



# **FULTON COUNTY**

**PURCHASING DEPARTMENT  
INVITATION TO BID NO. #13ITB86918K-JD**

**Construction of the Aviation Community Cultural Center**

**For**

**Facilities & Transportation Services Department**

**Volume I of II**



**Funded in whole or in part by the American Recovery and Reinvestment Act  
(ARRA) 2009**

**RFP DUE DATE AND TIME: Monday, March 18, 2013 at 11:00 A.M.  
RFP ISSUANCE DATE: February 1, 2013  
PURCHASING CONTACT: Joyce Daniel, Assistant Purchasing Agent  
E-MAIL: [joyce.daniel@fultoncountyga.gov](mailto:joyce.daniel@fultoncountyga.gov)  
PRE-BID CONFERENCE: Tuesday, February 26, 2013 at 1:00 P.M.**

**LOCATION: FULTON COUNTY PURCHASING DEPARTMENT  
130 PEACHTREE STREET, S.W., SUITE 1168  
ATLANTA, GA 30303**

## Table of Contents

<u>Section</u>	<u>Title</u>
<b>Division 0 – Bidding and Contract Requirements</b>	
<b>00020</b>	<b>Invitation to Bid</b>
	Description of Project
	Permits
	Rights of Way/Easements
	Bid Documents
	Subcontracting Opportunities
	Term of Contract
	No Contact Provision
	Bid Contact
	Basis of Award
	Pre-Bid Conference
<b>00100</b>	<b>Instructions to Bidders</b>
	A. Contract Documents
	B. Bid Preparation and Execution
	C. Addenda and Interpretations
	D. Site Examination
	E. Bidder's Modification and Withdrawal of Bids
	F. Bid and Contract Security
	G. Right to Reject Bids
	H. Applicable Laws
	I. Examination of Contract Documents
	J. Indemnification and Hold Harmless Agreement
	K. Bid Opening
	L. Determination of Successful Bidder
	M. Georgia Utility Contractors License
	N. General Contractors License
	O. Professional Licenses
	P. Wage Clause
	Q. Notice of Award of Contract
	R. Execution of Contract Documents
	S. Joint Venture
	T. Contractors Compliance with Procurement
	U. Georgia Security and Immigration Compliance Act
	V. Bid General Requirements
	Required Bid Submittal Checklist for ITB
<b>00300</b>	<b>Bid Form</b>
<b>00410</b>	<b>Bid Bond</b>
<b>00420</b>	<b>Purchasing Forms &amp; Instructions</b>
	Form A - Non-Collusion Affidavit of Prime Bidder/Offeror
	Form B - Certificate of Acceptance of Request for Bid Requirements
	Form C - Professional License Certifications
	Form C1 – Georgia Utility License Contractors License
	Form C2 – Georgia General Contractors License

Form C3 – Georgia Professional License  
Form D - Certification Regarding Debarment  
Form E - Disclosure Form & Questionnaire  
Form F - Georgia Security and Immigration Contractor Affidavit and Agreement  
Form G - Georgia Security and Immigration Subcontractor Affidavit

**00430 Contract Compliance Requirements**

Non-Discrimination in Contracting and Procurement  
Required Forms and EBO Plan  
Exhibit A – Promise of Non-Discrimination  
Exhibit B – Employment Report  
Exhibit C – Schedule of Intended Subcontractor Utilization  
Exhibit D – Letter of Intent to Perform As a Subcontractor or Provide  
Materials or Services  
Exhibit E – Declaration Regarding Subcontracting Practices  
Exhibit F – Joint Venture Disclosure Affidavit  
Exhibit G – Prime Contractor/Subcontractor Utilization Report  
Exhibit H - First Source Jobs Program Agreement  
Equal Business Opportunity Plan (EBO Plan)

**00490 Insurance and Risk Management Provisions**

**00500 Contractual Agreement**

**00610 Performance Bond Requirements**

**00620 Payment Bond Requirements**

**00700 General Conditions**

**00800 Special Conditions**

**VOLUME II**

**DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

000107 SEALS PAGE  
003132 GEOTECHNICAL DATA

**DIVISION 01 - GENERAL REQUIREMENTS**

011000 SUMMARY  
012200 UNIT PRICES  
012300 ALTERNATES  
012600 CONTRACT MODIFICATION PROCEDURES  
012900 PAYMENT PROCEDURES  
013100 PROJECT MANAGEMENT AND COORDINATION  
013200 CONSTRUCTION PROGRESS DOCUMENTATION  
013233 PHOTOGRAPHIC DOCUMENTATION  
013300 SUBMITTAL PROCEDURES  
014000 QUALITY REQUIREMENTS  
014200 REFERENCES  
015000 TEMPORARY FACILITIES AND CONTROLS  
015639 TEMPORARY TREE AND PLANT PROTECTION  
016000 PRODUCT REQUIREMENTS  
017300 EXECUTION  
017419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL  
017700 CLOSEOUT PROCEDURES  
017823 OPERATION AND MAINTENANCE DATA

017839 PROJECT RECORD DOCUMENTS  
017900 DEMONSTRATION AND TRAINING

**DIVISION 02 - EXISTING CONDITIONS**

024119 SELECTIVE DEMOLITION

**DIVISION 03 - CONCRETE**

033000 CAST-IN-PLACE CONCRETE

**DIVISION 04 - MASONRY**

042000 UNIT MASONRY

047200 CAST STONE MASONRY

**DIVISION 05 - METALS**

051200 STRUCTURAL STEEL FRAMING

052100 STEEL JOIST FRAMING

053100 STEEL DECKING

054000 COLD-FORMED METAL FRAMING

057000 DECORATIVE METAL

**DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

061000 ROUGH CARPENTRY

061600 SHEATHING

064113 WOOD – VENEER – FACED ARCHITECTURAL CABINETS

064116 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

072100 THERMAL INSULATION

074217 INSULATED-CORE METAL WALL BACKUP PANEL SYSTEM

075423 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

076200 SHEET METAL FLASHING AND TRIM

078413 PENETRATION FIRESTOPPING

078446 FIRE-RESISTIVE JOINT SYSTEMS

079200 JOINT SEALANTS

**DIVISION 08 - OPENINGS**

081113 HOLLOW METAL DOORS AND FRAMES

081416 FLUSH WOOD DOORS

083113 ACCESS DOORS AND FRAMES

084113 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

084413 GLAZED ALUMINUM CURTAIN WALLS

087100 DOOR HARDWARE

088000 GLAZING

088300 MIRRORS

089000 LOUVERS AND VENTS

**DIVISION 09 - FINISHES**

090500 COLORS AND FINISHES SCHEDULES

092216 NON-STRUCTURAL METAL FRAMING

092900 GYPSUM BOARD

093000 TILING

095113 ACOUSTICAL PANEL CEILINGS

096400 WOOD FLOORING

096420 WOOD GYMNASIUM FLOORING

096513 RESILIENT BASE AND ACCESSORIES

096519	RESILIENT TILE FLOORING
096813	TILE CARPETING
099113	EXTERIOR PAINTING
099123	INTERIOR PAINTING

**DIVISION 10 - SPECIALTIES**

102113	TOILET COMPARTMENTS
102226	OPERABLE PARTITIONS
102800	TOILET, BATH, AND LAUNDRY ACCESSORIES
104413	FIRE EXTINGUISHER CABINETS
104416	FIRE EXTINGUISHERS
107300	ALUMINUM WALKWAY COVERS
107516	GROUND SET FLAGPOLES

**DIVISION 12 -- FURNISHINGS**

122413	ROLLER WINDOW SHADES
123661	SIMULATED STONE COUNTERTOPS
124813	ENTRANCE FLOOR MATS AND FRAMES

**DIVISION 21 - FIRE SUPPRESSION**

210517	SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING
211100	FACILITY FIRE-SUPPRESSION WATER-SERVICE PIPING
211313	WET-PIPE SPRINKLER SYSTEMS

**DIVISION 22 - PLUMBING**

220517	SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING
220518	ESCUTCHEONS FOR PLUMBING PIPING
220519	METERS AND GAGES FOR PLUMBING PIPING
220523	GENERAL-DUTY VALVES FOR PLUMBING PIPING
220529	HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
220553	IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT
220719	PLUMBING PIPING INSULATION
221113	FACILITY WATER DISTRIBUTION PIPING
221116	DOMESTIC WATER PIPING
221119	DOMESTIC WATER PIPING SPECIALTIES
221313	FACILITY SANITARY SEWERS
221316	SANITARY WASTE AND VENT PIPING
221319	SANITARY WASTE PIPING SPECIALTIES
223300	ELECTRIC, DOMESTIC-WATER HEATERS
224213.13	COMMERCIAL WATER CLOSETS
224213.16	COMMERCIAL URINALS
224216.13	COMMERCIAL LAVATORIES
224216.16	COMMERCIAL SINKS
224716	PRESSURE WATER COOLERS

**DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING**

230513	COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
230553	IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT
230593	TESTING, ADJUSTING, AND BALANCING FOR HVAC
230713	DUCT INSULATION
230719	HVAC PIPING INSULATION
230900	INSTRUMENTATION AND CONTROL FOR HVAC
232113	HYDRONIC PIPING
232116	HYDRONIC PIPING SPECIALTIES

232123	HYDRONIC PUMPS
233113	METAL DUCTS
233300	AIR DUCT ACCESSORIES
233713	DIFFUSERS, REGISTERS, AND GRILLES
235213	ELECTRIC BOILERS
236500	COOLING TOWERS
238126	SPLIT-SYSTEM AIR-CONDITIONERS
238146	WATER-SOURCE UNITARY HEAT PUMPS

**DIVISION 26 - ELECTRICAL**

260519	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
260526	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
260529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
260533	RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
260543	UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS
260553	IDENTIFICATION FOR ELECTRICAL SYSTEMS
260923	LIGHTING CONTROL DEVICES
262200	LOW-VOLTAGE TRANSFORMERS
262413	SWITCHBOARDS
262416	PANELBOARDS
262726	WIRING DEVICES
265100	INTERIOR LIGHTING
265561	THEATRICAL LIGHTING
265600	EXTERIOR LIGHTING

**DIVISION 27 - COMMUNICATIONS**

270528	PATHWAYS FOR COMMUNICATIONS SYSTEMS
271300	COMMUNICATIONS BACKBONE CABLING

**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

281300	ACCESS CONTROL
283111	DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

**DIVISION 31 - EARTHWORK**

311000	SITE CLEARING
312000	EARTH MOVING
313116	TERMITE CONTROL

**DIVISION 32 - EXTERIOR IMPROVEMENTS**

321216	ASPHALT PAVING
321313	CONCRETE PAVING
321316	DECORATIVE CONCRETE PAVING
321373	CONCRETE PAVING JOINT SEALANTS
321400	UNIT PAVING
321713	PARKING BUMPERS
321723	PAVEMENT MARKINGS
323120	ORNAMENTAL STEEL FENCING GATES
328400	UNDERGROUND IRRIGATION SYSTEM
329200	TURF AND GRASSES
329300	PLANTS

**DIVISION 33 - UTILITIES**

330500	COMMON WORK RESULTS FOR UTILITIES
334100	STORM UTILITY DRAINAGE PIPING

END OF TABLE OF CONTENTS

**EXHIBITS**

- A. List of All Drawings
- B. Davis-Bacon Wages

**APPENDIX – Storm Water Management Report**

## INVITATION TO BID

### #13ITB86918K-JD-Construction of the Aviation Community Cultural Center

Sealed Bids for furnishing all materials, labor, tools, equipment and appurtenances necessary for the construction of the Aviation Community Cultural Center will be received by the Fulton County Department of Purchasing and Contract Compliance at 130 Peachtree Street, S.W. Suite 1168 Atlanta, GA 30303, until **11:00 a.m., local time, on Monday, March 18, 2013**, and then at said office publicly opened and read aloud.

#### **Description of Project:**

The Project consists of the following major elements: construction of a new community cultural center of approximately 16,200 sf. Interior spaces include a vestibule, lobby, an office suite, instructional rooms, a multi-media room with a stage, a media lab, galleries, gallery storage, a staff breakroom, restrooms, and various support spaces such as mechanical and electrical rooms, storage and a data/telephone room. The new facility will be furnished and all furniture, fixtures and equipment will be provided by the successful general contractor.

The site consists of a total area of 7.6 acres with a disturbed area of 5.7 acres. The exterior of the structure will be brick and metal wall panels with an adhered TPO roof system. The building is a metal frame structure supported by a slab on grade with spread footings. The mechanical system consists of fifteen water source heat pumps, a cooling tower and a boiler.

#### **Permits:**

The permits will be applied for by the Fulton County PMCM/AE Team.

#### **Rights of Way/Easements:**

No Rights of Way/Easements are presently required for this project.

#### **Bid Documents:**

This document and supporting documents can be downloaded at the Fulton County Website, <http://www.fultoncountyga.gov> under "Bid Opportunities".

Drawings can be purchased at the following location. The cost of the drawings is **\$355.78**. For payment information, contact **ARC** by email, fax or in person. All other questions should be addressed by the procedures outlined in this ITB to Joyce Daniel, Assistant Purchasing Agent, Fulton County Department of Purchasing and Contract Compliance at [joyce.daniel@fultoncountyga.gov](mailto:joyce.daniel@fultoncountyga.gov), or fax 404-335-5806.

**ARC**  
640 10<sup>th</sup> Street, NW  
Atlanta, Ga. 30318  
[Atlanta.Customerservice@E-arc.com](mailto:Atlanta.Customerservice@E-arc.com)  
Contact: Tony Sanford  
404-873-5911

**Subcontracting Opportunities:**

Potential prime contractors submitting a bid on this project for Fulton County and are seeking subcontractors and/or suppliers can advertise those subcontracting opportunities on the County's website, <http://www.fultoncountyga.gov> under "Subcontracting Bid Opportunities".

**Term of Contract:**

The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order of the Contracting Officer and to fully complete all work under this Contract within **287** consecutive calendar days from issuance of Notice to Proceed.

The County will make payments, within **45** days, in response to the Contractor's monthly Applications for Payment, which are accompanied by the Architect's Certificate for Payment, for work performed to date plus cost of stored materials, less retainage. Payments, Applications for Payment, Certificates for Payment, and retainage shall be in accordance with the provisions of the Contract Documents.

**No Contact Provision**

It is the policy of Fulton County that the evaluation and award process for County contracts shall be free from both actual and perceived impropriety, and that contacts between potential vendors and County officials, elected officials and staff regarding pending awards of County contracts shall be prohibited.

- A. No person, firm, or business entity, however situated or composed, obtaining a copy of or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners for award of the subject contract, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.
- B. All verbal and written communications initiated by such person, firm, or entity regarding this solicitation, if same are authorized and permitted by the terms and conditions of this solicitation, shall be directed to the Purchasing Agent.
- C. Any violation of this prohibition of the initiation or continuation of verbal or written communications with County officers, elected officials, employees, or designated County representatives shall result in a written finding by the Purchasing Agent that the submitted Bid or proposal of the person, firm, or entity in violation is "non-responsive", and same shall not be considered for award.

**Bid Contact**

Information regarding the bid or bid requirements, either procedural or technical, may be obtained by submitting questions in writing to:

Fulton County Department of Purchasing and Contract Compliance  
Attn: Joyce Daniel, Assistant Purchasing Agent  
Fulton County Public Safety Building  
130 Peachtree Street, S.W. Suite 1168  
Atlanta, GA 30303

Fax: (404) 355-5806  
Reference Bid #13ITB86918K-JD

Or joyce.daniel@fultoncountyga.gov

**Basis of Award**

The Contract, if awarded, will be awarded to the lowest responsive and responsible bidder. No bid may be withdrawn for a period of sixty (60) days after the date of bid opening except as permitted by O.C.G.A., §36-91-41 et seq., as amended. Each Bid must be accompanied by a Bid Bond in accordance with the Bid Bond Requirements provided in the Contract Documents, on a Surety Company's Standard Bid Bond Form acceptable to the County in an amount no less than 5% of the amount bid. The successful bidder will be required to furnish a Performance Bond and Payment Bond, **on or before** the issuance of Notice to Proceed, each in the amount of 100% of the Contract Amount. All other required Contract Documents must be fully completed and executed by the Contractor and his/her Surety, and submitted to the Owner **on or before** the issuance of the Notice to Proceed.

**Pre-Bid Conference**

Date: Tuesday, February 26, 2013  
Time: 1:00 P.M.  
Location: Facilities & Transportation Services Department – Training Room 1, First Floor  
Fulton County Airport-Brown Field  
3977 Aviation Circle, NW  
Atlanta, GA 30336  
Site Visit: Will be held immediately following the Pre-Bid Conference

A pre-bid conference will be held in the Facilities & Transportation Services Department, Training Room 1, First Floor, Fulton County Airport-Brown Field located at 3977 Aviation Circle NW, Atlanta, Georgia 30336. ***Inquiries regarding the solicitation either technical or otherwise may be submitted in writing prior to the pre-bid conference and will be addressed at the pre-bid conference.*** Any additional questions asked at the pre-bid conference must be submitted in written form at the pre-bid conference and will be responded to in the form of an addendum with the County's official responses.

The Pre-bid conference will be conducted for the purpose of explaining the County's bid process, the specifications/technical documents, and to provide non-binding verbal responses to questions concerning these bid specifications and to discuss issues from the bidders perspective. However, no verbal response provided at the pre-bid conference binds the County. Only those responses to written questions that are responded to by the County in written communications will be official.

**END OF SECTION**

## INSTRUCTIONS TO BIDDERS

### A. Contract Documents

The Contract Documents include the Contract Agreement, Contractor's Bid (including all documentation accompanying the Bid and any post-Bid documentation required by the County prior to the Notice of Award), Bonds, all Special Conditions, General Conditions, Supplementary Conditions, Specifications, Drawings and addenda, together with written amendments, change orders, field orders and the Construction Manager's written interpretations and clarifications issued in accordance with the General Conditions on or after the date of the Contract Agreement.

Shop drawing submittals reviewed in accordance with the General Conditions, geotechnical investigations and soils report and drawings of physical conditions in or relating to existing surface structures at or contiguous to the site are not Contract Documents.

The Contract Documents shall define and describe the complete work to which they relate.

### B. Bid Preparation and Execution

All Bids must be made on the Bid forms contained herein. The original signed Bid with five (5) copies shall be submitted in a sealed envelope, addressed to the Department of Purchasing and Contract Compliance, Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168 Atlanta, Georgia 30303, and labeled "Bid for ITB #13ITB86918K-JD-Construction of the Aviation Community Cultural Center."

**REQUIRED SUBMITTALS:** The bidder **must complete and execute** the following:

1. Bid Form
2. Acknowledgement of each Addendum
3. Bid Bond
4. Purchasing Forms (See Submittal Check List at end of this Section), fully executed
5. Contract Compliance Forms (See Submittal Check List at end of this Section), fully executed
6. Risk Management Insurance Provisions Form
7. Statement of Qualifications stating experience on similar projects, safety record to include the recordable incident rate (RIR) and three (3) references and five (5) years experience constructing buildings less than 20,000 square feet
8. Required Warranty - five (5) years for HVAC and twenty (20) years for roof

Any bids received after the stated time and date will not be considered. It shall be the sole responsibility of the bidder to have his/her bid delivered to the Fulton County Department of Purchasing and Contract Compliance for receipt on or before the stated time and date (see Section 00020). If a bid is sent by U.S. Mail, the bidder shall be responsible for its timely delivery to the Purchasing Department. Bids delayed by mail will not be considered, shall not be opened, and arrangements shall be made for their return at the bidder's request and expense.

Bid shall be publicly opened, with only the names and total bid price of the bidders disclosed at the opening.

**C. Addenda and Interpretations**

No interpretations of the meaning of the Drawings, Specifications or other pre-bid documents will be made to any Bidder orally.

Bidders requiring clarification or interpretation of the Contract Documents shall make a request in writing, either by mail, hand delivery, e-mail or fax, to the Purchasing Agent at the address below. To be given consideration, requests must be received no later than **12:00 P.M., Friday, March 1, 2013**. The County will not respond to any requests, oral or written, received after this date. Telephone inquiries will not be accepted.

Fulton County Department of Purchasing and Contract Compliance  
Attn: Joyce Daniel, Assistant Purchasing Agent  
Fulton County Public Safety Building  
130 Peachtree Street, S.W., 1168  
Atlanta, GA 30303  
Fax: (404) 355-5806  
joyce.daniel@fultoncountyga.gov  
Reference Bid # 13ITB86918K-JD

Only communications from firms that are in writing and signed will be recognized by the County as duly authorized expressions on behalf of proposers/bidders. Any and all such interpretations and any supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, will be mailed, shipped or faxed to all prospective Bidders (at the respective addresses furnished) prior to the date fixed for the opening of Bids.

Failure of Bidders to receive or acknowledge any Addendum shall not relieve them of any obligation under the Bid. All Addenda shall become part of the Contract Documents.

**D. Site Examination**

There will be a site visit for this project. It will be held on Tuesday, February 26, 2013 immediately following the Pre-Bid Conference at the project site located at 3977 Aviation Circle Boulevard, Atlanta GA 30336.

**E. Bidder's Modification and Withdrawal of Bids**

A Bidder may modify or withdraw its bid by written request, provided that the request is received by the County prior to the bid due date and time at the address to which bids are to be submitted. Provided further, that in case of an electronic request (i.e. facsimile, e-mail, etc.) a written confirmation thereof over the authorized signature of the Bidder must be received by the County at the address to which original Bids are to be submitted within three (3) calendar days after issue of the electronic message. Following withdrawal of its bid, the Bidder may submit a new bid, providing delivery is affected prior to the established bid opening date and time. **No bid may be withdrawn after bid due date for sixty (60) calendar days.**

**F. Bid and Contract Security**

A Bid Bond for an amount equal to five percent (5%) of the bid amount must accompany each Proposal. The bid bond shall be submitted in a separate, sealed envelope marked "Bid Bond".

**Bids must be accompanied by a bid bond or certified check** in an amount of five percent (5%) of the TOTAL AMOUNT of the base bid. The bid bond or certified check shall apply ONLY TO THIS BID. The bid name and contract number must appear on the security instrument. The bond must remain in full force and effect until the Bidder executes the final Contract. Bids not satisfying the bonding requirements of this project will be declared non-responsive.

Any bid bond, performance bond, payment bond, or security deposit required for public works construction contract shall be approved and filed with purchasing agent. At the option of the County, if the surety named in the bond is other than a surety company authorized by law to do business in this state pursuant to a current certificate of authority to transact surety business by the Commissioner of Insurance, such bond shall not be approved and filed unless such surety is on the United States Department of Treasury's list of approved bond sureties.

A Purchasing Agent shall approve as to form and as to the solvency of the surety any bid bond, performance bond, or payment bond required by this. In the case of a bid bond, such approval shall be obtained prior to acceptance of the bid or proposal. In the case of payment bonds and performance bonds, such approval shall be obtained prior to the execution of the contract.

Whenever, in the judgment of the County:

- (1) Any surety on a bid, performance, or payment bond has become insolvent;
- (2) Any corporation surety is not longer certified or approved by the Commissioner of Insurance to do business in the state; or
- (3) For any cause there are no longer proper or sufficient sureties on any or all the bonds

The County may require the contractor to strengthen any or all of the bonds or to furnish a new or additional bond or bonds within ten days. Thereupon, if so ordered by the County, all work on the contract shall cease unless such new or additional bond or bonds are furnished. If such bond or bonds are not furnished within such time, the County may terminate the contract and complete the same as the agent of and at the expense of the contractor and his or her sureties.

As a condition of responsiveness the bidder must contain a Bid Bond for an amount equal to 5% of the bid amount. The Bid Bond shall be included in a separate envelope marked on the outside "Bid Bond". Checks or letters of credit of any type will not be accepted. A certified cashier's check will be acceptable. Provide a completed and fully executed Bid Bond. When the bidder's package is opened, a purchasing agent will verify the presence of the Bid Bond and remove it from the Proposal Package.

If the bidder withdraws its bid from the competition after the selection of its bid for a reason not authorized by Georgia law, the County will proceed on the Bid Bond, along with any other available remedies.

The Surety of the Bid Bond shall be from a surety company authorized to do business in the State of Georgia, shall be listed in the Department of Treasury Circular 570, and shall have an underwriting limitation in excess of 100% of the bid amount. The Bonds and Surety shall be subject to approval by the County Attorney.

Attorneys-in-fact for bidders who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

**G. Right to Reject Bids**

The County reserves the right to reject any or all bids and to waive informalities. No bids will be received after the time set for opening bids. Any unauthorized conditions, limitations or provisions attached to the Bid, except as provided herein, will render it informal and may cause its rejection. Unbalanced bids will be subject to rejection. Any bidder may withdraw his/her bid, either personally or by telegraphic or written request, at any time prior to the scheduled closing time for receipt of bids. Telegraphic or written requests for withdrawal must be in the possession of the County prior to the closing time for receipt of bids.

**H. Applicable Laws**

All applicable laws and regulations of the State of Georgia and ordinances and regulations of Fulton County shall apply. Protestors shall seek resolution of their complaints in the manner provided in the Fulton County Code of Laws §2-324, which is incorporated by reference herein.

**I. Examination of Contract Documents**

Prospective bidders shall examine the contract documents and before submitting a bid, shall make a written request to the County for an interpretation or correction of any ambiguity, in consistency or error therein which could be discovered by a bidder. At the bid opening each bidder shall be presumed to have read and be familiar with the contract documents.

**J. Indemnification and Hold Harmless Agreement**

See Section 00490, Insurance and Risk Management Provisions page 3, Indemnification and Hold Harmless Agreement

**K. Bid Opening**

Bids will be opened in public and read aloud. All bidders are requested to be present at the opening.

**L. Determination of Successful Bidder**

Fulton County desires to complete this work in a timely manner. The Contract will be awarded to the lowest responsive, responsible bidder(s), if awarded.

1. **Responsibility:** The determination of the bidder's responsibility will be made by the County based on whether the bidder meets the following minimum requirements:
  - a. The County reserves the right to reject any bid if the evidence submitted by, or investigation of, the bidder fails to satisfy the County that he/she is properly qualified to carry out the obligations of the Contract.
  - b. Maintains a permanent place of business individually or in conjunction with the prime contractor.
  - c. Has the appropriate and adequate technical experience. Designated Project Manager must be proficient in all aspects of contracted work.
  - d. Has adequate personnel and equipment to do the work expeditiously.
  - e. Has suitable financial means to meet obligations incidental to the work.
2. **Responsiveness:** The determination of responsiveness will be made by the County based on a consideration of whether the bidder has submitted a complete Bid form

without irregularities, excisions, special conditions, or alternative bids for any item unless specifically requested in the Bid form.

**M. Georgia Utility Contractors License NON-APPLICABLE**

**N. General Contractors License APPLICABLE**

Effective July 1, 2008, all general contractors are required to be licensed by the State of Georgia to perform the following work; construction; construction management services; or design-build services as a prime contractor, joint venture partner, or as a subcontractor to a design professional acting as prime contractor as part of a design-build entity or combination, unless exempted from holding such license pursuant to Georgia law (O.C.G.A. 43-41-17). If exempted, Contractor must submit a copy of their Georgia Department of Transportation Certificate of Qualification with their bid submittal.

Bidders must complete Form C2: Georgia General Contractors License Certification in Section 6, Purchasing Forms. Failure to provide the required license shall deem your bid non-responsive.

**O. Professional Licenses APPLICABLE**

The State of Georgia requires that the following professions are required by state law to be licensed:

1. Electricians
2. Plumbers
3. Conditioned Air Contractors
4. Low voltage Contractors

Bidders and any sub-contractors performing any of the above described work must provide a copy of their license for the work they will perform on this project. Bidders must complete Form C3: Georgia Professional License Certification in Section 6, Purchasing Forms Failure to provide the required license may deem your bid non-responsive.

**P. Wage Clause**

Pursuant to 102-391, Each Contractor shall agree that in the performance of the Contract he will comply with all lawful agreements, if any, which the Contractor had made with any association, union, or other entity, with respect to wages, salaries, and working conditions, so as not to cause inconvenience, picketing, or work stoppage.

**Q. Notice of Award of Contract**

As soon as possible, and within sixty (60) days after receipt of bids, the County shall notify the successful Bidder of the Award of Contract.

The award shall be made by the Board of Commissioners of Fulton County to the lowest responsive, responsible bidder(s) as soon as possible after receipt of bids, taking into consideration price and the responsiveness to the requirements set forth in the Invitation for Bid. In such case, no claim shall be made by the selected Contractor(s) for loss of profit if the contract is not awarded or awarded for less work than is indicated and for less than the amount of his bid. The total of the awarded contract shall not exceed the available funds allocated for this project.

Should the County require additional time to award the contract, the time may be extended by mutual agreement between the County and the successful bidder. If an Award of

Contract has not been made within sixty (60) days from the bid date or within the extension mutually agreed upon, the Bidder may withdraw the Bid without further liability on the part of either party.

Any award made by the Board of Commissioners as a result of this bid will begin from the date of the notice to proceed. The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order from the user department. The contract shall become effective on the Contract Date and shall continue in effect until the end of the term of the contract or until the project has been closed-out unless earlier terminated pursuant to the termination provisions of the contract.

**R. Execution of Contract Documents**

Upon notification of Award of Contract, the County shall furnish the Contractor the conformed copies of Contract Documents for execution by the Contractor and Contractor's surety.

Within ten (10) days after receipt the Contractor shall return all the documents properly executed by the Contractor and the Contractor's surety. Attached to each document shall be an original power-of-attorney for the person executing the bonds for the surety and certificates of insurance for the required insurance coverage.

After receipt of the documents executed by the Contractor and his surety with the power-of-attorney and certificates of insurance, the County shall complete the execution of the documents. Distribution of the completed documents will be made upon completion.

Should the contractor and/or surety fail to execute the documents within the time specified, the County shall have the right to proceed on the Bid Bond accompanying the bid.

If the County fails to execute the documents within the time limit specified, the Contractor shall have the right to withdraw the Contractor's bid without penalty.

Should an extension of any of the time limits stated above be required, this shall be done only by mutual agreement between both parties.

Any agreement or contract resulting from the acceptance of a bid shall be on a County approved document form. The County reserves the right to reject any agreement that does not conform to the Invitation for Bid and any County requirements for agreements and contracts. The County reserves the right to modify the agreement resulting from this bid upon the recommendation of the County Attorney.

**S. Joint Venture**

Any Bidder intending to respond to this solicitation as a joint venture must submit an executed joint venture agreement with its offer. The agreement must designate those persons or entities authorized to execute documents or otherwise bind the joint venture in all transactions with Fulton County, or be accompanied by a document, binding upon the joint venture and its constituent members, making such designation. Offers from joint ventures that do not include these documents will be rejected as being non-responsive.

**T. Contractors Compliance With All Assurances And/Or Promises Made In Response To Procurement**

Should any Bidder submit a response to the County promising to provide a certain level of service for either the scope of work, MFBE participation, or any other matter, including where such promise or assurance is greater than what is required by the procurement documents, and should this response containing the promise or assurance be accepted by the County and made a part of the Contract Documents, then this degree or level of service promised by the bidder relating to the scope of work, MFBE participation, or other matter shall be considered to be a material part of the Agreement between the bidder and the County, such that the bidder's failure to provide the agreed upon degree or level of service or participation shall be a material breach of the Agreement giving the County just cause to terminate the Agreement for cause, pursuant to the General Conditions of the Agreement.

**U. Georgia Security and Immigration Compliance Act**

This Invitation to Bid is subject to the Georgia Security & Immigration Compliance Act. Pursuant to the Georgia Security & Immigration Compliance Act of 2006, as amended on May 11, 2009, bidders and proposers are notified that all bids/proposals for services that are to be physically performed within the State of Georgia must be accompanied by proof of their registration with and continuing and future participation in the E-Verify program established by the United States Department of Homeland Security. A completed affidavit must be submitted on the top of the bid/proposal at the time of submission, prior to the time for opening bids/proposals. Under state law, the County cannot consider any bid/proposal which does not include a completed affidavit. It is not the intent of this notice to provide detailed information or legal advice concerning the Georgia Security & Immigration Compliance Act. All bidders/proposers intending to do business with the County are responsible for independently apprising themselves and complying with the requirements of that law and its effect on County procurements and their participation in those procurements. For additional information on the E-Verify program or to enroll in the program, go to: <https://e-verify.uscis.gov/enroll>.

See Section 00420, Purchasing Forms & Instructions for declarations and affidavits.

**V. Bid General Requirements**

The following information pertains to the submission of a Bid to Fulton County, and contains instructions on how Bids must be presented in order to be considered. Listed below are the requirements for all Bidders interested in doing business with Fulton County.

1. The Bid sheets included in this Invitation to Bid ("Bid") must be fully completed and returned with the Bid unless otherwise specified in writing by the Purchasing Department. Type or neatly print the date, company name, and the full legal name and title of the person(s) signing the Bid in the place provided at the bottom of each Bid sheet. Any additional sheets submitted must contain the same signature and Bidder information.
2. All signatures must be executed by person(s) having contracting authority for the Bidder.
3. Absolutely no fax Bids or reproduction Bids will be accepted, except that photocopies may be submitted in addition to the original when multiple copies of the Bid are specifically requested in the solicitation.

4. The envelope in which the Bid response is submitted must be sealed and clearly labeled with the Bid number, project title, due date and time, and the name of the company or individual submitting the proposal. Bids must be received by the opening date and time shown on this Bid in order to be considered. The Purchasing Agent has no obligation to consider Bids which are not in properly marked envelopes. Contract Compliance submittals shall be submitted in a separate sealed envelope or package.

5. The original and the required number of copies of the Bid must be returned to:

Fulton County Purchasing Agent  
Fulton County Department of Purchasing and Contract Compliance  
130 Peachtree Street, S.W., Suite 1168  
Atlanta, Georgia 30303

Any inquiries, questions, clarifications or suggestions regarding this solicitation should be submitted in writing to the Purchasing Contact Person. Contact with any other County personnel in regard to a current solicitation is strictly prohibited in accordance

with Fulton County "No Contact Provision" policy outlined in S35 and in Section 00020, Invitation to Bid.

6. Show information and prices in the format requested. Prices are to be quoted F.O.B. Destination, and must include all costs chargeable to the Contractor executing the Contract, including taxes. Unless otherwise provided in the Contract, Fulton County shall have no liability for any cost not included in the price. The Contractor shall provide Fulton County the benefit through a reduction in price of any decrease in the Contractor's costs by reason of any tax exemption based upon Fulton County's status as a tax-exempt entity.
7. All prices Bid must be audited by the Bidder to ensure correctness before the Bid is submitted. The Bidder is solely responsible for the accuracy of information placed on a Bid sheet, including prices. Clerical or mathematical error is insufficient to void a successful Bid but a Bidder may withdraw a sealed Bid prior to opening without a penalty.
8. All prices must be submitted in the format requested and less all trade discounts. When multiple items are being Bid, Bidder must show both the unit price and the total extended price for each item. When applicable, the Bidder must include an additional lump sum Bid for groups or items. In the event a Bidder is offering an additional discount on groups of items, Bidder must indicate the total lump sum Bid for the particular group of items before any extra discount, the amount of extra discount, and the net total for the particular group. In the event of an extension error, unit pricing shall prevail.
9. By submitting a signed Bid, Bidder agrees to accept an award made as a result of that Bid under the terms and conditions spelled out in the Bid documents. In the event of a conflict between the different Bid documents, the County's cover Contract (if used) shall have precedence, followed in order by the Invitation to Bid, Purchase Order, Bid, Contractor's Warranty Agreement, Maintenance Agreement, and/or other Contractor provided agreements.
10. A Bidder may submit only one (1) Bid response for each specific Bid solicitation unless otherwise authorized in the specifications.

11. All prices submitted by the Bidder to Fulton County must be guaranteed by the authorized person(s) against any price increase for the time period designated in the Bid specifications, and Fulton County must be given the benefit of any price decrease occurring during such designated time period.
12. All items Bid must be new. Used, rebuilt and refurbished items will not be considered unless specifically authorized by Fulton County in the written specifications.
13. All Bidders must specify in the Bid response the earliest actual delivery date for each item unless otherwise specified in writing by Fulton County. The delivery date may be a factor in deciding the Bidder's capability to perform.
14. A successful Bidder's delivery ticket(s) and invoice(s) must list each item separately and must show Fulton County's purchase order number as well as the proper department and address to which delivery was made, as listed on the purchase order or in the Bidder's contract with Fulton County.
15. Unless clearly shown as "no substitute" or words to that effect, any items in this invitation to Bid which have been identified, described or referenced by a brand name or trade name are for reference only. Such identification is intended to be descriptive but not restrictive, and is to indicate the general quality and characteristics of products that may be offered. Each item Bid must be individually identified as to whether it is a specified item or an equivalent item by typing or printing after the item(s): The brand name; model or manufacturer's number, or identification regularly used in the trade. Deviations from the specifications must be clearly and fully listed on the Bid sheet, including photographs or cuts, specifications, and dimensions of the proposed "alternate". Fulton County is the sole judge of "exact equivalent", or "alternate". The factors to be considered are: function, design, materials, construction, workmanship, finishes, operating features, overall quality, local service facilities, warranty terms and service, and other relevant features of item(s) Bid.
16. For all Bids, Fulton County reserves the right to request representative samples. If requested, samples must be delivered at the Bidder's cost within three (3) business days. Samples are submitted at the risk of the Bidder and may be subjected to destructive tests by Fulton County. Samples must be plainly tagged with Fulton County's Bid number, item name, manufacturer, and the name of the Bidder.
17. Item(s) Bid must be complete and ready to operate. No obvious omissions of components or necessary parts shall be made even though the specifications may not detail or mention them. Unit(s) must be furnished with factory installed equipment and must be comparable with the basic form, fit, and functional requirements which are all to be included in the base price as well as any other equipment included as standard by the manufacturer or generally provided to the buying public.
18. All successful Bidders must assume full responsibility for all item(s) damaged prior to F.O.B. Destination delivery and agree to hold harmless Fulton County of all responsibility for prosecuting damage claims.
19. All successful Bidders must assume full responsibility for replacement of all defective or damaged goods within thirty (30) days of notice by Fulton County of such defect or damage.

20. All successful Bidders must assume full responsibility for providing or ensuring warranty service on any and all items including goods, materials, or equipment provided to the County with warranty coverage. If a successful Bidder is not the manufacturer, all manufacturers' warranties must be passed through to Fulton County. The Bidder and not Fulton County is responsible for contacting the manufacturer of the warranty service provided during the warranty period and supervising the completion of the warranty service to the satisfaction of Fulton County.
21. As a successful Bidder providing any equipment which requires fitting and assembly, the Bidder shall be solely responsible for such installation being performed by a manufacturer's authorized or approved servicer or an experienced worker, utilizing workmanship of the highest caliber. The Bidder must verify all dimensions at the site, shall be responsible for their correctness, and shall be responsible for the availability of replacement parts when specified in writing by Fulton County in the specifications, purchase order, or other contract.
22. A successful Bidder is solely responsible for disposing of all wrappings, crating, and other disposable material upon deliver of item(s).
23. All Bidders are required to be authorized distributors or regularly engaged in the sale or distribution of the type of goods, materials, equipment or services for which the Bidder is submitting a Bid response in addition, all Bidders are required to provide Fulton County with three (3) written references documenting the successful completion of Bids or contracts for the types of items including goods, materials, equipment, or services for which the Bidder is submitting a Bid response. In instances where a Bidder has never supplied such goods, material, equipment, or services before, the Bidder must submit with the Bid response a statement and supporting documentation demonstrating such expertise, knowledge, or experience to establish the Bidder as a responsible Bidder, capable of meeting the Bid requirements should an award be made. No exceptions to this provision will be made unless authorized in the Bid specifications.
24. Bidders may be required to furnish evidence that they maintain permanent places of business of a type and nature compatible with their Bid proposal, and are in all respects competent and eligible vendors to fulfill the terms of the specifications. Fulton County may make such investigations as it deems necessary to determine the ability of the Bidder to perform such work, and reserves the right to reject any Bidder if evidence fails to indicate that the Bidder is qualified to carry out the obligation of the Contract and to complete the work satisfactorily.
25. All Bidders must comply with all Fulton County Purchasing laws, policies, and procedures, non-discrimination in contracting and procurement ordinances, and relevant state and federal laws including but not limited to compliance with EEOC hiring guidelines and requirements under the Americans with Disabilities Act. Successful Bidder must obtain all permits, licenses, and inspections as required and furnish all labor, materials, insurance, equipment, tools, supervision, and incidentals necessary to accomplish the work in these specifications.
26. If a successful Bidder is unable or unwilling to enter into a Contract with Fulton County subsequent to being granted an award, or who fails to perform in accordance with the Bid specifications the Bidder will be subject to damages and all other relief allowed by law.

27. Successful Bidders contract directly with Fulton County and are the party or parties obligated to perform. Contracts may not be assigned and any failure to perform the Contract in accordance with the specifications will constitute a breach of Contract and may result in a Bidder being found to be "non-responsive" in the future.
28. In case of default by the successful Bidder, Fulton County may procure the articles for services from another source and hold the successful Bidder responsible for any resulting excess cost.
29. The County may award any Bid in whole or in part to one or more vendors or reject all Bids and/or waive any technicalities if it is in the best interests of the County to do so. In the event that all Bids are not rejected, Bids for items including goods, materials, equipment, and services will be awarded to the lowest "responsible" Bidder(s) as determined by Fulton County. Submitting the lowest Bid, as published at the Bid opening, does not constitute an award or the mutual expectation of an award of a Contract and purchase order. For purposes of this notice and the attached Bid sheets, a purchase order is a Contract to provide items including goods, materials, equipment, and services and is intended to have the full force and effect of a Contract. A breach of the terms and conditions of a purchase order constitutes a breach of Contract.
30. Bids for projects that are solicited pursuant to the Georgia Local Government Public Works Construction Law (O.C.G.A. § 36-91-1 et seq.) may withdrawn as follow:  
Competitive sealed Bids ("Bid") may not be revoked or withdrawn until 60 days after the time set by the governmental entity for opening of Bids. At the end of this time period, the Bid will cease to be valid, unless the Bidder provides written notice to the County prior to the scheduled expiration date that the Bid will be extended for a time period specified by the County.
31. In the evaluation of the Bids, any award will be subject to the Bid being:
  - a. Compliant to the specification – meets form, fit, and function requirements stated or implied in the specification.
  - b. Lowest cost to the County over projected useful life.
  - c. Administratively Compliant – Including all required bonds, insurance, established quality of work and general reputation, financial responsibility, relevant experience, and related criteria.
32. All proposals and Bids submitted to Fulton County are subject to the Georgia "Open Records Act", Official Code of Georgia, Annotated (O.C.G.A.) §50-18-70 et seq.
33. All proposals and Bids submitted to Fulton County involving Utility Contracting are subject to the Georgia law governing licensing of Utility Contractors, O.C.G.A. §43-14-8.2(h). The Utility Contractor License number of the person who will perform the utility work shall be written on the face of the Bid envelope.
34. The apparent silence of this specification, and any supplement thereto, as to details, of the omission from it of a detailed description concerning any point, will be regarded as meaning only the best commercial practices are to prevail. Only materials of the highest quality, correct type, size, and design are to be used. All interpretations of this specification will be made upon the basis of this statement, with Fulton County interpretation to prevail.

35. It is the policy of Fulton County that the evaluation and award process for County contracts shall be free from both actual and perceived impropriety, and that contacts between potential vendors and County officials, elected officials and staff regarding pending awards of County contracts shall be prohibited.
  - a. No person, firm, or business entity, however situated or composed, obtaining a copy of or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners for award of the subject contract, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.
  - b. All verbal and written communications initiated by such person, firm, or entity regarding this solicitation, if same are authorized and permitted by the terms and conditions of this solicitation, shall be directed to the Purchasing Agent.
  - c. Any violation of this prohibition of the initiation or continuation of verbal or written communications with County officers, elected officials, employees, or designated County representatives shall result in a written finding by the Purchasing Agent that the submitted Bid or proposal of the person, firm, or entity in violation is "non-responsive", and same shall not be considered for award.
36. Any Bidder intending to respond to this solicitation as a Joint Venture must submit an executed Joint Venture Agreement with this Bid. This agreement must designate those persons or entities authorized to execute documents or otherwise bind the Joint Venture in all transactions with Fulton County, or are accompanied by a document, binding upon the Joint Venture and its constituent members, making such designation. Bids from Joint Ventures that do not include these documents will be rejected as being "non-responsive".
37. Any Bidder intending to respond to this solicitation must complete all of the Procurement Affidavit Forms provided in this solicitation. Bids that do not include these completed documents will be rejected as being "non-responsive".

**Required Bid Submittal Check List for Invitation To Bid (ITB)**

The following submittals shall be completed and submitted with each bid (see table below "Required Bid Submittal Check List."). Please check to make sure that the required submittals are in the envelope before it is sealed. Failure to submit all required submittals may deem your proposal non-responsive.

Submit one (1) Original bid, signed and dated and **three (3) complete** copies of the Original Bid including all required documents.

Item #	Required Bid Submittal Check List	Check (√)
1	Bid Form (Section 00300) – All dollar amounts must be both in writing AND figures and represent prices for the published scope of work without exceptions.	
2	Acknowledgement of each Addendum (acknowledged both on the Bid Form, Section 00300, and on the form included with each addendum).	
3	Bid Bond (Section 00410) (separate envelope if Public Works Construction project)	
4	Purchasing Forms (Section 00420) Form A - Non-Collusion Affidavit of Prime Bidder/Offeror Form B - Certificate of Acceptance of Request for Bid/Proposal Requirements Form C1- Georgia Utility Contractor License ( <b>Non-applicable</b> ) Form C2- Georgia General Contractors License ( <b>Applicable</b> ) Form C3- Georgia Professional Licenses ( <b>Applicable</b> ) Form D - Certificate Regarding Debarment Form E - Disclosure Form & Questionnaire Form F - Declaration of Employee-Number Categories Form G - Georgia Security and Immigration Contractor Affidavit and Agreement Form H - Georgia Security and Immigration Subcontractor Affidavit	
5	Office of Contract Compliance Requirements (Section 00430) Exhibit A - Promise of Non-Discrimination (for Prime and each Sub) Exhibit B - Employment Record (for Prime and each Sub) Exhibit C - Schedule of Intended Subcontractor Utilization Exhibit D - Letter of Intent to Perform as Subcontractor Exhibit E - Declaration Regarding Subcontractor Practices Exhibit F - Joint Venture Disclosure Affidavit Exhibit G - Prime Contractor/Subcontractor Utilization Report Equal Business Opportunity Plan (EBO Plan)	
6	Risk Management Insurance Provisions Form (Section 00490) and proof of insurance, either letter from insurer or Certificate of Insurance.	
7	Statement of Qualifications stating experience on similar projects, safety record to include the recordable incident rate (RIR) and three (3) references and five (5) years of experience constructing buildings less than 20,000 square feet.	
8	Required Warranty - five (5) years for HVAC and twenty (20) years for roofing	

**END OF SECTION**

**BID FORM**

Submitted To: Fulton County Government

Submitted By: \_\_\_\_\_

For: **#13ITB86918K-JD-Construction of the Aviation Community Cultural Center**

Submitted on \_\_\_\_\_, 20\_\_.

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Bid as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Bid or in the Contract to be entered into; that this Bid is made without connection with any other person, company or parties making a Bid; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the Drawings and Specifications for the work and contractual documents relative thereto, and has read all instructions to Bidders and General Conditions furnished prior to the openings of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this Bid is accepted, to contract with the Board of Commissioners of Fulton County, Atlanta, Georgia, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary, and to complete the construction of the work in full and complete accordance with the shown, noted, and reasonably intended requirements of the Specifications and Contract Documents to the full and entire satisfaction of the Board of Commissioners of Fulton County, Atlanta, Georgia, with a definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents for the following prices.

THE BASE BID TOTAL IS THE AMOUNT UPON WHICH THE BIDDER WILL BE FORMALLY EVALUATED AND WHICH WILL BE USED TO DETERMINE THE LOWEST RESPONSIBLE BIDDER. Please make sure that all line items below are accurately calculated and total up to this inclusive amount.

The bid may not be withdrawn or modified for a period of sixty (60) days following the receipt of bids.

BASE BID TOTAL, ITEMS 1 THROUGH 3 (BELOW), INCLUSIVE, THE AMOUNT OF:

\$ \_\_\_\_\_  
**(Dollar Amount In Numbers)**

\_\_\_\_\_  
**(Dollar Amount In Words)**

The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order of the Contracting Officer and to fully complete all work under this Contract within **Two Hundred and Eighty-seven** consecutive calendar days from issuance of Notice to Proceed.

The Bidder declares that he understands that the quantities shown for the unit prices items are subject to either increase or decrease, and that should the quantities of any of the items of work be increased, the Bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the Bidder also understands that payment will be made on the basis of actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in quantities; and that actual quantities will be determined upon completion of work, at which time adjustments will be made to the contract amount by direct increase or decrease.

In case of discrepancies between the figures shown in the unit prices and the totals, the unit prices shall apply and the totals shall be corrected to agree with the unit prices. In case of discrepancies between written amounts and figures, written amounts shall take precedence over figures and the sum of all Bid extensions (of unit prices) plus lump sum items shall take precedence over BID TOTAL.

The Bidder furthermore agrees that, in the case of a failure on his part to execute the Contract Agreement and Bonds within ten (10) days after receipt of conformed contract documents for execution, the Bid Bond accompanying his bid and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure.

Enclosed is a Bid Bond in the approved form, in the sum of: \_\_\_\_\_

\_\_\_\_\_ Dollars

(\$ \_\_\_\_\_) according to the conditions of "Instructions to Bidders" and provisions thereof.

**COST PROPOSAL FORM**

The following Cost Proposal Form shall be used for submitting Bid Prices

**ITEM 1: BASE BID TOTAL AMOUNT**

CODE	COMPONENT DESCRIPTION	TOTAL AMOUNT	COST/SF
	<b>CSI ESTIMATE SUMMARY</b>		
01000	GENERAL REQUIREMENTS		
02000	SITWORK		
03000	CONCRETE		
04000	MASONRY		
05000	METALS		
06000	WOOD AND PLASTICS		
07000	THERMAL / MOISTURE PROTECTION		
08000	DOORS AND WINDOWS		
09000	FINISHES		
10000	SPECIALTIES		
11000	EQUIPMENT		
12000	FURNISHINGS		
13000	SPECIAL CONSTRUCTION		
14000	CONVEYING SYSTEMS		
15000	MECHANICAL		
16000	ELECTRICAL		
<b>Sub Total</b>			
	<b>FURNITURE, FIXTURES AND EQUIPMENT ALLOWANCE</b>	<b>\$100,000</b>	
	<b>OWNER'S ALLOWANCE</b>	<b>\$200,000</b>	
	<b>OWNER CONTROLLED CONTINGENCY</b>	<b>\$300,000</b>	
	<b>SIGNAGE ALLOWANCE</b>	<b>\$25,000</b>	
<b>Sub Total</b>			
	<b>TOTAL BASE BID AMOUNT:</b>		

**ITEM 2: ROCK EXCAVATION**

	DESCRIPTION	COST/CY
1	Trench Rock Removal and Disposal	
2	Mass Rock Removal and Disposal	
<b>Sub Total</b>		

**ITEM 3: REMOVAL OF UNSUITABLE MATERIAL AND REPLACEMENT**

	DESCRIPTION	COST/CY
1	Unsuitable Soil Removal and Off Site Disposal	
1.1	Total Quantity Estimated (CY) _____	
2	Importing, Placing and Compacting Soil Suitable for Structural Fill	
2.1	Total Quantity Estimated (CY) _____	
3	Removing, Replacing and Compacting existing Soil	
<b>Sub Total</b>		

**ALTERNATES:** The project will be awarded on the base bid amount. The following Alternates will be incorporated in the Contract if accepted. Refer to the Specifications for a complete description of Alternates.

Alternate No. 1		Total Alternate Amount
Alt. 1	Sidewalk Enhancement – refer to Drawing C-101, Note 5; Specification Section 012300 “Alternates”	\$



**END OF SECTION**

**BID BOND**

No bid for a contract in Fulton County for work to be done shall be valid for any purpose unless the Contractor shall give a Bid Bond with good and sufficient surety payable to, in favor of, and for the protection of Fulton County. The Bid Bond shall not be less than 5% of the total amount payable by the terms of the Contract. No bid shall be read aloud or considered if a proper bid bond has not been submitted.

Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Georgia.

Attestation for the corporation must be by the corporate officer; for a partnership by another partner; for an individual by a notary with the corporate seal.

**BID BOND**

**#13ITB86918K-JD-Construction of the Aviation Community Cultural Center  
FULTON COUNTY GOVERNMENT**

KNOW ALL MEN BY THESE PRESENTS, THAT WE \_\_\_\_\_

\_\_\_\_\_ hereinafter called the PRINCIPAL, and \_\_\_\_\_

\_\_\_\_\_ hereinafter call the SURETY, a corporation chartered and existing under the laws of the State of \_\_\_\_\_ and duly authorized to transact Surety business in the State of Georgia, are held and firmly bound unto the Fulton County Government (COUNTY), in the penal sum of \_\_\_\_\_ Dollars and Cents (\$ \_\_\_\_\_) good and lawful money of the United States of America, to be paid upon demand of the COUNTY, to which payment well and truly to be made we bind ourselves, our heirs, executors, and administrators and assigns, jointly and severally and firmly by these presents.

WHEREAS the PRINCIPAL has submitted to the COUNTY, for **#13ITB86918K-JD-Construction of the Aviation Community Cultural Center**, a Bid;

WHEREAS the PRINCIPAL desires to file this Bond in accordance with law:

NOW THEREFORE: The conditions of this obligation are such that if the Bid be accepted, the PRINCIPAL shall within ten (10) calendar days after receipt of written notification from the COUNTY of the award of the Contract execute the Contract in accordance with the Bid and upon the terms, conditions and prices set forth therein, in the form and manner required by the COUNTY, and execute sufficient and satisfactory Performance and Payments Bonds payable to the COUNTY, each in the amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to said COUNTY, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the SURETY shall upon failure of the PRINCIPAL to comply with any or all of the foregoing requirements within the time specified above immediately pay to the COUNTY, upon demand the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

---

In the event suit is brought upon this Bond by the COUNTY and judgment is recovered, the SURETY shall pay all costs incurred by the COUNTY in such suit, including attorney's fees to be fixed by the Court.

Enclosed is a Bid Bond in the approved form, in the amount of \_\_\_\_\_ Dollars

(\$ \_\_\_\_\_) being in the amount of five percent (5%) of the Contract Sum.

The money payable on this bond shall be paid to the COUNTY, for the failure of the Bidder to execute a Contract within ten (10) days after receipt of the Contract and at the same time furnish a Payment Bond and Performance Bond.

(SIGNATURES ON NEXT PAGE)

IN TESTIMONY THEREOF, the PRINCIPAL and SURETY have caused these presents to be duly signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

ATTEST:

\_\_\_\_\_  
PRINCIPAL

\_\_\_\_\_  
BY \_\_\_\_\_

(SEAL)

**CERTIFICATE AS TO CORPORATE PRINCIPAL**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation named as principal in the within bond; that \_\_\_\_\_, who signed the said bond of said corporation; that I know this signature, and his/her signature thereto is genuine; and that said bond was duly signed, sealed and attested for in behalf of said Corporation by authority of its governing body.

\_\_\_\_\_  
SECRETARY

(CORPORATE SEAL)

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
(SEAL) BY \_\_\_\_\_

**END OF SECTION**

## PURCHASING FORMS & INSTRUCTIONS

This section contains the procurement forms that are required to be executed and submitted with the bid package. This section does not contain all forms required to be included with the bid package submittal.

To be deemed responsive to this ITB, Bidders must provide the information requested and complete in detail all Purchasing Forms. The appropriate individual(s) authorized to commit the Bidder to the Project must sign the Purchasing Forms. Bidders should reproduce each Purchasing Form, as required, and complete the appropriate portions of the forms provided in this section.

- Form A: Non-Collusion Affidavit of Prime Bidder/Offeror
- Form B: Certificate of Acceptance of Request for Bid/Proposal Requirements
- Form C: Professional License Certifications
  - Form C1 – Georgia Utility License Contractor License
  - Form C2 – Georgia General Contractors License
  - Form C3 – Georgia Professional License
- Form D: Certification Regarding Debarment
- Form E: Disclosure Form and Questionnaire
- Form F: Georgia Security and Immigration Contractor Affidavit and Agreement
- Form G: Georgia Security and Immigration Subcontractor Affidavit

**FORM A: NON-COLLUSION AFFIDAVIT OF BIDDER/OFFEROR**

**STATE OF GEORGIA**

**COUNTY OF FULTON**

I, \_\_\_\_\_ certify that pursuant to Fulton County Code Section 2-320 (11), this bid or proposal is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same work, labor or service to be done or the supplies, materials or equipment to be furnished and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences and civil damages awards. I agree to abide by all conditions of this bid or proposal and certify that I am authorized to sign this bid or proposal for the bidder.

Affiant further states that pursuant to O.C.G.A. Section 36-91-21 (d) and (e), \_\_\_\_\_ has not, by itself or with others, directly or indirectly, prevented or attempted to prevent competition in such bidding or proposals by any means whatsoever. Affiant further states that (s)he has not prevented or endeavored to prevent anyone from making a bid or offer on the project by any means whatever, nor has Affiant caused or induced another to withdraw a bid or offer for the work.

Affiant further states that the said offer of \_\_\_\_\_ is bona fide, and that no one has gone to any supplier and attempted to get such person or company to furnish the materials to the bidder only, or if furnished to any other bidder, that the material shall be at a higher price.

\_\_\_\_\_  
(COMPANY NAME)

\_\_\_\_\_  
(PRESIDENT/VICE PRESIDENT)

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(SECRETARY/ASSISTANT SECRETARY)

(Affix corporate seal here, if a corporation)

Notary Public: \_\_\_\_\_

County: \_\_\_\_\_

Commission Expires: \_\_\_\_\_

**NOTE:**

**IF THE OFFEROR IS A PARTNERSHIP, ALL OF THE PARTNERS AND ANY OFFICER, AGENT, OR OTHER PERSON WHO MAY HAVE REPRESENTED OR ACTED FOR THEM IN BIDDING FOR OR PROCURING THE CONTRACT SHALL ALSO MAKE THIS OATH.**

**IF THE OFFEROR IS A CORPORATION, ALL OFFICERS, AGENTS, OR OTHER PERSONS WHO MAY HAVE ACTED FOR OR REPRESENTED THE CORPORATION IN BIDDING FOR OR PROCURING THE CONTRACT SHALL MAKE THE OATH.**

**FORM B: FULTON COUNTY CERTIFICATE OF ACCEPTANCE OF BID/PROPOSAL  
REQUIREMENTS**

This is to certify that on this day, offeror acknowledges that he/she has read this solicitation document, pages #\_\_\_\_\_ to #\_\_\_\_\_ inclusive, including any addenda # to #\_\_\_\_\_ exhibit(s) #\_\_\_\_\_ to #\_\_\_\_\_, attachment(s) #\_\_\_\_\_ to #\_\_\_\_\_, and/or appendices # to #,\_\_\_\_\_ in its entirety, and agrees that no pages or parts of the document have been omitted, that he/she understands, accepts and agrees to fully comply with the requirements therein, and that the undersigned is authorized by the offeror to submit the proposal herein and to legally obligate the offeror thereto.

This is also to certify that the offeror has reviewed the form Fulton County contract included in the solicitation documents and agrees to be bound by its terms, or that the offeror certifies that it is submitting any proposed modification to the contract terms with its proposal. The offeror further certifies that the failure to submit proposed modifications with the proposal waives the offeror's right to submit proposed modifications later. The offeror also acknowledges that the indemnification and insurance provisions of Fulton County's contract included in the solicitation documents are non-negotiable and that proposed modifications to said terms may be reason to declare the offeror's proposal as non-responsive.

Company: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

(Corporate Seal)

**FORM C1: CONTRACTOR'S GEORGIA UTILITY LICENSE CERTIFICATION**

Contractor's Name: \_\_\_\_\_

Utility Contractor's Name: \_\_\_\_\_

Expiration Date of License: \_\_\_\_\_

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

**(ATTACH COPY OF LICENSE)**

**NOT APPLICABLE**

---

**FORM C2: CONTRACTOR'S GEORGIA GENERAL CONTRACTOR'S LICENSE  
CERTIFICATION**

Contractor's Name: \_\_\_\_\_

General Contractor's License Number: \_\_\_\_\_

Expiration Date of License: \_\_\_\_\_

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

**(ATTACH COPY OF LICENSE)**

**APPLICABLE**

---

**FORM C3: GEORGIA PROFESSIONAL LICENSE CERTIFICATION**

**NOTE: Please complete this form for the work your firm will perform on this project.**

Contractor's Name: \_\_\_\_\_

Performing work as: Prime Contractor \_\_\_\_\_ Sub-Contractor \_\_\_\_\_

Professional License Type: \_\_\_\_\_

Professional License Number: \_\_\_\_\_

Expiration Date of License: \_\_\_\_\_

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

**(ATTACH COPY OF LICENSE)**

**APPLICABLE**

### FORM D: CERTIFICATION REGARDING DEBARMENT

- (1) The Offeror certifies that neither it or its subcontractors is presently debarred, suspended, proposed for debarment, declared ineligible, or otherwise excluded from doing business with any government agency. Any such exclusion may cause prohibition of your firm from participating in any procurement by the Fulton County Government.
- (2) If the Offeror is unable to certify to any of the statements in this certification, such Offeror or subcontractor shall attach an explanation to this bid or proposal.

#### INSTRUCTIONS FOR CERTIFICATION

By signing and submitting this certification, the Offeror is providing the certification set out below:

- (1) The certification in this clause is a material representation of fact upon which reliance will be placed. If it is later determined that the prospective vendor knowingly rendered a false certification, the Purchasing Agent may pursue all available remedies, including suspension and/or debarment, for withdrawal of award or termination of a contract.
- (2) The prospective Offeror shall provide immediate written notice to the Purchasing Agent if at anytime the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (3) Offeror shall be under a continuing duty to immediately inform the Purchasing Agent in writing of any changes, if as a result of such changes, the Offeror certification regarding debarment is affected.

#### DEBARMENT ORDINANCE

The following Section 2-322 of Fulton County Code of Laws establishes the procedure for the debarment of contractors.

**(a) Authority to suspend.**

After reasonable notice to the entity involved and reasonable opportunity for that entity to be heard, the Purchasing Agent, after consultation with user department, the County Manager and the County Attorney shall have the authority to suspend an entity for cause from consideration for award of county contracts. As used in this section, the term entity means any business entity, individual, firm, contractor, subcontractor or business corporation, partnership, limited liability corporation, firm, contractor, subcontractor or business structured; provided, further, that any such entity shall also be subject to suspension under this section if any of its constituents, members, subcontractors at any tier of such entity's and the entity, or any constituent or member, knew or should have known of the commission of the act. The suspension shall be for a period not to exceed three (3) years unless cause is based on a felony conviction for an offense related or associated with fraudulent contracting or misappropriation of funds wherein the suspension shall not exceed seven (7) years.

**(b) Causes for Suspension. The causes for suspension include:**

- (1) Conviction for commission of a criminal offense as an incident to obtain or attempting to obtain a public or private contract or subcontract, or in performance of such contract or subcontract;

- (2) Conviction of state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property or other offense indicating a lack of business integrity or business honesty which currently, seriously and directly affects responsibility as a county contractor.
- (3) Conviction of state or federal anti-trust statutes arising out of the solicitation and submission of bids and proposals;
- (4) Violation of contract provisions, as set forth below, of a character which is regarded by the Purchasing Agent to be so serious as to justify suspension action:
  - a. Failure to perform in accordance with the specifications within a time limit provided in a county contract;
  - b. A recent record of failure to perform or unsatisfactory performance in accordance with the terms of one or more contracts; provided, that failure to perform or unsatisfactory performance caused by acts beyond the control of the contractor shall not be considered to be a basis for suspension;
  - c. Material representation of the composition of the ownership or workforce or business entity certified to the county as a minority business enterprise; or
  - d. Falsification of any documents.
- (5) For violation of the ethical standards set forth in Fulton County Code Chapter 9, Code of Ethics.
- (6) Knowing misrepresentation to the county, of the use which a majority owned contractor intends to make a minority business enterprise (a business entity at least 51 percent of which is owned and controlled by minority persons, as defined in Fulton County Code Chapter 6, Article B, Minority Business Enterprise Affirmative Action Program and certified as such by the County) as a subcontractor or a joint venture partner, in performing work under contract with the County.

Failure to fully and truthfully provide the information required, may result in the disqualification of your bid/proposal from consideration or termination of the Contract, once awarded. This document must be completed and included as a part of the bid/proposal package along with other required documents.

[SIGNATURES ON NEXT PAGE]

Under penalty of perjury, I declare that I have examined this certification and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Legal Name of Offeror) (Date)

\_\_\_\_\_  
(Signature of Authorized Representative) (Date)

\_\_\_\_\_  
(Title)

**FORM E: DISCLOSURE FORM AND QUESTIONNAIRE**

1. Please provide the names and business addresses of each of the Offeror's firm's officers and directors.

For the purposes of this form, the term "Offeror" means an entity that responds to a solicitation for a County contract by either submitting a proposal in response to a Request for Proposal or a Request for Qualification or a Bid in response to an Invitation to Bid. Describe accurately, fully and completely, their respective relationships with said Offeror, including their ownership interests and their anticipated role in the management and operations of said Offeror.

2. Please describe the general development of said Offeror's business during the past five (5) years, or such shorter period of time that said Offeror has been in business.

3. Please state whether any employee, agent or representative of said Offeror who is or will be directly involved in the subject project has or has ever: (i) directly or indirectly had a business relationship with Fulton County; (ii) directly or indirectly received revenues from Fulton County; or (iii) directly or indirectly receives revenues from the result of conducting business on Fulton County property or pursuant to any contract with Fulton County. Please describe in detail any such relationship.

**LITIGATION DISCLOSURE:**

Failure to fully and truthfully disclose the information required, may result in the disqualification of your bid or proposal from consideration or termination of the Contract, once awarded.

1. Please state whether any of the following events have occurred in the last five (5) years with respect to said Offeror. If any answer is yes, explain fully the following:
  - (a) whether a petition under the federal bankruptcy laws or state insolvency laws was filed by or against said Offeror, or a receiver fiscal agent or similar officer was appointed by a court for the business or property of said Offeror;  
  
Circle One:                    YES    NO
  - (b) whether Offeror was subject of any order, judgment, or decree not subsequently reversed, suspended or vacated by any court of competent jurisdiction, permanently enjoining said Offeror from engaging in any type of business practice, or otherwise eliminating any type of business practice; and  
  
Circle One:                    YES    NO
  - (c) whether said Offeror's business was the subject of any civil or criminal proceeding in which there was a final adjudication adverse to said Offeror, which directly arose from activities conducted by the business unit or corporate division of said Offeror which submitted a bid or proposal for the subject project. If so please explain.  
  
Circle One:                    YES    NO
2. Have you or any member of your firm or team to be assigned to this engagement ever been indicted or convicted of a criminal offense within the last five (5) years?  
  
Circle One:                    YES    NO
3. Have you or any member of your firm or team been terminated (for cause or otherwise) from any work being performed for Fulton County or any other Federal, State or Local Government?  
  
Circle One:                    YES    NO
4. Have you or any member of your firm or team been involved in any claim or litigation adverse to Fulton County or any other federal, state or local government, or private entity during the last three (3) years?  
  
Circle One:                    YES    NO
5. Has any offeror, member of offeror's team, or officer of any of them (with respect to any matter involving the business practices or activities of his or her employer), been notified within the five (5) years preceding the date of this offer that any of them are the target of a criminal investigation, grand jury investigation, or civil enforcement proceeding?  
  
Circle One:                    YES    NO

If you have answered "YES" to any of the above questions, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, the name of the court and the file or reference number of the case, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your proposal.

**NOTE: If any response to any question set forth in this questionnaire has been disclosed in any other document, a response may be made by attaching a copy of such disclosure. (For example, said Offeror's most recent filings with the Securities and Exchange Commission ("SEC") may be provided if they are responsive to certain items within the questionnaire.) However, for purposes of clarity, Offeror should correlate its responses with the exhibits by identifying the exhibit and its relevant text.**

Disclosures must specifically address, completely respond and comply with all information requested and fully answer all questions requested by Fulton County. Such disclosure must be submitted at the time of the bid or proposal submission and included as a part of the bid/proposal submitted for this project. Disclosure is required for Offerors, joint venture partners and first-tier subcontractors.

Failure to provide required disclosure, submit officially signed and notarized documents or respond to any and all information requested/required by Fulton County can result in the bid/proposal declared as non-responsive. This document must be completed and included as a part of the bid/proposal package along with other required documents.

[SIGNATURES ON NEXT PAGE]

Under penalty of perjury, I declare that I have examined this questionnaire and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Legal Name of Proponent) (Date)

\_\_\_\_\_  
(Signature of Authorized Representative) (Date)

\_\_\_\_\_  
(Title)

**Sworn to and subscribed before me,**

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Notary Public) (Seal)

Commission Expires \_\_\_\_\_  
(Date)

**FORM F: GEORGIA SECURITY AND IMMIGRATION CONTRACTOR AFFIDAVIT AND  
AGREEMENT**

**Instructions:**

Contractors must attest to compliance with the requirements of O.C.G.A 13-10-91 and the Georgia Department of Labor Rule 300-10-01-.02 by executing the Contractor Affidavit provided.

STATE OF GEORGIA

COUNTY OF FULTON

FORM F: GEORGIA SECURITY AND IMMIGRATION CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with [insert name of prime contractor] on behalf of Fulton County Government has registered with and is participating in a federal work authorization program\* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services to this contract with Fulton County Government, contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A./ 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the Fulton County Government at the time the subcontractor(s) is retained to perform such service.

EEV/Basic Pilot Program\* User Identification Number \_\_\_\_\_

BY: Authorized Officer of Agent  
(Insert Subcontract Name) \_\_\_\_\_

Title of Authorized Officer or Agent of Subcontractor \_\_\_\_\_

Printed Name of Authorized Officer or Agent \_\_\_\_\_

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Notary Public: \_\_\_\_\_

County: \_\_\_\_\_

Commission Expires: \_\_\_\_\_

**NOTE:**

\* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

**FORM G: GEORGIA SECURITY AND IMMIGRATION SUBCONTRACTOR AFFIDAVIT**

**Instructions:**

In the event that your company is awarded the contract for this project, and will be utilizing the services of any subcontractor(s) in connection with the physical performance of services pursuant to this contract, the following affidavit must be completed by such subcontractor(s). Your company must provide a copy of each such affidavit to Fulton County Government, Department of Purchasing & Contract Compliance with the proposal submittal.

All subcontractor affidavit(s) shall become a part of the contract and all subcontractor(s) affidavits shall be maintained by your company and available for inspection by Fulton County Government at any time during the term of the contract. All subcontractor(s) affidavit(s) shall become a part of any contractor/subcontractor agreement(s) entered into by your company.

STATE OF GEORGIA

COUNTY OF FULTON

**FORM G: GEORGIA SECURITY AND IMMIGRATION SUBCONTRACTOR AFFIDAVIT**

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with **[insert name of prime contractor]** behalf of **Fulton County Government**

has registered with and is participating in a federal work authorization program\* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

\_\_\_\_\_  
EEV/Basic Pilot Program\* User Identification Number

\_\_\_\_\_  
BY: Authorized Officer of Agent  
(Insert Subcontract Name)

\_\_\_\_\_  
Title of Authorized Officer or Agent of Subcontractor

\_\_\_\_\_  
Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Notary Public: \_\_\_\_\_

County: \_\_\_\_\_

Commission Expires: \_\_\_\_\_

**NOTE:**

\* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

## **CONTRACT COMPLIANCE REQUIREMENTS**

### **NON-DISCRIMINATION IN PURCHASING AND CONTRACTING**

It is the policy of Fulton County Government that discrimination against businesses by reason of the race, color, gender or national origin of the ownership of any such business is prohibited. Furthermore, it is the policy of the Board of Commissioners ("Board") that Fulton County and all vendors and contractors doing business with Fulton County shall provide to all businesses the opportunity to participate in contracting and procurement paid, in whole or in part, with monetary appropriations of the Board without regard to the race, color, gender or national origin of the ownership of any such business. Similarly, it is the policy of the Board that the contracting and procurement practices of Fulton County should not implicate Fulton County as either an active or passive participant in the discriminatory practices engaged in by private contractors or vendors seeking to obtain contracts with Fulton County.

#### **Implementation of Equal Employment Opportunity (EEO) Policy**

The County effectuates Equal Employment Opportunity thru Policy #800-8, Non-Discrimination in Contracting and Procurement. This policy considers racial and gender workforce availability. The availability of each workgroup is derived from the work force demographics set forth in the 2000 Census EEO file prepared by the United States Department of Commerce for the applicable labor pool normally utilized for the contract.

#### **Monitoring of EEO Policy**

Upon award of a contract with Fulton County, the successful bidder/proposer must complete an Equal Employment Opportunity Report (EEOR), describing the racial and gender make-up of the firm's work force. If the EEOR indicates that the firm's demographic composition indicates underutilization of employee's of a particular ethnic group for each job category, the firm will be required to submit an aggressive action plan setting forth steps the firm will take to address the identified underutilization.

### **DETERMINATION OF GOOD FAITH EFFORTS**

During the course of the project, the Prime Contractor shall demonstrate that they have made all efforts reasonably possible to ensure that Minority and Female Business Enterprises (MFBE) have had a full and fair opportunity to compete and win subcontracts on this project. The Prime Contractor is required to include all outreach attempts that would demonstrate a "Good Faith Effort" in the solicitation of sub-consultants/subcontractors.

Written documentation demonstrating the Prime Contractor's outreach efforts to identify, contact, contract with or utilize Minority or Female owned businesses shall include holding pre-bid conferences, publishing advertisements in general circulation media, trade association publications, minority-focused media, and the County's bid board, as well as other efforts.

Include a list of publications where the advertisement was placed as well as a copy of the advertisement. Advertisement shall include at a minimum, scope of work, project location, location(s) of where plans and specifications may be viewed or obtained and trade or scopes of work for which subcontracts are being solicited.

## EQUAL BUSINESS OPPORTUNITY PLAN (EBO PLAN)

In addition to the proposal submission requirements, each vendor **must** submit an Equal Business Opportunity Plan (EBO Plan) with their bid/proposal. The EBO Plan is designed to enhance the utilization of a particular racial, gender or ethnic group by a bidder/proposer, contractor, or vendor or by Fulton County. The respondent **must** outline a plan of action to encourage and achieve diversity and equality in the available procurement and contracting opportunities with *this solicitation*.

The EBO Plan **must** identify and include:

1. Potential opportunities within the scope of work of *this solicitation* that will allow for participation of racial, gender or ethnic groups.
2. Efforts that will be made by the bidder/proposer to encourage and solicit minority and female business utilization in *this solicitation*.

Fulton County encourages joint ventures, teaming, partnering and mentor-protégé relationships with minority and female businesses in an effort to achieve contracting and procurement diversity.

**Prompt Payment:** The prime contractor **must** certify in writing and **must** document all subcontractors, sub-consultants and suppliers have been promptly paid for work and materials, (less any retainage by the prime contractor prior to receipt of any further progress payments). In the event the prime contractor is unable to pay subcontractors, sub-consultants or suppliers until it has received a progress payment from Fulton County, the prime contractor shall pay all subcontractors, sub-consultants or suppliers funds due from said progress payment within forty-eight (48) hours of receipt of payment from Fulton County. In no event shall a subcontractor, sub-consultant or supplier be paid later than fifteen (15) days as provided for by state law.

## REQUIRED FORMS AND EBO PLAN

In order to be compliant with the intent and provisions of the Fulton County Non-Discrimination in Purchasing and Contracting Ordinance (99-0960), bidders/proposers **must** submit the following completed documents. Failure to provide this information **shall** result in the proposal being deemed non-responsive.

- Exhibit A – Promise of Non-Discrimination
- Exhibit B – Employment Report
- Exhibit C – Schedule of Intended Subcontractor Utilization
- Exhibit D – Letter of Intent to Perform as a Subcontractor or Provide Materials or Services
- Exhibit E – Declaration Regarding Subcontractors Practices
- Exhibit F – Joint Venture Disclosure Affidavit
- Equal Business Opportunity Plan (EBO Plan). This document is not a form rather a statement created by the bidder/proposer on its company letter head addressing the EBO Plan requirements.
- Exhibit H – First Source Jobs Program Information, Form 2

The following document must be completed as instructed if awarded the project:

- Exhibit G – Prime Contractor's Subcontractor Utilization Report
- Exhibit H – First Source Jobs Program Agreement, Form 3

All Contract Compliance documents (Exhibits A – H and EBO Plan) are to be placed in a **separate sealed envelope** clearly marked "Contract Compliance". The EBO Plan must be submitted on company

letterhead. These documents are considered part of and should be submitted with the Technical Proposal.

**EXHIBIT A – PROMISE OF NON-DISCRIMINATION**

“Know all persons by these presents, that I/We ( \_\_\_\_\_ ),  
Name

\_\_\_\_\_ Title Firm Name  
Hereinafter “Company”, in consideration of the privilege to bid on or obtain contracts funded, in whole or in part, by Fulton County, hereby consent, covenant and agree as follows:

- 1) No person shall be excluded from participation in, denied the benefit of, or otherwise discriminated against on the basis of race, color, national origin or gender in connection with any bid submitted to Fulton County for the performance of any resulting there from,
- 2) That it is and shall be the policy of this Company to provide equal opportunity to all businesses seeking to contract or otherwise interested in contracting with this Company without regard to the race, color, gender or national origin of the ownership of this business,
- 3) That the promises of non-discrimination as made and set forth herein shall be continuing in nature and shall remain in full force and effect without interruption,
- 4) That the promise of non-discrimination as made and set forth herein shall be made a part of, and incorporated by reference into, any contract or portion thereof which this Company may hereafter obtain,
- 5) That the failure of this Company to satisfactorily discharge any of the promises of non-discrimination as made and set forth herein shall constitute a material breach of contract entitling the Board to declare the contract in default and to exercise any and all applicable rights and remedies, including but not limited to cancellation of the contract, termination of the contract, suspension and debarment from future contracting opportunities, and withholding and/or forfeiture of compensation due and owing on a contract; and
- 6) That the bidder shall provide such information as may be required by the Director of Contract Compliance pursuant to Section 4.4 of the Fulton County Non-Discrimination in Purchasing and Contracting Ordinance.

**SIGNATURE:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**TELEPHONE NUMBER:** \_\_\_\_\_

**EXHIBIT B – EMPLOYMENT REPORT**

The demographic employment make-up for the bidder must be identified and submitted with this bid/proposal. In addition, if subcontractors will be utilized by the bidder/proposer to complete this project, then the demographic employment make-up of the subcontractor(s) must be identified and submitted with this bid.

JOB CATEGORIES	TOTAL EMPLOYED		TOTAL MINORITIES		WHITE (Not Hispanic Origin)		BLACK or AFRICAN AMERICAN (Not of Hispanic Origin)		HISPANIC or LATINO		AMERICAN INDIAN or ALASKAN NATIVE (ASIAN)		ASIAN		NATIVE HAWAIIAN or OTHER PACIFIC ISLANDER (NHOP)		TWO or MORE RACES		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
EXECUTIVE/SENIOR LEVEL OFFICIALS and MANAGERS																			
FIRST/MID LEVEL OFFICIALS and MANAGERS																			
PROFESSIONALS																			
TECHNICIANS																			
SALES WORKERS																			
ADMINISTRATIVE SUPPORT WORKERS																			
CRAFT WORKERS OPERATIVES																			
LABORERS & HELPERS																			
SERVICE WORKERS																			
<b>TOTAL</b>																			

FIRMS'S NAME  
 ADDRESS  
 TELEPHONE

This completed form is for (Check only one):  
 Submitted by: \_\_\_\_\_

Bidder/Proposer

Subcontractor

Date Completed: \_\_\_\_\_

**EXHIBIT C - SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION**

If the bidder/proposer intends to subcontract any portion of this scope of work/service(s), this form **must be** completed and **submitted with the bid/proposal**. All prime bidders/proposers **must** include Letter(s) of Intent (Exhibit D) in the bid document for all subcontractors who will be utilized under the scope of work/services.

**Prime Bidder/Proposer:** \_\_\_\_\_

**ITB/RFP Number:** \_\_\_\_\_

**Project Name or Description of Work/Service(s):** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

1. My firm, as Prime Bidder/Proposer on this scope of work/service(s) is \_\_\_\_\_ is not \_\_\_\_\_ a minority or female owned and controlled business enterprise. (Please indicate below the portion of work, including, percentage of bid/proposal amount that your firm will carry out directly):

\_\_\_\_\_  
\_\_\_\_\_

2. If the Prime Bidder/Proposer is a Joint Venture, please complete Exhibit F: Joint Venture Disclosure Affidavit and attach a copy of the executed Joint Venture Agreement.
3. Sub-Contractors (including suppliers) to be utilized in the performance of this scope of work/service(s), if awarded, are:

SUBCONTRACTOR NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_

PHONE: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

ETHNIC GROUP\*: \_\_\_\_\_ COUNTY CERTIFIED\*\* \_\_\_\_\_

WORK TO BE PERFORMED: \_\_\_\_\_

DOLLAR VALUE OF WORK: \$ \_\_\_\_\_ PERCENTAGE VALUE: \_\_\_\_\_ %

**\*Ethnic Groups: African American (AABE); Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE); \*\*If yes, please attach copy of recent certification.**

SUBCONTRACTOR NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
CONTACT PERSON: \_\_\_\_\_  
ETHNIC GROUP\*: \_\_\_\_\_ COUNTY CERTIFIED\*\* \_\_\_\_\_  
WORK TO BE PERFORMED: \_\_\_\_\_  
DOLLAR VALUE OF WORK: \$ \_\_\_\_\_ PERCENTAGE VALUE: \_\_\_\_\_ %

---

SUBCONTRACTOR NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
CONTACT PERSON: \_\_\_\_\_  
ETHNIC GROUP\*: \_\_\_\_\_ COUNTY CERTIFIED\*\* \_\_\_\_\_  
WORK TO BE PERFORMED: \_\_\_\_\_  
DOLLAR VALUE OF WORK: \$ \_\_\_\_\_ PERCENTAGE VALUE: \_\_\_\_\_ %

---

SUBCONTRACTOR NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
CONTACT PERSON: \_\_\_\_\_  
ETHNIC GROUP\*: \_\_\_\_\_ COUNTY CERTIFIED\*\* \_\_\_\_\_  
WORK TO BE PERFORMED: \_\_\_\_\_  
DOLLAR VALUE OF WORK: \$ \_\_\_\_\_ PERCENTAGE VALUE: \_\_\_\_\_ %

---

SUBCONTRACTOR NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
CONTACT PERSON: \_\_\_\_\_  
ETHNIC GROUP\*: \_\_\_\_\_ COUNTY CERTIFIED\*\* \_\_\_\_\_  
WORK TO BE PERFORMED: \_\_\_\_\_  
DOLLAR VALUE OF WORK: \$ \_\_\_\_\_ PERCENTAGE VALUE: \_\_\_\_\_ %

**\*Ethnic Groups: African American (AABE); Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE); \*\*If yes, please attach copy of recent certification.**

**Total Dollar Value of Subcontractor Agreements: (\$)**

**Total Percentage Value: (%)**

**CERTIFICATION:** The undersigned certifies that he/she has read, understands and agrees to be bound by the Bid/Proposer provisions, including the accompanying Exhibits and other terms and conditions regarding sub-contractor utilization. The undersigned further certifies that he/she is legally authorized by the Bidder/Proposer to make the statement and representation in this Exhibit and that said statements and representations are true and correct to the best of his/her knowledge and belief. The undersigned understands and agrees that if any of the statements and representations are made by the Bidder/Proposer knowing them to be false, or if there is a failure of the intentions, objectives and commitments set forth herein without prior approval of the County, then in any such event the Contractor's acts or failure to act, as the case may be, shall constitute a material breach of the contract, entitling the County to terminate the Contract for default. The right to so terminate shall be in addition to, and in lieu of, any other rights and remedies the County may have for other defaults under the contract.

**Signature:** \_\_\_\_\_ **Title:** \_\_\_\_\_

**Firm or Corporate Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Telephone:** (     ) \_\_\_\_\_

**Fax Number:** (     ) \_\_\_\_\_

**Email Address:** \_\_\_\_\_

EXHIBIT D

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR  
OR  
PROVIDE MATERIALS OR SERVICES

This form **must** be completed by **ALL** known subcontractor and submitted with the bid/proposal. The Prime Contractor **must** submit Letters of Intent for **ALL** known subcontractors at time of bid submission.

To: \_\_\_\_\_  
(Name of Prime Contractor Firm)

From: \_\_\_\_\_  
(Name of Subcontractor Firm)

ITB/RFP Number: \_\_\_\_\_

Project Name: \_\_\_\_\_

The undersigned is prepared to perform the following described work or provide materials or services in connection with the above project (specify in detail particular work items, materials, or services to be performed or provided):

Description of Work	Project Commence Date	Project Completion Date	Estimated Dollar Amount

\_\_\_\_\_  
(Prime Bidder)

\_\_\_\_\_  
(Subcontractor)

Signature \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

**EXHIBIT E - DECLARATION REGARDING SUBCONTRACTING PRACTICES**

If the bidder/proposer **does not intend to subcontract** any portion of the scope of work services(s), this form **must be** completed and submitted with the bid/proposal.

\_\_\_\_\_ hereby declares that it is my/our intent to  
**(Bidder)**

perform 100% of the work required for \_\_\_\_\_  
**(ITB/RFP Number)**

\_\_\_\_\_  
**(Description of Work)**

In making this declaration, the bidder/proposer states the following:

1. That the bidder/proposer does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements** of the work on this project with his/her own current work forces;
2. If it should become necessary to subcontract some portion of the work at a later date, the bidder/proposer will comply with all requirements of the County's Non-Discrimination Ordinance in providing equal opportunities to all firms to subcontract the work. The determination to subcontract some portion of the work at a later date shall be made in good faith and the County reserves the right to require additional information to substantiate a decision made by the bidder/proposer to subcontract work following the award of the contract. Nothing contained in this provision shall be employed to circumvent the spirit and intent of the County's Non-Discrimination Ordinances;
3. The bidder will provide, upon request, information sufficient for the County to verify Item Number one.

**AUTHORIZED COMPANY REPRESENTATIVE**

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

**EXHIBIT F - JOINT VENTURE DISCLOSURE AFFIDAVIT**

**ITB/RFP No.** \_\_\_\_\_

**Project Name** \_\_\_\_\_

This form must be completed and submitted with the bid/proposal if a joint venture approach is to be undertaken.

In order to evaluate the extent of small, minority and female business involvement being proposed by a Bidder/Proposer, certain relevant information must be provided prior to contract award. The information requested below is to clearly identify and explain the extent of small business participation in the proposed joint venture. All items must be properly addressed before the business entity can be evaluated.

**1. Firms:**

- 1) **Name of Business:** \_\_\_\_\_  
**Street Address:** \_\_\_\_\_  
**Telephone No.:** \_\_\_\_\_  
**Nature of Business:** \_\_\_\_\_
  
- 2) **Name of Business:** \_\_\_\_\_  
**Street Address:** \_\_\_\_\_  
**Telephone No.:** \_\_\_\_\_  
**Nature of Business:** \_\_\_\_\_
  
- 3) **Name of Business:** \_\_\_\_\_  
**Street Address:** \_\_\_\_\_  
**Telephone No.:** \_\_\_\_\_  
**Nature of Business:** \_\_\_\_\_

**NAME OF JOINT VENTURE (if applicable):** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**PRINCIPAL OFFICE:** \_\_\_\_\_

**OFFICE PHONE:** \_\_\_\_\_

**Note:** Attach additional sheets as required

1. Describe the capital contributions by each joint venturer and accounting thereof.
2. Describe the financial controls of the joint venture, e.g., will a separate cost center be established? Which venturer will be responsible for keeping the books? How will the expense therefore be reimbursed? What is the authority of each joint venture to commit or obligate the order?
3. Describe any ownership, options for ownership, or loans between the joint ventures. Identify terms thereof.
4. Describe the estimated contract cash flow for each joint venturer.
5. To what extent and by whom will the on-site work be supervised?
6. To what extent and by whom will the administrative office be supervised?
7. Which joint venturer will be responsible for material purchases including the estimated cost thereof? How will the purchase be financed?
8. Which joint venturer will provide equipment? What is the estimated cost thereof? How will the equipment be financed?
9. Describe the experience and business qualifications of each joint venturer.
10. Submit a copy of all joint venture agreements and evidence of authority to do business in the State of Georgia as well as locally, to include all necessary business licenses.
11. Percent of Minority/Female Business Enterprises ownership by each joint venture in terms of profit and loss sharing: \_\_\_\_\_  
\_\_\_\_\_
12. The authority of each joint venturer to commit or obligate the other: \_\_\_\_\_  
\_\_\_\_\_
13. Number of personnel to be involved in project, their crafts and positions and whether they are employees of the Minority/Female Business Enterprises enterprise, the majority firm or the joint venture: \_\_\_\_\_  
\_\_\_\_\_
14. Identification of control and participation in venture; list those individuals who are responsible for day-to-day management and policy decision-maker, including, but not limited to, those with prime responsibility for areas designated below; (use additional sheets if necessary)

<u>Name</u>	<u>Race</u>	<u>Sex</u>	<u>Financial Decisions</u>	<u>Supervision Field Operation</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

In connection with any work that these firms, as a joint venture, might be authorized to perform in connection with above captioned contract, we each do hereby authorize representatives of the Fulton County Department of Contract Compliance, Departments of Purchasing and Contract Compliance, and Finance, under the direction of the County Manger's Office, to examine, from time to time, the books, records and files to the extent that such relate to this County project.

**WE DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THE FOREGOING DOCUMENT ARE TRUE AND CORRECT, AND THAT WE ARE AUTHORIZED, ON BEHALF OF THE ABOVE FIRMS, TO MAKE THIS AFFIDAVIT AND GRANT THE ABOVE PRIVILEGE.**

FOR \_\_\_\_\_  
(Company)

Date: \_\_\_\_\_  
\_\_\_\_\_  
(Signature of Affiant)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Company)

Date: \_\_\_\_\_  
\_\_\_\_\_  
(Signature of Affiant)

\_\_\_\_\_  
(Printed Name)

State of \_\_\_\_\_:

County of \_\_\_\_\_:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me, appeared \_\_\_\_\_, the undersigned officer, personally appeared \_\_\_\_\_ known to me to be the person described in the foregoing Affidavit and acknowledges that he (she) executed the same in the capacity therein stated and for the purpose therein contained.



**Should you have questions regarding any of the documents contained in Section 6, please feel free to contact the Office of Contract Compliance at (404) 612-6300, for further assistance.**

## EXHIBIT H

### FULTON COUNTY FIRST SOURCE JOBS PROGRAM

#### **STATEMENT OF POLICY:**

It is the policy of Fulton County Government to provide employment opportunities to the citizens of Fulton County. This policy will apply to all contracts procured through the Department of Purchasing & Contract Compliance valued in excess of \$200,000. The Prime Contractor is expected to utilize the First Source Jobs Program to fill 50% of the entry level jobs which arise as a result of any project funded in whole or in part with County funds with residents of Fulton County.

#### **PURPOSE:**

The purpose of this policy is to create a pool of employable persons who are residents of Fulton County to be called upon as a source to fill jobs created as a result of any eligible project funded in whole or in part with County funds in order to provide stable economic opportunities for families throughout the County. The First Source Jobs Program will be implemented by the Department of Purchasing & Contract Compliance and the Office of Workforce Development.

#### **MONITORING POLICY:**

Upon execution of a contract with Fulton County Government, the First Source Jobs Agreement (FSJ Form 2) will become a part of the contract between the bidder/proposer and Fulton County Government. The First Source Jobs Program will be monitored during routine site visits by the Office of Contract Compliance along with the Office of Workforce Development.

### FORM 1

**FULTON COUNTY**

**First Source Jobs Program Information**

**Company Name:** \_\_\_\_\_

**Project Number:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

**The following entry-level positions will become available as a result of the above referenced contract with Fulton County.**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

**Include a job description and all required qualifications for each position listed above.**

**Identify a company representative and contact phone number who will be responsible for coordinating with the First Source Jobs Program:**

**Company Representative:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Email Address:** \_\_\_\_\_

**FORM 2**

**FULTON COUNTY**  
**First Source Jobs Program Agreement**

Awarded Contractor's Name: \_\_\_\_\_

Formal Contract Name: \_\_\_\_\_

RFP/ITB Number: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Contact Phone: \_\_\_\_\_

The contractor listed above agrees to the following:

1. The contractor shall make a good faith effort to fill 50% of the entry level position(s) created by this project using the Fulton County First Source Jobs Program.
2. The contractor shall provide the applicable details of every entry level job in writing within the required form.
3. The contractor shall be expected to present documentation that confirms employment terms to both the employee and Fulton County.

The Office of Contract Compliance will assist with monitoring the participation of First Source Jobs Program employees during routine site visits and report findings to the Office of Workforce Development for confirmation and follow-up. The Office of Workforce Development shall notify the Director of Human Services and the Purchasing Agent of any determination of non-compliance with the requirements of this policy and recommend a resolution or action to be taken.

Upon a determination by the Purchasing Agent and the Director of Human Services that a contractor has failed to comply with any portion of this policy, the County may impose the following:

1. Ten percent (10%) of all future payments under the involved eligible project shall be entitled to be withheld from a contractor that has violated this policy until the contractor complies with the provisions of this policy.

The undersigned agrees to the terms and conditions set forth in this agreement.

Contractor's Official Title: \_\_\_\_\_ Date: \_\_\_\_\_

Contractor's Name: \_\_\_\_\_

Contractor's Signature: \_\_\_\_\_

**FORM 3**

**Insurance and Risk Management Provisions**

**#13ITB86918K-JD-Construction of the Aviation Community Cultural Center**

It is Fulton County Government’s practice to obtain Certificates of Insurance from our Contractors and Vendors. Insurance must be written by a licensed agent in a company licensed to write insurance in the State of Georgia, with an A.M. Best rating of at least A- VI, subject to final approval by Fulton County. Respondents shall submit with the bid/proposal evidence of insurability satisfactory to Fulton County Government as to form and content. Either of the following forms of evidence is acceptable:

- A letter from an insurance carrier stating that upon your firm/company being the successful Bidder/Respondent that a Certificate of Insurance shall be issued in compliance with the Insurance and Risk Management Provisions outlined below.
- A Certificate of Insurance complying with the Insurance and Risk Management Provisions outlined below (Request for Bid/Proposal number and Project Name, Number and Description must appear on the Certificate of Insurance).
- A combination of a specific policy written with an umbrella policy covering liabilities in excess of the required limits is acceptable to achieve the applicable insurance coverage levels.

Upon award, the Contractor/Vendor must maintain at their expense, insurance with policy limits equal to or greater than the limits described below. Proof of insurance must be provided to Fulton County Government prior to the start of any activities/construction as described in the bid document(s). Any and all Insurance Coverage(s) and Bonds required under the terms and conditions of the contract shall be maintained during the entire length of the contract, including any extensions or renewals thereto, and until all work has been completed to the satisfaction of Fulton County Government.

**Accordingly the Respondent shall provide a certificate evidencing the following:**

**1. WORKERS COMPENSATION/EMPLOYER’S LIABILITY INSURANCE – STATUTORY (In compliance with the Georgia Workers Compensation Acts, including but not limited to U.S. Longshoremen and Harbor Workers Act and any other State or Federal Acts or Provisions in which jurisdiction may be granted)**

Employer’s Liability Insurance	BY ACCIDENT	EACH ACCIDENT	\$1,000,000
Employer’s Liability Insurance	BY DISEASE	POLICY LIMIT	\$1,000,000
Employer’s Liability Insurance	BY DISEASE	EACH EMPLOYEE	\$1,000,000

**2. COMMERCIAL GENERAL LIABILITY INSURANCE (Including contractual Liability Insurance)**

Bodily Injury and Property Damage Liability (Other than Products/Completed Operations)	Each Occurrence	\$1,000,000
	General Aggregate	\$2,000,000
Products\Completed Operation	Aggregate Limit	\$2,000,000
Personal and Advertising Injury	Limits	\$1,000,000
Damage to Rented Premises	Limits	\$100,000

\*To Include Completed Operations for 3 Years after final payment.

**3. BUSINESS AUTOMOBILE LIABILITY INSURANCE**

**Combined Single Limits** Each Occurrence \$1,000,000  
(Including operation of non-owned, owned, and hired automobiles).

**4. UMBRELLA LIABILITY** Per Occurrence \$1,000,000  
**(In excess of above noted coverages)**

**5. BUILDERS' RISK:**

To be written on a Builders Risk "All-risk" form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism, malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by Supplementary Conditions) until Final Completion and Acceptance of the Project. Such policy of insurance shall contain at least the following sub-limits of insurance and deductibles:

Sub-limits:

Property in Transit	\$1,000,000
Property in Offsite Storage	\$1,000,000
Plans & Blueprints	\$25,000
Debris Removal	25% of Insured Physical Loss
Delay in Completion / Soft Cost	TBD
Ordinance of Law (Increased Cost of Construction)	\$1,000,000
Flood and Earthquake	TBD – Full Contract Value

Deductibles:

Flood and Earthquake	\$25,000
Water Damage other than Flood	\$100,000
All other Perils	\$10,000

**6. CONTRACTORS POLLUTION LIABILITY** Each Occurrence \$1,000,000

**Asbestos Abatement Operations (if required on the Project) –**

To provide coverage on a combined General Liability and Pollution Liability on an Occurrence Policy Form. Policy not to have a Sunset Clause.

To include three (3) years of extended Completed Operations coverage or a three (3) year extended reporting period.

**For All Other Operations -**

Pollution Liability Coverage may be provided by endorsement to General Liability Policy or a separate Pollution Liability Policy to include but not limited coverage for pesticides, herbicides.

To include three (3) years of extended Completed Operations coverage or a three (3) year extended reporting period.

### **Certificates of Insurance**

Certificates shall state that the policy or policies shall not expire, be cancelled or altered without at least thirty (30) days prior written notice to Fulton County Government. Policies and Certificates of Insurance are to list Fulton County Government as an Additional Insured (except for Workers' Compensation) and shall conform to all terms and conditions (including coverage of the indemnification and hold harmless agreement) contained in the Insurance and Risk Management Provisions.

If Fulton County Government shall so request, the Respondent, Contractor or Vendor will furnish the County for its inspection and approval such policies of insurance with all endorsements, or confirmed specimens thereof certified by the insurance company to be true and correct copies.

The Contractor agrees to name the Owner and all other parties required of the Contractor/Vendor shall be included as additional insureds on the CGL, using ISO Additional Insured Endorsement forms CG 2010 11/85 or its equivalent coverage to the additional insureds. This insurance for the additional insureds shall be as broad as the coverage provided for the named insured Subcontractor. It shall apply as Primary Insurance before any other insurance or self-insurance, including any deductible, non-contributory, and Waiver of Subrogation provided in favor of Fulton County.

Additional Insured under the General Liability, Auto Liability, Umbrella Policies (with exception of Workers Compensation and Professional Liability), with no Cross Suits exclusion.

#### **Important:**

It is understood that **Insurance in no way Limits the Liability of the Contractor/Vendor.**

### **USE OF PREMISES**

Contractor/Vendor shall confine its apparatus, the storage of materials and the operations of its workers to limits/requirements indicated by law, ordinance, permits and any restrictions of Fulton County Government and shall not unreasonably encumber the premises with its materials.

### **PROTECTION OF PROPERTY**

Contractor/Vendor will adequately protect its own work from damage, will protect Fulton County Government's property from damage or loss and will take all necessary precautions during the progress of the work to protect all persons and the property of others from damage or loss. Contractor/Vendor shall take all necessary precautions for the safety of employees of the work and shall comply with all applicable provisions of the Federal, State and local safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where work is being performed.

Contractor/Vendor shall erect and properly maintain at all times as required by the conditions and progress of the work, all necessary safeguards for the protection of its employees, Fulton

County Government employees and the public and shall post all applicable signage and other warning devices to protect against potential hazards for the work being performed.

**INDEMNIFICATION AND HOLD HARMLESS AGREEMENT**

Contractor/Vendor hereby agrees to release, indemnify, defend and hold harmless Fulton County, its Commissioners, officers, employees, sub-consultants, successors, assigns and agents, from and against any and all losses (including death), claims, damages, liabilities, costs and expenses (including but not limited to all actions, proceedings, or investigations in respect thereof and any costs of judgments, settlements, court costs, attorney’s fees or expenses, regardless of the outcome of any such action, proceeding, or investigation), caused by, relating to, based upon or arising out of any act or omission by Consultant, its directors, officers, employees, sub-consultants, successors, assigns or agents, or otherwise in connection (directly or indirectly) with its acceptance, or the performance, or nonperformance, of its obligations under these agreements. Such obligations shall not be construed to negate, abridge or otherwise reduce any other rights or obligations of indemnity which would otherwise exist as to any party or person as set forth in this paragraph.

Contractor/Vendor further agrees to protect, defend, indemnify and hold harmless Fulton County, its Commissioners, officers, employees, sub-consultants, successors, assigns and agents from and against any and all claims or liability for compensation under the Worker’s Compensation Act, Disability Benefits Act, or any other employee benefits act arising out of injuries sustained by any employees of Consultant. These indemnities shall not be limited by reason of the listing of any insurance coverage.

CONTRACTOR/VENDOR ACKNOWLEDGES HAVING READ, UNDERSTANDING, AND AGREEING TO COMPLY WITH THIS INDEMNIFICATION AND HOLD HARMLESS AGREEMENT, AND THE REPRESENTATIVE OF THE CONTRACTOR/VENDOR IDENTIFIED BELOW IS AUTHORIZED TO SIGN CONTRACTS ON BEHALF OF THE RESPONDING CONTRACTOR/VENDOR.

COMPANY: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

NAME: \_\_\_\_\_ TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**OWNER - CONTRACTOR AGREEMENT**

**#13ITB86918K-JD-CONSTRUCTION OF THE AVIATION COMMUNITY  
CULTURAL CENTER**

Contractor: \_\_\_\_\_ Project No. \_\_\_\_\_

Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

Contact: \_\_\_\_\_ Facsimile: \_\_\_\_\_

THIS AGREEMENT is effective as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between Fulton County, a political subdivision of the State of Georgia (hereinafter called the "County"), and the above named CONTRACTOR in accordance with all provisions of this Construction agreement, consisting of the following Contract Documents:

- Exhibit A: General Conditions
- Exhibit B: Special Conditions (if applicable)
- Exhibit C: Addenda
- Exhibit D: Bid Form
- Exhibit E: Bonds (Bid, Payment & Performance)
- Exhibit F: Scope of Work and Technical Specifications
- Exhibit G: Exhibits
- Exhibit H: Purchasing Forms
- Exhibit I: Office of Contract Compliance Forms
- Exhibit J: Risk Management Insurance Provisions Forms

WITNESSETH: That the said Contractor has agreed, and by these presents does agree with the said County, for and in consideration of a Contract Price of **[INSERT CONTRACT AMOUNT IN WORDS]**, (\$**[INSERT CONTRACT AMOUNT IN NUMBERS]**) and other good and valuable consideration, and under the penalty expressed on Bonds hereto attached, to furnish all equipment, tools, materials, skill, and labor of every description necessary to carry out and complete in good, firm, and substantial, and workmanlike manner, the Work specified, in strict conformity with the Drawings and the Specifications hereinafter set forth, which Drawings and Specifications together with the bid submittals made by the Contractor, General Conditions, Special Provisions, Detailed Specifications, Exhibits, and this Agreement, shall all form essential parts of this Contract. The Work covered by this Contract includes all Work indicated on Plans and Specifications and listed in the Bid entitled:

Project Number: **[INSERT PROJECT #]**

**[INSERT PROJECT NAME]**

The Contractor, providing services as an Independent Contractor, shall commence the Work with adequate force and equipment within 10 days from receipt of Notice to Proceed ("NTP") from the County, and shall complete the work within **two hundred and eighty-seven (287)** calendar days from the Notice to Proceed or the date work begins, whichever comes first. The Contractor shall remain responsible for performing, in accordance with the terms of the contract, all work assigned prior to the expiration of the said calendar days allowed for completion of the work even if the work is not completed until after the expiration of such days. The Contractor shall agree that in the performance of this contract he will comply with all lawful agreements, if any, which the

contractor has made with any association, union or other entity, with respect to wages, salaries and working conditions, so as to cause inconvenience, picketing or work stoppage.

As full compensation for the faithful performance of this Contract, the County shall pay the Contractor in accordance with the General Conditions and the prices stipulated in the Bid, hereto attached.

It is further mutually agreed between the parties hereto that if, at any time after the execution of this Agreement and the Surety Bonds hereto attached for its faithful performance, the County shall deem the surety or sureties upon such bonds to be unsatisfactory, or, if, for any reason, such bonds cease to be adequate to cover the performance of the Work, the Contractor shall, at his expense, within five days after receipt of notice from the County so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the County. In such event no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of the Work shall be furnished in manner and form satisfactory to the County.

The Contractor hereby assumes the entire responsibility and liability for any and all injury to or death of any and all persons, including the Contractor's agents, servants, and employees, and in addition thereto, for any and all damages to property caused by or resulting from or arising out of any act or omission in connection with this contract or the prosecution of work hereunder, whether caused by the Contractor or the Contractor's agents, Servants, or employees, or by any of the Contractor's subcontractors or suppliers, and the Contractor shall indemnify and hold harmless the County, the Construction Manager, County's Commissioners, officers, employees, successors, assigns and agents, or any of their subcontractors from and against any and all loss and/or expense which they or any of them may suffer or pay as a result of claims or suits due to, because of, or arising out of any and all such injuries, deaths and/or damage, irrespective of County or Construction Manager negligence (except that no party shall be indemnified for their own sole negligence). The Contractor, if requested, shall assume and defend at the Contractor's own expense, any suit, action or other legal proceedings arising there from, and the Contractor hereby agrees to satisfy, pay, and cause to be discharged of record any judgment which may be rendered against the County and the Construction Manager arising there from.

In the event of any such loss, expense, damage, or injury, or if any claim or demand for damages as heretofore set forth is made against the County or the Construction Manager, the County may withhold from any payment due or thereafter to become due to the Contractor under the terms of this Contract, an amount sufficient in its judgment to protect and indemnify it and the Construction Manager, County's Commissioners, officers, employees, successors, assigns and agents from any and all claims, expense, loss, damages, or injury; and the County, in its discretion, may require the Contractor to furnish a surety bond satisfactory to the County providing for such protection and indemnity, which bond shall be furnished by the Contractor within five (5) days after written demand has been made therefore. The expense of said Bond shall be borne by the Contractor. **[See General Conditions for similar provisions]**

This Contract constitutes the full agreement between the parties, and the Contractor shall not sublet, assign, transfer, pledge, convey, sell or otherwise dispose of the whole or any part of this Contract or his right, title, or interest therein to any person, firm or corporation without the previous consent of the County in writing. Subject to applicable provisions of law, this Contract shall be in full force and effect as a Contract, from the date on which a fully executed and approved counterpart hereof is delivered to the Contractor and shall remain and continue in full force and effect until after the expiration of any guarantee period and the Contractor and his sureties are finally released by the County.

This agreement was approved by the Fulton County Board of Commissioner on [Insert approval date and item number].

[SIGNATURES NEXT PAGE]

**IN WITNESS THEREOF**, the Parties hereto have caused this Contract to be executed by their duly authorized representatives as attested and witnessed and their corporate seals to be hereunto affixed as of the day and year date first above written.

OWNER:

**FULTON COUNTY, GEORGIA**

CONTRACTOR:

***[Insert Contractor COMPANY NAME]***

---

John H. Eaves, Commission Chair  
Board of Commissioners

---

***[Insert Name & Title of person authorized to sign contract]***

ATTEST:

ATTEST:

---

Mark Massey  
Clerk to the Commission (Seal)

---

Secretary/  
Assistant Secretary

(Affix Corporate Seal)

APPROVED AS TO FORM:

---

Office of the County Attorney

APPROVED AS TO CONTENT:

---

***[Insert Department Head Name]***  
***[Insert Department Head Title]***

**END OF SECTION**

**PERFORMANCE BOND**

No contract with Fulton County for work to be done shall be valid for any purpose unless the Contractor provides a Performance Bond with good and sufficient surety payable to, in favor of, and for the protection of Fulton County. The Performance Bond shall be in the amount of 100% of the total contract amount, payable by the terms of the Contract, and shall be written on the following form.

Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business as a surety in Georgia.

Attestation for the corporation must be by the corporate officer; for a partnership by another partner; for an individual by a notary with the corporate seal.

**PERFORMANCE BOND**

**KNOW ALL MEN BY THESE PRESENTS** that \_\_\_\_\_  
*(Insert name of Contractor)*  
(hereinafter called the "Principal") and \_\_\_\_\_  
*(Insert name of Surety)*  
(hereinafter called the "Surety"), are held and firmly bound unto **FULTON COUNTY**, a political subdivision of the State of Georgia (hereinafter called the "Owner"), its successors and assigns, in the penal sum of \_\_\_\_\_  
*[100% of Contract amount]*, lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated \_\_\_\_\_, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services of a project known as **Construction of the Aviation Community Cultural Center**, as more particularly described in the Contract (hereinafter called the "Project");

**NOW, THEREFORE**, the conditions of this obligation are as follows, that if the Principal shall fully and completely perform all the undertakings, covenants, terms, conditions, warranties, and guarantees contained in the Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, then this obligation shall be void; otherwise it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Owner to be, in default under the Construction-Type Contract, the Surety shall promptly remedy the default as follows:

1. Complete the Contract in accordance with its terms and conditions; or, at the sole option of the Owner,
2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Surety and the Owner of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as the work progresses (even though there should be a default or succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum set forth in the first paragraph hereof, as may be adjusted, and the Surety shall make available and pay to the Owner the funds required by this Paragraph prior to the payment of the Owner of the balance of the contract price, or any portion thereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the Contract, and any amendments thereto, less the amount paid by the Owner to the Contractor; or, at the sole option of the Owner,
3. Allow Owner to complete the work and reimburse the Owner for all reasonable costs incurred in completing the work.

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the Owner from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including reasonable attorney's fees, litigation costs and expert witness fees, which the Owner may incur, sustain or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Contract, including any and all amendments and modifications thereto, or

incurred by the Owner in making good any such failure of performance on the part of the Principal.

The Surety shall commence performance of its obligations and undertakings under this Bond promptly and without delay, after written notice from the Owner to the Surety.

The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Contract, and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, change in payment terms, and amendments.

The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment to the Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Contract as so amended or modified, and so as to increase the penal sum to the adjusted Contract Price of the Contract.

No right of action shall accrue on this Bond to or for the use of any person, entity or corporation other than the Owner and any other obligee named herein, or their executors, administrators, successors or assigns.

This Bond is intended to comply with O.C.G.A. Section 36-91-1 et seq., and shall be interpreted so; as to comply with; the minimum requirements thereof. However, in the event the express language of this Bond extends protection to; the Owner beyond that contemplated by O.C.G.A. Section 36-91-1 et seq. and O.C.G.A. Section 13-10-1, as amended, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

**IN WITNESS WHEREOF** the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_(SEAL)  
(Principal)

By: \_\_\_\_\_

Attest:

\_\_\_\_\_  
Secretary

\_\_\_\_\_(SEAL)  
(Surety)

By: \_\_\_\_\_

Attest:

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
(Address of Surety's Home Office)

\_\_\_\_\_  
(Resident Agent of Surety)

**END OF SECTION**

**PAYMENT BOND**

No Contract with Fulton County for work to be done shall be valid for any purpose unless the Contractor provides a Payment Bond with good and sufficient surety payable to Fulton County for the use and protection of all sub-contractors and all persons supplying labor, materials, machinery, and equipment in the prosecution of the work provided for in the Contract. The Payment Bond shall be in the amount of 100% of the total contract amount, payable by the terms of the Contract, and shall be written on the following form.

Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Georgia.

Attestation for the corporation must be by the corporate officer; for a partnership by another partner; for an individual by a notary with the corporate seal.

**PAYMENT BOND**

**KNOW ALL MEN BY THESE PRESENTS** that \_\_\_\_\_  
(hereinafter called the "Principal") and \_\_\_\_\_  
(hereinafter called the "Surety"), are held and firmly bound unto **FULTON COUNTY**, a political subdivision of the State of Georgia (hereinafter called the "Owner"), its successors and assigns as obligee, in the penal sum of \_\_\_\_\_ [100% of Contract amount], lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated \_\_\_\_\_, which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services of a project known as **Construction of the Aviation Community Cultural Center**, as more particularly described in the Contract (hereinafter called the "Project");

**NOW, THEREFORE**, the condition of this obligation is such that if the Principal shall promptly make payment to all persons working on or supplying labor or materials under the Contract, and any amendments thereto, with regard to labor or materials furnished and used in the Project, and with regard to labor or materials furnished but not so used, then this obligation shall be void; but otherwise it shall remain in full force and effect.

1. A "Claimant" shall be defined herein as any subcontractor, person, party, partnership, corporation or the entity furnishing labor, services or materials used, or reasonably required for use, in the performance of the Contract, without regard to whether such labor, services or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any subcontractor performing work on the Project, including, but not limited to, the following labor, services, or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.
2. In the event a Claimant files a lien against the property of the Owner, and the Principal fails or refuses to satisfy or remove it promptly, the Surety shall satisfy or remove the lien promptly upon written notice from the Owner, either by bond or as otherwise provided in the Contract.
3. The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in the payment terms, and any other amendments in or about the Contract and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and amendments.
4. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modifications to the Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Contract, as amended or modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.
5. This Bond is made for the use and benefit of all persons, firms, and corporations who or which may furnish any materials or perform any labor for or on account of the

---

construction-type services to be performed or supplied under the Contract, and any amendments thereto, and they and each of them may sue hereon.

6. No action may be maintained on this Bond after one (1) year from the date the last services, labor, or materials were provided under the Contract by the Claimant prosecuting said action.
7. This Bond is intended to comply with O.C.G.A. Section 13-10-1, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 13-10-1, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

**IN WITNESS WHEREOF** the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_(SEAL)

(Principal)

By: \_\_\_\_\_

Attest:

\_\_\_\_\_  
Secretary

\_\_\_\_\_(SEAL)

(Surety)

By: \_\_\_\_\_

Attest:

\_\_\_\_\_  
Secretary

\_\_\_\_\_

(Address of Surety's Home Office)

\_\_\_\_\_

(Resident Agent of Surety)

**END OF SECTION**

**GENERAL CONDITIONS**

GENERAL CONDITIONS:

00700-1 FAMILIARITY WITH SITE

Execution of this agreement by the Contractor is a representation that the Contractor has visited the site, has become familiar with the local conditions under which the work is to be performed, and has correlated personal observations with the requirements of this agreement.

00700-2 CONTRACT DOCUMENTS

This agreement consists of Owner's invitation for bid, instructions to bidders, bid form, performance bond, payment bond, acknowledgments, the contract, general conditions, special conditions, specifications, plans, drawings, exhibits, addenda, and written change orders.

- A. Notice of Award of Contract:
- B. Execution of Contract Documents

Upon notification of Award of Contract, the Owner shall furnish the Contractor the conformed copies of Contract Documents for execution by the Contractor and the Contractor's surety.

Within ten (10) days after receipt the Contractor shall return all the documents properly executed by the Contractor and the Contractor's surety. Attached to each document shall be an original power-of-attorney for the person executing the bonds for the surety and certificates of insurance for the required insurance coverage.

After receipt of the documents executed by the Contractor and his surety with the power-of-attorney and certificates of insurance, the Owner shall complete the execution of the documents. Distribution of the completed documents will be made upon completion.

Should the Contractor and/or Surety fail to execute the documents within the time specified; the Owner shall have the right to proceed on the Bid Bond accompanying the bid.

If the Owner fails to execute the documents within the time limit specified, the Contractor shall have the right to withdraw the Contractor's bid without penalty.

Drawings and Specifications:

The Drawings, Specifications, Contract Documents, and all supplemental documents, are considered essential parts of the Contract, and requirements occurring in one are as binding as though occurring in all. They are intended to define, describe and provide for all Work necessary to complete the Project in an acceptable manner, ready for use, occupancy, or operation by the Owner.

In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings.

In cases where products or quantities are omitted from the Specifications, the description and quantities shown on the Drawings shall govern.

Any ambiguities or need for clarification of the Drawings or Specifications shall be immediately reported to the Construction Manager in writing. Any such ambiguity or need for clarification shall be handled by the Construction Manager in writing. No clarification of the Drawings and Specifications hereunder by the Construction Manager shall entitle the Contractor to any additional monies unless a Change Order has been processed as provided by "Changes in the Contract" hereof.

Any work done by the Contractor following a discovery of such differing site condition or ambiguity or need for clarification in the Contract Drawings and Specifications prior to a written report to the Construction Manager shall not entitle the Contractor to additional monies and shall be done at the Contractor's risk.

The Construction Manager will furnish the Contractor five (5) copies of the Contract Drawings and the Specifications, one copy of which the Contractor shall have available at all times on the Project site.

### 00700-3 DEFINITIONS

The following terms as used in this agreement are defined as follows to the extent the definitions herein differ or conflict with those in the Instructions for Bidders, Section 00100, the definitions herein shall control.

Alternate bids – the amount stated in the bid or proposal to be added to or deducted from the amount of the base bid or base proposal if the corresponding change in project scope or alternate materials or methods of construction is accepted.

Base bid – the amount of money stated in the bid or proposal as the sum for which the bidder or proposer offers to perform the work.

Change Order - an alteration, addition, or deduction from the original scope of work as defined by the contract documents to address changes or unforeseen conditions necessary for project completion. A written order to the Contractor issued by the County pursuant to Fulton County Policy and Procedures 800-6 for changes in the work within the general scope of the contract documents, adjustment of the contract price, extension of the contract time, or reservation of determination of a time extension.

Construction Manager or Engineer shall mean Fulton Construction Management Partners, the County authorized representative for this project.

Contractor shall mean the party of the second part to the Contract Agreement or the authorized and legal representative of such party.

Contract Documents include the Contract Agreement, Contractor's Bid (including all documentation accompanying the Bid and any post-Bid documentation required by the County prior to the Notice of Award), Bonds, all Special Conditions, General Conditions, Supplementary Conditions, Specifications, Drawings and addenda, together with written amendments, change orders, field orders and the Construction Manager's written interpretations and clarifications issued in accordance with the General Conditions on or after the date of the Contract Agreement.

Shop drawing submittals reviewed in accordance with the General Conditions, geotechnical investigations and soils report and drawings of physical conditions in or relating to existing surface structures at or contiguous to the site are not Contract Documents.

Contract Price - The sum specified in the Agreement to be paid to the Contractor in consideration of the Work.

Contract Time shall mean the number of consecutive calendar days as provided in the Contract Agreement for completion of the Work, to be computed from the date of Notice to Proceed.

Owner or County shall mean Fulton County Government, party of the first part to the Contract Agreement, or its authorized and legal representatives.

Day - A calendar day of twenty-four hours lasting from midnight of one day to midnight the next day.

Design Consultant shall mean the firm or corporation responsible for the detailed design drawings and specifications.

Director - Director of the Facilities and Transportation Services Department of Fulton County, Georgia or the designee thereof.

Final Completion shall mean the completion of all work as required in accordance with the terms and conditions of the contract documents.

Liquidated Damages shall mean the amount, stated in the Contract Agreement, which the Contractor agrees to pay to the Owner for each consecutive calendar day beyond the Contract

time required to complete the Project or for failing to comply with associated milestones. Liquidated Damages will end upon written notification from the Owner of Final Acceptance of the Project or upon written notification of from the Owner of completion of the milestone.

Notice to Proceed - A written communication issued by the County to the Contractor authorizing it to proceed with the work, establishing the date of commencement and completion of the work, and providing other direction to the Contractor.

Products shall mean materials or equipment permanently incorporated into the work.

Program Manager - Not used in this contract. Delete all references.

Project Manual - The Contract Documents.

Provide shall mean to furnish and install.

Substantial Completion - The date certified by the Construction Manager when all or a part of the work, as established pursuant to General Condition 0700-81, is sufficiently completed in accordance with the requirements of the contract documents so that the identified portion of the work can be utilized for the purposes for which it is intended.

Work or Project - All of the services specified, indicated, shown or contemplated by the contract documents, and furnishing by the Contractor of all materials, equipment, labor, methods, processes, construction and manufacturing materials and equipment, tools, plans, supplies, power, water, transportation and other things necessary to complete such services in accordance with the contract documents to insure a functional and complete facility.

#### 00700-4 CODES

All codes, specifications, and standards referenced in the contract documents shall be the latest editions, amendments and revisions of such referenced standards in effect as of the date of the request for proposals for this contract.

#### 00700-5 REVIEW OF CONTRACT DOCUMENTS

Before making its proposal to the County, and continuously after the execution of the agreement, the Contractor shall carefully study and compare the contract documents and shall at once report to the Construction Manager any error, ambiguity, inconsistency or omission that may be discovered, including any requirement which may be contrary to any law, ordinance, rule, or regulation of any public authority bearing on the performance of the work. By submitting its proposal, the Contractor agrees that the contract documents, along with any supplementary written instructions issued by or through the Construction Manager that have become a part of the contract documents, appear accurate, consistent and complete insofar as can be reasonably determined. If the Contractor has timely reported in writing any error, inconsistency, or omission to the Construction Manager, has properly stopped the affected work until instructed to proceed, and has otherwise followed the instructions of the Construction Manager, the Contractor shall not be liable to the County for any damage resulting from any such error, inconsistency, or omission in the contract documents. The Contractor shall not perform any portion of the work without the contract documents, approved plans, specifications, products and data, or samples for such portion of the work. For purposes of this section "timely" is defined as the time period in which the contractor discovers, or should have discovered, the error, inconsistency, or omission, with the exercise of reasonable diligence.

#### 00700-6 STRICT COMPLIANCE

No observation, inspection, test or approval of the County or Construction Manager shall relieve the Contractor from its obligation to perform the work in strict conformity with the contract documents except as provided in General Condition 00700-48.

#### 00700-7 APPLICABLE LAW

All applicable State laws, County ordinances, codes, and rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to this agreement. The

Contractor shall comply with the requirements of any Fulton County program concerning non-discrimination in contracting. All work performed within the right of way of the Georgia Department of Transportation and any railroad crossing shall be in accordance with Georgia Department of Transportation regulations, policies and procedures and, where applicable, those of any affected railroad. The Contractor shall comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work as specified and the Contractor agrees to indemnify and hold harmless the County, its officers, agents and employees, as well as the Construction Manager and the Program Manager against any claim or liability arising from or based on the violation of any law, ordinance, regulation, order or decree affecting the conduct of the work, whether occasioned by the Contractor, his agents or employees.

00700-8 PERMITS, LICENSES AND BONDS

All permits and licenses necessary for the work shall be secured and paid for by the Contractor. If any permit, license or certificate expires or is revoked, terminated, or suspended as a result of any action on the part of the Contractor, the Contractor shall not be entitled to additional compensation or time. The Contractor shall obtain and keep in force at all times performance and payment bonds payable to Fulton County in penal amounts equal to 100% of the Contract price.

00700-9 TAXES

- A. The Contractor shall pay all sales, retail, occupational, service, excise, old age benefit and unemployment compensation taxes, consumer, use and other similar taxes, as well as any other taxes or duties on the materials, equipment, and labor for the work provided by the Contractor which are legally enacted by any municipal, county, state or federal authority, department or agency at the time bids are received, whether or not yet effective. The Contractor shall maintain records pertaining to such taxes and levies as well as payment thereof and shall make the same available to the County at all reasonable times for inspection and copying. The Contractor shall apply for any and all tax exemptions which may be applicable and shall timely request from the County such documents and information as may be necessary to obtain such tax exemptions. The County shall have no liability to the Contractor for payment of any tax from which it is exempt.
- B. The Contractor is obligated to comply with all local and State Sales and Use Tax laws. The Contractor shall provide the Owner with documentation to assist the Owner in obtaining sales and/or use tax refunds for eligible machinery and equipment used for the primary purpose of reducing or eliminating air or water pollution as provided for in Chapter 48-8-3 (36) and (37) of the Official Code of Georgia. All taxes shall be paid by the Contractor. All refunds will accrue to the Owner.

Acceptance of the project as complete and final payment will not be made by the Owner until the Contractor has fully complied with this requirement.

00700-10 DELINQUENT CONTRACTORS

The County shall not pay any claim, debt, demand or account whatsoever to any person firm or corporation who is in arrears to the County for taxes. The County shall be entitled to a counterclaim, backcharge, and offset for any such debt in the amount of taxes in arrears, and no assignment or transfer of such debt after the taxes become due shall affect the right of the County to offset any taxes owed against said debt.

00700-11 LIEN WAIVERS

The Contractor shall furnish the County with evidence that all persons who have performed work or furnished materials pursuant to this agreement have been paid in full prior to submitting its demand for final payment pursuant to this agreement. A final affidavit, Exhibit A, must be completed, and submitted to comply with requirements of 00700-11. In the event that such evidence is not furnished, the County may retain sufficient sums necessary to meet all lawful

claims of such laborers and materialmen. The County assumes no obligation nor in any way undertakes to pay such lawful claims from any funds due or that may become due to the Contractor.

00700-12 MEASUREMENT

All items of work to be paid for per unit of measurement shall be subject to inspection, measurement, and confirmation by the Construction Manager.

00700-13 ASSIGNMENT

The Contractor shall not assign any portion of this agreement or moneys due there from (include factoring of receivables) without the prior written consent of the County. The Contractor shall retain personal control and shall provide personal attention to the fulfillment of its obligations pursuant to this agreement. Any assignment without the express written consent of the County shall render this contract voidable at the sole option of the County.

00700-14 FOREIGN CONTRACTORS

In the event that the Contractor is a foreign corporation, partnership, or sole proprietorship, the Contractor hereby irrevocably appoints the Secretary of State of Georgia as its agent for service of all legal process for the purpose of this contract only.

00700-15 INDEMNIFICATION [there are two indemnification clauses, the other is in the Contract Cover Sheet]

The Contractor hereby assumes the entire responsibility and liability for any and all injury to or death of any and all persons, including the Contractor's agents, servants, and employees, and in addition thereto, for any and all damages to property caused by or resulting from or arising out of any act or omission in connection with this contract or the prosecution of work hereunder, whether caused by the Contractor or the Contractor's agents, servants, or employees, or by any of the Contractor's subcontractors or suppliers, and the Contractor shall indemnify and hold harmless the County, the Construction Manager and the Program Manager, or any of their subcontractors from and against any and all loss and/or expense which they or any of them may suffer or pay as a result of claims or suits due to, because of, or arising out of any and all such injuries, deaths and/or damage, irrespective of County or Construction Manager or Program Manager negligence (except that no party shall be indemnified for their own sole negligence). The Contractor, if requested, shall assume and defend at the Contractor's own expense, any suit, action or other legal proceedings arising there from, and the Contractor hereby agrees to satisfy, pay, and cause to be discharged of record any judgment which may be rendered against the County, the Construction Manager and the Program Manager arising there from.

In the event of any such loss, expense, damage, or injury, or if any claim or demand for damages as heretofore set forth is made against the County or the Construction Manager or the Program Manager, the County may withhold from any payment due or thereafter to become due to the Contractor under the terms of this Contract, an amount sufficient in its judgment to protect and indemnify it and the Construction Manager and the Program Manager from any and all claims, expense, loss, damages, or injury; and the County, in its discretion, may require the Contractor to furnish a surety bond satisfactory to the County providing for such protection and indemnity, which bond shall be furnished by the Contractor within five (5) days after written demand has been made therefore. The expense of said Bond shall be borne by the Contractor.

00700-16 SUPERVISION OF WORK AND COORDINATION WITH OTHERS

The Contractor shall supervise and direct the work using the Contractor's best skill and attention. The Contractor shall be solely responsible for all construction methods and procedures and shall coordinate all portions of the work pursuant to the contract subject to the overall coordination of the Construction Manager. All work pursuant to this agreement shall be performed in a skillful and workmanlike manner.

The County reserves the right to perform work related to the Project with the County's own forces and to award separate contracts in connection with other portions of the project, other work on the site under these or similar conditions of the contract, or work which has been extracted from the Contractor's work by the County.

When separate contracts are awarded for different portions of the project or other work on the site, the term "separate contractor" in the Contract Documents in each case shall mean the contractor who executes each separate County Agreement.

The Contractor shall cooperate with the County and separate contractors in arranging the introduction and storage of materials and equipment and execution of their work, and shall cooperate in coordinating connection of its work with theirs as required by the Contract Documents.

If any part of the Contractor's Work depends for proper execution or results upon the work of the County or any separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results **within seven (7) days** of discovery of such discrepancy or defect. Failure of the Contractor to so report in writing shall constitute an acceptance of the County's or separate contractor's work as fit and proper to receive the Work, except as to any defects which may subsequently become apparent in such work by others.

Any costs caused by defective or untimely work shall be borne by the party responsible therefore.

Should the Contractor wrongfully cause damage to the work or property of the County or to other work or property on the site, including the work of separate contractors, the Contractor shall promptly remedy such damage at the Contractor's expense.

Should the Contractor be caused damage by any other contractor on the Project, by reason of such other contractor's failure to perform properly his contract with the County, no action shall lie against the County or the Construction Manager inasmuch as the parties to this agreement are the only beneficiaries hereof and there are no third party beneficiaries and neither the County nor the Construction Manager shall have liabilities therefore, but the Contractor may assert his claim for damages solely against such other contractor. The Contractor shall not be excused from performance of the contract by reason of any dispute as to damages with any other contractor or third party.

Where the Work of this Contract shall be performed concurrently in the same areas as other construction work, the Contractor shall coordinate with the Construction Manager and the separate contractors in establishing mutually acceptable schedules and procedures that shall permit all jobs to proceed with minimum interference.

If a dispute arises between the Contractor and separate contractors as to their responsibility for cleaning up, the County may clean up and charge the cost thereof to the Contractor or contractors responsible therefore as the County shall determine to be just.

#### 00700-17 ADMINISTRATION OF CONTRACT

The Program Manager and the Construction Manager shall provide administration services as hereinafter described.

For the administration of this Contract, the Construction Manager shall serve as the County's primary representative during design and construction and until final payment to the Contractor is due. The Construction Manager shall advise and consult with the County and the Program Manager. The primary point of contact for the Contractor shall be the Construction Manager. All correspondence from the Contractor to the County shall be forwarded through the Construction Manager. Likewise, all correspondence and instructions to the Contractor shall be forwarded through the Construction Manager.

The Construction Manager will determine in general that the construction is being performed in accordance with design and engineering requirements, and will endeavor to guard the County against defects and deficiencies in the Work.

The Construction Manager will not be responsible for or have control or charge of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, nor will it be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Construction Manager will not be responsible for or have control or charge over the acts or omissions of the Contractor, its engineers, consultants, subcontractors, or any of their agents or employees, or any other persons performing the Work.

Based on the Construction Manager's observations regarding the Contractor's Applications for Payment, the Construction Manager shall determine the amounts owing to the Contractor, in accordance with the payment terms of the Contract, and shall issue Certificates for Payment in such amount to the County.

The Construction Manager shall render interpretations necessary for the proper execution or progress of the Work. Either party to the Contract may make written requests to the Construction Manager for such interpretations.

Claims, disputes and other matters in question between the Contractor and the County relating to the progress of the Work or the interpretation of the Contract Documents shall be referred to the Construction Manager for interpretation.

All interpretations of the Construction Manager shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in writing or in graphic form.

Except as otherwise provided in this Contract, the Construction Manager shall issue a decision on any disagreement concerning a question of fact arising under this Contract. The Construction Manager shall reduce the decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Construction Manager shall be final and conclusive unless, within thirty (30) days from the date of receipt of such copy, the Contractor files a written appeal with the Director of Facilities and Transportation Services Department and mails or otherwise furnishes the Construction Manager a copy of such appeal. The decision of the Director Facilities and Transportation Services Department or the Director's duly authorized representative for the determination of such appeals shall be final and conclusive. Such final decision shall not be pleaded in any suit involving a question of fact arising under this Contract, provided such is not fraudulent, capricious, arbitrary, so grossly erroneous as necessarily implying bad faith, or is not supported by substantial evidence. In connection with any appeal proceeding under this Article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of Contractor's appeal. Pending any final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract as directed by the Construction Manager.

The Construction Manager shall have authority to reject Work which does not conform to the Contract Documents. Whenever, in the Construction Manager's opinion, it is considered necessary or advisable for the implementation of the intent of the Contract Documents, the County shall have authority to require special inspection or testing of the Work whether or not such Work be then fabricated, installed or completed. The Contractor shall pay for such special inspection or testing if the Work so inspected or tested is found not to comply with the requirements of the contract; the County shall pay for special inspection and testing if the Work is found to comply with the contract. Neither the Construction Manager's authority to act under this Subparagraph, nor any decision made by the Construction Manager in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Construction Manager to the Contractor, any subcontractor, any of their agents or employees, or any other person performing any of the Work.

The Contractor shall provide such shop drawings, product data, and samples as may be required by the Construction Manager and/or as required by these Contract Documents.

The Construction Manager shall conduct inspections to determine Substantial Completion and Final Completion, and shall receive and forward to the County for review written warranties and related documents required by the Contract Documents and assembled by the Contractor. The Construction Manager shall approve and issue Certificates for Payment upon compliance with Substantial and Final Completion requirements indicated in General Conditions 00700-81, 00700-82, 00700-84 and 00700-85 of this Agreement.

Except as provided in General Condition 00700-48, the Contractor shall not be relieved from the Contractor's obligations to perform the work in accordance with the contract documents by the activities or duties of the County or any of its officers, employees, or agents, including inspections, tests or approvals, required or performed pursuant to this agreement.

#### 00700-18 RESPONSIBILITY FOR ACTS OF EMPLOYEES

The Contractor shall employ only competent and skilled personnel. The Contractor shall, upon demand from the Construction Manager, immediately remove any superintendent, foreman or workman whom the Construction Manager may consider incompetent or undesirable.

The Contractor shall be responsible to the County for the acts and omissions of the Contractor's employees, subcontractors, and agents as well as any other persons performing work pursuant to this agreement for the Contractor.

#### 00700-19 LABOR, MATERIALS, SUPPLIES, AND EQUIPMENT

Unless otherwise provided in this agreement, the Contractor shall make all arrangements with necessary support agencies and utility companies provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the execution and completion of the work.

#### 00700-20 DISCIPLINE ON WORK SITE

The Contractor shall enforce strict discipline and good order among its employees and subcontractors at all times during the performance of the work, to include compliance with the Fulton County Drug Free Work Place Policy. The Contractor shall not employ any subcontractor who is not skilled in the task assigned to it. The Construction Manager may, by written notice, require the Contractor to remove from the work any subcontractor or employee deemed by the Construction Manager to be incompetent.

#### 00700-21 HOURS OF OPERATION

All work at the construction site shall be performed during regular business hours of the Fulton County government, except upon the Construction Manager's prior written consent to other work hours. It is further understood that the Contractor's construction schedule is based on a normal 40 hours, five day work week, less Fulton County-recognized holidays. Contractors work schedule shall not violate Fulton County Noise Ordinance by working hours inconsistent with the Fulton County Noise Ordinance. The County's current noise ordinance or other applicable ordinance shall govern. If the Contractor desires to work in excess of this limit, the Contractor shall submit a written request to the Construction Manager, a minimum of five days prior to the desired work date. The Contractor shall be responsible for any additional expenses incurred by the Owner as a result of the extended work hours, including resident inspection overtime. The cost associated with resident inspector overtime shall be deducted from the Contractor monthly payment request.

#### 00700-22 FAMILIARITY WITH WORK CONDITIONS

The Contractor shall take all steps necessary to ascertain the nature and location of the work and the general and local conditions which may affect the work or the cost thereof. The Contractor's failure to fully acquaint itself with the conditions which may affect the work, including, but not limited to conditions relating to transportation, handling, storage of materials, availability of utilities, labor, water, roads, weather, topographic and subsurface conditions, other separate contracts to be entered into by the County relating to the project which may affect the work of the

Contractor, applicable provisions of law, and the character and availability of equipment and facilities necessary prior to and during the performance of the work shall not relieve the Contractor of its responsibilities pursuant to this agreement and shall not constitute a basis for an equitable adjustment of the contract terms. The County reserves the right to perform with its own forces or to contract with other entities for other portions of the project work, in which case the Contractor's responsibility to assure its familiarity with work conditions hereunder shall include all coordination with such other contractors and the County necessary to insure that there is no interference between contractors as will delay or hinder any contractor in its prosecution of work on the project. The County assumes no responsibility for any understandings or representations concerning conditions of the work made by any of its officers, agents, or employees prior to the execution of this agreement.

00700-23 RIGHT OF ENTRY

The County reserves the right to enter the site of the work by such agent, including the Construction Manager, as it may elect for the purpose of inspecting the work or installing such collateral work as the County may desire. The Contractor shall provide safe facilities for such access so that the County and its agents may perform their functions.

00700-24 NOTICES

Any notice, order, instruction, claim or other written communication required pursuant to this agreement shall be deemed to have been delivered or received as follows:

Upon personal delivery to the Contractor, its authorized representative, or the Construction Manager on behalf of the County. Personal delivery may be accomplished by in-person hand delivery or bona fide overnight express service.

Three days after depositing in the United States mail a certified letter addressed to the Contractor or the Construction Manager for the County. For purposes of mailed notices, the County's mailing address shall be 141 Pryor Street, 6th Floor, Atlanta, Georgia 30303, or as the County shall have otherwise notified the Contractor. The Contractor's mailing address shall be the address stated in its proposal or as it shall have most recently notified the Construction Manager in writing.

00700-25 SAFETY

A. SAFETY, HEALTH AND LOSS PREVENTION

The Contractor shall be responsible for implementing a comprehensive project-specific safety, health and loss prevention program and employee substance abuse program for this project. All Sub-Contractors must either implement their own program or follow the Contractor's safety, health and loss prevention program and employee substance abuse program.

The Contractor's safety, health and loss prevention program and employee substance abuse program must meet or exceed all governmental regulations (OSHA, EPA, DOT, State, local), and any other specific Fulton County requirements

B. COUNTY'S SAFETY, HEALTH, AND LOSS PREVENTION PROCESS GUIDELINES AND REQUIREMENTS

The County and its agents reserve the right, but assume no duty, to establish and enforce safety, health, and loss prevention guidelines and to make the appropriate changes in the guidelines, for the protection of persons and property and to review the efficiency of all protective measures taken by the Contractor. The Contractor shall comply with all safety, health, and loss prevention process guidelines and requirements and changes made by the County or its agent(s). The issuance of any such guidelines or changes by the County or its agent(s) shall not relieve the Contractor of its duties and responsibilities under this Agreement, and the County or its agent(s) shall not thereby

assume, nor be deemed to have assumed, any such duties or responsibilities of the Contractor.

C. COMPLIANCE OF WORK, EQUIPMENT, AND PROCEDURES WITH ALL APPLICABLE LAWS and REGULATIONS

All Work, whether performed by the Contractor or its Sub-Contractors of any tier, or anyone directly or indirectly employed by any of them, and all equipment, appliances, machinery, materials, tools and like items incorporated or used in the Work, shall be in compliance with and conform to:

1. All applicable laws, ordinances, rules, regulations and orders of any public, quasi-public or other governmental authority relating to the safety of persons and their protection against injury, specifically including, but in no event limited to, the Federal Occupational Safety and Health Act of 1970, as amended, and all rules and regulations now or hereafter in effect pursuant to said Act.
2. All rules, regulations, and requirements of the County or its agent(s) and its insurance carriers relating there to. In the event of a conflict or differing requirements the more stringent shall govern.

D. PROTECTION OF THE WORK

1. The Contractor shall, throughout the performance of the Work, maintain adequate and continuous protection of all Work and temporary facilities against loss or damage from whatever cause, shall protect the property of the County and third parties from loss or damage from whatever cause arising out of the performance of the Work, and shall comply with the requirements of the County or its agent(s) and its insurance carriers, and with all applicable laws, codes, rules and regulations, (as same may be amended) with respect to the prevention of loss or damage to property as a result of fire or other hazards.
2. The County or its agent(s) may, but shall not be required to, make periodic inspections of the Project work area. In such event, however, the Contractor shall not be relieved of its aforesaid responsibilities and the County or its agent(s) shall not assume, nor shall it be deemed to have assumed, any responsibility otherwise imposed upon the assurance of Contractor by this Agreement.

E. SAFETY EQUIPMENT

1. The Contractor shall provide to each worker on the Project work area the proper safety equipment for the duties being performed by that worker and will not permit any worker on the Project work area who fails or refuses to use the same. The County or its agent shall have the right, but not the obligation, to order the removal of a worker from the Project work site for his/her failure to comply with safe practices or substance abuse policies.

F. EMERGENCIES

1. In any emergency affecting the safety of persons or property, or in the event of a claimed violation of any federal or state safety or health law or regulation, arising out of or in any way connected with the Work or its performance, the Contractor shall act immediately to prevent threatened damage, injury or loss and to remedy said violation. Failing such action the County or its agent(s) may immediately take whatever steps it deems necessary including, but not limited to, suspending the Work as provided in this Agreement.
2. The County or its agent(s) may offset any and all costs or expenses of whatever nature, including attorneys' fees, paid or incurred by the County or its agent(s) (whether such fees are for in-house counsel or counsel retained by the County or its agent), in taking the steps authorized by Section 00700-25(G) (1) above

---

against any sums then or thereafter due to the Contractor. The Contractor shall defend, indemnify and hold the County, its officers, agents, and employees harmless against any and all costs or expenses caused by or arising from the exercise by the County of its authority to act in an emergency as set out herein. If the Contractor shall be entitled to any additional compensation or extension of time change order on account of emergency work not due to the fault or neglect of the Contractor or its Sub-Contractors, such additional compensation or extension of time shall be determined in accordance with General Condition 00700-52 and General Condition 00700-87 of this Agreement.

G. SUSPENSION OF THE WORK

1. Should, in the judgment of the County or its agent(s), the Contractor or any Sub-Contractor fail to provide a safe and healthy work place, the County or its agent shall have the right, but not the obligation, to suspend work in the unsafe areas until deficiencies are corrected. All costs of any nature (including, without limitation, overtime pay, liquidated damages or other costs arising out of delays) resulting from the suspension, by whomsoever incurred, shall be borne by the Contractor.
2. Should the Contractor or any Sub-Contractor fail to provide a safe and healthy work place after being formally notified in writing by the County or its agents of such non-compliance, the contract may be terminated following the termination provision of the contract.

H. CONTRACTOR'S INDEMNITY OF THE COUNTY FOR CONTRACTOR'S NON-COMPLIANCE WITH SAFETY PROGRAM

1. The Contractor recognizes that it has sole responsibility to assure its Safety Program is implemented and to assure its construction services are safely provided. The Contractor shall indemnify, defend and hold the County and its agents harmless, from and against any and all liability (whether public or private), penalties (contractual or otherwise), losses, damages, costs, attorneys' fees, expenses, causes of action, claims or judgments resulting, either in whole or in part, from any failure of the Contractor, its Sub-Contractors of any tier or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, to comply with the safety requirements of the contract. The Contractor shall not be relieved of its responsibilities under the safety requirements of the Contract should the County or its agent(s) act or fail to act pursuant to its rights hereunder.
2. The Contractor shall not raise as a defense to its obligation to indemnify under this Subparagraph I any failure of those indemnified hereunder to assure Contractor operates safely, it being understood and agreed that no such failure shall relieve the Contractor from its obligation to assure safe operations or from its obligation to so indemnify. The Contractor also hereby waives any rights it may have to seek contribution, either directly or indirectly, from those indemnified hereunder.
3. In any and all claims against those indemnified hereunder by any employee of the Contractor, any Sub-Contractor of any tier or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Subparagraph I shall not be limited in any way as to the amount or type of damages, compensation or benefits payable by or for the Contractor or any Sub-Contractor of any tier under any workers' compensation act, disability benefit or other employee benefit acts.

00700-26 BLASTING AND EXCAVATION

The Contractor acknowledges that it is fully aware of the contents and requirements of O.C.G.A. § 25-9-1 through 25-9-12 concerning blasting and excavation near underground gas pipes and facilities and shall fully comply therewith.

00700-27 HIGH VOLTAGE LINES

The Contractor acknowledges that it is fully aware of the contents and requirements O.C.G.A. § 46-3-30 through 46-3-39 concerning safeguards against contact with high voltage lines, and the Contractor shall fully comply with said provisions.

00700-28 SCAFFOLDING AND STAGING

The Contractor acknowledges that it is the person responsible for employing and directing others to perform labor within the meaning of O.C.G.A. § 34-1-1 and agrees to comply with said provisions.

00700-29 CLEAN-UP

The Contractor shall clean up all refuse, rubbish, scrap materials, and debris caused by its operations to the end that the site of the work shall present a neat, orderly and workmanlike appearance at all times.

00700-30 PROTECTION OF WORK

The Contractor shall be responsible for maintenance and protection of the work, which shall include any County-furnished supplies, material, equipment, until final completion of this agreement and acceptance of the work as defined herein. Any portion of the work suffering injury, damage or loss shall be considered defective and shall be corrected or replaced by the Contractor without additional cost to the County.

00700-31 REJECTED WORK

The Contractor shall promptly remove from the project all work rejected by the Construction Manager for failure to comply with the contract documents and the Contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the County. The Contractor shall also bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

00700-32 DEFECTIVE WORK

If the Contractor defaults or neglects to carry out any portion of the work in accordance with the contract documents, and fails within three days after receipt of written notice from the Construction Manager to commence and continue correction of such default or neglect with diligence and promptness, the County may, after three days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the County may have, make good such deficiencies and complete all or any portion of any work through such means as the County may select, including the use of a separate Contractor. In such case, an appropriate change order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies. In the event the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the County on demand.

The County may, at its option, accept defective or nonconforming work instead of requiring its removal or correction. In such case, a change order shall be issued reducing the price due the contractor to the extent appropriate and equitable. Such contract price adjustment shall be effected whether or not final payment has been made.

00700-33 WARRANTY OF NEW MATERIALS

The Contractor warrants to the County that all materials and equipment furnished under this contract will be new unless otherwise specified, and the Contractor further warrants that all work

will be of good quality, free from faults and defects, and in conformance with the contract documents. The warranty set forth in this paragraph shall survive final acceptance of the work.

00700-34 CONTRACTOR'S WARRANTY OF THE WORK

If within one year after the date of issuance of the certificate of final payment pursuant to General Condition 84, or within such longer period of time as may be prescribed by law or by the term of any applicable special warranty required by the contract documents, any of the work is found to be defective or not in accordance with the contract documents, the Contractor shall correct such work promptly after receipt of written notice from the Construction Manager to do so. This obligation shall survive both final payment for the work and termination of the contract.

00700-35 ASSIGNMENT OF MANUFACTURERS' WARRANTIES

Without limiting the responsibility or liability of the Contractor pursuant to this agreement, all warranties given by manufacturers on materials or equipment incorporated in the work are hereby assigned by the Contractor to the County. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the County. All such warranties shall be directly enforceable by the County.

00700-36 WARRANTIES IMPLIED BY LAW

The warranties contained in this agreement, as well as those warranties implied by law, shall be deemed cumulative and shall not be deemed alternative or exclusive. No one or more of the warranties contained herein shall be deemed to alter or limit any other.

00700-37 STOP WORK ORDERS

In the event that the Contractor fails to correct defective work as required by the contract documents or fails to carry out the work in accordance with contract documents, the Construction Manager, in writing, may order the Contractor to stop work until the cause for such order has been eliminated. This right of the County to stop work shall not give rise to any duty on the part of the County or the Construction Manager to execute this right for the benefit of the Contractor or for any other person or entity.

00700-38 TERMINATION FOR CAUSE

If the Contractor is adjudged bankrupt, makes a general assignment for the benefit of creditors, suffers the appointment of a receiver on account of its insolvency, fails to supply sufficient properly skilled workers or materials, fails to make prompt payment to subcontractors or materialmen, disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, fails to diligently prosecute the work, or is otherwise guilty of a material violation of this agreement and fails within seven days after receipt of written notice to commence and continue correction of such default, neglect, or violation with diligence and promptness, the County may, after seven days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the County may have, terminate the employment of the Contractor and take possession of the site as well as all materials, equipment, tools, construction equipment and machinery thereon. The County may finish the work by whatever methods the County deems expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is completed. If the unpaid balance of the contract price exceeds the cost of completing the work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the County on demand. This obligation for payment shall survive the termination of the contract. Termination of this agreement pursuant to this paragraph may result in disqualification of the Contractor from bidding on future County contracts.

00700-39 TERMINATION FOR CONVENIENCE

The County may, at any time upon written notice to the Contractor, terminate the whole or any portion of the work for the convenience of the County. The effective date of the terminations shall be provided in the written notice. Said termination shall be without prejudice to any right or

remedy of the County provided herein. In addition, in the event this agreement has been terminated due to the default of the Contractor, and if it is later determined that the Contractor was not in default pursuant to the provisions of this agreement at the time of termination, then such termination shall be considered a termination for convenience pursuant to this paragraph.

00700-40 TERMINATION FOR CONVENIENCE - PAYMENT

If the Contract is terminated for convenience by the Owner as provided in this article, Contractor will be paid compensation for those services actually performed as approved by the Owner or his representative. Partially completed tasks will be compensated for based on a signed statement of completion prepared by the Project Manager and submitted to the Contractor which shall itemize each task element and briefly state what work has been completed and what work remains to be done. Contractor shall also be paid for reasonable costs for the orderly filing and closing of the project.

00700-41 TERMINATION FOR CONVENIENCE - PAYMENT LIMITATIONS

Except for normal spoilage, and except to the extent that the County shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor the fair value, as determined by the Construction Manager, of property which is destroyed, lost, stolen or damaged so as to become undeliverable to the County or to another buyer.

00700-42 COST TO CURE

If the County terminates for cause the whole or any part of the work pursuant to this agreement, then the County may procure upon such terms and in such manner as the Construction Manager may deem appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the County for any excess costs for such similar supplies or services. The Contractor shall continue the performance of this agreement to the extent not terminated hereunder.

00700-43 ATTORNEY'S FEES

Should the Contractor default pursuant to any of the provisions of this agreement, the Contractor and its surety shall pay to the County such reasonable attorney's fees as the County may expend as a result thereof and all costs, expenses, and filing fees incidental thereto.

00700-44 CONTRACTOR'S RESPONSIBILITIES UPON TERMINATION

After receipt of a notice of termination from the County, and except as otherwise directed by the Construction Manager, the Contractor shall:

1. Stop work under the contract on the date and to the extent specified in the notice of termination;
2. Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the work under the agreement as is not terminated;
3. Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the notice of termination;
4. Assign to the County in the manner, at the times, and to the extent directed by the Construction Manager, all of the rights, title and interest of the Contractor under the orders and subcontracts so terminated, in which case the County shall have the right, at its discretion, to settle or pay any and all claims arising out of the termination of such orders or subcontracts;
5. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts with the approval or ratification of the Construction Manager, to the extent the Construction Manager may require, which approval or ratification shall be final for all purposes;

6. Transfer title and deliver to the entity or entities designated by the Construction Manager, in the manner, at the times, and to the extent, if any, directed by the Construction Manager, and to the extent specifically produced or specifically acquired by the Contractor for the performance of such portion of the work as has been terminated:
  - a. The fabricated or un-fabricated parts, work, and progress, partially completed supplies, and equipment, materials, parts, tools, dyes, jigs, and other fixtures, completed work, supplies, and other material produced as a part of or acquired in connection with the performance of the work terminated by the notice of termination; and
  - b. The completed or partially completed plans, drawings, information, and other property to the work.
7. Use its best efforts to sell in the manner, at the times, to the extent, and at the prices directed or authorized by the Construction Manager, any property described in Section 6 of this paragraph, provided, however, that the Contractor shall not be required to extend credit to any buyer and further provided that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the County to the Contractor pursuant to this agreement.
8. Complete performance of such part of the work as shall not have been terminated by the notice of termination; and
9. Take such action as may be necessary, or as the Construction Manager may direct, for the protection and preservation of the property related to the agreement which is in the possession of the Contractor and in which the County has or may acquire an interest.

00700-45 RECORDS

The Contractor shall preserve and make available to the County all of its records, books, documents and other evidence bearing on the costs and expenses of the Contractor and any subcontractor pursuant to this agreement upon three days advance notice to the Contractor.

00700-46 DEDUCTIONS

In arriving at any amount due the Contractor pursuant to the terms of this agreement, there shall be deducted, advance payments made to the Contractor applicable to the termination portion of the contract, the amount of any claim which the County may have against the Contractor, the amount determined by the Construction Manager to be necessary to protect the County against loss due to outstanding potential liens or claims, and the agreed price of any materials acquired or sold by the Contractor and not otherwise recovered by or credited to the County.

00700-47 REIMBURSEMENT OF THE COUNTY

In the event of termination, the Contractor shall refund to the County any amount paid by the County to the Contractor in excess of the costs properly reimbursable to the Contractor.

00700-48 SUSPENSION, INTERRUPTION, DELAY, DAMAGES

The Contractor shall be entitled to only those damages and that relief from termination by the County as specifically set forth in this agreement. The Construction Manager may issue a written order requiring the Contractor to suspend, delay or interrupt all or any part of the work for such period of time as the County may determine to be appropriate for the convenience of the County. If the performance of the work is interrupted for an unreasonable period of time by an act of the County or any of its officers, agents, employees, contractors, or consultants in the administration of this agreement, an equitable adjustment shall be made for any increase in the Contractor's costs of performance and any increase in the time required for performance of the work necessarily caused by the unreasonable suspension, delay, or interruption. Any equitable

adjustment shall be reduced to writing and shall constitute a modification to this agreement. In no event, however, shall an equitable adjustment be made to the extent that performance of this agreement would have been suspended, delayed or interrupted by any other cause, including the fault or negligence of the Contractor. No claim for an equitable adjustment pursuant to this paragraph shall be permitted before the Contractor shall have notified the Construction Manager in writing of the act or failure to act involved, and no claim shall be allowed unless asserted in writing to the Construction Manager within ten days after the termination of such suspension, delay or interruption.

00700-49 COMMENCEMENT AND DURATION OF WORK

The County may issue a Notice to Proceed at any time within 120 days following execution of the contract by the County. The Contractor shall commence work pursuant to this agreement within ten days of mailing or delivery of written notice to proceed. The Contractor shall diligently prosecute the work to completion within the time specified therefore in the Agreement. The capacity of the Contractor's construction and manufacturing equipment and plan, sequence and method of operation and forces employed, including management and supervisory personnel, shall be such as to insure completion of the work within the time specified in the Agreement. The Contractor and County hereby agree that the contract time for completion of the work is reasonable taking into consideration the average climatic conditions prevailing in the locality of the work and anticipated work schedules of other contractors whose activities are in conjunction with or may affect the work under this contract.

00700-50 TIME OF THE ESSENCE

All time limits stated in this agreement are of the essence of this contract.

00700-51 IMPACT DAMAGES

Except as specifically provided pursuant to a stop work order or change order, the Contractor shall not be entitled to payment or compensation of any kind from the County for direct or indirect or impact damages including, but not limited to, costs of acceleration arising because of delay, disruption, interference or hindrance from any cause whatsoever whether such delay, disruption, interference or hindrance is reasonable or unreasonable, foreseeable or unforeseeable, or avoidable, provided, however, that this provision shall not preclude the recovery of damages by the Contractor for hindrances or delays due solely to fraud or bad faith on the part of the County, its agents, or employees. The Contractor shall be entitled only to extensions in the time required for performance of the work as specifically provided in the contract.

00700-52 DELAY

The Contractor may be entitled to an extension of the contract time, but not an increase in the contract price or damages, for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Contractor or its subcontractors for labor strikes, acts of God, acts of the public enemy, acts of the state, federal or local government in its sovereign capacity, by acts of another separate contractor, or by an act or neglect of the County.

00700-53 INCLEMENT WEATHER

The Contractor shall not be entitled to an extension of the contract time due to normal inclement weather. Unless the Contractor can substantiate to the satisfaction of the Construction Manager that there was greater than normal inclement weather and that such greater than normal inclement weather actually delayed the work, the Contractor shall not be entitled to an extension of time therefore. The following shall be considered the normal inclement weather days for each month listed, and extensions of time shall be granted in increments of not less than one half day only for inclement weather in excess of the days set out.

January	10 days
February	10 days
March	7 days

---

April	6 days
May	4 days
June	3 days
July	4 days
August	2 days
September	2 days
October	3 days
November	6 days
December	9 days

00700-54 DELAY - NOTICE AND CLAIM

The Contractor shall not receive an extension of time unless a Notice of Delay is filed with the Construction Manager within ten days of the first instance of such delay, disruption, interference or hindrance and a written Statement of the Claim is filed with the Construction Manager within 20 days of the first such instance. In the event that the Contractor fails to comply with this provision, it waives any claim which it may have for an extension of time pursuant to this agreement.

00700-55 STATEMENT OF CLAIM - CONTENTS

The Statement of Claim referenced in Article 00700-54 shall include specific information concerning the nature of the delay, the date of commencement of the delay, the construction activities affected by the delay, the person or organization responsible for the delay, the anticipated extent of the delay, and any recommended action to avoid or minimize the delay.

00700-56 WORK BEHIND SCHEDULE, REMEDY BY CONTRACTOR

If the work actually in place falls behind the currently updated and approved schedule, and it becomes apparent from the current schedule that work will not be completed within the contract time, the Contractor agrees that it will, as necessary, or as directed by the Construction Manager, take action at no additional cost to the County to improve the progress of the work, including increasing manpower, increasing the number of working hours per shift or shifts per working day, increasing the amount of equipment at the site, and any other measure reasonably required to complete the work in a timely fashion.

00700-57 DILIGENCE

The Contractor's failure to substantially comply with the requirements of the preceding paragraph may be grounds for determination by the County that the Contractor is failing to prosecute the work with such diligence as will insure its completion within the time specified. In such event, the County shall have the right to furnish, from its own forces or by contract, such additional labor and materials as may be required to comply with the schedule after 48 hours written notice to the Contractor, and the Contractor shall be liable for such costs incurred by the County.

00700-58 SET-OFFS

Any monies due to the Contractor pursuant to the preceding paragraph of this agreement may be deducted by the County against monies due from the County to the Contractor.

00700-59 REMEDIES CUMULATIVE

The remedies of the County under Articles 00700-56, 00700-57, and 00700-58 are in addition to and without prejudice to all of the rights and remedies of the County at law, in equity, or contained in this agreement.

00700-60 TITLE TO MATERIALS

No materials or supplies shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sales contract or other agreement by which any

interest is retained by the seller. The Contractor hereby warrants that it has good and marketable title to all materials and supplies used by it in the work, and the Contractor further warrants that all materials and supplies shall be free from all liens, claims, or encumbrances at the time of incorporation in the work.

00700-61 INSPECTION OF MATERIALS

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards and in accordance with the requirements of the contract documents. Additional tests performed after the rejection of materials or equipment shall be at the Contractor's expense.

00700-62 CONSTRUCTION MANAGER'S PRESENCE DURING TESTING

All tests performed by the Contractor shall be witnessed by the Construction Manager unless the requirement therefore is waived in writing. The Construction Manager may perform additional tests on materials previously tested by the Contractor, and the Contractor shall furnish samples for this purpose as requested.

00700-63 MATERIALS INCORPORATED IN WORK

The Contractor shall furnish all materials and equipment to be incorporated in the work. All such materials or equipment shall be new and of the highest quality available. Manufactured materials and equipment shall be obtained from sources which are currently manufacturing such materials, except as otherwise specifically approved by the Construction Manager.

00700-64 STORAGE OF MATERIALS

Materials and equipment to be incorporated in the work shall be stored in such a manner as to preserve their quality and fitness for the work and to facilitate inspection.

00700-65 PAYROLL REPORTS

The Contractor may be required to furnish payroll reports to the Construction Manager as required by the Owner Controlled Insurance Program.

00700-66 CONTRACTORS' REPRESENTATIVE

Before beginning work, the Contractor shall notify the Construction Manager in writing of one person within its organization who shall have complete authority to supervise the work, receive orders from the Construction Manager, and represent the Contractor in all matters arising pursuant to this agreement. The Contractor shall not remove its representative without first designating in writing a new representative. The Contractor's representative shall normally be present at or about the site of work while the work is in progress. When neither the Contractor nor its representative is present at the work site, the superintendent, foreman, or other of the Contractor' employee in charge of the work shall be an authorized representative of the Contractor.

00700-67 SPECIALTY SUB-CONTRACTORS

The Contractor may utilize the services of specialty subcontractors on those parts of the project which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall not award more than seventy-five percent of the work to subcontractors.

00700-68 INSPECTION BY THE CONSTRUCTION MANAGER

All work pursuant to this agreement shall be subject to inspection by the Construction Manager for conformity with contract drawings and specifications. The Contractor shall give the Construction Manager reasonable advance notice of operations requiring special inspection of a portion of the work.

00700-69 WORK COVERED PRIOR TO CONSTRUCTION MANAGER'S INSPECTION

In the event that work is covered or completed without the approval of the Construction Manager, and such approval is required by the specifications or required in advance by the Construction Manager, the Contractor shall bear all costs involved in inspection notwithstanding conformance of such portion of the work to the contract drawings and specifications.

00700-70 SCHEDULING OF THE WORK

The work of this contract shall be planned, scheduled, executed, and reported as required by the Contract Documents.00700-71 PROGRESS ESTIMATES

The Contractor shall prepare a written report for the Construction Manager's approval, on County forms, of the total value of work performed and materials and equipment obtained to the date of submission. Such a report must accompany each request for a progress payment and is subject to review and approval by the Construction Manager. Approval of a progress estimate or tendering of a progress payment shall not be considered an approval or acceptance of any work performed, and all estimates and payments shall be subject to correction in subsequent estimates. Progress payments shall be made for all completed activities and for materials suitably stored on-site.

00700-72 PROGRESS PAYMENTS

Upon approval of each monthly estimate of work performed and materials furnished, the Construction Manager shall approve payment to the Contractor for the estimated value of such work, materials, and equipment, less the amount of all prior payments and any liquidated damages. The Contractor will be paid 100 percent, less retainage, of the cost of materials received and properly stored on-site but not incorporated into the work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale to establish the County's title to such materials or equipment. The Contractor's request for payment shall provide sufficient detail as to the work completed or materials purchased for which payment is requested to permit meaningful review by the Construction Manager.

00700-73 TIME OF PAYMENT

The Contractor will be paid within 45 days following receipt of an approved Progress Estimate. The Contractor expressly agrees that the payment provisions within this Contract shall supersede the rates of interest, payment periods, and contract and subcontract terms provided for under the Georgia Prompt Pay Act, O.C.G.A. §13-11-1 et seq., and that the rates of interest, payment periods, and contract and subcontract terms provided for under the Prompt Pay Act shall have no application to this Contract. The County shall not be liable for any late payment interest or penalty.

00700-74 RETAINAGE

The County shall retain from each progress payment ten percent of the estimated value of the work performed until the progress payments, including retainage, total 50 percent of the contract price. If a contract includes two or more projects or assignments that have been separately priced and have separate budgets, and the performances of such projects or assignments are not related to or dependent upon the performance of any other, the 50 per cent limit shall be based upon the price for each individual project or assignment. Thereafter, no further retainage shall be withheld so long as the Contractor is making satisfactory progress to insure completion of the work within the time specified therefore. The County may reinstate the ten percent retainage in the event the Construction Manager determines that the Contractor is not making satisfactory progress to complete the work within the time specified in this agreement or in the event that the Construction Manager provides a specific cause for such withholding. The County may also withhold retainage upon substantial completion of the work as provided in O.C.G.A. §13-10-81(c). Interest may be paid upon the retainage in accordance with Georgia law.

00700-75 PAYMENT OF SUBCONTRACTORS

The Contractor shall promptly pay each subcontractor upon the receipt of payment from the County. Such payment shall be made from the amount paid to the Contractor pursuant to the subcontractor's work. The Contractor shall also maintain the records of the percentage retained from payments to the Contractor pursuant to such subcontractor's work. The Contractor shall procure agreements from each subcontractor requiring each subcontractor to pay their subcontractors, agents and employees in a similar manner. The County reserves the right to inquire of any subcontractor, supplier, materialmen, or subconsultant, the status of any indebtedness of the Contractor. The County further reserves the right to require the Contractor to designate on each instrument of payment exceeding \$400.00 to subcontractors, suppliers, materialmen, and subconsultants that such payment is on account of the work under this Contract.

00700-76 COUNTY'S RESPONSIBILITIES TO SUBCONTRACTORS

Neither the County nor the Construction Manager shall have any obligation to pay any subcontractor except as otherwise required by law.

00700-77 PROGRESS PAYMENTS - ACCEPTANCE OF WORK

Certification of progress payments, as well as the actual payment thereof, shall not constitute the County's acceptance of work performed pursuant to this agreement.

00700-78 PAYMENTS IN TRUST

All sums paid to the Contractor pursuant to this agreement are hereby declared to constitute trust funds in the hands of the contractor to be applied first to the payment of claims of subcontractors, laborers, and suppliers arising out of the work, to claims for utilities furnished and taxes imposed, and to the payment of premiums on surety and other bonds and on insurance for any other application.

00700-79 JOINT PAYMENTS

The County reserves the right to issue any progress payment or final payment by check jointly to the Contractor and any subcontractor or supplier.

00700-80 RIGHT TO WITHHOLD PAYMENT

The Construction Manager may decline to approve payment and may withhold payment in whole or in part to the extent reasonable and necessary to protect the County against loss due to defective work, probable or actual third party claims, the Contractor's failure to pay subcontractors or materialmen, reasonable evidence that the work will not be completed within the contract time or contract price or damage to the County or any other contractor on the project.

00700-81 CERTIFICATE OF SUBSTANTIAL COMPLETION

Upon the Contractor's submission of a request for a certificate of Substantial Completion, the Construction Manager shall inspect the work and determine whether the work is Substantially Complete. If the work is Substantially Complete, the Construction Manager shall issue a certificate of Substantial Completion of the work which shall establish the date of Substantial Completion, shall state the responsibilities of the County and the Contractor for security, maintenance, heat, utilities, damage to the work and insurance, and shall fix the time within which the Contractor shall complete the items submitted by the Contractor as requiring correction or further work. The certificate of substantial completion of the work shall be submitted to the County and the Contractor for their written acceptance of the responsibilities assigned to them pursuant to such certificate.

If in the sole opinion of the Construction Manager, the work is not substantially complete, the Construction Manager shall notify the Contractor of such, in writing, and outline requirements to be met to achieve Substantial Completion.

00700-82 PAYMENT UPON SUBSTANTIAL COMPLETION

Upon Substantial Completion of the work and upon application by the Contractor and approval by the Construction Manager, the County shall make payment reflecting 100% work completed, less value of work remaining as determined by Construction Manager and any authorized retainage.

00700-83 COMMENCEMENT OF WARRANTIES

Warranties required by this agreement shall commence on the date of final completion of the project as determined under Article 00700-84 unless otherwise provided in the certificate of Substantial Completion.

00700-84 FINAL PAYMENT - WAIVER OF CLAIMS, DISPUTE OF FINAL PAYMENT

The acceptance of the Substantial Completion payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of application for payment at Substantial Completion and except for the retainage sums due at final acceptance. Following the Construction Manager's issuance of the certificate of Substantial Completion and the Contractor's completion of the work pursuant to this agreement, the Contractor shall forward to the Construction Manager a written notice that the work is ready for final inspection and acceptance. If after inspection the Construction Manager certifies that the work is complete and issues written notification of such to the Contractor, the Contractor shall forward to the Construction Manager a final application for payment. The Construction Manager shall issue a certificate for payment, which shall approve final payment to the Contractor and shall establish the date of final completion.

In the event the Contractor timely disputes the amount of the final payment, the amount due the Contractor shall be deemed by the Contractor and the County to be an unliquidated sum and no interest shall accrue or be payable on the sum finally determined to be due to the Contractor for any period prior to final determination of such sum, whether such determination be by agreement of the Contractor and the County or by final judgment of the proper court in the event of litigation between the County and the Contractor. The Contractor specifically waives and renounces any and all rights it may have under O.C.G.A. §13-6-13 and agrees that in the event suit is brought by the Contractor against the County for any sum claimed by the Contractor under the Contract or for any extra or additional work, no interest shall be awarded on any sum found to be due from the County to the Contractor in the final judgment entered in such suit. All final judgments shall draw interest at the legal rate, as specified by law.

00700-85 DOCUMENTATION OF COMPLETION OF WORK

Neither the final payment nor the remaining retainage shall become due until the Contractor submits the following documents to the Construction Manager:

- a. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work have been paid other otherwise satisfied;
- b. The surety's consent to final payment; and
- c. Any other data reasonably required by the County or Construction Manager establishing payment or satisfaction of all such obligations, including releases, waivers of liens, and documents of satisfaction of debts.

In the event that a subcontractor refuses to furnish a release or waiver as required by the County or Construction Manager, the Contractor may furnish a bond satisfactory to the County to indemnify the County against such loss. In the event that any lien or indebtedness remains unsatisfied after all payments are made, the contractor shall refund to the County all moneys that the County may become compelled to pay in discharging such lien or other indebtedness, including all costs and reasonable attorney's fees.

00700-86 GOVERNING LAW

Each and every provision of this agreement shall be construed in accordance with and governed by Georgia law. The parties acknowledge that this contract is executed in Fulton County, Georgia and that the contract is to be performed in Fulton County, Georgia. Each party hereby consents to the Fulton Superior Court's sole jurisdiction over any dispute which arises as a result of the execution or performance of this agreement, and each party hereby waives any and all objections to venue in the Fulton Superior Court.

00700-87 CHANGES IN THE WORK

A. CHANGE ORDERS

1. A Change Order is a written order to the Contractor signed to show the approval and the authorization of the County, issued after execution of the Contract, authorizing a change in the Work and/or an adjustment in the Contract Sum or the Contract Time. Change Orders shall be written using forms designated by the County with Contractor providing supporting documentation as required by the Construction Manager. The Contract Sum and the Contract Time may be changed only by approved Change Order pursuant to Fulton County Procedure 800-6. The amount payable by the Change Order is payment in full for all direct and indirect costs incurred and related to the work under said Change Order, including but not limited to delays, imports, acceleration, disruption and extended overhead. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including the adjustment in either or both of the Contract Sum or the Contract Time.
2. The County, without invalidating the Contract, may order changes in the Work within the general scope of the Contract as defined herein. The time allowed for performance of the work and the contract price to be paid to the Contractor may be adjusted accordingly.
3. The cost or credit to the County resulting from a change in the Work shall be determined in one or more of the following ways:
  - a. By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
  - b. By unit prices stated in the Contract Documents or subsequently agreed upon;
  - c. By cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
  - d. By the method provided in Subparagraph A4 below.
4. If none of the methods set forth in Subparagraphs 3a, 3b, or 3c above is agreed upon, the Contractor, provided a written order signed by the Construction Manager is received, shall promptly proceed with the Work involved. The cost of such Work shall then be determined by the Construction Manager on basis of the reasonable expenditures and savings of those performing the Work attributable to the change. The cost of the change shall include only the items listed in Subparagraph 5a below, and in the case of either a decrease or an increase in the Contract Sum, an allowance for overhead and profit in accordance with the schedules set forth in Subparagraphs 5b and 6 below shall be applied to the cost or credit.
  - a. In such case, and also under Subparagraph 3a above, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting of all actual costs expended, together with appropriate supporting data for inclusion in a Change Order.

- 
- b. All hourly rate charges shall be submitted to the Construction Manager for prior review and approval. All hourly rate charges shall be properly supported as required by the Construction Manager with certified payrolls, or their acceptable equivalent. When authorized to proceed for a given change and actual expenditures have been made prior to execution of a Change Order for the entire change, such actual expenditures may be summarized monthly, and if approved, incorporated into a Change Order. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease, if any, with respect to that change.
5. In Subparagraphs 3 and 4 above, the items included in "Cost" and "Overhead" shall be based on the following schedule:
- a. Unless otherwise provided in the Contract Documents, "Cost" shall be limited to the following: cost of materials incorporated into the Work, including sales tax and cost of delivery; cost of direct labor (labor cost may include a pro rata share of foreman's account of the change) including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; rental value of equipment and machinery; costs for preparing Shop Drawings.
- b. Unless otherwise provided in the Contract Documents, "Overhead" shall include the following: bond and insurance premiums including increase and decreases from change in the Work, supervision, superintendence, construction parking, wages of timekeepers, watchmen and clerks, small tools, consumable supplies, expendables, incidentals, general office expense, the cost of additional reproduction for the Contractor's subcontractors beyond that agreed upon in the Contract Documents, construction parking, any additional costs of craft supervision by the Contractor's or subcontractors' superintendents, and overhead charges which would be customary and expended regardless of the change in the Work due to other overlapping activities which are included as part of the original Contract, and all other expenses not included in "Cost" above.
- c. In the event that a change is issued by the County which would require the expenditure of substantial amounts of special supervision (beyond the foreman level) by the Contractor, the Contractor may, at the sole direction of the Construction Manager, be allowed to incorporate these charges into the agreement cost for the change.
6. In Subparagraphs 3 and 4 above, the allowance for overhead and profit combined, included in the total cost or credit to the County, shall be based on the following schedule:
- a. For the Contractor, for any work performed by the Contractor's own forces, ten (10) percent of the cost.
- b. For the Contractor, for any work performed by a Contractor's subcontractor, five (5) percent of the amount due the subcontractor.
- c. For each subcontractor or sub-subcontractor involved, for any work performed by that subcontractor's or sub-subcontractor's own forces, ten (10) percent of the cost.
- d. For each subcontractor, for work performed by a sub-subcontractor, five (5) percent of the amount due to the sub-subcontractor.

- 
- e. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 5 above unless modified otherwise.
7. In order to facilitate checking of quotations for extras or credits, all proposals or bids, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs, including labor cost, materials and subcontracts. Labor and materials shall be itemized in the manner defined in Subparagraph 4 above. Where major cost items are subcontracts, they shall be itemized also. In no case shall a change be approved without such itemization.
8. No payment shall be made for any changes to the contract that are not included in a fully executed Change Order.
- B. CONCEALED, UNKNOWN AND DIFFERING CONDITIONS
1. Should concealed conditions be encountered in the performance of the Work below the surface of the ground, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground or concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum and Contract Time shall be equitably adjusted by Change Order upon request by either party made within twenty (20) days after the first observance of the conditions. No such request for equitable adjustment shall be valid unless the Contractor complies with this (20) days notice and Subparagraph C.1. below.
2. The Contractor shall promptly, and before such conditions are disturbed, notify the Construction Manager in writing of any claim of concealed, unknown or differing conditions pursuant to this paragraph. The Construction Manager shall authorize the Engineer to investigate the conditions, and if it is found that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the Work under this Contract, whether or not changed as a result of such conditions, an equitable adjustment shall be recommended to the Construction Manager.
3. No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above, prior to disturbing the condition.
4. No claim by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this Contract.
5. Any materially differing site condition as between what is shown on the Drawings and Specifications and actually found on site shall be immediately reported to the Construction Manager in writing prior to the commencement of Work at the site. Failure of the Contractor to notify the Construction Manager in writing of the differing site condition prior to performance of Work at the site shall constitute a waiver of any claim for additional monies. Any Change Order necessitated by the differing site condition shall be processed as provided under "Changes in the Contract".
- C. REQUESTS FOR ADDITIONAL COST
1. If the Contractor wishes to request an increase in the Contract Sum, the Contractor shall give the Construction Manager written notice thereof within twenty (20) days after the occurrence of the event, or identification of the conditions, giving rise to such request. This notice shall be give by the

Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Article 00700-25 and Subparagraph A.4 above. No such request shall be valid unless so made within the twenty (20) days specified above. If the County and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Construction Manager. Any change in the Contract Sum resulting from such claim shall be documented by Change Order.

2. If the Contractor claims that addition cost is involved because of, but not limited to (1) any written interpretation pursuant to General Condition 00700-17 of this Agreement, (2) any order by the County to stop the Work pursuant to Articles 00700-25 and 00700-37 of this Agreement where the Contractor was not at fault, or any such order by the Construction Manager as the County's agent, or (3) any written order for a minor change in the Work issued pursuant to Paragraph D below, the Contractor shall submit a request for an increase in the Contract Sum as provided in Subparagraph C.1 above. No such claim shall be valid unless the Contractor complies with Subparagraph C.1 above and approved by the County pursuant to Change Order Policy 800-6.

#### D. MINOR CHANGES IN THE WORK

The Construction Manager may order minor changes in the Work not involving an adjustment in the Contract Price, extension of the time allowed for performance of the work and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by a written Change Directive issued by the Construction Manager, and shall be binding on the County and the Contractor. The Contractor shall carry out such written orders promptly.

#### E. BONDS

If any change order results in an increase in the contract price, the contractor shall increase the penal sum of the performance and payment bonds to equal the increased price.

#### 00700-88 DISAGREEMENT WITH ORDERS FOR CHANGE

Contractor's written acceptance of a Change Order or other order for changes shall constitute his final and binding agreement to the provisions thereof and a waiver of all claims in connection therewith, whether direct or consequential in nature. Should Contractor disagree with any order for changes, he may submit a notice of potential claim to the Construction Manager, at such time as the order is set forth in the form of a Change Order. Disagreement with the provisions of an order for changes shall not relieve Contractor of his obligation under Article 00700-87 of this Agreement.

#### 00700-89 NO WAIVER OF REMEDIES

Exercise by the County of any remedy is not exclusive of any other remedy available to County and shall not constitute a waiver of any such other remedies. Failure of the County to exercise any remedy, including breach of contract remedies, shall not preclude the County from exercising such remedies in similar circumstances in the future.

#### 00700-90 LAND AND RIGHTS-OF-WAY

The owner will provide, as indicated in the Contract Documents and prior to Notice to Proceed, the lands upon which the work is to be done, right-of-way for access thereto, and such other lands which are designated for the use of the Contractor. The Contractor shall confine the Contractor's work and all associated activities to the easements and other areas designated for the Contractor's use. The Contractor shall comply with any limits on construction methods and practices which may be required by easement agreements. If, due to some unforeseen reason, the necessary easements are not obtained, the Contractor shall receive an equitable extension of contract time dependent upon the effect on the critical path of the project schedule or the County may terminate the Contract for its convenience.

00700-91 COORDINATION WITH STATE DEPARTMENT OF TRANSPORTATION

No clearing or grading shall be completed by Contractor within the State Department of Transportation (DOT) area under construction. The Contractor must coordinate his construction scheduling with DOT.

If the Contractor begins work before DOT's completion date, he must obtain the approval of DOT before starting work in the area. The state DOT has the right to stop the Contractor's work the DOT area.

The Contractor shall receive no additional compensation or damages resulting from delay or work stoppage from DOT actions or scheduling.

Contractor shall obtain DOT drawings of the DOT, project area for verification of road geometry, storm drains, etc. from Georgia Department of Transportation or Fulton County. The Contractor is responsible for obtaining any pertinent DOT revisions.

I N D E X

<u>SUBJECT</u>	<u>GENERAL CONDITION ARTICLE #</u>
Administration of Contract	17
Applicable Law	7
Assignment	13
Blasting and Excavation	26
Changes	87, 88
Clean Site	29
Codes	4
Commencement of Work	49
Contract Documents	2
Contractor's Representative	66
Defective Work	31, 32
Definitions	3
Delay	51, 52, 54, 55
Extension of Time	52, 53, 54
Familiarity of Time	1, 22
Final Payment	84
Governing Law	86
High Voltage Lines	27
Inclement Weather	53
Indemnification	15
Inspections	23, 61, 62, 68, 69
Interruption	48
Licenses	8
Liquidated Damages	46, 48
New Materials	33, 63
Notices	24
Payment	72, 73, 75
Payment of Subcontractors	75, 76
Payment Upon Substantial Completion	82, 84
Payroll Reports	65
Permits	8
Progress Payments	72, 73, 77, 78, 79, 80
Protection of Work	30, 64

	<b>Section 00700</b>
	<b>General Conditions</b>
Records Inspection	45
Retainage	11, 74
Safety	25
Scaffolding and Staging	28
Scheduling	70
Service of Process	14
Stop Work Order	37
Subcontractors	67, 76
Substantial Completion	81
Suspension	48
Supervision of Work	16, 66
Surety's Responsibility	17
Taxes	9, 10
Termination for Cause	38, 44, 47
Termination for Convenience	39, 40, 41
Time of the Essence	50
Warranties	33, 34, 35, 36
Work Behind Schedule	56

**EXHIBIT A**  
**FINAL AFFIDAVIT**

TO FULTON COUNTY, GEORGIA

I, \_\_\_\_\_, hereby certify that all suppliers of materials, equipment and service, subcontractors, mechanic, and laborers employed by \_\_\_\_\_ or any of his subcontractors in connection with the design and/or construction of \_\_\_\_\_ at Fulton County have been paid and satisfied in full as of \_\_\_\_\_, 200\_\_\_\_, and that there are no outstanding obligations or claims of any kind for the payment of which Fulton County on the above-named project might be liable, or subject to, in any lawful proceeding at law or in equity.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

Personally appeared before me this \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_\_\_.  
\_\_\_\_\_, who under Oath deposes and says that he is \_\_\_\_\_ of the firm of \_\_\_\_\_, that he has read the above statement and that to the best of his knowledge and belief same is an exact true statement.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
My Commission expires

**END OF SECTION**

## SPECIAL CONDITIONS

### SAFETY POLICY STATEMENT

It is the policy of Fulton County to establish a comprehensive accident and loss prevention process for all Capital Projects implemented by Fulton County or its agents.

The goals of this comprehensive accident and loss prevention process are as follows:

- To prevent personal injury, property damage, and injury to the public.
- To implement safety and loss prevention processes as critical elements in the complete design and build process.
- To establish a proactive safety and health process that complies with all laws, regulations, consensus standards, and good management practices.
- To have the Contractors partner with Fulton County in the implementation of a Safety and Loss Prevention Process Program to minimize loss potential and to minimize risk.

Fulton County requires safety, health and loss prevention requirements and expectations to be included in project design, in the invitation to bid, in bid award and project meetings, and in the post job evaluations. The Contractor is required to develop and submit a project safety and health program for acceptance by Fulton County prior to Notice to Proceed. The Contractor is required to implement these requirements, and develop a management system to ensure compliance following the safety and health process outlined in this document and the bid documents.

The Contractor and other entities placed under contract with Fulton County will be obligated to implement, adhere to and enforce this Policy. The safety and health of the Contractor's employees, Sub-Contractors, and the public are the sole responsibility of the Contractor, The County may use and direct designated Representatives to implement and enforce this policy. **Failure of the Contractor to comply with this policy or any Safety related obligations may be grounds for contract termination.**

Fulton County's designated Representative will periodically inspect all Fulton County construction projects to identify safety hazards and make recommendations to resolve the issues, Contractor will be responsible for abating the identified issues in a timely manner, and submitting written description of corrective action within 48 hours to Fulton County designated Representatives. Failure to bring timely resolution to the issues may result in work stoppage at Contractor's expense.

Prior to commencing work under this contract, Contractor's Project Manager and Project Superintendent shall attend a Pre-Construction Meeting and Safety Pre-Planning meeting to address safety issues/requirements.

## CONTRACTOR SAFETY AND HEALTH MANAGEMENT PROCESS

### 1.0 NOT USED

### 2.0 REFERENCES

- 1.1 Occupational Safety and Health Regulations (OSHA) 29CFR1910 and 29CFR1926
- 1.2 Environmental Protection Agency Regulations (EPA) 40CFR
- 1.3 Fulton County Safety and Health and Requirements
- 1.4 Georgia Department of Transportation Regulations and Requirements
- 1.5 US Department of Transportation Requirements
- 1.6 Manual of Uniform Traffic Control Devices for Streets and Highways (ANSI D6.1)
- 1.7 Georgia Department of Natural Resources Environmental Protection Division Regulations

Safety rules and regulations will be followed using federal, state or local regulations in force. Should a Contractor's rule be in use which is more effective, the most stringent rule or regulation will be enforced by the Contractor, Sub-Contractors and Fulton County designated Safety Representative(s).

### 3.0 RESPONSIBILITY

The Contractor receiving the bid has the ultimate responsibility for the safety and health of all Sub-Contractors, all employees on the project, and the general public and complying with all governmental regulations and requirements (OSHA, EPA, DOT, state, local).

Nothing contained herein shall relieve the Contractor or any Sub-Contractor of such responsibility or liability.

### 4.0 PROCEDURE

- 4.1 The Contractor and each Sub-Contractor must implement a written safety and health prevention process and program following the guidelines contained in this document and in any other relevant portion of the Contract Documents. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.
- 4.2 The Contractor and each Sub-Contractor must implement a drug and alcohol policy following the guidelines contained in this document and in the bid specific actions. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.
- 4.3 The Contractor must designate a person responsible for site safety. Each Sub-Contractor must designate a person responsible for site safety.
- 4.4 Not Used.
- 4.5 Contractor is responsible for providing all necessary safety supplies and personal protective equipment required to protect its employees, Sub-Contractors, and the general public.
- 4.6 Contractor shall make available certified First-aid services, First-aid supplies, and provisions for medical care for all employees at the construction site prior to beginning work on site.
- 4.7 Contractor shall maintain a competent person at the construction site at all times with an OSHA 10-hour certification, Said person shall have the knowledge to recognize hazards or potential hazards and has the authority to

correct such hazards.

- 4.8 The status of project safety shall be included in the Contractor's agenda, which is required in Progress Meetings.

## 5.0 DRUG AND ALCOHOL POLICY

The Contractor and each Sub-Contractor must implement a drug and alcohol policy in order to maintain a safe and efficient work environment. This policy must include the following elements.

1. Written policy that prohibits the use, transportation, sale and possession of these materials
2. Disciplinary action plan for violations
3. Any treatment or reinstatement reemployment options
4. Drug and alcohol testing schedule that includes pre-employment, periodic for safety sensitive or critical jobs, and for cause

Note: AGC, ABC and/or Fulton County programs may be used as guidance documents.

## 6.0 OTHER CONTROLLED ITEMS

The Contractor and each Sub-Contractor is required to include in the Project Safety Program a prohibition against the use, possession, concealment, transportation, promotion or sale of the following controlled items

1. Firearms, weapons, and ammunition.
2. Switchblades
3. Unauthorized explosives including fireworks
4. Stolen property or contraband
5. Controlled chemicals or chemicals recognized as being able to be used for improper purposes

## 7.0 EMERGENCY PROCEDURES/GUIDELINES

- 7.1 The Contractor is required to establish site specific emergency procedures in the Project Safety Program to manage emergencies that may occur at any time in the following categories:

1. Fire
2. Employee injury
3. Pedestrian injury due to work activity of any kind
4. Property damage and damage to various utilities (i.e., electrical, gas, sewerage,, water, telephone or public roadways)
5. Public demonstrations
6. Bomb threats
7. Flood, Wind, Lightening, Hail
8. Terrorists Threats
9. Work place violence

- 7.2 These Emergency Procedures will be made part of the Contractor's Project Safety Program submittal and shall include but not be limited to the following elements:

1. A list of emergency phone numbers posted at the job site, along with

- information to be transmitted in such emergencies.
2. An incident command structure defining duties and responsibilities
  3. A system to train supervisors and employees on this emergency plan
  4. Procedures on how to handle emergencies including access to the site by emergency responders, accounting for workers, and securing the area.
  5. Procedures for media releases. These releases must be coordinated through the Fulton County Information and Public Affairs Office in coordination with the County's designated Representative.
  6. A plan that addresses serious incidents that includes notification to Fulton County, Fulton County's designated Representative immediately after the incident.
  7. A review and updating frequency that includes forwarding a copy to Fulton County and the County's designated Representative.

#### 8.0 ACCIDENT AND INCIDENT INVESTIGATION AND REPORTING

- 8.1 The Contractor is responsible for reporting all accidents and incidents on the project site to the County's designated Representative within (1) business day. Accidents or incidents resulting in a fatality, property loss in excess of \$5,000, or involvement with the general public must be reported immediately to Fulton County's designated Representative and the investigation of the accident or incident coordinated with Fulton County Safety staff.
- 8.2 The Contractor will maintain a log of all injuries that occur on the job site. This log will be current and available for review.
- 8.3 For any incidents such as fires, explosions, fatalities, etc., the Contractor must notify Fulton County's designated Representative immediately and must coordinate any releases to the news media through the County's designated Representative and the County's Information and Public Affairs Office,
- 8.4 If a work-related injury should occur on this project, Contractor shall perform a thorough investigation of the incident and document the information.
- 8.5 A written accident investigation report containing the following information a minimum must be forwarded to the Fulton County's designated Representative within 24 hours of incident.
  1. Company Name
  2. Location
  3. Date and Time of incident
  4. Description of incident
  5. Names of all parties involved and all witnesses
  6. Corrective action(s) taken to prevent recurrence
  7. If the incident involves injury or illness, the following information must be provided:
    - a) A medical description of the injury or illness
    - b) OSHA recordability status i.e. first aid, medical treatment, lost time, days of restricted work.
    - c) If the public is involved, information about treatment and treatment location.
  8. Any pictures, site drawings, etc. if they assist in describing the incident.

If the investigation cannot be completed in 24 hours, a preliminary report marked as such shall be forwarded and the report completed and forwarded as soon as possible.

## 9.0 JOB SAFETY ANALYSIS

- 9.1 The Contractor and each Sub-Contractor must implement a procedure to conduct a written job safety analysis or job hazard analysis for all project work tasks prior to beginning each task. Reference Appendix A.
- 9.2 The job safety analysis should follow National Safety Council, AGC, or other recognized guidelines and address all safety and health hazards for the work, identify personal protective and other safety equipment required, identify potential hazards to the general public if applicable, and identify any safety equipment, training, or controls that must be implemented prior to starting the work.
- 9.3 The Contractor must maintain a file for all job safety analysis forms, which is Accessible for review.

## 10.0 SAFETY AND HEALTH COMPLIANCE AUDITING

### 10.1 Self Auditing Requirements

- 10.1.1 The Contractor and each Sub-Contractor must implement a procedure to assure that written safety and health audits or inspections are conducted at least biweekly (every 2 weeks). Safety checklists used by Fulton County's designated Representative may be used. The Contractor may use this checklist or an equivalent approved by Fulton County's designated Representative.
- 10.1.2 Each written safety audit must be filed on the site and a copy forwarded to Fulton County designated Representative.

### 10.2 NOT USED

### 10.3 INSPECTIONS BY REGULATORY AGENCIES

- 10.3.1 The Contractor must notify the Fulton County designated Representative whenever an 051-IA compliance officer, health inspector, or EPA or Georgia Environmental Protection Division Representative arrives at the project site to conduct an inspection.
- 10.3.2 The Contractor is required to forward a copy of all regulatory citations, notice of violations, or similar for this project to Fulton County's designated Representative.
- 10.3.3 These records will be reviewed with Fulton County designated Representative and included in the Construction Project files.

### 10.4 SAFETY INSPECTION AND AUDIT FOLLOW UP

- 10.4.1 Every safety audit or regulatory inspection conducted per the requirements above may be reviewed by the Fulton County designated Representative. This review may identify serious and

- repeat safety items, look at trends, identify risks and potential losses, and site safety and loss prevention activities.
- 10.4.2 After this review the findings may identify areas needing improvement.
  - 10.4.3 A copy of the audit and any areas identified, as needing improvement will be forwarded to the Contractor's senior management.
  - 10.4.4 For findings that indicate major loss potential or serious concerns about site safety, the areas identified as needing improvement and the overall performance may be reviewed by Fulton County's designated Representative A written action plan to address the Contractor's performance issues may be developed.
  - 10.4.5 Fulton County or designated Representative may meet the Contractor's senior management to discuss the findings, contract requirements, and their plans to address the findings.
  - 10.4.6 The number and frequency of safety audits and site visits may be increased until improvements are noted.

## 11.0 SAFETY MEETINGS

- 11.1 The Contractor will conduct weekly safety meetings with all Contractor and Sub-Contractor employees on the site.
- 11.2 The Contractor will keep safety-meeting records that include meeting topic(s), outline of items discussed, and attendance and sign in sheet. At this meeting any accidents or audit findings and corrective actions from the previous week will be discussed.
- 11.3 The Contractor will maintain a job site file that contains copies of the safety meeting records.

## 12.0 TRAINING, INSPECTION AND CERTIFICATION

### 12.1 Employee Training

- 12.1.1 The Contractor must be able to show when requested the required safety training for all Contractor and Subcontractor employees and competent persons working on the site including any required craft training,
- 12.1.2 The Contractor must be able to show when requested that all employees operating mobile equipment or cranes have met or exceeded training and licensing requirements.
- 12.1.3 The Contractor must be able to show when requested that all scaffolds are erected under the direction of a competent scaffold builder, that all users are properly trained, and that the scaffold is inspected daily.
- 12.1.4 The Contractor shall ensure that each employee is properly trained in the recognition and avoidance of unsafe conditions and the regulations applicable to his or her work environment to control or eliminate any hazards or other exposure to illness or injury.
- 12.1.5 If Contractor or Sub-Contractor employs anyone who cannot effectively communicate using the English language, a translator must be maintained on site who can relay instructions, questions, or concerns in a manner that the non-English and English-speaking employees will understand. The identification of this translator shall be provided to Fulton County's designated Representative.
- 12.1.6 Contractor shall orient all supervision and employees concerning safety requirements before working on the project

## 12.2 Equipment Certification and Inspection

- 12.2.1 The Contractor must be able to document that all cranes and mobile equipment used on the job site have current inspections and certifications.
- 12.2.2 The Contractor must assure that required daily and weekly equipment inspections are performed and documented in writing per governmental regulations and the requirements of this policy.
- 12.2.3 The Contractor must maintain a job site file for these required inspections and certifications.
- 12.2.4 Equipment identified as having safety problems or not meeting standards or codes shall be tagged as defective and shall not be used until those identified items have been corrected.
- 12.2.5 Contractor shall maintain, and have available for viewing, safety inspection reports for ladder, electrical cords, scaffolds, and trenches/excavations.

## 13.0 SAFETY AND HEALTH PROGRAM ELEMENTS

Note:Based on the project work activities and scope of work, some program elements may be not applicable to the project work and therefore do not have to be implemented. Elements marked with an asterisk are applicable to all Projects.

### 13.1 Return to Work Policy\*

The Contractor and each Sub-Contractor will be required to establish a transitional work program for employees injured at work, which provides modified duty within the employee's physical limitations.

### 13.2 Fire Prevention Program\*

The Contractor and each Sub-Contractor will be required to submit a temporary/fire protection plan to be in effect for the duration of the contract. This plan must be submitted as part of the Contractor's Safety Program submittal, It must include provisions for fire protection systems and equipment, as identified in OSHA Safety and Health for Construction 1926, Sub-Part F, Fire Protection and Prevention.

### 13.3 Hazard Communication (HAZCOM)\*

The Contractor and each Sub-Contractor shall have a written HAZCOM Program. The program shall meet OSHA 1926 Requirements and provide for training so that all employees will be able to:

- Understand the program and identify hazardous chemicals with which they work.
- Understand product-warning labels.
- Have MSDSs for all potentially hazardous materials brought onto, used on, or stored at the job site.
- Know the physical location of the Material Safety Data Sheets (MSDS).

### 13.4 Personal Protective Equipment (PPE)\*

All Contractor and Sub-Contractor employees and other site visitors will be required to wear the PPE necessary to accomplish the work in a safe manner, PPE required will vary from job to job and must be based on a written hazard assessment. A list of PPE that is required is identified below:

- Hard Hats shall be worn at all times on all projects
- Hearing Protection for operations that create noise in excess of 65 dBA is required.
- Contractor shall provide eye or face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.  
Work boots or work shoes made of leather shall be required. No open toed shoes or canvas shoes are allowed
- Shirts with sleeves at least 4 inches long are required. Tank tops and mesh shirt are not allowed.
- Full Body Safety Harnesses with shock absorbing lanyards for fall protection are required.
- Full body and chemical splash protection is required when handling hazardous chemicals.
- Respirators are required when employees maybe exposed to dust and/or chemicals in excess of the OSHA permissible exposure limits.
- \* Long pants are required.

### 13.5 Confined Space Entry

If the project work involves permit required confined spaces, a permit required confined space entry program that meets 051-iA requirements must be established. This program must include but is not limited to the following elements.

- Confined Space Identification
- Environmental Testing
- Rescue
- Communication with employees in the confined space
- Employee Training
- Permit System for entry

### 13.6 Excavations

If the Contractor or Sub-Contractor must make a cut, cavity, trench or depression in an earth surface formed by earth removal, the work must comply with the OSHA Regulations on trenching and excavations. A competent person must be assigned for each excavation. Requirements include but are not limited to:

- Employee Training
- \* Daily inspections

- Soil testing
- Protective or support systems.

### 13.7 Electrical Tools, Equipment, and Systems\*

- \* The Contractor and each Sub-Contractor must implement Assured Grounding Program or use Ground Fault Circuit Interrupter (GFCI) devices on all electrical tools and extension cords.
- All electrical work must be performed in accordance with the National Electrical Code (NEC) and OSHA,
- All electrical tools and extension cords must be in good repair and the Contractor must establish a written inspection program for all electrical tools. The frequency of inspection shall be at least monthly.

### 13.8 Lockout/Tagout Procedure

The Contractor and each Sub-Contractor will be required to implement a written Lockout/Tag procedure that meets OSHA requirements if their work requires energy isolation, Program elements include but are not limited to the following:

- Energy isolation lists for each piece of equipment
- Employee training
- Individually keyed locks and danger tags
- Written Procedure that assigns responsibilities

### 13.9 Fall Protection\*

Contractor shall provide an approved fall protection system for all employees working at an elevation of 6 feet or higher on this project, including scaffolding work and steel erection. Employees will be responsible for utilizing the fall protection 100% of the time. Sub-Contractor will be responsible for ascertaining their employees' compliance with this requirement. The plan must address the following items:

- Only full body harnesses with shock absorbing lanyards and double locking hooks shall be use.
- Falls should be limited to less than. 6 feet such than employee can neither fall more than 6 feet nor contact any lower level.
- Fall protection systems must be planned into the job and must be designed to handle loads and forces expected. The project goal is 100% fall protection.
- Employee training and enforcement of these requirements are mandatory to assure an effective program.

### 13.10 Scaffolding

All scaffolds and work platforms shall be constructed to meet the

requirements of OSHA 1926.451 and ANSI A10.8, Some program elements include but are no limited to

- \* User training for all employees who may use scaffolds
- Scaffolding is to be designed and erected by competent person(s) following manufacturer's guidelines. Employees must use fall protection when erecting scaffolding.
- \* Daily inspection by competent person. Must implement daily tag system to document inspection.
- Must have engineering approval for scaffolds above 100 feet in height.
- Must be able to document competent person credentials,
- Scaffolds must have proper egress (ladder/stairs) and should have guardrails, complete deck, toe boards and netting if anything can fall on people below. If guardrails or decking is not complete, fall protection must be used.

#### 13.11 Cranes and Other Lifting Devices

- Trained and experienced operators shall operate Cranes in accordance with the applicable OSHA and ANSI/ASME.
- \* The Contractor is responsible for ensuring that the crane is properly sized for the job and that all required inspections and maintenance required by 051-IA and ANSI/ASME standards have been conducted.
- All cranes should have anti-two block devices installed and operational. Cranes lifting employees in personnel baskets must have an anti-two block device to stops the crane if this condition occurs (positive acting).
- Tag lines are required to secure materials while being moved or handled by cranes.
- All cranes working in the vicinity of overhead power lines shall be grounded and be equipped with proximity guards.
- A lift plan must be submitted for all lifts that exceed 20,000 pounds or 75% of the crane's lift capacity. This plan must be reviewed and approved by the Contractor.
- Slings, hooks, and other lifting devices must be inspected on regular basis and stored properly.

#### 13.12 Use of Personnel Baskets

- Personnel baskets should only be used as the last practical means after documenting that all other means are unacceptable.
- The personnel basket must be manufactured, tested, and used in accordance with OSHA 1926.550. The crane lifting the basket must also meet OSHA requirements.

#### 13.13 Personal Lifts with Articulating Booms (Jig) and Scissors Lifts

- Operators must be trained in the safe operation of the lift including daily inspection procedures prior to use.
- Operators of JLG lifts must wear a full body harness with shock absorbing

lanyard and be tied off while the lift is operation. Operators in a scissors lift must use fall protection anytime the guardrail system removed or altered.

#### 13.14 Ladders\*

- Ladders are acceptable means of access when used in compliance with OSHA 1926.1053.
- Ladders must be in good repair, have safety feet and be inspected
  - Extension ladders must be either held by an employee on the ground or tied off at the top.
  - Homemade ladders not meeting OSHA requirements should not be used.
  - \* Non-conducting ladders are required for electrical work.
  - Fall protection is encouraged for employees working on ladders especially if they will be leaning and turning in their work activities.

#### 13.15 Tools And Equipment

All tools and equipment used on the project must be in a safe operating condition, with all guards in place, and must meet or exceed all governmental regulations (OSHA, EPA, DOT, etc.). Tools and equipment must be maintained, inspected, tested, and used in accordance with OSHA regulations.

#### 13.16 Compressed Gas Cylinders\*

- \* Compressed gas cylinders must be used, stored, and transported in accordance with OSHA requirements, DOT requirements, and Compressed Gas Association standards.
- Fuel and oxygen cylinders must be store separately or separated by a % hour rated firewall.
- Compressed gas cylinders are not allowed inside confined spaces.

#### 13.17 Welding, Burning, and Cutting\*

- The Contractor's program must meet or exceed OSHA and NFPA requirements.
- All flammables must be removed from work area and a fire watch posted in area until 30 minutes after the job is completed.
- At a minimum a 10 LB ABC rated fire extinguisher must be available in the immediate work area.
- Regulators must be in good working order and must have anti-flash back and check valves.
- Welding shields and burning goggles must be used.

### 13.18 Sanitation and Housekeeping\*

- The project site shall have an adequate number of portable toilets and hand washing facilities.
- The project site must establish a housekeeping plan that includes daily site clean up and trash and debris removal.

### 13.19 Hearing Conservation\*

The Contractor and each Sub-Contractor who has employees exposed to noise levels exceeding 85 dBA must establish a hearing conservation program that meets or exceeds OSHA requirements. Minimum program elements include audiometric testing, noise monitoring, use of hearing protectors, and employee training.

### 13.20 Respiratory Protection

The Contractor and each Sub-Contractor who has employees who wear respiratory protection must implement a respiratory protection program that meets or exceeds OSHA requirements. Minimum program elements include risk based respirator selection, medical surveillance, employee training, respirator fit testing, and written operating procedures.

## 14.0 SPECIALIZED SAFETY PROGRAM ELEMENTS

If required by the project scope of work and specific work site or activities, specialized programs listed below shall be included in the Contractor's Safety Program submittal. The Contractor is required to implement the required programs and assure that they meet or exceed all contractual, regulatory and Fulton County's requirements applicable. Details for specific program elements may be included in the contract documents,

14.1 Asbestos Removal

14.2 Lead Based Paint Removal

14.3 Exposure Assessment and Employee Monitoring (Industrial Hygiene)

14.4 Hazardous Waste Operations and Training

14.5 Overhead Power Lines

14.6 Locating underground utilities

14.7 Dust Control

14.8 Guarding for floor holes and roof openings

14.9 Heavy Equipment, Truck and Earth Moving Equipment requirements

14.10 Environmental Requirements

## 15.0 ROAD AND TRANSPORTATION SAFETY REQUIREMENTS

The Contractor shall implement the following into its safety program whether required by the contract or any other authority having jurisdiction if required to perform the work and maintain vehicular and pedestrian traffic safety:

- 15.1 Barricades and Cones
- 15.2 Traffic and Warning Signs
- 15.3 Traffic control devices
- 15.4 Equipment and materials storage
- 15.5 Reflective Clothing and other personal protective equipment
- 15.6 Excavation and road hole protection
- 15.7 Erosion protection
- 15.8 Trained flaggers

16.0 ADDITIONAL REQUIREMENTS TO PROTECT THE GENERAL PUBLIC

Based on the Contractor's scope of work and specific work activities or location the Contractor may be required to implement the following into its safety program to protect the general public:

- 16.1 Fencing and other measures for site security
- 16.2 Warning, direction and no trespassing signs
- 16.3 Alternate public walk ways
- 16.4 Protection of the public from over head and other construction hazards
- 16.5 Site Traffic Control
- 16.6 Barricading off hazardous areas and open pits and holes

**Appendix A Job Safety Analysis Worksheet Example and Information**  
Job Safety Analysis! Job Pre-Planning Worksheet

<b>Job Name and #:</b>		<b>Completed By:</b>
<b>Date: Phase/Operation:</b>		
<b>Task</b>	<b>Hazard</b>	<b>Control</b>

## 17.0 SPECIAL CONDITIONS FOR AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) PROJECTS

The special conditions set forth in this section shall be incorporated in and deemed part of the Bid and the Contract, as indicated.

### 17.1 ACKNOWLEDGEMENT OF FEDERAL FUNDING

The Contractor agrees that any publication (written, visual or sound) but excluding press releases, newsletters and issue analyses, issued by the Contractor describing programs or projects funded in whole or in part with federal funds under this Agreement, shall contain the following acknowledgement:

“Acknowledgement: This project is funded in whole or in part by funds made available through the American Recovery and Reinvestment Act (ARRA).”

Fulton County Government (“County”), as a recipient of American Recovery and Reinvestment Act (“Act”) funds, is legally obligated to meet accountability and reporting requirements under the Act. The County or the federal funding source may also identify additional requirements or other changes in requirements. Such requirements may be in statute, regulation, policy or procedure.

### 17.2 REPORTING

All sub-recipients and their partners, contractors and/or vendors are responsible for reporting pursuant to Section 1512 of the American Recovery and Reinvestment Act of 2009. The County, as a prime recipient of Recovery Act funds, must comply with the Recovery Act’s extensive reporting requirements, including quarterly financial and programmatic reporting. The County will require quarterly reports from its sub-recipients in order to fulfill its obligation. The sub-recipient receiving Recovery Act funds may expect that a standard form(s) and/or reporting mechanism will be available to streamline the process. The sub-recipient agrees to provide the County all reports, documentation, or other information, as may be required to meet reporting obligations under the Recovery Act. The sub-recipient’s receipt of funds is contingent on meeting the Section 1512 reporting requirements.

Additional instructions and guidance regarding the required reporting will be provided as they become available. For planning purposes, however, sub-recipients receiving Recovery Act funds should be aware of the current Recovery Act section 1512(c) requirements.

Sub-recipient Reports: Not later than five days after the end of each calendar quarter (January 5, April 5, July 5, and October 5, etc., throughout the contract period), each sub-recipient that received recovery funds from a Federal agency shall submit a report to the County via email that contains:

- Financial data
- Sub-recipient (and if applicable, vendor) FTEs: jobs created or retained reported as single number; jobs directly funded by Recovery Act.
- Project activity milestones (based on sub-recipient scope of w

### 17.3 SITE VISITS

The County and the Federal agency's authorized representatives have the right to make site visits at reasonable times to review project accomplishments and management control systems to provide technical assistance, if required. Grantee must provide, and must require its sub-awardee to provide reasonable access to facilities, office space, resources, and safety and convenience of the government representatives in the performance of their duties.

All site visits and evaluations must be performed in a manner that does not unduly interfere with or delay the work.

### 17.4 LAWS

The Contractor shall comply with all applicable laws, ordinances, codes, regulations, and policies of local, state, and federal governments, as now or hereafter amended, including, but not limited to:

#### **United States Laws, Regulations and Circulars (Federal)**

A. American Recovery and Reinvestment Act (ARRA) of 2009

B. Audits:

Office of Management and Budget (OMB) Revised Circular A-133 "Audits of States, Local Governments, and Non-Profit Organizations."

Labor and Safety Standards:

Drug-Free Workplace Act of 1988, 41 USC 701 et seq.

Federal Fair Labor Standards Act, 29 U.S.C. 201 et seq.

Work Hours and Safety Act of 1962, 40 U.S.C. 327-330 and Department of Labor Regulations, 29 CFR Part 5

C. Laws against Discrimination which includes but are limited to:

Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin;

Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex;

Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps;

Age Discrimination Act of 1975, as amended (42 U.S.C.6101-07), which prohibits discrimination on the basis of age;

Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse;

Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L.91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism;

§§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290-dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records;

Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing;

Any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and

The requirements of any other nondiscrimination statute(s) which may apply to the application.

D. Other:

Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases;

Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds;

Davis-Bacon Act (40 U.S.C. §276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction sub-agreements;

Any other requirements required in the Assurance attached as Exhibit 3; and

Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

**Special Condition 1 – Buy American Preferences**

*The following provisions shall be incorporated in and deemed part of the RFP:*

- (a) The American Recovery and Reinvestment Act (ARRA) of 2009, states that no funds appropriated for a project for public infrastructure or public works, as defined in the Buy American Act, unless all of the iron, steel, and manufactured goods used in the project is produced in the United States. The following terms apply:
1. Steel and manufactured products. As used in this clause, steel and manufactured products include (i) steel produced in the United States or (ii) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States. Components of foreign origin of the same class or kind as the products referred to in subparagraphs 1.2. (i) or (ii) shall be treated as domestic.
  2. Components. As used in this clause, components means those articles, materials, and supplies incorporated directly into steel and manufactured products.
  3. Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.
- (b) The successful bidder will be required to assure that only domestic steel and manufactured products will be used by the CONTRACTOR, subcontractors, materialmen and suppliers in the performance of this contract. The Federal agency involved may waive these requirements in the following instances:
1. That the domestic materials are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality;
  2. That the Federal agency has determined, that domestic preference would be inconsistent with the public interest; or
  3. That inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent.

**Special Provisions 2 – Civil Rights Act of 1964, Title VI (49 CFR Part 21)**

*The following provisions shall be incorporated in and deemed part of the Contract:*

During the performance of this contract, the CONTRACTOR, for itself, its assignees and successors in interest (hereinafter referred to as the "CONTRACTOR") agrees as follows:

1. **Compliance with Regulations.** The CONTRACTOR shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination.** The CONTRACTOR, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The CONTRACTOR shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment.** In all solicitations either by competitive bidding or negotiation made by the CONTRACTOR for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the CONTRACTOR of the CONTRACTOR's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. **Information and Reports.** The CONTRACTOR shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Agency to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a CONTRACTOR is in the exclusive possession of another who fails or refuses to furnish this information, the CONTRACTOR shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance.** In the event of the CONTRACTOR's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it may determine to be appropriate, including, but not limited to:
  - a. Withholding of payments to the CONTRACTOR under the contract until the CONTRACTOR complies, and/or

b. Cancellation, termination, or suspension of the contract, in whole or in part.

**6. Incorporation of Provisions.** The CONTRACTOR shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The CONTRACTOR shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the CONTRACTOR may request the Sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

**Special Condition 3 – Lobbying and Influencing Federal Employees (49 CFR Part 20)**

*The following provisions shall be incorporated in and deemed part of the Contract:*

- (1) No Federal appropriated funds shall be paid, by or on behalf of the CONTRACTOR, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant and the amendment or modification of any Federal grant.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any Federal grant, the CONTRACTOR shall complete and submit Standard Form-LLL, "Disclosure of Lobby Activities," in accordance with its instructions.

**Special Condition 4 – Davis Bacon Requirements (29 CFR Part 5)**

*The following provisions shall be incorporated in and deemed part of the Contract:*

1. Minimum Wages

- (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the CONTRACTOR and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the CONTRACTOR and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

- (ii) (A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
  - (1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry;  
and

(3) The proposed wage rate, including any bona fide fringe benefits,  
bears a reasonable relationship to the wage rates contained in the  
wage determination.

(B) If the CONTRACTOR and the laborers and mechanics to be employed in  
the classification (if known), or their representatives, and the contracting  
officer agree on the classification and wage rate (including the amount  
designated for fringe benefits where appropriate), a report of the action taken  
shall be sent by the contracting officer to the Administrator of the Wage and  
Hour Division, Employment Standards Administration, U.S. Department of  
Labor, Washington, D.C. 20210. The Administrator, or an authorized  
representative, will approve, modify, or disapprove every additional  
classification action within 30 days of receipt and so advise the contracting  
officer or will notify the contracting officer within the 30-day period that  
additional time is necessary.

(C) In the event the CONTRACTOR, the laborers or mechanics to be  
employed in the classification or their representatives, and the contracting  
officer do not agree on the proposed classification and wage rate (including  
the amount designated for fringe benefits where appropriate), the contracting  
officer shall refer the questions, including the views of all interested parties  
and the recommendation of the contracting officer, to the Administrator for  
determination. The Administrator, or an authorized representative, will issue a  
determination within 30 days of receipt and so advise the contracting officer  
or will notify the contracting officer within the 30-day period that additional  
time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined  
pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to  
all workers performing work in the classification under this contract from the  
first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of  
laborers or mechanics includes a fringe benefit which is not expressed as an  
hourly rate, the CONTRACTOR shall either pay the benefit as stated in the  
wage determination or shall pay another bona fide fringe benefit or an hourly  
cash equivalent thereof.

(iv) If the CONTRACTOR does not make payments to a trustee or other third  
person, the CONTRACTOR may consider as part of the wages of any laborer  
or mechanic the amount of any costs reasonably anticipated in providing  
bona fide fringe benefits under a plan or program, *Provided*, That the  
Secretary of Labor has found, upon the written request of the  
CONTRACTOR, that the applicable standards of the Davis-Bacon Act have  
been met. The Secretary of Labor may require the CONTRACTOR to set

aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the CONTRACTOR under this contract or any other Federal contract with the same prime CONTRACTOR, or any other Federally-assisted contract subject to David-Bacon prevailing wage requirements, which is held by the same prime CONTRACTOR, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the CONTRACTOR or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the CONTRACTOR, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records

(i) Payrolls and basic records relating thereto shall be maintained by the CONTRACTOR during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the CONTRACTOR shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. CONTRACTORS employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) (A) The CONTRACTOR shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the applicant, sponsor, or

owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph 5.5(a)(3)(i) above. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime CONTRACTOR is responsible for the submission of copies of payrolls by all subcontractors.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the CONTRACTOR or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

- (1) That the payroll for the payroll period contains the information required to be maintained under paragraph (3)(i) above and that such information is correct and complete;
- (2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;
- (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the CONTRACTOR or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

- (iii) The CONTRACTOR or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the Sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the CONTRACTOR or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the

CONTRACTOR, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees

- (i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the CONTRACTOR as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a CONTRACTOR is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the CONTRACTOR's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the CONTRACTOR will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the CONTRACTOR will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance With Copeland Act Requirements.

The CONTRACTOR shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The CONTRACTOR or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime CONTRACTOR shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a CONTRACTOR and a subcontractor as provided in 29 CFR 5.12.

8. Compliance With Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the CONTRACTOR (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

- (i) By entering into this contract, the CONTRACTOR certifies that neither it (nor he or she) nor any person or firm who has an interest in the CONTRACTOR's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

**Special Condition 5 – Equal Employment Opportunity**

*The following provisions shall be incorporated in and deemed part of the Contract:*

During the performance of this contract, the CONTRACTOR agrees as follows:

1. The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The CONTRACTOR will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2. The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
3. The CONTRACTOR will send to each labor union or representative of workers with which s/he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the CONTRACTOR's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The CONTRACTOR will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The CONTRACTOR will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the CONTRACTOR's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedure authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7. The CONTRACTOR will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provision, including sanctions for noncompliance: *Provided, however,* that in the event a CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

**Special Condition 6 – Standard Federal Equal Employment Opportunity Construction Contract Specifications (41 CFR Part 60.4.3)**

*The following provisions shall be incorporated in and deemed part of both the RFP and the Contract:*

1. As used in these specifications:
  - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
  - b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
  - c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
  - d. "Minority" includes:
    - (1) Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin);
    - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);
    - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
    - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the CONTRACTOR, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the CONTRACTOR is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. CONTRACTORS shall be able to demonstrate their participation in and compliance with the provisions of

any such Hometown Plan. Each CONTRACTOR or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other CONTRACTORS or subcontractors toward a goal in an approved Plan does not excuse any covered CONTRACTOR's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The CONTRACTOR shall implement the specific affirmative action standards provided in paragraphs 18.7a through 18.7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the CONTRACTOR should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction CONTRACTORS performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The CONTRACTOR is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the CONTRACTOR has a collective bargaining agreement to refer either minorities or women shall excuse the CONTRACTOR's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.
6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the CONTRACTOR during the training period and the CONTRACTOR shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The CONTRACTOR shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the CONTRACTOR's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The CONTRACTOR shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:
  - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the CONTRACTOR's employees are assigned to work. The CONTRACTOR, where possible, will assign two or more women to each construction project. The CONTRACTOR shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the CONTRACTOR's

obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the CONTRACTOR or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the CONTRACTOR by the union or, if referred, not employed by the CONTRACTOR, this shall be documented in the file with the reason therefore along with whatever additional actions the CONTRACTOR may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the CONTRACTOR has a collective bargaining agreement has not referred to the CONTRACTOR a minority person or female sent by the CONTRACTOR, or when the CONTRACTOR has other information that the union referral process has impeded the CONTRACTOR's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the CONTRACTOR's employment needs, especially those programs funded or approved by the Department of Labor. The CONTRACTOR shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the CONTRACTOR's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the CONTRACTOR in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation

of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

- h. Disseminate the CONTRACTOR's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the CONTRACTOR's EEO policy with other CONTRACTORS and subcontractors with whom the CONTRACTOR does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the CONTRACTOR's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the CONTRACTOR shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a CONTRACTOR's workforce.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the CONTRACTOR's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction CONTRACTORS and suppliers, including circulation of solicitations to minority and female CONTRACTOR associations and other business associations.

- p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the CONTRACTOR's EEO policies and affirmative action obligations.
8. CONTRACTORS are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (18.7a through 18.7p). The efforts of a CONTRACTOR association, joint CONTRACTOR union, CONTRACTOR community, or other similar groups of which the CONTRACTOR is a member and participant, may be asserted as fulfilling any one or more of its obligations under 18.7a through 18.7p of these specifications provided that the CONTRACTOR actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the CONTRACTOR's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the CONTRACTOR. The obligation to comply, however, is the CONTRACTOR's and failure of such a group to fulfill an obligation shall not be a defense for the CONTRACTOR's noncompliance.
9. A single goal for minorities and a separate single goal for women have been established. The CONTRACTOR, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the CONTRACTOR has achieved its goals for women generally,) the CONTRACTOR may be in violation of the Executive Order if a specific minority group of women is underutilized.
10. The CONTRACTOR shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
11. The CONTRACTOR shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The CONTRACTOR shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any CONTRACTOR who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The CONTRACTOR, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 18.7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the

CONTRACTOR fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The CONTRACTOR shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, CONTRACTORS shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

**Special Condition 7 – Termination of Contract (49 CFR Part 18.36)**

*The following provisions shall be incorporated in and deemed part of the Contract:*

- a. The Sponsor may, by written notice, terminate this contract in whole or in part at any time, either for the Sponsor's convenience or because of failure to fulfill the contract obligations. Upon receipt of such notice services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this contract, whether completed or in progress, delivered to the Sponsor.
- b. If the termination is for the convenience of the Sponsor, an equitable adjustment in the contract price shall be made, but no amount shall be allowed for anticipated profit on unperformed services.
- c. If the termination is due to failure to fulfill the CONTRACTOR's obligations, the Sponsor may take over the work and prosecute the same to completion by contract or otherwise. In such case, the CONTRACTOR shall be liable to the Sponsor for any additional cost occasioned to the Sponsor thereby.
- d. If, after notice of termination for failure to fulfill contract obligations, it is determined that the CONTRACTOR had not so failed, the termination shall be deemed to have been effected for the convenience of the Sponsor. In such event, adjustment in the contract price shall be made as provided in paragraph 2 of this clause.
- e. The rights and remedies of the sponsor provided in this clause are in addition to any

**Special Condition 8 – Contract Workhours and Safety Standards Act Requirements (29 CFR Part 5)**

*The following provisions shall be incorporated in and deemed part of the Contract:*

1. Overtime Requirements.

No CONTRACTOR or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) above, the CONTRACTOR and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such CONTRACTOR and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 above, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 above.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the CONTRACTOR or subcontractor under any such contract or any other Federal contract with the same prime CONTRACTOR, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime CONTRACTOR, such sums as may be determined to be necessary to satisfy any liabilities of such CONTRACTOR or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 above.

4. Subcontractors.

The CONTRACTOR or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime CONTRACTOR

shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section.

## DIVISION WORK REQUIREMENTS

**DIVISION** Section Title

### **DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

000107 SEALS PAGE  
003132 GEOTECHNICAL DATA

### **DIVISION 01 - GENERAL REQUIREMENTS**

011000 SUMMARY  
012200 UNIT PRICES  
012300 ALTERNATES  
012600 CONTRACT MODIFICATION PROCEDURES  
012900 PAYMENT PROCEDURES  
013100 PROJECT MANAGEMENT AND COORDINATION  
013200 CONSTRUCTION PROGRESS DOCUMENTATION  
013233 PHOTOGRAPHIC DOCUMENTATION  
013300 SUBMITTAL PROCEDURES  
014000 QUALITY REQUIREMENTS  
014200 REFERENCES  
015000 TEMPORARY FACILITIES AND CONTROLS  
015639 TEMPORARY TREE AND PLANT PROTECTION  
016000 PRODUCT REQUIREMENTS  
017300 EXECUTION  
017419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL  
017700 CLOSEOUT PROCEDURES  
017823 OPERATION AND MAINTENANCE DATA  
017839 PROJECT RECORD DOCUMENTS  
017900 DEMONSTRATION AND TRAINING

### **DIVISION 02 - EXISTING CONDITIONS**

024119 SELECTIVE DEMOLITION

### **DIVISION 03 - CONCRETE**

033000 CAST-IN-PLACE CONCRETE

### **DIVISION 04 - MASONRY**

042000 UNIT MASONRY  
047200 CAST STONE MASONRY

### **DIVISION 05 - METALS**

051200 STRUCTURAL STEEL FRAMING  
052100 STEEL JOIST FRAMING  
053100 STEEL DECKING  
054000 COLD-FORMED METAL FRAMING  
057000 DECORATIVE METAL

### **DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

061000 ROUGH CARPENTRY  
061600 SHEATHING  
064113 WOOD-VENEER-FACED ARCHITECTURAL CABINETS

064116 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

072100 THERMAL INSULATION  
074217 INSULATED-CORE METAL WALL BACKUP PANEL SYSTEM  
075423 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING  
076200 SHEAT METAL FLASHING AND TRIM  
078413 PENETRATION FIRESTOPPING  
078446 FIRE-RESISTIVE JOINT SYSTEMS  
079200 JOINT SEALANTS

**DIVISION 08 - OPENINGS**

081113 HOLLOW METAL DOORS AND FRAMES  
081416 FLUSH WOOD DOORS  
083113 ACCESS DOORS AND FRAMES  
084113 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS  
084413 GLAZED ALUMINUM CURTAIN WALLS  
087100 DOOR HARDWARE  
088000 GLAZING  
088300 MIRRORS  
089000 LOUVERS AND VENTS

**DIVISION 09 – FINISHES**

090500 COLORS AND FINISHES SCHEDULES  
092216 NON-STRUCTURAL METAL FRAMING  
092900 GYPSUM BOARD  
093000 TILING  
095113 ACOUSTICAL PANEL CEILINGS  
096400 WOOD FLOORING  
096420 WOOD GYMNASIUM FLOORING  
096519 RESILIENT TILE FLOORING  
096813 TILE CARPETING  
099113 EXTERIOR PAINTING  
099123 INTERIOR PAINTING

**DIVISION 10 - SPECIALTIES**

102113 TOILET COMPARTMENTS  
102226 OPERABLE PARTITIONS  
102800 TOILET, BATH, AND LAUNDRY ACCESSORIES  
104413 FIRE EXTINGUISHER CABINETS  
104416 FIRE EXTINGUISHERS  
107300 ALUMINUM WALKWAY COVERS  
107516 GROUND SET FLAGPOLES

**DIVISION 12 – FURNISHINGS**

122413 ROLLER WINDOW SHADES  
123661 SIMULATED STONE COUNTERTOPS  
124813 ENTRANCE FLOORMATS AND FRAMES

**DIVISION 21 - FIRE SUPPRESSION**

- 210517 SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING
- 211100 FACILITY FIRE-SUPPRESSION WATER-SERVICE PIPING
- 211313 WET-PIPE SPRINKLER SYSTEMS

**DIVISION 22 - PLUMBING**

- 220517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING
- 220518 ESCUTCHEONS FOR PLUMBING PIPING
- 220519 METERS AND GAGES FOR PLUMBING PIPING
- 220523 GENERAL-DUTY VALVES FOR PLUMBING PIPING
- 220529 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
- 220553 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT
- 220719 PLUMBING PIPING INSULATION
- 221113 FACILITY WATER DISTRIBUTION PIPING
- 221116 DOMESTIC WATER PIPING
- 221119 DOMESTIC WATER PIPING SPECIALTIES
- 221313 FACILITY SANITARY SEWERS
- 221316 SANITARY WASTE AND VENT PIPING
- 221319 SANITARY WASTE PIPING SPECIALTIES
- 223300 ELECTRIC, DOMESTIC-WATER HEATERS
- 224213.13 COMMERCIAL WATER CLOSETS
- 224213.16 COMMERCIAL URINALS
- 224216.13 COMMERCIAL LAVATORIES
- 224216.16 COMMERCIAL SINKS
- 224716 PRESSURE WATER COOLERS

**DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING**

- 230513 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
- 230553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT
- 230593 TESTING, ADJUSTING, AND BALANCING FOR HVAC
- 230713 DUCT INSULATION
- 230719 HVAC PIPING INSULATION
- 230900 INSTRUMENTATION AND CONTROL FOR HVAC
- 232113 HYDRONIC PIPING
- 232116 HYDRONIC PIPING SPECIALTIES
- 232123 HYDRONIC PUMPS
- 233113 METAL DUCTS
- 233300 AIR DUCT ACCESSORIES
- 233713 DIFFUSERS, REGISTERS, AND GRILLES
- 235213 ELECTRIC BOILERS
- 236500 COOLING TOWERS
- 238126 SPLIT-SYSTEM AIR-CONDITIONERS
- 238146 WATER-SOURCE UNITARY HEAT PUMPS

**DIVISION 26 - ELECTRICAL**

- 260519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
- 260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
- 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
- 260533 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
- 260543 UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS
- 260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

260923 LIGHTING CONTROL DEVICES  
262200 LOW-VOLTAGE TRANSFORMERS  
262413 SWITCHBOARDS  
262416 PANELBOARDS  
262726 WIRING DEVICES  
265100 INTERIOR LIGHTING  
265561 THEATRICAL LIGHTING  
265600 EXTERIOR LIGHTING

**DIVISION 27 - COMMUNICATIONS**

270528 PATHWAYS FOR COMMUNICATIONS SYSTEMS  
271300 COMMUNICATIONS BACKBONE CABLING

**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

281300 ACCESS CONTROL  
283111 DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

**DIVISION 31 - EARTHWORK**

311000 SITE CLEARING  
312000 EARTH MOVING  
313116 TERMITE CONTROL

**DIVISION 32 - EXTERIOR IMPROVEMENTS**

321216 ASPHALT PAVING  
321313 CONCRETE PAVING  
321316 DECORATIVE CONCRETE PAVING  
321373 CONCRETE PAVING JOINT SEALANTS  
321400 UNIT PAVING  
321713 PARKING BUMPERS  
321723 PAVEMENT MARKINGS  
323120 ORNAMENTAL STEEL FENCING GATES  
328400 UNDERGROUND IRRIGATION SYSTEM  
329200 TURF AND GRASSES  
329300 PLANTS

**DIVISION 33 - UTILITIES**

330500 COMMON WORK RESULTS FOR UTILITIES  
334100 STORM UTILITY DRAINAGE PIPING

**SCOPE OF WORK**

**DIVISION WORK REQUIREMENTS  
(PROJECT SPECIFICATIONS)**

**SEE VOLUME II FOR COMPLETE SCOPE OF WORK FOR THIS PROJECT**

**EXHIBIT A**  
**DRAWINGS LIST**

FCACCC Drawing Index  
All drawings as issued January 30, 2013

**GENERAL**

- G-001 COVER SHEET
- G-002 SHEET INDEX
- G-011 LIFE SAFETY PLAN
- G-012 BUILDING CODE SUMMARY
- G-013 SITE SURVEY

**CIVIL**

- C-001 GENERAL NOTES, LEGEND, AND ABBREVIATIONS
- C-002 EROSION, SEDEMENTATION, AND POLLUTION CONTROL PLAN  
GENERAL NOTES
- C-003 SAMPLING PLAN
- C-100 EXISTING CONDITIONS AND DEMOLITION PLAN
- C-101 SITE PLAN
- C-102 SITE STAKING PLAN
- C-103 UTILITY PLAN
- C-104 GRADING AND DRAINAGE PLAN
- C-105 EROSION AND SEDIMENT CONTROL PLAN – INITIAL PHASE
- C-106 EROSION AND SEDIMENT CONTROL PLAN – INTERMEDIATE PHASE
- C-107 EROSION AND SEDIMENT CONTROL PLAN – FINAL PHASE
- C-200 STORM AND SANITARY SEWER PROFILES
- C-301 BID ALTERNATE 1-ENHANCED PAVEMENT SITE PLAN
- C-302 BID ALTERNATE 1-ENHANCED PAVEMENT STAKING PLAN AND DETAILS
- C-501 CONSTRUCTION DETAILS
- C-502 CONSTRUCTION DETAILS
- C-503 CONSTRUCTION DETAILS
- C-504 CONSTRUCTION DETAILS
- C-505 CONSTRUCTION DETAILS
- C-506 CONSTRUCTION DETAILS
- C-507 CONSTRUCTION DETAILS
- C-508 CONSTRUCTION DETAILS
- C-509 CONSTRUCTION DETAILS
- C-510 CONSTRUCTION DETAILS
- C-511 CONSTRUCTION DETAILS

**LANDSCAPE**

- L-101 TREE PROTECTION AND REPLACEMENT PLAN
- L-102 LANDSCAPE PLAN
- L-201 LANDSCAPE DETAILS
- L-301 IRRIGATION SLEEVING PLAN

**ARCHITECTURAL**

- A-001 GENERAL NOTES, ABBREVIATIONS, & SYMBOLS

- A-101 DIMENSIONED FLOOR PLAN
- A-102 NOTED FLOOR PLAN
- A-131 REFLECTED CEILING PLAN
- A-151 ROOF PLAN
- A-201 EXTERIOR ELEVATIONS
- A-202 EXTERIOR ELEVATIONS
- A-301 BUILDING SECTIONS
- A-302 BUILDING SECTIONS
- A-351 EXTERIOR WALL SECTIONS
- A-352 EXTERIOR WALL SECTIONS
- A-371 PARTITION TYPES AND DETAILS
- A-401 ENLARGED TOILET AND BREAKROOM PLANS
- A-501 EXTERIOR WALL AND WINDOW DETAILS
- A-531 REFLECTED CEILING AND ROOF DETAILS
- A-561 CASEWORK AND MILLWORK DETAILS
- A-571 ADA MOUNTING HEIGHTS AND DETAILS
- A-601 DOOR SCHEDULE, DOOR & FRAME TYPES
- A-611 STOREFRONT AND CURTAIN WALL SCHEDULE & TYPES
- A-612 WINDOW SCHEDULE, TYPES, & DETAILS
- A-701 TOWER SECTIONS AND DETAILS
- A-702 DETAILS
- A-703 DETAILS
- A-704 DETAILS
- A-705 INTERIOR ELEVATIONS
- A-706 RECEPTION DESK ELEVATIONS AND DETAILS

INTERIORS

- I-101 FINISH FLOOR PLAN
- I-201 FURNITURE PLAN
- I-701 INTERIOR FINISH LEGEND & SCHEDULE SIGNAGE SCHEDULE

STRUCTURAL

- S-001 GENERAL STRUCTURAL NOTES AND ABBREVIATION KEY
- S-101 FOUNDATION AND FLOOR PLAN
- S-102 ROOF FRAMING PLAN
- S-201 ELEVATIONS
- S-301 FOUNDATION SECTIONS
- S-302 FRAMING SECTIONS
- S-401 RED BOLT FRAMING PLANS AND ELEVATIONS
- S-501 TYPICAL CONCRETE AND MASONRY DETAILS
- S-502 TYPICAL FRAMING DETAILS
- S-601 WIND LOAD DIAGRAMS
- S-701 SCHEDULES

MECHANICAL

- M-001 MECHANICAL GENERAL NOTES AND ABBREVIATIONS
- M-101 MECHANICAL FLOOR PLAN
- M-102 MECHANICAL PIPING PLAN
- M-301 MECHANICAL ROOM SECTIONS
- M-401 ENLARGED MECHANICAL ROOM PLANS
- M-501 MECHANICAL DETAILS
- M-502 MECHANICAL DETAILS
- M-601 MECHANICAL SCHEDULES

- M-602 MECHANICAL SCHEDULES
- M-701 HYDRONIC FLOW SYSTEM DIAGRAM
- M-702 SEQUENCE OF OPERATIONS

PLUMBING

- P-001 PLUMBING GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
- P-101 PLUMBING FLOOR PLAN - SANITARY, WASTE & VENT
- P-102 PLUMBING FLOOR PLAN - PRESSURE PIPING
- P-401 ENLARGED PLUMBING PLANS
- P-501 PLUMBING DETAILS AND SCHEDULES
- P-901 PLUMBING RISER DIAGRAMS

FIRE PROTECTION

- FP-001 FIRE PROTECTION GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
- FP-101 FIRE PROTECTION HAZARD CLASSIFICATION ZONES
- FP-501 FIRE PROTECTION DETAIL SHEET

ELECTRICAL

- E-001 GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
- E-101 LIGHTING PLAN
- E-102 POWER PLAN
- E-103 FIRE ALARM PLAN
- E-104 COMMUNICATIONS PLAN
- E-105 GROUNDING PLAN
- E-501 ELECTRICAL DETAILS
- E-502 LIGHTING FIXTURE DETAILS
- E-503 LIGHTING FIXTURE DETAILS
- E-504 LIGHTING DETAILS
- E-601 ELECTRICAL ONE LINE DIAGRAM
- E-602 FIRE ALARM RISER DIAGRAM
- E-603 TELECOM RISER DIAGRAM
- E-604 RISER DIAGRAMS
- E-605 PANEL SCHEDULES
- ES-101 ELECTRICAL SITE PLAN

DAVIS-BACON WAGES

General Decision Number: GA130146 01/04/2013 GA146

Superseded General Decision Number: GA20120312

State: Georgia

Construction Type: Building

County: Fulton County in Georgia.

Modification Number Publication Date

0 01/04/2013

ASBE0048-001 04/01/2012

Rates Fringes

ASBESTOS WORKER/HEAT & FROST

INSULATOR.....\$ 24.82 13.26

ASBE0048-002 06/01/2012

Rates Fringes

FIRESTOPPER.....\$ 20.60 9.70

BOIL0026-001 01/01/2012

Rates Fringes

DAVIS-BACON WAGES

BOILERMAKER.....\$ 25.23 19.37

-----

CARPO225-001 07/01/2011

Rates Fringes

CARPENTER (Drywall Finishing,

Drywall Hanging, and Metal

Stud Installation).....\$ 22.75 6.55

-----

ELEV0032-001 01/01/2012

Rates Fringes

ELEVATOR MECHANIC.....\$ 36.38 23.535+a+b

PAID HOLIDAYS:

a. New Year's Day, Memorial Day, Independence Day, Labor Day,

Veteran's Day, Thanksgiving Day, the Friday after

Thanksgiving, and Christmas Day.

b. Employer contributes 8% of regular hourly rate to vacation

pay credit for employee who has worked in business more

than 5 years; 6% for less than 5 years' service.

-----

ENGI0926-001 07/01/2012

DAVIS-BACON WAGES

Rates Fringes

POWER EQUIPMENT OPERATOR:

Backhoe/Excavator,

Bobcat/Skid Loader/Skid

Steer, Bulldozer,

Forklift, and Loader.....\$ 23.49 10.08

Crane.....\$ 27.13 10.08

Oiler.....\$ 18.80 10.08

-----

PAIN1940-001 04/01/2012

Rates Fringes

GLAZIER.....\$ 21.57 8.23

FOOTNOTE: Paid holidays: Thanksgiving Day, Christmas Day,

New Year's Day, National Memorial Day, July 4th and Labor

Day; if the employee works the day before and the day after

the holiday.

-----

PLUM0072-023 08/01/2012

Rates Fringes

DAVIS-BACON WAGES

PLUMBER.....\$ 29.90 12.56

-----

PLUM0072-024 08/01/2012

Rates Fringes

PIPEFITTER (Including

Installation of HVAC Pipe,

HVAC Unit, & HVAC Electrical

/Temperature Controls).....\$ 29.90 12.56

-----

SHEE0085-001 08/01/2012

Rates Fringes

SHEET METAL WORKER (Including

HVAC Duct Installation;

Excluding Metal Roof

Installation).....\$ 29.70 13.07

-----

SUGA2012-053 08/11/2012

Rates Fringes

ACOUSTICAL CEILING MECHANIC.....\$ 15.00 0.00

DAVIS-BACON WAGES

ALARM INSTALLER.....	\$ 18.49	3.88
BRICKLAYER.....	\$ 16.00	0.00
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Finishing/Taping, Drywall Hanging, Form Work, and Metal Stud Installation.....	\$ 17.86	3.62
CEMENT MASON/CONCRETE FINISHER...	\$ 15.08	3.36
ELECTRICIAN (Low Voltage Wiring and Installation of Sound and Communication Systems).....	\$ 22.44	5.42
ELECTRICIAN, Excludes Low Voltage Wiring and Installation of Alarms and Sound and Communication Systems.....	\$ 22.78	5.27
FLOOR LAYER (Carpet, Vinyl and Resilient Flooring).....	\$ 20.00	0.00

DAVIS-BACON WAGES

FORM WORKER.....	\$ 12.20	0.49
INSULATOR (Batt, Blown and Foam).....	\$ 17.67	0.14
IRONWORKER, REINFORCING.....	\$ 20.48	8.41
IRONWORKER, STRUCTURAL.....	\$ 20.00	0.35
LABORER: Common or General.....	\$ 11.39	0.00
LABORER: Flagger.....	\$ 13.44	0.00
LABORER: Landscape.....	\$ 12.19	0.00
LABORER: Mason Tender - Brick...\$	9.00	0.00
LABORER: Pipelayer.....	\$ 12.00	0.23
OPERATOR: Asphalt Spreader.....	\$ 16.53	0.00
OPERATOR: Grader/Blade.....	\$ 17.52	0.00
OPERATOR: Roller.....	\$ 14.49	0.00
OPERATOR: Screed.....	\$ 14.17	0.00
PAINTER: Brush, Roller and Spray.....	\$ 16.00	1.62
ROOFER, Excludes Installation of Metal Roofs.....	\$ 10.49	0.64
SHEET METAL WORKER (Metal Roofs Installation).....	\$ 21.75	0.00

DAVIS-BACON WAGES

SPRINKLER FITTER (Fire

Sprinklers).....\$ 22.69      12.30

TILE FINISHER.....\$ 10.36      0.00

TILE SETTER.....\$ 20.00      0.00

TRUCK DRIVER: Dump Truck.....\$ 16.05      2.92

TRUCK DRIVER: Lowboy Truck.....\$ 17.41      0.00

-----

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

-----

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular

---

**DAVIS-BACON WAGES**

rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January

---

**DAVIS-BACON WAGES**

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

-----

**WAGE DETERMINATION APPEALS PROCESS**

1.) Has there been an initial decision in the matter? This can

be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on

**DAVIS-BACON WAGES**

a wage determination matter

\* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator

**DAVIS-BACON WAGES**

(See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

## Appendix 1 – Stormwater Management Report

FULTON COUNTY AVIATION COMMUNITY  
CULTURAL CENTER  
FULTON COUNTY, GEORGIA

September 24, 2012

**Stormwater Management Report**

*Prepared by*

**POND**

Pond & Company  
3500 Parkway Lane  
Suite 600  
Norcross, GA 30092

Project No. 1120185



9/24/2012

**TABLE OF CONTENTS**

**PROJECT DESCRIPTION ..... 3**

**STORMWATER MANAGEMENT ..... 3**  
    Pre-Development Analysis ..... 3  
    Post-Development Analysis..... 4  
    Stormwater Management Facility ..... 7

**10% DOWNSTREAM ANALYSIS..... 9**

**WATER QUALITY ..... 10**

**CHANNEL PROTECTION ..... 10**

**STORM DRAINAGE DESIGN ..... 11**

**CONCLUSION ..... 11**

**METHODS AND RESOURCES ..... 12**

**APPENDIX A ..... 12**  
    Figure 1 - Vicinity Map ..... 12

**APPENDIX B ..... 12**  
    Figure 2 - FIRM Panel Map ..... 12

**APPENDIX C ..... 12**  
    Figure 4 – National Wetlands Inventory Map ..... 12

**APPENDIX D ..... 12**  
    Pre-Development Curve Number & Tc Calculations ..... 12  
    Figure 5 - Pre-Development Drainage Map ..... 12

**APPENDIX E ..... 12**  
    Post-Development Curve Number & Tc Calculations ..... 12  
    Figure 6 - Post-Development Drainage Map ..... 12  
    Figure 7 - Enlarged Pond View..... 12  
    Figure 8 - Outlet Control Structure Details ..... 12

**APPENDIX F ..... 12**  
    10% Basin Downstream Analysis Curve Number & Tc Calculations ..... 12  
    Figure 9 - 10% Downstream Analysis Drainage Map..... 12

**APPENDIX G ..... 12**  
    Water Quality Volume and Micropool Calculations ..... 12  
    TSS Calculations ..... 12  
    Figure 10 - TSS Land Use Map..... 12

**APPENDIX H** .....  
Channel Protection Volume Calculations .....

**APPENDIX I**.....  
Stage Storage and Orifice Sizing Calculations.....  
Pond Report.....

**APPENDIX J**.....  
Hydrograph Reports (2-Year-100-Year 24 Hour Storm Events) .....

**APPENDIX K** .....  
Storm Sewer Design Calculations .....

Figure 11 - Storm Drainage Basin Map.....

**APPENDIX L**.....  
Final Subsurface Exploration By S&ME, Inc. ....

## **PROJECT DESCRIPTION**

The Fulton County Aviation Community Cultural Center project site is located in Fulton County between the intersections of Aviation Circle and Fulton Industrial Boulevard, Atlanta Georgia. The project site will be located on a 7.6 acre property owned by Fulton County. The project site is bounded by FAA Radio Beacons to the north; Aviation Circle to the west and northeast, and Fulton Industrial Boulevard to the south. (See Appendix A, **Figure 1 - Vicinity Map.**)

The total disturbed area for this project is approximately 5.70 acres. Site work will include the construction of a community center (16,209 sf); parking lots; utilities; and stormwater management. Stormwater management for this facility consists of one detention pond, containing a micropool. The proposed pond has been designed to provide stormwater detention, water quality, and channel protection for this development.

The following topics are discussed in this report:

- Stormwater management;
- 10% downstream analysis;
- Water quality;
- Channel protection;
- Storm drainage design.

The analysis and/or design of each of these items will be summarized in the next sections followed by supporting data and calculations.

## **STORMWATER MANAGEMENT**

The *Fulton County Code of Ordinance and the Georgia Stormwater Management Manual* apply to this project. Stormwater detention will be provided for the 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour storm events. The stormwater management facility was designed using pre-developed flows based on existing conditions for all upstream areas. Post-developed flows were based on the on-site upstream basin areas being developed and existing conditions for off-site upstream areas. Hydrologic Soil Group C was used to determine U.S.N.R.C. TR-55 curve numbers for existing and proposed land cover.

### **Pre-Development Analysis**

In the pre-developed condition, the project site is primarily an open field of grass with a moderate to densely wooded area located in the northwest corner of the property. Landscape trees are located along the southern property line adjacent to Fulton Industrial Boulevard and at the intersection of Fulton Industrial Boulevard and Aviation Circle to the northeast. A normally dry drainage swale passes through the site and connects to an underground storm sewer system near the intersection of Aviation Circle and Fulton Industrial Boulevard to the south. The site contains mostly flat slopes across the property and steep slopes along the western property line adjacent to Aviation Circle. Elevations on the site range from 842 to 903.

Based on FIRM Panel Map 13121C0219E, dated June 22, 1998, the site is not located within a Special Flood Hazard Area (see Appendix B, **Figure 2 - FIRM Panel Map 13121C0219E**), and according to the wetlands inventory maps, wetlands are not located within the boundary of the proposed project site (see Appendix C, **Figure 4 – National Wetlands Inventory Map**).

Four drainage basins have been defined for the pre-developed analysis: Pre-Basin A, Pre-Basin B, Pre-Basin C, and Pre-Basin D. The land use for each pre-development basin is described below:

- Pre-Basin A (which consists of a portion of the project site) contains open space with grass in good condition.

- Pre-Basin B (which consists of a portion of the project site) contains woodland with good cover and open space with grass in good condition. This basin contains approximately 0.18 acres of offsite area.
- Pre-Basin C (which consists of a portion of the project site) contains open space with grass in good condition, landscape trees along the northeast and southeast property line, and a drainage swale. This basin contains approximately 3.58 acres of offsite area.
- Pre-Basin D (which consists of offsite area) contains asphalt pavement and open space with grass in good condition.

Stormwater runoff in Pre-Basin A flows across the basin as sheet flow from the south and leaves the basin at the northwest property corner at Study Line A.

Stormwater runoff in Pre-Basin B flows across the basin as sheet flow and shallow concentrated flow. Runoff from the upstream side of the basin drains to an existing drop inlet and leaves the basin through a 15" storm pipe at Study Line B. Runoff from the slopes immediately adjacent to Aviation Circle flows down the slope as sheet flow and leaves the basin at Study Line B.

Stormwater runoff in Pre-Basin C flows across the basin primarily as sheet flow and enters a drainage swale. Runoff from offsite areas to the north flows across the basin as sheet flow and enters the drainage swale. Runoff from off-site areas to the northeast enters the site through an existing storm sewer system that discharges into the drainage swale. The runoff from offsite areas combine with on-site flows and leaves the basin at Study Point C.

Stormwater runoff in Pre-Basin D flows across the basin as sheet flow and shallow concentrated flow. Runoff leaves the basin at Study Point D.

Pre-development drainage basins are delineated on **Figure 5 - Pre-Developed Drainage Basin Map** (see Appendix D). The pre-developed curve numbers and Tc calculations are provided in Appendix D.

### **Post-Development Analysis**

In the post-developed condition, a community center building, concrete sidewalks, asphalt pavement, and stormwater management/water quality BMP facility will be constructed.

Six drainage basins have been defined for the post-development analysis: Post-Basin A, Post-Basin B, Post-Basin C.1, Post-Basin C.2, Post-Basin C.3, and Post-Basin D. The land use for each post-development basin is described below:

- Post-Basin A (which consists of a portion of the project site) contains open space with grass in good condition. This basin will remain undisturbed under post development conditions.
- Post-Basin B (which consists of a portion of the project site) contains woodland with good cover, proposed landscaping, and open space with grass in good condition. This basin contains approximately 0.18 acres of offsite area. A small section of this basin will be disturbed pervious area.
- Post-Basin C.1 (which consists of a portion of the project site) contains the proposed building, asphalt pavements, concrete sidewalks, landscaping and the stormwater management facility. This basin also contains approximately 0.77 acres of offsite area.
- Post-Basin C.2 (which consists of a portion of the project site) contains open space with grass cover in good condition.

- Post-Basin C.3 (which consists of offsite area) contains existing buildings, asphalt pavement and open spaces with grass cover in good condition.
- Post-Basin D (which consists of offsite area) contains asphalt pavement and open space with grass in good condition. A section of the pavement in this basin will be disturbed to install the proposed driveway to the facility.

Similar to pre-development conditions, stormwater runoff in Post-Basin A flows across the basin as sheet flow from the south and leaves the basin at the northwest property corner at Study Line A.

Stormwater runoff in Post-Basin B flows across the basin as sheet flow and shallow concentrated flow. Runoff from the upstream side of the basin drains to an existing drop inlet and leaves the basin through a 15-inch storm pipe at Study Line B. Runoff from the slopes immediately adjacent to Aviation Circle flows down the slope as sheet flow and leaves the basin at Study Line B.

Stormwater runoff in Post-Basin C.1 flows across the basin from the north and east as sheet flow and enters a proposed stormwater drainage system. Runoff is routed through this drainage system to the stormwater management/water quality BMP facility, a detention pond with micropool. Runoff will leave the pond via an outlet control structure; enter an outfall pipe; leave through a headwall; enter an existing channel located in the south corner of the site; combine with flows from Post-Basin C.2 and Post Basin C.3; and leave the site at Study Point C.

Stormwater runoff in Post-Basin C.2 flows through this basin as shallow concentrated flow and enters the proposed storm sewer system located between the proposed building and Fulton Industrial Boulevard. Runoff from Post-Basin C.2 combines with routed flows from Post-Basin C.1 and onsite flows from Post-C.3 in the proposed onsite storm drainage system. Runoff from this storm drainage system discharges through a proposed headwall into an existing concrete channel, located near the south corner of the site, and leave the basin at Study Point C.

Stormwater runoff in Post-Basin C.3 flows across the basin as sheet flow and shallow concentrated flow into to an existing storm drainage system that runs under Fulton Industrial Boulevard from the northeast. The existing storm drainage system connects to the proposed onsite storm drainage system, which receives the combined flows from Post-Basin C.1, Post-Basin C.2, and Post-Basin C.3. The combined runoff from this storm drainage system bypasses the stormwater management facility and leaves the site at Study Point C.

Similar to pre-development conditions, stormwater runoff in Post-Basin D flows across the basin as sheet flow to shallow concentrated flow and leaves the basin at Study Point D.

The post-developed drainage basins are delineated on **Figure 6 - Post-Development Drainage Basin Map** (see Appendix E). The post-developed curve numbers and Tc calculations are provided in Appendix E.

The following tables provide summaries of the drainage areas, Runoff Curve Numbers and times of concentration used in the hydrologic analyses at Study Line A, Study Line B, Study Point C, Study Point D, and at the 10% Study Point.

**Drainage Area Summary**

Drainage Area	Pre-Developed Drainage Area (ac)	Post-Developed Drainage Area (ac)
A	0.13	0.13
B	3.10	2.35
C	8.12	N/A
C.1	N/A	5.36
C.2	N/A	0.70
C.3	N/A	2.86
D	0.49	0.44
10% Basin	93.37	93.37

**Curve Number Summary**

Drainage Area	Pre-Development Curve Number	Post-Development Curve Number
A	74	74
B	73	73
C	80	N/A
C.1	N/A	85
C.2	N/A	74
C.3	N/A	89
D	89	89
10% Basin	72	72

**Time of Concentration Summary**

Drainage Basin	Pre- development T <sub>c</sub> (minutes)	Post- development T <sub>c</sub> (minutes)
A	5.0	5.0
B	9.4	9.4
C	10.0	N/A
C.1	N/A	5.0
C.2	N/A	5.0
C.3	N/A	5.0
D	5.0	5.0
10% Basin	24.2	24.2

## Stormwater Management Facility

Stormwater detention, water quality, channel protection, and overbank flood protection will be provided by an excavated detention pond. The stormwater management facility will be located to the west of the proposed parking lot.

The area draining to the stormwater management facility (Post-Basin C.1) is approximately 5.36 acres, of which 2.47 acres is impervious. This drainage basin also includes approximately 0.77 acres of offsite area that drains to the detention pond.

The stormwater management facility was designed to provide the required water quality volume, channel protection volume and overbank flood protection (attenuation of the peak discharge from the 1- through 100-year storm events) as prescribed by the *Georgia Stormwater Management Manual*. Extreme flood protection is provided for the pond by means of an emergency overflow spillway. The emergency spillway drains to a grass channel that discharges into the existing concrete channel located just downstream of the outlet control structure. Additionally, the proposed stormwater management facility will have a micropool.

The following table provides a summary of the micropool volumes and elevations. See Appendix G for **Water Quality Volume and Micropool Calculations**.

**Micropool Volume Summary**

Drainage Basin	Micropool Volume Req'd (cf)	Micropool Volume Provided (cf)	Micropool Elevation Provided (ft)
C.1	2,713	4,827	875.32

*Note: A minimum depth of three feet will be provide for the micropool.*

Stormwater detention will be controlled by an outlet control structure. The proposed outlet control structure is shown on **Figure 7 - Enlarged View at Pond Outlet** and **Figure 8 - Outlet Control Structure Details** (see Appendix E)

Following is a summary of stormwater flows through the proposed stormwater management facility. See Appendix J for hydrograph reports.

**Stormwater Management/Water Quality BMP Facility Summary  
(Post-Basin C.1)**

Storm Frequency (years)	Peak Inflow (cfs)	Peak Outflow (cfs)	Ponding Elevation (ft MSL)
1	17.03	0.52	876.96
2	22.53	0.60	877.40
5	28.08	1.76	877.61
10	33.65	3.91	877.82
25	41.08	8.79	878.16
50	46.64	12.83	878.39
100	52.18	16.40	878.63

Stormwater runoff will: discharge from the facility Outlet Control Structure B-2.1; enter existing concrete channel located to the south of the proposed pond; combine with flows from Post-Basin C.2 and Post-

Basin C.3; and leave the basin at Study Point C. See Appendix H for **Figure 8 - Outlet Control Structure Details**.

Following is a summary of contributing drainage basins for Study Line A, Study Line B, Study Point C and Study Point D and the stormwater flows at each point of study. (See Appendix H for supporting calculations.)

**Contributing Drainage Basins**

Study Point	Pre-Basin	Post-Basin
A	A	A
B	B	B
C	C	C.1 C.2 C.3
D	D	D

**Flow Summary at Study Line A**

Return Frequency	Pre-Development Flow at Study Line A	Post-Development Flow at Study Line A
1	0.25	0.25
2	0.37	0.37
5	0.48	0.48
10	0.61	0.61
25	0.78	0.78
50	0.92	0.92
100	1.05	1.05

**Flow Summary at Study Line B**

Return Frequency	Pre-Development Flow at Study Line B	Post-Development Flow at Study Line B
1	5.28	4.00
2	7.79	5.90
5	10.44	7.92
10	13.25	10.05
25	17.16	13.01
50	20.15	15.27
100	23.17	17.57

**Flow Summary at Study Point C**

Return Frequency	Pre-Development Flow at Study Point C	Post-Development Flow at Study Point C
1	17.80	12.16
2	24.71	15.84
5	31.86	19.54
10	39.14	23.25
25	48.97	30.62
50	56.38	37.92
100	63.81	45.46

**Flow Summary at Study Point D**

Return Frequency	Pre-Development Flow at Study Point D	Post-Development Flow at Study Point D
1	1.80	1.61
2	2.31	2.07
5	2.82	2.53
10	3.32	2.98
25	3.99	3.59
50	4.50	4.04
100	5.00	4.49

**10% DOWNSTREAM ANALYSIS**

In accordance with the *Fulton County Code of Ordinances, Article IV* and the *Georgia Stormwater Management Manual*, the conditions downstream from the project to a point where the project area is 10% of the total drainage basin (the "10% Study Point") were analyzed. The contributing drainage area at the 10% Study Point is 93.37 acres under pre-development conditions and 93.37 acres under post-development conditions (see Appendix F for **Figure 9 – 10% Downstream Analysis Drainage Basin Map**). The area between the project site and the 10% Study Point was modeled based on existing hydrologic conditions in the watershed, which consists of industrial properties, roads, open grass areas, and undeveloped wooded areas.

As described above, stormwater runoff in both the pre- and post-developed conditions leaves the project site through an existing concrete channel located at the south corner of the property, enters an existing 36-inch storm drainage pipe, and travels approximately 1,540 feet to the 10% Study Point.

Following is a summary of flows for pre- and post-developed conditions at the 10% Study Point. (See Appendix F for supporting calculations.)

**Flow Summary at 10% Study Point**

Storm Frequency (year)	Pre-Development Flow (cfs)	Post-Development Flow (cfs)
1	98.97	90.12
2	150.02	136.85
5	204.91	188.20
10	262.49	244.76
25	342.86	323.86
50	404.71	384.66
100	467.49	446.03

The peak flows at the 10% Study Point for the post-developed condition will be less than those for the pre-developed condition, and should, therefore not have an adverse impact on downstream properties, as required by the *Fulton County Code of Ordinances, Article IV* and the *Georgia Stormwater Management Manual*.

## WATER QUALITY

In accordance with the *Georgia Stormwater Management Manual*, water quality volume at least equal to the runoff from the 1.2 inches of rainfall from the project site shall be provided. Water quality treatment also includes the design of a micropool and a forebay. The water quality volume that is provided in the micropool is 4,827 cubic feet and the water quality volume provided in the forebay is 1,156 cubic feet. The remaining treatment volume is 4,868 cubic feet which will be routed through a 3-inch diameter circular orifice that will be constructed in the outlet control structure of the facility. The total water quality volume for the areas being treated by the proposed detention pond is provided in the table below. (See Appendix I for supporting calculations.)

**Water Quality Volume Summary**

<b>Description</b>	<b>Detention Pond with Micropool</b>
WQV (cubic feet) required	10,851
WQV (cubic feet) provided	10,871
WQV elevation required	874.20
WQV elevation provided	875.83
Minimum WQ orifice invert elevation required	875.32
WQ orifice invert elevation provided	875.32

Additionally, per the *Georgia Stormwater Management Manual*, "stormwater runoff generated on the development site is to be treated by the stormwater management system to remove at least 80% of the calculated average annual post-development TSS loading from the site."

The project site was divided into four drainage areas in order to perform the TSS loading analysis, as shown on **Fig. 10 – TSS Land Use Map** in Appendix G.

Drainage Area 1 (equivalent to Post-basin A) consists of 0.13 acres. Runoff from this drainage area will bypass the stormwater management facility.

Drainage Area 2 (equivalent to Post-basin B) consists 2.20 acres. Runoff from this drainage area will bypass the stormwater management facility.

Drainage Area 3 (equivalent to Post-basin C.1) consists of 4.59 acres. Runoff from this drainage area will drain to and be treated by a grass swale and stormwater management facility.

Drainage Area 4 (equivalent to Post-basin C.2) consists 0.70 acres. Runoff from this drainage area will be treated by a grass swale and bypass the stormwater management facility.

According to the required TSS loading analysis, the concentration of TSS leaving the post-developed project site will meet the 80% TSS removal rate as specified in *Georgia Stormwater Management Manual*. TSS reduction was calculated using the **Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool** (see Appendix G for calculations).

## CHANNEL PROTECTION

According to the *Georgia Stormwater Management Manual*, 24-hour detention of the runoff from the one-year storm must be provided in the facility to protect downstream channels from erosive velocities and unstable conditions. The 24-hour detention of the one-year storm will be drained through a 3-inch

diameter circular orifice to be constructed in the outlet control structure of the facility. (See Appendix H for supporting calculations.)

Following is a summary of channel protection design information for the proposed stormwater management/water quality BMP facility. (See the Appendix H for supporting calculations.)

**Channel Protection Volume Summary**

Description	Pond 2
CPV required (cubic feet) required	23,927
CPV required (cubic feet) provided	24,004
CPV Elevation required	877.42
CPV Elevation provided	877.42
Minimum CPV orifice elevation required	875.83
CPV orifice elevation provided	875.83

## **STORM DRAINAGE DESIGN**

Supporting calculations are included in Appendix L which documents the data used for storm drainage pipe and channel design.

Following is a summary of data related to conveyance velocity and energy dissipation in the channel immediately downstream of the proposed stormwater management facility.

**Energy Dissipation Summary**

Pipe Outlet Headwall	25-Year Post-Development Flow Velocity at Outlet Headwall (ft/s)	Non-Erosive Velocity from Storm Water Design Manual (ft/s)	Froude Number	Energy Dissipation Measures Proposed
HW A1	3.72	5.0	0.66	ST – Riprap apron
HW B1	7.35	5.0	1.3	Concrete Channel
HW C-1	4.63	5.0	0.82	Concrete Channel

## **CONCLUSION**

The Fulton County Aviation Community Cultural Center has been designed to provide stormwater detention, water quality, and channel protection for the proposed development. The proposed facility will: reduce the post-development peak flows from the 2-, 5-, 10-, 25-, 50-, and 100-year storms to less than pre-development flows where stormwater runoff leaves the property for the project, and at a point downstream where the project area is no more than 10% of the watershed; not adversely impact downstream drainage conditions; remove 80% of total suspended solids; include the required volumes for water quality and downstream channel protection; and detain the stormwater runoff from the 1-year storm for at least 24 hours. Accordingly, the proposed stormwater management/water quality Best Management Practices facility meets the *Fulton County Code of Ordinances and the Georgia Stormwater Management Manual*.

## **METHODS AND RESOURCES**

Hydrologic / Hydraulic Methods: U.S.N.R.C.S. TR-55;  
Hydraflow Hydrographs 2009 extension for AutoCAD Civil 3D

SCS Curve Numbers: USDA Natural Resources Conservation Service

Topography: Topographic Survey for Fulton County Library System Brown  
Field Site Land Lot 22 of 14<sup>th</sup> FF District, Fulton County, Georgia  
by MACTEC Engineering and Consulting, Inc., dated June 14,  
2010.

Geotechnical Data: United States Geological Survey Quadrangle maps; USDA  
NRCS Web Soil Survey data; Final Subsurface Exploration  
Fulton County Aviation Community Cultural Center Aviation  
Circle and Fulton Industrial Boulevard Fulton County, Georgia,  
by S&ME Inc., dated March 23, 2012

**APPENDIX A**

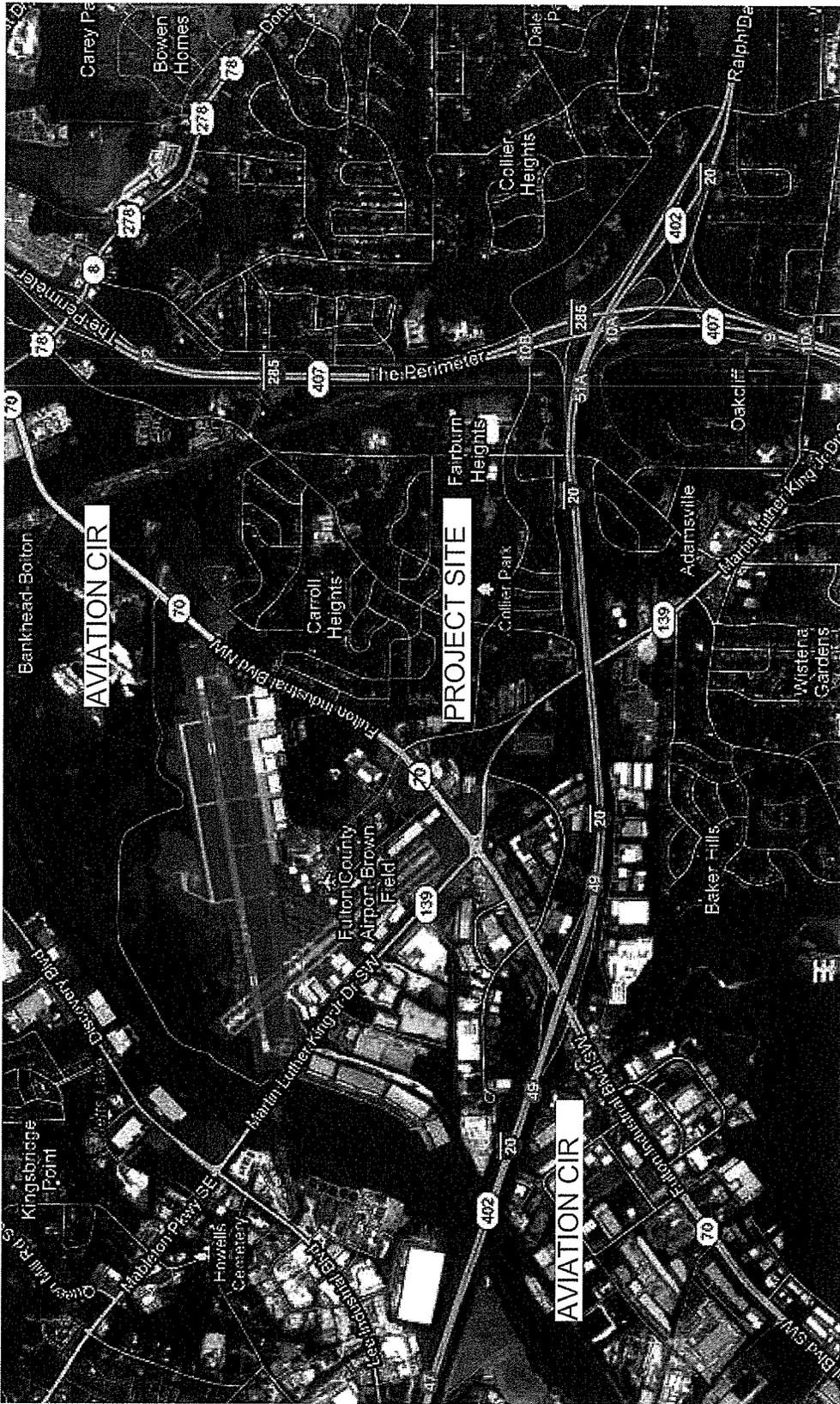
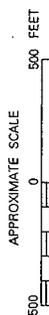


Figure 1 – Vicinity Map

**APPENDIX B**



**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
FLOOD INSURANCE RATE MAP  
FULTON COUNTY,  
GEORGIA  
AND INCORPORATED AREAS**

**PANEL 219 OF 490**

(SEE MAP INDEX FOR PANELS NOT PRINTED)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
ATLANTA CITY OF	13557	029	E
FULTON COUNTY	13560	029	E

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

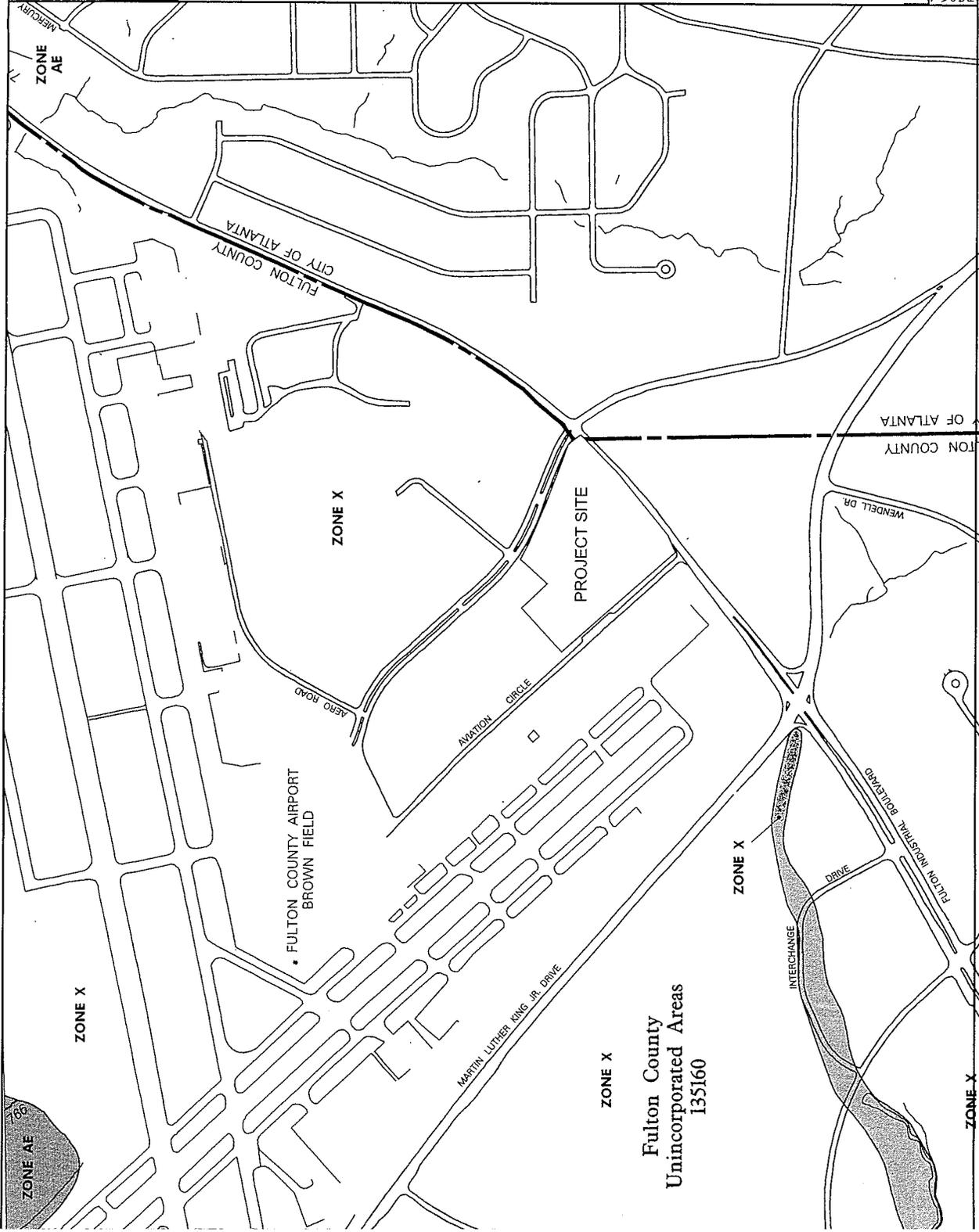
**MAP NUMBER  
131210219 E**

**EFFECTIVE DATE:  
JUNE 22, 1998**



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-AMT On-Line. This map does not reflect changes in flood hazard information since the date of the original map. For the most current information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.nws.fema.gov](http://www.nws.fema.gov)



ZONE AE

ZONE X

FULTON COUNTY  
CITY OF ATLANTA

FULTON COUNTY AIRPORT  
BROWN FIELD

ZONE X

MARTIN LUTHER KING JR. DRIVE

PROJECT SITE

ZONE X

Fulton County  
Unincorporated Areas  
135160

ZONE X

INTERCHANGE

DRIVE

FULTON COUNTY  
INDUSTRIAL BOULEVARD

FULTON COUNTY  
OF ATLANTA

ZONE X

WENDELL DR

ZONE AE

MERCURY

## APPENDIX C



U.S. Fish and Wildlife Service

# National Wetlands Inventory

Jul 19, 2012

## Wetlands

-  Freshwater Emergent
-  Freshwater Forested/Shrub
-  Estuarine and Marine Deepwater
-  Estuarine and Marine
-  Freshwater Pond
-  Lake
-  Riverine
-  Other



This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Figure 3 - National Wetlands Inventory Map



**APPENDIX D**



JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
PRE-BASIN A  
PRE-DEVELOPED

DATE: 7/23/2012  
TIME: 2:55:51 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =  
SOIL GROUP =

0.13  
C

SQ. MILES = 0.0002

LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*%	%IMP*AREA
LAKES	0.00	100.00%	1.00	98	0.00%	0.00	0.00
IMPERVIOUS	0.00	100.00%	1.00	98	0.00%	0.00	0.00
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	0.13	0.00%	0.35	74	100.00%	74.00	0.00
<b>STREETS AND ROADS:</b>							
PAVED; curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED; open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00

TOTALS

0.13

100.00%

74.00

0.00

CN = 74

$I_p = 0.703$

IMP. AREA = 0.00

% IMP. = 0.0%

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
PRE-BASIN B  
PRE-DEVELOPED

DATE: 7/23/2012  
TIME: 2:55:51 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =		3.10		SQ. MILES =		0.0048	
SOIL GROUP =		C					
LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*	%IMP*AREA
LAKES	0.00	100.00%	1.00	98	0.00%	0.00	0.00
IMPERVIOUS	0.00	100.00%	1.00	98	0.00%	0.00	0.00
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>							
	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.85	0.00%	0.15	70	27.42%	19.19	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	2.25	0.00%	0.35	74	72.58%	53.71	0.00
<b>STREETS AND ROADS:</b>							
PAVED: curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED: open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>							
	0.00	0.00%	0.50	91	0.00%	0.00	0.00
<b>TOTALS</b>		3.10			100.00%	72.90	0.00
		CN = 73		I <sub>s</sub> = 0.743			
		IMP. AREA = 0.00					
		% IMP. = 0.0%					

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
PRE-BASIN C  
PRE-DEVELOPED

DATE: 7/23/2012  
TIME: 2:55:51 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =  
SOIL GROUP =

8.12  
C

SQ. MILES = 0.0127

LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*%	%IMP*AREA
LAKES	0.00	100.00%	1.00	98	0.00%	0.00	0.00
IMPERVIOUS	1.79	100.00%	1.00	98	22.04%	21.60	1.79
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	6.14	0.00%	0.35	74	75.62%	55.96	0.00
<b>STREETS AND ROADS:</b>							
PAVED: curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED: open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.19	65.00%	0.70	89	2.34%	2.08	0.12
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00

TOTALS 8.12 100.00% 79.64 1.91

CN = 80

$I_p = 0.511$

IMP. AREA = 1.91  
% IMP. = 23.6%

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
PRE-BASIN D  
PRE-DEVELOPED

DATE: 7/23/2012  
TIME: 2:55:51 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =  
SOIL GROUP =

0.49  
C

SQ. MILES = 0.0008

LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*	%IMP*AREA
LAKES	0.00	100.00%	1.00	98	0.00%	0.00	0.00
IMPERVIOUS	0.31	100.00%	1.00	98	63.27%	62.00	0.31
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	0.18	0.00%	0.35	74	36.73%	27.18	0.00
<b>STREETS AND ROADS:</b>							
PAVED: curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED: open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00

TOTALS 0.49 100.00% 89.18 0.31

CN = 89

$I_p = 0.243$

IMP. AREA = 0.31

% IMP. = 63.3%

# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

## Hyd. No. 1

Pre-Basin A

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 72.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 10.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 3.23</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 3.23</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	=0.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 0.00</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+ 0.00</b>	<b>+ 0.00</b>	<b>= 0.00</b>
<b>Total Travel Time, Tc .....</b>				<b>3.23 min</b>

# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

## Hyd. No. 2

Pre-Basin B

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 1.60	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 8.75</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 8.75</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 108.00	0.00	0.00	
Watercourse slope (%)	= 6.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=3.95	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 0.46</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.46</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 1.23	0.00	0.00	
Wetted perimeter (ft)	= 3.93	0.00	0.00	
Channel slope (%)	= 13.00	0.00	0.00	
Manning's n-value	= 0.013	0.015	0.015	
Velocity (ft/s)	=18.98	0.00	0.00	
Flow length (ft)	{0}186.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.16</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.16</b>
<b>Total Travel Time, Tc .....</b>				<b>9.37 min</b>

# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

## Hyd. No. 3

Pre-Basin C

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 50.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 10.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 2.41</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 2.41</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 50.00	0.00	0.00	
Watercourse slope (%)	= 10.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=5.10	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 0.16</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.16</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 13.50	3.14	10.50	
Wetted perimeter (ft)	= 18.25	6.28	11.99	
Channel slope (%)	= 6.00	3.00	3.00	
Manning's n-value	= 0.150	0.015	0.150	
Velocity (ft/s)	=1.99	10.81	1.57	
Flow length (ft)	471.0	71.0	321.0	
<b>Travel Time (min)</b>	<b>= 3.95</b>	<b>+</b> <b>0.11</b>	<b>+</b> <b>3.40</b>	<b>= 7.46</b>
<b>Total Travel Time, Tc</b> .....				<b>10.00 min</b>

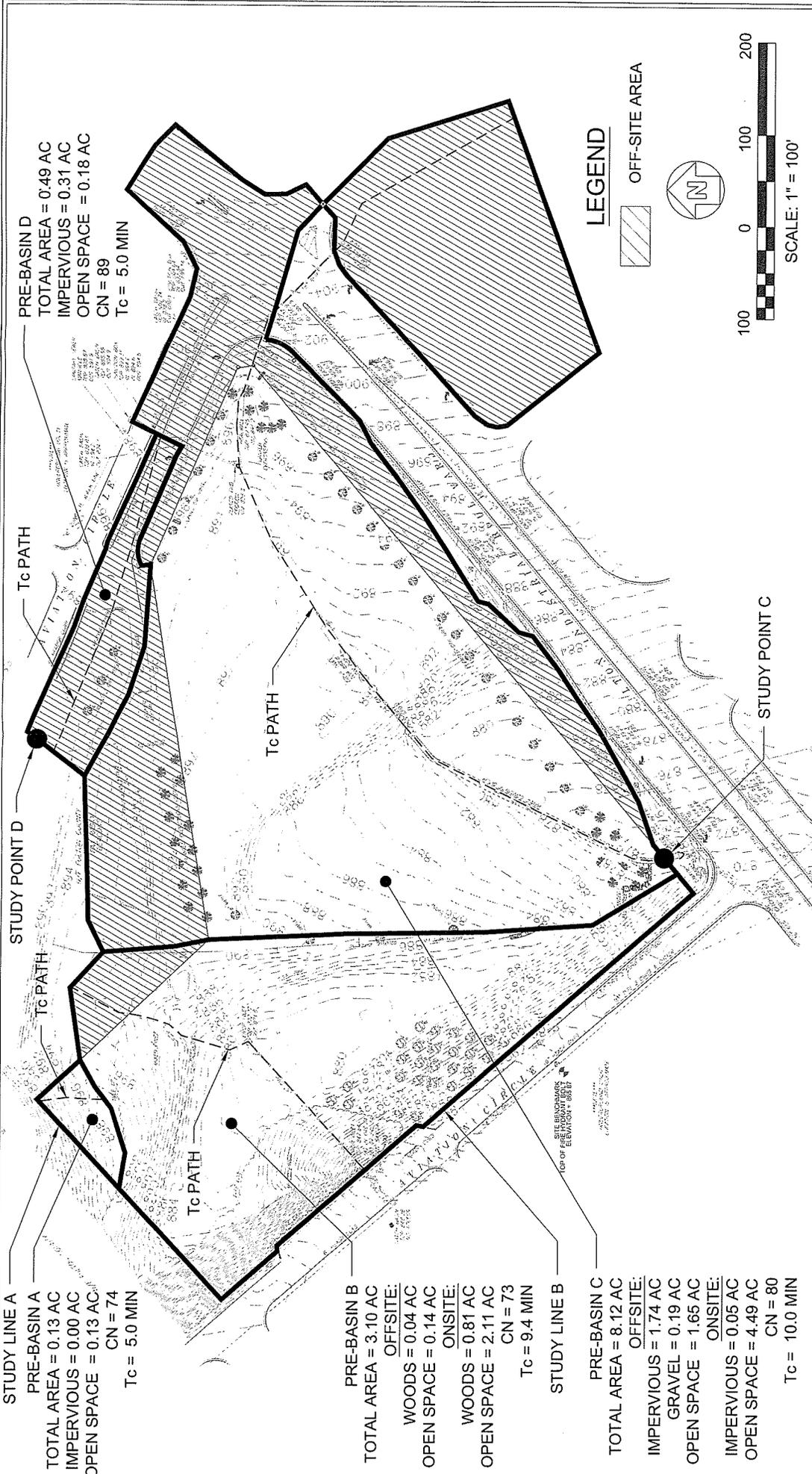
# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

## Hyd. No. 4

Pre-Basin D

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.011	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 2.50	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 0.90</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.90</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 259.00	0.00	0.00	
Watercourse slope (%)	= 2.50	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	=3.21	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 1.34</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 1.34</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{{0}}0.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.00</b>
<b>Total Travel Time, Tc .....</b>				<b>5.00 min</b>



STUDY LINE A  
 PRE-BASIN A  
 TOTAL AREA = 0.13 AC  
 IMPERVIOUS = 0.00 AC  
 OPEN SPACE = 0.13 AC  
 CN = 74  
 Tc = 5.0 MIN

PRE-BASIN D  
 TOTAL AREA = 0.49 AC  
 IMPERVIOUS = 0.31 AC  
 OPEN SPACE = 0.18 AC  
 CN = 89  
 Tc = 5.0 MIN

PRE-BASIN B  
 TOTAL AREA = 3.10 AC  
 OFFSITE:  
 WOODS = 0.04 AC  
 OPEN SPACE = 0.14 AC  
 ONSITE:  
 WOODS = 0.81 AC  
 OPEN SPACE = 2.11 AC  
 CN = 73  
 Tc = 9.4 MIN

STUDY LINE B  
 PRE-BASIN C  
 TOTAL AREA = 8.12 AC  
 OFFSITE:  
 IMPERVIOUS = 1.74 AC  
 GRAVEL = 0.19 AC  
 OPEN SPACE = 1.65 AC  
 ONSITE:  
 IMPERVIOUS = 0.05 AC  
 OPEN SPACE = 4.49 AC  
 CN = 80  
 Tc = 10.0 MIN

**LEGEND**

 OFF-SITE AREA



 SCALE: 1" = 100'

**POND**  
 Architects • Engineers • Planners  
 3500 Parkway Lane  
 Suite 600  
 Norcross, Ga. 30092  
 Phone: 678-336-7740  
 Fax: 678-336-7744  
 Web: www.pondco.com

PROJECT: **FULTON COUNTY AVIATION COMMUNITY CULTURAL CENTER**

**PRE-DEVELOPMENT DRAINAGE BASIN MAP**

DATE: 09/24/2012  
 PROJECT NO.: 1120185  
 DRAWING NO.: APPENDIX D  
 SHEET NO.: Figure 5

## APPENDIX E

JOB NUMBER:  
 STUDY AREA:  
 CONDITIONS:

06039.001  
 POST-BASIN A  
 PRE-DEVELOPED

DATE: 8/2/2012  
 TIME: 7:46:18 PM  
 ENGINEER: TLN

TOTAL AREA (ACRES) =	0.13		SQ. MILES = 0.0002				
SOIL GROUP =	C						
LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*%	%IMP*AREA
LAKES	0.00	100.00%	1.00	98	0.00%	0.00	0.00
IMPERVIOUS	0.00	100.00%	1.00	98	0.00%	0.00	0.00
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	0.13	0.00%	0.35	74	100.00%	74.00	0.00
<b>STREETS AND ROADS:</b>							
PAVED; curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED; open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00
<b>TOTALS</b>	0.13				100.00%	74.00	0.00
		CN = 74		I <sub>a</sub> = 0.703			
		IMP. AREA = 0.00		% IMP. = 0.0%			

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
POST-BASIN B  
POST-DEVELOPED

DATE: 8/2/2012  
TIME: 7:46:18 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =  
SOIL GROUP =

2.35  
C

SQ. MILES = 0.0037

LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*	%IMP*AREA
LAKES	0.00	100.00%	1	98	0.00%	0.00	0.00
IMPERVIOUS	0.00	100.00%	1	98	0.00%	0.00	0.00
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.85	0.00%	0.15	70	36.17%	25.32	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	1.50	0.00%	0.35	74	63.83%	47.23	0.00
<b>STREETS AND ROADS:</b>							
PAVED: curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED: open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00

TOTALS 2.35 100.00% 72.55 0.00

CN = 73

I<sub>a</sub> = 0.757

IMP. AREA = 0.00  
% IMP. = 0.00%

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
POST-BASIN C.1  
POST-DEVELOPED

DATE: 8/2/2012  
TIME: 7:46:18 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =	5.36		SQ. MILES = 0.0084				
SOIL GROUP =	C						
LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*	%IMP*AREA
LAKES	0.00	100.00%	1.00	98	0.00%	0.00	0.00
IMPERVIOUS	2.28	100.00%	1.00	98	42.54%	41.69	2.28
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	2.89	0.00%	0.35	74	53.92%	39.90	0.00
<b>STREETS AND ROADS:</b>							
PAVED; curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED; open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.19	65.00%	0.70	89	3.54%	3.15	0.12
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00
<b>TOTALS</b>	5.36				100.00%	84.74	2.40
		CN = 85		I <sub>a</sub> = 0.360			
		IMP. AREA = 2.40		% IMP. = 44.8%			

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
POST-BASIN C.2  
POST-DEVELOPED

DATE: 8/2/2012  
TIME: 7:46:18 PM  
ENGINEER: TLN

TOTAL AREA (ACRES) =  
SOIL GROUP =

0.70  
C

SQ. MILES = 0.0011

LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*%	%IMP*AREA
LAKES	0.00	100.00%	1	98	0.00%	0.00	0.00
IMPERVIOUS	0.00	100.00%	1	98	0.00%	0.00	0.00
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	0.70	0.00%	0.35	74	100.00%	74.00	0.00
<b>STREETS AND ROADS:</b>							
PAVED: curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED: open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.60	91	0.00%	0.00	0.00

TOTALS 0.70 100.00% 74.00 0.00

CN = 74

$I_s = 0.703$

IMP. AREA = 0.00  
% IMP. = 0.0%

JOB NUMBER:  
 STUDY AREA:  
 CONDITIONS:

06039.001  
 POST-BASIN C.3  
 POST-DEVELOPED

DATE: 8/2/2012  
 TIME: 7:46:18 PM  
 ENGINEER: TLN

TOTAL AREA (ACRES) =	2.86		SQ. MILES = 0.0045				
SOIL GROUP =	C						
LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN*	%IMP*AREA
LAKES	0.00	100.00%	1	98	0.00%	0.00	0.00
IMPERVIOUS	1.74	100.00%	1	98	60.84%	59.62	1.74
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	88	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	78	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	86	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	74	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	71	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	77	0.00%	0.00	0.00
GOOD COVER	0.00	0.00%	0.15	70	0.00%	0.00	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	86	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	79	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	1.12	0.00%	0.35	74	39.16%	28.98	0.00
<b>STREETS AND ROADS:</b>							
PAVED; curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED; open ditches (including right-of-way)	0.00	70.00%	0.80	92	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	89	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	87	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	94	0.00%	0.00	0.00
INDUSTRIAL	0.00	72.00%	0.80	91	0.00%	0.00	0.00
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	90	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	83	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	81	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	80	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	79	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	77	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	91	0.00%	0.00	0.00
<b>TOTALS</b>	2.86				100.00%	88.60	1.74

CN = 89  
 IMP. AREA = 1.74  
 % IMP. = 60.8%

I<sub>a</sub> = 0.257



# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

## Hyd. No. 6

Post-Basin A

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.150	0.011	0.011	
Flow length (ft)	= 72.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 10.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 3.23</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 3.23</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	=0.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.00</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	{0}0.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.00</b>
<b>Total Travel Time, Tc</b> .....				<b>5.00 min</b>

# TR55 Tc Worksheet

## Hyd. No. 7

Post-Basin B

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
<b>Sheet Flow</b>							
Manning's n-value	= 0.150		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 1.60		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 8.75</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>8.75</b>
<b>Shallow Concentrated Flow</b>							
Flow length (ft)	= 108.00		0.00		0.00		
Watercourse slope (%)	= 6.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.95		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 0.46</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.46</b>
<b>Channel Flow</b>							
X sectional flow area (sqft)	= 1.23		0.00		0.00		
Wetted perimeter (ft)	= 3.93		0.00		0.00		
Channel slope (%)	= 13.00		0.00		0.00		
Manning's n-value	= 0.013		0.015		0.015		
Velocity (ft/s)	=18.98		0.00		0.00		
Flow length (ft)	{{0}}186.0		0.0		0.0		
<b>Travel Time (min)</b>	<b>= 0.16</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.16</b>
<b>Total Travel Time, Tc .....</b>							<b>9.37 min</b>

# TR55 Tc Worksheet

## Hyd. No. 8

Post-Basin C.1 (To Pond)

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.011	0.011	0.011	
Flow length (ft)	= 274.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 2.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 2.22</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 2.22</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 259.00	0.00	0.00	
Watercourse slope (%)	= 1.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=1.61	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 2.68</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 2.68</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	=0.00	0.00	0.00	
Flow length (ft)	0.0	0.0	0.0	
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b> <b>0.00</b>	<b>+</b> <b>0.00</b>	<b>= 0.00</b>
<b>Total Travel Time, Tc .....</b>				<b>4.89 min</b>

# TR55 Tc Worksheet

**Hyd. No. 10**

Post-Basin C.2

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
<b>Sheet Flow</b>							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 45.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 6.70		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 0.32</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.32</b>
<b>Shallow Concentrated Flow</b>							
Flow length (ft)	= 165.00		0.00		0.00		
Watercourse slope (%)	= 1.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.61		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 1.70</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>1.70</b>
<b>Channel Flow</b>							
X sectional flow area (sqft)	= 2.37		0.00		0.00		
Wetted perimeter (ft)	= 3.99		0.00		0.00		
Channel slope (%)	= 2.00		0.00		0.00		
Manning's n-value	= 0.013		0.015		0.015		
Velocity (ft/s)	=11.43		0.00		0.00		
Flow length (ft)	{0}556.0		0.0		0.0		
<b>Travel Time (min)</b>	<b>= 0.81</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.81</b>
<b>Total Travel Time, Tc .....</b>							<b>2.84 min</b>

# TR55 Tc Worksheet

## Hyd. No. 11

Post-Basin C.3

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
<b>Sheet Flow</b>				
Manning's n-value	= 0.011	0.011	0.011	
Flow length (ft)	= 50.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 4.80	0.00	0.00	
Land slope (%)	= 10.00	0.00	0.00	
<b>Travel Time (min)</b>	<b>= 0.30</b>	<b>+</b>	<b>0.00</b>	<b>+</b>
			<b>0.00</b>	<b>= 0.30</b>
<b>Shallow Concentrated Flow</b>				
Flow length (ft)	= 50.00	210.00	0.00	
Watercourse slope (%)	= 10.00	7.00	0.00	
Surface description	= Unpaved	Unpaved	Paved	
Average velocity (ft/s)	=5.10	4.27	0.00	
<b>Travel Time (min)</b>	<b>= 0.16</b>	<b>+</b>	<b>0.82</b>	<b>+</b>
			<b>0.00</b>	<b>= 0.98</b>
<b>Channel Flow</b>				
X sectional flow area (sqft)	= 2.37	1.77	0.00	
Wetted perimeter (ft)	= 3.99	2.36	0.00	
Channel slope (%)	= 2.00	0.00	0.00	
Manning's n-value	= 0.013	0.015	0.015	
Velocity (ft/s)	=11.43	0.00	0.00	
Flow length (ft)	697.0	426.0	0.0	
<b>Travel Time (min)</b>	<b>= 1.02</b>	<b>+</b>	<b>Infinity</b>	<b>+</b>
			<b>0.00</b>	<b>= Infinity</b>
<b>Total Travel Time, Tc .....</b>				<b>2.30 min</b>

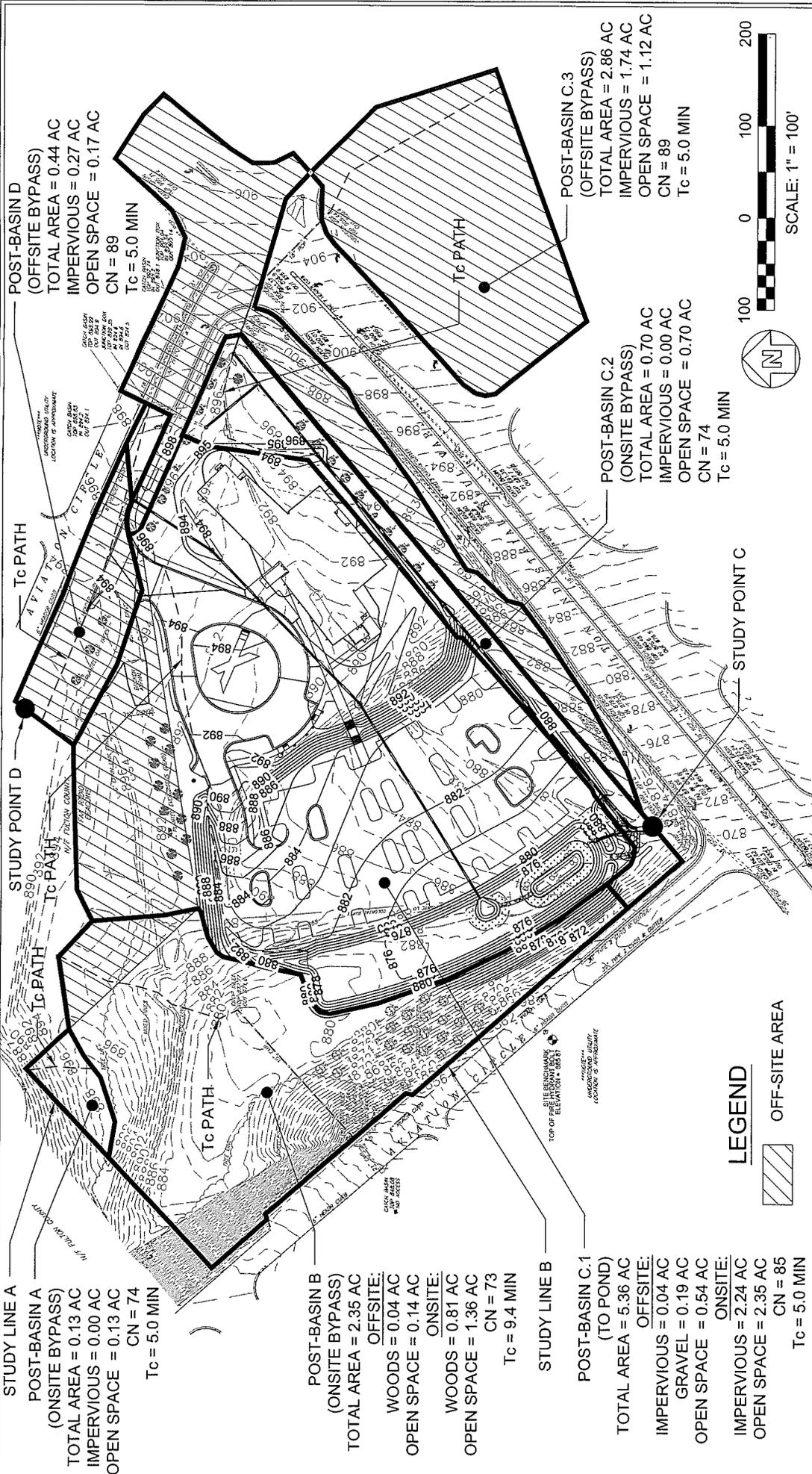
# TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

**Hyd. No. 13**

Post-Basin D

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
<b>Sheet Flow</b>							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 24.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 2.50		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 0.29</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.29</b>
<b>Shallow Concentrated Flow</b>							
Flow length (ft)	= 115.00		0.00		0.00		
Watercourse slope (%)	= 2.50		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=3.21		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 0.60</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.60</b>
<b>Channel Flow</b>							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00		0.00		0.00		
Flow length (ft)	{{0}}0.0		0.0		0.0		
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.00</b>
<b>Total Travel Time, Tc .....</b>							<b>0.89 min</b>



**STUDY LINE A**  
**POST-BASIN A**  
 (ONSITE BYPASS)  
 TOTAL AREA = 0.13 AC  
 IMPERVIOUS = 0.00 AC  
 OPEN SPACE = 0.13 AC  
 CN = 74  
 Tc = 5.0 MIN

**POST-BASIN B**  
 (ONSITE BYPASS)  
 TOTAL AREA = 2.35 AC  
 OFFSITE:  
 WOODS = 0.04 AC  
 OPEN SPACE = 0.14 AC  
 ONSITE:  
 WOODS = 0.81 AC  
 OPEN SPACE = 1.36 AC  
 CN = 73  
 Tc = 9.4 MIN

**STUDY LINE B**  
**POST-BASIN C.1**  
 (TO POND)  
 TOTAL AREA = 5.36 AC  
 OFFSITE:  
 IMPERVIOUS = 0.04 AC  
 GRAVEL = 0.19 AC  
 OPEN SPACE = 0.54 AC  
 ONSITE:  
 IMPERVIOUS = 2.24 AC  
 OPEN SPACE = 2.35 AC  
 CN = 85  
 Tc = 5.0 MIN

**POST-BASIN C.2**  
 (ONSITE BYPASS)  
 TOTAL AREA = 0.70 AC  
 IMPERVIOUS = 0.00 AC  
 OPEN SPACE = 0.70 AC  
 CN = 74  
 Tc = 5.0 MIN

**POST-BASIN C.3**  
 (OFFSITE BYPASS)  
 TOTAL AREA = 2.86 AC  
 IMPERVIOUS = 1.74 AC  
 OPEN SPACE = 1.12 AC  
 CN = 89  
 Tc = 5.0 MIN

**POST-BASIN D**  
 (OFFSITE BYPASS)  
 TOTAL AREA = 0.44 AC  
 IMPERVIOUS = 0.27 AC  
 OPEN SPACE = 0.17 AC  
 CN = 89  
 Tc = 5.0 MIN

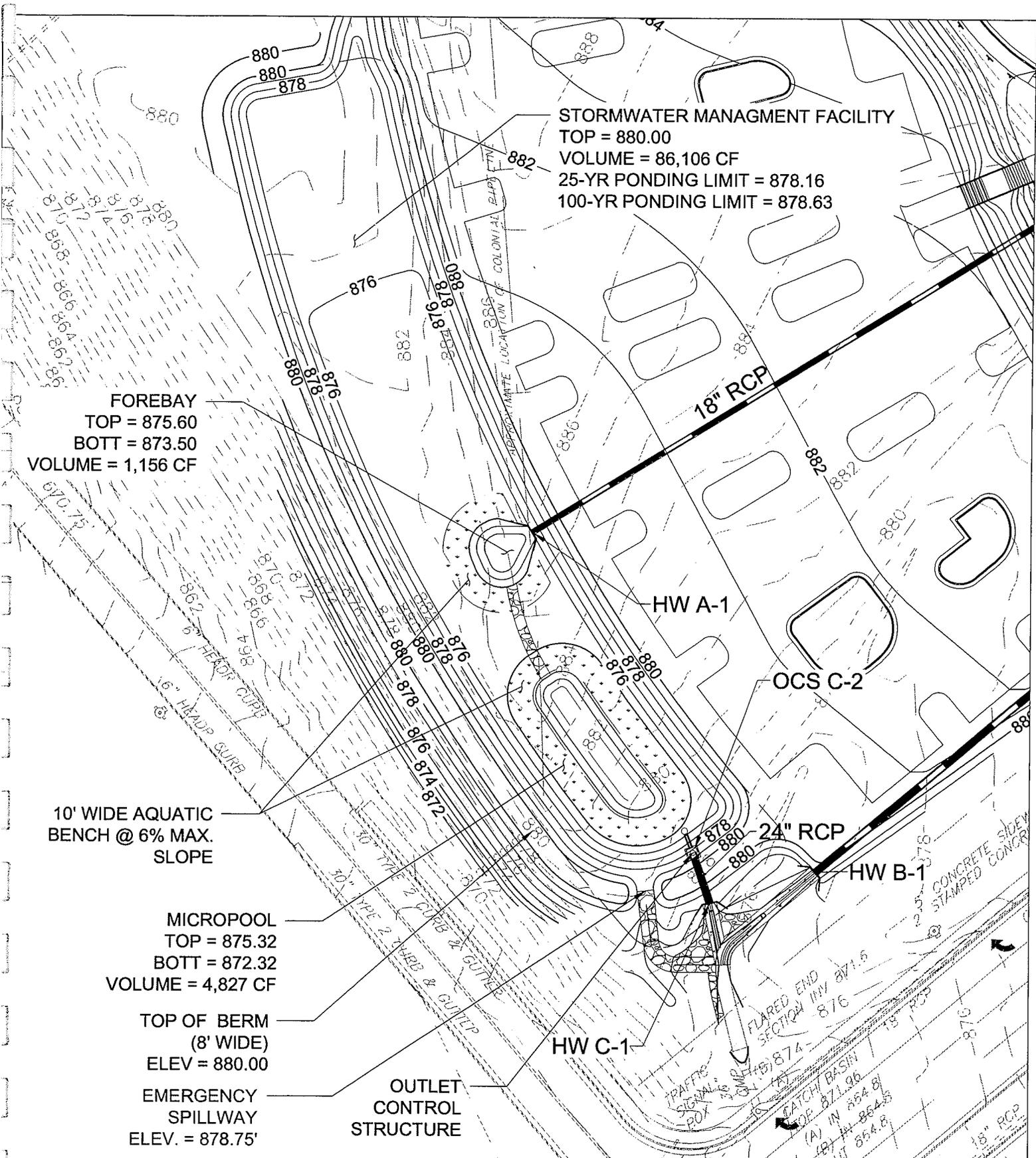
**LEGEND**



OFF-SITE AREA



<p>3500 Parkway Lane        Suite 600        Norcross, Ga. 30092        Phone: 678-336-7740        Fax: 678-336-7744        Web: www.pondco.com</p>	<p>PROJECT: <b>FULTON COUNTY AVIATION COMMUNITY CULTURAL CENTER</b></p>
	<p>DATE: 09/24/2012        PROJECT NO.: 1120185        DRAWING NO.: APPENDIX E        SHEET NO.: Figure 6</p>
<p><b>POST-DEVELOPMENT DRAINAGE BASIN MAP</b></p>	



STORMWATER MANAGEMENT FACILITY  
 TOP = 880.00  
 VOLUME = 86,106 CF  
 25-YR PONDING LIMIT = 878.16  
 100-YR PONDING LIMIT = 878.63

FOREBAY  
 TOP = 875.60  
 BOTT = 873.50  
 VOLUME = 1,156 CF

10' WIDE AQUATIC  
 BENCH @ 6% MAX.  
 SLOPE

MICROPOOL  
 TOP = 875.32  
 BOTT = 872.32  
 VOLUME = 4,827 CF

TOP OF BERM  
 (8' WIDE)  
 ELEV = 880.00

EMERGENCY  
 SPILLWAY  
 ELEV. = 878.75'

OUTLET  
 CONTROL  
 STRUCTURE

**POND**  
 Architects • Engineers • Planners  
 3500 Parkway Lane  
 Suite 600  
 Norcross, Ga. 30092  
 Phone 678-336-7740  
 Fax 678-336-7744  
 Web www.pondco.com

FULTON COUNTY  
 AVIATION COMMUNITY CULTURAL CENTER

ENLARGED VIEW OF POND

09/24/2012
PROJECT NO. 1120185
DRAWING NO. APPENDIX E
SHEET NO. Figure 7

**APPENDIX F**

JOB NUMBER:  
STUDY AREA:  
CONDITIONS:

06039.001  
10% BASIN  
PRE & POST

DATE: 7/23/2012  
TIME: 5:13:39 PM  
ENGINEER: TLN

LAND USE	AREA	TIA (estimate)	C (estimate)	CN	% TOTAL	CN%	%IMP*AREA
TOTAL AREA (ACRES) = <b>93.37</b> SQ. MILES = <b>0.1459</b>							
SOIL GROUP = <b>C</b>							
LAKES	9.47	100.00%	1.00	98	10.14%	9.94	9.47
IMPERVIOUS	0.00	100.00%	1.00	98	0.00%	0.00	0.00
<b>CULTIVATED LAND:</b>							
W/O CONSERVATION TREATMENT	0.00	0.00%	0.65	81	0.00%	0.00	0.00
WITH CONSERVATION TREATMENT	0.00	0.00%	0.45	71	0.00%	0.00	0.00
<b>PASTURE OR RANGE LAND:</b>							
POOR CONDITION	0.00	0.00%	0.60	79	0.00%	0.00	0.00
GOOD CONDITION	0.00	0.00%	0.35	61	0.00%	0.00	0.00
<b>MEADOW: GOOD CONDITION</b>	0.00	0.00%	0.20	58	0.00%	0.00	0.00
<b>WOODS OR FOREST LAND</b>							
THIN STAND, POOR COVER	0.00	0.00%	0.35	66	0.00%	0.00	0.00
GOOD COVER	43.22	0.00%	0.15	55	46.29%	25.46	0.00
<b>OPEN SPACE (lawns, parks, golf courses, cemeteries, etc.):</b>							
POOR CONDITION (grass cover <50%)	0.00	0.00%	0.60	79	0.00%	0.00	0.00
FAIR CONDITION (grass cover 50% TO 75%)	0.00	0.00%	0.45	69	0.00%	0.00	0.00
GOOD CONDITION (grass cover >75%)	5.00	0.00%	0.35	61	5.36%	3.27	0.00
<b>STREETS AND ROADS:</b>							
PAVED; curbs and storm drains (excluding right-of-way)	0.00	100.00%	1.00	98	0.00%	0.00	0.00
PAVED; open ditches (including right-of-way)	0.00	70.00%	0.80	89	0.00%	0.00	0.00
GRAVEL (including right-of-way)	0.00	65.00%	0.70	85	0.00%	0.00	0.00
DIRT (including right-of-way)	0.00	55.00%	0.60	82	0.00%	0.00	0.00
<b>URBAN DISTRICTS</b>							
COMMERCIAL AND BUSINESS	0.00	85.00%	0.85	92	0.00%	0.00	0.00
INDUSTRIAL	35.68	72.00%	0.80	88	38.21%	33.63	25.69
<b>RESIDENTIAL DISTRICTS BY LOT SIZE</b>							
1/8 ACRE OR LESS (town houses)	0.00	65.00%	0.70	85	0.00%	0.00	0.00
1/4 ACRE	0.00	38.00%	0.60	75	0.00%	0.00	0.00
1/3 ACRE	0.00	30.00%	0.55	72	0.00%	0.00	0.00
1/2 ACRE	0.00	25.00%	0.50	70	0.00%	0.00	0.00
1 ACRE	0.00	20.00%	0.45	68	0.00%	0.00	0.00
2 ACRES	0.00	12.00%	0.40	65	0.00%	0.00	0.00
<b>NEWLY GRADED AREAS (pervious areas only, no veg.)</b>	0.00	0.00%	0.50	86	0.00%	0.00	0.00

TOTALS      93.37      100.00%      72.29      35.16

CN = **72**  
IMP. AREA = 35.16  
% IMP. = 37.7%

$I_p = 0.767$

# TR55 Tc Worksheet

## Hyd. No. 15

10% Drainage Basin

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
<b>Sheet Flow</b>							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 50.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 2.00		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 0.57</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.57</b>
<b>Shallow Concentrated Flow</b>							
Flow length (ft)	= 3230.00		0.00		0.00		
Watercourse slope (%)	= 2.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.28		0.00		0.00		
<b>Travel Time (min)</b>	<b>= 23.59</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>23.59</b>
<b>Channel Flow</b>							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.013		0.015		0.015		
Velocity (ft/s)	=0.00		0.00		0.00		
Flow length (ft)	{0}0.0		0.0		0.0		
<b>Travel Time (min)</b>	<b>= 0.00</b>	<b>+</b>	<b>0.00</b>	<b>+</b>	<b>0.00</b>	<b>=</b>	<b>0.00</b>
<b>Total Travel Time, Tc .....</b>							<b>24.16 min</b>



## APPENDIX G

**Pond and Company**

3500 Parkway Lane  
Suite 600  
Norcross, Georgia 30092  
Phone: 678-336-7740  
Fax: 678-336-7744

**Water Quality Calculations**

PROJECT: FCACCC DATE: 9/24/2012  
LOCATION: Fulton Industrial Blvd TIME: 7:44:17 PM  
CATEGORY: WQ Volume ENGINEER: TLN

**Basin Post-Basin C.1 (To Pond)**

Area (ac) 5.36 On site area to be treated  
Impervious (ac) 2.47

WQV= (1.2RvAs)/12  
Rv = 0.05+I(0.009)  
I 46.08 %  
Rv 0.4647  
As 233481.6 SF

<b>100% WQV</b>	<b>10851</b>	<b>CF</b>	0.25 AC-FT
<b>25% WQV</b>	<b>2713</b>	<b>CF</b>	0.06 AC-FT

Note: Micropool volume equals 25% of the water quality volume.

**Pond and Company**

3500 Parkway Lane  
Suite 600  
Norcross, Georgia 30092  
Phone: 678-336-7740  
Fax: 678-336-7744

**Forebay Volume Calculations**

PROJECT: FCACCC  
LOCATION: Fulton Industrial Blvd  
CATEGORY: Forebay

DATE: 9/24/2012  
TIME: 7:44:17 PM  
ENGINEER: TLN

**Pond 1**

Water Quality Volume Required (100%)	10851	CF
Impervious Area	2.47	AC
Forebay Vol. = I x 0.1"x (1/12")	897	CF
No. of Inlets	1	
Forebay Required Inlet	897	CF

<b>Inlet - HW F1</b>				
Elevation (FT)	Increment (FT)	Area (SF)	Incremental Vol (CF)	Cumulative Vol (CF)
873.50	0.50	178.00	0.00	0.00
874.00	0.50	359.00	134.25	134.25
875.00	1.00	538.00	448.50	582.75
875.60	0.60	1372.00	573.00	1155.75

**Forebay Provided Inlet HW F1**

1155.75 CF

**Forebay Elevation**

875.60 FT

Enough provided? YES

**Depth of Pool**

2.1 ft

**Pond and Company**  
3500 Parkway Lane

Suite 600  
Norcross, Georgia 30092  
Phone: 678-336-7740  
Fax: 678-336-7744

### Micropool Volume Calculations

PROJECT: FCACCC  
LOCATION: Fulton Industrial Blvd  
CATEGORY: Micropool

DATE: 9/24/2012  
TIME: 7:44:17 PM  
ENGINEER: TLN

#### **Pond 1**

Water Quality Volume Required (100%)

10851 CF

Minimum Micropool Volume Req'd =

$$0.25 \times \text{WQV} =$$

2713 CF

Elevation (FT)	Increment (FT)	Area (SF)	Incremental Vol (CF)	Cumulative Vol (CF)
872.32	0.00	375	0	0
873.00	0.68	781	393	393
874.00	1.00	1,249	1,015	1,408
875.00	1.00	3,342	2,296	3,704
875.32	0.32	3,680	1,124	4,827

#### **Micropool Volume Provided Pond 1**

4,827 CF

#### **Micropool Elevation**

875.32 FT

Enough provided? YES

#### **Depth of Pool**

3.0 ft



# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool

**General Information**

Name of Developer: Fulton County  
 Development Name: Aviation Community Cultural Ctr  
 Site Location / Address: Aviation Cir & Fulton Industrial Blvd  
Fulton County, GA  
 Development Type: Office/Professional  
 Area of Development (acres): 7.62

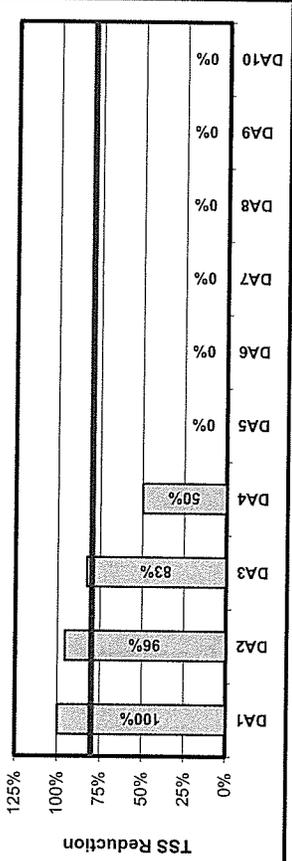
Date Submitted: \_\_\_\_\_  
 Permit Number: \_\_\_\_\_  
 Developer Contact: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_  
 Name of Engineer(s): Pond & Company  
 Maintenance Responsibility: Fulton County

**Summary of Site and Structural Control Information**

Number of Drainage Areas: <b>4</b>	<b>Total # of Structural Controls Used: 3</b>																																													
Sum of Drainage Areas (ac) : <b>7.62</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">General Application Structural Stormwater Controls</th> <th colspan="2">Limited Application Structural Stormwater Controls</th> </tr> </thead> <tbody> <tr> <td>Stormwater Pond</td> <td style="text-align: center;">1</td> <td>Filter Strip</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Stormwater Wetland</td> <td style="text-align: center;">0</td> <td>Grass Channel</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Bioretention Area</td> <td style="text-align: center;">0</td> <td>Organic Filter</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Sand Filter</td> <td style="text-align: center;">0</td> <td>Underground Sand Filter</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Infiltration Trench</td> <td style="text-align: center;">0</td> <td>Submerged Gravel Wetland</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Enhanced Swales</td> <td style="text-align: center;">0</td> <td>Gravity (Oil-Grit) Separator</td> <td style="text-align: center;">0</td> </tr> <tr> <td></td> <td></td> <td>Porous Concrete**</td> <td style="text-align: center;">0</td> </tr> <tr> <td></td> <td></td> <td>Modular Porous Paver System**</td> <td style="text-align: center;">0</td> </tr> <tr> <td></td> <td></td> <td>Alum Treatment System</td> <td style="text-align: center;">0</td> </tr> <tr> <td></td> <td></td> <td>Proprietary Structural Control***</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>		General Application Structural Stormwater Controls		Limited Application Structural Stormwater Controls		Stormwater Pond	1	Filter Strip	0	Stormwater Wetland	0	Grass Channel	2	Bioretention Area	0	Organic Filter	0	Sand Filter	0	Underground Sand Filter	0	Infiltration Trench	0	Submerged Gravel Wetland	0	Enhanced Swales	0	Gravity (Oil-Grit) Separator	0			Porous Concrete**	0			Modular Porous Paver System**	0			Alum Treatment System	0			Proprietary Structural Control***	0
General Application Structural Stormwater Controls		Limited Application Structural Stormwater Controls																																												
Stormwater Pond	1	Filter Strip	0																																											
Stormwater Wetland	0	Grass Channel	2																																											
Bioretention Area	0	Organic Filter	0																																											
Sand Filter	0	Underground Sand Filter	0																																											
Infiltration Trench	0	Submerged Gravel Wetland	0																																											
Enhanced Swales	0	Gravity (Oil-Grit) Separator	0																																											
		Porous Concrete**	0																																											
		Modular Porous Paver System**	0																																											
		Alum Treatment System	0																																											
		Proprietary Structural Control***	0																																											
<p>Land Use Distribution Pie</p> <table border="1" style="margin: 0 auto; border-collapse: collapse;"> <tr> <td>IA</td> <td style="text-align: center;">30%</td> </tr> <tr> <td>DP</td> <td style="text-align: center;">41%</td> </tr> <tr> <td>NC</td> <td style="text-align: center;">29%</td> </tr> </table>			IA	30%	DP	41%	NC	29%																																						
IA	30%																																													
DP	41%																																													
NC	29%																																													
<p>Number of Drainage Areas: <b>4</b></p> <p>Sum of Drainage Areas (ac) : <b>7.62</b></p> <p>Total (IA) Impervious Area (ac) : <b>2.24</b></p> <p>Total (DP) Disturbed Pervious Area (ac) : <b>3.14</b></p> <p>Total (NC) Natural Conservation Area (ac) : <b>2.24</b></p> <p>Percent Imperviousness (%) : <b>29%</b></p>																																														
<b>TSS Reduction</b>																																														
<p><b>Total TSS Reduction (%) : 84%</b></p>																																														

**Official Use Only**

Tracking #: \_\_\_\_\_  
 Reviewed By: \_\_\_\_\_  
 Date Approved: \_\_\_\_\_  
 Conditions of Approval: \_\_\_\_\_



# Drainage Area 01

## Land Use Distribution (acres)

Enter Total Area : 0.13

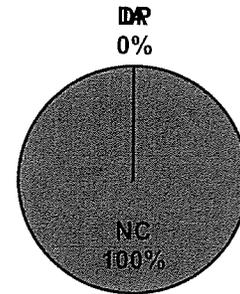
Enter Impervious Area (IA) : 0.00

Enter Disturbed Pervious Area (DP) : 0.00

Enter Natural Conservation Area (NC) : 0.13

**Total Area for check :** 0.13

**Percent Imperviousness (%) :** 0%



## Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres): 0.13

Enter Area (acres) Treated by (if applicable):

Undisturbed Stream Buffers : \_\_\_\_\_

Vegetated Channels : \_\_\_\_\_

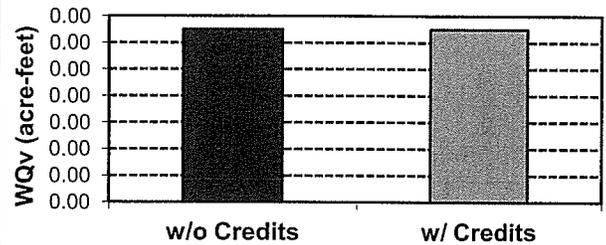
Overland Flow Filtration / Recharge : \_\_\_\_\_

**Total Area receiving Credits (acres):** 0.13

## Water Quality Volume (WQ<sub>v</sub>)

**WQ<sub>v</sub> (ac-ft) w/o Credits =** 0.001

**WQ<sub>v</sub> w/ Non-Struc. Credits =** 0.001



## Structural Controls

Select Structural Control(s)

Control ID

Control 1 NONE

NONE

Control 2 NONE

NONE

Control 3 NONE

NONE

Control 4 NONE

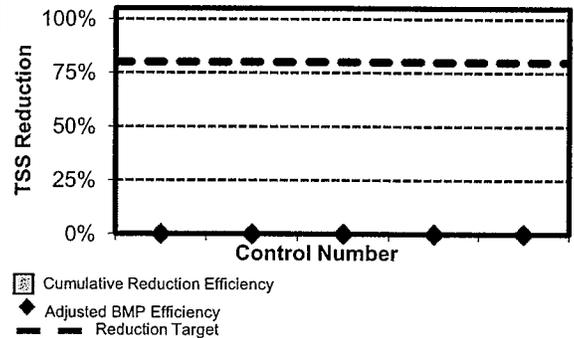
NONE

Control 5 NONE

NONE

## TSS Reduction Chart

**TSS Reduction from Structural Controls:** 0%



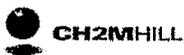
## Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

DA 2    DA 3    DA 4    DA 5    DA 6    DA 7    DA 8    DA 9    DA 10

**Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):**

100%



Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin: \_\_\_\_\_

District/LL/Parcel: \_\_\_\_\_

Comm. District: \_\_\_\_\_

# Drainage Area 02

## Land Use Distribution (acres)

Enter Total Area : 2.20

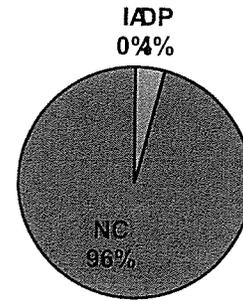
Enter Impervious Area (IA) :

Enter Disturbed Pervious Area (DP) : 0.09

Enter Natural Conservation Area (NC) : 2.11

**Total Area for check :** 2.20

**Percent Imperviousness (%) :** 0%



### Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres): 2.11

Enter Area (acres) Treated by (if applicable):

Undisturbed Stream Buffers :

Vegetated Channels :

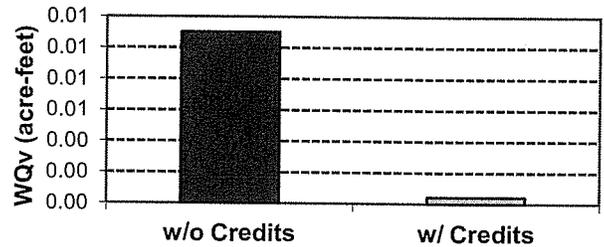
Overland Flow Filtration / Recharge :

**Total Area receiving Credits (acres):** 2.11

### Water Quality Volume (WQ<sub>v</sub>)

**WQ<sub>v</sub> (ac-ft) w/o Credits =** 0.011

**WQ<sub>v</sub> w/ Non-Struc. Credits =** 0.000



### Structural Controls

**Select Structural Control(s)**

**Control ID**

Control 1 NONE

NONE

Control 2 NONE

NONE

Control 3 NONE

NONE

Control 4 NONE

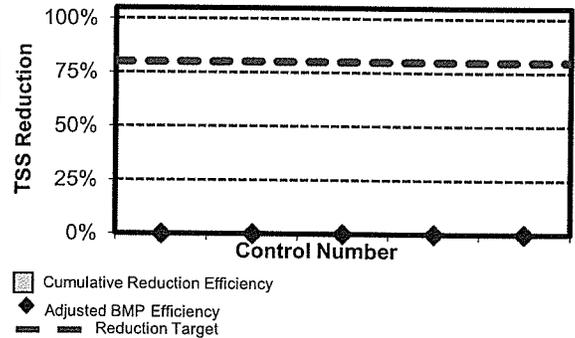
NONE

Control 5 NONE

NONE

### TSS Reduction Chart

**TSS Reduction from Structural Controls:** 0%



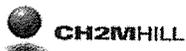
### Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

DA 1    DA 3    DA 4    DA 5    DA 6    DA 7    DA 8    DA 9    DA 10

**Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):**

# 96%



Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:

District/LL/Parcel:

Comm. District:

# Drainage Area 03

## Land Use Distribution (acres)

Enter Total Area : **4.59**

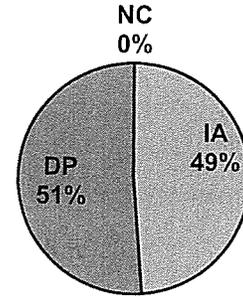
Enter Impervious Area (IA) : 2.24

Enter Disturbed Pervious Area (DP) : 2.35

Enter Natural Conservation Area (NC) :

**Total Area for check : 4.59**

**Percent Imperviousness (%) : 49%**



### Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres): 0.00

Enter Area (acres) Treated by (if applicable):

Undisturbed Stream Buffers :

Vegetated Channels :

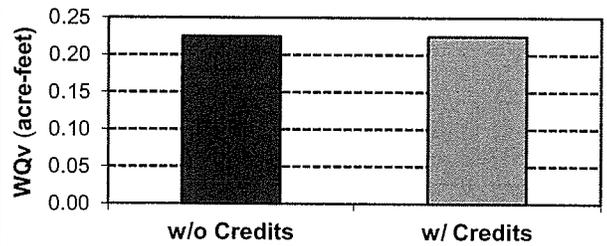
Overland Flow Filtration / Recharge :

**Total Area receiving Credits (acres): 0.00**

### Water Quality Volume (WQ<sub>v</sub>)

**WQ<sub>v</sub> (ac-ft) w/o Credits = 0.225**

**WQ<sub>v</sub> w/ Non-Struc. Credits = 0.225**



### Structural Controls

Select Structural Control(s)

Control ID

Control 1 Grass Channel

FCH-03-1

Control 2 Stormwater Pond

STP-03-2

Control 3 NONE

NONE

Control 4 NONE

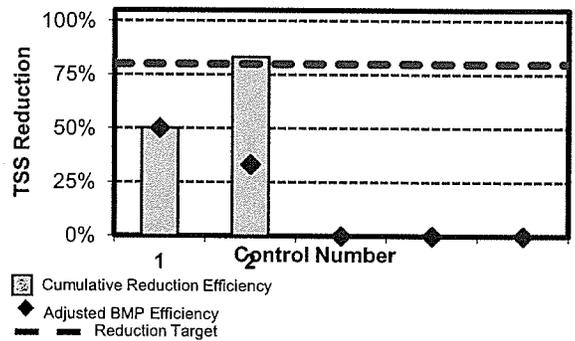
NONE

Control 5 NONE

NONE

### TSS Reduction Chart

**TSS Reduction from Structural Controls: 83%**



### Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

DA 1    DA 2    DA 4    DA 5    DA 6    DA 7    DA 8    DA 9    DA 10

**Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):**

# 83%



Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:

District/LL/Parcel:

Comm. District:



10% DRAINAGE BASIN  
 TOTAL AREA = 93.37 AC  
 INDUSTRIAL = 35.68 AC  
 ROADS = 9.47 AC  
 OPEN SPACE = 5.00 AC  
 WOODS = 43.22 AC  
 CN = 72  
 Tc = 24.2 MIN

10% STUDY POINT

<p><b>POND</b>          Architect • Engineers • Planners          3500 Parkway Lane          Suite 600          Norcross, Ga. 30092          Phone 678-336-7740          Fax 678-336-7744          Web www.pondco.com</p>	<p>PROJECT: FULTON COUNTY AVIATION COMMUNITY CULTURAL CENTER</p>	<p>DATE: 09/24/2012          PROJECT NO: 1120185          DRAWING NO: APPENDIX F          SHEET NO: Figure 9</p>
	<p>10% DRAINAGE BASIN MAP</p>	

# Drainage Area 04

## Land Use Distribution (acres)

Enter Total Area : **0.70**

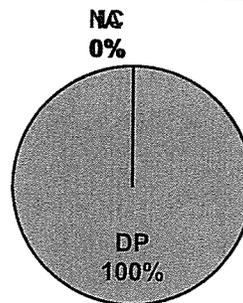
Enter Impervious Area (IA) :

Enter Disturbed Pervious Area (DP) : **0.70**

Enter Natural Conservation Area (NC) :

**Total Area for check : 0.70**

**Percent Imperviousness (%) : 0%**



## Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres): **0.00**

Enter Area (acres) Treated by (if applicable):

Undisturbed Stream Buffers :

Vegetated Channels :

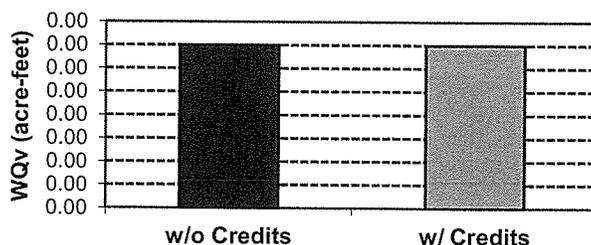
Overland Flow Filtration / Recharge :

**Total Area receiving Credits (acres): 0.00**

## Water Quality Volume (WQ<sub>v</sub>)

**WQ<sub>v</sub> (ac-ft) w/o Credits = 0.004**

**WQ<sub>v</sub> w/ Non-Struc. Credits = 0.004**



## Structural Controls

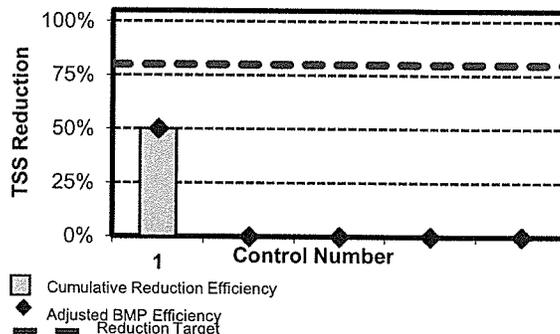
### Select Structural Control(s)

### Control ID

Control 1	Grass Channel	FCH-04-1
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

## TSS Reduction Chart

**TSS Reduction from Structural Controls: 50%**



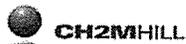
## Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

DA 1    DA 2    DA 3    DA 5    DA 6    DA 7    DA 8    DA 9    DA 10

**Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):**

# 50%

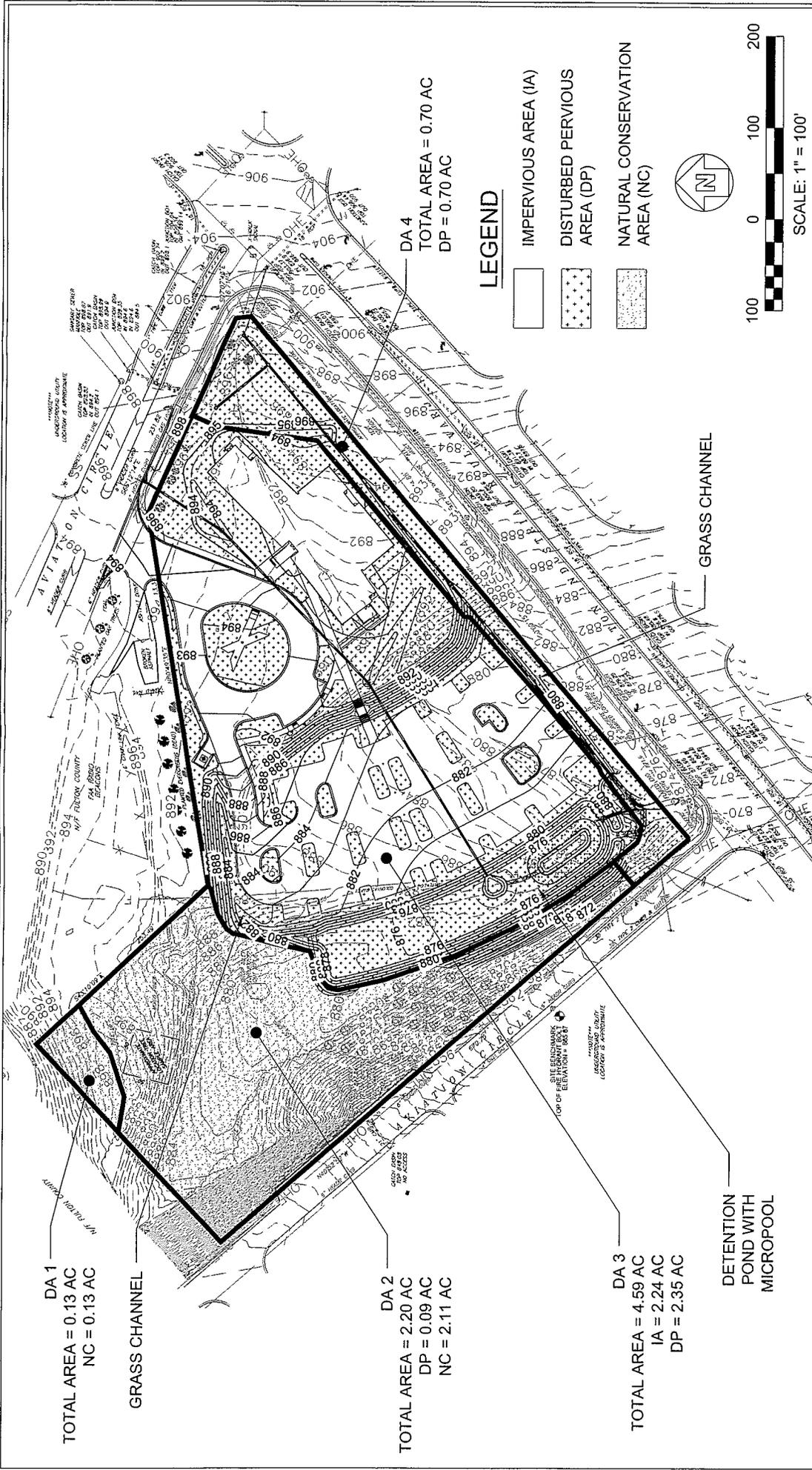


## Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:

District/LL/Parcel:

Comm. District:



<p><b>FULTON COUNTY AVIATION COMMUNITY CULTURAL CENTER</b></p> <p><b>TSS AREA MAP</b></p>	<p>DATE: 09/24/2012</p> <p>PROJECT NO: 1120185</p> <p>DRAWING NO: APPENDIX G</p> <p>SHEET NO: Figure 10</p>
	<p>PROJECT:</p>
<p><b>POND</b> Architects • Engineers • Planners 3500 Parkway Lane Suite 600 Atlanta, GA 30092 Phone 678-336-7740 Fax 678-336-7744 Web www.pondco.com</p>	

**APPENDIX H**

Norcross, Georgia 30092  
 Phone: 678-336-7740  
 Fax: 678-336-7744

PROJECT: FCACCC  
 LOCATION: Fulton Industrial Blvd  
 CATEGORY: CPV (Post-Basin C.1)

DATE: 9/25/2012  
 TIME: 12:50:53 AM  
 ENGINEER: TLN

**Design Information**

Drainage Area*, A	<u>5.36 Acres</u>	<u>0.008375 Sq. miles</u>	*Area draining to pond
Composite Runoff CN	<u>85</u>		
Time of Concentration, T	<u>0.083 Hours</u>		
Rainfall, in., P (1 year)	<u>3.36 Inches</u>		
Detention Time	<u>24 Hours</u>		
Orifice Invert Elevation	<u>875.83 Feet</u>		

**Calculations**

S	$S=(1000/CN)-10$	=	1.80
Runoff, in	$Qa=(\frac{P-0.2S}{P+0.8S})^2$	=	1.87 inches
Initial Abstraction, Ia	Ia	=	0.38 (from GSMM table 2.1.5-3)
	Ia/P	=	0.11
Unit Peak Factor	qu	=	975 csm/in (from Figure 2.1.5-6)
Peak Discharge	qi= qu*A*Qa	=	15.31 cfs
	qo/qi	=	0.02
	$Vs/Vr=0.682-1.43(qo/qi) + 1.64(qo/qi)^2-0.804(qo/qi)^3$	=	0.66
Storage Volume	CPv = (Vs/Vr)(Qa)(A)/12	=	23926.98 cf
	WSEL	=	877.42 feet

## APPENDIX I

**Pond and Company**

3500 Parkway Lane  
 Suite 600  
 Norcross, Georgia 30092  
 Phone: 678-336-7740  
 Fax: 678-336-7744

**Stage-Storage & Orifice Sizing Calculations**

PROJECT: FCACCC  
 LOCATION: Fulton Industrial Blyd  
 CATEGORY: Stage Storage & WQ/CP Orifice Sizing

DATE: 9/25/2012  
 TIME: #####  
 ENGINEER: TLN

<b>Detention Pond with Micropool</b>					
<b>Micropool Volume Required (CF)</b>				<b>2713</b>	<b>CF</b>
<b>Water Quality Volume Required (CF)</b>				<b>10851</b>	<b>CF</b>
<b>Channel Protection Volume Required (CF)</b>				<b>23927</b>	<b>cf</b>
Elevation (FT)	Increment (FT)	Area (SF)	Incremental Storage (CF)	Total Storage (CF)	Total Storage (CF)
875.32	0.00	7,702	0	0	0
875.83	0.51	11,468	4,888	4,888	0
876.00	0.68	11,785	1,977	6,865	1,977
877.00	1.00	17,850	14,818	21,682	16,794
877.42	0.42	16,483	7,210	28,892	24,004
878.00	1.00	20,299	10,667	39,559	34,671
879.00	1.00	22,641	21,470	61,029	56,141
880.00	1.00	25,134	23,888	84,917	80,028

875.32 (WQV Begins)

**Micropool Vol Elev**

Min. Elev. Req'd = 874.20  
 Elev. Provided = 875.32 (Micropool, WQV Orifice, Routing Begins)  
 Vol. Provided = 4,827 cf (See Appendix G for Micropool Calculations)

**Water Quality Treatment Vol Elev**

Min. Elev. Req'd = 875.83  
 Elev. Provided = 875.83 (WQV Ends, CP orifice elevation)  
 Vol. in forebay (fb) and micropool (mp) = 5983 cf  
 Required WQV = 10,851 cf  
 Routed WQV=Req'd WQV-fb & mp vol.= 4,868 cf  
 Vol. Provided = 10,871 cf

**Size WQ orifice**

$A=(CP/t)/(0.6*(64.4*H/2)^{0.5})$   
 V= WQ Vol 4888 cf  
 t (sec) 86400 s  
 H=Height 0.51 ft H=(CPV Elev -CPV Orifice Elev)  
 Area = 0.023 sq. ft  
 Diameter= 0.1723 ft  
 Diameter= 2.1 in  
 Diameter= 3.0 in minimum  
 INV ELEV 875.32 ft

**Channel Protection Vol Elev**

Min. Elev. Req'd = 877.42  
Elev. Provided = 877.42 (CPV Ends, overflow weir elevation)  
Vol. Provided = 24,004 cf

**Size CP orifice**

$A=(CP/t)/(0.6*(64.4*H/2)^{0.5})$   
V= CP Vol 24003.93 cf  
t (sec) 86400 s  
H=Height 1.59 ft  $H=(CPV\ Elev - CPV\ Orifice\ Elev)$   
Area = 0.065 sq. ft  
Diameter= 0.2871 ft  
Diameter= 3.4 in  
Diameter= 3.0 in used  
INV ELEV 875.83 ft

**Size Pond Drain**

$A=(CP/t)/(0.6*(64.4*H/2)^{0.5})$   
V= CP Vol 84916.56 cf  
t (sec) 86400 s  
H=Height 4.68 ft  
Area = 0.133 sq. ft  
Diameter= 0.4122 ft  
Diameter= 4.9 in  
INV ELEV 875.32 ft



# Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Pond No. 1 - Detention Pond with Micropool

### Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 875.32 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	875.32	7,702	0	0
0.51	875.83	11,468	4,888	4,888
0.68	876.00	11,785	1,976	6,865
1.68	877.00	17,850	14,818	21,682
1.83	877.15	18,200	2,704	24,386
2.68	878.00	20,299	16,362	40,748
3.68	879.00	22,641	21,470	62,218
4.68	880.00	25,134	23,887	86,106

### Culvert / Orifice Structures

### Weir Structures

	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 24.00	3.00	3.00	0.00	Crest Len (ft)	= 8.00	4.00	Inactive	0.00
Span (in)	= 24.00	3.00	3.00	0.00	Crest El. (ft)	= 880.00	877.42	0.00	0.00
No. Barrels	= 1	1	1	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 875.26	875.32	875.83	0.00	Weir Type	= 1	Rect	Rect	---
Length (ft)	= 10.00	0.00	0.00	0.00	Multi-Stage	= Yes	Yes	No	No
Slope (%)	= 1.00	0.00	0.00	n/a					
N-Value	= .013	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 0.000 (by Wet area)			
Multi-Stage	= n/a	Yes	Yes	No	TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	875.32	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.51	4,888	875.83	0.15 ic	0.15 ic	0.00	---	0.00	0.00	---	---	---	---	0.147
0.68	6,865	876.00	0.23 ic	0.18 ic	0.05 ic	---	0.00	0.00	---	---	---	---	0.226
1.68	21,682	877.00	0.55 oc	0.28 ic	0.24 ic	---	0.00	0.00	---	---	---	---	0.526
1.83	24,386	877.15	0.58 oc	0.30 ic	0.26 ic	---	0.00	0.00	---	---	---	---	0.556
2.68	40,748	878.00	6.29 oc	0.20 ic	0.20 ic	---	0.00	5.88	---	---	---	---	6.290
3.68	62,218	879.00	21.49 oc	0.19 ic	0.19 ic	---	0.00	21.10 s	---	---	---	---	21.49
4.68	86,106	880.00	28.06 ic	0.13 ic	0.13 ic	---	0.00	27.80 s	---	---	---	---	28.06

**APPENDIX J**



# Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	0.253	0.366	-----	0.484	0.610	0.784	0.916	1.050	Pre-Basin A
2	SCS Runoff	-----	5.282	7.785	-----	10.44	13.25	17.16	20.15	23.17	Pre-Basin B
3	SCS Runoff	-----	17.80	24.71	-----	31.86	39.14	48.97	56.38	63.81	Pre-Basin C
4	SCS Runoff	-----	1.797	2.306	-----	2.815	3.322	3.994	4.496	4.996	Pre-Basin D
6	SCS Runoff	-----	0.253	0.366	-----	0.484	0.610	0.784	0.916	1.050	Post-Basin A
7	SCS Runoff	-----	4.004	5.901	-----	7.917	10.05	13.01	15.27	17.57	Post-Basin B
8	SCS Runoff	-----	17.03	22.53	-----	28.08	33.65	41.08	46.64	52.18	Post-Basin C.1 (To Pond)
9	Reservoir	8	0.517	0.603	-----	1.761	3.909	8.790	12.83	16.40	Route Basin C.1
10	SCS Runoff	-----	1.362	1.969	-----	2.609	3.285	4.220	4.933	5.653	Post-Basin C.2
11	SCS Runoff	-----	10.49	13.46	-----	16.43	19.39	23.31	26.24	29.16	Post-Basin C.3
12	Combine	9, 10, 11	12.16	15.84	-----	19.54	23.25	30.62	37.92	45.46	Total Post C
13	SCS Runoff	-----	1.613	2.071	-----	2.528	2.983	3.587	4.038	4.487	Post-Basin D
15	SCS Runoff	-----	87.05	132.82	-----	182.13	234.55	307.42	363.54	420.55	10% Drainage Basin
16	Combine	1, 2, 3, 15	98.97	150.02	-----	204.91	262.49	342.86	404.71	467.49	10% Pre-Basin
17	Combine	6, 7, 12, 15,	90.12	136.85	-----	188.20	244.76	323.86	384.66	446.03	10% Post-Basin

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.253	2	718	506	-----	-----	-----	Pre-Basin A
2	SCS Runoff	5.282	2	720	12,227	-----	-----	-----	Pre-Basin B
3	SCS Runoff	17.80	2	720	46,387	-----	-----	-----	Pre-Basin C
4	SCS Runoff	1.797	2	716	3,715	-----	-----	-----	Pre-Basin D
6	SCS Runoff	0.253	2	718	506	-----	-----	-----	Post-Basin A
7	SCS Runoff	4.004	2	720	9,269	-----	-----	-----	Post-Basin B
8	SCS Runoff	17.03	2	716	34,566	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	0.517	2	844	34,458	8	876.96	21,018	Route Basin C.1
10	SCS Runoff	1.362	2	718	2,726	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	10.49	2	716	21,686	-----	-----	-----	Post-Basin C.3
12	Combine	12.16	2	716	58,870	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	1.613	2	716	3,336	-----	-----	-----	Post-Basin D
15	SCS Runoff	87.05	2	730	343,780	-----	-----	-----	10% Drainage Basin
16	Combine	98.97	2	728	402,901	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	90.12	2	730	412,426	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

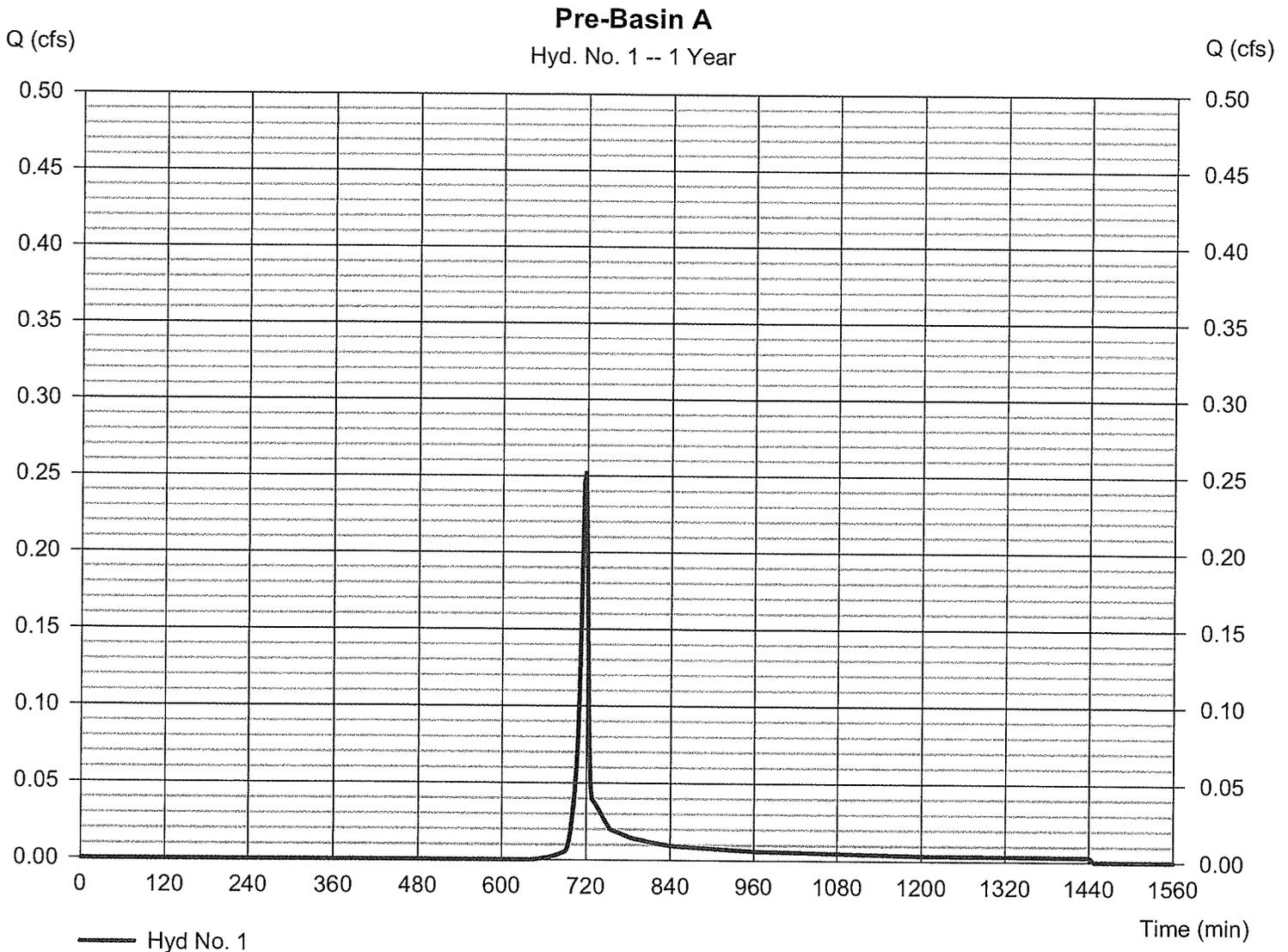
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.253 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 506 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

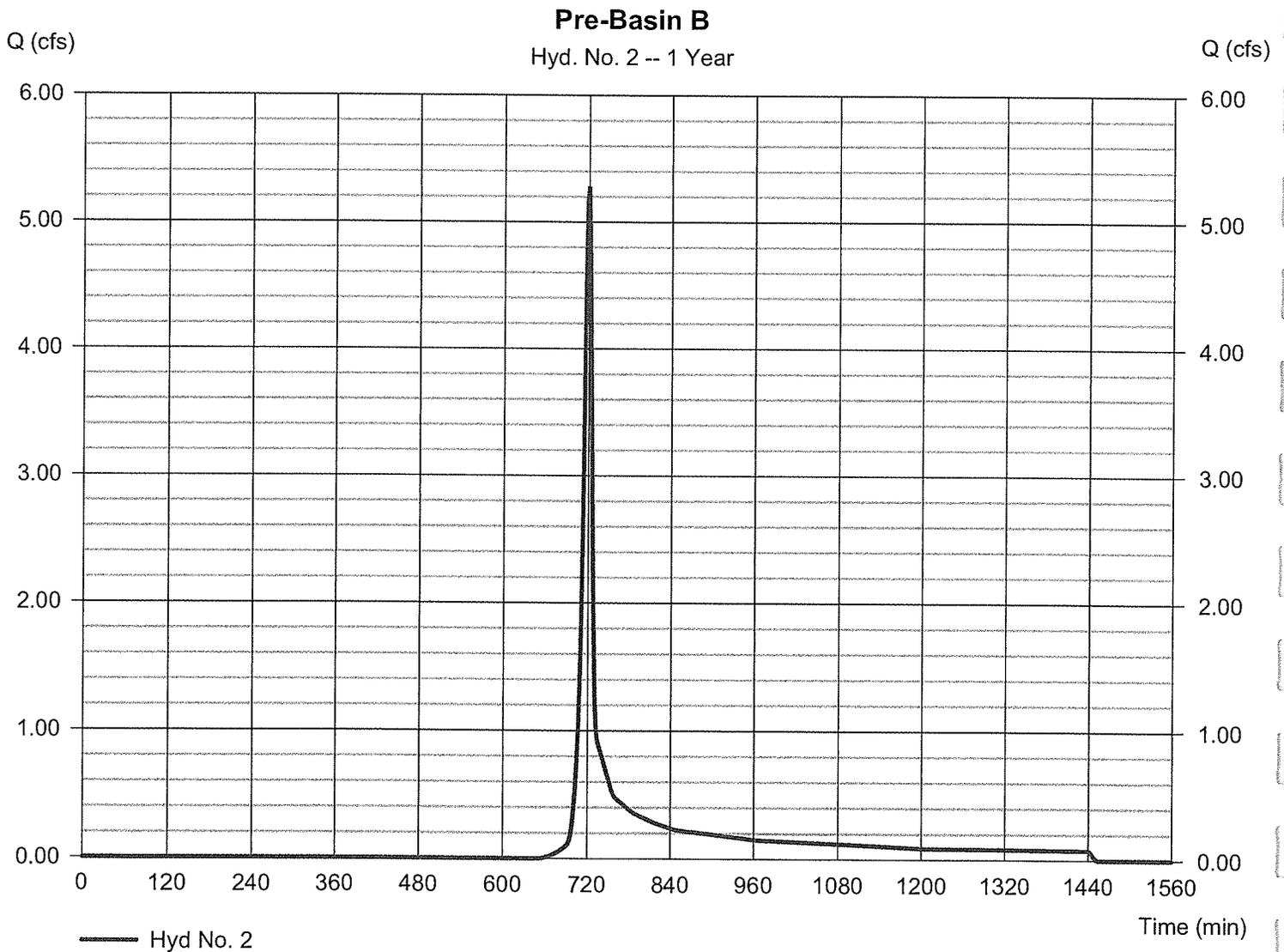
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 5.282 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 12,227 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

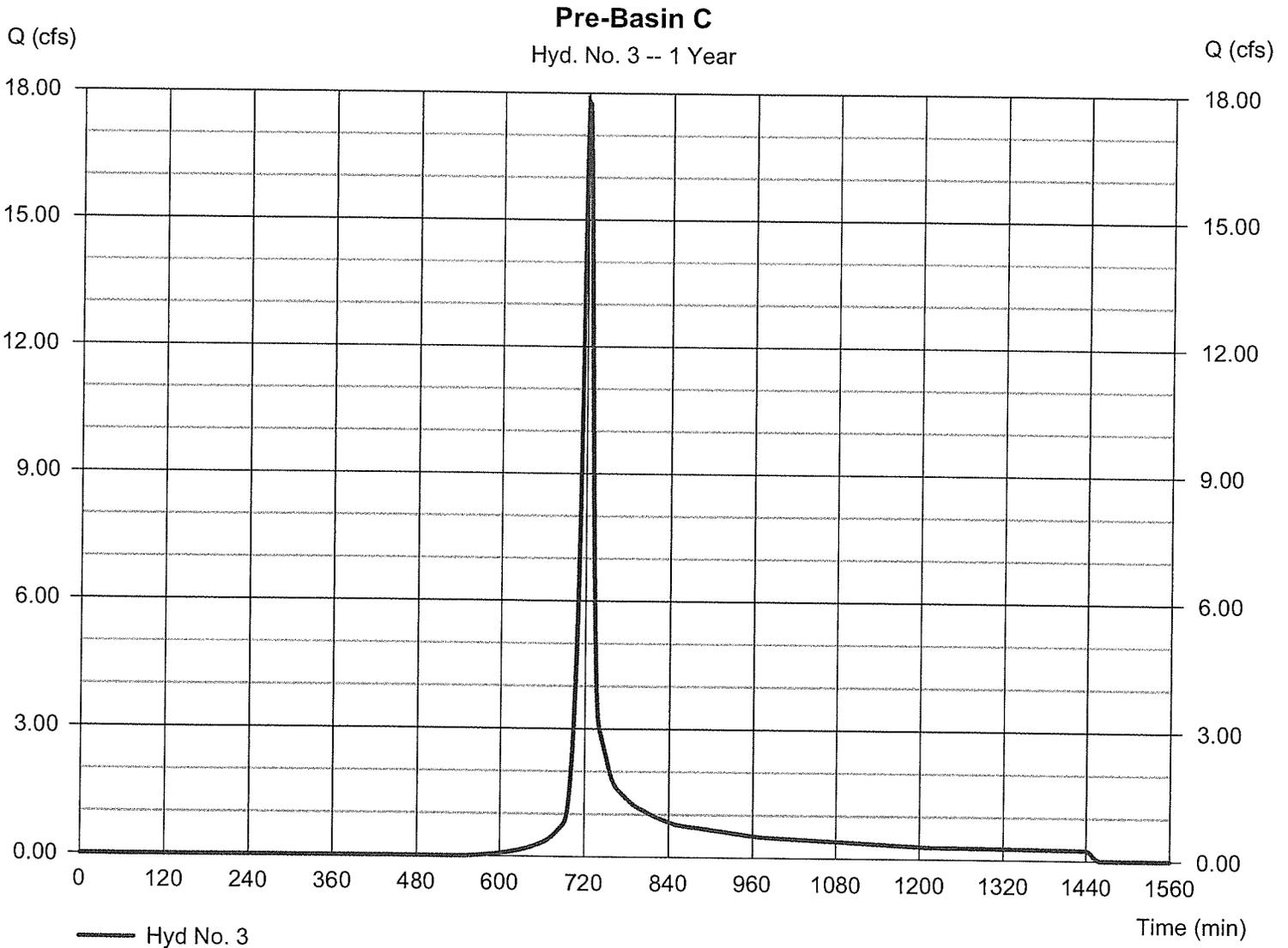
Tuesday, Sep 25, 2012

## Hyd. No. 3

Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 17.80 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 46,387 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.190 \times 85) + (5.260 \times 75)] / 8.120$



# Hydrograph Report

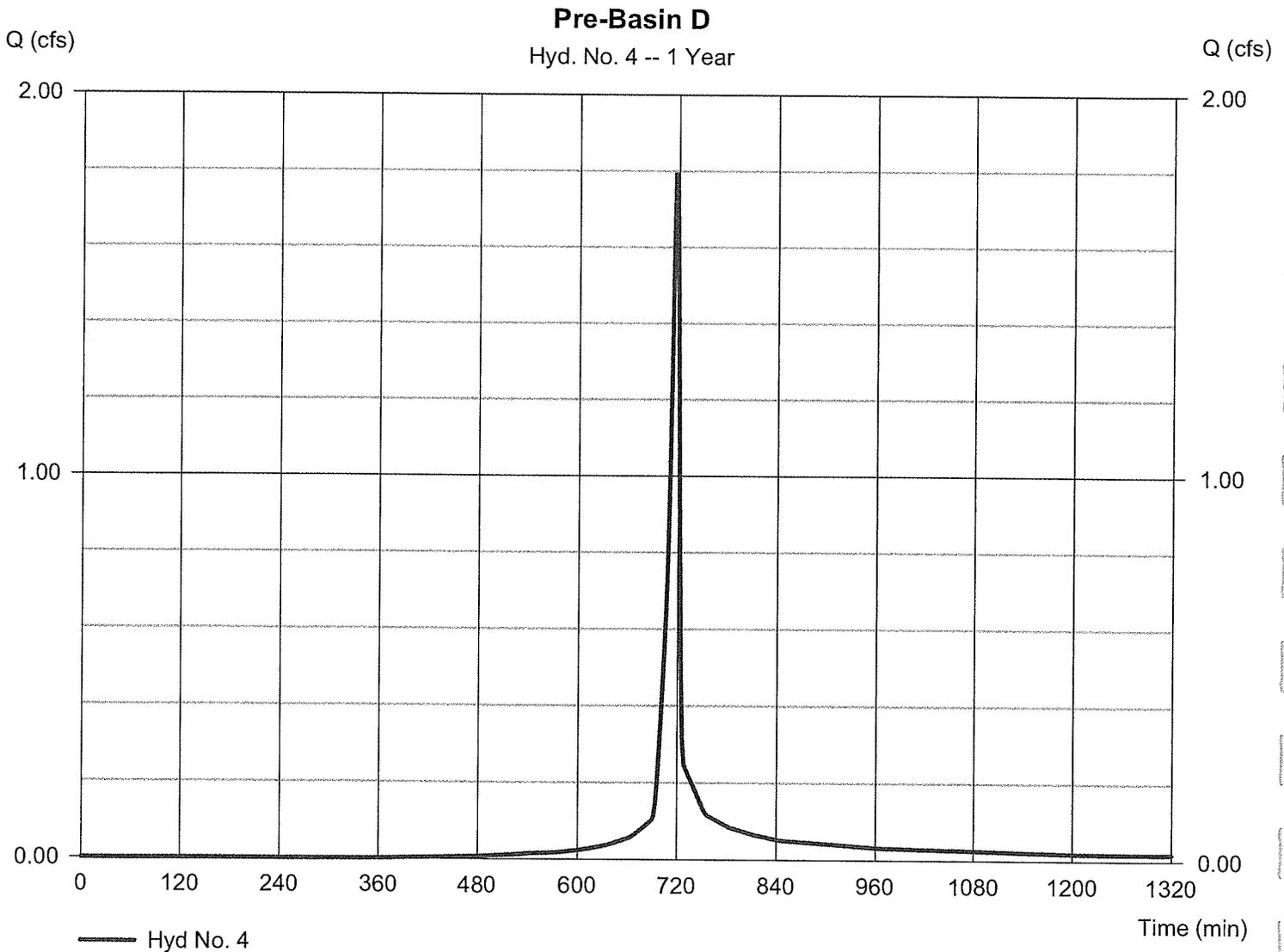
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 4

### Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 1.797 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,715 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

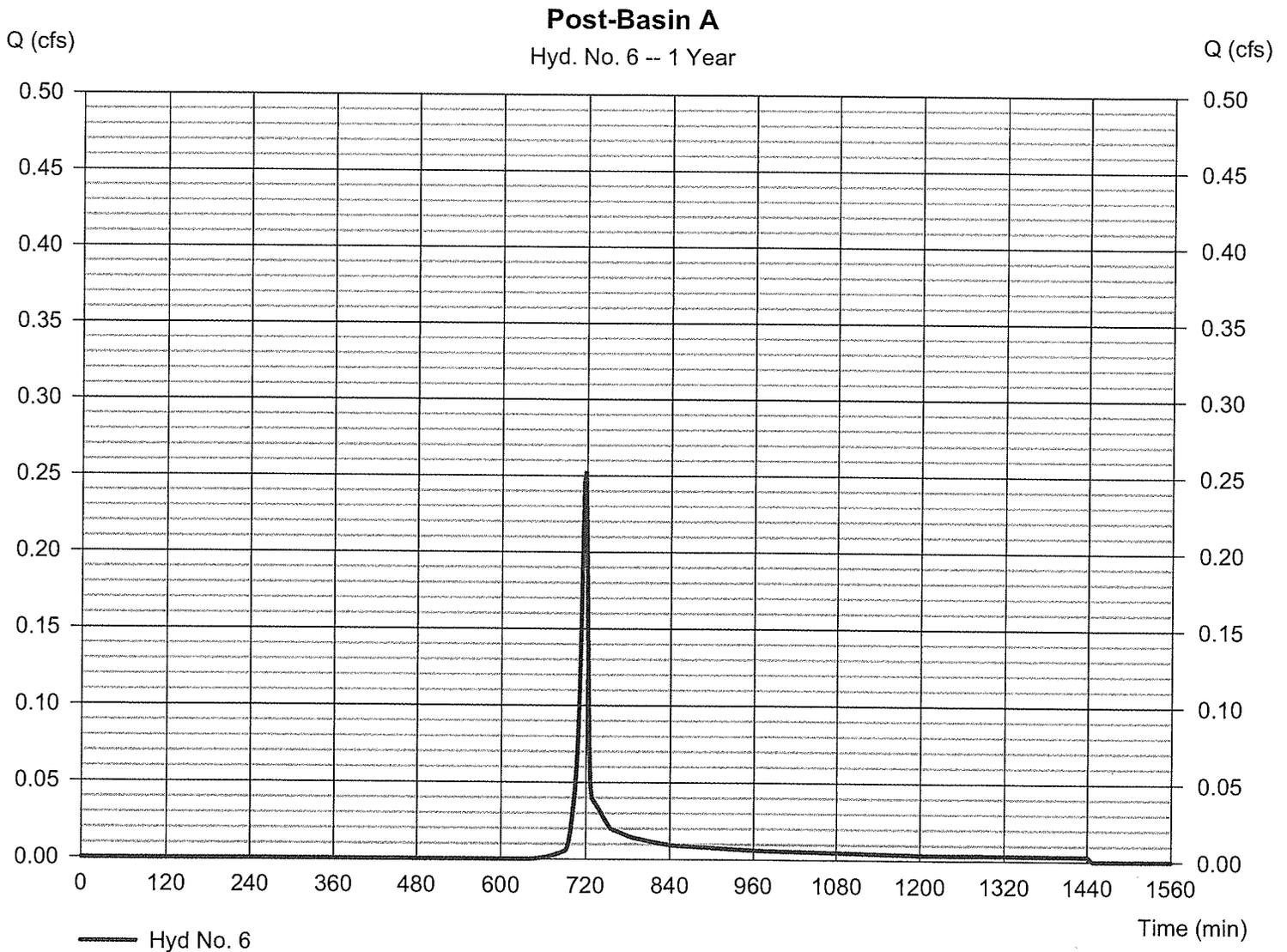


# Hydrograph Report

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.253 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 506 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

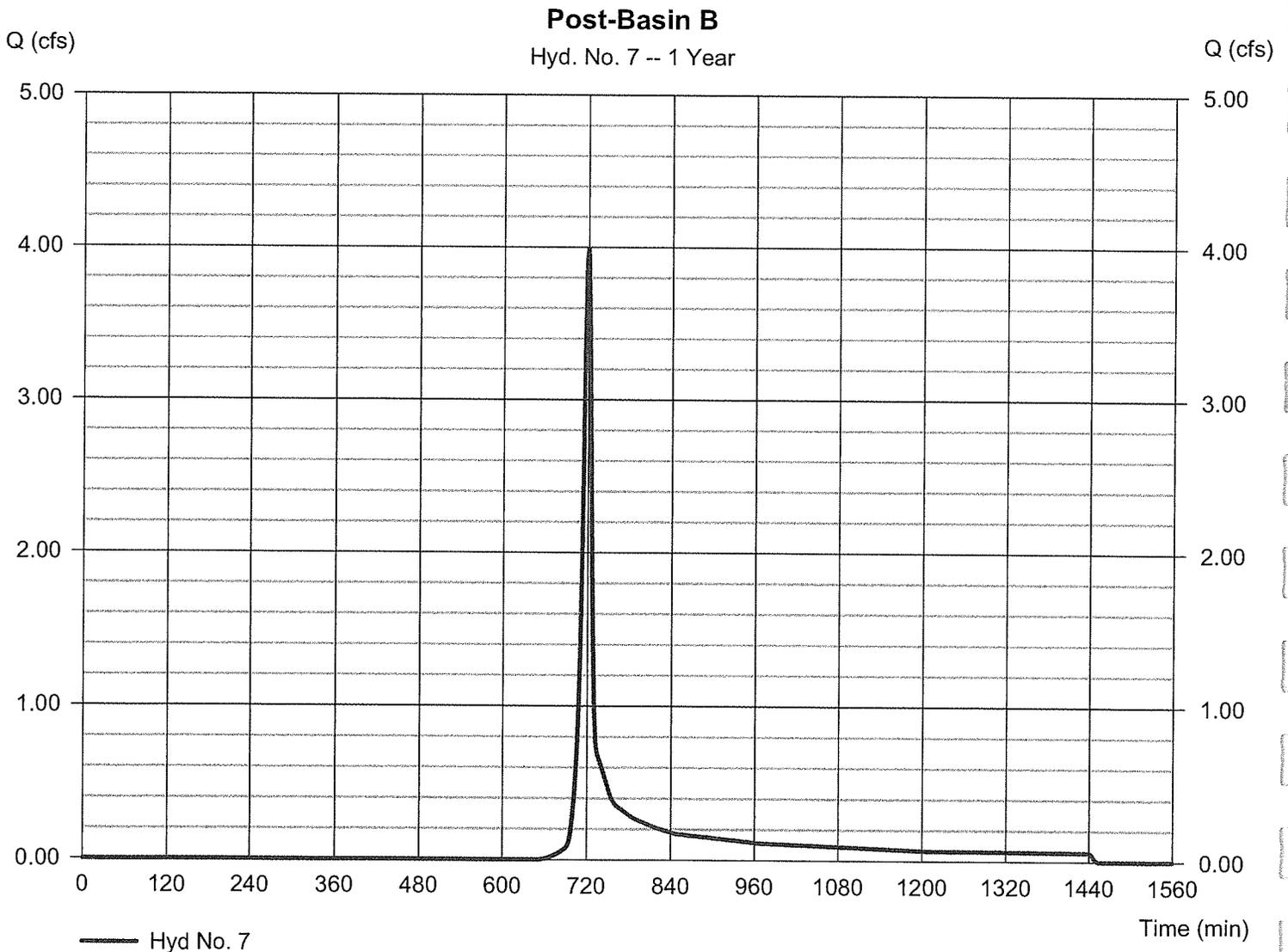
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 4.004 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 9,269 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

## Hyd. No. 8

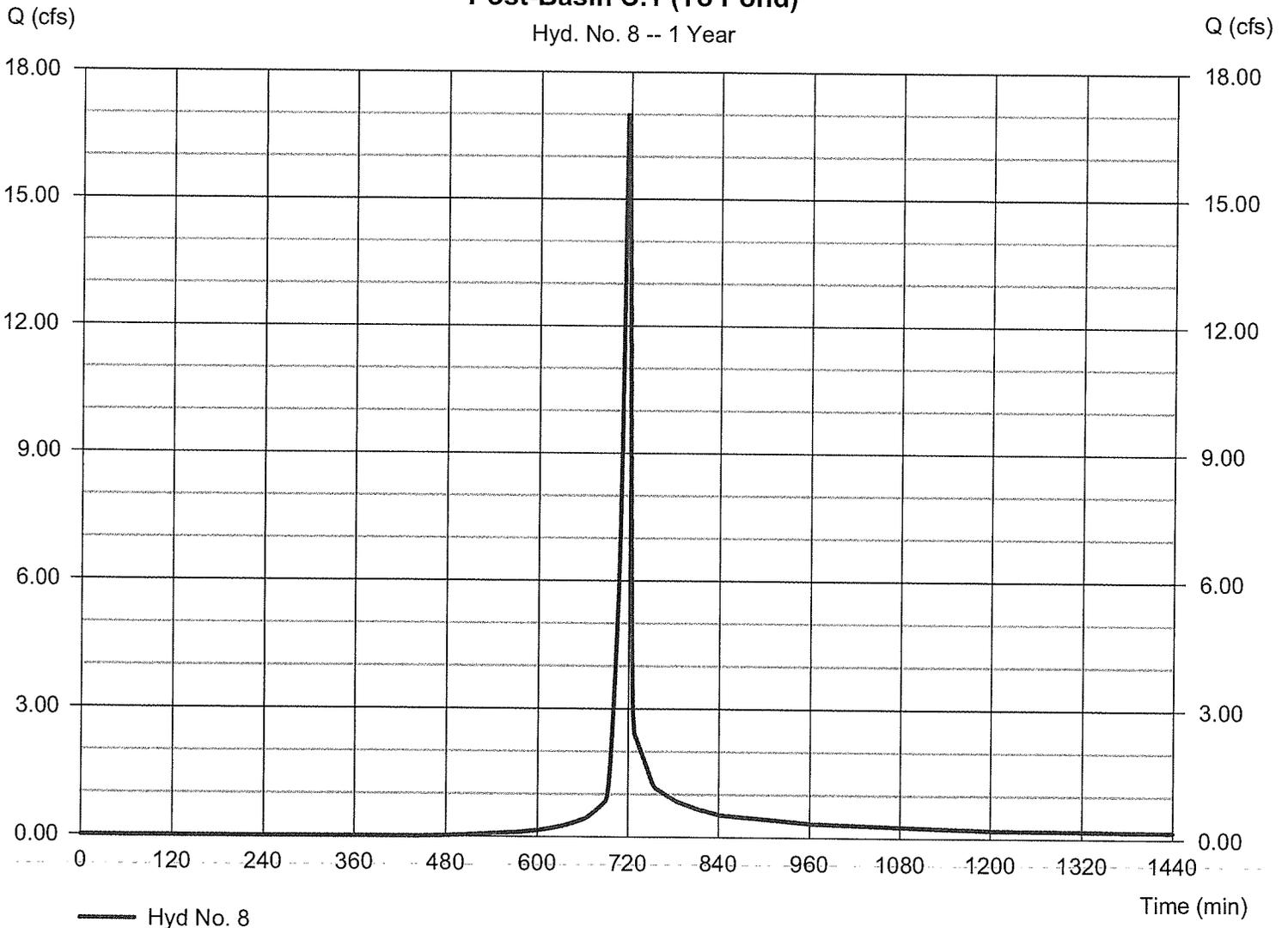
### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 17.03 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 34,566 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$

### Post-Basin C.1 (To Pond)

Hyd. No. 8 -- 1 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

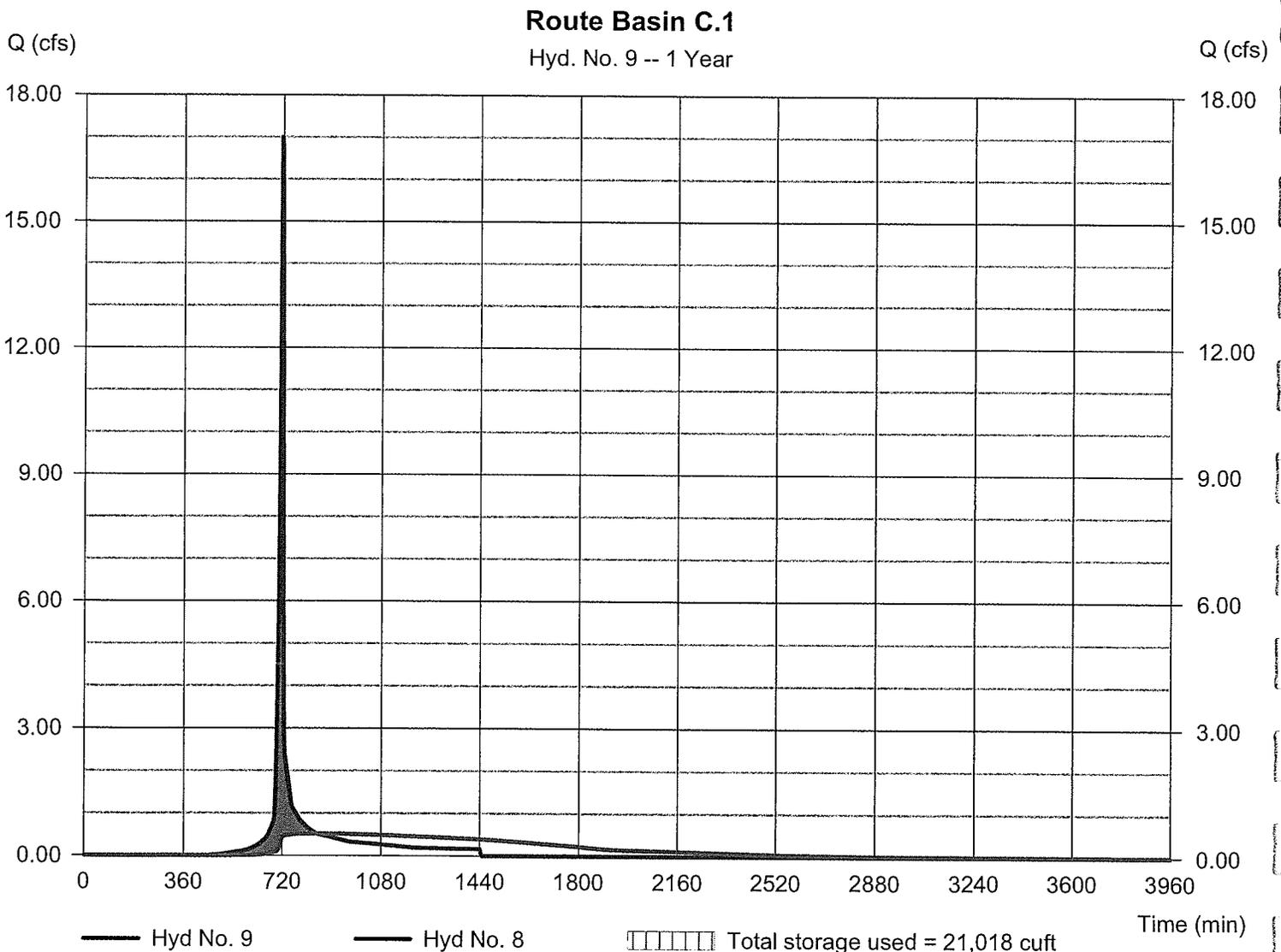
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 0.517 cfs
Storm frequency	= 1 yrs	Time to peak	= 844 min
Time interval	= 2 min	Hyd. volume	= 34,458 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 876.96 ft
Reservoir name	= Detention Pond with MicropoolMax. Storage		= 21,018 cuft

Storage Indication method used.



# Hydrograph Report

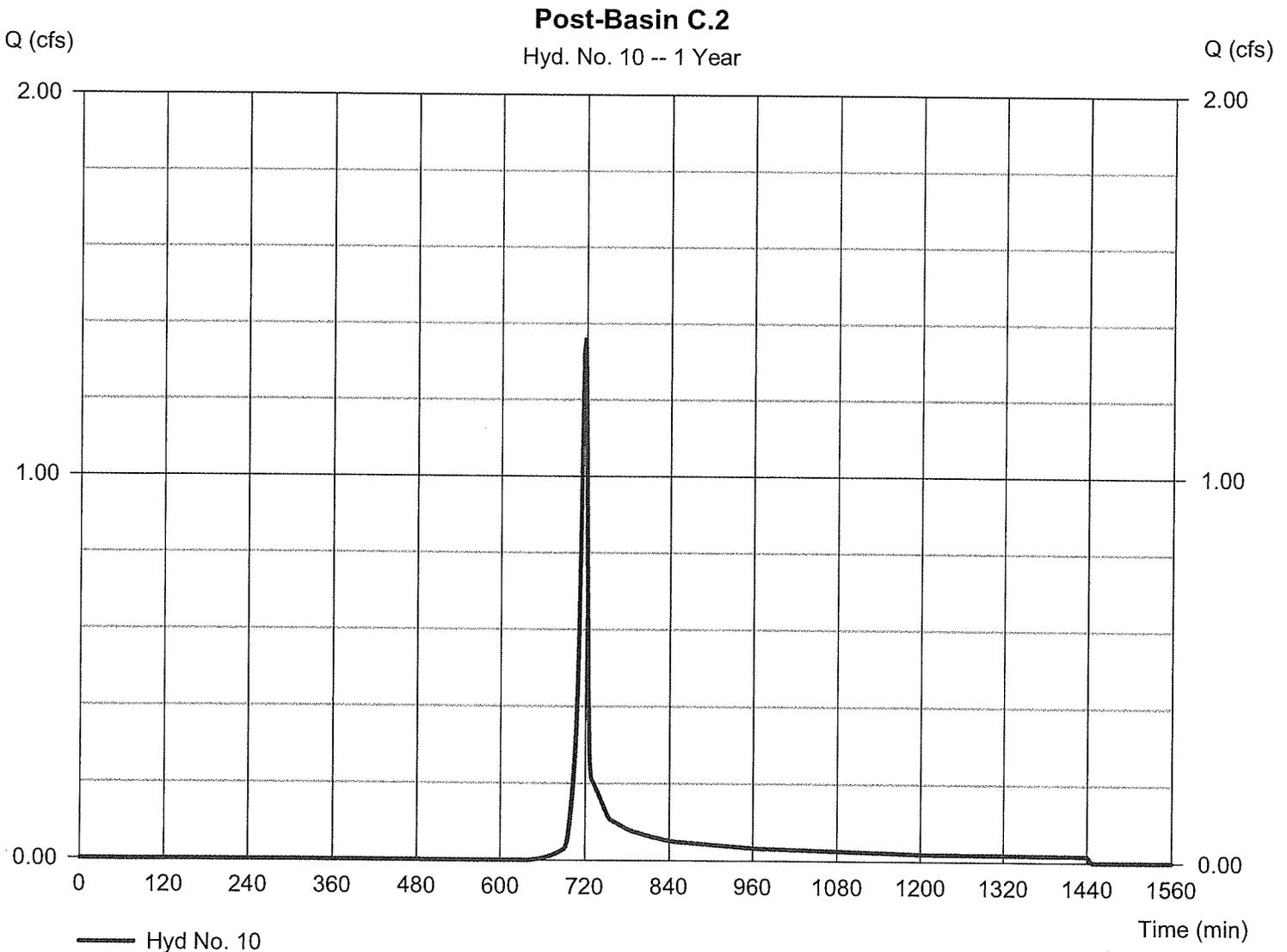
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.362 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,726 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

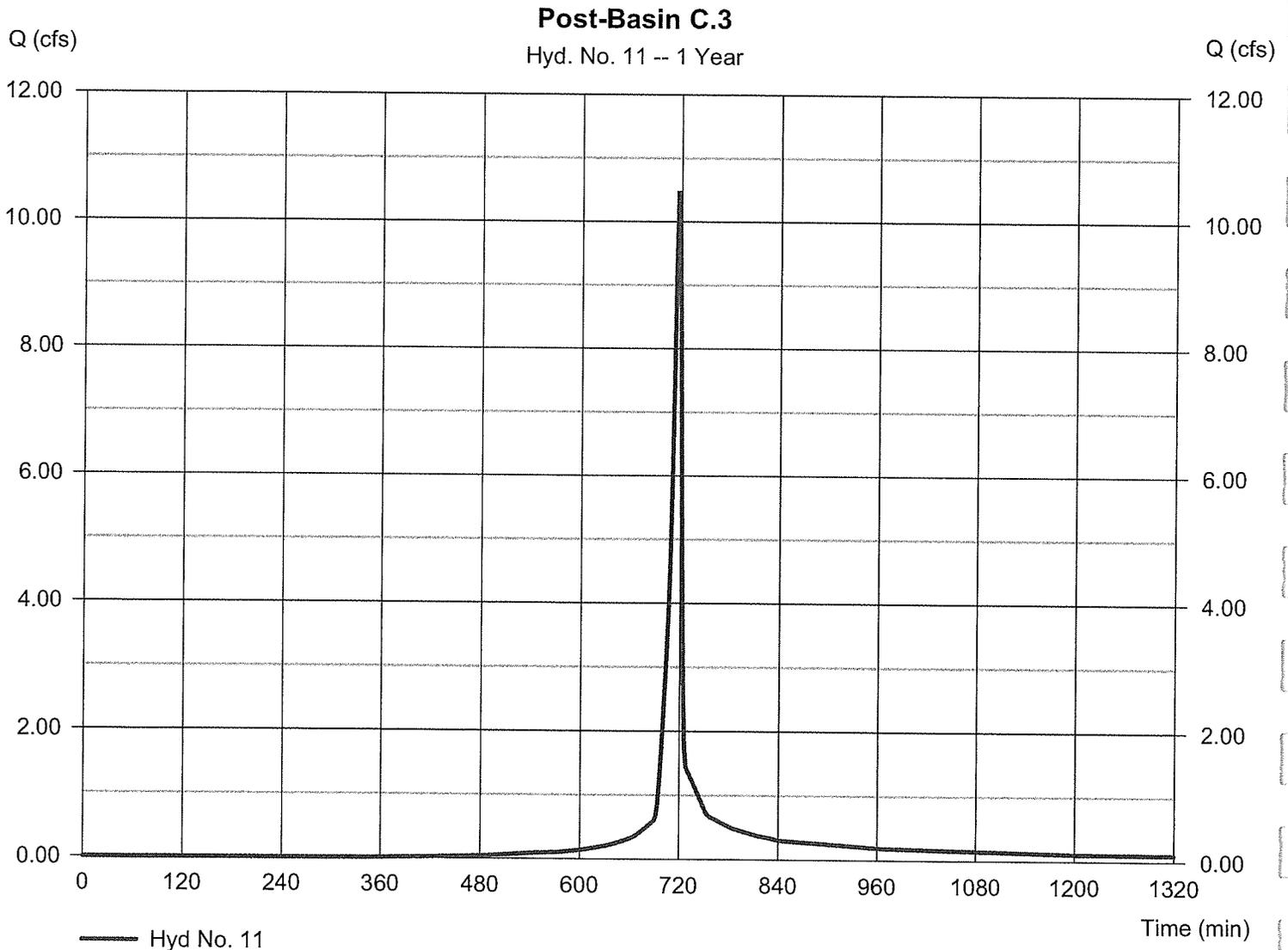
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

### Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 10.49 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 21,686 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

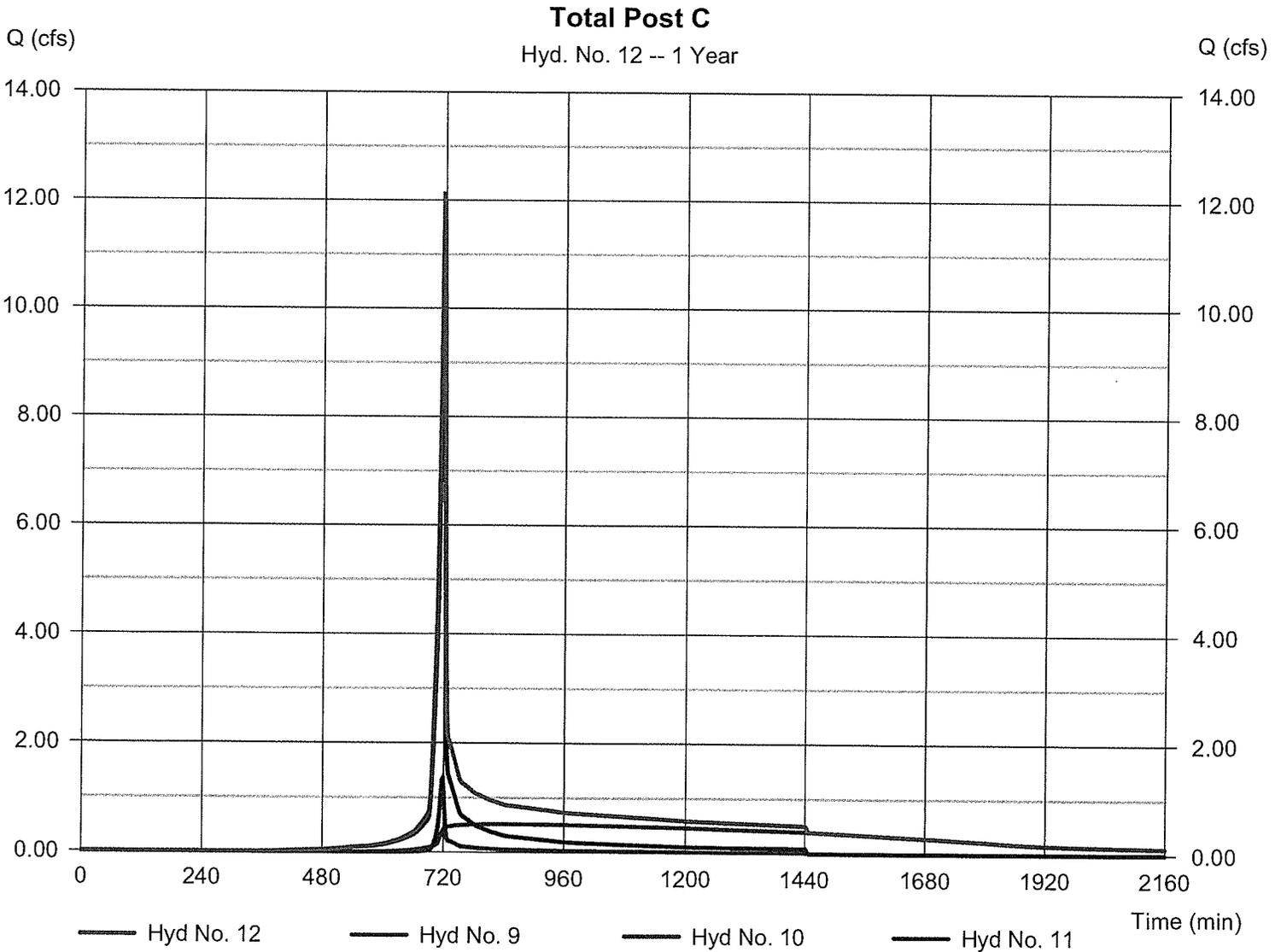


# Hydrograph Report

## Hyd. No. 12

Total Post C

Hydrograph type	= Combine	Peak discharge	= 12.16 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 58,870 cuft
Inflow hyds.	= 9, 10, 11	Contrib. drain. area	= 3.560 ac



# Hydrograph Report

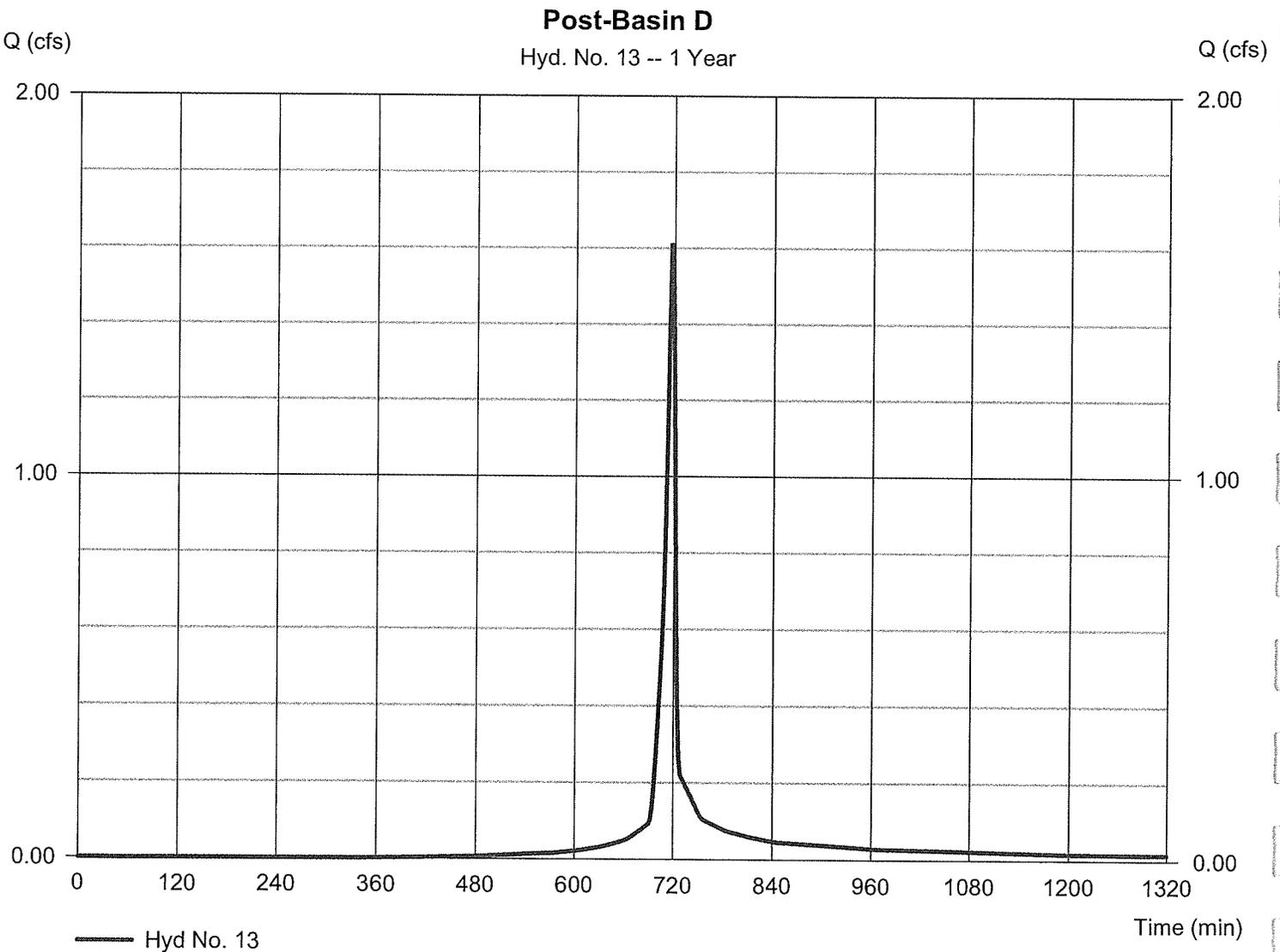
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 13

### Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 1.613 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,336 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

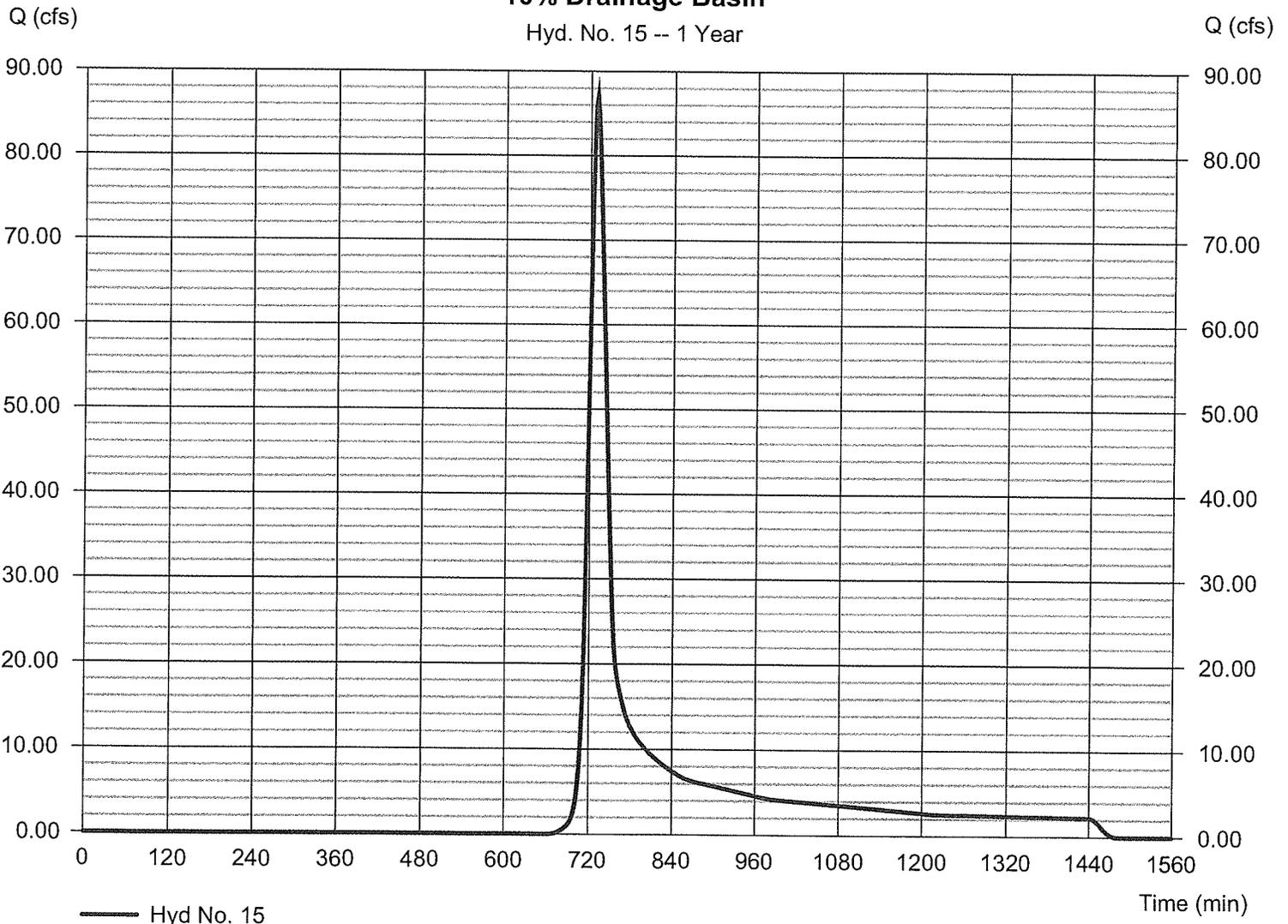
## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 87.05 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 343,780 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### 10% Drainage Basin

Hyd. No. 15 -- 1 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

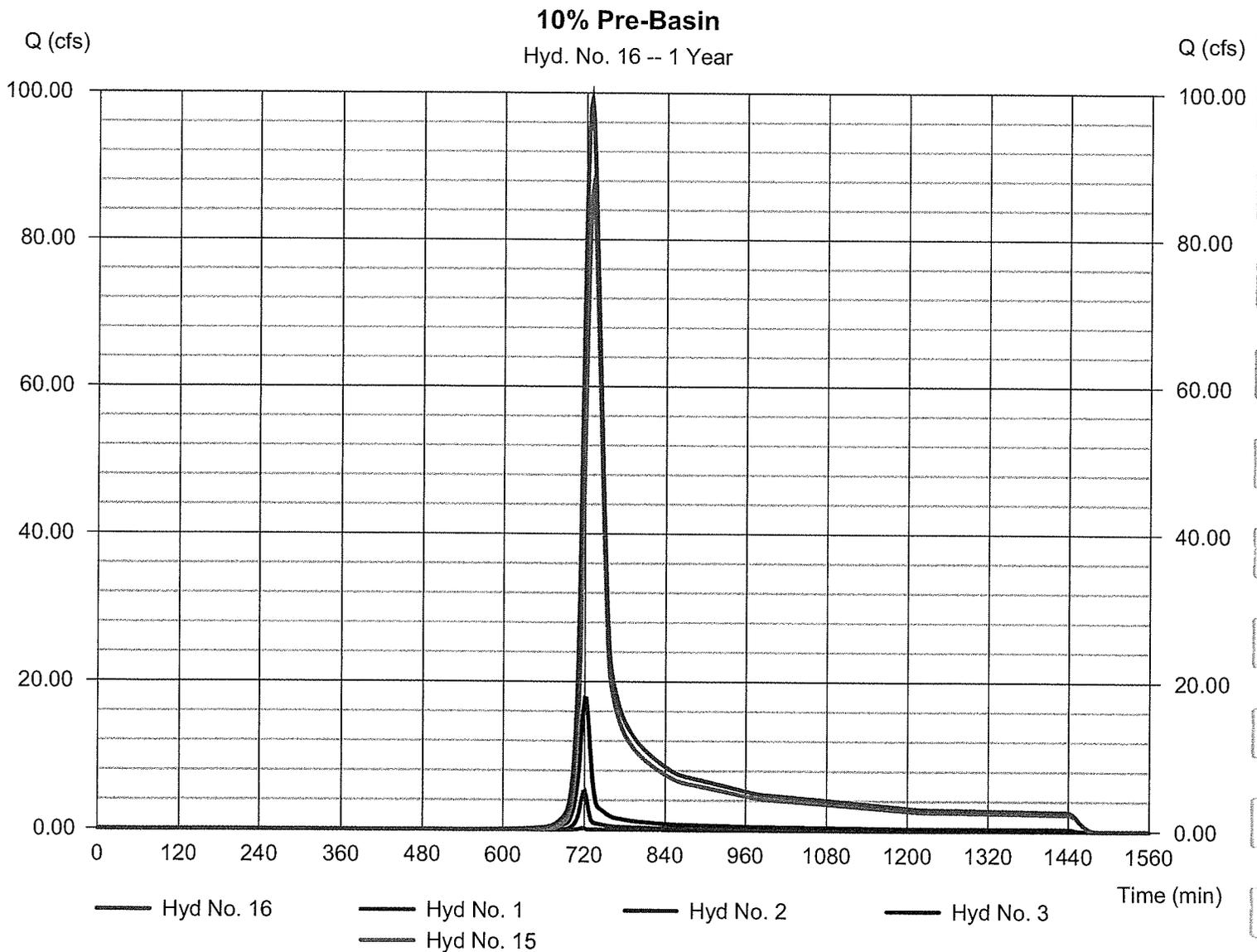
Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 1, 2, 3, 15

Peak discharge = 98.97 cfs  
Time to peak = 728 min  
Hyd. volume = 402,901 cuft  
Contrib. drain. area = 104.720 ac

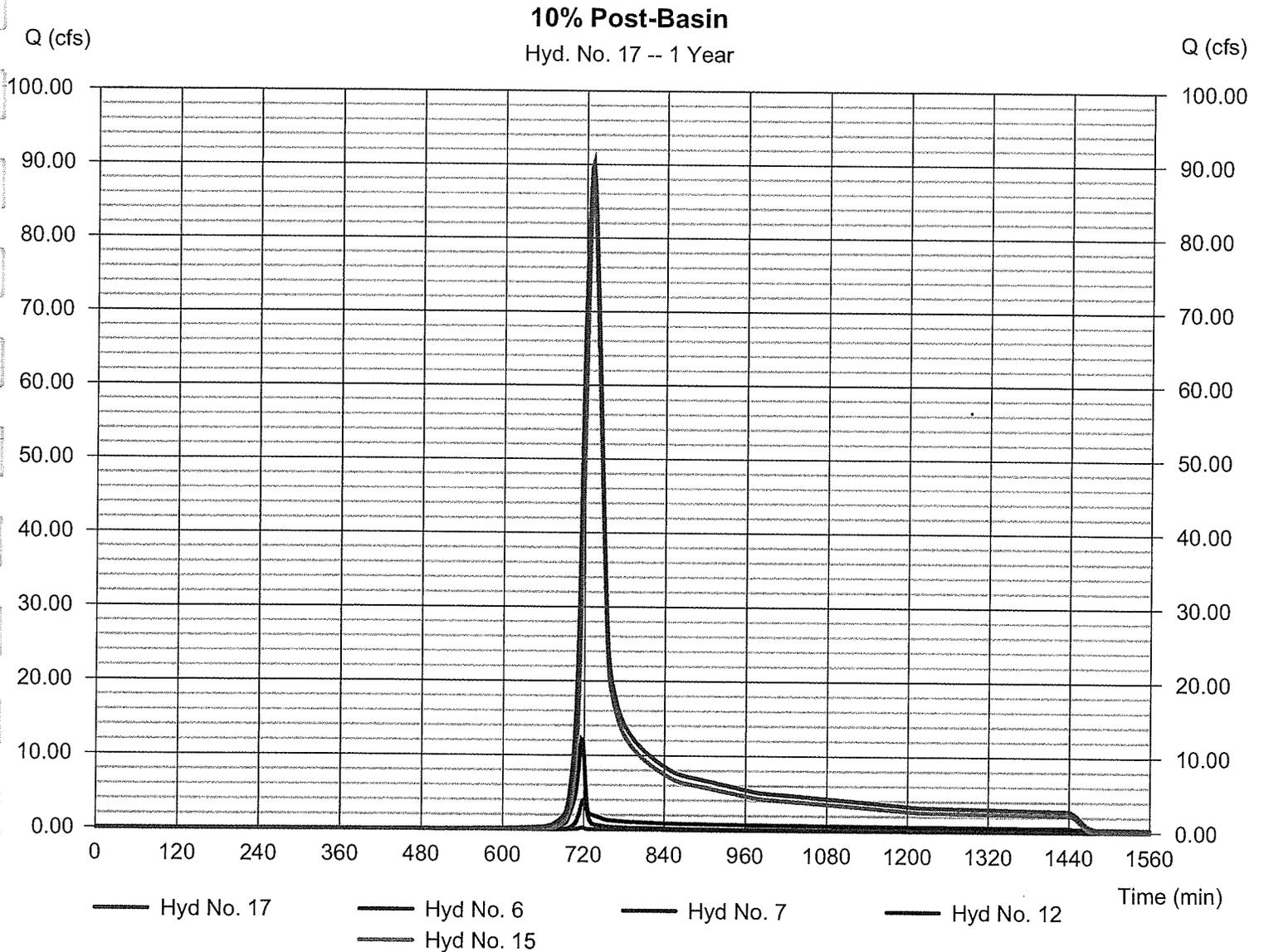


# Hydrograph Report

## Hyd. No. 17

10% Post-Basin

Hydrograph type	= Combine	Peak discharge	= 90.12 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 412,426 cuft
Inflow hyds.	= 6, 7, 12, 15	Contrib. drain. area	= 95.850 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

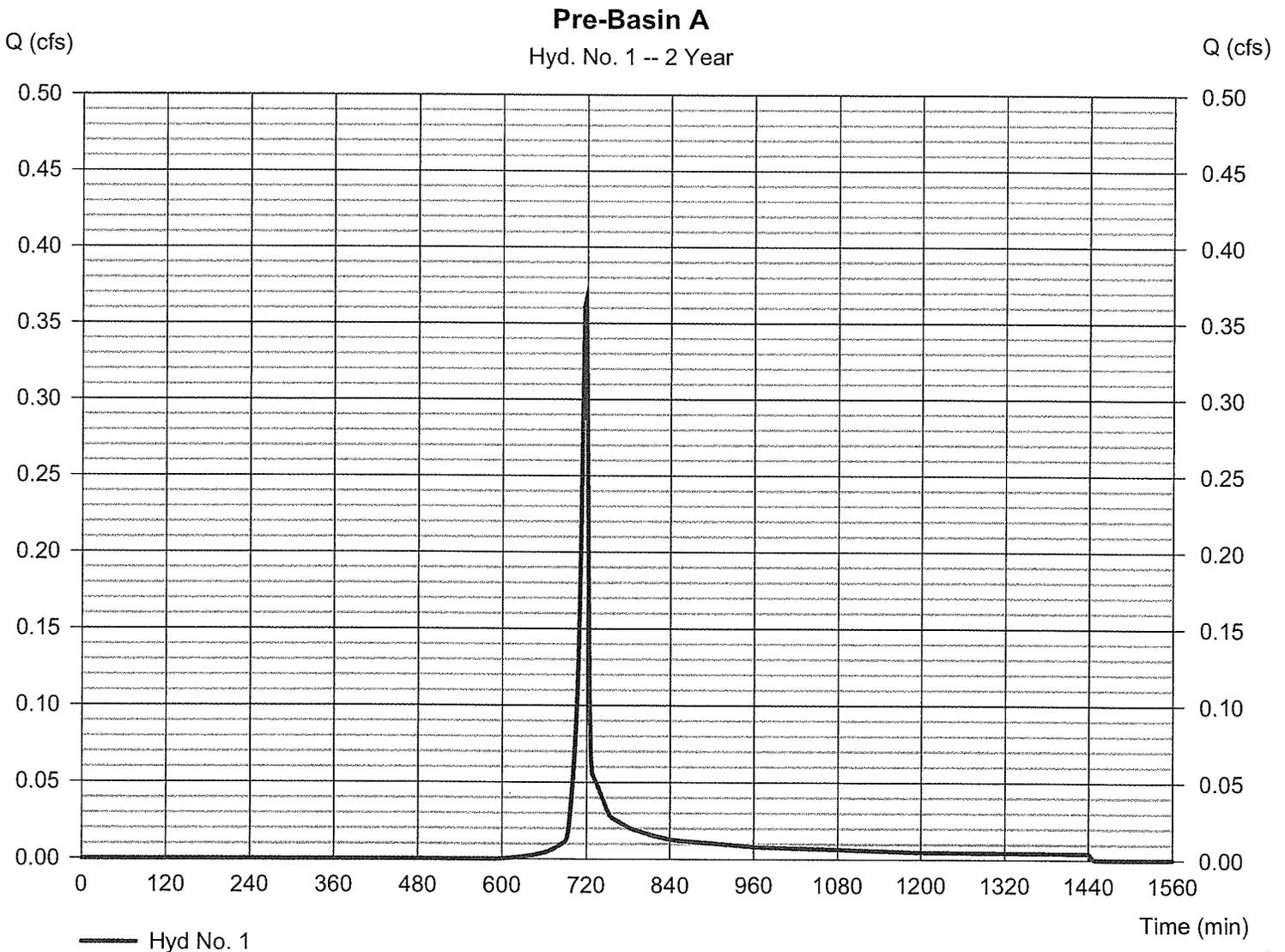
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.366	2	718	732	-----	-----	-----	Pre-Basin A
2	SCS Runoff	7.785	2	720	17,837	-----	-----	-----	Pre-Basin B
3	SCS Runoff	24.71	2	720	64,075	-----	-----	-----	Pre-Basin C
4	SCS Runoff	2.306	2	716	4,833	-----	-----	-----	Pre-Basin D
6	SCS Runoff	0.366	2	718	732	-----	-----	-----	Post-Basin A
7	SCS Runoff	5.901	2	720	13,522	-----	-----	-----	Post-Basin B
8	SCS Runoff	22.53	2	716	46,138	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	0.603	2	872	46,010	8	877.40	29,128	Route Basin C.1
10	SCS Runoff	1.969	2	718	3,943	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	13.46	2	716	28,208	-----	-----	-----	Post-Basin C.3
12	Combine	15.84	2	716	78,161	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	2.071	2	716	4,340	-----	-----	-----	Post-Basin D
15	SCS Runoff	132.82	2	730	505,930	-----	-----	-----	10% Drainage Basin
16	Combine	150.02	2	728	588,575	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	136.85	2	730	598,346	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.366 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 732 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

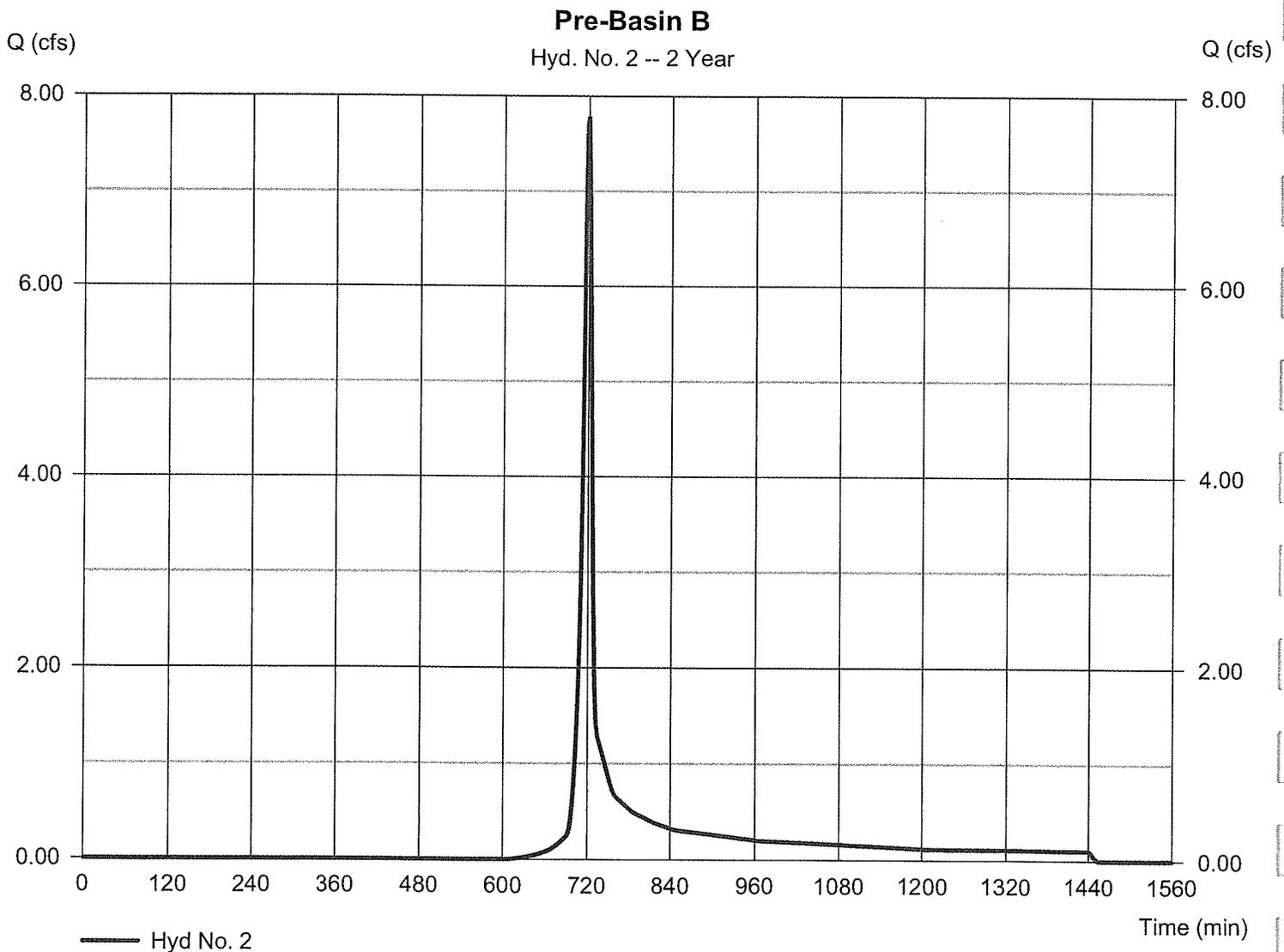
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 7.785 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 17,837 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



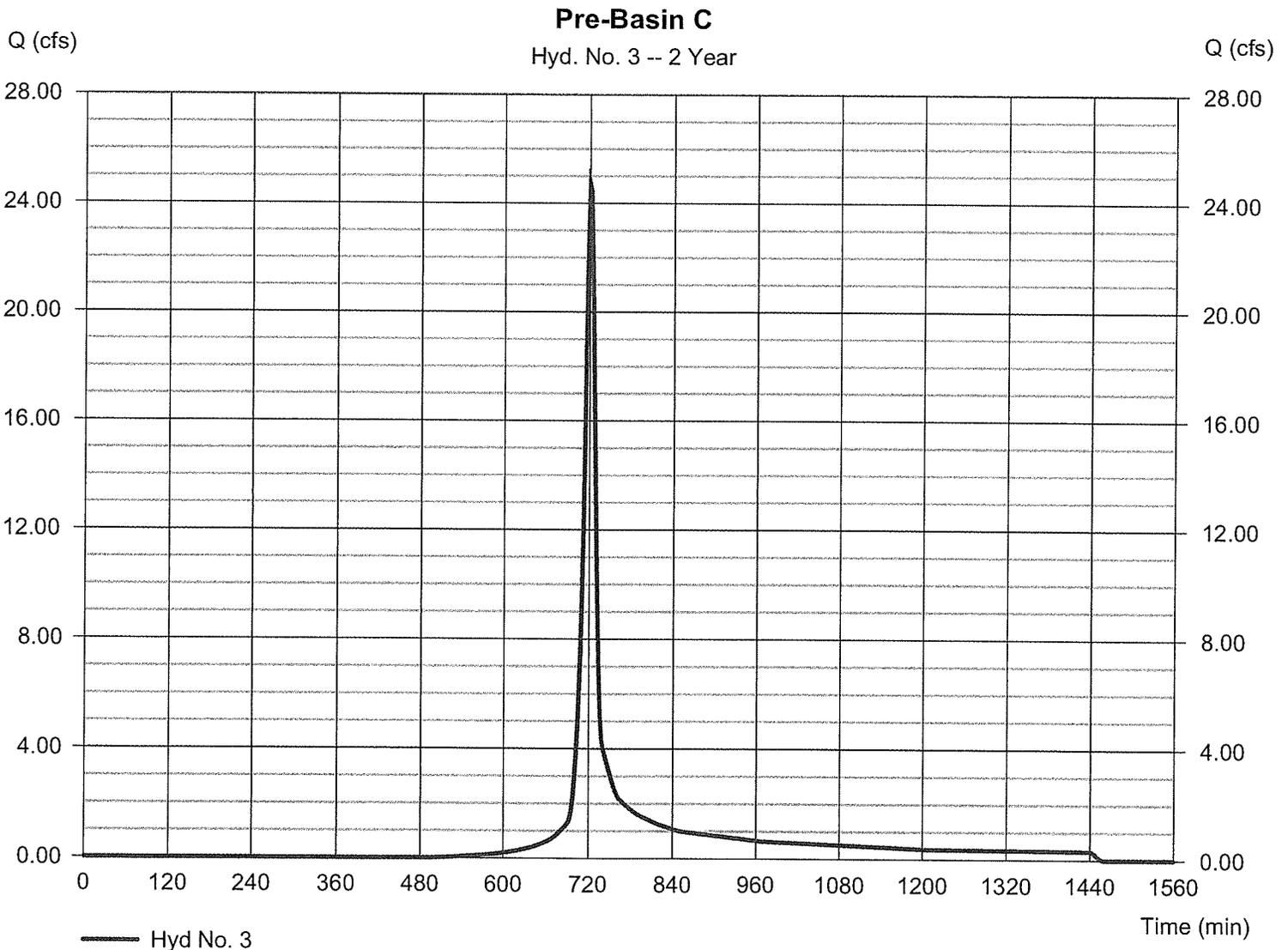
# Hydrograph Report

## Hyd. No. 3

### Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 24.71 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 64,075 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.190 \times 85) + (5.260 \times 75)] / 8.120$



# Hydrograph Report

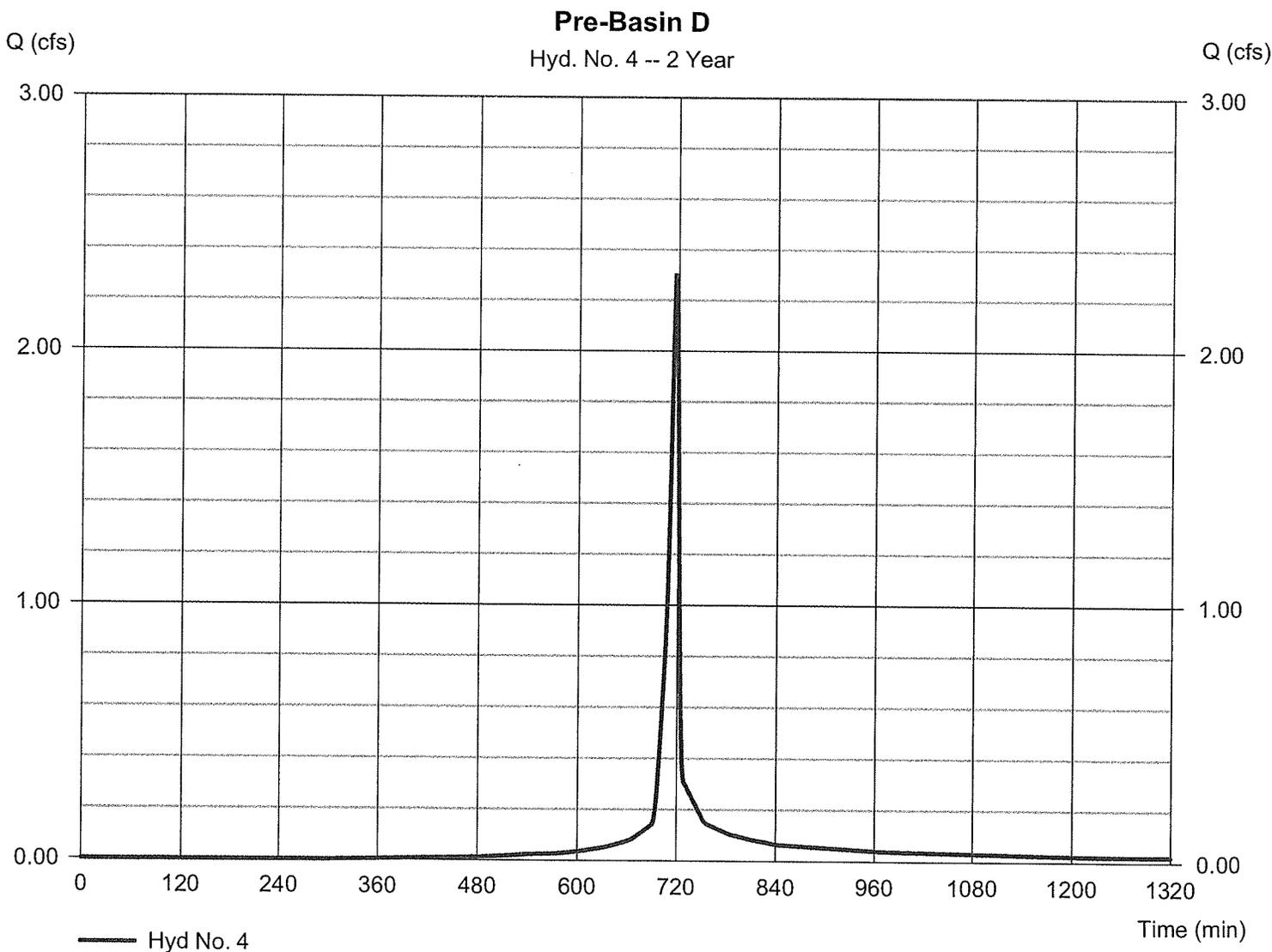
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 4

### Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.306 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,833 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

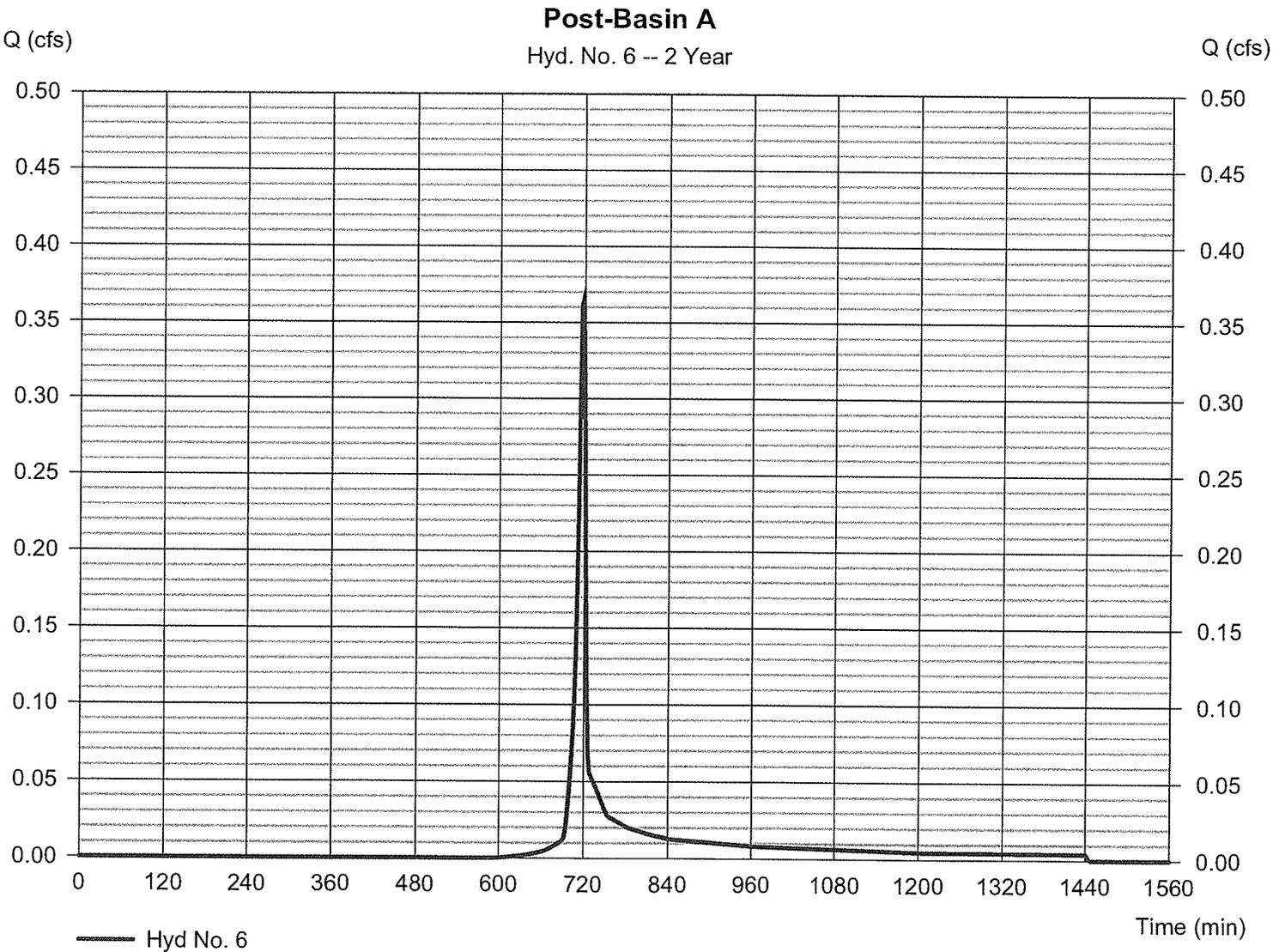
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.366 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 732 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

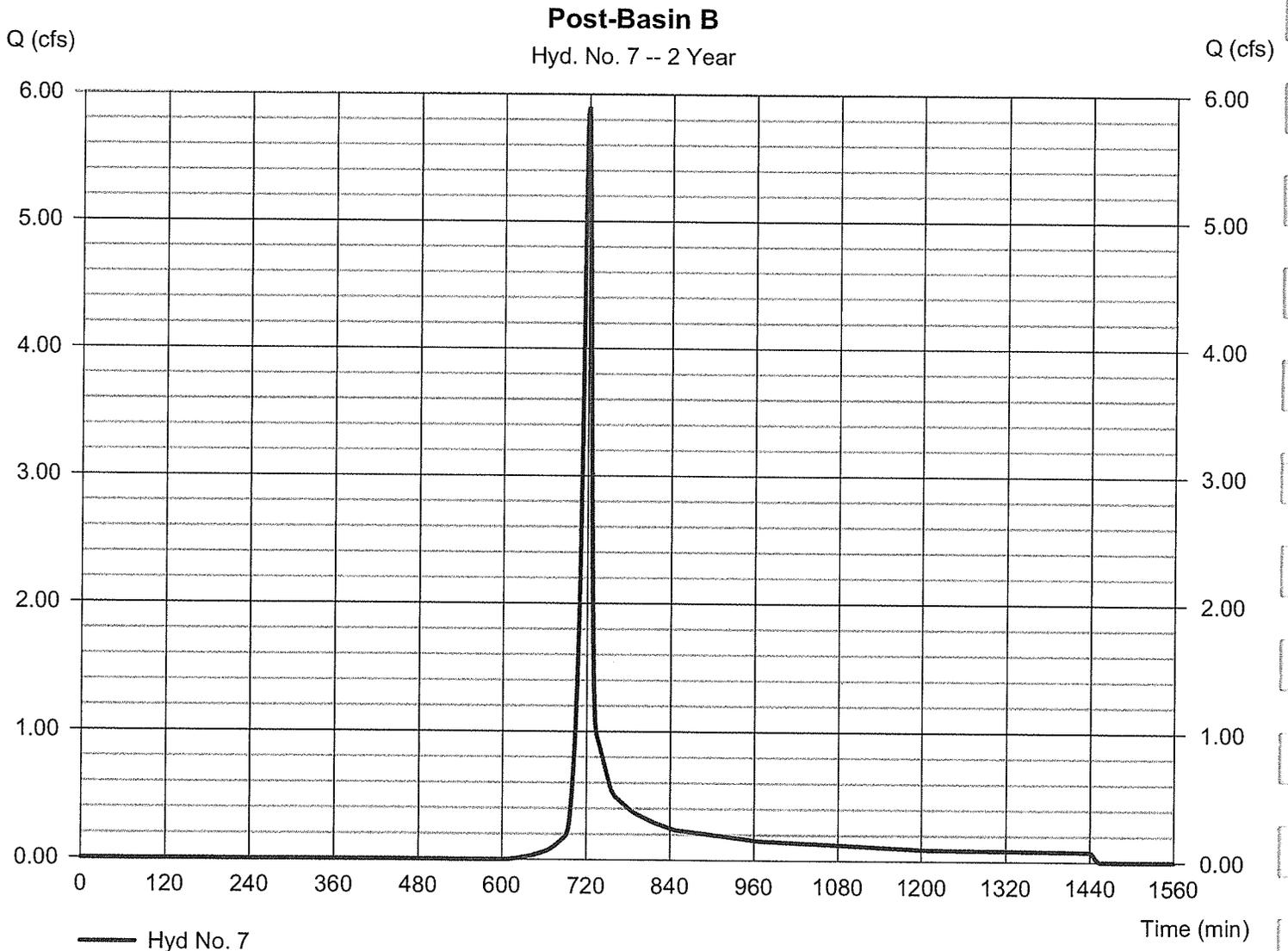
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 5.901 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 13,522 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

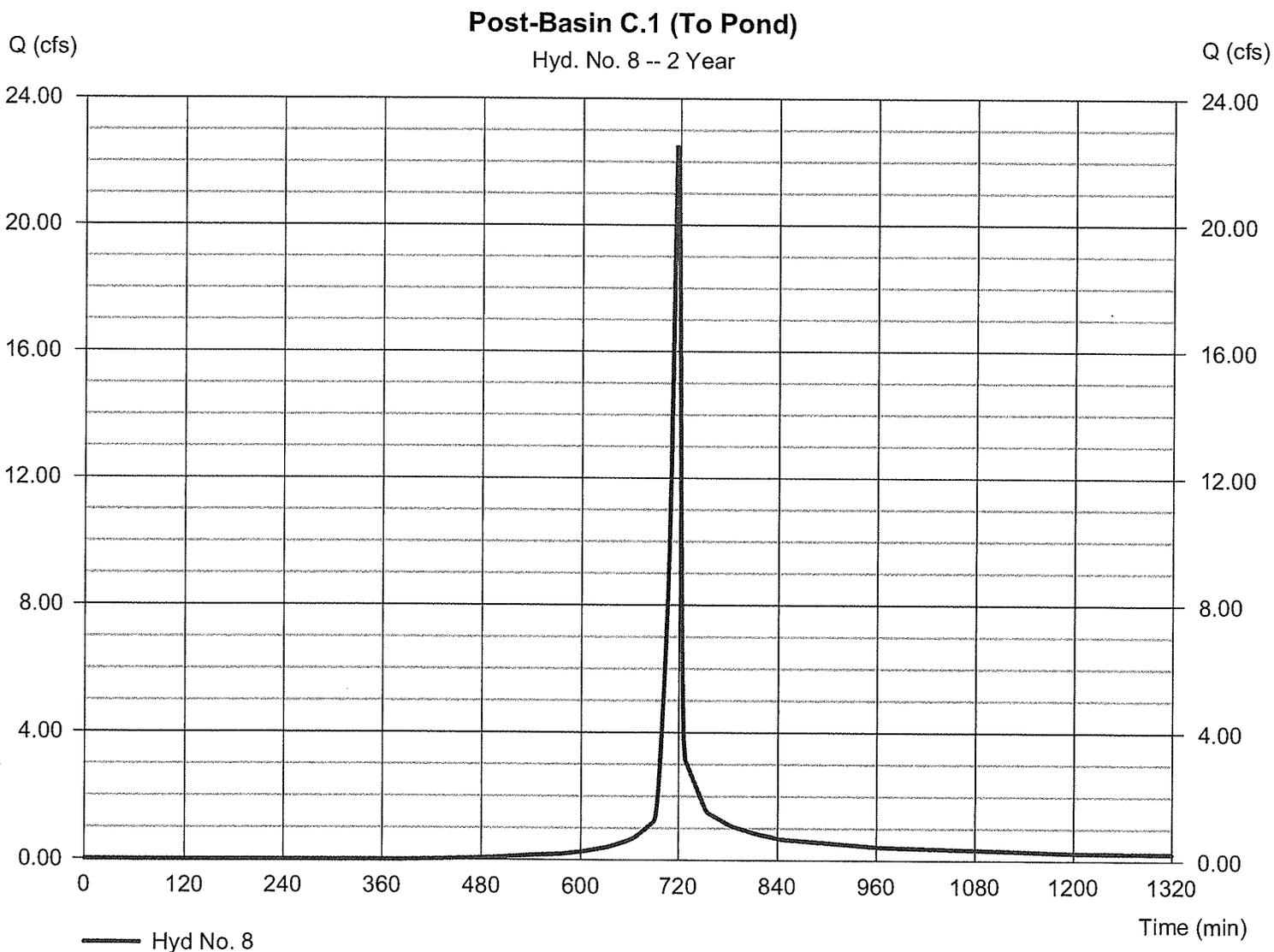
Tuesday, Sep 25, 2012

## Hyd. No. 8

### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 22.53 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 46,138 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

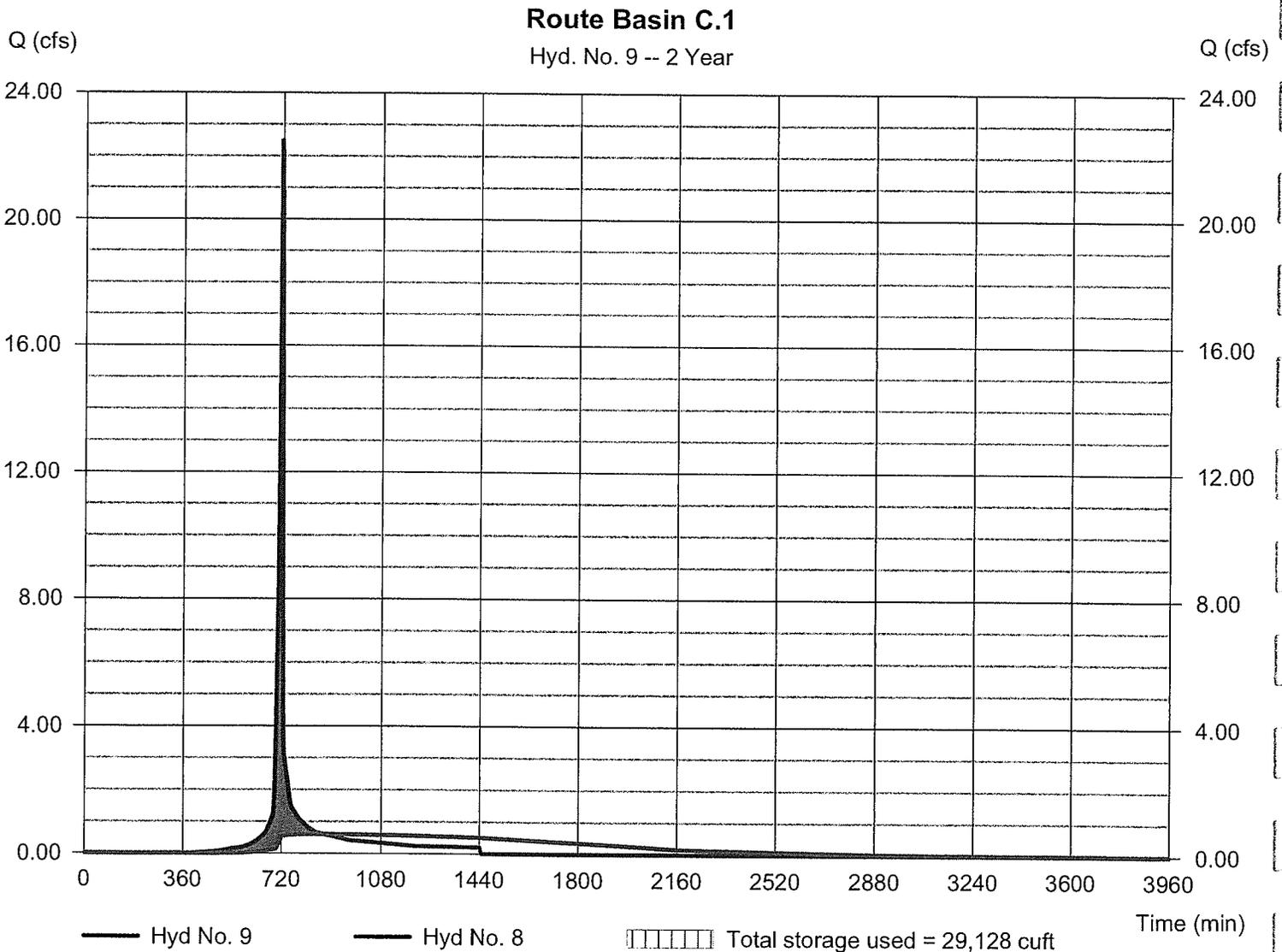
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 0.603 cfs
Storm frequency	= 2 yrs	Time to peak	= 872 min
Time interval	= 2 min	Hyd. volume	= 46,010 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 877.40 ft
Reservoir name	= Detention Pond with Micropool	Max. Storage	= 29,128 cuft

Storage Indication method used.



# Hydrograph Report

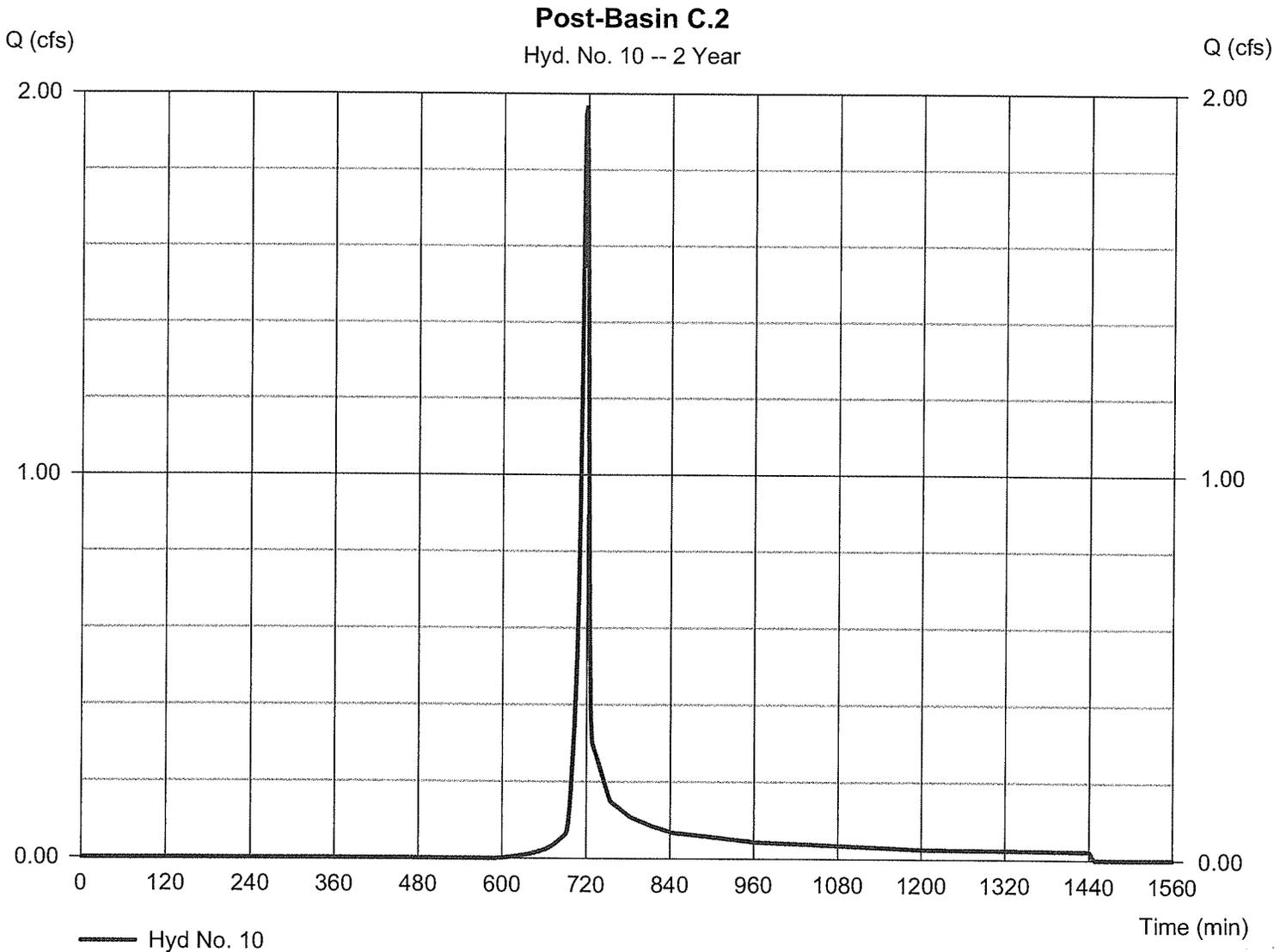
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.969 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 3,943 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

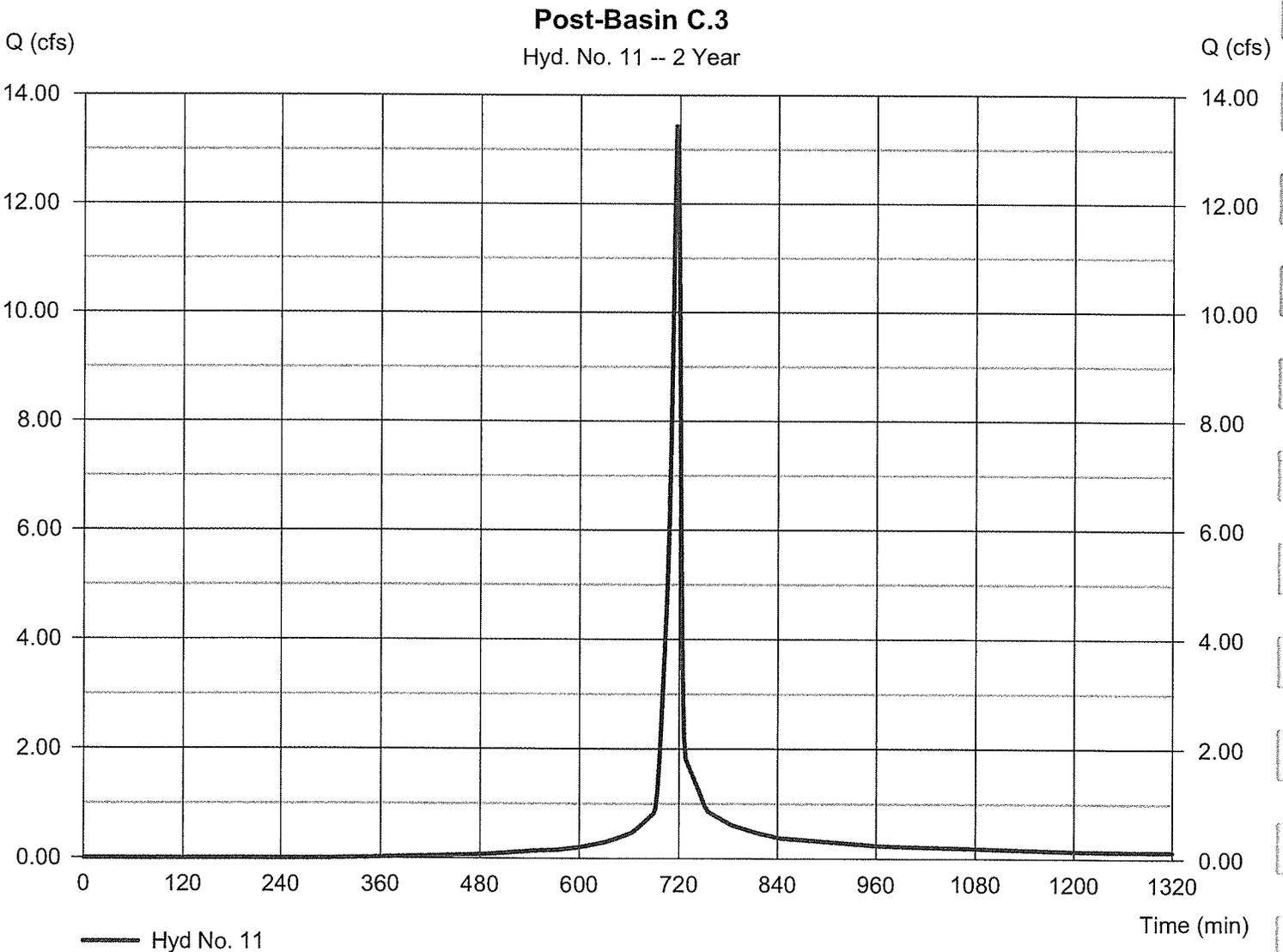
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

### Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 13.46 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 28,208 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

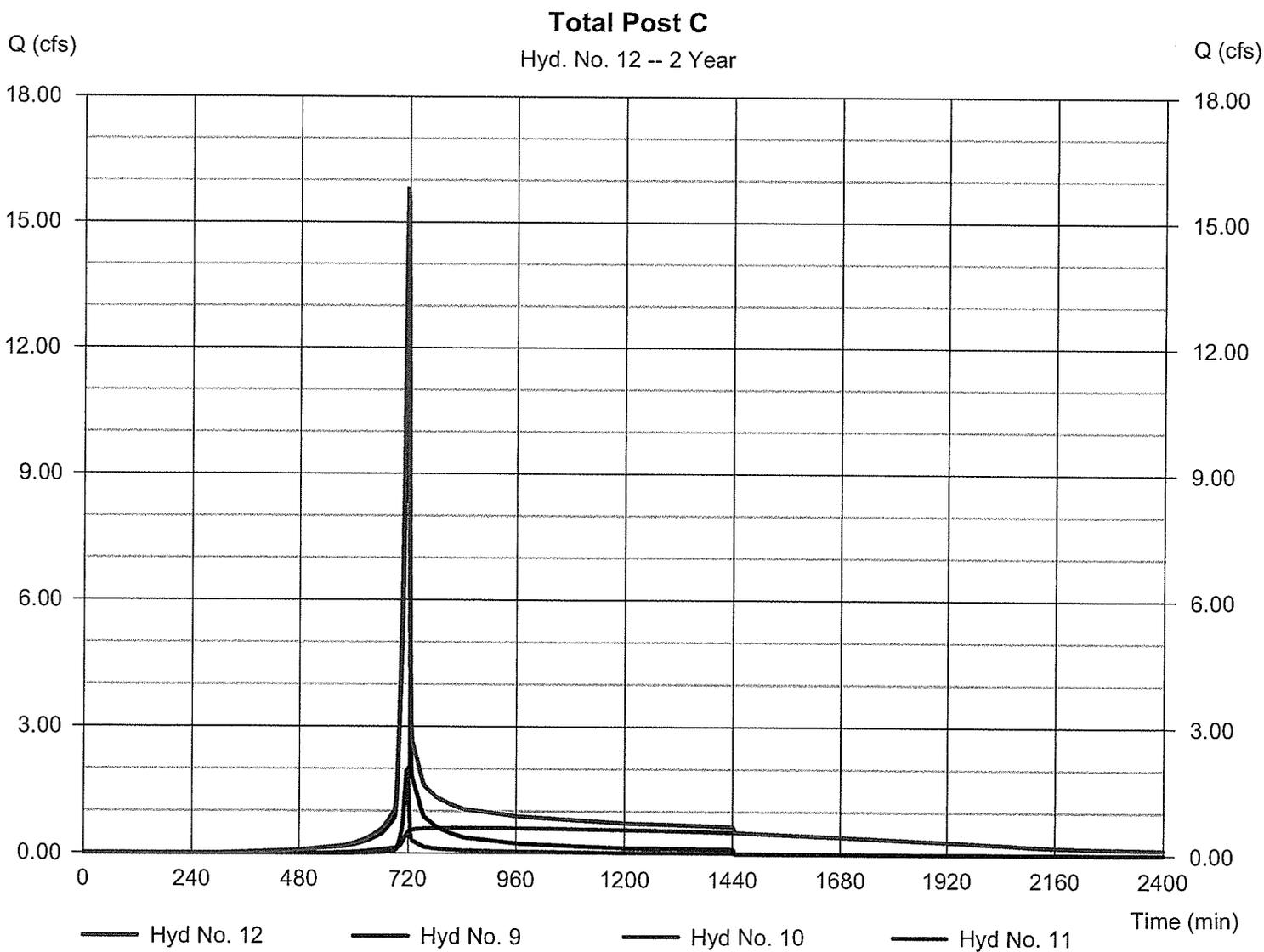
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 12

Total Post C

Hydrograph type	= Combine	Peak discharge	= 15.84 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 78,161 cuft
Inflow hyds.	= 9, 10, 11	Contrib. drain. area	= 3.560 ac

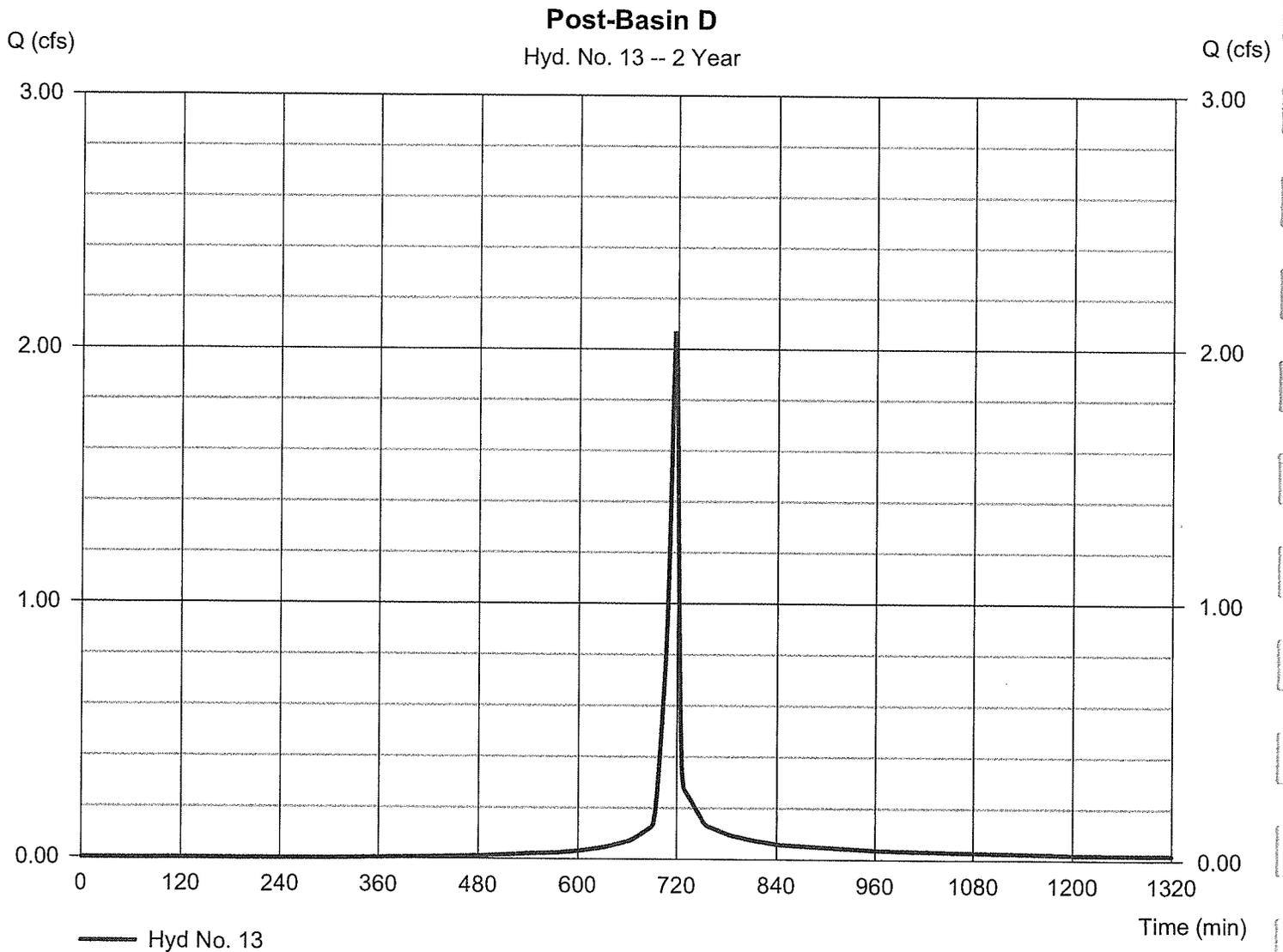


# Hydrograph Report

## Hyd. No. 13

### Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.071 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,340 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

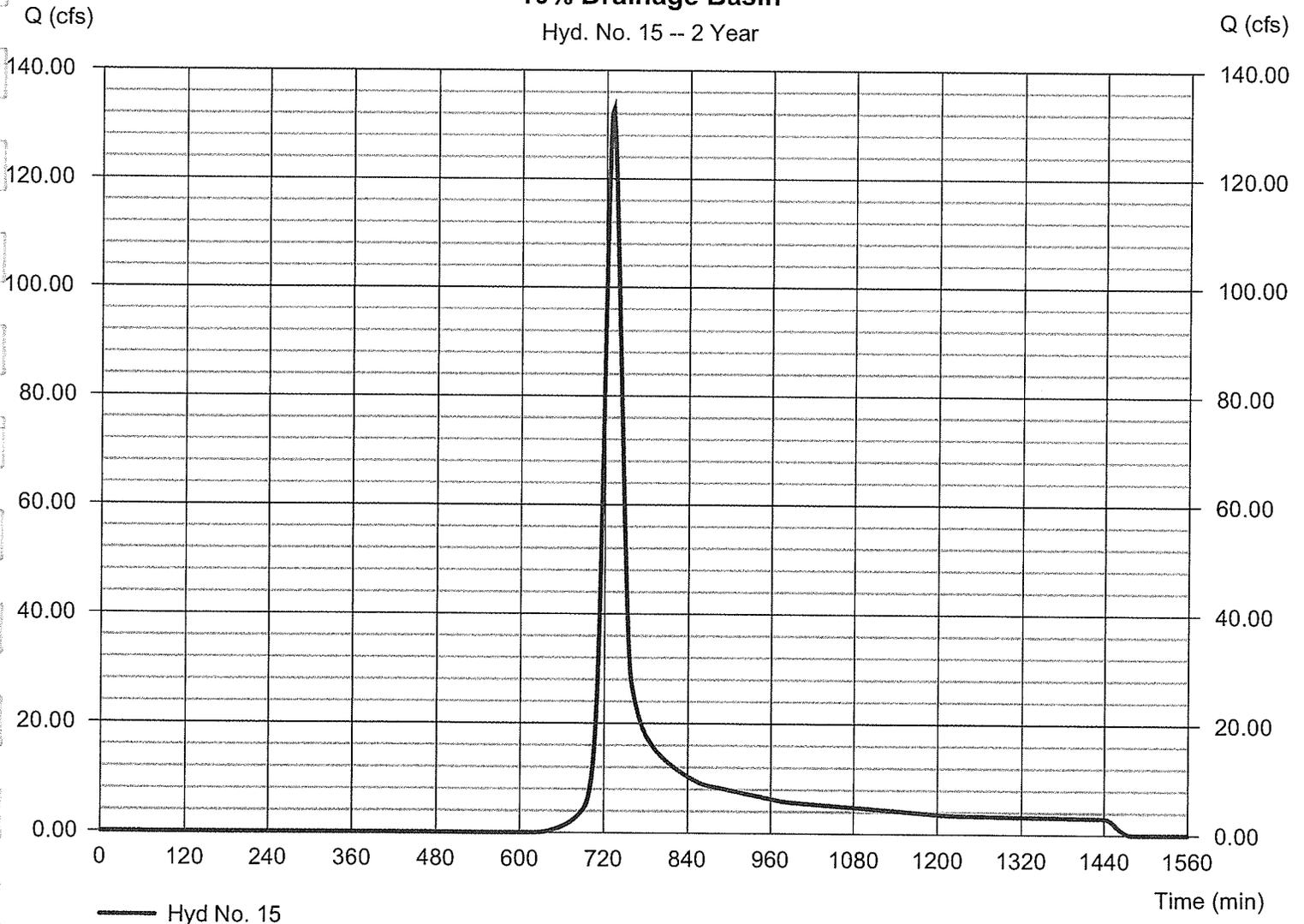
## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 132.82 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 505,930 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### 10% Drainage Basin

Hyd. No. 15 -- 2 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

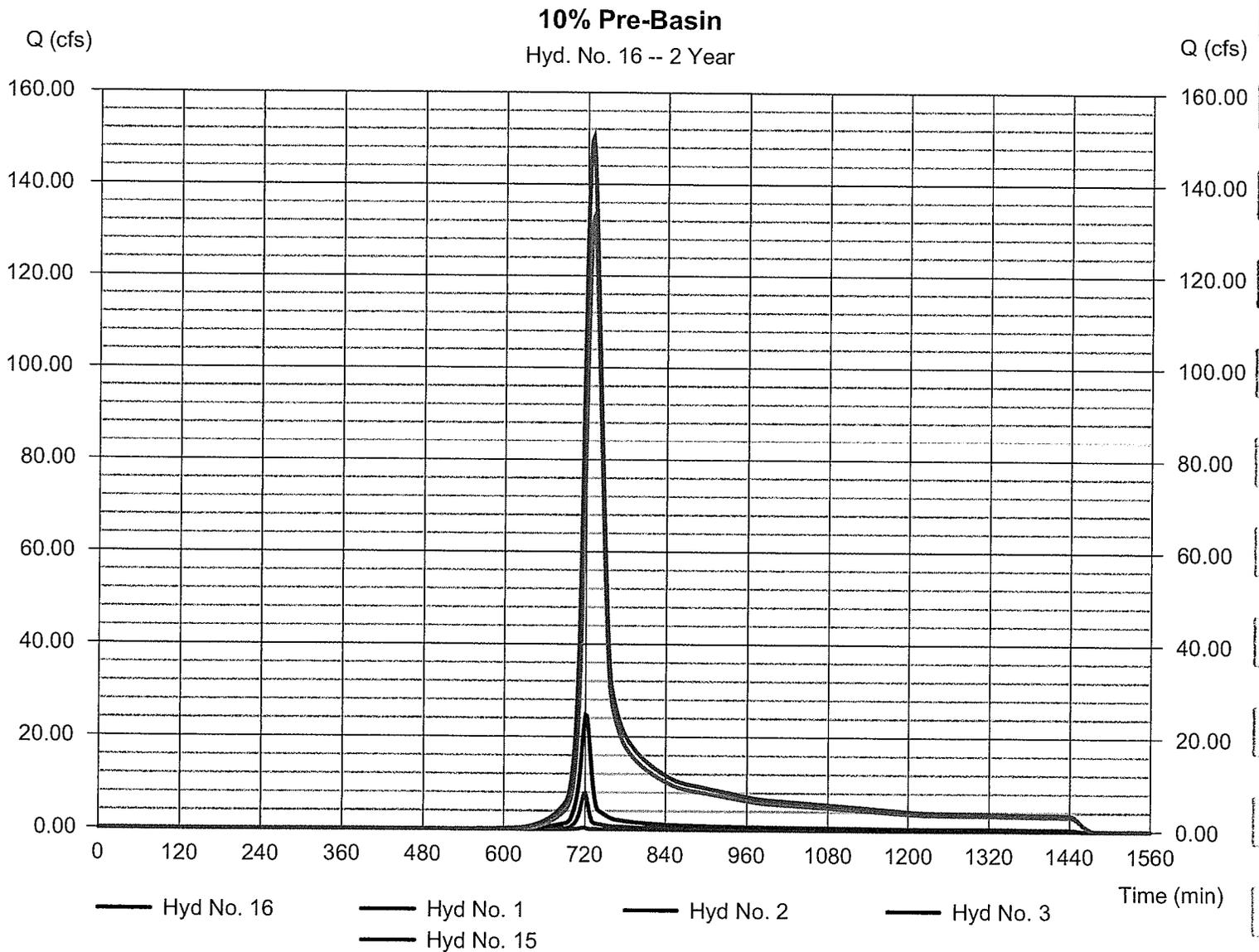
Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 1, 2, 3, 15

Peak discharge = 150.02 cfs  
Time to peak = 728 min  
Hyd. volume = 588,575 cuft  
Contrib. drain. area = 104.720 ac



# Hydrograph Report

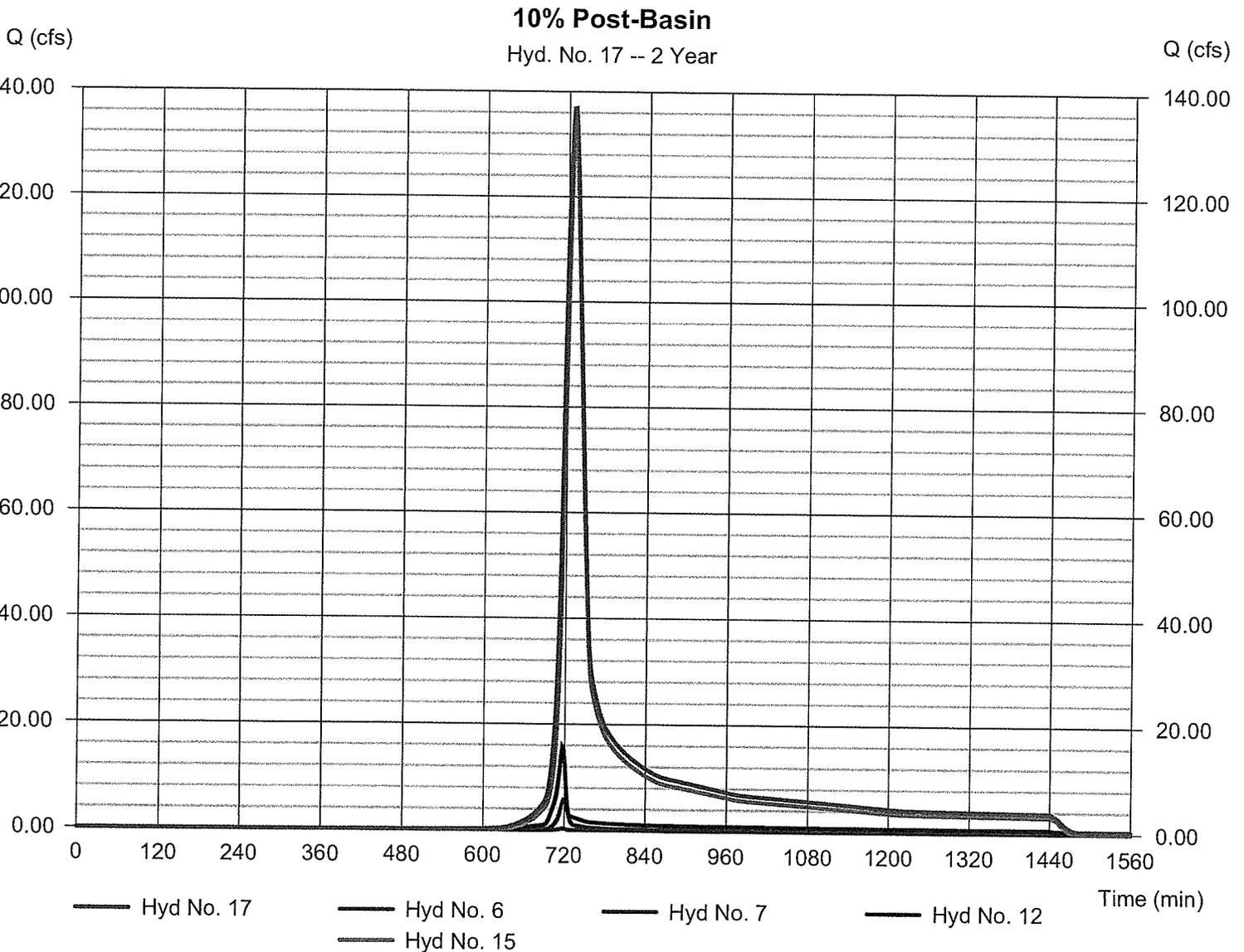
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 17

### 10% Post-Basin

Hydrograph type	= Combine	Peak discharge	= 136.85 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 598,346 cuft
Inflow hyds.	= 6, 7, 12, 15	Contrib. drain. area	= 95.850 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

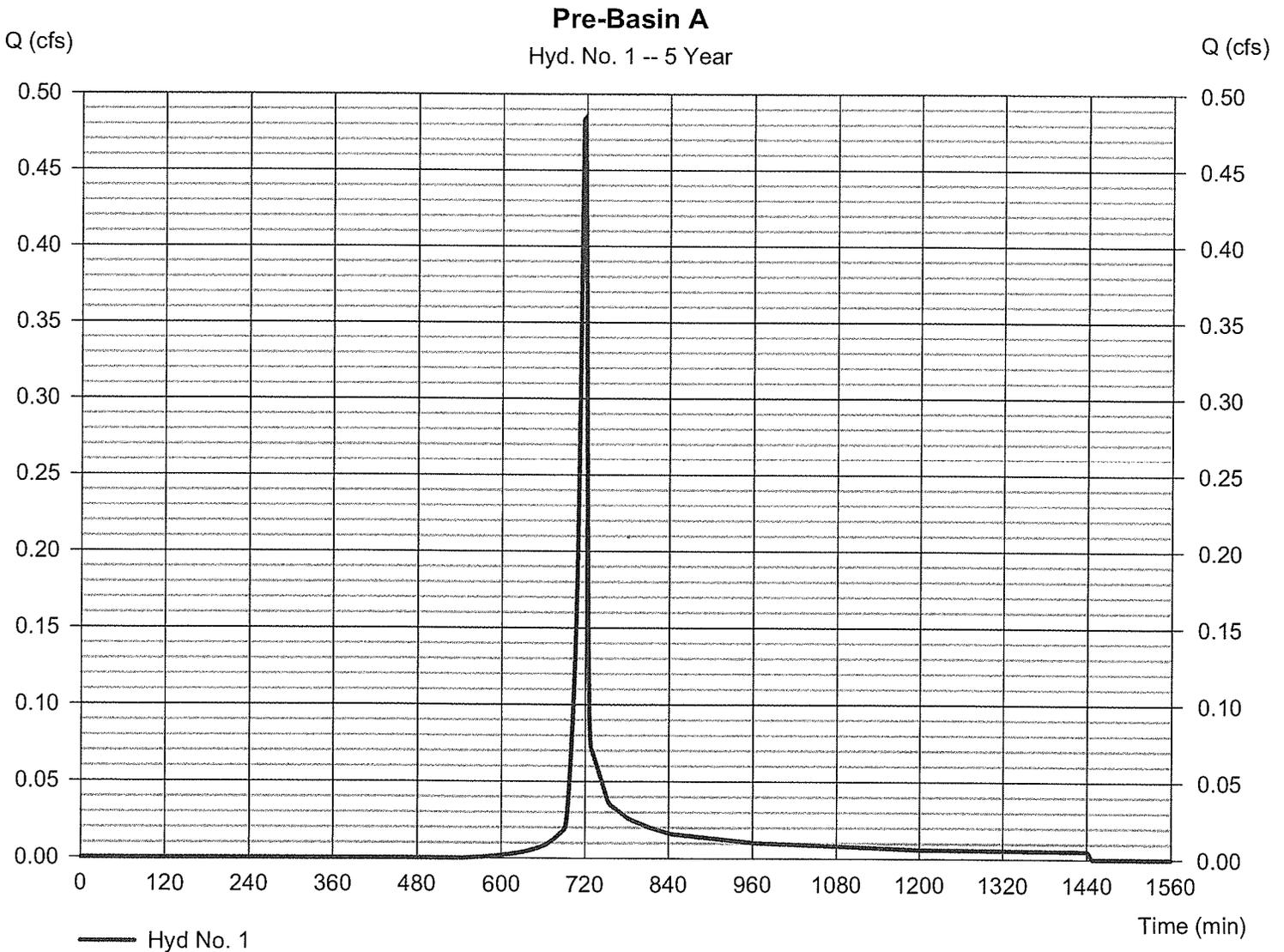
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.484	2	718	976	-----	-----	-----	Pre-Basin A
2	SCS Runoff	10.44	2	720	23,910	-----	-----	-----	Pre-Basin B
3	SCS Runoff	31.86	2	720	82,652	-----	-----	-----	Pre-Basin C
4	SCS Runoff	2.815	2	716	5,971	-----	-----	-----	Pre-Basin D
6	SCS Runoff	0.484	2	718	976	-----	-----	-----	Post-Basin A
7	SCS Runoff	7.917	2	720	18,125	-----	-----	-----	Post-Basin B
8	SCS Runoff	28.08	2	716	58,073	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	1.761	2	758	57,938	8	877.61	33,296	Route Basin C.1
10	SCS Runoff	2.609	2	718	5,255	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	16.43	2	716	34,851	-----	-----	-----	Post-Basin C.3
12	Combine	19.54	2	716	98,043	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	2.528	2	716	5,362	-----	-----	-----	Post-Basin D
15	SCS Runoff	182.13	2	730	682,290	-----	-----	-----	10% Drainage Basin
16	Combine	204.91	2	728	789,828	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	188.20	2	728	799,434	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.484 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 976 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

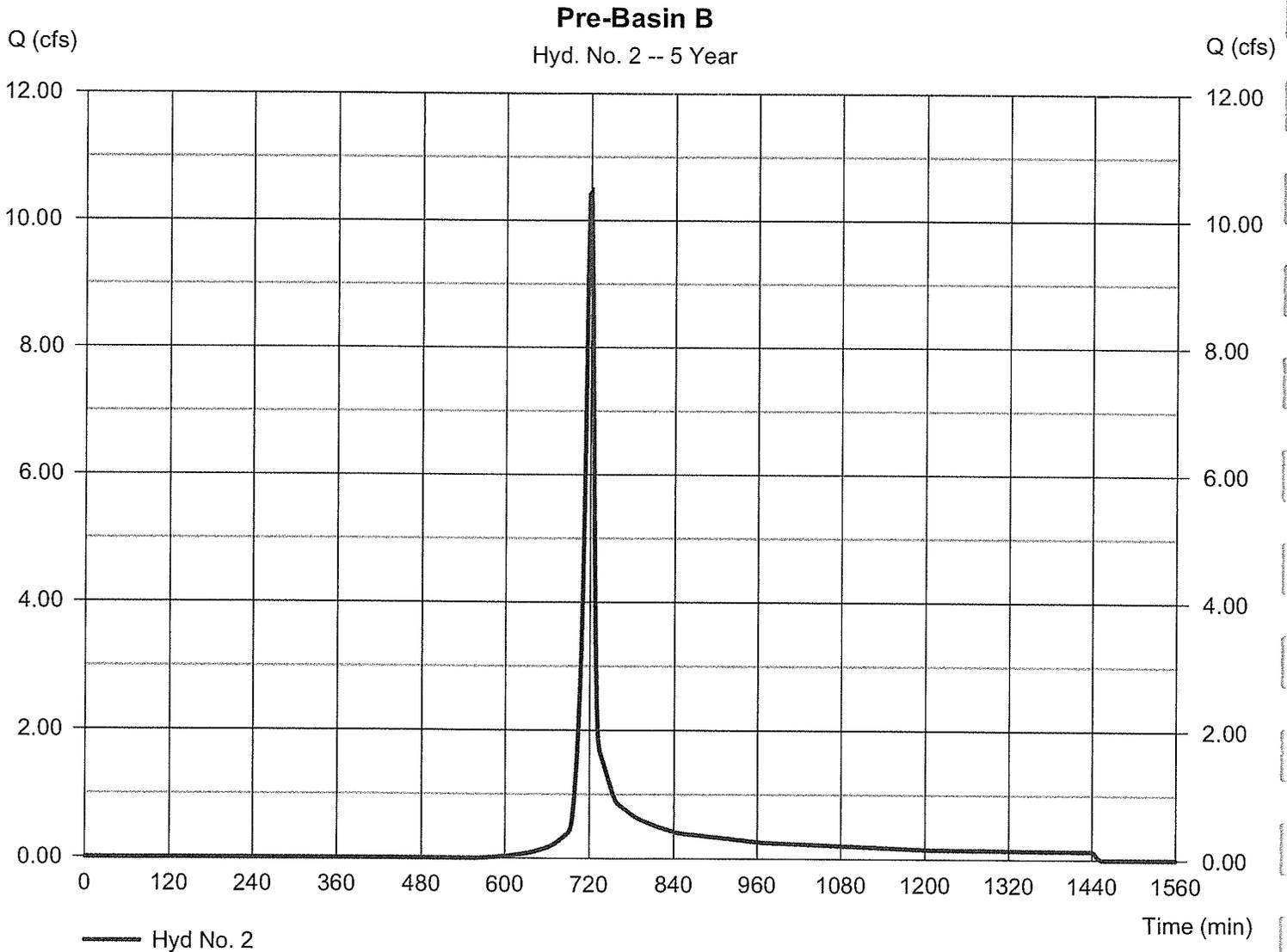
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 10.44 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 23,910 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

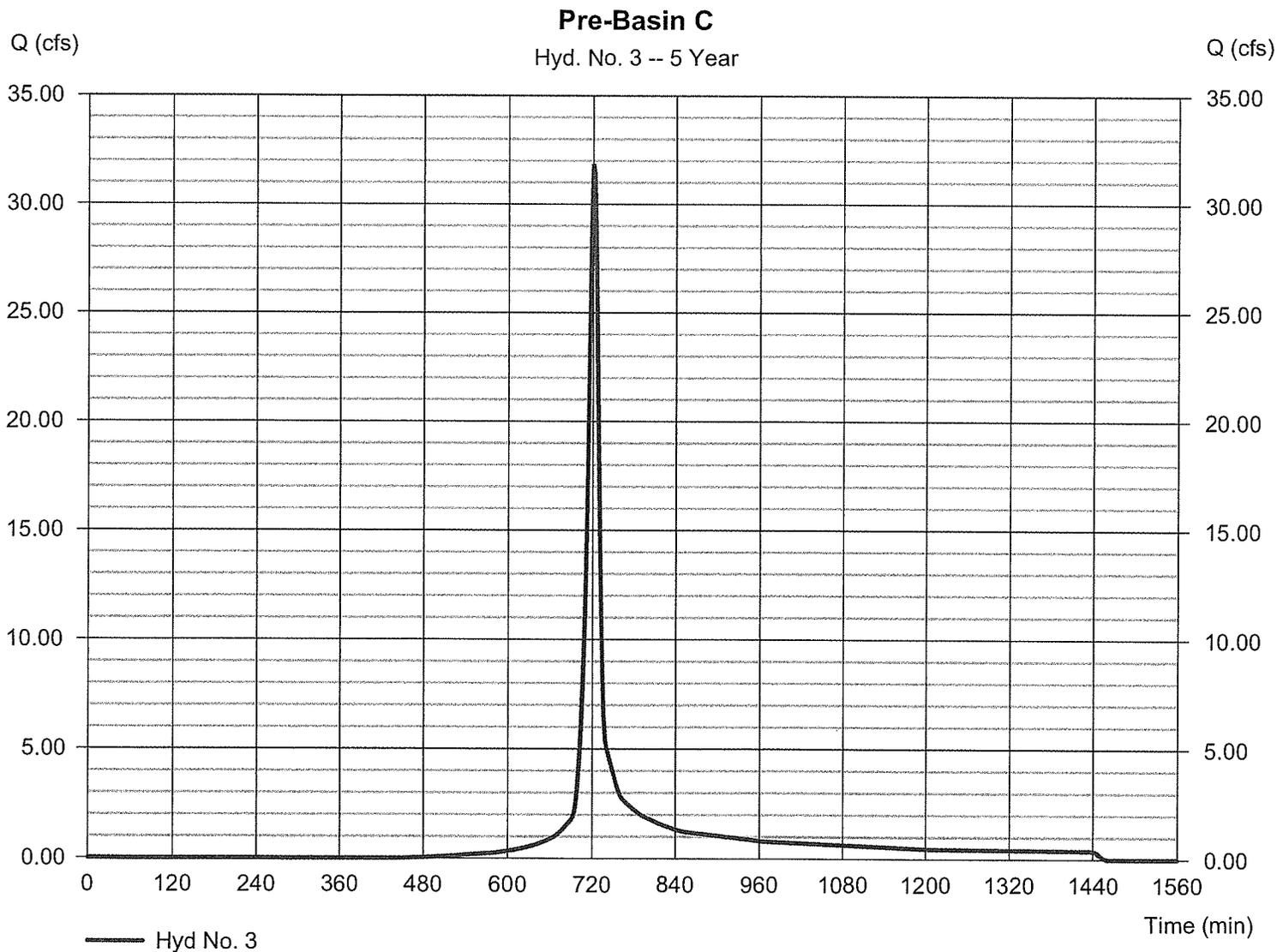
Tuesday, Sep 25, 2012

## Hyd. No. 3

### Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 31.86 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 82,652 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.190 \times 85) + (5.260 \times 75)] / 8.120$



# Hydrograph Report

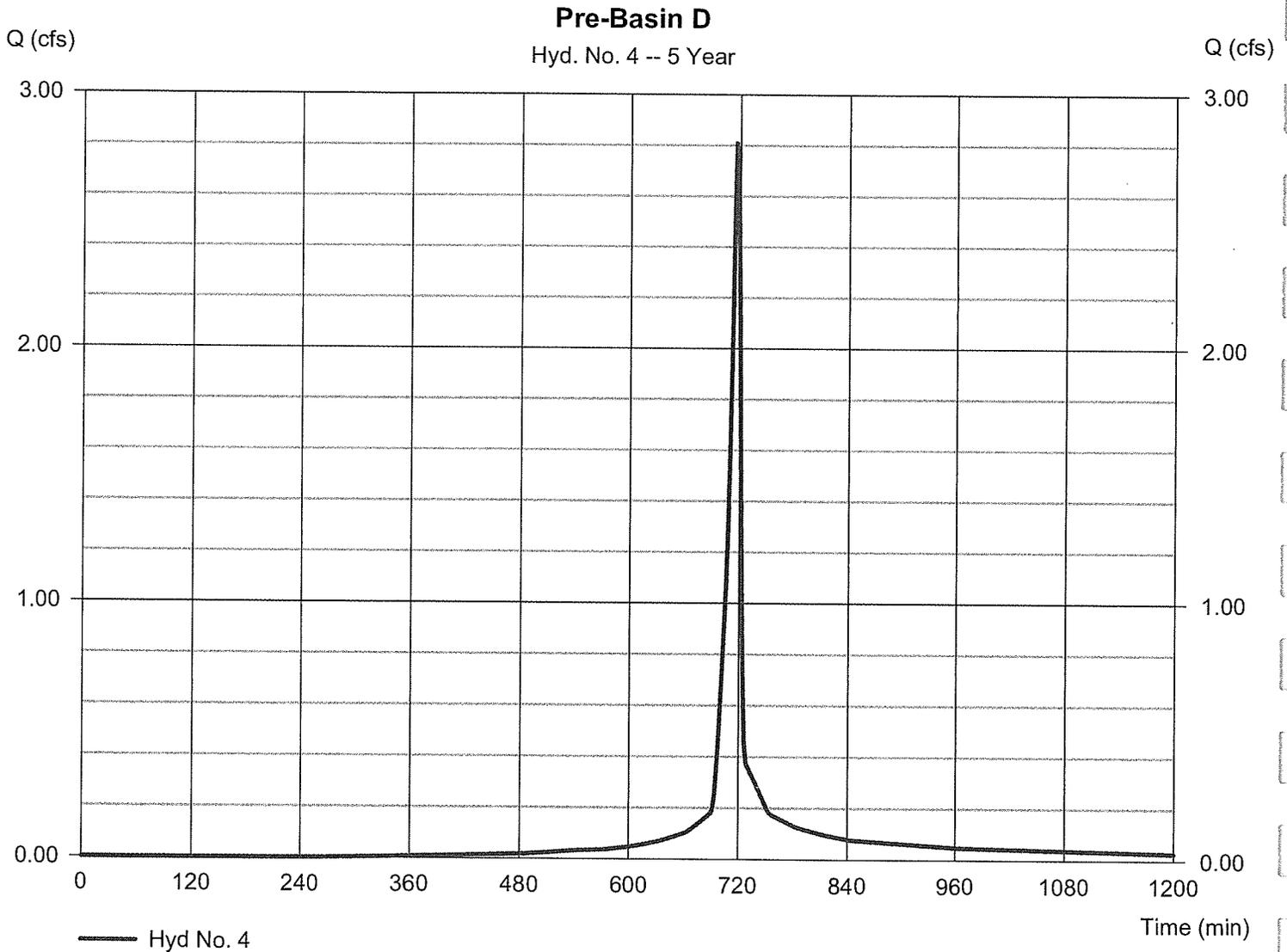
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 4

Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.815 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,971 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

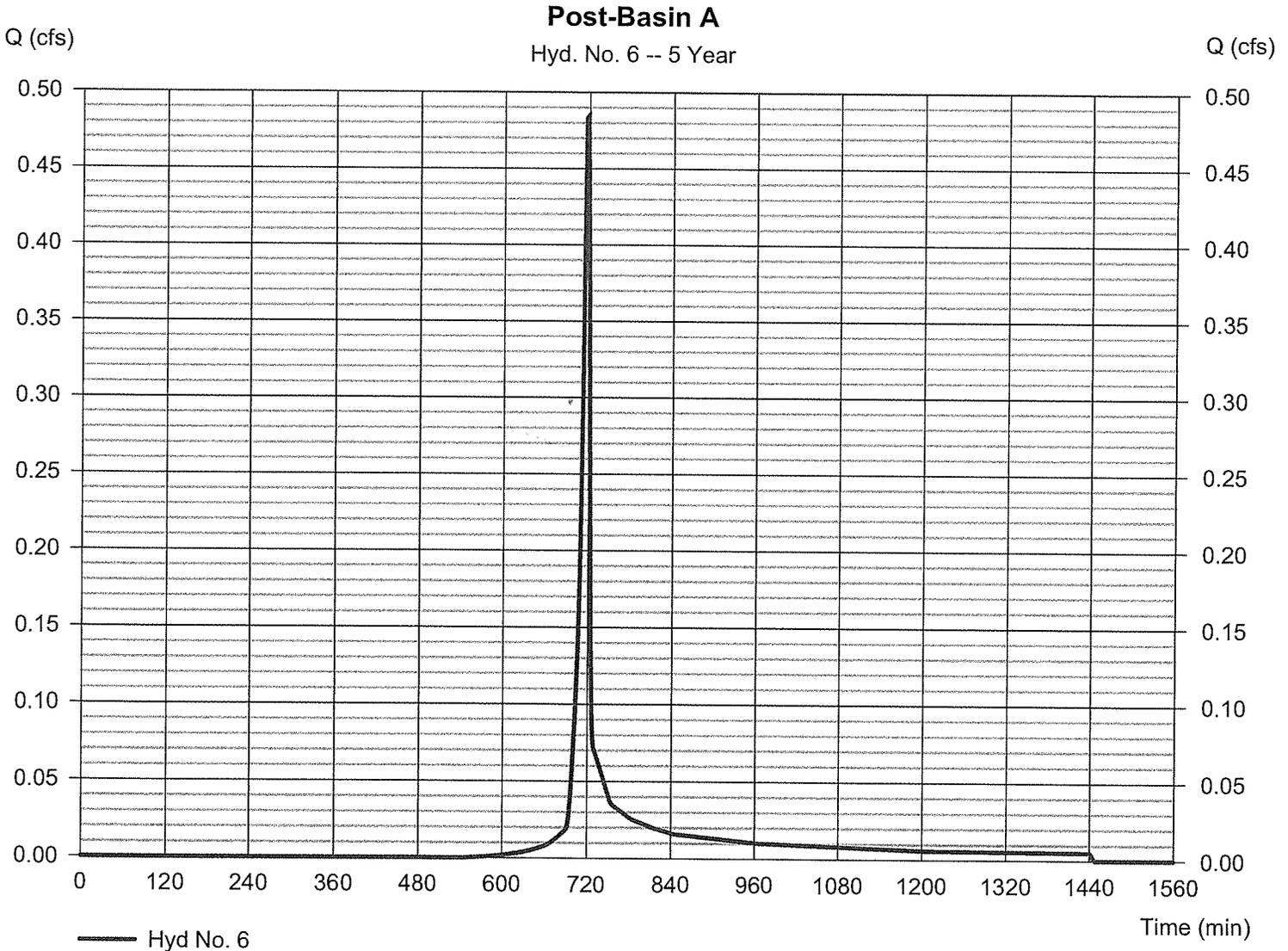
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.484 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 976 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

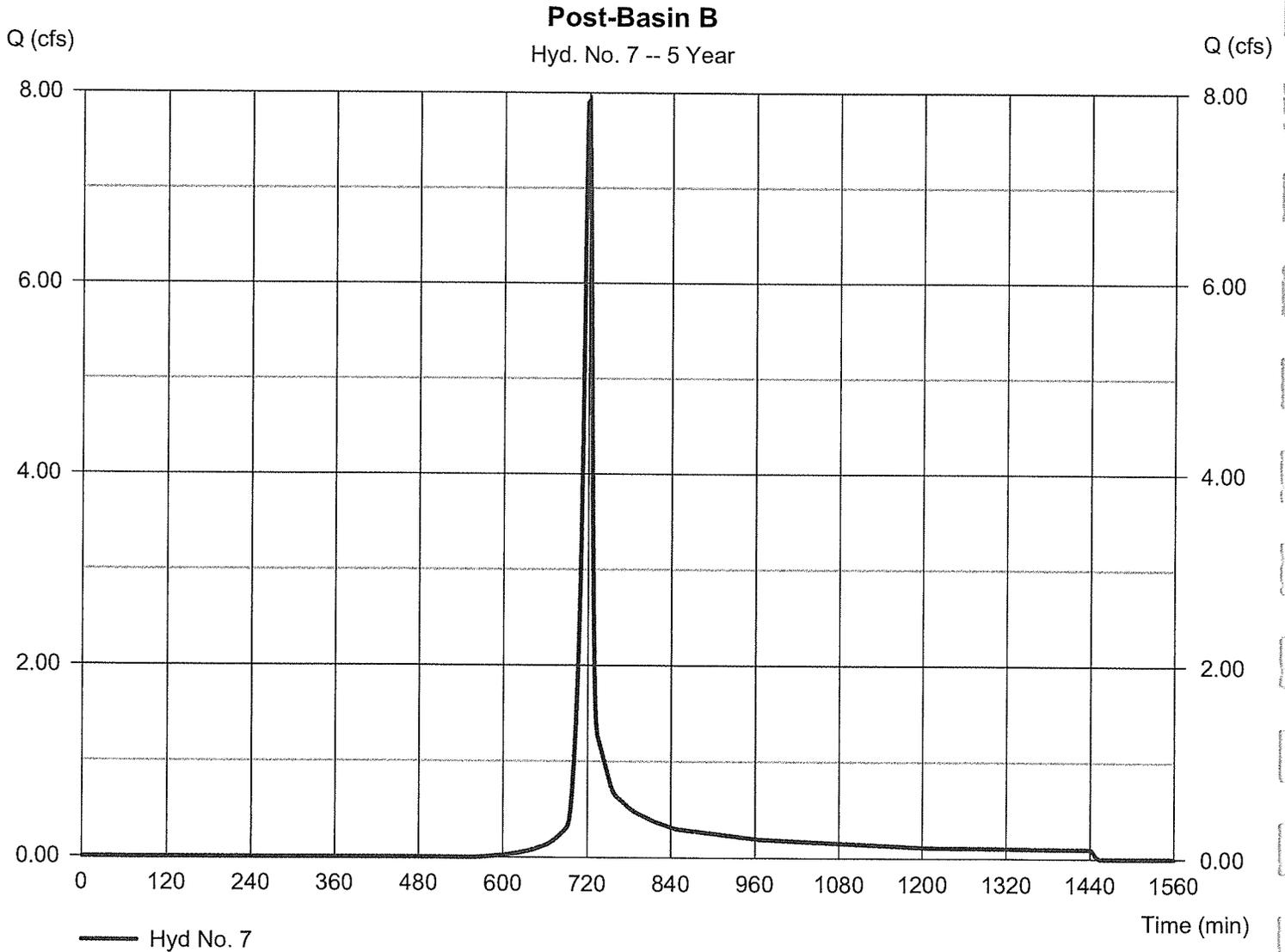
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 7.917 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 18,125 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

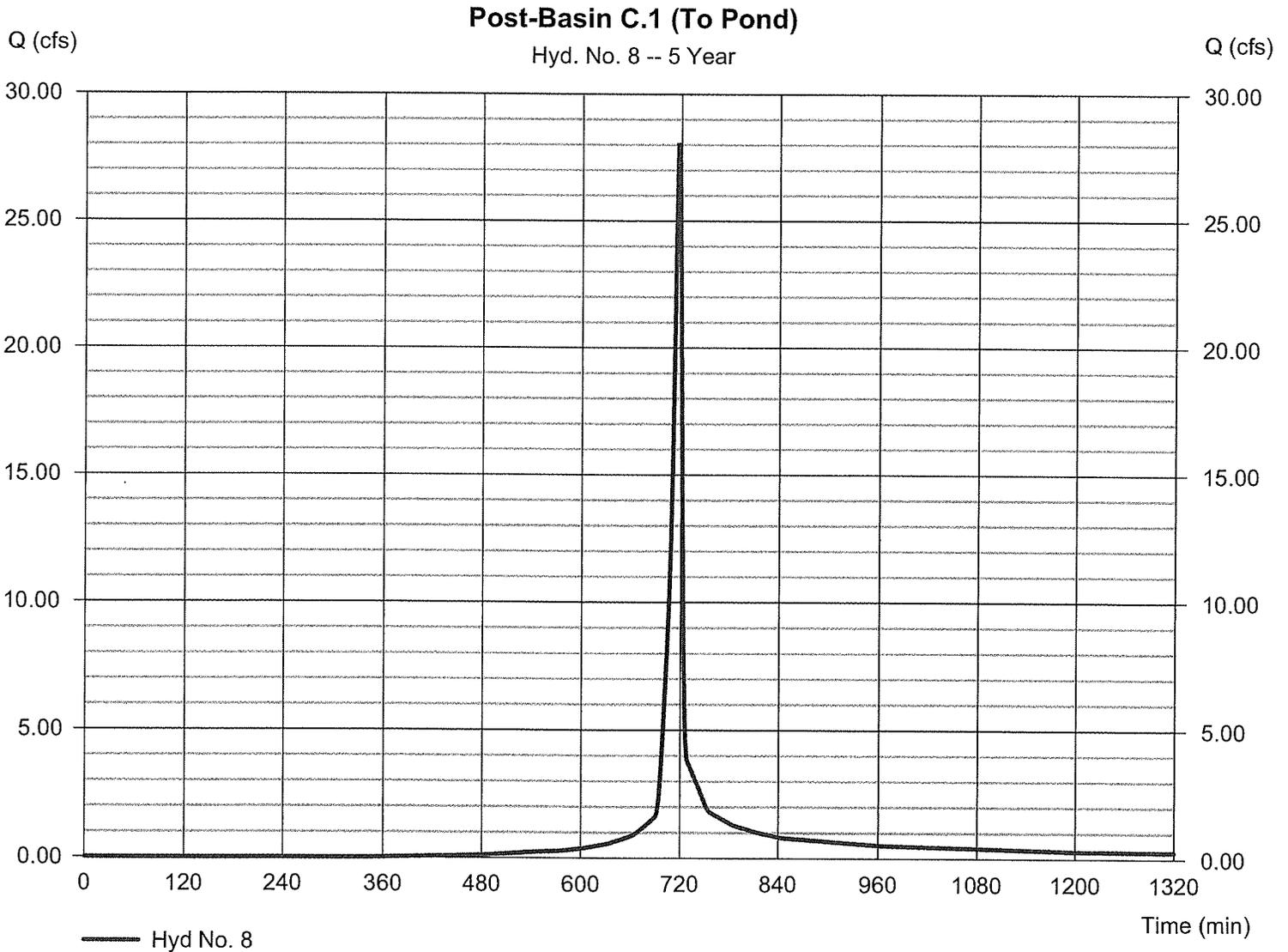
Tuesday, Sep 25, 2012

## Hyd. No. 8

### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 28.08 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 58,073 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

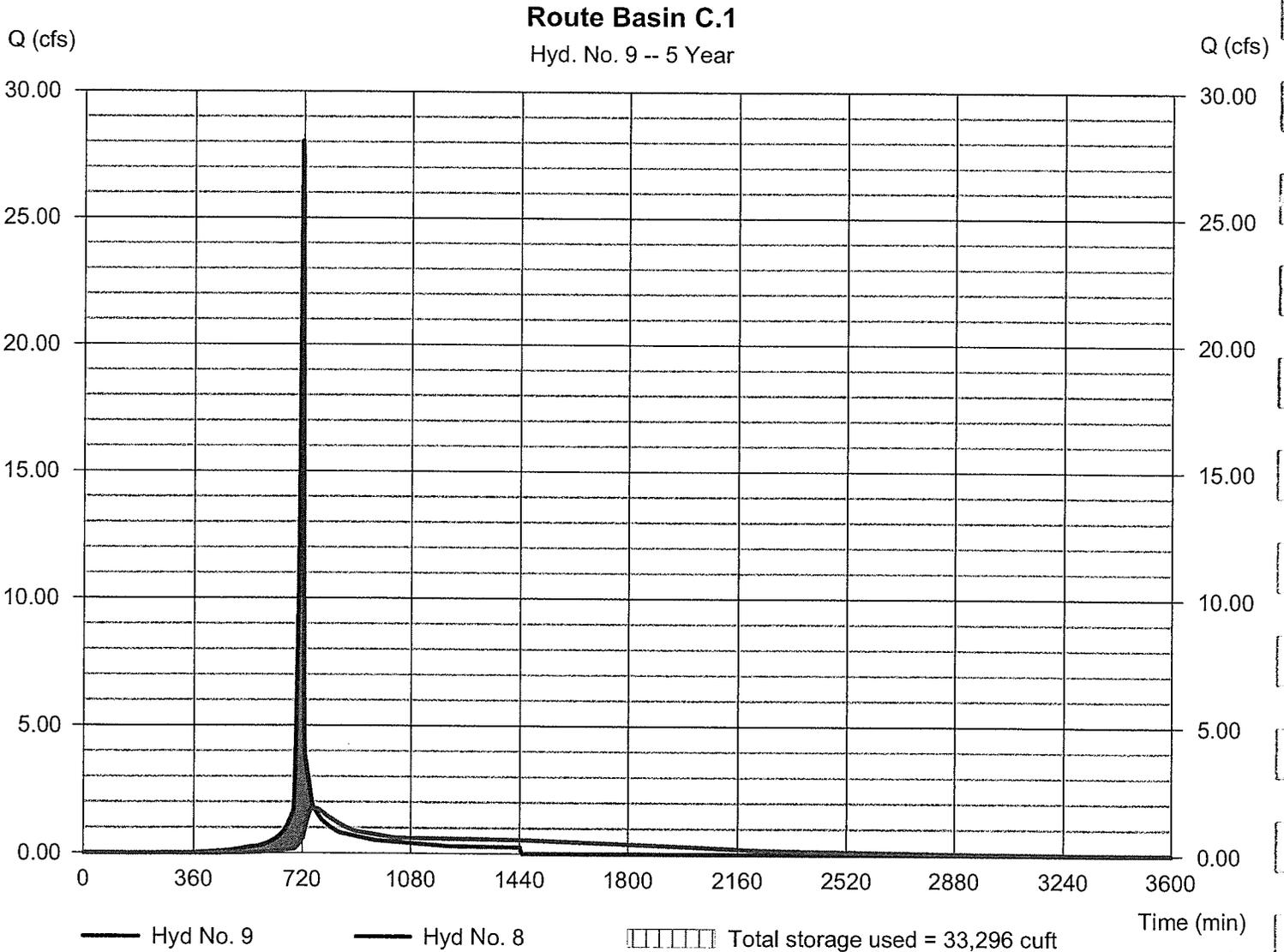
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 1.761 cfs
Storm frequency	= 5 yrs	Time to peak	= 758 min
Time interval	= 2 min	Hyd. volume	= 57,938 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 877.61 ft
Reservoir name	= Detention Pond with Micropool	Max. Storage	= 33,296 cuft

Storage Indication method used.

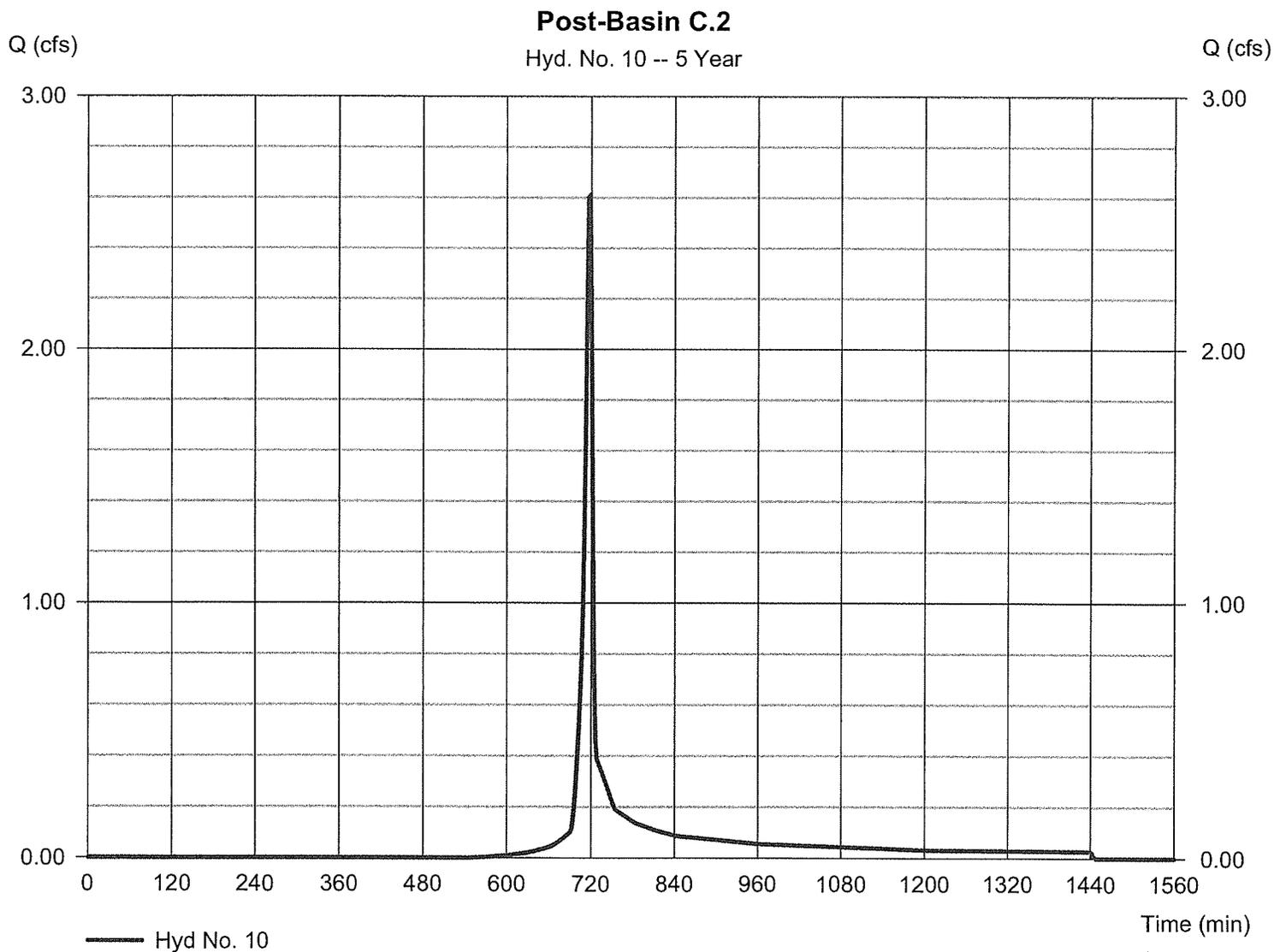


# Hydrograph Report

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.609 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 5,255 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

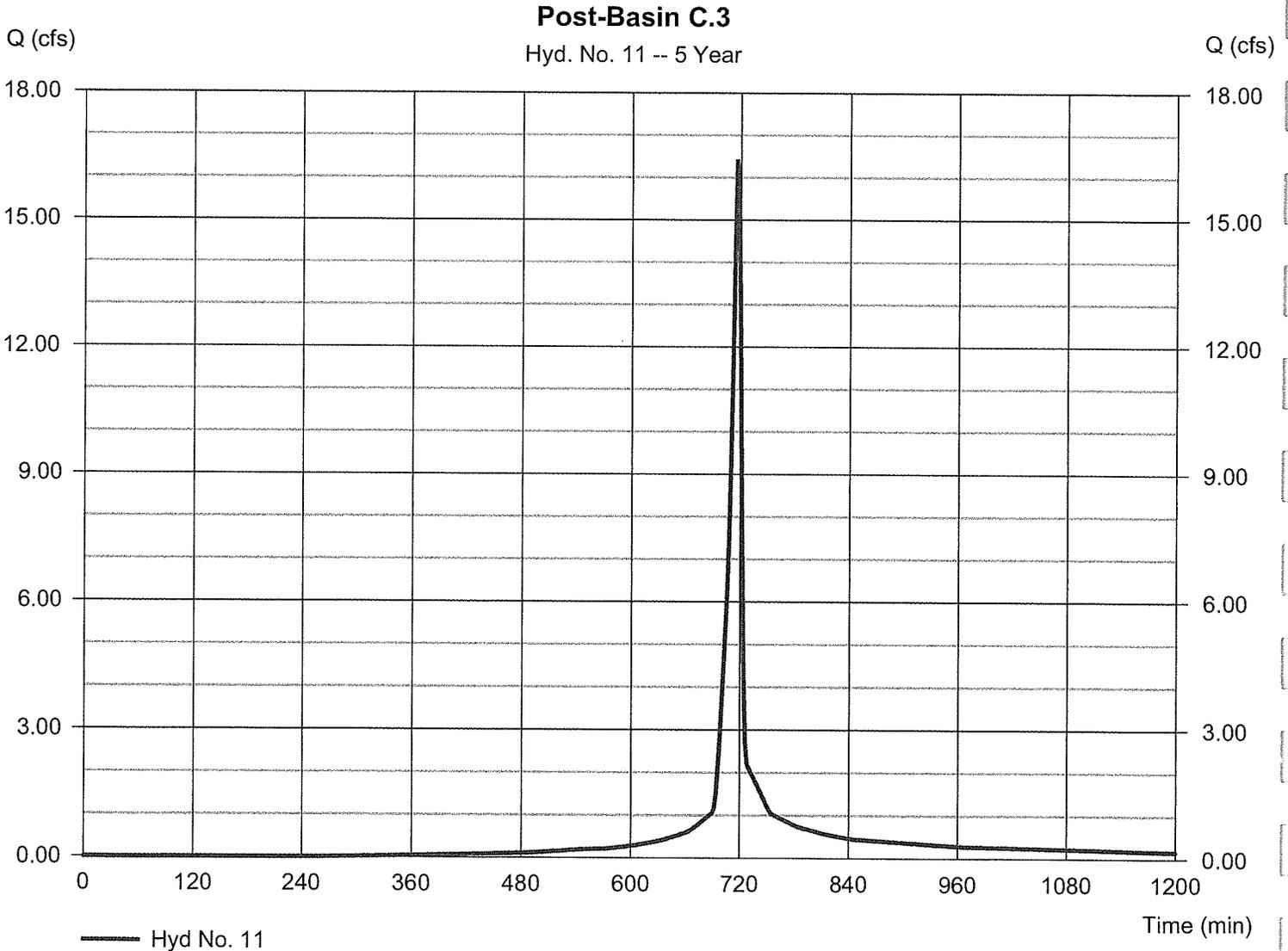
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

### Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 16.43 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 34,851 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

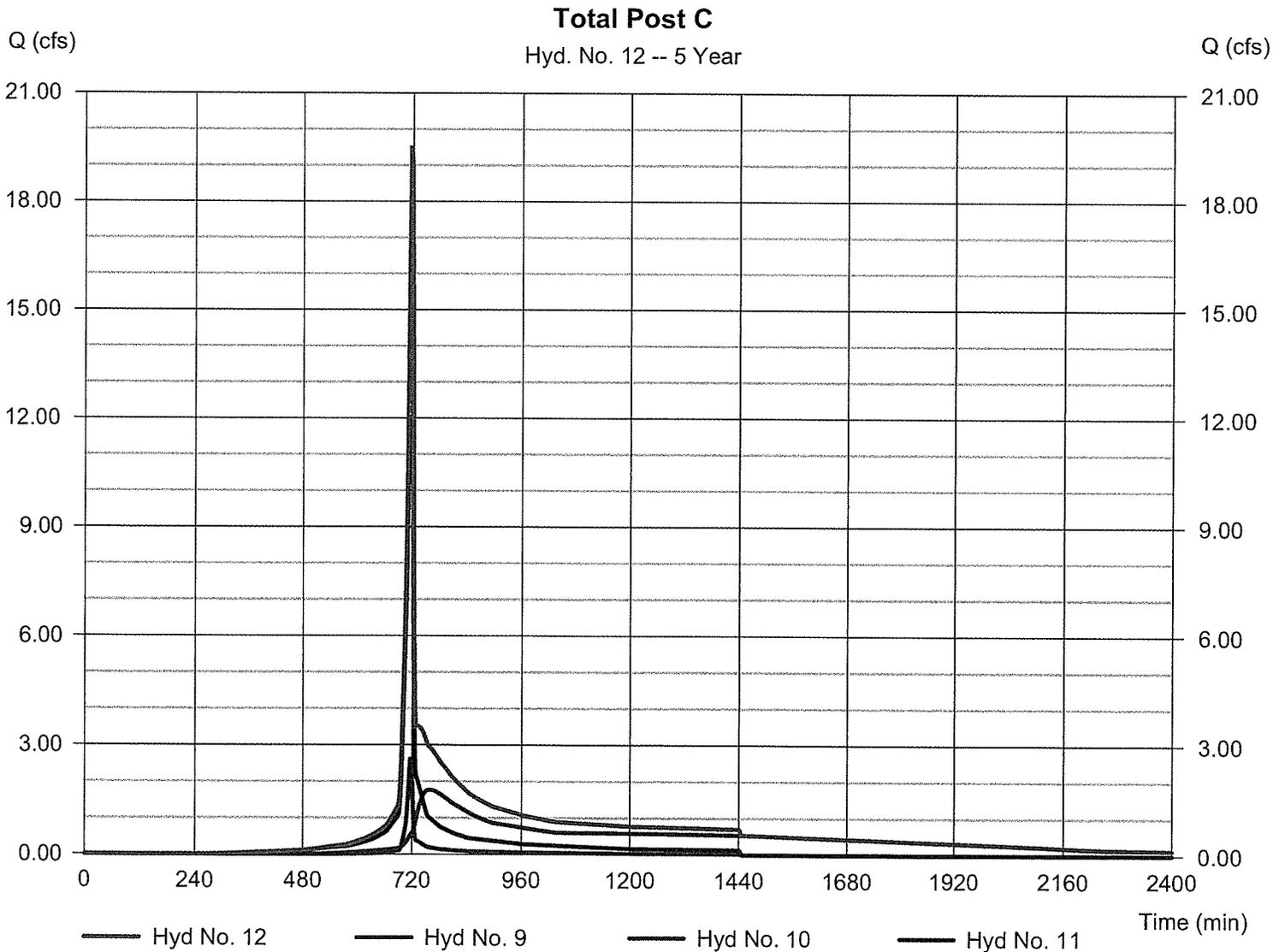
Tuesday, Sep 25, 2012

## Hyd. No. 12

### Total Post C

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 10, 11

Peak discharge = 19.54 cfs  
Time to peak = 716 min  
Hyd. volume = 98,043 cuft  
Contrib. drain. area = 3.560 ac



# Hydrograph Report

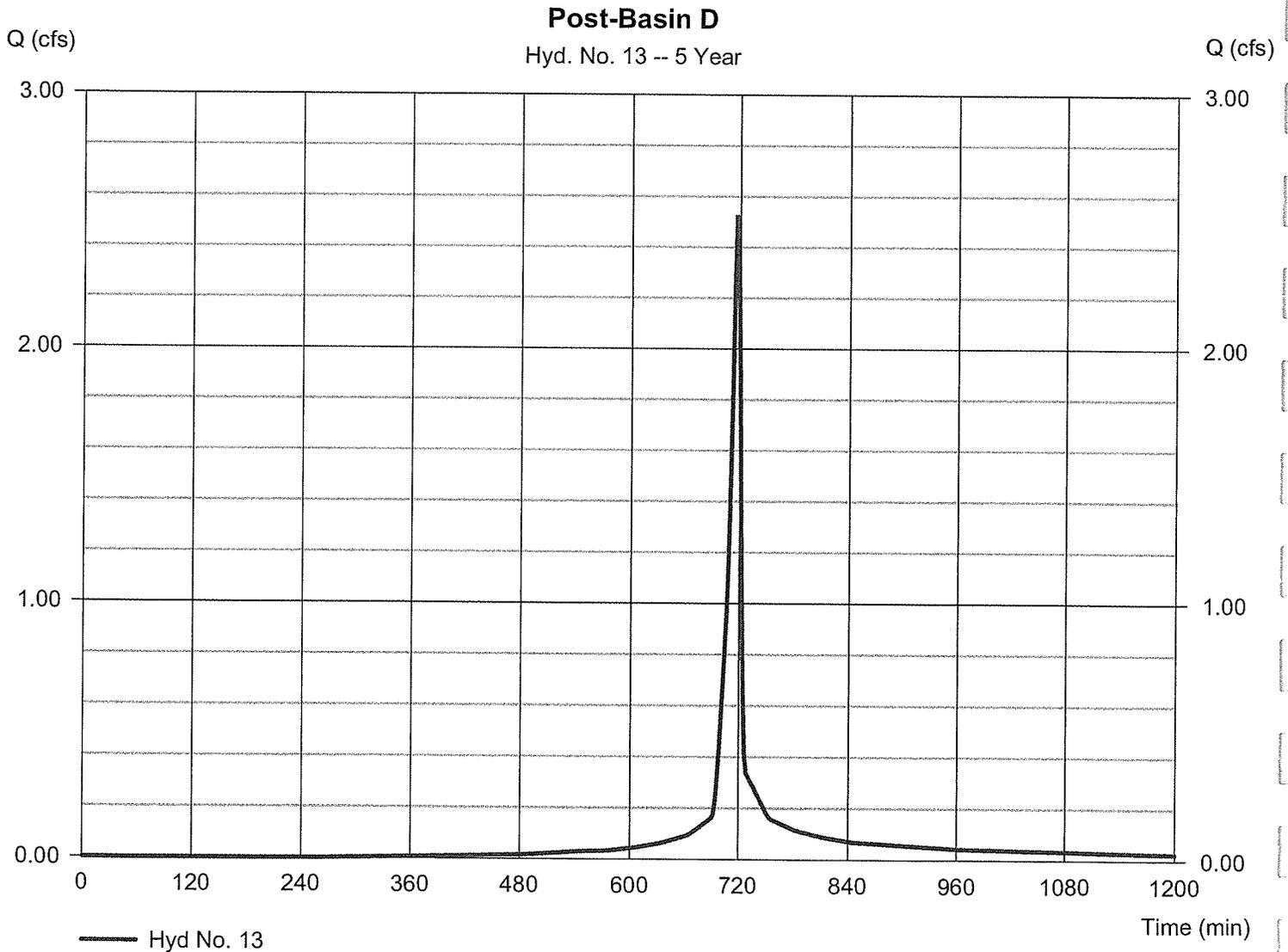
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 13

### Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.528 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,362 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

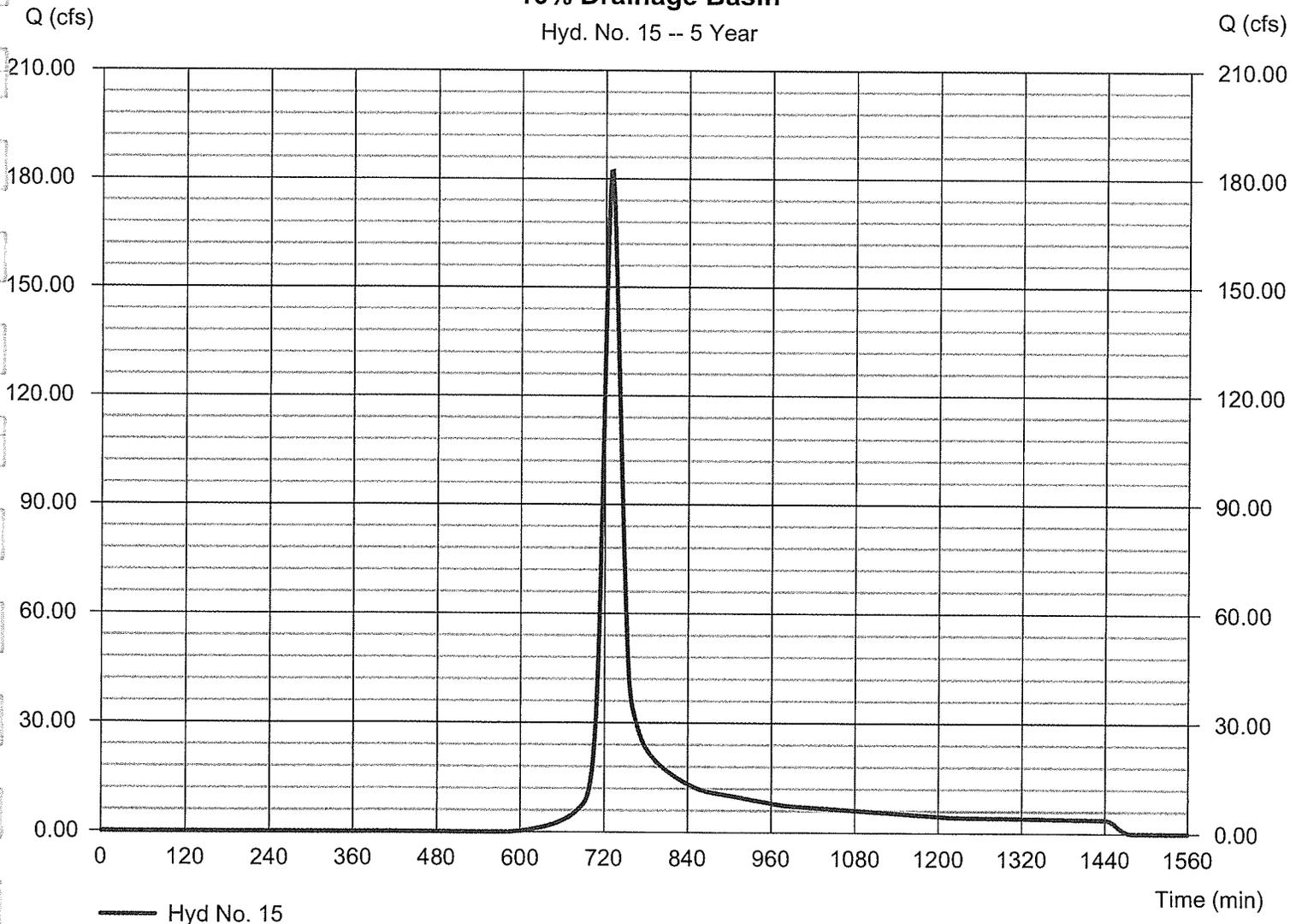
## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 182.13 cfs
Storm frequency	= 5 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 682,290 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### 10% Drainage Basin

Hyd. No. 15 -- 5 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

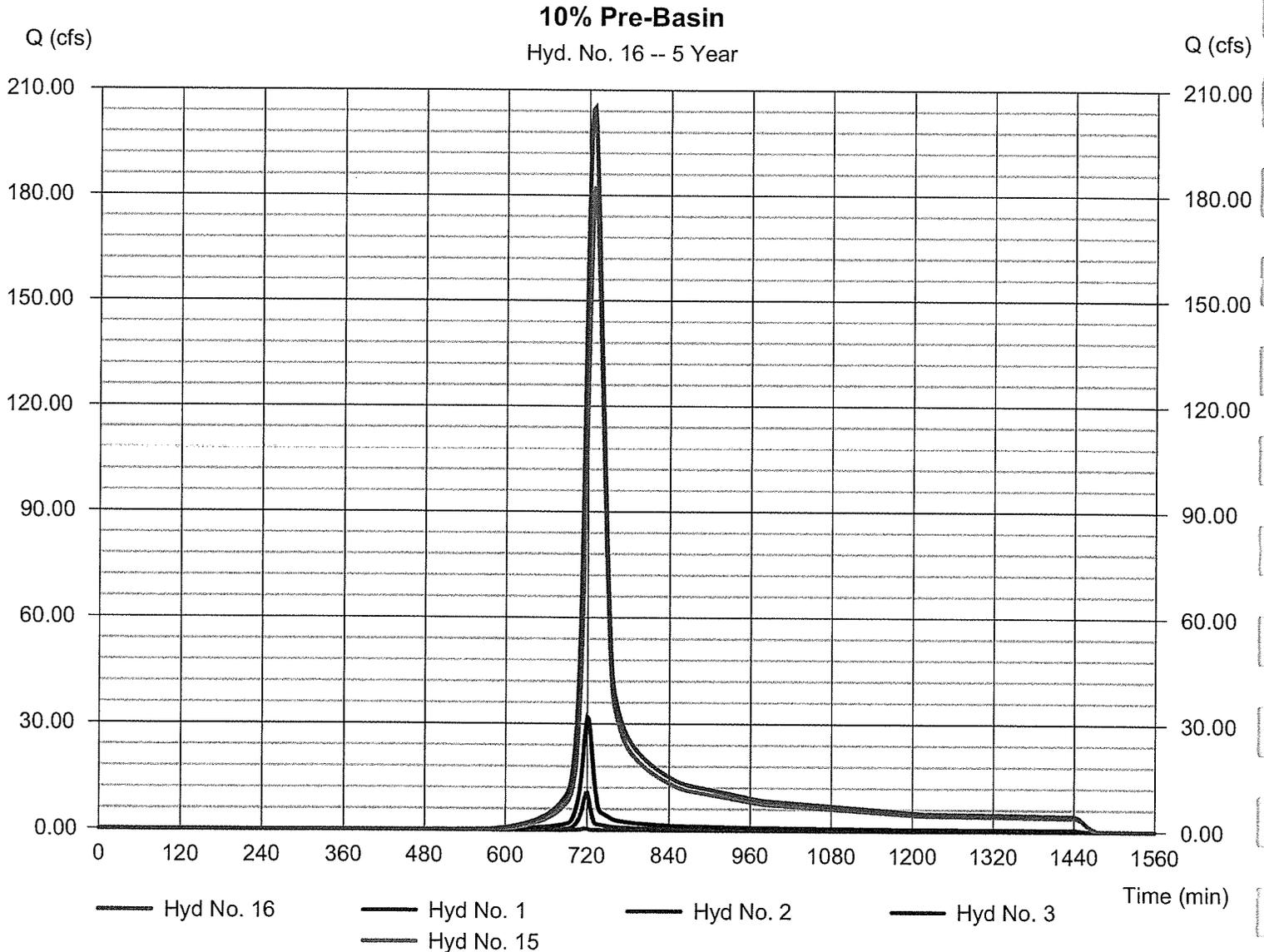
Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 2 min  
Inflow hyd. = 1, 2, 3, 15

Peak discharge = 204.91 cfs  
Time to peak = 728 min  
Hyd. volume = 789,828 cuft  
Contrib. drain. area = 104.720 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

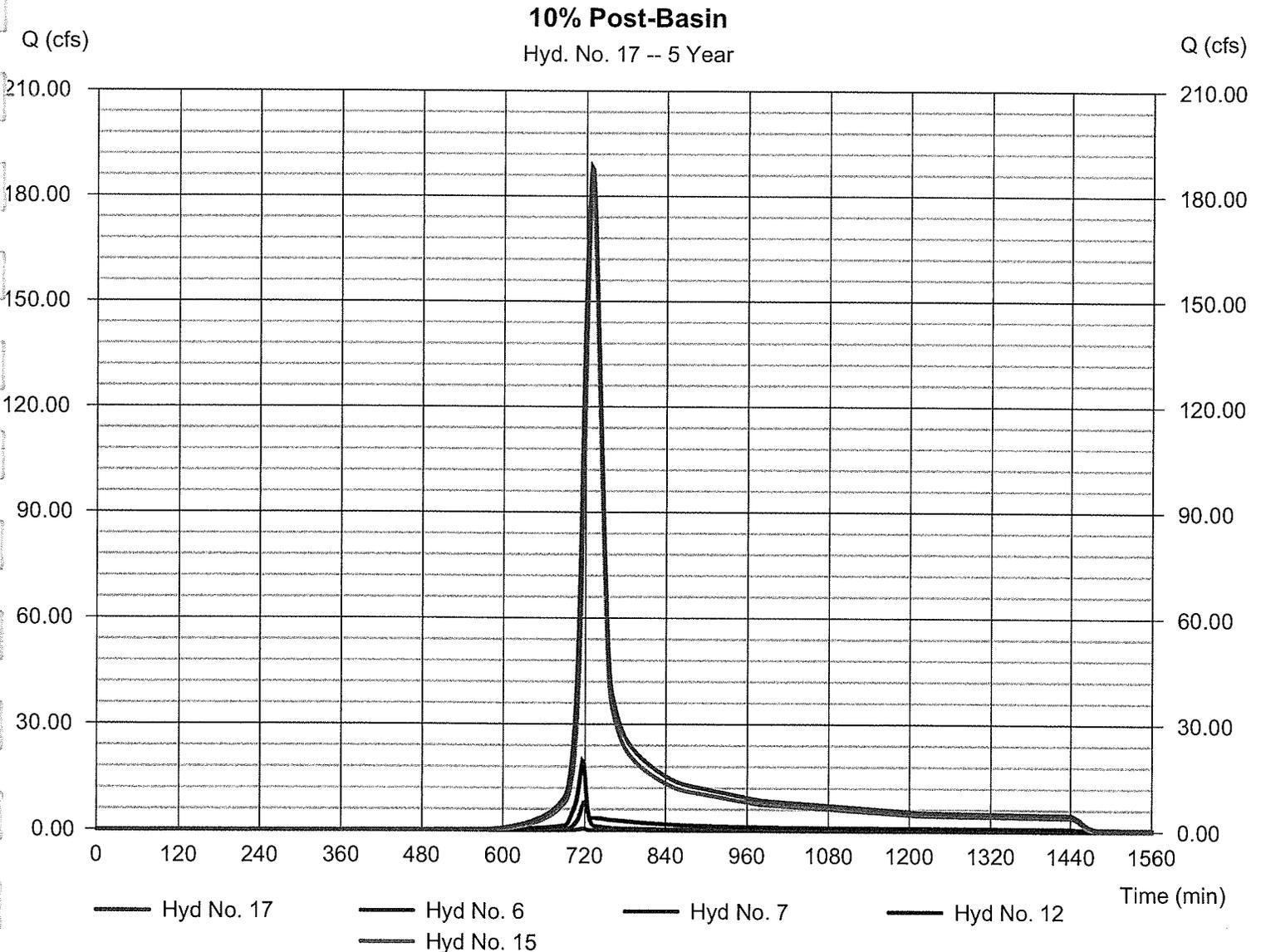
Tuesday, Sep 25, 2012

## Hyd. No. 17

10% Post-Basin

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 2 min  
Inflow hyds. = 6, 7, 12, 15

Peak discharge = 188.20 cfs  
Time to peak = 728 min  
Hyd. volume = 799,434 cuft  
Contrib. drain. area = 95.850 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.610	2	716	1,232	-----	-----	-----	Pre-Basin A
2	SCS Runoff	13.25	2	718	30,327	-----	-----	-----	Pre-Basin B
3	SCS Runoff	39.14	2	720	101,863	-----	-----	-----	Pre-Basin C
4	SCS Runoff	3.322	2	716	7,123	-----	-----	-----	Pre-Basin D
6	SCS Runoff	0.610	2	716	1,232	-----	-----	-----	Post-Basin A
7	SCS Runoff	10.05	2	718	22,990	-----	-----	-----	Post-Basin B
8	SCS Runoff	33.65	2	716	70,256	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	3.909	2	736	70,117	8	877.82	37,245	Route Basin C.1
10	SCS Runoff	3.285	2	716	6,636	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	19.39	2	716	41,575	-----	-----	-----	Post-Basin C.3
12	Combine	23.25	2	716	118,327	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	2.983	2	716	6,396	-----	-----	-----	Post-Basin D
15	SCS Runoff	234.55	2	728	869,304	-----	-----	-----	10% Drainage Basin
16	Combine	262.49	2	726	1,002,727	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	244.76	2	728	1,011,854	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

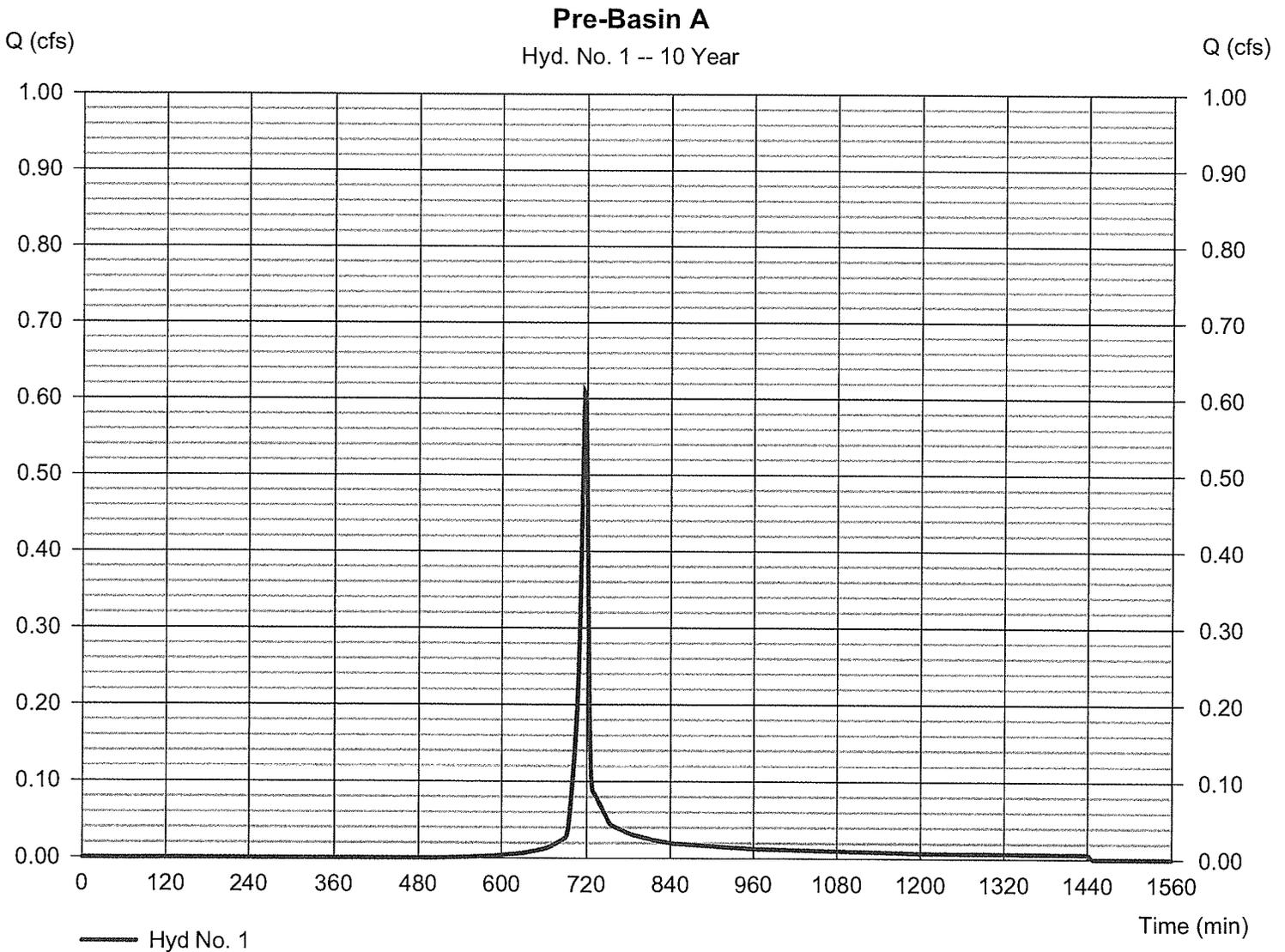
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.610 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,232 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

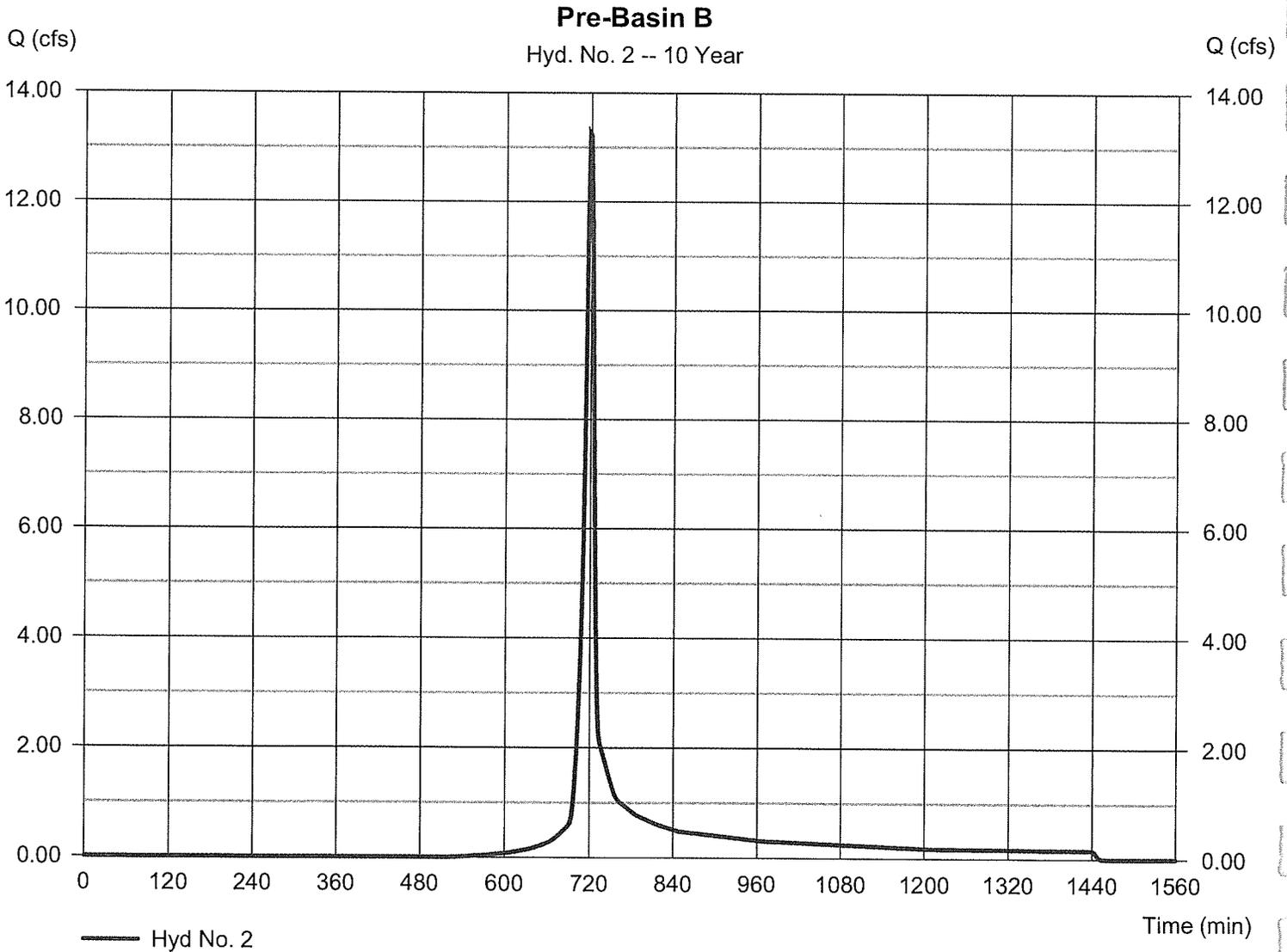


# Hydrograph Report

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 13.25 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 30,327 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

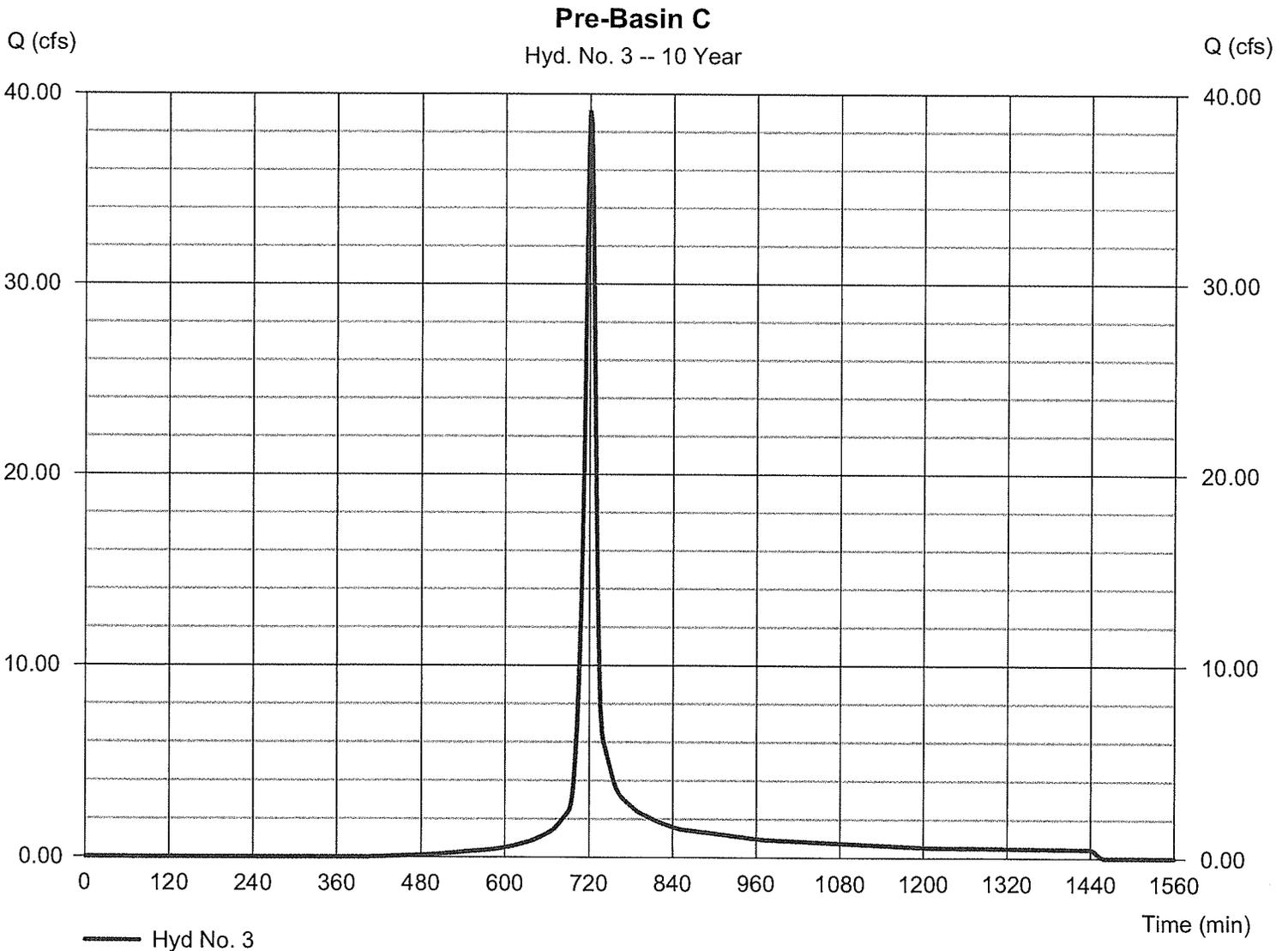
Tuesday, Sep 25, 2012

## Hyd. No. 3

### Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 39.14 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 101,863 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.190 \times 85) + (5.260 \times 75)] / 8.120$

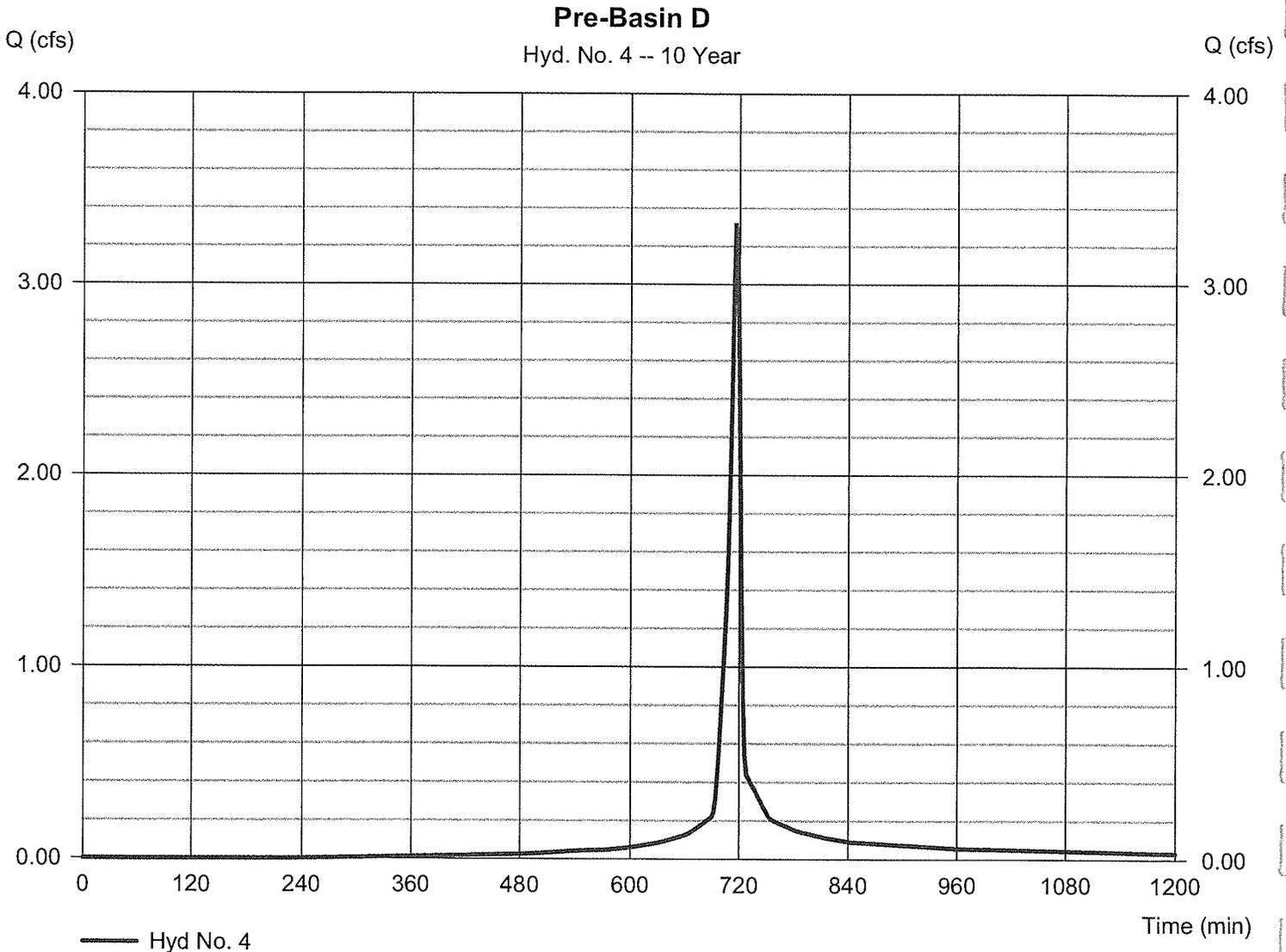


# Hydrograph Report

## Hyd. No. 4

### Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 3.322 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 7,123 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

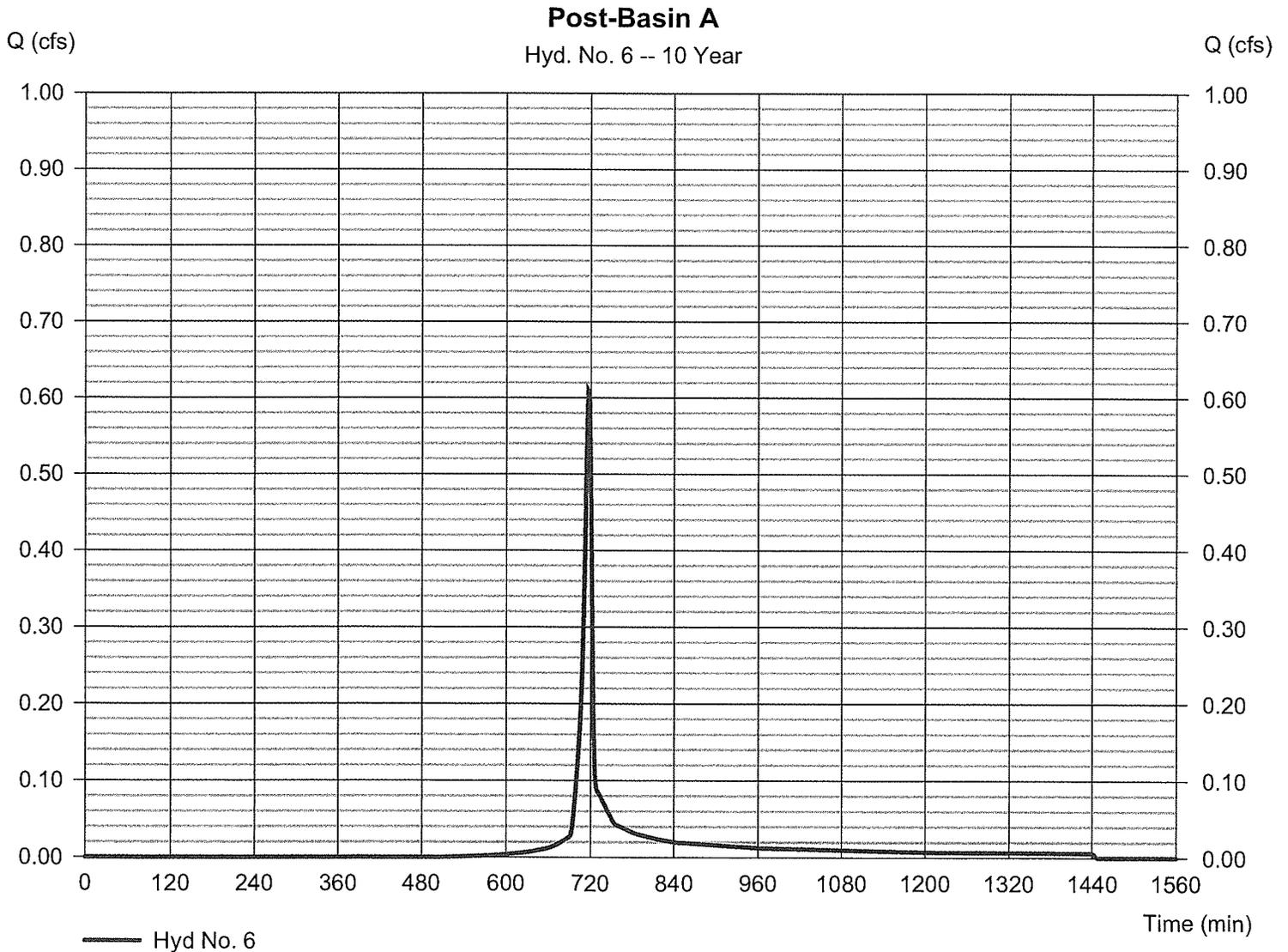


# Hydrograph Report

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.610 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,232 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

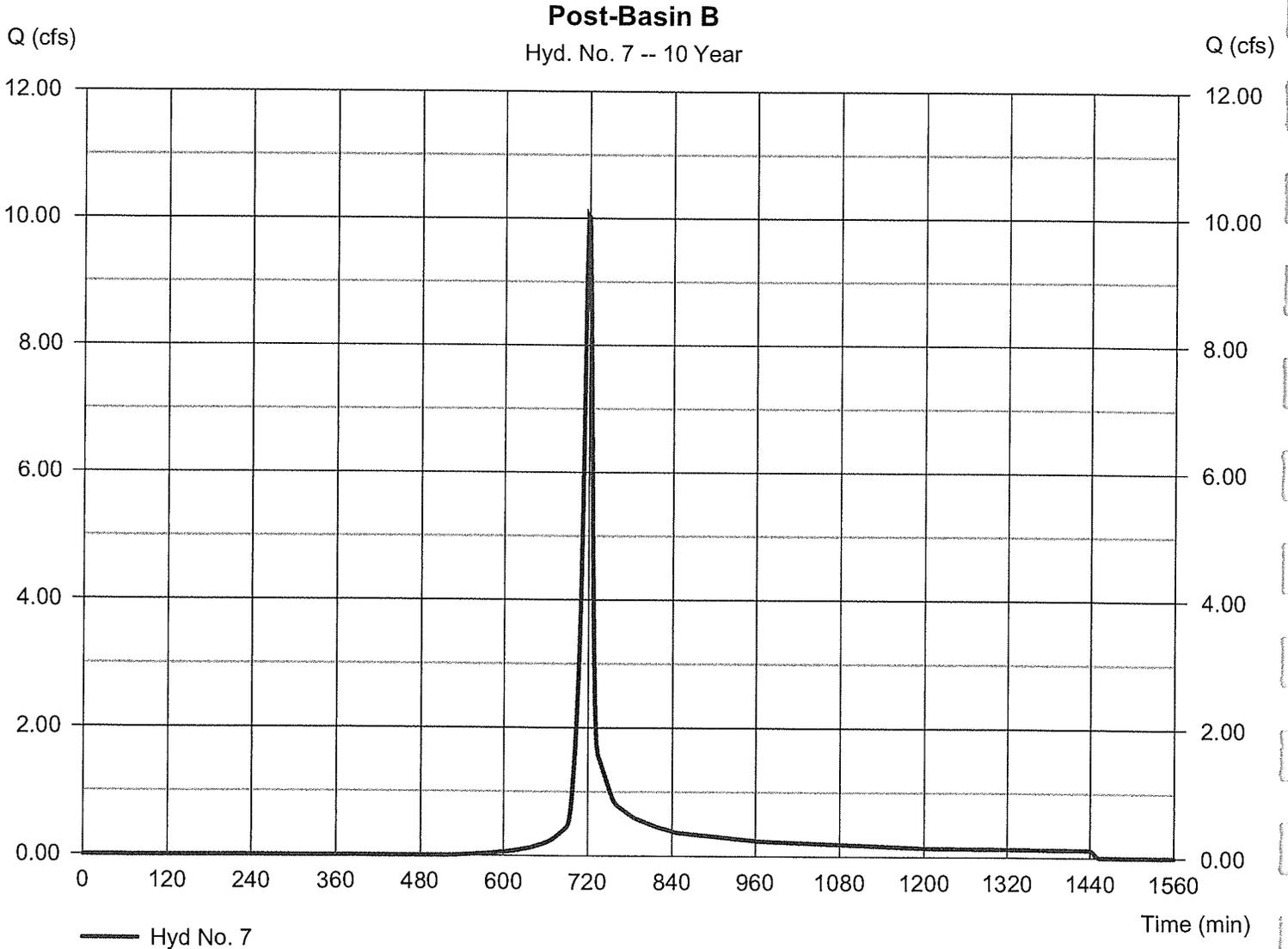


# Hydrograph Report

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 10.05 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 22,990 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



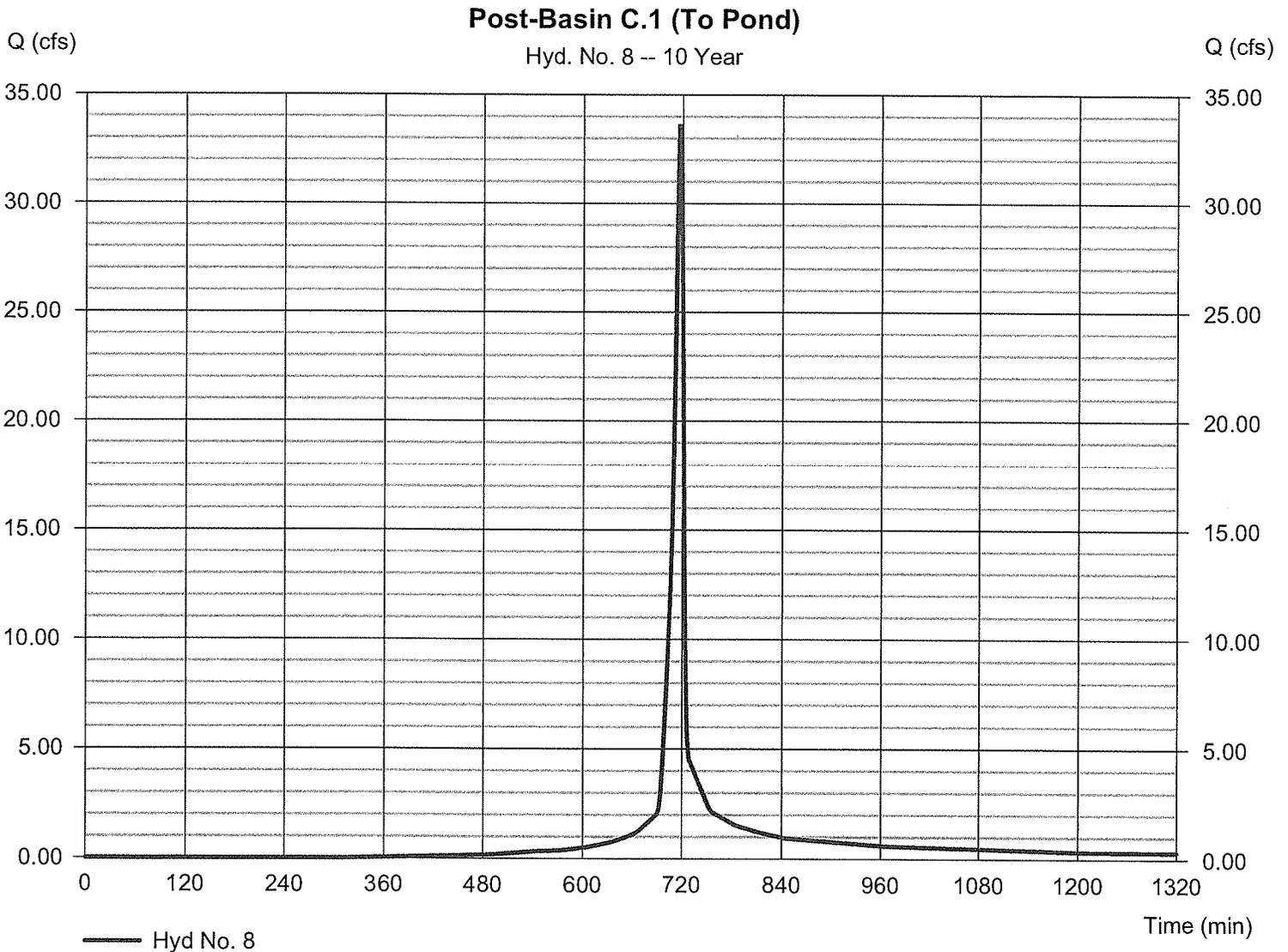
# Hydrograph Report

## Hyd. No. 8

### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 33.65 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 70,256 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

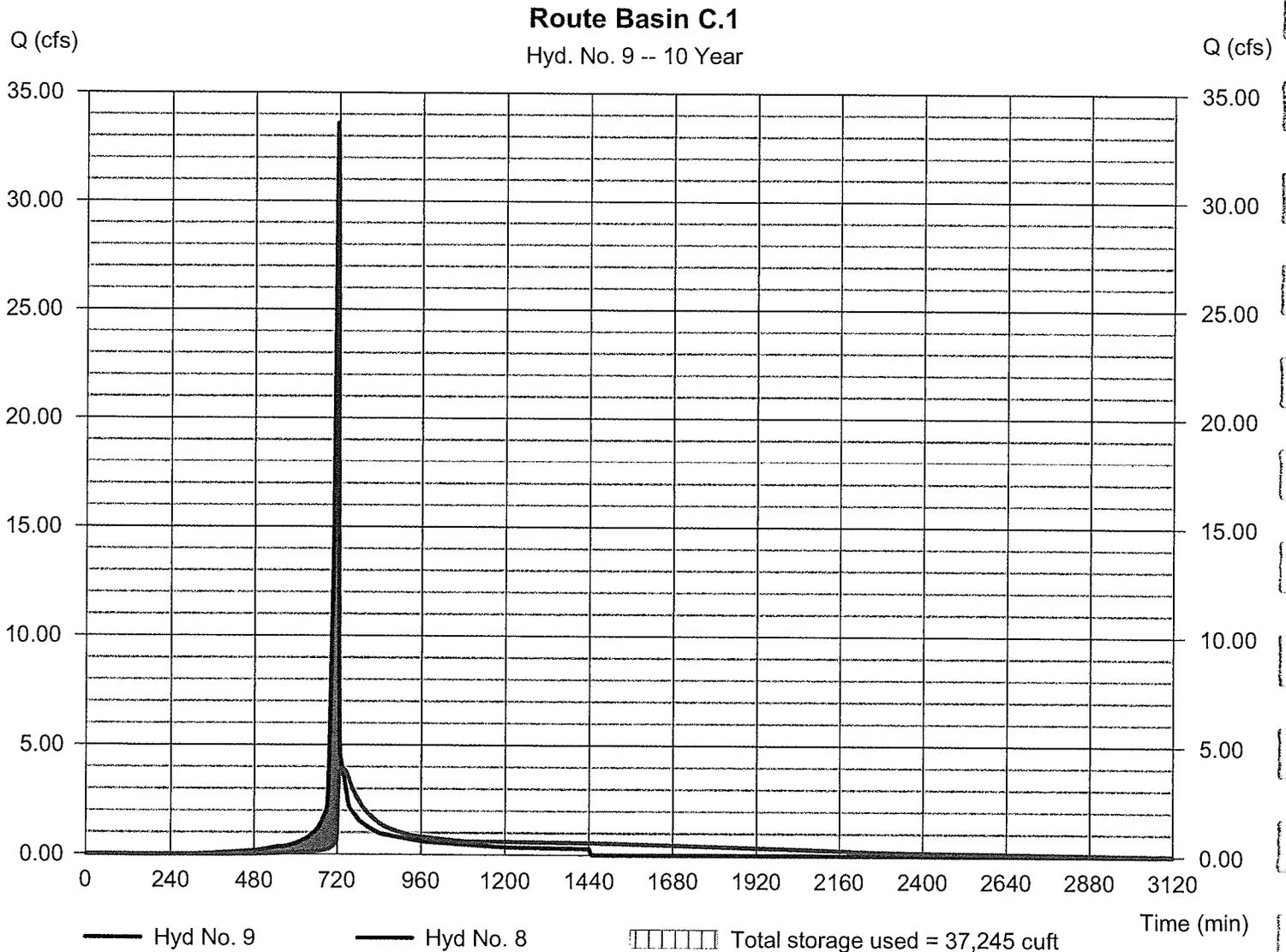
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 3.909 cfs
Storm frequency	= 10 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 70,117 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 877.82 ft
Reservoir name	= Detention Pond with Micropool	Max. Storage	= 37,245 cuft

Storage Indication method used.



# Hydrograph Report

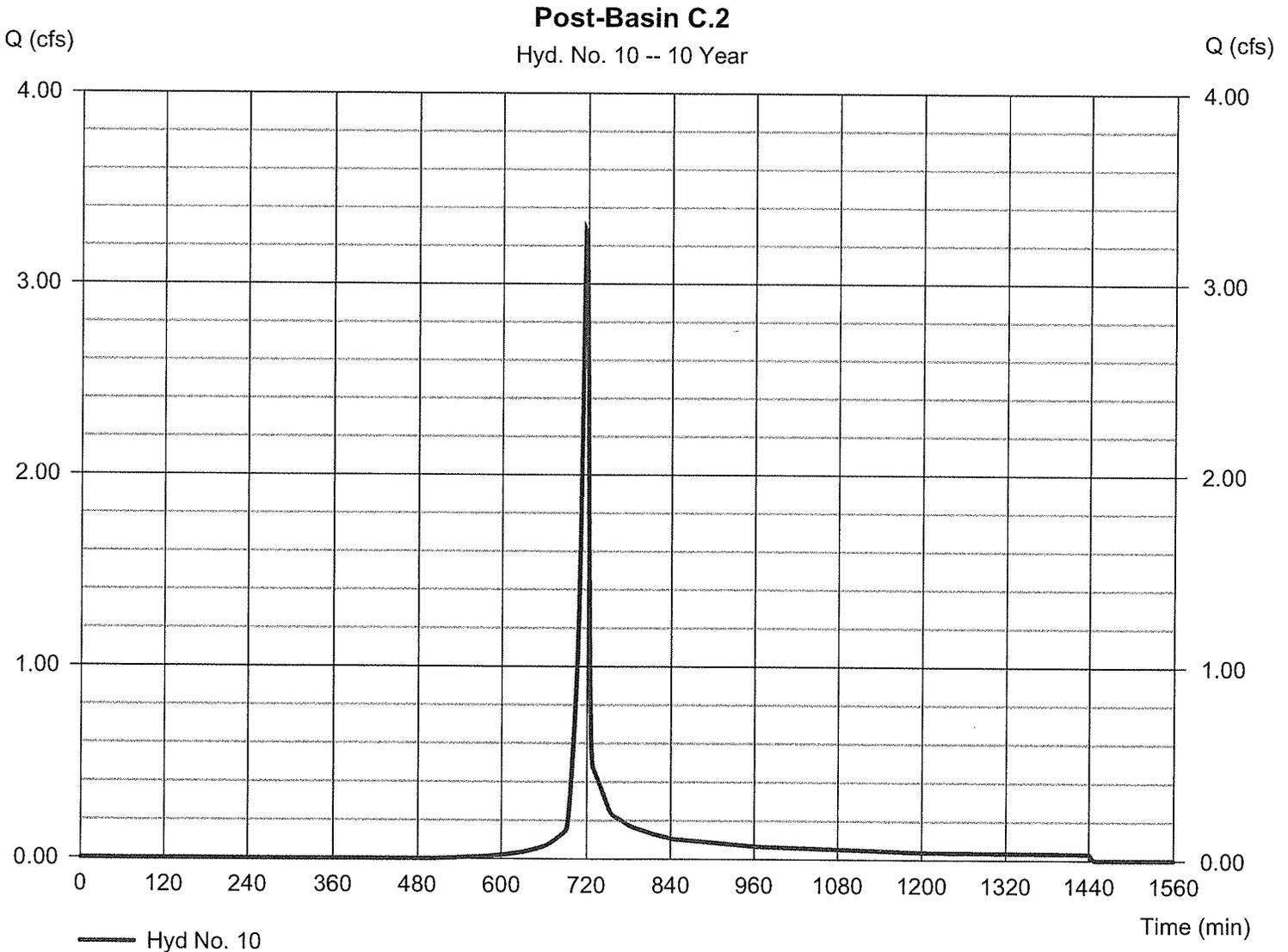
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 3.285 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 6,636 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

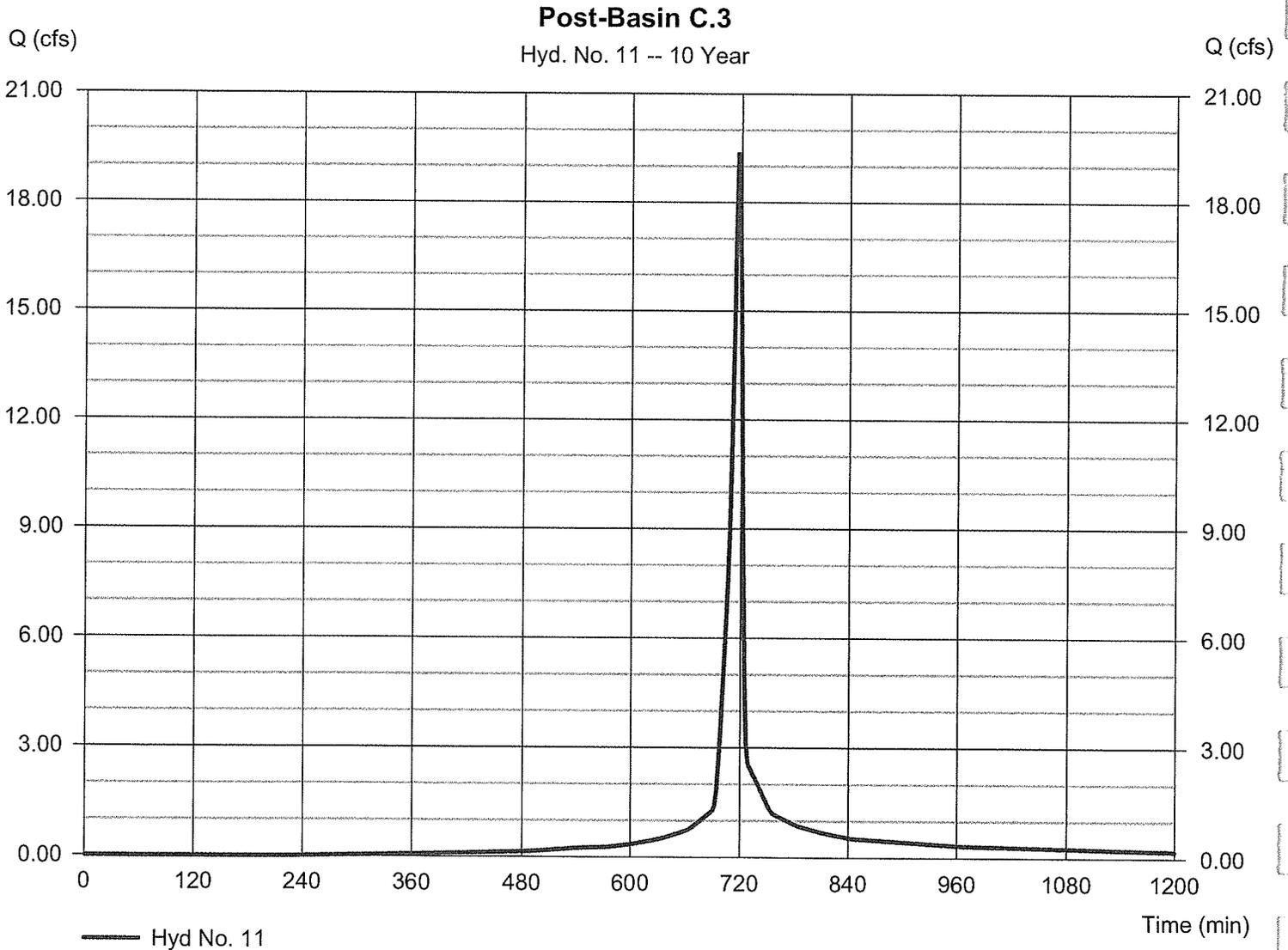
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

### Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 19.39 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 41,575 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

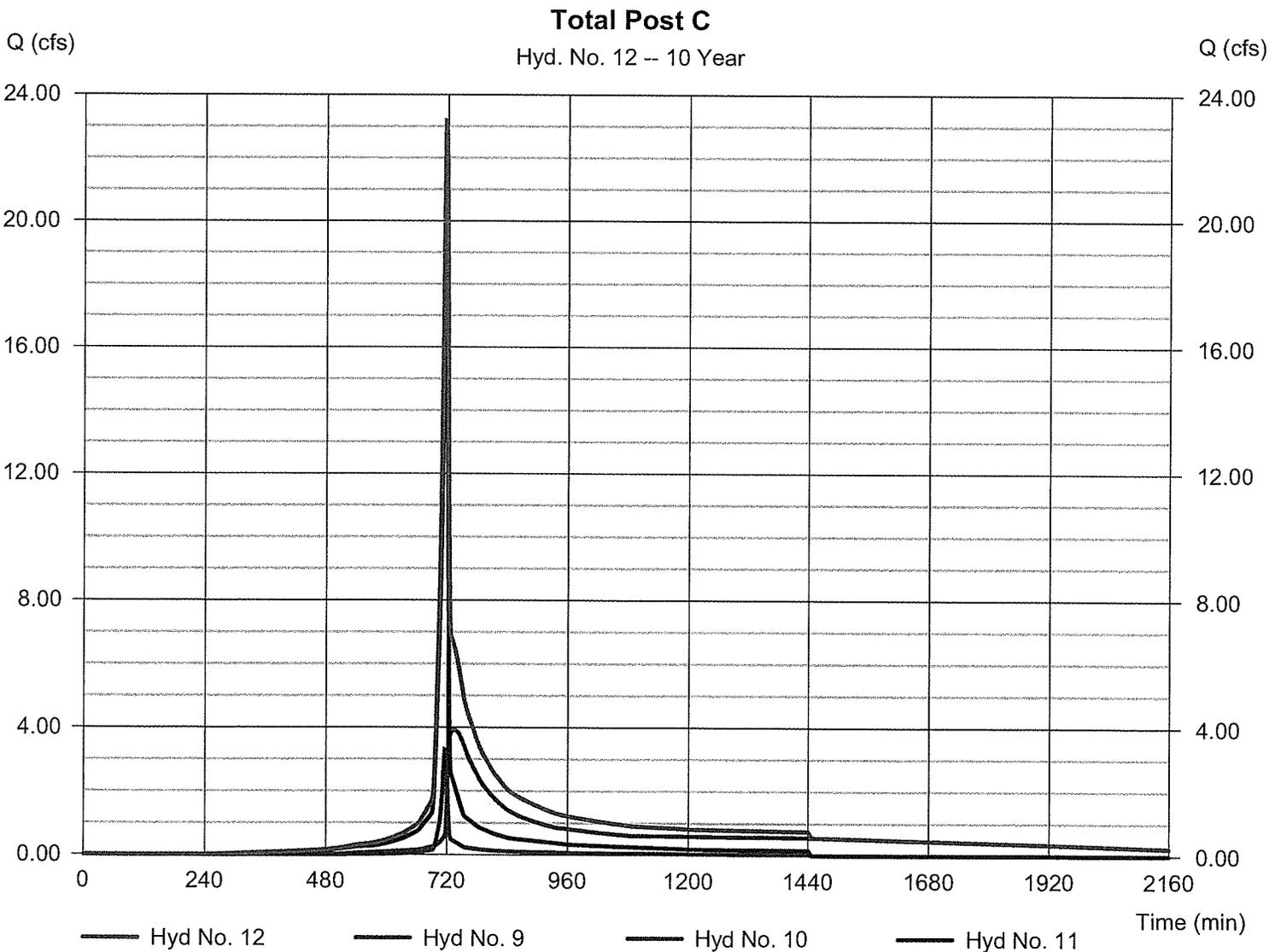
Tuesday, Sep 25, 2012

## Hyd. No. 12

### Total Post C

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 10, 11

Peak discharge = 23.25 cfs  
Time to peak = 716 min  
Hyd. volume = 118,327 cuft  
Contrib. drain. area = 3.560 ac



# Hydrograph Report

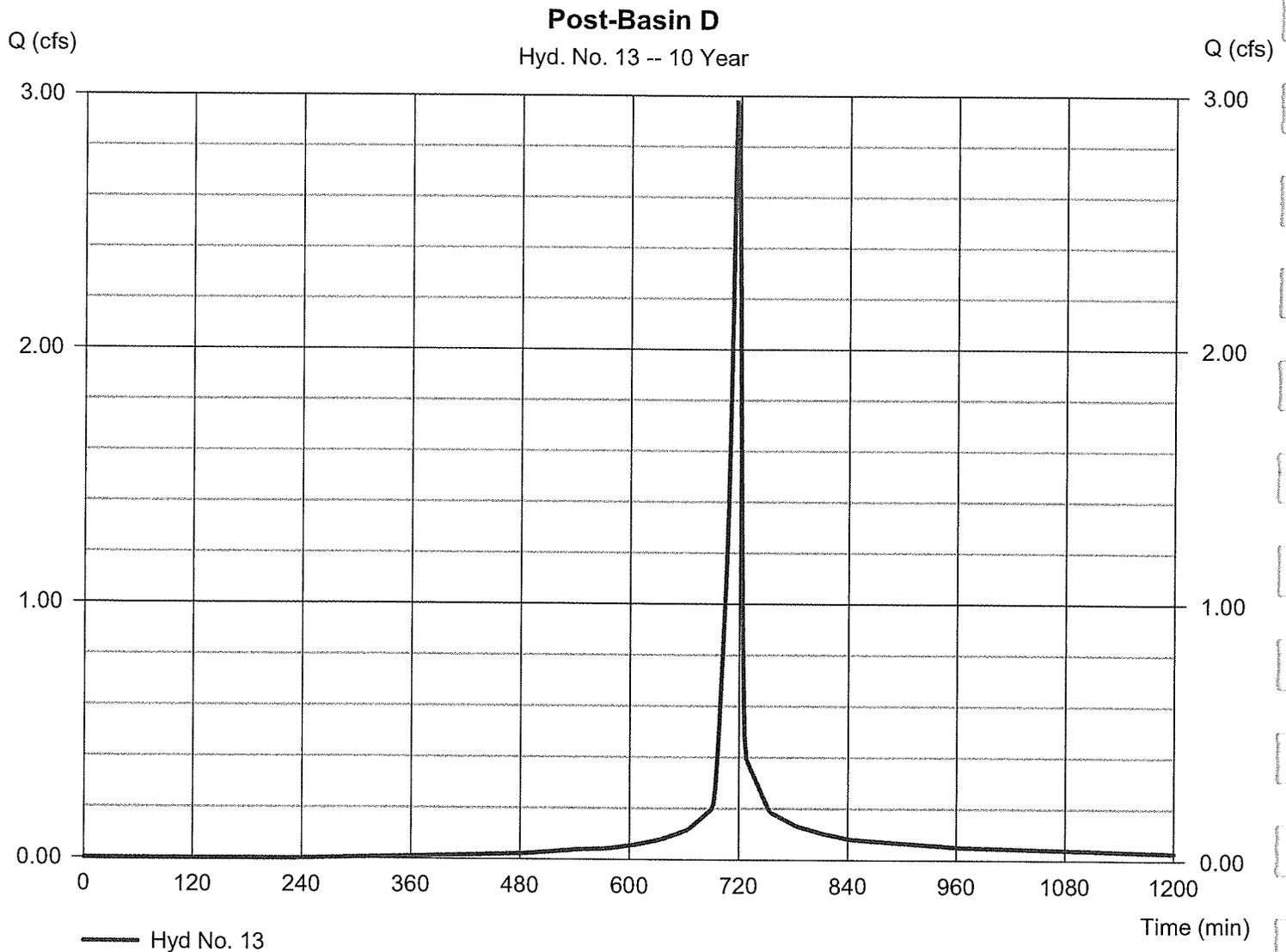
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 13

Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.983 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 6,396 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

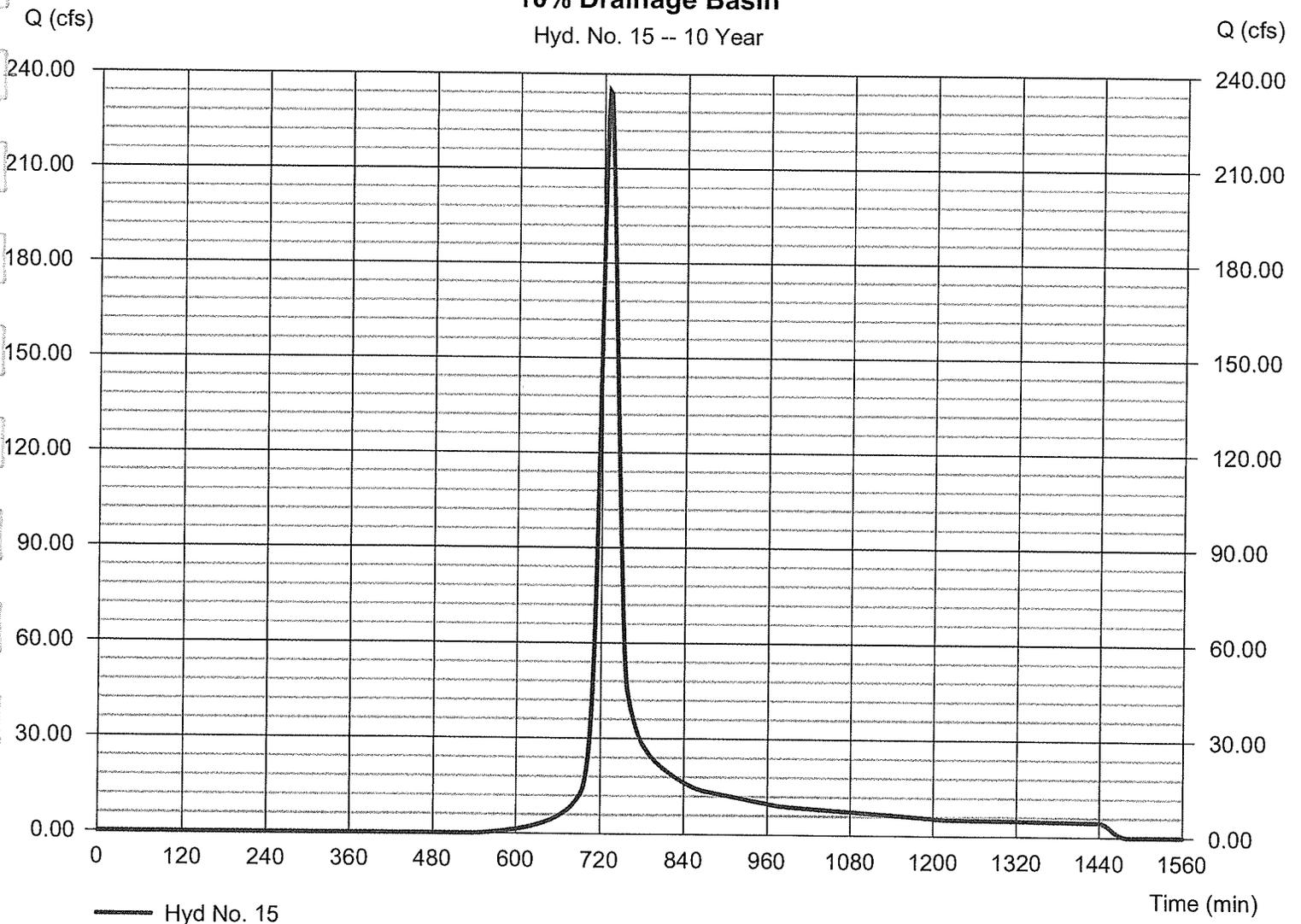
## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 234.55 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 869,304 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### 10% Drainage Basin

Hyd. No. 15 -- 10 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

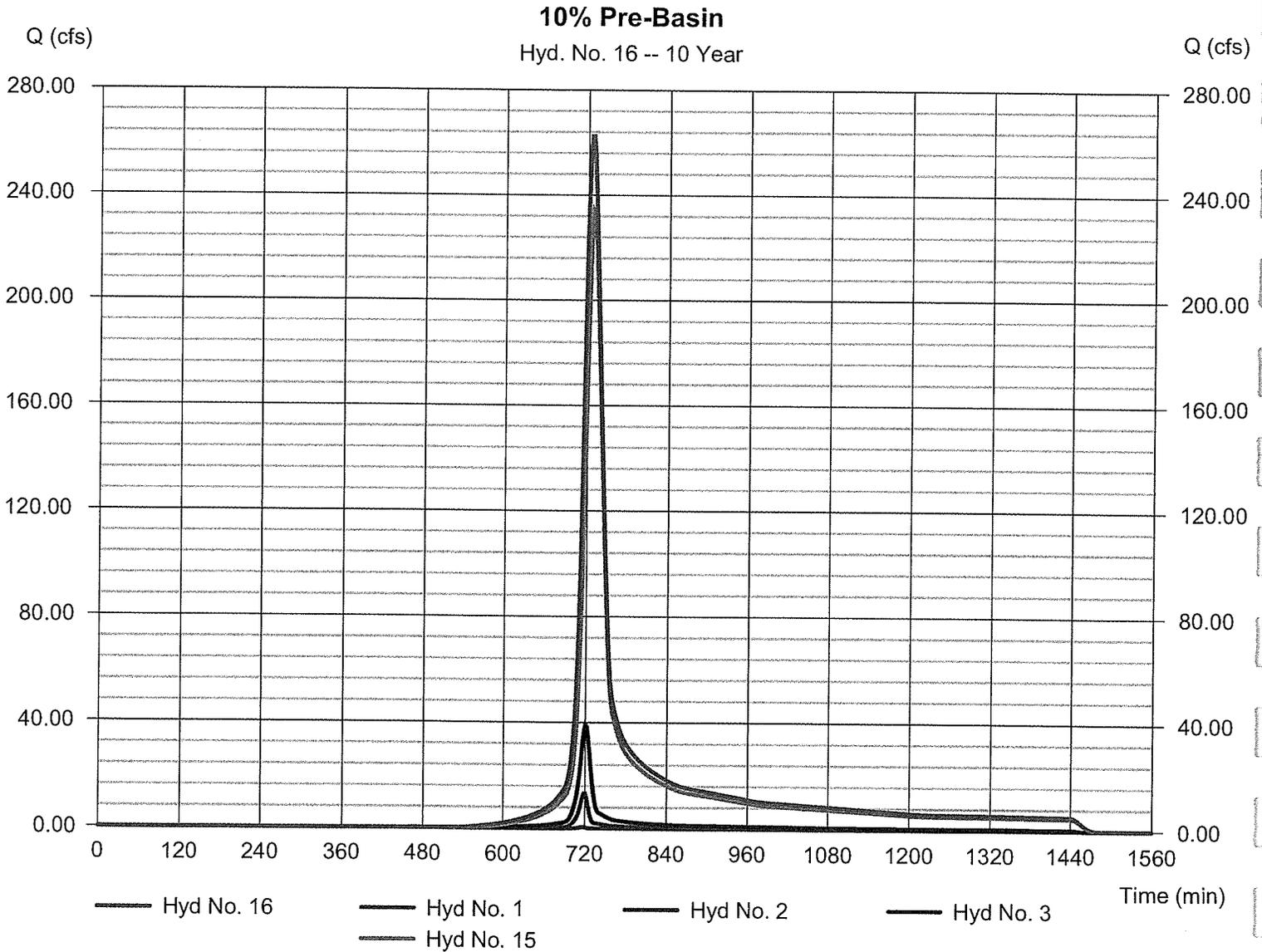
Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 2 min  
Inflow hyds. = 1, 2, 3, 15

Peak discharge = 262.49 cfs  
Time to peak = 726 min  
Hyd. volume = 1,002,727 cuft  
Contrib. drain. area = 104.720 ac



# Hydrograph Report

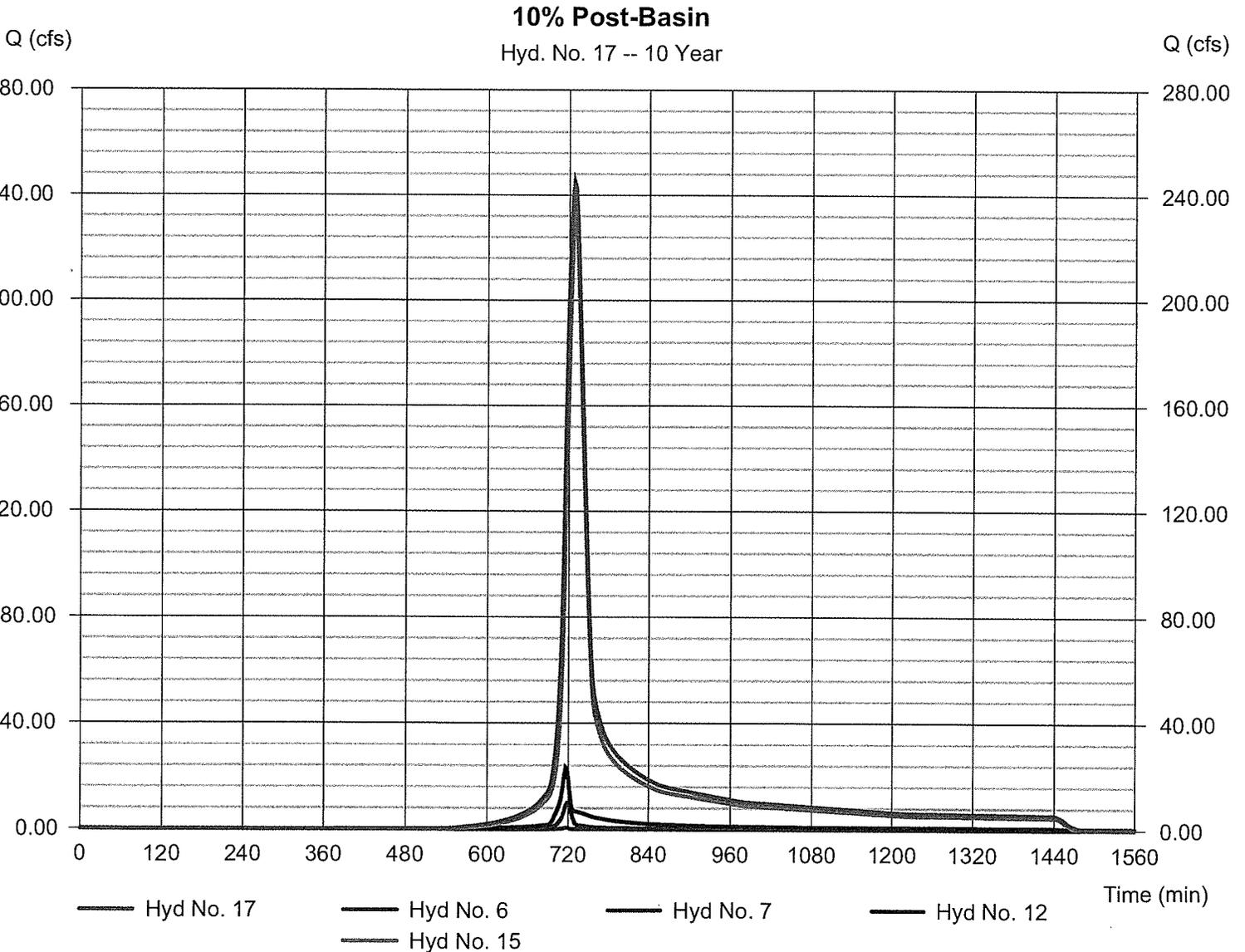
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 17

### 10% Post-Basin

Hydrograph type	= Combine	Peak discharge	= 244.76 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,011,854 cuft
Inflow hyds.	= 6, 7, 12, 15	Contrib. drain. area	= 95.850 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

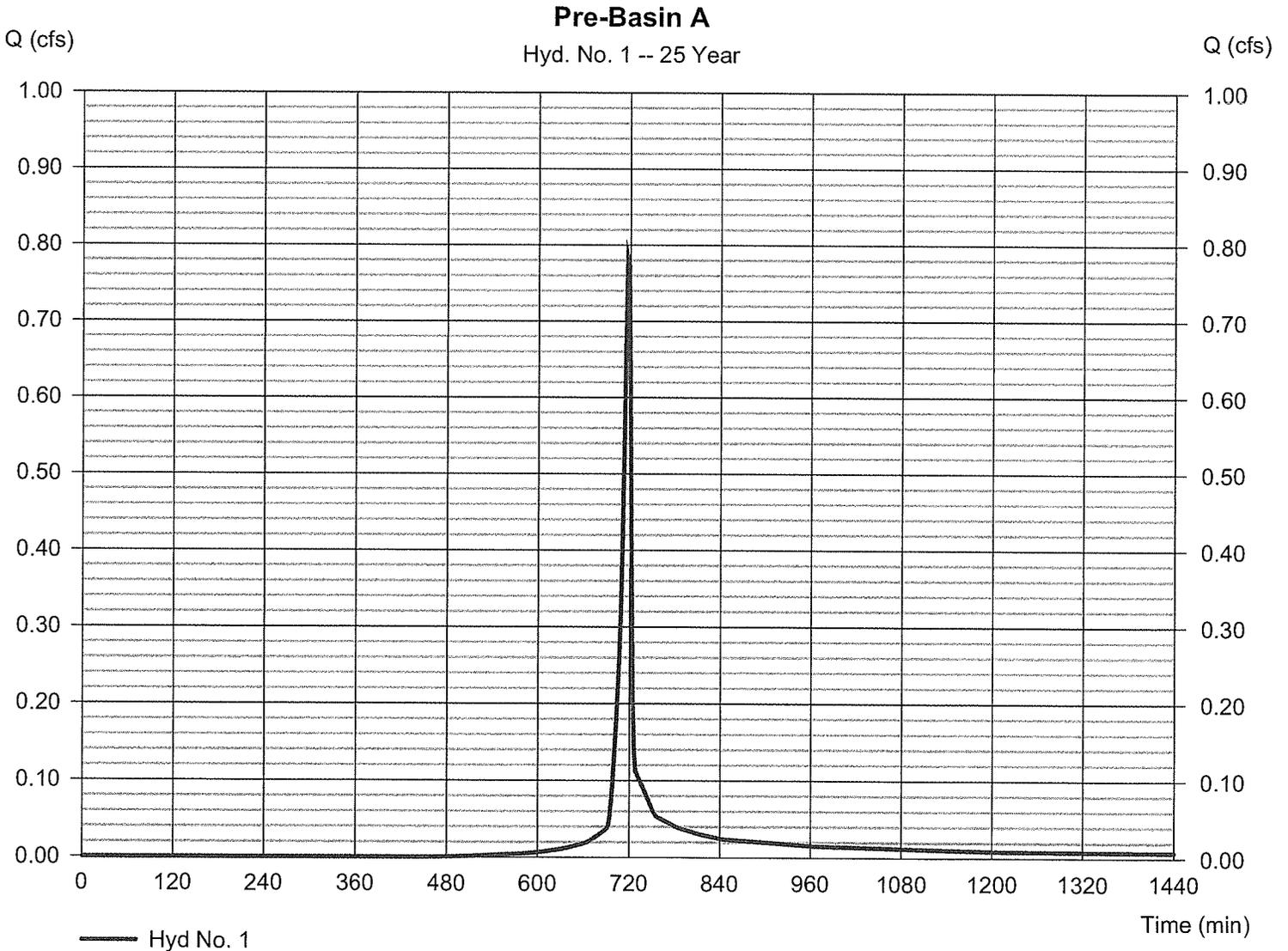
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.784	2	716	1,589	-----	-----	-----	Pre-Basin A
2	SCS Runoff	17.16	2	718	39,284	-----	-----	-----	Pre-Basin B
3	SCS Runoff	48.97	2	720	128,184	-----	-----	-----	Pre-Basin C
4	SCS Runoff	3.994	2	716	8,673	-----	-----	-----	Pre-Basin D
6	SCS Runoff	0.784	2	716	1,589	-----	-----	-----	Post-Basin A
7	SCS Runoff	13.01	2	718	29,780	-----	-----	-----	Post-Basin B
8	SCS Runoff	41.08	2	716	86,771	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	8.790	2	724	86,626	8	878.16	44,027	Route Basin C.1
10	SCS Runoff	4.220	2	716	8,558	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	23.31	2	716	50,625	-----	-----	-----	Post-Basin C.3
12	Combine	30.62	2	718	145,809	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	3.587	2	716	7,788	-----	-----	-----	Post-Basin D
15	SCS Runoff	307.42	2	728	1,131,082	-----	-----	-----	10% Drainage Basin
16	Combine	342.86	2	726	1,300,139	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	323.86	2	728	1,308,262	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.784 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,589 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

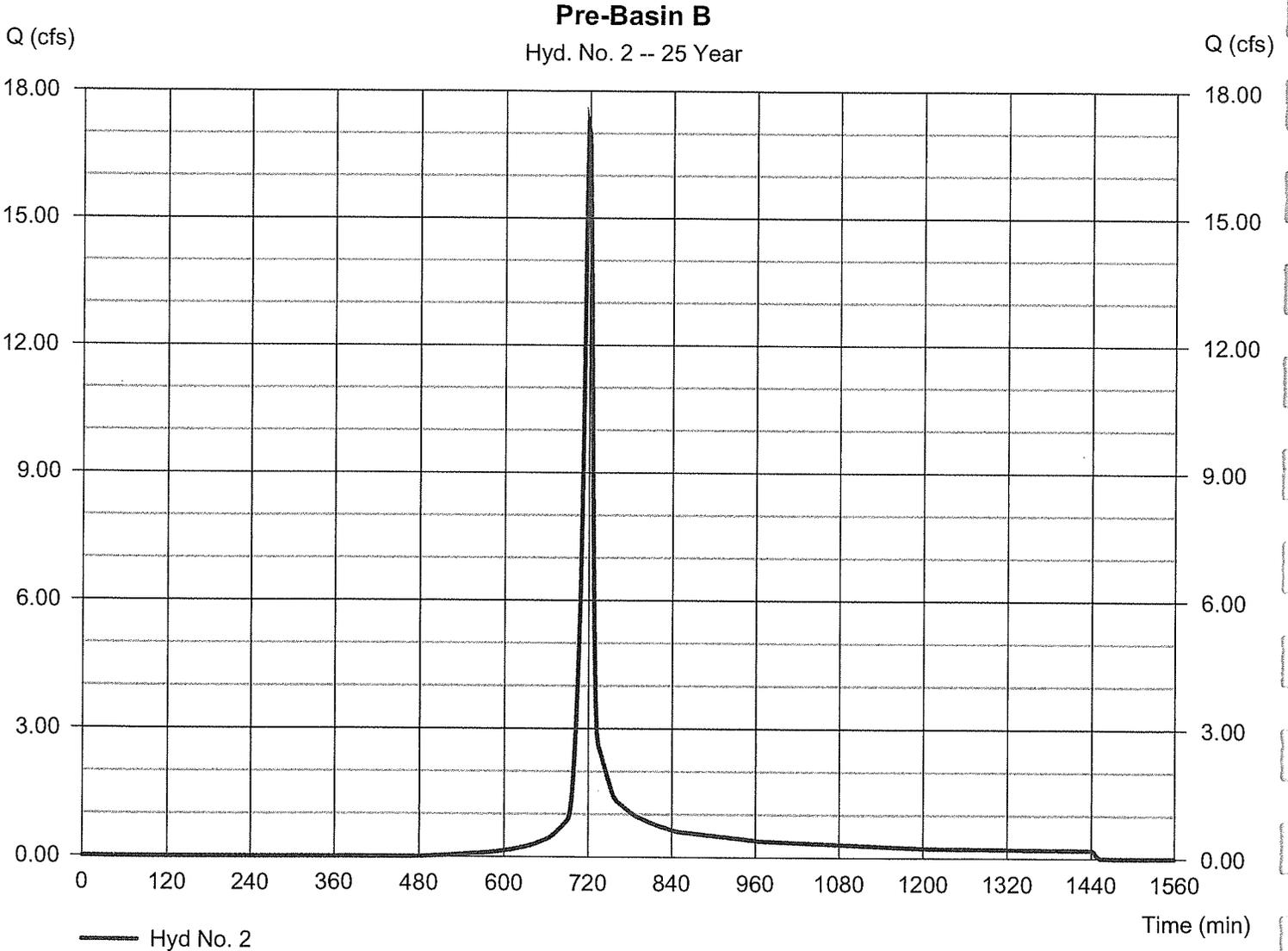
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 17.16 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 39,284 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



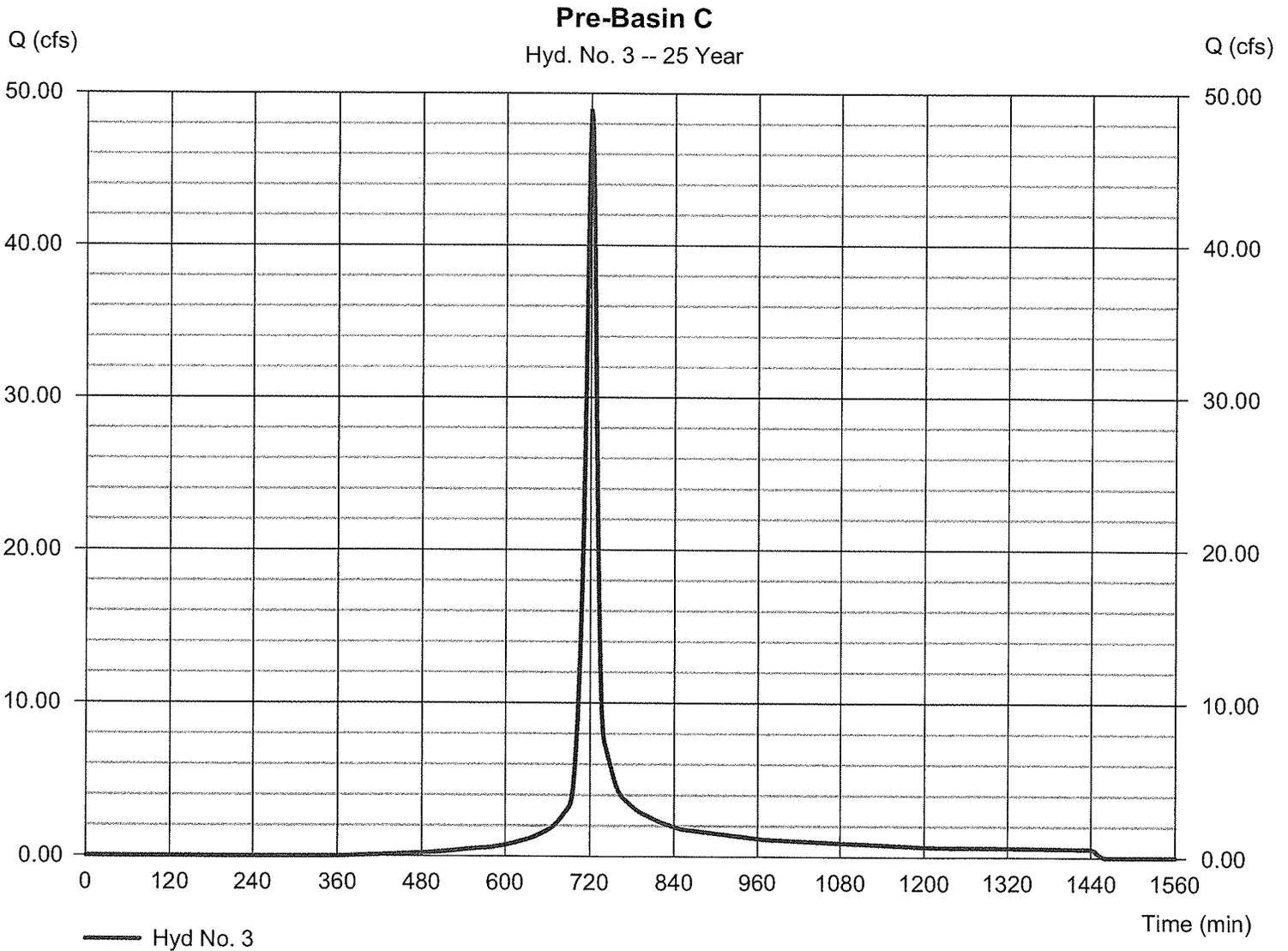
# Hydrograph Report

## Hyd. No. 3

### Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 48.97 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 128,184 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.190 \times 85) + (5.260 \times 75)] / 8.120$

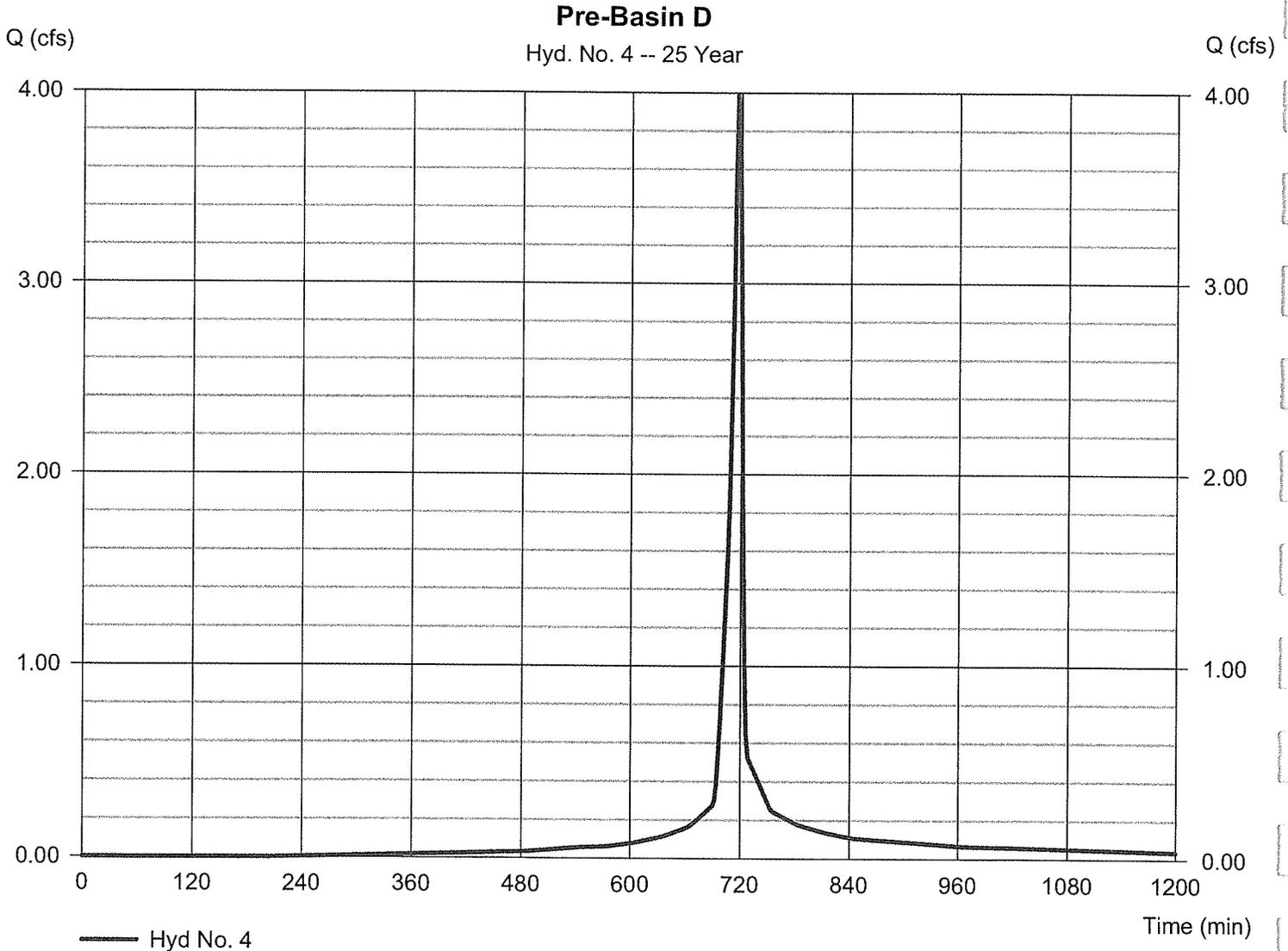


# Hydrograph Report

## Hyd. No. 4

Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 3.994 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 8,673 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

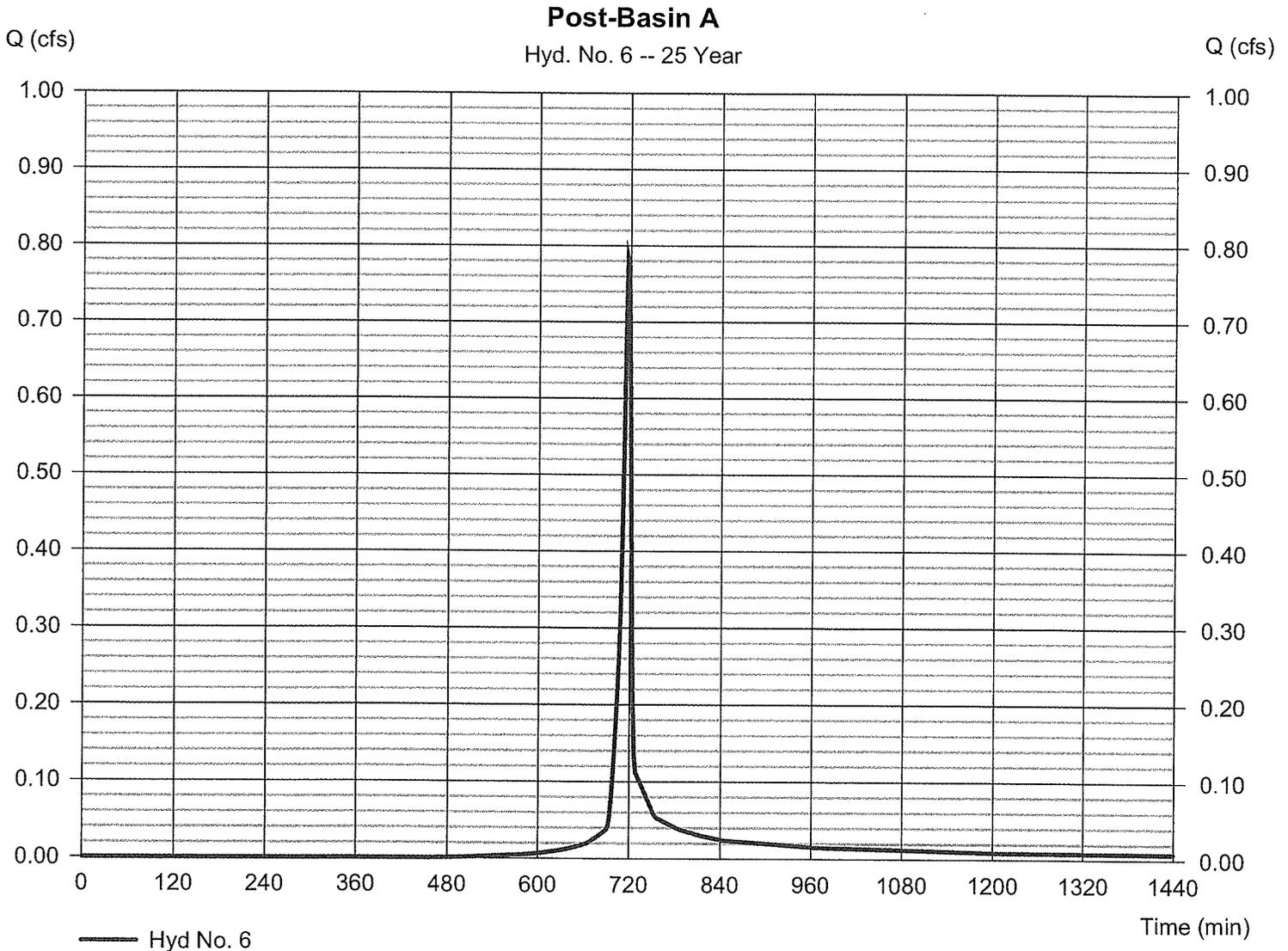
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.784 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,589 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

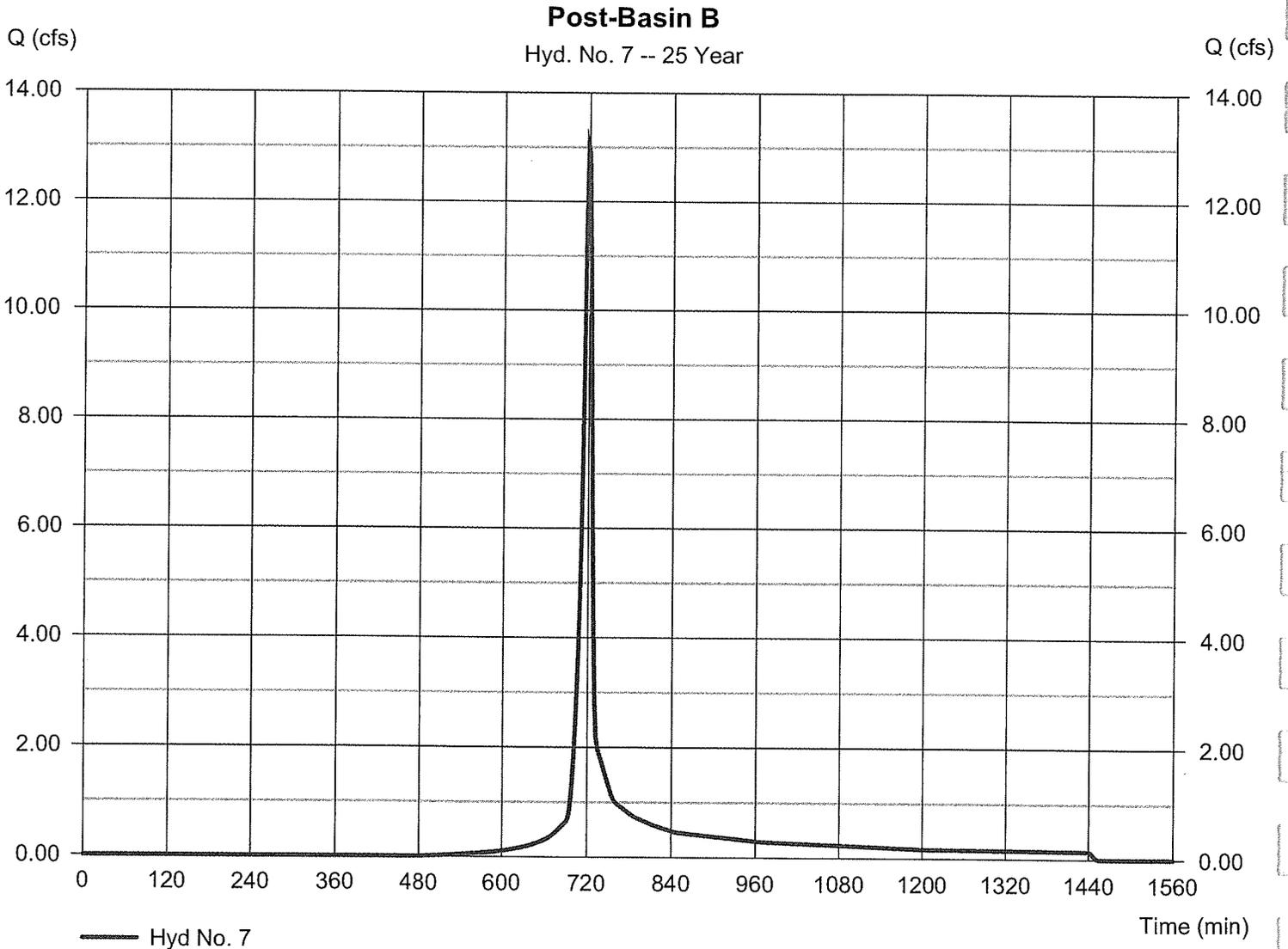


# Hydrograph Report

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 13.01 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 29,780 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 8

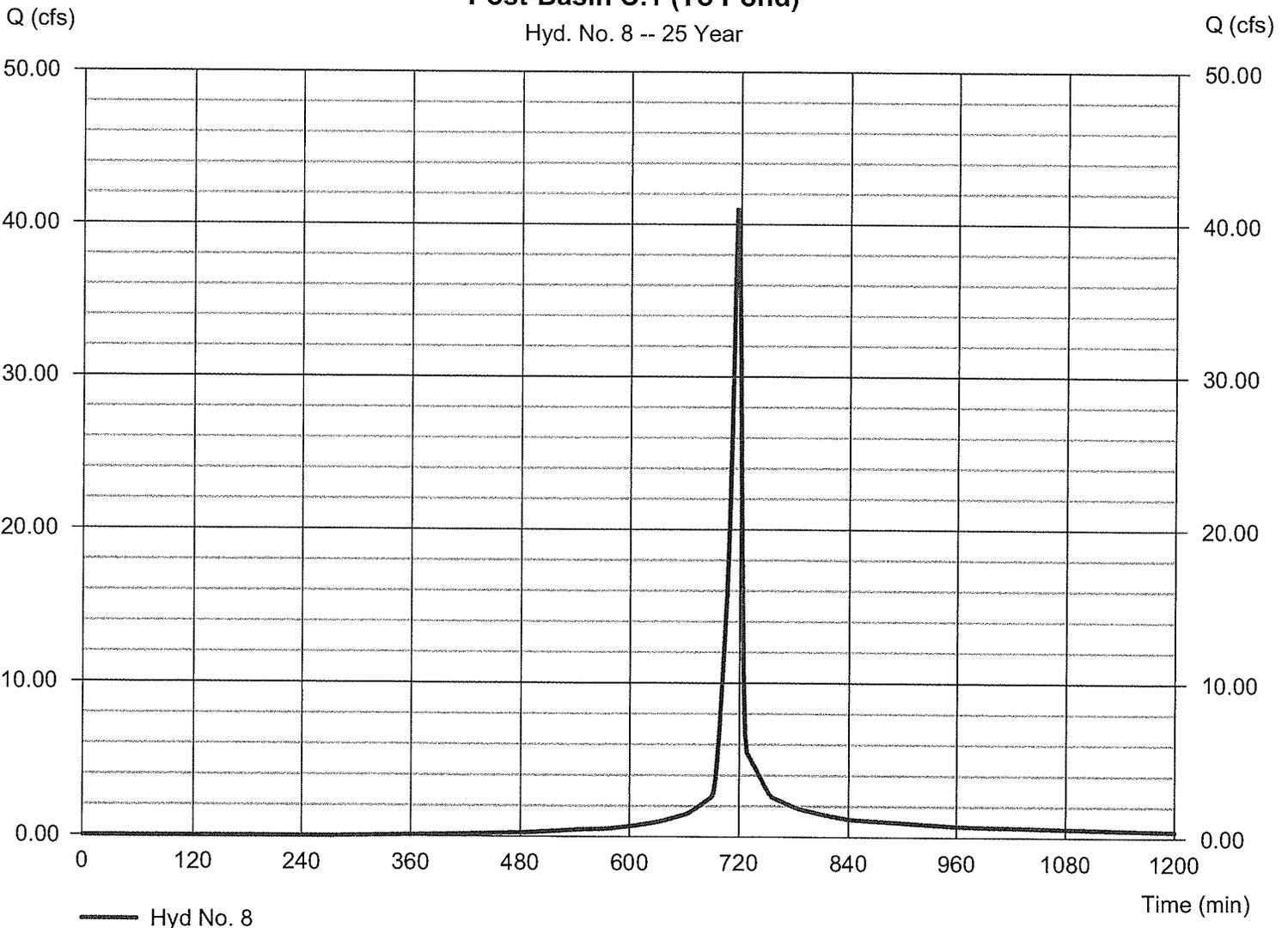
### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 41.08 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 86,771 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$

### Post-Basin C.1 (To Pond)

Hyd. No. 8 -- 25 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

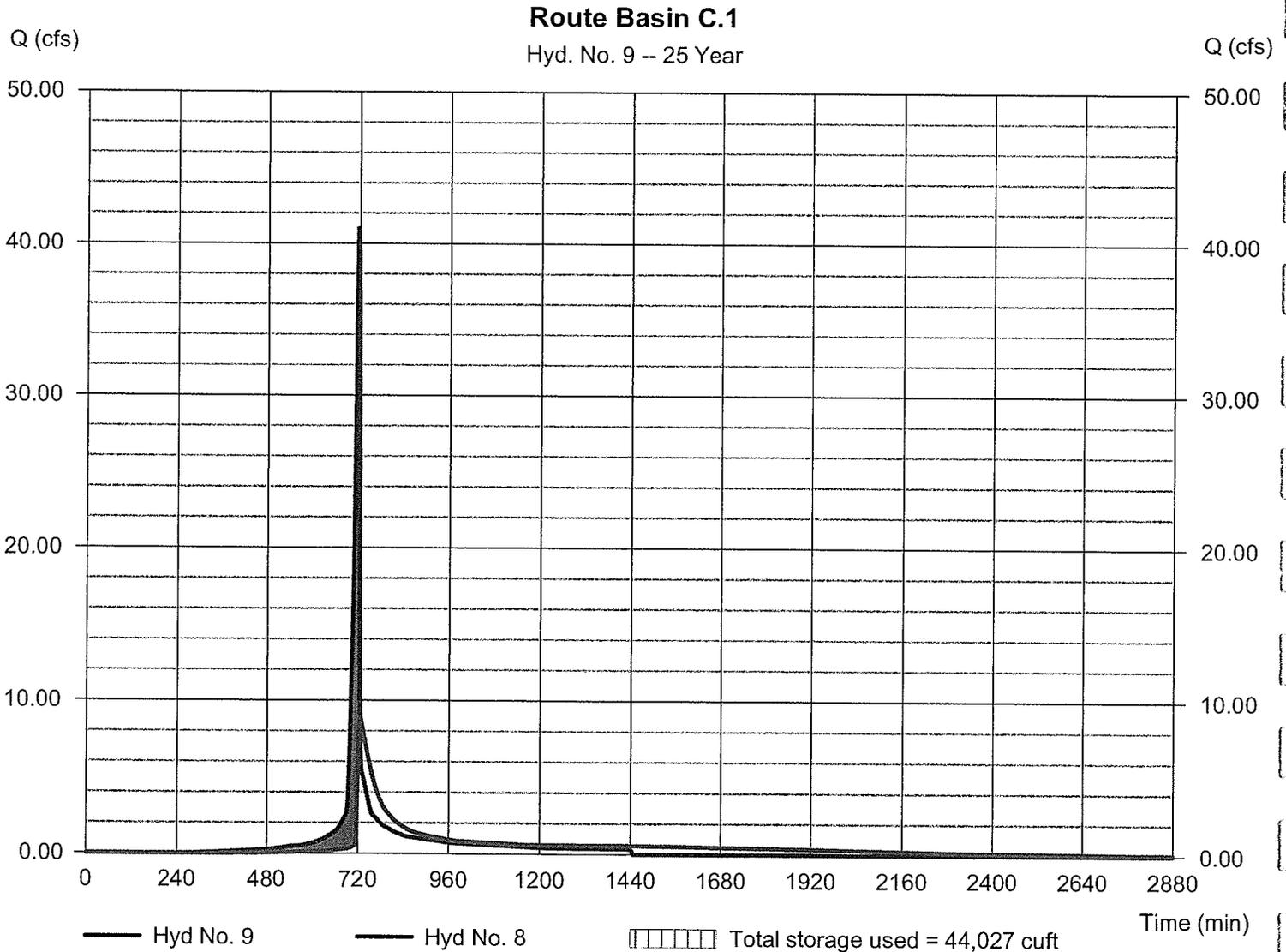
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 8.790 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 86,626 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 878.16 ft
Reservoir name	= Detention Pond with Micropool	Max. Storage	= 44,027 cuft

Storage Indication method used.



# Hydrograph Report

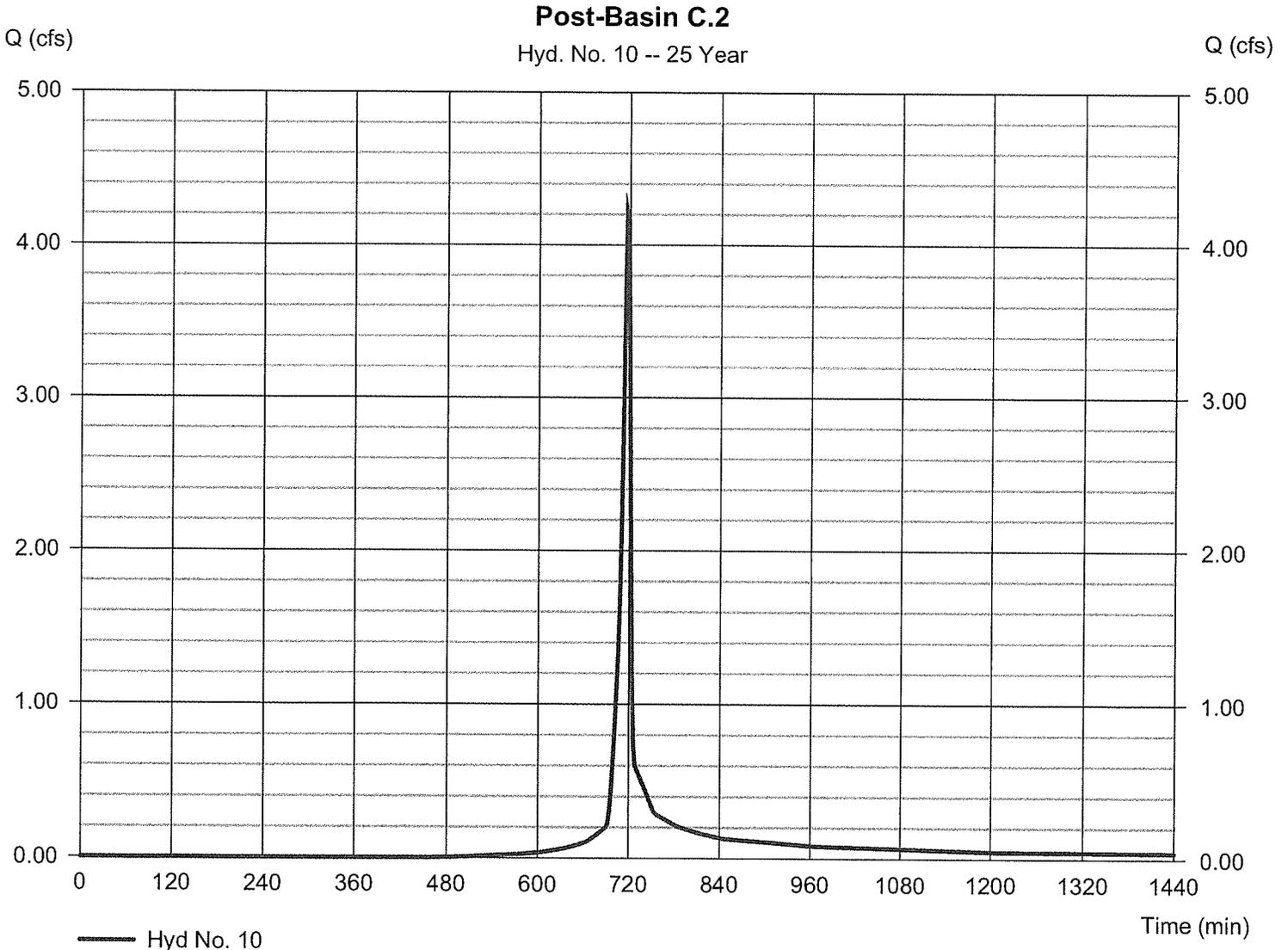
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 4.220 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 8,558 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

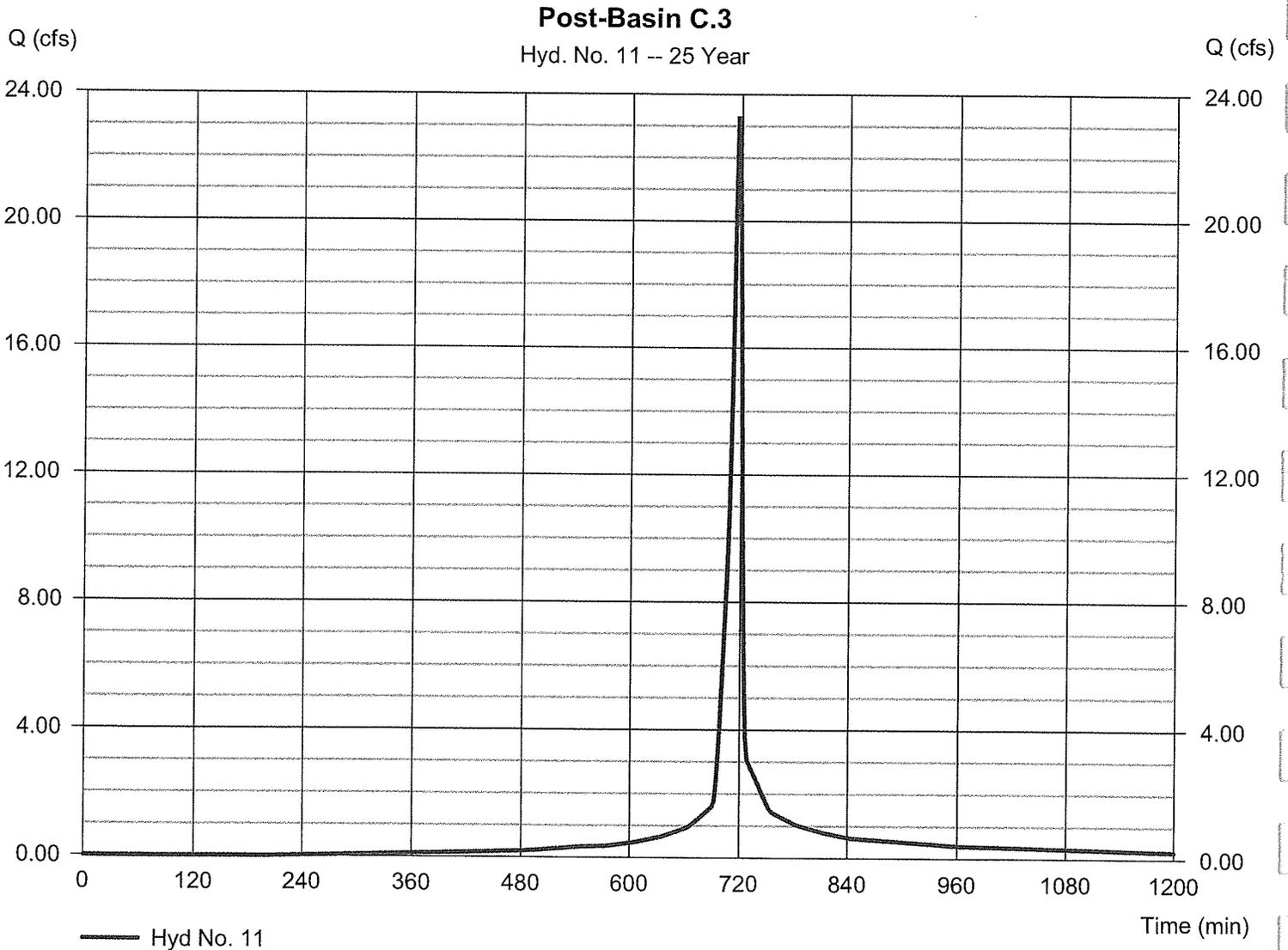
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 23.31 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 50,625 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

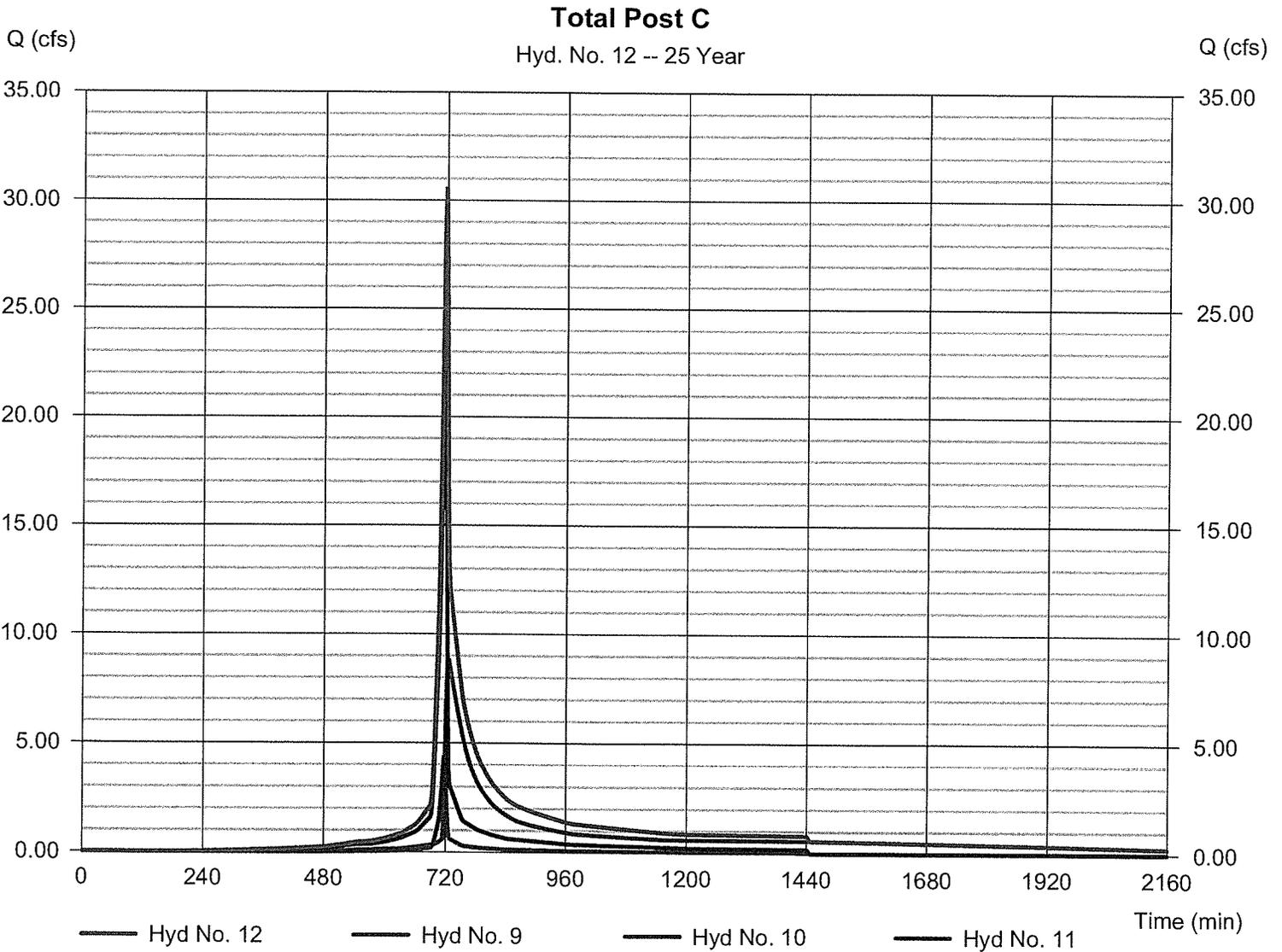
Tuesday, Sep 25, 2012

## Hyd. No. 12

### Total Post C

Hydrograph type = Combine  
Storm frequency = 25 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 10, 11

Peak discharge = 30.62 cfs  
Time to peak = 718 min  
Hyd. volume = 145,809 cuft  
Contrib. drain. area = 3.560 ac



# Hydrograph Report

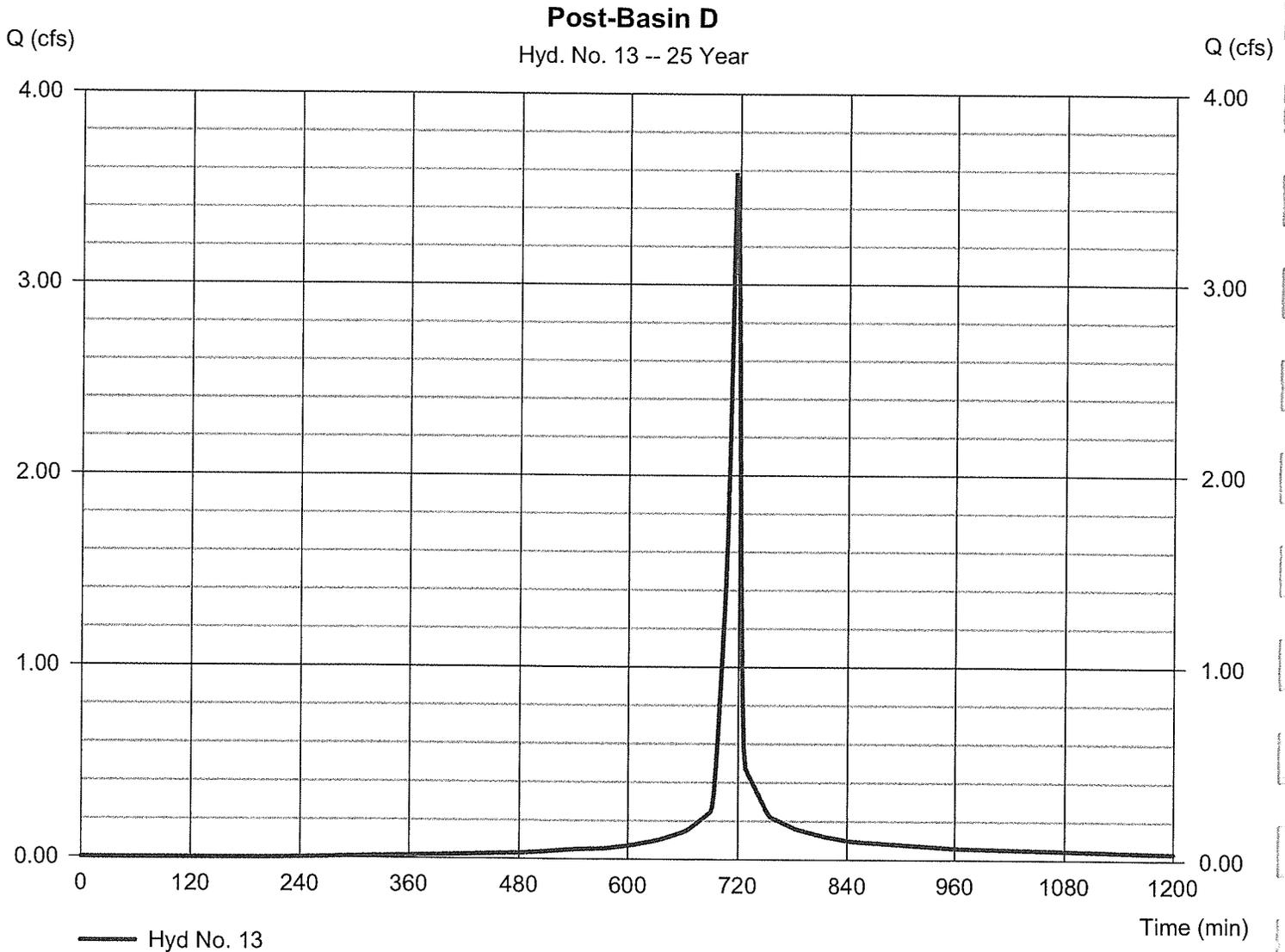
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 13

### Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 3.587 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 7,788 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

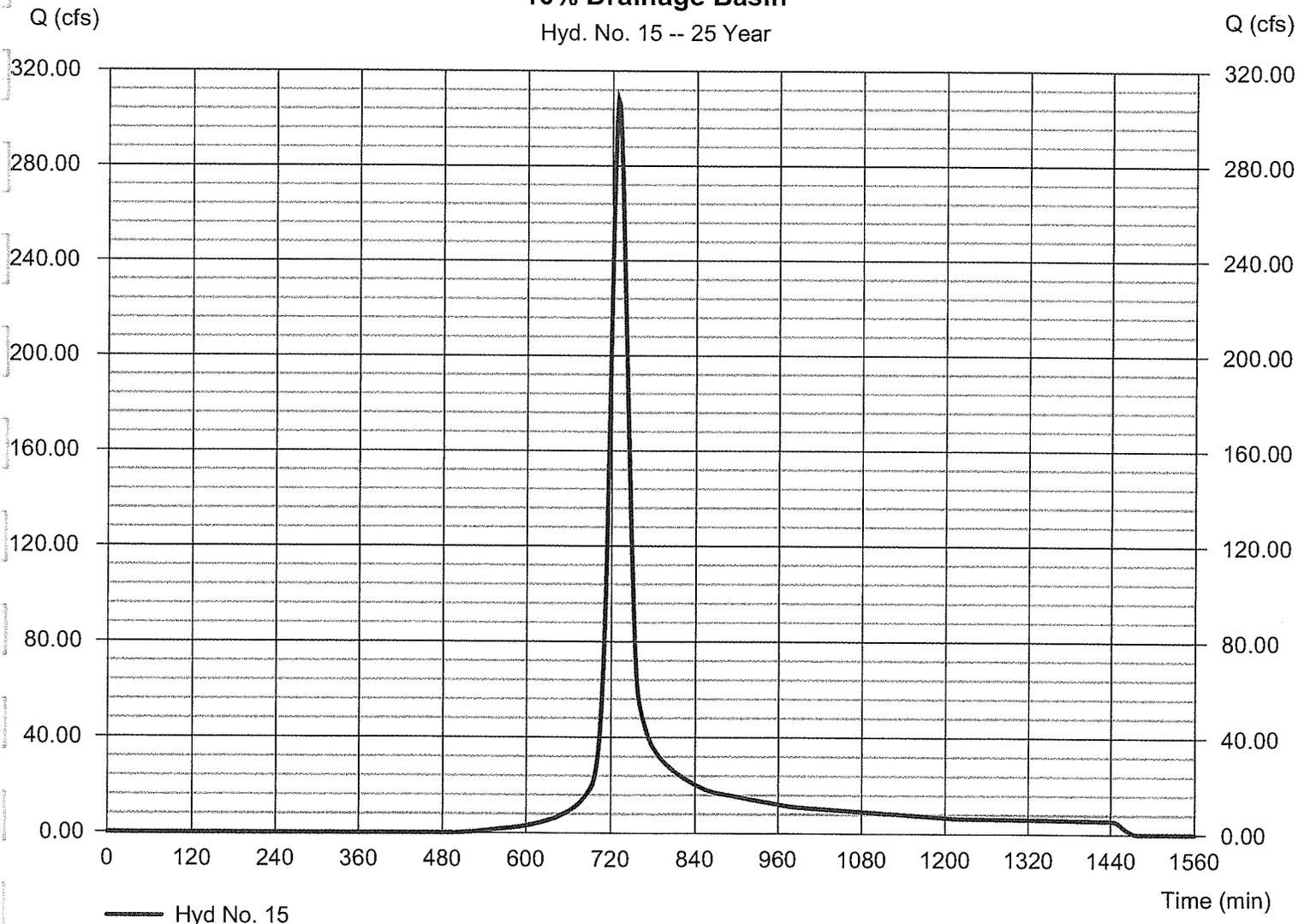
## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 307.42 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,131,082 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### 10% Drainage Basin

Hyd. No. 15 -- 25 Year



# Hydrograph Report

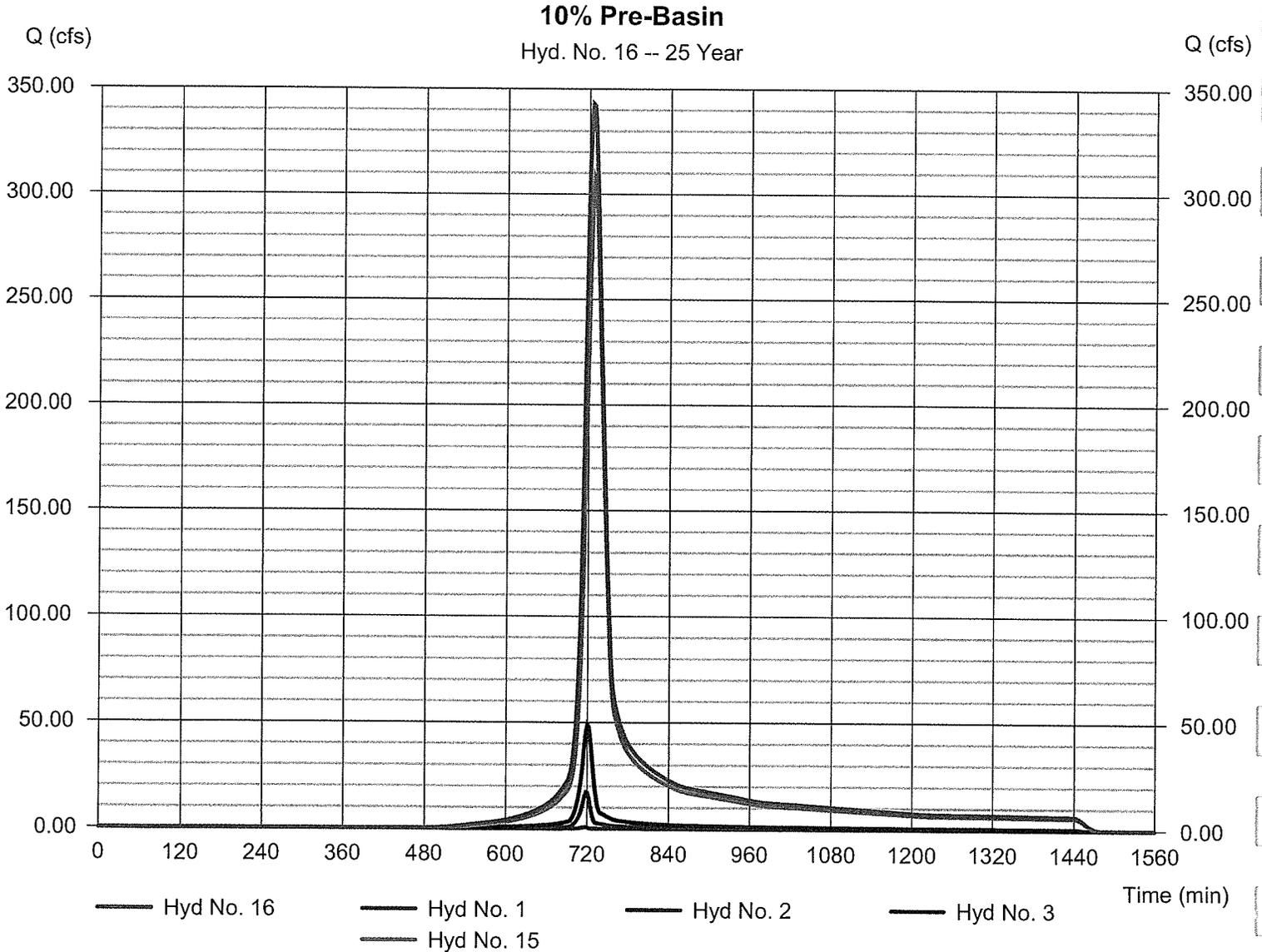
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type	= Combine	Peak discharge	= 342.86 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,300,139 cuft
Inflow hyd.	= 1, 2, 3, 15	Contrib. drain. area	= 104.720 ac



# Hydrograph Report

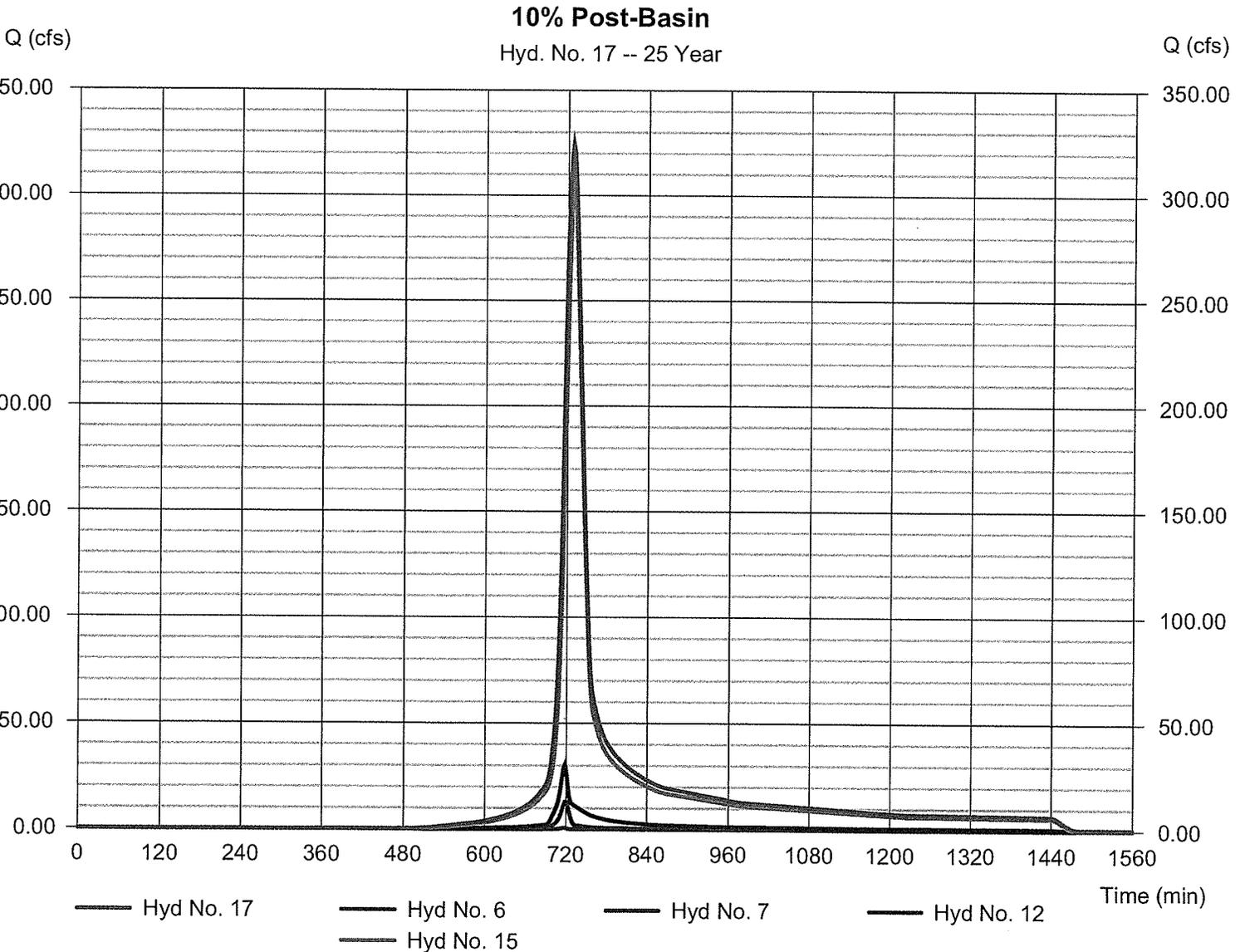
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 17

10% Post-Basin

Hydrograph type	= Combine	Peak discharge	= 323.86 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,308,262 cuft
Inflow hyds.	= 6, 7, 12, 15	Contrib. drain. area	= 95.850 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.916	2	716	1,866	-----	-----	-----	Pre-Basin A
2	SCS Runoff	20.15	2	718	46,230	-----	-----	-----	Pre-Basin B
3	SCS Runoff	56.38	2	720	148,316	-----	-----	-----	Pre-Basin C
4	SCS Runoff	4.496	2	716	9,844	-----	-----	-----	Pre-Basin D
6	SCS Runoff	0.916	2	716	1,866	-----	-----	-----	Post-Basin A
7	SCS Runoff	15.27	2	718	35,045	-----	-----	-----	Post-Basin B
8	SCS Runoff	46.64	2	716	99,302	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	12.83	2	724	99,155	8	878.39	49,148	Route Basin C.1
10	SCS Runoff	4.933	2	716	10,046	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	26.24	2	716	57,457	-----	-----	-----	Post-Basin C.3
12	Combine	37.92	2	718	166,658	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	4.038	2	716	8,840	-----	-----	-----	Post-Basin D
15	SCS Runoff	363.54	2	728	1,334,564	-----	-----	-----	10% Drainage Basin
16	Combine	404.71	2	726	1,530,978	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	384.66	2	728	1,538,134	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

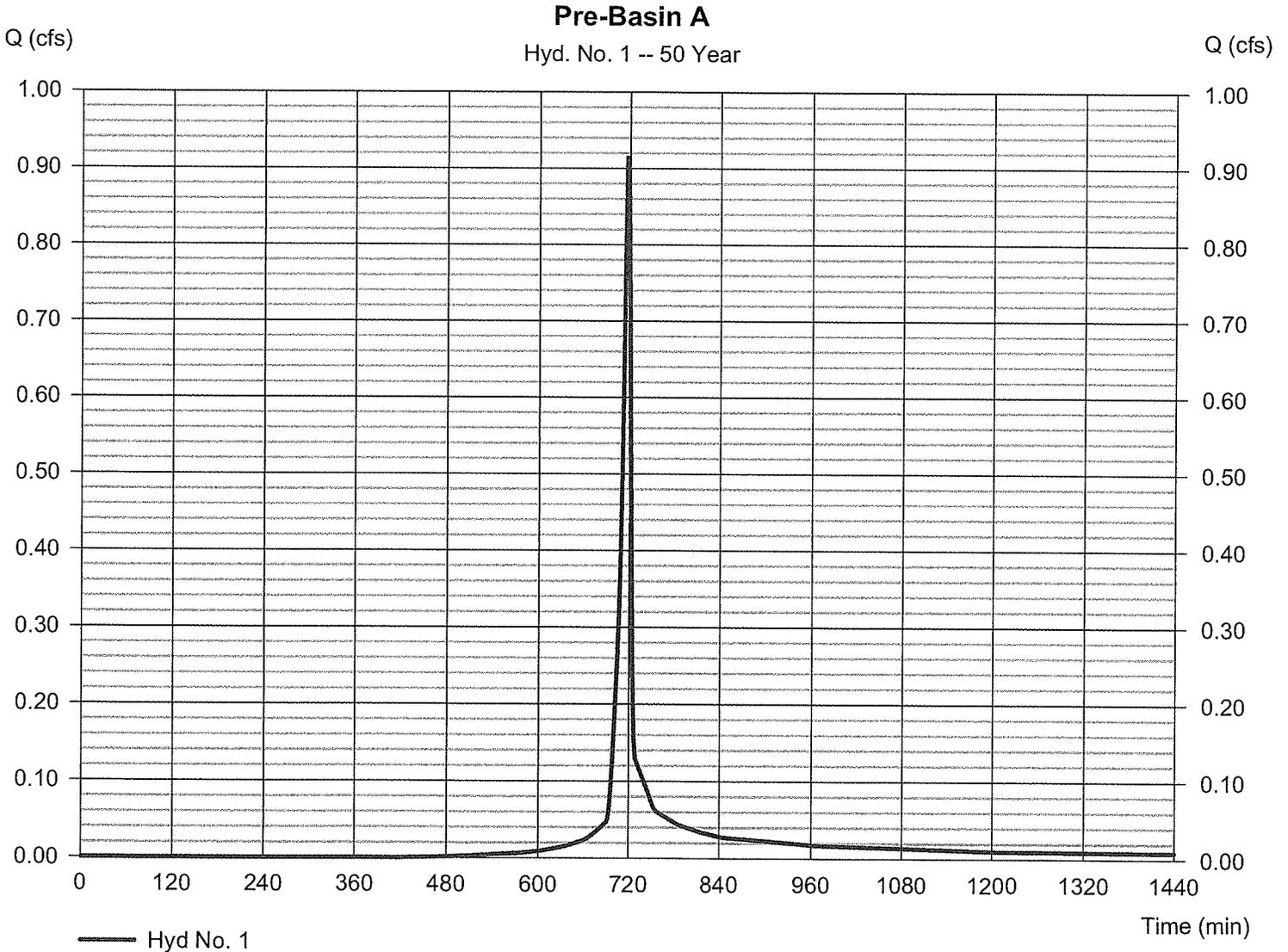
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.916 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,866 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

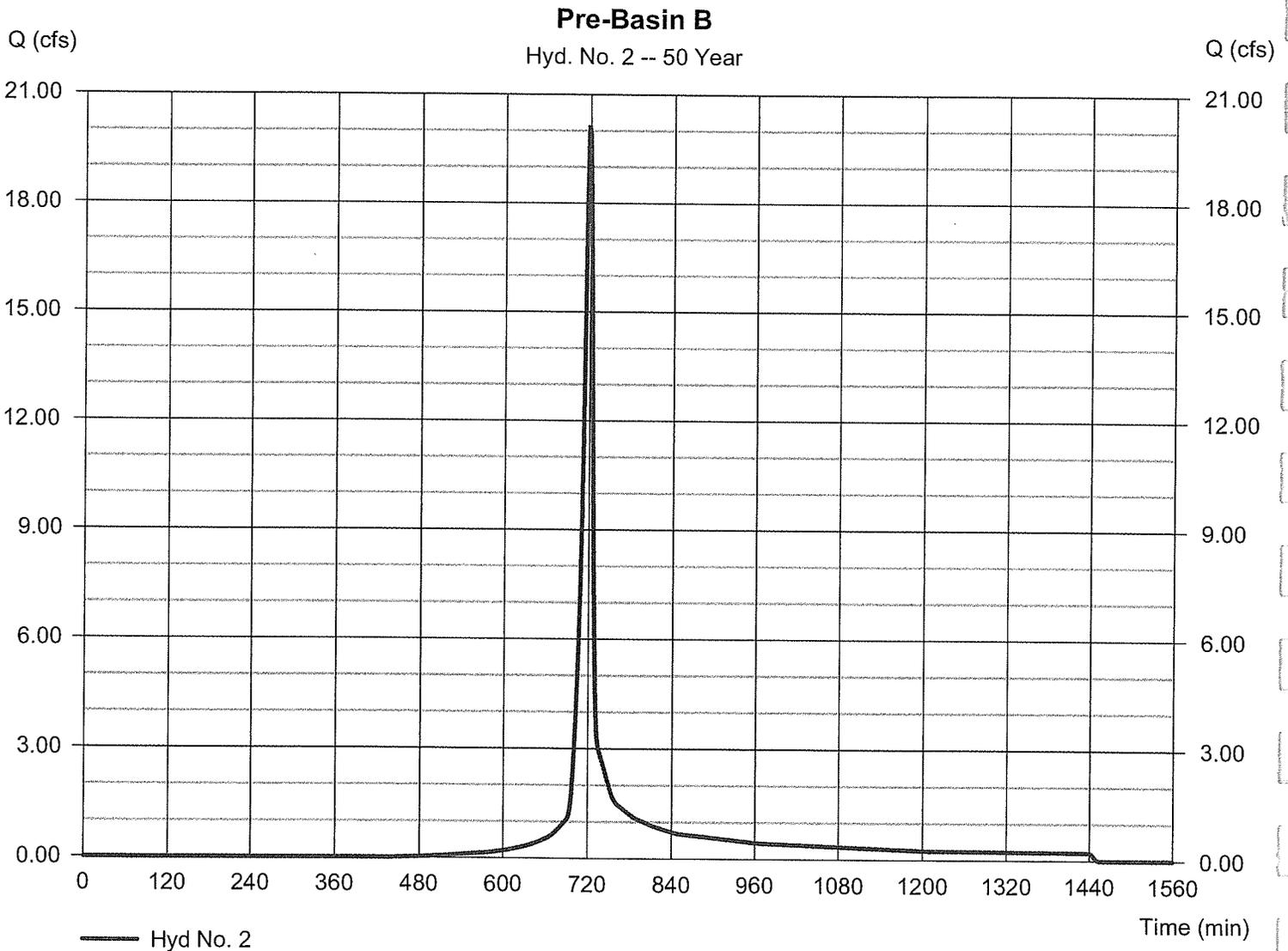
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 20.15 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 46,230 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



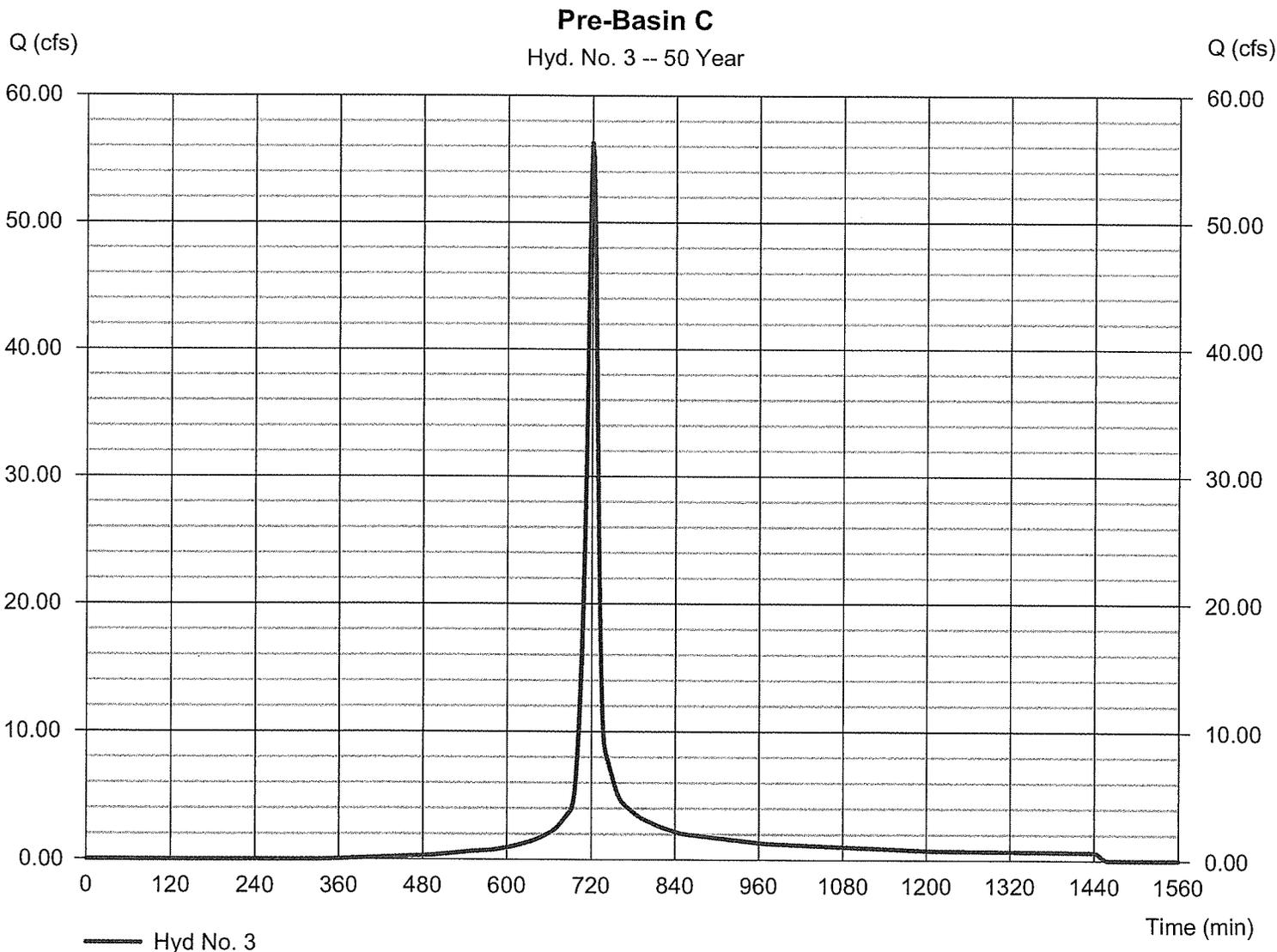
# Hydrograph Report

## Hyd. No. 3

### Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 56.38 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 148,316 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.190 x 85) + (5.260 x 75)] / 8.120



# Hydrograph Report

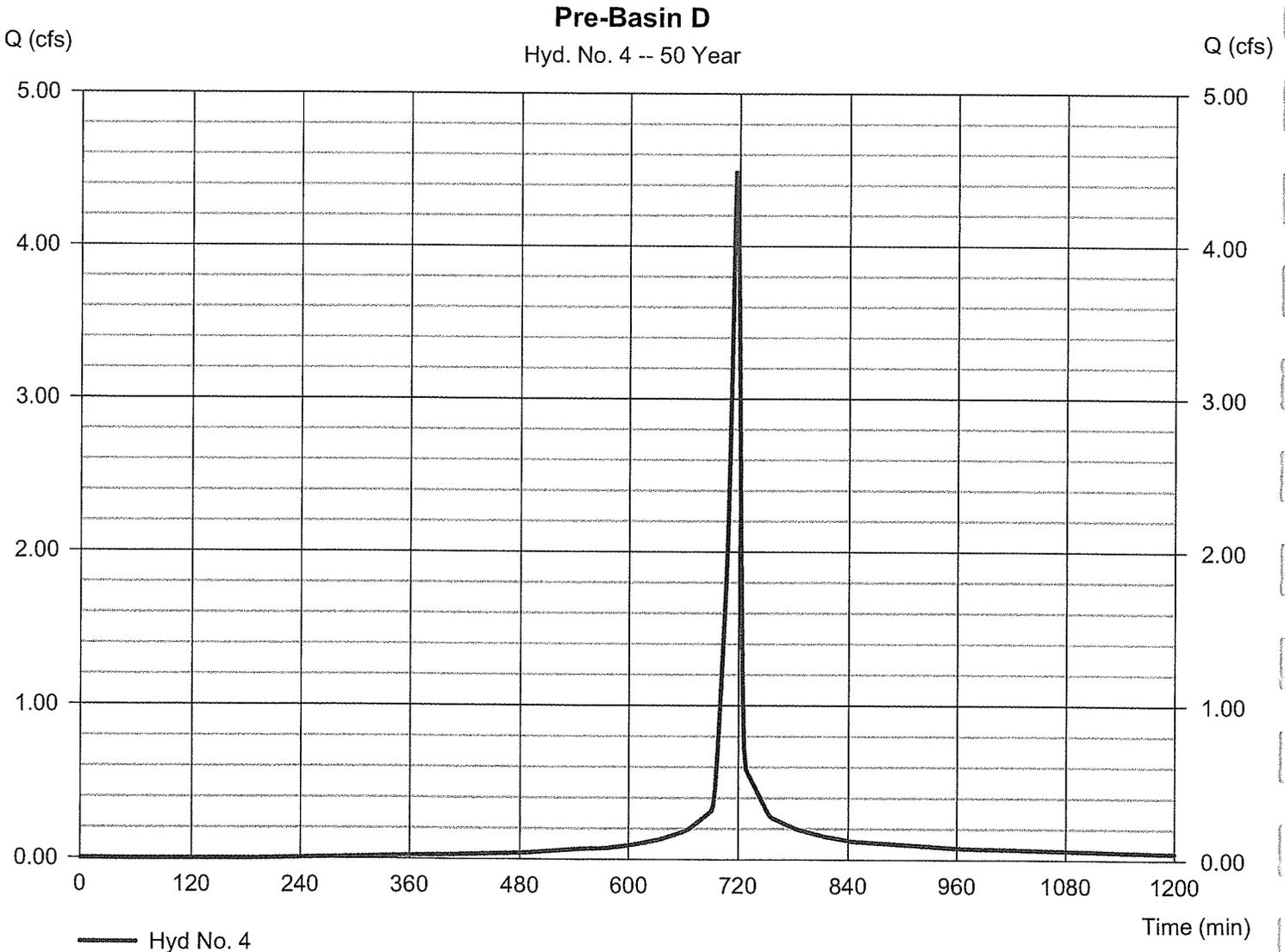
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 4

### Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.496 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 9,844 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

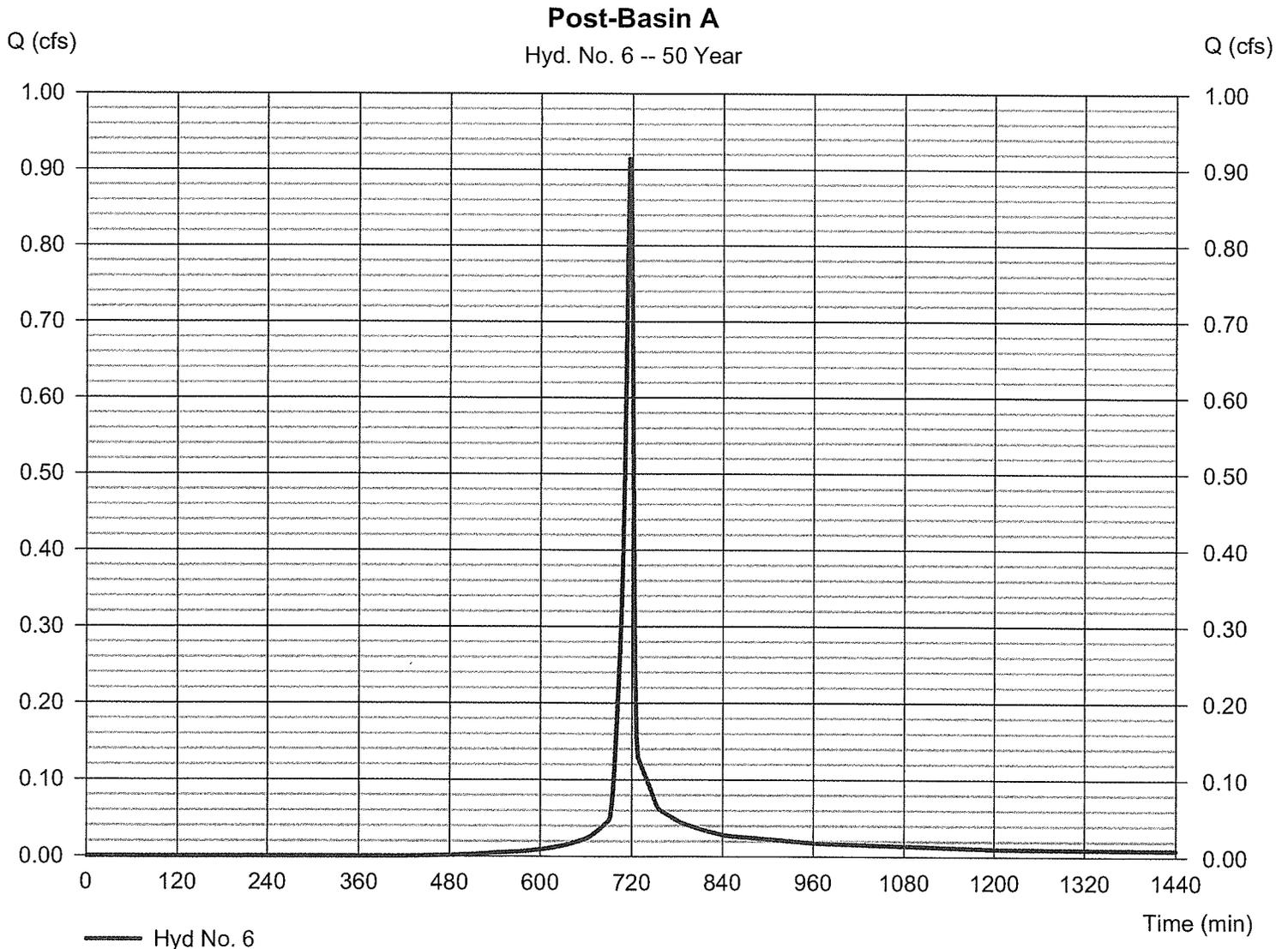


# Hydrograph Report

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.916 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,866 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

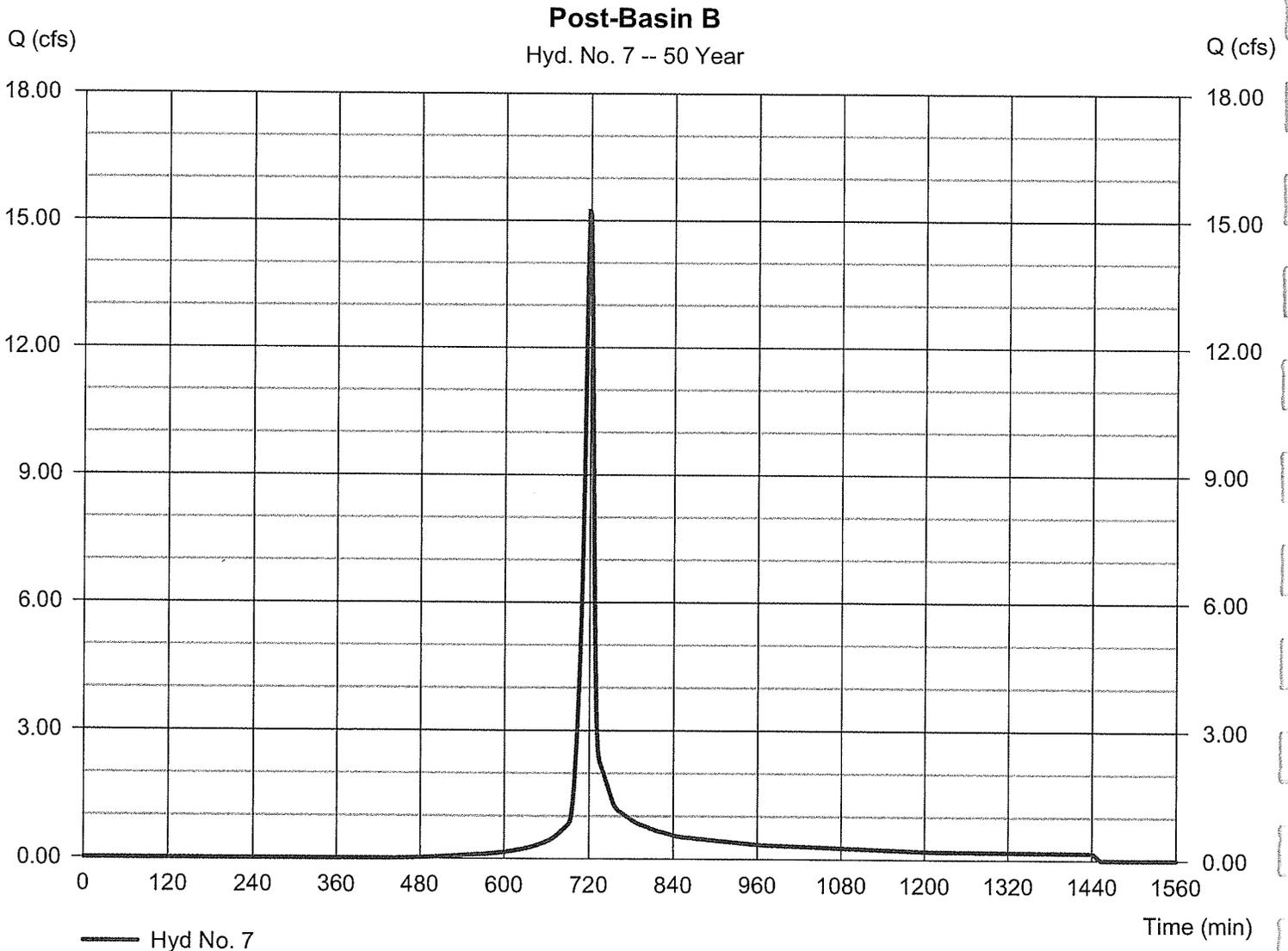
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 15.27 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 35,045 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



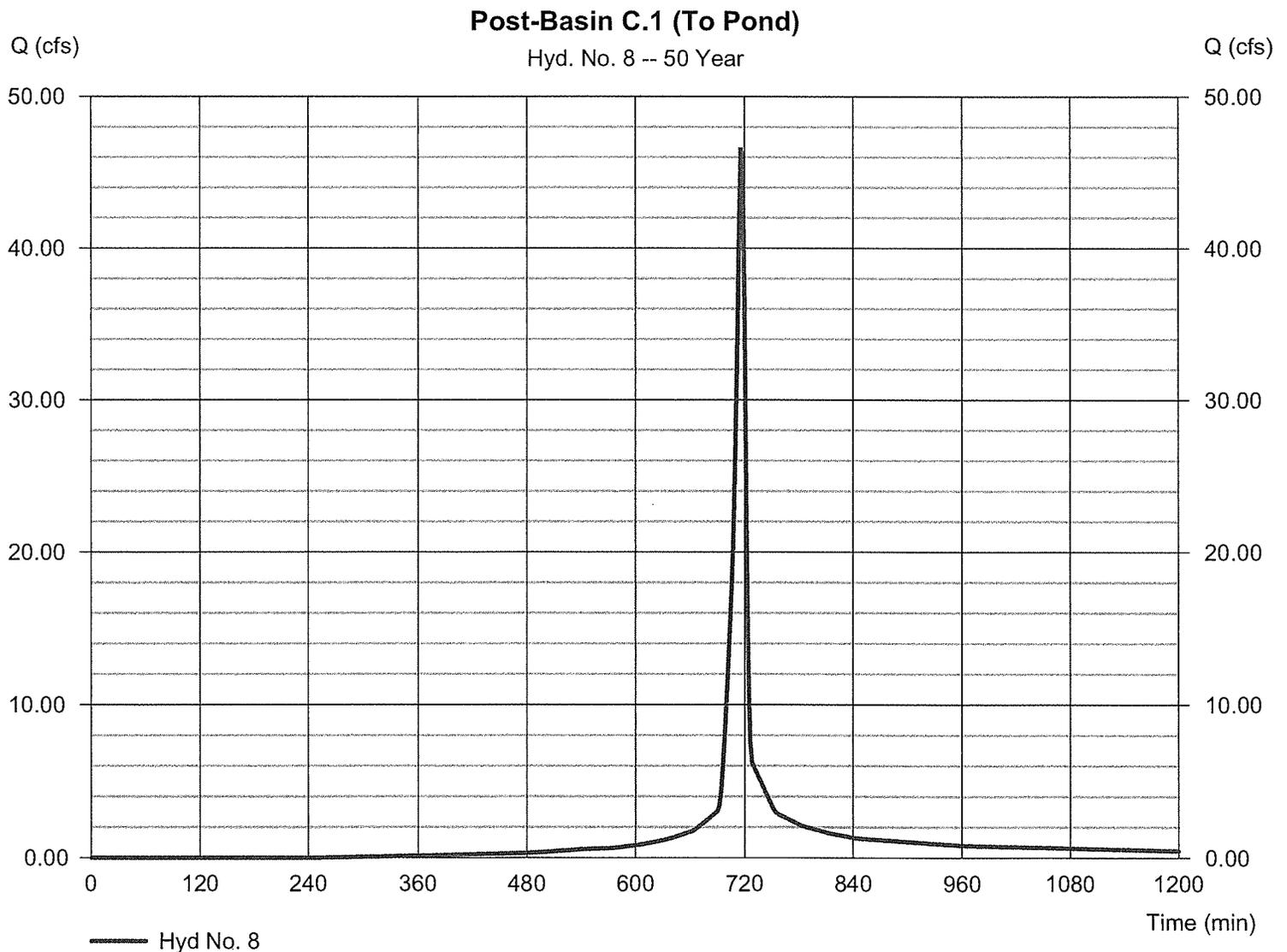
# Hydrograph Report

## Hyd. No. 8

### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 46.64 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 99,302 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

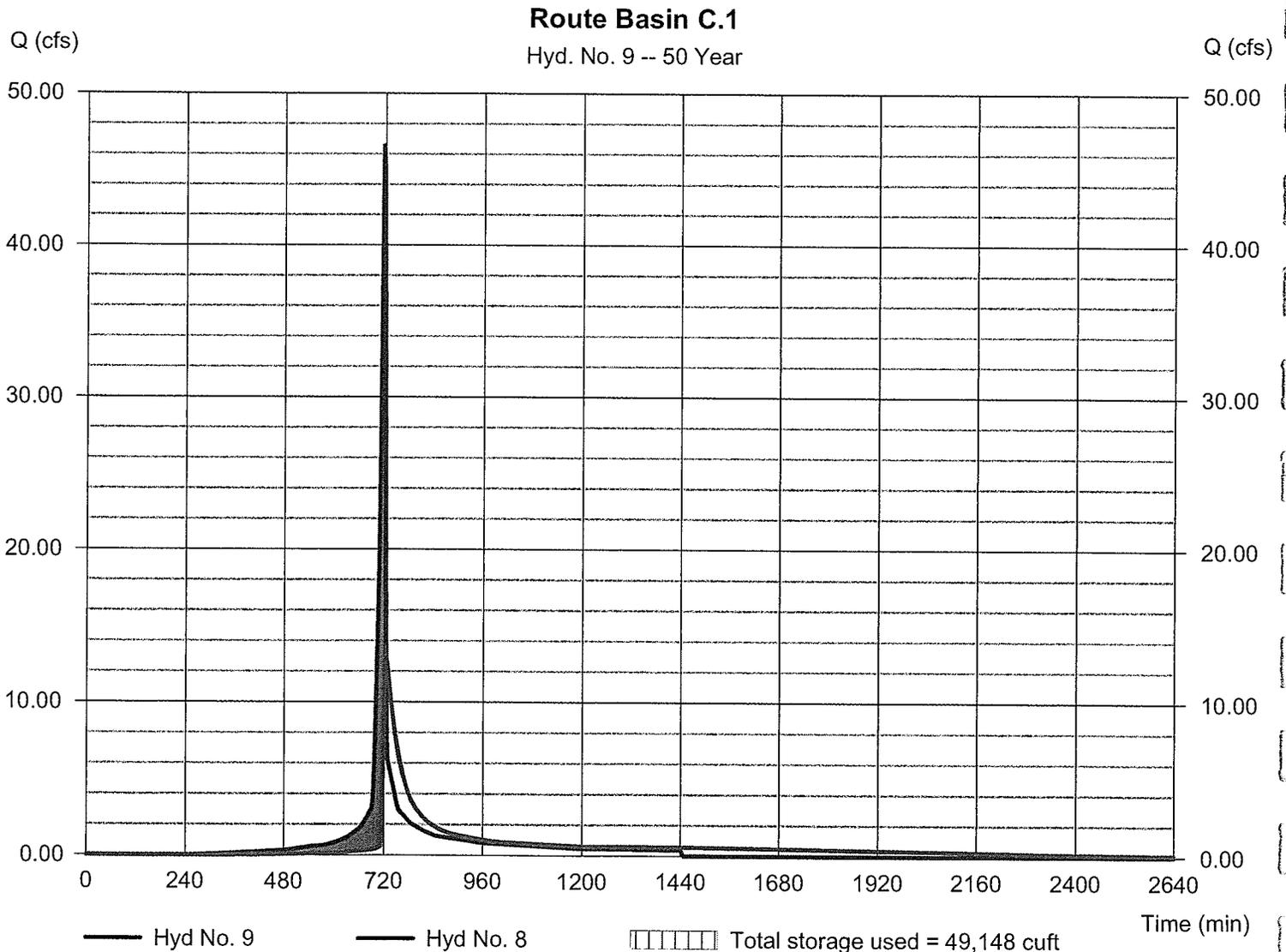
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 12.83 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 99,155 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 878.39 ft
Reservoir name	= Detention Pond with Micropool	Max. Storage	= 49,148 cuft

Storage Indication method used.

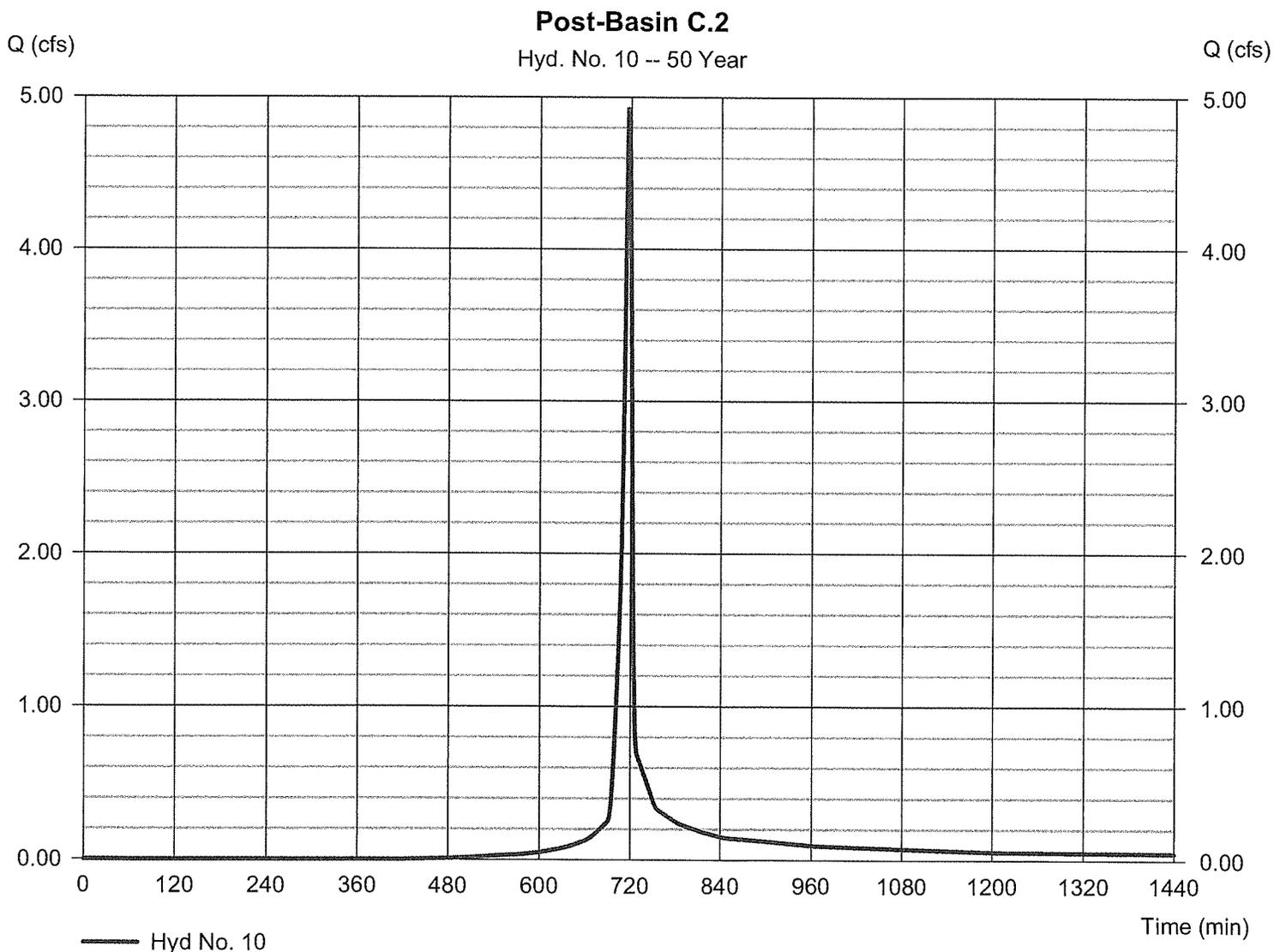


# Hydrograph Report

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 4.933 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 10,046 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

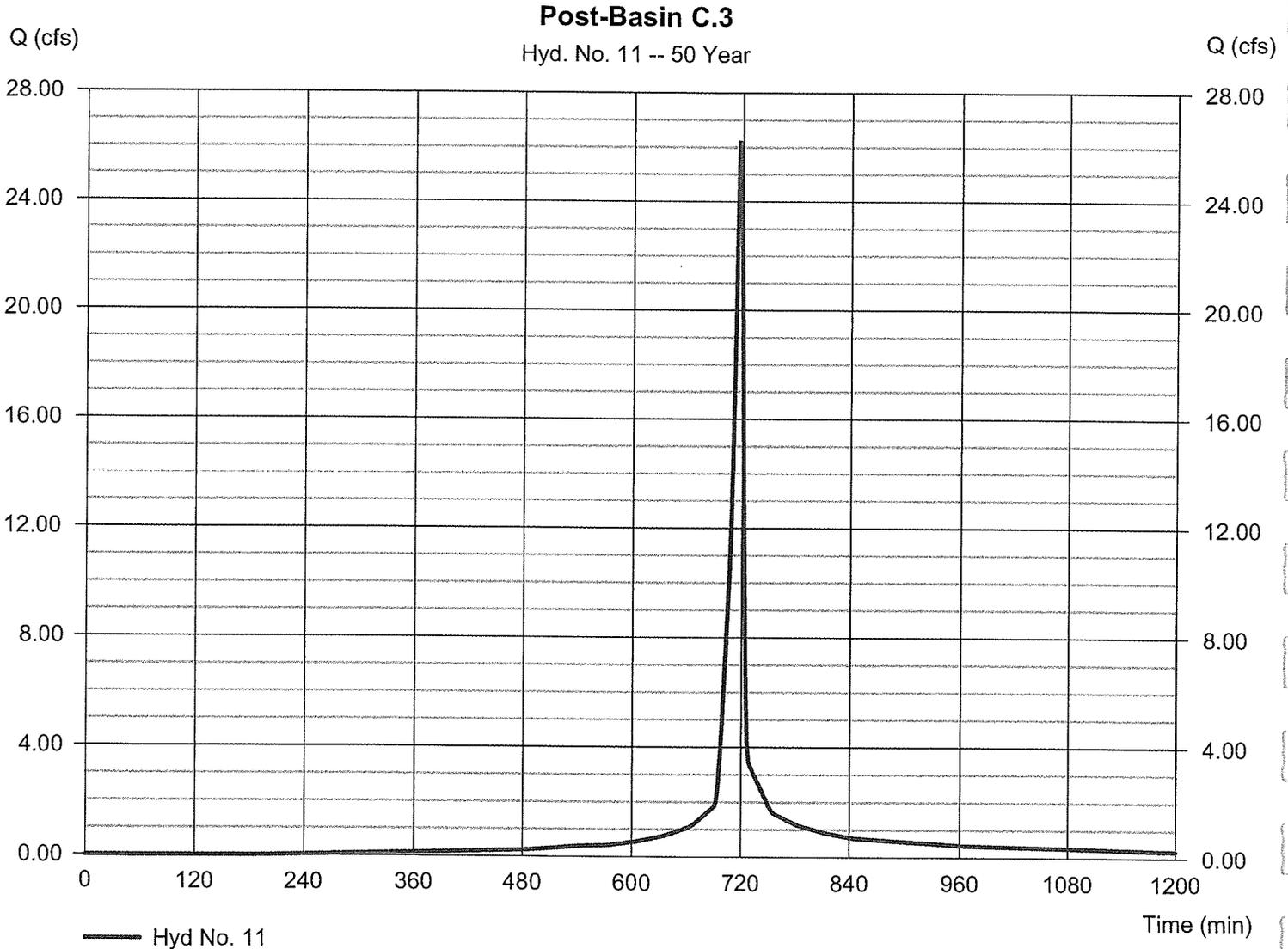
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

### Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 26.24 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 57,457 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

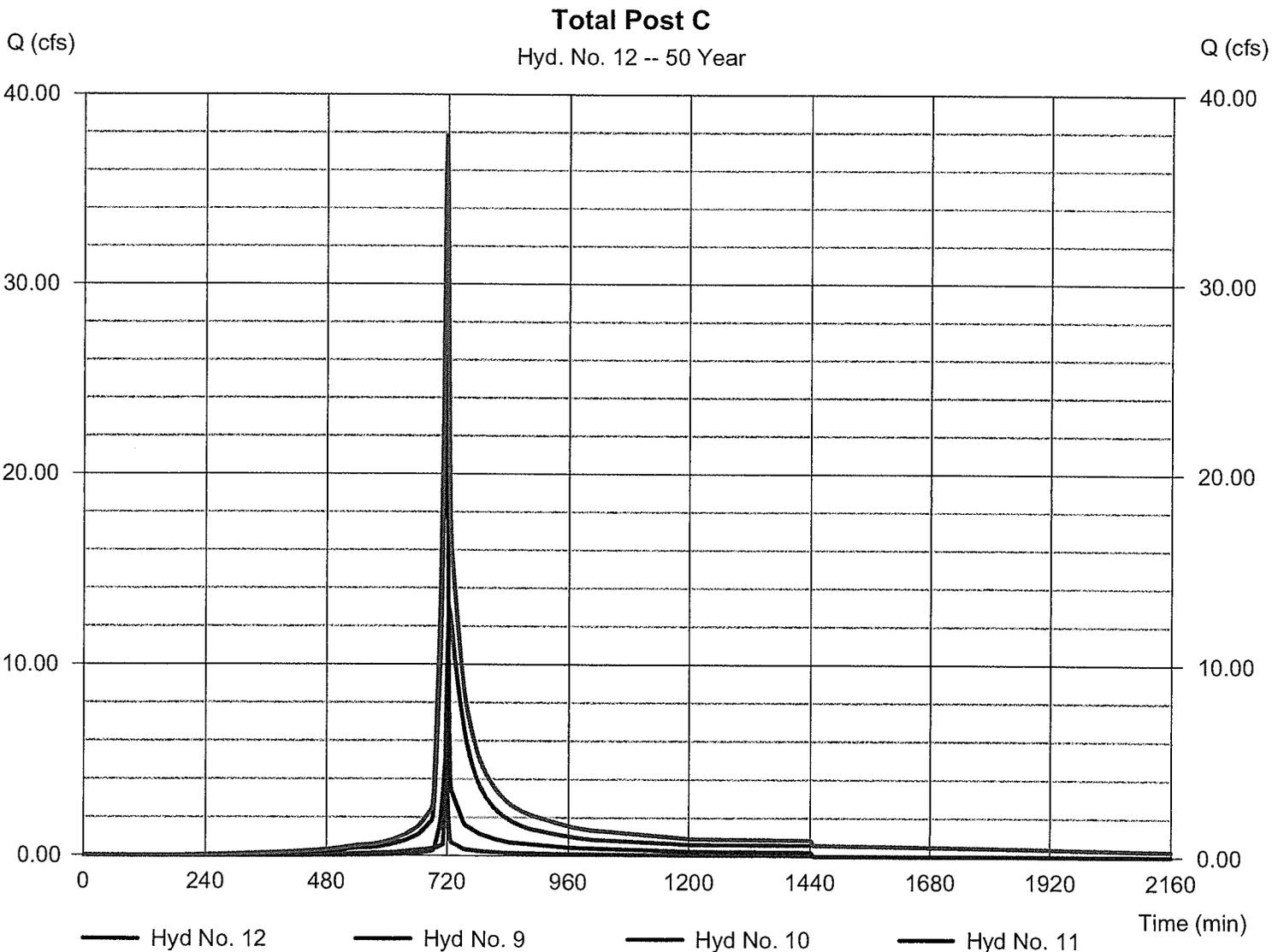
Tuesday, Sep 25, 2012

## Hyd. No. 12

### Total Post C

Hydrograph type = Combine  
Storm frequency = 50 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 10, 11

Peak discharge = 37.92 cfs  
Time to peak = 718 min  
Hyd. volume = 166,658 cuft  
Contrib. drain. area = 3.560 ac



# Hydrograph Report

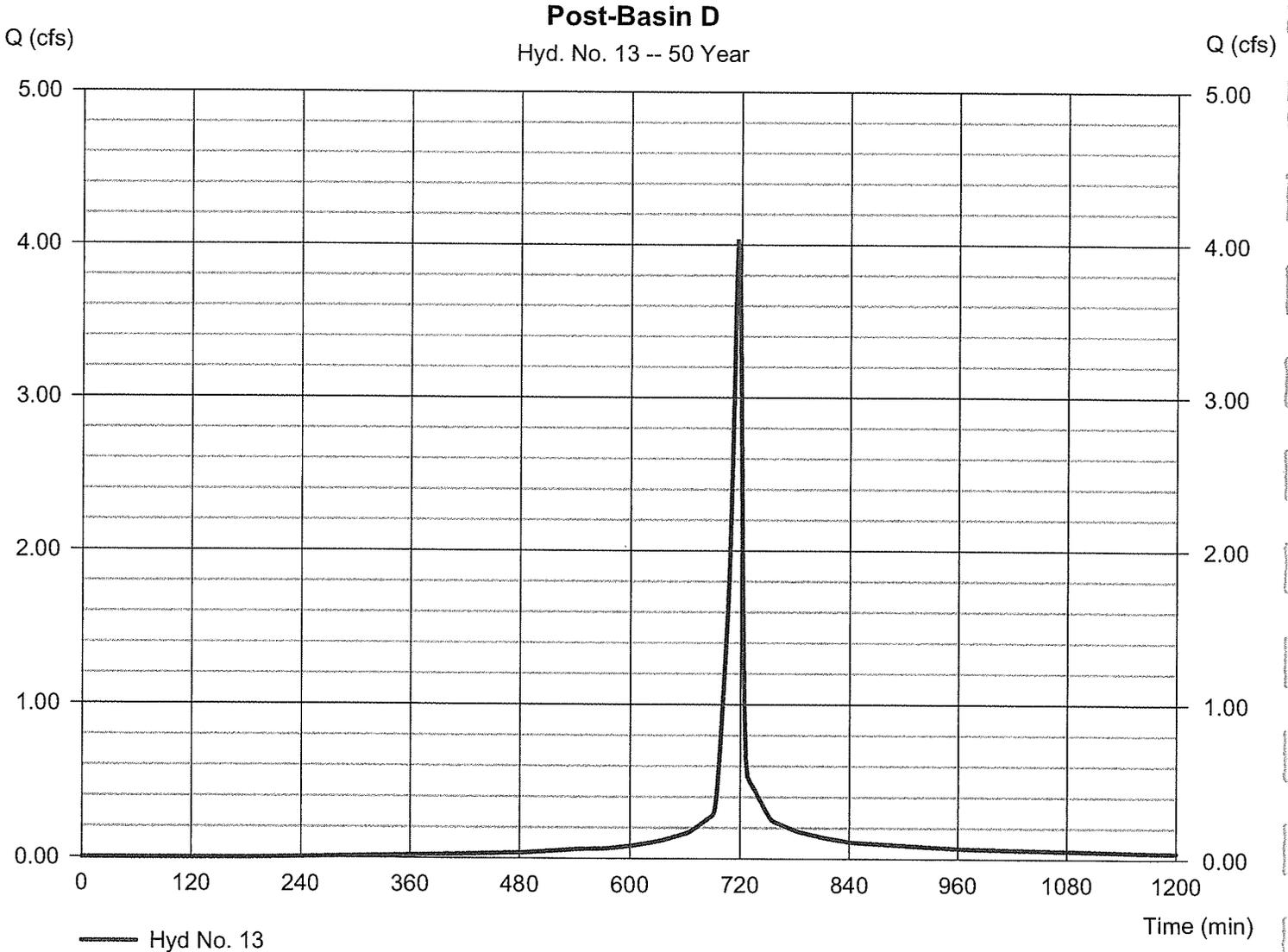
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 13

### Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.038 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 8,840 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

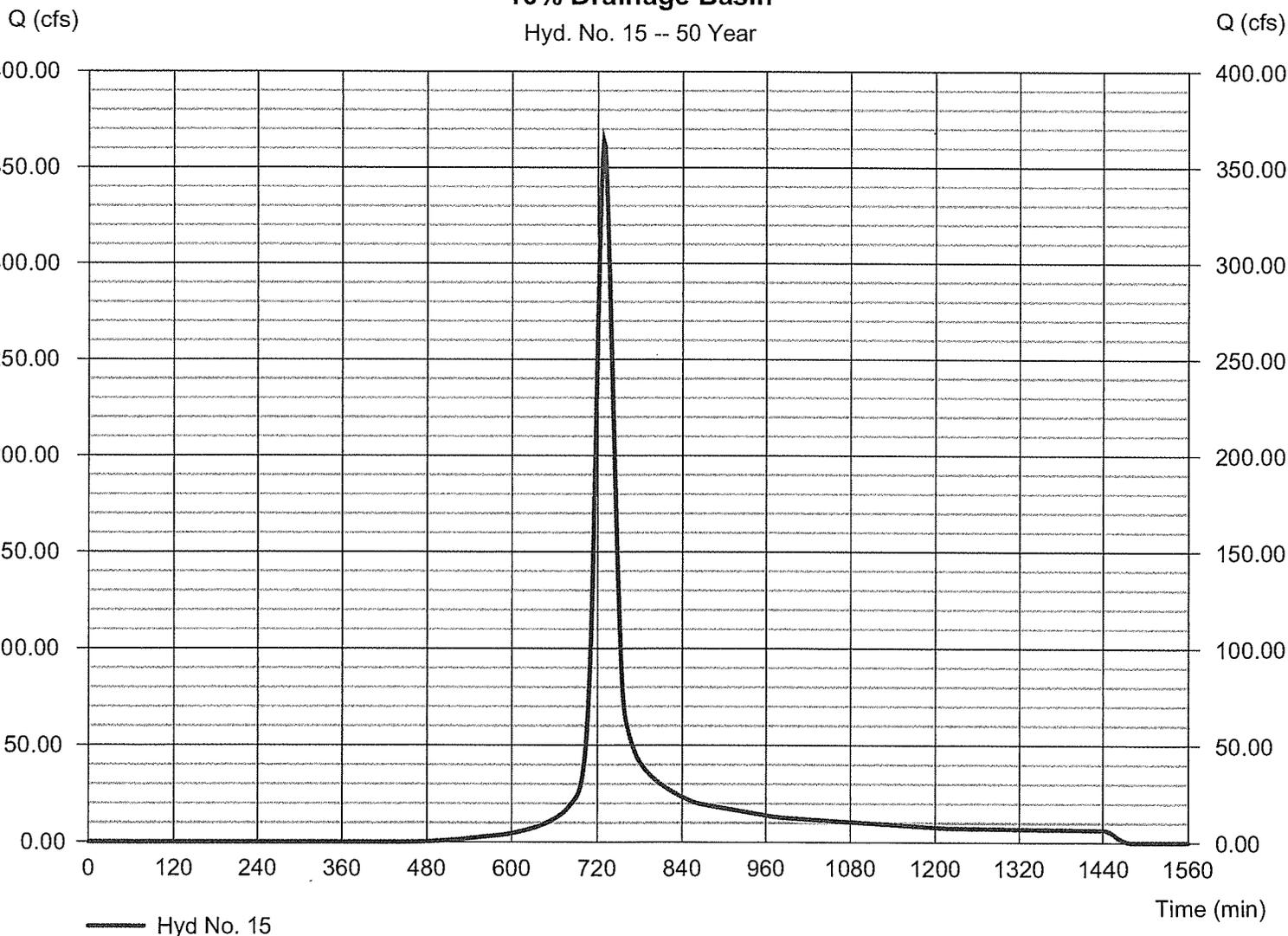
## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 363.54 cfs
Storm frequency	= 50 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,334,564 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### 10% Drainage Basin

Hyd. No. 15 -- 50 Year



# Hydrograph Report

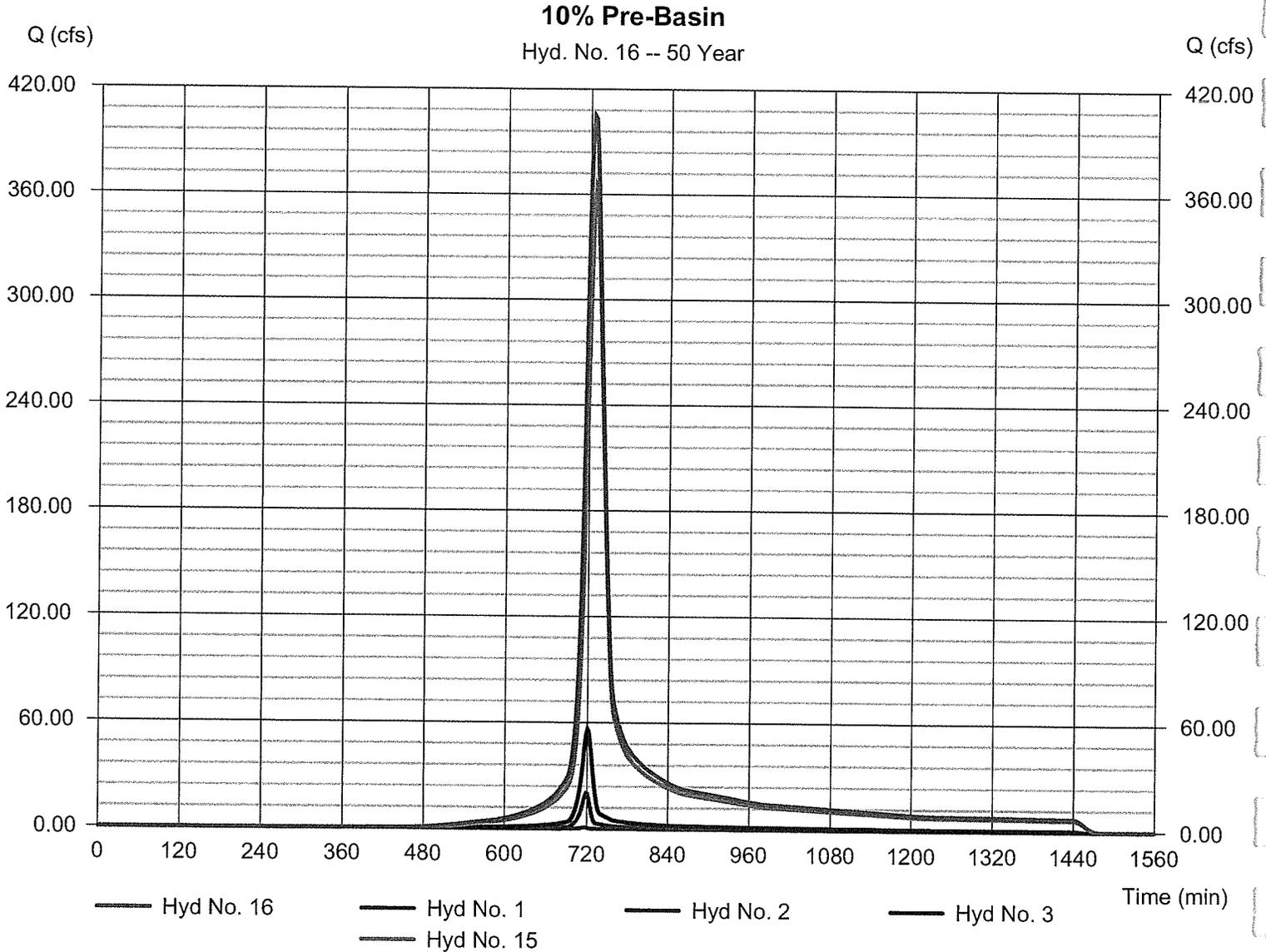
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type	= Combine	Peak discharge	= 404.71 cfs
Storm frequency	= 50 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,530,978 cuft
Inflow hyd.	= 1, 2, 3, 15	Contrib. drain. area	= 104.720 ac

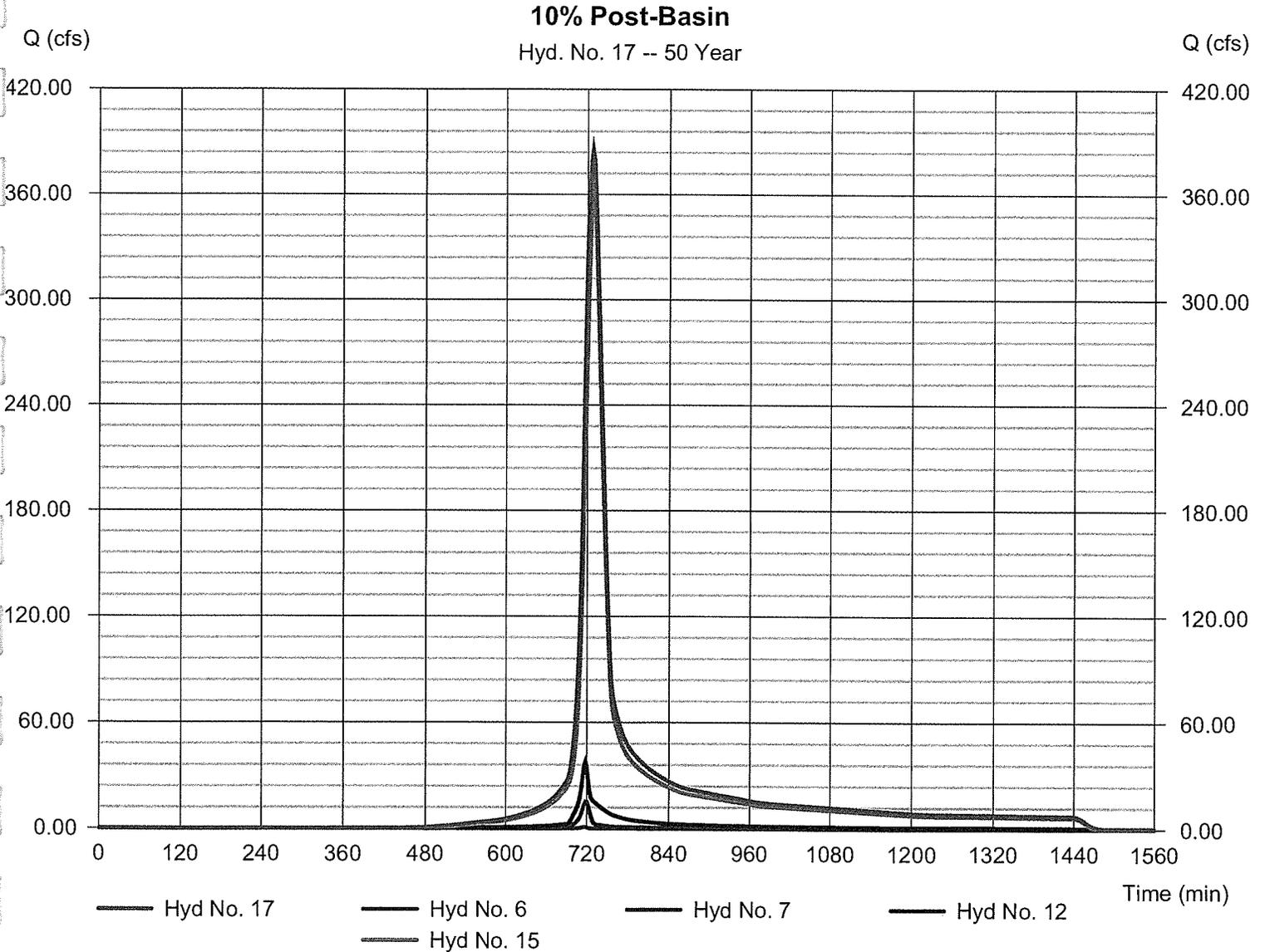


# Hydrograph Report

## Hyd. No. 17

10% Post-Basin

Hydrograph type	= Combine	Peak discharge	= 384.66 cfs
Storm frequency	= 50 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,538,134 cuft
Inflow hyds.	= 6, 7, 12, 15	Contrib. drain. area	= 95.850 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

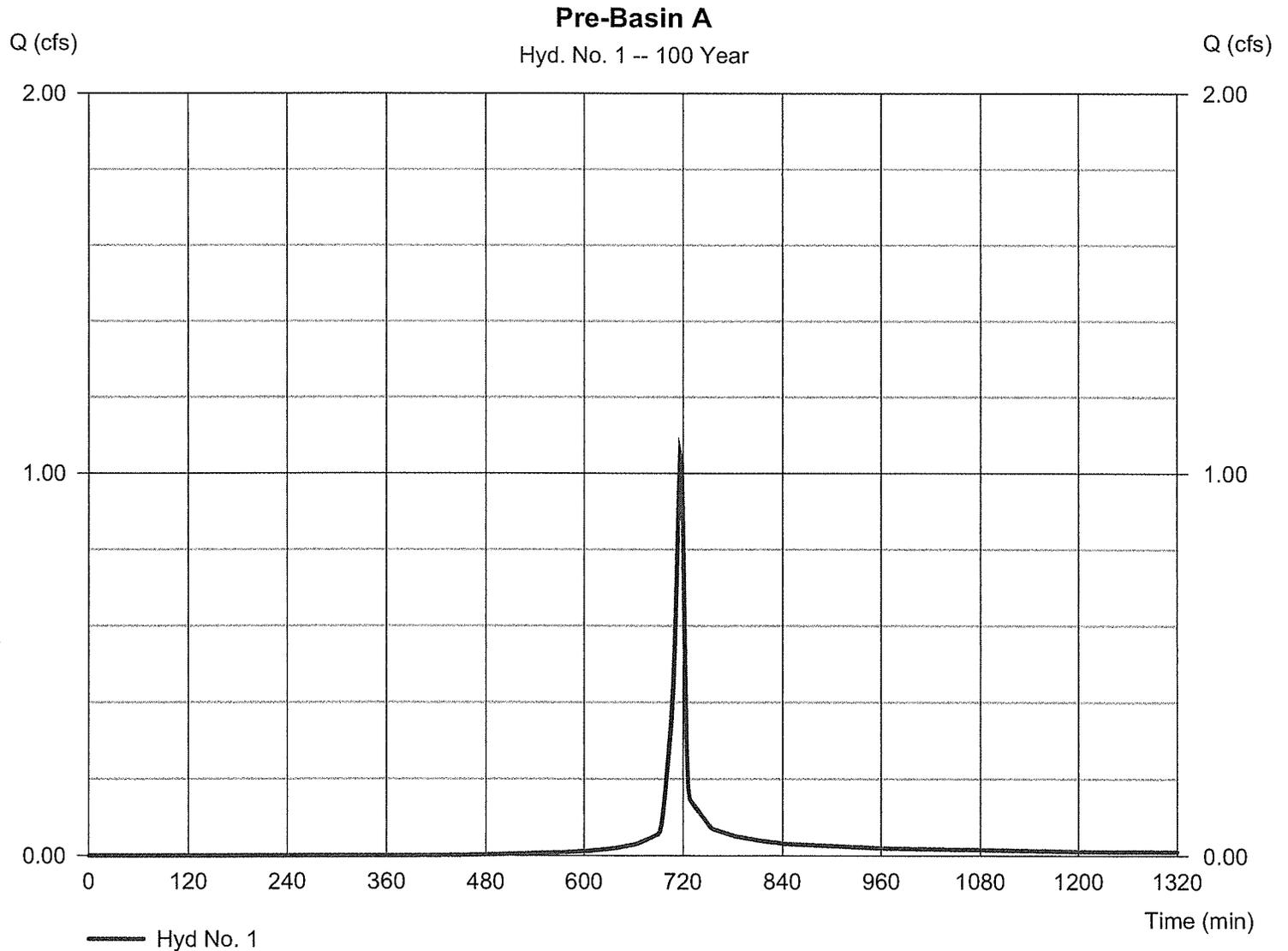
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.050	2	716	2,148	-----	-----	-----	Pre-Basin A
2	SCS Runoff	23.17	2	718	53,329	-----	-----	-----	Pre-Basin B
3	SCS Runoff	63.81	2	720	168,703	-----	-----	-----	Pre-Basin C
4	SCS Runoff	4.996	2	716	11,020	-----	-----	-----	Pre-Basin D
6	SCS Runoff	1.050	2	716	2,148	-----	-----	-----	Post-Basin A
7	SCS Runoff	17.57	2	718	40,427	-----	-----	-----	Post-Basin B
8	SCS Runoff	52.18	2	716	111,927	-----	-----	-----	Post-Basin C.1 (To Pond)
9	Reservoir	16.40	2	724	111,777	8	878.63	54,082	Route Basin C.1
10	SCS Runoff	5.653	2	716	11,564	-----	-----	-----	Post-Basin C.2
11	SCS Runoff	29.16	2	716	64,318	-----	-----	-----	Post-Basin C.3
12	Combine	45.46	2	718	187,659	9, 10, 11	-----	-----	Total Post C
13	SCS Runoff	4.487	2	716	9,895	-----	-----	-----	Post-Basin D
15	SCS Runoff	420.55	2	728	1,542,844	-----	-----	-----	10% Drainage Basin
16	Combine	467.49	2	726	1,767,023	1, 2, 3, 15	-----	-----	10% Pre-Basin
17	Combine	446.03	2	728	1,773,078	6, 7, 12, 15,	-----	-----	10% Post-Basin

# Hydrograph Report

## Hyd. No. 1

### Pre-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.050 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,148 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

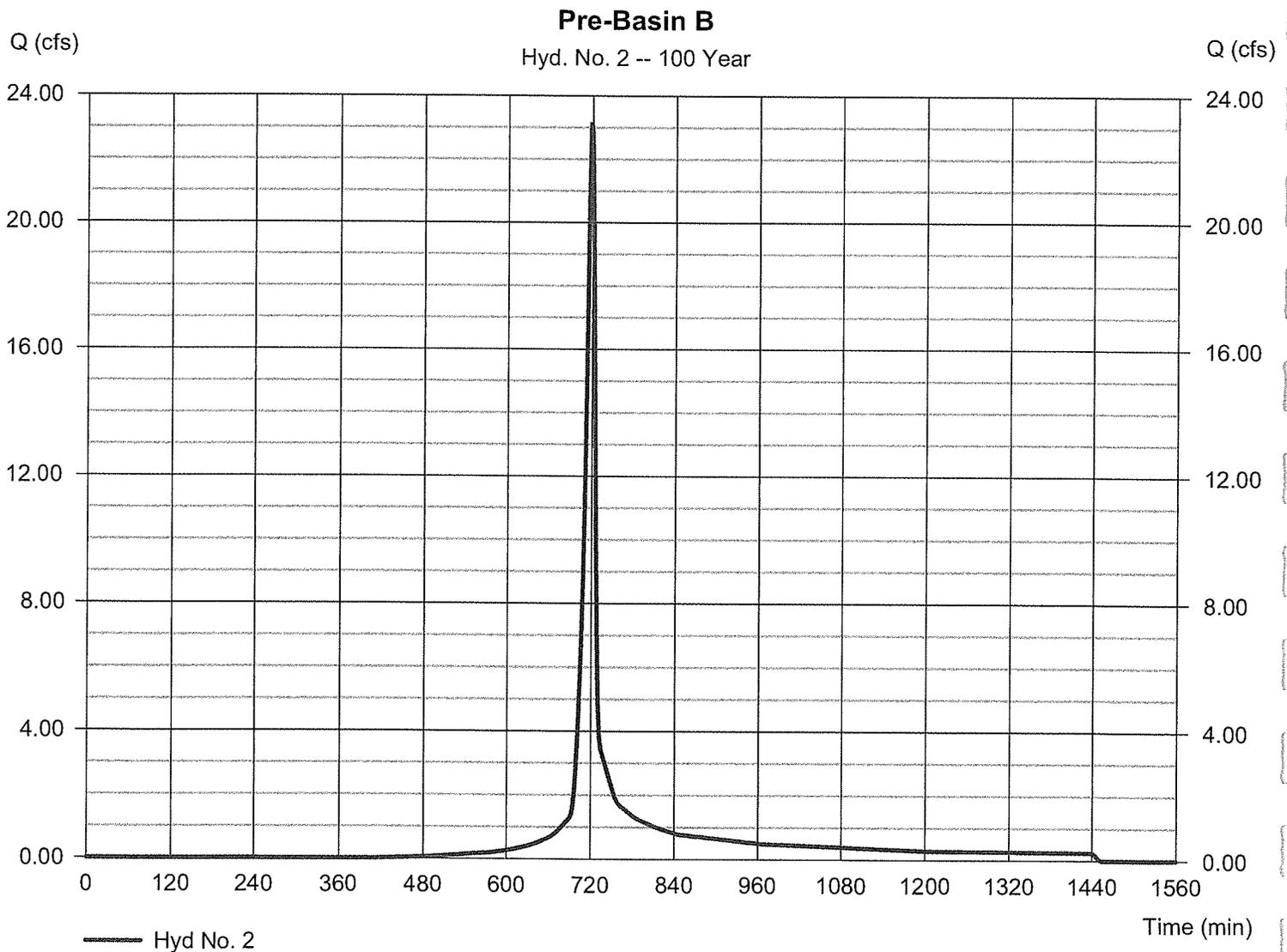
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 2

### Pre-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 23.17 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 53,329 cuft
Drainage area	= 3.100 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



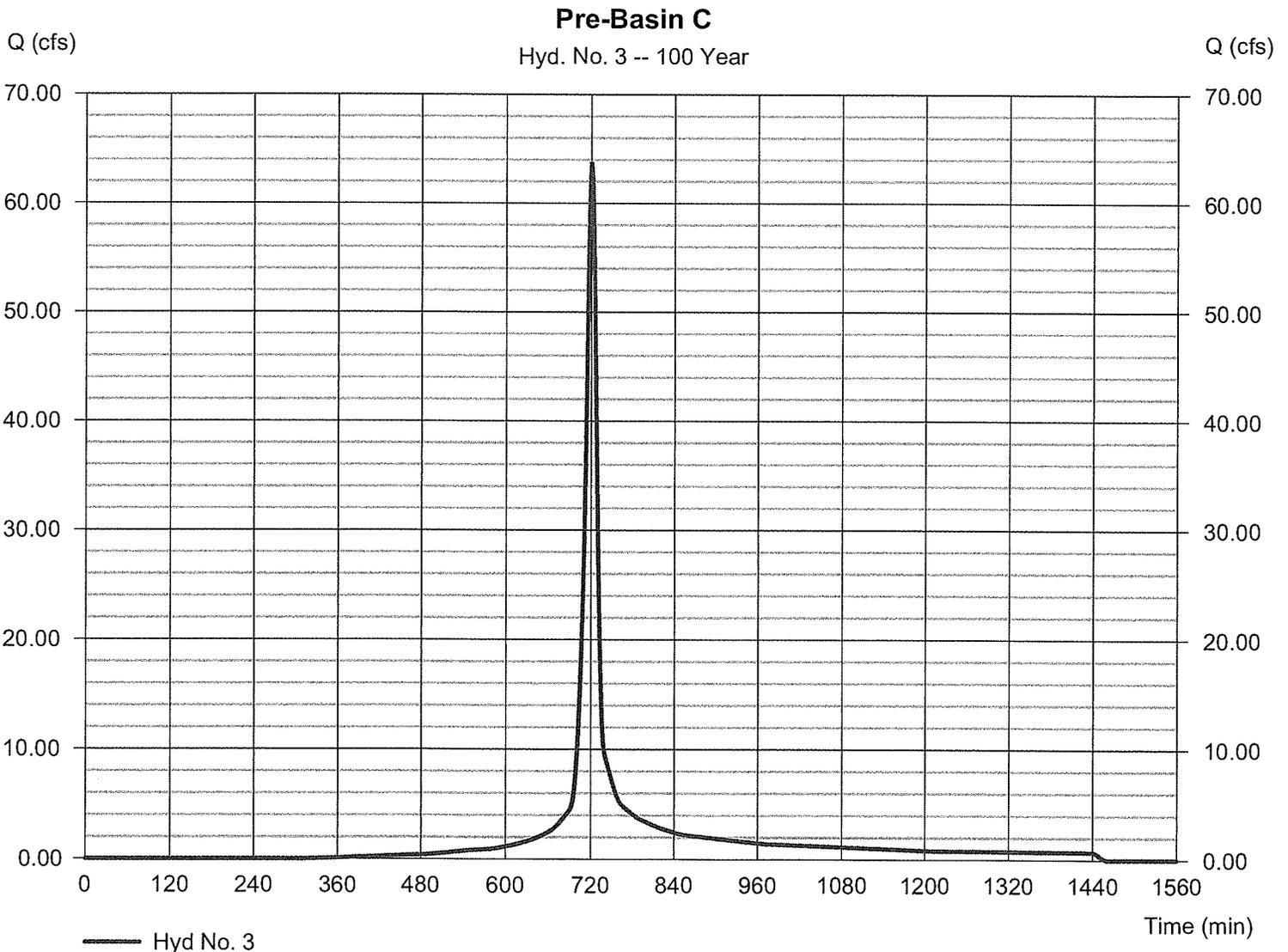
# Hydrograph Report

## Hyd. No. 3

### Pre-Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 63.81 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 168,703 cuft
Drainage area	= 8.120 ac	Curve number	= 80*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.190 \times 85) + (5.260 \times 75)] / 8.120$



# Hydrograph Report

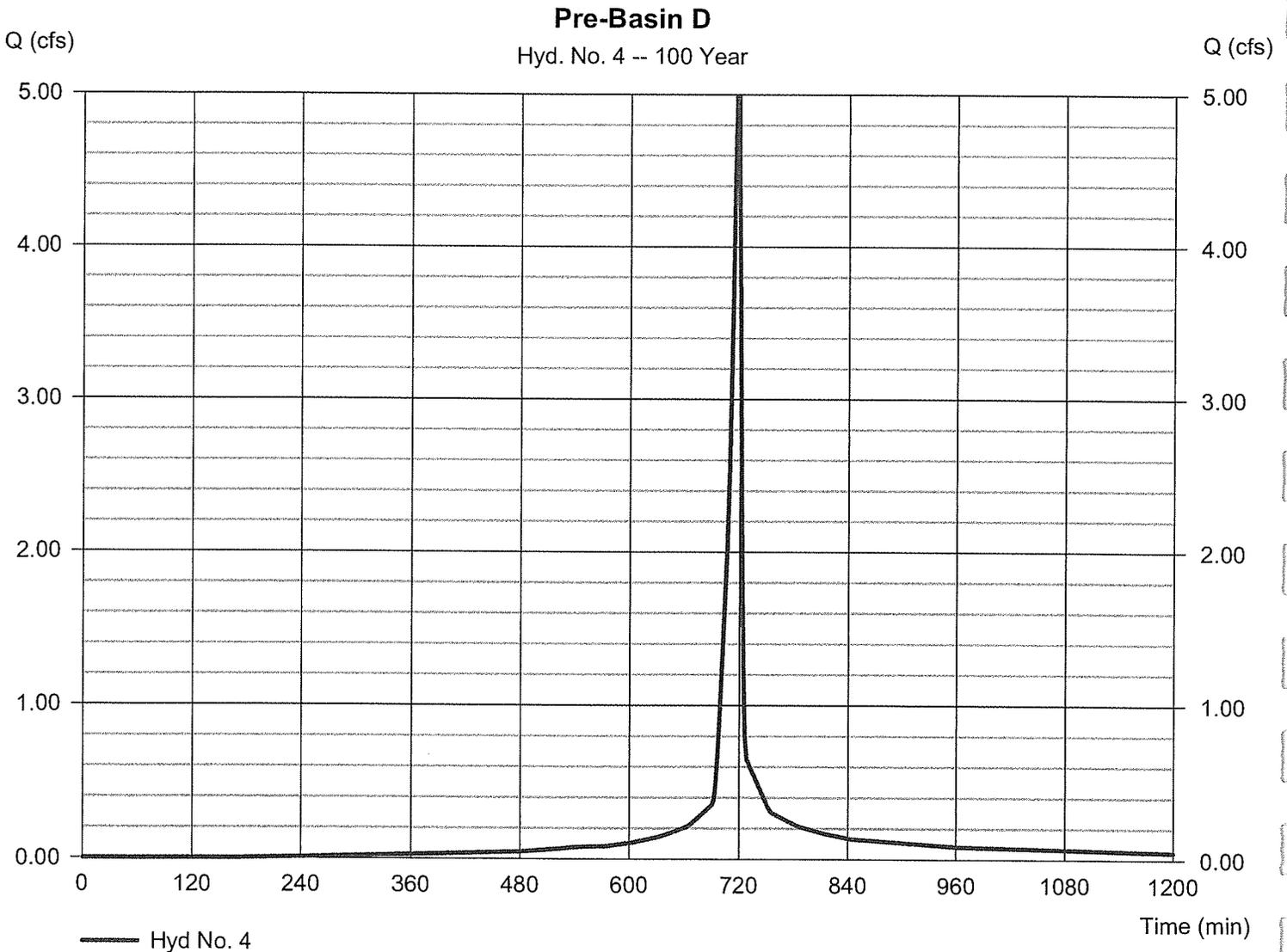
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 4

### Pre-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.996 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 11,020 cuft
Drainage area	= 0.490 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

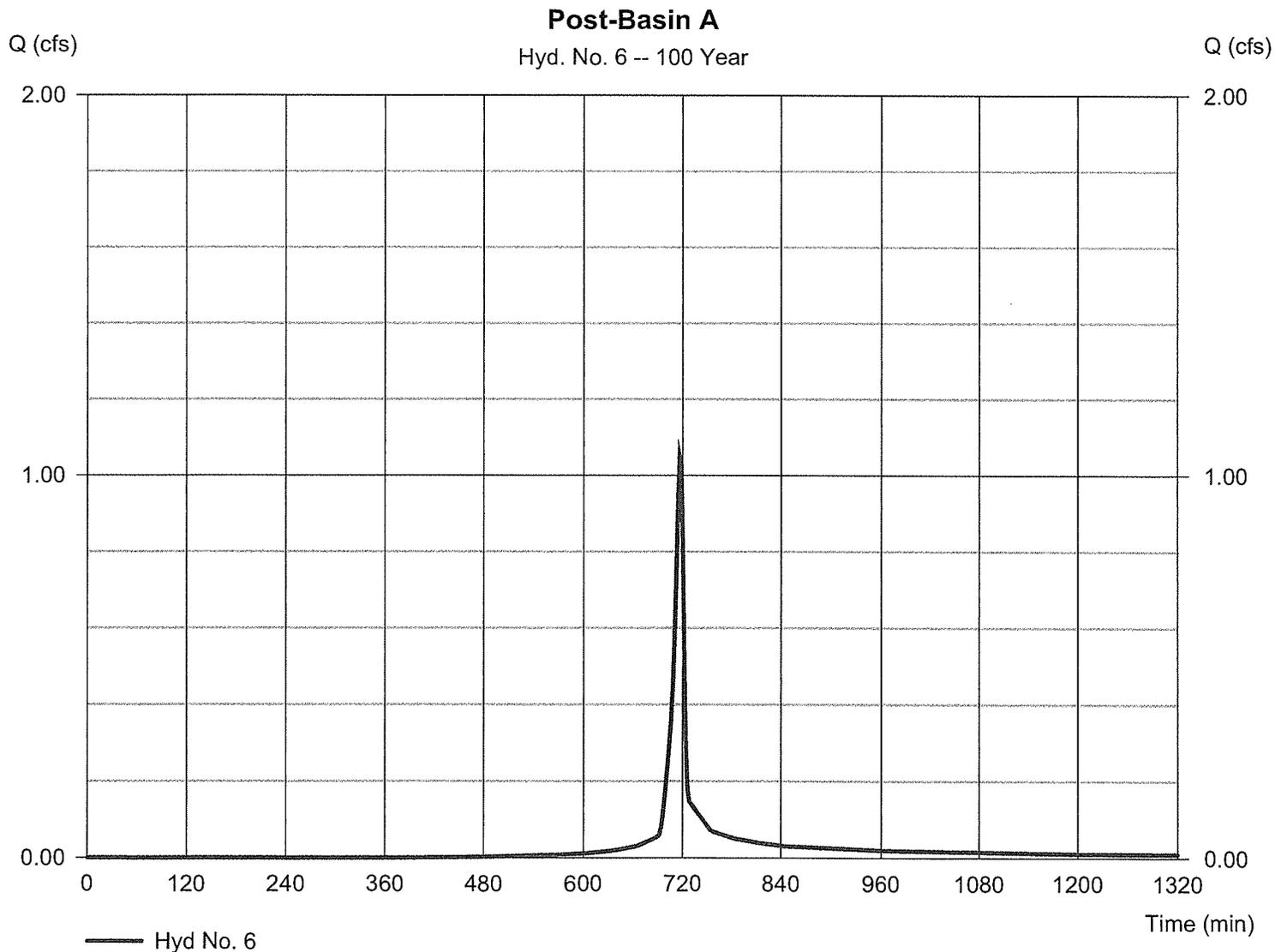


# Hydrograph Report

## Hyd. No. 6

### Post-Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.050 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,148 cuft
Drainage area	= 0.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

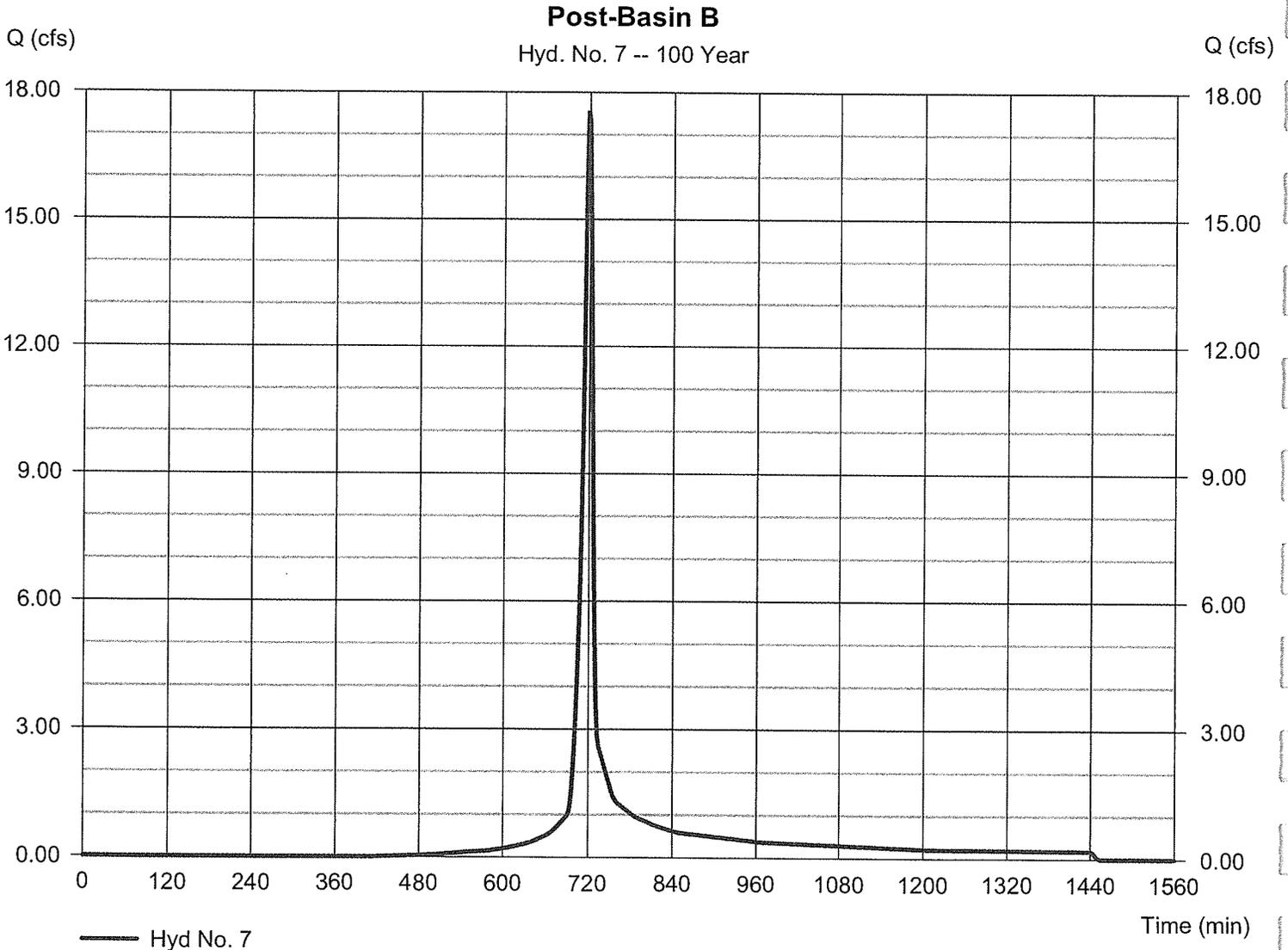


# Hydrograph Report

## Hyd. No. 7

### Post-Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 17.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 40,427 cuft
Drainage area	= 2.350 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.37 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

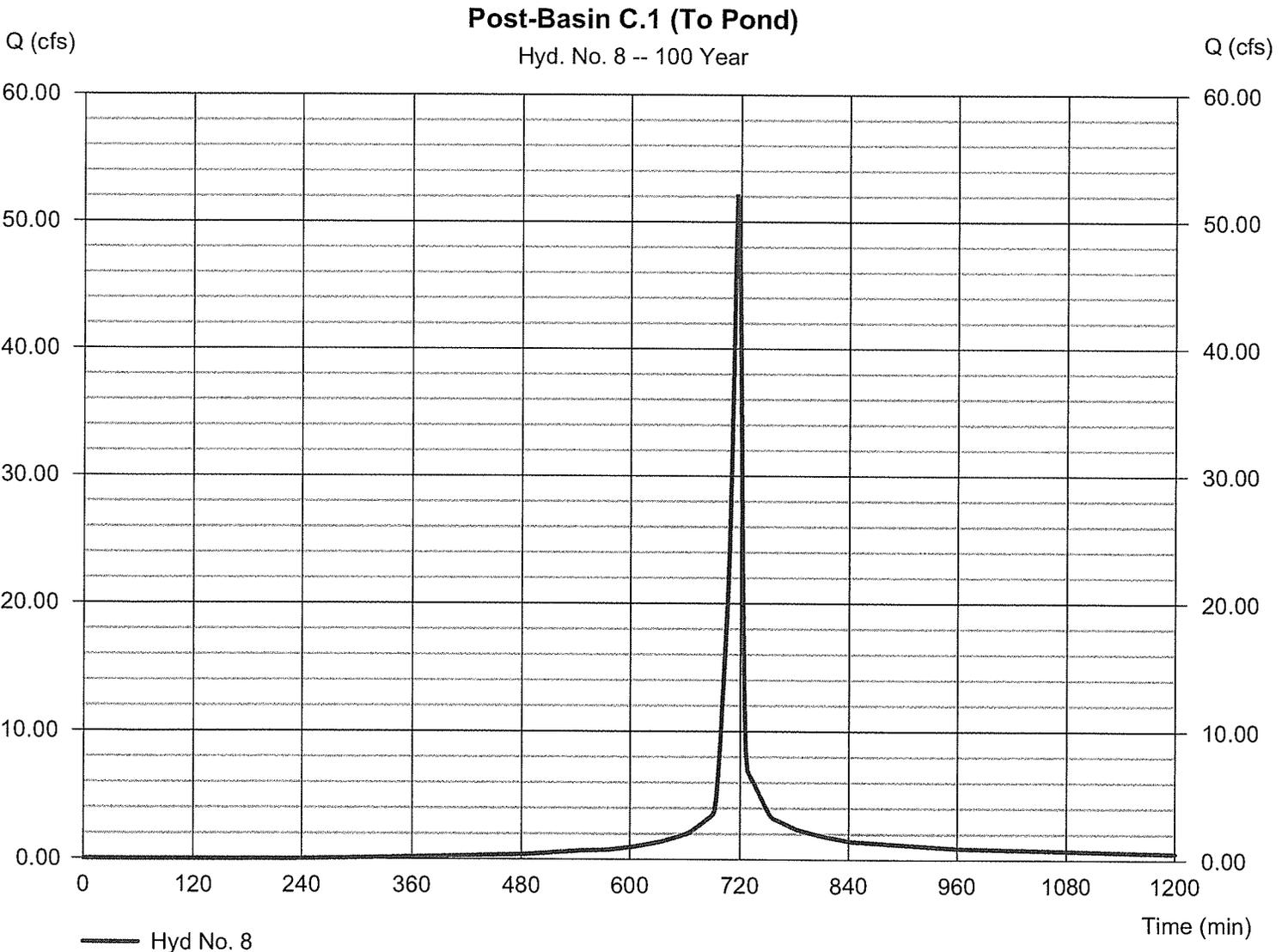
Tuesday, Sep 25, 2012

## Hyd. No. 8

### Post-Basin C.1 (To Pond)

Hydrograph type	= SCS Runoff	Peak discharge	= 52.18 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 111,927 cuft
Drainage area	= 5.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.530 \times 68) + (0.190 \times 85) + (2.200 \times 75) + (2.240 \times 98)] / 5.360$



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

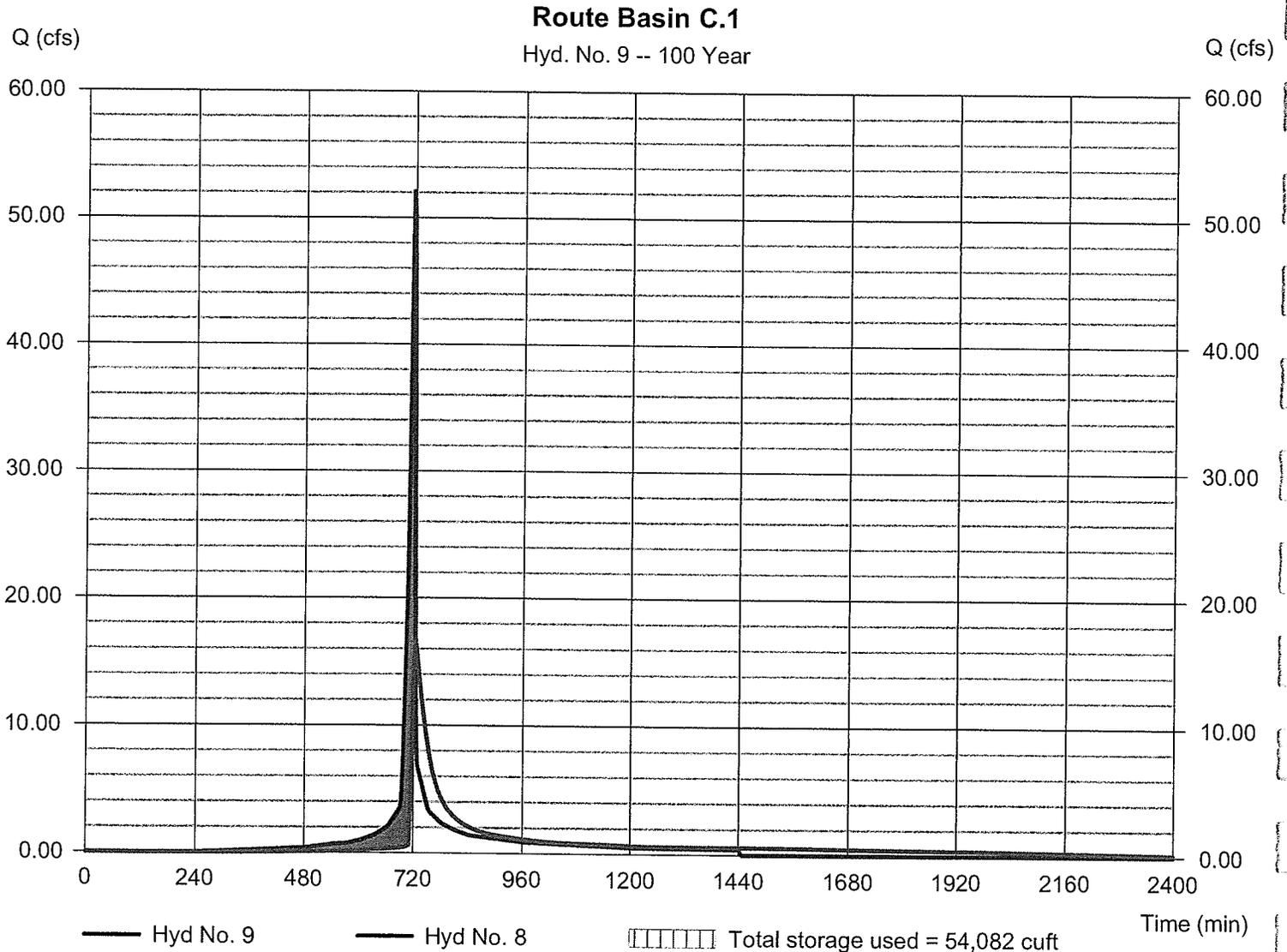
Tuesday, Sep 25, 2012

## Hyd. No. 9

Route Basin C.1

Hydrograph type	= Reservoir	Peak discharge	= 16.40 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 111,777 cuft
Inflow hyd. No.	= 8 - Post-Basin C.1 (To Pond)	Max. Elevation	= 878.63 ft
Reservoir name	= Detention Pond with Micropool	Max. Storage	= 54,082 cuft

Storage Indication method used.



# Hydrograph Report

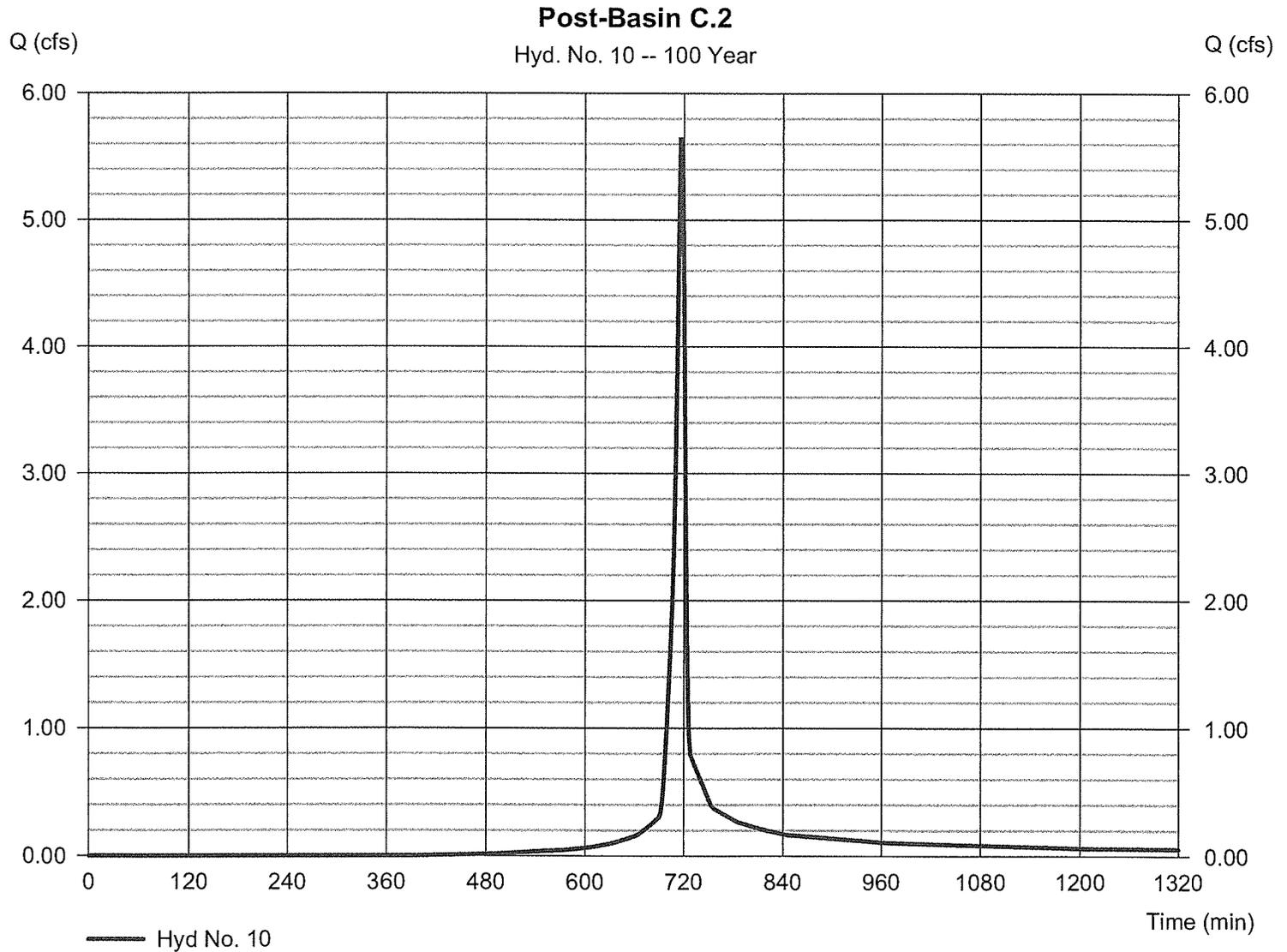
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 10

### Post-Basin C.2

Hydrograph type	= SCS Runoff	Peak discharge	= 5.653 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 11,564 cuft
Drainage area	= 0.700 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

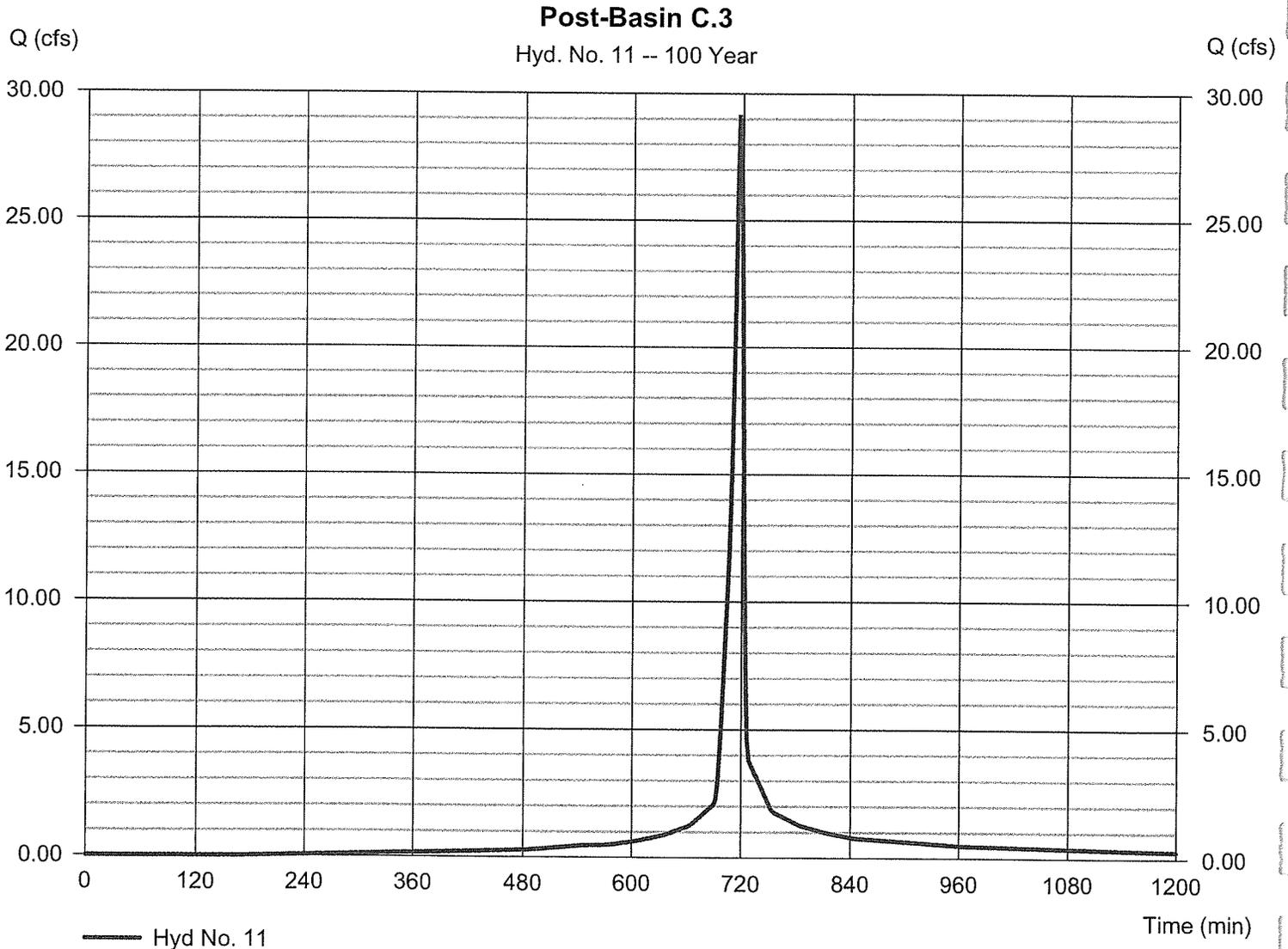
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 11

### Post-Basin C.3

Hydrograph type	= SCS Runoff	Peak discharge	= 29.16 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 64,318 cuft
Drainage area	= 2.860 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



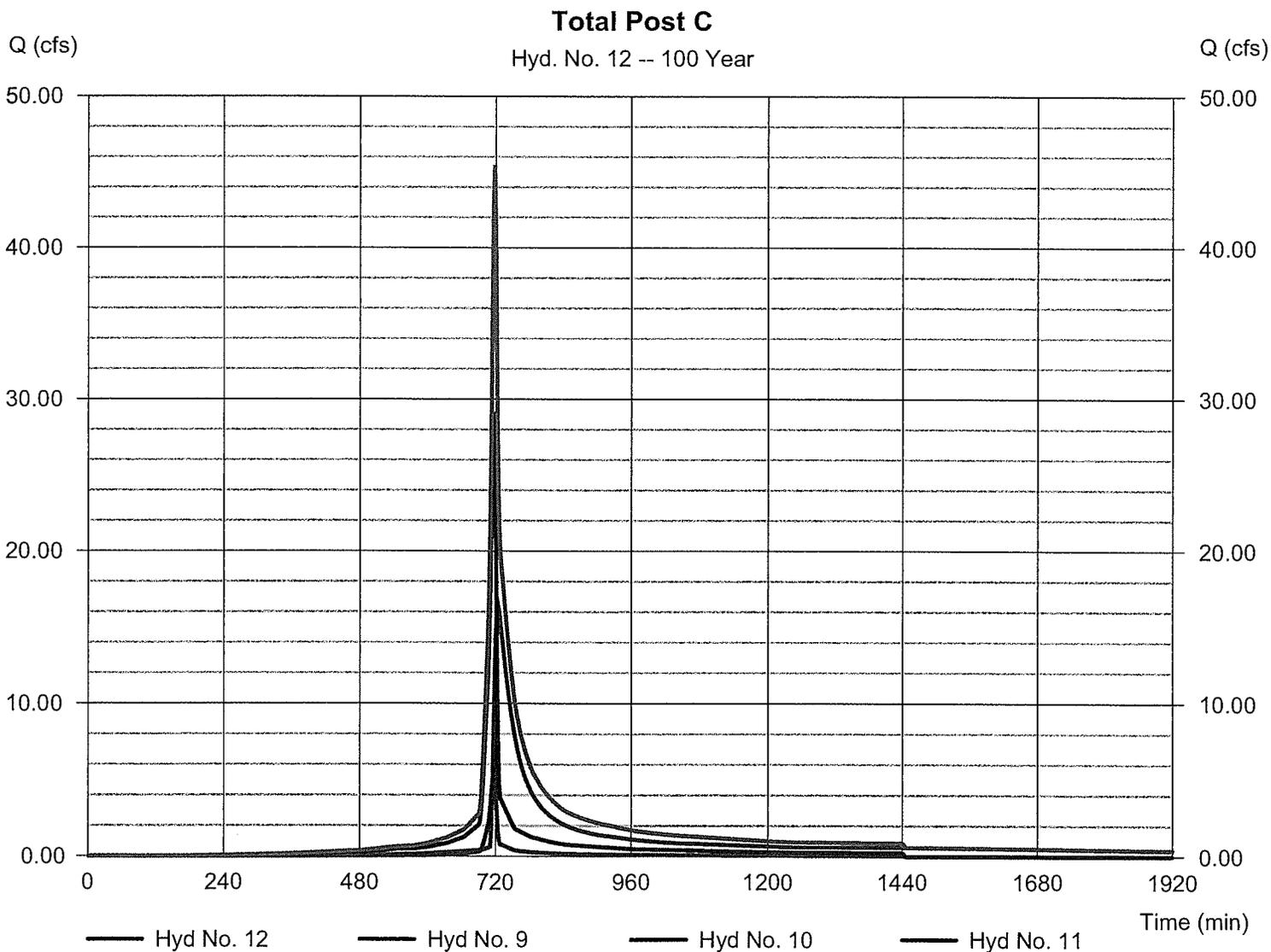
# Hydrograph Report

## Hyd. No. 12

Total Post C

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 10, 11

Peak discharge = 45.46 cfs  
Time to peak = 718 min  
Hyd. volume = 187,659 cuft  
Contrib. drain. area = 3.560 ac

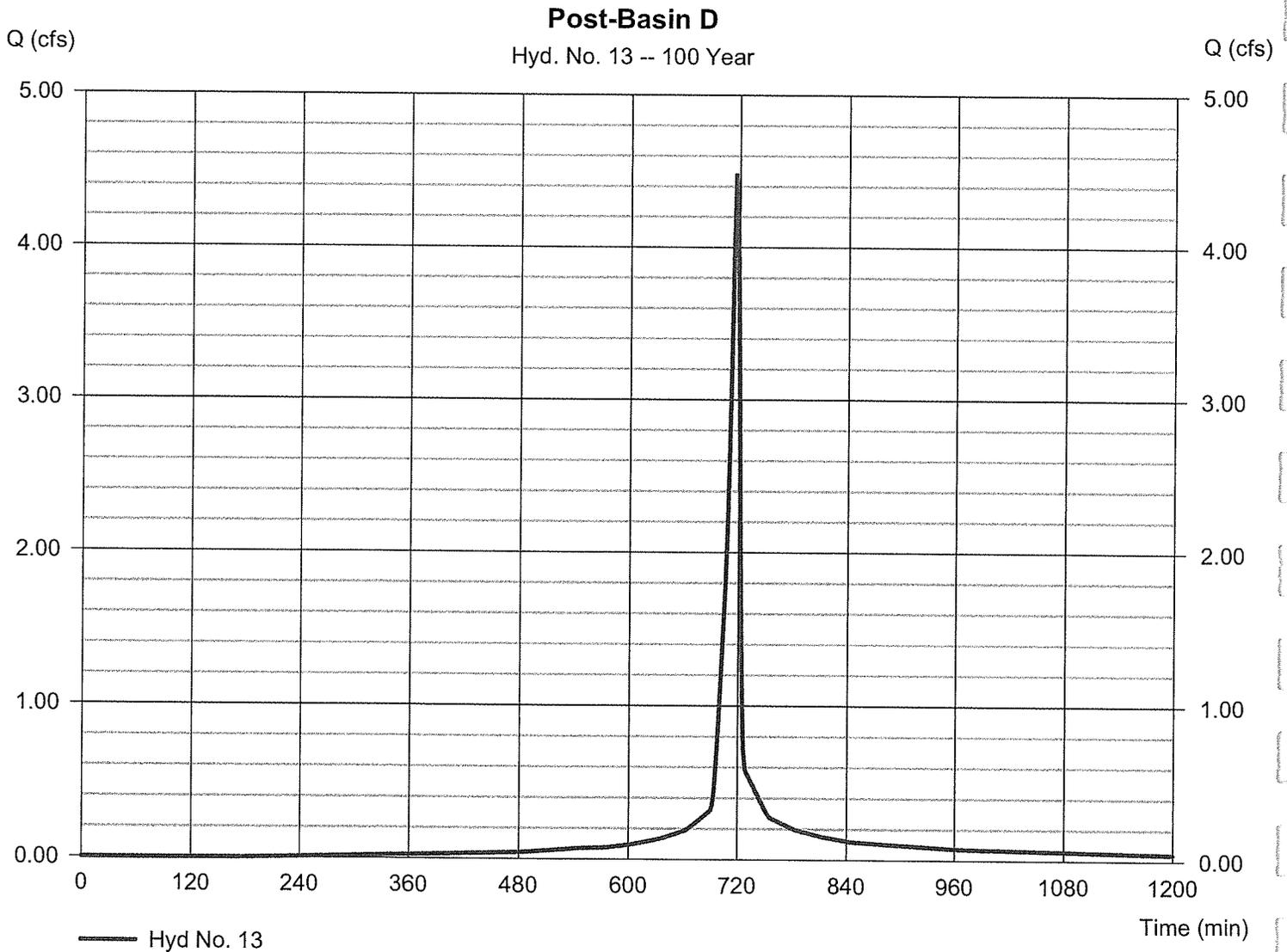


# Hydrograph Report

## Hyd. No. 13

### Post-Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.487 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 9,895 cuft
Drainage area	= 0.440 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

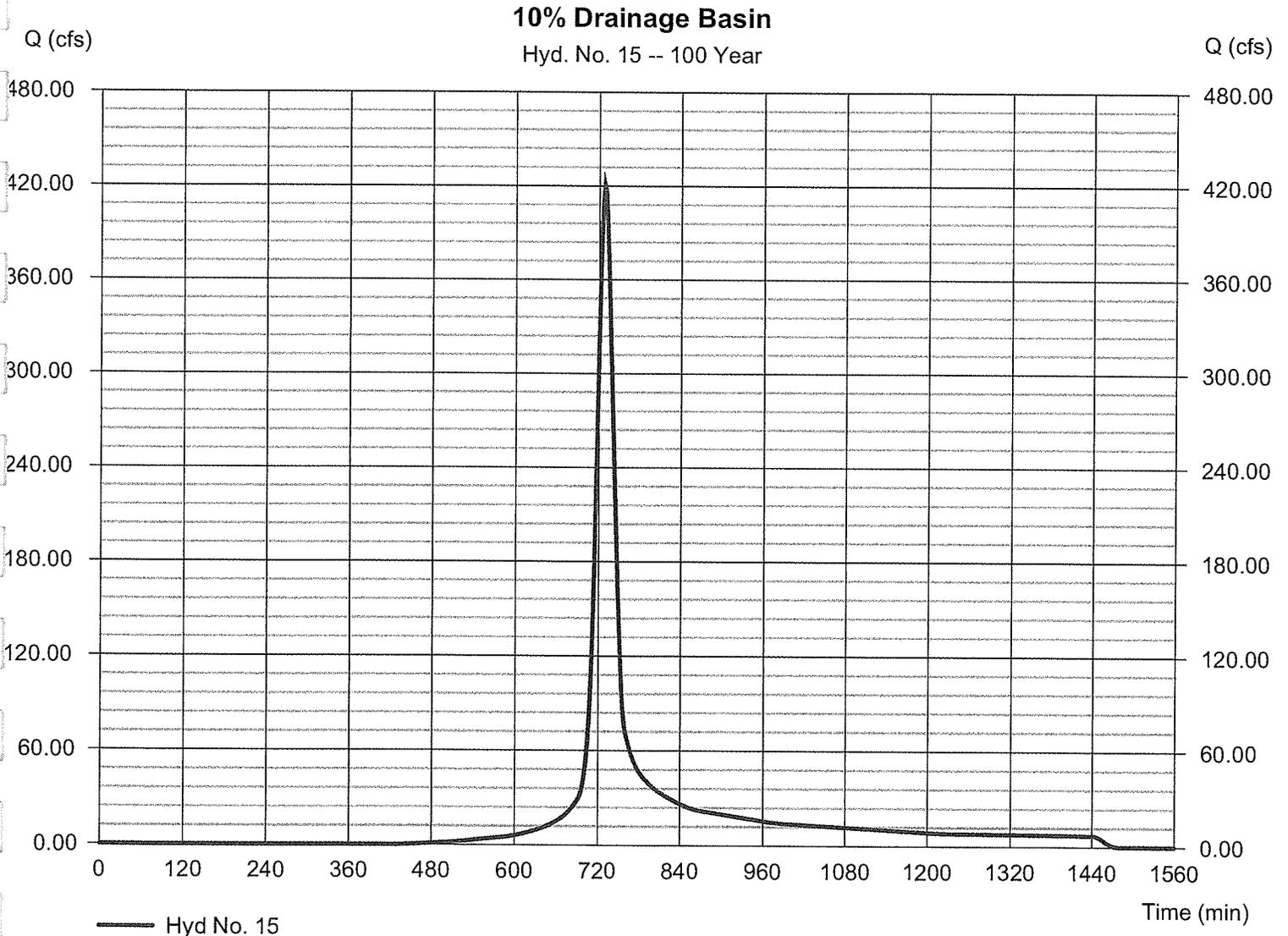
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 15

### 10% Drainage Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 420.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,542,844 cuft
Drainage area	= 93.370 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.16 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

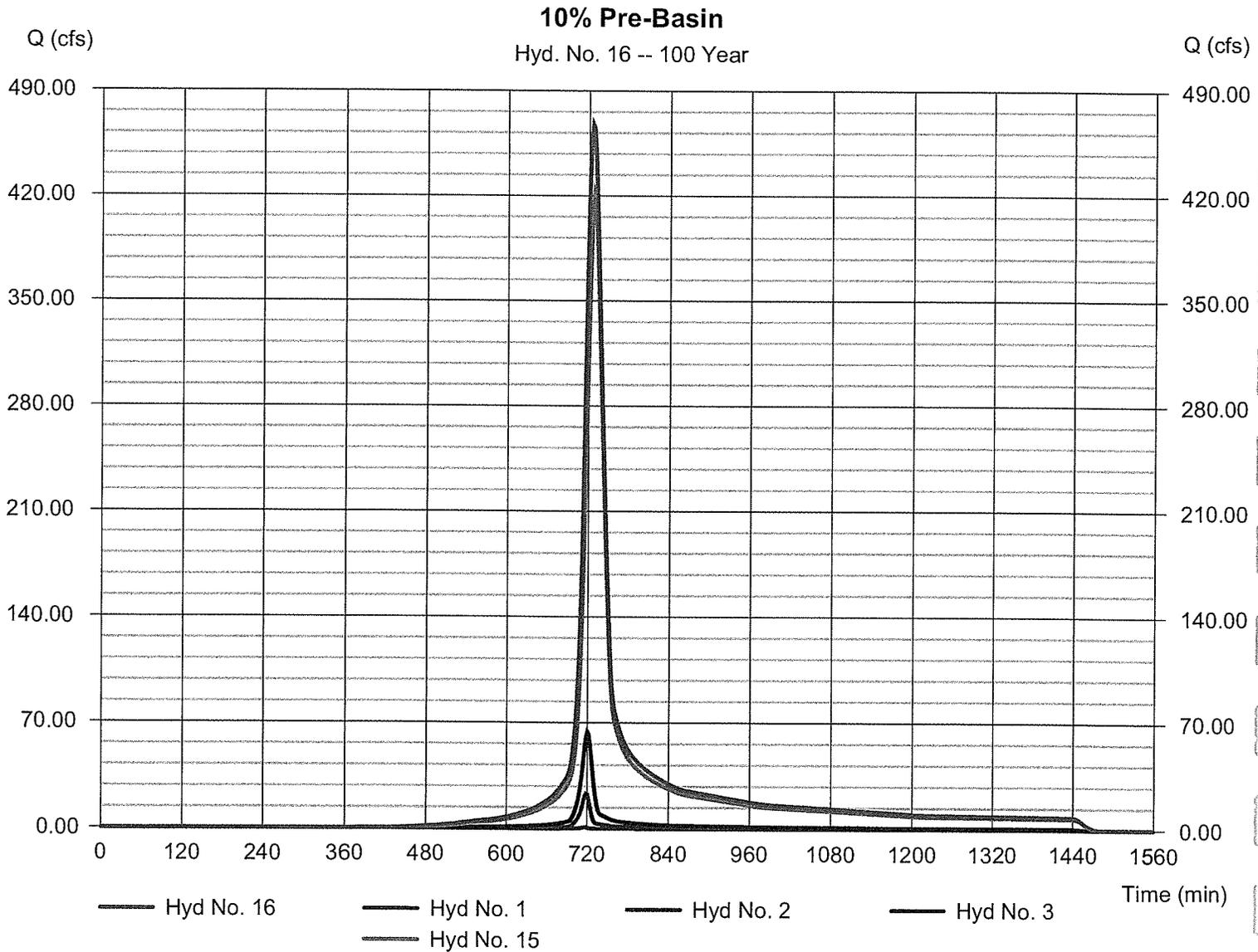
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, Sep 25, 2012

## Hyd. No. 16

10% Pre-Basin

Hydrograph type	= Combine	Peak discharge	= 467.49 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,767,023 cuft
Inflow hyds.	= 1, 2, 3, 15	Contrib. drain. area	= 104.720 ac



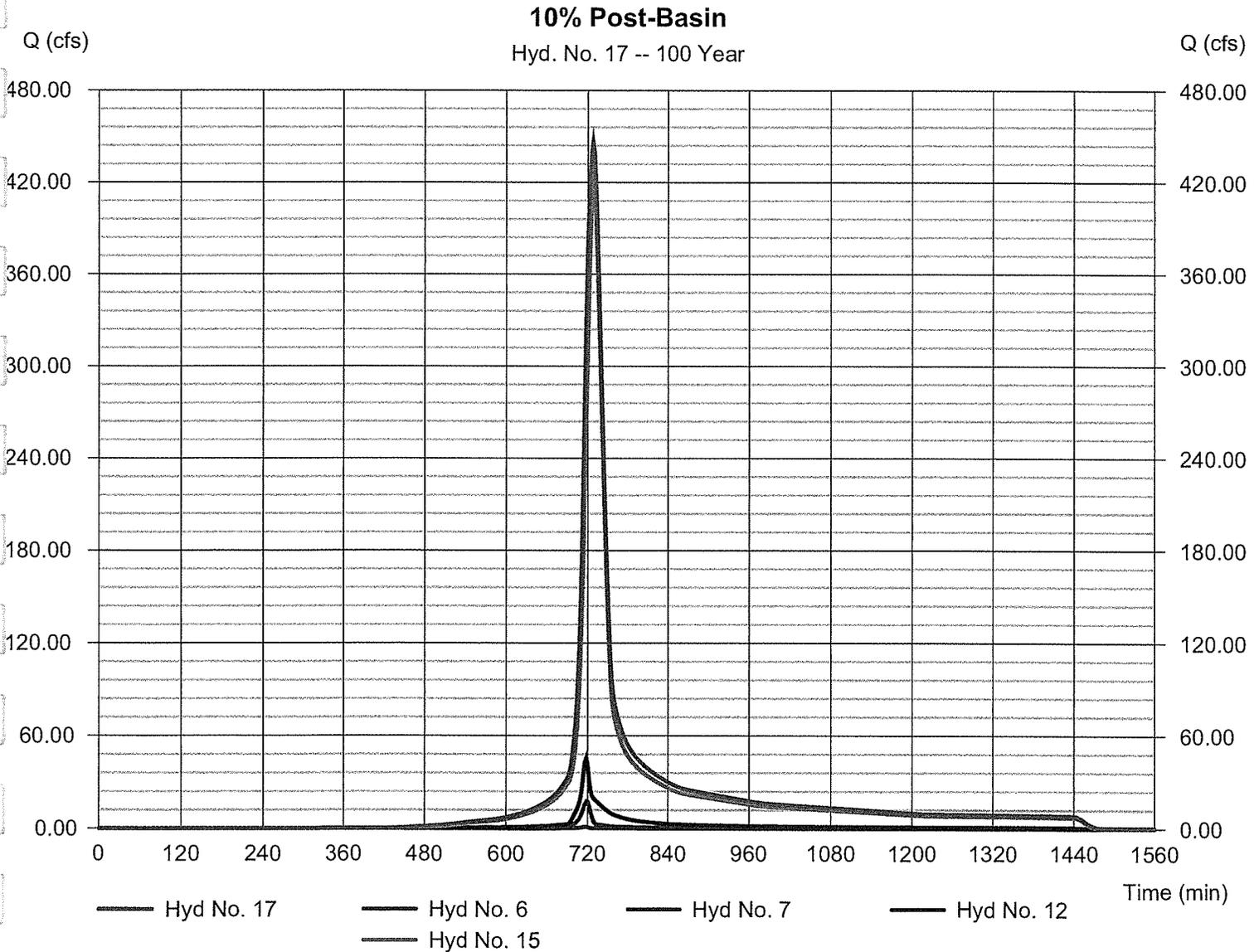
# Hydrograph Report

## Hyd. No. 17

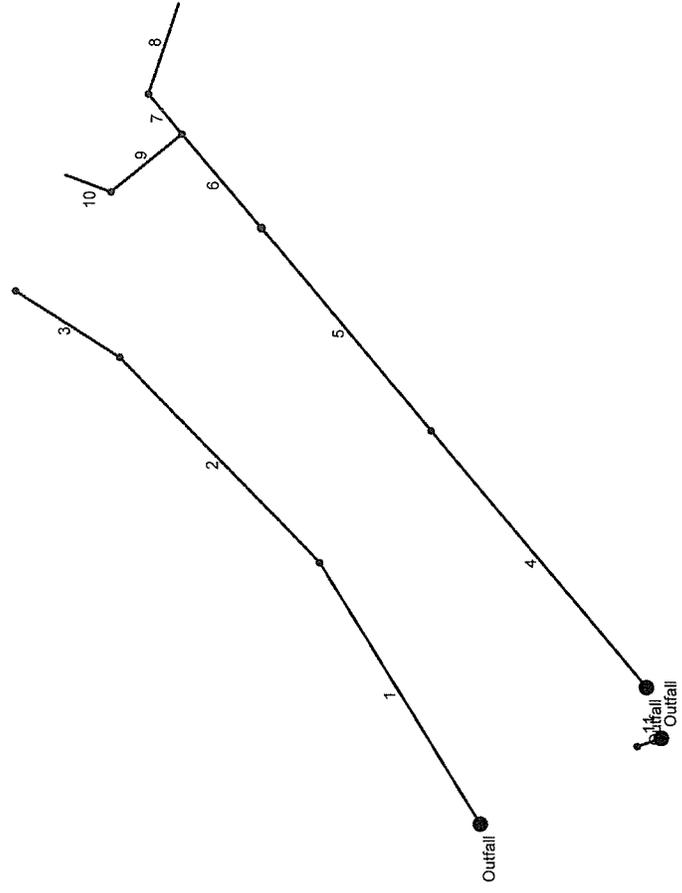
10% Post-Basin

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 2 min  
Inflow hyds. = 6, 7, 12, 15

Peak discharge = 446.03 cfs  
Time to peak = 728 min  
Hyd. volume = 1,773,078 cuft  
Contrib. drain. area = 95.850 ac



## APPENDIX K



# Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	A1-A2	4.78	18	Cir	248.053	873.50	879.70	2.499	878.16	880.53	n/a	880.53 j	End	DropGrate
2	A2-A3	3.12	18	Cir	230.919	886.66	889.55	1.252	887.19	890.22	n/a	890.22	1	DropGrate
3	A3-A4	0.44	18	Cir	99.145	889.55	891.30	1.765	890.22	891.55	n/a	891.55 j	2	Curb-Horiz
4	B1-B2	19.23	24	Cir	270.518	875.38	878.81	1.268	876.93	880.36	0.42	880.36	End	DropGrate
5	B2-B3	18.58	24	Cir	213.708	882.50	886.69	1.961	883.60	888.22	0.41	888.22	4	DropGrate
6	B3-B4	16.80	18	Cir	99.188	887.19	889.33	2.158	888.69*	891.23*	1.41	892.64	5	Manhole
7	B4-B5	10.54	18	Cir	41.998	889.33	891.08	4.167	892.64*	893.06*	0.48	893.54	6	Manhole
8	B5-EX. JB	10.63	18	Cir	77.002	895.33	896.90	2.039	896.26	898.14	0.72	898.14	7	Manhole
9	B5-B5.1	6.47	18	Cir	73.848	889.33	890.07	1.002	892.64*	892.92*	0.19	893.10	6	Manhole
10	B5.1-EX. SWCB	6.52	18	Cir	38.402	893.62	894.12	1.302	894.41	895.10	0.44	895.54	9	Curb-Horiz
11	C1-C2	8.79	24	Cir	20.764	875.05	875.26	1.011	876.36	876.32	0.43	876.74	End	DropCurb

Project File: FCACCC STORM\_REV-20120923.stm

Number of lines: 11

Run Date: 9/25/2012

NOTES: Return period = 25 Yrs. ; \*Surcharged (HGL above crown). ; j - Line contains hyd. jump.



# Storm Sewer Inpoutation

Station	Line	To Line	Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
				Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End		248.053	0.22	0.80	0.45	0.10	0.50	8.1	8.1	7.5	4.78	16.60	3.72	18	2.50	873.50	879.70	878.16	880.53	875.83	892.20	A1-A2
2	1		230.919	0.53	0.58	0.66	0.35	0.40	7.0	7.0	7.8	3.12	11.75	4.83	18	1.25	886.66	889.55	887.19	890.22	892.20	893.04	A2-A3
3	2		99.145	0.05	0.05	1.05	0.05	0.05	5.0	5.0	8.4	0.44	13.95	1.40	18	1.77	889.55	891.30	890.22	891.55	893.04	896.04	A3-A4
4	End		270.518	0.35	3.13	0.39	0.14	2.41	6.3	6.3	8.0	19.23	25.47	7.35	24	1.27	875.38	878.81	876.93	880.36	878.30	892.07	B1-B2
5	4		213.708	0.60	2.78	0.39	0.23	2.28	5.7	5.7	8.2	18.58	31.67	8.85	24	1.96	882.50	886.69	883.60	888.22	892.07	893.04	B2-B3
6	5		99.188	0.00	2.18	0.00	0.00	2.04	5.5	5.5	8.2	16.80	15.42	9.51	18	2.16	887.19	889.33	888.69	891.23	893.04	897.14	B3-B4
7	6		41.998	0.00	1.44	0.00	0.00	1.27	5.2	5.2	8.3	10.54	21.44	5.97	18	4.17	889.33	891.08	892.64	893.06	897.14	898.00	B4-B5
8	7		77.002	1.44	1.44	0.88	1.27	1.27	5.0	5.0	8.4	10.63	14.99	7.99	18	2.04	895.33	896.90	896.26	898.14	898.00	903.37	B5-EX. JB
9	6		73.848	0.00	0.74	0.00	0.00	0.78	5.2	5.2	8.3	6.47	10.51	3.66	18	1.00	889.33	890.07	892.64	892.92	897.14	896.03	B5-B5.1
10	9		38.402	0.74	0.74	1.05	0.78	0.78	5.0	5.0	8.4	6.52	11.98	6.13	18	1.30	893.62	894.12	894.41	895.10	896.03	898.83	B5.1-EX. SWCB
11	End		20.764	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	8.79	22.75	4.63	24	1.01	875.05	875.26	876.36	876.32	878.55	878.76	C1-C2

Project File: FCACCC STORM\_REV-20120923.stm

Number of lines: 11

Run Date: 9/25/2012

NOTES: Intensity = 72.79 / (Inlet time + 13.00) ^ 0.75; Return period = Yrs. 25; Pipe travel time suppressed.; c = cir e = ellip b = box

Line No.	Line ID	Inlet Time (min)	Runoff Coeff (C)	i Inlet (in/hr)	Drng Area (ac)	Incr Q (cfs)	Total Area (ac)	Tc (min)	Total CxA	i Sys (in/hr)	Flow Rate (cfs)	Line Size (in)	Line Type	Invert Up (ft)	Invert Dn (ft)	Line Length (ft)	Line Slope (%)	Vel Ave (ft/s)	Sf Ave (%)
1	A1-A2	8.1	0.45	7.45	0.22	1.79	0.80	8.1	0.50	7.45	4.78	18	Cir	879.70	873.50	248.053	2.50	3.72	0.395
2	A2-A3	7.0	0.66	7.75	0.53	2.71	0.58	7.0	0.40	7.75	3.12	18	Cir	889.55	886.66	230.919	1.25	4.83	0.880
3	A3-A4	5.0	1.05	8.39	0.05	0.44	0.05	5.0	0.05	8.39	0.44	18	Cir	891.30	889.55	99.145	1.77	1.40	0.234
4	B1-B2	6.3	0.39	7.96	0.35	1.09	3.13	6.3	2.41	7.96	19.23	24	Cir	878.81	875.38	270.518	1.27	7.35	0.804
5	B2-B3	5.7	0.39	8.15	0.60	1.91	2.78	5.7	2.28	8.15	18.58	24	Cir	886.69	882.50	213.708	1.96	8.85	1.370
6	B3-B4	5.5	0.00	0.00	0.00	0.00	2.18	5.5	2.04	8.22	16.80	18	Cir	889.33	887.19	99.188	2.16	9.51	2.561
7	B4-B5	5.2	0.00	0.00	0.00	0.00	1.44	5.2	1.27	8.32	10.54	18	Cir	891.08	889.33	41.998	4.17	5.97	1.008
8	B5-EX. JB	5.0	0.88	8.39	1.44	10.63	1.44	5.0	1.27	8.39	10.63	18	Cir	896.90	895.33	77.002	2.04	7.99	1.521
9	B5-B5.1	5.2	0.00	0.00	0.00	0.00	0.74	5.2	0.78	8.32	6.47	18	Cir	890.07	889.33	73.848	1.00	3.66	0.379
10	B5.1-EX. SWCB	5.0	1.05	8.39	0.74	6.52	0.74	5.0	0.78	8.39	6.52	18	Cir	894.12	893.62	38.402	1.30	6.13	0.985
11	C1-C2	5.0	0.00	0.00	0.00	8.79	0.00	5.0	0.00	0.00	8.79	24	Cir	875.26	875.05	20.764	1.01	4.63	0.382

Project File: FCACCC STORM\_REV-20120923.stm

Number of lines: 11

Date: 9/25/2012

NOTES: Intensity = 72.79 / (Inlet time + 13.00) ^ 0.75 -- Return period = 25 Yrs. ; \*\* Critical depth



# hydraulic Grade Line Computations

Line Size (in) (2)	Q (cfs) (3)	Downstream						Len (ft) (12)	Upstream						Check		JL coeff (K) (23)	Minor loss (ft) (24)			
		Invert elev (ft) (4)	HGL elev (ft) (5)	Depth (ft) (6)	Area (sqft) (7)	Vel (ft/s) (8)	Vel head (ft) (9)		EGL elev (ft) (10)	Sf (%) (11)	HGL elev (ft) (14)	Depth (ft) (15)	Area (sqft) (16)	Vel (ft/s) (17)	Vel head (ft) (18)	EGL elev (ft) (19)			Sf (%) (20)	Ave Sf (%) (21)	Energy loss (ft) (22)
1	4.78	873.50	878.16	1.50	1.77	2.71	0.11	878.27	0.208	248.05	879.70	0.83**	1.01	4.73	0.35	880.88	0.582	0.395	n/a	0.50	n/a
2	3.12	886.66	887.19	0.53*	0.56	5.61	0.49	887.68	1.248	230.91	889.55	0.67**	0.77	4.05	0.26	890.48	0.511	0.880	n/a	0.50	n/a
3	0.44	889.55	890.22	0.67	0.77	0.57	0.01	890.23	0.010	99.145	891.30	0.25**	0.20	2.23	0.08	891.63	0.457	0.234	n/a	1.00	n/a
4	19.23	875.38	876.93	1.55*	2.62	7.35	0.84	877.77	0.804	270.51	878.81	1.55**	2.62	7.35	0.84	881.20	0.804	0.804	n/a	0.50	0.42
5	18.58	882.50	883.60	1.10*	1.77	10.48	1.71	885.31	1.961	213.70	886.69	1.53**	2.57	7.22	0.81	889.03	0.779	1.370	n/a	0.50	0.41
6	16.80	887.19	888.69	1.50*	1.77	9.51	1.41	890.10	2.561	99.188	889.33	1.50	1.77	9.51	1.41	892.64	2.560	2.561	2.540	1.00	1.41
7	10.54	889.33	892.64	1.50	1.77	5.97	0.55	893.19	1.009	41.998	891.08	1.50	1.77	5.97	0.55	893.61	1.008	1.008	0.424	0.87	0.48
8	10.63	895.33	896.26	0.93*	1.15	9.21	1.32	897.58	2.039	77.002	896.90	1.24**	1.57	6.78	0.72	898.86	1.003	1.521	n/a	1.00	0.72
9	6.47	889.33	892.64	1.50	1.77	3.66	0.21	892.84	0.379	73.848	890.07	1.50	1.77	3.66	0.21	893.12	0.379	0.379	0.280	0.89	0.19
10	6.52	893.62	894.41	0.79*	0.94	6.92	0.75	895.15	1.302	38.402	894.12	0.98**	1.22	5.34	0.44	895.54	0.667	0.985	0.378	1.00	0.44
11	8.79	875.05	876.36	1.31	2.18	4.03	0.25	876.61	0.258	20.764	875.26	1.06**	1.68	5.23	0.43	876.74	0.505	0.382	0.079	1.00	0.43

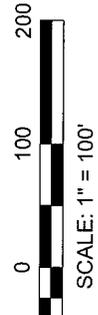
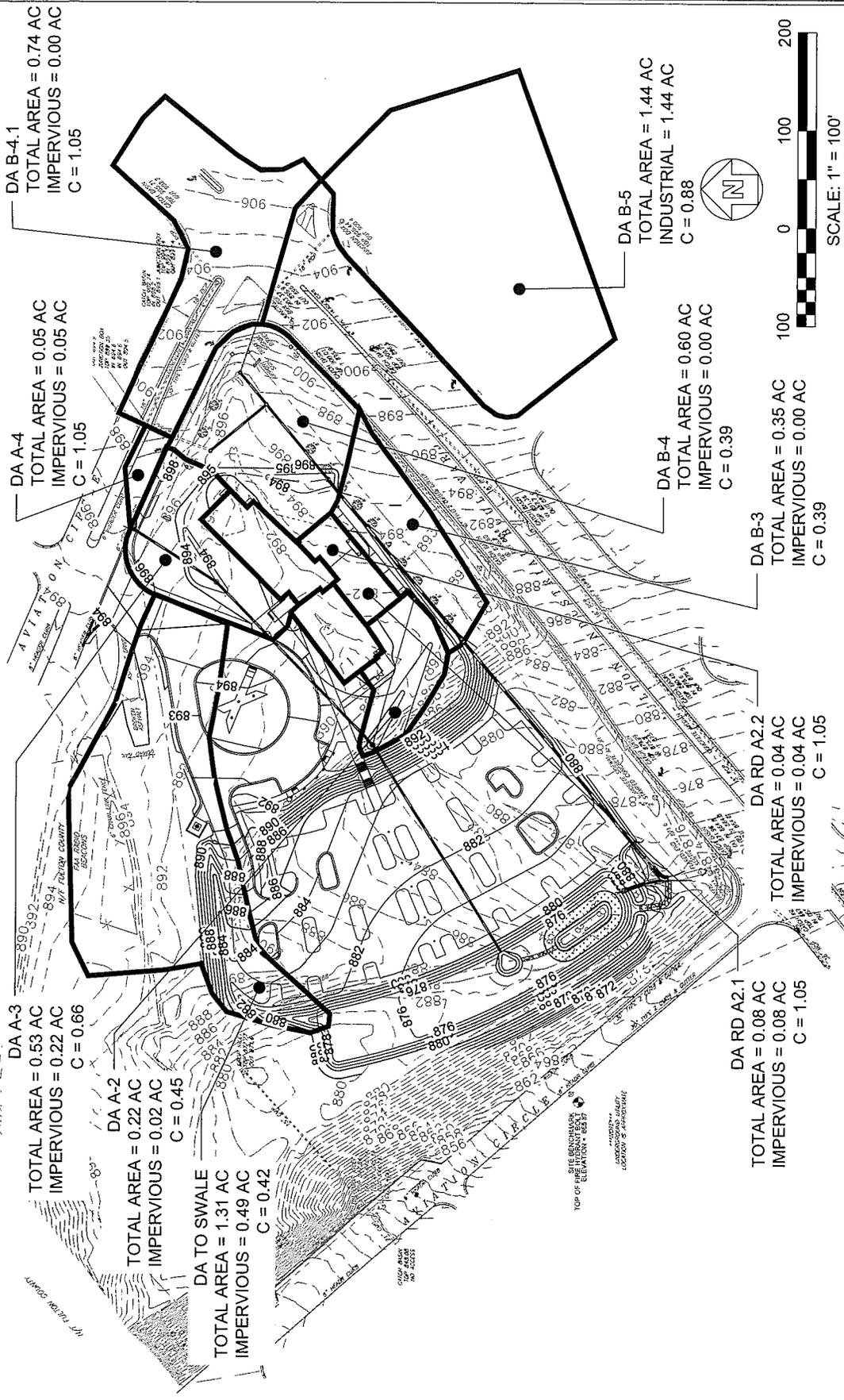
Project File: FCACCC STORM\_REV-20120923.stm Number of lines: 11 Run Date: 9/25/2012

Notes: \* Normal depth assumed.; \*\* Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box Storm Sewers v8.0i

## General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

- Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.
- Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.
- Col. 3 Total flow rate in the line.
- Col. 4 The elevation of the downstream invert.
- Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.
- Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.
- Col. 7 Cross-sectional area of the flow at the downstream end.
- Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).
- Col. 9 Velocity head (Velocity squared / 2g).
- Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).
- Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).
- Col. 12 The line length.
- Col. 13 The elevation of the upstream invert.
- Col. 14 Elevation of the hydraulic grade line at the upstream end.
- Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.
- Col. 16 Cross-sectional area of the flow at the upstream end.
- Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).
- Col. 18 Velocity head (Velocity squared / 2g).
- Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18).
- Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).
- Col. 21 The average of the downstream and upstream friction slopes.
- Col. 22 Energy loss. Average  $Sf/100 \times \text{Line Length}$  (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.
- Col. 23 The junction loss coefficient (K).
- Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).



<b>FULTON COUNTY AVIATION COMMUNITY CULTURAL CENTER</b>  <b>STORM DRAINAGE BASIN MAP</b>	PROJECT:	DATE: 09/24/2012 PROJECT NO: 1120185 DRAWING NO: APPENDIX K SHEET NO: Figure 11
	<b>POND</b> Architects • Engineers • Planners 3500 Parkway Lane Suite 600 Columbus, GA 30902 Phone: 706-336-7740 Fax: 706-336-7744 Web: www.pondco.com	

**APPENDIX L**

**Final Subsurface Exploration  
Fulton County Aviation Community Cultural Center  
Aviation Circle and Fulton Industrial Boulevard  
Fulton County, Georgia  
S&ME Job No. 1801-11-522, Report No. 417438**

Prepared For:

Mr. Freddie Robinson  
Fulton County Building Construction Division  
3977 Aviation Circle  
Atlanta, Georgia 30336

Prepared By:

S&ME, Inc.  
11420 Johns Creek Parkway  
Duluth, Georgia 30097

March 23, 2012



March 23, 2012

Fulton County Building Construction Division  
3977 Aviation Circle  
Atlanta, Georgia 30336

Attention: Mr. Freddie Robinson  
Projects Manager

**Reference: Final Subsurface Exploration**  
Proposed Fulton County Aviation Community Cultural Center  
Aviation Circle and Fulton Industrial Boulevard  
Fulton County, Georgia  
S&ME Job No. 1801-11-522A, Report No. 417438

Dear Mr. Robinson:

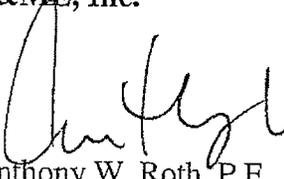
S&ME, Inc. has completed a final subsurface exploration for the subject project. This exploration was conducted in general accordance with our Proposal No. AG1-11-357, Revised November 1, 2011, as authorized by Mr. Michael Ross through execution of a Notice to Proceed dated November 9, 2011.

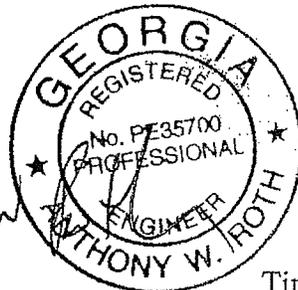
The purpose of the exploration was to obtain subsurface data so that we could evaluate subsurface conditions in the finalized building area relative to foundation and slab support. This report describes our understanding of the project and the subsurface conditions encountered and contains our conclusions and geotechnical recommendations.

S&ME, Inc. appreciates being selected to participate in this phase of the project. We are available to provide consulting services, quality assurance testing, and Special Inspections during the construction phase. Please contact us if you have any questions about this report or if we may be of further service.

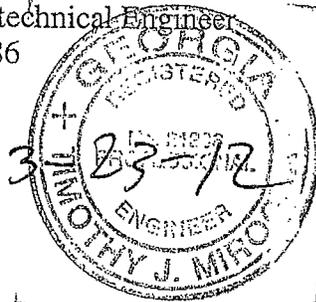
Respectfully submitted,

S&ME, Inc.

  
Anthony W. Roth, P.E.  
Project Geotechnical/Materials Engineer  
Ga. Reg. 35700



  
Timothy J. Mirocha, P.E.  
Principal Geotechnical Engineer  
Ga. Reg. 21386



AWR/TJM/kh

## TABLE OF CONTENTS

<b>1. BACKGROUND INFORMATION .....</b>	<b>1</b>
<b>2. PROJECT INFORMATION.....</b>	<b>1</b>
<b>3. FIELD EXPLORATION AND TESTING PROCEDURES .....</b>	<b>2</b>
<b>4. SITE CONDITIONS .....</b>	<b>3</b>
4.1 Area Geology.....	3
4.2 Site Description.....	3
4.3 Subsurface Conditions .....	4
4.3.1 Topsoil.....	4
4.3.2 Building Area Borings.....	4
4.3.3 Site Borings .....	5
4.3.4 Test Boring Records .....	5
<b>5. CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>5</b>
5.1 General discussion .....	5
5.2 Site Preparation.....	6
5.2.1 Stripping/Undercutting .....	6
5.2.2 Subgrade Evaluation.....	7
5.3 Excavation Difficulty.....	7
5.4 Earth Material Utilization/Fill Compaction.....	8
5.5 Soil Fill Density Testing .....	8
5.6 Earth Slope Recommendations .....	8
5.7 Building Foundation Recommendations.....	9
5.8 Seismic Site Class .....	10
5.9 Floor Slab Recommendations .....	10
5.10 Final Building Slab and Pavement Subgrade Preparation .....	10
<b>6. LIMITATIONS OF CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>10</b>

### Appendix

Boring Location Plan  
Test Boring Records  
Procedures  
Sample Rock Definition  
Important Information about your Geotechnical Engineering Report

**FINAL SUBSURFACE EXPLORATION**  
**Fulton County Aviation Community Cultural Center**  
**Aviation Circle and Fulton Industrial Boulevard**  
**Fulton County, Georgia**  
**S&ME Job No. 1801-11-522A**  
**Report No. 417438**

**1. BACKGROUND INFORMATION**

S&ME, Inc. completed a Preliminary Subsurface Exploration in December, 2011, as reported in our Report No. 416250, dated December 21, 2011. The purpose of that exploration was to collect general subsurface conditions relative to geotechnical aspects of site development such as excavation condition information and basic information relative to building support. At the time of our Preliminary Exploration, the site plan had not been finalized, and the building location was not known.

The building location and site plan have been finalized since our Preliminary Exploration, based on a March 8, 2012 email from you. This Final Subsurface Exploration was performed to collect subsurface data in the building area that was identified in the drawings appended to the March 8 email. The data collected during the Final Exploration was used to evaluate foundation and slab support characteristics for the building.

**2. PROJECT INFORMATION**

Our understanding of the project is based on: review of the provided Subsurface Exploration Scope of Services and the boundary survey drawing prepared by McClung Surveying Services, Inc., undated; finalized site plans (undated) emailed to us on March 8, 2012; the Topographic Survey drawing dated November 22, 2011 prepared by B&E Jackson & Associates; an email from Mr. Mike Maginnis of Pond & Company, dated March 21, 2012; and our field work. The 15,000± s.f. building will be a single story steel framed structure with non-load-bearing walls and a concrete slab-on-grade. Exterior walls will likely be cold-formed metal with masonry and metal panel veneer. For the sake of our analysis, we have assumed the following structural load values:

- Interior and exterior column footings will carry maximum individual column loads of 75 kips to 100 kips.
- Floor slab loads will be 150 psf or less.
- Total and differential settlement tolerances are not yet available.

According to the finalized site plan, the Fulton County Aviation Community Cultural Center will be sited adjacent to Fulton Industrial Boulevard in the eastern corner of the site. A preliminary finished floor elevation of 896 feet was reported in the March 21, 2012 email from Mr. Maginnis. Four to eight feet of new fill will be required to reach this finished floor elevation. A building expansion zone is indicated on the site plan. This expansion zone is on the southwest side of the building and will extend the building

parallel to Fulton Industrial Boulevard. The finished floor elevation for the Expansion Zone is not known at this time.

Driveway and parking areas are planned to be constructed northwest and west of the building area. A stormwater retaining pond is planned near the south corner of the site (near the southern intersection of Fulton Industrial Boulevard and Aviation Circle). A walkway is planned to extend from the parking lot to the western corner of the site to a planned "Boeing Bowl".

### **3. FIELD EXPLORATION AND TESTING PROCEDURES**

Field sampling and testing by S&ME are in general accordance with ASTM procedures and established geotechnical engineering practice. The Appendix contains brief descriptions of field procedures as well as the data obtained.

Our project engineer made a site reconnaissance to observe pertinent site and topographic features as well as surface indications of the site geology. We located the four borings of this final exploration by using compass headings and pacing distances from existing site features identified on the boundary plan provided to us. Because of the methods used, the boring locations shown on the Boring Location Plan in the Appendix are approximate. The locations of the borings from the preliminary exploration are also shown on the Boring Location Plan, and the Test Boring Records are appended to this report. The approximate ground surface elevations at the boring locations were estimated from the topographic survey and are shown on the Test Boring Records.

The exploratory borings were made by mechanically twisting hollow-stem augers into the soil. Soil samples were obtained at the ground surface and at 5-foot depth intervals thereafter with a standard 1.4-inch I.D., 2-inch O.D. split-barrel sampler. The sampler was first seated 6 inches and then driven an additional foot with blows of 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "standard penetration resistance" with units of blows per foot (bpf).

An automatic trip drop hammer was used for the standard penetration testing. The automatic hammer has a higher efficiency than a manual hammer and thus often yields lower standard penetration resistance values. We recognize this reduction and compensate for it in our evaluation. However, the consistency descriptions on the Test Boring Records are based on traditional relationships between soil consistency and recorded standard penetration test values.

Soil samples obtained during the exploration were returned to our laboratory and reviewed by the project engineer. The purposes of this review are to check the field descriptions, visually estimate the percentages of the soil's constituents (sand, clay, etc.), identify pertinent structural features such as foliation planes and slickensides, and observe evidence of soil origin. The stratification lines shown on the boring records represent the approximate boundaries between soil types, but the transitions may be more gradual.

## **4. SITE CONDITIONS**

### **4.1 Area Geology**

The project site is in Georgia's Piedmont physiographic province. Geologic mapping indicates the project is underlain by ductilely sheared button schists. The soil overburden of this area is residuum formed by in-place weathering of the parent rocks. A typical upland soil profile consists of thin topsoil underlain by a few feet of clayey soils that transition with increasing depth into less clayey, coarser grained silts and sands with varying mica content. Separating the completely weathered soil overburden from the unaltered parent rock is a transition zone of residuum with penetration resistances of more than 100 blows per foot (bpf) which is locally described as *partially weathered rock*. Partially weathered rock retains much of the appearance and fabric of the parent rock formations, and may consist of thinly inter-layered very hard or dense soil and rock.

The weathering processes that formed the overburden soils and partially weathered rock were extremely variable, depending on such factors as rock mineralogy, past groundwater conditions, and the tectonic history (joints, faults, and igneous intrusions) of the specific area. Differential weathering of the rock mass has resulted in erratically varying subsurface conditions, evidenced by abrupt changes in soil type and consistency in relatively short horizontal and vertical distances. Depths to rock can be irregular and isolated boulders, discontinuous rock layers, or rock pinnacles can be present within the overburden and transition zones.

Fill soils have been placed by man in conjunction with construction grading, farming, or waste disposal. Fill can be comprised of different soil types from various sources and can also contain debris from building demolition, organics, topsoil, trash, etc. The engineering properties of fill depend primarily on its composition, density, and moisture content. The fill materials encountered in our borings did not contain significant amounts of debris or organics. We do not expect that density tests or other documentation of these fill soils exist. If these records do exist, we should be furnished a copy for our review so that we may revise our recommendations.

### **4.2 Site Description**

The overall site is irregularly shaped and comprises approximately 7.6 acres. The site appears to have been previously graded into three "pads" separated by berms or slopes.

The northeastern section is generally flat. There are culvert pipes with headwalls near the eastern corner of the site. The two culverts drain to a ditch that, in turn, drains to a drop inlet structure near the berm that divides the northeastern "pad" from the southern "pad." Ground surface elevations in the northeastern "pad" vary from 895 feet in the north side to 888 feet near the storm drain. A stormwater pipe connects the drop inlet structure to a headwall on the lower side of the berm. The berm is about 11 feet in height.

The southern pad is gently sloped from northeast to southwest. A concrete paved ditch exists on the south side of this pad and extends from the headwall at the northeast berm to

the southern corner of the property. Elevations in the southern pad range from 890 feet to 876 feet.

The western pad slopes down from a high elevation of 899 feet near the northwestern-most property corner to a drop inlet structure with a top elevation of 871 feet in the center of the pad. The center section of the western pad is relatively flat. There is also a slope down from the western pad to the south/west alignment of Aviation Circle. The inclination of that slope varies from about 4H:1V to steeper than 2H:1V (based on scaling from the Topographic Survey drawing).

Most of the site is cleared and grassed, with some trees along the slopes and berms. Sections of the western pad are wooded with thicker large trees along the slopes. A utility locator working for Colonial Pipeline informed us that a decommissioned buried fuel pipeline traverses the property beneath the berm that is oriented due north from the south corner of the site, and terminates within the site. Several fairly wide utility easements are located along the Fulton Industrial Boulevard edge of the site.

### **4.3 Subsurface Conditions**

#### **4.3.1 Topsoil**

Although the site is grassed, only nominal thicknesses of topsoil were present at our boring locations and, therefore, are not reported on the Test Boring Records in the Appendix.

#### **4.3.2 Building Area Borings**

Borings F-1 through F-4, drilled during the Final Subsurface Exploration phase, and Boring 3, which was drilled during the Preliminary Subsurface Exploration, were drilled in the planned building area or the building Expansion Zone.

Borings F-1 through F-4 encountered two to eight feet of old fill. The sampled old fill soils were described as tan and red-brown sandy silts with some clay, and varying amounts of mica. Standard penetration resistance values of the fill samples ranged from 5 to 13 bpf, which correlate to firm to stiff consistencies.

Residual soil was encountered near the ground surface at Boring 3 and beneath the fill within Borings F-1 through F-4. The residual soils were typically loose to very dense silty sands of various colors or firm tan and gray sandy silt, each with varying amounts of mica. Stiff clayey silt residual soil was sampled in Boring F-4. The standard penetration resistance values exhibited by the residual soils ranged from 5 to 64 bft, but were typically in the range of 5 to 12 bpf.

Partially weathered rock was encountered at a depth of 17 feet in Boring F-2 and was described as very dense white sand. Each of the borings drilled within the building area were extended to their planned termination depths without encountering refusal to further auger penetration.

Ground water was present in Borings F-1 through F-4. Delayed groundwater depth measurements were 14 ½ to 17 feet. The reader should note that groundwater depths can vary in the future due to changes in weather and site drainage characteristics.

#### *4.3.3 Site Borings*

Borings 1, 2 and 4 through 10 were drilled during the Preliminary Subsurface Exploration in December, 2011. These borings were located in landscape, driveway, or other non-building areas of the site.

Borings 1, 2, and 4 through 9 encountered fill soils. The fill soils were generally described as brown sandy silts and silty sands. Standard penetration resistance values typically ranged from 7 to 11 bpf, correlating to firm and stiff consistencies. The sample collected near 10 feet deep at boring 9 exhibited soft consistency (2 bpf); this sample was notably wet. That boring was extended in order to determine the thickness of the soft fill layer. The fill soils were penetrated at 13 feet. Several of the fill samples collected had trace amounts of construction debris common to redeveloped urban areas in Atlanta.

Residual soils were encountered beneath the fill soils and at the ground surface at Boring 10. The residual soils sampled were generally tan-brown sandy silt, white and tan silty sand, and tan and orange-brown sandy silt. Blow counts within the residuum were 7 to 39 bpf

Partially weathered rock (PWR) was encountered in Boring 7 at a depth of 3 feet. The PWR was described as very dense white and tan silty sand. Auger refusal to further penetration was encountered at 6 feet at Boring 7. The material on which our auger encountered refusal is inferred to be mass rock, but was not cored.

Groundwater was not encountered in the site borings at the time of the Preliminary Subsurface Exploration. Groundwater levels will fluctuate with seasonal variations in rainfall, evaporation, construction activities, surface runoff, and other site-specific factors. It is possible for future groundwater levels at the site to be at different depths.

#### *4.3.4 Test Boring Records*

The preceding is a generalized description of subsurface conditions. Please refer to the Test Boring Records in the Appendix for more detailed information at individual boring locations.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 General discussion**

Old fill soils were encountered in many of the borings within the site. Based on the moderate to low consistencies of the samples collected, the fill may have been placed with some compaction effort, but no documentation of the fill placement is known to exist. If these documents exist, we should be allowed to review them. The possibility of poor conditions intermittent of our boring locations or within unexplored areas of the site

must still be considered. Thus, we recommend the "old" fill soils be undercut from within and to 10 feet beyond planned building lines, including the Expansion Zone. The nature and consistency of the fill soils indicate they can likely be re-used as structural fill. The fill soils encountered in the Site Borings listed in a previous report section can be left in place beneath flexible pavement and landscaping areas.

We recommend undercutting of "old" fill from the Expansion Zone take place during the initial site work phase because future undercutting could cause building distress due to the close proximity to the planned building and the "old" fill depths. We recommend the storm drain structure and its pipe be relocated out of the Expansion Zone.

After "old" fill is undercut and re-placed to structural fill standards, the building can be supported on shallow foundations designed for an allowable net soil bearing pressure of 3,000 psf. Building slabs can be designed to be soil supported. Detailed recommendations regarding foundations and slabs are contained in subsequent report sections.

Excavation difficulty will likely be encountered if significant excavation will be required for the retaining pond and deep utilities installed in the southern area of the site. Boring 7, which was drilled near the retaining pond, encountered Partially Weathered Rock at 3 feet and auger refusal (inferred to be mass rock) at 6 feet. Excavation of PWR will require concentrated effort with large earthmoving equipment; excavation into material on which our power auger encountered refusal will require the use of blasting or pneumatic tools. **The reader should be aware that rock elevations in the Atlanta Piedmont geology can vary greatly over short horizontal distances. Rock may be encountered at higher elevations between or away from our borings.**

## 5.2 Site Preparation

### 5.2.1 Stripping/Undercutting

Site preparation for construction will consist of removing the grass layer and stripping of any topsoil. The provided site plan indicates that wooded areas will not be disturbed. Abandoned underground utilities and any associated trench backfill soils should also be removed from the building and Expansion Zone areas. Stripping should extend at least 10 feet beyond the perimeter of construction areas.

An exception to the above stripping recommendation is that topsoil (not grass) can remain in place in planned pavement and slope areas that will receive at least 5 feet of compacted fill. However, the topsoil must be thoroughly root-raked, and concentrations of fibrous material should be thoroughly removed and wasted. Where less than 5 feet of fill is to be placed, the grass and any topsoil layer should be stripped as recommended above.

After the building area has been stripped, undercutting of the old fill can commence. We recommend that the old fill be completely undercut (to undisturbed residual soils) from the building footprint plus 10 feet each way. The thickness of the old fill ranged from 2 to 8 feet in our borings in the building area. If desired, the depths and area of old fill can be

better defined with observation pits during construction.

### **5.2.2 Subgrade Evaluation**

After designated areas of the site have been stripped and the old fill has been undercut from the recommended areas, at-grade areas and areas that are to receive fill should be evaluated by a member of our engineering staff. This evaluation should include observing proofrolling with a loaded tandem-axle dump truck. Proofrolling consists of applying repeated passes to the subgrade with this equipment. Any materials judged to deflect excessively under the wheel loads and which cannot be densified by continued rolling should be undercut to stable soils or stabilized in place as recommended by the engineer before placing fill.

### **5.3 Excavation Difficulty**

In most locations, we expect that the existing low to moderate consistency residual overburden soils and fill can be removed by conventional scrapers, front-end loaders, and backhoes. We anticipate excavation difficulty in the retaining pond area and nearby deep utility trenches as previously discussed. Blasting will be required if planned grades will be below rock in these areas. We again note that rock levels in the Piedmont geology can vary considerably over short horizontal distances and may be higher between and away from our borings. We highly advise that the project documents include a performance-type definition of "rock".

In mass-graded areas, self-loading scrapers or pusher-assisted scrapers can be used to excavate overburden soils. Our experience is that loosening with a tractor-mounted ripper may be necessary to facilitate scraper loading of soils with penetration resistances of more than 30 blows per foot. Loosening of partially weathered rock will likely require use of a large bulldozer, such as a Caterpillar Model D8K, equipped with a single-tooth ripper. This equipment also can often dislodge relatively large boulders that cannot be excavated by the scrapers. In limited excavation areas, a large front-end loader, such as a Caterpillar Model 977, may be used to excavate partially weathered rock.

Rubber-tired backhoes are customarily used to excavated trenches in overburden soils. However, because partially weathered rock and potentially massive rock was encountered at a relatively shallow depth at this site, we recommend trench excavation with a large, tracked backhoe, such as a Caterpillar Model 325. This device is generally able to excavate a significant thickness of partially weathered rock.

Mass grading with a Caterpillar Model D8K bulldozer/ripper or limited excavation with a Caterpillar Model 977 front-end loader will typically extend to the auger refusal depths shown on our borings. Trench excavation with a Caterpillar Model 325 backhoe can generally extend to within several feet of the refusal depth. Deeper excavation typically requires blasting or the use of pneumatic tools. Because of the geologic conditions in this area, it is possible to encounter large boulders, extensive rock lenses and rock pinnacles between our borings. These materials may be too large or competent to be excavated by the previously cited equipment and also may require excavation by blasting or pneumatic tools.

Rock excavation can be defined in many ways. In our opinion, rock excavation should be defined in a method specification based on the grading equipment commonly used in the Atlanta area. The Appendix contains a sample rock excavation specification for your review.

#### **5.4 Earth Material Utilization/Fill Compaction**

After undercutting of existing fill soils and subgrade evaluation/preparation as described above, below-grade areas may be brought to their design subgrade levels with structural fill. Structural fill for this project is defined as inorganic natural soil with maximum particle sizes of about 4 inches and Plasticity Indexes of 30 or less. Structural fill should be placed in relatively thin (4- to 8-inch) layers and compacted to at least 95 percent of the soil's maximum dry density as determined by the standard Proctor compaction test (ASTM D698). Structural fill should be used in building, pavement, hardscape and slope areas and for utility trench backfill. Since pavement and floor slab support characteristics of Piedmont soils are generally enhanced by an increased degree of compaction, we recommend that the upper 1 foot of fill beneath planned pavements be compacted to at least 98 percent of the standard Proctor maximum dry density. We suggest that soil fill that is to be placed in landscaped areas be compacted to at least 90 percent of the standard Proctor maximum dry density. Excavated overburden residual soils and existing fill soils that are free of organic or deleterious matter and large pieces of rock should be satisfactory for use as structural fill. Some wetting or drying may be required to achieve moisture content levels compatible with attaining the recommended degrees of compaction. Soil drying during late fall, winter, and early spring is often difficult and time-consuming unless relatively expensive chemical additives such as quicklime are used to aid the drying process.

Fill containing topsoil and some other organics and large pieces or rock (less than boulder size) can be used in pavement area fills deeper than 5 feet below subgrade elevations or in slopes, provided their moisture contents are compatible with attaining a high degree of compaction (at least 95% of the soil's standard Proctor maximum dry density). The fill should be placed and compacted in lifts in the same fashion as for structural fill as discussed above.

#### **5.5 Soil Fill Density Testing**

In-place density testing must be performed as a check that the previously recommended compaction criteria are being achieved. We recommend that these tests be performed on an essentially full-time basis during mass grading in the building area. Part-time testing should suffice for pavement area and slope fills and for utility trench backfills. A suggested testing frequency is one test for every 5,000 square feet of fill placed in the building area, one test per 10,000 square feet for pavement area fill, and one test for every 100 to 150 linear feet of backfill placed in utility trenches. Tests should be performed at vertical intervals of 2 feet or less as the fill is being placed. We recommend density testing by a technician working under the direction of our project engineer.

#### **5.6 Earth Slope Recommendations**

Generally, permanent cut and fill slopes should be no steeper than 2H:1V and temporary

slopes no steeper than  $1\frac{1}{2}H:1V$ . These slope recommendations are based on our previous experience with similar conditions since no detailed slope stability analysis was performed to justify steeper slopes. Groundwater, soft soils or slickensides may cause abnormal trench sidewall instability at some utility trench locations, resulting in the need for temporary slopes of flatter than  $1\frac{1}{2}H:1V$ . Safe work conditions relative to trench excavation are the responsibility of the contractor.

We recommend a building setback of at least 10 feet from the tops of all slopes of up to 20 feet in height and a setback of at least 20 feet from higher slopes. A setback for pavement area curbs of at least 3 feet from slope crests is advised. Drop inlets or storm sewers should not be installed at the crests of slopes because leakage can result in maintenance problems or possible slope failure. Crest areas should be sloped to prevent surface runoff from flowing over the slope faces.

It is difficult to construct fill at the maximum recommended inclination without leaving a loose, poorly compacted zone on the slope face. For this reason, we recommend that any fill slopes be slightly over-built, then cut back to firm, well compacted soils prior to applying a vegetative cover. If the slopes cannot be slightly over-built and cut back, we recommend that finished soil slopes be compacted to reduce, as much as practical, the thickness of this soft surficial veneer. The compaction may be done by making several coverages from top to bottom of the slopes using a bulldozer.

## **5.7 Building Foundation Recommendations**

The exploration findings indicate that the planned building can be supported by shallow footings bearing on residual soil or new compacted structural fill after the old fill is undercut and replaced with structural fill as discussed herein. We recommend use of a maximum allowable net soil bearing pressure of up to 3,000 psf to size column and strip footings supported by these materials. Even though computed footing dimensions may be less, column footings should be at least 24 inches wide and strip footings should be at least 18 inches wide. These dimensions facilitate densification and hand cleaning of footing subgrades disturbed by the excavation process. They also reduce the potential for localized punching shear failure. All exterior footing bottoms should be at least 12 inches below the lowest adjacent exterior grade for protection against frost penetration.

All footing excavations must be evaluated by a representative of our firm to observe field conditions in light of our design recommendations. We can provide geotechnical guidance to the owner's design team if any unforeseen soil conditions are encountered during construction.

Footing excavation often produces a thin veneer of disturbed soil at the footing subgrade. We recommend that this disturbed soil be hand cleaned prior to placing reinforcing steel. Furthermore, the footing excavation bottoms should be free of all fall-in prior to placing concrete.

The strength properties of soil exposed at the footing subgrade will change if exposed to wetting, drying, or freezing. Whenever possible, concrete should be placed during the day

the excavation is completed. If subgrades will be left open for more than one day, they should be covered with polyethylene sheeting. If inclement weather is expected, a lean (1,000 psi) concrete veneer about 3 inches thick should be placed on the exposed subgrade. Excavation of disturbed soil may be required if these protective measures are not implemented.

### **5.8 Seismic Site Class**

A substantial profile of low to moderate consistency soil exists in the building area. Based on this condition, we recommend a Seismic Site Class of "D" for the proposed building.

### **5.9 Floor Slab Recommendations**

The building floor slab can be supported on residual soils or new compacted structural fill after undercutting and site preparation as previously discussed. To reduce the possibility of slab cracking because of minor differential settlement, the floor slab should be structurally separate from the foundations or transitions from foundation-supported building elements to soil-supported floors should be reinforced. Otherwise the slab can be unreinforced concrete with load transfer provided by "aggregate interlock" along appropriately spaced saw-cut joints.

Groundwater was encountered at 14 ½ to 17 feet beneath existing grades within the borings of this exploration. Therefore, we believe that an under-slab drainage layer is optional. The subgrade should, however, be covered by an effective vapor barrier to reduce the possibility of slab dampness due to upward migration of soil moisture. We suggest that a barrier such as "*Moistop*" be considered in lieu of polyethylene which can be easily torn. If a moisture-sensitive floor covering is planned, the flooring manufacturer's waterproofing/slab preparation recommendations should be followed.

### **5.10 Final Building Slab and Pavement Subgrade Preparation**

Subgrades are often disturbed between completion of site grading and slab and pavement construction due to exposure to the elements, footing and utility line installation, and other construction activities. For this reason, we recommend that the subgrades be evaluated by our engineer just before constructing the floor slabs or placing the pavement base course. During this evaluation, accessible parts of subgrades should be proofrolled with a loaded tandem-axle dump truck. Unstable areas should be properly compacted in place or undercut to firm materials and replaced with structural fill or crushed stone compacted to meet the project specifications.

We note that the soils that are likely to be exposed at finished subgrade are of the types that are easily loosened or softened by excessive wetting or drying and by exposure to construction traffic. The need for widespread reworking and recompaction of the upper few inches to about a foot of the subgrade soils should be expected if there is a significant delay between the pregrading stage and when site construction activities resume.

## **6. LIMITATIONS OF CONCLUSIONS AND RECOMMENDATIONS**

This report is for the exclusive use of Fulton County Building Construction Division for specific application to the subject project. Our conclusions and recommendations have

been prepared using generally accepted standards of geotechnical engineering practice in the State of Georgia. No other warranty is expressed or implied. This company is not responsible for the conclusions, opinions, or recommendations of others based on these data.

Our conclusions and recommendations are based on the development information furnished to us, the data obtained from the previously described subsurface exploration, and our past experience. They do not reflect variations in the subsurface conditions which are likely to exist between our exploratory points or in unexplored areas of the site. These variations result from the inherent variability of the subsurface conditions in this geologic region and past land usage, such as fill placement. If such variations become apparent during construction, it will be necessary for us to re-evaluate our conclusions and recommendations based upon on-site observation of the conditions.

If the overall design or locations of the planned building, pavements, and utilities are changed, the recommendations contained in this report must not be considered valid unless the changes are reviewed by our firm and our recommendations modified or confirmed in writing. When the design is finalized, we should be given the opportunity to review the foundation plan, grading plan, and applicable portions of the project specifications. This service will allow us to determine whether these documents are consistent with the intent of our recommendations.

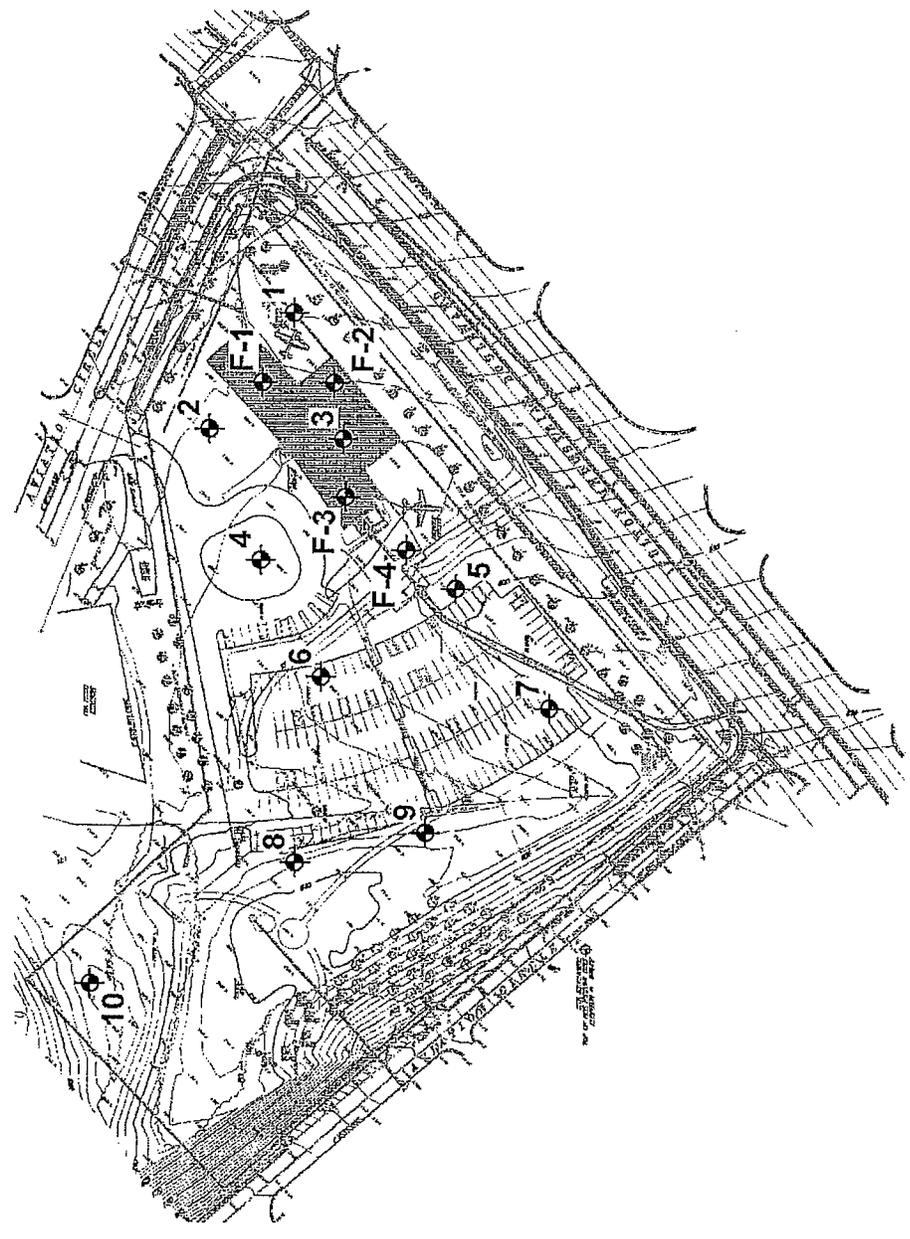
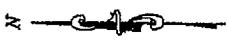
Subsequent report sections include comments about geotechnical aspects of the proposed construction. The recommendations contained herein are not intended to dictate construction methods or sequences. They are based on findings from this subsurface exploration and are furnished solely to help designers understand subsurface conditions related to foundation and earthwork plans and specifications.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of the geotechnical design. We recommend that the owner retain these services and that we be allowed to continue our involvement in the project through these phases of construction. Our firm is not responsible for interpretation of the data contained in this report by others, nor do we accept any responsibility for job site safety which is the sole responsibility of the contractor.

# **APPENDIX**

---

BORING LOCATION PLAN  
TEST BORING RECORDS  
PROCEDURES  
SAMPLE ROCK DEFINITION  
IMPORTANT INFORMATION ABOUT YOUR  
GEOTECHNICAL ENGINEERING REPORT



PROJECT NO: 1801-11-522A	REPORT NO: 417438	DATE: 3-23-12	VERTICAL SCALE: N/A	HORIZONTAL SCALE: 1"=200'	CAD FILE: A1.DWG	DRAWN BY: CLH	REVIEWED BY: T.ROTH	PLATE NO.: 1
-----------------------------	----------------------	------------------	------------------------	------------------------------	---------------------	------------------	------------------------	-----------------

**BORING LOCATION PLAN**  
 Aviation Community Cultural Center  
 Final Subsurface Exploration  
 Atlanta, Fulton County, Georgia



**LEGEND:**

⊕ - Approximate Soil Test Boring Location  
 SOURCE: Topographic Survey By BE  
 Jackson & Associates, Dated  
 11-22-11 Overlain By Site Plan  
 By Others









# TEST BORING RECORD

BORING NO: **F-4**

PROJECT: Aviation Community Cultural Center		JOB NO: 1801-11-522	
PROJECT LOCATION: Fulton Industrial Boulevard and Aviation Circle, Atlanta, Fulton County, Georgia			
ELEVATION: 891.0	BORING STARTED: 3/16/2012	BORING COMPLETED: 3/16/2012	
DRILLING METHOD: Hollow Stem Auger	RIG TYPE: CME 550	HAMMER: Automatic	
GROUNDWATER: $\nabla$ 18.0 ATD	$\nabla$ 17.0 delayed measurement	BORING DIAMETER (IN): 7	SHEET 1 OF 1

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	P.P. tsf	STANDARD PENETRATION RESISTANCE (N)										BLOWS /6"	
							10	20	30	40	50	60	70	80	90	100		
	891.0	0	FILL - Firm tan brown sandy <u>SILT</u> with some mica															2 - 2 - 4
	888.0	5	FILL - Stiff brown sandy <u>SILT</u> with some clay															4 - 6 - 7
	883.0	10	RESIDUUM - Stiff red brown clayey <u>SILT</u>															4 - 5 - 7
	878.0	15	Medium dense white and gray silty fine to medium <u>SAND</u>															5 - 6 - 6
	873.0	20	Dense tan silty fine to medium <u>SAND</u> (dry)															12 - 20 - 23
	871.0	20	Boring Terminated at 20 feet															
		25																
		30																

BORING RECORD S&ME 1801-11-522 AVIATION COMMUNITY CULTURAL CENTER - BORING LOGS.GPJ OOR\_CORP.GDT 3/23/12





















# TEST BORING RECORD

BORING NO: 10

PROJECT: Aviation Community Cultural Center		JOB NO: 1801-11-522PSE	REPORT NO: 416250
PROJECT LOCATION: Atlanta, Fulton County, Georgia			
ELEVATION:	BORING STARTED: 12/16/2011	BORING COMPLETED: 12/16/2011	
DRILLING METHOD: HSA	RIG TYPE: CME 550	HAMMER: Automatic	
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 2.25	SHEET 1 OF 1	

Remarks:

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N)										BLOWS /6"	
							0	10	20	30	40	50	60	70	80	90		100
		0	RESIDUUM - VERY STIFF RED-BROWN SANDY SILT WITH CLAY	▨														4 - 6 - 10
		5	DENSE WHITE AND TAN SILTY FINE TO MEDIUM SAND	▨														25 - 18
		5	HARD TAN AND ORANGE-BROWN SANDY SILT	▨														21
		10	BORING TERMINATED	▨														11 - 14
		10																18
		15																
		20																
		25																
		30																

BORING RECORD S&ME 1801-11-522PSE.GPJ QOR\_CORP.GDT 12/21/11

## INTRODUCTION

S&ME, Inc. performs most all tests in general accordance with the American Society for Testing and Materials (ASTM) or the United States Army Corps of Engineers procedures. These procedures are generally recognized as the basis for uniformity and consistency of test results in the geotechnical engineering profession. All work is initiated and supervised by qualified engineers. Our tests are performed by skilled technicians trained in either ASTM or Corps procedures. Our equipment is well maintained, and our laboratory equipment is calibrated at least yearly.

Subsequent portions of this Appendix present brief descriptions of our testing procedures. Where applicable, we have referenced these procedures to either ASTM or the Corps of Engineers. Reference should be made to the following publications for specific descriptions of apparatus, procedures, reporting, etc.

Annual Book of ASTM Standards, Section 4, Volume 4.08: Soil and Rock: Building Stones. American Society for Testing and Materials, Latest Edition

EM 1110-2-1803. Subsurface Investigations, Soils, Chapter 3. U.S. Army Corps of Engineers, 1972.

EM 1110-1-1801, Geological Investigations. U.S. Army Corps of Engineers, 1978.

EM 1110-2-1907, Soil Sampling. U.S. Army Corps of Engineers, 1972.

EM 1110-1-1802, Geophysical Exploration. U.S. Army Corps of Engineers, 1979.

EM 1110-2-1906, Laboratory Soils Testing. U.S. Army Corps of Engineers, 1970.

# PROCEDURES

## **SOIL TEST BORING PROCEDURES, ASTM D-1586**

The borings were advanced by a hollow stem auger which was mechanically driven by a 125-horsepower drill rig. At regular intervals, soil samples were obtained through the hollow central portion of the augers with a standard 1.4 inch I.D., 2.0 inch O.D. split tube sampler.

The sampler was initially seated six inches to penetrate any loose cuttings; then driven an additional foot with blows of a 140 pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated as the *standard penetration resistance*. Penetration resistance, when properly evaluated, is an index to the soil's strength and density.

The samples were classified in the field by the driller as they were obtained. Representative portions of each soil sample were then sealed in containers and transported to our laboratory. The samples were examined by a graduate geotechnical engineer or engineering geologist to visually check the field classifications. All boring data, including sampling intervals, penetration resistances, soil classifications, and groundwater level are presented on the attached Test Boring Records.

An automatic trip drop hammer was used for the standard penetration testing. The automatic hammer has a higher efficiency than a manual hammer, and thus yields lower standard penetration resistance values. We recognize this reduction and compensate for it in our evaluation. However, the consistency descriptions on our Test Boring Records are based on traditional relationships between soil consistency and recorded standard penetration test values.

**PROCEDURES**

**CORRELATION  
OF  
STANDARD  
PENETRATION RESISTANCE  
WITH  
RELATIVE COMPACTNESS AND CONSISTENCY**

**Sand and Gravel**

<u>Standard Penetration Resistance</u> <u>Blows/Foot</u>	<u>Relative Compactness</u>
0-4 .....	Very Loose
5-10 .....	Loose
11-30 .....	Medium Dense
31-50 .....	Dense
Over 50 .....	Very Dense

**Silt and Clay**

<u>Standard Penetration Resistance</u> <u>Blows/Foot</u>	<u>Consistency</u>
0-2 .....	Very Soft
3-4 .....	Soft
5-8 .....	Firm
9-15 .....	Stiff
16-30 .....	Very Stiff
31-50 .....	Hard
Over 50 .....	Very Hard

## Sample Rock Definition

We suggest that *Rock* be defined as the following:

### General Excavation:

Any material which cannot be excavated with a single-tooth ripper drawn by a crawler tractor having a draw bar pull rated at not less than 56,000 pounds (Caterpillar D8K or equivalent) or excavated by a front-end loader with a minimum bucket breakout force of 25,600 pounds (Caterpillar 977 or equivalent).

### Trench Excavation:

Any material which cannot be excavated with a backhoe having a bucket curling force rated at not less than 33,010 pounds (Caterpillar 325 or equivalent).



# Important Information About Your Geotechnical Engineering Report

*Variations in subsurface conditions can be a principal cause of construction delays, cost overruns and claims. The following information is provided to assist you in understanding and managing the risk of these variations.*

## **Geotechnical Findings Are Professional Opinions**

Geotechnical engineers cannot specify material properties as other design engineers do. Geotechnical material properties have a far broader range on a given site than any manufactured construction material, and some geotechnical material properties may change over time because of exposure to air and water, or human activity.

Site exploration identifies subsurface conditions at the time of exploration and only at the points where subsurface tests are performed or samples obtained. Geotechnical engineers review field and laboratory data and then apply their judgment to render professional opinions about site subsurface conditions. Their recommendations rely upon these professional opinions. Variations in the vertical and lateral extent of subsurface materials may be encountered during construction that significantly impact construction schedules, methods and material volumes. While higher levels of subsurface exploration can mitigate the risk of encountering unanticipated subsurface conditions, no level of subsurface exploration can eliminate this risk.

## **Scope of Geotechnical Services**

Professional geotechnical engineering judgment is required to develop a geotechnical exploration scope to obtain information necessary to support design and construction. A number of unique project factors are considered in developing the scope of geotechnical services, such as the exploration objective; the location, type, size and weight of the proposed structure; proposed site grades and improvements; the construction schedule and sequence; and the site geology.

Geotechnical engineers apply their experience with construction methods, subsurface conditions and exploration methods to develop the exploration scope. The scope of each exploration is unique based on available project and site information. Incomplete project information or constraints on the scope of exploration increases the risk of variations in subsurface conditions not being identified and addressed in the geotechnical report.

## **Services Are Performed for Specific Projects**

Because the scope of each geotechnical exploration is unique, each geotechnical report is unique. Subsurface conditions are explored and recommendations are made for a specific project. Subsurface information and recommendations may not be adequate for other uses. Changes in a proposed structure location, foundation loads, grades, schedule, etc. may require additional geotechnical exploration, analyses, and consultation. The geotechnical engineer should be consulted to determine if additional services are required in response to changes in proposed construction, location, loads, grades, schedule, etc.

## **Geo-Environmental Issues**

The equipment, techniques, and personnel used to perform a geo-environmental study differ significantly from those used for a geotechnical exploration. Indications of environmental contamination may be encountered incidental to performance of a geotechnical exploration but go unrecognized. Determination of the presence, type or extent of environmental contamination is beyond the scope of a geotechnical exploration.

## **Geotechnical Recommendations Are Not Final**

Recommendations are developed based on the geotechnical engineer's understanding of the proposed construction and professional opinion of site subsurface conditions. Observations and tests must be performed during construction to confirm subsurface conditions exposed by construction excavations are consistent with those assumed in development of recommendations. It is advisable to retain the geotechnical engineer that performed the exploration and developed the geotechnical recommendations to conduct tests and observations during construction. This may reduce the risk that variations in subsurface conditions will not be addressed as recommended in the geotechnical report.