Thienes Engineering, Inc.
CIVIL ENGINEERING ● LAND SURVEYING

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

MYFORD ROAD INDUSTRIAL
14321 & 14351 MYFORD ROAD
TUSTIN, CA

PREPARED FOR

B8 MYFORD II INDUSTRIAL OWNER, LLC
c/o PANATTONI DEVELOPMENT COMPANY, INC.
2442 DUPONT DRIVE
IRVINE, CA 92612
P. (949) 296-2989
F. (916) 418-2941

FEBRUARY 14, 2022
REVISED APRIL 21, 2022
REVISED AUGUST 11, 2022 (IS/MND)

JOB NO. 4040

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
P. (714) 521-4811
FAX (714) 521-4173

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

MYFORD ROAD INDUSTRIAL
14321 & 14351 MYFORD ROAD

PREPARED UNDER
THE SUPERVISION OF:

8/11/2022

REINHARD STENZEL   DATE
R.C.E. 56155
EXP. 12/31/2022

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the northernly side of Myford Road between Michelle Drive and Walnut Avenue in the City of Tustin. See following page for vicinity map.
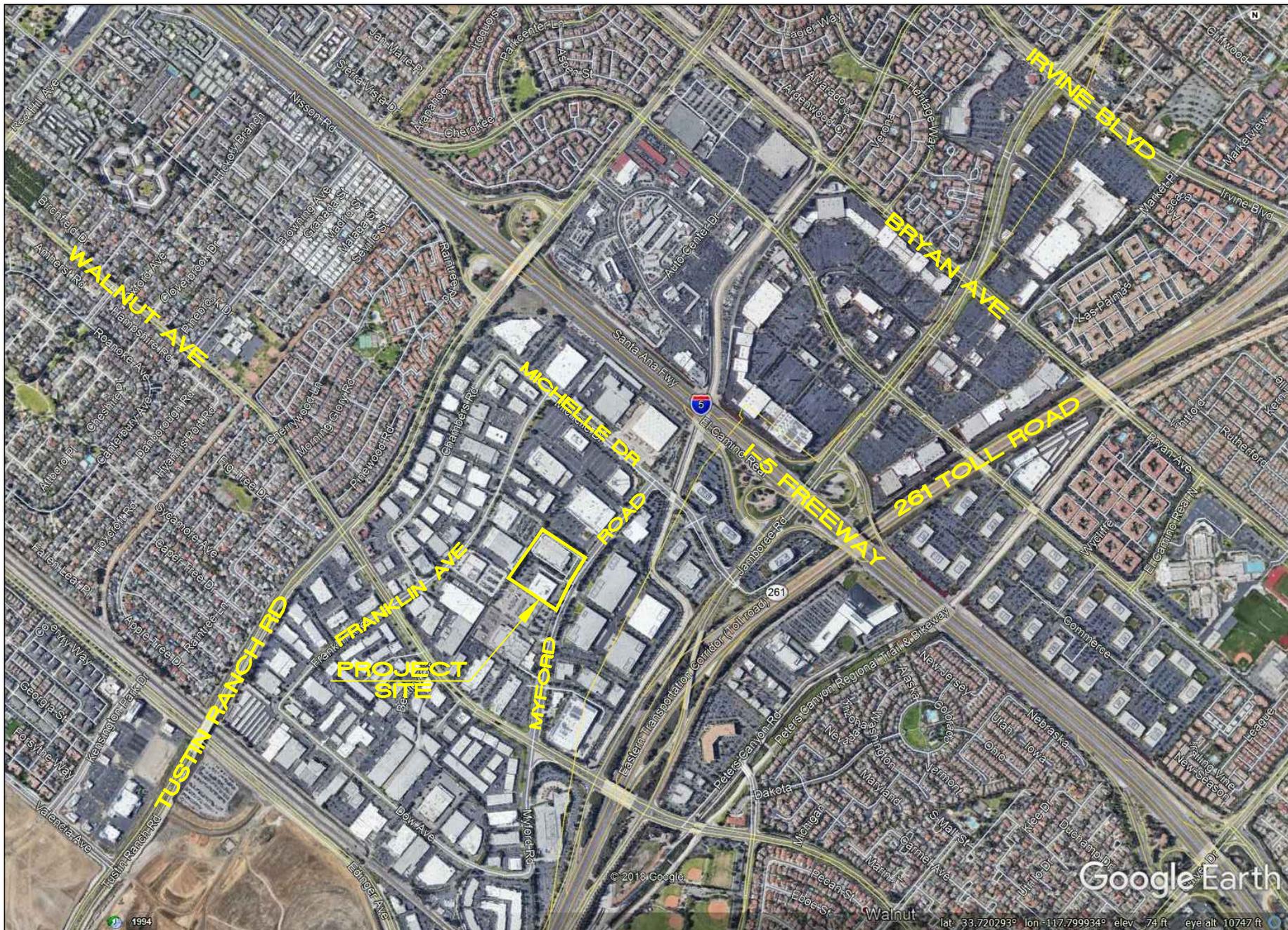
B: STUDY PURPOSE

The purpose of this study is to determine the 25- and 100-year peak flow rates for the project site that drain to an existing storm drain system located along the northerly property line.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

    Reinhard Stenzel
    Mark Benavides

IRVINE BLVD

BRYAN AVE

WALNUT AVE

261 TOLL ROAD

I-5 FREEWAY

El Camino Real

MICHELLE DR

MYFORD ROAD

FRANKLIN AVE

TUSTIN RANCH RD

PROJECT SITE

Santa Ana Fwy

Eastern Transportation Corridor (Toll Road)

Peters Canyon Regional Trail & Bikeway

lat 33.720293° lon -117.799934° elev 74 ft   eye alt 10747 ft

Google Earth

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VICINITY MAP
FOR
14351 MYFORD ROAD
TUSTIN, CA 92780

NTS

DISCUSSION

Project Description

The project site encompasses approximately 7.18 acres. Proposed improvements to the site include the construction of one commercial/industrial building with approximately 148,437 square feet. There is a truck yard located on the northerly side of the proposed building. Vehicle parking is located along the northwest, northeast, and southerly areas of the project site. There will be landscaping adjacent to Myford Road and smaller areas throughout the site.

Existing storm drains

There is an existing storm drain system in Myford Road. This is a City of Irvine storm drain system. It does not appear that the project site is tabled to this drain. Instead, the project site appears to be tabled to the existing City of Tustin storm drain system that traverses through the project site along the northwesterly property line in an easement. This existing pipe is 48" diameter RCP through the site. There is one existing lateral onsite that convey runoff from the project site to this facility. The as-built plans do not indicate a peak flow rate or hydraulic grade line. It is assumed to be a 25-year design storm event storm drain.

See Appendix "A" for reference storm drain plans.

Existing Condition Hydrology

Under existing conditions, the easterly parking areas drain to Myford Road through the existing driveway (nodes 300-301, 400-401, & 500-501 on Existing Condition Hydrology Map). The 25-year peak flow rates out the driveway are 0.8, 2.6, and 3.7 cfs.

Runoff from the majority of the northerly lot of existing site drains westerly via gutters to an existing catch basin located at the westerly corner of the project site. This catch basin connects to the existing 48" storm drain. The 25-year peak flow rates for this area is 6.6 cfs.

Runoff from the majority of the southerly lot of existing site drains westerly via gutters to an existing catch basin located at the westerly corner of the project site. This catch basin connects to the existing 48" storm drain. The 25-year peak flow rates for this area is 6.6 cfs.

Total site 25-year peak flow rates is 20.3 cfs.

See Appendix "B" for Hydrology Calculations and Appendix "F" for the existing condition hydrology map.

Proposed Condition Hydrology

Proposed conditions will table runoff to both existing storm drain systems at the westerly property line. Runoff from the northwesterly portion of the building and the northwesterly truck yard (nodes 100-101) will drain to a catch basin located in the truck yard. A proposed storm drain will convey runoff from truck yard and connect to the existing 18" lateral located at the westerly property line. The 100-year peak flow rates for this area are approximately 10.1 cfs.

Flow from the southeasterly half of the building will be collected by a catch basin near the south driveway (node 201). A proposed storm drain will convey runoff westerly to the southwest corner of the site. This will confluence with the runoff from the southwesterly portion prior to connecting to the existing lateral. The 100-year peak flow rate at this location is approximately 12.3 cfs, respectively.

Detention

As previously noted, the existing storm drain facility through the westerly portion of the site may be designed for 25-year events. With this assumption, 100-year runoff from the proposed improvements will be limited to the existing condition 25-year peak flow rate currently tributary to each of the existing 18" laterals. This is achieved via onsite detention in the northwesterly truck yard area.

Discharge from the truck yard area is dependent upon capacity of the proposed storm drain system, which is based on pipe length, pipe size, downstream H.G.L., and other hydraulic losses. Various peak flow rates were computed in an iterative trial and error method for this storm drain system to determine a water surface elevation in each truck yard area with a given peak flow rate. These peak flow rates and corresponding water surface elevation were used to determine the outflow rates from the truck yard area used in the detention calculations.

The flow from the site will be limited to an existing condition 25-year storm event that drained from the site. This will require surface ponding in the truck yard to store the excess volume. The final limits of ponding and depths of ponding will be determined in final design.

The existing condition 25-year peak flow rate of the entire site is approximately 20.3 cfs. To limit the 100-year peak flow rates to no more than 20.3 cfs, detention will be utilized in the northwesterly truck yard. Basin routing calculations for the truck yard show that approximately 5.2 cfs will discharge to the connection while detaining the remaining 100-year volume to a depth of approximately 0.92' (total volume of 4,312 cf) above the top of grate in the northwesterly truck yard.

See Appendix "C" for the hydraulic calculations and Appendix "D" for detention calculations.

Methodology

Hydrology calculations were computed using Orange County Rational Method program (by AES Software). Orange County preset rainfall values were used in the 25- and 100-year calculations. The soil type is "C" per the Orange County Hydrology Manual. See Appendix "A" for reference materials. Small area unit hydrograph program, also by AES Software, was used for the basin routing and detention calculations.

Summary

With onsite detention, 100-year discharge will be limited to existing conditions 25-year peak flow rates at each of the existing laterals. In addition, significant area has been removed that previously drained to Myford Road and City of Irvine storm drain system. Overall, Q100 from the project site (17.5 cfs) with detention is less than existing condition Q25 (20.3 cfs), therefore development of the site will not adversely affect downstream facilities.

APPENDIX A

REFERENCE MATERIALS

PROJECT SITE

SOILS MAP

GENERAL NOTES

1. All work shall be in accordance with the Standard Specifications of the State of California, Department of Public Works, Division of Highways, dated Jan. 1973 and in accordance with the City of Tustin Street Improvement Standards, to the satisfaction of the City Engineer.

2. In accordance with Chapter 8A of "The Code of the City of Tustin, California," all construction in street rights of way, done in conjunction with this project, will require a City of Tustin construction permit to be obtained prior to start of work.

3. When curb and gutter subgrade is over cut in excess of 2", the subgrade shall be brought back up to proper level with compacted Class 2 aggregate base.

4. All underground utilities shall be installed to the property line prior to paving of streets.

5. Pavement which does not join other pavement, or butt up against concrete curbs and gutters, shall have a 2"x6" minimum redwood header, left in place. Said header shall be securely staked to prevent deflection.

6. The asphaltic concrete pavement shall have an "asphaltic emulsion" sealcoat applied within 48 hours after completion of paving. If patching of the new surface with a fine mix is required to eliminate "bird bath," the surface shall be re-sealcoated.

7. The Orange County Flood Control District inspector shall be notified at least two working days prior to any connection to their facilities. Installation shall be done to the satisfaction of the OCFCD inspector.

8. All sewers shall be constructed in accordance with the "Standard Specifications for the Construction of Sanitary Sewers" of the Orange County Sanitation District No. 7 and in accordance with the City of Tustin Street Improvement Standards to the satisfaction of the City Engineer.

9. Stations shown thus [+54.03] are sewer line stations and are independent of centerline of street stations.

10. Vitrified clay pipe sewers, including lateral services to the property line, shall have joints of the mechanical compression type, such as "wedgelock," "speed seal," "mainline" or approved equal.

11. All lateral sewer services shall have a minimum slope of 1/4" per foot (2.00%).

12. "As built" lateral sewer service locations shall be provided to the City Engineer by the contractor. Services not at 90° to the mainline sewer shall be staked by the surveyor at the property line. A 4" "S" shall be imprinted into the curb face at the point where the service crosses the property line.

13. The contractor shall expose all join points to the existing sewer system for verification of elevations, prior to requesting sewer stakes.

14. Manholes shall be left 8" below subgrade and raised to finish grade after completion of street paving.

15. Pipeline leakage tests shall be made in the presence of the City of Tustin Public Works inspector only after backfill has been completed, compaction tests on backfill have been made, and the backfill has been accepted by the inspector.

16. All sewer lines shall be balled in the presence of the City of Tustin Public Works inspector only after completion of all leakage test, street paving, and raising of manholes to finished grade.

17. The City of Tustin shall be notified at least two working days prior to any inspection.

18. Irrigation line relocation work shall be constructed in accordance with the Standards, approvals and specifications of the Irvine Ranch Irrigation District.

19. The water system shall be constructed in accordance with the Standards and Specifications of the Irvine Ranch Water District and to the satisfaction of the City Engineer.

20. Stations shown thus S.D. are storm drains stations and are independent of centerline of street stations.

21. The contractor shall have copies on the project site and be familiar with all applicable standards and specifications.

22. All stationing refers to the centerline of street unless otherwise noted... i.e. "SEWER" or S.D., street width dimensions and all data refers to face of curb.

23. Street lights shall be constructed in accordance with and maintained by the Tustin Lighting District.

24. Advertising signs will not be allowed in street rights of way.

25. All lot corners shall be set in accordance with the record map, prior to acceptance of these improvements.

27. The water system is to be installed by the Developer. All water main work shall conform to the Standard Specifications of the Irvine Ranch Water District.

28. The District Engineering Office is to be called for inspection two (2) days prior to start of work at (714) 833-1222. A pre-construction conference will be held on job site prior to start of work.

29. All main-line valves shall be maintained so as to be accessible during tract development and all valve stem tops having over 48 inch cover will have extensions pinned to them.

30. Specified relative compaction for trench backfill, subgrade and aggregate base shall be determined by California test method no. 231. The city will furnish first tests when requested by the contractor. Any re-testing required due to first test failures shall be made, as ordered by the City Public Works inspector, at the contractors expense.

BENCH MARK: 3B-67-68 ALUMINUM CAP BY O.C.S.
4.25 MILES SOUTHEAST ALONG THE ATCHISON, TOPEKA AND SANTA FE RAILWAY FROM THE RAILWAY STATION IN SANTA ANA TO A WOODEN RAILWAY BRIDGE OVER A FLOOD CONTROL CHANNEL; 0.35 MILE NORTHWEST ALONG THE RAILWAY FROM THE HARVARD AVENUE CROSSING; 55 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILWAY, 185 FEET NORTHWEST OF THE CENTER LINE OF MOULTON PARKWAY (FORMERLY NAVY WAY), 5 FEET SOUTHEAST OF THE SOUTHEAST END OF A WOODEN RETAINING WALL OF A WOODEN BRIDGE CROSSING OF THE FLOOD CONTROL CHANNEL ON MOULTON PARKWAY (FORMERLY NAVY WAY), SET IN THE SOUTHEAST END OF A CONCRETE RETAINING SLAB, 1 FOOT LOWER THAN THE ROAD.
LEVELED ADJUSTMENT — 1968-1970 ELEV. = 56.968

PLAN

SECTION A-A

OUTLET STRUCTURE AT SANTA ANA SANTA FE

KEY MAP

SCALE: 1" = 500'

TENT. TRACT NO. 8451

LEGEND
- PROPOSED PAVEMENT
- SEWER LINE W/M.H.
- WATER LINE W/F.H.
- STORM DRAIN W/M.H. & C.B.
- STREET LIGHT
- STREET SIGN
- SHEET NUMBER

ELEVATION FROM B.C.

PHASE 3 STORM DRAIN

CLOW GV 12"
DRESSER 6"
PRATT 6"
TYLER IRON

BASIS OF BEARINGS:

BEARINGS HEREON ARE BASED ON THE S.E.'LY LINE OF LOTS 38 AND 43 IN BLOCK 45 OF IRVINE'S SUBDIVISION BEING N 40°46'12" E PER TRACT No. 8093 RECORDED IN BOOK 315, PAGES 1-7 INCL. OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY, CALIFORNIA.

ORANGE COUNTY FLOOD CONTROL DISTRICT

ALL INSTALLATIONS AND WORK AFFECTING FLOOD CONTROL DISTRICT FACILITIES SHALL CONFORM WITH DISTRICT'S STANDARD SPECIFICATIONS AND WITH THE PROVISIONS OF THE CONSTRUCTION PERMIT GRANTED BY DISTRICT. CONTRACTOR SHALL MAINTAIN A COPY OF SAID PERMIT AND STAMPED PLANS ON THE JOB SITE. USE OF DISTRICT PROPERTY AND CONFORMANCE TO THE ABOVE SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY DISTRICT'S DULY ASSIGNED INSPECTOR.

O.C.F.C.D. INSPECTOR SHALL BE NOTIFIED PRIOR TO COMMENCEMENT OF ANY WORK IN ACCORDANCE WITH PERMIT PROVISIONS.

APPROVED

IRVINE RANCH WATER DISTRICT   7/26/74 DATE

REVISIONS				
NO.	DATE	INITIAL	DESCRIPTION	APPD
1	9-30-74	M.R.H.	REVISED STORM DRAIN @ JAMBOREE & WALNUT FOR EDISON & TELE. CROSSING, SHT NOS. 3 & 5	
2	12-3-74		REVISED STREET STRUCTURAL SECTIONS TO REFLECT LIME TREATED SUB-BASE	
3	7-30-74		REVISED STORM DRAIN ON STA. 22 TO BEGIN CONST. OF 78" RCP AT STA. 4+18.10	
4				
5	6-25-75	R.H.	ADDED DRIVEWAY @ LOT 22 FRANKLIN & LOT 4 MYFORD	
6	10-14-74	W.R.S.	ADDED NEW STREETS (MICHAEL & JANE AVENUE) ALONG WALNUT AVENUE	

REFERENCES

WILLIAMSON & SCHMID	DATE
PREPARED UNDER THE SUPERVISION OF: Richard A. Schmid RCE 12261	3/13/74
CHECKED BY	
RECMD. BY	
APPROVED: Robert S. Ledendecker City Engineer R.C.E. 15849	8-28-74

STREET & STORM DRAIN IMPROVEMENTS
EAST TUSTIN INDUSTRIAL PROJECT
TRACT NO.'s 8590 & 8603

R-907A

CITY OF TUSTIN, CALIFORNIA

SHEET 1 OF 25
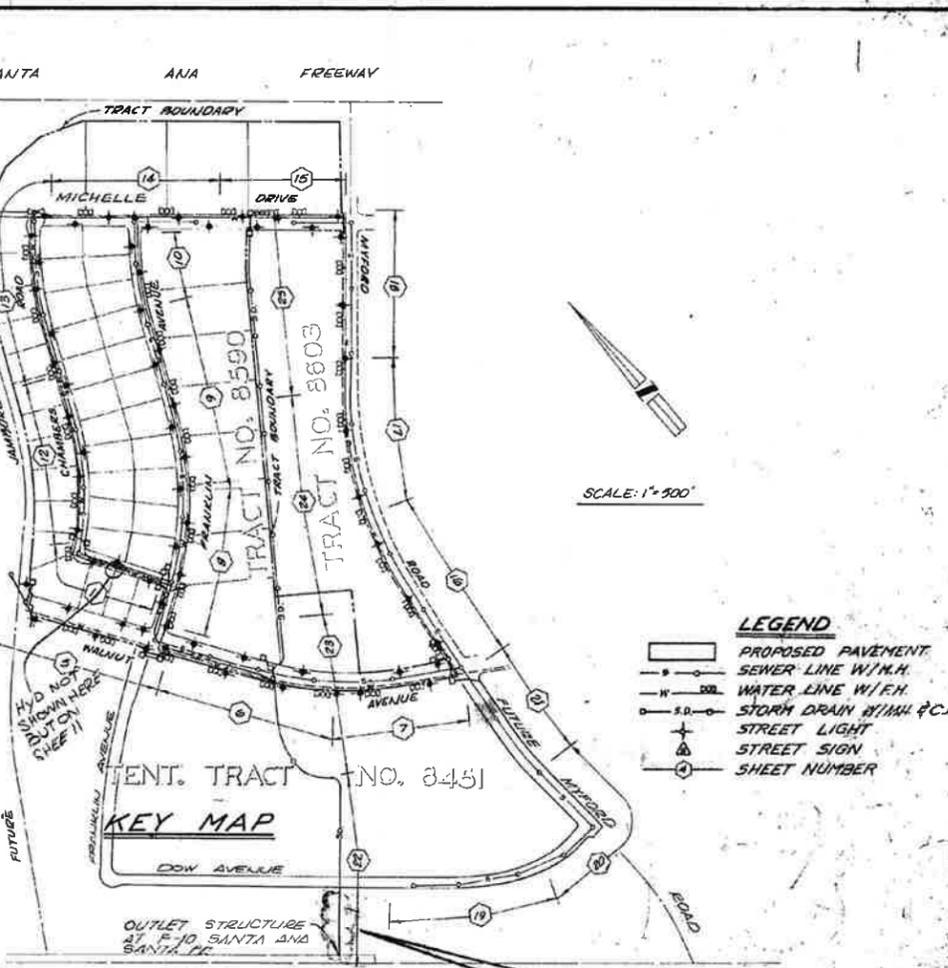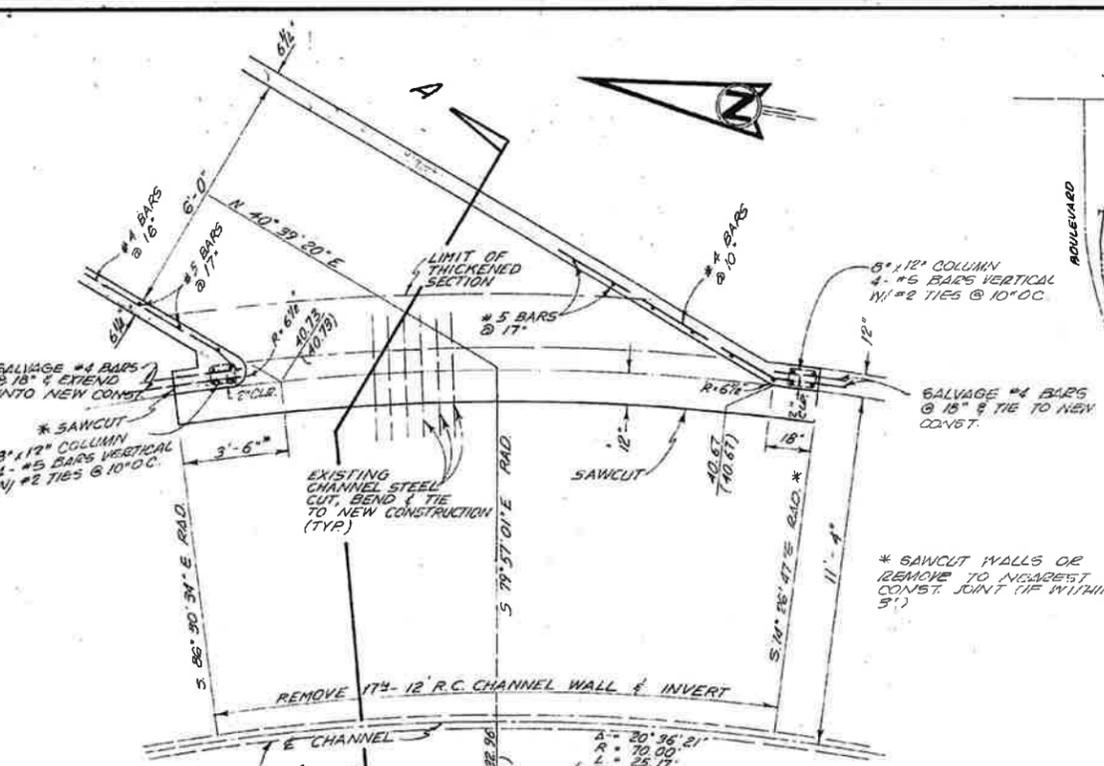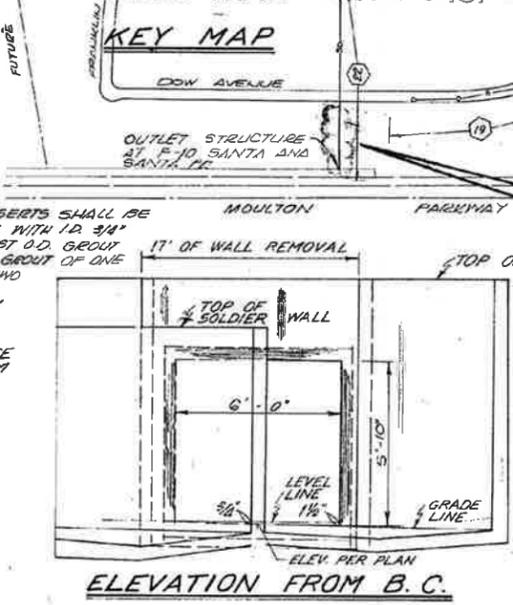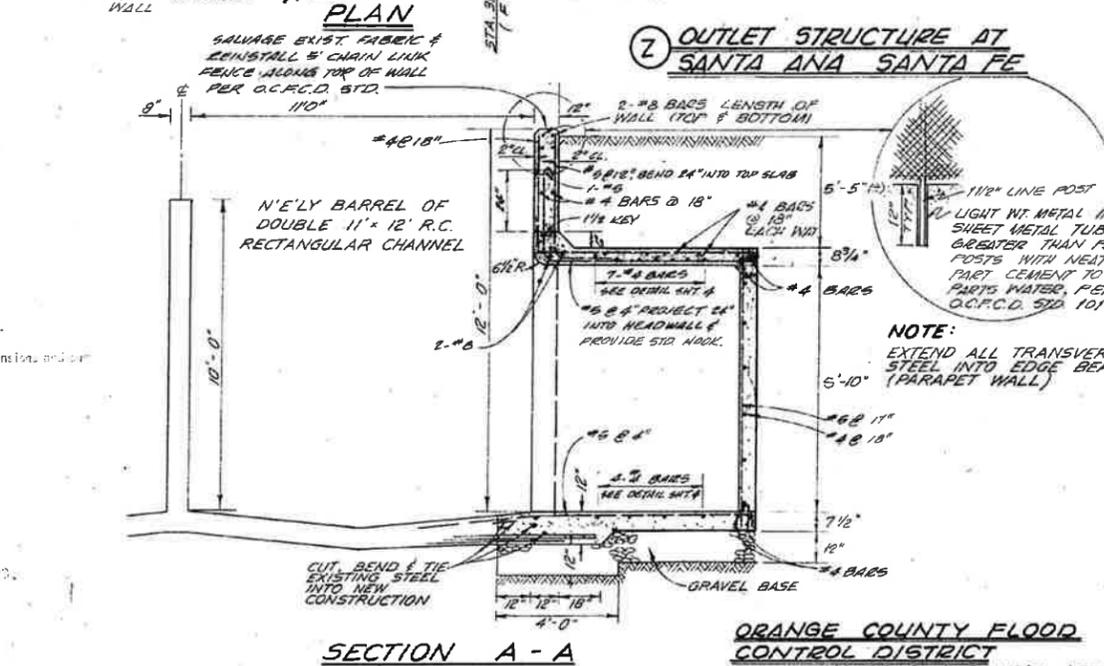
226

Profile (top):

Vertical scale markers: 70, 65, 60 (left and right)

Station numbers: 122 123 124 125 126 127 128 129 130 131 132 133 134 135

PROFILE SCALES
HORIZ 1"=40'
VERT 1"=4'

CONST. 135.19 L.F. 60" R.C.P. (3000 D)   CONST. 332.50 L.F. 54" R.C.P. (3000 D)   CONST. 297.42 L.F. 48" R.C.P. (3000 D)   CONST. 301.33 L.F. 48" R.C.P. (3000 D)   CONST. 189.47 L.F. 48" R.C.P. (3000 D)

Plan (bottom):

SCALE: 1"=40'

Lot numbers: 20, 22, 23, 24, 25 (top), 21, 7, 6, 5, 4 (bottom)

TRACT BOUNDARY
15' STORM DRAIN EASEMENT
LOT LINE
TRACT NO. 8603
LINE "A"

EXIST. I.R.W.D. LINE TO BE ABANDONED
10' I.R.W.D. EASEMENT LINE TO BE CONSTRUCTED BY OTHERS

60.48 INV. SURVEY
PROJECT SITE
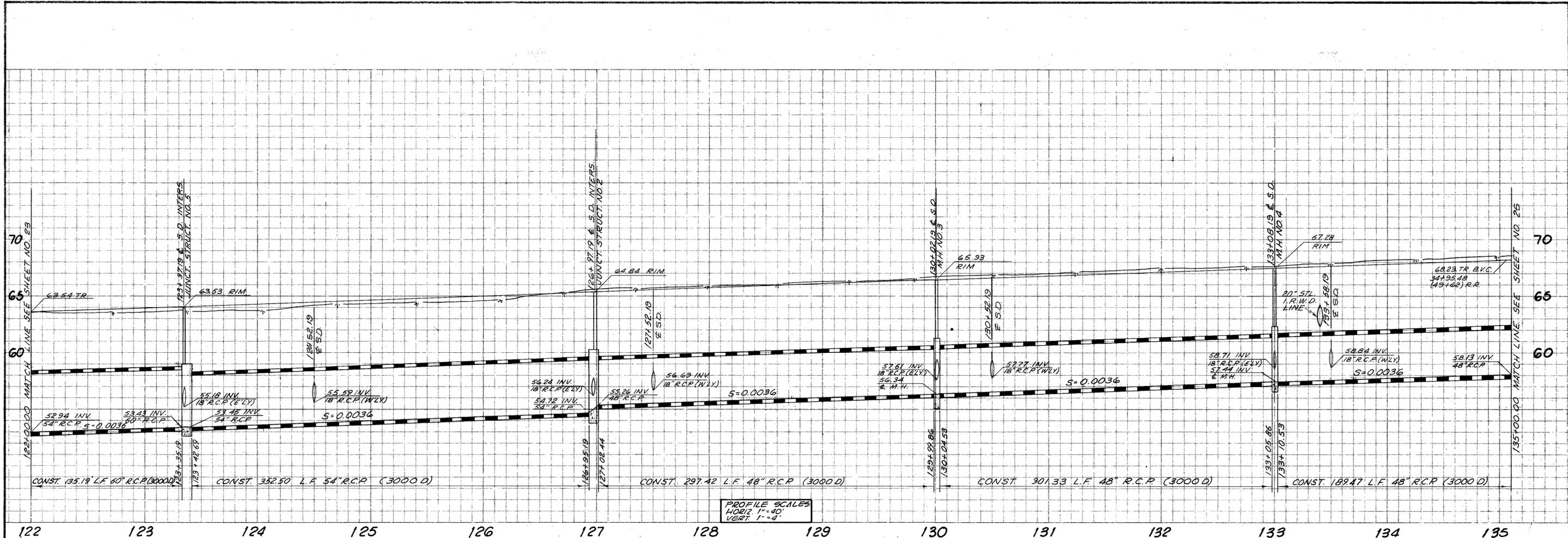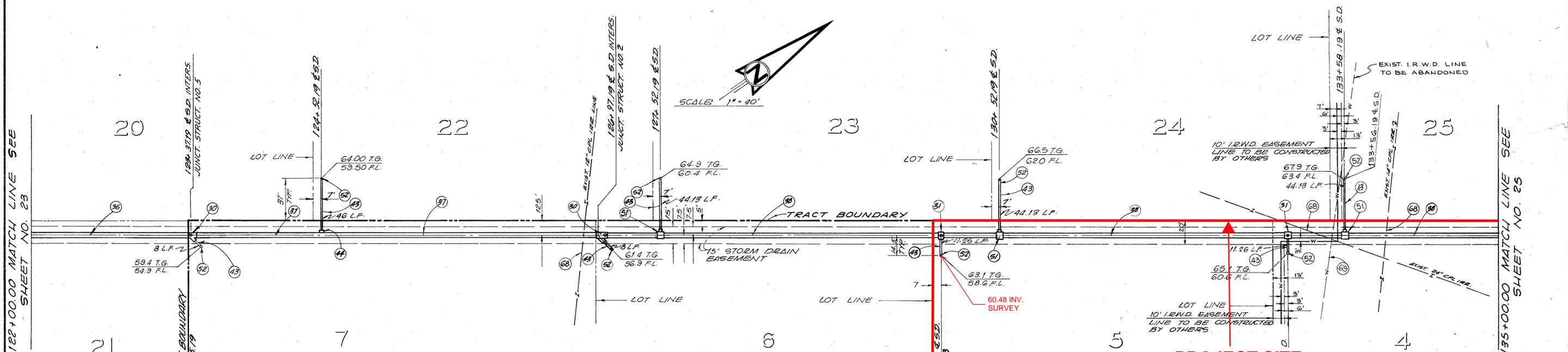
CONSTRUCTION NOTES
30 CONST. JUNCTION STRUCTURE PER DETAIL SHEET 3.
31 CONST. STORM DRAIN MANHOLE PER DETAIL SHEET 3.
37 CONST. 54" R.C.P.
36 CONST. 48" R.C.P.
43 CONST. 18" R.C.P. (ALL TYPICAL (3000 D) ON THIS SHEET)
44 CONST. CONC. COLLAR PER DETAIL SHEET 3.
51 CONST. JUNCTION STRUCTURE PER DETAIL (U) SHEET NO. 4.
62 CONST. C.M.P. DROP INLET PER DETAIL SHEET 3.
68 REMOVE EXISTING IRRIGATION LINE & PLUG ENDS @ R.
98 REMOVE EXISTING I.R.W.D. LINE.
52 CONST. 48" R.C.P.

LINE "A"

CONSTRUCTION NOTES

31 — CONST. STORM DRAIN MANHOLE PER DETAIL ⑪ SHEET NO. 3
38 — CONST. 48" R.C.P.
40 — CONST. 36" R.C.P.
43 — CONST. 18" R.C.P. (ALL TYPICAL (3000 D) ON THIS SHEET)
51 — CONST. JUNCTION STRUCTURE PER DETAIL ⑪ SHEET NO. 4
52 — CONST. C.M.P. DROP INLET PER DETAIL ⑪ SHEET NO. 3

STORM DRAIN
ℂ CURVE DATA
Δ = 5°54'52"
R = 465.84'
L = 48.09'
T = 24.06'

PROFILE SCALES:
HORIZ. 1"=40'
VERT. 1"=4'

SCALE: 1"=40'

TRACT NO. 8803

APPENDIX B

HYDROLOGY CALCULATIONS

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        _____
        **************************************************************************
                     RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
                       (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
                       (c) Copyright 1983-2016 Advanced Engineering Software (aes)
                        Ver. 23.0  Release Date: 07/01/2016  License ID 1435

                               Analysis prepared by:




         ************************* DESCRIPTION OF STUDY *************************
         * TEI JOB NO. 4040                                                    *
         * MYFORD ROAD                                                         *
         * EXISTING CONDITION 25-YEAR (100)                                    *
         **************************************************************************

          FILE NAME: W:\4040\100X-25.DAT
          TIME/DATE OF STUDY: 15:46 02/10/2022
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          USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
        ==========================================================================
                          --*TIME-OF-CONCENTRATION MODEL*--

          USER SPECIFIED STORM EVENT(YEAR) =   25.00
          SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
          SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
          *DATA BANK RAINFALL USED*
          *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

          *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
             HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
             WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE   FACTOR
        NO.  (FT)    (FT)      SIDE / SIDE/ WAY   (FT)    (FT)  (FT)  (FT)    (n)
        ===  =====  =========  ================  ======  =====  ===== =====  =======
          1  30.0    20.0      0.018/0.018/0.020  0.67    2.00 0.0312 0.167 0.0150

          GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
            1. Relative Flow-Depth =  0.00 FEET
               as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
            2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
          *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
           OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
          *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

        **************************************************************************
          FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
        --------------------------------------------------------------------------
          >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
          >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
        ==========================================================================
          INITIAL SUBAREA FLOW-LENGTH(FEET) =   662.00
          ELEVATION DATA: UPSTREAM(FEET) =     72.05  DOWNSTREAM(FEET) =     69.66

          Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
          SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.581
          *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.861
          SUBAREA Tc AND LOSS RATE DATA(AMC  II):
           DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS    Tc
              LAND USE            GROUP    (ACRES) (INCH/HR) (DECIMAL)  CN   (MIN.)
          COMMERCIAL                C       2.60     0.25      0.100     69   12.58
          SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
          SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
          SUBAREA RUNOFF(CFS) =      6.64
          TOTAL AREA(ACRES) =      2.60   PEAK FLOW RATE(CFS) =      6.64
        ==========================================================================
          END OF STUDY SUMMARY:
          TOTAL AREA(ACRES)      =       2.6  TC(MIN.) =     12.58
          EFFECTIVE AREA(ACRES) =      2.60  AREA-AVERAGED Fm(INCH/HR)=  0.03
          AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap = 0.100
          PEAK FLOW RATE(CFS)    =       6.64
        ==========================================================================
        ==========================================================================
          END OF RATIONAL METHOD ANALYSIS

        ↑
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          _____
          **************************************************************************
                    RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
                      (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
                     (c) Copyright 1983-2016 Advanced Engineering Software (aes)
                        Ver. 23.0  Release Date: 07/01/2016  License ID 1435

                               Analysis prepared by:




           ************************* DESCRIPTION OF STUDY *************************
           * TEI JOB NO. 4040                                                     *
           * MYFORD ROAD                                                          *
           * EXISTING CONDITION 25-YEAR (200)                                     *
           **************************************************************************

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          ========================================================================
                          --*TIME-OF-CONCENTRATION MODEL*--

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            SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
            SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
            *DATA BANK RAINFALL USED*
            *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

            *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
               HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
               WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT  WIDTH LIP   HIKE  FACTOR
          NO.  (FT)    (FT)      SIDE / SIDE/ WAY   (FT)    (FT)  (FT)  (FT)    (n)
          ===  =====  =========  ================  ======  ===== ===== ===== =======
            1   30.0    20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

            GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
              1. Relative Flow-Depth =  0.00 FEET
                 as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
              2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
            *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
             OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
            *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

          **************************************************************************
            FLOW PROCESS FROM NODE   200.00 TO NODE   201.00 IS CODE =  21
          --------------------------------------------------------------------------
            >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
            >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
          ========================================================================
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            ELEVATION DATA: UPSTREAM(FEET) =    69.84  DOWNSTREAM(FEET) =     65.25

            Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
            SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  11.785
            *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.969
            SUBAREA Tc AND LOSS RATE DATA(AMC  II):
             DEVELOPMENT TYPE/     SCS SOIL   AREA     Fp         Ap    SCS   Tc
               LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL)  CN  (MIN.)
            COMMERCIAL               C       2.50    0.25      0.100    69  11.79
            SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
            SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
            SUBAREA RUNOFF(CFS) =      6.62
            TOTAL AREA(ACRES) =      2.50   PEAK FLOW RATE(CFS) =      6.62
          ========================================================================
            END OF STUDY SUMMARY:
            TOTAL AREA(ACRES)     =        2.5  TC(MIN.) =     11.79
            EFFECTIVE AREA(ACRES) =      2.50  AREA-AVERAGED Fm(INCH/HR)=  0.03
            AREA-AVERAGED Fp(INCH/HR) = 0.25  AREA-AVERAGED Ap = 0.100
            PEAK FLOW RATE(CFS)   =        6.62
          ========================================================================
          ========================================================================
            END OF RATIONAL METHOD ANALYSIS

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```

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                       _____
                       *************************************************************************
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                                        Analysis prepared by:




         ************************* DESCRIPTION OF STUDY *************************
         * TEI JOB NO. 4040                                                       *
         * MYFORD ROAD                                                            *
         * EXISTING CONDITION 25-YEAR (300)                                       *
         *************************************************************************

          FILE NAME: W:\4040\300X-25.DAT
          TIME/DATE OF STUDY: 15:55 02/10/2022
         ========================================================================
          USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
         ========================================================================
                            --*TIME-OF-CONCENTRATION MODEL*--

          USER SPECIFIED STORM EVENT(YEAR) =   25.00
          SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
          SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
          *DATA BANK RAINFALL USED*
          *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

          *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
             HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
             WIDTH  CROSSFALL  IN- / OUT-/PARK- HEIGHT WIDTH  LIP  HIKE  FACTOR
          NO.  (FT)    (FT)    SIDE / SIDE/ WAY   (FT)   (FT)  (FT) (FT)   (n)
          ===  =====  ========= ================ ====== ===== ======= ===== =======
           1   30.0    20.0    0.018/0.018/0.020  0.67   2.00 0.0312 0.167 0.0150

          GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
            1. Relative Flow-Depth =  0.00 FEET
               as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
            2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
           *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
            OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
           *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

         *************************************************************************
          FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
         -------------------------------------------------------------------------
          >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
          >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
         ========================================================================
          INITIAL SUBAREA FLOW-LENGTH(FEET) =   168.00
          ELEVATION DATA: UPSTREAM(FEET) =     71.69  DOWNSTREAM(FEET) =     69.17

          Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
          SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.467
          *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.586
          SUBAREA Tc AND LOSS RATE DATA(AMC  II):
           DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp         Ap     SCS   Tc
              LAND USE              GROUP   (ACRES) (INCH/HR) (DECIMAL)  CN  (MIN.)
          COMMERCIAL                 C       0.20      0.25     0.100    69   5.47
          SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
          SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
          SUBAREA RUNOFF(CFS) =      0.82
          TOTAL AREA(ACRES) =       0.20   PEAK FLOW RATE(CFS) =      0.82
         ========================================================================
          END OF STUDY SUMMARY:
          TOTAL AREA(ACRES)      =       0.2  TC(MIN.) =     5.47
          EFFECTIVE AREA(ACRES) =      0.20  AREA-AVERAGED Fm(INCH/HR)=  0.03
          AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.100
          PEAK FLOW RATE(CFS)    =       0.82
         ========================================================================
         ========================================================================
          END OF RATIONAL METHOD ANALYSIS
```

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                _____
                **************************************************************************
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                                  Analysis prepared by:




          *************************** DESCRIPTION OF STUDY **************************
          * TEI JOB NO. 4040                                                        *
          * MYFORD ROAD                                                             *
          * EXISTING CONDITION 25-YEAR (400)                                        *
          **************************************************************************

           FILE NAME: W:\4040\400X-25.DAT
           TIME/DATE OF STUDY: 15:58 02/10/2022
          ========================================================================
           USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
          ========================================================================
                        --*TIME-OF-CONCENTRATION MODEL*--

           USER SPECIFIED STORM EVENT(YEAR) =   25.00
           SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
           SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
           *DATA BANK RAINFALL USED*
           *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

           *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
              HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
             WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE   FACTOR
          NO.  (FT)   (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
          ===  =====  =========  =================  ======  =====  =====  =====  =======
           1   30.0    20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

           GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
             1. Relative Flow-Depth =  0.00 FEET
                as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
             2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
           *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
            OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
           *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

          **************************************************************************
           FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
          ------------------------------------------------------------------------
           >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
           >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
          ========================================================================
           INITIAL SUBAREA FLOW-LENGTH(FEET) =   275.00
           ELEVATION DATA: UPSTREAM(FEET) =     70.33  DOWNSTREAM(FEET) =     67.57

           Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
           SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.216
           *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.919
           SUBAREA Tc AND LOSS RATE DATA(AMC  II):
            DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS    Tc
              LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN   (MIN.)
           COMMERCIAL                C       0.75     0.25      0.100     69    7.22
           SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
           SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
           SUBAREA RUNOFF(CFS) =     2.63
           TOTAL AREA(ACRES) =      0.75   PEAK FLOW RATE(CFS) =      2.63
          ========================================================================
           END OF STUDY SUMMARY:
           TOTAL AREA(ACRES)     =       0.8  TC(MIN.) =     7.22
           EFFECTIVE AREA(ACRES) =      0.75  AREA-AVERAGED Fm(INCH/HR)=  0.03
           AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap = 0.100
           PEAK FLOW RATE(CFS)   =      2.63
          ========================================================================
          ========================================================================
           END OF RATIONAL METHOD ANALYSIS

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**************************************************************************
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                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
 * TEI JOB NO. 4040                                                    *
 * MYFORD ROAD                                                         *
 * EXISTING CONDITION 25-YEAR (500)                                    *
 **********************************************************************

   FILE NAME: W:\4040\500X-25.DAT
   TIME/DATE OF STUDY: 16:01 02/10/2022
 ======================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ======================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   25.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
   *DATA BANK RAINFALL USED*
   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT WIDTH LIP   HIKE  FACTOR
   NO. (FT)   (FT)      SIDE / SIDE/ WAY    (FT)   (FT)  (FT)  (FT)   (n)
   === ===== ========= ================= ====== ===== ===== ===== =======
    1  30.0   20.0     0.018/0.018/0.020   0.67   2.00 0.0312 0.167 0.0150

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.00 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
    *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
     OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
    *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

 **********************************************************************
   FLOW PROCESS FROM NODE   500.00 TO NODE   501.00 IS CODE =  21
 ----------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ======================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   284.00
   ELEVATION DATA: UPSTREAM(FEET) =     67.90  DOWNSTREAM(FEET) =     66.31

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   8.215
   *  25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.642
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP    (ACRES) (INCH/HR) (DECIMAL)  CN  (MIN.)
   COMMERCIAL                C        1.15     0.25     0.100    69   8.21
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
   SUBAREA RUNOFF(CFS) =      3.74
   TOTAL AREA(ACRES) =       1.15   PEAK FLOW RATE(CFS) =      3.74
 ======================================================================
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)      =        1.1  TC(MIN.) =      8.21
   EFFECTIVE AREA(ACRES) =       1.15  AREA-AVERAGED Fm(INCH/HR)=  0.03
   AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.100
   PEAK FLOW RATE(CFS)    =       3.74
 ======================================================================
 ======================================================================
   END OF RATIONAL METHOD ANALYSIS

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                                Analysis prepared by:




           ************************** DESCRIPTION OF STUDY *************************
           * TEI JOB NO. 4040                                                     *
           * MYFORD ROAD                                                          *
           * PROPOSED CONDITION 100-YEAR (100P)                                   *
            ***********************************************************************

            FILE NAME: W:\4040\100P-100.DAT
            TIME/DATE OF STUDY: 14:09 02/14/2022
           ========================================================================
            USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
           ========================================================================
                          --*TIME-OF-CONCENTRATION MODEL*--

            USER SPECIFIED STORM EVENT(YEAR) =  100.00
            SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
            SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
            *DATA BANK RAINFALL USED*
            *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

            *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
                HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
                WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT  WIDTH  LIP  HIKE  FACTOR
            NO.  (FT)    (FT)     SIDE / SIDE/ WAY    (FT)   (FT)  (FT) (FT)   (n)
            === =====  =========  =================  ======  ===== ===== ===== ======
             1  30.0     20.0     0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

            GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
              1. Relative Flow-Depth =  0.00 FEET
                 as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
              2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
            *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

           ************************************************************************
            FLOW PROCESS FROM NODE   100.00 TO NODE   101.00 IS CODE =  21
           ------------------------------------------------------------------------
            >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
            >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
           ========================================================================
            INITIAL SUBAREA FLOW-LENGTH(FEET) =   601.00
            ELEVATION DATA: UPSTREAM(FEET) =      71.33  DOWNSTREAM(FEET) =    67.08

            Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
            SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.581
            * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.027
            SUBAREA Tc AND LOSS RATE DATA(AMC III):
             DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp        Ap     SCS   Tc
                LAND USE             GROUP    (ACRES) (INCH/HR) (DECIMAL) CN   (MIN.)
            COMMERCIAL                 C        2.80     0.25     0.100    86   10.58
            SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
            SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
            SUBAREA RUNOFF(CFS) =    10.08
            TOTAL AREA(ACRES) =     2.80   PEAK FLOW RATE(CFS) =     10.08
           ========================================================================
            END OF STUDY SUMMARY:
            TOTAL AREA(ACRES)      =       2.8  TC(MIN.) =     10.58
            EFFECTIVE AREA(ACRES) =      2.80  AREA-AVERAGED Fm(INCH/HR)=  0.03
            AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap = 0.100
            PEAK FLOW RATE(CFS)    =      10.08
           ========================================================================
           ========================================================================
            END OF RATIONAL METHOD ANALYSIS

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                _____
                ***************************************************************************
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                                    Analysis prepared by:




         **************************** DESCRIPTION OF STUDY **************************
         * TEI JOB NO. 4040                                                         *
         * MYFORD ROAD                                                              *
         * PROPOSED CONDITION 100-YEAR (200P)                                       *
          **************************************************************************

          FILE NAME: W:\4040\200P-100.DAT
          TIME/DATE OF STUDY: 14:04 02/14/2022
         ===========================================================================
          USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
         ===========================================================================
                         --*TIME-OF-CONCENTRATION MODEL*--

          USER SPECIFIED STORM EVENT(YEAR) =  100.00
          SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
          SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
          *DATA BANK RAINFALL USED*
          *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

          *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
            HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
            WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT  WIDTH  LIP  HIKE    FACTOR
         NO. (FT)    (FT)     SIDE / SIDE/ WAY    (FT)   (FT)  (FT) (FT)      (n)
         === =====  ========= =================  ======  ===== ====== ===== =======
          1  30.0    20.0     0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

          GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
            1. Relative Flow-Depth =  0.00 FEET
               as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
            2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
          *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

         ***************************************************************************
          FLOW PROCESS FROM NODE   200.00 TO NODE   201.00 IS CODE =  21
         ---------------------------------------------------------------------------
          >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
          >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
         ===========================================================================
          INITIAL SUBAREA FLOW-LENGTH(FEET) =   718.00
          ELEVATION DATA: UPSTREAM(FEET) =     71.33  DOWNSTREAM(FEET) =     65.93

          Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
          SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.222
          * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.893
          SUBAREA Tc AND LOSS RATE DATA(AMC III):
           DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap      SCS   Tc
              LAND USE            GROUP    (ACRES) (INCH/HR) (DECIMAL)  CN  (MIN.)
          COMMERCIAL               C        3.60      0.25     0.100    86   11.22
          SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
          SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
          SUBAREA RUNOFF(CFS) =     12.53
          TOTAL AREA(ACRES) =      3.60   PEAK FLOW RATE(CFS) =      12.53

         ***************************************************************************
          FLOW PROCESS FROM NODE   201.00 TO NODE   202.00 IS CODE =  31
         ---------------------------------------------------------------------------
          >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
          >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
         ===========================================================================
          ELEVATION DATA: UPSTREAM(FEET) =    61.84  DOWNSTREAM(FEET) =    59.41
          FLOW LENGTH(FEET) =   483.00   MANNING'S N =  0.012
          DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
          PIPE-FLOW VELOCITY(FEET/SEC.) =   5.90
          ESTIMATED PIPE DIAMETER(INCH) = 24.00    NUMBER OF PIPES =   1
          PIPE-FLOW(CFS) =       12.53
```

```
   PIPE TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =   12.59
   LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1201.00 FEET.


****************************************************************************
   FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  81
--------------------------------------------------------------------------
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   MAINLINE Tc(MIN.) =   12.59
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.646
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL    AREA      Fp          Ap      SCS
       LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 C        0.80      0.25      0.100    86
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
   SUBAREA AREA(ACRES) =   0.80     SUBAREA RUNOFF(CFS) =    2.61
   EFFECTIVE AREA(ACRES) =      4.40   AREA-AVERAGED Fm(INCH/HR) =  0.02
   AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.10
   TOTAL AREA(ACRES) =      4.4       PEAK FLOW RATE(CFS) =      14.34
==========================================================================
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)      =      4.4  TC(MIN.) =      12.59
   EFFECTIVE AREA(ACRES) =      4.40 AREA-AVERAGED Fm(INCH/HR)=  0.02
   AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap = 0.100
   PEAK FLOW RATE(CFS)    =     14.34
==========================================================================
==========================================================================
   END OF RATIONAL METHOD ANALYSIS
```

APPENDIX C

DETENTION CALCULATIONS

TEI JOB NO 4040
Truck Yard Ponding

Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)	Q(Discharge) (cfs)
67.08	0.00	0				
			6	6	0.00	4.0
67.20	0.12	97				
			192	198	0.00	4.3
67.40	0.32	1825				
			832	1030	0.02	4.6
67.60	0.52	6491				
			1966	2996	0.07	4.9
67.80	0.72	13173				
			3443	6439	0.15	5.2
68.00	0.92	21255				

```
        _____
        ********************************************************************
                          SMALL AREA UNIT HYDROGRAPH MODEL
        ====================================================================
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                            Analysis prepared by:




        ********************************************************************
        --------------------------------------------------------------------

         Problem Descriptions:
          TEI JOB NO. 4040
          MYFORD ROAD
          HYDROGRAPH
        --------------------------------------------------------------------


            RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
            TOTAL CATCHMENT AREA(ACRES) =    2.80
            SOIL-LOSS RATE, Fm,(INCH/HR) =  0.250
            LOW LOSS FRACTION = 0.066
            TIME OF CONCENTRATION(MIN.) = 10.50
            SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
            ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
            RETURN FREQUENCY(YEARS) = 100
              5-MINUTE  POINT RAINFALL VALUE(INCHES) =  0.52
             30-MINUTE  POINT RAINFALL VALUE(INCHES) =  1.09
              1-HOUR    POINT RAINFALL VALUE(INCHES) =  1.45
              3-HOUR    POINT RAINFALL VALUE(INCHES) =  2.43
              6-HOUR    POINT RAINFALL VALUE(INCHES) =  3.36
             24-HOUR    POINT RAINFALL VALUE(INCHES) =  5.63


        --------------------------------------------------------------------


            TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.10
            TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.22

        ********************************************************************
          TIME      VOLUME      Q    0.      2.5       5.0       7.5      10.0
         (HOURS)    (AF)      (CFS)
        --------------------------------------------------------------------
          0.08     0.0006     0.21  Q       .         .         .         .
          0.25     0.0036     0.21  Q       .         .         .         .
          0.43     0.0066     0.21  Q       .         .         .         .
          0.60     0.0096     0.21  Q       .         .         .         .
          0.77     0.0127     0.21  Q       .         .         .         .
          0.95     0.0157     0.21  Q       .         .         .         .
          1.12     0.0188     0.21  Q       .         .         .         .
          1.30     0.0219     0.22  Q       .         .         .         .
          1.48     0.0250     0.22  Q       .         .         .         .
          1.65     0.0282     0.22  Q       .         .         .         .
          1.83     0.0314     0.22  Q       .         .         .         .
          2.00     0.0346     0.22  Q       .         .         .         .
          2.17     0.0378     0.22  Q       .         .         .         .
          2.35     0.0410     0.23  Q       .         .         .         .
          2.53     0.0443     0.23  Q       .         .         .         .
          2.70     0.0476     0.23  Q       .         .         .         .
          2.88     0.0510     0.23  Q       .         .         .         .
```

1

```
 3.05      0.0543      0.23   Q              .              .              .              .
 3.22      0.0577      0.24   Q              .              .              .              .
 3.40      0.0611      0.24   Q              .              .              .              .
 3.58      0.0646      0.24   Q              .              .              .              .
 3.75      0.0680      0.24   Q              .              .              .              .
 3.92      0.0715      0.24   Q              .              .              .              .
 4.10      0.0751      0.25   Q              .              .              .              .
 4.28      0.0786      0.25   Q              .              .              .              .
 4.45      0.0822      0.25   Q              .              .              .              .
 4.62      0.0859      0.25   .Q             .              .              .              .
 4.80      0.0896      0.25   .Q             .              .              .              .
 4.97      0.0933      0.26   .Q             .              .              .              .
 5.15      0.0970      0.26   .Q             .              .              .              .
 5.32      0.1008      0.26   .Q             .              .              .              .
 5.50      0.1046      0.27   .Q             .              .              .              .
 5.68      0.1085      0.27   .Q             .              .              .              .
 5.85      0.1124      0.27   .Q             .              .              .              .
 6.03      0.1163      0.27   .Q             .              .              .              .
 6.20      0.1203      0.28   .Q             .              .              .              .
 6.38      0.1243      0.28   .Q             .              .              .              .
 6.55      0.1284      0.28   .Q             .              .              .              .
 6.72      0.1325      0.29   .Q             .              .              .              .
 6.90      0.1367      0.29   .Q             .              .              .              .
 7.07      0.1409      0.29   .Q             .              .              .              .
 7.25      0.1452      0.30   .Q             .              .              .              .
 7.43      0.1495      0.30   .Q             .              .              .              .
 7.60      0.1539      0.30   .Q             .              .              .              .
 7.78      0.1583      0.31   .Q             .              .              .              .
 7.95      0.1628      0.31   .Q             .              .              .              .
 8.12      0.1674      0.32   .Q             .              .              .              .
 8.30      0.1720      0.32   .Q             .              .              .              .
 8.48      0.1767      0.33   .Q             .              .              .              .
 8.65      0.1814      0.33   .Q             .              .              .              .
 8.82      0.1862      0.34   .Q             .              .              .              .
 9.00      0.1911      0.34   .Q             .              .              .              .
 9.18      0.1961      0.35   .Q             .              .              .              .
 9.35      0.2012      0.35   .Q             .              .              .              .
 9.52      0.2063      0.36   .Q             .              .              .              .
 9.70      0.2115      0.36   .Q             .              .              .              .
 9.88      0.2168      0.37   .Q             .              .              .              .
10.05      0.2222      0.38   .Q             .              .              .              .
10.23      0.2277      0.38   .Q             .              .              .              .
10.40      0.2333      0.39   .Q             .              .              .              .
10.57      0.2390      0.40   .Q             .              .              .              .
10.75      0.2449      0.41   .Q             .              .              .              .
10.93      0.2508      0.42   .Q             .              .              .              .
11.10      0.2569      0.42   .Q             .              .              .              .
11.27      0.2631      0.44   .Q             .              .              .              .
11.45      0.2694      0.44   .Q             .              .              .              .
11.62      0.2759      0.46   .Q             .              .              .              .
11.80      0.2826      0.46   .Q             .              .              .              .
11.98      0.2894      0.48   .Q             .              .              .              .
12.15      0.2967      0.52   .  Q           .              .              .              .
12.32      0.3050      0.63   .  Q           .              .              .              .
12.50      0.3143      0.64   .  Q           .              .              .              .
12.68      0.3238      0.67   .  Q           .              .              .              .
12.85      0.3335      0.68   .  Q           .              .              .              .
13.02      0.3436      0.71   .  Q           .              .              .              .
13.20      0.3539      0.72   .  Q           .              .              .              .
13.38      0.3645      0.75   .    Q         .              .              .              .
13.55      0.3756      0.77   .    Q         .              .              .              .
13.73      0.3870      0.81   .    Q         .              .              .              .
13.90      0.3989      0.83   .    Q         .              .              .              .
14.07      0.4113      0.88   .    Q         .              .              .              .
14.25      0.4243      0.91   .    Q         .              .              .              .
```

```
14.43      0.4380      0.98   .   Q      .            .          .            .
14.60      0.4524      1.02   .    Q     .            .          .            .
14.77      0.4678      1.11   .    Q     .            .          .            .
14.95      0.4842      1.16   .    Q     .            .          .            .
15.12      0.5020      1.30   .     Q    .            .          .            .
15.30      0.5214      1.39   .     Q    .            .          .            .
15.48      0.5423      1.50   .     Q    .            .          .            .
15.65      0.5648      1.62   .      Q   .            .          .            .
15.82      0.5932      2.31   .         Q.            .          .            .
16.00      0.6327      3.15   .          . Q          .          .            .
16.17      0.7245      9.54   .          .            .          .         Q  .
16.35      0.8071      1.88   .        Q  .           .          .            .
16.52      0.8315      1.50   .       Q   .           .          .            .
16.70      0.8512      1.23   .   Q      .            .          .            .
16.88      0.8678      1.06   .    Q     .            .          .            .
17.05      0.8823      0.95   .  Q       .            .          .            .
17.23      0.8953      0.86   .  Q       .            .          .            .
17.40      0.9072      0.79   .  Q       .            .          .            .
17.58      0.9182      0.74   . Q        .            .          .            .
17.75      0.9286      0.69   . Q        .            .          .            .
17.92      0.9383      0.66   . Q        .            .          .            .
18.10      0.9476      0.62   . Q        .            .          .            .
18.27      0.9555      0.47   .Q         .            .          .            .
18.45      0.9622      0.45   .Q         .            .          .            .
18.62      0.9685      0.43   .Q         .            .          .            .
18.80      0.9746      0.41   .Q         .            .          .            .
18.98      0.9804      0.39   .Q         .            .          .            .
19.15      0.9860      0.38   .Q         .            .          .            .
19.33      0.9914      0.37   .Q         .            .          .            .
19.50      0.9966      0.35   .Q         .            .          .            .
19.67      1.0017      0.34   .Q         .            .          .            .
19.85      1.0066      0.33   .Q         .            .          .            .
20.02      1.0113      0.32   .Q         .            .          .            .
20.20      1.0159      0.31   .Q         .            .          .            .
20.38      1.0204      0.31   .Q         .            .          .            .
20.55      1.0248      0.30   .Q         .            .          .            .
20.73      1.0291      0.29   .Q         .            .          .            .
20.90      1.0333      0.28   .Q         .            .          .            .
21.08      1.0373      0.28   .Q         .            .          .            .
21.25      1.0413      0.27   .Q         .            .          .            .
21.42      1.0452      0.27   .Q         .            .          .            .
21.60      1.0491      0.26   .Q         .            .          .            .
21.77      1.0528      0.26   .Q         .            .          .            .
21.95      1.0565      0.25   .Q         .            .          .            .
22.12      1.0601      0.25   Q          .            .          .            .
22.30      1.0636      0.24   Q          .            .          .            .
22.48      1.0671      0.24   Q          .            .          .            .
22.65      1.0705      0.23   Q          .            .          .            .
22.83      1.0739      0.23   Q          .            .          .            .
23.00      1.0772      0.23   Q          .            .          .            .
23.17      1.0804      0.22   Q          .            .          .            .
23.35      1.0836      0.22   Q          .            .          .            .
23.52      1.0868      0.22   Q          .            .          .            .
23.70      1.0899      0.21   Q          .            .          .            .
23.88      1.0929      0.21   Q          .            .          .            .
24.05      1.0959      0.21   Q          .            .          .            .
24.23      1.0974      0.00   Q          .            .          .            .
      ------------------------------------------------------------------------------
--------------------------------------------------------------------------------
      TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
      (Note: 100% of Peak Flow Rate estimate assumed to have
      an instantaneous time duration)

      Percentile of Estimated                    Duration
         Peak Flow Rate                          (minutes)
```

```
       =======================            =========
              0%                             1449.0
             10%                              157.5
             20%                               31.5
             30%                               21.0
             40%                               10.5
             50%                               10.5
             60%                               10.5
             70%                               10.5
             80%                               10.5
             90%                               10.5

   Problem Descriptions:
    TEI JOB NO. 4040
    MYFORD ROAD
    HYDROGRAPH
  ------------------------------------------------------------------------------


      RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
      TOTAL CATCHMENT AREA(ACRES) =    2.80
      SOIL-LOSS RATE, Fm,(INCH/HR) =  0.250
      LOW LOSS FRACTION = 0.066
      TIME OF CONCENTRATION(MIN.) = 10.50
      SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
      ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
      RETURN FREQUENCY(YEARS) = 100
        5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.52
       30-MINUTE POINT RAINFALL VALUE(INCHES) =  1.09
        1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.45
        3-HOUR   POINT RAINFALL VALUE(INCHES) =  2.43
        6-HOUR   POINT RAINFALL VALUE(INCHES) =  3.36
       24-HOUR   POINT RAINFALL VALUE(INCHES) =  5.63


  ------------------------------------------------------------------------------

      TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.10
      TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.22

  *******************************************************************************
     TIME      VOLUME      Q    0.      2.5       5.0       7.5      10.0
    (HOURS)    (AF)      (CFS)
  -------------------------------------------------------------------------------
     0.08     0.0006     0.21  Q      .         .         .         .
     0.25     0.0036     0.21  Q      .         .         .         .
     0.43     0.0066     0.21  Q      .         .         .         .
     0.60     0.0096     0.21  Q      .         .         .         .
     0.77     0.0127     0.21  Q      .         .         .         .
     0.95     0.0157     0.21  Q      .         .         .         .
     1.12     0.0188     0.21  Q      .         .         .         .
     1.30     0.0219     0.22  Q      .         .         .         .
     1.48     0.0250     0.22  Q      .         .         .         .
     1.65     0.0282     0.22  Q      .         .         .         .
     1.83     0.0314     0.22  Q      .         .         .         .
     2.00     0.0346     0.22  Q      .         .         .         .
     2.17     0.0378     0.22  Q      .         .         .         .
     2.35     0.0410     0.23  Q      .         .         .         .
     2.53     0.0443     0.23  Q      .         .         .         .
     2.70     0.0476     0.23  Q      .         .         .         .
     2.88     0.0510     0.23  Q      .         .         .         .
     3.05     0.0543     0.23  Q      .         .         .         .
     3.22     0.0577     0.24  Q      .         .         .         .
     3.40     0.0611     0.24  Q      .         .         .         .
     3.58     0.0646     0.24  Q      .         .         .         .
     3.75     0.0680     0.24  Q      .         .         .         .
```

```
3.92      0.0715     0.24   Q          .          .          .          .
4.10      0.0751     0.25   Q          .          .          .          .
4.28      0.0786     0.25   Q          .          .          .          .
4.45      0.0822     0.25   Q          .          .          .          .
4.62      0.0859     0.25   .Q         .          .          .          .
4.80      0.0896     0.25   .Q         .          .          .          .
4.97      0.0933     0.26   .Q         .          .          .          .
5.15      0.0970     0.26   .Q         .          .          .          .
5.32      0.1008     0.26   .Q         .          .          .          .
5.50      0.1046     0.27   .Q         .          .          .          .
5.68      0.1085     0.27   .Q         .          .          .          .
5.85      0.1124     0.27   .Q         .          .          .          .
6.03      0.1163     0.27   .Q         .          .          .          .
6.20      0.1203     0.28   .Q         .          .          .          .
6.38      0.1243     0.28   .Q         .          .          .          .
6.55      0.1284     0.28   .Q         .          .          .          .
6.72      0.1325     0.29   .Q         .          .          .          .
6.90      0.1367     0.29   .Q         .          .          .          .
7.07      0.1409     0.29   .Q         .          .          .          .
7.25      0.1452     0.30   .Q         .          .          .          .
7.43      0.1495     0.30   .Q         .          .          .          .
7.60      0.1539     0.30   .Q         .          .          .          .
7.78      0.1583     0.31   .Q         .          .          .          .
7.95      0.1628     0.31   .Q         .          .          .          .
8.12      0.1674     0.32   .Q         .          .          .          .
8.30      0.1720     0.32   .Q         .          .          .          .
8.48      0.1767     0.33   .Q         .          .          .          .
8.65      0.1814     0.33   .Q         .          .          .          .
8.82      0.1862     0.34   .Q         .          .          .          .
9.00      0.1911     0.34   .Q         .          .          .          .
9.18      0.1961     0.35   .Q         .          .          .          .
9.35      0.2012     0.35   .Q         .          .          .          .
9.52      0.2063     0.36   .Q         .          .          .          .
9.70      0.2115     0.36   .Q         .          .          .          .
9.88      0.2168     0.37   .Q         .          .          .          .
10.05     0.2222     0.38   .Q         .          .          .          .
10.23     0.2277     0.38   .Q         .          .          .          .
10.40     0.2333     0.39   .Q         .          .          .          .
10.57     0.2390     0.40   .Q         .          .          .          .
10.75     0.2449     0.41   .Q         .          .          .          .
10.93     0.2508     0.42   .Q         .          .          .          .
11.10     0.2569     0.42   .Q         .          .          .          .
11.27     0.2631     0.44   .Q         .          .          .          .
11.45     0.2694     0.44   .Q         .          .          .          .
11.62     0.2759     0.46   .Q         .          .          .          .
11.80     0.2826     0.46   .Q         .          .          .          .
11.98     0.2894     0.48   .Q         .          .          .          .
12.15     0.2967     0.52   . Q        .          .          .          .
12.32     0.3050     0.63   . Q        .          .          .          .
12.50     0.3143     0.64   . Q        .          .          .          .
12.68     0.3238     0.67   . Q        .          .          .          .
12.85     0.3335     0.68   . Q        .          .          .          .
13.02     0.3436     0.71   . Q        .          .          .          .
13.20     0.3539     0.72   . Q        .          .          .          .
13.38     0.3645     0.75   .  Q       .          .          .          .
13.55     0.3756     0.77   .  Q       .          .          .          .
13.73     0.3870     0.81   .  Q       .          .          .          .
13.90     0.3989     0.83   .  Q       .          .          .          .
14.07     0.4113     0.88   .  Q       .          .          .          .
14.25     0.4243     0.91   .  Q       .          .          .          .
14.43     0.4380     0.98   .  Q       .          .          .          .
14.60     0.4524     1.02   .   Q      .          .          .          .
14.77     0.4678     1.11   .   Q      .          .          .          .
14.95     0.4842     1.16   .   Q      .          .          .          .
15.12     0.5020     1.30   .     Q    .          .          .          .
```

```
15.30     0.5214     1.39  .     Q   .          .          .          .          .
15.48     0.5423     1.50  .     Q   .          .          .          .          .
15.65     0.5648     1.62  .      Q  .          .          .          .          .
15.82     0.5932     2.31  .         Q.         .          .          .          .
16.00     0.6327     3.15  .          . Q       .          .          .          .
16.17     0.7245     9.54  .          .          .          .          .   Q     .
16.35     0.8071     1.88  .        Q  .          .          .          .          .
16.52     0.8315     1.50  .     Q   .          .          .          .          .
16.70     0.8512     1.23  .    Q    .          .          .          .          .
16.88     0.8678     1.06  .    Q    .          .          .          .          .
17.05     0.8823     0.95  .  Q      .          .          .          .          .
17.23     0.8953     0.86  .  Q      .          .          .          .          .
17.40     0.9072     0.79  .  Q      .          .          .          .          .
17.58     0.9182     0.74  . Q       .          .          .          .          .
17.75     0.9286     0.69  . Q       .          .          .          .          .
17.92     0.9383     0.66  . Q       .          .          .          .          .
18.10     0.9476     0.62  . Q       .          .          .          .          .
18.27     0.9555     0.47  .Q        .          .          .          .          .
18.45     0.9622     0.45  .Q        .          .          .          .          .
18.62     0.9685     0.43  .Q        .          .          .          .          .
18.80     0.9746     0.41  .Q        .          .          .          .          .
18.98     0.9804     0.39  .Q        .          .          .          .          .
19.15     0.9860     0.38  .Q        .          .          .          .          .
19.33     0.9914     0.37  .Q        .          .          .          .          .
19.50     0.9966     0.35  .Q        .          .          .          .          .
19.67     1.0017     0.34  .Q        .          .          .          .          .
19.85     1.0066     0.33  .Q        .          .          .          .          .
20.02     1.0113     0.32  .Q        .          .          .          .          .
20.20     1.0159     0.31  .Q        .          .          .          .          .
20.38     1.0204     0.31  .Q        .          .          .          .          .
20.55     1.0248     0.30  .Q        .          .          .          .          .
20.73     1.0291     0.29  .Q        .          .          .          .          .
20.90     1.0333     0.28  .Q        .          .          .          .          .
21.08     1.0373     0.28  .Q        .          .          .          .          .
21.25     1.0413     0.27  .Q        .          .          .          .          .
21.42     1.0452     0.27  .Q        .          .          .          .          .
21.60     1.0491     0.26  .Q        .          .          .          .          .
21.77     1.0528     0.26  .Q        .          .          .          .          .
21.95     1.0565     0.25  .Q        .          .          .          .          .
22.12     1.0601     0.25  Q         .          .          .          .          .
22.30     1.0636     0.24  Q         .          .          .          .          .
22.48     1.0671     0.24  Q         .          .          .          .          .
22.65     1.0705     0.23  Q         .          .          .          .          .
22.83     1.0739     0.23  Q         .          .          .          .          .
23.00     1.0772     0.23  Q         .          .          .          .          .
23.17     1.0804     0.22  Q         .          .          .          .          .
23.35     1.0836     0.22  Q         .          .          .          .          .
23.52     1.0868     0.22  Q         .          .          .          .          .
23.70     1.0899     0.21  Q         .          .          .          .          .
23.88     1.0929     0.21  Q         .          .          .          .          .
24.05     1.0959     0.21  Q         .          .          .          .          .
24.23     1.0974     0.00  Q         .          .          .          .          .
```

    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated   Duration
       Peak Flow Rate   (minutes)
    ======================   =========
           0%   1449.0
          10%   157.5
          20%   31.5
          30%   21.0

```
                40%                                    10.5
                50%                                    10.5
                60%                                    10.5
                70%                                    10.5
                80%                                    10.5
                90%                                    10.5

   Problem Descriptions:
    TEI JOB NO. 4040
    MYFORD ROAD
    HYDROGRAPH



   ================================================================================
       FLOW-THROUGH DETENTION BASIN MODEL

       SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
       CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   10.500
       DEAD STORAGE(AF) =        0.00
       SPECIFIED DEAD STORAGE(AF) FILLED =        0.00
       ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00



                       INFLOW
                          |
                          |
                          V                __effective depth
                   ------------           |    (and volume)
                  |            |           |
                  | detention  |   |....V.............
                  |   basin    | <-->       outflow
                  |            |   |........._____
                   ------------          |        \
                          |              | storage |   basin outlet
                          V               ----------
                       OUTFLOW



       DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
       TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   7
       *BASIN-DEPTH  STORAGE    OUTFLOW **BASIN-DEPTH  STORAGE    OUTFLOW  *
       *  (FEET)   (ACRE-FEET)   (CFS)   **  (FEET)   (ACRE-FEET)  (CFS)   *
       *    0.000      0.000      0.000**    0.120      0.001      4.000*
       *    0.320      0.003      4.300**    0.520      0.020      4.600*
       *    0.720      0.050      4.700**    0.830      0.070      5.100*
       *    0.920      0.100      5.400**
   --------------------------------------------------------------------------------
       BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
        INTERVAL   DEPTH   {S-O*DT/2}   {S+O*DT/2}
         NUMBER   (FEET)   (ACRE-FEET)  (ACRE-FEET)
            1      0.00      0.00000      0.00000
            2      0.12     -0.02793      0.02993
            3      0.32     -0.02810      0.03410
            4      0.52     -0.01326      0.05326
            5      0.72      0.01601      0.08399
            6      0.83      0.03312      0.10688
            7      0.92      0.06095      0.13905
       WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT INTERVAL(MIN.)
   --------------------------------------------------------------------------------
       DETENTION BASIN ROUTING RESULTS:
       NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
             OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
             AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.
```
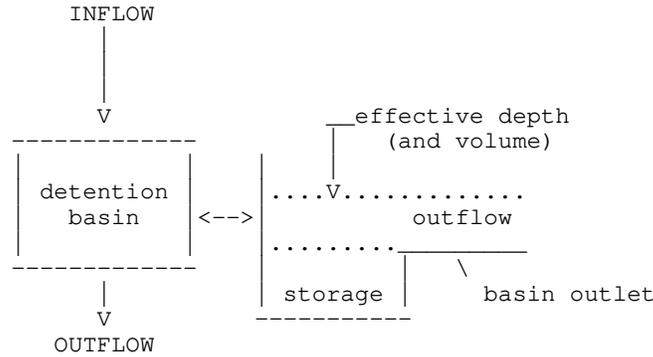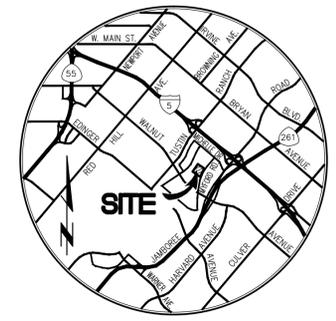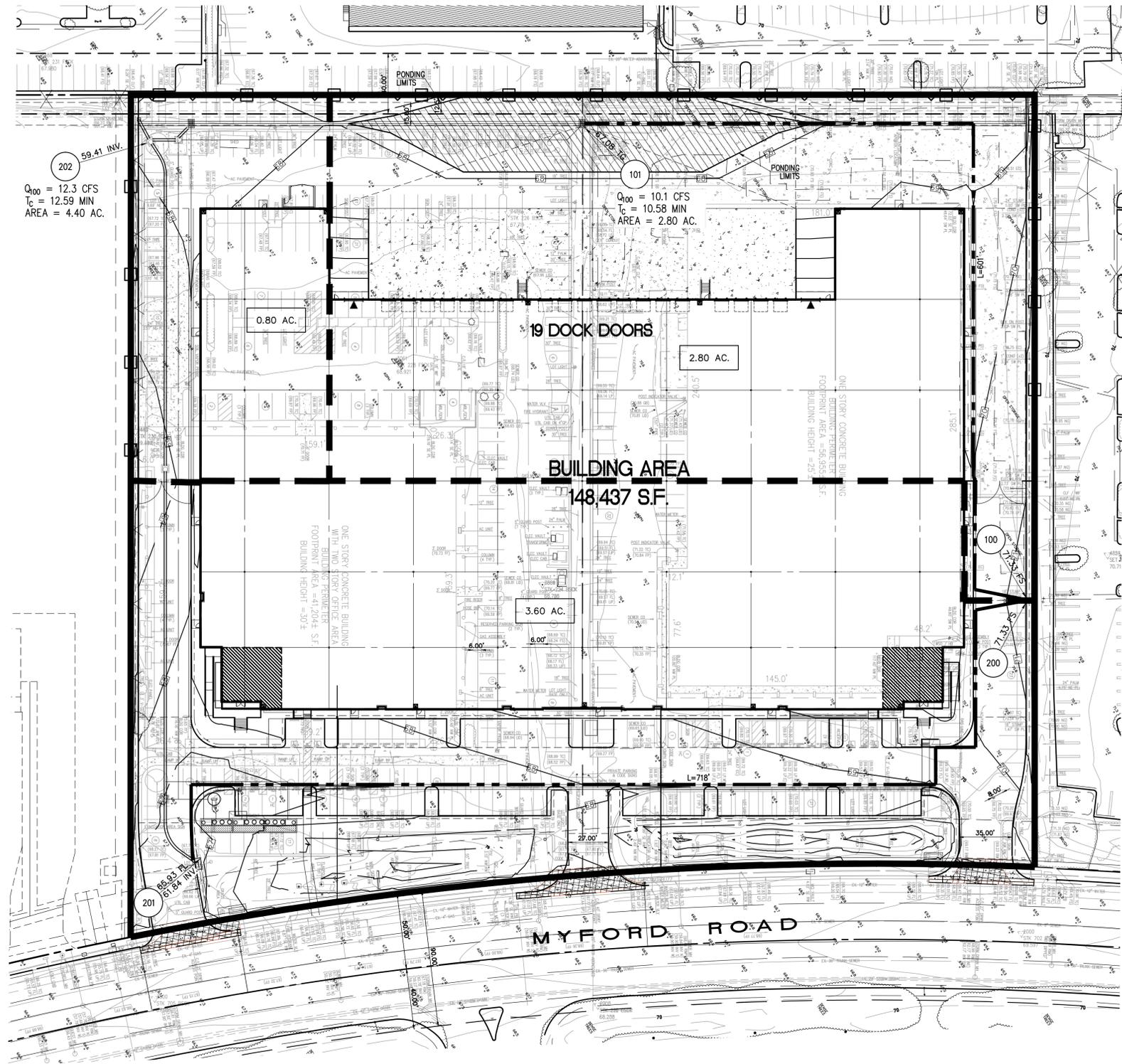
7

TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	EFFECTIVE DEPTH(FT)	OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
0.075	0.000	0.21	0.01	0.20	0.000
0.250	0.000	0.21	0.01	0.40	0.000
0.425	0.000	0.21	0.01	0.40	0.000
0.600	0.000	0.21	0.01	0.40	0.000
0.775	0.000	0.21	0.01	0.41	0.000
0.950	0.000	0.21	0.01	0.41	0.000
1.125	0.000	0.21	0.01	0.41	0.000
1.300	0.000	0.22	0.01	0.42	0.000
1.475	0.000	0.22	0.01	0.42	0.000
1.650	0.000	0.22	0.01	0.42	0.000
1.825	0.000	0.22	0.01	0.42	0.000
2.000	0.000	0.22	0.01	0.43	0.000
2.175	0.000	0.22	0.01	0.43	0.000
2.350	0.000	0.23	0.01	0.43	0.000
2.525	0.000	0.23	0.01	0.44	0.000
2.700	0.000	0.23	0.01	0.44	0.000
2.875	0.000	0.23	0.01	0.45	0.000
3.050	0.000	0.23	0.01	0.45	0.000
3.225	0.000	0.24	0.01	0.45	0.000
3.400	0.000	0.24	0.01	0.46	0.000
3.575	0.000	0.24	0.01	0.46	0.000
3.750	0.000	0.24	0.01	0.46	0.000
3.925	0.000	0.24	0.01	0.47	0.000
4.100	0.000	0.25	0.01	0.47	0.000
4.275	0.000	0.25	0.01	0.48	0.000
4.450	0.000	0.25	0.01	0.48	0.000
4.625	0.000	0.25	0.01	0.49	0.000
4.800	0.000	0.25	0.01	0.49	0.000
4.975	0.000	0.26	0.01	0.50	0.000
5.150	0.000	0.26	0.02	0.50	0.000
5.325	0.000	0.26	0.02	0.51	0.000
5.500	0.000	0.27	0.02	0.51	0.000
5.675	0.000	0.27	0.02	0.52	0.000
5.850	0.000	0.27	0.02	0.52	0.000
6.025	0.000	0.27	0.02	0.53	0.000
6.200	0.000	0.28	0.02	0.53	0.000
6.375	0.000	0.28	0.02	0.54	0.000
6.550	0.000	0.28	0.02	0.54	0.000
6.725	0.000	0.29	0.02	0.55	0.000
6.900	0.000	0.29	0.02	0.56	0.000
7.075	0.000	0.29	0.02	0.56	0.000
7.250	0.000	0.30	0.02	0.57	0.000
7.425	0.000	0.30	0.02	0.58	0.000
7.600	0.000	0.30	0.02	0.59	0.000
7.775	0.000	0.31	0.02	0.59	0.000
7.950	0.000	0.31	0.02	0.60	0.000
8.125	0.000	0.32	0.02	0.61	0.000
8.300	0.000	0.32	0.02	0.62	0.000
8.475	0.000	0.33	0.02	0.63	0.000
8.650	0.000	0.33	0.02	0.64	0.000
8.825	0.000	0.34	0.02	0.64	0.000
9.000	0.000	0.34	0.02	0.65	0.000
9.175	0.000	0.35	0.02	0.66	0.000
9.350	0.000	0.35	0.02	0.67	0.000
9.525	0.000	0.36	0.02	0.69	0.000
9.700	0.000	0.36	0.02	0.70	0.000
9.875	0.000	0.37	0.02	0.71	0.000
10.050	0.000	0.38	0.02	0.72	0.000
10.225	0.000	0.38	0.02	0.74	0.000
10.400	0.000	0.39	0.02	0.75	0.000
10.575	0.000	0.40	0.02	0.76	0.000

10.750	0.000	0.41	0.02	0.78	0.000
10.925	0.000	0.42	0.02	0.79	0.000
11.100	0.000	0.42	0.02	0.81	0.000
11.275	0.000	0.44	0.03	0.83	0.000
11.450	0.000	0.44	0.03	0.85	0.000
11.625	0.000	0.46	0.03	0.87	0.000
11.800	0.000	0.46	0.03	0.89	0.000
11.975	0.000	0.48	0.03	0.91	0.000
12.150	0.000	0.52	0.03	0.97	0.000
12.325	0.000	0.63	0.04	1.12	0.000
12.500	0.000	0.64	0.04	1.24	0.000
12.675	0.000	0.67	0.04	1.27	0.000
12.850	0.000	0.68	0.04	1.30	0.000
13.025	0.000	0.71	0.04	1.34	0.000
13.200	0.000	0.72	0.04	1.38	0.000
13.375	0.000	0.75	0.04	1.43	0.000
13.550	0.000	0.77	0.04	1.47	0.000
13.725	0.000	0.81	0.05	1.53	0.000
13.900	0.000	0.83	0.05	1.59	0.000
14.075	0.000	0.88	0.05	1.66	0.000
14.250	0.000	0.91	0.05	1.74	0.000
14.425	0.000	0.98	0.06	1.83	0.000
14.600	0.000	1.02	0.06	1.93	0.000
14.775	0.000	1.11	0.06	2.05	0.001
14.950	0.000	1.16	0.07	2.19	0.001
15.125	0.000	1.30	0.08	2.38	0.001
15.300	0.000	1.39	0.08	2.60	0.001
15.475	0.000	1.50	0.09	2.79	0.001
15.650	0.000	1.62	0.09	3.01	0.001
15.825	0.000	2.31	0.28	3.69	0.003
16.000	0.000	3.15	0.44	4.36	0.013
16.175	0.000	9.54	0.92	4.93	0.099
16.350	0.000	1.88	0.74	5.07	0.053
16.525	0.000	1.50	0.38	4.58	0.008
16.700	0.000	1.23	0.07	3.38	0.001
16.875	0.000	1.06	0.06	2.21	0.001
17.050	0.000	0.95	0.05	1.94	0.000
17.225	0.000	0.86	0.05	1.74	0.000
17.400	0.000	0.79	0.05	1.59	0.000
17.575	0.000	0.74	0.04	1.48	0.000
17.750	0.000	0.69	0.04	1.38	0.000
17.925	0.000	0.66	0.04	1.30	0.000
18.100	0.000	0.62	0.04	1.24	0.000
18.275	0.000	0.47	0.03	1.06	0.000
18.450	0.000	0.45	0.03	0.89	0.000
18.625	0.000	0.43	0.02	0.85	0.000
18.800	0.000	0.41	0.02	0.81	0.000
18.975	0.000	0.39	0.02	0.78	0.000
19.150	0.000	0.38	0.02	0.75	0.000
19.325	0.000	0.37	0.02	0.72	0.000
19.500	0.000	0.35	0.02	0.70	0.000
19.675	0.000	0.34	0.02	0.68	0.000
19.850	0.000	0.33	0.02	0.65	0.000
20.025	0.000	0.32	0.02	0.64	0.000
20.200	0.000	0.31	0.02	0.62	0.000
20.375	0.000	0.31	0.02	0.60	0.000
20.550	0.000	0.30	0.02	0.59	0.000
20.725	0.000	0.29	0.02	0.57	0.000
20.900	0.000	0.28	0.02	0.56	0.000
21.075	0.000	0.28	0.02	0.54	0.000
21.250	0.000	0.27	0.02	0.53	0.000
21.425	0.000	0.27	0.02	0.52	0.000
21.600	0.000	0.26	0.02	0.51	0.000
21.775	0.000	0.26	0.01	0.50	0.000
21.950	0.000	0.25	0.01	0.49	0.000

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22.125      0.000      0.25      0.01      0.48      0.000
22.300      0.000      0.24      0.01      0.47      0.000
22.475      0.000      0.24      0.01      0.46      0.000
22.650      0.000      0.23      0.01      0.46      0.000
22.825      0.000      0.23      0.01      0.45      0.000
23.000      0.000      0.23      0.01      0.44      0.000
23.175      0.000      0.22      0.01      0.43      0.000
23.350      0.000      0.22      0.01      0.43      0.000
23.525      0.000      0.22      0.01      0.42      0.000
23.700      0.000      0.21      0.01      0.42      0.000
23.875      0.000      0.21      0.01      0.41      0.000
24.050      0.000      0.21      0.01      0.40      0.000
24.225      0.000      0.00      0.00      0.20      0.000
24.400      0.000      0.00      0.00      0.00      0.000
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APPENDIX D

HYDROLOGY MAPS

VICINITY MAP
N.T.S.

SITE

Q25 = 6.6 CFS
Tc = 11.79 MIN
AREA = 2.50 AC.
201

2.50 AC.

Q25 = 6.6 CFS
Tc = 12.58 MIN
AREA = 2.60 AC.
101

2.60 AC.

ONE STORY CONCRETE BUILDING
BUILDING PERIMETER
FOOTPRINT AREA =56,955± S.F.
BUILDING HEIGHT =25'±

181.0'

EXISTING CATCH BASIN
PER EXIST. AS-BUILT PLANS

EXISTING CATCH BASIN

ONE STORY CONCRETE BUILDING
WITH TWO STORY OFFICE AREA
FOOTPRINT AR =41,204± S.F.
BUILDING HEIGHT =32'±

1.15 AC.

100

300

200

0.75 AC.

0.20 AC.

400

Q25 = 2.6 CFS
Tc = 7.22 MIN
AREA = 0.75 AC.

L=275'

500

Q25 = 3.7 CFS
Tc = 8.21 MIN
AREA = 1.15 AC.

401

L=284'

501

301

Q25 = 0.8 CFS
Tc = 5.47 MIN
AREA = 0.20 AC.

MYFORD ROAD

LEGEND

▬▬▬	PROJECT BOUNDARY
▬ ▬ ▬	SUBAREA BOUNDARY
▬·▬·▬	FLOW PATH
4.10 AC.	SUBAREA AREA
◯ 100	NODE NUMBER
⎯⎯	FLOW DIRECTION
◇	PONDING LIMITS

CITY OF TUSTIN
PUBLIC WORKS DEPARTMENT

EXISTING CONDITION
HYDROLOGY MAP

14351 MYFORD ROAD

4040/1 OF 1 SHEET

Designed by		Approved by		Date	
Date					
Checked by					
Date					
Designed by		Public Works Director		R.C.E.	XXXXX
Date					
Checked by					
Date		Sheet 1 of 1 Sheets			

SCALE:1"=40'
0 20 40   80   120

Last Update: 2/10/22
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SITE

PONDING LIMITS

202   59.41 INV.

Q$_{100}$ = 12.3 CFS
T$_C$ = 12.59 MIN
AREA = 4.40 AC.

101

Q$_{100}$ = 10.1 CFS
T$_C$ = 10.58 MIN
AREA = 2.80 AC.

PONDING LIMITS

0.80 AC.

19 DOCK DOORS

2.80 AC.

BUILDING AREA
148,437 S.F.

100

3.60 AC.

6.00'   6.00'

200

145.0'

L=718'

27.00'   35.00'

201

65.93 FL
51.84 INV.

MYFORD   ROAD

LEGEND

▬▬▬▬	PROJECT BOUNDARY
▬ ▬ ▬	SUBAREA BOUNDARY
—·—·—	FLOW PATH
4.10 AC.	SUBAREA AREA
100	NODE NUMBER
·········	FLOW DIRECTION
◇	PONDING LIMITS

CITY OF TUSTIN
PUBLIC WORKS DEPARTMENT

PROPOSED CONDITION
HYDROLOGY MAP

14351 MYFORD ROAD

Designed by		Approved by	Date
Date			
Checked by			
Date			
Designed by		Public Works Director	R.C.E. XXXXX
Date			
Checked by			
Date			
	Sheet 1 of 1	Sheets	

4040/1   OF 1 SHEET

Last Update: 4/21/22
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0 20 40   80   120

SCALE: 1"=40'