGE RESTRICTIONS ACCOMPLISHED BY A SERIES OF REGIONAL DETENTION PONDS. ALL FRONTING INFRASTRUCTURE HAS BEEN CONSTRUCTED BY LONGFORD HOMES EXCEPT FOR TURN LANES. OFFSITE FLOWS DO NOT IMPACT THE SITE. THE PURPOSE OF THIS SUBMITTAL IS TO OBTAIN SITE DEVELOPMENT PLAN APPROVAL AND TO DOCUMENT THE PROPOSED DRAINAGE CONCEPT FOR THE SITE. A SEPARATE SUBMITTAL WILL BE REQUIRED FOR BUILDING PERMIT APPROVAL.

II. PROJECT DESCRIPTION:

AS SHOWN BY VICINITY MAP C-9, THE PROPOSED SITE IS LOCATED AT THE SOUTHEAST CORNER OF RAINBOW BLVD NW AND WOODMONT AVENUE NW, BOTH OF WHICH WERE CONSTRUCTED BY LONGFORD HOMES AS PART OF THE TRAILS, UNIT II SUBDIVISION (CPN 730084). THE 5 ACRE TRACT WAS SPLIT OUT OF THE MUCH LARGER BULK LAND PARCEL, TRACT 10, THE TRAILS, UNIT 2. THE PROPERTY TO THE NORTH IS CURRENTLY UNDER CONSTRUCTION AS A SINGLE FAMILY RESIDENTIAL SUBDIVISION, THE PRESERVE AT THE TRAILS (CPN 738483). THE SITES TO THE WEST AND SOUTH ARE DEVELOPED

REQUIRES EPC SITE PLAN REVIEW AND DRB APPROVAL. AS SHOWN BY PANEL 111 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS, BERNALILLO COUNTY, NEW MEXICO, AND INCORPORATED AREAS, DATED NOVEMBER 19, 2003, THE SITE DOES NOT LIE WITHIN A DESIGNATED FLOOD HAZARD ZONE. EXISTING SITE RUNOFF ULTIMATELY DRAINS TO THE BOCA NEGRA ARROYO WHICH HAS A ZONE A FLOOD HAZARD

III. BACKGROUND DOCUMENTS

THE FOLLOWING IS A LIST OF DOCUMENTS RELATED TO THE SITE AND SURROUNDING AREA. THIS LIST MAY NOT BE INCLUSIVE, HOWEVER, REPRESENTS A SUMMARY OF RELEVANT PLANS AND DOCUMENTS WHICH ARE KNOWN TO THE ENGINEER AT THE TIME OF PLAN PREPARATION.

- A. BOCA NEGRA MARIPOSA ARROYO DRAINAGE MANAGEMENT.PLAN DATED APRIL, 2005, PREPARED FOR AMAFCA BY RESOURCE TECHNOLOGY, INC. (RTI). THIS PLAN, ADOPTED BY AMAFCA, PRESENTS AN OVERALL DRAINAGE MANAGEMENT PLAN FOR THE BOCA NEGRA WATERSHED INCLUDING THE DESIGN AND CONSTRUCTION OF THE BOCA NEGRA DAM TO BE LOCATED NEAR THE INTERSECTION OF UNSER BLVD NW AND RAINBOW (ATRISCO) BLVD NW. THIS DAM, TO BE MAINTAINED BY AMAFCA, IS THE DESIGNATED OUTFALL FOR DEVELOPED RUNOFF FROM THE TRAILS SITE AND IS CURRENTLY IN THE FINAL STAGES OF DESIGN. DAM CONSTRUCTION IS PLANNED TO BEGIN IN 2006 UNDER A COST-SHARING AGREEMENT BETWEEN AMAFCA AND PRIVATE DEVELOPERS THAT
- B. PRELIMINARY CONSTRUCTION PLANS FOR THE TRAILS OFFSITE STORM DRAIN (CPN 761281) BY WILSON & COMPANY DATED JULY, 2005. THIS PLAN SET (NOT YET APPROVED AT THE TIME THIS REPORT WAS PREPARED) ADDRESSES THE PUBLIC (CITY OF ALBUQUERQUE) UNIVERSE STORM DRAIN THAT WILL RUN FROM THE ALAMEDA GRANT LINE AT THE SOUTHEAST CORNER OF THE TRAILS PROJECT SOUTH TO THE AFOREMENTIONED BOCA NEGRA DAM (REF. A). THE STORM DRAIN WILL SERVE AS THE OUTFALL FOR THE TRAILS PROJECT.
- C. AMENDMENT TO THE TRAILS SUBDIVISION MASTER DRAINAGE STUDY PREPARED FOR LONGFORD HOMES BY WILSON & COMPANY, INC, DATED JULY 29, 2004. THE ORIGINAL PLAN FOR THE TRAILS WAS PREPARED BY BOHANNON-HUSTON, INC (BHI). THE AMENDMENT BY WILSON & COMPANY REVISED THE DRAINAGE CONCEPT FOR THE TRAILS TO ONE WHEREBY STORMWATER WOULD BE DETAINED IN PONDS DISCHARGING TO THE PROPOSED UNIVERSE STORM DRAIN (REF. B). THE PROPOSED LDS MEETINGHOUSE SITE IS LOCATED WITHIN BASIN H WHICH IS IDENTIFIED FOR FREE DISCHARGE TO A PROPOSED 36 INCH STORM DRAIN THAT OUTFALLS TO THE UNIVERSE STORM DRAIN (REF. B).
- D. CONSTRUCTION PLANS FOR THE TRAILS, UNIT 2 (CPN 730084) BY WILSON AND COMPANY DATED MAY, 2005. THESE PLANS, RECENTLY CONSTRUCTED INCLUDED THE DESIGNS FOR THE FRONTING STEET AND UTILITY IMPROVEMENTS OF THE FRONTING PARTS OF RAINBOW AND WOODMONT, AS WELL AS THE STORM DRAIN AND POND SERVING BASIN H THAT IS THE DESIGNATED OUTFALL FOR THE LDS MEETINGHOUSE SITE. THESE PLANS INCLUDE AN OVERALL POND AND DRAINAGE BASIN MAP FOR THE TRAILS THAT SHOWS WOODMONT DRAINING TO BASIN G WHICH DRAINS TO A DETENTION POND CONSTRUCTED WITH CPN 738483, THE RESERVE AT THE TRAILS, ALSO BY WILSON & COMPANY AND CURRENTLY UNDER CONSTRUCTION.
- E. CONCEPTUAL G&D BY JMA DATED 11/01/2005. THIS CONCEPTUAL PLAN FOR THIS SAME SITE WAS APPROVED FOR SITE PLAN DRB ACTION. SINCE THAT TIME, THE PROPOSED SITE PLAN HAS CHANGED, AND THE DETENTION POND TO THE SOUTH HAS BEEN ADDED. THE ORIGINAL PLAN IDENTIFIED AN OUTFALL TO A STORM DRAIN. THE NEW OUTFALL IS TO THE POND. THIS PREVIOUS PLAN (C9/D8) IS REPLACED BY THIS CURRENT SUBMITTAL.

IV. EXISTING CONDITIONS:

THE SITE IS UNDEVELOPED WITH A SPARSE GROUND COVER OF NATIVE VEGETATION. THE SITE GENERALLY SLOPES FROM NORTHWEST TO SOUTHEAST AND EXISTING SITE RUNOFF EVENTUALLY DRAINS TO THE UNDEVELOPED BOCA NEGRA ARROYO. THE SITE IS SURROUNDED BY VARIOUS PHASES OF THE TRAILS SUBDIVISION CURRENTLY UNDER CONSTRUCTION. PHASE 2 (REF. D) CONSTRUCTED THE FULL WIDTH PUBLIC STREET IMPROVEMENTS FOR RAINBOW AND WOODMONT WHICH INCLUDE PUBLIC STORM DRAINS. THESE STREETS WILL PREVENT OFFSITE FLOWS FORM IMPACTING THE SITE. THE REMAINING FRONTAGE LIES TOPOGRAPHICALLY LOWER AND IS INCAPABLE OF GENERATING OFFSITE FLOWS.

V. DEVELOPED CONDITIONS

THE PROPOSED SITE WILL BE A MEETINGHOUSE FOR THE JESUS CHRIST CHURCH OF LATTER DAY SAINTS (LDS). THE SITE WILL INCLUDE THE MEETINGHOUSE BUILDING WITH ASSOCIATED PAVED PARKING AND LANDSCAPING IMPROVEMENTS. THE SITE WILL DRAIN VIA INTERNAL STORM DRAIN TO AN EXISTING PUBLIC DRAINAGE POND WIHTIN A PUBLIC EASEMENT THAT LIES TO THE SOUTH OF THE SITE AND IS SIZED FOR THIS DISCHARGE. OFFSITE SLOPE GRADING WILL REQUIRE PERMISSION FROM THE ADJACENT PROPERTY OWNER (LONGFORD HOMES).

VI. CONCEPTUAL GRADING PLAN

THE CONCEPTUAL GRADING PLAN ON SHEET C-1 SHOWS: 1) EXISTING GRADES INDICATED BY CONTOURS AT 1 FT, 0 IN INTERVALS AS SHOWN BY THE REFERNCED JMA TOPO, 2) PROPOSED BOUNDARY FOR THE ADJACENT TRACTS AS PROVIDED BY WILSON & COMPANY, 3) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS AS SHOWN BY THE AFOREMENTIONED SURVEY AND SUPPLEMENTED WITH PROPOSED RAINBOW AND WOODMONT UTILITY IMPROVEMENTS BY LONGFORD HOMES TO SUPPORT THE TRAILS PROJECTS (REF D.), AND 4) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS.

VII. CALCULATIONS

THE CALCULATIONS, WHICH APPEAR AT RIGHT, ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40-ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY, 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF

VIII. CONCLUSIONS

- 1) THE PROPOSED SITE IMPROVEMENTS AND DRAINAGE CONCEPT ARE CONSISTENT WITH THE DEVELOPMENT CRITERIA ESTABLISHED BY PREVIOUSLY APPROVED PLANS FOR THIS SITE (BOCA NEGRA DMP, TRAILS MDP) AND WITH THE PROPOSED CONCEPTS FOR OTHER AREA PLANS THAT ARE NOT YET APPROVED (UNIVERSE STORM DRAIN, BOCA NEGRA DAM).
- 2) LONGFORD HOMES CONSTRUCTED THE FRONTING STREETS AND DOWNSTREAM STORM DRAINAGE IMPROVEMENTS.
- 3) THIS SUBMITTAL SUPPORTS THE SITE DEVELOPMENT PLAN FOR THE SUBJECT PROJECT. A SEPARATE SUBMITTAL WILL BE REQUIRED TO SUPPORT
- 4) THERE ARE NO DPM DESIGN VARIANCES, PUBLIC OR PRIVATE DRAINAGE EASEMENTS PROPOSED BY THIS PROJECT OTHER THAN THE OFFSITE STORM DRAIN EASEMENT PREVIOUSLY PLATTED BY THE SELLER.
- 5) THIS PROJECT WILL REQUIRE CONSTRUCTION OF PUBLIC TURN LANES.
- 6) OFFSITE SLOPE GRADING WILL REQUIRE PERMISSION FROM THE ADJACENT PROPERTY OWNER (LONGFORD HOMES).

SITE CHARACTERISTICS

1. PRECIPITATION ZONE = 1

2. $P_{6,100} = P_{360} = 2.20$

TREATMENT

3. TOTAL PROJECT AREA (At) = 221,650SF

4. EXISTING LAND TREATMENT

| A | 221,650 / 5.09 | 100 |
|-----------------------------|----------------|-----|
| 5. DEVELOPED LAND TREATMENT | | |
| TREATMENT | AREA (SF/AC) | %_ |
| В | 75,760 / 1.74 | 34 |
| C | 28,480 / 0.65 | 13 |
| D | 117,410 / 2.70 | 53 |

6. EXISTING CONDITION

- 1. VOLUME Ew = (EAAA + EBAB + EcAc + EDAD)/AT
- Ew = (0.44)(5.09)/5.09 = 0.44 IN
- $V_{100} = (Ew/12)AT (0.44/12)(5.09)(43,560)=8,130 CFS$ 2. PEAK DISCHARGE

QP = QPA AA + QPBAB + QPCAC + QPDAD QP = Q100 = (1.29)(5.09) = 6.6 CFS

7. DEVELOPED CONDITION

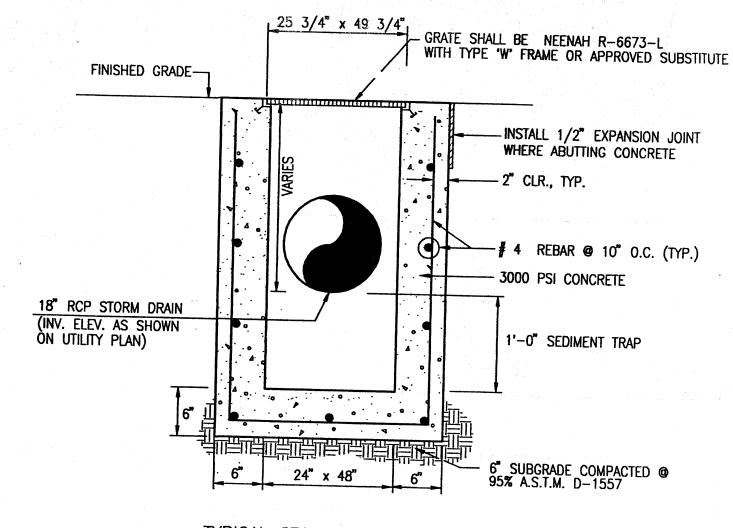
- 1. VOLUME $Ew = (E_AA_A + E_BA_B + E_CA_C + E_DA_D)/A_T$
- Ew = [(.067)(1.74)+(0.99)(0.65)+(1.97)(2.70)]/5.09=1.40 IN $V_{100} = (Ew/12)AT = (1.40/12)(5.09)(43,560) = 25,870 CFS$

AREA (SF/AC)

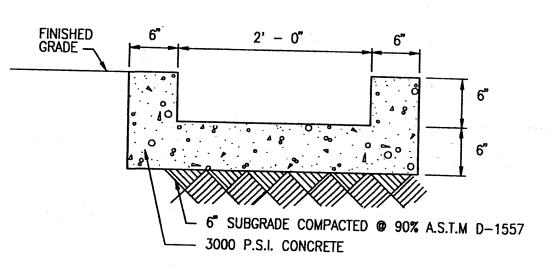
- 2. PEAK DISCHARGE
- QP = QPA AA + QPBAB + QPCAC + QPDAD
- QP = Q100 = (2.03)(1.74) + (2.87)(0.65) + (4.37)(2.70) = 17.2 CFS

8. COMPARISON

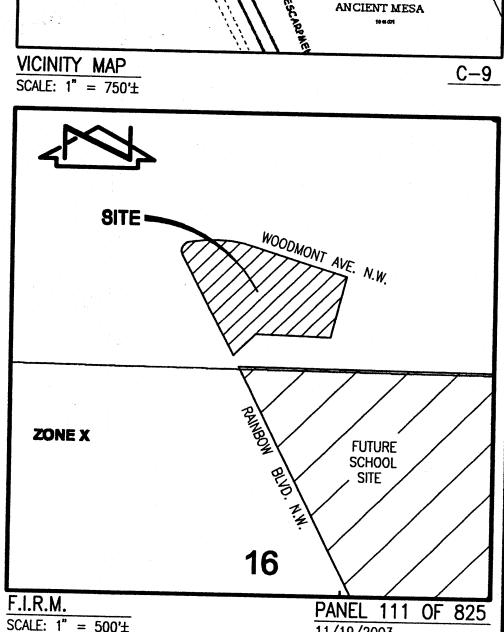
- 1. VOLUME
- $V_{100} = 25,870 8,130 = 17,740 \text{ CFS (INCREASE)}$
- 2. PEAK DISCHARGE
- $Q_{100} = 17.2 6.6 = 10.6 \text{ CFS}$ (INCREASE)



TYPICAL STORM INLET SECTION SCALE: 1'' = 1' - 0''



TYPICAL RUNDOWN SECTION SCALE: 1'' = 1' - 0''



THE TRAILS (UIIIT 2)

11/19/2003

 $^{\circ}$

SU

Architect / Engineer

87

C 102

ARCHITECTS

ROGERS

Stamp:

(505)

DOWEL DETAIL

CONSTRUCTION NOTES: C. 3" RADIUS, (TYPICAL). D. 3/8 CHECKERED STEEL PLATE. ROD ANCHOR 1" x 5" SIDEWALK GRADE DOWEL AND JOINT, (OPTIONAL)

GUTTER FLOWLINE ELEV. K. 3/8" x 1" F.H. C'SUNK STAINLESS STEEL MACHINE SCREW. M. DRAIN WIDTH, 24" MAX. 12" MIN.

TYPICAL SIDEWALK CULVERT DETAILS NOT TO SCALE

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C-2

HER-TRA-98-13

NARRATIVE

CALCULATIONS

Property Number 589-1196

Sheet Title:

DETAILS

Plot Date: 03-16-2007 Plot Time: 07:26 am

File Path: E\DMA\ACDIA\2005.0493\File Name: 50493DP.DWG

