Easterling & Associates, Inc.

5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87114
(505) 898-8021

May 2, 1989

Mr. Bernie J. Montoya
Engineering Assistant
Engineering Group
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: TOYS "R" US GRADING AND DRAINAGE CERTIFICATION (J-19/D48)

Dear Bernie:

This letter shall serve as engineering certification that the below-ground storm drain and storm water detention facilities for the above-referenced project were constructed in substantial conformance with the approved grading and drainage plan. One copy of Sheets C-2A and C-2B are enclosed for your review.

Please do not hesitate to contact me, should you have any questions.

Sincerely,

Douglas W. Copeland, P.E.
Project Manager

DWC/djh
Job No. 2011.2

Enclosures

DRAINAGE INFORMATION SHEET

ZONE ATLAS/DRAINAGE FILE NO. J-19/D-48

PROJECT TITLE: Toys "R" Us - Phase I only

LEGAL DESCRIPTION: Parcels D & E of Winrock Shopping Center and a leased portion of Tract A, Winrock Shopping Center.

CITY ADDRESS: SW corner of Indian School Road & Pennsylvania Street

ENGINEERING FIRM: Easterling & Assoc. Inc. CONTACT: Douglas Copeland

ADDRESS: 5843 Paradise Blvd. N.W. PHONE: 898-8021

OWNER: Toys "R" Us CONTACT:

ADDRESS: PHONE:

ARCHITECT: Casco Corporation CONTACT: John McCutcheon

ADDRESS: 10877 Watson Road St. Louis MO 63127 PHONE: 314/821-1100

SURVEYOR: Hugg Surveying, Inc. CONTACT: Garry Hugg

ADDRESS: 4100 Southern Blvd., SE Rio Rancho, NM 87124 PHONE: 505/ 892-8800

CONTRACTOR: Sun Builders CONTACT: Gigi Thompson

ADDRESS: 2600 Viysfrl Plaza Drive Houston, TX 77008 PHONE: 713/868-9123

RECEIVED
MAY 02 1989
HYDROLOGY SECTION

PRE-DESIGN MEETING:

____ YES
____ NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. _____
EPC NO. _____
PROJECT NO. _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ GRADING & DRAINAGE PLAN
____ EROSION CONTROL PLAN
__X__ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT APPROVAL
____ GRADING/PAVING PERMIT APPROVAL
__X__ OTHER For Bernie's Information (SPECIFY)

DATE SUBMITTED: May 2, 1989 BY: Douglas Copeland

Engineering Certification

EASTERLING & ASSOCIATES, INC.
5643 Paradise Blvd., NW
Albuquerque, New Mexico 87114
(505) 898-8021

RECEIVED
MAY 02 1989
HYDROLOGY SECTION

[X] DELIVERY [ ] PICK UP [ ] _____

****

ACTION DESIRED BY: DATE 5/2/89 TIME _____

JOB _____ JOB NO. 2011.2 TASK _____

REQUESTED BY: DWC

APPROVED BY: DWC

****

COMPANY NAME: COA - HYDROLOGY

ADDRESS: 4th Floor - Co Bldg

ATTENTION: BERNIE MONTOYA TELEPHONE: _____

ITEM DESCRIPTION: LETTER - Toys 'R' Us
Grading Cert - J19/D-48
Drainage Info Sheet
G & D. PLAN SHEETS C-2A
C-2B

SPECIAL INSTRUCTIONS: FOR ENGINEERING CERTIFICATION

****

RECEIVED BY: _____

COMPANY: _____ DATE _____ TIME _____

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 11, 1988

Doug Copeland
Easterling & Associates, Inc.
5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87114

RE: DRAINAGE PLAN FOR TOYS "R" US PHASE I (J-19/D48)
RECEIVED JUNE 22, 1988

Dear Mr. Copeland:

The above referenced plan dated June 21, 1988 is approved for Building Permit and S.O. #19 release. The S.O. #19 includes a tie-in to the back of a catch basin and the curb penetration with a four inch pipe.

Please attach a copy of this approved plan to the construction sets routed for sign-off.

Should you have any questions, please call me at 768-2650.

Cordially,

Carlos A. Montoya, P.E.

CAM/bsj

xc: Becky Sandoval, Permits

CASCO
CORPORATION
of CASCO Ltd.

June 28, 1988

Sun Builders
2600 Citadel Plaza Drive
Houston, Texas 77008

Attention: Gigi Thomason

Re: TOYS "R" US, INC.
Albuquerque, NM
Special Inspections for Storm Line Installation

Dear Gigi:

The City of Albuquerque requires special inspections on the installation of the storm drainage lines, catch basins, culvert pipes and special order 19 connections. The Owner has authorized Easterling & Associates to handle the certification of your installation of these lines. Please contact Doug Copeland at Easterling & Associates, telephone (505) 898-8021 to coordinate your installation schedule with his site visits.

Please contact us if you have any questions.

Sincerely,

CASCO CORPORATION

John T. McCutcheon

/pmh

Air Courier.

cc: Jeff Bayer
Doug Copeland (Easterling & Associates)
PJH
File (88-638)

10877 Watson Road • St. Louis, Missouri 63127 • (314) 821-1100 • TWX910-760-1472 • FAX (314) 821-4162

DRAINAGE INFORMATION SHEET

ZONE ATLAS/DRAINAGE FILE NO. J-19 / D-48

PROJECT TITLE: Toys "R" Us - Phase I only

LEGAL DESCRIPTION: Parcels D & E of Winrock Shopping Center and a leased portion of Tract A, Winrock Shopping Center.

CITY ADDRESS: SW corner Indian School Road & Pennsylvania Street

ENGINEERING FIRM: Easterling & Assoc. Inc. CONTACT: Doug Copeland

ADDRESS: 5643 Paradise Blvd. N.W. PHONE: 898-8021

OWNER: Toys "R" Us CONTACT: Bob Gorman

ADDRESS: 395 West Passaic Street, Rochelle Park, NJ 07662 PHONE: 201/854-2800

ARCHITECT: Casco Corporation CONTACT: John McCutcheon

ADDRESS: 10877 Watson Road, St. Louis, MO 63127 PHONE: 314/821-1100

SURVEYOR: Hugg Surveying, Inc. CONTACT: Garry Hugg

ADDRESS: 4100 Southern Blvd., SE, Rio Rancho, NM 87124 PHONE: 892-8800

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES (copy included)

____ NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. _____

EPC NO. _____

PROJECT NO. _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

X GRADING & DRAINAGE PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

RECEIVED JUN 22 1988 HYDROLOGY SECTION

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ SITE DEVELOPMENT PLAN APPROVAL

____ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

____ ROUGH GRADING PERMIT APPROVAL

____ GRADING/PAVING PERMIT APPROVAL

____ OTHER _____ (SPECIFY)

DATE SUBMITTED: February 23, 1988 BY: DOUGLAS C. COPELAND

Resubmitted: March 24, 1988 Revised Site Plan No. 2

Resubmitted: April 21, 1988 Revised to show Detailed Grading & Drainage Plan

Resubmitted: MAY 17/1988 REVISED TO SHOW 60" CMP DETENTION FACILITY. - D.C.C.

RESUBMITTED JUNE, 22, 1988 REVISED TO SHOW G&D PLANS TO CONFORM TO REVISED SITE PLAN

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 15, 1988

Doug Copeland
Easterling & Associates, Inc.
5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87114

RE: DRAINAGE PLAN FOR TOYS "R" US PHASE I (J-19/D48)
RECEIVED MAY 17, 1988

Dear Mr. Copeland:

The above referenced plan dated May 12, 1988 is approved for "Foundation Only and Grading Permit". Stuart relayed the information that the drawing was going to change again prior to Building Permit. Therefore, prior to building permit release, we will need to review and approve the revised drainage plan. Also, please be advised of the following comments:

1. I was unable to obtain the 0.50% slope on the 24 inch RCP on Sheet C-2A. I used the length and the invert elevations of the two manholes.

2. Please show the rebar requirements for Section B of the sidewalk, culvert; Section M of the concrete rundown; and Section N of the concrete rundown on Sheet C-2B.

3. I believe that the height of the connection encasement block should be four feet on Sheet C-2C.

4. Please document who the owner wants to inspect the site. We will inspect, however, we need notice from the contractor when the improvements are in but are not covered. We will need open trenches and time for our survey crew to check elevations. Another option is for the owner's engineer to certify the project.

Should you have any questions, please call me at 768-2650.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

CITY / HYDROLOGY

DRAINAGE INFORMATION SHEET

ZONE ATLAS/DRAINAGE FILE NO. J-19

PROJECT TITLE: Toys "R" Us - Phase I only

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SURVEYOR: Hugg Surveying, Inc. CONTACT: Garry Hugg

ADDRESS: 4100 Southern Blvd., SE Rio Rancho, NM 87124 PHONE: 892-8800

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

RECEIVED
MAY 17 1988
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES (copy included)

NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO.

EPC NO.

PROJECT NO.

TYPE OF SUBMITTAL:

DRAINAGE REPORT

DRAINAGE PLAN

CONCEPTUAL GRADING & DRAINAGE PLAN

GRADING PLAN

X GRADING & DRAINAGE PLAN

EROSION CONTROL PLAN

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SITE DEVELOPMENT PLAN APPROVAL

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FOUNDATION PERMIT APPROVAL

CERTIFICATE OF OCCUPANCY APPROVAL

ROUGH GRADING PERMIT APPROVAL

GRADING/PAVING PERMIT APPROVAL

OTHER (SPECIFY)

DATE SUBMITTED: February 23, 1988 BY: Douglas Copeland

Resubmitted: March 24, 1988 Revised Site Plan No. 2

Resubmitted: April 21, 1988 Revised to show Detailed Grading & Drainage Plan

RESUBMITTED: MAY 17/1988 REVISED TO SHOW 60" CMP DETENTION FACILITY. - DLC

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 15, 1988

Doug Copeland, P.E.
Easterling & Associates, Inc.
5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87124

RE: CONCEPTUAL GRADING & DRAINAGE REPORT FOR TOYS 'R' US
RESUBMITTED MARCH 25, 1988, FOR SITE DEVELOPMENT PLAN APPROVAL
(J-19/D48)

Dear Mr. Copeland:

I have reviewed your submittal, referred to above, and have the following comments on it:

1. From your report

   a. the site at present discharges an estimated 58.3 cfs, during the 100 year event;

   b. the undeveloped flows from the site are estimated to peak at 27.2 cfs;

   c. after the development of the Toys 'R' Us building site and the adjacent parking lot (subbasins A, B, & E on your grading and drainage plan), the total peak run-off during the 100 year event from the areas of concern is estimated at 8.1 cfs from subbasins A, D, & E, plus 28.0 cfs from subbasins C & G, the existing parking lots to the south, for a total of 36.1 cfs.

2. At our predesign conference, we agreed that the discharge from the site should be held to a maximum equal to the undeveloped flow rate (27.2 cfs) in order to help alleviate some of the flooding in the intersection of Louisiana and Indian School.

3. Your proposed discharge is in excess of the agreed upon rate.

I am approving your submittal for the following reasons: first, it is expected that with the completion of the Uptown Loop Road, that the flows from this site will be intercepted from Indian School Road before reaching the intersection with Louisiana, although this is not certain, and second, if the drainage diversion is not built for some reason, your project will improve the current situation by reducing the peak flows from 58.3 cfs to 36.1 cfs.

If you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

GSR/

EASTERLING & ASSOCIATES, INC.
5643 Paradise Blvd. NW
ALBUQUERQUE, NEW MEXICO 87114

(505) 898-8021

LETTER OF TRANSMITTAL

TO CITY HYDROLOGY

DATE 3/25 JOB NO. 2011.2
ATTENTION STEWART REEDER
RE THROUGH BARBARA
REVISED TOYS R US SITE PLAN -

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			DRAINAGE REPORT & 2 COPIES OF CONCEPTUAL G.D PLAN.

RECEIVED
MAR 25 1988
HYDROLOGY SECTION

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS BARBARA - THE DRAINAGE INFO SHEET IS INCLUDED IN REPORT (SEE SECOND SHEET).

STEWART - WE HAVE REVISED PLAN. PLEASE DISREGARD PREVIOUS SUBMITTAL. SORRY FOR THE REDO -

COPY TO Jack Ferguson

SIGNED: DOUG

If enclosures are not as noted, kindly notify us at once.

PRODUCT 240-2 ACME Inc. Boston, Mass. 01471

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 18, 1988

Doug Copeland, P.E.
Eastetling & Associates, Inc.
5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87114

RE: CONCEPTUAL GRADING AND DRAINAGE REPORT FOR TOYS 'R' US, SUBMITTED FEBRUARY 26, 1988, FOR SITE DEVELOPMENT PLAN APPROVAL (J-19/D48)

Dear Mr. Copeland:

Your submittal, referred to above, is approved for Site Development Plan sign-off by the Hydrology Section. I agree that your pond size could be reduced to as little as 8,000 cubic feet, and, with a controlled outfall as you are proposing, that the local flooding conditions in Indian School Road will be mitigated somewhat.

I believe that there is an error on the HYDROLOGY INPUT PARAMETERS Table B, area size: it is given as 4.58 acres instead of 5.60 acres.

For Building Permit approval, please provide the following:

- a detail of the outflow control you are proposing;
- positive drainage for the ponds so that water will not stand;
- low flow channels in Pond B, preferably lined with some sort of dumped riprap; and
- the landscaping treatment for the ponds.

If you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

GSR/bsj

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO.: J19 DATE: 17 FEB 88

PLANNING DIVISION NOS: EPC: ______ DRB: ______

SUBJECT: Toys [illegible]

STREET ADDRESS (IF KNOWN): ______

SUBDIVISION NAME: ______

APPROVAL REQUESTED:

___ PRELIMINARY PLAT
X SITE DEVELOPMENT PLAN
___ OTHER

___ FINAL PLAT
___ BUILDING PERMIT
___ ROUGH GRADING

ATTENDANCE:

WHO	REPRESENTING
DOUG COPELAND	EASTERLING & ASSOC.
STUART REEDER	CITY

FINDINGS:

1. CONCEPTUAL DRAINAGE PLAN REQUIRED
2. FREE DISHARGE NOT ALLOWED INTO INDIAN SCHOOL
3. SUB SURFACE DISCHARGE TO EXISTING FACILITIES:
   A. FREE DISCHARGE ALLOWED w/
      (1) ANALYSIS OF DOWNSTREAM CAPACITY
      (2) Tp OF YOUR SITE IS FAR ENOUGH IN ADVANCE OF BASIN Tp
4. DISCHARGE TO INDIAN SCHOOL (SURFACE) MUST BE AT A CONTROLLED RATE: USE RATIONAL w/ A COEFFICIENT OF 0.40 (UNDEVELOPED)

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: G S Reeder SIGNED: [illegible]
TITLE: CE / HYDROLOGY TITLE: [illegible]
DATE: 16 FEB 88 DATE: [illegible]

NOTE PLEASE PROVIDE A COPY OF THIS RECAP WITH THE DRAINAGE SUBMITTAL

1/6

RECEIVED
MAY 17 1988
HYDROLOGY SECTION

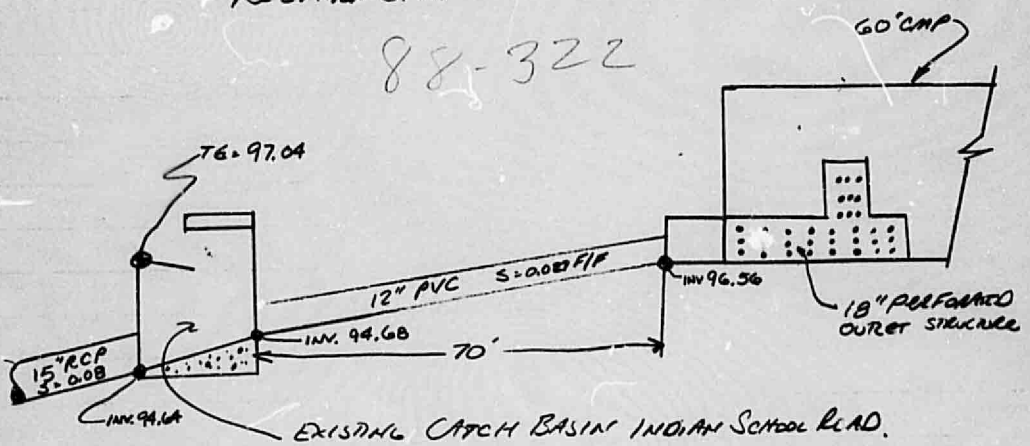
5/13/88

REVISED HYDRAULICS - TOYS R US
by: D. COPELAND

GIVEN:

1. REDESIGN OF POND TO CHANGE FROM POND SECTION TO UNDERGROUND STORM WATER DETENTION FACILITY WITH FOLLOWING RELATIONSHIP:

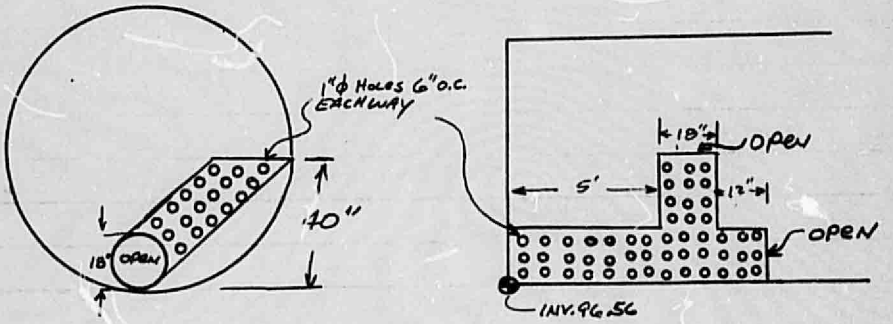
88-322



FIND: STAGE VS DISCHARGE RELATIONSHIP FOR GIVEN OUTLET WORKS DESIGN.

SOLUTION:

1. CASE I - ANALYZE 18" PERFORATED OUTLET STRUCTURE TO DETERMINE INLET CAPACITY.



NO. HOLES PER HOLE ROW = $2\left(\frac{5+1.5+1.0}{0.50}\right)$ = 30 HOLES

OPEN AREA PER ROW = $(30)(1/2)^2(\pi/4)$ = 0.1 .4 FT^2

ANALYZE CASE WHERE WATER LEVEL IS 18" DEEP IN MAIN PIPE, I.E. 18" PERF. PIPE IS SUBMERGED UP TO RISER. CALCULATE Q INTO PIPE.

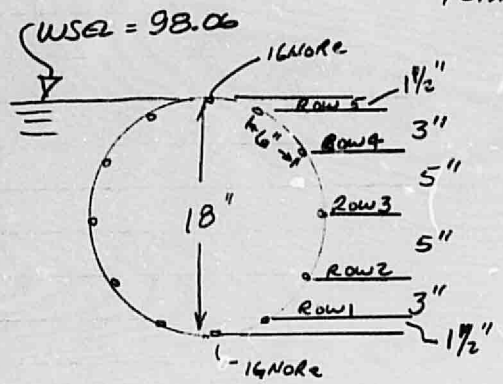
USING ORIFICE EQUATION FOR SMALL HOLES GIVES:

$$Q = Ca\sqrt{2gh}$$

SMALL HOLES

Row #	C	a (ft^2)	h (ft)	Q (CFS)
1	0.60	0.164	1.42	0.94
2	0.60	0.164	1.08	0.82
3	0.60	0.164	0.67	0.65
4	0.60	0.164	0.38	0.49
5	0.60	0.164	0.13	0.28

TOTAL Q SMALL HOLES. ==> 3.18 CFS



Q FOR 18" PIPE EXIT =

$$Q = (0.6)(1.5)^2\left(\frac{\pi}{4}\right)\sqrt{(2)(32.2)(0.75)}$$

$$= 7.38 \text{ CFS (LARGE EXIT)}$$

TOTAL $Q_{WSEL\,98.06}$ = 10.56 CFS

2. CASE II - ANALYZE 12" PVC PIPE FOR OUTFLOW CAPACITY. ASSUME WSEL = 98.06 IN 60" CMP, FULL PIPE FLOW, & FREE DISCHARGE @ OUTLET.

FROM SCS "ENGINEERING FIELD MANUAL"

EQ. 3-12 $$Q = a\sqrt{\frac{2gH}{1+Km+(Kp)(L)}}$$

$g = 32.2\ Ft/sec^2$

$a = (12/12)^2(\pi/4) = 0.785\ Ft^2$

$H = 98.06 - 94.68 = 3.38\ Ft.$

Km = minor Losses = 0.5 FOR "SHARP CORNER

Kp = Pipe losses $= \frac{5087\,n^2}{(d)^{4/3}} = 0.0187\ Ft/Ft$

$n = 0.010$

L = Length of Pipe = 70'

$$\therefore\ Q = (0.785)\sqrt{\frac{(2)(32.2)(3.38)}{\left[1+0.5+(70)\left(\frac{(5087)(0.01)^2}{(12)^{4/3}}\right)\right]}}$$

$$= \underline{\underline{6.93\ CFS}}$$

3. CASE III - CHECK MANNINGS EQ.

$$V = \frac{1.48}{n}(R)^{2/3}(S)^{1/2}$$

$$= \frac{1.48}{0.01}\left(\frac{0.785}{3.14}\right)^{2/3}(0.027)^{1/2} = 9.6 \text{ FPS}$$

$$Q = VA = (0.785)(9.6) = \underline{7.57 \text{ CFS}}$$

CONCLUSION:

@ WSEL = 98.06 CASE II (Pipe Control) IS CONTROLLING FACTOR FOR OUTLET STRUCTURE. CONTINUE ANALYSIS TO DETERMINE STAGE DISCHARGE RELATIONSHIP FOR WSEL = 98.06 to 101.56

STAGE vs DISCHARGE

12" PVC PIPE, 70 FEET LONG $S = 0.027 FT/FT$
$n = 0.010$ $K_{P_{12}} = 0.0187 FT/FT$ $K_{m_{12}} = 0.5$

$$Q = (A)\sqrt{\frac{2gH}{1 + K_m + K_P L}}$$

$K_{P_8} = 0.032$
$K_{m_8} = 0.5$

WSEL	H (FT)	Q (CFS) 12"	Q (CFS) 8"
98.06	3.38	6.93	2.66
99.06	4.38	7.87	3.03
100.06	5.38	8.72	3.35
101.06	6.38	9.49	3.66
101.56	6.88	9.80	3.80

THE 12" ϕ PVC GIVES OUTFLOW RATES WHICH MORE CLOSELY CORRESPOND TO THE HYDROLOGY RECOMMENDATIONS. THEREFORE USE 12"ϕ PVC OUTLET PIPE.

TIME TO DRAIN PIPES WHEN FULL EQUALS 18 MINUTES

$8635 CF / 8.0 CFS = 18 MIN.$

EASTERLING & ASSOCIATES, INC.
5643 Paradise Blvd. NW
ALBUQUERQUE, NEW MEXICO 87114

(505) 898-8021

LETTER OF TRANSMITTAL

DATE	JOB NO.
6/29/88	2012C
ATTENTION: Carlos Maestas	
RE:	

TO City Arch. Hydrology

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☒ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	6/29/88		Memo from CASCO - Engr. Dat to County Site

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval
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☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Carlos - Per Your Request

COPY TO Carlos A Martinez

SIGNED: Douglas G.

If enclosures are not as noted, kindly notify us at once.

PRODUCT 240-2 NEBS Inc., Groton, Mass. 01471

TOYS 'R' US

DRAINAGE REPORT

BY:
DOUGLAS W. COPELAND, P.E.

EASTERLING & ASSOCIATES, INC.
5643 PARADISE BOULEVARD, NW
ALBUQUERQUE, NEW MEXICO 87114

APRIL 1988

Verbal
comments
5/10/88
GSR

DRAINAGE INFORMATION SHEET

ZONE ATLAS/DRAINAGE FILE NO. J-19/D48

PROJECT TITLE: Toys "R" Us - Phase I only

LEGAL DESCRIPTION: Parcels D & E of Winrock Shopping Center and a leased portion of Tract A, Winrock Shopping Center.

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ADDRESS: 4100 Southern Blvd., SE Rio Rancho, NM 87124 PHONE: 892-8800

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

RECEIVED
APR 29 1988
HYDROLOGY SECTION

PRE-DESIGN MEETING:

Y YES (copy included)
__ NO
X COPY OF CONFERENCE RECAP SHEET PROVIDED

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TYPE OF SUBMITTAL:

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__ PRELIMINARY PLAT APPROVAL
__ SITE DEVELOPMENT PLAN APPROVAL
__ FINAL PLAT APPROVAL
X BUILDING PERMIT APPROVAL
__ FOUNDATION PERMIT APPROVAL
__ CERTIFICATE OF OCCUPANCY APPROVAL
__ ROUGH GRADING PERMIT APPROVAL
__ GRADING/PAVING PERMIT APPROVAL
__ OTHER (SPECIFY)

DATE SUBMITTED: February 23, 1988 BY: Douglas L. Lor

Resubmitted: March 24, 1988 Revised Site Plan No. 2

Resubmitted: April 21, 1988 Revised to show Detailed Grading & Drainage Plan

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO.: J19 DATE: 17 FEB 88

PLANNING DIVISION NOS: EPC: _____ DRB: _____

SUBJECT: Toys R US - NW SW CORNER REVIS.; INDIAN SCHOOL NE CORNER WINROCK SHOPPING CENTER

STREET ADDRESS (IF KNOWN): _____

SUBDIVISION NAME: _____

APPROVAL REQUESTED:

	PRELIMINARY PLAT		FINAL PLAT
X	SITE DEVELOPMENT PLAN		BUILDING PERMIT
	OTHER		ROUGH GRADING

ATTENDANCE:	WHO	REPRESENTING
	DOUG COPELAND	EASTERLING & ASSOC.
	STUART REEDER	CITY

FINDINGS:

1. CONCEPTUAL DRAINAGE PLAN REQUIRED
2. FREE DISHARGE NOT ALLOWED INTO INDIAN SCHOOL
3. SUR SURFACE DISCHARGE TO EXISTING FACILITIES:
   A. FREE DISCHARGE ALLOWED W/
      (1) ANALYSIS OF DOWNSTREAM CAPACITY
      (2) Tp OF YOUR SITE IS FAR ENOUGH IN ADVANCE OF BASIN Tp
4. DISCHARGE TO INDIAN SCHOOL (SURFACE) MUST BE AT A CONTROLLED RATE: USE RATIONAL W/ A COEFFICIENT OF 0.40 (UNDEVELOPED)

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED:	G.S.REEDER	SIGNED:	DOUGLAS L. COPELAND
TITLE:	CE/HYDROLOGY	TITLE:	ENGR
DATE:	16 FEB 88	DATE:	4/16/88

NOTE PLEASE PROVIDE A COPY OF THIS RECAP WITH THE DRAINAGE SUBMITTAL

RECEIVED MAR 24 1988

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR	CHIEF ADMINISTRATIVE OFFICER	DEPUTY CAO PUBLIC SERVICES	DEPUTY CAO PLANNING/DEVELOPMENT
KEN SCHULTZ	GENE ROMO	FRANK MARTINEZ	BILL MUELLER

March 18, 1988

Doug Copeland, P.E.
Easterling & Associates, Inc.
5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87114

RE: CONCEPTUAL GRADING AND DRAINAGE REPORT FOR TOYS 'R' US, SUBMITTED FEBRUARY 26, 1988, FOR SITE DEVELOPMENT PLAN APPROVAL (J-19/D48)

Dear Mr. Copeland:

Your submittal, referred to above, is approved for Site Development Plan sign-off by the Hydrology Section. I agree that your pond size could be reduced to as little as 8,000 cubic feet. and, with a controlled outfall as you are proposing, that the local flooding conditions in Indian School Road will be mitigated somewhat.

I believe that there is an error on the HYDROLOGY INPUT PARAMETERS Table B, area size: it is given as 4.58 acres instead of 5.60 acres.

For Building Permit approval, please provide the following:

- a detail of the outflow control you are proposing;
- positive drainage for the ponds so that water will not stand;
- low flow channels in Pond B, preferably lined with some sort of dumped riprap; and
- the landscaping treatment for the ponds.

If you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

GSR/bsj
copy sent to John McCutcheon 3-25-88

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR KEN SCHULTZ
CHIEF ADMINISTRATIVE OFFICER GENE ROMO
DEPUTY CAO PUBLIC SERVICES FRANK MARTINEZ
DEPUTY CAO PLANNING/DEVELOPMENT BILL MUELLER

April 15, 1988

Doug Copeland, P.E.
Easterling & Associates, Inc.
5643 Paradise Boulevard, NW
Albuquerque, New Mexico 87124

RE: CONCEPTUAL GRADING & DRAINAGE REPORT FOR TOYS 'R' US
RESUBMITTED MARCH 25, 1988, FOR SITE DEVELOPMENT PLAN APPROVAL
(J-19/D48)

Dear Mr. Copeland:

I have reviewed your submittal, referred to above, and have the following comments on it:

1. From your report

   a. the site at present discharges an estimated 58.3 cfs, during the 100 year event;

   b. the undeveloped flows from the site are estimated to peak at 27.2 cfs;

   c. after the development of the Toys 'R' Us building site and the adjacent parking lot (subbasins A, B, & E on your grading and drainage plan), the total peak run-off during the 100 year event from the areas of concern is estimated at 8.1 cfs from subbasins A, D, & E, plus 28.0 cfs from subbasins C & G, the existing parking lots to the south, for a total of 36.1 cfs.

2. At our predesign conference, we agreed that the discharge from the site should be held to a maximum equal to the undeveloped flow rate (27.2 cfs) in order to help alleviate some of the flooding in the intersection of Louisiana and Indian School.

3. Your proposed discharge is in excess of the agreed upon rate.

I am approving your submittal for the following reasons: first, it is expected that with the completion of the Uptown Loop Road, that the flows from this site will be intercepted from Indian School Road before reaching the intersection with Louisiana, although this is not certain, and second, if the drainage diversion is not built for some reason, your project will improve the current situation by reducing the peak flows from 58.3 cfs to 36.1 cfs.

If you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

GSR/

DRAINAGE REPORT

PROJECT LOCATION

The proposed project is located on property at the southwest corner of the Indian School Road and Pennsylvania Avenue intersection adjacent to and northeast of Winrock Shopping Center. The total land area involved measures 9.59 acres.

EXISTING CONDITIONS

Approximately 4.90 acres are currently undeveloped; 3.54 acres are currently paved and provide parking spaces for a portion of Winrock Shopping Center and Winrock Medical Plaza; 0.53 acres exist as roof area; and 0.62 acres exist as landscaping. Surface runoff from existing pavement and roof areas flows overland in a westerly direction. Runoff from the Medical Plaza concentrates at the northwest corner of the property near Analysis Point No. 1 where it flows into a catch basin drop structure with an outlet which provides free discharge into Indian School Road. Runoff from the remaining areas either flows overland into Indian School Road or commingles with parking lot flows from Winrock parking lot and flows to a drainage way immediately west of the proposed development. The existing drainage way directs runoff from contributing basins into Indian School Road and is currently allowed to free discharge at an uncontrolled rate. There exists a storm drain system in Indian School Road adjacent to the site. A catch basin is located approximately 75 feet west of Analysis Point No. 1. A field inspection of the site and review of topographic survey indicates there are no offsite flows entering the site.

FEMA Floodway Map Panel 30 shows a 100-year flood hazard area along Indian School Road east and west of Louisiana Boulevard. The Albuquerque Master Drainage Study shows that for Analysis Point AP 1003, the surface flow depth equals 0.76 feet for the 100-year event. This is 0.11 feet below the 0.87 foot maximum depth, as stipulated in Section 7 of the City of Albuquerque Drainage Ordinance.

PROPOSED DEVELOPMENT

It is proposed that the project be developed in two phases, with each phase given separate and independent site plan review and approval. Phased development strategy will be as follows:

PHASE I

Develop area between Winrock Theater on the west and proposed new access road off of Indian School on the east. Development will consist of demolishing existing Winrock Medical

Plaza and regrading the area within Basin A, D & E, in accordance with detailed grading and drainage plan.

Runoff from Basin A will be intercepted by Pond "A" and routed through Pond "A" outlet device into the back of the catch basin in Indian School Road. In accordance with hydrology and hydraulics discussion below, Pond "A" will be sized to store a volume equal to the total runoff volume minus the routed volume based upon a maximum allowable discharge rate of 8.1 cfs (see Figure 1). Runoff from Basin E will gravity-drain into the back of the catch basin in Indian School Road. Outlet structure hydraulic calculations show that for each stage of water surface elevation, the grate is the controlling factor for pond discharge. See Figure 2 and Figure 3 for Pond "A" outlet works details.

The mature landscape portion of Basin D will remain unchanged. New landscaping will be added to the east half of Basin D. Basin D will drain into Indian School Road via overland flow.

Basin E is a truck dock in a sump condition. A Special Order No. 19 connection to back of catch basin in Indian School Road will provide positive drainage.

Existing landscape medians and access drive shown in Basin C will be removed and paved over to match existing pavement. Landscape medians and new access road will be constructed through Basin C as shown. Existing paved parking areas in Basin C will not be regraded. At most, a slurry seal will be applied to eliminate striping and new stripes painted according to revised site plan. The drainage patterns for Basin C will not change as a result.

Offsite flows from Phase II will be intercepted and desilted in Pond B. Any excess runoff not retained in Pond B will flow into Indian School Road via access road.

Proposed development improves downstream flooding condition rather than contributing to it.

Existing catch basins and storm drain should have adequate capacity during peak runoff period for site (Tp<10 minutes) when compared to time to peak for watershed upstream.

Proposed Uptown Loop Road will construct major storm drain interceptor in short term. New interceptor will be located downstream of site and should provide permanent solution for downstream flooding problem.

PHASE II

Phase II development will occur in the future and is located east of proposed access road off of Indian School Road over to Pennsylvania Avenue.

With the exception of hydrology calculations shown herein, drainage scheme for Phase II development is not addressed by this report. The drainage scheme will be submitted for review and approval during the site planning process for this phase.

HYDROLOGY

The hydrology input parameters for Basins A, B, C, D, E, F & G are shown in Table 1. Pond "A" was sized based upon triangular hydrograph shown in Figure 1. The undeveloped flow rate for all basins is calculated to be 28.0 cfs. Basin A+D+E contribute 28% (3.99 acres + 4.1 acres = 28%) of the total peak flow at Analysis Point 1. Pursuant to pre-design conference with Stewart Reeder, A free discharge rate not-to-exceed the pre-existing undeveloped conditions will be allowed without further downstream analysis. Therefore, an allowable discharge rate for Phase I (Basin A+D+E) shall not exceed (0.28)*(28.0) = 7.9 CFS. Using triangular hydrograph and assuming simplified routing technique (i.e., inflow equals outflow not to exceed 7.9 cfs), pond volume for Pond "A" shall not exceed 8,000 CF.

HYDRAULICS

Pond "A" outlet hydraulics are summarized in Table 2. Figure 2 reflects the outlet works configuration shown on the plan. It is apparent from the three cases analyzed that the grate for pond "A" outlet structure will control outflow consistent with hydrology requirements.

The catch basin and storm drain facility draining to Pond "A" has a capacity of 16.0 cfs when flowing full.

$$V = \frac{1.49}{n} (R)^{0.667} (S)^{0.5}$$

Let n = 0.013
s = 0.005 Ft./Ft.
Dia. = 24" RCP

$$= \frac{1.49}{0.013} \left(\frac{3.14}{6.28}\right)^{0.667} (0.005)0.5 = 5.1 \text{ FPS}$$

$$Q = VA = (5.1)(3.14) = 16.0 \text{ cfs}$$

EROSION CONTROL

Phase I will be rough graded and redeveloped within the same construction season, thus, eliminating the need for intermediate erosion control plans. Any areas disturbed on Phase II as necessary to construct temporary ponds will be revegetated prior to completing the construction of Phase I.

TABLE 1 - HYDROLOGY INPUT PARAMETERS

HYDROLOGY CALCULATIONS

PROJ. NAME: TOYS R US (RESUBMITTAL PLAN NO. 3)
DESIGNER: DOUGLAS D. COPELAND
DATE: 04/27/88

PROJECT INFO INPUT DATA

Zone Atlas (Ref. 1986 City of Albuquerque Zone Atlas)	J-19
Soil Type (Ref. SCS Soil Survey)	EtC
Hydrologic Soil Group (Ref. SCS Soil Survey)	B
6 Hr. Rainfall Val. - 100 year freq. (Ref. Plate 22.2	2.35

* NOTE: If Tc < 10 min., Intensity calculations assume Tc = 10 min.

WATERSHED AREA INPUT DATA

Analysis Point No.: 1 Watershed Designation: BASIN A+B+C+D+E+F+G UNDEVELOPED

Height (Feet)	25
Length (Feet)	1100
Slope (Ft/Ft)	0.022
Tc (Min.) *	7.356
Velocity (fps)	2.491

Sub-area Description	UNDEVELOPED	ROOF	LANDSCAPE UNDEVELOPED		HA	COMPOSITE
Area (Acres)	14.10	0.00	0.00	0.00	0.00	14.10
Percentage of Total	100%	0%	0%	0%	0%	100%
Curve Number	70	98	61	70	0	70
'C' Value	0.40	0.90	0.25	0.40	0.00	0.40
Runoff (Inches)	0.39	2.12	0.15	0.39	0.00	0.39

WATERSHED AREA INPUT DATA

Analysis Point No.: 1 Watershed Designation: BASIN A+B+E DEVELOPED

Height (Feet)	13
Length (Feet)	1000
Slope (Ft/Ft)	0.012
Tc (Min.) *	9.264
Velocity (fps)	1.942

Sub-area Description	PAVEMENT	ROOF	LANDSCAPE UNDEVELOPED		HA	COMPOSITE
Area (Acres)	2.39	0.96	0.64	0.00	0.00	3.99
Percentage of Total	60%	24%	16%	0%	0%	100%
Curve Number	98	98	61	70	0	90.5
'C' Value	0.95	0.90	0.25	0.40	0.00	0.83
Runoff (Inches)	2.12	2.12	0.15	0.39	0.00	1.81

WATERSHED AREA INPUT DATA

Analysis Point No.: 1 Watershed Designation: BASIN A+B+C+D+E+F+G EXISTING

Height (Feet)	25
Length (Feet)	1100
Slope (Ft/Ft)	0.022
Tc (Min.) *	7.356
Velocity (fps)	2.491

Sub-area Description	PAVEMENT	ROOF	LANDSCAPE UNDEVELOPED		HA	COMPOSITE
Area (Acres)	7.47	0.56	1.13	4.94	0.00	14.10
Percentage of Total	53%	4%	8%	35%	0%	100%
Curve Number	98	98	61	70	0	89
'C' Value	0.95	0.90	0.25	0.40	0.00	0.70
Runoff (Inches)	2.12	2.12	0.15	0.39	0.00	1.34

WATERSHED AREA INPUT DATA

Analysis Point No.: 2 Watershed Designation: BASIN B+F DEVELOPED

Height (Feet)	12
Length (Feet)	560
Slope (Ft/Ft)	0.021
Tc (Min.) *	4.474
Velocity (fps)	2.085

Sub-area Description	PAVEMENT	ROOF	LANDSCAPE UNDEVELOPED		HA	COMPOSITE
Area (Acres)	2.05	0.73	0.28	0.00	0.00	3.06
Percentage of Total	67%	24%	9%	0%	0%	100%
Curve Number	98	98	61	70	0	96
'C' Value	0.95	0.90	0.25	0.40	0.00	0.87
Runoff (Inches)	2.12	2.12	0.15	0.39	0.00	1.94

WATERSHED AREA INPUT DATA

Analysis Point No.: 1 Watershed Designation: BASIN A+B+C+D+E+F+G DEVELOPED

Height (Feet)	15
Length (Feet)	515
Slope (Ft/Ft)	0.029
Tc (Min.) *	3.727
Velocity (fps)	2.302

Sub-area Description	PAVEMENT	ROOF	LANDSCAPE UNDEVELOPED		HA	COMPOSITE
Area (Acres)	10.58	1.69	1.83	0.00	0.06	14.10
Percentage of Total	75%	12%	13%	0%	0%	100%
Curve Number	98	98	61	70	0	95.5
'C' Value	0.95	0.90	0.25	0.40	0.00	0.85
Runoff (Inches)	2.12	2.12	0.15	0.39	0.00	1.67

WATERSHED AREA INPUT DATA

Analysis Point No.: 3 Watershed Designation: BASIN C+G DEVELOPED

Height (Feet)	12
Length (Feet)	700
Slope (Ft/Ft)	0.017
Tc (Min.) *	5.790
Velocity (fps)	2.014

Sub-area Description	PAVEMENT	ROOF	LANDSCAPE UNDEVELOPED		HA	COMPOSITE
Area (Acres)	6.26	0.00	0.77	0.00	0.00	7.03
Percentage of Total	89%	0%	11%	0%	0%	100%
Curve Number	98	98	61	70	0	95.5
'C' Value	0.95	0.90	0.25	0.40	0.00	0.87
Runoff (Inches)	2.12	2.12	0.15	0.39	0.00	1.91

TABLE 2

POND "A" OUTLET HYDRAULICS

Water Surface Elevation	CASE I Grate Control[2] h(Ft.)	CASE I Grate Control[2] Q(cfs)[1,3]	CASE II Orfice Control[4] @ Pipe Inlet[1,3] h(Ft.)	CASE II Orfice Control[4] @ Pipe Inlet[1,3] Q(cfs)[1,3]	CASE III Pipe Control[6] V(fps)[5]	CASE III Pipe Control[6] Q(cfs)[6]
5296.56			0	0	0	0
5297.56			0.50	2.7	10.8	8.5
5299.00			1.94	5.3	10.8	8.5
5299.50	0.50	2.7	2.44	5.9	10.8	8.5
5300.00	1.00	3.9	2.94	6.5	10.8	8.5
5300.50	1.50	4.7	3.44	7.0	10.8	8.5
5301.00	2.00	5.5	3.94	7.5	10.8	8.5
5301.50	2.50	6.1	4.44	7.9	10.8	8.5
5302.00	3.00	6.7	4.94	8.4	10.8	8.5
5302.50	3.50	7.2	5.44	8.8	10.8	8.5
5303.00	4.00	7.7	5.94	9.2	10.8	8.5
5303.50	4.50	8.2	6.44	9.6	10.8	8.5

Case I Controls - 8.1 cfs allowed, 8.2 cfs provided

NOTES:

1/ $Q = (C)(A)(2gh)^{0.5}$ for grate and orfice control

2/ A = 0.8 Ft.^{2} for Neenah grate R-2570

3 C = 0.6 for orfice equation

4/ a = 0.785 Ft.^{2} for 12" PVC pipe

5/ $V = \frac{1.49}{n}(R)^{0.667}(S)^{0.5}$ Let n = 0.009 for PVC
S = 0.027 Ft./Ft.
DIA. = 12"

6/ Q = VA

FIGURE I - TRIANGULAR HYDROGRAPH FOR BASIN A+D+E DEVELOPED

— TOYS R US —
REVISED SITE PLAN NO. 3
FOR PHASE I DEVELOPMENT

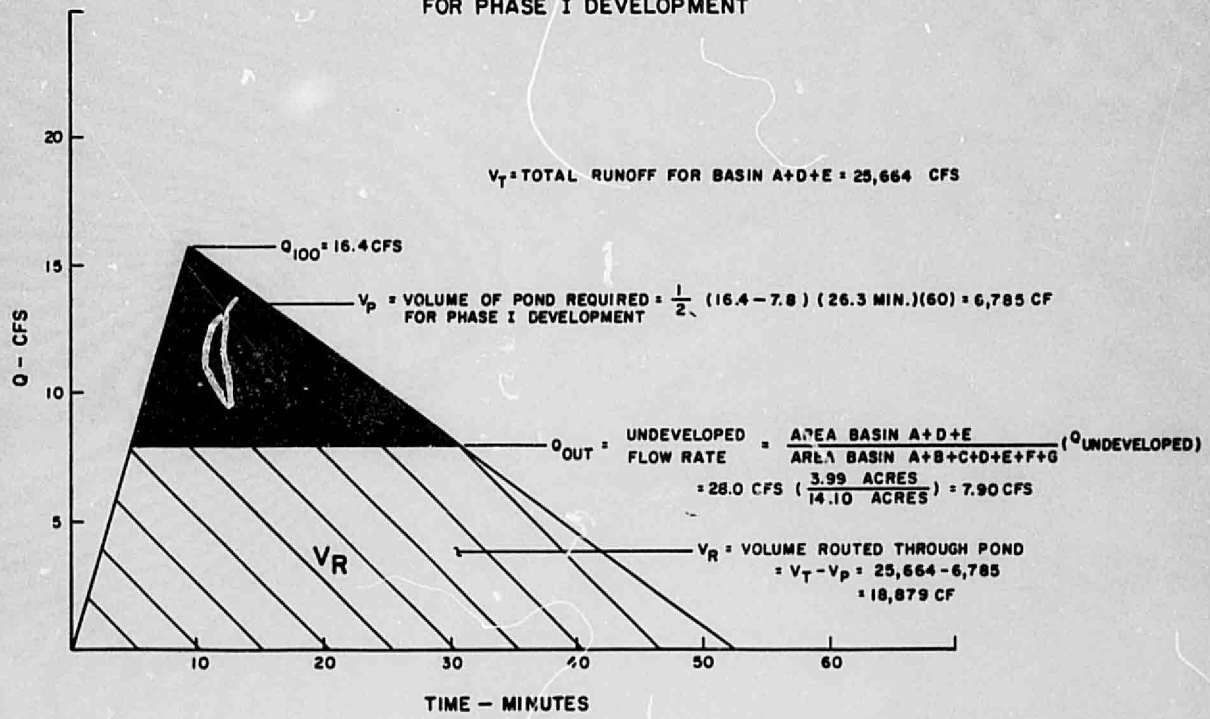
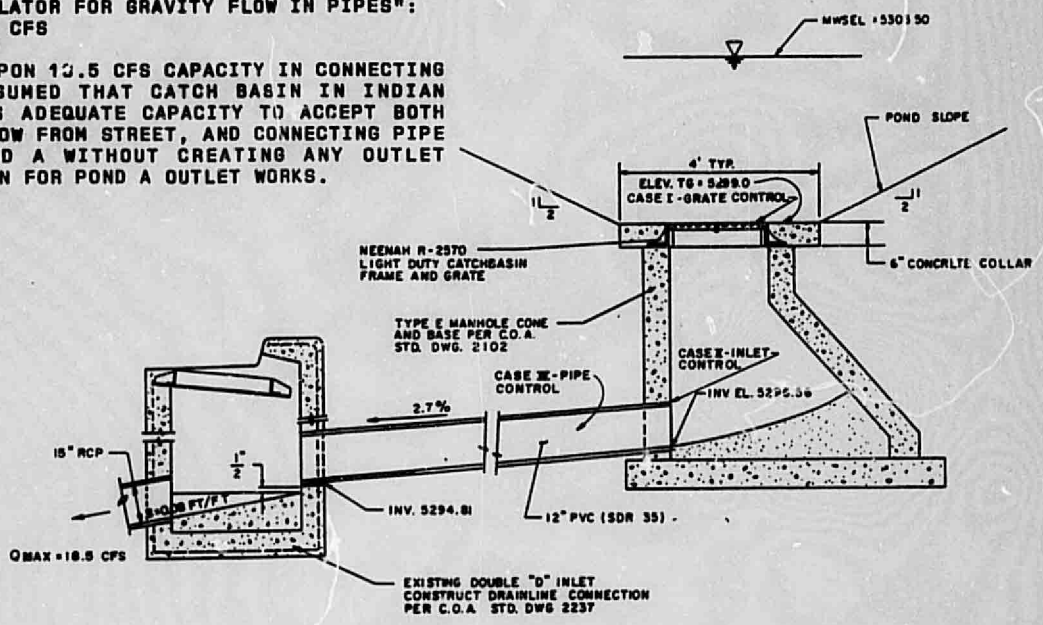


FIGURE 2 - POND A OUTLET STRUCTURE

GIVEN: AS-BUILT DRAWINGS INDICATE THAT EXISTING CATCH BASIN CONNECTING PIPE IS 15" DIAMETER RCP WITH S = 0.080 FT./F. FROM J-M PIPE "FIELD'S HYDRAULICS CALCULATOR FOR GRAVITY FLOW IN PIPES":
Q MAX = 18.5 CFS

ASSUME: BASED UPON 18.5 CFS CAPACITY IN CONNECTING PIPE, IT IS ASSUMED THAT CATCH BASIN IN INDIAN SCHOOL ROAD HAS ADEQUATE CAPACITY TO ACCEPT BOTH THROUGH GRATE FLOW FROM STREET, AND CONNECTING PIPE FLOWS FROM POND A WITHOUT CREATING ANY OUTLET CONTROL CONDITION FOR POND A OUTLET WORKS.



THEREFORE: IT CAN BE CONCLUDED THAT POND A OUTLET STRUCTURE HYDRAULICS ARE CONTROLLED BY CASE I-GRATE CONTROL, WITH A MAXIMUM FLOW RATE OF 8.2 CFS WHEN POND CRESTS EMERGENCY SPILLWAY AT ELEVATION 5303.50.

FIGURE 3 NEEHAH GRATE SPECS

NEENAH FOUNDRY COMPANY

FOR PRICING AND INFORMATION CONTACT:
MOUNTAIN WEST, INC.
5818 Signal, N.E.
Albuquerque, NM 87113
Phone (505) 821-8234
EARL YINGLING SCOTT YINGLING BOB HUMPHREY

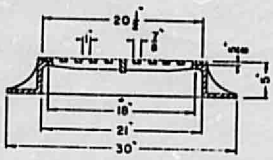
R-2570 Catch Basin Frame, Grate

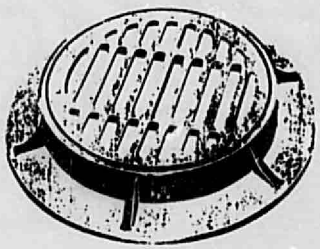
Light Duty

Board of Education Type

Total Weight 170 Pounds

Furnished standard with ground bearing surfaces.





FREE OPEN AREAS OF NEENAH GRATES

CATALOG NO	TYPE	SQ FT OPEN
R-2552-A	K	08
R-2552-B	K	08
R-2565-A	G	09
R-2565-C	G	12
R-2565-E	G	18
R-2565-F	G	18
R-2565-G	G	17
R-2565-H	G	12
R-2565-J	G	18
R-2569	A	08
R-2570	G	08
R-2571-A	F	09
R-2571-B	F	11
R-2571-C	F	09