Appendix C – Reference Material

- *Technical Drainage Study for Tanaya Village Discount Tire*; June 2004 (DS-3564).

DS # 3504

DS INDEX:

APN: 125-27-222-002

PROJECT: TENAYA VILLAGE DISCOUNT TIRE

SUBMITTAL 2nd submittal

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: June 9, 2004

TO:
Land Development Services
Department of Public Works

FROM:
Albert Sung, P.E. AT for
Flood Control Project Engineer
Department of Public Works

SUBJECT: Drainage Study for: **Tenaya Village Discount Tire**	**COPIES TO:** Tetra Tech
Cross Streets: South of Azure & 2400' West of Tenaya	Montecito Companies
File Number: F:\Depot\DSMemos\DS3564B.doc	Bart Anderson, P.E., DevCo
Parcel Number: 125-27-222-002	
Zoning Action:	
FEMA Flood Zone YES NO X	
Proposed Storm Drain YES NO X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. No.
1st Submittal	4/21/2004	5/5/2004	See Comments Below	$400.00	123490: $400
2nd Submittal	5/26/2004	6/9/2004	See Comments Below	$400.00	125898: $400
			TOTAL FEES (LDDRS):	**$800.00**	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. This drainage study assumes that the project will be constructed in one phase. If improvement plans are submitted to break the project into separate phases, a drainage study update will be required for each phase addressing the interim condition.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Amendment and accepted by the City of Las Vegas Flood Control Section. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the City of Las Vegas reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

END OF REMARKS
ays/ajj

T/R/S: T19S/R60E/27
AREA G-27

Rec'd 5/20/2004
DS 3564
G-27
$400

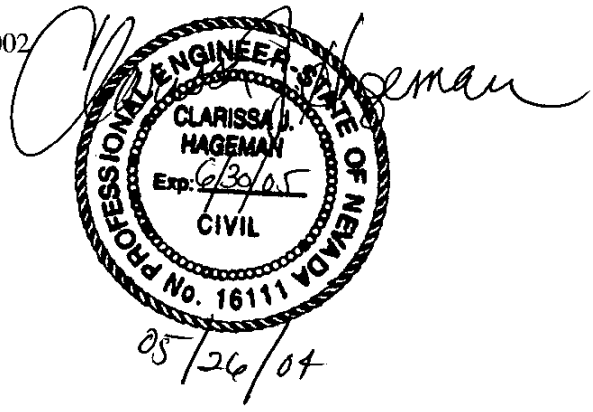
ADDENDUM #1 TO THE TECHNICAL DRAINAGE STUDY FOR DISCOUNT TIRE

CITY OF LAS VEGAS

Prepared for:
MONTECITO COMPANIES
6600 W. Charleston Boulevard, Suite 124
Las Vegas, NV

Prepared by:
TETRA TECH, INC.
401 N. Buffalo Drive, Suite 100
Las Vegas, Nevada 89145
(702) 242-4200
FAX (702) 242-2100

May 2004
TT #P09158-0002



05/26/04

PT 125-27-222-003

AZURE DRIVE

RANCHHOUSE ROAD

BLOOMING MEADOWS DRIVE

BLOOMING MEADOWS DR

BOWLES DR

44/94*

PT1

DEON1

DEOF1

DEON2

PROJECT SITE

*REFERENCED FROM THE MONTECITO EASE DRAINAGE STUDY

NORTH

W E S

1" = 40

LEGEND

DEON1 BASIN NAME

BASIN BOUNDARY

FLOW ARROW

PT1 CONCENTRATION POINT

1 STREET SECTION

DEOF1	3.21	5	9
DEON1	0.65	1	2
DEON2	0.15	<1	<1
PT1	-	6	11

SEC 1-1 AZURE DR	44/94	.57/.70	4.56/5.18	2.60/3.63
SEC 2-2 PARKING AREA	6/11	.26/.32	1.81/2.10	.47/.67
SEC 3-3 BERM (MAJ SLOPE)	5/9	.42/.52	2.20/2.59	.92/1.35
SEC 3-3 BERM (MIN SLOPE)	5/9	.36/.45	2.98/3.46	1.07/1.56

This grading plan is a part of drainage study # 3564 which was received on 5/27/04 and approved on 6/4/04. Page 3 Of 3

REV. | DATE | BY | REVISION

MONTECITO COMPANIES

LAS VEGAS, NEVADA

TETRA TECH, INC.
401 N. Buffalo Dr. Suite 100, Las Vegas, Nevada 89145 (702) 242-4200

SHEET: FIGURE 6 (REVISED) DEVELOPED CONDITION

TITLE: DISCOUNT TIRE CITY OF LAS VEGAS

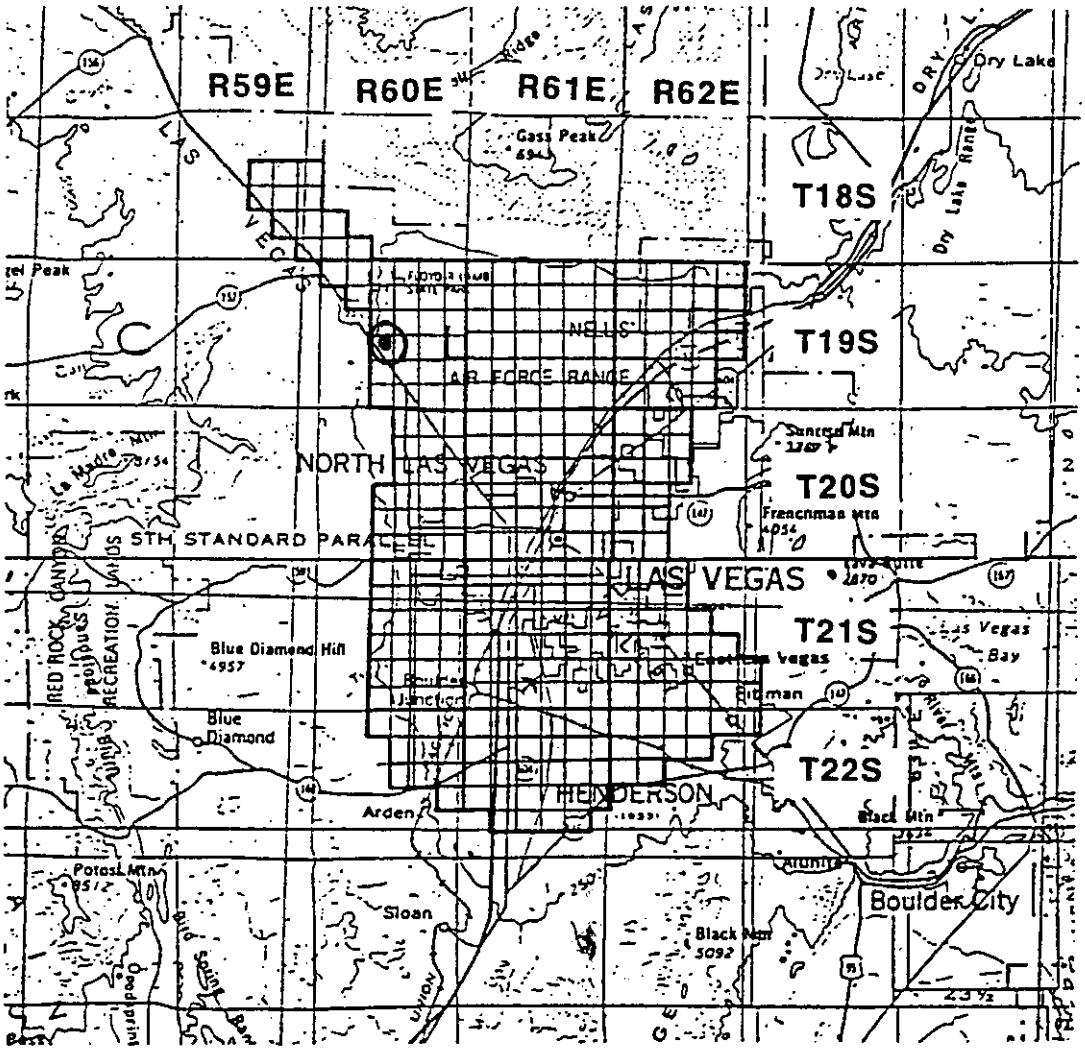
DRAWN BY: | DESIGNED BY: | QUALITY CONTROL BY: | QUALITY CONTROL BY: | CHECKED BY: | SCALE: | PROJECT NO.

SEAL

SHEET 1 1 OF 1 DRAWING NO.

P:\Land\P09158\0002\Design Data\Hydro\dwg\Onsite.dwg 04/15/2004 11:11:19 AM PDT

McCARRAN AIRPORT RAINFALL AREA



TOWNSHIP	RANGE	SECTIONS	TOWNSHIP	RANGE	SECTIONS
18 South	59 East	13-15,22-26,36	20 South	62 East	4-9,16-20,29-32
18 South	60 East	30-32	21 South	60 East	1-4,9-16,21-28,33-36
19 South	60 East	1-6,8-16,21-28,33-36	21 South	61 East	ALL SECTIONS
19 South	61 East	ALL SECTIONS	21 South	62 East	4-9,15-23, 25-36
19 South	62 East	2-11,14-23,27-34	22 South	60 East	1-4,10-15,24
20 South	60 East	1-3,10-15,21-28,33-36	22 South	61 East	1-24,26-29
20 South	61 East	ALL SECTIONS	22 South	62 East	1-10,17-18

Notes:
1. Refer to Table 505 and Figure 516 Depth-Duration- Frequency values in the McCarran Airport Rainfall Area.
2. Refer to Table 506 and Figure 517 for Time-Intensity-Frequency values on the McCarran Airport Rainfall Area.

Revision	Date

WRC ENGINEERING

REFERENCE:
USACE, Los Angeles District, 1988

FIGURE 513

DEPTH-DURATION-FREQUENCY VALUES FOR McCARRAN AIRPORT RAINFALL AREA

(IN INCHES)

TIME	RECURRENCE INTERVAL					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5 min.	0.15	0.27	0.35	0.46	0.54	0.63
10 min.	0.25	0.44	0.57	0.74	0.89	1.02
15 min.	0.33	0.57	0.74	0.97	1.15	1.32
30 min.	0.44	0.78	1.01	1.31	1.55	1.79
1 hour	0.52	0.89	1.15	1.50	1.78	2.06
2 hour	0.59	1.01	1.30	1.70	2.01	2.30
3 hour	0.64	1.08	1.39	1.82	2.15	2.48
6 hour	0.72	1.22	1.58	2.05	2.41	2.77
24 hour (TR-55)	1.20	1.60	1.80	2.40	2.70	2.96

NOTE: 1. Refer to Figure 513 for a description and drawing of the area included in the McCarran Airport Rainfall Area.

2. The 24 hour values presented above are for use with TR-55 only.

3. Table 501 adjustments not required.

Revision	Date

REFERENCE:
USACE, Los Angeles District, 1988

RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
See Table 602A					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

RUNOFF CURVE NUMBERS
(SEMIARID RANGELANDS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition[2]	A[3]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	(77)	(85)	88
	Fair	55	72	81	86
	Good	49	68	79	84

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: >70% ground cover.

[3]Curve numbers for group A have been developed only for desert shrub.

Revision	Date

Combined into one
Basin DEON1

CURVE NUMBER CALCULATIONS
DISCOUNT TIRE - DEVELOPED CONDITION

Basin	Hydrologic Group	% of Basin	CN	Land Cover
DEON1	B	84.6	92	Commercial
	C	15.4	94	
	Average CN =		92	

Basin	Hydrologic Group	% of Basin	CN	Land Cover
DEON2	B	93.33	92	Commercial
	C	6.67	94	
	Average CN =		92	

Basin	Hydrologic Group	% of Basin	CN	Land Cover
DEOF1	B	5	92	Commercial
	C	95	94	
	Average CN =		94	

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

Tetra Tech, Inc.
Project No. : P09158-0002

DEVELOPMENT : Discount Tire
Developed Conditions

CALCULATED BY : JKC

DATE:April 2004

SUB-BASIN DATA					INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc CHECK URBANIZED BASINS		FINAL Tc	Min Tc	Tlag	REMARKS
DESIG: (1)	CN	K (2)	AREA (acres) (3)	AREA (mi^2) (4)	LENGTH (ft) (5)	SLOPE (%) (6)	Ti (min) (7)	LENGTH (ft) (8)	SLOPE (%) (9)	LAND COVER k	VELOCITY* (fps) (10)	Tt (min) (11)	Tc = Ti + Tt (min)	TOTAL LENGTH (ft) (12)	Tc = (L/180)+10 (min) (13)	(min) (14)	(min)	Tlag= 0.6Tc/60 (hrs)	
DEOF1	94	0.8508	3.21	0.0050	75	3.94	2.46	970	0.58	DEV	2.33	6.9	9.4	1045.0	15.806	9.40	5.00	0.0940	
DEON1	92	0.8244	0.65	0.0010	75	3.94	1.75	275	0.58	DEV	2.33	2.0	3.7	350.0	11.944	3.72	5.00	0.0500	minimum Tc used
DEON2	92	0.8244	0.15	0.0002	75	1.00	1.75	290	1.13	DEV	3.25	1.5	3.2	365.0	12.028	3.24	5.00	0.0500	minimum Tc used

Ti = 1.8 (1.1 - K) L^1/2 / S^1/3
Tc = Ti + Tt
K = 0.0132 (CN) - 0.39 Tlag = 0.6Tc

* The velocity in column 9 was computed using the equation V = CS^.5
C is a coefficient and S is the travel slope, as outlined in section 602.1 of the CCRFCD Manual.

*As recommended in the CCRFCD Manual, C = 30.6 under developed conditions and C = 29.4 under undeveloped conditions.

REFERENCE :

STANDARD FORM 4

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12APR04  TIME  09:07:38   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID
    2         ID    PREPARED FOR:
    3         ID              MONTECITO
    4         ID
    5         ID
    6         ID
    7         ID    @@@@@@@@@@@@@@@@@@
    8         ID
    9         ID    TECHNICAL HYDROLOGY STUDY FOR DISCOUNT TIRE
   10         ID    DEVELOPED CONDITIONS
   11         ID    file name:  DEV.TXT
   12         ID    Project Number: P09158-0002
   13         ID
   14         ID
   15         ID    TETRA TECH, INC.
   16         ID    401 N. Buffalo Drive, Suite 100
   17         ID    Las Vegas, Nevada  89145
   18         ID
   19         ID    *********************
   20         ID    *    SDN 3  VALUES  *
   21         ID    *********************
   22         ID
   23         ID
   24         ID
   25         ID
   26         ID
              *DIAGRAM
   27         IT       5       0       0     300
   28         IN       5       0       0
   29         IO       5       0       0
   30         JR    PREC     .57     1.0
              *
   31         KK   DEOF1
   32         BA   .0050
   33         PB    2.77
   34         PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
   35         PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
   36         PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
   37         PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
   38         PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
   39         PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
   40         PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
   41         PC    .998    .999   1.00
   42         LS       0      94
   43         UD   .0940
              *
   44         KK   DEON1
   45         BA   .0010
   46         LS       0      92
   47         UD   .0500
              *
```



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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
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```
            48          KK   PT1
            49          KM   CONCENTRATION POINT 1- COMBINE DEOF1 & DEON1
            50          HC       2
                        *
            51          KK   DEON2
            52          BA   .0002
            53          LS       0      92
            54          UD   .0500
                        *
            55          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    31      DEOF1
                .
                .
    44          .  .    DEON1
                .          .
                .          .
    48      PT1  ..........
                .
                .
    51          .       DEON2

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN   1998              *
*            VERSION 4.1                *
*                                       *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************

                        PREPARED FOR:
                                  MONTECITO


                        @@@@@@@@@@@@@@@@@@@@

                        TECHNICAL HYDROLOGY STUDY FOR DISCOUNT TIRE
                        DEVELOPED CONDITIONS
                        file name:  DEV.TXT
                        Project Number: P09158-0002


                        TETRA TECH, INC.
                        401 N. Buffalo Drive, Suite 100
                        Las Vegas, Nevada  89145

                        **********************
                        *    SDN 3  VALUES   *
                        **********************



  29 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1   0  STARTING DATE
                       ITIME        0000  STARTING TIME
                         NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE     2   0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                       ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL      .08 HOURS
                      TOTAL TIME BASE    24.92 HOURS

           ENGLISH UNITS
                DRAINAGE AREA          SQUARE MILES
                PRECIPITATION DEPTH    INCHES
                LENGTH, ELEVATION      FEET
                FLOW                   CUBIC FEET PER SECOND
                STORAGE VOLUME         ACRE-FEET
```

SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

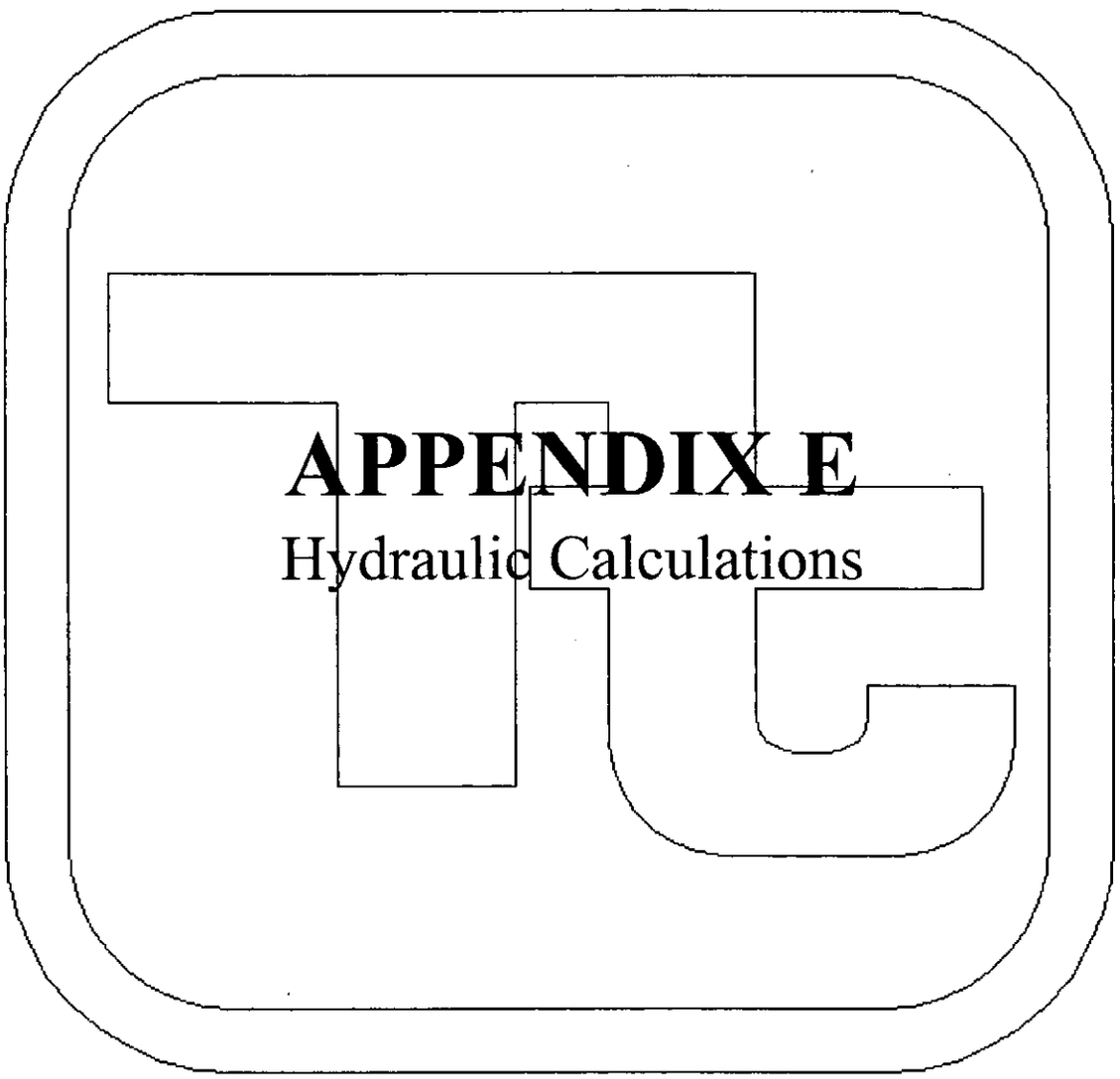
JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.57 1.00

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .57	RATIO 2 1.00
HYDROGRAPH AT						
+	DEOP1	.00	1	FLOW	5.	9.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DEON1	.00	1	FLOW	1.	2.
				TIME	3.50	3.50
2 COMBINED AT						
+	PT1	.01	1	FLOW	6.	11.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DEON2	.00	1	FLOW	0.	0.
				TIME	3.50	3.50

*** NORMAL END OF HEC-1 ***



APPENDIX E

Hydraulic Calculations

Sec 2-2 Parking Area Q10
Worksheet for Triangular Channel

Project Description	
Worksheet	Sec 2-2 Parking Are:
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

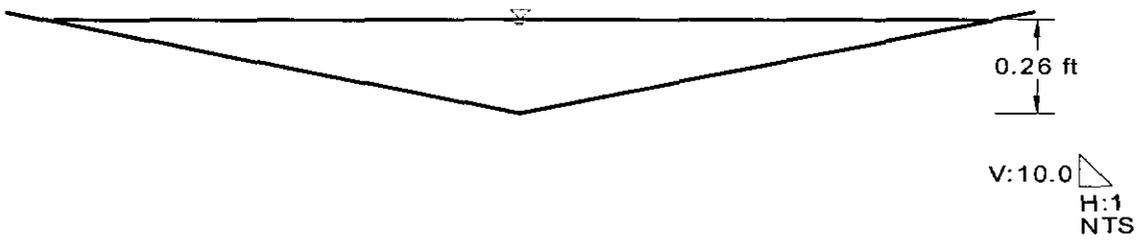
Input Data		
Mannings Coeffic	0.016	
Channel Slope	005800	ft/ft
Left Side Slope	50.00	H : V
Right Side Slope	50.00	H : V
Discharge	6.00	cfs

Results		
Depth	0.26	ft
Flow Area	3.3	ft²
Wetted Perim	25.789	ft
Top Width	25.784	ft
Critical Depth	0.25	ft
Critical Slope	0.007499	ft/ft
Velocity	1.81	ft/s
Velocity Head	0.05	ft
Specific Energ	0.31	ft
Froude Numb	0.89	
Flow Type	Subcritical	

Sec 2-2 Parking Area Q10
Cross Section for Triangular Channel

Project Description	
Worksheet	Sec 2-2 Parking Are:
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.016	
Channel Slope	005800	ft/ft
Depth	0.26	ft
Left Side Slope	50.00	H : V
Right Side Slope	50.00	H : V
Discharge	6.00	cfs



Sec 2-2 Parking Area Q100
Worksheet for Triangular Channel

Project Description	
Worksheet	Sec 2-2 Parking Area
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

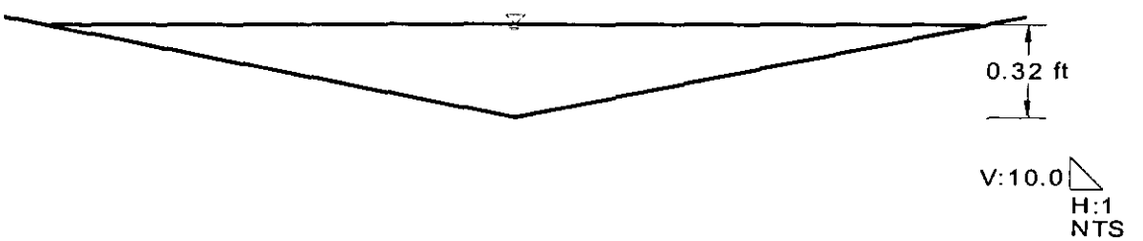
Input Data		
Mannings Coeffic	0.016	
Channel Slope	005800	ft/ft
Left Side Slope	50.00	H : V
Right Side Slope	50.00	H : V
Discharge	11.00	cfs

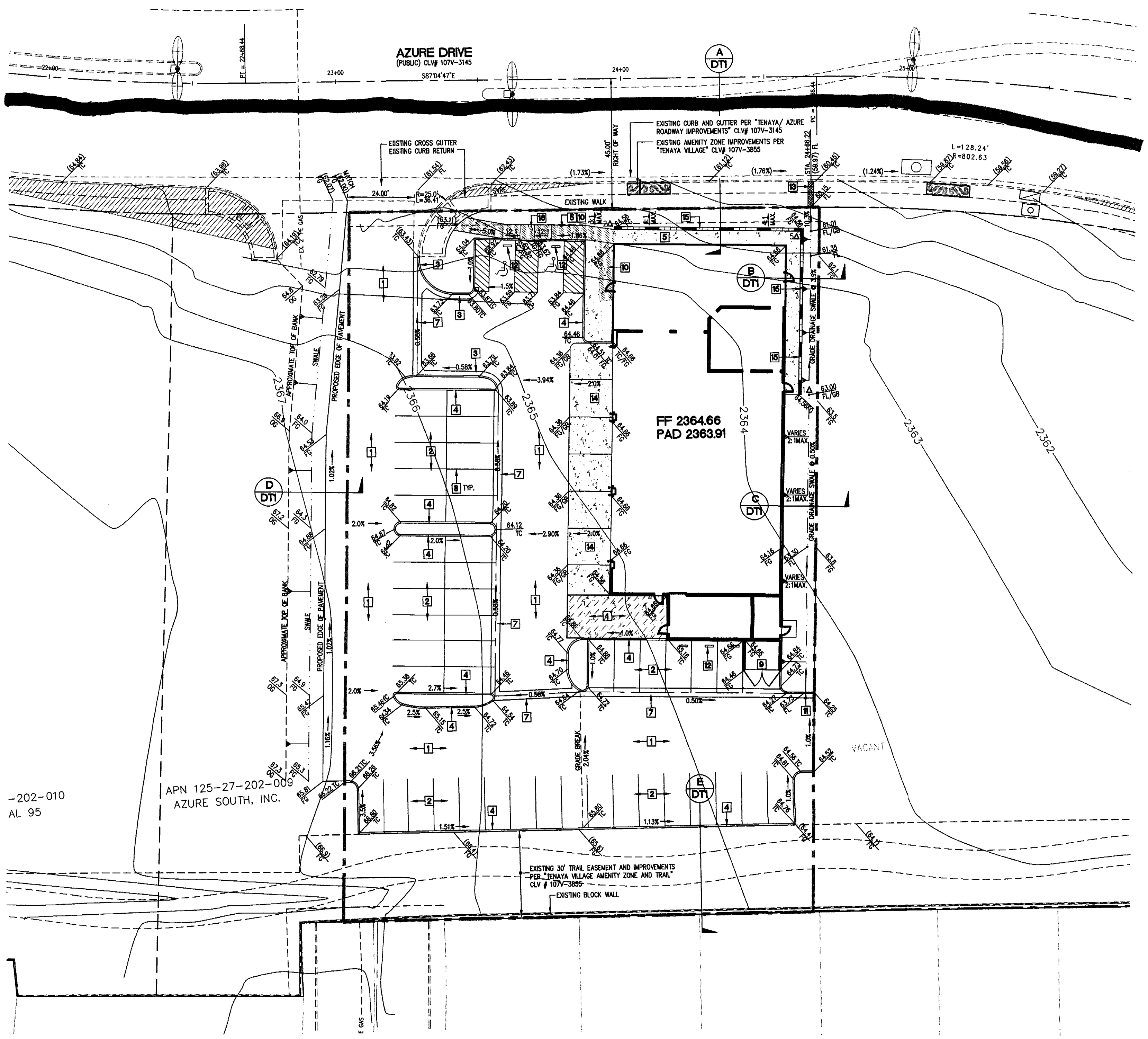
Results		
Depth	0.32	ft
Flow Area	5.2	ft²
Wetted Perim	32.396	ft
Top Width	32.390	ft
Critical Depth	0.31	ft
Critical Slope	0.006912	ft/ft
Velocity	2.10	ft/s
Velocity Head	0.07	ft
Specific Ener	0.39	ft
Froude Numb	0.92	
Flow Type	Subcritical	

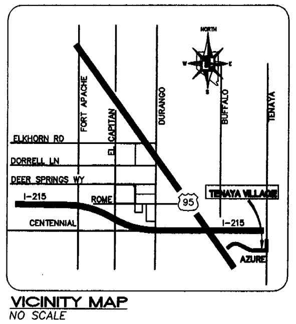
Sec 2-2 Parking Area Q100
Cross Section for Triangular Channel

Project Description	
Worksheet	Sec 2-2 Parking Area
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coeffic	0.016	
Channel Slope	005800	ft/ft
Depth	0.32	ft
Left Side Slope	50.00	H : V
Right Side Slope	50.00	H : V
Discharge	11.00	cfs



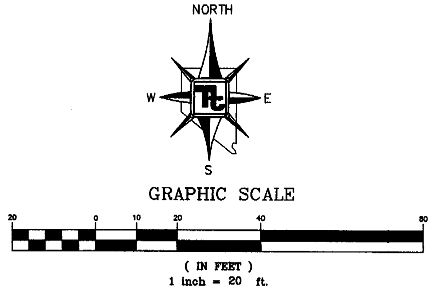




VICINITY MAP
NO SCALE

Avoid overhead power line contact.
Call before you Overhead
1–702–593–6111
NEVADA POWER ENVIRONMENT SAFETY SERVICES DEPARTMENT

Avoid cutting underground utility lines. It's costly.
Call before you Dig
1–800–227–2600
UNDERGROUND SERVICE (USA)



GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

BASIS OF BEARINGS:

SOUTH 00°51'56" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 27, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, AS SHOWN ON THAT CERTAIN PARCEL MAP ON FILE IN THE OFFICE OF THE COUNTY RECORDER, CLARK COUNTY, NEVADA, IN FILE 98 OF PARCEL MAPS, AT PAGE 05.

BENCHMARK:

RIVET AND PLATE IN CONCRETE PAD (MAILBOX) AT SOUTHEAST CORNER OF TENAYA AND ROME.

6LV90 22S6

ELEVATION – 717.7771 METERS (NAVD88)
ELEVATION – 2254.91 FEET (NAVD88)

RETAINING WALL CONVERSION TABLE	
Δ1	0.67'
Δ2	1.33'
Δ3	2.00'
Δ4	2.67'
Δ5	3.33'
Δ6	4.00'
Δ7	4.67'
Δ8	5.34'
Δ9	6.01'
Δ10	6.68'
Δ11	7.35'

DISCOUNT TIRE CO. INC.

NVC TENAYA & AZURE
LAS VEGAS, NV

NOTES:

1. TETRA TECH, INC. SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES IN THE PLANS OR CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL ALLOW A MINIMUM OF 48 HRS. FOR RESOLUTIONS AND OR CORRECTIONS.
2. ALL WORK TO BE PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENT HAVE BEEN OBTAINED FROM THE OFFSITE OWNER.
3. ALL WORK PERFORMED WITHIN THE PUBLIC RIGHT–OF–WAY AND OUTSIDE THE PROJECT BOUNDARY SHALL BE PERFORMED UNDER A SEPARATE ENCROACHMENT PERMIT ISSUED BY THE CONTROLLING AUTHORITY.
4. ADD 2200' TO ALL ELEVATIONS SHOWN.
5. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REVIEW THE PLANS AND BE COMPLETELY SATISFIED THAT ALL AREAS RELATED TO HANDICAP/ADA ROUTING MEET THE CLARK COUNTY ADA REGULATIONS. ANY QUESTIONS OR CLARIFICATIONS SHALL BE ISSUED IN WRITING TO THE ENGINEER OF RECORD AND TO THE OWNER. IN NO CASE SHALL THESE AREAS BE CONSTRUCTED IN CONFLICT WITH THE REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR UNDERSTANDING THE REGULATIONS.

CONSTRUCTION KEY:

1	MAIN CORRIDOR– 3" AC PAVING OVER 6" TYPE II AGG BASE OVER COMPACTED NATIVE TO 95% RC
2	AUTOMOTIVE PARKING– 3" AC PAVING OVER 4" TYPE II AGG BASE OVER COMPACTED NATIVE TO 95% RC
3	"L" CURB PER UNIFORM STANDARD DRAWING NO. 216
4	"A" CURB PER UNIFORM STANDARD DRAWING NO. 219
5	5' SIDEWALK PER UNIFORM STANDARD DRAWING NO. 234
6	NOT USED
7	3' WIDE VALLEY GUTTER PER DETAIL F ON SHEET DT1
8	4" PAINTED STRIPE. SEE ARCHITECTURAL SITE PLAN FOR DETAILS.
9	TRASH ENCLOSURE. SE ARCHITECTURAL DETAIL 7/A1.1
10	ACCESSIBLE ROUTE PER CABO/ANSI A117.1–1992
11	DEPRESS CURB
12	INSTALL WHEEL STOPS PER ARCHITECTURAL DETAIL 13/A1.1
13	INSTALL SIDEWALK DRAIN PER UNIFORM STANDARD DRAWING NO. 236
14	CONCRETE AREA– 5" THK., 4500 PSI, BLACK CONC. APRON FLUSH WITH PAVEMENT AT DOOR OPENING
15	STANDARD CITY OF LAS VEGAS RETAINING WALL HEIGHT IS SHOWN AS Δ1 SEE RETAINING WALL CONVERSION TABLE
16	HANDICAP ACCESSIBLE RAMP PER CABO/ANSI A117.1–1992

SOILS REPORT:

BY: MACTEC ENGINEERING AND CONSULTING,INC.

PROJECT NO. 4975–03–1625.02
DATED: FEBRUARY 10, 2003

EARTHWORK QUANTITIES:

TOTAL CUT = XXXXX CY
TOTAL FILL = XXXXX CY

THESE FIGURES ARE FOR PERMIT PURPOSES ONLY AND ARE NOT INTENDEDFOR BIDDING OR CONTRACT AMOUNTS. NUMBERS ARE RAW AND UNADJUSTED.

LEGEND:

AC	ASPHALTIC CONCRETE	BWC	BACK OF SIDEWALK
TC	TOP OF CURB	TE	TRASH ENCLOSURE
FS	FINISH SURFACE	FL	FLOWLINE
SW	SIDEWALK	FG	FINISH GRADE
HP	HIGH POINT	GB	GRADE BREAK
TRW	TOP OF RETAINING WALL		
BCR	BEGIN CURB RETURN		
ECR	END OF CURB RETURN		
TYP.	TYPICAL		
⟸	SLOPE DIRECTION		
F.F.=77.1	FINISH FLOOR ELEVATION		
P.E.=77.7	PAD ELEVATION		
▨	A.D.A. ACCESSIBLE ROUTE		
⩘	HANDICAP RAMP		
00.00 TC	PROPOSED DESIGN ELEVATION		
(00.00) TC	EXISTING ELEVATION		
▬ ▬	PROPOSED 6' SCREEN WALL		
▬	EXISTING BLOCK WALL		
▬	PROPOSED RETAINING WALL		

CERTIFICATION:

I HEREBY CERTIFY THAT THE GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE WITH THE CITY OF LAS VEGAS PUBLIC WORKS FOR THIS PROJECT.

KENNETH T. YAMADA, P.E. #14664
DATE

This grading plan is a part of drainage study # 3564 which was received on 5/27/04 and approved on 6/9/04. Page 1 Of 3.

REV.	DATE	BY	REVISION

DISCOUNT TIRE CO.
20225 N. SCOTTSDALE ROAD
SCOTTSDALE, AZ 85045
(480) 606–5781

TETRA TECH, INC.
INFRASTRUCTURE SOUTHWEST GROUP
401 N. Buffalo Dr. Suite 100, Las Vegas, Nevada 89145 (702) 242–4200

SHEET
GRADING PLAN

TITLE
TENAYA VILLAGE DISCOUNT TIRE
CITY OF LAS VEGAS

DRAWN BY:
QUALITY CONTROL BY:
DESIGNED BY:
QUALITY CONTROL BY:
CHECKED BY:
SCALE:
PROJECT NO.
P09158–0002

SEAL
KENNETH T. YAMADA
EXP. 6/30/04
CIVIL
No. 14664
5-25-04

SHEET
GR1
7 OF 8
DRAWING NO.