CITY OF ALBUQUERQUE

Timothy M. Keller, Mayor

May 18, 2018

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM, 87199

RE: Legacy Apartments - Oakland Roadway
Supplemental Drainage Analysis
Engineer's Stamp Date: 5/11/18
Hydrology File: C18D064B

Dear Mr. Soule:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based upon the information provided in your submittal received 05/11/2018, the Supplemental Drainage Analysis **is not** approved for Work Order. The following comments need to be addressed for approval of the above referenced project:

1. Please provide drainage watersheds outlines in our map. Also please add the storm drain and show the flow direction. (Please just show a little of the pipes that leave the analysis area.

2. AP1 Is a double "C" inlet and you have calculated the grate would capture 14 CFS however you used the nomograph for a single inlet "A", "C", and "D". Please use the nomograph for a double inlet. The amount captured should be a lot less than 14 cfs. AP3 is also a double "C" inlet. However by the time all the surface drainage reaches AP3, it is captured by this inlet.

3. It appears that the inlet that is to be proposed is AP5. This also looks like it is right on the existing pipe from the area inlet to the manhole at the corner of Oakland and San Pedro. However, the road section here does not have a crown section so the runoff flows will not be captured by the inlet and will spill into San Pedro where there is no method to capture the runoff. This proposed inlet looks like it should be placed to the east where the road still has a crown section and then connected to the existing storm pipe.

Orig: Drainage File

CITY OF ALBUQUERQUE

Timothy M. Keller, Mayor

Also I have a general question. Who is going to design and build the proposed inlet? Doug told me that the work order for Legacy has not been closed yet and the Legacy 2 Apartments does not have drainage features in their Infrastructure List.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Orig: Drainage File

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: LEGACY NAA APARTMENT Building Permit #: _____ City Drainage #: C18-d064B

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: LOTS 4-10 &23-29 BLOCK 28, TRACT A, UNT B NORTH ALB ACES

City Address: OAKLAND BETWEEN SAN PEDRO AND LOUISIANA

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: VANDY INVESTMENTS,LLC Contact: _____

Address: 6501 EAGLE ROCK

Phone#: _____ Fax#: _____ E-mail: _____

Architect: Rich Barber Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Surveyor: CONSTRUCTION SURVEY TECHNOLOGIES Contact: JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

- x DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- x DRAINAGE PLAN RESUBMITTAL ***
- ____ CONCEPTUAL G & D PLAN
- ____ GRADING PLAN
- ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ____ ENGINEER'S CERT (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERT (TCL)
- ____ ENGINEER'S CERT (DRB SITE PLAN)
- ____ ENGINEER'S CERT (ESC)
- ____ SO-19
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- X SIA/FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ GRADING CERTIFICATION
- ____ SO-19 APPROVAL
- ____ ESC PERMIT APPROVAL
- ____ ESC CERT. ACCEPTANCE
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes X No ____ Copy Provided

DATE SUBMITTED: 5/11/18 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

*** this is a supplemental submittal analysis based upon city inquiry regarding inlet capacities

RIO GRANDE ENGINEERING OF NEW MEXICO, LLC

May 11, 2018

Doug Hughes PE CFM
Principal Engineer Planning Dept
City of Albuquerque

RE: Oakland Roadway Inlet Analysis
Legacy Apartments

Dear Mr. Hughes:

The purpose of this letter is to respond to your verbal/email on April 24, 2018. The analysis shows the ultimate flows that will be within the southern half of Oakland from Louisiana to San Pedro. The work map show the existing 4 inlets as well as one planned inlet at the far west end of Oakland. The existing conditions allow 1.36 cfs to enter San Pedro. The introduction of a single A inlet will eliminate the flow entering san Pedro.

For each existing inlet we have calculated the flow depth and associated grate capacity. The work map shows the flow at each inlet as well as the captured and bypass flow for each inlet. The developer of the Legacy Apartments is currently in the entitlement stages of the property at san Pedro and Oakland. They are willing to install this inlet with there project. They will add a single A inlet on their required infrastructure list.

This analysis does show some flow entered into San Pedro. The analysis show the impact is 1.36 cfs. Based upon the analysis, the addition of a single inlet will eliminate this flow. Should you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,

David Soule, PE

5/11/18

Weighted E Method

OAKLAND INLET ANALYSIS

Existing Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
OAKLAND 1	15750	0.362	0%	0	0.0%	0.000	15.0%	0.05424	85%	0.307	2.200	0.066	1.73	0.107
OAKLAND 2	8250	0.189	0%	0	0.0%	0.000	15.0%	0.02841	85%	0.161	2.200	0.035	0.91	0.056
OAKLAND 3	12375	0.284	0%	0	0.0%	0.000	15.0%	0.04261	85%	0.241	2.200	0.052	1.36	0.084
OAKLAND 4	12375	0.284	0%	0	0.0%	0.000	15.0%	0.04261	85%	0.241	2.200	0.052	1.36	0.084
OAKLAND5	12375	0.284	0%	0	0.0%	0.000	15.0%	0.04261	85%	0.241	2.200	0.052	1.36	0.084
SILVER OAKS	77220	1.773	0%	0	34.0%	0.603	16.0%	0.28364	50%	0.886	1.699	0.251	7.00	0.369
FUTURE ULACHER PARCEL	70200	1.612	0%	0	34.0%	0.548	16.0%	0.25785	50%	0.806	1.699	0.228	6.36	0.336

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

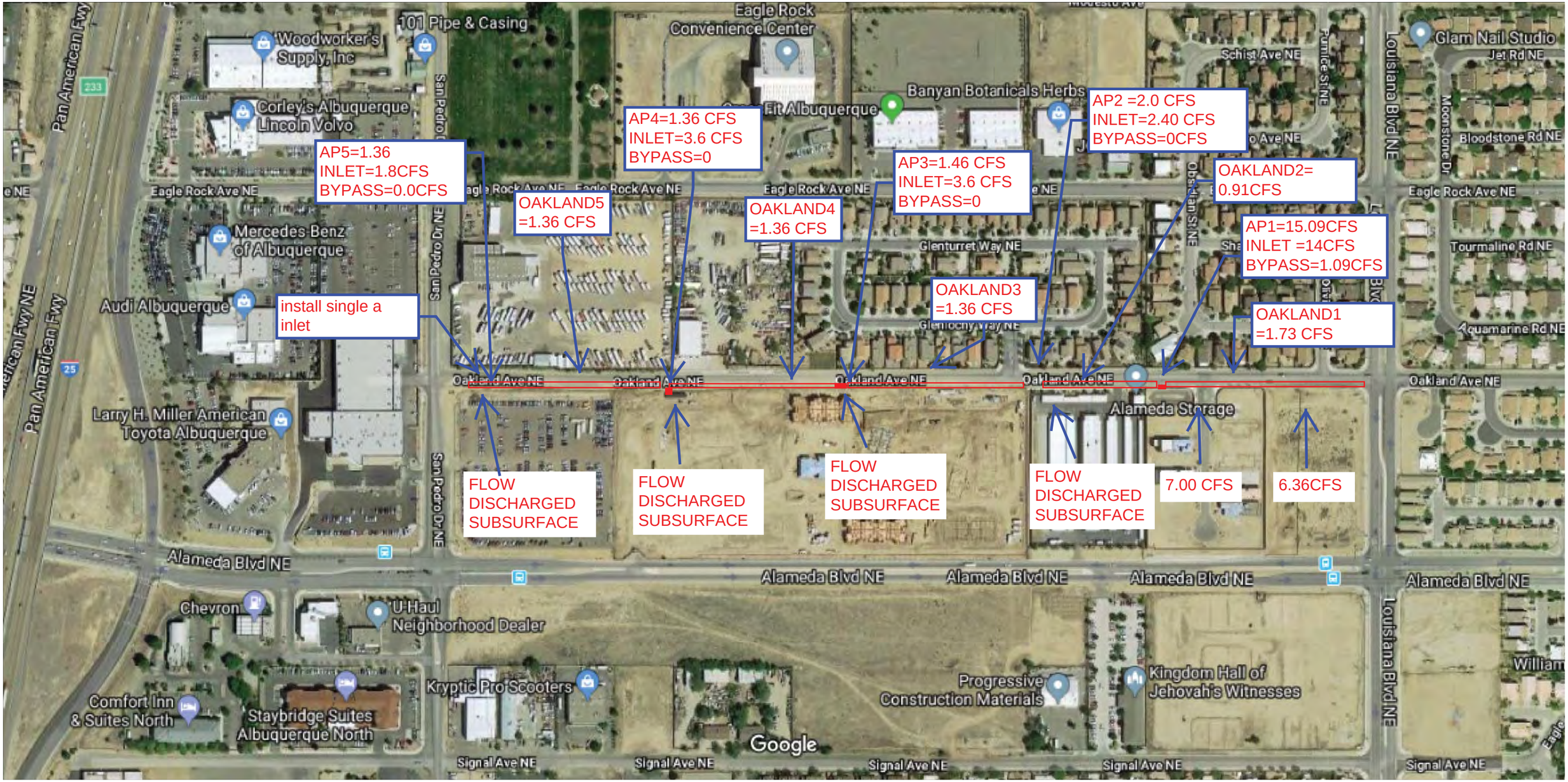
Where for 100-year, 6-hour storm (zone 3)

Ea= 0.66 Qa= 1.87

Eb= 0.92 Qb= 2.6

Ec= 1.29 Qc= 3.45

Ed= 2.36 Qd= 5.02



OAKLAND STORM DRAIN INLET WORK MAP

Street Capacity Calculations

OAKLAND

32' F-F Street Section with 8" curb

Slope= 0.035

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)	
0.01	0.0008	0.1703	0.0047	0.0004	0.0007	0.4587	0.0046	0.8083	0.0075	
0.02	0.0032	0.3406	0.0094	0.0023	0.0047	0.7281	0.0146	0.9073	0.0175	
0.04	0.0128	0.6812	0.0188	0.0148	0.0296	1.1558	0.0462	1.0184	0.0410	
0.06	0.0288	1.0219	0.0282	0.0436	0.0872	1.5145	0.0909	1.0896	0.0672	
0.08	0.0512	1.3625	0.0376	0.0939	0.1879	1.8347	0.1468	1.1431	0.0954	
0.1	0.0800	1.7031	0.0470	0.1703	0.3406	2.1290	0.2129	1.1864	0.1251	
0.12	0.1152	2.0437	0.0564	0.2770	0.5539	2.4041	0.2885	1.2230	0.1561	
0.125	0.1250	2.1289	0.0587	0.3088	0.6176	2.4704	0.3088	1.2314	0.1640	

For water depths greater than 0.125 ft but less than 0.405 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)	
0.13	0.1356	2.3840	0.0569	0.3281	0.6561	2.4190	0.3145	1.1823	0.1619	
0.16	0.2256	3.9143	0.0576	0.5506	1.1012	2.4402	0.3904	1.0751	0.1761	
0.2	0.4156	5.9547	0.0698	1.1522	2.3044	2.7723	0.5545	1.0924	0.2248	AP3,4,5
0.24	0.6856	7.9951	0.0858	2.1804	4.3608	3.1801	0.7632	1.1440	0.2864	AP2
0.28	1.0356	10.0355	0.1032	3.7261	7.4521	3.5979	1.0074	1.1982	0.3547	
0.32	1.4656	12.0759	0.1214	5.8753	11.7506	4.0087	1.2828	1.2488	0.4274	
0.3464	1.7932	13.4225	0.1336	7.6639	15.3278	4.2737	1.4804	1.2797	0.4772	
0.39	2.4106	15.6466	0.1541	11.3294	22.6588	4.6998	1.8329	1.3262	0.5620	
0.405	2.6450	16.4117	0.1612	12.8099	25.6197	4.8430	1.9614	1.3411	0.5919	

For water depths greater than 0.405 ft but less than 0.667 ft

Y2= Y - 0.405
A3= A2 + Y2*16
P3= P2 + Y2

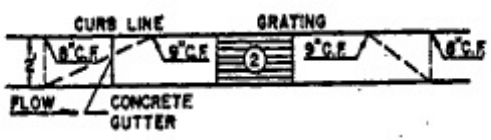
Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)	
0.41	2.7250	16.4167	0.1660	13.4594	26.9187	4.9392	2.0251	1.3594	0.6094	AP1
0.44	3.2050	16.4467	0.1949	17.6170	35.2340	5.4967	2.4186	1.4603	0.7149	
0.47	3.6850	16.4767	0.2236	22.2034	44.4068	6.0253	2.8319	1.5488	0.8210	
0.5	4.1650	16.5067	0.2523	27.1971	54.3941	6.5299	3.2650	1.6274	0.9276	
0.55	4.9650	16.5567	0.2999	36.3764	72.7529	7.3266	4.0296	1.7410	1.1068	
0.5945	5.6770	16.6012	0.3420	45.3986	90.7972	7.9969	4.7542	1.8278	1.2679	
0.63	6.2450	16.6367	0.3754	53.1431	106.2861	8.5097	5.3611	1.8894	1.3976	
0.667	6.8370	16.6737	0.4100	61.7104	123.4208	9.0260	6.0203	1.9476	1.5337	

For water depths greater than 0.667 ft but less than 0.847 ft

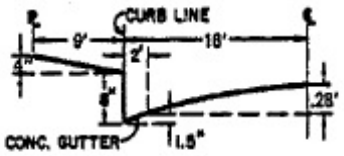
Y3= Y - 0.667
A4= A3 + 16 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	7.3922	18.3240	0.4034	66.0007	132.0014	8.9284	6.2499	1.8806	1.5443
0.73	7.9442	19.8243	0.4007	70.6140	141.2280	8.8887	6.4888	1.8334	1.5626
0.75	8.3372	20.8245	0.4004	74.0610	148.1220	8.8832	6.6624	1.8076	1.5786
0.77	8.7502	21.8247	0.4009	77.8043	155.6085	8.8917	6.8466	1.7857	1.5973
0.8	9.4072	23.3250	0.4033	83.9766	167.9532	8.9268	7.1415	1.7588	1.6297
0.82	9.8702	24.3252	0.4058	88.4663	176.9325	8.9629	7.3496	1.7443	1.6539
0.85	10.6022	25.8255	0.4105	95.7707	191.5414	9.0331	7.6781	1.7266	1.6936

GRATING CAPACITIES FOR TYPE "A" , "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

AP1- 7CFS PER GRATE

AP2- 2.4CFS PER GRATE

AP3,4,5- 1.8CFS PER GRATE