

CONCEPTUAL DRAINAGE MANAGEMENT PLAN AND SUMMARY CALCULATIONS

- INTRODUCTION**
The purpose of this submittal is to provide a conceptual Drainage Management Plan for the development of Tract 5, North Andalusia at La Luz. This plan is submitted in support of a site plan for building permit and site plan for subdivision approvals.
- SITE LOCATION**
The site is located at the corner of Coors Blvd. and Learning Road in NW Albuquerque and is bounded by Coors Blvd. on the west, Learning Road on the south, and Antequera Road on the east. The site is located within Hydrologic Zone 1 and is shown on Zone Map F-12.
- EXISTING HYDROLOGIC CONDITIONS**
The site is currently undeveloped, but has been mass graded as a relatively flat pad site. The adjoining Coors Blvd., Learning Road, and Antequera Road are fully constructed streets. In the existing condition, the site sheet flows toward the east and flows are accepted and conveyed by Antequera Road as surface flows to a storm drain system which outfalls to an existing retention pond located just west of the Lower Corrales Riverside Drain.
- PROPOSED HYDROLOGIC CONDITIONS**
The project site will be developed in two phases: the current proposed phase, and a future development phase which will take place on the remaining southern tract adjacent to Antequera Road. The hydrologic calculations presented hereon account for the proposed first phase development and also assume a 90% impervious area for the remaining future tract. As per the Conceptual Grading and Drainage Plan for Andalusia Tract 6B, prepared by Bohannon Huston, Inc., dated 1-11-05, an allowable discharge of 4.18 cfs/acre is permitted from commercial tracts, and this previously prepared plan demonstrates downstream hydraulic capacity. Flows from this project are designed to be accepted by an existing 24" public storm drain and stub to the property located Antequera Drive at the eastern corner of the site which is sized to accept 14.4 cfs from the project site. As demonstrated by the calculations shown hereon, the site will generate 13.9 cfs (4.10 cfs/acre) in the ultimate build-out condition. Flows generated by the site will be directed toward the east as surface flows and captured by storm inlets and an underground storm drain system near the paved access into the site which will discharge into the existing Antequera storm drain system and then eventually outfall into the existing retention pond located west of the Lower Corrales Riverside Drain. In the proposed condition, water harvesting within the project site will occur within several of the landscaped areas as feasible.
- CONCLUSION**
This Conceptual Drainage Management Plan provides for grading and drainage elements which are capable of conveying the 100-year storm which meet the City's requirements. Additionally, the project conforms to the previously prepared Drainage Management Plan for the site with storm water peak discharges at or below what was allowed by that plan.
- SITE BASIN SUMMARY CALCULATIONS**
Site Data
Hydrologic Zone 1
AT=3.37 ac

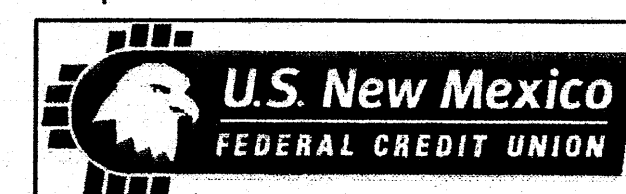
Existing Condition
%C = 100%
V100 = 0.2789 ac-ft
Q100 = 9.7 cfs (2.87 cfs/acre)

DEVELOPED SITE BASIN SUMMARY CALCULATIONS						
	AREA (ac)	%C	%D	cfs/acre	Q ₁₀₀ (cfs)	V ₁₀₀ (ac-ft)
PHASE 1 TRACT	2.42	21%	79%	4.06	9.8	0.3558
PHASE 2 TRACT	0.95	10%	90%	4.22	4.0	0.1482
TOTAL	3.37			4.10	13.8	0.5040

STORM DRAIN PIPE CAPACITY SUMMARY USING MANNING'S EQN						
PIPE	SIZE	SLOPE	Manning 'n'	Q ₁₀₀ (cfs)	V (fps)	Depth (ft)
SDP1	12	2%	0.012	4.0	7.6	0.63
SDP2	12	3%	0.012	4.0	8.9	0.56
SDP3	12	2%	0.012	2.0	6.4	0.42
SDP4	12	2%	0.012	0.1	2.7	0.10

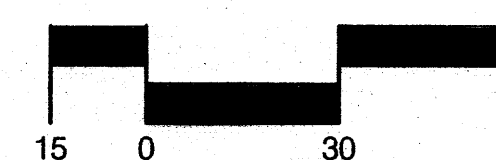
U.S. NEW MEXICO FEDERAL CREDIT UNION CONCEPTUAL GRADING AND DRAINAGE PLAN

Prepared for:



PO Box 129
Albuquerque, NM 87103

Scale: 1" = 30'



October, 2011

Prepared by:

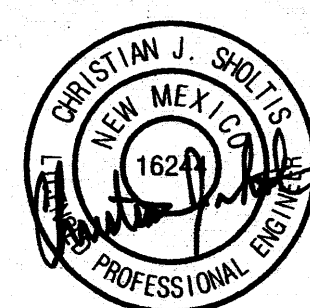
Consensus Planning, Inc.
302 Eighth Street NW
Albuquerque, NM 87102

NewGround
15450 South Outer Forty Drive
Suite 300
Chesterfield, MO 63017

Bohannon Huston, Inc
Courtyard 1, 7500 Jefferson NE
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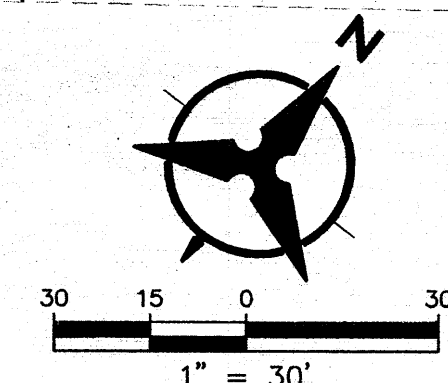
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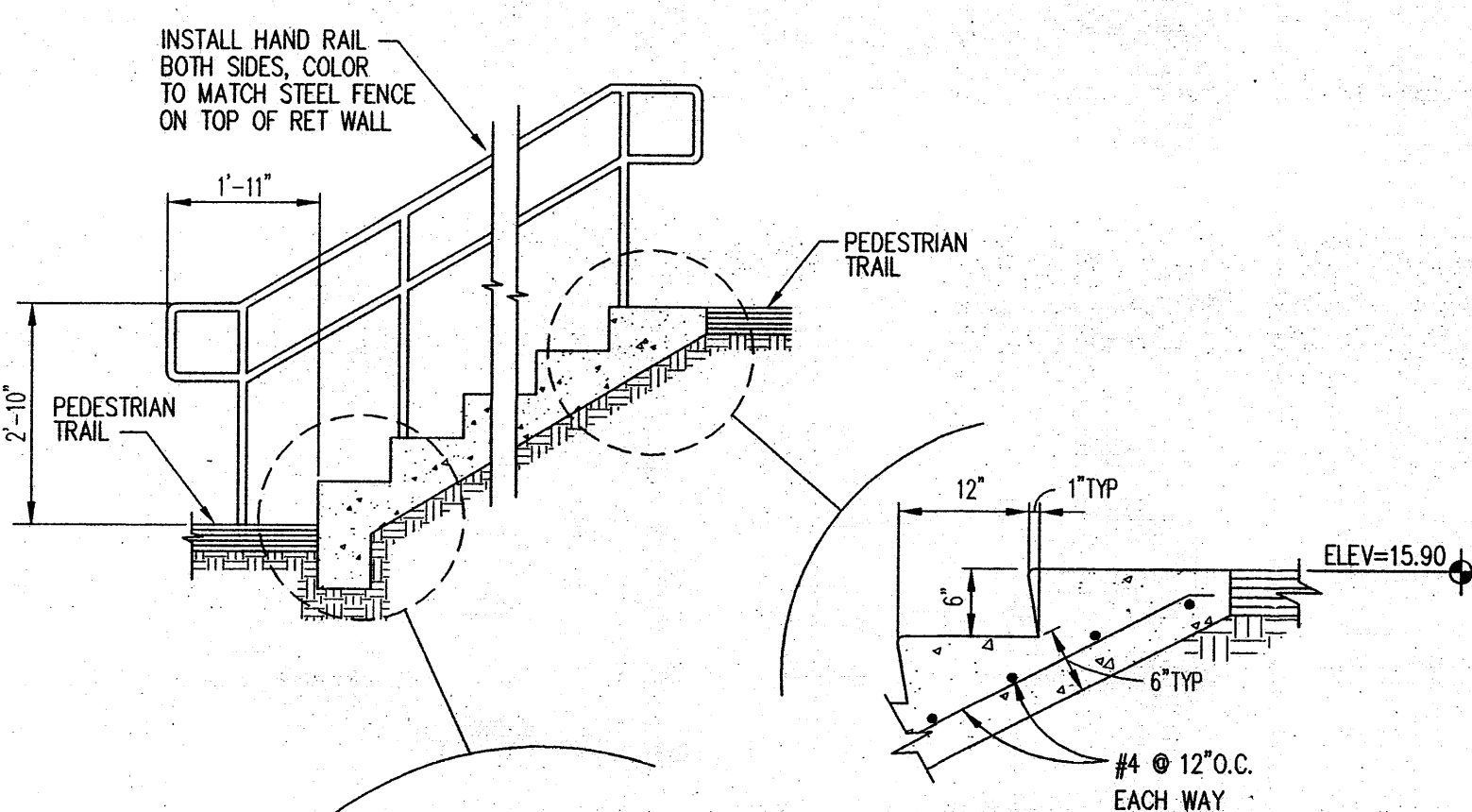
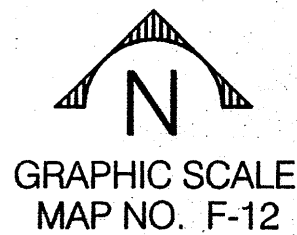
1-A-12

Bohannon Huston

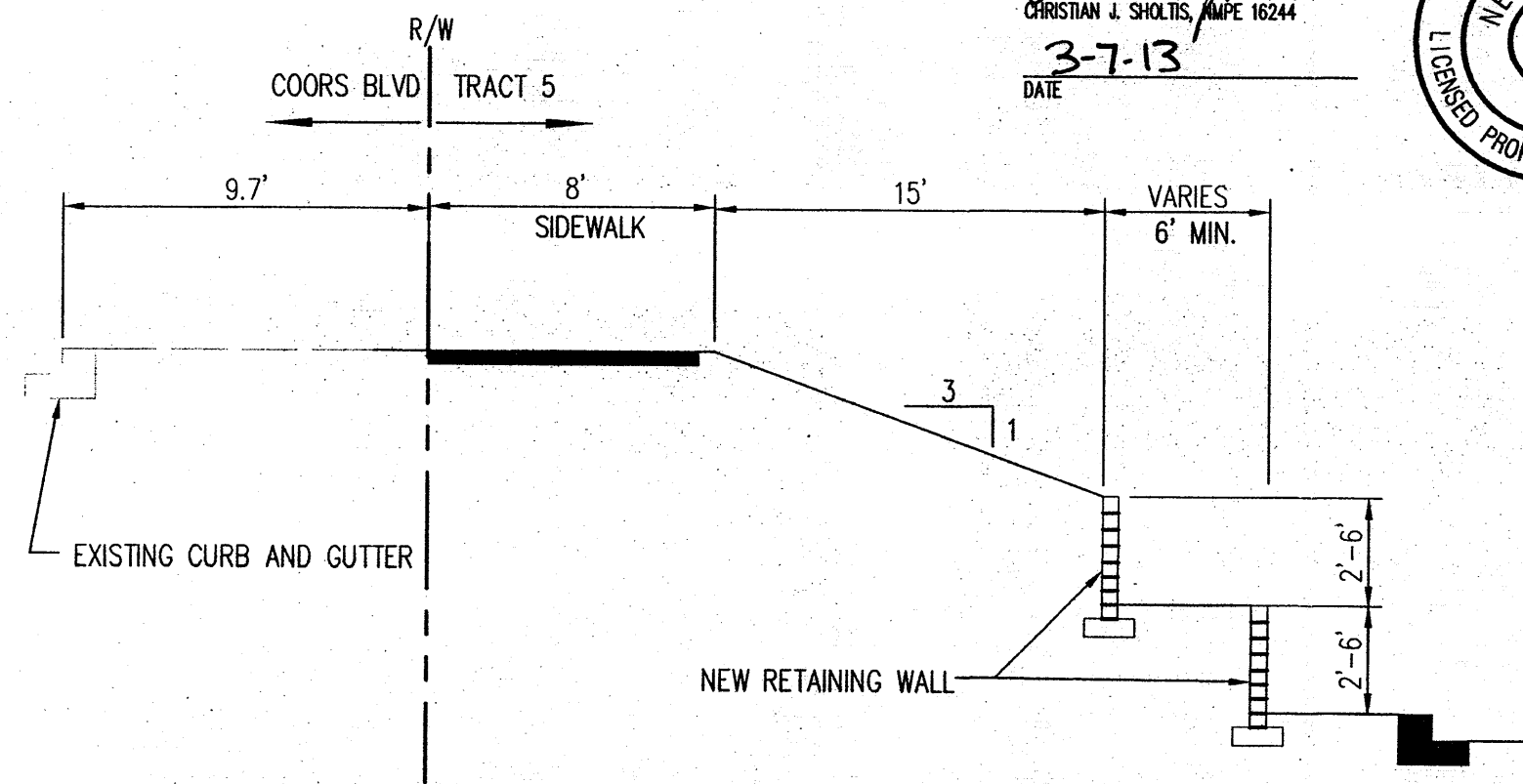


SITE VICINITY

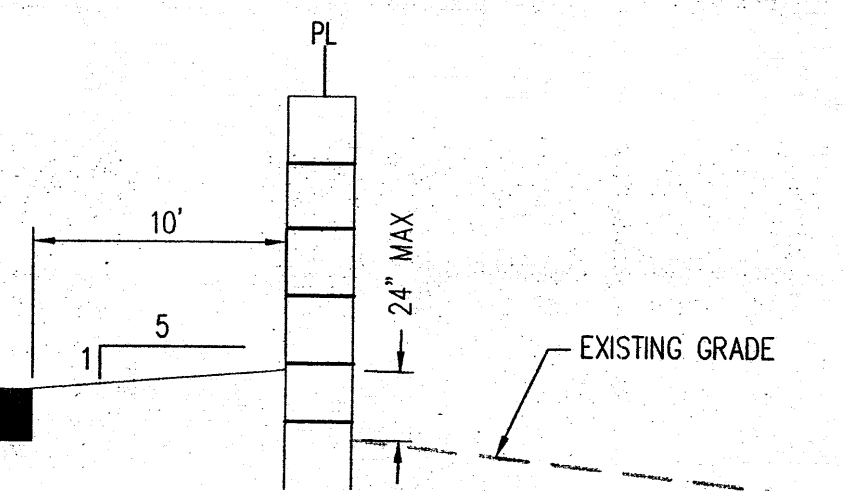
SITE



1 CONCRETE STEPS & HANDRAIL
NOT TO SCALE



SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

GRADING AND DRAINAGE CERTIFICATION
I, CHRISTIAN J. SHULTS, MPE 16244, OF THE FIRM BOHANNAN HUSTON, INC. HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED IN SUBSTANTIAL COMPLIANCE WITH THE RECORD INFORMATION PRESENTED HEREON. I HAVE PERSONALLY VISITED THE PROJECT SITE ON MARCH 5, 2013, AND HAVE BEEN INFORMED BY THE CONTRACTOR 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 CERTIFICATE OF OCCUPANCY.

EXCEPTIONS TO THE PLAN ARE NOTED BELOW:
1) THE EXISTING STORM POND WAS NOT CONSTRUCTED. DOWNSTREAM POND A IS CURRENTLY UNDER CONSTRUCTION AND IS THE ULTIMATE DRAINAGE OUTFALL FOR THIS PROJECT.
THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE GRADING 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.

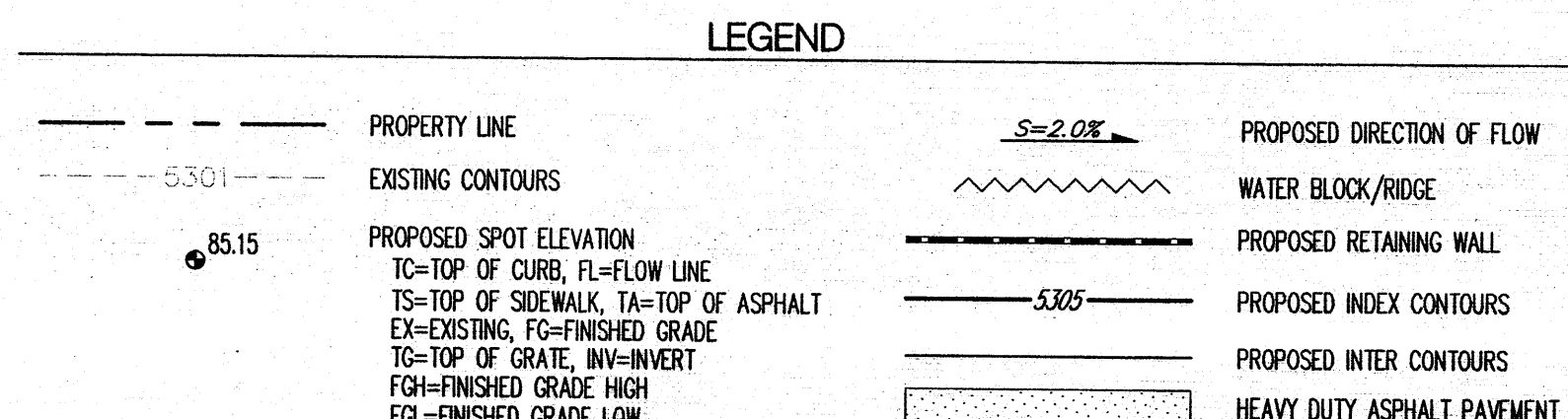
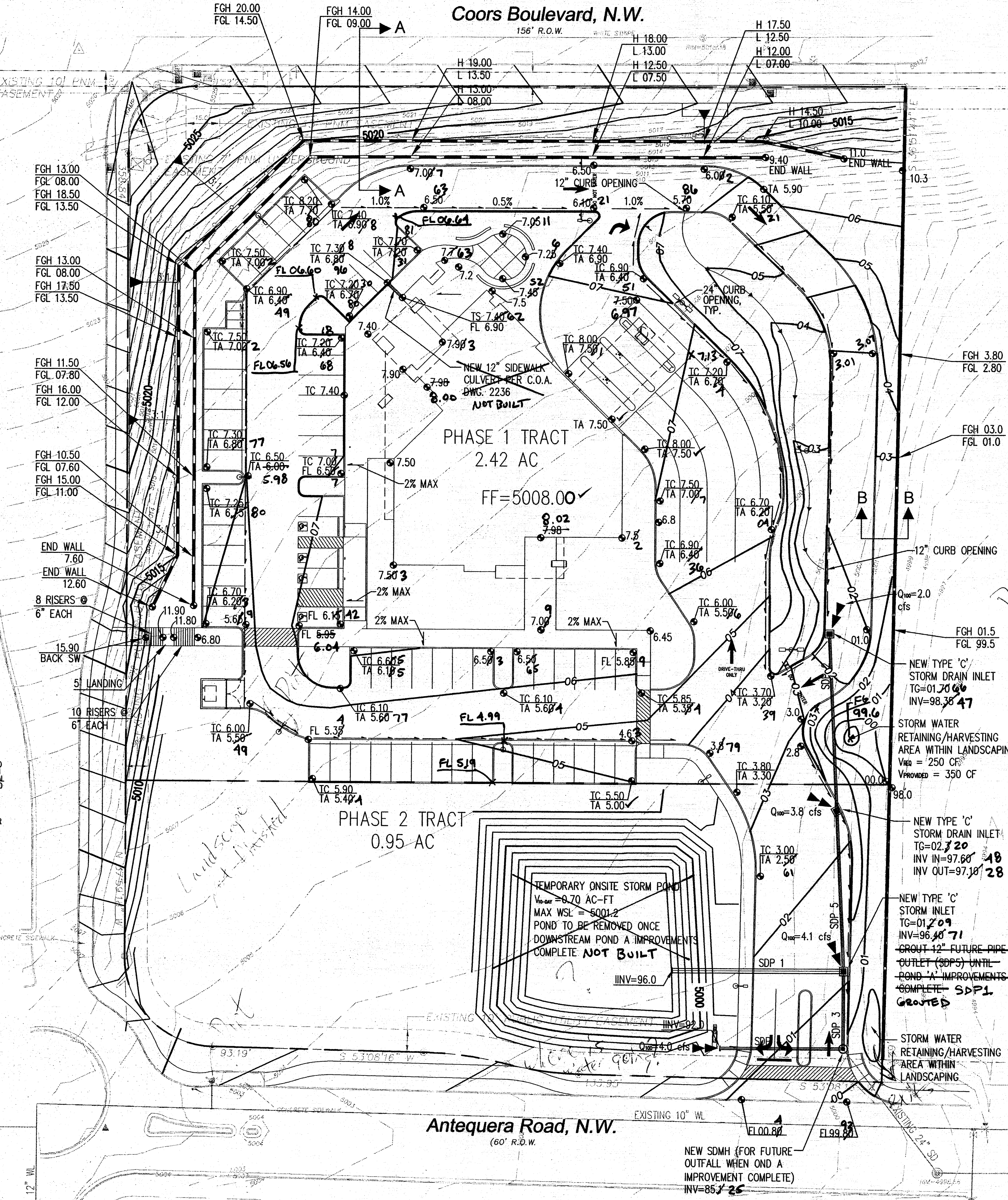
DATE 3-7-13
DATE 3-7-13



Learning Road, N.W.
(R.O.W. VARIES)

Coors Boulevard, N.W.

156' R.O.W.



BENCHMARK
3 1/4" ALUMINUM DISC MARKED
"10-E122004" LOCATED AT THE NE
CORNER OF COORS BLVD. NW AND
MONTANO ROAD NW
ELEV = 5009.74' FT (NAVD 88)

GENERAL NOTES

1. ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE PROJECT GEOTECHNICAL REPORT. WHERE APPLICABLE, CITY OF ALBUQUERQUE STANDARDS SHALL APPLY.
2. THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING EPA REQUIREMENTS WITH RESPECT TO STORM WATER DISCHARGE.
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL OBSTRUCTIONS INCLUDING ALL UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OBSERVER OR ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
4. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT LINE LOCATING SERVICE FOR LOCATION OF EXISTING UTILITIES.
5. ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION, SHALL BE COORDINATED WITH THAT UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCES CAUSED BY UTILITY COMPANY WORK CREWS. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.
6. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE AND APPROVED BY THE CONSTRUCTION OBSERVER.
7. CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS. ANY DAMAGE TO ADJACENT PROPERTIES RESULTING FROM THE CONSTRUCTION PROCESS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
8. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY.
9. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE PROJECT PRIOR TO COMMENCING CONSTRUCTION (I.E., BARRICADING, TOPSOIL DISTURBANCE, EXCAVATION PERMITS, EPA STORM WATER PERMITS, ETC.).
10. ALL PROPERTY CORNERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A REGISTERED LAND SURVEYOR.
11. THE CONTRACTOR SHALL PREPARE A CONSTRUCTION TRAFFIC CONTROL AND SIGNING PLAN AND OBTAIN APPROVAL OF SUCH PLAN FROM LOS ALAMOS COUNTY, TRAFFIC ENGINEERING DEPARTMENT, PRIOR TO BEGINNING ANY CONSTRUCTION WORK ON OR ADJACENT TO EXISTING STREETS.
12. ALL BARRICADES AND CONSTRUCTION SIGNING SHALL CONFORM TO APPLICABLE SECTIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), US DEPARTMENT OF TRANSPORTATION, LATEST EDITION.
13. THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION BARRICADES AND SIGNING AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE PROPER LOCATION OF ALL BARRICADES AT THE END AND BEGINNING OF EACH DAY.
14. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO CONFORM WITH EPA REQUIREMENTS, INCLUDING COMPLIANCE WITH NPDES PHASE 2 REQUIREMENTS.

GRADING NOTES

1. EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.
2. THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST.
3. ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION." ALL OTHER WORK SHALL, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (FIRST PRIORITY), AND/OR THE NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).
4. EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.
5. IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.
6. THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY.
7. A DISPOSAL SITE FOR ANY & ALL EXCESS EXCAVATION MATERIAL, AND UNSUITABLE MATERIAL AND/OR A BORROW SITE CONTAINING ACCEPTABLE FILL MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL OR BORROW SITE AND HAIL TO OR FROM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
8. PAVING AND ROADWAY GRADES SHALL BE +/- 0.1' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING PLAN ELEVATION.
9. ALL PROPOSED CONTOURS REFLECT TOP OF PAVEMENT ELEVATIONS IN THE PARKING AREA AND MUST BE ADJUSTED FOR MEDIAN AND ISLANDS.
10. VERIFY ALL ELEVATIONS SHOWN ON PLAN FROM BASIS OF ELEVATION CONTROL STATION PRIOR TO BEGINNING CONSTRUCTION.

STORM DRAIN PIPE CAPACITY SUMMARY USING MANNING'S EQN

PIPE	SIZE	SLOPE	Manning 'n'	Q ₁₀₀ (cfs)	V (fps)	Depth (ft)
SDP1	24	0.6%	0.012	9.9	5.7	8.54
SDP2	12	1.0%	0.012	2.0	4.7	1.50
SDP3	18	4.0%	0.012	9.9	11.7	0.48
SDP4	12	2.0%	0.012	4.0	7.1	0.67
SDP5	18	1.0%	0.012	5.8	6.5	0.81

Revisions ADDENDUM 1 4-26-12

Date 4-20-2012

Drawn by BJG

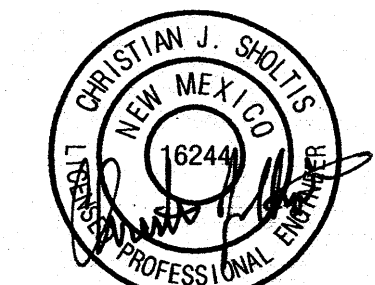
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Title GRADING & DRAINAGE PLAN

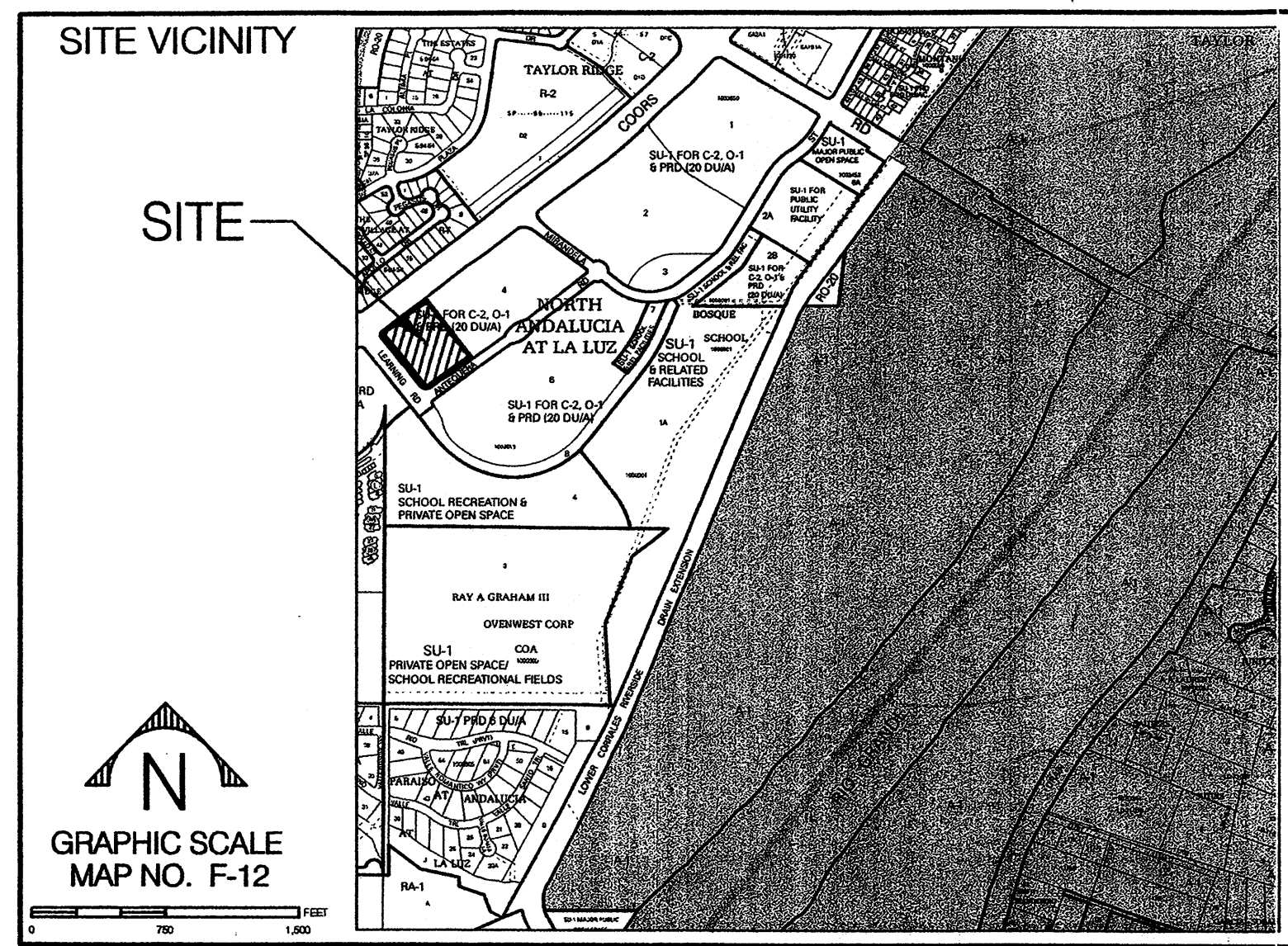
US NEW MEXICO FEDERAL
CREDIT UNION
ALBUQUERQUE, NEW MEXICO

Sheet
C-3

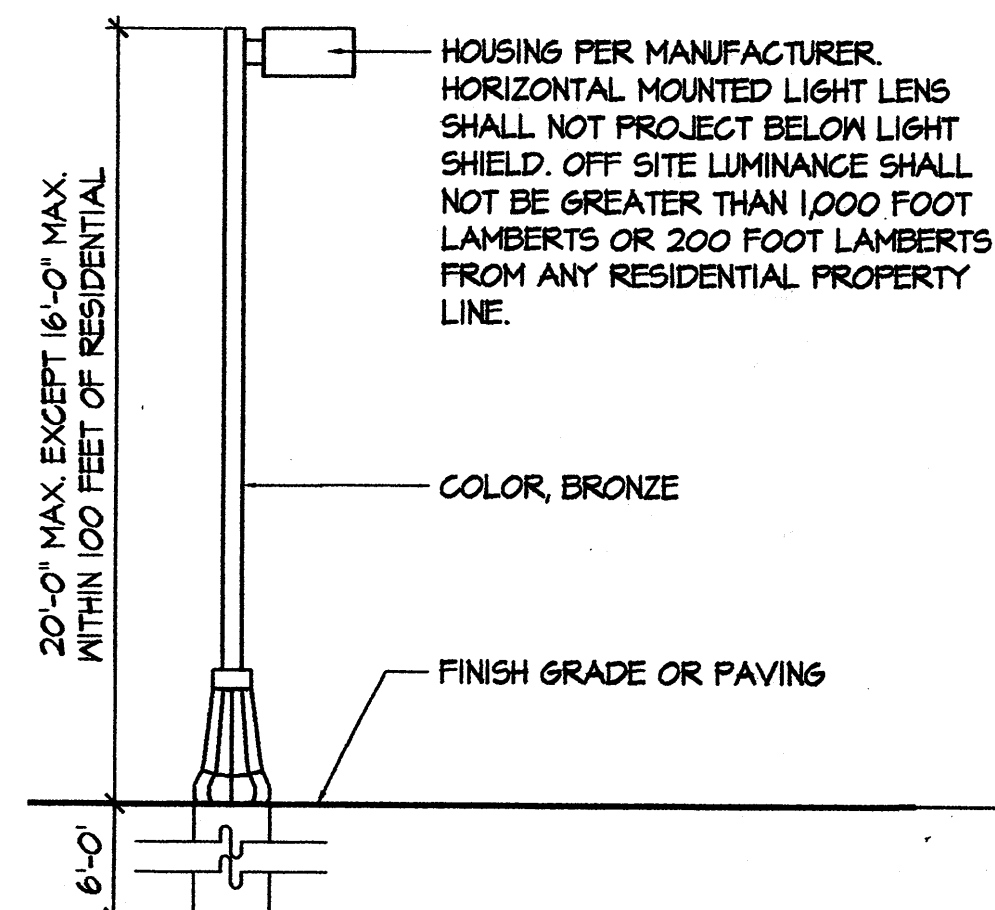
Bohannan & Huston



4-30-12
5-18-12

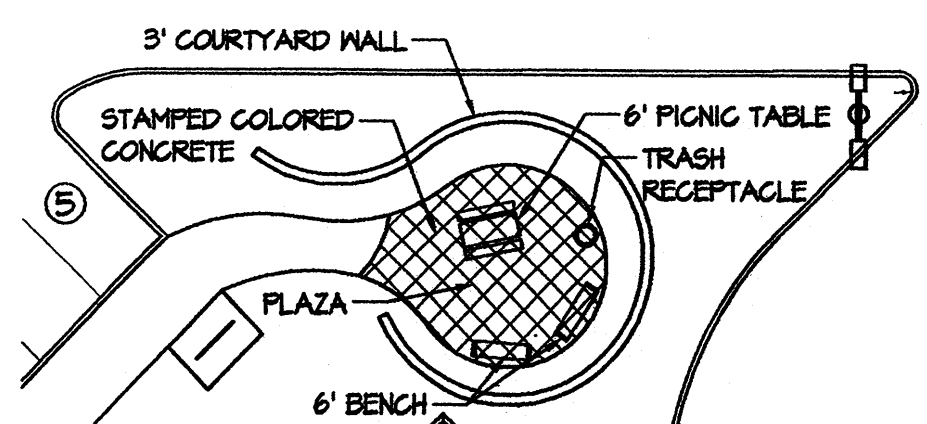


- GENERAL NOTES:**
- SIGNAGE SHALL COMPLY WITH THE APPROVED SITE PLAN FOR SUBDIVISION DESIGN STANDARDS FOR NORTH ANDALUCIA. ONE MONUMENT SIGN IS PROPOSED AT THE CORNER OF THE PROPERTY THAT IS LIMITED TO 30 S.F. SIGN AREA AND A MAXIMUM HEIGHT OF 4 FEET.
 - WALL SIGNS SHALL NOT EXCEED 6% OF FACADE AREA AND THE LETTERING SHALL NOT EXCEED 2 FEET IN HEIGHT.
 - ALL LIGHTING SHALL COMPLY WITH THE STANDARDS OF §14-16-3-9, AREA REGULATIONS OF THE CITY COMPREHENSIVE ZONING CODE, THE COORS CORRIDOR PLAN LIGHTING REGULATIONS, AND THE NORTH ANDALUCIA SITE PLAN FOR SUBDIVISION DESIGN STANDARDS.
 - ROOF MOUNTED MECHANICAL EQUIPMENT SHALL BE SCREENED.
 - THE MECHANICAL SYSTEMS (HEATING AND COOLING) AND BUILDING ENVELOPE (WALLS, ROOF, AND WINDOWS) SHALL BE DESIGNED AND MAINTAINED TO PROMOTE THE EFFICIENT USE OF ENERGY.
 - RAINWATER HARVESTING MEASURES, SUCH AS CURB CUTS, SHALL BE PROVIDED.
 - ALL SCREENING AND VEGETATION SURROUNDING GROUND-MOUNTED TRANSFORMERS AND UTILITY PADS SHALL ALLOW 10 FEET OF CLEARANCE IN FRONT OF THE EQUIPMENT DOOR AND 5-6 FEET OF CLEARANCE ON THE REMAINING THREE SIDES FOR SAFE OPERATION, MAINTENANCE, AND REPAIR PURPOSES.
 - RECYCLING CARTS SHALL BE PROVIDED IN THE BUILDING AND PICKED UP THROUGH A PRIVATE CONTRACTOR.
 - PNM COORDINATION: DEVELOPMENT SHALL ABIDE BY ALL CONDITIONS OR TERMS OF UTILITY EASEMENTS PRIOR TO DEVELOPMENT, CONTACT SHALL BE MADE TO PNM'S NEW SERVICE DELIVERY DEPARTMENT TO COORDINATE ELECTRIC SERVICE AND OPTIONS FOR THE LOCATION OF ELECTRIC SERVICE CONNECTION.
 - PLACEMENT OF A TYPE C BUS SHELTER PER CITY OF ALBUQUERQUE DESIGN STANDARD #2355 WITHIN A 5' X 20' EASEMENT SHALL BE REQUIRED.

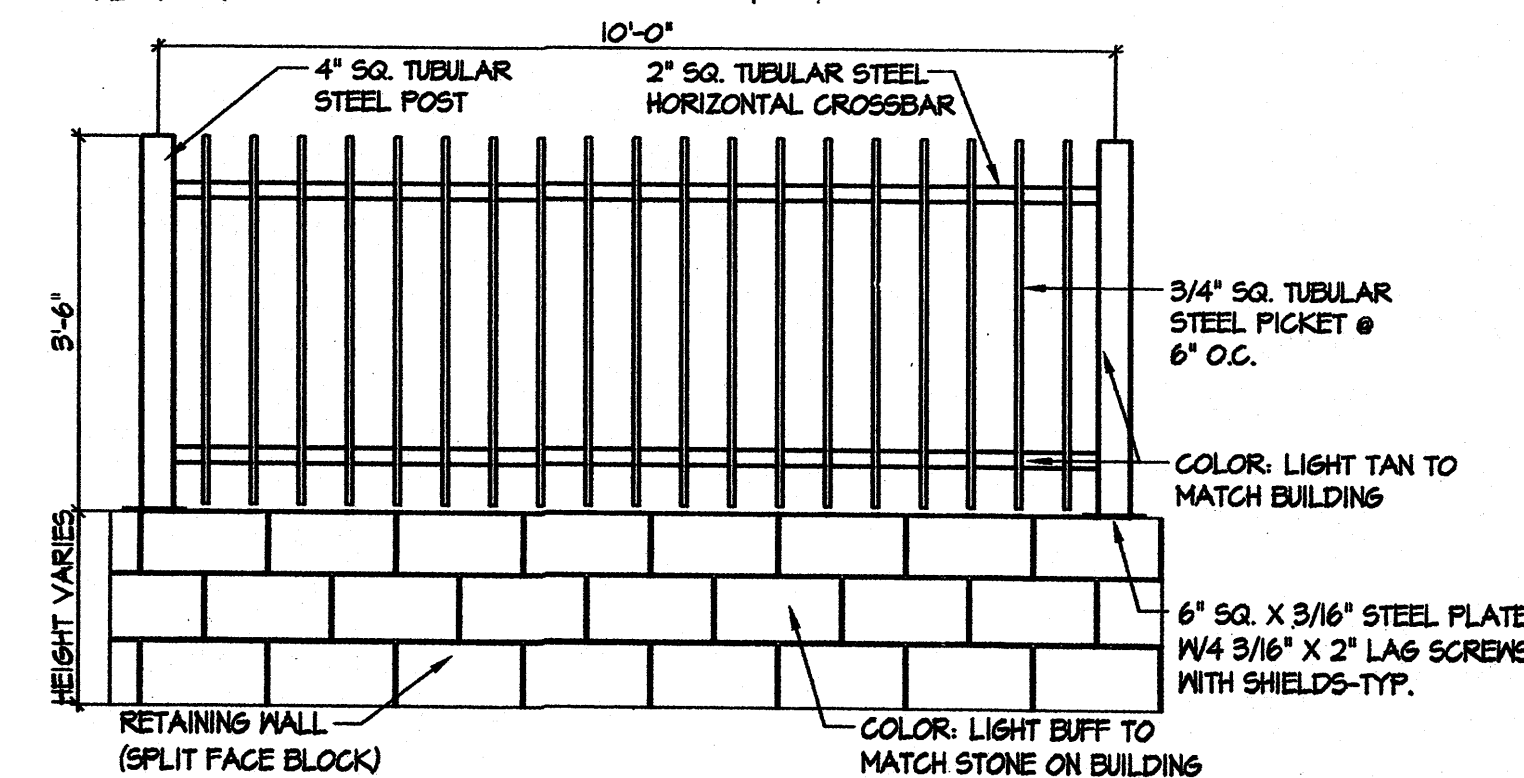
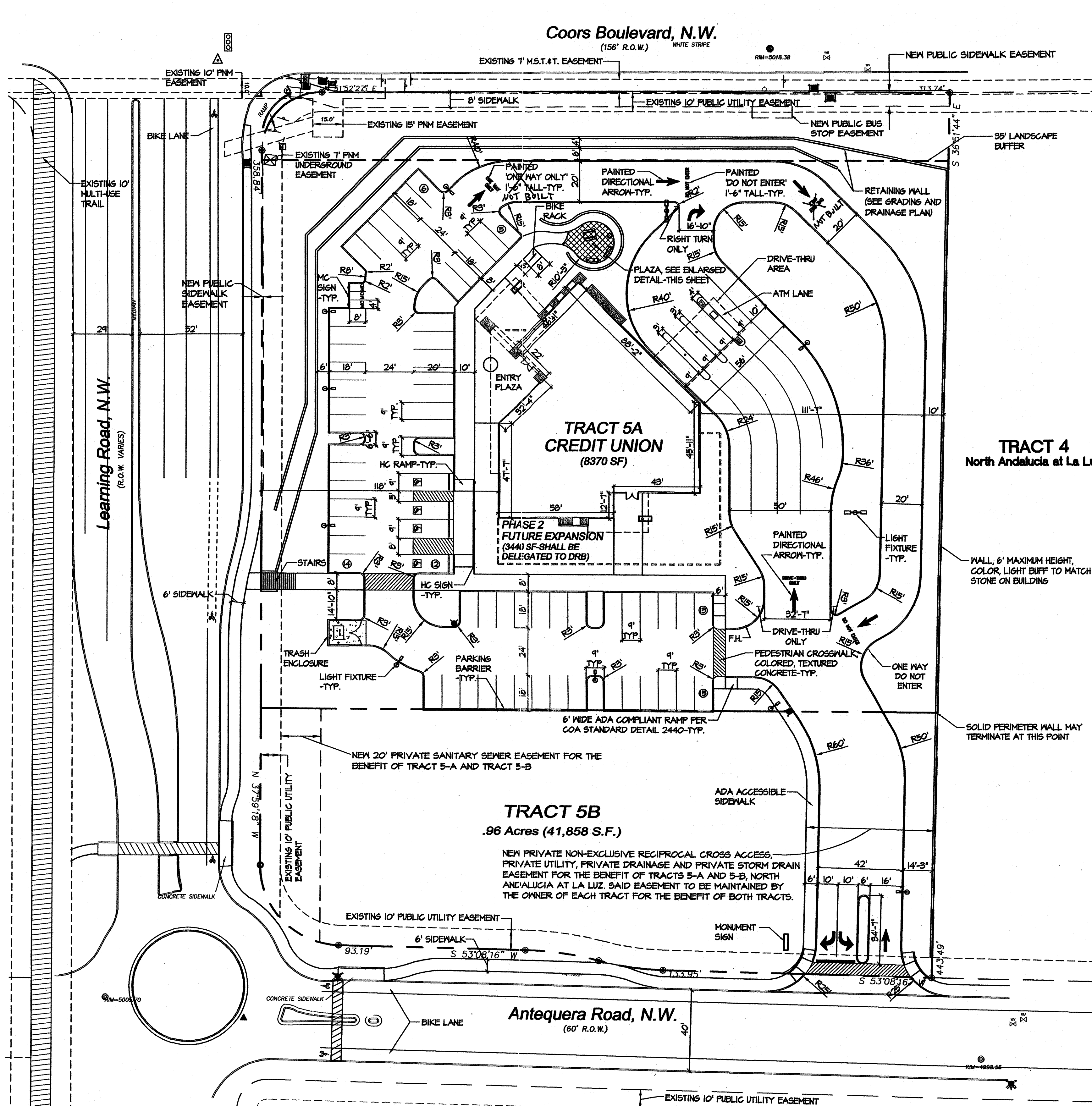


LIGHTING NOTE: NEON LIGHTS ARE PROHIBITED WITHIN 300 FEET OF LEARNING ROAD.

PARKING LOT LIGHT FIXTURE DETAIL
NOT TO SCALE



ENLARGED PLAZA DETAIL (373 SF)
SCALE: 1" = 20'



SAFETY FENCE ON TOP OF RETAINING WALL
SCALE: 1/2" = 1'-0"

SITE DATA:
LEGAL DESCRIPTION: TRACTS 5A AND 5B, PLAT OF NORTH ANDALUCIA AT LA LUZ.
EXISTING ZONING: SU-1 FOR O-I USES INCLUDING BANK WITH DRIVE-UP SERVICE.
LAND USE: 1-STORY CREDIT UNION WITH DRIVE-IN FACILITIES. PROPOSED TRACT SHALL BE O-I USES.
BUILDING AREA: 8,370 S.F. (PHASE I) 3,440 S.F. (FUTURE PHASE 2)
MAXIMUM TOTAL BUILDING HEIGHT: 26 FEET.
SITE AREA: 3.38 ACRES TRACT 5A: 2.42 ACRES. TRACT 5B: 0.96 ACRES.
PARKING: REQUIRED MINIMUM PARKING: 1 PER 200 S.F. = 60. PER SITE PLAN FOR SUBDIVISION: MAXIMUM PARKING IS MINIMUM, PLUS 10% = 66.
TOTAL PROVIDED PARKING: 65
HANDICAPPED REQUIRED: 4
HANDICAPPED PROVIDED: 4
MOTORCYCLE REQUIRED: 3
MOTORCYCLE PROVIDED: 3
BICYCLE REQUIRED: 3
BICYCLE PROVIDED: 3
MINIMUM SETBACKS: PER THE O-I ZONE.
VEHICULAR ACCESS: VEHICULAR ACCESS TO THIS SITE IS PROVIDED FROM ANTEQUERA ROAD. LEARNING ROAD IS A SIGNALIZED INTERSECTION.
BICYCLE ACCESS: ANDALUCIA HAS A SYSTEM OF BICYCLE LANES AND MULTI-USE TRAILS. BICYCLE LANES ARE IN LEARNING ROAD AND ANTEQUERA ROAD AND MULTI-USE TRAILS ARE ALONG LEARNING ROAD, MONTANO ROAD, AND SOUTH TOWARDS THE SAN ANTONIO ARROYO. A CITY TRAIL HEAD IS LOCATED WITHIN ANDALUCIA AT MONTANO ROAD.
TRANSIT ACCESS: THERE ARE THREE BUS ROUTES ALONG COORS BOULEVARD-ABQ ROUTES 740, 46, AND 155. A RAPID RIDE STOP AND BUS STOP ARE LOCATED ADJACENT TO THIS SITE ALONG COORS BOULEVARD.
INTERNAL CIRCULATION: INTERNAL CIRCULATION AROUND THE PROPOSED BUILDING WILL BE DIRECTED BY TRAFFIC SIGNAGE. PEDESTRIAN CONNECTIONS TO THIS SITE WILL BE PROVIDED FROM LEARNING ROAD AND ANTEQUERA ROAD.
CROSS ACCESS EASEMENT: SHALL BE REQUIRED AT TIME OF PLATTING AT DRB.

PROJECT NUMBER: 1003859
 Application Number: 11EPC-40074; 12DRB-70027

This Plan is consistent with the specific Site Development Plan approved by the Environmental Planning Commission (EPC), dated December 8, 2011 and the Findings and Conditions in the Official Notification of Decision are satisfied.

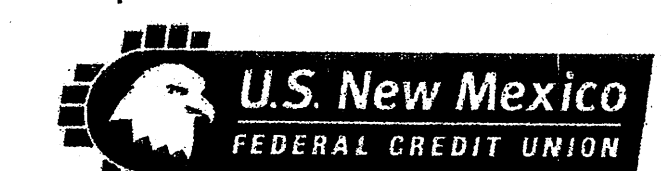
Is an Infrastructure List required? () Yes (X) No If yes, then a set of approved DRC plans with a work order is required for any construction within Public Right-of-Way or for construction of public improvements.

DRB SITE DEVELOPMENT PLAN SIGNOFF APPROVAL:

<i>7/5/12</i>	04-04-12
Traffic Engineering, Transportation Division	Date
<i>Allen Peta</i>	04/04/12
ABCWUA	Date
<i>Carl S. Dumont</i>	4-4-12
Parks and Recreation Department	Date
<i>He</i>	4-4-12
City Engineer	Date
<i>Joe White</i> 681-2766	2/14/12
Solid Waste Management	Date
<i>Carl Peta</i>	4-4-12
DRB Chairperson, Planning Department	Date

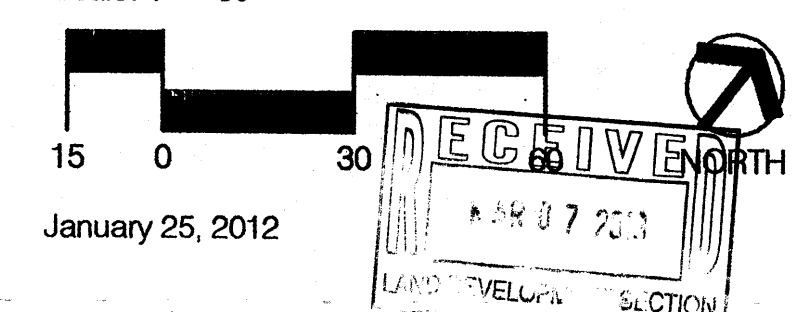
U.S. NEW MEXICO FEDERAL CREDIT UNION SITE PLAN FOR BUILDING PERMIT

Prepared for:



PO Box 129
 Albuquerque, NM 87103

Scale: 1" = 30'

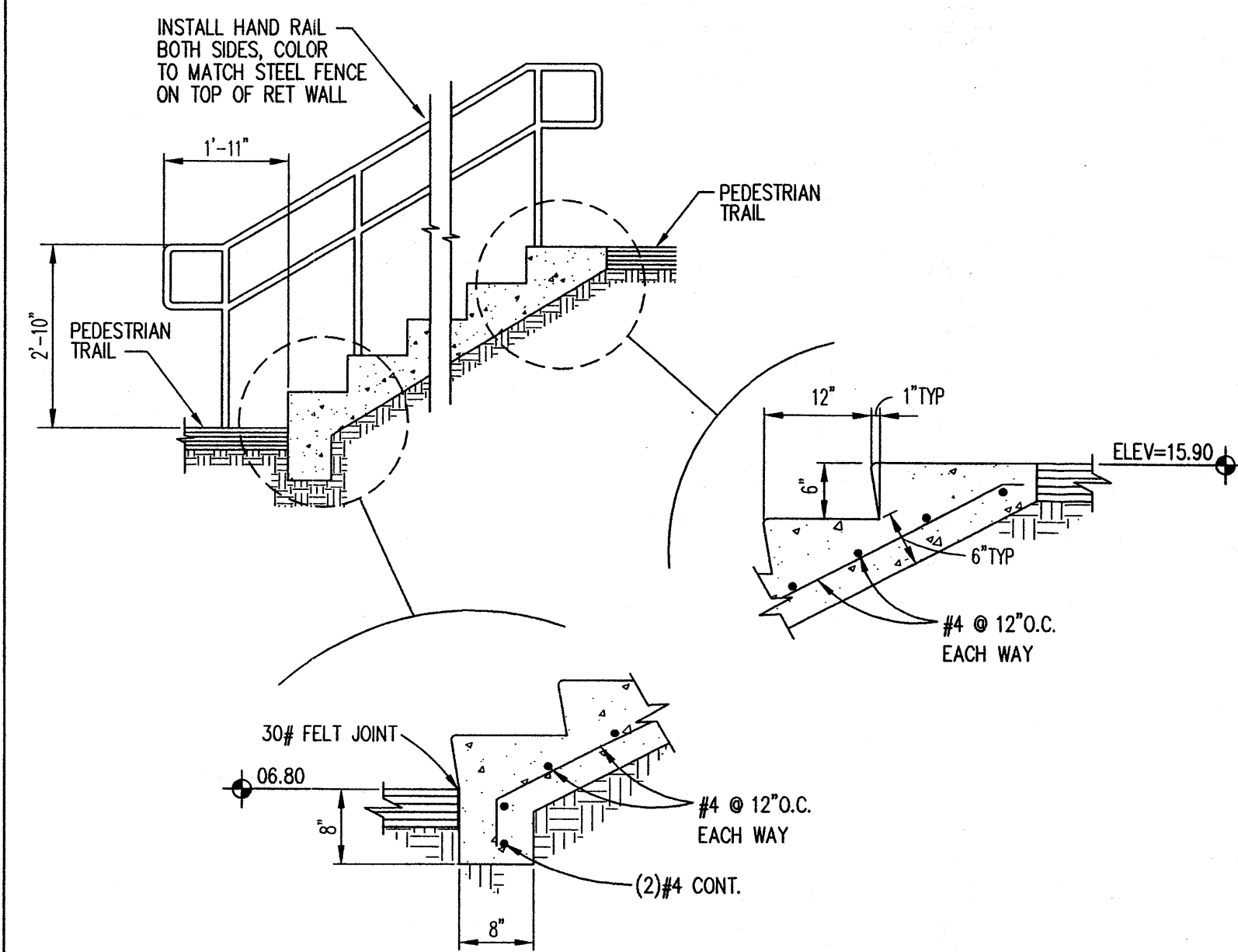
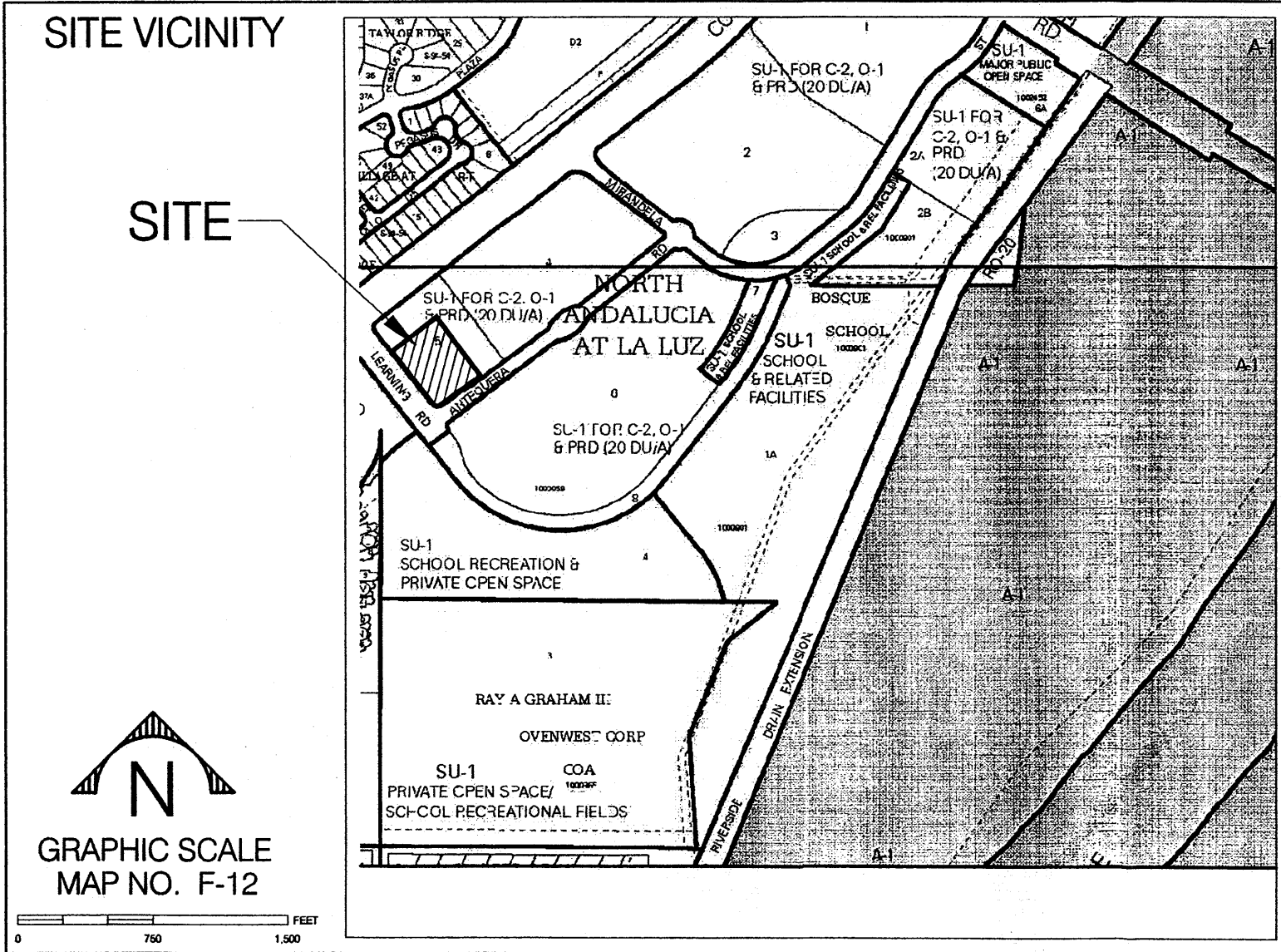


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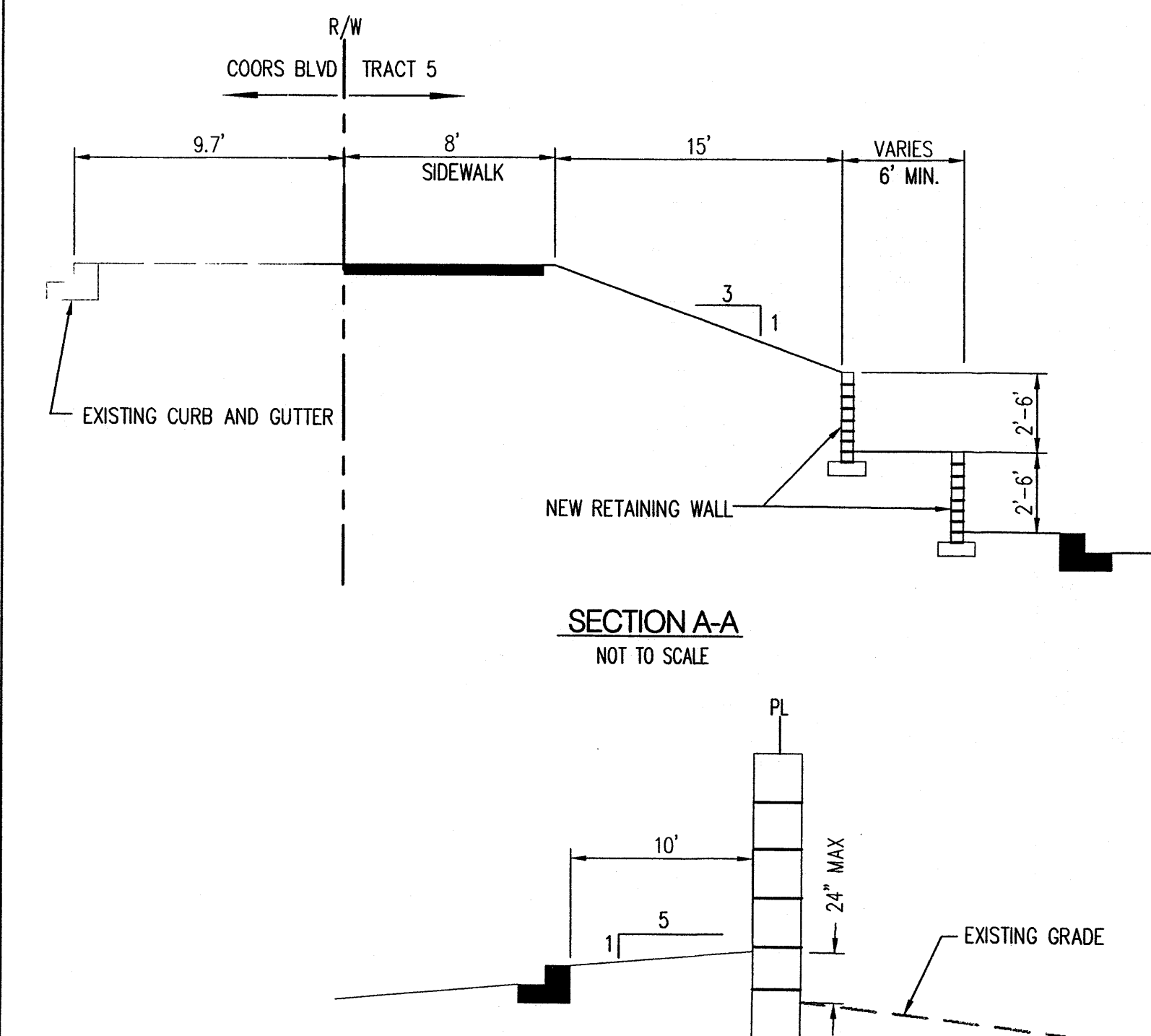
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 302 Eighth Street NW
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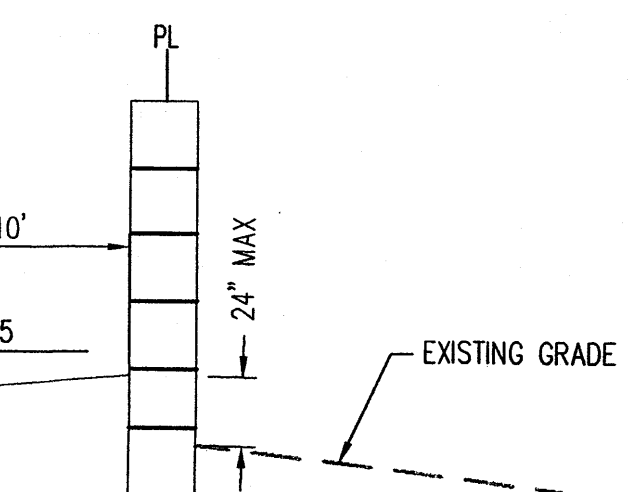
Bohannon Huston, Inc.
 Courtyard 1, 7500 Jefferson NE
 Albuquerque, NM 87109-4335



1 CONCRETE STEPS & HANDRAIL
NOT TO SCALE

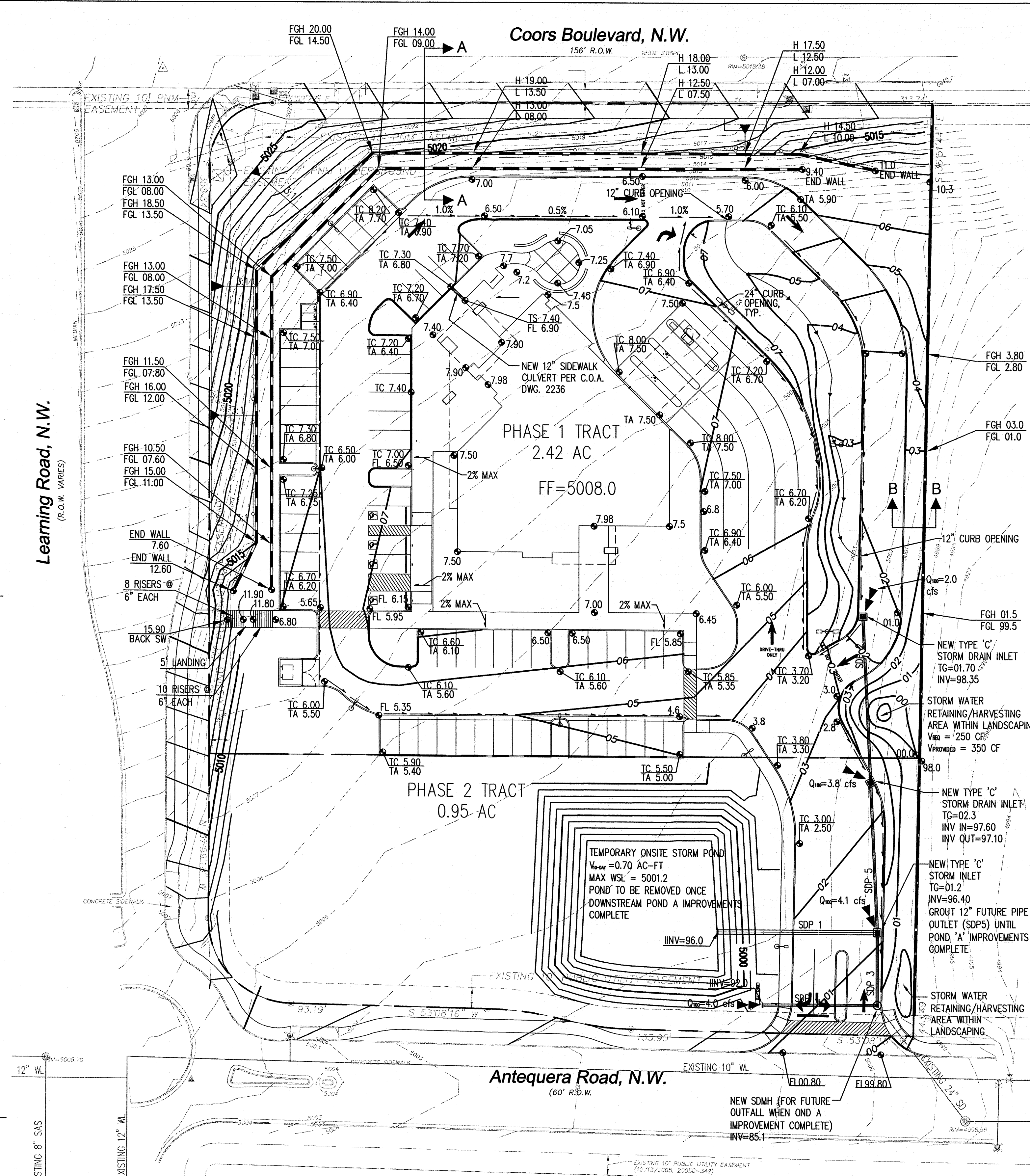


SECTION A-A
NOT TO SCALE

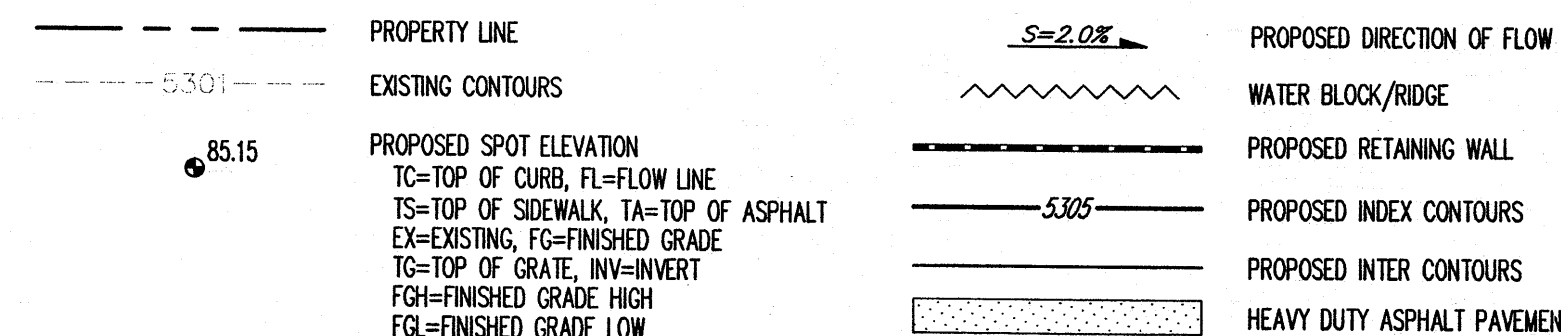


SECTION B-B
NOT TO SCALE

Learning Road, N.W.
(R.O.W. VARIES)



LEGEND



BENCHMARK
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- ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION, SHALL BE COORDINATED WITH THAT UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCES CAUSED BY UTILITY COMPANY WORK CREWS. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE AND APPROVED BY THE CONSTRUCTION OBSERVER.
- CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS. ANY DAMAGE TO ADJACENT PROPERTIES RESULTING FROM THE CONSTRUCTION PROCESS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY.
- THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE PROJECT PRIOR TO COMMENCING CONSTRUCTION (I.E., BARRICADING, TOPSOIL DISTURBANCE, EXCAVATION PERMITS, EPA STORM WATER PERMITS, ETC.).
- ALL PROPERTY CORNERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A REGISTERED LAND SURVEYOR.
- THE CONTRACTOR SHALL PREPARE A CONSTRUCTION TRAFFIC CONTROL AND SIGNING PLAN AND OBTAIN APPROVAL OF SUCH PLAN FROM LOS ALAMOS COUNTY, TRAFFIC ENGINEERING DEPARTMENT, PRIOR TO BEGINNING ANY CONSTRUCTION WORK ON OR ADJACENT TO EXISTING STREETS.
- ALL BARRICADES AND CONSTRUCTION SIGNING SHALL CONFORM TO APPLICABLE SECTIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), US DEPARTMENT OF TRANSPORTATION, LATEST EDITION.
- THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION BARRICADES AND SIGNING AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE PROPER LOCATION OF ALL BARRICADES AT THE END AND BEGINNING OF EACH DAY.
- THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO CONFORM WITH EPA REQUIREMENTS, INCLUDING COMPLIANCE WITH NPDES PHASE 2 REQUIREMENTS.

GRADING NOTES

- EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.
- THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST.
- ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION." ALL OTHER WORK SHALL, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (FIRST PRIORITY), AND/OR THE NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).
- EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.
- IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.
- THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY.
- A DISPOSAL SITE FOR ANY & ALL EXCESS EXCAVATION MATERIAL, AND UNSUITABLE MATERIAL AND/OR A BORROW SITE CONTAINING ACCEPTABLE FILL MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL OR BORROW SITE AND HAUL TO OR FROM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
- PAVING AND ROADWAY GRADES SHALL BE +/- 0.1' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING PLAN ELEVATION.
- ALL PROPOSED CONTOURS REFLECT TOP OF PAVEMENT ELEVATIONS IN THE PARKING AREA AND MUST BE ADJUSTED FOR MEDIANS AND ISLANDS.
- VERIFY ALL ELEVATIONS SHOWN ON PLAN FROM BASIS OF ELEVATION CONTROL STATION PRIOR TO BEGINNING CONSTRUCTION.

STORM DRAIN PIPE CAPACITY SUMMARY USING MANNING'S EQN

PIPE	SIZE	SLOPE	'n'	Q ₁₀₀ (cfs)	V (fps)	Depth (ft)
SDP1	24	0.6%	0.012	9.9	5.7	0.54
SDP2	12	1.0%	0.012	2.0	4.7	0.54
SDP3	18	4.0%	0.012	9.9	11.7	0.48
SDP4	12	2.0%	0.012	4.0	7.1	0.67
SDP5	18	1.0%	0.012	5.8	6.5	0.51



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CONCEPTUAL DRAINAGE MANAGEMENT PLAN AND SUMMARY CALCULATIONS

I. INTRODUCTION

THE PURPOSE OF THIS SUBMITTAL IS TO PROVIDE A CONCEPTUAL DRAINAGE MANAGEMENT PLAN FOR THE DEVELOPMENT OF TRACT 5, NORTH ANDALUCIA AT LA LUZ. THIS PLAN IS SUBMITTED IN SUPPORT OF A SITE PLAN FOR BUILDING PERMIT AND SITE PLAN FOR SUBDIVISION APPROVALS.

II. SITE LOCATION

THE SITE IS LOCATED AT THE CORNER OF COORS BLVD. AND LEARNING ROAD IN NW ALBUQUERQUE AND IS BOUNDED BY COORS BLVD. ON THE WEST, LEARNING ROAD ON THE SOUTH, AND ANTEQUERA ROAD ON THE EAST. THE SITE IS LOCATED WITHIN HYDROLOGIC ZONE 1 AND IS SHOWN ON ZONE MAP F-12.

III. EXISTING HYDROLOGIC CONDITIONS

THE SITE IS CURRENTLY UNDEVELOPED, BUT HAS BEEN MASS GRADED AS A RELATIVELY FLAT PAD SITE. THE ADJOINING COORS BLVD., LEARNING ROAD, AND ANTEQUERA ROAD ARE FULLY CONSTRUCTED STREETS. IN THE EXISTING CONDITION, THE SITE SHEET FLOWS TOWARD THE EAST AND FLOWS ARE ACCEPTED AND CONVEYED BY ANTEQUERA ROAD AS SURFACE FLOWS TO A STORM DRAIN SYSTEM WHICH OUTFALLS TO AN EXISTING RETENTION POND LOCATED JUST WEST OF THE LOWER CORRALES RIVERSIDE DRAIN.

IV. ULTIMATE PROPOSED HYDROLOGIC CONDITIONS

THE PROJECT SITE WILL BE DEVELOPED IN TWO PHASES: THE CURRENT PROPOSED PHASE, AND A FUTURE DEVELOPMENT PHASE WHICH WILL TAKE PLACE ON THE REMAINING SOUTHERN TRACT ADJACENT TO ANTEQUERA ROAD. THE HYDROLOGIC CALCULATIONS PRESENTED HEREON ACCOUNT FOR THE PROPOSED FIRST PHASE DEVELOPMENT AND ALSO ASSUME A 90% IMPERVIOUS AREA FOR THE REMAINING FUTURE TRACT.

AS PER THE CONCEPTUAL GRADING AND DRAINAGE PLAN FOR ANDALUCIA TRACT 88 AND THE BOSQUE SCHOOL DRAINAGE STUDY, BOTH PREPARED BY BOHANNAN HUSTON, INC., DATED 1-11-06 AND 4-10-06 RESPECTIVELY, AN ALLOWABLE DISCHARGE OF 4.18 CFS/ACRE IS PERMITTED FROM COMMERCIAL TRACTS, AND THESE PREVIOUSLY PREPARED PLANS DEMONSTRATE DOWNSTREAM HYDRAULIC CAPACITY. FLOWS FROM THIS PROJECT ARE DESIGNED TO BE ACCEPTED BY AN EXISTING 24" PUBLIC STORM DRAIN AND STUB TO THE PROPERTY LOCATED IN ANTEQUERA DRIVE AT THE EASTERN CORNER OF THE SITE WHICH IS SIZED TO ACCEPT 14.4 CFS FROM THE PROJECT SITE. AS DEMONSTRATED BY THE CALCULATIONS SHOWN HEREON, THE SITE WILL GENERATE 13.8 CFS (4.10 CFS/ACRE) IN THE ULTIMATE BUILD-OUT CONDITION. FLOWS GENERATED BY THE SITE WILL BE DIRECTED TOWARD THE EAST AS SURFACE FLOWS AND CAPTURED BY STORM INLETS AND AN UNDERGROUND PRIVATE STORM DRAIN SYSTEM NEAR THE PAVED ACCESS INTO THE SITE WHICH WILL DISCHARGE INTO THE EXISTING ANTEQUERA STORM DRAIN SYSTEM AND THEN EVENTUALLY OUTFALL INTO THE EXISTING RETENTION POND (REFERRED TO AS POND 'A' IN THE 88SDS) LOCATED WEST OF THE LOWER CORRALES RIVERSIDE DRAIN AND NORTH OF THE BOSQUE SCHOOL. IN THE PROPOSED CONDITION, WATER HARVESTING WITHIN THE PROJECT SITE WILL OCCUR WITHIN SEVERAL OF THE LANDSCAPED AREAS AS FEASIBLE.

V. INTERIM DEVELOPED CONDITIONS, TEMPORARY ONSITE POND, AND OUTFALL RETENTION POND

THE EXISTING RETENTION POND (POND 'A') LOCATED NORTH OF THE BOSQUE SCHOOL AND ADJACENT TO THE RIVERSIDE DRAIN TO WHICH THE CREDIT UNION PROJECT AND SURROUNDING AREAS ARE DESIGNED TO DISCHARGE TO PER THE MASTER DRAINAGE STUDY CURRENTLY HAS ADEQUATE CAPACITY TO ACCEPT DEVELOPED FLOWS FROM THE CREDIT UNION PROJECT, THE EXISTING DEVELOPED ROADWAYS, AND THE REMAINING EXISTING MASS GRADED TRACTS WITHOUT OVERFLOWING INTO POND B LOCATED TO THE SOUTH (SEE CALCULATIONS BELOW FOR FLOW VOLUMES GENERATED IN THE INTERIM CONDITION); HOWEVER, THE 100-YEAR WATER SURFACE OF POND A EXCEEDS THE PUBLIC DRAINAGE EASEMENT LIMITS UNDER THIS SCENARIO. THEREFORE, A TEMPORARY ONSITE POND LOCATED ON THE PHASE 2 TRACT IS PROPOSED UNTIL SUCH TIME THAT POND A IS RE-GRADED AND CERTIFIED TO HAVE ADEQUATE VOLUME WITHIN THE EXISTING STORM DRAINAGE EASEMENT TO ACCEPT THE CREDIT UNION PROJECT AND SURROUNDING GRADED AREAS AND DEVELOPED ROADWAYS. ONCE THE POND A IMPROVEMENTS HAVE BEEN CONSTRUCTED AND CERTIFIED TO THE CITY, THE TEMPORARY ONSITE POND CAN BE REMOVED, AND THE SITE CAN DISCHARGE VIA THE EXISTING STORM DRAIN TO POND A IN ACCORDANCE WITH THE MASTER DRAINAGE STUDY. SINCE THE CONSTRUCTION OF POND 'A' IN 2006, WATER PRESENT IN THE BOTTOM OF THIS POND HAS BEEN OBSERVED ON A REGULAR BASIS. IT IS LIKELY THAT THIS IS DUE TO THE GROUNDWATER LEVEL WHICH IS BELIEVED TO BE LESS THAN TWO FEET BELOW THE POND BOTTOM BASED UPON NEARBY USGS MONITORING WELLS, AS WELL AS ITS PROXIMITY TO THE RIVERSIDE DRAIN WHICH COULD BE PERCOLATING INTO THE POND. AS A RESULT, THERE IS A CONCERN THAT THIS STANDING WATER REPRESENTS A LONG-TERM TYPICAL CONDITION, AND THAT THE POND VOLUME OCCUPIED BY THE NORMAL STANDING WATER SUBTRACTS FROM THE POND VOLUME FOR STORM WATER RETENTION. THE NORMAL WATER SURFACE OF THE LONG TERM STANDING WATER IS 4986.0 FEET ABOVE MSL (NGVD 88) AS RECENTLY SURVEYED BY PRECISION SURVEYS; THEREFORE, ALL FUTURE POND VOLUME CALCULATIONS FOR POND A SHOULD ASSUME A POND BOTTOM EQUAL TO THE NORMAL WATER SURFACE ELEVATION OF 4986.0.

VI. CONCLUSION

THIS CONCEPTUAL DRAINAGE MANAGEMENT PLAN PROVIDES FOR GRADING AND DRAINAGE ELEMENTS WHICH ARE CAPABLE OF CONVEYING AND MANAGING THE 100-YEAR STORM WHICH MEET THE CITY'S REQUIREMENTS. ADDITIONALLY, THE PROJECT WILL ULTIMATELY CONFORM TO THE PREVIOUSLY PREPARED DRAINAGE MANAGEMENT PLAN FOR THE SITE WITH STORM WATER PEAK DISCHARGES AT OR BELOW WHAT WAS ALLOWED BY THAT PLAN.

VII. SITE BASIN SUMMARY CALCULATIONS

SITE DATA
HYDROLOGIC ZONE 1
AT= 3.38 AC

EXISTING CONDITION
%C = 100%
V100 = 0.2788 AC-FT
Q100 = 9.7 CFS (2.87 CFS/ACRE)

DEVELOPED CONDITION SITE BASIN SUMMARY CALCULATIONS						
	LAND TREATMENTS					
	AREA (ac)	%C	%D	cfs/acre	Q ₁₀₀ (cfs)	V ₁₀₀ (ac-ft)
PHASE 1 TRACT	2.42	21%	79%	4.06	9.8	0.3558
PHASE 2 TRACT	0.95	10%	90%	4.22	4.0	0.1482
TOTAL	3.37			4.10	13.8	0.5040

STORM DRAIN PIPE CAPACITY SUMMARY USING MANNING'S EQN						
PIPE	SIZE	SLOPE	Manning 'n'	Q ₁₀₀ (cfs)	V (fps)	Depth (ft)
SDP1	24	0.6%	0.012	9.9	5.7	0.54
SDP2	12	1.0%	0.012	2.0	4.7	0.54
SDP3	18	4.0%	0.012	9.9	11.7	0.48
SDP4	12	2.0%	0.012	4.0	7.1	0.67
SDP5	18	1.0%	0.012	5.8	6.5	0.51

INTERIM CONDITION SITE BASIN SUMMARY CALCULATIONS						
	LAND TREATMENTS					
	AREA (ac)	%C	%D	cfs/acre	Q ₁₀₀ (cfs)	V _{10-yr} (ac-ft)
PHASE 1 TRACT	2.42	21%	79%	4.06	9.8	0.3558
PHASE 2 TRACT	0.95	80%	20%	3.17	3.0	0.0939
UNDEV TRACTS 1-4, 6-9	57.31	100%		2.87	164.5	4.7281
ROADWAYS	9.98	10%	90%	4.22	42.1	1.5569
TRACT 6-A	2.22	100%		2.87	6.4	0.1832
TOTAL	72.88			3.10	225.8	6.9178

THE ABOVE TABLE IS PROVIDED FOR THE PURPOSE OF CALCULATING THE TOTAL REQUIRED RETENTION VOLUME FOR POND A WITHOUT OVERFLOWING TO POND B. SEE APPROVED PLAN FOR THE BOSQUE SCHOOL DRAINAGE STUDY DATED APRIL 10, 2006, CITY HYDROLOGY FILE E12-D15D

STORM INLET CAPACITY SUMMARY					
INLET TYPE	UPSTREAM FLOW DEPTH (FT)	UPSTREAM FLOW (CFS)	FLOW CAPTURED (CFS)	BYPASS FLOW (CFS)	TOTAL INLET CAPACITY AT 0.5' DEPTH (CFS)
SUMP	N/A	2.0	2.0	0.0	6.8
ON GRADE	0.35	7.9	4.0	3.9	6.5
ON GRADE	0.27	3.9	3.0	0.9	6.5

THE ABOVE TABLE WAS COMPUTED UTILIZING THE FOLLOWING EQUATIONS AND METHODOLOGIES:

- SUMP INLET CAPACITY WAS DETERMINED USING THE WEIR EQUATION ($Q=CLH$) WHERE $C=3.0$ AND UTILIZING ASSUMING A THREE SIDED WEIR.
- UPSTREAM FLOW DEPTHS WERE CALCULATED USING THE MANNING'S EQUATION WITH A MANNING'S N OF 0.017.
- CAPACITIES FOR INLETS ON GRADE WERE DETERMINED USING PLATE 22.3 D-5 OF THE DPM.



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Drawn by B/G

PA C/S

Title DRAINAGE PLAN

Job No. 20120222

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