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File **1994-0043** Name: Wal-Mart Expansion – Site Plan Review – 2879 North Avenue

Present	Scanned	
		A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will be found on the ISYS query system in their designated categories. Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page. Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for the contents of each file.
X	X	**Table of Contents**
		***Review Sheet Summary**
X	X	***Application form**
X		Review Sheets
X		Receipts for fees paid for anything
X	X	***Submittal checklist**
X	X	***General project report**
		Reduced copy of final plans or drawings
		Reduction of assessor's map.
		Evidence of title, deeds, easements
		***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		***Final reports for drainage and soils (geotechnical reports)**
		Other bound or non-bound reports
		Traffic studies
X	X	***Review Comments**
		***Petitioner's response to comments**
X	X	***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**

DOCUMENT DESCRIPTION:

X	X	Correspondence	X		Utility Plan
X	X	Colorado Dept. of Highways Access Permit	X	X	Planting Plan
X	X	Traffic Impact Study – 2/94	X		Irrigation Plan
X	X	Final Drainage Report – 2/15/94			
X		E-mails			
X		Landscape Materials List			
X	X	Certification of Plat – 5/23/94			
X	X	Agreement and No Build Easement – 6/10/94 - Bk 2078/Pg 483			
X	X	Planning Clearance – issued 8/25/94 - **			
X	X	Traffic Impact Charts			
X		Construction Phasing Plan			
X	X	Site Plan – to be scanned to file			
X	X	Grading Plan			
X		Detail Sheet			

COLORADO DEPARTMENT OF HIGHWAYS
STATE HIGHWAY ACCESS PERMIT

No/MP/Side:	6/33.90/R
Local Jurisdiction:	City of Grand J
Dist/Section/Patrol:	30240
DOH Permit No.:	388037
Permit Fee:	$75.00
Date of Transmittal:	6-16-88

HE PERMITTEE;

Wal-Mart Stores, Inc.
Mitchell Bldg.
701 South Walton Blvd., Hwy 71
Bentonville, AR 72716

is hereby granted permission to construct and use an access to the state highway at the location noted below. The access shall be constructed, maintained and used in accordance with the terms and conditions of this permit, including the State Highway Access Code and listed attachments. This permit may be revoked by the issuing authority if at any time the permitted access and its use violate any of the terms and conditions of this permit. The use of advance warning and construction signs, flashers, barricades and flaggers are required at all times during access construction within State right-of-way in conformance with the MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, Part VI. The issuing authority, the Department and their duly appointed agents and employees shall be held harmless against any action for personal injury or property damage sustained by reason of the exercise of the permit.

OCATION:

On the south side of State Highway 6, a distance of 4780 feet east from Mile Post 33 aka 2881 North Avenue, Grand Junction.

\CCESS TO PROVIDE SERVICE TO:

Wal-Mart retail sales store (approximately 121,900 sq.ft.)

)THER TERMS AND CONDITIONS:

See Attached Sheet.

RECEIVED GRAND JUNCTION
PLANNING DEPARTMENT
DEC 02 1988

MUNICIPALITY OR COUNTY APPROVAL

Required only when the appropriate local authority retains issuing authority.

By (X) Not Required Date _____ Title _____

Upon the signing of this permit the permittee agrees to the terms and conditions and referenced attachments contained herein. All construction shall be completed in an expeditious and safe manner and shall be finished within 45 days from initiation. The permitted access shall be completed in accordance with the terms and conditions of the permit prior to being used. **The permittee shall notify** Weldon Allen **with the Colorado Department of Highways in** _____ at 242-4126, **at least 48 hours prior to commencing construction within the State Highway right-of-way.**

The person signing as the permittee must be the owner or legal representative of the property served by the permitted access and have full authority to accept the permit and all it's terms and conditions.

Permittee (X) Richard L. McKeehan Date 11/29/88

Sr. Staff Engr., Wal-Mart Properties, Inc.

This permit is not valid until signed by a duly authorized representative of the State Department of Highways.

STATE OF COLORADO, DIVISION OF HIGHWAYS
ROBERT L. OLEVENGER, CHIEF ENGINEER

By (X) _____ Date 12-1-88 (Date of issue) Title District ROW Engineer

OPY DISTRIBUTION: Required; Make copies as necessary for; Previous Editions are Obsolete and will not be us
DOH Form 1

The following paragraphs are pertinent highlights of the State Highway Access Code. They are provided for your convenience but do not alleviate compliance with all aspects of the Access Code. A copy of the State Highway Access Code is available from your local issuing authority (local government) or the State Department of Highways (Department). When this permit was issued, the issuing authority made its decision based in part on information submitted by the applicant, on the access category which is assigned to the highway, what alternative access to other public roads and streets is available, and safety and design standards. Changes in use or design not approved by the permit or the issuing authority may cause the revocation or suspension of the permit.

I **Appeals**

1. Should the permittee or applicant chose to object to any of the terms or conditions of the permit placed therein by the Department, an appeal must be filed with the Colorado Highway Commission within 60 days of transmittal of the permit for permittee signature. The request for the hearing shall be filed in writing and submitted to the Colorado Highway Commission, 4201 East Arkansas Avenue, Denver, Colorado 80222. The request shall include reasons for the appeal and may include recommendations by the permittee or applicant that would be acceptable to him.

2. The Department may consider any objections and requested revisions at the request of the applicant or permittee. If agreement is reached, the Department, with the approval of the local issuing authority (if applicable), may revise the permit accordingly, or issue a new permit, or require the applicant to submit a new application for reconsideration. Changes in the original application, proposed design or access use will normally require submittal of a new application.

3. Regardless of any communications, meetings, or negotiations with the Department regarding revisions and objections to the permit, if the permittee or applicant wishes to appeal the Department's decision to the Commission, the appeal must be brought to the Commission within 60 days of transmittal of the permit.

4. Any appeal by the applicant or permittee of action by the local issuing authority when it is the appropriate local authority (under subsection 2.4), shall be filed with the local authority and be consistent with the appeal procedures of the local authority.

5. If the final action is not further appealed, the Department or local authority may record the decision with the County Clerk and Recorder.

II **Construction standards and requirements**

1. The access must be under construction within one year of the permit date. However, under certain conditions a one year time extension may be granted if requested in writing prior to permit expiration.

2. The applicant shall notify the office specified on the permit at least 48 hours prior to construction. A copy of the permit shall be available for review at the construction site. Inspections will be made during construction.

3. The access construction within highway right-of-way must be completed within 45 days.

4. It is the responsibility of the permittee to complete the construction of the access according to the terms and conditions of the permit. If the permittee wishes to use the access prior to completion, arrangements must be approved by the issuing authority and Department and included on the permit. The Department or issuing authority may order a halt to any unauthorized use of the access. Reconstruction or improvements to the access may be required when the permittee has failed to meet required specifications of design or materials. If any construction element fails within two years due to improper construction or material specifications, the permittee is responsible for all repairs.

5. In the event it becomes necessary to remove any right-of-way fence, the posts on either side of the access shall be securely braced with an approved end post before the fence is cut to prevent any slacking of the remaining fence. All posts and wire removed are Department property and shall be turned over to a representative of the Department.

6. A copy of the permit shall be available for review at the construction site. If necessary, minor changes and additions shall be ordered by the Department or local authority field inspector to meet unanticipated site conditions.

7. The access shall be constructed and maintained in a manner that shall not cause water to enter onto the roadway, and shall not interfere with the drainage system in the right-of-way.

8. Where necessary to remove, relocate, or repair a traffic control device or public or private utilities for the construction of a permitted access, the work shall be accomplished by the permittee without cost to the Department or issuing authority, and at the direction of the Department or utility company. Any damage to the state highway or other public right-of-way beyond that which is allowed in the permit shall be repaired immediately.

9. Adequate advance warning is required at all times during access construction, in conformance with the Manual on Uniform Traffic Control Devices for Streets and Highways. This may include the use of signs, flashers, barricades and flaggers. This is also required by section 42-4-501, C.R.S. as amended. The issuing authority, the Department and their duly appointed agents and employees shall be held harmless against any action for personal injury or property damage sustained by reason of the exercise of the permit.

III **Changes in use and violations**

1. If there are changes in the use of the access, the access permit-issuing authority must be notified of the change. A change in property use which makes the existing access design or use in non-conformance with the Access Code or the terms and conditions of the permit, may require the reconstruction or relocation of the access. Examples of changes in access use are; an increase in vehicular volume by 20 percent, or an increase by 20 percent of a directional characteristic such as a left turn. The issuing authority will review the original permit; it may decide it is adequate or request that you apply for a new permit.

2. All terms and conditions of the permit are binding upon all assigns, successors-in-interest and heirs.

3. When a permitted driveway is constructed or used in violation of the Access Code, the local government or Department may obtain a court order to halt the violation. Such access permits may be revoked by the issuing authority.

IV **Further information**

1. When the permit holder wishes to make improvements to an existing legal access, he shall make his request by filing a completed permit application form with the issuing authority. The issuing authority may take action only on the request for improvement. Denial does not revoke the existing access.

2. The permittee, his heirs, successors-in-interest, and assigns, of the property serviced by the access shall be responsible for meeting the terms and conditions of the permit and the removal or clearance of snow or ice upon the access even though deposited on the access in the course of Department snow removal operations. The Department shall maintain in unincorporated areas the highway drainage system, including those culverts under the access which are part of that system within the right-of-way.

3. The issue date of the permit is the date the Department representative signs the permit which is after the permittee has returned the permit signed and paid any required fees.

4. The Department may, when necessary for the improved safety and operation of the roadway, rebuild, modify, remove, or redesign the highway including any auxiliary lane.

5. Any driveway, whether constructed before, on, or after June 30, 1979, may be required by the Department, with written concurrence of the appropriate local authority, to be reconstructed or relocated to conform to the Access Code, either at the property owner's expense if the reconstruction or relocation is necessitated by a change in the use of the property which results in a change in the type of driveway operation; or at the expense of the Department if the reconstruction or relocation is necessitated by changes in road or traffic conditions. The necessity for the relocation or reconstruction shall be determined by reference to the standards set forth in the Access Code.

PERMIT NO. 388037

1. Local ordinance requires a construction permit from City of Grand Junction.
2. Access shall be constructed as shown on plans dated May 17, 1988. Any signals required due to this development shall be paid for by the permittee. Permanent highway striping and signing shall be done by the Colorado Division of Highways. The actual cost of the work will be billed to the permittee. The cost will not exceed an estimated $1000.
3. No drainage from this site shall enter onto the surface of the highway. All existing drainage structures shall be extended to accommodate all new construction and safety standards.
4. Contractor shall follow the applicable construction specifications set for by the Department of Highways in the latest manual Standard Specifications for Road and Bridge Construction. The property owner is responsible for any utilities disrupted by the construction of this driveway and all expenses incurred for repair. Any damage to any existing Highway facilities shall be repaired prior to continuing other work.
5. Compaction of sub-grade, embankments and backfill shall comply with Section 203.11 of the Division of Highways Standard Specifications.
6. Compaction of Hot Bituminous Pavement (HBP) shall comply with Section 401.17 of the Division of Highways Standard Specifications.
7. If frost is present in the sub-grade, no surfacing material shall be placed until all frost is gone or removed.
8. Saw or score asphalt to assure a straight edge for patching.
9. The first 20 feet beyond the closest highway lane, including speed change lanes, shall slope down and away from the highway at a 2% grade to ensure proper drainage control.
10. All excavations on Utility lines, culverts, other trenches or tunnels shall meet the requirements of Colorado Department of Highways, OSHA, Colorado Industrial Commission and the Colorado Division of Mines whichever applies.
11. Work shall BEGIN AFTER 8:30 A.M. and all equipment shall be off the roadway BEFORE 3:30 P.M. each day.

Kathy Portner

SUBMITTAL CHECKLIST

SITE PLAN REVIEW

Location: *North Ave. & Melody Lane* Project Name: *Wal Mart Expansion*

ITEMS: DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	○ City Fire Department	● City Attorney	○ City Downtown Dev. Auth.	○ County Planning	● County Bldg. Dept.	○ Irrigation District	○ Drainage District	○ Water District	● Sewer District *Fruitvale*	● U.S. West	● Public Service	○ GVRP	● CDOT	○ Corps of Engineers	○ Walker Field	● *Fruitvale Lateral & Waste Ditch Co.*	TOTAL REQ'D
● Application Fee	VII-1	1																					
● Submittal Checklist*	VII-3	1																					
● Review Agency Cover Sheet*	VII-3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
● Planning Clearance*	VII-3	1																					
● 11"x17" Reduction of Assessor's Map	VII-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
● Evidence of Title *current site*	VII-2	1			1			1															
○ Appraisal of Raw Land	VII-1	1			1	1																	
○ Deeds	VII-1	1			1			1															
○ Easements	VII-2	1	1	1	1			1															
○ Avigation Easement	VII-1	1			1			1															
○ ROW	VII-3	1	1	1	1			1															
○ Improvements Agreement/Guarantee	VII-2	1	1	1				1															
● CDOT Access Permit	VII-3	1	1																				
○ Industrial Pretreatment Sign-off	VII-4	1		1																			
● General Project Report	X-7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
○ Elevation Drawing	IX-13	1	1																				
● Site Plan	IX-29	2	2	1	1																	1	
○ 11"x17" Reduction of Site Plan	IX-29					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
● Grading and Drainage Plan	IX-16	1	2										1										
○ Storm Drainage Plan and Profile	IX-30	1	2										1		1	1	1	1					
○ Water and Sewer Plan and Profile	IX-34	1	2	1			1							1	1	1	1	1					
○ Roadway Plan and Profile	IX-28	1	2										1										
○ Road Cross-Sections	IX-27	1	2																				
○ Detail Sheet	IX-12	1	2																				
● Landscape Plan	IX-20	2	1	1																			
○ Geotechnical Report	X-8	1	1								1												
● Final Drainage Report	X-5,6	1	2										1										
○ Stormwater Management Plan	X-14	1	2										1							1			
○ Phase I and II Environmental Report	X-10,11	1	1																				
● Traffic Impact Study	X-15	1	2																1				

NOTES:
1) An asterisk in the item description column indicates that a form is supplied by the City.
2) Required submittal items and distribution are indicated by filled in circles, some of which may be filled in during the pre-application conference. Additional items or copies may be subsequently requested in the review process.
3) Each submitted item must be labeled, named, or otherwise identified as described above in the description column.

GENERAL PROJECT REPORT
Wal-Mart Expansion Project

A. PROJECT DESCRIPTION

1. Location: Expansion of existing Wal-Mart Store located at the southwest corner of North Avenue and Melody Lane.

2. Acreage/Size: .75 Acre and Building Expansion of 47,558 S.F.

3. Proposed Use: Retail

B. PUBLIC BENEFIT

Provide upgraded building elevations and larger, better arranged retail facility for the citizens of Grand Junction.

C. PROJECT COMPLIANCE, COMPATIBILITY and IMPACT

1. Adopted Plans/and/or policies - N.A.

2. Land Use in the surrounding area

   - To the North: Amusement Park and Various Commercial
   - To the South: Industrial
   - To the West: Undeveloped
   - To the East: Residential

3. Site Access and Traffic Patterns
   Existing Access from North Avenue and Melody Lane will remain; traffoc patterns will remain as currently exist.

4. Availability of Utilities/ Fire Hydrants

   Since this is an expansion of an existing store, all required utilities and fire hydrants are available. Minor adjustments and relocations of existing facilities will be required.

5. Special or Unusual Demands or Utilities
   No special or unusual demands on utilities will be created by this store expansion.

6. Effects on Public Facilities
   No increased demand on public facilities will be created by this store expansion.

7. Site Soils and Geology
   A Geotechnical Report is available for the store expansion area.

8. Impact of project on site geology and geological hazards.
   None

9. Hours of Operation
   The hours of operation of the existing store will not be changed after store expansion.

10. Signage Plans
    Some modification of the wall signage will be required as a part of the store expansion. All signage modifications will be in conformance with the City of Grand Junction Sign Ordinance.

D. DEVELOPMENT SCHEDULE and PHASING

The store expansion will be accomplished within 180 days. Building additions will be phased as required to allow the store to continue normal operating hours at all times.

WAL★MART EXPANSION
TRAFFIC IMPACT STUDY
GRAND JUNCTION, COLORADO

Krager and Associates, Inc.

WAL-MART CENTER

TRAFFIC IMPACT STUDY

GRAND JUNCTION, COLORADO

February, 1994

Prepared for:

Dunaway Associates West, Inc.
4500 South Lakeshore Drive, Suite 250
Tempe, Arizona 85282

Prepared by:

Krager and Associates, Inc.
4090 Estes Street
Wheat Ridge, Colorado 80033
2.24408grand

I. INTRODUCTION

This traffic impact study addresses the capacity, geometric, and control requirements associated with the proposed expansion of a Wal-Mart store at the intersection of North Avenue and Melody Lane in Grand Junction, Colorado.

Site Location

The site is located on the southwest quadrant of the North Avenue/Melody Lane intersection. The study area to be examined in this traffic impact analysis encompasses the access points to the site and the North Avenue/Melody Lane intersection.

Existing and Proposed Site Uses

The site currently consists of a 82,000-square foot Wal-Mart Store. Wal-Mart is proposing to expand the existing store to a 123,500-square foot discount store. Wal-Mart is also considering a further expansion at sometime in the future to a 192,000-square foot facility. The initial expansion is referred to as Phase 1 in this study, and was assumed to be completed by the Year 1995. Phase 2 expansion was assumed to occur in the Year 2010.

Access to this site will remain the same for the two building expansions. There are two full-movement access points to North Avenue and three full-movement access points to Melody Lane. The southern-most access to Melody Lane serves the truck loading area, and was not analyzed in this study, since customers will not normally be using this driveway.

Existing and Future Street System

State Street has a five-lane cross section along the frontage of the site. This cross section allows for two through travel lanes in each direction and a left turn lane.

Melody Lane is a two-lane paved road without curb and gutter.

The intersection of North Avenue and Melody Lane is signalized. All access points to the site are stop sign controlled.

II. TRIP GENERATION AND DESIGN HOUR VOLUMES

Driveway traffic counts were conducted at the existing Wal-Mart Store so that actual trip generation could be compared to estimated trip generation based on standard ITE trip factors. The actual counts proved to be slightly higher (four percent) than the traffic that would be projected using conventional trip generation rates. The existing driveway counts were used as a base trip generation for the site.

Although trip generation rates are traditionally applied to the gross square footage of a building, the assumption that traffic will increase proportionally to the building size would not be valid in this case. The expansion of the Wal-Mart Store will accommodate a larger inventory of stock in a more spacious design. This redesign of the store will provide better retail services to their existing customers and, hopefully, increase the amount of merchandise that each customer purchases.

The retail market for this Wal-Mart has already been well established. The retail market can expand consistent with the population growth of Grand Junction, but is unlikely to expand faster than the area population.

The premise that traffic is unlikely to increase with the store expansion is supported by the individual traffic surveys for discount stores provided in the ITE Trip Generation Manual. Of the seven discount stores surveyed during peak periods of operation, the size of the store does not correspond to the generated traffic for six of the seven sites. In other words, a discount store is likely to generate a given amount of traffic based on the available market, not on the actual square footage of the store. A graph of the PM peak hour trip rates for the six stores listed in the Trip Generation Manual is provided in Appendix A.

Based on this graph of trip rates, the projected trip generation for Phase 1 and Phase 2 expansion is shown in Table 1. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination. The noon hour was selected as the critical period for analysis. It is the peak traffic generating time for a Wal-Mart store, and the noon hour peak in Grand Junction is just slightly less than the evening rush hour traffic volumes.

Table 1

Trip Generation

Standard ITE Method

Land Use	Units	Noon Peak Hour in	out	total
Existing Store	82.0 KSF	278	267	545
Phase 1 Expansion	123.5 KSF	419	403	822
Phase 2 Expansion	192.0 KSF	652	627	1279

Existing Counts/Best Fit Equation Method

Land Use	Units	Noon Peak Hour in	out	total
Existing Store	82.0 KSF	301	264	565
Phase 1 Expansion	123.5 KSF	382	335	717
Phase 2 Expansion	192.0 KSF	512	449	961

III. TRIP MAKING REDUCTIONS

Due to the retail use of this site, it is reasonable to expect that some passer-by trips are also likely to occur. However, to provide a conservative analysis, no trip reductions were assumed.

IV. TRIP DISTRIBUTION

The overall directional distribution of the site-generated traffic was determined based on the existing travel patterns at the site access points. The trip distributions used in the analysis of this report are shown in Figure 1.

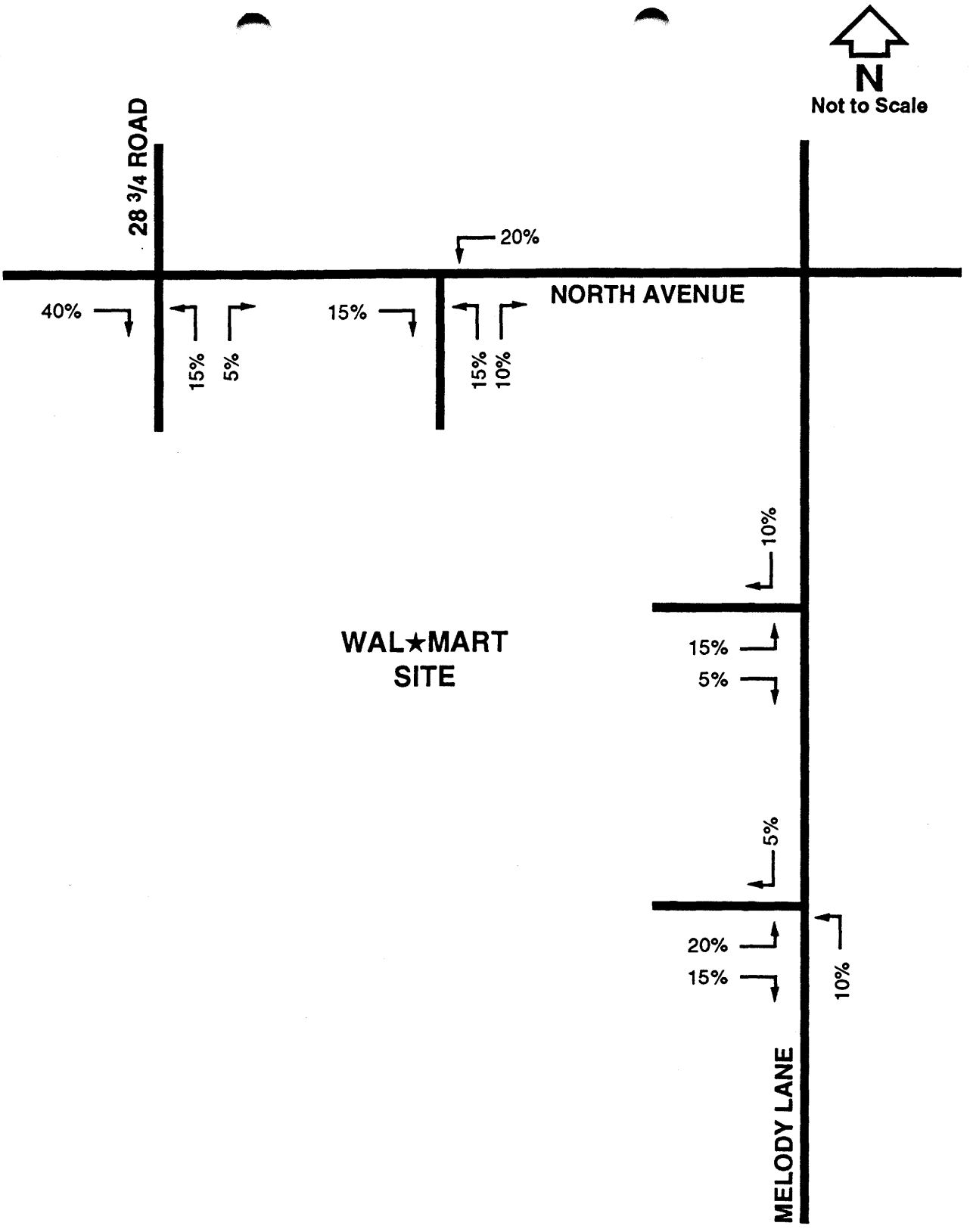


Figure 1

TRIP DISTRIBUTION

V. TRAFFIC VOLUMES AND TRIP ASSIGNMENT

Traffic assignment is how the generated and distributed trips are expected to be loaded on the roadway network. The site-generated trips for Phase 1 and Phase 2 expansions are shown in Figures 2 and 3.

Existing noon hour traffic counts were taken at the intersection of North Avenue and Melody Lane, and at all access points to the Wal-Mart site. The existing counts are shown in Figure 4. Traffic count data is shown in Appendix B. Background traffic for the area was developed using these traffic counts. The existing Wal-Mart traffic was then removed from the traffic counts to show background traffic only.

Future background traffic was developed by assuming a two-percent annual growth rate for the Grand Junction area. Background traffic for the Years 1995 and 2010 are shown in Figure 5.

The site-generated traffic was combined with the background traffic to determine total projected traffic for the study area. Total noon hour traffic for the Years 1995 and 2010 are illustrated in Figures 6 and 7.

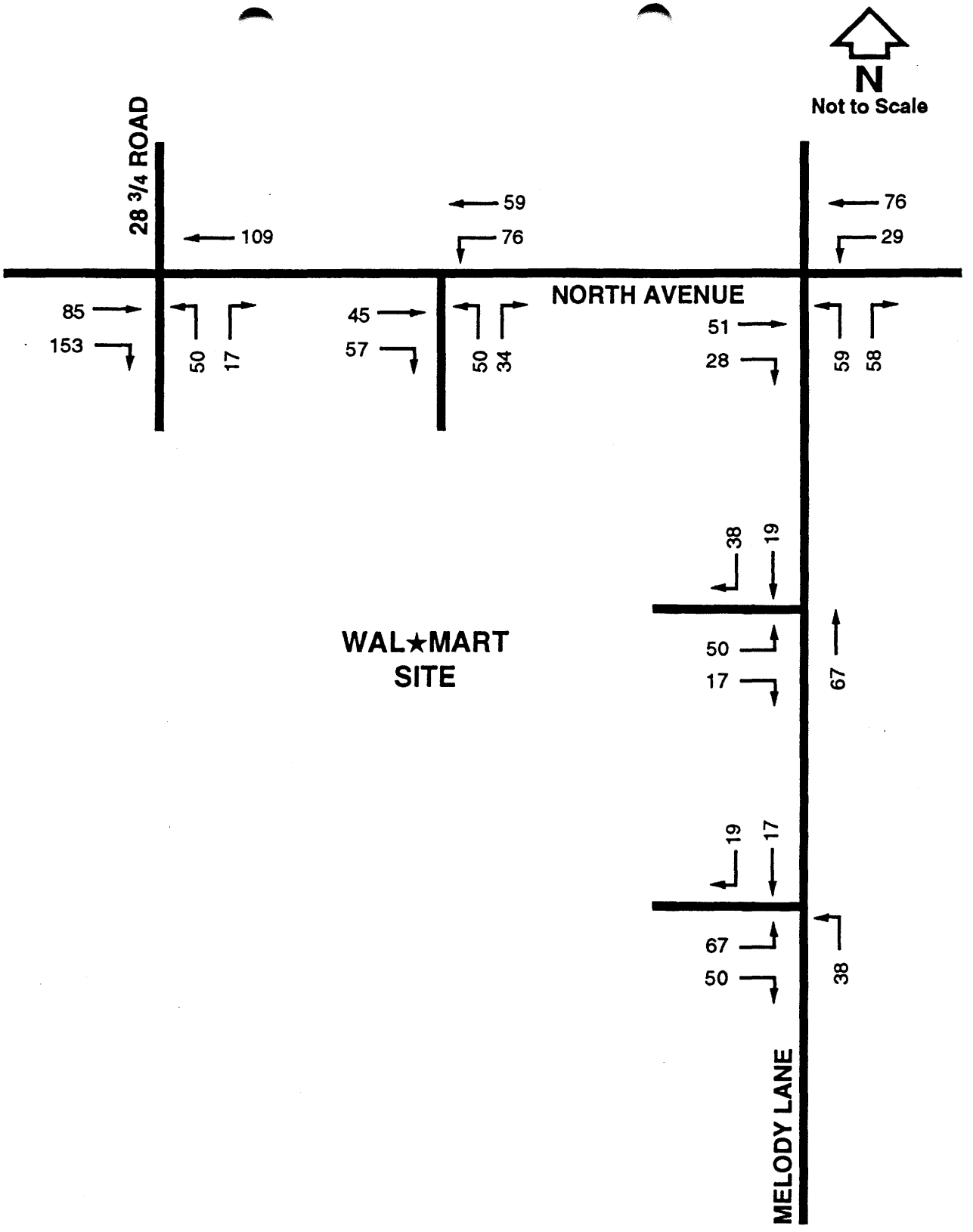


Figure 2

SITE-GENERATED TRAFFIC

Phase I

Noon Hour

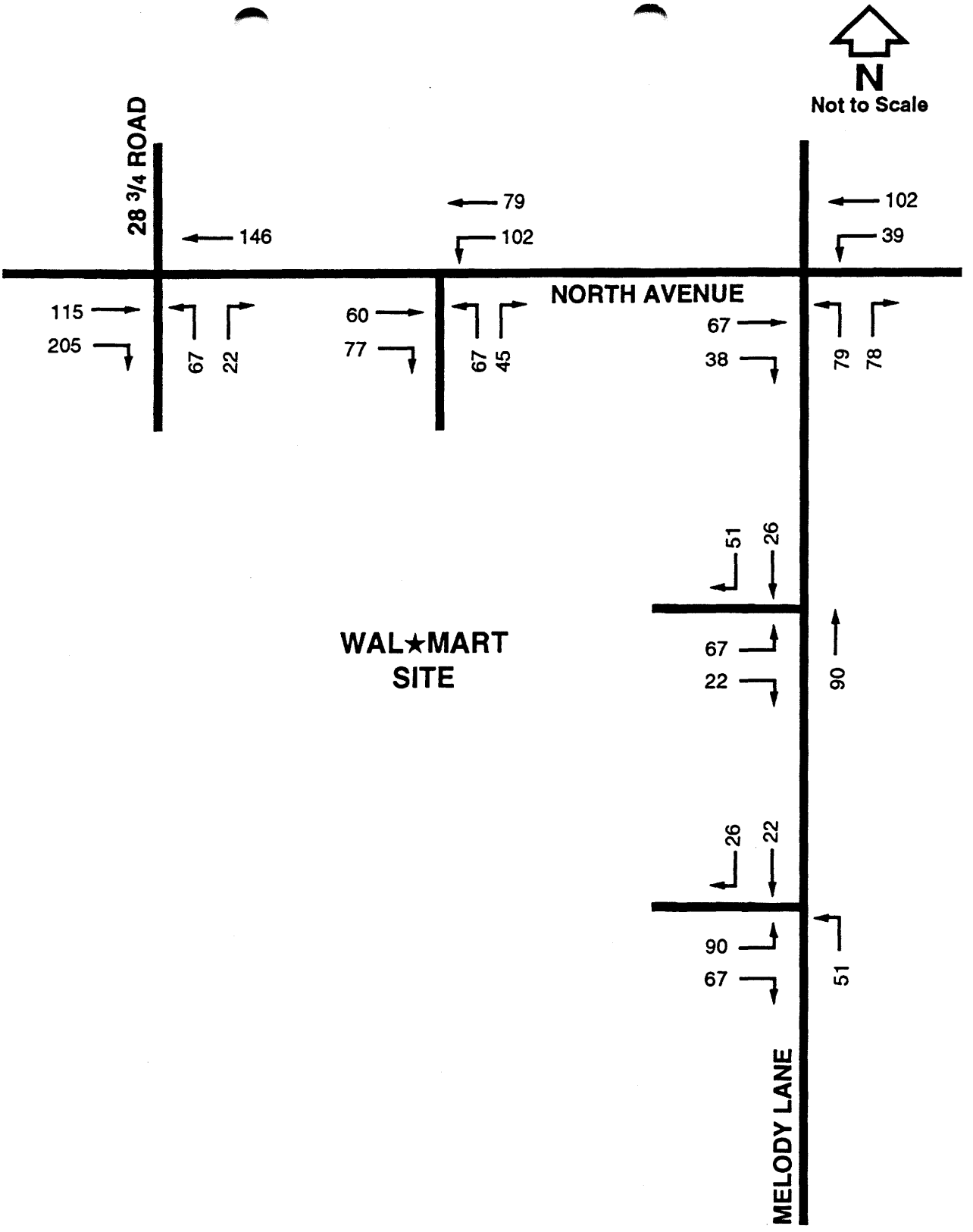


Figure 3

SITE-GENERATED TRAFFIC

Year 2010

Noon Hour

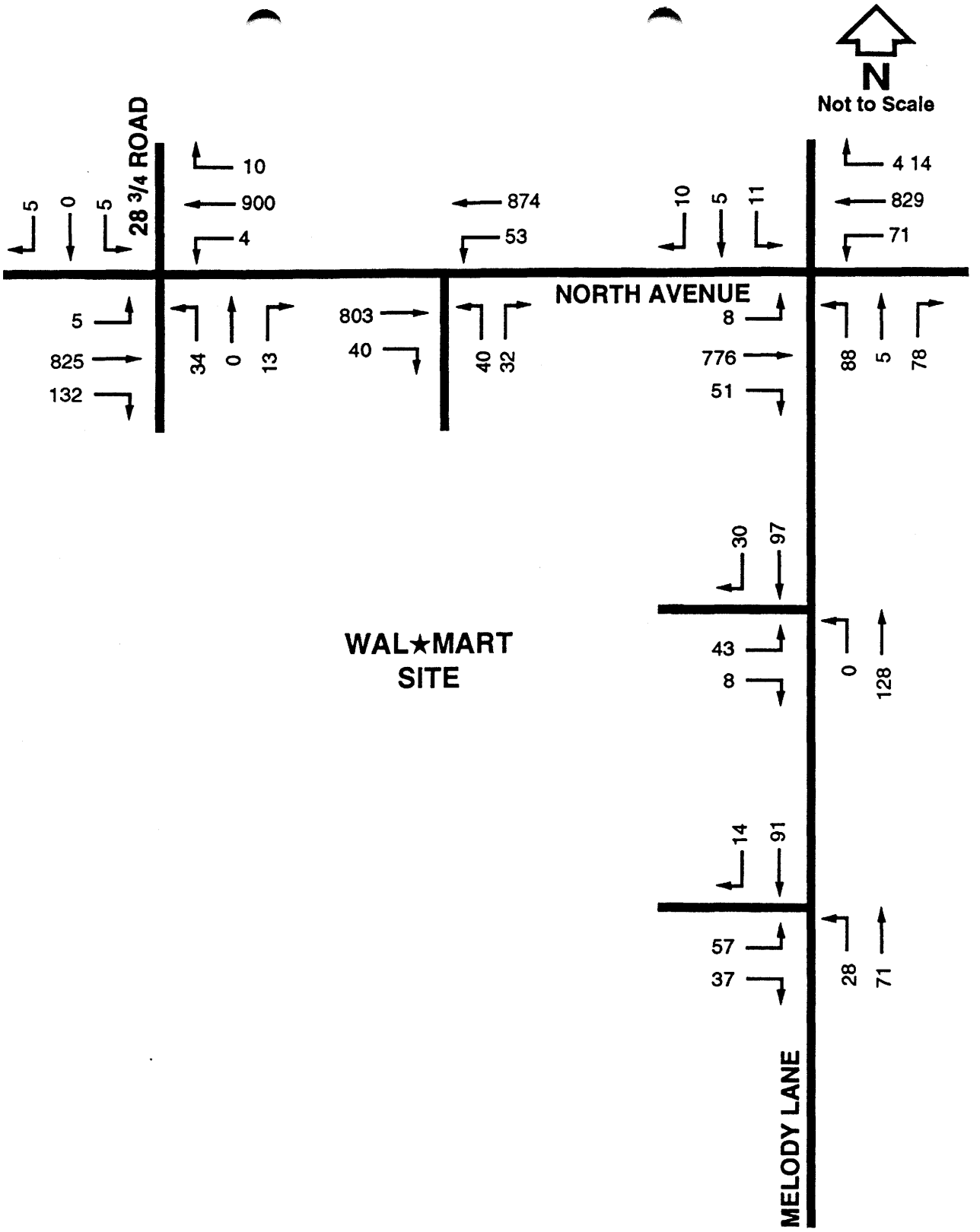


Figure 4
EXISTING TRAFFIC
Noon Hour

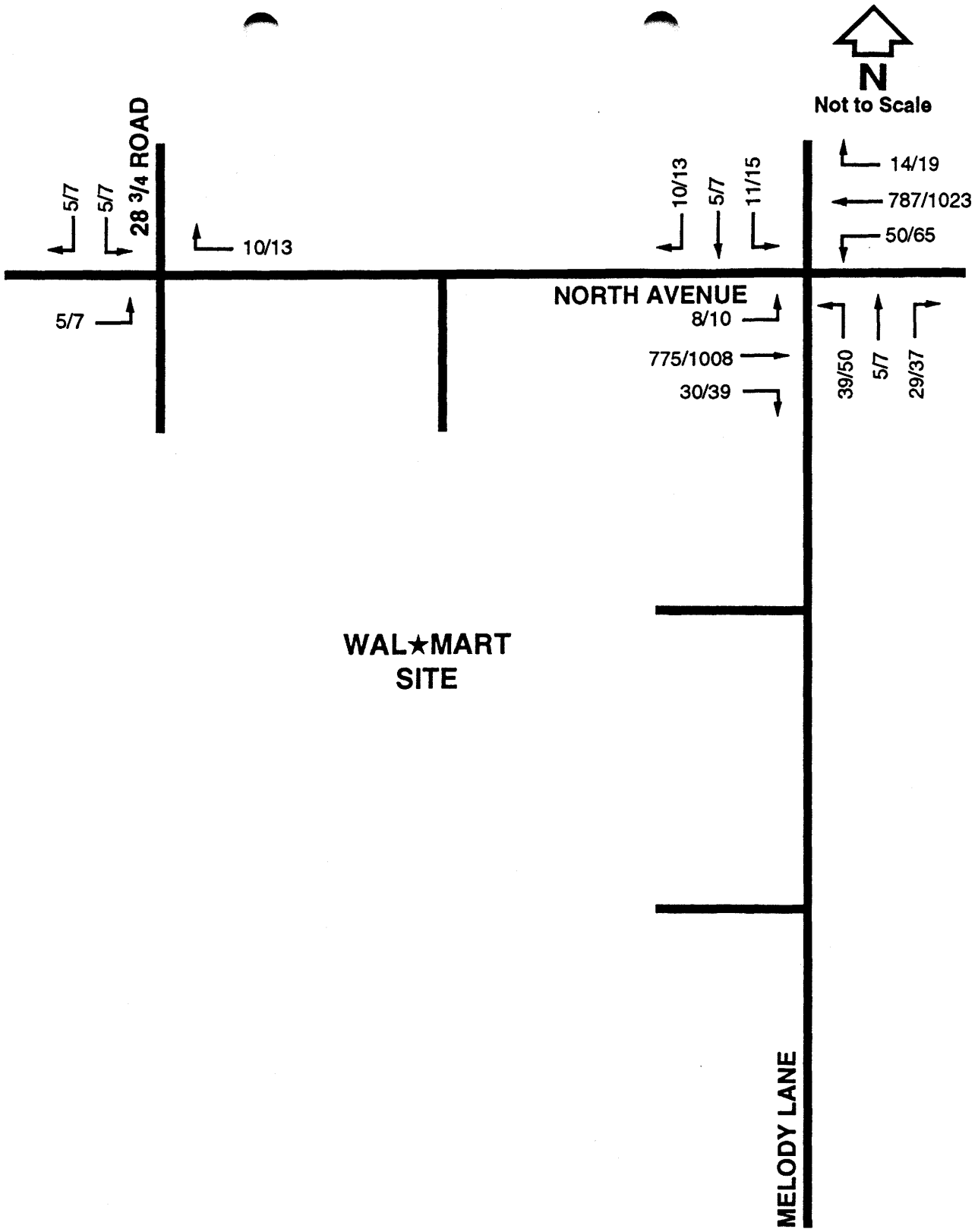


Figure 5

BACKGROUND TRAFFIC

Year 1995/Year 2010

Noon Hour

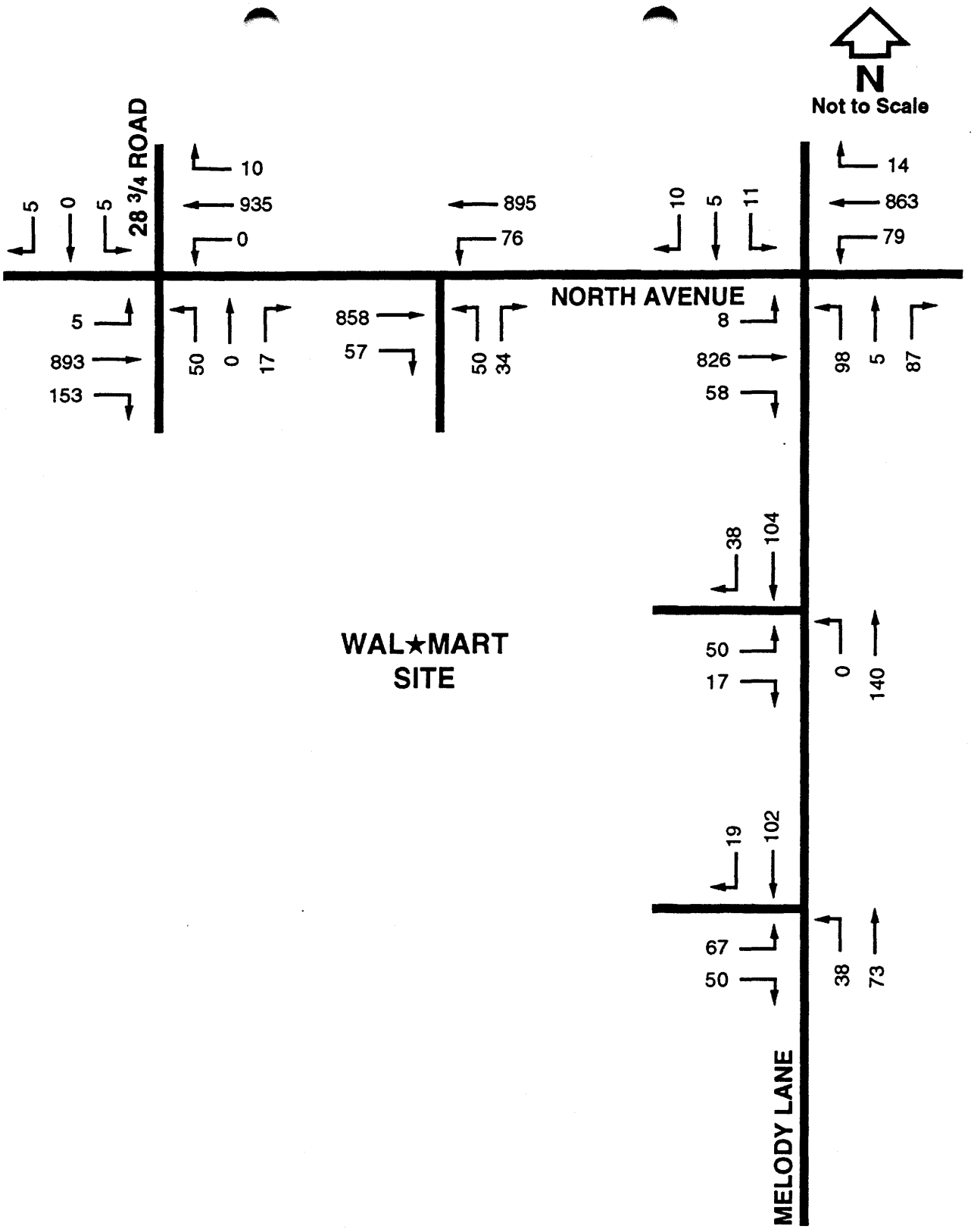


Figure 6

TOTAL TRAFFIC

Year 1995

Noon Hour

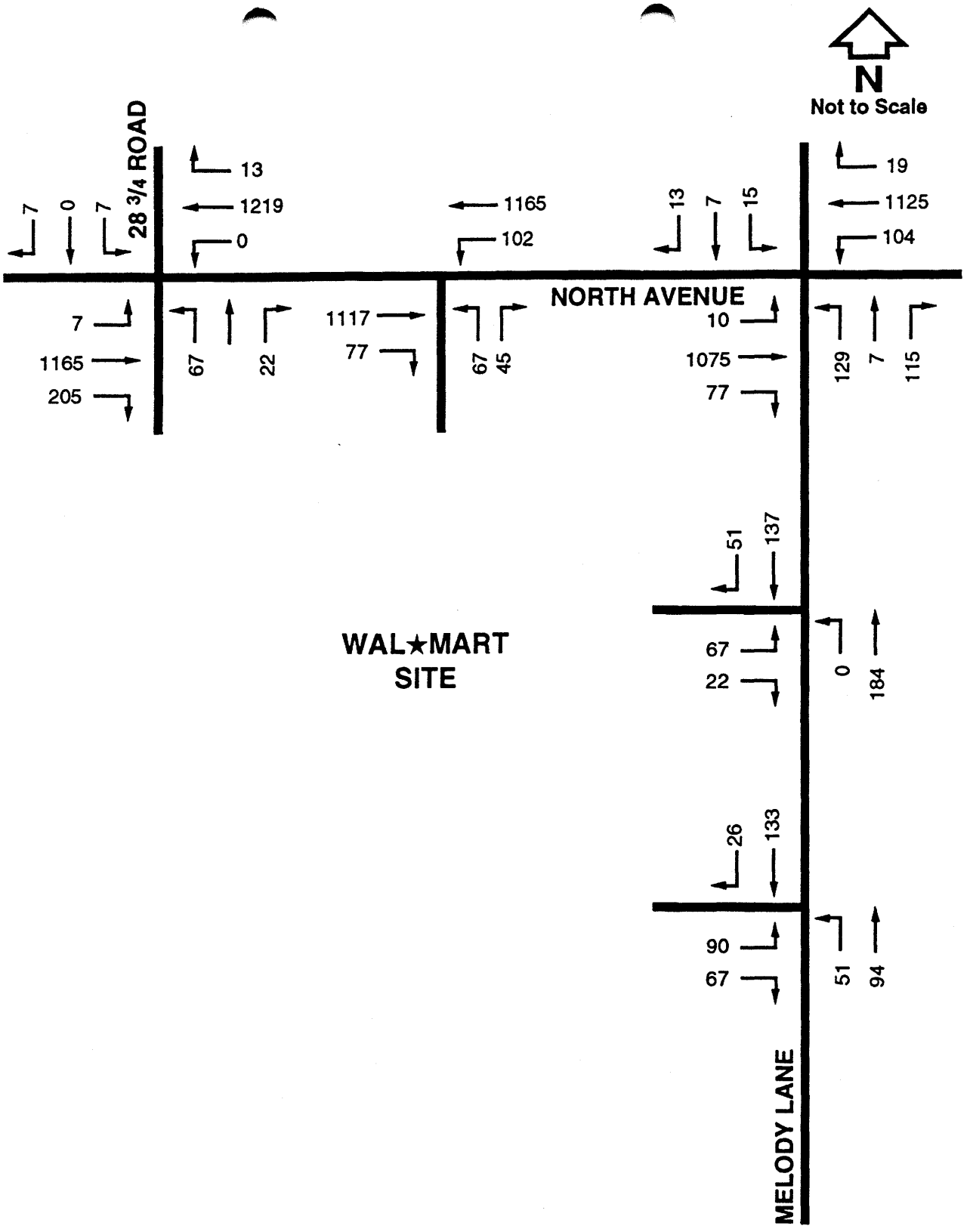


Figure 7
TOTAL TRAFFIC
Year 2010
Noon Hour

Operational Analysis

The Signalized and Unsignalized Intersection Analysis techniques, as published in the "Highway Capacity Manual" by the Transportation Research Board in 1985, were used to analyze the access points to the site and the intersection of North Avenue and Melody Lane. These techniques allow determination of the overall intersection levels of service based on each traffic movement.

Traffic analyses were completed for existing conditions as well as for total traffic in the Years 1995 and 2010. Table 2 illustrates the levels of service found for the existing and projected traffic volumes. Definitions of levels of service are given in Appendix C. The capacity work sheets are given in Appendix D.

The analysis indicates that the signalized intersection of North Avenue and Melody Lane will operate well. Left turn stacking for the intersection will be adequate through the Year 2010. No intersection improvements are needed.

The access points on Melody Lane both function very well, even though Melody Lane is a two-lane street. The good quality of traffic flow shown in the analysis indicates that no improvements are needed. However, when the east side of Melody Lane is improved, the striping of a center left turn lane will keep through traffic from being delayed by left-turning vehicles.

Some long delays can be expected for left turns out of the access points on North Avenue due to the heavy volume of traffic on North Avenue. However, if these delays become excessive, motorists will have the option of using the access points on Melody Lane, which function very well.

Table 2

Intersection Capacity Analysis Summary

	Noon Peak Hour Level of Service
Existing Traffic	
North Avenue/Melody Lane	B(11.2/0.395)
North Avenue/28 3/4 Road	E/E/B/C
North Avenue/Access	E/A/C
Melody Lane/North Access	A/A/A
Melody Lane/Main Access	A/A/A
Total Traffic, Year 1995	
North Avenue/Melody Lane	B(11.5/0.424)
North Avenue/28 3/4 Road	E/E/C/C
North Avenue/Access	F/A/C
Melody Lane/North Access	A/A/A
Melody Lane/Main Access	A/A/A
Total Traffic, Year 2010	
North Avenue/Melody Lane	B(14.7/0.566)
North Avenue/28 3/4 Road	F/E/D/D
North Avenue/Access	F/A/E
Melody Lane/North Access	A/A/A
Melody Lane/Main Access	A/A/A

KEY:

Unsignalized Intersections - left out/left out/left in/left in
- left out/right out/left in
Signalized Intersection - (v/c ratio - delay)

VII. RECOMMENDATIONS

This study assessed the impacts of the proposed expansion of the Wal-Mart Store on North Avenue at Melody Lane in Grand Junction, Colorado. As a result of this analysis, all intersections within the study area were found to operate at acceptable levels of service.

The signalized intersection of North Avenue and Melody Lane is operating at Level of Service B currently. With the proposed expansions of Wal-Mart and an increase in background traffic, the intersection will continue to operate at Level of Service B. No improvements are needed at this intersection.

The access points on Melody Lane both function very well, even though Melody Lane is a two-lane street. The good quality of traffic flow shown in the analysis indicates that no improvements are needed. However, when the east side of Melody Lane is improved, the striping of a center left turn lane will keep through traffic from being delayed by left-turning vehicles.

Some long delays can be expected for left turns out of the access points on North Avenue due to the heavy volume of traffic on North Avenue. However, if these delays become excessive, motorists will have the option of using the access points on Melody Lane, which function very well.

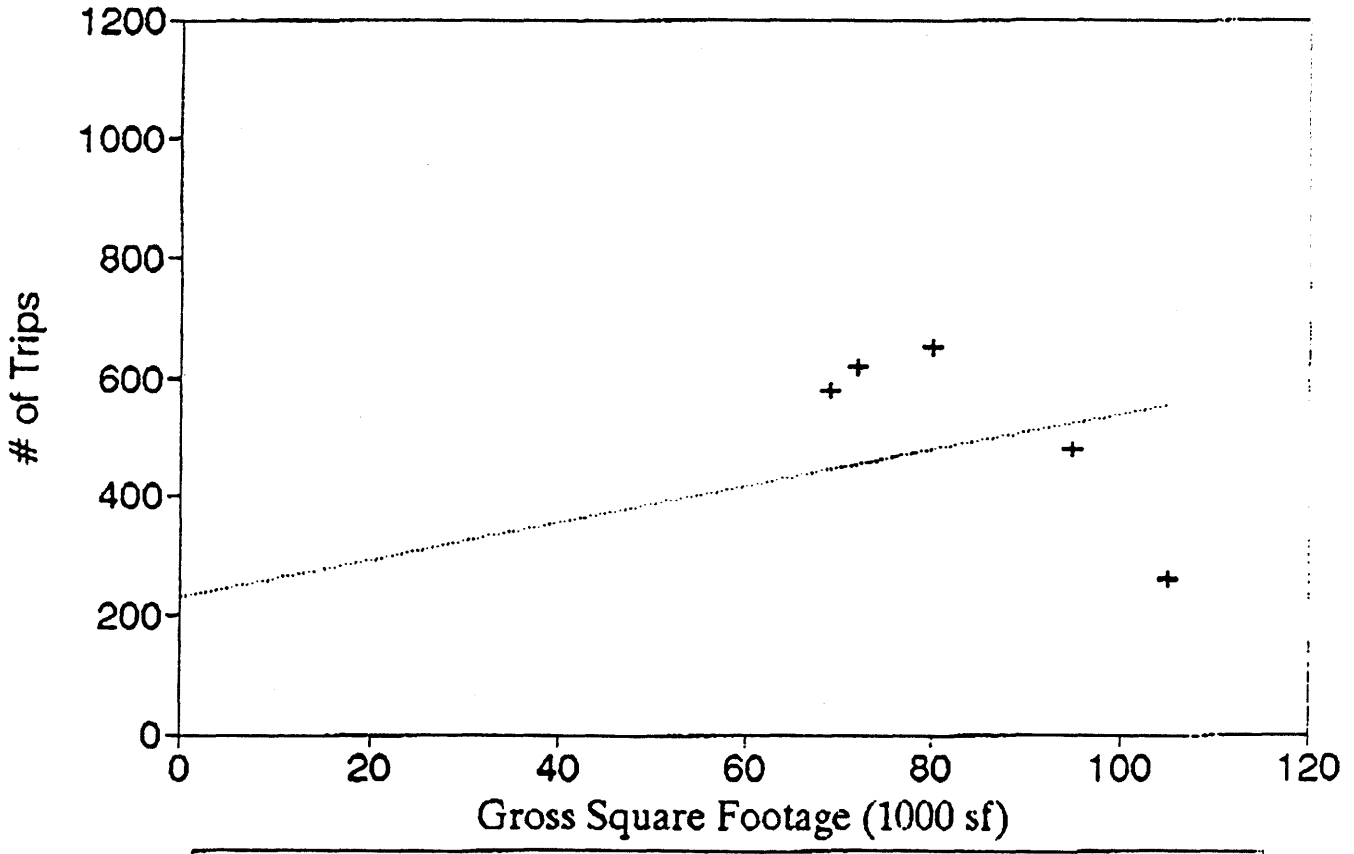
The City of Grand Junction Staff has expressed a concern regarding increased traffic at the I-70 Business/Melody Lane intersection. This study indicates that only a small increase in traffic is likely on Melody Lane south of the site. The need to improve the intersection as a direct result of the Wal-Mart expansion is very remote. No off-site improvements are recommended as a result of the traffic analysis conducted for this report.

Appendix A

Trip Generation Graph

PM Peak Hour of the Generator

Trip Generation Rates



(source: ITE Trip Generation Manual, Land Use Code 815)

Appendix B

Traffic Counts

KRAGER AND ASSOCIATES - TRAFFIC COUNT DATA - JOB NO. 9402
421 805 FAX 467-2354
INTERSECTION Melody Lane / North Ave DATE 2/3/94
TIMES noon - 1pm
COUNTER DAVID MORRIS WEATHER CLEAR 35°

EB Right	WB Thru	WB Left	NB Right	NB Thru	NB Left
00-12:15 1111	15+23+20+25+23	1111 IIII IIII IIII	IIII II IIII IIII	1111	IIII = IIII IIII
	18+22+20+21+24				
4	206	24	22	4	22
:15 - 12:30					
1111	5+25+19+23+21	IIII IIII	II IIII IIII IIII		IIII IIII IIII I
	19+15+19+18				
4	184	10	20		16
:30 - 12:45					IIII IIII IIII I IIII IIII IIII
1111	27+27+17+22+47	III IIII IIII IIII	IIII IIII IIII		
	24+23+18				
4	205	23	15		31
45 - 1:00					
11	6+24+14+27+28	IIII IIII 1111	I IIII IIII IIII IIII	1	IIII IIII IIII 1111
	45+29+30+32				
2	234	14	21	1	19
(14)	(829)	(71)	(78)	(5)	(80)

KRAGER AND ASSOCIATES - TRAFFIC COUNT DATA - JOB NO. 9408

421 805 FAX 467-2354

INTERSECTION Melody Lane / North Ave DATE 2/9/94

TIMES Noon - 1 pm

COUNTER Richard Mullikin WEATHER Sunny 35°

3 Left	SB Thru	SB Right	EB left	EB Thru	EB right
2:00 - 12:15					
11	11	111	1	19 +18 +19 +24 +17	++++ ++++ ++++ ++++ 111
				+ 26 + 25 + 18 + 20	
2	2	3	1	205	23
:15 - 12:30					
11	11	111	1	25 + 25 + 25 + 20 17 + 15 + 20 + 22	++++ 111
2	2	3	1	169	8
:30 - 12:45					
111		11	++++ 1	15 + 20 + 25 + 12 + 18 + 15 + 25 +	++++ ++++
				20 + 20 + 20 + 17	
3		2	5	207	10
:45 - 1:00					
1111	1	11	1	10 + 10 + 15 + 15 + 25 + 15 + 10 +	++++ ++++
				15 + 10 + 20	
4	1	2	1	+ 35 + 15	10
				195	
(11)	(5)	(10)	(8)	(776)	(51)

KRAGER AND ASSOCIATES - TRAFFIC COUNT DATA - JOB NO. 9408
425- -05 FAX 467-2354

INTERSECTION Melody Lane/Access (S of North) DATE 2-9-94

TIMES noon-1pm

COUNTER Elise Brown WEATHER Sunny. 35°

TIME	SB Right	EB left	EB right	NB left	
-12:15	~~||||~~ ~~||||~~ II ⑫	~~||||~~ ~~||||~~ ⑩	III ③	–	
:15-12:30	~~||||~~ I ⑥	~~||||~~ ~~||||~~ II ⑫	II ②	–	
:30-12:45	~~||||~~ IIII ⑨	~~||||~~ ~~||||~~ II ⑫	I ①	–	
:45-1:00	III ③	~~||||~~ IIII ⑨	II ②	–	
	(30)	(43)	(8)		

KRAGER AND ASSOCIATES - TRAFFIC COUNT DATA - JOB NO. 9408

421 0805 FAX 467-2554

INTERSECTION North Ave / 28 3/4 Rd DATE 2/9/94

TIMES noon - 1pm

COUNTER Dan Brown WEATHER Sunny 35°

TIME	WB ~~EB~~ left	EB right	NB left	NB right	EB left
11:00-11:15	II	IIII IIII IIII IIII IIII IIII IIII IIII	IIII IIII II	IIII	I
Total	2	40	12	5	
11:15-11:30		IIII IIII IIII IIII IIII	III	II	I
Total	0	24	3	2	
11:30-11:45		IIII IIII IIII IIII IIII IIII	IIII IIII	IIII	II
Total	0	29	9	4	
11:45-1:00	II	IIII IIII IIII IIII IIII IIII IIII	IIII IIII	II	I
Total	2	39	10	2	
	(4)	(132)	(34)	(13)	

426-0805 FAX 467-2354

INTERSECTION Melody Lane / Teller Ave DATE 2-9-94

TIMES noon - 1pm

COUNTER PATTI BARRINGTON WEATHER SUNNY

TIME	SB Right	EB left	EB right	NB left
on. 12:15	1111 4	13	10	9
12:15 - 12:30	11 2	13	10	4
12:30 - 12:45	7	15	9	6
12:45 - 1:00	1	14	8	9
	14	57	37	28

KRAGER AND ASSOCIATES - TRAFFIC COUNT DATA - NO. 9408

426-6805 FAX 467-2354

INTERSECTION North Ave / Bear Rd DATE 2/15/94

TIMES noon - 1pm

COUNTER Dan Brown WEATHER Clear - Sunny - 40°

Time	EB Right	NB left	NB right	WB left	
12:00-12:15	𝍸 𝍸 ||||	𝍸 ||	𝍸 |||	𝍸 𝍸 |	
Totals	(14)	(7)	(8)	(11)	
12:15-12:30	||||	𝍸 𝍸 ||||	𝍸 𝍸 |	𝍸 𝍸 ||||	
	(4)	(14)	(11)	(14)	
12:30-12:45	𝍸 ||||	𝍸 𝍸	𝍸 |||	𝍸 𝍸 |||	
	(9)	(10)	(8)	(13)	
12:45-1:00	𝍸 𝍸 |||	𝍸 ||||	𝍸	𝍸 𝍸 𝍸	
	(13)	(9)	(5)	(15)	
	(40)	(40)	(32)	(53)	

Appendix C

Level of Service Definitions

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Delay is a complex measure, and is dependent on a number of variables, including the quality of [the signal] progression, the cycle length, the green time ratio, and the v/c ratio for the lane group or approach in question.

Level-of-service A describes operations with very low delay, i.e., less than 5.0 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-service B describes operations with delay in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehcles stop than for LOS A, causing higher levels of average delay.

Level-of-service C describes operations with delay in the range of 15.1 to 25 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-service D describes operations with delay in the range of 25.1 to 40.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some conbination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level-of-service E describes operations with delay in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurances.

Level-of-service F describes operations with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Excerpted from Highway Capacity Manual, Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 1985

LEVEL OF SERVICE CRITERIA

FOR

UNSIGNALIZED INTERSECTIONS

Level-of-service criteria for unsignalized intersections are stated in very general terms, and are related to general delay ranges. Analysis for a stop- or yield-controlled intersection results in solutions for the capacity of each lane on the minor approaches. The level-of-service criteria are then based on the reserve, or unused, capacity of the lane in question, expressed in passenger cars per hour (PCPH).

RESERVE CAPACITY (PCPH)	LEVEL OF SERVICE	EXPECTED DELAY TO MINOR STREET TRAFFIC
≥400	A	Little or no delay
300-399	B	Short traffic delays
200-299	C	Average traffic delays
100-199	D	Long traffic delays
0- 99	E	Very long traffic delays
*	F	*

*When demand volume exceeds the capcity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

Reference: Highway Capacity Manual. Special Report 209. Transportation Research Board, National Research Council. Washington, D.C. 1985.

Appendix D

Capacity Analysis Worksheets

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..North Avenue/Melody Lane
AREA TYPE.....OTHER
ANALYST.....klk
DATE.....2/16/94
TIME.....noon
COMMENT.....Existing Traffic

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	8	71	88	11	L	12.0	L	12.0	L	12.0	LTR	12.0	
TH	776	829	5	5	T	12.0	T	12.0	TR	12.0		12.0	
RT	51	14	78	10	TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	16.8	3
WB	0.00	2.00	N	0	0	0.90	50	N	16.8	3
NB	0.00	2.00	N	0	0	0.90	50	N	25.8	3
SB	0.00	2.00	N	0	0	0.90	50	N	25.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 70.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
WB	LT	X	X			SB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
GREEN		5.0	30.0	0.0	0.0	GREEN		20.0	0.0	0.0	0.0
YELLOW		5.0	5.0	0.0	0.0	YELLOW		5.0	0.0	0.0	0.0

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.020	0.600	4.3	A	11.2	B
	TR	0.598	0.457	11.2	B		
WB	L	0.171	0.600	4.8	A	10.8	B
	TR	0.605	0.457	11.3	B		
NB	L	0.187	0.314	13.3	B	13.3	B
	TR	0.192	0.314	13.3	B		
SB	LTR	0.064	0.314	12.8	B	12.8	B

INTERSECTION: Delay = 11.2 (sec/veh) V/C = 0.395 LOS = B

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Avenue

NAME OF THE NORTH/SOUTH STREET..... 28 3/4 Road

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon

OTHER INFORMATION.... Existing Traffic

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	5	4	34	5
THRU	825	900	0	0
RIGHT	132	10	13	5

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	2	2	2	1
LANE USAGE			L + R	LTR

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	NB	5.70	5.70	0.00	5.70
	SB	5.70	5.70	0.00	5.70
MAJOR LEFTS					
	EB	5.60	5.60	0.00	5.60
	WB	5.60	5.60	0.00	5.60
MINOR THROUGHS					
	NB	6.80	6.80	0.00	6.80
	SB	6.80	6.80	0.00	6.80
MINOR LEFTS					
	NB	7.30	7.30	0.00	7.30
	SB	7.30	7.30	0.00	7.30

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... 28 3/4 Road
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Existing Traffic

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
NB LEFT	42	66	64	64	23	E
THROUGH	0	83	81	81	81	E
RIGHT	16	574	574	574	558	A
MINOR STREET						
SB LEFT	6	66	64	64	57	E
THROUGH	0	83	81	115 81	102 81	D E
RIGHT	6	593	593	593	586	A
MAJOR STREET						
EB LEFT	6	314	314	314	308	B
WB LEFT	5	295	295	295	290	C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... 28 3/4 Road
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Existing Traffic

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Avenue

NAME OF THE NORTH/SOUTH STREET..... Access

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon

OTHER INFORMATION.... Existing Traffic

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	7	53	40	--
THRU	803	874	0	--
RIGHT	40	13	32	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	0	0	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	5.70	5.70	0.00	5.70
MAJOR LEFTS	WB	5.60	5.60	0.00	5.60
MINOR LEFTS	NB	7.30	7.30	0.00	7.30

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... Access
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Existing Traffic

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	49	66	57	57	9	E
RIGHT	39	619	619	619	580	A
MAJOR STREET						
WB LEFT	65	348	348	348	283	C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... Access
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Existing Traffic

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Access

NAME OF THE NORTH/SOUTH STREET..... Melody Lane

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon Hour

OTHER INFORMATION.... Existing Traffic

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	67	--	0	0
THRU	0	--	184	137
RIGHT	22	--	0	51

NUMBER OF LANES

	EB	WB	NB	SB
LANES	1	--	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	-----	---	---	-
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	---	---	---
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	EB	5.70	5.70	0.00	5.70
MAJOR LEFTS	NB	5.10	5.10	0.00	5.10
MINOR LEFTS	EB	6.80	6.80	0.00	6.80

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Existing Traffic

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
EB LEFT	82	536	536	536	454	A
				592	483	A
RIGHT	27	872	872	872	845	A
MAJOR STREET						
NB LEFT	0	957	957	957	957	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Existing Traffic

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... Main Access

NAME OF THE NORTH/SOUTH STREET..... Melody Lane

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon Hour

OTHER INFORMATION.... Existing Traffic

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	57	--	28	0
THRU	0	--	71	91
RIGHT	37	--	0	14

NUMBER OF LANES

	EB	WB	NB	SB
LANES	1	--	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	-----	---	---	-
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	---	---	---
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	EB	5.70	5.70	0.00	5.70
MAJOR LEFTS	NB	5.10	5.10	0.00	5.10
MINOR LEFTS	EB	6.80	6.80	0.00	6.80

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Main Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Existing Traffic

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
EB LEFT	70	669	655	655	585	A
				745	630	A
RIGHT	45	946	946	946	901	A
MAJOR STREET						
NB LEFT	34	994	994	994	959	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Main Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Existing Traffic

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..North Avenue/Melody Lane
AREA TYPE.....OTHER
ANALYST.....klk
DATE.....2/16/94
TIME.....noon
COMMENT.....Total Traffic-Year 1995

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	8	79	98	11	: L	12.0	L	12.0	L	12.0	LTR	12.0	
TH	826	863	5	5	: T	12.0	T	12.0	TR	12.0		12.0	
RT	58	14	87	10	: TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0	:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	
					:	12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	16.8	3
WB	0.00	2.00	N	0	0	0.90	50	N	16.8	3
NB	0.00	2.00	N	0	0	0.90	50	N	25.8	3
SB	0.00	2.00	N	0	0	0.90	50	N	25.8	3

SIGNAL SETTINGS CYCLE LENGTH = 70.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
WB	LT	X	X			SB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
GREEN		5.0	30.0	0.0	0.0	GREEN		20.0	0.0	0.0	0.0
YELLOW		5.0	5.0	0.0	0.0	YELLOW		5.0	0.0	0.0	0.0

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.020	0.600	4.3	A	11.6	B
	TR	0.639	0.457	11.7	B		
WB	L	0.203	0.600	4.9	A	11.0	B
	TR	0.630	0.457	11.6	B		
NB	L	0.209	0.314	13.4	B	13.4	B
	TR	0.213	0.314	13.4	B		
SB	LTR	0.065	0.314	12.8	B	12.8	B

INTERSECTION: Delay = 11.5 (sec/veh) V/C = 0.424 LOS = B

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Avenue

NAME OF THE NORTH/SOUTH STREET..... 28 3/4 Road

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon

OTHER INFORMATION.... Total Traffic-Year 1995

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	5	0	50	5
THRU	893	935	0	0
RIGHT	153	10	17	5

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	2	2	2	1
LANE USAGE			L + R	LTR

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

	TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS				
NB	5.70	5.70	0.00	5.70
SB	5.70	5.70	0.00	5.70
MAJOR LEFTS				
EB	5.60	5.60	0.00	5.60
WB	5.60	5.60	0.00	5.60
MINOR THROUGHS				
NB	6.80	6.80	0.00	6.80
SB	6.80	6.80	0.00	6.80
MINOR LEFTS				
NB	7.30	7.30	0.00	7.30
SB	7.30	7.30	0.00	7.30

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... 28 3/4 Road
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 1995

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M		SHARED CAPACITY c (pcph) SH		RESERVE CAPACITY c = c - v R		SH	LOS
MINOR STREET										
NB LEFT	61	66	65			65		4		E
THROUGH	0	83	82	>		82	>	82	>	E
RIGHT	21	539	539	>	539	539	> 518	518	>A	A
MINOR STREET										
SB LEFT	6	66	64	>		64	>	58	>	E
THROUGH	0	83	82	>	115	82	> 103	82	>D	E
RIGHT	6	579	579	>		579	>	573	>	A
MAJOR STREET										
EB LEFT	6	300	300			300		294		C
WB LEFT	0	259	259			259		259		C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... 28 3/4 Road
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 1995

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Avenue

NAME OF THE NORTH/SOUTH STREET..... Access

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon

OTHER INFORMATION.... Total Traffic-Year 1995

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	7	76	50	--
THRU	858	895	0	--
RIGHT	57	13	34	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	0	0	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	5.70	5.70	0.00	5.70
MAJOR LEFTS	WB	5.60	5.60	0.00	5.60
MINOR LEFTS	NB	7.30	7.30	0.00	7.30

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... Access
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 1995

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	61	66	51	51	-10	F
RIGHT	42	591	591	591	549	A
MAJOR STREET						
WB LEFT	93	312	312	312	219	C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... Access
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 1995

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Access

NAME OF THE NORTH/SOUTH STREET..... Melody Lane

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon Hour

OTHER INFORMATION.... Total Traffic-Year 1995

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	50	--	0	0
THRU	0	--	140	104
RIGHT	17	--	0	38

NUMBER OF LANES

	EB	WB	NB	SB
LANES	1	--	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	-----	---	---	-
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	---	---	---
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	EB	5.70	5.70	0.00	5.70
MAJOR LEFTS	NB	5.10	5.10	0.00	5.10
MINOR LEFTS	EB	6.80	6.80	0.00	6.80

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Total Traffic-Year 1995

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
EB LEFT	61	608	608	608	547	A
				665	583	A
RIGHT	21	917	917	917	896	A
MAJOR STREET						
NB LEFT	0	980	980	980	980	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Total Traffic-Year 1995

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... Main Access

NAME OF THE NORTH/SOUTH STREET..... Melody Lane

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon Hour

OTHER INFORMATION.... Total Traffic-Year 1995

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	67	--	38	0
THRU	0	--	73	102
RIGHT	50	--	0	19

NUMBER OF LANES

	EB	WB	NB	SB
LANES	1	--	1	1

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	-----	---	---	-
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	---	---	---
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	EB	5.70	5.70	0.00	5.70
MAJOR LEFTS	NB	5.10	5.10	0.00	5.10
MINOR LEFTS	EB	6.80	6.80	0.00	6.80

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Main Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Total Traffic-Year 1995

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
EB LEFT	82	645	627	627	545	A
				729	586	A
RIGHT	61	930	930	930	869	A
MAJOR STREET						
NB LEFT	46	988	988	988	941	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Main Access
NAME OF THE NORTH/SOUTH STREET.... Melody Lane
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon Hour
OTHER INFORMATION.... Total Traffic-Year 1995

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..North Avenue/Melody Lane
AREA TYPE.....OTHER
ANALYST.....klk
DATE.....2/16/94
TIME.....noon
COMMENT.....Total Traffic-Year 2010

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	10	104	129	15	L	12.0	L	12.0	L	12.0	LTR	12.0	
TH	1075	1125	7	7	T	12.0	T	12.0	TR	12.0		12.0	
RT	77	19	115	13	TR	12.0	TR	12.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ PKG Y/N	BUSES Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	16.8	3
WB	0.00	2.00	N	0	0	0.90	50	N	16.8	3
NB	0.00	2.00	N	0	0	0.90	50	N	25.8	3
SB	0.00	2.00	N	0	0	0.90	50	N	25.8	3

SIGNAL SETTINGS — CYCLE LENGTH = 70.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X	X			NB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
WB	LT	X	X			SB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
GREEN		5.0	30.0	0.0	0.0	GREEN		20.0	0.0	0.0	0.0
YELLOW		5.0	5.0	0.0	0.0	YELLOW		5.0	0.0	0.0	0.0

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.032	0.600	4.3	A	15.4	C
	TR	0.833	0.457	15.4	C		
WB	L	0.335	0.600	5.6	B	14.3	B
	TR	0.821	0.457	15.0	C		
NB	L	0.277	0.314	13.8	B	13.8	B
	TR	0.282	0.314	13.8	B		
SB	LTR	0.091	0.314	12.9	B	12.9	B

INTERSECTION: Delay = 14.7 (sec/veh) V/C = 0.566 LOS = B

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Avenue

NAME OF THE NORTH/SOUTH STREET..... 28 3/4 Road

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon

OTHER INFORMATION.... Total Traffic-Year 2010

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	7	0	67	7
THRU	1165	1219	0	0
RIGHT	205	13	22	7

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	2	2	2	1
LANE USAGE			L + R	LTR

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	0	0	0
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	NB	5.70	5.70	0.00	5.70
	SB	5.70	5.70	0.00	5.70
MAJOR LEFTS					
	EB	5.60	5.60	0.00	5.60
	WB	5.60	5.60	0.00	5.60
MINOR THROUGHS					
	NB	6.80	6.80	0.00	6.80
	SB	6.80	6.80	0.00	6.80
MINOR LEFTS					
	NB	7.30	7.30	0.00	7.30
	SB	7.30	7.30	0.00	7.30

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... 28 3/4 Road
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 2010

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M		SHARED CAPACITY c (pcph) SH		RESERVE CAPACITY c = c - v R SH		LOS
MINOR STREET									
NB LEFT	82	66	64		64		-18		F
THROUGH	0	83	81	>	81	>	81	>	E
RIGHT	27	425	425	> 425	425	> 398	398	>B	B
MINOR STREET									
SB LEFT	9	66	62	>	62	>	53	>	E
THROUGH	0	83	81	> 109	81	> 92	81	>E	E
RIGHT	9	473	473	>	473	>	464	>	A
MAJOR STREET									
EB LEFT	9	193	193		193		184		D
WB LEFT	0	156	156		156		156		D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... 28 3/4 Road
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 2010

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 35

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 30000

NAME OF THE EAST/WEST STREET..... North Avenue

NAME OF THE NORTH/SOUTH STREET..... Access

NAME OF THE ANALYST..... klk

DATE OF THE ANALYSIS (mm/dd/yy)..... 2/16/94

TIME PERIOD ANALYZED..... Noon

OTHER INFORMATION.... Total Traffic-Year 2010

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	7	102	67	--
THRU	1117	1165	0	--
RIGHT	77	13	45	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	0	0	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	5.70	5.70	0.00	5.70
MAJOR LEFTS	WB	5.60	5.60	0.00	5.60
MINOR LEFTS	NB	7.30	7.30	0.00	7.30

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... North Avenue
NAME OF THE NORTH/SOUTH STREET.... Access
DATE AND TIME OF THE ANALYSIS..... 2/16/94 ; Noon
OTHER INFORMATION.... Total Traffic-Year 2010

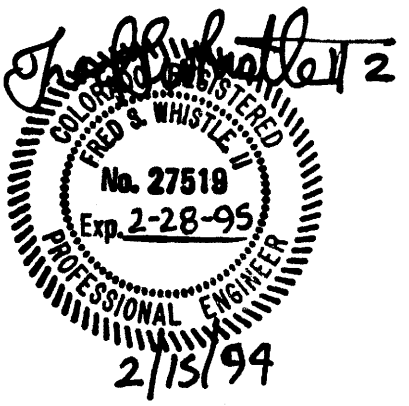
#43-94

FINAL DRAINAGE REPORT

WAL-MART EXPANSION
GRAND JUNCTION, COLO.

February 15, 1994

Dunaway Associates West Inc.



I. GENERAL LOCATION AND DESCRIPTION

A. SITE IS LOCATED AT THE INTERSECTION OF NORTH AVENUE AND MELODY LANE.

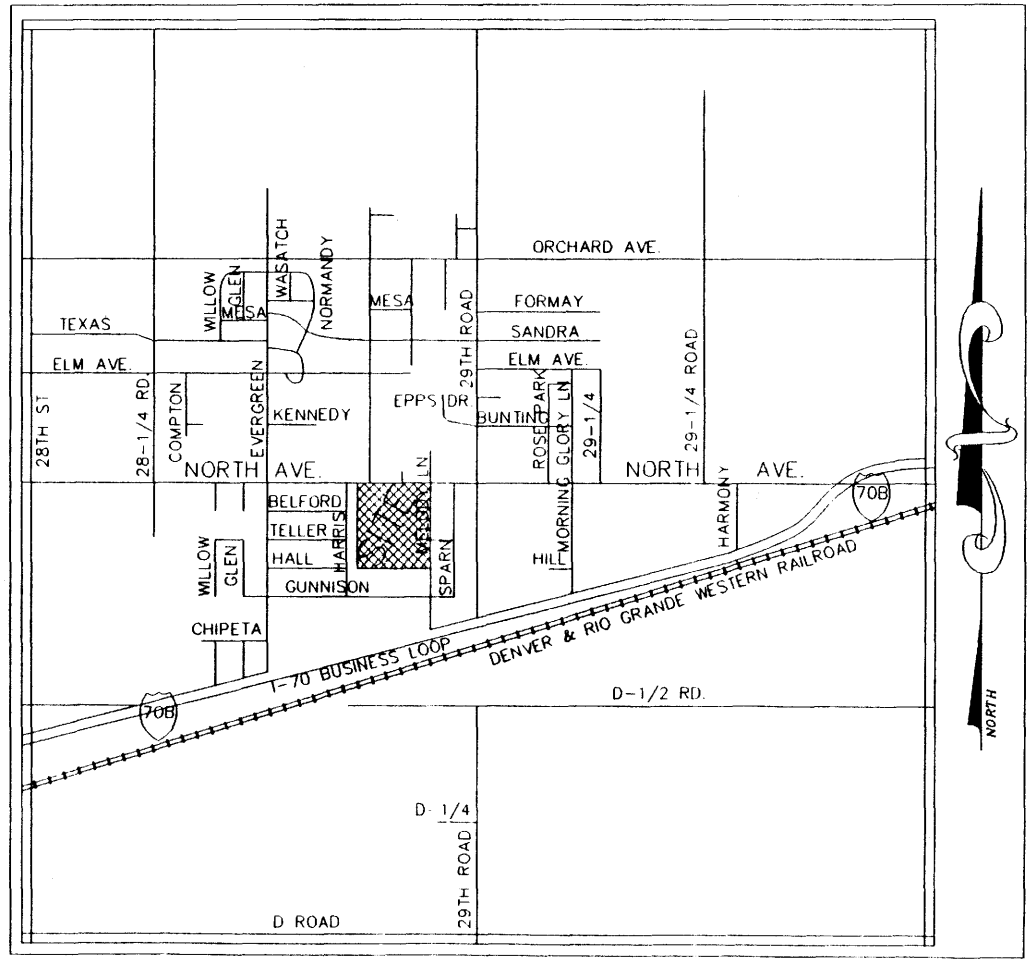
B. SITE AND MAJOR BASIN DESCRIPTION
SITE IS CURRENTLY 12.85 ACRES WITH AN ADDITIONAL .75 ACRES BEING ADDED FOR THE PLANNED EXPANSION. THE STORM SEWER SYSTEM IN MELODY LANE IS USED FOR DRAINAGE.

II. EXISTING DRAINAGE CONDITIONS

THE EXISTING 12.85 ACRES DRAINS TO MELODY LANE. NO INFLOW OCCURS FROM UPSTREAM. AN ONSITE STORM DRAIN SYSTEM LOCATED ON THE WEST AND SOUTH OF WAL-MART PICKS UP DRAINAGE AND CONVEYS 7.66 ACRES OF RUNOFF TO THE MELODY LANE SYSTEM. THIS SYSTEM RANGES FROM 18" TO 24" IN DIAMETER. THE MINIMUM SLOPE OF THE 24" PIPE IS 0.15%. THE REMAINDER OF THE SITE DRAINS DIRECTLY TO INLETS ALONG MELODY LANE.

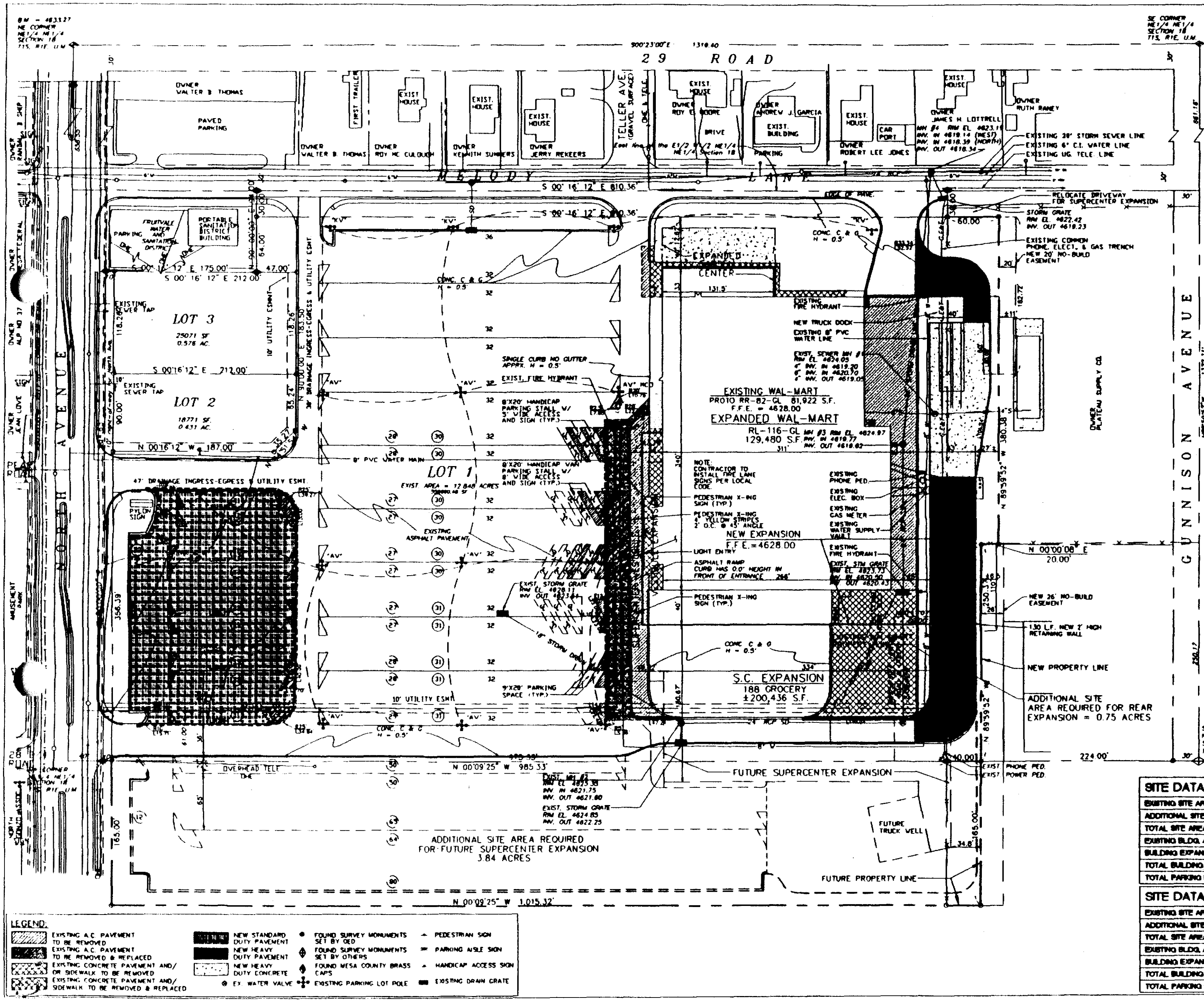
THE ADDITIONAL .75 ACRES IN THE REAR IS DEVELOPED COMMERCIALLY AND DRAINS TO THE SOUTH.

THE ADDITIONAL 3.84 ACRES FOR THE SUPERCENTER PROJECT IS UNDEVELOPED AND DRAINS TO THE SOUTH. THE SOILS IN THE AREA ARE SLIGHTLY SANDY SILTY CLAYS AND WOULD APPEAR TO FALL IN HYDROLOGIC TYPE C OR D.



VICINITY MAP

2/23/94



GRAPHIC SCALE

NOTES:

ALL EXISTING LIGHTS TO BE RELAMPED AND RELENSED WITHIN WAL-MART TAX-MAP AREA PER MANUFACTURE'S RECOMMENDATIONS.

RELAMP AND RELENSE - 50 HEADS

BRONZE POLES TO BE PAINTED BLACK OR MATCH EXISTING POLES IF IN BAD SHAPE. (FADED OR SCRATCHED)

REFER TO ARCHITECTURAL BUILDING PLANS AND SPECIFICATIONS FOR EARTHWORK AND COMPACTION REQUIREMENTS FOR ALL SLABS AND BUILDING FOUNDATIONS.

CONTRACTOR SHALL REFER TO ARCHITECT PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULE SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.

THE SITEWORK FOR THIS PROJECT SHALL MEET OR EXCEED THE "WAL-MART STANDARD SITEWORK SPECIFICATIONS" PROVIDED BY WAL-MART.

10'x36' COMPACTOR PAD 6" CONCRETE WITH WWF (6x6-6x6) TOP SURFACE FLUSH WITH PAVEMENT. COMPACTOR WILL BE PROVIDED AND INSTALLED BY OTHERS.

ALL CURBING IS TO BE WAL-MART TYPE "A" CURB UNLESS OTHERWISE NOTED ON PLANS. (SEE DETAIL ON SHEET 7)

ALL HANDICAP SPACES MUST HAVE HANDICAP SIGNS POSTED THAT MEETS CITY AND STATE REQUIREMENTS.

MASONRY CONTRACTOR SHALL COORDINATE WITH IRRIGATION CONTRACTOR FOR LOCATION OF SLEEVING.

SITE DATA	WAL-MART W/ EXPANSION
EXISTING SITE AREA	12.85 ACRES
ADDITIONAL SITE AREA	0.75 ACRES
TOTAL SITE AREA	13.60 ACRES
EXISTING BLDG. AREA	81,922 S.F.
BUILDING EXPANSION	47,558 S.F.
TOTAL BUILDING AREA	129,480 S.F.
TOTAL PARKING PROVIDED	888 (6.91/1,000 SF)

SITE DATA	EXPANDED WAL-MART W/ SUPERCENTER
EXISTING SITE AREA	13.60 ACRES
ADDITIONAL SITE AREA	3.84 ACRES
TOTAL SITE AREA	17.44 ACRES
EXISTING BLDG. AREA	129,480 S.F.
BUILDING EXPANSION	±70,956 S.F.
TOTAL BUILDING AREA	±200,436 S.F.
TOTAL PARKING PROVIDED	987 (5.13/1,000 SF)

NOTE: PARKING RATIO FOR WAL-MART W/ EXPANSION BASED ON 116,087 S.F. BASE BUILDING AREA
PARKING RATIO FOR WAL-MART W/ SUPERCENTER BASED ON ±192,400 S.F. BASE BUILDING AREA

SITE PLAN

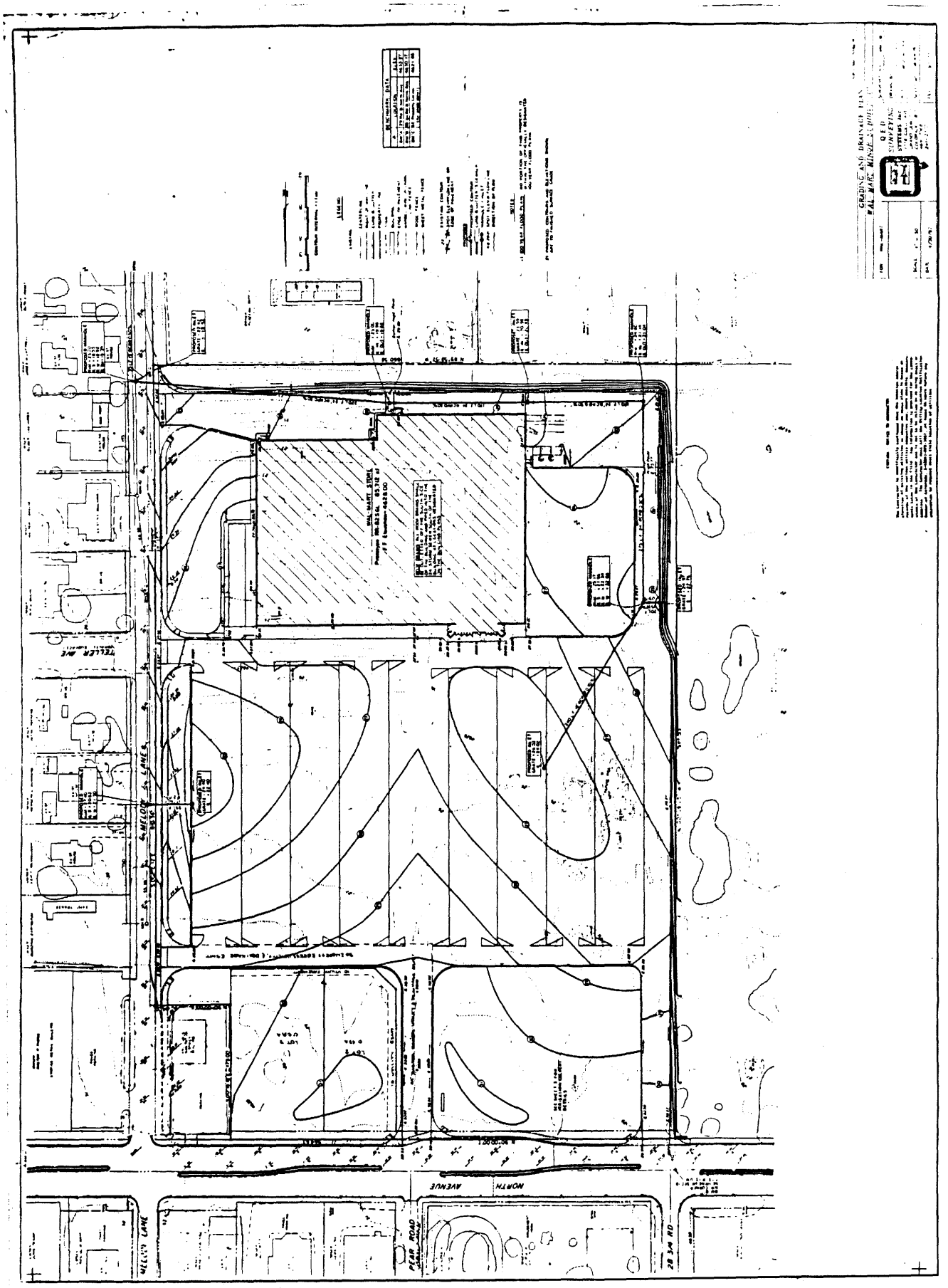
NORTH AVE. & MELODY LN.
GRAND JUNCTION, COLORADO

WAL★MART

DUNAWAY ASSOCIATES WEST INC.

JOB NO. 9321300
DESIGN BY: FSW
CHECKED BY: FSW
DATE: FEB. 14, 1994
SCALE: 1" = 100'
SHEET 2 OF 8 SHEETS

4



Pre-Development Drainage Map

III. PROPOSED DRAINAGE CONDITIONS

A. CHANGES IN DRAINAGE PATTERNS

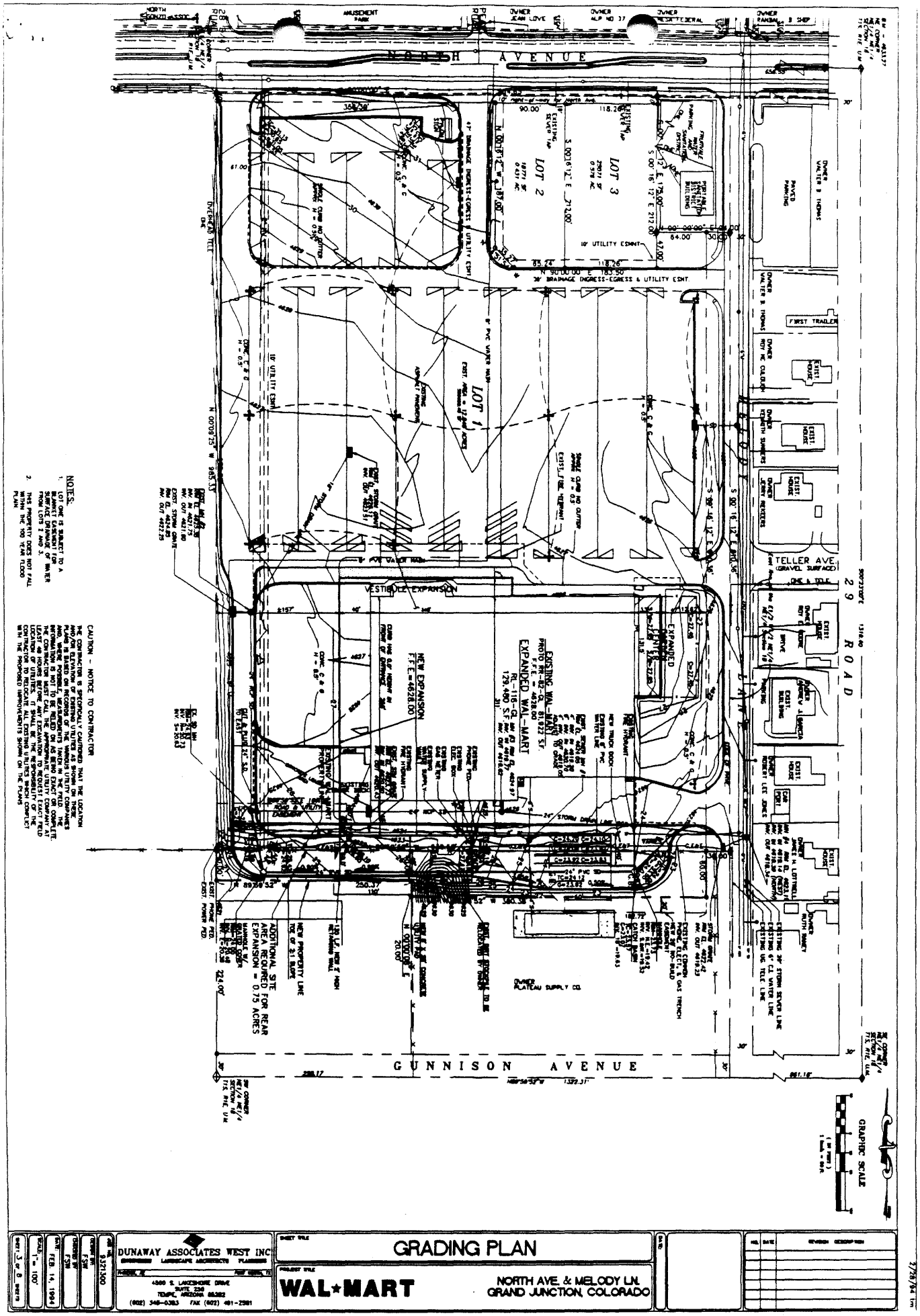
THE ONLY CHANGE IN DRAINAGE PATTERN WILL BE THE ADDITIONAL .75 ACRES IN THE REAR OF WAL-MART. INSTEAD OF DRAINING TO THE SOUTH AS IT DOES TODAY, THIS SMALL AREA WILL BE INCORPORATED INTO THE ONSITE 24" STORM DRAIN.

THE FRONT PARKING AREA THAT WILL BE PAVED FOR EXPANSION WAS ACCOUNTED FOR IN THE PREVIOUS STUDY BY ARMSTRONG IN 1988. NO INCREASE IN RUNOFF IS EXPECTED.

WHEN THE ADDITIONAL 3.84 ACRES OF SUPERCENTER PARKING IS DEVELOPED IN THE FUTURE, A DETENTION BASIN SYSTEM WILL BE UTILIZED. THIS WILL ELIMINATE ADVERSE EFFECTS DOWNSTREAM.

B. MAINTENANCE

THE EXISTING ONSITE 24" STORM DRAIN BEHIND WAL-MART WILL BE RELOCATED AND WILL HANDLE THE ADDITIONAL .75 ACRES FOR THE EXPANSION. THE RELOCATED SLOPE WILL BE .18%. ALL MAINTENANCE ON THE ONSITE SYSTEM WILL BE THE RESPONSIBILITY OF WAL-MART.



Post Development Drainage Map

IV. DESIGN CRITERIA AND APPROACH

A. GENERAL DESIGN CONSIDERATIONS
1. PREVIOUS DRAINAGE STUDIES - ARMSTRONG CONSULTANTS 1988 INCLUDED UNDER VI. REFERENCES IN THIS REPORT.
2. DESIGN CRITERIA AND APPROACH
   a. PROVE ADDITIONAL .75 ACRES WILL NOT HAVE ADVERSE EFFECT ON ONSITE STORM DRAINAGE SYSTEM AS DESIGNED BY ARMSTRONG. (SEE FIGURE 1A & 1B).
   b. RELOCATE 24" AT SLOPE GREATER THAN OR EQUAL TO MINIMUM SLOPE IN PIPE TO NOT ADVERSELY AFFECT ONSITE DRAINAGE.
   c. PROVIDE PARAMETERS FOR FUTURE STORM WATER MANAGEMENT OF FUTURE SUPERCENTER PARKING AREA ESTABLISHING DETENTION STORAGE VOLUMES.

B. HYDROLOGY
1. THE 2 AND 100 YEAR STORMS WERE CONSIDERED FOR THE EXPANSION AREA AND THE FUTURE SUPERCENTER PARKING AREA USING THE RATIONAL FORMULA.
2. TRIANGULAR HYDROGRAPHS WERE GENERATED TO ANALYZE EFFECTS OF THE ADDITIONAL .75 ACRES OF RUNOFF IN THE ONSITE 24" STORM DRAIN.
3. A DETENTION STORAGE FORMULA DERIVED FROM TRIANGULAR HYDROGRAPHS WAS UTILIZED TO DETERMINE FUTURE STORAGE REQUIREMENTS FOR THE FUTURE SUPERCENTER PARKING AREA.

C. HYDRAULICS
1. PIPES WERE SIZED USING THE MANNINGS EQUATION.
2. INLETS WERE SIZED USING THE NEEMAH FOUNDRY CURVES.

V. RESULTS AND CONCLUSIONS

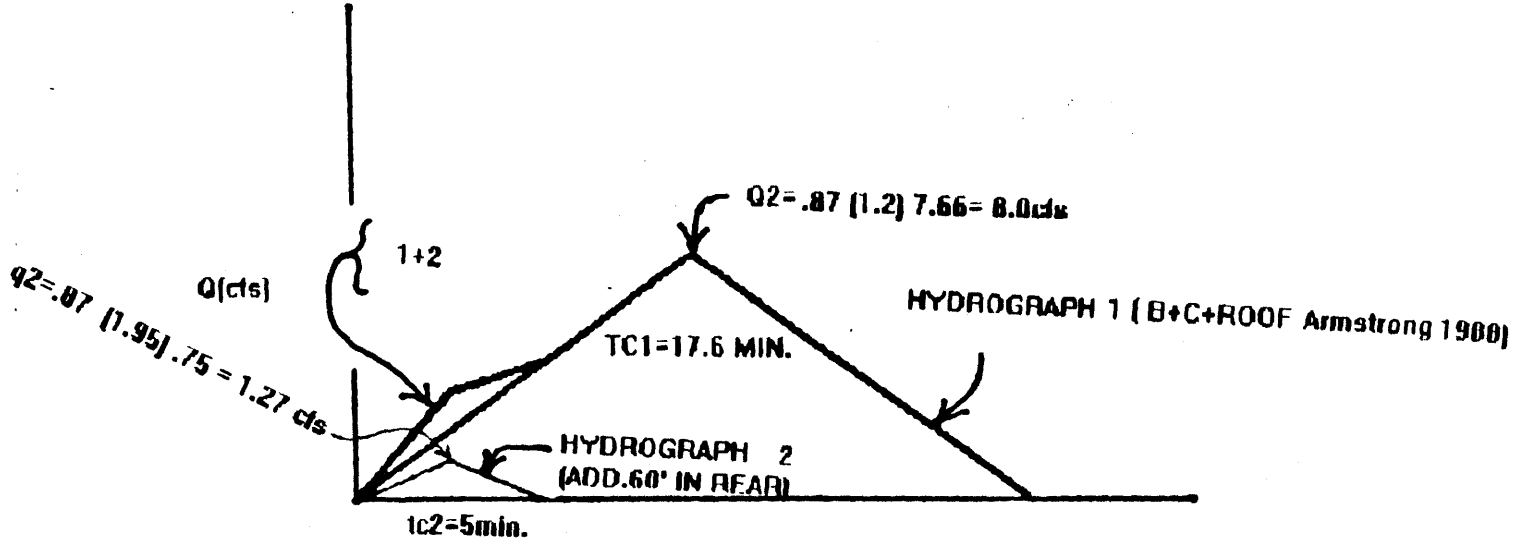
A. RESULTS 2 AND 100 YEAR STORM

1. DISCHARGE OUT OF EXISTING 24" STORM DRAIN
   EXISTING 2 YEAR= 8.0 CFS
   EXISTING 100 YEAR = 20.45 CFS
2. DISCHARGE FROM EXISTING SUPERCENTER PARKING SITE
   EXISTING 2 YEAR = 1.24 CFS
   EXISTING 100 YEAR = 5.99 CFS
3. DISCHARGE FROM PROPOSED 24" STORM DRAIN
   PROPOSED 2 YEAR = 8.0 CFS DUE TO OFFSETTING PEAKS OF HYDROGRAPHS.
   PROPOSED 100 YEAR = 20.45 CFS DUE TO OFFSETTING PEAKS OF HYDROGRAPHS.
4. DISCHARGE FROM FUTURE SUPERCENTER PARKING SITE PROPOSED 2 YEAR = 1.24 CFS UTILIZING MINIMUM 2,577 C.F. OF RETENTION STORAGE.
   PROPOSED 100 YEAR = 5.99 CFS UTILIZING MINIMUM 4,550 C.F. OF RETENTION STORAGE.

B. CONCLUSIONS

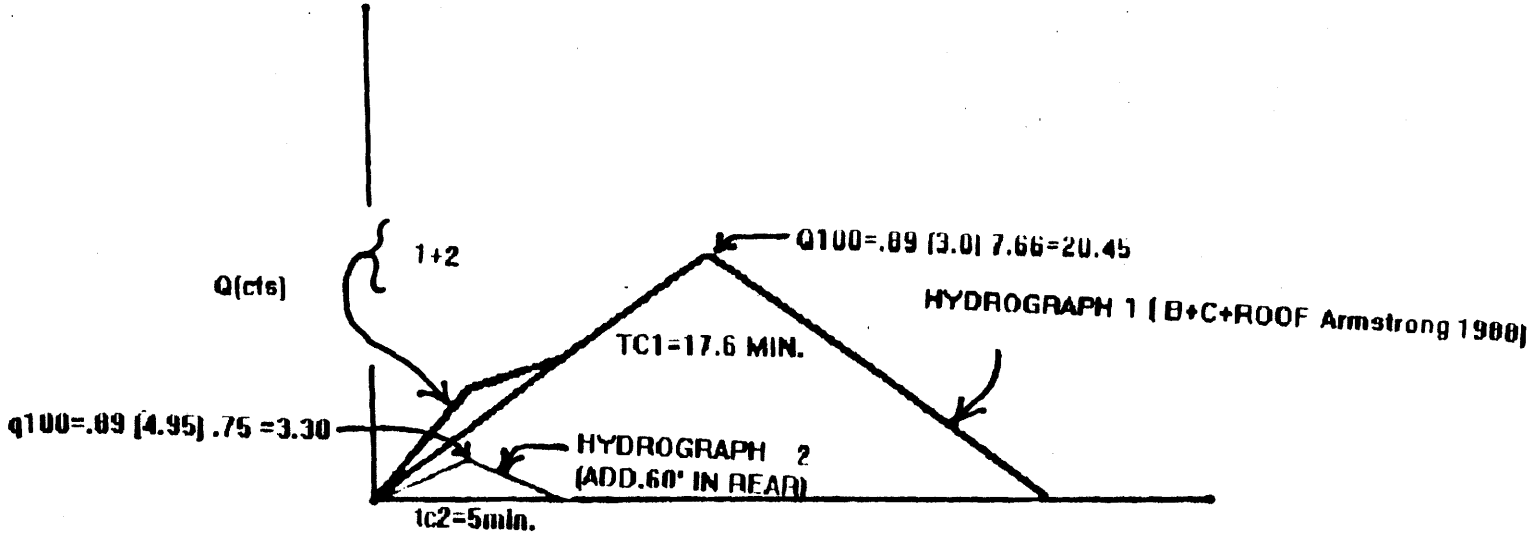
1. THE EXPANSION OF THE WAL-MART WILL NOT INCREASE PEAK RUNOFF RATES AS PREDICTED IN THE ARMSTRONG STUDY OF 1988.
2. IF DETENTION BASINS ARE IMPLEMENTED IN THE FUTURE DEVELOPMENT OF THE SUPERCENTER PARKING SITE AS OUTLINED ABOVE, HISTORICAL RUNOFF RATES FROM THIS 3.84 ACRES SITE WILL NOT BE INCREASED.
3. THE RELOCATION OF THE 24" STORM DRAIN WILL NOT ADVERSELY AFFECT THE CARRYING CAPACITY SINCE THE MINIMUM PROPOSED SLOPE OF -------% EXCEEDS THE MINIMUM EXISTING SLOPE -----%.
4. ADEQUATE INLETS AND LATERALS HAVE BEEN DESIGNED FOR THE ADDITIONAL 0.75 ACRE SITE IN THE REAR OF THE SITE.

FIGURE 1A EFFECT OF DEVELOPMENT OF 0.75 ACRE STRIP IN REAR



2 YEAR

FIGURE 1B EFFECT OF DEVELOPMENT OF 0.75 ACRE STRIP IN REAR



100 YEAR

VI. REFERENCES

ARMSTRONG 1988 STUDY (INCLUDED IN APPENDIX)
CITY CHARTS (INCLUDED IN ARMSTRONG STUDY)

VII. APPENDICES

A. EXISTING RUNOFF

1. IN 24" IN REAR (SEE ARMSTRONG STUDY)
2. EXISTING FROM FUTURE SUPERCENTER PARKING
   a. 2 YEAR
   SLOPE - 1.% LENGTH = 1,150 C = .43 A = 3.84 AC
   .5 -.33
   TC = 1.8 (1.1-C) D S
   TC = 40.89 MIN.
   I = .75 IN/HR FROM CITY CHART
   Q = CIA = 1.24 CFS
   b. 100 YEAR
   C = .65
   TC = 27.5 MIN FROM ABOVE EQUATION
   I = 2.4 IN/HR
   Q = .65 (2.4) 3.84 = 5.99 CFS

B. PROPOSED RUNOFF

1. IN PROPOSED 24" IN REAR (SEE 2 AND 24 YEAR HYDROGRAPH FIGURES 1A AND 1B).
2. PROPOSED FROM SUPERCENTER PARKING AREA
   a. 2 YEAR
   SLOPE = 1% LENGTH = 1,150 C = .87 A = 3.84 AC
   TC = 14 MIN. FROM ABOVE EQUATION
   I = 1.3 IN/HR FROM CHART
   Q = .87 (1.3)3.84 = 4.34 CFS
   b. 100 YEAR
   C = .89
   TC = 12.82 MIN. FROM ABOVE EQUATION
   I = 3.5 IN/HR FROM CHART
   Q = .89 (3.5) 3.84 = 11.96 CFS
3. DRAINAGE TO NEW SOUTHWEST GRATE INLET
   AREA = 1.28 TC = 5 MIN I_{100} = 4.95 IN/HR C = .87
   Q = CIA = 1.29 CFS
4. DRAINAGE TO NEW SOUTHEAST GRATE INLET
   AREA = .3 AC TC = 5 MIN I_{100} = 4.95 IN/HR C = .87
   Q = CIA = 1.29 CFS

C. & D. DETENTION BASIN CALCULATIONS

1. 2 YEAR
   PROPOSED TC = 14 MIN = .23 HR
   Q PROPOSED =- 4.34 CFS
   Q EXISTING = 1.24 CFS
   .23 (4.34-1.24) = .71 CFS HRS = .71 AC IN = 2,557 CF
2. 100 YEAR
   PROPOSED TC = 12.82 MIN. = .21 HR
   Q PROPOSED TC = 11.96 CFS
   Q EXISTING = 5.99 CFS
   .21 (11.96-5.99)
   1.25 ACIN = 4550 C.F.

E. STREET FLOW
NO CHANGE (SEE ARMSTRONG STUDY 1988).

F. INLETS
FROM NEEMAH GRAPH IN ARMSTRONG STUDY
SW INLET 5.51 CFS USE R-3067 Q CAP = 7.2 AT .5" DEPTH
SE INLET 1.29 CFS USE SAME R-3067 GRATE INLET

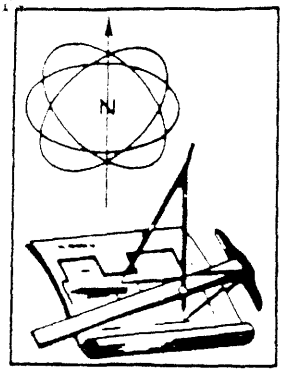
G. STORM DRAINS

1. FROM FIGURE 1A & 1B PEAK RUNOFF RATES WILL NOT BE INCREASED IN EXISTING 24".
2. PROPOSED RELOCATION OF 24" IS AT .18% STEEPER THAN MINIMUM EXISTING SLOPE OF .15%.
3. CAPACITY OF 18" LATERAL FROM SE INLET AT .55%
   MANNINGS EQUATION N = .013
   QCAP = 7.79 CFS Q100 TO INLET 1.29 CFS

H. N/A

I. N/A

J. MISCELLANEOUS HYDRAULIC CALCULATIONS 1988 ARMSTRONG CONSULTANTS STUDY ON FOLLOWING PAGES.



ARMSTRONG CONSULTANTS, INC.

861 Rood Avenue — Grand Junction, Colorado 81501 — (303) 242-0101

COPY

To: Don Newton
Grand Jct. City Engineer

Attn:

Date: June 1, 1988
Job No. 885111
Re: Wal-Mart

Gentlemen:

I am sending you ☑ Attached ☐ Under separate cover

Sent by: ☐ Mail ☑ Messenger

Copies	Date	Description
1	5/4/88	Drainage Calcs.
1	5/5/88	Drainage Area Map

These are transmitted as checked:

- ☑ As requested
- ☐ For review and comment
- ☐ For approval
- ☐ Approved as submitted
- ☐ Approved as noted
- ☐ Returned for corrections
- ☐ For your use
- ☐ For bids due .....
- ☐ .....
- ☐ Prints returned after loan to us

Remarks:

If enclosures are not as listed, please notify us at once.

Signed Tom Logue

CONSULTING ENGINEERS

ARMSTRONG CONSULTANTS, INC.
861 Rood Avenue
Grand Junction, Colorado 81501
(303) 242-8101

CALCULATED BY RPR
DATE 5-4-88
CHECKED BY _____

JOB NO 885111
PROJECT Wal-Mart/G.J.
DESIGN STORM 10yr.

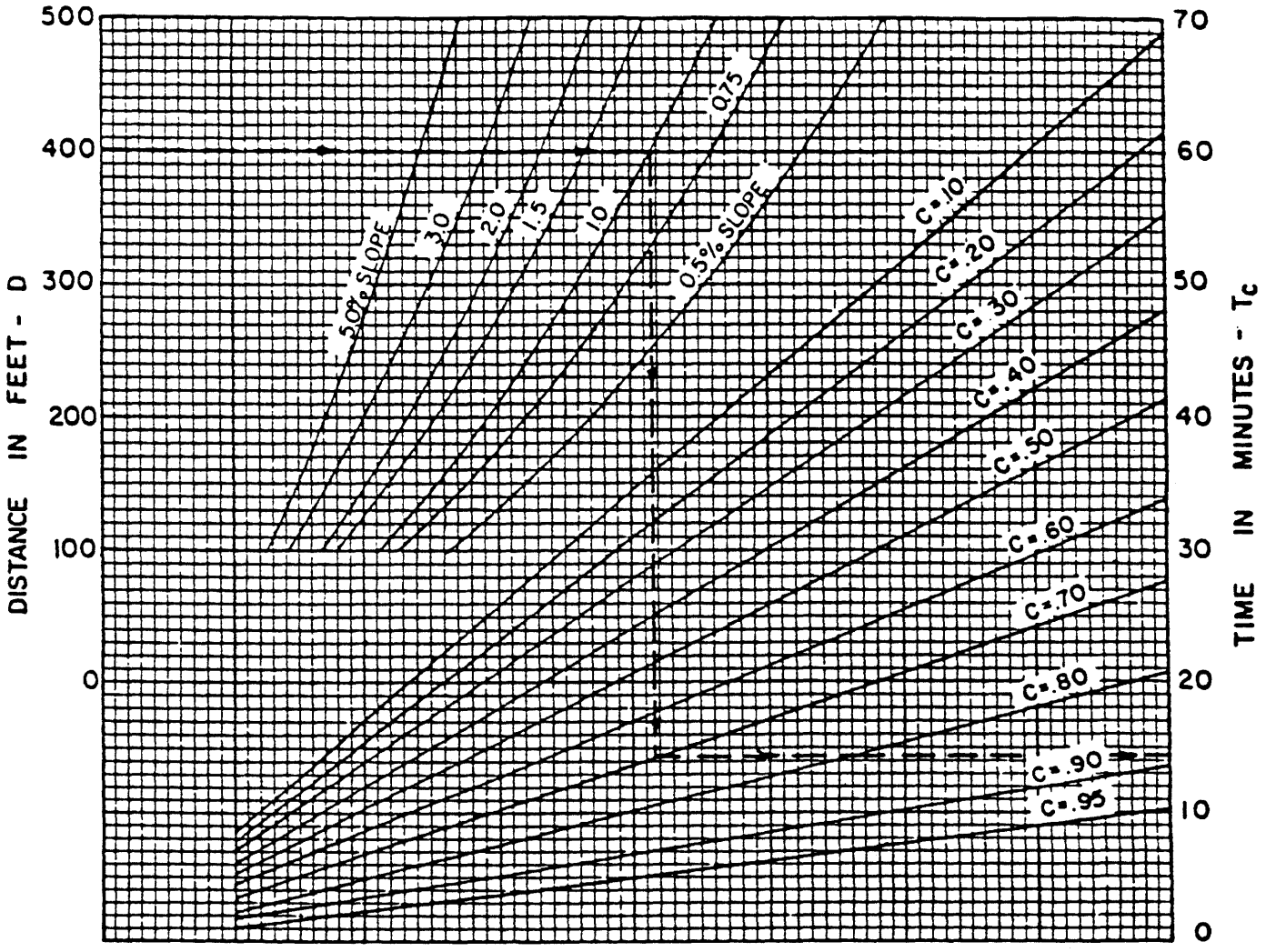
TIME OF CONCENTRATION

Note: See attached map for drainage areas and routes for tc's.

$t_c = t_i + t_t$

SUB-BASIN DATA			INITIAL/OVERLAND TIME (t_i)			TRAVEL TIME (t_t)				t_c CHECK (URBANIZED BASINS)			FINAL t_c	REMARKS
DESIG: (1)	AREA Ac (2)	C_5 (3)	LENGTH Ft (4)	SLOPE % (5)	t_i Min (6)	LENGTH Ft (7)	SLOPE % (8)	VEL. FPS (9)	t_t Min (10)	COMP. t_c (11)	TOTAL LENGTH Ft (12)	$t_c = (L/180)+10$ Min (13)	Min (14)	
A	4.53	0.88	40	1.00	3	630	0.50	1.1	9.5	12.5	670	13.7	12.5	East RE Inlet
B	3.86	0.88	290	0.80	6.5	360	0.50	1.1	5.4	11.9	650	13.6	11.9	Parking Lot Inlet
C	1.89	0.88				515	0.50	1.1	7.8	7.8	515	12.9	7.8	West RE Inlet
D	1.90	0.88				1000	0.80	1.3	12.8	12.8	1000	15.6	12.8	Melody Lane Inlet
B+C	5.75	0.88			13.6 to Inlet	240 in pipe	0.70	6	0.7	14.3			14.3	in Pipe
B+C & roof	7.66	0.88			14.3	895 in pipe	0.30	4.5	3.3	17.6			17.6	in pipe

TIME OF CONCENTRATION ≃ T_c
FOR OVERLAND FLOW



BASED ON EQUATION

$$T_c \approx \frac{1.8\,(1.1-C)\,\sqrt{D}}{\sqrt[3]{S}}$$

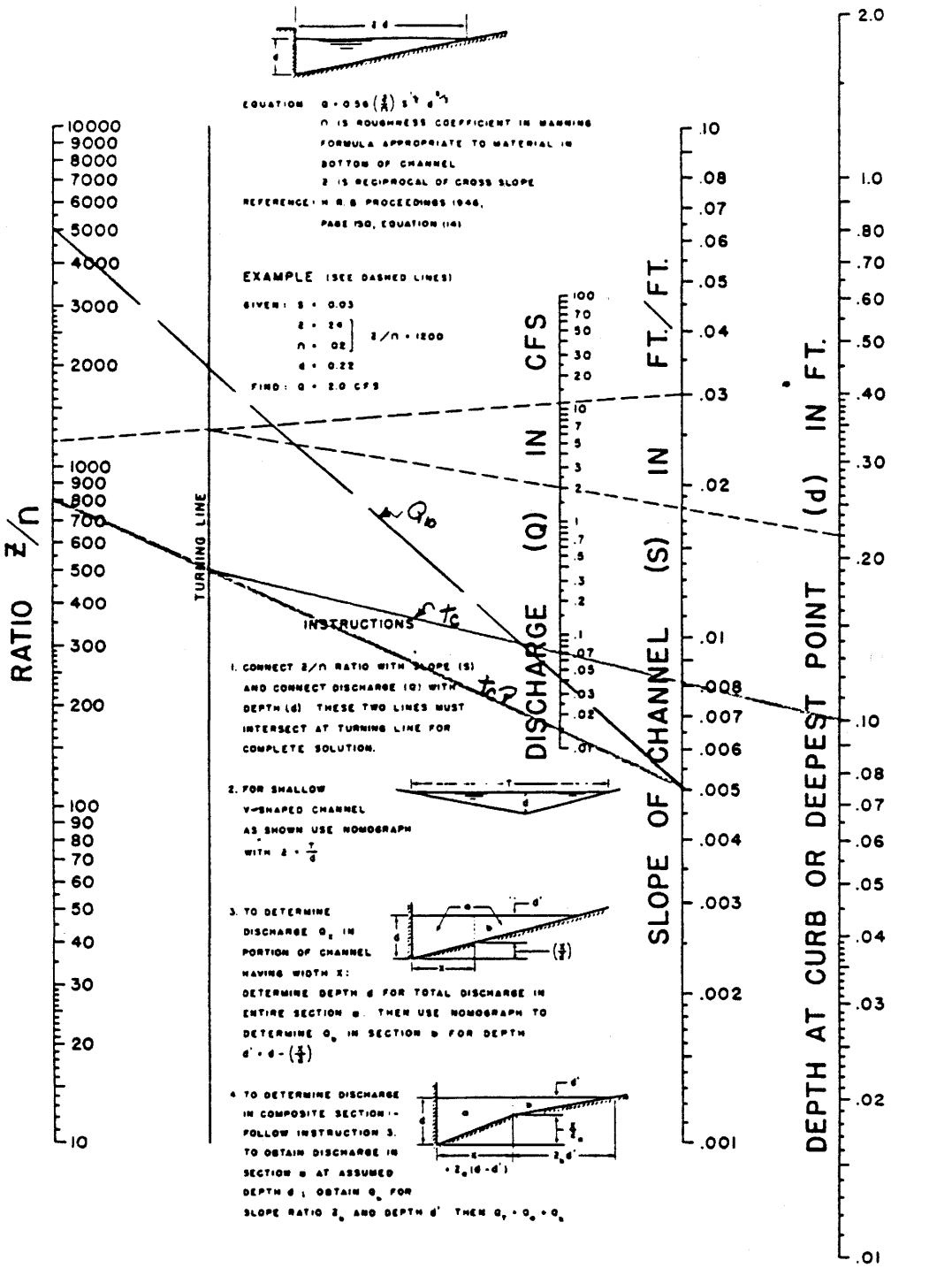
C = Coefficient of runoff
D = Distance of flow in feet
S = Slope in %

EXAMPLE

D = 400'
S = 1%
C = 0.70
T_c = 15 Minutes

Wal-Mart

CHART 29



NOMOGRAPH FOR FLOW IN TRIANGULAR CHANNELS

For 2' Conc. C & G & to find t_c

$z = 12$ for 1st 1 ft. of spread

$n = 0.015$

$\therefore \frac{z}{n} = 800$ for determining t_c

& assume $d \approx 0.10$ for determining t_c

$\therefore$ for $S = 0.5\%$ (Typ.) & $d = 0.10$, $Q = 0.07$ & Spread = 1.2'

& $V_{t_c} = \frac{Q}{A} = \frac{0.07}{0.06} = 1.1$ fps

For Q_{10} & 2' C & G

$z = 12$ for 1st 1 ft. of spread

$n = 0.015$

$\frac{z}{n} = 800$ & $d = 1.67''$ for gutter flow

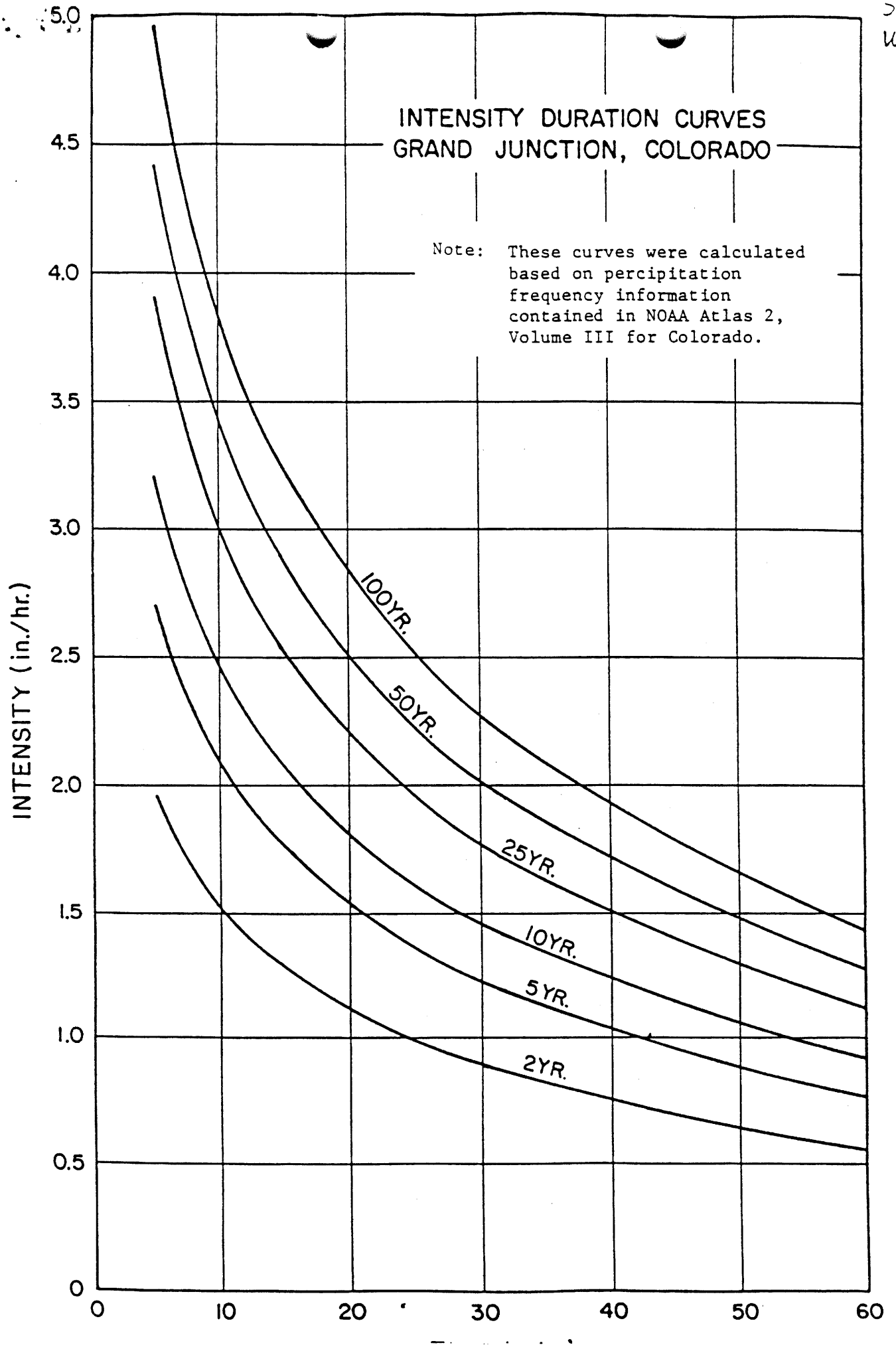
$\therefore$ for $S = 0.5\%$ (Typ.)

$Q_{gutter} = 0.2$ cfs

$\therefore$ Reduce Q_{10} by 0.2 cfs

& solve for asphalt flow spread w/ $n = 0.02$ (conc.) & $z = 100$ (1°

Ont. 4 of 11
Wal-Mart



Sht. 5 of 11
Wal-Mart

RUNOFF COEFFICIENTS FOR RATIONAL METHOD

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	C, Runoff Coefficients FREQUENCY 2	5	10	100
Business:					
Commercial Areas	95	.87	.87	.88	.89
Neighborhood Areas	70	.60	.65	.70	.80
Residential:					
Single-Family	40	.40	.45	.50	.60
Multi-Unit (detached)	50	.45	.50	.60	.70
Multi-Unit (attached)	70	.60	.65	.70	.80
½ Acre Lot or Larger	30	.30	.35	.40	.60
Apartments	70	.65	.70	.70	.80
Industrial:					
Light Areas	80	.71	.72	.76	.82
Heavy Areas	90	.80	.80	.85	.90
Parks, Cemeteries:	7	.10	.10	.35	.60
Playgrounds:	13	.15	.25	.35	.60
Schools:	50	.45	.50	.60	.70
Railroad Yard Areas:	40	.40	.45	.50	.60
Undeveloped Areas:					
Historic Flow Analysis- Greenbelts, Agricultural	2	(See "Lawns")			
Offsite Flow Analysis (when land use not defined)	45	.43	.47	.55	.65
Streets:					
Paved	100	.87	.88	.90	.93
Gravel	13	.15	.25	.35	.65
Drive and Walks:	96	.87	.87	.88	.89
Roofs:	90	.80	.85	.90	.90
Lawns, Sandy Soil:	0	.00	.01	.05	.20
Lawns, Clayey Soil:	0	.05	.10	.20	.40

ARMSTRONG CONSULTANTS, INC.
861 Rood Avenue
Grand Junction, Colorado 81501
(303) 242-8101

CALCULATED BY RPR
DATE 5-4-88
CHECKED BY _____

JOB NO 885111
PROJECT Wal-Mart/G.J
DESIGN STORM 10yr. w/ 100yr. checks in sumps

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

	STREET	DESIGN POINT	DIRECT RUNOFF: AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C·A (AC)	I IN/HR	Q (CFS)	TOTAL RUNOFF: t_c (MIN)	Σ(C·A) (AC)	I (IN/HR)	Q (CFS)	STREET: SLOPE (%)	STREET FLOW (CFS)	PIPE: DESIGN FLOW (CFS)	SLOPE (%)	PIPE SIZE	TRAVEL TIME: LENGTH (FT)	VELOCITY (FPS)	t_t (MIN)	REMARKS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1	East R Inlet		A	4.53	0.88	12.5	3.99	I_{10} = 2.25	Q_{10} = 9.0														
2	East R Inlet		A	4.53	0.88	12.5	3.99	I_{100} = 3.50	Q_{100} = 14.0														
3	Parking Lot Inlet		B	3.86	0.88	11.9	3.40	I_{10} = 2.30	Q_{10} = 7.8														
4	Parking Lot Inlet		B	3.86	0.88	11.9	3.40	I_{100} = 3.55	Q_{100} = 12.0														
5	West R Inlet		C	1.89	0.88	7.8	1.66	I_{10} = 2.70	Q_{10} = 4.5														
6	West R Inlet		C	1.89	0.88	7.8	1.66	I_{100} = 4.50	Q_{100} = 7.5														
7	Melody Lane S. Inlet		D	1.90	0.88	12.8	1.67	I_{10} = 2.18	Q_{10} = 3.6														
8	24" pipe W. of Bldg		B + C	5.75	0.88	14.3	5.06	I_{10} = 2.12	Q_{10} = 10.7														
9	24" pipe S. of Bldg.		B+C + roof	7.66	0.88	17.6	6.74	I_{10} = 1.93	Q_{10} = 13.0														
10																						
11																						

ARMSTRONG CONSULTANTS, INC.
Engineers, Planners, Surveyors, Soil Testing, Material Testing, Geotechnical Engineers
861 Rood Avenue
Grand Junction, Colorado 81501
(303) 242-0101

PIPE DESIGN CALCULATIONS

MADE RPR DATE 5-4-00
CHECKED _____ DATE _____
JOB NO 885111 Wal-Mart SHEET 7 of 11

Structure Locat.			HYDRAULIC GRADE LINE			Pipe Design						
Station	Dist. ft.	Side	Head Losses @ Structures & Normal Flow Depths	Structure	HGL Elev.	D In	L ft	Slope %	V fps	Cap. cfs	Invert Elev. Upper	Invert Elev. Lower
East R Inlet	Q_{10}=	9.0	Q_{10}=9.0 vs Q_{cap} = 10.5			15	55	2.00	9.0	10.5	22.40	21.30
to Melody Lane						Cover 3'						
Sewer						Class R.C.P. Cl. II n=0.012						
Parking Lot Inlet	Q_{10}=	7.8	Q_{10}=7.8 vs Q_{cap} = 10.1			18	240	0.70	5.8	10.1	24.02	22.34
to 1st M.H.						Cover 3'						
						Class R.C.P. Cl. II n=0.012						
West R Inlet	Q_{10}=	4.5	Q_{10}=4.5 vs Q_{cap}=5.2			15	30	0.50	4.5	5.2	22.76	22.61
to 1st M.H						Cover 1'						
						Class R.C.P. Cl. II n=0.012						
Pipe West	Q_{10}=	10.7	Q_{10}=10.7 vs Q_{cap} = 14.5			24	260	0.30	4.5	14.5	21.86	21.08
of Bldg.						Cover 3'						
						Class R.C.P. Cl. II n=0.012						
Pipe South	Q_{10}=	13.0	Q_{10}=13.0 vs Q_{cap} = 14.5			24	300	0.30	4.8	14.5	20.98	20.08
of Bldg.						Cover 4'						
						Class R.C.P. Cl. II n=0.012						
Pipe South	Q_{10}=	13.0	Q_{10}=13.0 vs Q_{cap} = 14.5			24	355	0.30	4.8	14.5	19.98	18.92
of Bldg.						Cover 5'						
to Melody Sewer						Class R.C.P. Cl. II n=0.012						
Melody S.	Q_{10}=	3.6	Q_{10}=3.6 vs Q_{cap} = 5.2			15	45	0.50	4.5	5.2	19.32	19.10
Inlet to Melody						Cover 2'						
Sewer						Class R.C.P. Cl. II n=0.01						

ARMSTRONG CONSULTANTS, INC.
861 Rood Avenue
Grand Junction, Colorado 81501
(303) 242-8101

Capacities

INLET CALCULATIONS

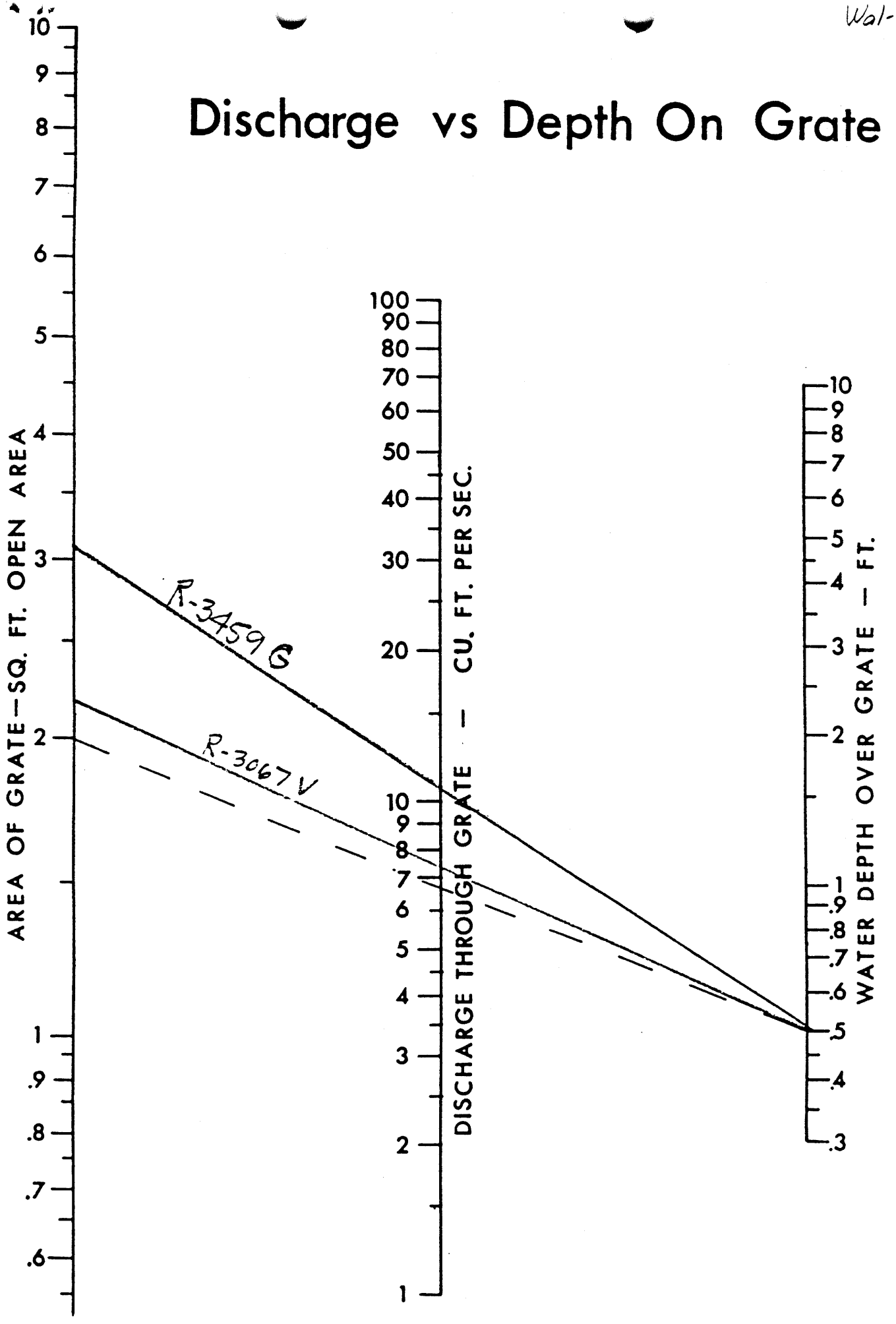
MADE _____ DATE 4-2
CHECKED _____ DATE _____
JOB NO 885111 SHEET 8 of 11
Wal-Mart

Location			Runoff Discharge							Gutter Discharge						Inlet Discharge			
Station	Dist. ft.	Side	Area A.	C	CA	Tot. CA	T Min.	I In/hr	Q cfs	L-SL ft/ft	X-SL ft/ft	By Pass	Q cfs	Y ft	Sprd ft	Type	Inter cfs	By Pass	By Pass
East Pt			4.53	0.88	3.99	3.99	12.5	I_{10}= 2.25	Q_{10}= 9.0	0.5%	≈1%	Sump	Q_{10}≈ 4.5	0.38	24	R-3067 V	Q_{10}= 9.0	0	
Inlet								I_{100}= 3.50	Q_{100}= 14.0	Conc. gutter = 0.14' depth of flow from each direction						Q_{grate} = 7.5 $Q_{curb opening}$ = 3.3 for d=6			
(Sump)																N.G.			
Parking			3.86	0.88	3.40	3.40	11.9	I_{10}= 2.30	Q_{10}= 7.8	≈1%	≈1%	Sump	Q_{10}= 7.8	N/A	N/A	R-3154 G	Q_{10}= 7.8	0	
Lot Inlet								I_{100}= 3.55	Q_{100}= 12.0	Area Inlet w/no gutter						d<0.3' for Q_{10} = 7.8 d=0.6' for Q_{100} = 12.0			
(Sump)																N.G.			
West Pt			1.89	0.88	1.66	1.66	7.8	I_{10}= 2.70	Q_{10}= 4.5	0.5%	≈1%	Sump	Q_{10}≈ 2.25	0.32	18	R-3067 V	Q_{10}= 4.5	0	
Inlet								I_{100}= 4.50	Q_{100}= 7.5	Conc. gutter = 0.14' depth of flow from each direction						Q_{grate} = 7.5 $Q_{curb opening}$ = 3.3 for d=6			
(Sump)																N.G.			
Melody			1.90	0.88	1.61	1.67	12.8	I_{10}= 2.18	Q_{10}= 3.6	0.8%	≈1%		Q_{10}= 3.6	0.34	20	R-3067 V	Q_{10}= 3.6	0	
Lane S. Inlet										Conc. gutter = 0.14' depth of flow						Q_{grate} = 6.0 $Q_{curb opening}$ = 1.7 for d=0			
																N.G.			
																N.G.			
																N.G.			
																N.G.			

1 163 2C

Wal-Mart

Discharge vs Depth On Grate



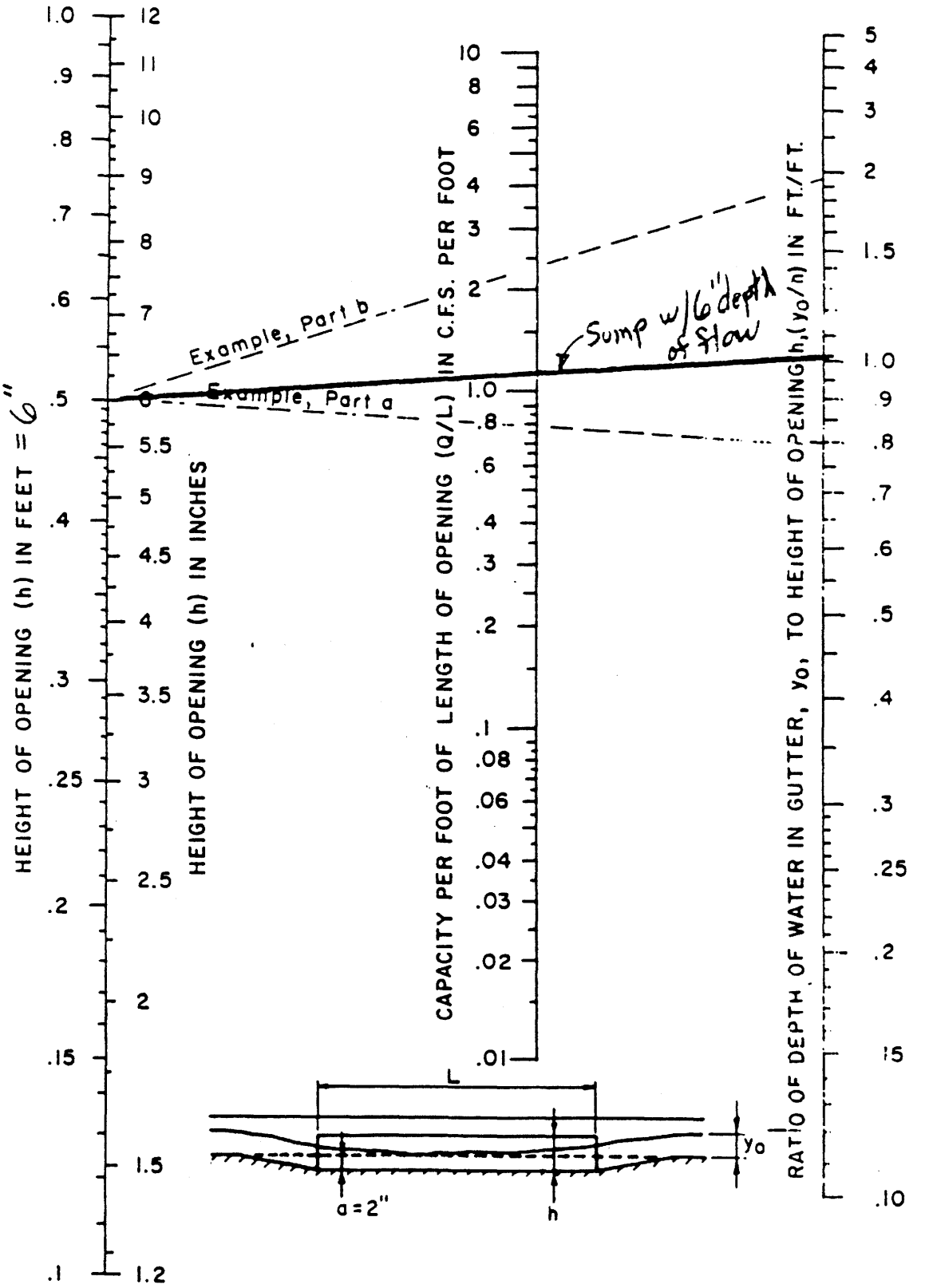


FIGURE 3-1. NOMOGRAPH FOR CAPACITY OF CURB OPENING INLETS IN SUMPS, DEPRESSION DEPTH 2"

Adapted from Bureau of Public Roads Nomograph.

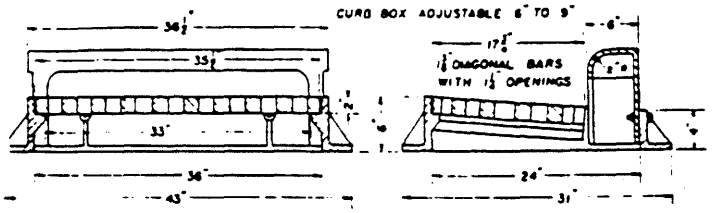
Sheet 11 of 11
Wal-Mart

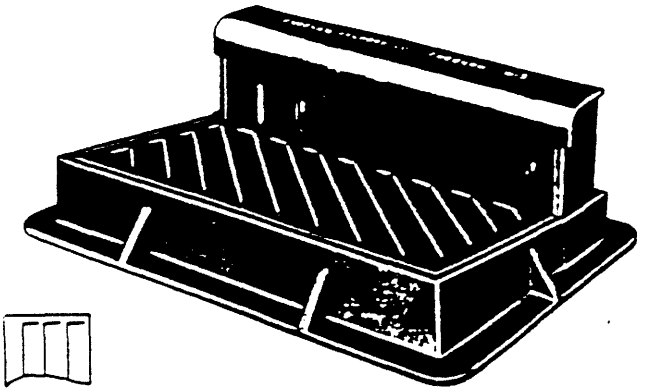
R-3067V Curb Inlet Frame, Grate, Curb Box

Heavy Duty
Total Weight 510 Pounds

ype DL Reversible grate shown. For opposite hand flip grate
op to bottom.

Grate Open Area = 2.2 Sq Ft.





Type V
Grate

Illustrating R-3067 with Type DL grate

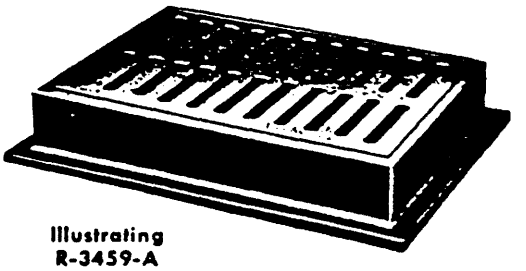
R-3459 Series G Reversible Type F Rectangular Gutter Inlet Frames and Grates

ght Duty Standard with base flange as shown. Flange at top on request.
Specify: 1. Complete catalog number.

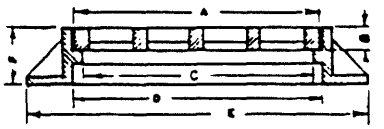
Open Area = 3.1 Sq. Ft.

Catalog No.	Dimensions in inches								Wt. Lbs.
	A	B	C	D	E	F	Openings	Bars	
3459-A	14 x 20	1½	12 x 18	14¼ x 20¼	18 x 24	4	⅜ x 5½	1	165
R-3459-B	13½ x 25½	1½	12 x 24	13¾ x 25⅜	18 x 30	4	⅜ x 4½	1	190
R-3459-C	19½ x 25½	1½	18 x 24	19¾ x 25⅜	24 x 30	4	⅜ x 5½	1	200
R-3459-D	19¾ x 31⅜	1½	18 x 30	20 x 32	24 x 36	4	⅜ x 5	1	220
3459-E	19¾ x 37⅜	1½	18 x 36	20 x 38	24 x 42	4	⅜ x 5	1	295
3459-F	25½ x 31½	1½	24 x 30	25¾ x 31⅜	30 x 36	4	1 x 5½	½	270
R-3459-G	25¾ x 37⅜	1½	24 x 36	26 x 38	30 x 42	4	1 x 5½	½	310
R-3459-H*	25¾ x 49⅜	1½	24 x 48	26 x 50	30 x 54	4	⅜ x 5½	1	410
3459-J*	31¾ x 37⅜	1½	30 x 36	32 x 38	36 x 42	4	1 x 6½	1	420
3459-K*	31½ x 49½	1½	30 x 48	31¾ x 49¾	36 x 54	4	1 x 5	1	425

*Grate in two pieces.



Illustrating
R-3459-A



#43-94 Wal-Mart Site Plan Review

Landscaping--The rough calculations for landscaping requirements, as scaled from the drawings are as follows:

North Avenue--356.39 x 15' x .75 = 4,009 s.f.
Melody Lane --810.36 x 10' x .75 = 6,077 s.f.

Parking Area--590 x 345 = 203,550 s.f.
415 x 305 = 126,575 s.f.
330,125 x .05 = 16,506.25 s.f.

Total landscaped area required = 26,592 s.f. (53 trees)
Rough estimate (scaled from drawing) of landscaping provided

	10,040
	1,440
50 trees shown - 4 trees to west of bldg that will be removed w/ future expansion ~~##~~ excluded = 46 trees	2,340
	75
	3,530
7 additional trees required - to be placed in parking	2,610
islands with no trees shown	370
	15,300
	* 35,705 s.f. provided

~~Network device fault reading drive F: 1 Retry; 2 Cancel; 3~~

*Note: s.f. shown as provided excludes grass area to south & west of building that is not visible and will be removed with future expansions.

REVIEW COMMENTS

WAL * MART EXPANSION

Bill Cheney, Utility Engineer
June 8, 1994

Sewer

1. Fruitvale Sanitation: No comment.

Water

1. Provide detail or narrative on relocating backflow preventers on fire line and potable line to inside building when vault is relocated.

2. It appears that the fire hydrant located on the southwest corner of the building is on property that is not owned by Wal*Mart. Permission from the adjacent property owner is required if the hydrant is located as shown.

REVIEW COMMENTS

FILE # 43-94 **TITLE HEADING:** Site Plan Review - Wal-Mart Expansion

LOCATION: 2881 North Avenue

PETITIONER: Dunaway Associates West, Inc.

PETITIONER'S ADDRESS/TELEPHONE: 4500 S. Lakeshore Dr., #250
Tempe, AZ 85282
602-345-0383

PETITIONER'S REPRESENTATIVE: Scott Moore

STAFF REPRESENTATIVE: Kathy Portner

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED. A PLANNING CLEARANCE WILL NOT BE ISSUED UNTIL ALL ISSUES HAVE BEEN RESOLVED.

CITY UTILITY ENGINEER **3/4/94**
Bill Cheney **244-1590**

WATER - Show relocation of water meter vault. Relocate back flow prevention device to mechanical room if device is presently in the meter vault. How is water line located under south portion of extension proposed to be relocated?

SEWER

1. Fruitvale Sanitation District
2. An additional "Plant Investment Fee" of $12,487.50 will be required based on the 47,558 S.F. addition to the existing building. This equates to an additional 16.65 E.Q.U. (equivalent residential units) which will be reflected on the monthly service charges for sewer.
3. Contact Dan Tonello (244-1489) for requirements pertaining to "Industrial Pretreatment" and grease traps for cafeteria.

FRUITVALE LATERAL & WASTE DITCH COMPANY **3/5/94**
Gerald Hill **243-6402**

No additional surface drainage from this project and existing development will be tolerated. Owner/developer must take appropriate steps to ensure no additional drainage enters association irrigation system.

CITY PARKS & RECREATION DEPARTMENT **3/4/94**
Don Hobbs **244-1542**

None at this time - we ask to look at open space fees again when the required processing is determined.

U.S. WEST **3/7/94**
Leon Peach **244-4964**

No comments at this time.

PUBLIC SERVICE COMPANY **3/16/94**
Dale Clawson **244-2695**

Public Service Company will review when we have a Final Plat and plot plan to look at.

CITY DEVELOPMENT ENGINEER **3/16/94**
Jody Kliska **244-1591**

See attached comments and red-lined plans.

COMMUNITY DEVELOPMENT DEPARTMENT **3/17/94**
Kathy Portner **244-1446**

See attached comments.

GRAND JUNCTION FIRE DEPARTMENT **3/21/94**
George Bennett **244-1400**

COMMENTS WILL FOLLOW AT A LATER DATE (as soon as possible).

FAXED: 602/491-2581

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(303) 244-1430 FAX (303) 244-1599

March 7, 1994

Scott Moore
Dunaway and Associates

RE: WalMart Expansion and platting

Dear Mr. Moore:

We are in receipt of the review packets for the proposed replat of lot 1, WalMart Minor Subdivision. As was discussed with the surveyor, Dan Brown, at the time of the pre-application meeting, the replat must be of all properties involved. Therefore, the three parcels to the south of the existing WalMart must be included, in their entirety, on the plat.

I did research development file #46-91 in our office on the conditions of approval of the vacation of Gunnison Avenue as it relates to those three properties to the south of WalMart. The approval of the vacation was subject to a 60 foot wide easement for utilities centered on the vacated ROW, the dedication of 30 ft. of ROW for Melody Lane and an adjustment of property lines so that all parcels have frontage on a dedicated ROW. All of those requirements could be met through the replatting of the parcels.

The City's policy for replats is that where lot lines are being adjusted between platted lots or between a platted lot and a metes and bounds described lot, a plat of all properties, in their entirety, must be recorded. The proposal to include only those portions of the properties to the south to be conveyed to WalMart on the plat is not acceptable and not consistent with City policy. However, because there is no proposed increase in the total number of lots or parcels existing, the review of the replat can be done administratively rather than through a hearing process. I am therefore rejecting the submittal made by Dan Brown for the WalMart replat and returning all packets to him. The separately submitted review of the site plan for WalMart is in process and will continue; however, a Planning Clearance for Building Permit will not be issued until the approved plat is recorded.

If you have questions you can call me at 244-1446.

Sincerely,

Katherine M. Portner

Katherine M. Portner
Planning Supervisor

STAFF REVIEW

FILE: #43-94

DATE: March 17, 1994

STAFF: Kathy Portner

REQUEST: Wal-Mart Expansion--Site Plan Review

LOCATION: North Avenue and Melody Lane

APPLICANT: Dunaway Associates West, Inc.

EXISTING LAND USE: Commercial and Vacant

PROPOSED LAND USE: Commercial

SURROUNDING LAND USE:

NORTH:	Commercial
SOUTH:	Commercial and Industrial
EAST:	Commercial
WEST:	Vacant

EXISTING ZONING: C-1, C-2, I-2

PROPOSED ZONING: Same

SURROUNDING ZONING:

NORTH:	C-1
SOUTH:	I-2
EAST:	C-1,C-2
WEST:	C-1,C-2

RELATIONSHIP TO COMPREHENSIVE PLAN:

There is no Comprehensive Plan for this area. Retail sales is in compliance with the North Avenue Corridor Guideline.

STAFF ANALYSIS:

1. Platting of all properties involved will be required. See attached letter dated March 7, 1994.

2. Show on the plans the square footage of all existing and/or proposed landscaped areas. It appears the site does not meet the current landscaping requirement of 75% of the first 15' along North Avenue, 75% of first 10' along Melody Lane and 5% of the total parking area. Landscaping shall include 40% shrubs and one tree for every 500 sq. ft. (or fraction thereof) of landscaped area. Interior landscape islands will be required in the parking lot.

3. A detailed analysis of existing and proposed parking is required including total number of spaces and the total gross square footage of sales area.

STAFF RECOMMENDATION:

Krager and Associates, Inc.

April 26, 1994

Ms. Kathy Portner
City of Grand Junction
250 North 5th Street
Grand Junction, Colorado 81501

re: Grand Junction Wal-Mart Traffic Comments

Dear Kathy:

On Monday, April 18, 1994, I met with Ms. Jody Kliska to discuss her review comments dated March 16, 1994. Based on our discussion and in light of revisions made to the site plan, I believe that all of Jody's traffic concerns have been addressed. The following is an itemized response to the concerns raised in her memo.

Site Plan

Access to the new parking area has been restricted on all but the south side.

Wal-Mart agrees to construct a right turn lane at the 28-3/4 Road access at the time of the Phase 2 expansion. Traffic projections indicate that the signalized intersection at Melody Lane is in good operating condition and an exclusive right turn lane is not needed at this intersection.

Wal-Mart will construct a driveway island at the 28-3/4 Road access to prevent left turns out of the site.

The southern driveway has been relocated to facilitate truck movements.

Curb, gutter, and sidewalk improvements will be made per City standards.

CDOT is not requiring new access permits for Phase 1 expansion. When Phase 2 expansion occurs, new access permit applications will be made.

4090 Estes Street Wheat Ridge, Colorado 80033 (303) 425-0805 FAX (303) 467-2354

Traffic Study

As previously stated, a right turn lane will be constructed for the 28-3/4 Road access at the time of Phase 2 development. Left turns out of this access will be restricted by a raised island.

Existing conditions are shown on the site plan.

Since the left turn storage on North Avenue is established, no queueing analysis was completed.

Attached are revised capacity analyses for actual lane widths and a restrictive left turn signal at Melody/North. The intersection will function acceptably.

With the revisions to the access for the new parking area, stacking should be adequate at all access points.

The alignment of the southern driveway has been revised. This driveway will be used for truck access and not as a customer access.

I hope that this information is useful. If you have additional questions, please feel free to call me.

Sincerely,

Kathleen Krager, P.E.

cc: Jody Kliska, P.E.
enclosure

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..North Avenue/Melody Lane
AREA TYPE.....OTHER
ANALYST.....klk
DATE.....4/25/94
TIME.....Noon
COMMENT.....Total Traffic, Year 2010, Protected Lefts

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	10	104	129	15	L	11.0	L	11.0	L	11.0	LTR	11.0	
TH	1075	1125	7	7	T	11.0	T	11.0	TR	11.0		12.0	
RT	77	19	115	13	TR	11.0	TR	11.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	16.0	3
WB	0.00	2.00	N	0	0	0.90	50	N	16.0	3
NB	0.00	2.00	N	0	0	0.90	50	N	24.3	3
SB	0.00	2.00	N	0	0	0.90	50	N	24.3	3

SIGNAL SETTINGS — CYCLE LENGTH = 70.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
WB	LT	X				SB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
GREEN		5.0	30.0	0.0	0.0	GREEN		20.0	0.0	0.0	0.0
YELLOW		5.0	5.0	0.0	0.0	YELLOW		5.0	0.0	0.0	0.0

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.068	0.100	21.7	C	16.6	C
	TR	0.859	0.457	16.5	C		
WB	L	0.704	0.100	31.7	D	17.2	C
	TR	0.847	0.457	16.0	C		
NB	L	0.286	0.314	13.8	B	13.8	B
	TR	0.291	0.314	13.9	B		
SB	LTR	0.094	0.314	12.9	B	12.9	B

INTERSECTION: Delay = 16.6 (sec/veh) V/C = 0.636 LOS = C

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..North Avenue/Melody Lane
AREA TYPE.....OTHER
ANALYST.......klk
DATE..........4/25/94
TIME..........Noon
COMMENT.......Total Traffic, Year 2010, Protected Lefts

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	10	104	129	15	L	11.0	L	11.0	L	11.0	LTR	11.0	
TH	1075	1125	7	7	T	11.0	T	11.0	TR	11.0		12.0	
RT	77	19	115	13	TR	11.0	TR	11.0		12.0		12.0	
RR	0	0	0	0		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR. TYPE
EB	0.00	2.00	N	0	0	0.90	50	N	16.0	3
WB	0.00	2.00	N	0	0	0.90	50	N	16.0	3
NB	0.00	2.00	N	0	0	0.90	50	N	24.3	3
SB	0.00	2.00	N	0	0	0.90	50	N	24.3	3

SIGNAL SETTINGS — CYCLE LENGTH = 70.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
WB	LT	X				SB	LT	X			
	TH		X				TH	X			
	RT		X				RT	X			
	PD						PD				
GREEN		5.0	30.0	0.0	0.0	GREEN		20.0	0.0	0.0	0.0
YELLOW		5.0	5.0	0.0	0.0	YELLOW		5.0	0.0	0.0	0.0

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.068	0.100	21.7	C	16.6	C
	TR	0.859	0.457	16.5	C		
WB	L	0.704	0.100	31.7	D	17.2	C
	TR	0.847	0.457	16.0	C		
NB	L	0.286	0.314	13.8	B	13.8	B
	TR	0.291	0.314	13.9	B		
SB	LTR	0.094	0.314	12.9	B	12.9	B

INTERSECTION: Delay = 16.6 (sec/veh) V/C = 0.636 LOS = C

Krager and Associates, Inc.

May 18, 1994

Ms. Kathy Portner
City of Grand Junction
250 North 5th Street
Grand Junction, Colorado 81501

re: Grand Junction Wal-Mart Additional Review Comments 5/9/94
File: 2.4408comm2

Dear Kathy:

Within the additional staff comments, May 9, 1994, is a comment from Jody Kliska that suggests the 28 3/4 Road access be realigned at this time to reduce the expense of future street relocation work. However, street paving is not the only cost associated with the realignment of this driveway. Extensive grading and drainage work would need to be undertaken before the driveway could be realigned. For this reason, the applicant desires to realign the driveway at the time of Phase 2 development. Grading and drainage work on the new parcel could be completed at that time in conjunction with other site work on the parcel. A new State Highway Access Permit would also be obtained at that time, since no revision in the existing access permit is needed for Phase 1 development. However, until the driveway is realigned, left turns out will be restricted with the construction of a driveway island.

If you have additional questions, please feel free to call me.

Sincerely,

Kathleen Krager, P.E.

cc: Scott Moore
enclosure

4090 Estes Street Wheat Ridge, Colorado 80033 (303) 425-0805 FAX (303) 467-2354

DUNAWAY ASSOCIATES WEST, INC.

May 25, 1994

Ms. Kathy Portner
Community Development
City of Grand Junction
250 North 5th Street
Grand Junction, CO. 81501-2668

Re: Wal*Mart Expansion Plan Review Comments

Dear Kathy:

In response to your written comments dated May 9, 1994. Please note that the plans have been revised to reflect your concerns.

We have added a note to the plan that hopefully will clear up any confusion with the parking requirement.

You will also note that the plan meets or exceeds your comments with regard to landscaping and the installation of curbed planter islands as mentioned by Jodi Kliska.

The fire department has stated that they need a 10' fire lane in front of the buliding. As shown, this is accomplished and also allows for a 10' traffic lane in each direction.

As for the intersection of 28¾ Road, our traffic engineer, Krager and Associates, Inc. is addressing your comment and her response will be coming shortly, if you dont already have them.

The last comment about the storm drain inlet located at the south entrance on Melody Lane. It is being removed and is noted on the plans.

Should you have any questions, please call.

Sincerely,

DUNAWAY ASSOCIATES WEST, INC.

Jerry Domke
Senior Projects Manager

JD/eh

Enclosures: 6 Sets Revised Plans

SB NO. SB-61-94

MESA COUNTY LAND RECORDS
544 ROOD AVE
GRAND JUNCTION, COLO. 81501
(303) 244-1823

To: Monika Todd, Mesa County Clerk & Recorder.

This is to certify that the SUBDIVISION PLAT described below

WAL-MART TWO SUBDIVISION

has been reviewed under my direction and that to the best of my knowledge it conforms with the necessary requirements pursuant to the Colorado Revised Statute 1973 38-51-102 for the recording of Land Survey Plats in the records of the County Clerk's Office. This approval does not certify as to the accuracy of Surveys, Drafting, Calculations, nor to the possibility of ommissions of easements and other Rights-of-Way or Legal Ownerships.

Dated this 23rd day of MAY 1994

Signed: Ken Swearengin

NOTE"
The recording of this plat is subject to all Approved Signatures & Dates.

RECORDED IN MESA COUNTY RECORDS
DATE: 6/10/94
TIME: 10:30

BOOK:_____PAGE_____
RECEPTION NO:_____

Bk. 14
Page 235
Fee 10.00

1685305 10:22 AM 06/10/94
MONIKA TODD CLK&REC MESA COUNTY CO

43-94

Drawn AA98

43-94

BOOK 2078 PAGE 483

1685304 10:22 AM 06/10/94
MONIKA TODD CLK&REC MESA COUNTY CO

Doc Exempt

EXHIBIT "C"

AGREEMENT AND NO BUILD EASEMENT

THIS AGREEMENT is made as of the 7th day of June, 1994, between WAL-MART STORES, INC., a Delaware corporation, whose address is 702 S. W. Eighth Street, Bentonville, Arkansas 72716 (hereinafter called "Grantee") and WAGNER EQUIPMENT CO. a Colorado corporation whose address is 18000 East Smith Road, Aurora, Colorado 80011, (hereinafter called "Grantor").

WHEREAS, Grantor is owner of Parcel A in the city of Grand Junction, County of Mesa, State of Colorado hereinafter described in Exhibit "A" attached hereto, which northerly property line of Parcel A abuts the Wal-Mart Tract, hereinafter described as Parcel B in Exhibit "A", measuring approximately sixty (60') feet by four hundred twelve and fifty-two hundredths (412.52') feet;

WHEREAS, Grantee is desirous of obtaining a no build easement area from Grantor;

WHEREAS, the City of Grand Junction requires certain covenants and agreements from Wal-Mart;

W I T N E S S E T H

NOW, THEREFORE, the said Grantor, for and in consideration of Ten Dollars ($10.00) and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, does hereby grant to Grantee, its successors and assigns, a non-exclusive right to a "No Build Easement" on, over, across or under Parcel A measuring approximately twenty (20') feet by one hundred eighty-two and seventy-two hundredths (182.72') feet located in Grand Junction, Colorado. THE EASEMENTS ARE MADE SUBJECT TO THE FOLLOWING:

1. The Grantor shall have the right to use and enjoy fully said premises for parking and drive lanes subject to the easement rights hereby granted, but Grantor agrees that it will not construct nor permit to be constructed any lakes, ponds, buildings or other structures of a permanent nature upon or over said easement area without the written consent of both Grantee and the City of Grand Junction.

2. Grantor and Grantee recognize and understand that within a portion of the described No Build Easement area there currently exists a portion of an in ground loading dock. It is hereby agreed and accepted that Grantor shall have the right to maintain, repair and continually use said in ground dock as required by Grantor and that granting of this No Build Easement shall not obstruct nor interfere in anyway with Grantors use and enjoyment of said in ground dock.

3. The Grantee will indemnify and hold harmless the Grantor from any claims for damages or injuries arising out of or connected directly or indirectly with the use by the Grantee, its invitees, licensees and guests of the easement granted herein, or of the property covered by the easement.

4. The easement granted hereunder is a permanent easement and will continue in full force and effect so long as the easement is used by the Grantee, its successors and assigns.

5. This easement contains all of the agreements and stipulations between the Grantor and Grantee with respect to the granting of said easement, and the same shall inure to the benefit

of and be binding upon the Grantor and Grantee and their respective successors and assigns and thereafter so long as it is required by the City to meet the public safety and health needs.

6. The City of Grand Junction shall retain the right to enforce the terms of the easement against both the Grantor and the Grantee so long as the building is in existence. The Grantee, and its successors and assigns, shall indemnify and hold harmless the City of Grand Junction, its officers, agents and employees from any claims, however stated, for damages or injuries arising out of the use of the easement and the failure to provide unobstructed access to emergency personnel and equipment.

7. While the Wal-Mart building is in existence, the Grantee agrees to take such steps as may be required to maintain the sixty foot-swath of unobstructed area except for the portion the surrounds the Wal-Mart loading dock as shown on Exhibit "B". This easement is intended to satisfy the criteria for an unlimited area surrounding a building as outlined in Section 506(b) of the Uniform Building Code. Grantee agrees to police the area of the easement and to enforce the terms of this agreements as against the owner of the burdened property, and as to others as may reasonably be required.

8. This easement shall not be terminated or relocated or otherwise modified without the prior written consent of the City's Chief Building Official or the Fire Chief.

9. This easement contains all of the agreements and stipulations between the Grantor and Grantee with respect to the granting of said easement, and the same shall inure to the benefit of and be binding upon the Grantor and Grantee and their respective successors and assigns. This easement shall be recorded by Grantee at its expense in the official county records and shall provide copies of same to all parties to the easement.

IN WITNESS WHEREOF, the undersigned have executed this easement agreement the date first written above.

Attest: _____
Assistant Secretary

WAL-MART STORES, INC.

_____
Its Asst. Vice President of Real Estate

Attest: _____
President

WAGNER EQUIPMENT CO.

_____
Its: _____

CITY OF GRAND JUNCTION, COLORADO

Attest: _____
Its: City Clerk

_____
Its: _____

CORPORATE ACKNOWLEDGEMENT

STATE OF COLORADO)
) §
COUNTY OF Adams)

On this 1st day of June 1994, personally appeared Robert A. Barrows to me personally known who, being by me duly sworn, did say that he is the Vice-President of Wagner Equipment Co., a Colorado corporation, and that the seal affixed to said instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by the authority of its Board of Directors and said _____ _____ acknowledged said instrument to be the free act and deed of said corporation.

In witness whereof, I have hereunto set my hand and official seal the day and year last above written.

My Commission Expires
2-17-95

Helene F. Taylor
Notary Public
Residing in Colorado

CORPORATE ACKNOWLEDGEMENT

STATE OF ARKANSAS)
) §
COUNTY OF BENTON)

Be it remembered that on this 3rd day of June, 1994, before me a notary public in and for the county and state aforesaid, came Robert M. Bedard Assistant Vice President of Real Estate, of Wal-Mart Stores, Inc., a corporation, who is personally known to me to be the person who executed as such officer the within instrument of writing on behalf of such corporation, and such person duly acknowledged the execution of the same to be the act and deed of said corporation.

In testimony whereof, I have hereunto set my hand and affixed my notary seal the day and year last above written.

MY COMMISSION EXPIRES 9/25/99

Dorothy L. Jensen
Notary Public
Residing in Benton county

ACKNOWLEDGEMENT

STATE OF COLORADO)
) §
COUNTY OF MESA)

On this 7th day of June, 1994, personally appeared David Varley to me personally known who, being by me duly sworn, did say that he is the Assistant City Manager of The City of Grand Junction of Colorado, a municipal corporation, and that the seal affixed to said instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by the authority of its Assistant City Manager

and said Assistant City Manager acknowledged said instrument to be the free act and deed of said corporation

In witness whereof, I have hereunto set my hand and official seal the day and year last above written.

Stephanie Nye
Notary Public
Residing in Mesa County

NOTARY PUBLIC STATE OF COLORADO
MY COMMISSION EXP OCT.10,1994

NOTARY PUBLIC STATE OF COLORADO

EXHIBIT "A"

PARCEL A: LAND OWNED AND RETAINED BY WAGNER EQUIPMENT CO. COVERED BY NO BUILD EASEMENT TO WAL-MART

A parcel of land situated in NE1/4 of Section 18 T1S R1E of the Ute Meridian, being described as follows:

Considering the South line of the NE1/4NE1/4 of Section 18, T1S, R1E, Ute P.M. to bear N 89°59'52" W and all bearings contained herein to be relative thereto.

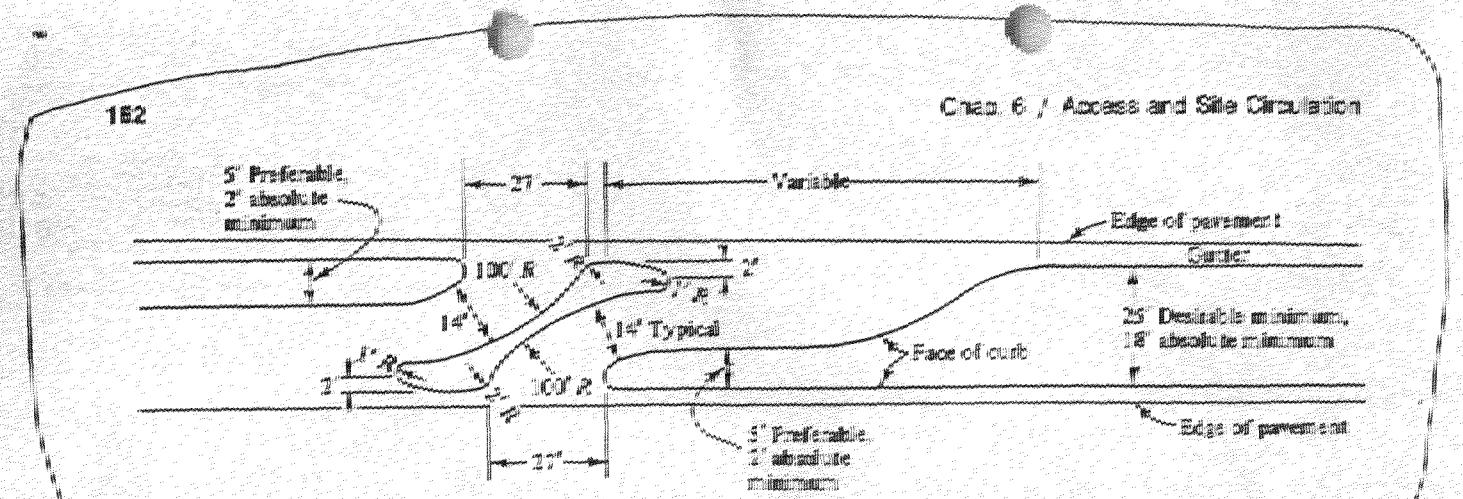
COMMENCING at the SE Corner of Lot One Wal-Mart Minor Subdivision thence S00 16'12"E 60.00 feet to the Point of Beginning, thence N89°59'51"W 182.72 feet; thence S00°00'08"W 20.00 feet; thence S89°59'51"E 182.72 feet; thence N00°16'12"W 20.00 feet to the point of beginning.

PARCEL B: LAND OWNED AND RETAINED BY WAL-MART

A parcel of land situated in NE1/4 of Section 18, T1S, R1E of the Ute Meridian, being described as follows:

Considering the South line of the NE1/4NE1/4 of Section 18, T1S, R1E, Ute P.M. to bear N 89°59'52" W and all bearings contained herein to be relative thereto.

Beginning at the SE Corner of Lot One Wal-Mart Minor Subdivision thence N89°59'51"W 379.80 feet to the NW corner of a parcel described in Book 1836 Page 437 of the Mesa County Clerk and Recorder records; thence S00°00'08"W 60.00 feet; thence S89°59'51"E 380.08 feet; thence N00° 16'12"W 60.00 feet to the point of beginning.



(b) Median detail

Figure 6-12 (continued)

TABLE 6-3
Cost-Effective Techniques to Enhance Capacity and Safety on Existing Roadways

Left turns into driveway	
Provide continuous two-way left-turn lane	> 60 driveways/mile; > 20% left turns during peak hour
Provide alternating left-turn lanes	> 45 driveways/mile; > 15% left turns during peak hour
Provide isolated median and left-turn lanes*	< 30 driveways/mile; > 1,000 vpd driveway traffic, > 1,000 vpd roadway traffic
Right turns into driveway	
Provide continuous right-turn lane	> 50 driveways/mile; > 15,000 vpd roadway traffic with > 20% right turns/mile
Provide supplementary right-turn-only driveways	high-volume driveway; > 300-foot frontage
Provide right-turn deceleration lane*	> 35 mph; > 1,000 right turns/day and > 40 right turns during peak hour; adequate frontage
General	
Provide frontage road*	> 60 driveways/mile; > 20,000 vpd roadway traffic 40–55 mph
Provide 2 one-way driveways instead of 1 two-way driveway	< 60 driveways/mile; < 35 mph; > 150-foot frontages
Provide right-turn acceleration lane*	> 35 mph; > 75 right turns during peak hour; adequate frontage

SOURCE: Adapted from Glennon et al. [1].
*Adequate geometrics are critical to the satisfactory functioning of these techniques.

3. Left-turn prohibitions are most desirable when physically implemented with median channelization (if a median exists) or driveway channelization. Signing should also be installed as necessary.
4. To a great extent, the width for entering movements will be determined by the turning requirements. Exit width will be determined by peak turning volumes.

ACCESS DRIVES

In order to ensure efficient internal circulation, storage areas at access drives must be designed to allow for adequate capacity. Storage on the driveway should be of sufficient length to keep stopped vehicles from blocking the path of entering vehicles or vehicles traveling along the internal circulation roadways. Failure to provide sufficient storage will result in unsafe and confusing vehicle conflicts as indicated in Figure 6-13.

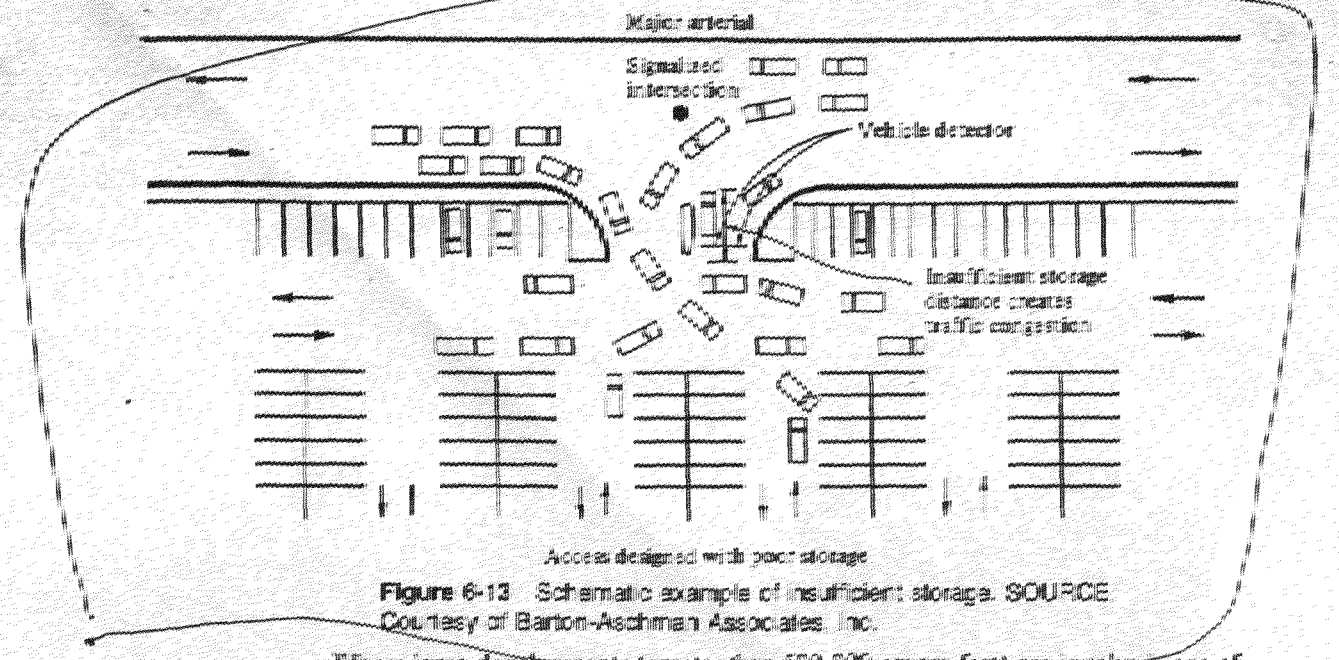


Figure 6-13 Schematic example of insufficient storage. SOURCE: Courtesy of Barton-Aschman Associates, Inc.

Where large developments (greater than 500,000 square feet) are involved, one of the two following basic site layouts should be used in order to develop good access and site-circulation design:

1. Locate the building at least 500 feet back from the street. This will provide a throat length of 250 feet, which is necessary for a high-capacity access drive and adequate parking-bay lengths between the ring road and the building face.
2. Orient the long dimension of linear developments perpendicular to the arterial. This will provide for long signalized access spacing and good on-site circulation.

Figure 6-14 illustrates the essential elements of good design which provides for: (1) long signalized intersection spacing, (2) long throat length between the intersection of the access drive in the arterial and its intersection with the ring road, (3) ample parking between the ring road and the building, and (4) a discontinuous perimeter road.

Figure 6-15(a) illustrates the major site-circulation features of a large medical complex. Signalized intersection spacing is at one-fourth mile. This results in very poor horizontal alignment of the major site circulation on the south end of the complex. Relocating the intersection further to the south would cause interference at the adjacent intersection to the south. Furthermore, the long unobstructed perimeter roadway along the west side is conducive to high speeds and results in high vehicular–pedestrian conflicts. It also results in poor geometry at the intersection of the perimeter and ring road.

The original development consisted of part of the center third of the complex. At that time, the major on-site circulation roadways north and south of the complex were a considerable distance from the structure; parking was provided between these roadways and the structure. As the complex was expanded to the south and the emergency room was relocated, it was necessary to relocate the south roadway. The increase in staff and visitors necessitated a substantial increase in parking. The circulation, as developed, experienced the following problems: (1) It is very difficult to develop signing to direct persons who are not familiar with the complex to the appropriate entrance. (2) The long peripheral roadway (in excess of a quarter of a mile) at the face of the complex is conducive to high volume and high speeds; also, there are numerous conflicts between vehicles entering or leaving the parking lots, dropping off or picking up patients (passengers), and other movement. (3) Access to the emergency room is not as direct as desirable. (4) Truck access (several WB-50s per day) is awkward, and maneuvering into the unloading docks is difficult. (5) Circulation from the visitor's parking area to the building entrances to pick up passengers is inconvenient. (6) The on-site roadway to the south of the building complex has

MELODY LANE

157+41

157+03.2

157+03.2

157

S 89°42'30" E

78.8'

280.5 R

158

158+22

159+32.2

159

63.2'

159+32.2

280.5 R

157+03.2

157+82.2

10-22-92 1:05 P.M.

03-11-93 11:46 A.M.

05-12-93 4:50 P.M.

07-20-93 12:04 PM

01-18-92 5:00 P.M.

01-27-94 11:25 A.M.

03-24-92 5:00 P.M.

05-03-93 12:45 P.M.

11-09-93 12:12 P.M.

09-05-93 4:10 P.M.

11-21-92 11:10 A.M.

14' D/W

157+68

14' D/W

159+24

158+18

MELODY LANE

158+44

12-11-92 4:15 P.M.

06-11-93 12:10 P.M.

LEFT TURN COLLISION

SIDE SWIPE

OUT OF CONTROL

REAR END COLLISION WITH BACKING VEHICLE

FATAL ACCIDENT

PERSONAL INJURY

PROPERTY DAMAGE

● Fatal

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.
8	COLORADO	F-001-1(18)

00 - 160+00

[5] 1+35.1
28°34' ROAD

131+42

131+77

R=25.00'

L=30.52'

T=15.90'

20'

20'

40'

40'

04-23-92 3:40 PM

0-20-92 5:17 P.M.

93 1:41 PM

151

28'

S 89° 42' 30" E 4-22-92 4:52 PM

04-21-92 5:45 P.M.

05-30-92 12:30 PM

72.0'

12-30-92 4:38 PM

02-05-93 1:10 PM

02-17-93 12:25 PM

02-10-93 12:14 PM

60'

131+12

30' DW

151+30

152

152+30

153

153+54

20' DW

25' DW

153+43

260.5' R

260.5' R

30' DW

30' DW

N

Δ 0°08' LT.

29 ROAD

163+38

164+20

165+58

35' D.W.

36' D.W.

35' D.W.

30ft

30ft

30ft

04-04-92 2:20 P.M.

04-07-92 10:56 A.M.

04-16-92 12:45 P.M.

164

165

166

7

8

18

17

710'

710'

300'

S 89°50'30" E

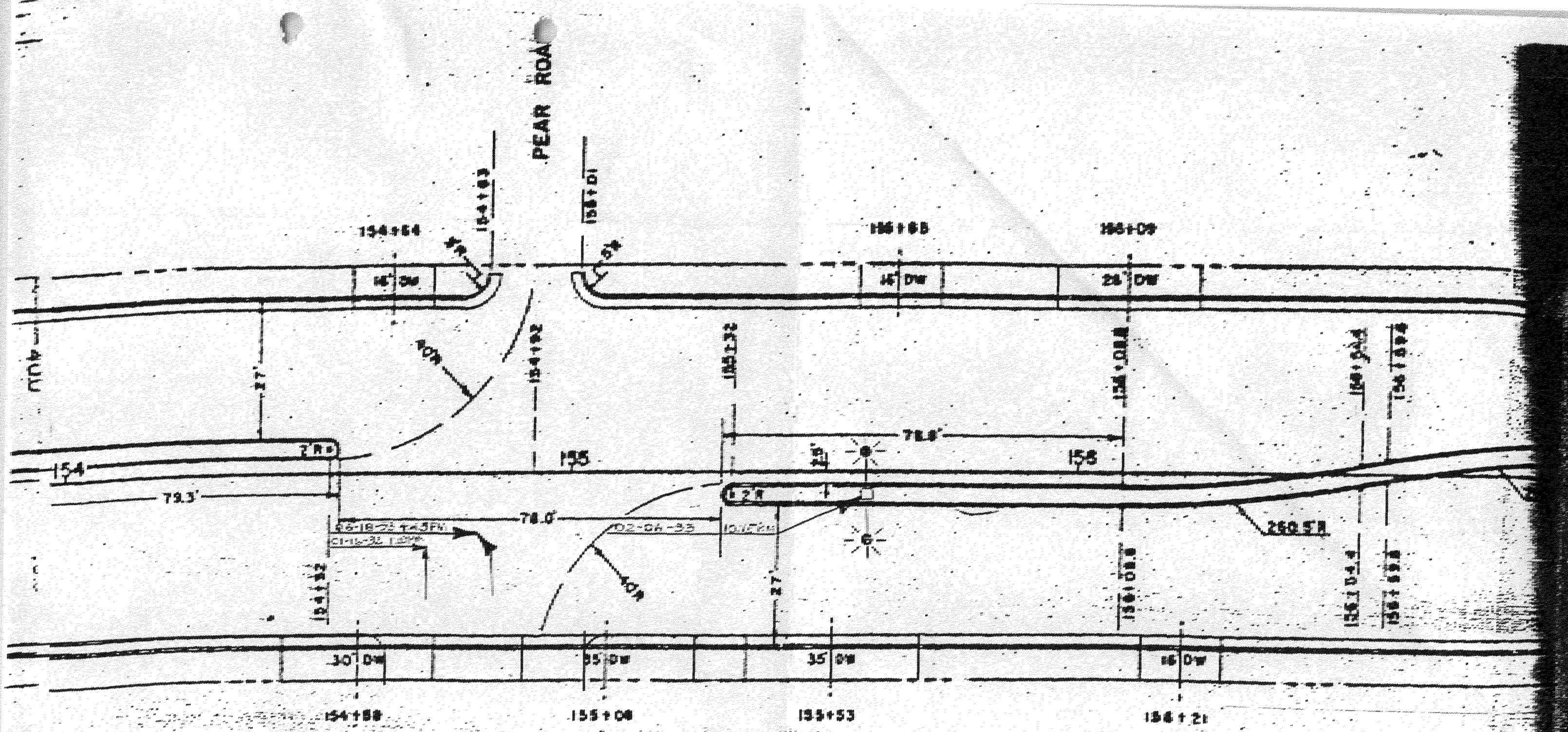
16' D.W.

30' D.W.

165+63

165+96

A 174.8



92-14
93-20
94-1

- MOVING VEHICLE
- PEDESTRIAN
- PARKED VEHICLE
- PARKING OR UNPARKING VEHICLE
- FIXED OBJECT
- REAR END COLLISION
- HEAD ON COLLISION
- RIGHT ANGLE COLLISION

B.M. = 4633.27
NE CORNER
NE1/4 NE1/4
SECTION 18
T1S, R1E, U.M.

SE CORNER
NE1/4 NE1/4
SECTION 18
T1S, R1E, U.M.

S00°23'00"E 1319.40

29 ROAD

NORTH

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

LEGEND

- NEW CART CORRAL
- NEW STOP SIGN
- NEW PEDESTRIAN X-ING SIGN
- NEW HANDICAP ACCESSIBLE SIGN
- NEW PARKING AISLE SIGN
- NEW PIPE BOLLARD
- NEW PARKING LOT LIGHT STD.
- PROPERTY LINE
- CENTER LINE

OWNER WALTER B. THOMAS — PAVED PARKING

OWNER WALTER B. THOMAS — FIRST TRAILER — EXIST. HOUSE

OWNER ROY MC CULOUGH — EXIST. HOUSE

OWNER KENNITH SUMMERS — EXIST. HOUSE

OWNER JERRY REKEERS — EXIST. HOUSE

TELLER AVE. (GRAVEL SURFACE)

East line of the E1/2 W1/2 NE1/4 NE1/4 Section 18

OWNER ROY E. MOORE — EXIST. HOUSE — DRIVE

OWNER ANDREW J. GARCIA — EXIST. HOUSE — EXIST BUILDING — PAVING

OWNER ROBERT LEE JONES — EXIST. HOUSE — CAR PORT

OWNER JAMES H. LOTTRELL — EXIST. HOUSE — MH #4 RIM EL. 4623.14 INV. IN 4619.14 (WEST) INV. IN 4618.59 (NORTH) INV. OUT 4614.34

OWNER RUTH RANEY

EXISTING 30" STORM SEWER LINE
EXISTING 6" C.I. WATER LINE
EXISTING UG TELE. LINE

M E L O D Y L A N E

S 00° 16' 12" E 810.36'

OWNER RANDAL B SHIP

OWNER MESA FEDERAL

OWNER ALP ND 37

OWNER JEAN LOVE

N 90°00'00" W 1317.10' (ORIGIN OF BEARINGS)

N O R T H A V E N U E

PEAR ROAD

FRUITVALE WATER AND SANITATION DISTRICT

PORTABLE SANITATION DISTRICT BUILDING

S 00° 16' 12" E 175.00'
S 00° 16' 12" E 212.00'
N 90° 00'00" E 94.00'
30.00'
64.00'
47.00'

LOT 3
25071 SF.
0.576 AC.

LOT 2
18771 SF.
0.431 AC.

S 00°16'12" E 212.00'
N 90°00'00" E 183.50'
118.26'
118.26'
65.24'
90.00'
564.63'
N 00°16'12" W 187.00'
N 45°51'54" W 35.27'

EXISTING SEWER TAP

30' right-of-way for North Ave.

8" PVC WATER MAIN

12' DRAINAGE INGRESS-EGRESS & UTILITY EASEMENT

LOT 1
EXIST. AREA = 12.848 ACRES
559680.48 SF.

NEW GARDEN CENTER

EXIST. FIREPLANT

NEW TRUCK DOCK
EXISTING 8" PVC WATER LINE

EXIST. SEWER MH #1
RIM EL. 4624.55
8" IN. N. 4619.55
8" OUT 4619.05

EXISTING WAL-MART
PROTO RR-82-GL 81,922 S.F.
F.F.E. = 4628.00

EXPANDED WAL-MART
RL-116-GL
128,614 S.F.
310.33'

EXIST. MH #2
RIM EL. 4624.97
INV. IN 4619.77
INV. OUT 4619.62

EXISTING 8" PVC WATER LINE

NOTE:
CONTRACTOR TO INSTALL FIRE LANE SIGNS PER LOCAL CODE.

PEDESTRIAN X-ING SIGN (TYP.)

PEDESTRIAN X-ING 4" YELLOW STRIPES 2' O.C. @ 45° ANGLE

NEW EXPANSION
F.F.E.=4628.00

LIGHT ENTRY

ASPHALT RAMP
CURB HAS 0.0" HEIGHT IN FRONT OF ENTRANCE

PEDESTRIAN X-ING SIGN (TYP.)

VESTIBULE EXPANSION

EXISTING PHONE PED.
EXISTING ELEC. BOX
EXISTING GAS METER
EXISTING WATER SUPPLY VAULT
EXISTING FIRE HYDRANT
EX. SURFACE INLET

9'X20' HANDICAP PARKING STALL W/ 5' WIDE ACCESS AND SIGN (TYP.)

9'X20' HANDICAP VAN PARKING STALL W/ 8' WIDE ACCESS AND SIGN (TYP.)

9'X20' PARKING SPACE (TYP.)

SINGLE CURB NO GUTTER APPRX. H = 0.5'

EXIST. ASPHALT PAVEMENT

CONC. C & G H = 0.5'

EXIST. STORM GRATE RIM EL. 4625.55 INV. OUT 4619.55

EXIST. STORM GRATE RIM EL. 4624.55 INV. OUT 4620.25

EXIST. MH #3 RIM EL. 4625.35 INV. IN 4621.75 INV. OUT 4621.60

EXIST. STORM GRATE RIM EL. 4624.55 INV. OUT 4620.25

10' UTILITY EASEMENT

OVERHEAD TELE LINE

N 00°09'25" W 985.33'

975.33'

NW CORNER NE1/4 NE1/4 SECTION 18 T1S, R1E, U.M.

NORTH GONZO ASSOC.

AMUSEMENT PARK

N 90°00'00" E 356.39'

R.O.W. 3/4 ROAD

OWNER PLATEAU SUPPLY CO.

N 89°59'52" W 380.38'

N 89°59'52" W 630.58'

N 89°59'52" W 1322.31'

N 00°00'08" E 20.00'

250.37'
110' WALL

250.17

130 L.F. NEW 2' HIGH RETAINING WALL

NEW PROPERTY LINE

ADDITIONAL SITE AREA REQUIRED FOR REAR EXPANSION = 0.75 ACRES

NEW 20' NO-BUILD EASEMENT

SW CORNER NE1/4 NE1/4 SECTION 18 T1S, R1E, U.M.

EXIST. PHONE PED.
EXIST. POWER PED.

224.00'

OK
APR
6-21-94

ACCEPTED KR 6/21/94
ANY CHANGE OF SETBACKS MUST BE APPROVED BY THE CITY PLANNING DEPT. IT IS THE APPLICANTS RESPONSIBILITY TO PROPERLY LOCATE AND IDENTIFY EASEMENTS AND PROPERTY LINES.

NOTES:

REFER TO ARCHITECTURAL BUILDING PLANS AND SPECIFICATIONS FOR EARTHWORK AND COMPACTION REQUIREMENTS FOR ALL SLABS AND BUILDING FOUNDATIONS.

CONTRACTOR SHALL REFER TO ARCHITECT PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULE SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.

THE SITEWORK FOR THIS PROJECT SHALL MEET OR EXCEED THE "WAL-MART STANDARD SITEWORK SPECIFICATIONS" PROVIDED BY WAL-MART.

10'x36' COMPACTOR PAD 6" CONCRETE WITH WWF (6x6-6x6) TOP SURFACE FLUSH WITH PAVEMENT. COMPACTOR WILL BE PROVIDED AND INSTALLED BY OTHERS.

ALL CURBING IS TO BE WAL-MART TYPE "A" CURB UNLESS OTHERWISE NOTED ON PLANS. (SEE DETAIL ON SHEET 7)

ALL HANDICAP SPACES MUST HAVE HANDICAP SIGNS POSTED THAT MEETS CITY AND STATE REQUIREMENTS.

MASONRY CONTRACTOR SHALL COORDINATE WITH IRRIGATION CONTRACTOR FOR LOCATION OF SLEEVING.

ALL EXISTING WAL-MART PARKING LOT LIGHTS ARE TO BE RELAMPED. LAMPS ARE TO BE FURNISHED BY WAL-MART.

*NOTE: PARKING RATIO FOR WAL-MART W/ EXPANSION BASED ON 116,097 S.F. BASE BUILDING AREA

SITE DATA	WAL-MART W/ EXPANSION
EXISTING SITE AREA	12.85 ACRES
ADDITIONAL SITE AREA	0.75 ACRES
TOTAL SITE AREA	13.60 ACRES
EXISTING BLDG. AREA	81,922 S.F.
BUILDING EXPANSION	46,692 S.F.
TOTAL BUILDING AREA	128,614 S.F.
PARKING REQUIRED BY CITY (1/200 SF SALES AREA)	552 (110,314 SF/200)
TOTAL PARKING PROVIDED	697 (6.00/1,000 SF)

LEGEND:

- EXISTING A.C. PAVEMENT
- EXISTING A.C. PAVEMENT TO BE REMOVED
- EXISTING CONCRETE PAVEMENT AND/OR SIDEWALK
- EXISTING CONCRETE PAVEMENT AND/OR SIDEWALK TO BE REMOVED
- NEW STANDARD DUTY PAVEMENT
- NEW HEAVY DUTY PAVEMENT
- NEW HEAVY DUTY CONCRETE
- NEW CONCRETE SIDEWALKS OR RAMPS
- FOUND SURVEY MONUMENTS SET BY QED
- FOUND SURVEY MONUMENTS SET BY OTHERS
- FOUND MESA COUNTY BRASS CAPS
- EXISTING PARKING LOT POLE
- EXISTING DRAIN GRATE
- EX. WATER VALVE

NO.	DATE	REVISION DESCRIPTION

COLORADO REGISTERED PROFESSIONAL ENGINEER CHRIS L. RYDER No. 21613 Exp. 9-30-94

DATE:

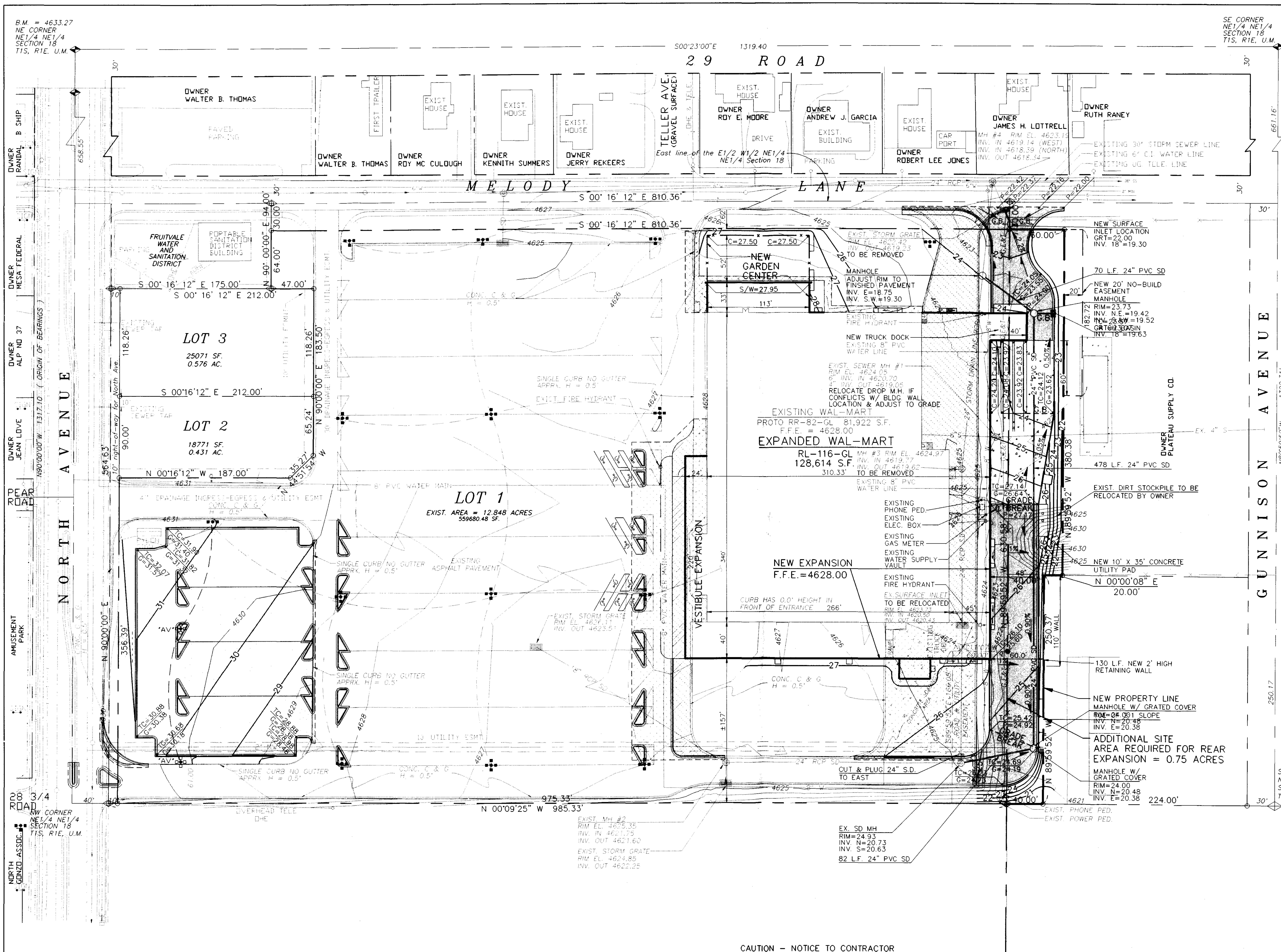
SHEET TITLE: SITE PLAN

PROJECT TITLE: WAL★MART

NORTH AVE. & MELODY LN.
GRAND JUNCTION, COLORADO

DUNAWAY ASSOCIATES WEST INC
ENGINEERS LANDSCAPE ARCHITECTS PLANNERS
PHOENIX, AZ FORT WORTH, TX CHICAGO, IL
4500 S. LAKESHORE DRIVE SUITE 250 TEMPE, ARIZONA 85282
(602) 345-0383 FAX (602) 491-2581

JOB NO. 9321300
DESIGN BY: CLR
CHECKED BY: FSW
DATE: APR. 22, 1994
SCALE: 1" = 50'
SHEET 3 OF 9 SHEETS



LEGEND

F.F.=1210.56 FINISH FLOOR ELEVATION
EXISTING CONTOUR
PROPOSED CONTOUR
GRADE BREAK
NEW TOP OF CURB ELEVATION
NEW GUTTER ELEVATION
NEW CONCRETE ELEVATION
NEW PAVEMENT ELEVATION
NEW SIDEWALK ELEVATION
DIRECTION OF FLOW
NEW STORM DRAIN
NEW CURB INLET
SURFACE INLET
NEW MANHOLE

LEGEND:

- EXISTING A.C. PAVEMENT
- EXISTING A.C. PAVEMENT TO BE REMOVED
- EXISTING CONCRETE PAVEMENT AND/OR SIDEWALK
- EXISTING CONCRETE PAVEMENT AND/OR SIDEWALK TO BE REMOVED
- NEW STANDARD DUTY PAVEMENT
- NEW HEAVY DUTY PAVEMENT
- NEW HEAVY DUTY CONCRETE
- NEW CONCRETE SIDEWALKS OR RAMPS
- FOUND SURVEY MONUMENTS SET BY QED
- FOUND SURVEY MONUMENTS SET BY OTHERS
- FOUND MESA COUNTY BRASS CAPS
- EXISTING PARKING LOT POLE
- EXISTING DRAIN GRATE
- EX. WATER VALVE

NOTES:

1. LOT ONE IS SUBJECT TO A BLANKET EASEMENT FOR SURFACE DRAINAGE OF WATER FROM LOTS 2 AND 3.
2. THIS PROPERTY DOES NOT FALL WITHIN THE 100 YEAR FLOOD PLAIN.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

NO.	DATE	REVISION DESCRIPTION

COLORADO REGISTERED PROFESSIONAL ENGINEER — FRED S. ... No. ...

DATE:

SHEET TITLE: # GRADING PLAN

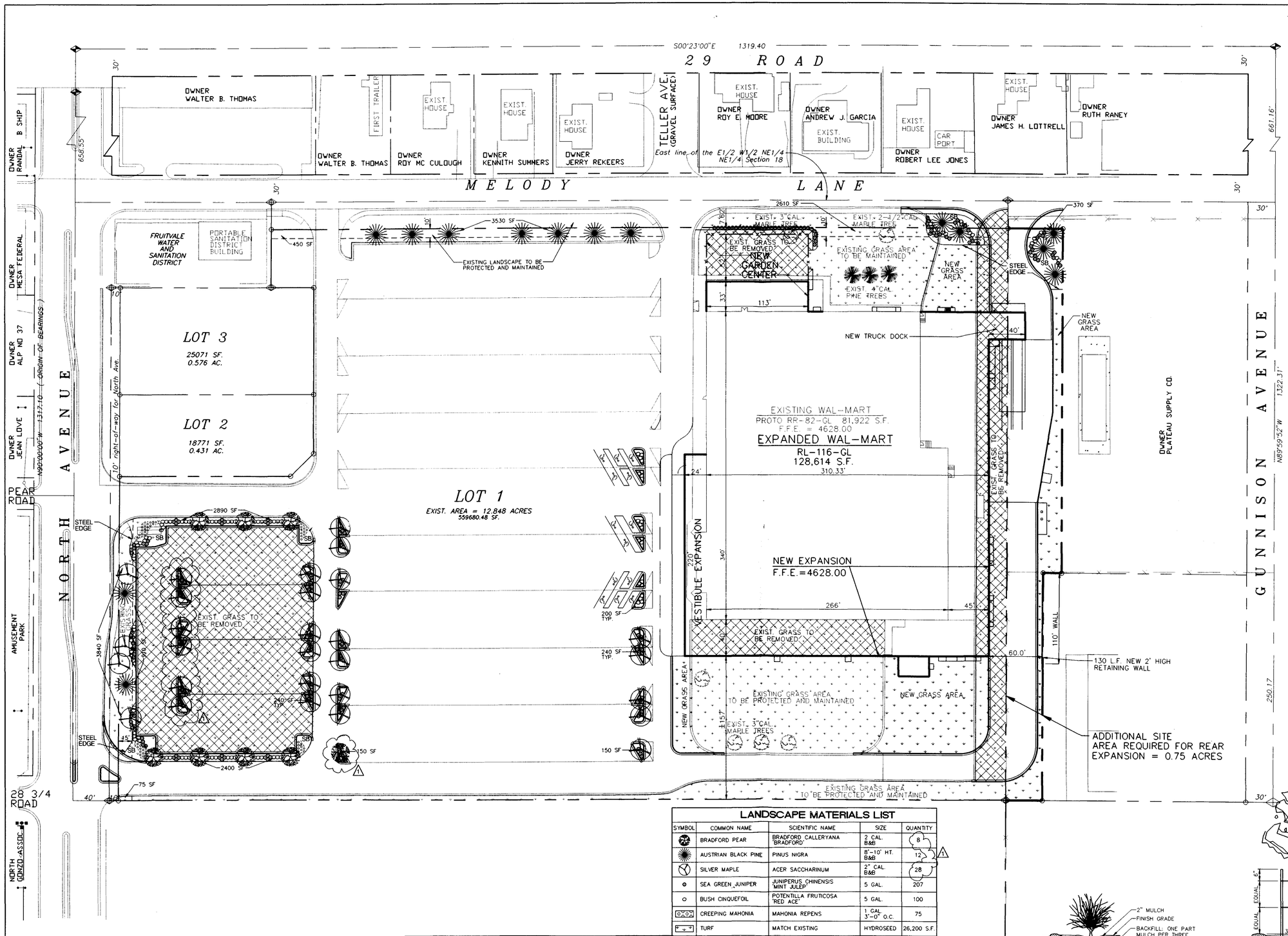
PROJECT TITLE: # WAL★MART

NORTH AVE. & MELODY LN.
GRAND JUNCTION, COLORADO

DUNAWAY ASSOCIATES WEST INC
ENGINEERS LANDSCAPE ARCHITECTS PLANNERS
PHOENIX, AZ FORT WORTH, TX CHICAGO, IL
4500 S. LAKESHORE DRIVE
SUITE 250
TEMPE, ARIZONA 85282
(602) 345-0383 FAX (602) 491-2581

JOB NO. 9321300
RHR: RHR
CHECKED BY: FSW
DATE: APR. 22, 1994
SCALE: 1"= 50'
SHEET 4 OF 9 SHEETS

5/25/94

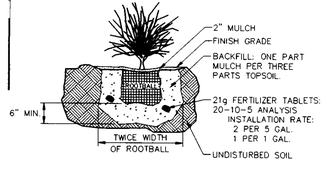


LANDSCAPE MATERIALS LIST

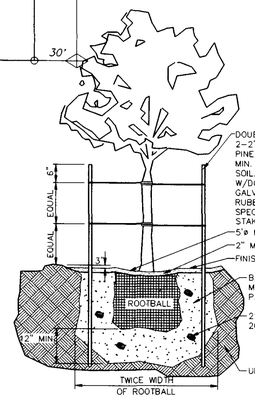
SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	QUANTITY
	BRADFORD PEAR	BRADFORD CALLERYANA 'BRADFORD'	2 CAL. B&B	8
	AUSTRIAN BLACK PINE	PINUS NIGRA	8'-10' HT. B&B	12
	SILVER MAPLE	ACER SACCHARINUM	2" CAL. B&B	28
	SEA GREEN JUNIPER	JUNIPERUS CHINENSIS 'MINT JULEP'	5 GAL.	207
	BUSH CINQUEFOIL	POTENTILLA FRUTICOSA 'RED ACE'	5 GAL.	100
	CREEPING MAHONIA	MAHONIA REPENS	1 GAL 3'-0" O.C.	75
	TURF	MATCH EXISTING	HYDROSEED	26,200 S.F.
SB	SHREDDED BARK		4" DEPTH	14,200 S.F.
	STEEL EDGING		1/8"X4"	330 L.F.

LANDSCAPE AREA PROVIDED IN IMPROVED PARKING AREA	9,830 S.F. (6%)
TOTAL LANDSCAPE PROVIDED ON SITE	95,700 S.F. (16%)

NOTES:
1. ALL GRASSED AREAS ARE TO RECEIVE FOUR INCHES OF TOPSOIL, SEED, MULCH AND WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
2. ALL LANDSCAPE AREAS ARE TO BE WATERED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM.
3. EXTEND SHREDDED BARK INTO NON-LAWN AREAS UNDER ALL SHRUBS AND GROUND COVER.
4. TREES ARE TO BE MIN. 8'-10' HT.
5. PROVIDE FABRIC WEED BARRIER UNDER ALL PLANTING AND MULCHED AREAS.



SHRUB PLANTING



TREE PLANTING

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

ACCEPTED KR 6/24/94
ANY CHANGE OF SETBACKS MUST BE APPROVED BY THE CITY PLANNING DEPT. IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY LOCATE AND IDENTIFY EASEMENTS AND PROPERTY LINES.

Revised sheet received 6/17/94

NO.	DATE	REVISION DESCRIPTION
1	6-15-94	ADD 7 TREES IN PARKING LOT PER CITY OF G.J.

DATE:

SHEET TITLE: PLANTING PLAN

PROJECT TITLE: WAL★MART
NORTH AVE. & MELODY LN.
GRAND JUNCTION, COLORADO

DUNAWAY ASSOCIATES WEST INC
ENGINEERS LANDSCAPE ARCHITECTS PLANNERS
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JOB NO. 9321300
RHR CLR
CHECKED BY: CDU
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SCALE: 1" = 50'
SHEET 6 OF 9 SHEETS

1994-003