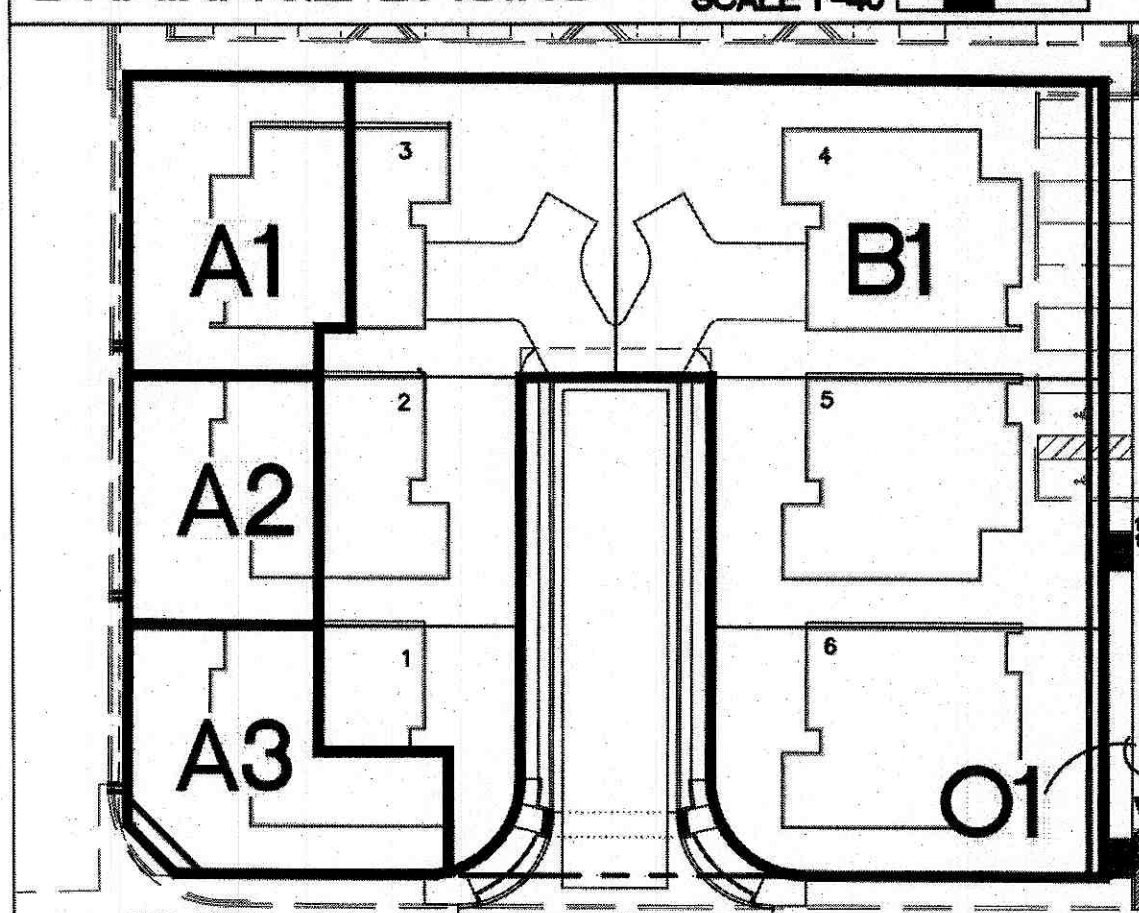


DRAINAGE BASINS

SCALE 1"=40'



Basin No.	Description	Area of basin flows	Sub-basin Weighted Excess Precipitation	Sub-basin Volume of Runoff	Sub-basin Peak Discharge Rate
A1		2,400 SF	0.1 Ac	217 cu ft	0.3 cfs
A2		2,400 SF	0.0 Ac	217 cu ft	0.3 cfs
A3		2,400 SF	0.1 Ac	217 cu ft	0.3 cfs
B1		2,400 SF	0.5 Ac	217 cu ft	0.3 cfs
B2		2,400 SF	0.5 Ac	217 cu ft	0.3 cfs

SIDEWALK CULVERT CALCS.

Orifice Equation	SideWalk Culvert	Flow
$Q = C_d A \sqrt{2gh}$		
Where:		
C_d	0.6	(indicating that the opening will function at 60% capacity)
A	1.34 sq.ft.	
g	32.2 ft/sec ²	
h	0.33 ft	depth of flow at opening from the center of culvert

THE 0.77 ACRE OFF-SITE BASIN DRAINING TO THIS SW CULVERT GENERATES 2.9 CFS < 3.7 CFS. OK

GENERAL NOTES

- COORDINATE WORK WITH SITE PLAN, UTILITY PLAN, AND DEMOLITION PLAN.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. REPORT ALL DISCREPANCIES TO THE ENGINEER AND VERIFY THE ENGINEER'S INTENT BEFORE PROCEEDING.
- FOR ALL ACCESSIBLE ROUTES, MAXIMUM ALLOWABLE CROSS SLOPE IS 2.0% AND MAXIMUM LONGITUDINAL SLOPE WITHOUT RAMP IS 5.0%. FOLLOW ALL ADA ACCESSIBILITY GUIDELINES OR CITY CODES, WHICHEVER IS MORE STRINGENT.
- ALL TRASH, DEBRIS, & SURFACE VEGETATION SHALL BE CLEARED AND LEGALLY DISPOSED OF OFF-SITE.
- ALL SUBGRADE, OVEREXCAVATION, AND FILL SHALL BE PLACED AND / OR COMPACTED PER THE GEOTECHNICAL REPORT AND CITY OF ALBUQUERQUE SPECIFICATIONS.
- PROPOSED SPOT AND CONTOUR ELEVATIONS SHOWN REPRESENT TOP OF FINISH MATERIAL (I.E. TOP OF CONCRETE, TOP OF CONCRETE BUILDING PAD, TOP OF PAVEMENT MATERIAL, TOP OF LANDSCAPING MATERIAL, ETC.). CONTRACTOR SHALL GRADE, COMPACT SUBGRADE AND DETERMINE EARTHWORK ESTIMATES BASED ON ELEVATIONS SHOWN MINUS FINISH MATERIAL THICKNESSES.
- IF FIELD GRADE ADJUSTMENTS ARE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
- EXISTING UTILITY LINES ARE SHOWN IN AN APPROXIMATE MANNER ONLY AND MAY BE INCOMPLETE OR OBSOLETE. SUCH LINES MAY OR MAY NOT EXIST WHERE SHOWN OR NOT SHOWN. CONTRACTOR SHALL CONTACT NM-811 FOR UTILITY LINE SPOTS TWO WORKING DAYS PRIOR TO CONDUCTING SITE FIELD WORK. CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES.
- OWNER WILL PROVIDE SOIL TESTING AND INSPECTION SERVICES DURING EARTHWORK OPERATIONS. CONTRACTOR SHALL ALLOW TESTING LABS TO INSPECT AND APPROVE COMPACTED SUBGRADES AND FILL LAYERS BEFORE FURTHER CONSTRUCTION WORK IS DONE. SHOULD COMPACTION TESTS INDICATE INADEQUATE DENSITY, CONTRACTOR SHALL PROVIDE ADDITIONAL COMPACTION AND TESTING AT THE CONTRACTOR'S SOLE EXPENSE.
- OWNER HAS ESTABLISHED PROPERTY BOUNDARY CORNERS. CONTRACTOR SHALL PROVIDE ALL OTHER CONSTRUCTION STAKING. CONTRACTOR SHALL LOCATE AND PRESERVE ALL BOUNDARY CORNERS AND REPLACE ANY LOST OR DISTURBED CORNERS AT CONTRACTOR'S SOLE EXPENSE.
- THE ENVIRONMENTAL PROTECTION AGENCY (EPA) AND THE CITY OF ALBUQUERQUE REQUIRE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), AN NPDES PERMIT, AND AN EROSION AND SEDIMENT CONTROL (ESC) PERMIT FOR PROJECTS WHERE CONSTRUCTION ACTIVITIES MEET THE EPA THRESHOLD. (SWPPP, NPDES PERMIT, AND ESC PLAN BY OTHERS.) A CITY-APPROVED ESC PERMIT MUST BE INCLUDED WITH THE CONTRACTOR'S SUBMITTAL FOR A ROUGH GRADING, GRADING, PAVING, BUILDING, OR WORK ORDER PERMIT.
- ADJUST RIMS OF EXISTING UTILITY FEATURES AS NECESSARY TO MATCH NEW GRADES.
- WHERE GRADES BETWEEN NEW AND EXISTING ARE SHOWN AS 'MATCH' OR '±', TRANSITIONS SHALL BE SMOOTH.

DRAINAGE CONCEPT

THE SITE DRAINAGE WILL DISCHARGE FROM THE PROPOSED DEVELOPMENT TO SIGNAL AVENUE VIA THE PROPOSED HOPE COURT ACCESS ROAD (BASIN B1) AND THE EXISTING CHURCH ACCESS ROAD / DRAINAGE EASEMENT (BASINS A1, A2 AND A3). BASED ON THE 100-YEAR 6-HOUR CALCULATIONS, THE DEVELOPED SITE WILL GENERATE 3.2 CFS.

BASIN A1: APPROXIMATELY 0.3 CFS WILL FREE DISCHARGE TO THE EXISTING CHURCH ACCESS ROAD.

BASIN A2: APPROXIMATELY 0.2 CFS WILL FREE DISCHARGE TO THE EXISTING CHURCH ACCESS ROAD.

BASIN A3: APPROXIMATELY 0.3 CFS WILL FREE DISCHARGE TO THE EXISTING CHURCH ACCESS ROAD.

BASIN B1: APPROXIMATELY 2.4 CFS WILL FREE DISCHARGE TO SIGNAL AVENUE VIA HOPE COURT.

TOTAL DISCHARGE TO EXISTING CHURCH ACCESS ROAD / DRAINAGE EASEMENT = B2+B3+B4 = 0.8 CFS.

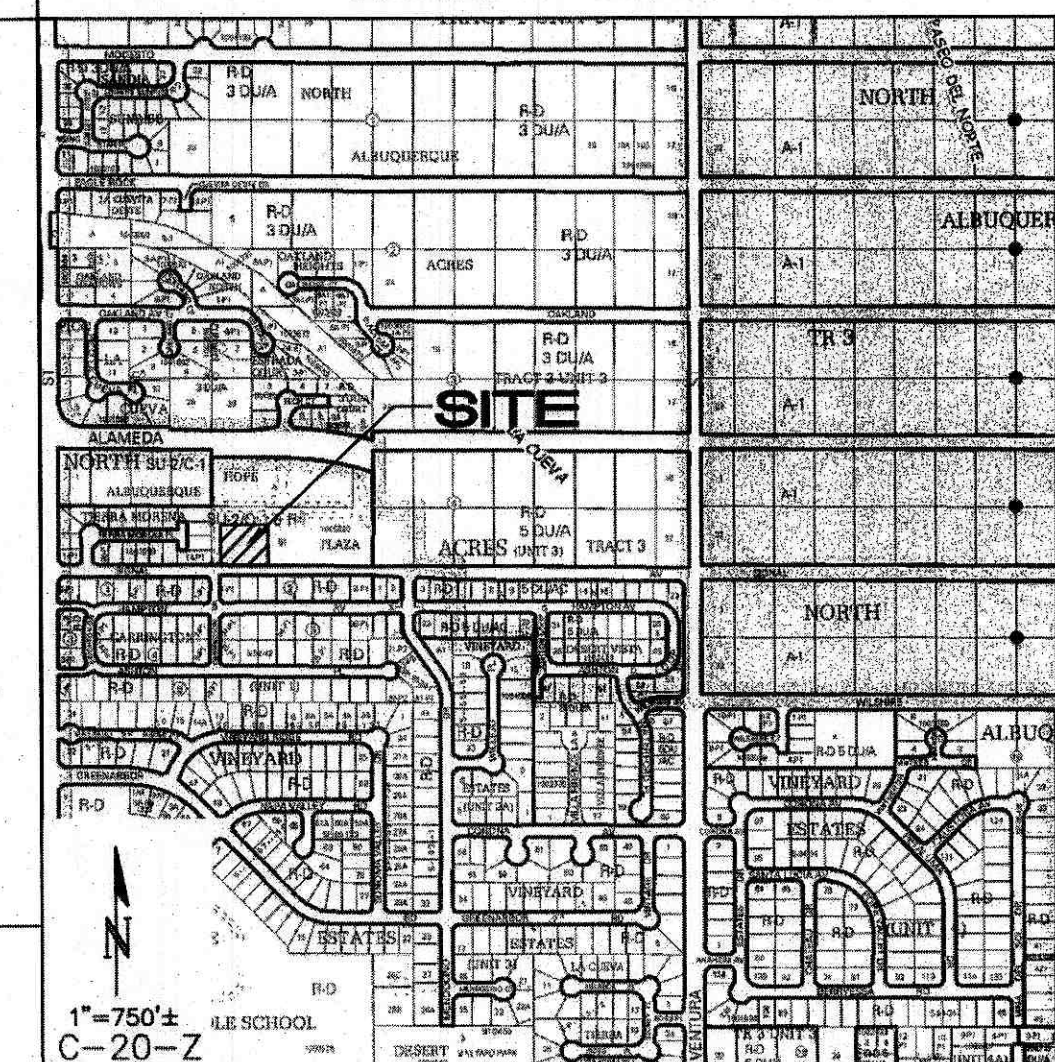
BASIN O1 (OFF-SITE EAST): APPROXIMATELY 2.9 CFS WILL FREE DISCHARGE TO SIGNAL AVENUE VIA PROPOSED COVERED SIDEWALK CULVERT.

CALCULATIONS: Hope Plaza : April 18, 2014					
Based on Drainage Design Criteria for City of Albuquerque Section 22.2 DPM, Vol 2, dated Jan., 1993					
ON-SITE					
AREA OF SITE:	29643	SF	=	0.68	
100-year, 6-hour					
HISTORIC FLOWS:		DEVELOPED FLOWS:		EXCESS PRECIP:	
Treatment SF	%	Treatment SF	%	Precip. Zone	
Area A	0	0%	Area A	0	0%
Area B	29643	100%	Area B	2371	8%
Area C	0	0%	Area C	2075	7%
Area D	0	0%	Area D	25197	85%
Total Area	29643	100%	Total Area	29643	100%
On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)					
Weighted E = $E_A A_A + E_B A_B + E_C A_C + E_D A_D$					
Historic E = 0.92 in. Developed E = 2.17 in.					
On-Site Volume of Runoff: $V_{360} = E/A / 12$					
Historic $V_{360} = 2273$ CF Developed $V_{360} = 5360$ CF					
On-Site Peak Discharge Rate: $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D / 43,560$					
For Precipitation Zone 3					
$Q_{pA} = 1.87$ $Q_{pB} = 3.45$					
$Q_{pC} = 2.60$ $Q_{pD} = 5.02$					
Historic $Q_p = 1.8$ CFS Developed $Q_p = 3.2$ CFS					

KEYED NOTES

- HOPE COURT (ROLL CURB & GUTTER) AND INTERSECTION AT SIGNAL AVE. TO BE CONSTRUCTED BY PUBLIC WORK ORDER (COA PROJECT NO. 745785). ELEVATIONS SHOWN FOR INFORMATION ONLY.
- EXISTING EARTH SWALE WITH INTERMITTENT CHECK DAMS. DO NOT DISTURB.
- NEW COVERED SIDEWALK CULVERT TO PASS FLOW TO SIGNAL AVE. TO BE CONSTRUCTED BY PUBLIC WORK ORDER (COA PROJECT NO. 745785).
- INSTALL 12" SQUARE ADS INLINE DRAIN WITH HINGED GRATE AT RIM ELEVATION SHOWN. EXTEND 4" OUTLET PIPE THROUGH WALL WITH INVERT 0.5' ABOVE TOP OF ADJACENT EXISTING CURB. PROVIDE TURNED BLOCK IN CMU WALL 2" ABOVE DRAIN RIM ELEVATION FOR EMERGENCY OVERFLOW.
- CONSTRUCT 1' WIDE (BOTTOM WIDTH) X 4" THICK 'U' SHAPED CONCRETE RUNDOWN FROM 4" PIPE OUTLET TO EXISTING CHURCH ACCESS ROAD TOP OF CURB. SLOPE = 2% SEE SECTION AND DETAILS THIS SHEET.
- CONSTRUCT TWO TERRACED (30" MAX. HEIGHT EACH) RETAINING WALLS TO ACHIEVE GRADE DIFFERENCE SHOWN. DESIGN BY OTHERS.
- NEW PEDESTRIAN ACCESS WALK WITH TURNED-DOWN EDGE. GRADE TRANSITION RAMPS, PRIVATE COVERED SIDEWALK CULVERT AS SHOWN TO BE CONSTRUCTED IN COORDINATION WITH ADJACENT PROPERTY OWNER.
- PERIMETER RETAINING/PRIVACY WALL (DESIGN BY OTHERS). MAX RETAIN = 4'.
- ROOFS TO SHED FLOW TO E, W, & S. NO ROOF FLOW WILL DISCHARGE TO THE NORTH / ADJACENT PROPERTY.
- 10'X10'X1' DEEP F.F. ROCK EROSION CONTROL AT BACK OF SIDEWALK CULVERT. MATCH FLOWLINE ELEVATIONS NORTH AND EAST.

VICINITY MAP



LEGEND

- PROPOSED FLOW DIRECTION
- FF = PROPOSED FINISH FLOOR ELEVATION
- SUB-BASIN BOUNDARY

PROJECT DATA

PROPERTY: THE SITE IS AN UNDEVELOPED PROPERTY LOCATED WITHIN CITY OF ALBUQUERQUE ZONE MAP C-20-Z. THE SITE IS BOUND TO THE WEST BY A PRIVATE CHURCH ACCESS DRIVE, TO THE NORTH AND EAST BY EXISTING CHURCH PARKING, AND TO THE SOUTH BY SIGNAL AVE. NE.

PROPOSED IMPROVEMENTS: THE PROPOSED IMPROVEMENTS INCLUDE THE CONSTRUCTION OF A SIX UNIT RESIDENTIAL SUBDIVISION WITH AN ASSOCIATED ASPHALT PAVED ROAD.

LEGAL: LOTS 1 - 6, HOPE PLAZA, CITY OF ALBUQUERQUE, NEW MEXICO.

AREA: 29,643 SF (LOTS 1-6)

BENCHMARK: ALBUQUERQUE CONTROL SURVEY MONUMENT "7-C19". ELEVATION = 5485.723 (NAVD 1988)

OFF-SITE: NO OFF-SITE FLOW IMPACTS THIS PROPERTY.

FLOOD HAZARD: PER BERNALILLO COUNTY FIRM MAP #35001C01416, THE SITE IS LOCATED WITHIN FLOODZONE 'X' (UNSHADED) DESIGNATED AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.

SURVEYOR: RUSS P. HUGG, NMPS NO. 9750

DRAINAGE CERTIFICATION

I, Fred C. Arfman, NMPE No. 7322, of the firm Isaacson & Arfman, P.A., hereby certify that this project has been graded and will drain in substantial compliance with and in accordance with the design intent of the approved plan dated April 28, 2014. The record information edited onto the original design document has been obtained by Russ Hugg, NMPS No. 9750, of the firm Surv-Tek, Inc. I further certify that I have personally visited the project site on January 7, 2015 and have determined by visual inspection that the survey data provided is representative of actual site conditions and is true and correct to the best of my knowledge and belief. This certification is submitted in support of a request for Grading & Drainage Certification.

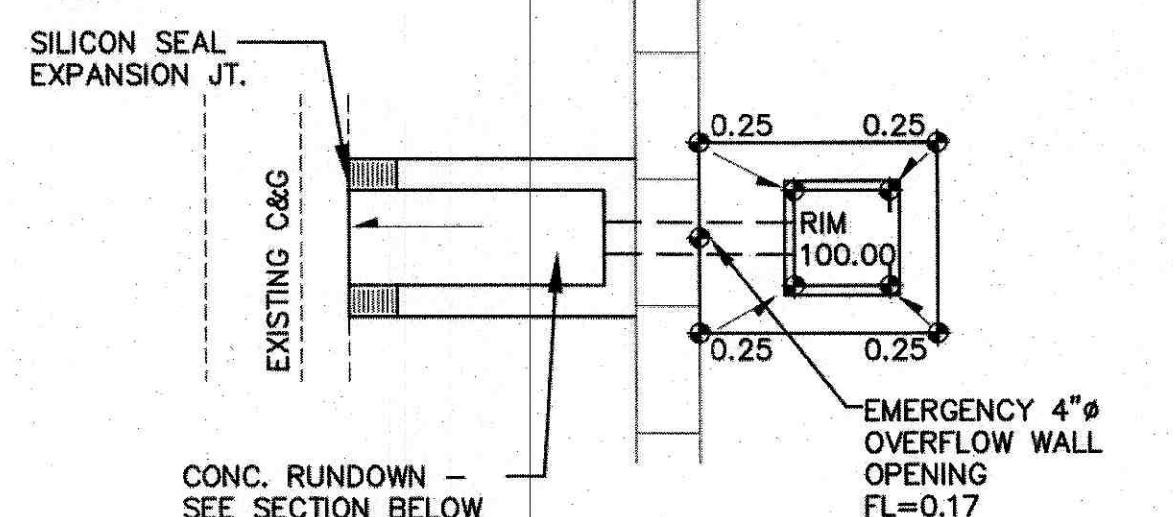
The record information presented hereon is not necessarily complete and intended only to verify substantial compliance of the grading and drainage aspects of this project. Those relying on this record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

Fred C. Arfman
Fred C. Arfman NMPE 7322
01-20-2015
Date



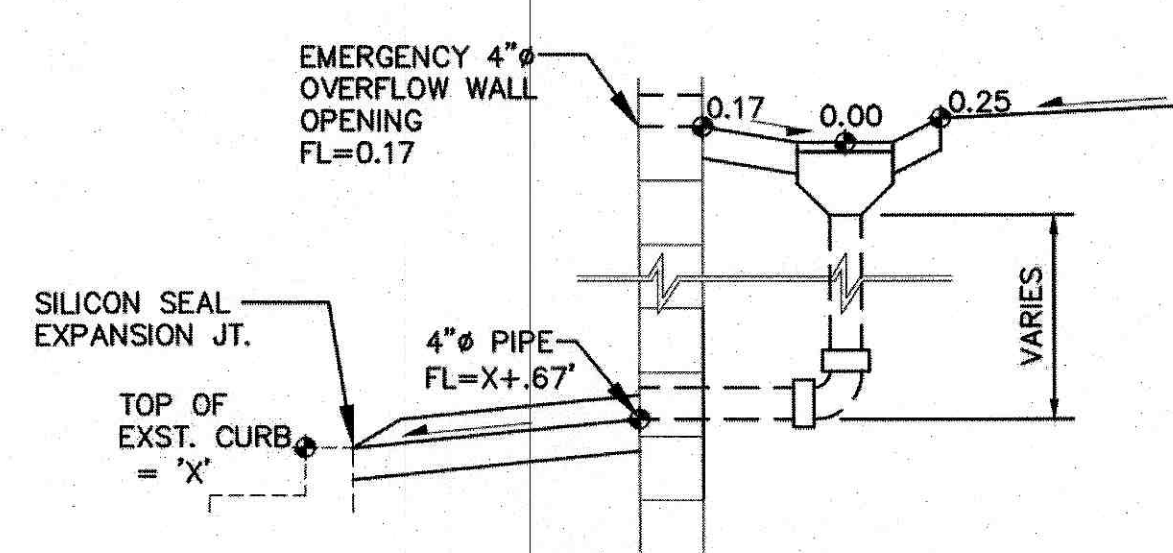
DRAIN DETAIL PLAN

SCALE: 1"=5'



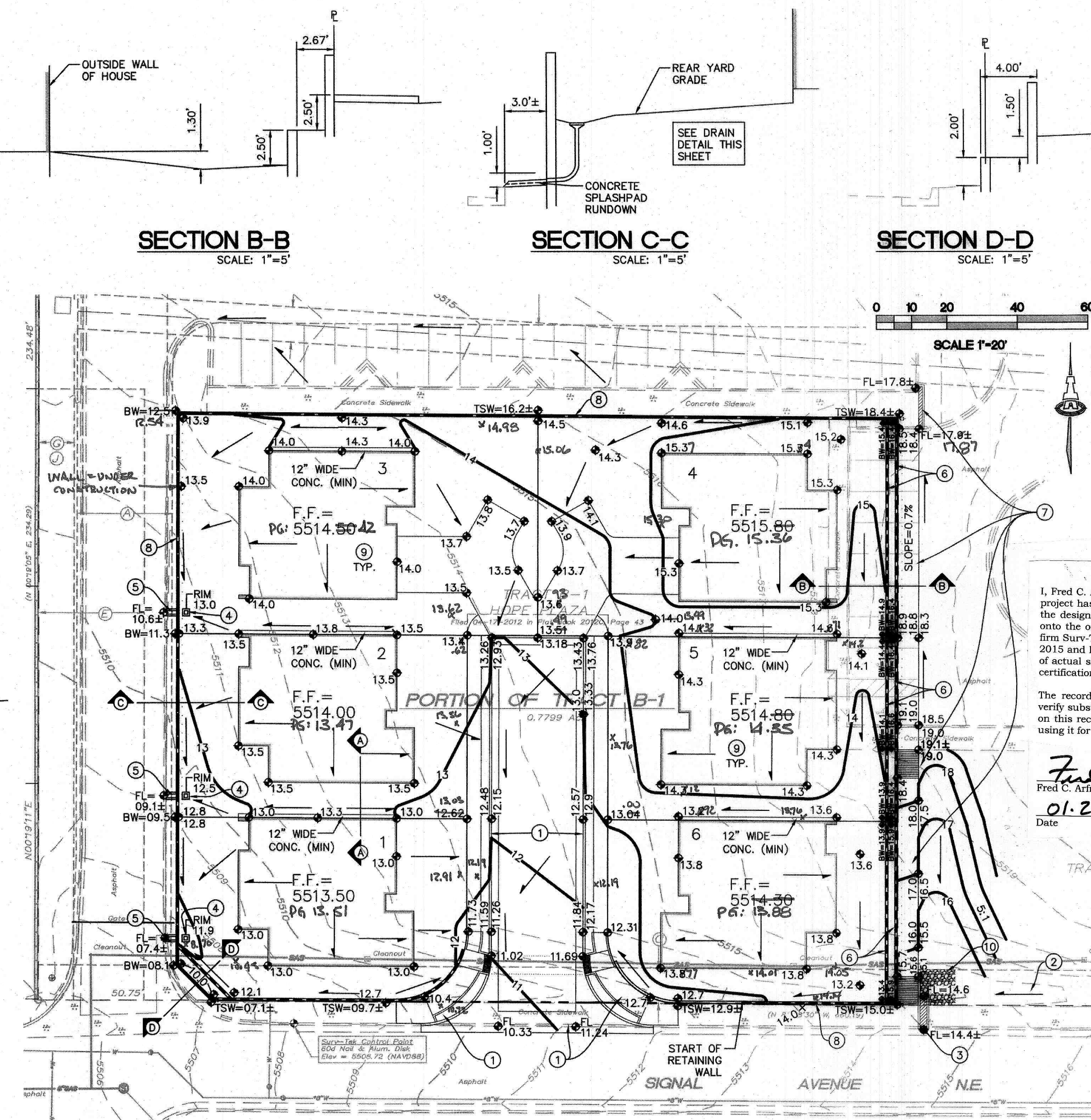
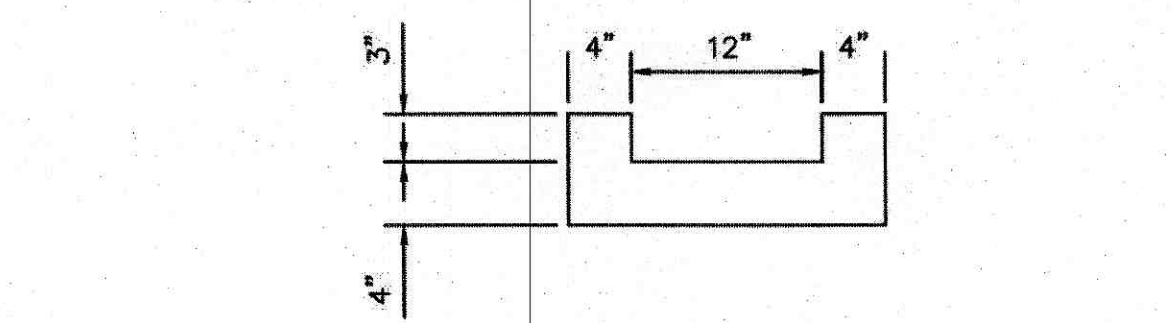
DRAIN DETAIL: SECTION

SCALE: 1"=5'

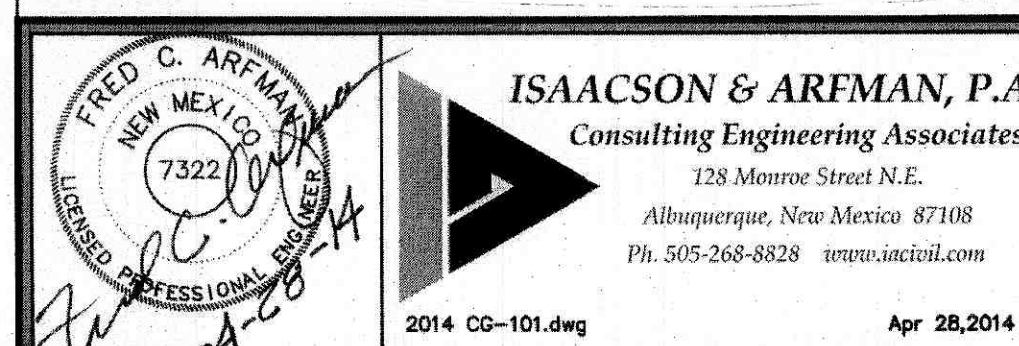


CONCRETE RUNDOWN

SCALE: 1"=5'



FOR INFORMATION ONLY
CPN 745785
SHEET 5 OF 11



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Albuquerque, New Mexico 87108
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2014 CG-101.dwg Apr 28, 2014

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HOPE PLAZA
SUBDIVISION
HOPEFUL DIRT, LLC.

GRADING & DRAINAGE PLAN

Date:	No. Revision:	Date:	Job No.
04/21/14			2014
Drawn By:			CG-101
CKD By:			SH OF
FCA			