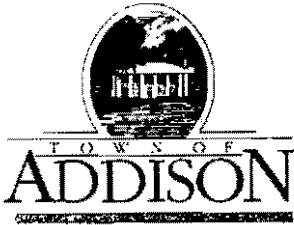


D. 1991 DRAINAGE - ESPEY HUSTON





CITY ENGINEER'S OFFICE

Post Office Box 144 Addison, Texas 75001

(214) 450-2886

16801 Westgrove

M E M O R A N D U M

August 30, 1991

To: Ron Whitehead, City Manager

From: ~~John Baumgartner~~ City Engineer

JRB
9-3-91

RE: Town of Addison Drainage Criteria Manual

The Town of Addison contracted with Espey, Huston and Associates, Inc. to prepare a Drainage Criteria Manual that provides a basis for the design of drainage systems within the Town of Addison.

The significant aspects of this manual are as follows:

1. Requires new storm drainage systems to provide for the fully developed 100 year storm.
2. Requires the developers use rainfall intensities based on Hydro-35, which is commonly used throughout the metroplex.
3. Limits the ponding depth in the street to a maximum (depending on the street classification) of six inches.
4. Requires detention/retention ponds when runoff from a development exceeds the capacity of the downstream system. As an alternative to detention/retention, a developer is allowed to upgrade the existing system to accommodate the fully developed flow.

These standards are generally consistent with the practices currently followed within the Town of Addison.

Staff recommends that the Council consider an ordinance adopting the proposed Addison Drainage Criteria Manual. If you concur, please have Carmen place an item on the September 10, 1991 council agenda for their consideration.

JRB/rp

Attachments: 1. Proposed Addison Drainage Criteria Manual
2. Draft ordinance

cc: Carmen Moran, City Secretary

ORDINANCE NO. 091-045

AN ORDINANCE OF THE TOWN OF ADDISON, TEXAS AMENDING CHAPTER 16, STREETS AND SIDEWALKS OF THE CODE OF ORDINANCES, TOWN OF ADDISON, TEXAS, TO PROVIDE FOR ADOPTION OF DRAINAGE CRITERIA; TO PROVIDE FOR REPEAL; TO PROVIDE FOR SEVERABILITY; TO PROVIDE FOR A SAVINGS CLAUSE; TO PROVIDE FOR PENALTIES; AND TO PROVIDE AN EFFECTIVE DATE.

BE IT ORDAINED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

SECTION 1. That Section 16-26 of the Code of Ordinances, Town of Addison, Texas, is hereby amended to read as follows:

Sec. 16-26. Adoption of Drainage Criteria.

There is hereby adopted standard specifications for drainage construction and drainage criteria, as the rules and regulations governing the construction of drainage systems and streets, roads and alleys in the City. The specifications adopted hereby are attached to the ordinance from which this section is derived as Exhibit "A" and made a part hereof for all purposes. The original copy of the standard specifications shall be kept with such ordinance and with the other ordinances of the City at the Town hall and shall be made available for public inspection during regular business hours of the City. It shall constitute an offense for any Person to violate any of the requirements contained in such drainage criteria.

SECTION 2. That all ordinances of the City in conflict with the provisions of this ordinance be, and the same are hereby repealed and all other ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

SECTION 3. That should any paragraph, sentence, sub-division, clause, phrase or section of this ordinance be adjudged or be held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof other than the part so decided to be invalid, illegal, or unconstitutional.

SECTION 4. Any person, firm or corporation violating any of the provisions of this Ordinance, shall upon commission be deemed guilty of a misdemeanor, and shall be subject to a fine not to exceed the sum of Five Hundred and no/100 Dollars (\$500.00) for each offense, and each day such violation continues shall constitute a separate offense.

SECTION 5. That Chapter 16, Streets and Sidewalks, of the Code of Ordinances, Town of Addison, Texas, shall remain in full force and effect, save and except as amended by this ordinance.

SECTION 6. This ordinance shall take effect and be in force from and after its adoption as provided by law.

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS, this _____ day of _____, 1991.

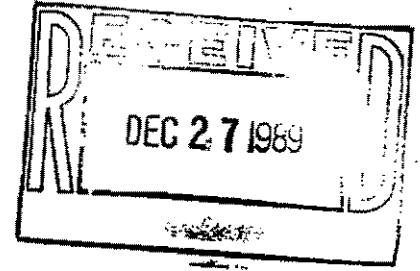
MAYOR

ATTEST:

CITY SECRETARY



ESPEY,
HUSTON &
ASSOCIATES, INC.
Engineering & Environmental Consultants



December 23, 1989

Mr. Ron Whitehead
City Manager's Office
Town of Addison
Post Office Box 144
Addison, Texas 75001

EH&A Proposal No. 89-0822

Re: Drainage Study

Dear Mr. Whitehead:

Reference is made to your letter dated November 7, 1989 regarding a proposed study related to drainage problems in the Town of Addison. We have received and reviewed the Ginn Report entitled "Preliminary Engineering Study for Drainage Improvements," dated October 1989. We secured a copy of the recently completed report on December 23, 1989.

In your letter, you have requested that we undertake the following tasks:

1. Review the Ginn Report and comment on the recommendations proposed.
2. Outline policies/standards to be implemented for existing drainage problems.
3. Outline drainage standards for future development in Addison.

The scope for Task No. 1 would consist of the following activities related to the Ginn Report on localized drainage problems:

- Review each problem in the field to obtain problem definition.
- Review existing plans and calculations developed in the report.
- Review alternative solutions and cost estimates.
- Present concurrence with proposed solution or an alternative solution for each problem area.

With respect to Task No. 2, we understand that some of the drainage problems which currently exist may have been avoided with adequate drainage policies in place by the City. We will review each case identified in the Ginn Report individually and make recommendations to implement drainage policies for these specific cases.

The third task is a very important and necessary tool for the Town to control the orderly development of drainage facilities in the future. As you know, when communities urbanize, drainage problems become more acute, as increased levels of development yield more runoff. Many problems can be avoided through the implementation of formalized drainage policies.

Mr. Ron Whitehead

December 23, 1989

Page 2

Espey, Huston & Associates, Inc. (EH&A) has authored numerous "Drainage Criteria Manuals" throughout the State of Texas. This provides the Town and development community with a known set of drainage standards, enforced throughout the Town which, if properly administered, will preclude the possibility of flooding for an acceptable frequency storm.

This policy manual should govern the planning, design, construction and operation of storm drainage facilities within the Town of Addison and within all areas subject to the Town's extra-territorial jurisdiction. Definitions, formulae, criteria, procedures and data will be developed to support this policy. We have previously reviewed with you several samples of manuals authored by EH&A.

Fee Schedule

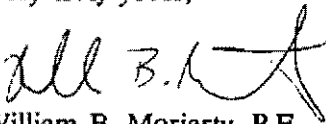
For the above described services, we would propose the following schedule of charges:

- Task 1 - Review and comment on the Ginn Report \$ 4,000
- Task 2 - Outline policies/standards for existing drainage problems \$ 3,500
- Task 3 - Prepare Drainage Criteria Manual which outlines drainage standards for future development in Addison \$18,000

Further, as you requested, we have investigated the potential for State funding for the above described activities. As you know, Section 15.405 of the Texas Water Code authorizes the Texas Water Development Board to provide grant assistance from their Research and Planning Fund to political subdivisions to develop reconnaissance-level plans for flood protection. The Board can provide funding not to exceed 50% of planning costs. Unfortunately, it does not appear that the activities outlined in this letter would be eligible.

We hope this information proves useful. We would be happy to discuss this proposal further at your convenience, and look forward to proceeding with the work.

Very truly yours,



William B. Moriarty, P.E.
Vice President

WBM:bls

CHAPTER V

DRAINAGE

Definition: Runoff is a quantity of water passing any given point of the drainage course as a result of precipitation. Runoff may be properly referred to as storm water, flow, or discharge.

Rainfall: Rainfall intensities used for this preliminary report were taken from the U.S. Department of Commerce Weather Bureau, Technical Bulletin No. 25. The U.S. Department of Commerce Weather Bureau, Technical Paper No. 40 will probably be utilized in the final design for the calculation of rainfall intensities.

The Rational Method: For drainage areas that are not complex and have an area of less than 1,000 acres the rational method for determining runoff is recommended.

Formula: The rational method is based on the formula: $Q = CIA$ where Q is the rate of runoff in cubic feet per second (CFS); C is the coefficient of runoff which is the ratio of the maximum rate of runoff to the average rainfall intensity. As a ratio, C has no unit. I is the average intensity of the rainfall in inches per hour for the duration

under consideration. A is the area in acres contributing to the runoff. NOTE: The unit of Q as expressed by the formula is inches per hour per acre. However, this rate differs from cubic feet per second by less than 1% and the unit of cubic feet per second is commonly used.

Coefficient of runoff: The coefficient of runoff represents the effects of infiltration, detention, evaporation, and storage. Some of the factors that effect the coefficient of runoff are permiability of the soil type and the amount of vegetation, slope of the surface and future land uses. Values of C are listed in the following table:

<u>LAND USE</u>	<u>RANGE OF C</u>
Residential	0.3 - 0.6
Commercial	0.7 - 0.9
Industrial	0.6 - 0.8
Apartments	0.6 - 0.8
Shopping Centers	0.8 - 0.9
Paved Areas	0.9

Time of Concentration: The time of concentration is the time required for all parts of the drainage area to

contribute flow to the point under consideration.

Overland: The time of concentration for overland flow can be determined by the use of various nomographs or can be computed by the formula $K = L/\sqrt{S}$, where L is the length of the most distant contributing point and S is the slope.

Velocity: Considering the anticipated growth along Addison Road a velocity greater than 5 feet per second is recommended.

Minimum Time: Minimum time of concentration is 20 minutes.

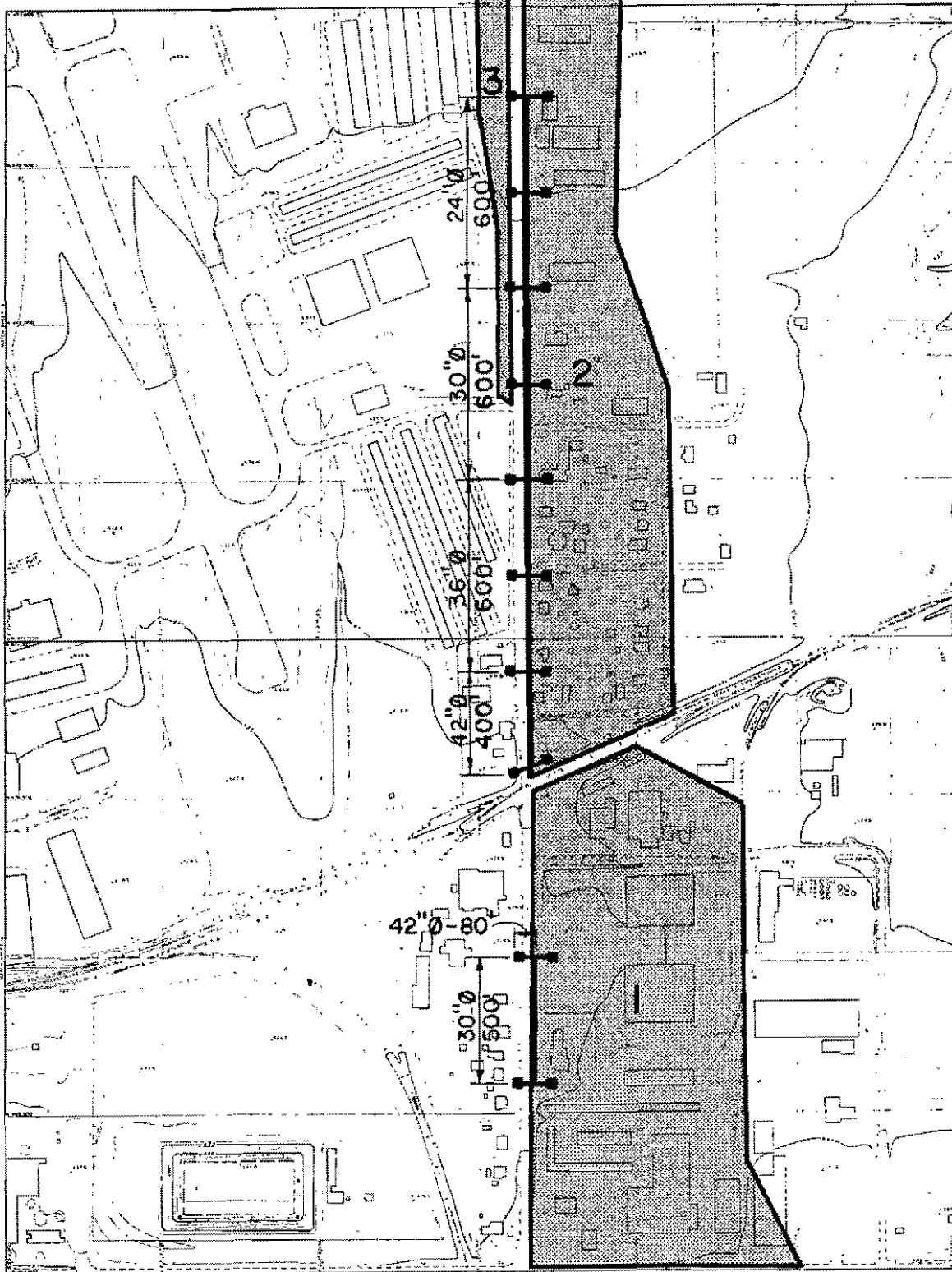
Design Frequency: The design frequency is a frequency of the design runoff or the rainfall return period. A design frequency is based on the importance of the facility under design consideration or possible flood damage resulting from an overflow of the drainage facility.

Design Criteria: Due to the fact that Addison Road is located primarily on a ridge running in a north/south direction, most of the water that falls on the roadway will either be discharged east to the White Rock drainage basin or to the west to the Trinity drainage basin. Also, due to the fact that there are no low lying areas where water could accumulate and cause possible flood damage, the design criteria

was selected as a basis of design according to the following:
 I (intensity) was selected for a 20 minute duration on the
 25 year storm frequency curve. The coefficient of runoff
 was selected as 0.85 This represents a compromise between
 all paved areas and commercial and apartment-type construction.
 The following table shows the quantity of discharge for the
 various drainage areas as shown on the attached maps. The
 values of Q_{25} range from 9 to 258 cubic feet per second.

<u>Drainage Area No.</u>	<u>Acres</u>	<u>C</u>	<u>Total CA</u>	<u>Time of Concentration</u>	<u>I_{25}^* In/Hr</u>	<u>Q_{25}</u>
1	25	0.85	21.25	20 minutes	5.15	109
2	22	0.85	18.70	20 minutes	5.15	96
3	2	0.85	1.70	20 minutes	5.15	9
4	22	0.85	18.70	20 minutes	5.15	96
5	40	0.85	34.00	20 minutes	5.15	175
6	55	0.85	46.75	20 minutes	5.15	240
7	19	0.85	16.15	20 minutes	5.15	83
8	59	0.85	50.15	20 minutes	5.15	258
9	2	0.85	1.70	20 minutes	5.15	9
10	2	0.85	1.70	20 minutes	5.15	9
TOTAL	248					

*Technical Paper No. 25



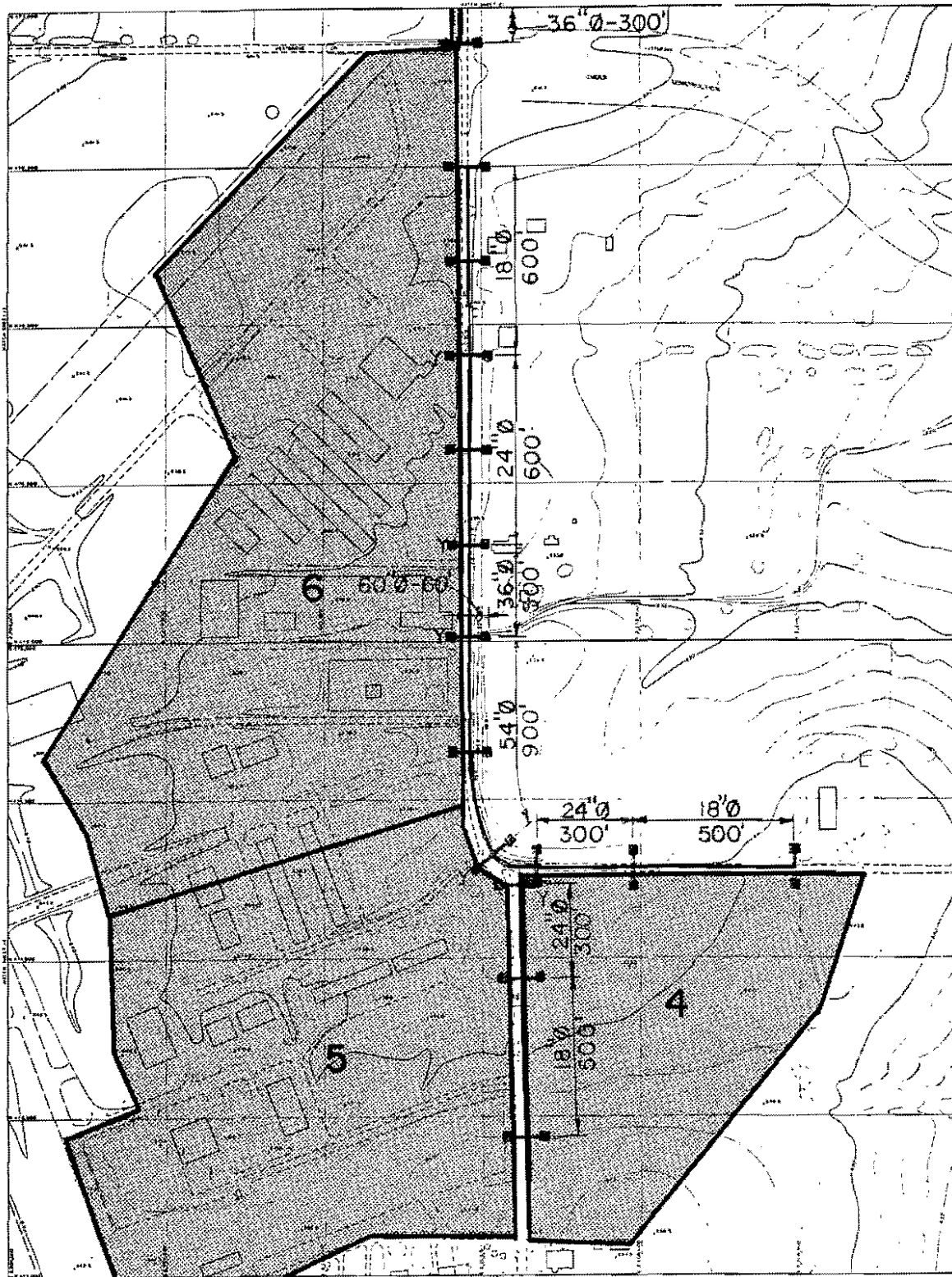
LEGEND

- Y = "Y" Inlet
- = Curb Inlet

SCALE: 1"=500'


CITY OF ADDISON
**ADDISON ROAD
 DRAINAGE AREAS**
 GINN AND STACY, INC.
 CONSULTING ENGINEERS
 DALLAS, TEXAS

1978



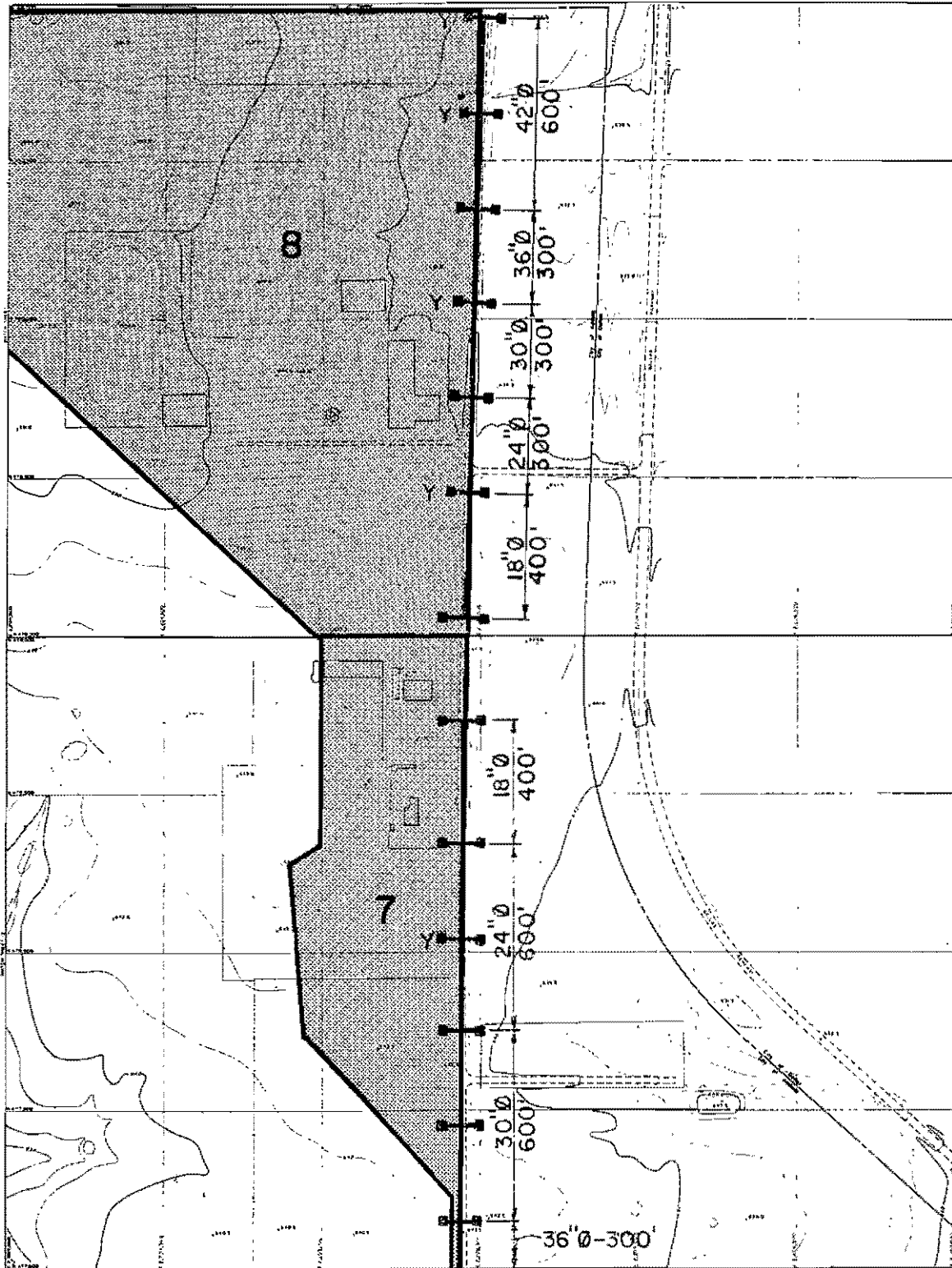
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ADDISON ROAD DRAINAGE AREAS
<i>GINN AND STACY, INC. CONSULTING ENGINEERS DALLAS, TEXAS</i>

1978



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CITY OF ADDISON
ADDISON ROAD DRAINAGE AREAS
<i>GINN AND STACY, INC. CONSULTING ENGINEERS DALLAS, TEXAS</i>
1978

091-045

October 2001

October 2001							November 2001						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
7	8	9	10	11	12	13	4	5	6	7	8	9	10
14	15	16	17	18	19	20	11	12	13	14	15	16	17
21	22	23	24	25	26	27	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28	29	30	

Monday October	Tuesday	Wednesday	Thursday	Friday	Sat/Sun
1 10:30am FEMA Representative-Dale Hoff-National Flood 10:30am Updated: CIP (TH Conf-Room) 12:30pm GOLF WITH THE GUYS!!!!	2 10:00am DART System Plan w/Jay Kline (Town Hall Conf Rm) 2:00pm Marsh Ln. Construction and Easement Alternatives (Service	3 9:00am Kim Forsythe Property/Arapaho 10:00am WORDING ON AGREEMENT C 10:00am DRAFT AGENDA MTG. 3:00pm REVIEW SECURITY	4 9:00am Review Budget (Svc Center) 11:30am PW STAFF LUNCH MEETING	5 8:00am DO NOT BOOK MIKE FOR TODAY 1:30pm MEETING W/CT &	6
8 ALL DAY AWWA GOLF TOURNAMENT 8:00am GOLF TOURNEY ALL DAY 10:30am Updated: CIP (TH Conf-Room)	9 10:00am pre council meeting in city managers co 10:00am pre council meeting 11:30am Meet w URS/Midway 1:30pm Updated: Sasaki & 3:30pm Arapaho Road Bridge 7:30pm COUNCIL MEETING	10 10:00am POST COUNCIL 12:00pm TOASTMASTERS-FIRE STA.1 1:00pm 7-11 and Jack in the Box plans for Addison Road (Service Center)	11	12 7:00am UNITED WAY PANCAKE BREAKFAST 1:30pm MEETING W/CT &	13 9:00am RICKY'S FISH FRY IS TODAY.....IN WYLIE...
15 10:30am Updated: CIP (TH Conf-Room)	16 2:00pm GIS "DUCKS IN A ROW MEETING" (ADDISON SERVICE CTR. 16801 WESTGROVE)	17 9:00am MONTHLY CIP PROGRESS MTG. (TH CONF. ROOM) 10:00am DRAFT AGENDA(TH CONF RM)	18	19 1:30pm MEETING W/CT &	20
22 10:30am Updated: CIP (TH Conf-Room)	23 10:00am pre council meeting to discuss the upcoming council meeting 7:30pm COUNCIL MEETING	24 8:00am TSPE/FREESE NICHOLS 10:00am post council meeting	25	26 1:30pm MEETING W/CT &	27
29 8:00am STEVE, MIKE & LUKE @ CONCRETE CONF. 10:30am Updated: CIP (TH Conf-Room)	30 8:00am JIM & LUKE @ CONCRETE CONF. 6:00pm HALLOWEEN BASH (AAC)	31 8:00am LUKE @ CONCRETE CONF. 11:30am MERITORIOUS SERVICE LUNCH (F.S.I) 6:00pm PD HALLOWEEN EVENT @4010 B			28 8:00am DAYLIGHT SAVINGS TIME

November 2001

November 2001							December 2001						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3							1
4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30		23	24	25	26	27	28	29
							30	31					

Monday	Tuesday	Wednesday	Thursday	Friday	Sat/Sun
			November 1	2	3
			8:00am LUKE @ CONCRETE CONF.	1:30pm MEETING W/CT &	
					4
					5
10:30am Updated: CIP (TH Conf-Room)				1:30pm MEETING W/CT &	10
					11
					12
10:30am Updated: CIP (TH Conf-Room)	10:00am pre council meeting in city managers conf. room to discuss upcoming council me			1:30pm MEETING W/CT &	17
	10:00am pre council meeting in city managers conf. room to discuss				18
					19
10:30am Updated: CIP (TH Conf-Room)		9:00am MONTHLY CIP PROGRESS MTG. [TH CONF. ROOM]		1:30pm MEETING W/CT &	24
					25
					26
10:30am Updated: CIP (TH Conf-Room)	10:00am pre council meeting to discuss the upcoming council meeting	8:00am MIKE AT TML IN HOUSTON 10:00am post council meeting	8:00am MIKE AT TML IN HOUSTON	8:00am MIKE AT TML IN HOUSTON 1:30pm MEETING W/CT &	