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West Capital Airpark
Phase 2 Business Park

Stormwater Management Report

Prepared for: West Capital Developments

Engineering excellence. Planning progress. Liveable landscapes.

West Capital Airpark – Phase 2 Business Park

1500 Thomas Argue Road

Ottawa, Ontario

Stormwater Management Report

Prepared By:

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Suite 200, 240 Michael Cowpland Drive
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November 19, 2024
Revised: November 14, 2025

Novatech File: 102085-14
Ref: R-2024-125

NOVATECH
Engineers, Planners & Landscape Architects

November 14, 2025

City of Ottawa
Planning & Growth Management Department
10 Laurier Avenue West
4th Floor Infrastructure Approvals Division
Ottawa, ON K1P 1J1

Attention: **Kevin Hall, C.E.T. Project Manager**

Reference: **West Capital Airpark – Phase 2 Business Park**
Site Stormwater Management Report
Our File No.: 102085-14

Please find enclosed the Stormwater Management Report, dated November 14, 2025, prepared for the Phase 2 Business Park of the West Capital Airpark development to address stormwater management related conditions of Draft Plan Approval.

If you have any questions or require any additional information, please contact the undersigned.

Yours truly,

NOVATECH



Alex McAuley, P.Eng.
Senior Project Manager | Land Development Engineering

Cc: West Capital Developments

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1.0 INTRODUCTION

1.1 Background

Novatech has been retained to provide design services for the proposed West Capital Airpark (residential development and business park) located at Carp Airport. The Carp Airport property is described as Part of Lots 12, 13, 14 and 15 Concession 3, Part of Lots 13 and 14 Concession 4 and part of the Road Allowance between Concession 3 & 4 in the former Township of West Carleton (Huntley Ward)—now the City of Ottawa. Refer to **Figure 1** (Key Plan) for the site location.

1.2 Purpose

This Stormwater Management Report has been prepared to address conditions of draft plan approval for the proposed Phase 2 Business Park of the Carp Airport subdivision.

This report outlines the detailed stormwater management design for the proposed Phase 2 Business Park with respect to storm drainage, quantity control, quality control, and dry pond design. Site servicing (water distribution, sanitary servicing, and general storm drainage) is addressed in the separate Site Servicing Report.

The City of Ottawa Development Servicing Study Checklist has been included in **Appendix E.**

1.3 Proposed Development

The proposed Phase 2 Business Park consists of 21 blocks intended for industrial / commercial use. The development will include four new private streets connecting to existing Thomas Argue Road, Russ Bradley Road, and Carp Road. Refer to the **Concept Plan** (102085-CP3) for the proposed block and right of way configuration.

1.4 Reference Documents

The following reference documents are to be read in conjunction with this report.

<u>City of Ottawa Documents</u>

- Village of Carp Class Environmental Assessment for Water and Wastewater Infrastructure Upgrade/Expansion (1634-00693) dated May 2008, by Stantec.
- Carp River Watershed / Subwatershed Study, dated December 2004, by City of Ottawa.

<u>Existing Approved West Capital Airpark Documents</u>

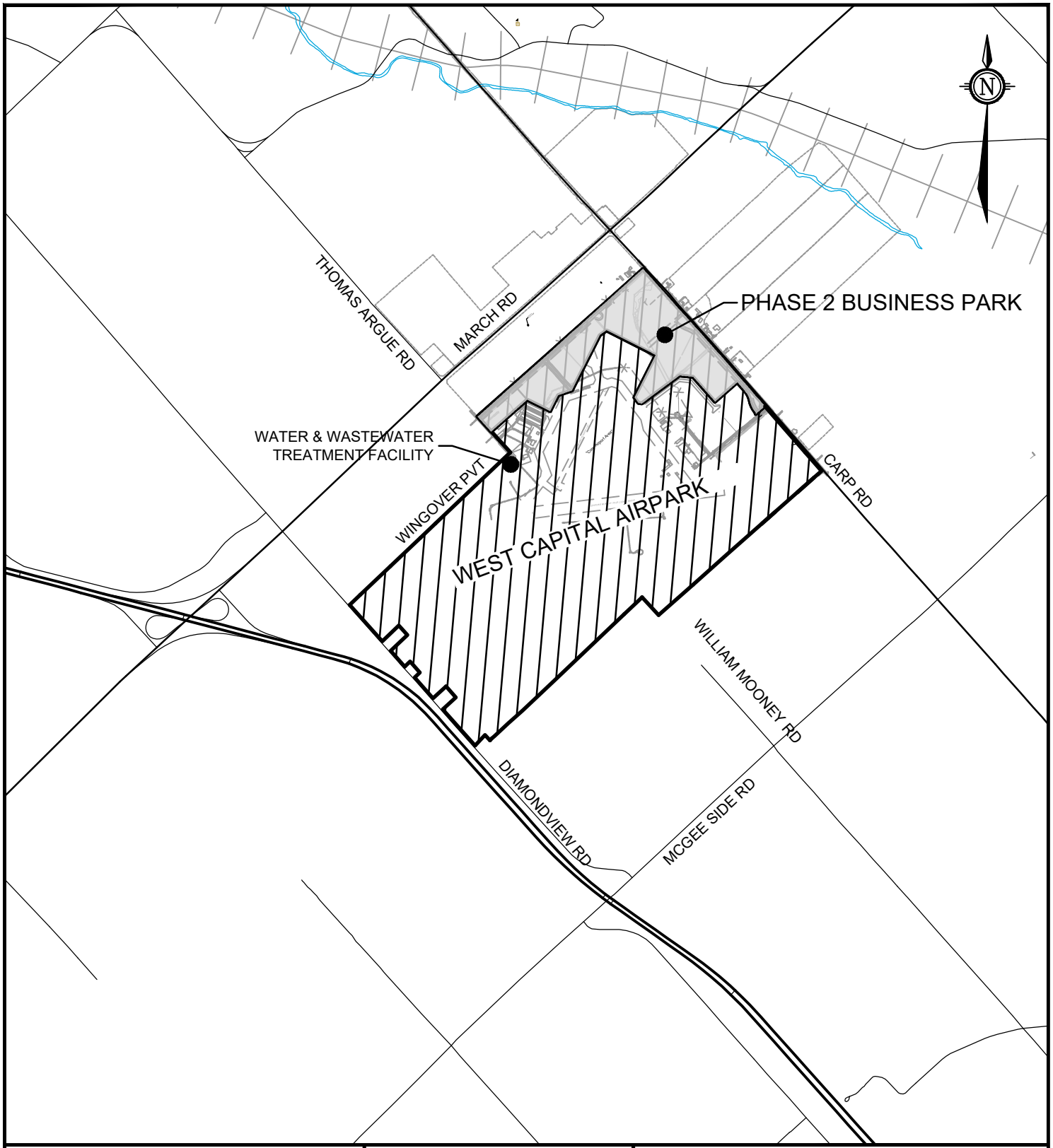
- West Capital Airpark (Carp Airport) Stormwater Site Management Brief – Business Park (Phase 1) (R-2014-018) dated February 2014, by Novatech

<u>Phase 2 Business Park Documents</u>

- Geotechnical Investigation and Slope Stability Assessment (100011.049), dated October 25, 2024 by Gemtec
- Phase 2 Business Park Servicing (R-2024-131) dated November 14, 2025, by Novatech

1.5 Ownership, Operation and Maintenance of Proposed Servicing

The right of ways within the West Capital Airpark development will be owned by the condominium corporation as common elements. However, in accordance with the Municipal Capital Facility Development Agreement (MCFDA) that is in place for the project, the City of Ottawa would be responsible for maintenance, repair, and replacement of the surface works that include roadways,



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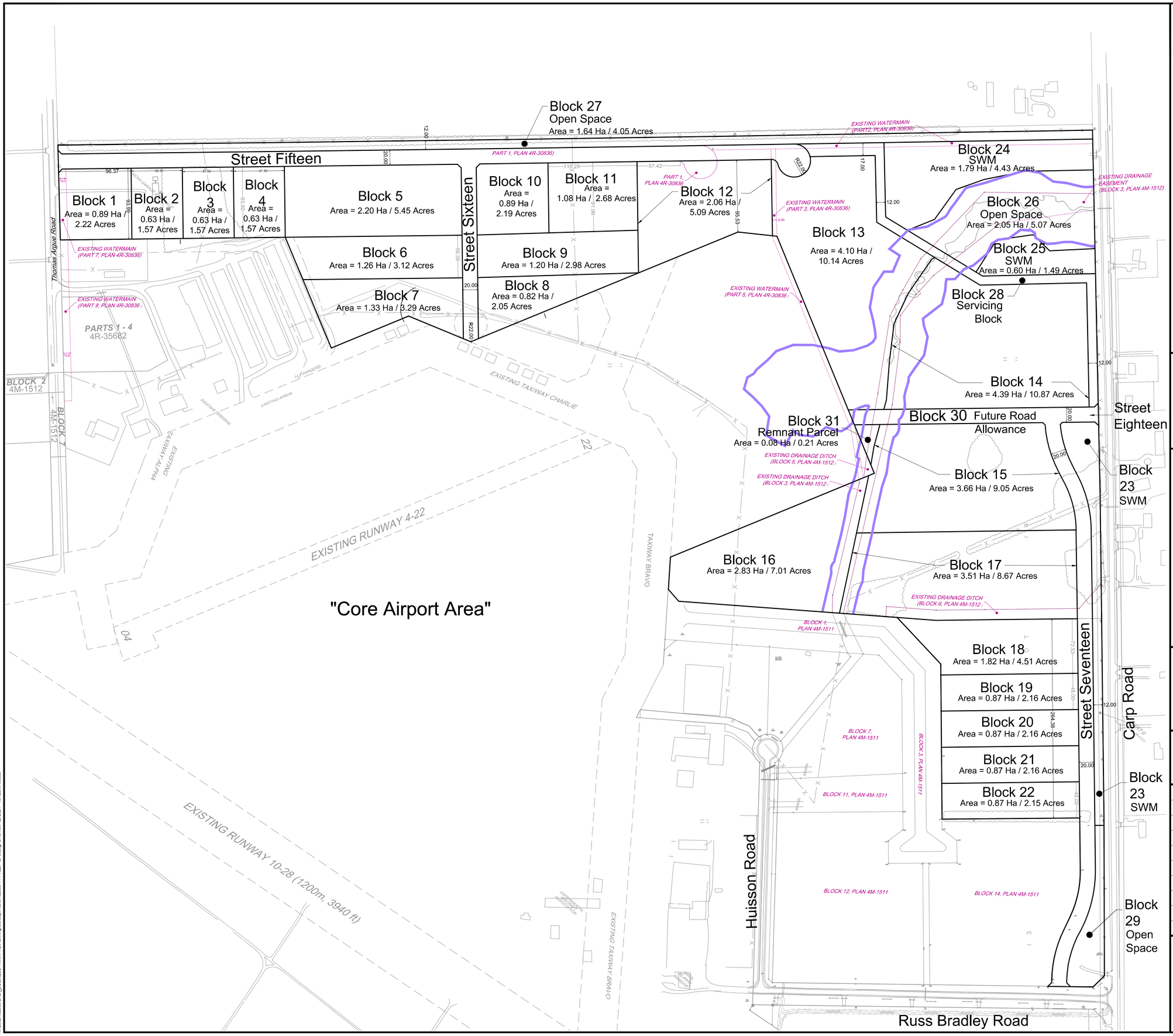
WEST CAPITAL AIRPARK - PHASE 2 BUSINESS PARK

KEY PLAN

DATE	JOB	FIGURE
OCT 2024	102085	1

SHT8X11.DWG - 216mmx279mm

M:\2002\102085\CAD_BUSINESS PARK PH2\Civil\Figures\102085-2BP-KP.dwg, 8x11 Keyplan, Oct 02, 2024 - 11:58am, mparker


Block 27
Open Space
Area = 1.64 Ha / 4.05 Acres
Street Fifteen
Block 1
Area = 0.89 Ha / 2.22 Acres
Block 2
Area = 0.63 Ha / 1.57 Acres
Block 3
Area = 0.63 Ha / 1.57 Acres
Block 4
Area = 0.63 Ha / 1.57 Acres
Block 5
Area = 2.20 Ha / 5.45 Acres
Block 6
Area = 1.26 Ha / 3.12 Acres
Block 7
Area = 1.33 Ha / 3.29 Acres
Street Sixteen
Block 10
Area = 0.89 Ha / 2.19 Acres
Block 11
Area = 1.08 Ha / 2.68 Acres
Block 12
Area = 2.06 Ha / 5.09 Acres
Block 9
Area = 1.20 Ha / 2.98 Acres
Block 8
Area = 0.82 Ha / 2.05 Acres
Block 13
Area = 4.10 Ha / 10.14 Acres
Block 24
SWM
Area = 1.79 Ha / 4.43 Acres
Block 26
Open Space
Area = 2.05 Ha / 5.07 Acres
Block 25
SWM
Area = 0.60 Ha / 1.49 Acres
Block 28
Servicing Block
Block 14
Area = 4.39 Ha / 10.87 Acres
Block 30 Future Road Allowance
Street Eighteen
Block 31
Remnant Parcel
Area = 0.08 Ha / 0.21 Acres
Block 15
Area = 3.66 Ha / 9.05 Acres
Block 23
SWM
Block 16
Area = 2.83 Ha / 7.01 Acres
Block 17
Area = 3.51 Ha / 8.67 Acres
Block 18
Area = 1.82 Ha / 4.51 Acres
Block 19
Area = 0.87 Ha / 2.16 Acres
Block 20
Area = 0.87 Ha / 2.16 Acres
Block 21
Area = 0.87 Ha / 2.16 Acres
Block 22
Area = 0.87 Ha / 2.15 Acres
Street Seventeen
Carp Road
Huisson Road
Russ Bradley Road
Block 29
Open Space
Thomas Argue Road
PARTS 1 - 4
4R-35682
BLOCK 2
4M-1512
BLOCK 1
4M-1512
"Core Airport Area"
EXISTING RUNWAY 4-22
EXISTING RUNWAY 10-28 (1200m, 3940 ft)
EXISTING TAXIWAY CHARLIE
TAXIWAY BRAVO
EXISTING TAXIWAY BRAVO
EXISTING TAXIWAY ALPHA
EXISTING APRON
WESTAIR TERMINAL
14 T-HANGERS
EXISTING WATERMAIN (PART 7, PLAN 4R-30836)
EXISTING WATERMAIN (PART 9, PLAN 4R-30836)
EXISTING WATERMAIN (PART 1, PLAN 4R-30836)
EXISTING WATERMAIN (PART2, PLAN 4R-30836)
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EXISTING DRAINAGE EASEMENT (BLOCK 3, PLAN 4M-1512)
EXISTING DRAINAGE DITCH (BLOCK 5, PLAN 4M-1512)
EXISTING DRAINAGE DITCH (BLOCK 3, PLAN 4M-1512)
EXISTING DRAINAGE DITCH (BLOCK 6, PLAN 4M-1512)
BLOCK 1, PLAN 4M-1511
BLOCK 7, PLAN 4M-1511
BLOCK 3, PLAN 4M-1511
BLOCK 11, PLAN 4M-1511
BLOCK 12, PLAN 4M-1511
BLOCK 14, PLAN 4M-1511
PART 1, PLAN 4R-30836
PART 6, PLAN 4R-30836
R22.00
R22.00
264.38
72.63
57.42
118.29
96.37
68.00
67.86
67.86
96.53
96.53
96.53

curbs, sidewalks, boulevards, streetlights, and the storm drainage system which includes the stormwater management facilities.

Details are included in Schedule I of the Subdivision Agreement for Phase 1 Residential (refer to **Appendix A**). The same approach is proposed for the Phase 2 Business Park.

2.0 EXISTING CONDITIONS

Under existing conditions, the Phase 2 Business Park lands (43.85 ha) are currently agricultural fields adjacent the airport hangers and taxiway. Some vegetation exists near the hangers to the northwest and adjacent the Northeast Tributary to the northeast. Refer to the Pre-Development Storm Drainage Area Plan for the Phase 2 Business Park (Drawing **102085-14-PRE**).

The existing drainage patterns for the Phase 2 Business Park are to two fishery habitat outlets:

Northeast Tributary:

- The northern portion of the of the Phase 2 Business Park that is west of the Northeast Tributary flows overland in a northeasterly direction and outlets to the Northeast Tributary.
- The northern portion of the of the Phase 2 Business Park that is east of the Northeast Tributary drains overland in a northeast direction and outlets to the Northeast Tributary.

Southeast Tributary

- Flows from the southern portion of the Phase 2 Business Park drain overland to the northeast and are captured by the Carp Road roadside ditch, which is part of the Southeast Tributary. Flows from this portion of the development ultimately cross-under Carp Road via an existing culvert to a downstream section of the Southeast Tributary.

3.0 STORMWATER MANAGEMENT CRITERIA

The following stormwater management criteria were established in consultation with the Mississippi Valley Conservation Authority (MVCA) and the City of Ottawa.

3.1 Quantity Control

- Control post-development flows to pre-development levels for the 1:2 year to 1:100-year events.

3.2 Quality Control

- Provide an ‘Enhanced’ level of water quality protection, corresponding to 80% long-term TSS removal.
- Implement lot level and conveyance Best Management Practices to promote infiltration and treatment of storm runoff.

3.3 Conveyance / Flood Protection

- Flows are to be confined within the right of ways and/or defined drainage easements for all storms up to and including the 1:100 year event.
- Private entrance culverts are to be sized for the 1:5 year storm event, with a minimum size of 500mm;
- Road/Taxiway crossing culverts are to be sized for the 1:10 year storm event, with a minimum size of 600mm.

3.4 Temperature Mitigation

- Provide measures to mitigate thermal impacts from runoff.
- The maximum temperature of storm runoff to Type 2 Fish Communities (Southeast Tributary) is to be controlled to 25°C.
- The maximum temperature of storm runoff to Type 3 Fish Communities (Northeast Tributary) is to be controlled to 30°C.

4.0 STORMWATER MANAGEMENT DESIGN

The Phase 2 Business Park will be serviced by roadside ditches and on-site swales that will outlet to a system of dry ponds before discharging offsite. The treatment train conveyance system and stormwater management controls will provide water quality treatment and control post-development peak flows.

There will be no change to the existing airport lands except any works to redirect or enhance external drainage.

Drainage patterns for the Phase 2 Business Park are provided on the Post-Development Storm Drainage Area Plan (Drawing **102085-14-POST**) and are summarized below:

- Area draining to Thomas Argue Road
    - The eastern portion of Block 1 will drain to the east section of Street 15 which is graded towards Thomas Argue Road.
- Area draining to Pond 'A'
    - Blocks 6 and 7 and the front portion of Blocks 8 and 9 are proposed to drain to Street 16.
    - The western portion of Block 1, Blocks 2 to 5, the rear portion of Blocks 8 and 9, and Blocks 10 to 13 are proposed to drain towards Street 15.
    - Both Street 15 and 16 are proposed to outlet to Pond 'A', which ultimately outlets to the Northeast Tributary.
- Area draining to Pond 'B'
    - Block 14 is proposed to drain to the ditch easement for Pond 'B'.
    - Block 15 is proposed to drain to Street 17.
    - Both the north portion of Street 17 and Street 18 are proposed to outlet to Pond 'B', which ultimately outlets to the Northeast Tributary.
- Area draining to Linear Pond 'C'
    - Block 16 is proposed to drain to Street 17.
    - This portion of Street 17 (immediately north of the Phase 1 ditch easement) is proposed to outlet to Linear Pond 'C', which ultimately outlets to the Southeast Tributary (Carp Road roadside ditch).
- Area draining to Linear Pond 'D'
    - Blocks 17 to 18 are proposed to drain to Street 17.
    - This portion of Street 17 (immediately south of the Phase 1 ditch easement) is proposed to outlet to Linear Pond 'D', which ultimately outlets to the Southeast Tributary (Carp Road roadside ditch).
- Area draining to Linear Pond 'E'
    - Blocks 19 to 21 are proposed to drain to the south portion of Street 17.

- The south section of Street 17 is proposed to outlet to Linear Pond 'E', which ultimately outlets to the Southeast Tributary (Carp Road roadside ditch).

4.1 Grading / Roadside Ditches

Development of the Phase 2 Business Park blocks is to be completed on a block-by-block basis as each individual building site is developed. Detailed grading completed during the development of each block must ensure that the proposed drainage patterns indicated on the Grading Plans (**102085-GR5, 102085-GR7**, **102085-GR8**, and **102085-GR9**) are maintained under post-development conditions. The proposed drainage patterns were delineated to maintain existing drainage patterns. Refer to the Post-Development Drainage Area Plan (Drawing **102085-14-POST**).

The proposed roadside ditches servicing the Phase 2 Business Park have been designed with a minimum slope of 0.4%.

4.2 Culverts / Drainage Crossings

- All driveway and hydrant culverts will be a minimum of 500mm and sized to convey at least the 5-year post-development peak flow.
- All cross-culverts will be a minimum of 600mm and sized to convey at least the 10-year post-development peak flow.
- All drainage crossings will be designed to ensure that the 100-year flow overtopping the culvert is confined within the rights-of-ways or drainage easements.
- The peak flow overtopping the road must have a flow depth less than 0.30m and velocity less than 0.60 m/s.

4.3 Quantity Control

Quantity control is to be provided by a series of dry ponds. Outflows to the Northeast Tributary will be controlled by two larger dry ponds (Ponds 'A' and 'B'). Runoff to the Southeast Tributary will be controlled by three linear dry ponds (Ponds 'C', 'D' and 'E'). The drainage divide of the Phase 2 Business Park to the ponds is provided in **Table 4.1** and shown on the Post-Development Storm Drainage Area Plan (Drawing **102085-14-POST**)..

Table 4.1: Drainage Areas to SWMFs

Pond	Description of Drainage Area	Drainage Area IDs	Drainage Area (ha)	Runoff Coefficient	Percent Impervious
Direct Runoff Area	West portion of Block 1	A-01	0.69	0.66	65.7%
Pond 'A'	East portion of Block 1, Blocks 2 to 13, Streets 15 and 16	A-02 to A-15, SWM-1	22.76	0.59	55.9%
Pond 'B'	Blocks 14 and 15, Street 18 North portion of Street 17	B-01, B-02, B-11 to B-13, SWM-2	9.30	0.63	61.9%
Linear Pond 'C'	Block 16, Portion of Street 17	B-09, B-10, B-14	4.11	0.58	54.8%
Linear Pond 'D'	Blocks 17 and 18, Portion of Street 17	B-03, B-07, B-08	2.80	0.61	58.5%
Linear Pond 'E'	Blocks 19 to 21, South portion of Street 17	B-04 to B-06, B-15	4.06	0.55	49.5%

The SWM facilities have been sized to provide quantity control storage based on the following runoff coefficients for the contributing development blocks. The development blocks are allowed to release uncontrolled flows to the roadside ditches, provided that the proposed development meets or is below the assigned runoff coefficients. Any proposed development with a higher runoff coefficient will require additional on-site SWM controls. The design requirements for the blocks are summarized in **Table 4.2**.

Table 4.2: Block Development Requirements

Block Number	Design Runoff Coefficient	Design Percent Impervious	Receiving Ponds	Receiving Tributary
Blocks 1 to 15	0.70	71.4%	Ponds 'A' and 'B'	Northeast Tributary
Blocks 16 to 21	0.65	64.3%	Linear Ponds 'C' to 'E'	Southeast Tributary

The assigned runoff coefficients of the development blocks were set based on a conservative impervious land use as shown in the examples on the Coefficient Calculation Plan (drawing **102085-2BP-CC)** in **Appendix B**.

4.4 Quality Control

'Enhanced' treatment (80% TSS removal) will be provided by a treatment train approach consisting of grassed filter strips, vegetated swales and roadside ditches, oil-grit separators, and the dry ponds.

The development blocks will have perimeter ditches and/or vegetated filter strips to promote the settling and filtration of suspended solids prior to outletting into the roadside ditches - refer to **Table 4.3**.

The roadside ditches will have shallow slopes and vegetated banks which will aid in the filtration and settling of sediment from the roadways. Runoff from the roadways will sheet flow towards the roadside ditches. The banks of the ditches will act as vegetated filter strips, providing filtration of storm runoff along each side of the roadway before it reaches the bottom of the ditch.

The roadside ditches have relatively large drainage areas, depths and bottom widths and have been designed primarily for the conveyance of flows and not for water quality treatment. The upstream portions of the roadside ditches have smaller contributing drainage areas and lower flows and will provide more treatment capacity, but their effectiveness at providing water quality treatment is reduced as the contributing drainage area increases going downstream.

The water quality design criteria, a comparison of recommended vs. provided design parameters, and the model results for the water quality event (25mm event) for the proposed roadside ditches are provided in **Table 4.3** and **Table 4.4**.

Table 4.3: Ditch Treatment – Streets 15 & 16

Criteria	Recommended	Street 15						Street 16	
		A01	A12 & A04	A13 & A05	A14 & A08 & A07	A03 & A09	A15 & A10	A06 & A02	A11 & A02
Design Parameters									
Drainage area	< 2.0 ha (MOE) < 4.0 ha (FHWA)	0.83 ha	2.93 ha	2.94 ha	3.87 ha	2.63 ha	4.10 ha	2.87 ha	1.18 ha
Channel Slope	< 0.5% (MOE) 0.02% - 6.0% (FHWA)	0.8%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.5%

Criteria	Recommended	Street 15						Street 16	
		A01	A12 & A04	A13 & A05	A14 & A08 & A07	A03 & A09	A15 & A10	A06 & A02	A11 & A02
Bottom Width	> 0.75 m (MOE) 0.6 m - 2.4 m (FHWA)	1.0m	1.0m	1.0m	1.0m	1.0m	1.0m	0.5m	0.5m
Side Slopes (H:V)	>2.5:1 (MOE) 2:1 - 4:1 (FHWA)	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1
Swale Length (1)	61 m (FHWA)	120m	476m	458m	418m	400m	186m	250m	250m
25mm Event (Water Quality)									
Flow	150 L/s (MOE)	1 - 69	1 - 125	70 - 217	107 - 550	158 - 605	301 - 952	5 - 249	2 - 112
Flow Depth	±0.1 m (FHWA)	0.03 - 0.19	0.01 - 0.31	0.15 - 0.47	0.18 - 0.42	0.25 - 0.44	0.39 - 0.51	0.08 - 0.47	0.03 - 0.27
Velocity	<0.5 m/s (MOE)	0.02 - 0.41	0.01 - 0.42	0.15 - 0.45	0.25 - 0.60	0.31 - 0.66	0.27 - 1.26	0.09 - 0.52	0.07 - 0.57

(1) Along Street 15, both sides of the road roadside ditches are counted for swale length

Table 4.4: Ditch Treatment – Streets 17 & 18 & Pond 'B' Easement

Criteria	Recommended	Pond 'B' Easement	Street 18	Street 17				
		B01 & B13	B012	B02 & B11	B09 & B14	B03 & B08	B04 & B06	B15
Design Parameters								
Drainage area	< 2.0 ha (MOE) < 4.0 ha (FHWA)	4.11ha	0.56ha	3.81ha	3.54ha	2.66ha	2.80ha	0.53ha
Channel Slope	< 0.5% (MOE) 0.02% - 6.0% (FHWA)	0.7%	1.2%	1.0%	0.5%	0.5%	0.5%	1.4%
Bottom Width	> 0.75 m (MOE) 0.6 m - 2.4 m (FHWA)	0.5m	0.5m	2.0m	1.0m	1.0m	1.0m	1.0m
Side Slopes (H:V)	>2.5:1 (MOE) 2:1 - 4:1 (FHWA)	3:1	3:1	3:1	3:1	3:1	3:1	3:1
Swale Length (1)	61 m (FHWA)	171m	122m	234m	237m	210m	305m	438m
25mm Event (Water Quality)								
Flow	150 L/s (MOE)	338 - 616	18 - 336	7 - 321	5 - 277	0 - 198	1 - 229	17 - 18
Flow Depth	±0.1 m (FHWA)	0.14 - 0.37	0.05 - 0.44	0.03 - 0.44	0.04 - 0.42	0.05 - 0.40	0.01 - 0.42	0.05 - 0.17
Velocity	<0.5 m/s (MOE)	0.37 - 0.97	0.18 - 0.83	0.03 - 0.71	0.04 - 0.51	0.06 - 0.32	0.03 - 0.42	0.22 - 0.32

(1) Along Streets 17 and 18, both sides of the road roadside ditches are counted for swale length

Dry Ponds 'A' and 'B' will outlet to the Northeast Tributary. The runoff to these dry ponds will have settling of suspended solids within the roadside ditches, pre-treatment by an OGS unit, and a minimum 24-hour detention time within the pond for the 25mm event.

The three linear dry ponds (Ponds 'C', 'D' and 'E') will outlet to the Southeast Tributary. The runoff to these linear ponds will have settling of suspended solids within the roadside ditches and a minimum 24-hour detention time within the pond for the 25mm event. Since the linear ponds are proposed within the strip of land between the Phase 2 Business Park roadside ditch and the Carp Road roadside dich, there is limited space for an OGS unit for pre-treatment.

4.5 Temperature Mitigation

The Northeast Tributary is a Type 3 Fish Community which requires runoff to be controlled to 30°C based on the anticipated site design, temperature mitigation is not required. The Southeast Tributary is a Type 2 Fish Community which requires runoff to be controlled to 25°C and does require temperature mitigation.

The application of linear dry ponds will lessen any temperature issues. Per the MOE *SWM Planning & Design Manual* (2003), wet ponds are more prone to the permanent pool heating up during the hot summer days. Dry ponds have no permanent pool, thus reducing thermal impacts. Table 4.3 of the MOE *SWM Planning & Design Manual*, dry ponds will increase the temperature by 2.2°C less than wet ponds. Section 4.4 of the MOE *SWM Planning & Design Manual* discusses design and planting strategies that aid in minimizing temperature impacts, such as long narrow ponds lined with landscaping to provide additional shade. This will be implemented in the dry ponds, especially the linear ponds.

The use of a rural cross-section with roadside ditches will promote infiltration of the first flush. The first flush (first 5mm of runoff) will absorb the majority of heat from paved surfaces. Runoff exceeding the first flush will be cooler and will not require temperature mitigation.

Equation H.2 of the MOE *SWM Planning & Design Manual* was used to determine potential temperature impacts to the receiving tributaries. Conservatively, runoff generated from the development was assumed to be 35°C. Based on temperature sampling for the Carp River for the residential West Pond, water temperature of the receiving watercourse is estimated to have an average summer temperature of 20°C. Results are provided in **Table 4.5**. Detailed calculations are provided in **Appendix D**.

Table 4.5: Temperature Impact from Dry Ponds

Parameter	Northeast Tributary (Pond 'A' & 'B')	Southeast Tributary (Ponds 'C', 'D' & 'E')
Average Stream Flow (m^3/s)	0.514	0.158
Average Summer Temp in Stream (°C)	20	20
Urban Runoff Temperature (°C)	35	35
15mm SWMF Outflow (m^3/s)	0.040	0.026
Average Temperature Increase for Dry Pond (°C)	2.9	2.9
Increase in Temperature (°C)	1.3	0.9
New Stream Temperature (°C)	21.3	20.9

4.6 Best Management Practices

Block-level Best Management Practices (BMPs) are used to promote infiltration and reduce runoff volumes and peak flows. While not strictly required, BMPs are still recommended to be implemented at each development block within the Phase 2 Business Park as they can provide additional benefits for both water quality and quantity control. Potential block-level BMPs that can be applied to the Phase 2 Business Park include:

- Rooftop storage – restricting the discharge rate from roof drains to provide rooftop detention of stormwater.
- Direct roof leaders to grassed areas or infiltration trenches.
- Reduced lot grading to promote infiltration.
- Flat-bottom vegetated perimeter swales for water quality treatment and conveyance.
- Vegetated filter strips for overland sheet flows from parking lots or other hard-surfaces.

The above BMP measures were also proposed as part of the Phase 1 Business Park report (Novatech, February 2014) and are also applicable to the Phase 2 Business Park design.

4.7 Watercourse Modifications

Other than connections from the outlets of the proposed dry ponds, no modifications are proposed as part of the Phase 2 design.

5.0 HYDROLOGIC & HYDRAULIC MODELLING (PCSWMM)

The performance of the proposed storm drainage and stormwater management system was evaluated using the PCSWMM hydrologic / hydraulic model. The results of the analysis were used to determine the following:

- Total runoff and peak flows from the individual blocks / overall site (to adhere to the criteria).
- Sizing of the culvert / drainage crossings.
- Sizing of the conveyance channels and calculating the hydraulic grade line in the channels.
- Sizing of the dry ponds and outlet configurations.

The PCSWMM model schematics and model parameters are provided in **Appendix B**.

PCSWMM model results and output files are provided in **Appendix B**.

5.1 Model Development

The drainage areas were revised from the Phase 1 Business Park design (Novatech, 2014) to account for maintaining flows to the Southeast Tributary and the subsequent fish habitat. The drainage divide was set based on the Southeast Tributary crossing under Carp Road.

Pre-Development Modelling

A pre-development model of the Phase 2 Business Park was completed using PCSWMM and is based on the existing conditions of the site. The purpose of this model was to confirm the pre-development runoff from Phase 2 to the Northeast and Southeast Tributaries.

Post-Development Modelling

A post-development model of the proposed subdivision was created using PCSWMM and includes the roadside ditches, road crossing and driveway culverts and dry ponds.

5.1.1 Design Storms

The hydrologic analysis was completed using the following synthetic design storms.

Chicago Storms	*SCS Storms*
2-year, 4-hour Chicago Storm	2-year, 12-hour SCS Storm
5-year, 4-hour Chicago Storm	5-year, 12-hour SCS Storm
100-year, 4-hour Chicago Storm	100-year, 12-hour SCS Storm

These design storms were also used in the hydrologic analysis for the West Capital Airpark. The IDF parameters used to generate the design storms were taken from the *City of Ottawa Sewer Design Guidelines (2012)*. The 4-hour Chicago storm distribution was found to generate the highest peak flows and the 12-hour SCS was found to produce the largest dry pond storage requirements.

The storm drainage system was also stress tested using a 100-year (+20%) design storm, which has a 20% higher intensity and total volume compared to the 100-year storm event.

5.1.2 Model Parameters

Storm Drainage Areas

The pre-development subcatchments and hydrologic parameters were developed based on the Pre-Development Storm Drainage Area Plan (Drawing **102085-14-PRE**). The subcatchment boundaries have been developed based on the existing topography obtained from site surveys. Pre-development parameters were determined using aerial imagery and land use of the subcatchments. PCSWMM Alternative Runoff Method (ARM) subcatchments were used and applied the NASH unit hydrograph, curve numbers and initial abstraction (IA), which more accurately models runoff for undeveloped areas. **Table 5.1** provides a summary of the pre-development model parameters, with further detail provided in **Appendix B**.

Table 5.1: Pre-Development Subcatchment Parameters (ARM)

Area ID	Catchment Area (ha)	Flow Length (m)	Time of Concentration (min)	Weighted Curve Number	Weighted IA (mm)	Average Slope (%)
NE-1	5.92	720	26	63	14.7	1.2%
NE-2	27.38	1350	67	69	11.2	0.6%
NE-3	9.03	430	15	75	8.6	1.3%
NE-4	2.15	298	15	74	9.0	1.5%
NE-5	20.57	700	39	74	9.0	0.5%
NE-6	31.08	972	35	63	15.1	1.1%
SE-1	3.17	352	18	73	9.6	0.7%
SE-2	9.13	780	37	73	9.5	0.7%
SE-3	10.64	469	23	75	8.5	0.7%

The Phase 2 Business Park lands (and blocks) have been divided into post-development subcatchments based on the drainage areas tributary to each dry pond or outlet. Existing off-site

(external) areas have also been included in the model. Refer to the Post-Development Storm Drainage Area Plan (Drawing **102085-14-POST**).

The post-development modelling parameters for each subcatchment were based on the proposed land use and grading for each of the blocks and roadways. The Phase 2 Business Park subcatchments were modelled using the standard SWMM5 runoff module using Horton's Equation. The existing and offsite areas were modelled using ARM subcatchments. The subcatchment parameters are summarized in **Table 5.2** and **Table 5.3**.

Table 5.2: Post-Development Subcatchment Parameters (Business Park)

Area ID	Catchment Area (ha)	Runoff Coefficient (C)	Percent Impervious (%)	No Depression (%)	Flow Width (m)	Average Slope (%)
A-01a	0.690	0.66	65.7%	0%	65	2.0%
A-01b	0.140	0.38	25.7%	0%	65	2.0%
A-02a	0.270	0.48	40.0%	0%	244	2.0%
A-02b	0.270	0.48	40.0%	0%	242	2.0%
A-03a	0.230	0.38	25.7%	0%	177	2.0%
A-03b	0.370	0.38	25.7%	0%	174	2.0%
A-04	2.150	0.70	71.4%	0%	230	2.0%
A-05	2.170	0.70	71.4%	0%	232	2.0%
A-06	2.600	0.70	71.4%	0%	108	2.0%
A-07	1.130	0.70	71.4%	0%	87	2.0%
A-08	1.940	0.70	71.4%	0%	212	2.0%
A-09	2.030	0.70	71.4%	0%	177	2.0%
A-10	3.190	0.70	71.4%	0%	139	2.0%
A-11	0.910	0.70	71.4%	0%	111	2.0%
A-12a	0.290	0.38	25.7%	0%	233	2.0%
A-12b	0.490	0.38	25.7%	0%	231	2.0%
A-13a	0.300	0.38	25.7%	0%	229	2.0%
A-13b	0.470	0.38	25.7%	0%	228	2.0%
A-14a	0.310	0.38	25.7%	0%	221	2.0%
A-14b	0.490	0.38	25.7%	0%	236	2.0%
A-15a	0.150	0.25	7.1%	0%	145	2.0%
A-15b	0.760	0.25	7.1%	0%	427	2.0%
B-01	3.910	0.70	71.4%	0%	172	2.0%
B-02	3.560	0.70	71.4%	0%	142	2.0%
B-03	2.360	0.65	64.3%	0%	107	2.0%
B-04	2.620	0.65	64.3%	0%	141	2.0%
B-05	0.730	0.25	7.1%	0%	372	2.0%
B-06a	0.090	0.48	40.0%	0%	89	2.0%
B-06b	0.090	0.48	40.0%	0%	86	2.0%
B-07	0.140	0.25	7.1%	0%	111	2.0%
B-08a	0.150	0.48	40.0%	0%	148	2.0%
B-08b	0.150	0.48	40.0%	0%	147	2.0%

Area ID	Catchment Area (ha)	Runoff Coefficient (C)	Percent Impervious (%)	No Depression (%)	Flow Width (m)	Average Slope (%)
B-09	3.270	0.65	64.3%	0%	107	2.0%
B-10	0.570	0.25	7.1%	0%	257	2.0%
B-11a	0.130	0.48	40.0%	0%	119	2.0%
B-11b	0.120	0.48	40.0%	0%	117	2.0%
B-12a	0.280	0.48	40.0%	0%	281	2.0%
B-12b	0.280	0.48	40.0%	0%	278	2.0%
B-13	0.200	0.25	7.1%	0%	163	2.0%
B-14a	0.135	0.48	40.0%	0%	131	2.0%
B-14b	0.135	0.48	40.0%	0%	133	2.0%
B-15a	0.265	0.48	40.0%	0%	270	2.0%
B-15b	0.265	0.48	40.0%	0%	270	2.0%
SWM-1	2.240	0.25	7.1%	0%	288	2.0%
SWM-2	0.820	0.25	7.1%	0%	144	2.0%

Table 5.3: Post-Development Subcatchment Parameters (Offsite Areas)

Area ID	Catchment Area (ha)	Flow Length (m)	Time of Concentration (min)	Weighted Curve Number	Weighted IA (mm)	Average Slope (%)
1BP-1	9.00	503	21	72	10.0	1.0%
1BP-2	3.96	187	15	75	8.5	0.5%
EX-1	4.49	724	26	62	15.5	1.2%
EX-2	4.46	163	15	78	7.0	0.5%
EX-3	2.15	286	15	74	9.0	1.5%
EX-4	19.72	734	41	69	11.5	0.5%
EX-5	31.08	965	34	67	12.4	1.1%

Infiltration

Infiltration losses for all subcatchments were modeled using Horton's infiltration equation, which defines the infiltration capacity of soil over the duration of a precipitation event using a decay function that ranges from an initial maximum infiltration rate to a minimum rate as the storm progresses. The default values for the City of Ottawa were used for all catchments.

Horton's Equation:
$f(t) = f_c + (f_o - f_c)e^{-k(t)}$

Initial infiltration rate: f_o = 76.2 mm/hr
Final infiltration rate: f_c = 13.2 mm/hr
Decay Coefficient: k = 4.14 /hr

Depression Storage

The default values for depression storage in the City of Ottawa were used for all catchments. Rooftops were assumed to provide no depression storage (zero-impervious parameter).

- Depression Storage (pervious areas): 4.67 mm
- Depression Storage (impervious areas): 1.57 mm

Equivalent Width

'Equivalent Width' refers to the width of the subcatchment flow path. This parameter is calculated as described in Section 5.4.5.6 of the *City of Ottawa Sewer Design Guidelines* (October 2012).

Impervious Values

Runoff coefficients for each subcatchment were determined based on the proposed site plan. Refer to the Storm Drainage Area Plan (Drawing 119240-SWM) for details. Sample calculations for the runoff coefficients are provided on the Coefficient Calculation Plan (drawing **102085-2BP-CC)** in **Appendix B**. Percent impervious values were calculated using the following equation:

%imp = (C – 0.20) / 0.70

Receiving Watercourse Water Levels

The 100-year downstream water levels for the dry pond outlets were evaluated using Manning's equation and the modelled flows from the original Phase 1 Business Park SWMHYMO model (Novatech, February 2014). These flows are provided in a '*Channel and Culvert Design – Realigned Tributaries'* memorandum for the Phase 1 Business Park (Novatech, 2018) provided in **Appendix C**. Using an approximate cross-section at each pond outlet, the maximum 100-year water levels in the Northeast Tributary and the Carp Road were estimated (refer to calculations in **Appendix C**). The resulting 100-year water levels are provided in **Table 5.4**. The elevations for Ponds 'A', 'B', and 'C' are below the bottom of the ponds and will not impact the function of the SWMFs. The maximum water levels in the Northeast Tributary and Carp Road roadside ditch water levels are above the bottom of Ponds 'D' and 'E', but it is unlikely to impact the function of the ponds.

Table 5.4: Receiving Watercourse Water Levels

Tributary	Outlet Location	Tributary Invert (m)	100-year HGL Elevation (m)	Pond Bottom Elevation (m)
Northeast Tributary	Dry Pond 'A'	100.81	101.48	103.30
	Dry Pond 'B'	101.01	101.52	102.35
Southeast Tributary (Carp Road Roadside Ditch)	Linear Dry Pond 'C'	104.74	105.58	105.97
	Linear Dry Pond 'D'	106.26	107.05	106.95
	Linear Dry Pond 'E'	107.40	108.06	107.70

There are culverts for both the Northeast Tributary and Carp Road roadside ditch (southeast Tributary) that cross under Carp Road. The backwater impacts from these culverts were also reviewed to determine impacts on the SWMFs. The culvert crossings are summarized as follows:

- Northeast Tributary has a 1000mm diameter CSP culvert with a 3.1% slope
    - Upstream invert = 100.30m
    - Downstream invert = 99.68m
    - Length = 19.8m
- Southeast Tributary has an 1800mm x 800mm Box culvert with a 1.9% slope
    - Upstream invert = 104.60m
    - Downstream invert = 104.27m
    - Length = 17.5m

The backwater impacts for these culverts were analysed using HY-8 and the upstream flows from '*Channel and Culvert Design – Realigned Tributaries'* memorandum for the Phase 1 Business Park (Novatech, 2018). It is still assumed that these peak flows will occur with a different timing to the pond outflows. It should be noted that the 100-year flows will overtop Carp Road at the Northeast Tributary crossing. The results of the analysis are presented in **Table 5.5** and HY-8 results provided in **Appendix C.**

Table 5.5: Carp Road Culvert Backwater HGLs

Tributary / Culvert	2-year Backwater HGL (m)	100-year Backwater HGL (m)	Outlet Location	Pond Bottom Elevation (m)
Northeast Tributary	100.90	103.14	Dry Pond 'A'	103.30
			Dry Pond 'B'	102.35
Southeast Tributary (Carp Road Roadside Ditch)	104.76	105.19	Linear Dry Pond 'C'	105.97
			Linear Dry Pond 'D'	106.95
			Linear Dry Pond 'E'	107.70

Ponds 'A', 'C', 'D' and 'E' are all above the backwater from the Carp Road cross-culverts and will not be impacted. Pond 'B' is below the 100-year backwater HGL and the extended detention orifice will be impacted by the backwater. The high flow outlet is above the 100-year backwater HGL and will still be able to drain the pond. During smaller storms, the extended detention orifice will function as designed. Since it is anticipated that the peak in the tributaries will occur later than the in the ponds, Pond 'B' should function as designed and the 100-year drawdown time may be extended when the extended detention orifice becomes slowed with the reduced head from the backwater impacts.

5.2 Model Results

The following section provides the PCSWMM model results.

5.2.1 Hydraulic Grade Line (Ditches)

The roadside ditches, conveyance swales, and culverts were sized as follows:

- Ditches were sized so that the 100-year peak flows are contained within the right of ways and/or defined drainage easements.
- Driveway entrance culverts, hydrant crossing culverts and access road culverts were sized for the 5-year storm event, with a minimum size of 500mm.
- Road cross-culverts were sized for the 10-year storm event, with a minimum size of 600mm.
- The offsite ditch to convey runoff from the Carp Airport around the perimeter of the Business Park development was also sized to convey the 100-year runoff.

Grading information for ditches conveying flows to the SWMFs are provided on the Grading Plans and Plan and Profile Drawings listed below. Cross-sections showing the roadside ditches for Streets 15, 16, 17 and 18 are provided on the Notes and Details Plans:

Grading Plans	Plan and Profile Drawings		Notes and Details Plans
102085-GR5	**102085-P61**	**102085-P70**	**102085-BP-ND1**
102085-GR7	**102085-P62**	**102085-P71**	**102085-BP-ND2**
102085-GR8	**102085-P63**	**102085-P72**	**102085-BP-ND3**
102085-GR9	**102085-P64**	**102085-P73**	
	102085-P69	**102085-P76**	

Details of the various culverts within the Phase 2 Business Park are provided in **Table 5.6**, **Table 5.7** and **Table 5.8**.

Table 5.6: Cross-Culverts

PCSWMM ID	Location	Culvert Size
CULV-17	Under Street 15 (approx. Station = 15+1025)	800mm
CULV-18	Under Street 15 (approx. Station = 15+0925)	800mm
CULV-19	Under Street 15 (approx. Station = 15+0825)	800mm
CULV-20	Under Street 15 (approx. Station = 15+0725)	800mm
CULV-21	Under Street 15 (approx. Station = 15+0625)	600mm
CULV-22	Under Street 15 (approx. Station = 15+0550)	800mm
CULV-23	Under Street 15 (approx. Station = 15+0425)	600mm
CULV-24	Under Street 15 (approx. Station = 15+0325)	600mm
CULV-25	Under Street 15 (approx. Station = 15+0175)	600mm
CULV-28	Street 18 & Carp Road	800mm
CULV-29	Street 17 & Street 18	800mm
CULV-37	Under Street 17 convey west ditch flows to Linear Pond ‘C’ (approx. Station = 17+625)	700mm
CULV-38	Under Street 17 convey west ditch flows to Linear Pond ‘D’ (approx. Station = 17+510)	700mm
CULV-39	Under Street 17 convey west ditch flows to Linear Pond ‘E’ (approx. Station = 17+360)	700mm
CULV-40	Under Street 17 convey west ditch flows to Linear Pond ‘E’ (South) (approx. Station = 17+250)	500mm
CULV-41	Under Street 17 for Phase 1 to Carp Road Ditch (approx. Station = 17+530)	1200mm
CULV-42	External Ditch near Carp Airport Hangars	600mm

Table 5.7: Driveway Entrance Culverts

PCSWMM ID	Location	Culvert Size
CULV-01	Pond ‘A’ Access Road	3x 600mm
CULV-02	Street 15, Block 13	Twin 800mm
CULV-03	Street 15, Block 12	800mm
CULV-04	Street 15, Block 12	700mm
CULV-05	Street 15, Block 11	800mm
CULV-06	Street 15, Block 10	600mm
CULV-07	Street 15, Block 5	700mm
CULV-08	Street 15, Block 5	600mm
CULV-09	Street 15, Block 4	600mm
CULV-10	Street 15, Block 3	600mm
CULV-11	Street 15, Block 2	500mm
CULV-12	Street 15, Block 1	500mm
CULV-13	Street 16, Block 9	600mm
CULV-14	Street 16, Block 8	600mm
CULV-15	Street 16, Block 7	600mm

PCSWMM ID	Location	Culvert Size
CULV-16	Street 16, Block 6	800mm
CULV-26	Pond 'B' Access Road	3x 600mm
CULV-27	Street 18, Block 14	500mm
CULV-30	Street 17, Block 15	800mm
CULV-31	Street 17, Block 16	500mm
CULV-32	Street 17, Block 17	700mm
CULV-33	Street 17, Block 18	600mm
CULV-34	Street 17, Block 19	600mm
CULV-35	Street 17, Block 20	700mm
CULV-36	Street 17, Block 21	500mm

Table 5.8: Hydrant Culverts

PCSWMM ID	Location	Culvert Size
HYD-01	Street 15, Block 13	800mm
HYD-02	Street 15, Block 12	800mm
HYD-03	Street 15, Block 12	600mm
HYD-04	Street 15, Block 11	700mm
HYD-05	Street 15, Block 10	600mm
HYD-06	Street 15, Block 5	800mm
HYD-07	Street 15, Block 5	700mm
HYD-08	Street 15, Block 5	600mm
HYD-09	Street 15, Block 4	600mm
HYD-10	Street 15, Block 3	600mm
HYD-11	Street 15, Block 1	500mm
HYD-12	Street 15, Block 1	500mm
HYD-13	Street 16, Block 7	600mm
HYD-14	Street 16, Block 6	800mm
HYD-15	Street 17, Block 15	500mm
HYD-16	Street 17, Block 15	500mm
HYD-17	Street 17, Block 16	500mm
HYD-18	Street 17, Block 18	500mm
HYD-19	Street 17, Block 20	500mm
HYD-20	Street 17, Block 21	500mm

Entrance / Driveway / Hydrant Culverts (sized for 5-year)

All the above private entrance and hydrant culverts were sized to convey the 5-year flows. All the 5-year HGLs through these culverts were at or below the culvert obvert except for the private entrance culverts at Blocks 13 and 15. These culverts were unable to be upsized due to cover restrictions for the culverts and no space in the ditches for twinning culverts. Profiles for the 5-year ditch and culvert HGLs are provided in **Appendix B**.

- The entrance culvert at Block 13 (CULV-02) has the 5-year HGL 0.01m above the upstream obvert of the culvert and is due to the backwater from the cross-culvert under Street 15 at Station 15+1025 (CULV-17).
- The entrance culvert at Block 15 (CULV-30) has the 5-year HGL 0.01m above the upstream obvert of the culvert and is due to the backwater from the cross-culvert at the intersection of Streets 17 and 18 (CULV-29).

Cross-Culverts (sized for 10-year)

All cross-culverts were sized for the 10-year storm event, and all cross-culverts do not overtop the roads up to and including the 10-year storm. Profiles for the 10-year ditch and culvert HGLs are provided in **Appendix B**.

Culvert Results during 100-year Storm Event

Most cross-culverts do not overtop in the 100-year due to the requirement to contain the 100-year flows within the rights-of-way and easements. The only exception is the cross-culvert at the intersection of Street 17 and Street 18 (CULV-29).

The private driveway entrance, hydrant, and access road culverts that overtop in the 100-year include:

- Pond 'A' access road culvert (CULV-01)
- The Block 6 entrance culvert (CULV-16);
- The Block 15 entrance culvert (CULV-30); and
- The Block 17 entrance culvert (CULV-32).

The 100-year HGL is contained within the rights-of-way and drainage easements, apart from the cross-culvert at the intersection of Streets 17 and 18 (CULV-29). This area has the 100-year HGL spilling into the development Block limits but it will be contained within the easement limits on the development blocks. Profiles for the overtopping culverts and 100-year HGLs within the roadside ditches are provided in **Appendix B**. Note the pond access road culverts are not shown, only the roadside ditch culverts are provided when overtopping occurs.

Culvert Results during Stress Test (100-year + 20%) Storm Event

The stress test was also used to confirm the function of the ditches. The stress test HGL is contained within the rights-of-way and drainage easements, apart from the cross-culvert at the intersection of Streets 17 and 18 (CULV-29). This area has the stress test HGL spilling into the development Block limits but it will be contained within the easement limits on the development blocks. Profiles for the overtopping culverts and 100-year HGLs within the roadside ditches are provided in **Appendix B**. Note the Pond access road culverts are not shown, only the roadside ditch culverts are provided when overtopping occurs.

The cross-culverts that overtop in the stress test are as follows:

- Intersection of Street 18 and Carp Road (CULV-28)
- Intersection of Street 17 and Street 18 (CULV-29); and
- Culvert under Street 17 to Pond C (CULV-37).

The private driveway entrance, hydrant, and access road culverts that overtop in the stress test include:

- Pond 'A' access road culvert (CULV-01)
- The Block 13 entrance culvert (CULV-02);

- The Block 12 entrance culvert (CULV-03);
- The Block 12 entrance culvert (CULV-04);
- The Block 11 entrance culvert (CULV-05);
- The Block 6 entrance culvert (CULV-16);
- Pond 'B' access road culvert (CULV-26);
- The Block 15 entrance culvert (CULV-30);
- The Block 17 entrance culvert (CULV-32);
- The Block 18 entrance culvert (CULV-35);
- The hydrant culvert at Block 12 (HYD-02);
- The hydrant culvert at Block 5 (HYD-06);
- The hydrant culvert at Block 5 (HYD-07); and
- The hydrant culvert at Block 6 (HYD-14).

5.2.2 Peak Flow Comparison

The peak flows to each tributary were controlled by the dry ponds. The uncontrolled and Phase 1 drainage areas were accounted for in the modelling. The ponds were designed so that post-development peak flows are controlled to pre-development levels. The flows for each tributary are summarized in **Table 5.9**.

Table 5.9: Peak Flow Comparison (L/s)

Storm Distribution->		**4hr Chicago**				**12hr SCS**		
Return Period->		**25mm**	**2yr**	**5yr**	**100yr**	**2yr**	**5yr**	**100yr**
Southeast Tributary (Ponds 'C', 'D' & 'E' and Phase 1 drainage)	*Pre* [(1)]	103	256	541	1,655	362	688	1,837
	Post [(2)]	105	250	537	1,654	323	640	1,766
	Diff	2	-6	-4	-1	-39	-48	-71
Northeast Tributary (Ponds 'A' & 'B' and external / uncontrolled drainage)	*Pre* [(3)]	220	600	1,337	4,475	879	1,776	5,177
	Post [(4)]	273	595	1,315	4,471	743	1,592	4,931
	Diff	53	-5	-22	-4	-136	-184	-246
TOTAL	*Pre*	323	856	1,878	6,130	1,241	2,464	7,014
	Post	378	845	1,852	6,125	1,066	2,232	6,697
	Diff	55	-11	-26	-5	-175	-232	-317

[(1)] Sum of peak flows at outfalls SE-1 to SE-3
[(2)] Sum of peak flows at outfalls OF-1, OF-2, OF-6, OF-C, OF-D and OF-E.
[(3)] Sum of peak flows at outfalls NE-1 to NE-6.
[(4)] Sum of peak flows at outfalls OF-3 to OF-5, OF-7a, OF-7b, OF-A and OF-B.

6.0 SWM FACILTY DESIGN

The SWMF design is provided in the following section. Dry ponds were selected due to the proximity to the Carp Airport to discourage the presence of waterfowl in the vicinity of the airport. The SWMFs are not intended as fish habitat. The outlets of the SWMFs have been designed to be above the water levels in the receiving watercourses to prevent fish from entering the SWMFs.

SWMFs 'A' and 'B' outlet to the Northeast Tributary and the linear SWMFs 'C', 'D' and 'E' outlet to the Southeast Tributary.

Details for the SWMFs can be found on the Stormwater Management Pond Facility Plans. Refer to the following Drawings:

102085-SWMF7	**102085-SWMF10**
102085-SWMF8	**102085-SWMF11**
102085-SWMF9	**102085-SWMF12**

6.1 Dry Pond Design Criteria

The MOE Stormwater Management Planning and Design Manual (2003) lists the following design criteria for dry ponds:

- Average side slopes of 4H:1V;
- Maximum depth of 3m with a mean depth of 1 to 2m;
- Length to width ratio of 3:1;
- Minimum inlet pipe size of 450mm, to avoid freezing and clogging.
- Minimum outlet pipe size of 450mm and a minimum orifice size of 75mm.
- Minimum 24 hours of extended detention storage or 12 hours if there is a conflict with the minimum orifice size; and
- Maintenance access to the inlet and outlet of the SWMF.

Drawdown times are demonstrated on drawdown graphs from the PCSWMM model, which are provided in **Appendix D**.

6.2 Northeast Tributary SWMFs (Dry Ponds 'A' and 'B')

SWMF 'A' receives drainage from Streets 15 and 16, and Blocks 2 to 13, as well as a portion of Block 1. SWMF 'B' receives drainage from the north portion of Street 17 and Street 18, and Blocks 14 and 15. Both dry ponds outlet to the Northeast Tributary. Both SWMFs will receive pre-treatment from OGS units and will have outlet ditches to direct outflows to the Northeast Tributary. The sizing of the OGS units is provided in **Appendix D**.

6.2.1 SWM Facility Inlets

Inlet flows for the 25mm events will be directed to both ponds via ditch inlet catchbasins (DICBs). Inlet calculations for the DICBs to confirm they have adequate capacity for the maximum treatment flow rate for the OGS units are provided in **Appendix D**.

Dry Pond 'A'

The 25mm storm event will be collected in the north and south roadside ditch of Street 15 into a 1200x600mm DICB. The 25mm event will be pre-treated by two Vortechs 16000 in parallel and will outlet SWMF 'A' via a 600mm diameter pipe.

The north and south ditches combine into a single ditch at the end of the Street 15 cul-de-sac (via twin 800mm diameter culverts), which runs adjacent to the SWMF 'A' access road prior to outletting to SWMF 'A'. A berm is located downstream of the DICB that is set at the elevation of the 25mm HGL. Flows above the 25mm event would spill over this berm be directed to the SWMF via a swale and three (3) 600mm diameter culverts located under a portion of the access road. Flows greater than the capacity of the culverts will spill over the access road.

Dry Pond 'B'

The 25mm storm event will be collected in the drainage easement along Block 14 into a 1200x600mm DICB. The 25mm event will be pre-treated by a Vortechs 16000 and will outlet SWMF 'B' via a 600mm diameter pipe.

Immediately downstream of the DICB, three (3) 600mm diameter culverts run under the Pond 'B' access roads and the upstream inverts are set to the 25mm HGL at the DICB. Storms above the

25mm event will be directed to the pond via a three (3) 600mm diameter culverts into a ditch that outlets to the SWMF. Flows in excess of the capacity of the culverts will spill over the access road.

6.2.2 SWM Facility Outlets

Dry Pond 'A'

- The minimum 24-hour drawdown time will be provided by a 150mm diameter culvert with an invert of 103.30m
- Control of the 2-year to 100-year storm event will be provided by a 0.75m wide weir with an invert of 104.13m.
- Flows above the 100-year storm event will be provided by an emergency spillway, a trapezoidal weir with a 20m bottom width, 3H:1V side slopes and an invert of 104.99m. This weir is able to safely convey the stress test (100-year + 20% flows).

A summary of the stage-storage curve for SWMF 'A' is provided in **Table 6.1**. A detailed stage-storage curve is provided in **Appendix D**.

Table 6.1: SWMF 'A' Stage-Storage-Discharge

Description	Elevation (m)	Depth (m)	Volume (m^3)	Release Rate (L/s)			
				Low Q	High Q	Spillway	Total
Bottom of Pond	103.30	0.00	0	0	0	0	0
25mm (Chicago)	104.03	0.73	2,451	39	0	0	39
2-year (SCS)	104.23	0.93	3,535	44	42	0	86
5-year (SCS)	104.43	1.13	4,702	46	228	0	274
100-year (SCS)	104.99	1.69	8,205	54	1,099	0	1,153
100-year + 20% (SCS)	105.10	1.80	8,947	54	1,101	1,329	2,484
Top of Pond	105.10	1.80	8,952	-	-	-	-
Low Flow Outlet	150mm dia. PVC Culvert (invert = 103.30m)						
High Flow Outlet	0.75m Rectangular Weir (invert = 104.13m)						
Emergency Spillway	20.0m Bottom Width Trapezoidal Weir with 3:1 Side Slopes (invert = 104.99m)						
25mm Drawdown Time	24.5 hours						

Dry Pond 'B'

- The maximum drawdown time possible with a minimum orifice size (greater than 12-hours) will be provided by a 100mm diameter ICD with an invert of 102.35m
- Control of the 2-year to 100-year storm event will be provided by a 200mm diameter culvert with an invert of 103.20m.
- Flows above the 100-year storm event will be provided by an emergency spillway, a trapezoidal weir with a 10m bottom width, 3H:1V side slopes and an invert of 104.32m. This weir is able to safely convey the stress test (100-year + 20% flows).

A summary of the stage-storage curve for SWMF 'B' is provided in **Table 6.2**. A detailed stage-storage curve is provided in **Appendix D**.

Table 6.2: SWMF 'B' Stage-Storage-Discharge

Description	Elevation (m)	Depth (m)	Volume (m^3)	Release Rate (L/s)			
				Low Q	High Q	Spillway	Total
Bottom of Pond	102.35	0.00	0	0	0	0	0
25mm (Chicago)	103.17	0.82	1,100	19	0	0	19
2-year (SCS)	103.37	1.02	1,579	21	16	0	37
5-year (SCS)	103.61	1.26	2,192	24	41	0	65
100-year (SCS)	104.32	1.97	4,309	30	76	0	106
100-year + 20% (SCS)	104.41	2.06	4,602	30	80	472	582
Top of Pond	104.50	2.15	4,930	-	-	-	-
Low Flow Outlet	100mm dia. ICD (invert = 102.35m)						
High Flow Outlet	200mm dia. PVC Culvert (invert = 103.20m)						
Emergency Spillway	10.0m Bottom Width Trapezoidal Weir with 3:1 Side Slopes (invert = 104.32m)						
25mm Drawdown Time	22.4 hours						

6.3 Southeast Tributary SWMFs (Linear Dry Ponds 'C', 'D' and 'E')

Linear SWMF 'C' receives drainage from a portion of Street 17 and Block 16. Linear SWMF 'D' receives drainage from a portion of Street 17 and Blocks 17 to 18. Linear SWMF 'E' receives drainage from the south portion of Street 17 and Blocks 19 to 21. All three linear dry ponds outlet to the Southeast Tributary. These SWMFs have limited space and cannot accommodate OGS units. They will all outlet directly into the Carp Road roadside ditch.

6.3.1 SWM Facility Inlets

All three linear dry ponds will receive inlet flows from ditches with 0.5m bottom widths and 3H:1V side slopes.

6.3.2 SWM Facility Outlets

All the linear dry ponds will have outlet structures consisting of orifices and weirs built into a concrete wall in the side of the SWMF.

Linear Dry Pond 'C'

- A minimum 24-hour drawdown time will be provided by a 100mm diameter orifice with an invert of 105.97m.
- Control of the 2-year to 100-year storm event will be provided by a 150mm diameter culvert with an invert of 106.25m.
- Flows above the 100-year storm event will be provided by an emergency spillway, a trapezoidal weir with a 1m bottom width, 3H:1V side slopes and an invert of 106.70m. This weir is able to safely convey the stress test (100-year + 20% flows).

A summary of the stage-storage curve for SWMF 'C' is provided in**Table 6.3**. A detailed stage-storage curve is provided in **Appendix D**.

Table 6.3: SWMF 'C' Stage-Storage-Discharge

Description	Elevation (m)	Depth (m)	Volume (m^3)	Release Rate (L/s)			
				Low Q	High Q	Spillway	Total
Bottom of Pond	105.97	0.00	0	0	0	0	0
25mm (Chicago)	106.19	0.22	426	9	0	0	9
2-year (SCS)	106.27	0.30	659	11	1	0	12
5-year (SCS)	106.36	0.39	927	12	8	0	20
100-year (SCS)	106.64	0.67	1,891	17	27	0	44
100-year + 20% (SCS)	106.77	0.80	2,363	19	32	41	92
Top of Pond	107.00	1.03	3,257	-	-	-	-
Low Flow Outlet	100mm dia. ICD (invert = 105.97m)						
High Flow Outlet	150mm dia. PVC Culvert (invert = 106.25m)						
Emergency Spillway	1.0m Bottom Width Trapezoidal Weir with 3:1 Side Slopes (invert = 106.70m)						
25mm Drawdown Time	25.5 hours						

Linear Dry Pond 'D'

- The maximum drawdown time possible with a minimum orifice size will be provided by a 100mm diameter orifice with an invert of 106.95m.
- Control of the 2-year to 100-year storm event will be provided by a 0.60m wide weir with an invert of 107.60m.
- Flows above the 100-year storm event will be provided by an emergency spillway, a trapezoidal weir with a 1m bottom width, 3H:1V side slopes and an invert of 108.01m. This weir is able to safely convey the stress test (100-year + 20% flows).

A summary of the stage-storage curve for SWMF 'D' is provided in **Table 6.4**. A detailed stage-storage curve is provided in **Appendix D**.

Table 6.4: SWMF 'D' Stage-Storage-Discharge

Description	Elevation (m)	Depth (m)	Volume (m^3)	Release Rate (L/s)			
				Low Q	High Q	Spillway	Total
Bottom of Pond	106.95	0.00	0	0	0	0	0
25mm (Chicago)	107.56	0.61	251	16	0	0	16
2-year (SCS)	107.67	0.72	331	18	22	0	40
5-year (SCS)	107.78	0.83	416	19	87	0	106
100-year (SCS)	108.00	1.05	612	21	282	0	303
100-year + 20% (SCS)	108.06	1.11	670	22	290	24	336
Top of Pond	108.26	1.31	887	-	-	-	-
Low Flow Outlet	100mm dia. ICD (invert = 106.95m)						
High Flow Outlet	0.60m Rectangular Weir (invert = 107.60m)						
Emergency Spillway	1.0m Bottom Width Trapezoidal Weir with 3:1 Side Slopes (invert = 108.01m)						
25mm Drawdown Time	10.1 hours						

Linear Dry Pond 'E'

- The maximum drawdown time possible with a minimum orifice size (roughly 12-hours) will be provided by a 100mm diameter orifice with an invert of 107.63m.
- Control of the 2-year to 100-year storm event will be provided by a 0.30m wide weir with an invert of 108.18m.
- Flows above the 100-year storm event will be provided by an emergency spillway, a trapezoidal weir with a 1m bottom width, 3H:1V side slopes and an invert of 108.71m. This weir is able to safely convey the stress test (100-year + 20% flows).

A summary of the stage-storage curve for SWMF 'E' is provided in **Table 6.5**. A detailed stage-storage curve is provided in **Appendix D**.

Table 6.5: SWMF 'E' Stage-Storage-Discharge

Description	Elevation (m)	Depth (m)	Volume (m^3)	Release Rate (L/s)			
				Low Q	High Q	Spillway	Total
Bottom of Pond	107.63	0.00	0	0	0	0	0
25mm (Chicago)	108.18	0.55	293	15	0	0	15
2-year (SCS)	108.28	0.65	383	17	17	0	34
5-year (SCS)	108.41	0.78	522	18	61	0	79
100-year (SCS)	108.71	1.08	899	22	210	0	232
100-year + 20% (SCS)	108.82	1.19	1,060	23	213	79	315
Top of Pond	108.96	1.33	1,287	-	-	-	-
Low Flow Outlet	100mm dia. ICD (invert = 107.63m)						
High Flow Outlet	0.30m Rectangular Weir (invert = 108.18m)						
Emergency Spillway	1.0m Bottom Width Trapezoidal Weir with 3:1 Side Slopes (invert = 108.71m)						
25mm Drawdown Time	11.6 hours						

7.0 EROSION AND SEDIMENT CONTROL

7.1.1 Temporary Erosion Protection Measures

The following erosion and sediment control measures are to be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987) and "Construction Specification for Temporary Erosion and Sediment Control Measures" (OPSS 805).

These temporary measures are to be implemented prior to construction and remain in place throughout each phase of construction. Temporary erosion protection measures are to be inspected based on the following schedule:

- Weekly during dry weather events.
- After any significant storm events (minimum 25mm of rainfall within any 24-hour period).

- After any significant snowmelt events (when the melting of snow at a rate which adversely affects the performance and function of the system).
- After any extreme weather events.

During inspections, the contractor is responsible to identify and rectify any deficiencies and undertake necessary maintenance measures as soon as possible. Inspections and maintenance of temporary ESC measures shall continue until they are no longer required. The contractor shall ensure that records of inspection, including at a minimum, the inspector's name, date of inspection, visual observations, and any necessary remedial measures to maintain the interim ESC measures.

Erosion and sediment control measures are shown on the Erosion and Sediment Control Plan (Drawing **102085-ESC4**).

Construction Measures - General

- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accordance with the design drawings and that mitigation measures are being implemented as specified.
- Silt fencing is to be installed along the upland edge of all fish habitat corridors according to OPSS 1860, Table 3 to isolate all work areas from the adjacent aquatic habitat.
- Rock flow check dams are to be installed at the outlets to roadside ditches and woven with Class II geotextile according to OPSS 1860. The rocks used shall be according to OPSS 1004 requirements for rip-rap and gabion stone.
- Catchbasin Inlet inserts are to be placed under all catchbasins and storm manhole covers, checked daily and cleaned out once 50% full.
- Mud mats are to be installed at designated truck entrances to ensure that minimal material is tracked off-site.
- After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.

Construction Measures – Outlets to Watercourses

Under Ontario Regulation 174/06, the proposed outlets to watercourses considered as aquatic habitat will require an application under Section 28 of the Conservation Authorities Act - Alterations to Waterways.

Mitigation measures to ensure a minimal amount of disturbance to the affected watercourses will be developed in conjunction with MVCA at the time of the permit application. These measures should include:

- Operation of machinery outside of the water in a manner that minimizes disturbance to the banks of the watercourse.
- All materials and equipment must be used in a manner that prevents any deleterious substance (e.g. Petroleum, silt, debris, etc.) from entering the watercourse.
- Stockpiling of material and maintenance of equipment must be at least 30 meters from the existing watercourse.
- All material used in the construction of the outlet should be clean and free of fines.

- Access should be confined to a single-entry point at each outlet location in order to minimize removal and/or destruction of adjacent riparian vegetation along the shoreline.
- No in-stream works are permitted between March 15 and July 1 of any given year to protect local fish populations during their spawning and nursery time periods.
- No in-water work shall be conducted at times when flows are elevated due to local rain events or seasonal floods.
- Storm drainage outlets are to be stabilized, as required, before the discharge points become operational.
- Additional stream bank stabilization methods, if necessary, include the addition of rip-rap, live stakes, live fascine and joint planting of rock and live stakes.

Construction Measures – Culvert Installation

The contractor is to implement the required erosion protection measures prior to culvert installation.

7.1.2 Permanent Erosion Protection Measures

The outlets from the dry ponds (Ponds 'A', 'B', 'C', 'D' and 'E') are to have rip rap to prevent erosion of the soils within the outlet ditches. Minimum rip rap sizes have been selected based on the velocity of the 100-year peak flows leaving the SWMFs. Sizing details are provided in Appendix D and show on the Stormwater Management Pond Facility Plans:

102085-SWMF7	**102085-SWMF10**
102085-SWMF8	**102085-SWMF11**
102085-SWMF9	**102085-SWMF12**

8.0 CONCLUSIONS

The conclusions based on the results of the stormwater management analysis are as follows:

Quantity Control

- Quantity control for the Phase 2 Business Park will be provided by two larger dry ponds and three linear dry ponds.
- Blocks 1 to 15 (Ponds 'A' and 'B') do not require on-site quantity control for runoff coefficients up to C = 0.70.
- Blocks 16 to 21 (Ponds 'C', 'D' and 'E') do not require on-site quantity control for ruonff coefficients up to C = 0.65.
- Onsite controls will be required for blocks that are developed above these runoff coefficients.

Quality Control

- Dry Ponds 'A' and 'B' will have quality control provided by a treatment train approach via settling in the perimeter ditches within the blocks, roadside ditches, OGS units, and a minimum 24-hour detention time or a 12-hour detention time, where conflicts with the minimum orifice size applies.
- Linear Ponds 'C', 'D' and 'E' will have quality control provided by a treatment train approach via settling and filtration in perimeter ditches within the development blocks,

roadside ditches and a minimum 24-hour detention time (or a 12-hour detention time where in conflict with the minimum orifice size applies. Note: Pond 'D' will only achieve a 9-hour drawdown time due to the minimum orifice size, but the overall treatment train is still expected to meet the water quality objectives.

Conveyance / Flood Protection

- Storm drainage for the Phase 2 Business Park will be provided by ditches and culverts.
- Ditches will convey the design peak flows without exceeding the confines of the right of ways and/or defined drainage easements for all storms up to and including the 100-year event.
- All driveway culverts will be a minimum 500mm diameter and sized to convey at least the 5-year peak flow.
- All cross-culverts will be a minimum 600mm diameter and sized to convey at least the 10-year peak flow.

Temperature Mitigation

- The first 5mm of runoff (first flush) will be infiltrated within the roadside ditches. The dry ponds will be designed to have landscaping to provide shading to minimize thermal impacts. Dry ponds will only increase runoff by approximately 1°C, which will keep average stream temperatures below the required targets of 25°C and 30°C for the Southeast Tributary and Northeast Tributary, respectfully.

NOVATECH



Melanie Schroeder, P.Eng.
Project Engineer | Water Resources



Michael Petepiece, P.Eng.
Senior Project Manager | Water Resources

Appendix A
Documentation and Conditions of Final Approval

- Schedule I of the Subdivision Agreement for Phase 1 Residential

SCHEDULE "I"

MAINTENANCE OF WORKS/FACILITIES

West Capital Airpark (Carp Airport)
Residential – Phase 1

In accordance with Section 7.6 of the Carp Airport Municipal Capital Facility and Development Agreement, the City is responsible for maintenance, repair and replacement of the works/facilities listed below:

1) **Roads including roadside ditches, grassed boulevards, sidewalks, curbs, culverts, streetlights, line painting, street name signs and traffic control signs:** Blocks 172 and 175 (Albert Boyd Private), Block 173 (Sopwith Private), Blocks 174, 180, 181 and 182 (Wingover Private), Blocks 159 and 176 (Chandelle Private) (from the cul-de-sac to Block 178 (Tailslide Private) and Block 178 (Tailslide Private).

2) **Storm Sewer Network including storm sewers, ICD's, road catchbasins, storm manholes):** Along Blocks 160, 169, 170, 171, 185, 197 and 201; Blocks 172 and 175 (Albert Boyd Private), Block 173 (Sopwith Private), Blocks 174, 180, 181 and 182 (Wingover Private), Blocks 159 and 176 (Chandelle Private) and Block 178 (Tailslide Private)

3) **Rearyard catachbasins and leads:**
   - Parts of Lots 1 and 2 being Parts 2, 3, 4 and 5 on an approved draft reference plan
   - Parts of Lots 5 and 6 being Parts 10, 11, 12 and 13 on an approved draft reference plan
   - Parts of Lots 45 and 46 being Parts 71, 72, 73 and 74 on an approved draft reference plan
   - Parts of Lots 33 and 34 being Parts 55, 56, 57 and 58 on an approved draft reference plan
   - Parts of Lots 25 and 26 being Parts 39, 40, 41 and 42 on an approved draft reference plan
   - Parts of Lots 22 and 23 being Parts 32, 33, 34 and 35 on an approved draft reference plan
   - Parts of Lots 69 and 70 being Parts 99, 100, 101 and 102 on an approved draft reference plan
   - Parts of Lots 74 and 75 being Parts 108, 109, 110 and 111 on an approved draft reference plan
   - Parts of Lots 31 and 32 being Parts 49, 50, 51 and 52 on an approved draft reference plan
   - Part of Lot 28 being Parts 114 and 115 on an approved draft reference plan

4) **Stormwater Management Pond:**
   - Block 157 - Stormwater Management Pond East
   - Block 156 - Stormwater Management Pond West

5) **Outlet Ditches:**
   - Blocks 163, 184, 186 and 193

6) **Stone Trench:** Beneath roadside ditches in Block 178 (Tailslide Private).

7) **Asphalt Walkways (including culverts, grassed areas and fence):**
   - Blocks 161, 162, 164, 165 and 170

8) **Stonedust Pathways including culverts:**
   - Along Blocks 174, 180, 181 and 182 (Wingover Private) from the west limit of the park to the bend in the road
   - Through Blocks 166, 167, 168 and 199

The City will be maintaining the roads in the Residential Phase 1 to the Class 5A standard as described in the City of Ottawa Maintenance Quality Standards for Roadway, Sidewalks and Pathways approved by Council and any future amendments.

Appendix B
SWM Modelling

- Pre-Development Model Parameters
- Post-Development Model Parameters
- Pre-Development Model Schematics
- Pre-Development PCSWMM Model Result Output Files
    - 100-year 4-hour Chicago
    - 100-year 12-hour SCS
- Post-Development Model Schematics
- Post-Development PCSWMM Model Result Output Files
    - 100-year 4-hour Chicago
    - 100-year 12-hour SCS
- PCSWMM Ditch Profiles
    - 5-year 4-hour Chicago
    - 10-year 4-hour Chicago
    - 100-year 4-hour Chicago
    - 100-year + 20% 4-hour Chicago

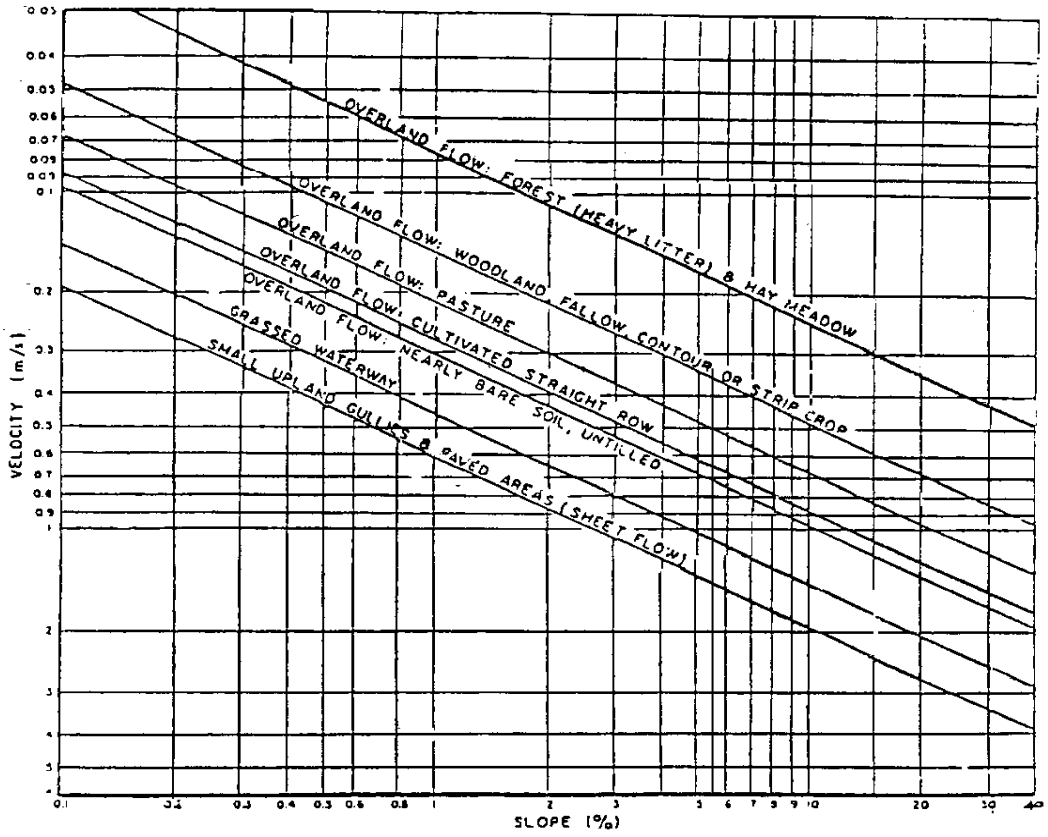


Figure A.5.2: Upland Method for Estimating Time of Concentration
(SCS National Engineering Handbook, 1971)

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development Model Parameters

NOVATECH
Engineers, Planners & Landscape Architects

Curve Number & Initial Abstraction

Area ID	Catchment Area (ha)	Land use		Soil Type		CN	S (mm)	IA (mm)	
NE-1	5.920	Impervious	0.0%	-	98	**63**	147	14.7	
		Grass / Lawn	0.0%	B	61				Good
		Row Crop	36.2%	B	75				SR & CR
		Brush	52.1%	B	56				Fair
		Woods	11.7%	B	60				Fair
NE-2	27.380	Impervious	1.8%	-	98	**69**	112	11.2	
		Grass / Lawn	9.7%	B	61				
		Row Crop	62.7%	B	75				
		Brush	21.3%	B	56				
		Woods	4.5%	B	60				
NE-3	9.030	Impervious	0.0%	-	98	**75**	86	8.6	
		Grass / Lawn	0.0%	B	61				
		Row Crop	98.1%	B	75				
		Brush	1.9%	B	56				
		Woods	0.0%	B	60				
NE-4	2.150	Impervious	0.0%	-	98	**74**	90	9.0	
		Grass / Lawn	0.0%	B	61				
		Row Crop	93.5%	B	75				
		Brush	6.5%	B	56				
		Woods	0.0%	B	60				
NE-5	20.570	Impervious	35.3%	-	98	**74**	90	9.0	
		Grass / Lawn	59.7%	B	61				
		Row Crop	0.0%	B	75				
		Brush	5.0%	B	56				
		Woods	0.0%	B	60				
NE-6	31.080	Impervious	3.4%	-	98	**63**	151	15.1	
		Grass / Lawn	86.3%	B	61				
		Row Crop	4.9%	B	75				
		Brush	5.4%	B	56				
		Woods	0.0%	B	60				
SE-1	3.170	Impervious	0.0%	-	98	**73**	96	9.6	
		Grass / Lawn	0.0%	B	61				
		Row Crop	87.7%	B	75				
		Brush	12.3%	B	56				
		Woods	0.0%	B	60				
SE-2	9.130	Impervious	5.6%	-	98	**73**	95	9.5	
		Grass / Lawn	19.4%	B	61				
		Row Crop	71.2%	B	75				
		Brush	3.8%	B	56				
		Woods	0.0%	B	60				
SE-3	10.640	Impervious	0.0%	-	98	**75**	85	8.5	
		Grass / Lawn	0.0%	B	61				
		Row Crop	100.0%	B	75				
		Brush	0.0%	B	56				
		Woods	0.0%	B	60				

Time of Concentration (Upland's Method)

Area ID	Catchment Area (ha)	% Imperv.	Runoff Coefficient	Overland Flow				Shallow Concentrated Flow				Overall		
				Length (m)	Slope (%)	Velocity (m/s)	Travel Time (min)	Length (m)	Slope (%)	Velocity (m/s)	Travel Time (min)	Time of Concentration (min)	Min. Time of Concentration (min)	Time to Peak (min)
NE-1	5.92	0.0%	0.20	50	1.2%	0.22	4	670	1.2%	0.51	22	26	26	17
NE-2	27.38	1.8%	0.21	50	0.6%	0.16	5	1300	0.6%	0.35	62	67	67	45
NE-3	9.03	0.0%	0.20	50	1.3%	0.24	3	380	1.3%	0.53	12	15	15	10
NE-4	2.15	0.0%	0.20	50	1.5%	0.26	3	248	1.5%	0.55	8	11	15	7
NE-5	20.57	35.3%	0.45	50	0.5%	0.15	6	650	0.5%	0.32	34	39	39	26
NE-6	31.08	3.4%	0.22	50	1.1%	0.21	4	922	1.1%	0.50	31	35	35	23
SE-1	3.17	0.0%	0.20	50	0.7%	0.18	5	302	0.7%	0.38	13	18	18	12
SE-2	9.13	5.6%	0.24	50	0.7%	0.18	5	730	0.7%	0.38	32	37	37	25
SE-3	10.64	0.0%	0.20	50	0.7%	0.18	5	419	0.7%	0.38	18	23	23	15

*Add overland flow & shallow concentrated flow travel time + creek flow travel time through subcatchment

NOTES:
- Use row crop and woods for overland flow and grassed waterwya for concetrated / channel flow

Carp Airport Phase 2 Business Park (102085-14)
Post-Development ARM Subcatchment Model Parameters

NOVATECH
Engineers, Planners & Landscape Architects

Curve Number & Initial Abstraction

Area ID	Catchment Area (ha)	Land use		Soil Type		CN	S (mm)	IA (mm)	
1BP-1	9.000	Impervious	0.0%	-	98	**72**	100	10.0	
		Grass / Lawn	19.6%	B	61				Good
		Row Crop	77.6%	B	75				SR & CR
		Brush	2.8%	B	56				Fair
		Woods	0.0%	B	60				Fair
1BP-2	3.960	Impervious	0.0%	-	98	**75**	85	8.5	
		Grass / Lawn	0.0%	B	61				
		Row Crop	100.0%	B	75				
		Brush	0.0%	B	56				
		Woods	0.0%	B	60				
EX-1	4.490	Impervious	0.0%	-	98	**62**	155	15.5	
		Grass / Lawn	0.0%	B	61				
		Row Crop	29.1%	B	75				
		Brush	55.7%	B	56				
		Woods	15.2%	B	60				
EX-2	4.460	Impervious	15.7%	-	98	**78**	70	7.0	
		Grass / Lawn	0.0%	B	61				
		Row Crop	83.3%	B	75				
		Brush	1.0%	B	56				
		Woods	0.0%	B	60				
EX-3	2.150	Impervious	0.0%	-	98	**74**	90	9.0	
		Grass / Lawn	0.0%	B	61				
		Row Crop	94.0%	B	75				
		Brush	6.0%	B	56				
		Woods	0.0%	B	60				
EX-4	19.720	Impervious	21.4%	-	98	**69**	115	11.5	
		Grass / Lawn	75.8%	B	61				
		Row Crop	0.0%	B	75				
		Brush	1.8%	B	56				
		Woods	1.0%	B	60				
EX-5	31.080	Impervious	15.7%	-	98	**67**	124	12.4	
		Grass / Lawn	74.0%	B	61				
		Row Crop	4.9%	B	75				
		Brush	5.4%	B	56				
		Woods	0.0%	B	60				

Time of Concentration (Upland's Method)

Area ID	Catchment Area (ha)	% Imperv.	Runoff Coefficient	Overland Flow				Shallow Concentrated Flow				Overall		
				Length (m)	Slope (%)	Velocity (m/s)	Travel Time (min)	Length (m)	Slope (%)	Velocity (m/s)	Travel Time (min)	Time of Concentration (min)	Min. Time of Concentration (min)	Time to Peak (min)
1BP-1	9.00	0.0%	0.20	50	1.0%	0.21	4	453	1.0%	0.45	17	21	21	14
1BP-2	3.96	0.0%	0.20	50	0.5%	0.15	6	137	0.5%	0.32	7	13	15	9
EX-1	4.49	0.0%	0.20	50	1.2%	0.22	4	674	1.2%	0.51	22	26	26	17
EX-2	4.46	15.7%	0.31	50	0.5%	0.15	6	113	0.5%	0.32	6	11	15	8
EX-3	2.15	0.0%	0.20	50	1.5%	0.26	3	236	1.5%	0.55	7	10	15	7
EX-4	19.72	21.4%	0.35	50	0.5%	0.15	6	684	0.5%	0.32	36	41	41	28
EX-5	31.08	15.7%	0.31	50	1.1%	0.21	4	915	1.1%	0.50	31	34	34	23

*Add overland flow & shallow concentrated flow travel time + creek flow travel time through subcatchment

NOTES:
- Use row crop and woods for overland flow and grassed waterwya for concetrated / channel flow

Carp Airport Phase 2 Business Park (102085-14)
Post-Development Model Parameters

NOVATECH
Engineers, Planners & Landscape Architects

Area ID	Catchment Area	Runoff Coefficient	Percent Impervious	No Depression	Flow Path Length	Equivalent Width	Average Slope
A-01a	0.690	0.66	65.7%	0%	106	65	2.0%
A-01b	0.140	0.38	25.7%	0%	22	65	2.0%
A-02a	0.270	0.48	40.0%	0%	11	244	2.0%
A-02b	0.270	0.48	40.0%	0%	11	242	2.0%
A-03a	0.230	0.38	25.7%	0%	13	177	2.0%
A-03b	0.370	0.38	25.7%	0%	21	174	2.0%
A-04	2.150	0.70	71.4%	0%	93	230	2.0%
A-05	2.170	0.70	71.4%	0%	94	232	2.0%
A-06	2.600	0.70	71.4%	0%	241	108	2.0%
A-07	1.130	0.70	71.4%	0%	130	87	2.0%
A-08	1.940	0.70	71.4%	0%	92	212	2.0%
A-09	2.030	0.70	71.4%	0%	115	177	2.0%
A-10	3.190	0.70	71.4%	0%	229	139	2.0%
A-11	0.910	0.70	71.4%	0%	82	111	2.0%
A-12a	0.290	0.38	25.7%	0%	12	233	2.0%
A-12b	0.490	0.38	25.7%	0%	21	231	2.0%
A-13a	0.300	0.38	25.7%	0%	13	229	2.0%
A-13b	0.470	0.38	25.7%	0%	21	228	2.0%
A-14a	0.310	0.38	25.7%	0%	14	221	2.0%
A-14b	0.490	0.38	25.7%	0%	21	236	2.0%
A-15a	0.150	0.25	7.1%	0%	10	145	2.0%
A-15b	0.760	0.25	7.1%	0%	18	427	2.0%
B-01	3.910	0.70	71.4%	0%	227	172	2.0%
B-02	3.560	0.70	71.4%	0%	251	142	2.0%
B-03	2.360	0.65	64.3%	0%	221	107	2.0%
B-04	2.620	0.65	64.3%	0%	186	141	2.0%
B-05	0.730	0.25	7.1%	0%	20	372	2.0%
B-06a	0.090	0.48	40.0%	0%	10	89	2.0%
B-06b	0.090	0.48	40.0%	0%	10	86	2.0%
B-07	0.140	0.25	7.1%	0%	13	111	2.0%
B-08a	0.150	0.48	40.0%	0%	10	148	2.0%
B-08b	0.150	0.48	40.0%	0%	10	147	2.0%
B-09	3.270	0.65	64.3%	0%	306	107	2.0%
B-10	0.570	0.25	7.1%	0%	22	257	2.0%
B-11a	0.130	0.48	40.0%	0%	11	119	2.0%
B-11b	0.120	0.48	40.0%	0%	10	117	2.0%
B-12a	0.280	0.48	40.0%	0%	10	281	2.0%
B-12b	0.280	0.48	40.0%	0%	10	278	2.0%
B-13	0.200	0.25	7.1%	0%	12	163	2.0%
B-14a	0.135	0.48	40.0%	0%	10	131	2.0%
B-14b	0.135	0.48	40.0%	0%	10	133	2.0%
B-15a	0.265	0.48	40.0%	0%	10	270	2.0%
B-15b	0.265	0.48	40.0%	0%	10	270	2.0%
SWM-1	2.240	0.25	7.1%	0%	78	288	2.0%
SWM-2	0.820	0.25	7.1%	0%	57	144	2.0%
TOTAL:	**43.86**	**0.60**	**56.7%**				

Carp Airport Phase 2 Business Park (102085-14)

Design Storm Time Series Data

4-hour Chicago Design Storms

NOVATECH
Engineers, Planners & Landscape Architects

C25mm-4.stm		C2-4.stm		C5-4.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0	0:00	0	0:00	0
0:10	1.51	0:10	2.05	0:10	2.68
0:20	1.75	0:20	2.37	0:20	3.1
0:30	2.07	0:30	2.81	0:30	3.68
0:40	2.58	0:40	3.5	0:40	4.58
0:50	3.46	0:50	4.69	0:50	6.15
1:00	5.39	1:00	7.3	1:00	9.61
1:10	13.44	1:10	18.21	1:10	24.17
1:20	56.67	1:20	76.81	1:20	104.19
1:30	17.77	1:30	24.08	1:30	32.04
1:40	9.12	1:40	12.36	1:40	16.34
1:50	6.14	1:50	8.32	1:50	10.96
2:00	4.65	2:00	6.3	2:00	8.29
2:10	3.76	2:10	5.09	2:10	6.69
2:20	3.17	2:20	4.29	2:20	5.63
2:30	2.74	2:30	3.72	2:30	4.87
2:40	2.43	2:40	3.29	2:40	4.3
2:50	2.18	2:50	2.95	2:50	3.86
3:00	1.98	3:00	2.68	3:00	3.51
3:10	1.81	3:10	2.46	3:10	3.22
3:20	1.68	3:20	2.28	3:20	2.98
3:30	1.56	3:30	2.12	3:30	2.77
3:40	1.47	3:40	1.99	3:40	2.6
3:50	1.38	3:50	1.87	3:50	2.44
4:00	1.31	4:00	1.77	4:00	2.31

Carp Airport Phase 2 Business Park (102085-14)

Design Storm Time Series Data

4-hour Chicago Design Storms

NOVATECH
Engineers, Planners & Landscape Architects

C100-4.stm		C100-4+20%.stm	
Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr
0:00	0	0:00	0
0:10	4.39	0:10	5.27
0:20	5.07	0:20	6.08
0:30	6.05	0:30	7.26
0:40	7.54	0:40	9.05
0:50	10.16	0:50	12.19
1:00	15.97	1:00	19.16
1:10	40.65	1:10	48.78
1:20	178.56	1:20	214.27
1:30	54.05	1:30	64.86
1:40	27.32	1:40	32.78
1:50	18.24	1:50	21.89
2:00	13.74	2:00	16.49
2:10	11.06	2:10	13.27
2:20	9.29	2:20	11.15
2:30	8.02	2:30	9.62
2:40	7.08	2:40	8.5
2:50	6.35	2:50	7.62
3:00	5.76	3:00	6.91
3:10	5.28	3:10	6.34
3:20	4.88	3:20	5.86
3:30	4.54	3:30	5.45
3:40	4.25	3:40	5.1
3:50	3.99	3:50	4.79
4:00	3.77	4:00	4.52

Carp Airport Phase 2 Business Park (102085-14)

Design Storm Time Series Data

SCS Design Storms

Engineers, Planners & Landscape Architects

S2-12.stm		S5-12.stm		S100-12.stm	
Duration	Intensity	Duration	Intensity	Duration	Intensity
min	mm/hr	min	mm/hr	min	mm/hr
0:00	0.00	0:00	0	0:00	0
0:30	1.27	0:30	1.69	0:30	2.82
1:00	0.59	1:00	0.79	1:00	1.31
1:30	1.10	1:30	1.46	1:30	2.44
2:00	1.10	2:00	1.46	2:00	2.44
2:30	1.44	2:30	1.91	2:30	3.19
3:00	1.27	3:00	1.69	3:00	2.82
3:30	1.69	3:30	2.25	3:30	3.76
4:00	1.69	4:00	2.25	4:00	3.76
4:30	2.29	4:30	3.03	4:30	5.07
5:00	2.88	5:00	3.82	5:00	6.39
5:30	4.57	5:30	6.07	5:30	10.14
6:00	36.24	6:00	48.08	6:00	80.38
6:30	9.23	6:30	12.25	6:30	20.47
7:00	4.06	7:00	5.39	7:00	9.01
7:30	2.71	7:30	3.59	7:30	6.01
8:00	2.37	8:00	3.15	8:00	5.26
8:30	1.86	8:30	2.47	8:30	4.13
9:00	1.95	9:00	2.58	9:00	4.32
9:30	1.27	9:30	1.69	9:30	2.82
10:00	1.02	10:00	1.35	10:00	2.25
10:30	1.44	10:30	1.91	10:30	3.19
11:00	0.93	11:00	1.24	11:00	2.07
11:30	0.85	11:30	1.12	11:30	1.88
12:00	0.85	12:00	1.12	12:00	1.88

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Overall Model Schematic

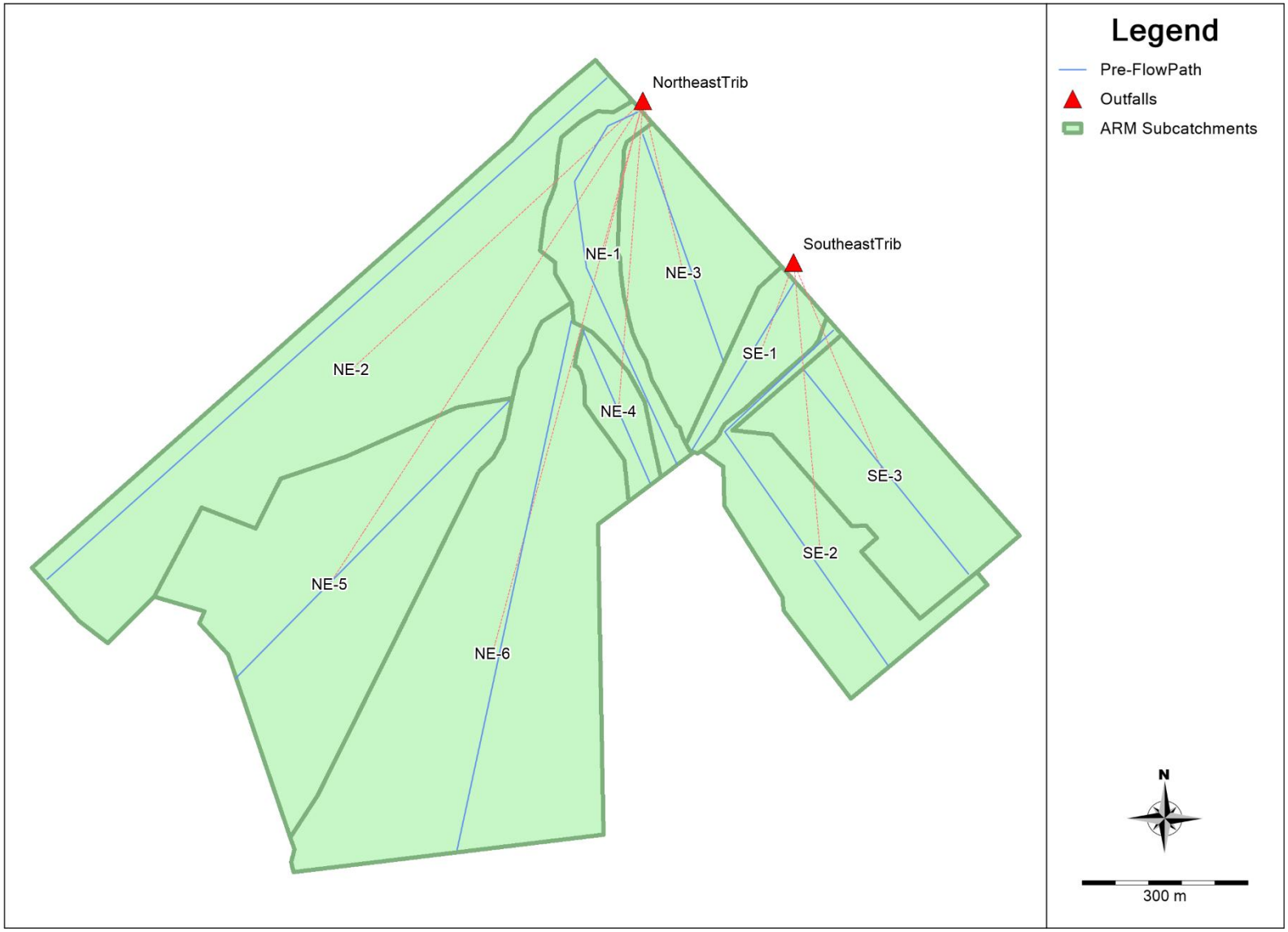


Date: 2024-11-12
M:\2002\102085\DATA\Phase 2 BPark\Calculations\SWM\PCSWMM\102085-BP-PRE Model Schematics.docx

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development PCSWMM Model Schematics

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Engineers, Planners & Landscape Architects

Subcatchments, Flow Paths and Outfalls



Date: 2024-11-12
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Carp Airport Phase 2 Business Park (102085-14)
Pre-Development - 100-year 4-hour Chicago Model Output

ALTERNATIVE RUNOFF METHOD (ARM) - PCSWMM VERSION 7.6.3620

This is a new version of ARM - your feedback and suggestions are solicited.
Create a ticket, post on the PCSWMM feature request forum, or email us directly!

Simulation start time: 11/28/2023 00:00:00
Simulation end time: 11/29/2023 00:00:00
Runoff wet weather time steps: 300 seconds
Report time steps: 60 seconds
Number of data points: 1441

****
Unit Hydrographs Runoff Method
****

Subcatchment	Runoff Method	Raingage	Area (ha)	Time of Concentration (min)	Time to Peak (min)	Time after Peak (min)	Peak UH Flow ($m^3/s/mm$)	UH Depth (mm)
NE-1	Nash IUH	Raingage	5.92	26	17.33	112.67	0.03081	0.999
SE-3	Nash IUH	Raingage	10.64	23	15.33	104.67	0.06261	0.999
SE-2	Nash IUH	Raingage	9.13	37	24.67	155.33	0.03339	1
SE-1	Nash IUH	Raingage	3.17	18	12	78	0.02383	0.998
NE-3	Nash IUH	Raingage	9.03	15	10	75	0.08147	0.996
NE-2	Nash IUH	Raingage	27.38	67	44.67	290.33	0.05531	1
NE-6	Nash IUH	Raingage	31.08	35	23.33	166.67	0.12018	1
NE-5	Nash IUH	Raingage	20.57	39	26	174	0.07138	1
NE-4	Nash IUH	Raingage	2.15	15	10	65	0.0194	0.996

****
ARM Runoff Summary
****

Subcatchment	Total Precip (mm)	Total Losses (mm)	Total Runoff (mm)	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff (fraction)
NE-1	76.002	58.147	17.838	1.056	245.323	0.235
SE-3	76.002	46.058	29.925	3.184	875.246	0.394
SE-2	76.002	48.438	27.558	2.516	508.417	0.363
SE-1	76.002	48.504	27.442	0.87	271.737	0.361
NE-3	76.002	46.127	29.756	2.687	945.993	0.392
NE-2	76.002	52.531	23.47	6.426	847.29	0.309
NE-6	76.002	58.346	17.651	5.486	1065.455	0.232
NE-5	76.002	47.27	28.726	5.909	1156.591	0.378
NE-4	76.002	47.27	28.619	0.615	214.71	0.377

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.3)

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development - 100-year 4-hour Chicago Model Output

```
*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 0
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------------
Raingage             06-C4hr-100yr               INTENSITY   10 min.


************
Node Summary
************
                                    Invert      Max.    Ponded    External
Name                 Type            Elev.     Depth      Area    Inflow
------------------------------------------------------------------------------
NortheastTrib        OUTFALL          0.00      0.00       0.0
SoutheastTrib        OUTFALL          0.00      0.00       0.0


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Surcharge Method ......... EXTRAN
Starting Date ............ 11/28/2023 00:00:00
Ending Date .............. 11/29/2023 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00


*************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
*************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.000         0.000
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         2.875        28.750
```

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development - 100-year 4-hour Chicago Model Output

```
External Outflow .........         2.875        28.750
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


Analysis begun on:  Wed Nov  5 15:47:55 2025
Analysis ended on:  Wed Nov  5 15:47:55 2025
Total elapsed time: < 1 sec
```

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development - 100-year 12-hour SCS Model Output

ALTERNATIVE RUNOFF METHOD (ARM) - PCSWMM VERSION 7.6.3620

This is a new version of ARM - your feedback and suggestions are solicited.
Create a ticket, post on the PCSWMM feature request forum, or email us directly!

Simulation start time: 11/28/2023 00:00:00
Simulation end time: 11/29/2023 00:00:00
Runoff wet weather time steps: 300 seconds
Report time steps: 60 seconds
Number of data points: 1441

****
Unit Hydrographs Runoff Method
****

Subcatchment	Runoff Method	Raingage	Area (ha)	Time of Concentration (min)	Time to Peak (min)	Time after Peak (min)	Peak UH Flow ($m^3/s/mm$)	UH Depth (mm)
NE-1	Nash IUH	Raingage	5.92	26	17.33	112.67	0.03081	0.999
SE-3	Nash IUH	Raingage	10.64	23	15.33	104.67	0.06261	0.999
SE-2	Nash IUH	Raingage	9.13	37	24.67	155.33	0.03339	1
SE-1	Nash IUH	Raingage	3.17	18	12	78	0.02383	0.998
NE-3	Nash IUH	Raingage	9.03	15	10	75	0.08147	0.996
NE-2	Nash IUH	Raingage	27.38	67	44.67	290.33	0.05531	1
NE-6	Nash IUH	Raingage	31.08	35	23.33	166.67	0.12018	1
NE-5	Nash IUH	Raingage	20.57	39	26	174	0.07138	1
NE-4	Nash IUH	Raingage	2.15	15	10	65	0.0194	0.996

****
ARM Runoff Summary
****

Subcatchment	Total Precip (mm)	Total Losses (mm)	Total Runoff (mm)	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff (fraction)
NE-1	93.91	66.438	27.466	1.626	302.989	0.292
SE-3	93.91	51.018	42.857	4.56	957.045	0.456
SE-2	93.91	53.961	39.945	3.647	584.046	0.425
SE-1	93.91	54.034	39.811	1.262	295.902	0.424
NE-3	93.91	51.094	42.647	3.851	959.952	0.454
NE-2	93.91	59.154	34.755	9.516	1039.406	0.37
NE-6	93.91	66.667	27.239	8.466	1327.746	0.29
NE-5	93.91	52.511	41.395	8.515	1326.677	0.441
NE-4	93.91	52.511	41.237	0.887	220.673	0.439

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.3)

Carp Airport Phase 2 Business Park (102085-14)
Pre-Development - 100-year 12-hour SCS Model Output

```
*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 0
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                  Data       Recording
Name                 Data Source                  Type       Interval
----------------------------------------------------------------------
Raingage             11-S12hr-100yr               INTENSITY   30 min.


************
Node Summary
************
                                    Invert      Max.    Ponded    External
Name                 Type            Elev.     Depth      Area    Inflow
--------------------------------------------------------------------------
NortheastTrib        OUTFALL          0.00      0.00       0.0
SoutheastTrib        OUTFALL          0.00      0.00       0.0


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Surcharge Method ......... EXTRAN
Starting Date ............ 11/28/2023 00:00:00
Ending Date .............. 11/29/2023 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00


*************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
*************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.000         0.000
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         4.233        42.328
```

```
External Outflow .........         4.233        42.328
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


Analysis begun on:  Wed Nov  5 15:54:48 2025
Analysis ended on:  Wed Nov  5 15:54:49 2025
Total elapsed time: 00:00:01
```

Carp Airport Phase 2 Business Park (102085-14)
Post-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Overall Model Schematic



Date: 2025-11-03
M:\2002\102085\DATA\Phase 2 BPark\Calculations\SWM\PCSWMM\Sub 2\102085-BP-POST Model Schematics R1.docx

Carp Airport Phase 2 Business Park (102085-14)
Post-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Offsite Subcatchments and Flow Paths



Date: 2025-11-03
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Carp Airport Phase 2 Business Park (102085-14)
Post-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Onsite Subcatchments and Flow Widths

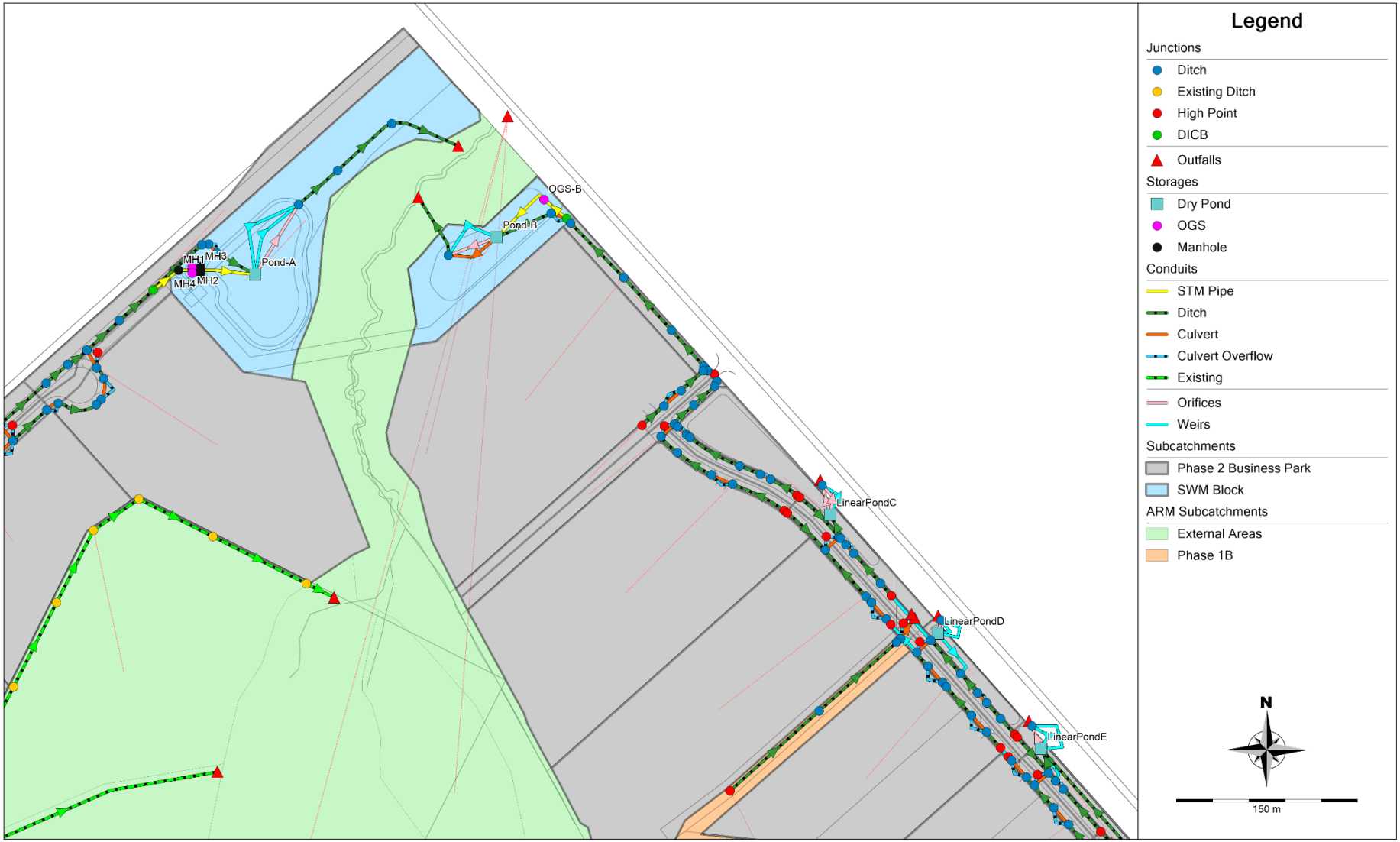


Date: 2025-11-03
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Carp Airport Phase 2 Business Park (102085-14)
Post-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Storage Nodes (Ponds and MHs)



Date: 2025-11-03
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Carp Airport Phase 2 Business Park (102085-14)
Post-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Outfalls

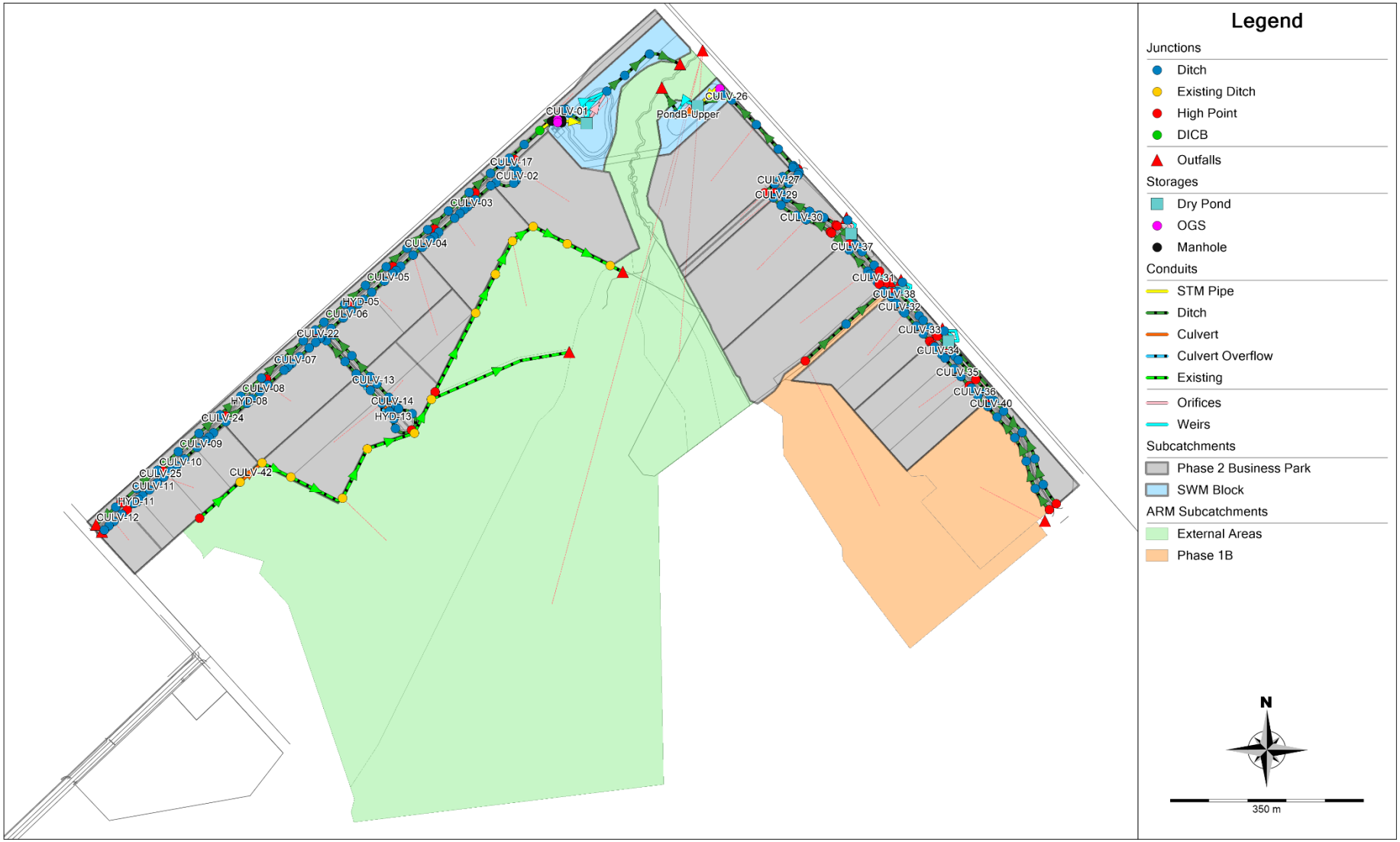


Date: 2025-11-03
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Carp Airport Phase 2 Business Park (102085-14)
Post-Development PCSWMM Model Schematics

NOVATECH
Engineers, Planners & Landscape Architects

Culverts



Date: 2025-11-03
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Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

```
  ALTERNATIVE RUNOFF METHOD (ARM) - PCSWMM VERSION 7.6.3620
  ---------------------------------------------------------

  This is a new version of ARM - your feedback and suggestions are solicited.
  Create a ticket, post on the PCSWMM feature request forum, or email us directly!

  Simulation start time:                  11/28/2023 00:00:00
  Simulation end time:                    12/01/2023 00:00:00
  Runoff wet weather time steps:          300 seconds
  Report time steps:                      60 seconds
  Number of data points:                  4321


  ******************************
  Unit Hydrographs Runoff Method
  ******************************

  ------------------------------------------------------------------------------------------------------------------------
-------------------------------------------
                                                                                  Area   Time of Concentration  Time to Peak
Time after Peak    Peak UH Flow    UH Depth
  Subcatchment         Runoff Method             Raingage                       (ha)   (min)                  (min)
(min)              (m³/s/mm)       (mm)
  ------------------------------------------------------------------------------------------------------------------------
-------------------------------------------
  EX-1                 Nash IUH                  Raingage                       4.49   26                     17.33
107.67             0.02337         0.999
  1BP-2                Nash IUH                  Raingage                       3.96   15                     10
70                 0.03573         0.996
  EX-2                 Nash IUH                  Raingage                       4.46   15                     10
70                 0.04024         0.996
  EX-3                 Nash IUH                  Raingage                       2.15   15                     10
65                 0.0194          0.996
  1BP-1                Nash IUH                  Raingage                       9      21                     14
96                 0.058           0.999
  EX-5                 Nash IUH                  Raingage                       31.08  34                     22.67
162.33             0.12371         1
  EX-4                 Nash IUH                  Raingage                       19.72  41                     27.33
182.67             0.06509         1


  ******************
```

```
  ARM Runoff Summary
  ******************

  ------------------------------------------------------------------------------------------
                     Total       Total       Total       Total       Peak        Runoff
                     Precip      Losses      Runoff      Runoff      Runoff      Coeff
  Subcatchment       (mm)        (mm)        (mm)        10^6 ltr    LPS         (fraction)
  ------------------------------------------------------------------------------------------
  EX-1               76.002      59.069      16.922      0.76        174.727     0.223
  1BP-2              76.002      46.058      29.823      1.181       416.191     0.392
  EX-2               76.002      42.148      33.722      1.504       544.826     0.444
  EX-3               76.002      47.27       28.619      0.615       214.71      0.377
  1BP-1              76.002      49.565      26.411      2.377       675.204     0.348
  EX-5               76.002      54.565      21.432      6.661       1365.453    0.282
  EX-4               76.002      52.709      23.291      4.593       845.049     0.306


  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.3)
  ------------------------------------------------------------

  WARNING 04: minimum elevation drop used for Conduit CULV-28
  WARNING 04: minimum elevation drop used for Conduit CULV-29
  WARNING 04: minimum elevation drop used for Conduit CULV-38
  WARNING 04: minimum elevation drop used for Conduit CULV-39
  WARNING 04: minimum elevation drop used for Conduit MH2-OGSA1
  WARNING 04: minimum elevation drop used for Conduit MH2-OGSA2
  WARNING 04: minimum elevation drop used for Conduit MH3-MH5
  WARNING 04: minimum elevation drop used for Conduit MH4-MH5
  WARNING 04: minimum elevation drop used for Conduit OGSA1-MH43
  WARNING 04: minimum elevation drop used for Conduit OGSA2-MH4

  *************
  Element Count
  *************
  Number of rain gages ...... 1
  Number of subcatchments ... 45
  Number of nodes ........... 255
  Number of links ........... 336
  Number of pollutants ...... 0
  Number of land uses ....... 0
```

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	06-C4hr-100yr	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A-01a	0.69	65.00	65.70	2.0000	Raingage	J102
A-01b	0.14	65.00	25.70	2.0000	Raingage	J026
A-02a	0.27	244.00	40.00	2.0000	Raingage	J067
A-02b	0.27	242.00	40.00	2.0000	Raingage	J056
A-03a	0.23	177.00	25.70	2.0000	Raingage	J037
A-03b	0.37	174.00	25.70	2.0000	Raingage	J008
A-04	2.15	230.00	71.40	2.0000	Raingage	J094
A-05	2.17	232.00	71.40	2.0000	Raingage	J081
A-06	2.60	108.00	71.40	2.0000	Raingage	J066
A-07	1.13	87.00	71.40	2.0000	Raingage	J042
A-08	1.94	212.00	71.40	2.0000	Raingage	J047
A-09	2.03	177.00	71.40	2.0000	Raingage	J037
A-10	3.19	139.00	71.40	2.0000	Raingage	J027
A-11	0.91	111.00	71.40	2.0000	Raingage	J057
A-12a	0.29	233.00	25.70	2.0000	Raingage	J091
A-12b	0.49	231.00	25.70	2.0000	Raingage	J023
A-13a	0.30	229.00	25.70	2.0000	Raingage	J081
A-13b	0.47	228.00	25.70	2.0000	Raingage	J018
A-14a	0.31	221.00	25.70	2.0000	Raingage	J047
A-14b	0.49	236.00	25.70	2.0000	Raingage	J012
A-15a	0.15	145.00	7.10	2.0000	Raingage	J027
A-15b	0.76	427.00	7.10	2.0000	Raingage	J003
B-01	3.91	172.00	71.40	2.0000	Raingage	J107
B-02	3.56	142.00	71.40	2.0000	Raingage	J155
B-03	2.36	107.00	64.30	2.0000	Raingage	J166
B-04	2.62	141.00	64.30	2.0000	Raingage	J175
B-05	0.73	372.00	7.10	2.0000	Raingage	LinearPondE
B-06a	0.09	89.00	40.00	2.0000	Raingage	J174
B-06b	0.09	86.00	40.00	2.0000	Raingage	J142
B-07	0.14	111.00	7.10	2.0000	Raingage	LinearPondD
B-08a	0.15	148.00	40.00	2.0000	Raingage	J167
B-08b	0.15	147.00	40.00	2.0000	Raingage	J137
B-09	3.27	107.00	64.30	2.0000	Raingage	J159
B-10	0.57	257.00	7.10	2.0000	Raingage	LinearPondC
B-11a	0.13	119.00	40.00	2.0000	Raingage	J155
B-11b	0.12	117.00	40.00	2.0000	Raingage	J122
B-12a	0.28	281.00	40.00	2.0000	Raingage	J152
B-12b	0.28	278.00	40.00	2.0000	Raingage	J114
B-13	0.20	163.00	7.10	2.0000	Raingage	J108
B-14a	0.14	131.00	40.00	2.0000	Raingage	J159
B-14b	0.14	133.00	40.00	2.0000	Raingage	J131
B-15a	0.27	270.00	40.00	2.0000	Raingage	J181
B-15b	0.27	270.00	40.00	2.0000	Raingage	J148
SWM-1	2.24	288.00	7.10	2.0000	Raingage	Pond-A
SWM-2	0.82	144.00	7.10	2.0000	Raingage	Pond-B

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
15+0175	JUNCTION	111.19	0.30	0.0	
15+0325	JUNCTION	110.59	0.30	0.0	
15+0425	JUNCTION	110.19	0.30	0.0	
15+0550	JUNCTION	109.69	0.30	0.0	
15+0625	JUNCTION	109.39	0.30	0.0	
15+0725	JUNCTION	108.99	0.30	0.0	
15+0825	JUNCTION	108.59	0.30	0.0	
15+0925	JUNCTION	108.14	0.30	0.0	
15+1025	JUNCTION	107.59	0.30	0.0	
17+250	JUNCTION	109.55	0.30	0.0	
17+365	JUNCTION	109.10	0.30	0.0	
17+512	JUNCTION	108.75	0.30	0.0	
17+532	JUNCTION	108.88	0.30	0.0	

17+625	JUNCTION	107.58	0.30	0.0
17+793	JUNCTION	106.52	0.30	0.0
18+282	JUNCTION	105.72	0.30	0.0
DICB01	JUNCTION	103.88	3.37	0.0
DICB02	JUNCTION	102.92	2.10	0.0
J001	JUNCTION	102.55	1.50	0.0
J002	JUNCTION	102.88	1.50	0.0
J002a	JUNCTION	104.89	1.60	0.0
J002b	JUNCTION	105.03	1.50	0.0
J002c	JUNCTION	105.17	1.50	0.0
J003	JUNCTION	105.87	1.50	0.0
J004	JUNCTION	106.16	1.64	0.0
J005	JUNCTION	106.40	1.50	0.0
J006	JUNCTION	106.53	1.50	0.0
J007	JUNCTION	106.71	1.58	0.0
J008	JUNCTION	107.04	1.50	0.0
J009	JUNCTION	107.16	1.58	0.0
J010	JUNCTION	107.44	1.50	0.0
J011	JUNCTION	107.56	1.58	0.0
J012	JUNCTION	107.84	1.50	0.0
J013	JUNCTION	107.98	1.56	0.0
J014	JUNCTION	108.25	1.50	0.0
J015	JUNCTION	108.25	1.58	0.0
J016	JUNCTION	108.44	1.50	0.0
J017	JUNCTION	108.65	1.50	0.0
J018	JUNCTION	108.78	1.56	0.0
J019	JUNCTION	109.04	1.50	0.0
J020	JUNCTION	109.18	1.56	0.0
J021	JUNCTION	109.45	1.50	0.0
J022	JUNCTION	109.64	1.50	0.0
J023	JUNCTION	109.78	1.56	0.0
J024	JUNCTION	110.04	1.50	0.0
J025	JUNCTION	110.17	1.50	0.0
J026	JUNCTION	110.15	1.50	0.0
J027	JUNCTION	106.29	1.58	0.0
J028	JUNCTION	106.32	1.58	0.0
J029	JUNCTION	106.37	1.58	0.0
J030	JUNCTION	106.47	1.50	0.0
J031	JUNCTION	106.49	1.58	0.0
J032	JUNCTION	106.56	1.58	0.0
J033	JUNCTION	106.81	1.58	0.0
J034	JUNCTION	106.91	1.58	0.0
J035	JUNCTION	106.95	1.58	0.0
J036	JUNCTION	107.00	1.58	0.0
J037	JUNCTION	107.14	1.50	0.0
J038	JUNCTION	107.23	1.56	0.0
J039	JUNCTION	107.26	1.58	0.0
J040	JUNCTION	107.31	1.57	0.0
J041	JUNCTION	107.39	1.57	0.0
J042	JUNCTION	107.54	1.50	0.0
J043	JUNCTION	107.59	1.57	0.0
J044	JUNCTION	107.64	1.57	0.0
J045	JUNCTION	107.66	1.58	0.0
J046	JUNCTION	107.74	1.58	0.0
J047	JUNCTION	107.94	1.50	0.0
J048	JUNCTION	107.96	1.56	0.0
J049	JUNCTION	108.01	1.56	0.0
J050	JUNCTION	108.08	1.56	0.0
J051	JUNCTION	108.17	1.56	0.0
J052	JUNCTION	108.36	1.50	0.0
J053	JUNCTION	108.52	1.50	0.0
J054	JUNCTION	108.77	1.50	0.0
J055	JUNCTION	108.96	1.56	0.0
J056	JUNCTION	109.05	1.56	0.0
J057	JUNCTION	109.21	1.56	0.0
J058	JUNCTION	109.34	1.56	0.0
J059	JUNCTION	109.45	1.50	0.0
J060	JUNCTION	109.62	1.50	0.0
J061	JUNCTION	109.72	1.50	0.0
J062	JUNCTION	109.62	1.50	0.0
J063	JUNCTION	109.45	1.56	0.0
J064	JUNCTION	109.39	1.56	0.0
J065	JUNCTION	109.34	1.56	0.0
J066	JUNCTION	109.20	1.56	0.0
J067	JUNCTION	109.02	1.58	0.0
J068	JUNCTION	108.93	1.58	0.0
J069	JUNCTION	108.89	1.58	0.0
J070	JUNCTION	108.84	1.58	0.0
J071	JUNCTION	108.77	1.50	0.0
J072	JUNCTION	108.52	1.50	0.0
J073	JUNCTION	108.36	1.58	0.0
J074	JUNCTION	108.37	1.58	0.0

J075	JUNCTION	108.41	1.58	0.0
J076	JUNCTION	108.54	1.50	0.0
J077	JUNCTION	108.57	1.57	0.0
J078	JUNCTION	108.64	1.57	0.0
J079	JUNCTION	108.67	1.57	0.0
J080	JUNCTION	108.71	1.57	0.0
J081	JUNCTION	108.88	1.56	0.0
J082	JUNCTION	108.95	1.56	0.0
J083	JUNCTION	109.03	1.56	0.0
J084	JUNCTION	109.08	1.56	0.0
J085	JUNCTION	109.28	1.56	0.0
J086	JUNCTION	109.39	1.56	0.0
J087	JUNCTION	109.44	1.56	0.0
J088	JUNCTION	109.48	1.56	0.0
J089	JUNCTION	109.56	1.56	0.0
J090	JUNCTION	109.68	1.56	0.0
J091	JUNCTION	109.75	1.56	0.0
J092	JUNCTION	109.77	1.56	0.0
J093	JUNCTION	109.81	1.56	0.0
J094	JUNCTION	109.88	1.56	0.0
J095	JUNCTION	109.95	1.55	0.0
J096	JUNCTION	110.02	1.55	0.0
J097	JUNCTION	110.14	1.50	0.0
J098	JUNCTION	110.13	1.55	0.0
J099	JUNCTION	110.18	1.55	0.0
J100	JUNCTION	110.29	1.50	0.0
J101	JUNCTION	110.14	1.55	0.0
J102	JUNCTION	109.98	1.55	0.0
J103	JUNCTION	109.88	1.55	0.0
J104	JUNCTION	109.78	1.55	0.0
J105	JUNCTION	103.74	1.50	0.0
J106	JUNCTION	103.69	1.50	0.0
J107	JUNCTION	103.96	1.50	0.0
J108	JUNCTION	104.19	1.50	0.0
J109	JUNCTION	104.35	1.50	0.0
J110	JUNCTION	104.44	1.58	0.0
J111	JUNCTION	104.53	1.50	0.0
J112	JUNCTION	104.80	1.55	0.0
J113	JUNCTION	105.11	1.55	0.0
J114	JUNCTION	105.55	1.50	0.0
J115	JUNCTION	104.44	1.58	0.0
J116	JUNCTION	104.57	1.50	0.0
J117	JUNCTION	104.85	1.50	0.0
J118	JUNCTION	105.24	1.58	0.0
J119	JUNCTION	105.32	1.55	0.0
J120	JUNCTION	105.46	1.55	0.0
J121	JUNCTION	105.57	1.50	0.0
J122	JUNCTION	106.08	1.50	0.0
J123	JUNCTION	106.21	1.55	0.0
J124	JUNCTION	106.30	1.55	0.0
J125	JUNCTION	106.61	1.50	0.0
J126	JUNCTION	106.61	1.50	0.0
J127	JUNCTION	106.29	1.57	0.0
J128	JUNCTION	106.38	1.50	0.0
J129	JUNCTION	106.44	1.55	0.0
J130	JUNCTION	106.59	1.55	0.0
J131	JUNCTION	107.14	1.50	0.0
J132	JUNCTION	107.34	1.50	0.0
J133	JUNCTION	107.48	1.57	0.0
J134	JUNCTION	107.74	1.50	0.0
J135	JUNCTION	107.79	1.55	0.0
J136	JUNCTION	107.85	1.55	0.0
J137	JUNCTION	107.98	1.50	0.0
J138	JUNCTION	108.09	1.50	0.0
J139	JUNCTION	108.09	1.50	0.0
J140	JUNCTION	107.83	1.57	0.0
J141	JUNCTION	107.94	1.55	0.0
J142	JUNCTION	108.04	1.55	0.0
J143	JUNCTION	108.59	1.50	0.0
J144	JUNCTION	108.40	1.55	0.0
J145	JUNCTION	108.36	1.55	0.0
J146	JUNCTION	108.30	1.55	0.0
J147	JUNCTION	108.71	1.50	0.0
J148	JUNCTION	109.43	1.50	0.0
J149	JUNCTION	110.15	1.50	0.0
J150	JUNCTION	110.87	1.50	0.0
J151	JUNCTION	111.69	1.50	0.0
J152	JUNCTION	105.24	1.58	0.0
J153	JUNCTION	105.57	1.50	0.0
J154	JUNCTION	105.82	1.58	0.0
J155	JUNCTION	106.00	1.58	0.0
J156	JUNCTION	106.61	1.50	0.0

J157	JUNCTION	106.61	1.50	0.0
J158	JUNCTION	106.32	1.57	0.0
J159	JUNCTION	107.14	1.50	0.0
J160	JUNCTION	107.19	1.55	0.0
J161	JUNCTION	107.47	1.55	0.0
J162	JUNCTION	107.61	1.50	0.0
J163	JUNCTION	107.48	1.57	0.0
J164	JUNCTION	107.56	1.57	0.0
J165	JUNCTION	107.65	1.57	0.0
J166	JUNCTION	107.74	1.50	0.0
J167	JUNCTION	107.84	1.56	0.0
J168	JUNCTION	107.93	1.56	0.0
J169	JUNCTION	108.09	1.50	0.0
J170	JUNCTION	108.09	1.50	0.0
J171	JUNCTION	108.01	1.56	0.0
J172	JUNCTION	107.89	1.56	0.0
J173	JUNCTION	107.83	1.57	0.0
J174	JUNCTION	108.09	1.57	0.0
J175	JUNCTION	108.29	1.57	0.0
J176	JUNCTION	108.60	1.50	0.0
J177	JUNCTION	108.52	1.55	0.0
J178	JUNCTION	108.43	1.55	0.0
J179	JUNCTION	108.31	1.55	0.0
J180	JUNCTION	108.71	1.50	0.0
J181	JUNCTION	109.43	1.50	0.0
J182	JUNCTION	110.15	1.50	0.0
J183	JUNCTION	110.87	1.50	0.0
J184	JUNCTION	111.69	1.50	0.0
J185	JUNCTION	106.77	1.60	0.0
J186	JUNCTION	106.90	1.50	0.0
J187	JUNCTION	107.37	1.50	0.0
J188	JUNCTION	107.58	1.50	0.0
J189	JUNCTION	106.43	1.50	0.0
J190	JUNCTION	106.73	1.50	0.0
J191	JUNCTION	106.91	1.50	0.0
J192	JUNCTION	107.05	1.50	0.0
J193	JUNCTION	107.72	1.50	0.0
J194	JUNCTION	108.45	1.50	0.0
J195	JUNCTION	108.69	1.50	0.0
J196	JUNCTION	108.70	1.50	0.0
J197	JUNCTION	108.90	1.50	0.0
J198	JUNCTION	109.17	1.50	0.0
J199	JUNCTION	109.47	1.50	0.0
J200	JUNCTION	109.78	1.50	0.0
J201	JUNCTION	109.89	1.56	0.0
J202	JUNCTION	109.96	1.56	0.0
J203	JUNCTION	110.17	1.50	0.0
Out-C	JUNCTION	105.27	2.00	0.0
Out-D	JUNCTION	106.14	2.00	0.0
Out-E	JUNCTION	107.38	2.00	0.0
Pond-A-Out	JUNCTION	103.25	1.85	0.0
Pond-B-Out	JUNCTION	102.27	2.23	0.0
OF1	OUTFALL	106.59	1.20	0.0
OF2	OUTFALL	107.74	0.63	0.0
OF3	OUTFALL	0.00	0.00	0.0
OF4	OUTFALL	106.30	1.00	0.0
OF5	OUTFALL	108.00	1.00	0.0
OF6	OUTFALL	0.00	0.00	0.0
OF7a	OUTFALL	109.79	1.25	0.0
OF7b	OUTFALL	109.69	1.35	0.0
OF-A	OUTFALL	101.81	1.00	0.0
OF-B	OUTFALL	101.50	1.00	0.0
OF-C	OUTFALL	105.22	0.50	0.0
OF-D	OUTFALL	106.09	0.50	0.0
OF-E	OUTFALL	107.33	0.50	0.0
LinearPondC	STORAGE	105.97	1.03	0.0
LinearPondD	STORAGE	106.95	1.31	0.0
LinearPondE	STORAGE	107.63	1.33	0.0
MH1	STORAGE	103.81	2.77	0.0
MH2	STORAGE	103.76	2.73	0.0
MH3	STORAGE	103.76	2.68	0.0
MH4	STORAGE	103.76	2.68	0.0
MH5	STORAGE	103.40	3.04	0.0
OGS-A1	STORAGE	103.76	2.73	0.0
OGS-A2	STORAGE	103.76	2.73	0.0
OGS-B	STORAGE	102.82	1.78	0.0
Pond-A	STORAGE	103.30	1.80	0.0
Pond-B	STORAGE	102.35	2.15	0.0

****
Link Summary

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

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Name	From Node	To Node	Type	Length	%Slope	Roughness
C001	J001	OF-A	CONDUIT	59.3	1.2485	0.0450
C002	J002	J001	CONDUIT	59.6	0.5539	0.0450
C003	Pond-A-Out	J002	CONDUIT	42.7	0.8663	0.0450
C004a	J002a	Pond-A	CONDUIT	2.0	94.0233	0.0450
C004b	J002c	J002b	CONDUIT	5.9	1.3581	0.0450
C004c	DICB01	J002c	CONDUIT	55.1	1.3258	0.0450
C005	J003	DICB01	CONDUIT	20.8	1.7795	0.0450
C006	J004	J003	CONDUIT	53.2	0.6956	0.0450
C007	J005	J004	CONDUIT	19.6	0.8149	0.0450
C008	J006	J005	CONDUIT	23.8	0.5460	0.0450
C009	J007	J006	CONDUIT	51.8	0.5021	0.0450
C010	J008	J007	CONDUIT	50.2	0.4985	0.0450
C011	J009	J008	CONDUIT	49.9	0.4008	0.0450
C012	J010	J009	CONDUIT	50.0	0.3997	0.0450
C013	J011	J010	CONDUIT	50.0	0.4001	0.0450
C014	J012	J011	CONDUIT	50.1	0.3994	0.0450
C015	J013	J012	CONDUIT	50.0	0.4003	0.0450
C016	J014	J013	CONDUIT	49.9	0.4207	0.0450
C017	J015	J014	CONDUIT	20.7	0.3859	0.0450
C018	J016	J015	CONDUIT	29.2	0.3761	0.0450
C019	J017	J016	CONDUIT	50.0	0.4199	0.0450
C020	J018	J017	CONDUIT	50.2	0.3788	0.0450
C021	J019	J018	CONDUIT	49.9	0.4010	0.0450
C022	J020	J019	CONDUIT	50.1	0.3990	0.0450
C023	J021	J020	CONDUIT	50.0	0.4201	0.0450
C024	J022	J021	CONDUIT	49.9	0.3804	0.0450
C025	J023	J022	CONDUIT	50.0	0.3998	0.0450
C026	J024	J023	CONDUIT	49.9	0.4008	0.0450
C027	J025	J024	CONDUIT	37.9	0.3427	0.0450
C028	J025	J026	CONDUIT	12.2	0.1643	0.0450
C029	J026	OF7b	CONDUIT	47.3	0.9728	0.0450
C030	J028	J027	CONDUIT	10.8	0.2789	0.0450
C031	J030	J029	CONDUIT	6.2	0.3214	0.0450
C032	J031	J030	CONDUIT	33.7	0.2966	0.0450
C033	J033	J032	CONDUIT	37.5	0.6672	0.0450
C034	J035	J034	CONDUIT	8.1	0.4960	0.0450
C035	J037	J036	CONDUIT	12.3	0.4877	0.0450
C036	J038	J037	CONDUIT	37.9	0.3956	0.0450
C037	J040	J039	CONDUIT	8.9	0.4517	0.0450
C038	J042	J041	CONDUIT	21.4	0.3743	0.0450
C039	J043	J042	CONDUIT	30.0	0.4002	0.0450
C040	J045	J044	CONDUIT	8.5	0.3529	0.0450
C041	J047	J046	CONDUIT	30.7	0.3905	0.0450
C042	J048	J047	CONDUIT	18.8	0.4251	0.0450
C043	J050	J049	CONDUIT	18.3	0.3828	0.0450
C044	J052	J051	CONDUIT	28.7	0.4531	0.0450
C045	J053	J052	CONDUIT	13.9	1.1482	0.0450
C046	J054	J053	CONDUIT	50.1	0.4995	0.0450
C047	J055	J054	CONDUIT	50.0	0.5000	0.0450
C048	J057	J056	CONDUIT	31.8	0.5030	0.0450
C049	J059	J058	CONDUIT	7.9	0.6354	0.0450
C050	J060	J059	CONDUIT	26.7	0.6360	0.0450
C051	J061	J060	CONDUIT	33.1	0.3021	0.0450
C052	J061	J062	CONDUIT	32.7	0.3060	0.0450
C053	J062	J063	CONDUIT	17.6	0.6261	0.0450
C054	J064	J065	CONDUIT	7.6	0.6589	0.0450
C055	J066	J067	CONDUIT	31.1	0.5137	0.0450
C056	J068	J069	CONDUIT	8.8	0.4544	0.0450
C057	J070	J071	CONDUIT	29.9	0.5013	0.0450
C058	J071	J072	CONDUIT	49.9	0.5011	0.0450
C059	J072	J073	CONDUIT	12.2	0.6539	0.0450
C060	J074	J073	CONDUIT	3.3	0.2988	0.0450
C061	J076	J075	CONDUIT	15.2	0.3284	0.0450
C062	J077	J076	CONDUIT	23.5	0.4259	0.0450
C063	J079	J078	CONDUIT	8.0	0.3753	0.0450
C064	J081	J080	CONDUIT	39.4	0.4063	0.0450
C065	J083	J082	CONDUIT	19.0	0.4207	0.0450
C066	J085	J084	CONDUIT	50.0	0.4000	0.0450
C067	J086	J085	CONDUIT	29.8	0.3692	0.0450
C068	J088	J087	CONDUIT	9.0	0.4439	0.0450
C069	J090	J089	CONDUIT	30.6	0.3926	0.0450
C070	J092	J091	CONDUIT	3.6	0.5502	0.0450
C071	J094	J093	CONDUIT	17.3	0.4045	0.0450
C072	J095	J094	CONDUIT	15.7	0.3817	0.0450
C073	J097	J096	CONDUIT	16.4	0.4276	0.0450
C074	J098	J097	CONDUIT	9.6	0.4169	0.0450
C075	J100	J099	CONDUIT	16.7	0.3600	0.0450
C076	J100	J101	CONDUIT	12.0	0.8313	0.0450
C077	J102	J103	CONDUIT	11.9	0.8433	0.0450

C078	J104	OF7a	CONDUIT	4.9	0.8129	0.0450
C079	Pond-B-Out	OF-B	CONDUIT	48.2	1.5965	0.0450
C080	J105	Pond-B	CONDUIT	9.4	11.6745	0.0450
C081	J106	DICB02	CONDUIT	5.2	0.3839	0.0450
C082	J107	J106	CONDUIT	62.8	0.4299	0.0450
C083	J108	J107	CONDUIT	58.7	0.3920	0.0450
C084	J109	J108	CONDUIT	40.0	0.4004	0.0450
C085	J110	J109	CONDUIT	4.6	3.7364	0.0450
C086	J111	J110	CONDUIT	3.5	0.2887	0.0450
C087	J112	J111	CONDUIT	24.5	1.3064	0.0450
C088	J114	J113	CONDUIT	24.0	1.6283	0.0450
C089	J116	J115	CONDUIT	4.7	1.0712	0.0450
C090	J117	J116	CONDUIT	22.9	1.2205	0.0450
C091	J118	J117	CONDUIT	22.7	2.0730	0.0450
C092	J119	J118	CONDUIT	3.5	1.4094	0.0450
C093	J121	J120	CONDUIT	3.8	1.5733	0.0450
C094	J122	J121	CONDUIT	47.6	1.0710	0.0450
C095	J123	J122	CONDUIT	18.6	0.9697	0.0450
C096	J125	J124	CONDUIT	25.5	1.0195	0.0450
C098	J126	J127	CONDUIT	46.5	0.5374	0.0450
C099	J128	J127	CONDUIT	1.3	1.5130	0.0450
C100	J129	J128	CONDUIT	7.2	1.5210	0.0450
C101	J131	J130	CONDUIT	32.9	1.5204	0.0450
C102	J132	J131	CONDUIT	13.6	1.4742	0.0450
C104	J134	J133	CONDUIT	37.4	0.5074	0.0450
C105	J135	J134	CONDUIT	21.3	0.4700	0.0450
C106	J137	J136	CONDUIT	17.4	0.4588	0.0450
C107	J138	J137	CONDUIT	17.5	0.6276	0.0450
C109	J139	J140	CONDUIT	39.5	0.4808	0.0450
C110	J141	J140	CONDUIT	8.7	1.0324	0.0450
C111	J143	J142	CONDUIT	46.8	1.0695	0.0450
C112	J143	J144	CONDUIT	28.9	0.4850	0.0450
C113	J145	J146	CONDUIT	12.1	0.4977	0.0450
C114	J147	J146	CONDUIT	25.2	1.4288	0.0450
C115	J148	J147	CONDUIT	50.8	1.4166	0.0450
C116	J149	J148	CONDUIT	52.7	1.3667	0.0450
C117	J150	J149	CONDUIT	48.8	1.4771	0.0450
C118	J151	J150	CONDUIT	41.8	1.9609	0.0450
C119	J153	J152	CONDUIT	19.4	1.2878	0.0450
C120	J154	J153	CONDUIT	33.6	0.9827	0.0450
C121	J156	J155	CONDUIT	48.3	1.0974	0.0450
C123	J157	J158	CONDUIT	44.0	0.5004	0.0450
C124	J159	J158	CONDUIT	51.1	1.4691	0.0450
C125	J160	J159	CONDUIT	7.0	1.4257	0.0450
C126	J162	J161	CONDUIT	6.1	1.4802	0.0450
C128	J164	J163	CONDUIT	14.9	0.5381	0.0450
C129	J166	J165	CONDUIT	4.6	0.4338	0.0450
C130	J167	J166	CONDUIT	31.6	0.5071	0.0450
C131	J169	J168	CONDUIT	17.4	0.5741	0.0450
C133	J170	J171	CONDUIT	3.9	0.5132	0.0450
C134	J172	J173	CONDUIT	9.4	0.5314	0.0450
C135	J174	J173	CONDUIT	24.8	1.0468	0.0450
C136	J176	J175	CONDUIT	22.7	1.0559	0.0450
C137	J176	J177	CONDUIT	5.3	0.5626	0.0450
C138	J178	J179	CONDUIT	26.4	0.4538	0.0450
C139	J180	J179	CONDUIT	25.3	1.3809	0.0450
C140	J181	J180	CONDUIT	49.0	1.4690	0.0450
C141	J182	J181	CONDUIT	47.3	1.5233	0.0450
C142	J183	J182	CONDUIT	51.3	1.4028	0.0450
C143	J184	J183	CONDUIT	45.9	1.7849	0.0450
C144	J186	J185	CONDUIT	4.7	0.6427	0.0450
C145	J187	J186	CONDUIT	85.4	0.5505	0.0450
C146	J188	J187	CONDUIT	99.0	0.2121	0.0450
C147	J189	OF4	CONDUIT	25.8	0.5036	0.0450
C148	J190	J189	CONDUIT	86.6	0.3466	0.0450
C149	J191	J190	CONDUIT	68.5	0.2629	0.0450
C150	J192	J191	CONDUIT	45.5	0.3076	0.0450
C151	J193	J192	CONDUIT	67.0	0.9995	0.0450
C152	J194	J193	CONDUIT	78.1	0.9345	0.0450
C153	J195	J194	CONDUIT	159.4	0.1506	0.0450
C154	J196	OF5	CONDUIT	263.9	0.2653	0.0450
C155	J197	J196	CONDUIT	67.9	0.2946	0.0450
C156	J198	J197	CONDUIT	89.1	0.3029	0.0450
C157	J199	J198	CONDUIT	98.8	0.3036	0.0450
C158	J200	J199	CONDUIT	104.4	0.2970	0.0450
C159	J201	J200	CONDUIT	57.5	0.2954	0.0450
C160	J203	J202	CONDUIT	97.6	0.1537	0.0450
CULV-01	J002b	J002a	CONDUIT	10.0	1.4017	0.0240
CULV-02	J029	J028	CONDUIT	17.7	0.2824	0.0240
CULV-03	J034	J033	CONDUIT	19.0	0.5266	0.0240
CULV-04	J041	J040	CONDUIT	19.6	0.4080	0.0240
CULV-05	J046	J045	CONDUIT	19.4	0.4119	0.0240

CULV-06	J051	J050	CONDUIT	18.8	0.4788	0.0240
CULV-07	J078	J077	CONDUIT	18.4	0.3804	0.0240
CULV-08	J082	J081	CONDUIT	19.0	0.3694	0.0240
CULV-09	J089	J088	CONDUIT	19.2	0.4162	0.0240
CULV-10	J091	J090	CONDUIT	18.5	0.3781	0.0240
CULV-11	J096	J095	CONDUIT	18.1	0.3859	0.0240
CULV-12	J101	J102	CONDUIT	19.5	0.8200	0.0240
CULV-13	J056	J055	CONDUIT	18.1	0.4968	0.0240
CULV-14	J058	J057	CONDUIT	19.2	0.6756	0.0240
CULV-15	J065	J066	CONDUIT	19.5	0.7180	0.0240
CULV-16	J067	J068	CONDUIT	18.8	0.4788	0.0240
CULV-17	J027	J004	CONDUIT	16.6	0.7846	0.0240
CULV-18	J033	J007	CONDUIT	16.7	0.5988	0.0240
CULV-19	J039	J009	CONDUIT	16.7	0.5988	0.0240
CULV-20	J045	J011	CONDUIT	16.7	0.5988	0.0240
CULV-21	J050	J013	CONDUIT	16.7	0.5988	0.0240
CULV-22	J073	J015	CONDUIT	16.7	0.6572	0.0240
CULV-23	J081	J018	CONDUIT	16.7	0.5988	0.0240
CULV-24	J085	J020	CONDUIT	16.7	0.5988	0.0240
CULV-25	J094	J023	CONDUIT	16.7	0.5988	0.0240
CULV-26	DICB02	J105	CONDUIT	11.8	1.0170	0.0130
CULV-27	J113	J112	CONDUIT	19.3	1.6045	0.0240
CULV-28	J115	J110	CONDUIT	11.9	0.0026	0.0130
CULV-29	J152	J118	CONDUIT	15.2	0.0020	0.0130
CULV-30	J155	J154	CONDUIT	18.9	0.9549	0.0130
CULV-31	J161	J160	CONDUIT	18.2	1.5393	0.0240
CULV-32	J165	J164	CONDUIT	18.1	0.4985	0.0240
CULV-33	J168	J167	CONDUIT	18.5	0.4874	0.0240
CULV-34	J171	J172	CONDUIT	18.7	0.6434	0.0240
CULV-35	J175	J174	CONDUIT	18.6	1.0776	0.0240
CULV-36	J177	J178	CONDUIT	18.4	0.4897	0.0240
CULV-37	J158	J127	CONDUIT	15.2	0.1974	0.0240
CULV-38	J163	J133	CONDUIT	15.1	0.0020	0.0240
CULV-39	J173	J140	CONDUIT	15.2	0.0020	0.0240
CULV-40	J179	J146	CONDUIT	15.2	0.0658	0.0240
CULV-41	J185	OF1	CONDUIT	20.6	0.8724	0.0240
CULV-42	J202	J201	CONDUIT	52.7	0.1328	0.0240
DICB01-MH1	DICB01	MH1	CONDUIT	26.7	0.2625	0.0130
DICB02-OGSB	DICB02	OGS-B	CONDUIT	19.4	0.4642	0.0130
HYD-01	J032	J031	CONDUIT	11.2	0.6237	0.0240
HYD-02	J036	J035	CONDUIT	10.6	0.4700	0.0240
HYD-03	J039	J038	CONDUIT	12.1	0.4122	0.0240
HYD-04	J044	J043	CONDUIT	11.5	0.4336	0.0240
HYD-05	J049	J048	CONDUIT	12.9	0.3885	0.0240
HYD-06	J075	J074	CONDUIT	10.1	0.3971	0.0240
HYD-07	J080	J079	CONDUIT	10.8	0.3696	0.0240
HYD-08	J084	J083	CONDUIT	12.0	0.4181	0.0240
HYD-09	J087	J086	CONDUIT	11.3	0.4420	0.0240
HYD-10	J093	J092	CONDUIT	10.6	0.3779	0.0240
HYD-11	J099	J098	CONDUIT	11.4	0.4369	0.0240
HYD-12	J103	J104	CONDUIT	11.4	0.8768	0.0240
HYD-13	J063	J064	CONDUIT	9.1	0.6589	0.0240
HYD-14	J069	J070	CONDUIT	11.3	0.4415	0.0240
HYD-15	J120	J119	CONDUIT	9.4	1.4845	0.0240
HYD-16	J124	J123	CONDUIT	9.3	0.9654	0.0240
HYD-17	J130	J129	CONDUIT	9.6	1.5570	0.0240
HYD-18	J136	J135	CONDUIT	10.9	0.5509	0.0240
HYD-19	J142	J141	CONDUIT	9.5	1.0537	0.0240
HYD-20	J144	J145	CONDUIT	9.9	0.4051	0.0240
Inflow-C	J127	LinearPondC	CONDUIT	6.6	5.9131	0.0450
Inflow-D	J133	LinearPondD	CONDUIT	6.4	9.4165	0.0450
Inflow-E1	J140	LinearPondE	CONDUIT	6.4	4.2225	0.0450
Inflow-E2	J146	LinearPondE	CONDUIT	9.3	7.7652	0.0450
MH1-MH2	MH1	MH2	CONDUIT	11.2	0.4458	0.0130
MH2-OGSA1	MH2	OGS-A1	CONDUIT	2.3	0.0131	0.0130
MH2-OGSA2	MH2	OGS-A2	CONDUIT	2.3	0.0131	0.0130
MH3-MH5	MH3	MH5	CONDUIT	2.9	0.0104	0.0130
MH4-MH5	MH4	MH5	CONDUIT	2.9	0.0104	0.0130
MH5-HWa	MH5	Pond-A	CONDUIT	9.7	1.0284	0.0130
OGSA1-MH43	OGS-A1	MH3	CONDUIT	1.6	0.0191	0.0130
OGSA2-MH4	OGS-A2	MH4	CONDUIT	1.6	0.0191	0.0130
OGSB-HWb	OGS-B	Pond-B	CONDUIT	7.7	0.3888	0.0130
Out-C	Out-C	OF-C	CONDUIT	10.0	0.5000	0.0450
Out-D	Out-D	OF-D	CONDUIT	10.0	0.5000	0.0450
Out-E	Out-E	OF-E	CONDUIT	10.0	0.5000	0.0450
OVF-01	J002b	J002a	CONDUIT	4.0	-0.5000	0.0150
OVF-02	J029	J028	CONDUIT	8.0	0.6250	0.0150
OVF-03	J034	J033	CONDUIT	8.0	1.2501	0.0150
OVF-04	J041	J040	CONDUIT	8.0	1.0001	0.0150
OVF-05	J046	J045	CONDUIT	8.0	1.0001	0.0150
OVF-06	J051	J050	CONDUIT	8.0	1.1251	0.0150
OVF-07	J078	J077	CONDUIT	8.0	0.8750	0.0150

OVF-08	J082	J081	CONDUIT	8.0	0.8750	0.0150
OVF-09	J089	J088	CONDUIT	8.0	1.0001	0.0150
OVF-10	J091	J090	CONDUIT	8.0	0.8750	0.0150
OVF-11	J096	J095	CONDUIT	8.0	0.8750	0.0150
OVF-12	J101	J102	CONDUIT	8.0	2.0004	0.0150
OVF-13	J056	J055	CONDUIT	8.0	1.1251	0.0150
OVF-14	J058	J057	CONDUIT	8.0	1.6252	0.0150
OVF-15	J065	J066	CONDUIT	8.0	1.7503	0.0150
OVF-16	J067	J068	CONDUIT	8.0	1.1251	0.0150
OVF-17a	15+1025	J027	CONDUIT	3.0	6.0108	0.0150
OVF-17b	15+1025	J004	CONDUIT	3.0	6.0108	0.0150
OVF-18a	15+0925	J033	CONDUIT	3.0	6.0108	0.0150
OVF-18b	15+0925	J007	CONDUIT	3.0	6.0108	0.0150
OVF-19a	15+0825	J039	CONDUIT	3.0	6.0108	0.0150
OVF-19b	15+0825	J009	CONDUIT	3.0	6.0108	0.0150
OVF-20a	15+0725	J045	CONDUIT	3.0	6.0108	0.0150
OVF-20b	15+0725	J011	CONDUIT	3.0	6.0108	0.0150
OVF-21a	15+0625	J050	CONDUIT	3.0	6.0108	0.0150
OVF-21b	15+0625	J013	CONDUIT	3.0	6.0108	0.0150
OVF-22a	15+0550	J073	CONDUIT	3.0	6.0108	0.0150
OVF-22b	15+0550	J015	CONDUIT	3.0	6.3461	0.0150
OVF-23a	15+0425	J081	CONDUIT	3.0	6.0108	0.0150
OVF-23b	15+0425	J018	CONDUIT	3.0	6.0108	0.0150
OVF-24a	15+0325	J085	CONDUIT	3.0	6.0108	0.0150
OVF-24b	15+0325	J020	CONDUIT	3.0	6.0108	0.0150
OVF-25a	15+0175	J094	CONDUIT	3.0	6.0108	0.0150
OVF-25b	15+0175	J023	CONDUIT	3.0	6.0108	0.0150
OVF-26	DICB02	J105	CONDUIT	4.0	0.5000	0.0150
OVF-27	J113	J112	CONDUIT	8.0	3.8779	0.0150
OVF-28a	18+282	J115	CONDUIT	3.0	6.0108	0.0150
OVF-28b	18+282	J110	CONDUIT	3.0	6.0108	0.0150
OVF-29a	17+793	J152	CONDUIT	3.0	6.0108	0.0150
OVF-29b	17+793	J118	CONDUIT	3.0	6.0108	0.0150
OVF-30	J155	J154	CONDUIT	8.0	2.2506	0.0150
OVF-31	J161	J160	CONDUIT	8.0	3.5021	0.0150
OVF-32	J165	J164	CONDUIT	8.0	1.1251	0.0150
OVF-33	J168	J167	CONDUIT	8.0	1.1251	0.0150
OVF-34	J171	J172	CONDUIT	8.0	1.5002	0.0150
OVF-35	J175	J174	CONDUIT	8.0	2.5008	0.0150
OVF-36	J177	J178	CONDUIT	8.0	1.1251	0.0150
OVF-37a	17+625	J158	CONDUIT	3.0	5.6758	0.0150
OVF-37b	17+625	J127	CONDUIT	3.0	6.6815	0.0150
OVF-38a	17+512	J163	CONDUIT	3.0	6.0108	0.0150
OVF-38b	17+512	J133	CONDUIT	3.0	6.0108	0.0150
OVF-39a	17+365	J173	CONDUIT	3.0	6.0108	0.0150
OVF-39b	17+365	J140	CONDUIT	3.0	6.0108	0.0150
OVF-40a	17+250	J179	CONDUIT	3.0	5.6758	0.0150
OVF-40b	17+250	J146	CONDUIT	3.0	6.0108	0.0150
OVF-41a	17+532	J185	CONDUIT	3.0	28.0415	0.0150
OVF-41b	17+532	OF2	CONDUIT	3.0	28.0415	0.0150
OVF-H01	J032	J031	CONDUIT	3.0	2.3340	0.0150
OVF-H02	J036	J035	CONDUIT	3.0	1.6669	0.0150
OVF-H03	J039	J038	CONDUIT	3.0	1.6669	0.0150
OVF-H04	J044	J043	CONDUIT	3.0	1.6669	0.0150
OVF-H05	J049	J048	CONDUIT	3.0	1.6669	0.0150
OVF-H06	J075	J074	CONDUIT	3.0	1.3335	0.0150
OVF-H07	J080	J079	CONDUIT	3.0	1.3335	0.0150
OVF-H08	J084	J083	CONDUIT	3.0	1.6669	0.0150
OVF-H09	J087	J086	CONDUIT	3.0	1.6669	0.0150
OVF-H10	J093	J092	CONDUIT	3.0	1.3335	0.0150
OVF-H11	J099	J098	CONDUIT	3.0	1.6669	0.0150
OVF-H12	J103	J104	CONDUIT	3.0	3.3352	0.0150
OVF-H13	J063	J064	CONDUIT	3.0	2.0004	0.0150
OVF-H14	J069	J070	CONDUIT	3.0	1.6669	0.0150
OVF-H15	J120	J119	CONDUIT	3.0	4.6718	0.0150
OVF-H16	J124	J123	CONDUIT	3.0	3.0014	0.0150
OVF-H17	J130	J129	CONDUIT	3.0	5.0063	0.0150
OVF-H18	J136	J135	CONDUIT	3.0	2.0004	0.0150
OVF-H19	J142	J141	CONDUIT	3.0	3.3352	0.0150
OVF-H20	J144	J145	CONDUIT	3.0	1.3335	0.0150
PondB-Upper	Pond-B	Pond-B-Out	CONDUIT	9.5	0.5263	0.0130
O-PondA	Pond-A	Pond-A-Out	ORIFICE			
O-PondB	Pond-B	Pond-B-Out	ORIFICE			
O-PondC-Lower	LinearPondC	Out-C	ORIFICE			
O-PondC-Upper	LinearPondC	Out-C	ORIFICE			
O-PondD	LinearPondD	Out-D	ORIFICE			
O-PondE	LinearPondE	Out-E	ORIFICE			
C097	J126	J125	WEIR			
C103	J133	J132	WEIR			
C108	J139	J138	WEIR			
C122	J157	J156	WEIR			
C127	J163	J162	WEIR			

C132	J170	J169	WEIR
W-PondA	Pond-A	Pond-A-Out	WEIR
W-PondA-Spill	Pond-A	Pond-A-Out	WEIR
W-PondB-Spill	Pond-B	Pond-B-Out	WEIR
W-PondC-Spill	LinearPondC	Out-C	WEIR
W-PondD	LinearPondD	Out-D	WEIR
W-PondD-Berm	LinearPondD	J134	WEIR
W-PondD-Spill	LinearPondD	Out-D	WEIR
W-PondE	LinearPondE	Out-E	WEIR
W-PondE-Berm	LinearPondE	J141	WEIR
W-PondE-Spill	LinearPondE	Out-E	WEIR

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C001	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6636.14
C002	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4420.10
C003	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	5527.77
C004a	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	57589.56
C004b	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6921.44
C004c	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6838.69
C005	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	16156.90
C006	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	10101.82
C007	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	10933.36
C008	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	8949.88
C009	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	8582.07
C010	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	8551.14
C011	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7667.80
C012	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7657.83
C013	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7661.27
C014	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7654.31
C015	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7663.19
C016	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7856.21
C017	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7523.65
C018	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7427.97
C019	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7848.51
C020	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7454.54
C021	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7670.03
C022	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7650.95
C023	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7850.63
C024	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7470.42
C025	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7657.98
C026	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7668.18
C027	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7090.04
C028	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	4909.21
C029	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	11945.98
C030	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5318.35
C031	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5708.96
C032	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5484.17
C033	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	8225.72
C034	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	7092.49
C035	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	7032.28
C036	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6333.90
C037	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6767.91
C038	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6161.34
C039	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6370.72
C040	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5981.95
C041	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6292.61
C042	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6565.48
C043	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6230.30
C044	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6778.75
C045	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	8410.35
C046	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5547.00
C047	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5550.27
C048	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5566.68
C049	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6256.60
C050	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6259.71
C051	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	4313.96
C052	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	4341.99
C053	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6210.63
C054	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6370.98
C055	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5625.44
C056	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5290.85
C057	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5557.09
C058	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5555.99
C059	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6346.83
C060	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5504.45
C061	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5771.16

C062	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6571.67
C063	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6169.48
C064	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6418.80
C065	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6531.91
C066	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6368.64
C067	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6118.71
C068	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6709.08
C069	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6309.57
C070	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	7469.77
C071	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6404.99
C072	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6221.65
C073	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6585.18
C074	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6502.05
C075	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6041.94
C076	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	9181.55
C077	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	9247.90
C078	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	9079.28
C079	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	7504.20
C080	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	20292.95
C081	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	4901.03
C082	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	5186.69
C083	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	4952.38
C084	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	5005.34
C085	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	15290.33
C086	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	4908.48
C087	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10441.71
C088	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11657.53
C089	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9455.11
C090	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10092.64
C091	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	13153.38
C092	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10845.50
C093	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11459.00
C094	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9454.48
C095	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	8996.16
C096	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9224.19
C098	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6696.97
C099	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11237.22
C100	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11266.70
C101	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11264.52
C102	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11092.14
C104	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6507.37

C105	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6262.70
C106	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6187.94
C107	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	7237.38
C109	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6334.80
C110	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9282.37
C111	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9447.73
C112	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6361.88
C113	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6444.83
C114	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10919.84
C115	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10873.22
C116	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10679.85
C117	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11102.81
C118	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	12792.79
C119	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10367.29
C120	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9056.26
C121	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9570.10
C123	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6462.27
C124	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11072.78
C125	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10907.94
C126	TRAPEZOIDAL	1.05	4.36	0.57	7.30	1	8102.30
C128	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6701.26
C129	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6017.29
C130	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6505.34
C131	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6921.72
C133	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6544.66
C134	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6659.29
C135	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9347.06
C136	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9387.35
C137	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6852.57
C138	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6154.21
C139	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10735.17
C140	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11072.63
C141	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11275.43
C142	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10820.13
C143	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	12205.14
C144	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4761.30
C145	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4406.54
C146	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	2735.04
C147	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2877.79
C148	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2387.35
C149	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2079.04

C150	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2248.85
C151	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	4054.03
C152	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	3919.97
C153	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	1573.58
C154	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2088.64
C155	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2200.80
C156	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2231.76
C157	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2234.47
C158	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2209.94
C159	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2203.97
C160	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	1589.59
CULV-01	CIRCULAR	0.60	0.28	0.15	0.60	3	393.78
CULV-02	CIRCULAR	0.80	0.50	0.20	0.80	1	380.65
CULV-03	CIRCULAR	0.80	0.50	0.20	0.80	1	519.82
CULV-04	CIRCULAR	0.70	0.38	0.17	0.70	1	320.46
CULV-05	CIRCULAR	0.80	0.50	0.20	0.80	1	459.76
CULV-06	CIRCULAR	0.60	0.28	0.15	0.60	1	230.14
CULV-07	CIRCULAR	0.70	0.38	0.17	0.70	1	309.43
CULV-08	CIRCULAR	0.60	0.28	0.15	0.60	1	202.15
CULV-09	CIRCULAR	0.60	0.28	0.15	0.60	1	214.57
CULV-10	CIRCULAR	0.60	0.28	0.15	0.60	1	204.51
CULV-11	CIRCULAR	0.50	0.20	0.12	0.50	1	127.06
CULV-12	CIRCULAR	0.50	0.20	0.12	0.50	1	185.22
CULV-13	CIRCULAR	0.60	0.28	0.15	0.60	1	234.44
CULV-14	CIRCULAR	0.60	0.28	0.15	0.60	1	273.38
CULV-15	CIRCULAR	0.60	0.28	0.15	0.60	1	281.83
CULV-16	CIRCULAR	0.80	0.50	0.20	0.80	1	495.63
CULV-17	CIRCULAR	0.80	0.50	0.20	0.80	2	634.50
CULV-18	CIRCULAR	0.80	0.50	0.20	0.80	1	554.31
CULV-19	CIRCULAR	0.80	0.50	0.20	0.80	1	554.31
CULV-20	CIRCULAR	0.80	0.50	0.20	0.80	1	554.31
CULV-21	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-22	CIRCULAR	0.80	0.50	0.20	0.80	1	580.72
CULV-23	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-24	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-25	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-26	CIRCULAR	0.60	0.28	0.15	0.60	3	619.25
CULV-27	CIRCULAR	0.50	0.20	0.12	0.50	1	259.09
CULV-28	CIRCULAR	0.80	0.50	0.20	0.80	1	66.97
CULV-29	CIRCULAR	0.80	0.50	0.20	0.80	1	59.22
CULV-30	CIRCULAR	0.80	0.50	0.20	0.80	1	1292.27
CULV-31	CIRCULAR	0.50	0.20	0.12	0.50	1	253.78
CULV-32	CIRCULAR	0.70	0.38	0.17	0.70	1	354.25
CULV-33	CIRCULAR	0.60	0.28	0.15	0.60	1	232.21
CULV-34	CIRCULAR	0.60	0.28	0.15	0.60	1	266.79
CULV-35	CIRCULAR	0.70	0.38	0.17	0.70	1	520.83
CULV-36	CIRCULAR	0.50	0.20	0.12	0.50	1	143.14
CULV-37	CIRCULAR	0.70	0.38	0.17	0.70	1	222.89
CULV-38	CIRCULAR	0.70	0.38	0.17	0.70	1	22.58
CULV-39	CIRCULAR	0.70	0.38	0.17	0.70	1	22.47
CULV-40	CIRCULAR	0.50	0.20	0.12	0.50	1	52.46
CULV-41	CIRCULAR	1.20	1.13	0.30	1.20	1	1972.58
CULV-42	CIRCULAR	0.60	0.28	0.15	0.60	1	121.23
DICB01-MH1	CIRCULAR	0.60	0.28	0.15	0.60	1	314.62
DICB02-OGSB	CIRCULAR	0.60	0.28	0.15	0.60	1	418.36
HYD-01	CIRCULAR	0.80	0.50	0.20	0.80	1	565.72
HYD-02	CIRCULAR	0.80	0.50	0.20	0.80	1	491.09
HYD-03	CIRCULAR	0.60	0.28	0.15	0.60	1	213.55
HYD-04	CIRCULAR	0.70	0.38	0.17	0.70	1	330.37
HYD-05	CIRCULAR	0.60	0.28	0.15	0.60	1	207.31
HYD-06	CIRCULAR	0.80	0.50	0.20	0.80	1	451.40
HYD-07	CIRCULAR	0.70	0.38	0.17	0.70	1	305.01
HYD-08	CIRCULAR	0.60	0.28	0.15	0.60	1	215.06
HYD-09	CIRCULAR	0.60	0.28	0.15	0.60	1	221.13
HYD-10	CIRCULAR	0.60	0.28	0.15	0.60	1	204.47
HYD-11	CIRCULAR	0.50	0.20	0.12	0.50	1	135.20
HYD-12	CIRCULAR	0.50	0.20	0.12	0.50	1	191.53
HYD-13	CIRCULAR	0.60	0.28	0.15	0.60	1	269.99
HYD-14	CIRCULAR	0.80	0.50	0.20	0.80	1	475.98
HYD-15	CIRCULAR	0.50	0.20	0.12	0.50	1	249.21
HYD-16	CIRCULAR	0.50	0.20	0.12	0.50	1	200.97
HYD-17	CIRCULAR	0.50	0.20	0.12	0.50	1	255.23
HYD-18	CIRCULAR	0.50	0.20	0.12	0.50	1	151.82
HYD-19	CIRCULAR	0.50	0.20	0.12	0.50	1	209.96
HYD-20	CIRCULAR	0.50	0.20	0.12	0.50	1	130.19
Inflow-C	TRAPEZOIDAL	1.03	3.70	0.53	6.68	1	13040.26
Inflow-D	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	24085.35
Inflow-E1	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	16128.51
Inflow-E2	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	21871.89
MH1-MH2	CIRCULAR	0.60	0.28	0.15	0.60	1	409.99
MH2-OGSA1	CIRCULAR	0.53	0.22	0.13	0.53	1	49.22
MH2-OGSA2	CIRCULAR	0.53	0.22	0.13	0.53	1	49.22

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

MH3-MH5	CIRCULAR	0.53	0.22	0.13	0.53	1	43.85
MH4-MH5	CIRCULAR	0.53	0.22	0.13	0.53	1	43.93
MH5-HWa	CIRCULAR	0.60	0.28	0.15	0.60	1	622.72
OGSA1-MH43	CIRCULAR	0.53	0.22	0.13	0.53	1	59.36
OGSA2-MH4	CIRCULAR	0.53	0.22	0.13	0.53	1	59.36
OGSB-HWb	CIRCULAR	0.60	0.28	0.15	0.60	1	382.86
Out-C	TRAPEZOIDAL	0.50	1.25	0.30	4.00	1	880.91
Out-D	TRAPEZOIDAL	0.50	1.25	0.30	4.00	1	880.91
Out-E	TRAPEZOIDAL	0.50	1.25	0.30	4.00	1	880.91
OVF-01	RECT_OPEN	0.30	1.65	0.27	5.50	1	3253.44
OVF-02	RECT_OPEN	0.30	1.65	0.27	5.50	1	3637.47
OVF-03	RECT_OPEN	0.30	1.65	0.27	5.50	1	5144.31
OVF-04	RECT_OPEN	0.30	1.65	0.27	5.50	1	4601.14
OVF-05	RECT_OPEN	0.30	1.65	0.27	5.50	1	4601.14
OVF-06	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-07	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-08	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-09	RECT_OPEN	0.30	1.65	0.27	5.50	1	4601.14
OVF-10	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-11	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-12	RECT_OPEN	0.30	1.65	0.27	5.50	1	6507.49
OVF-13	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-14	RECT_OPEN	0.30	1.65	0.27	5.50	1	5865.57
OVF-15	RECT_OPEN	0.30	1.65	0.27	5.50	1	6087.05
OVF-16	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-17a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-17b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-18a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-18b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-19a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-19b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-20a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-20b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-21a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-21b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-22a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-22b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11590.64
OVF-23a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-23b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-24a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-24b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-25a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-25b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-26	RECT_OPEN	0.30	1.65	0.27	5.50	1	3253.44
OVF-27	RECT_OPEN	0.30	1.65	0.27	5.50	1	9060.54
OVF-28a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-28b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-29a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-29b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-30	RECT_OPEN	0.30	1.65	0.27	5.50	1	6902.42
OVF-31	RECT_OPEN	0.30	1.65	0.27	5.50	1	8610.37
OVF-32	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-33	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-34	RECT_OPEN	0.30	1.65	0.27	5.50	1	5635.40
OVF-35	RECT_OPEN	0.30	1.65	0.27	5.50	1	7276.00
OVF-36	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-37a	RECT_OPEN	0.30	1.65	0.27	5.50	1	10961.45
OVF-37b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11893.04
OVF-38a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-38b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-39a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-39b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-40a	RECT_OPEN	0.30	1.65	0.27	5.50	1	10961.45
OVF-40b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-41a	RECT_OPEN	0.30	1.65	0.27	5.50	1	24364.37
OVF-41b	RECT_OPEN	0.30	1.65	0.27	5.50	1	24364.37
OVF-H01	RECT_OPEN	0.30	1.65	0.27	5.50	1	7029.14
OVF-H02	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H03	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H04	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H05	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H06	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
OVF-H07	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
OVF-H08	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H09	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H10	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
OVF-H11	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H12	RECT_OPEN	0.30	1.65	0.27	5.50	1	8402.63
OVF-H13	RECT_OPEN	0.30	1.65	0.27	5.50	1	6507.49
OVF-H14	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H15	RECT_OPEN	0.30	1.65	0.27	5.50	1	9944.78
OVF-H16	RECT_OPEN	0.30	1.65	0.27	5.50	1	7971.01

OVF-H17	RECT_OPEN	0.30	1.65	0.27	5.50	1	10294.65
OVF-H18	RECT_OPEN	0.30	1.65	0.27	5.50	1	6507.49
OVF-H19	RECT_OPEN	0.30	1.65	0.27	5.50	1	8402.63
OVF-H20	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
PondB-Upper	CIRCULAR	0.20	0.03	0.05	0.20	1	23.80

```
***************
Analysis Options
***************
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ................ NO
  Snowmelt ............ NO
  Groundwater ......... NO
  Flow Routing ........ YES
  Ponding Allowed ..... NO
  Water Quality ....... NO
Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 11/28/2023 00:00:00
Ending Date ..... 12/01/2023 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 2.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 8
Head Tolerance ..... 0.001500 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	3.333	76.002
Evaporation Loss	0.000	0.000
Infiltration Loss	0.964	21.968
Surface Runoff	2.359	53.791
Final Storage	0.039	0.890
Continuity Error (%)	-0.852	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	2.359	23.592
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	1.769	17.693
External Outflow	4.126	41.261
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.001	0.009
Continuity Error (%)	0.036	

```
************************
Highest Continuity Errors
************************
Node J141 (-19.11%)
Node J200 (5.52%)
Node LinearPondE (2.77%)
Node J138 (1.42%)
Node J201 (-1.19%)
```

```
*************************
Time-Step Critical Elements
*************************
Link C099 (4.45%)
Link C004a (3.05%)
Link OGSA2-MH4 (3.01%)
Link PondB-Upper (2.83%)
```

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

```
  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link OGSA2-MH4 (12)
  Link OGSA1-MH43 (12)
  Link MH4-MH5 (10)
  Link MH2-OGSA2 (9)
  Link MH3-MH5 (9)


  *********************************
  Most Frequent Nonconverging Nodes
  *********************************
  Node OF1 (0.01%)
  Node OF2 (0.01%)
  Node OF3 (0.01%)
  Node OF4 (0.01%)
  Node OF5 (0.01%)


  ************************
  Routing Time Step Summary
  ************************
  Minimum Time Step           :     0.13 sec
  Average Time Step           :     1.83 sec
  Maximum Time Step           :     2.00 sec
  % of Time in Steady State   :     0.00
  Average Iterations per Step :     2.17
  % of Steps Not Converging   :     0.01
  Time Step Frequencies       :
      2.000 -  1.516 sec      :    87.75 %
      1.516 -  1.149 sec      :     0.24 %
      1.149 -  0.871 sec      :     0.47 %
      0.871 -  0.660 sec      :     5.53 %
      0.660 -  0.500 sec      :     6.01 %


  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
A-01a	76.00	0.00	0.00	17.22	49.27	9.05	58.32	0.40	266.91	0.767
A-01b	76.00	0.00	0.00	36.07	19.14	21.26	40.40	0.06	48.32	0.532
A-02a	76.00	0.00	0.00	28.60	29.79	18.27	48.06	0.13	116.71	0.632
A-02b	76.00	0.00	0.00	28.60	29.79	18.26	48.05	0.13	116.61	0.632
A-03a	76.00	0.00	0.00	35.62	19.14	22.07	41.21	0.09	90.13	0.542
A-03b	76.00	0.00	0.00	36.05	19.14	21.28	40.43	0.15	128.19	0.532
A-04	76.00	0.00	0.00	14.15	53.54	7.81	61.35	1.32	895.82	0.807
A-05	76.00	0.00	0.00	14.15	53.54	7.81	61.35	1.33	904.10	0.807
A-06	76.00	0.00	0.00	14.98	53.58	6.86	60.44	1.57	970.96	0.795
A-07	76.00	0.00	0.00	14.38	53.58	7.53	61.11	0.69	454.91	0.804
A-08	76.00	0.00	0.00	14.13	53.54	7.83	61.37	1.19	810.07	0.807
A-09	76.00	0.00	0.00	14.28	53.57	7.64	61.21	1.24	828.13	0.805
A-10	76.00	0.00	0.00	14.92	53.58	6.92	60.50	1.93	1199.33	0.796
A-11	76.00	0.00	0.00	14.07	53.52	7.92	61.43	0.56	384.20	0.808
A-12a	76.00	0.00	0.00	35.59	19.14	22.13	41.27	0.12	114.62	0.543
A-12b	76.00	0.00	0.00	36.05	19.14	21.29	40.43	0.20	169.89	0.532
A-13a	76.00	0.00	0.00	35.63	19.14	22.06	41.20	0.12	117.37	0.542

A-13b	76.00	0.00	0.00	36.02	19.14	21.34	40.48	0.19
164.32	0.533							
A-14a	76.00	0.00	0.00	35.68	19.14	21.95	41.09	0.13
119.54	0.541							
A-14b	76.00	0.00	0.00	36.02	19.14	21.32	40.47	0.20
170.95	0.532							
A-15a	76.00	0.00	0.00	44.54	5.29	27.60	32.89	0.05
54.94	0.433							
A-15b	76.00	0.00	0.00	45.13	5.29	26.51	31.80	0.24
230.49	0.418							
B-01	76.00	0.00	0.00	14.91	53.58	6.93	60.51	2.37
1471.95	0.796							
B-02	76.00	0.00	0.00	15.02	53.58	6.81	60.38	2.15
1321.68	0.795							
B-03	76.00	0.00	0.00	18.90	48.26	8.35	56.61	1.34
819.14	0.745							
B-04	76.00	0.00	0.00	18.64	48.26	8.62	56.88	1.49
930.18	0.748							
B-05	76.00	0.00	0.00	45.27	5.29	26.30	31.59	0.23
212.18	0.416							
B-06a	76.00	0.00	0.00	28.56	29.79	18.38	48.17	0.04
39.24	0.634							
B-06b	76.00	0.00	0.00	28.57	29.79	18.34	48.13	0.04
39.12	0.633							
B-07	76.00	0.00	0.00	44.72	5.29	27.22	32.50	0.05
48.33	0.428							
B-08a	76.00	0.00	0.00	28.56	29.79	18.38	48.17	0.07
65.39	0.634							
B-08b	76.00	0.00	0.00	28.56	29.79	18.37	48.16	0.07
65.35	0.634							
B-09	76.00	0.00	0.00	19.44	48.24	7.77	56.01	1.83
1081.57	0.737							
B-10	76.00	0.00	0.00	45.47	5.29	26.02	31.31	0.18
156.54	0.412							
B-11a	76.00	0.00	0.00	28.59	29.79	18.29	48.08	0.06
56.27	0.633							
B-11b	76.00	0.00	0.00	28.57	29.79	18.36	48.15	0.06
52.25	0.634							
B-12a	76.00	0.00	0.00	28.55	29.79	18.40	48.19	0.13
122.24	0.634							
B-12b	76.00	0.00	0.00	28.56	29.79	18.38	48.18	0.13
122.13	0.634							
B-13	76.00	0.00	0.00	44.69	5.29	27.27	32.56	0.07
69.66	0.428							

B-14a	76.00	0.00	0.00	28.57	29.79	18.36	48.15	0.07
58.76	0.634							
B-14b	76.00	0.00	0.00	28.56	29.79	18.38	48.17	0.07
58.84	0.634							
B-15a	76.00	0.00	0.00	28.55	29.79	18.42	48.21	0.13
115.85	0.634							
B-15b	76.00	0.00	0.00	28.55	29.79	18.42	48.21	0.13
115.85	0.634							
SWM-1	76.00	0.00	0.00	48.83	5.29	22.08	27.37	0.61
299.12	0.360							
SWM-2	76.00	0.00	0.00	47.73	5.29	23.28	28.57	0.23
132.69	0.376							

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
15+0175	JUNCTION	0.00	0.00	111.19	0 00:00	0.00
15+0325	JUNCTION	0.00	0.00	110.59	0 00:00	0.00
15+0425	JUNCTION	0.00	0.00	110.19	0 00:00	0.00
15+0550	JUNCTION	0.00	0.00	109.69	0 00:00	0.00
15+0625	JUNCTION	0.00	0.00	109.39	0 00:00	0.00
15+0725	JUNCTION	0.00	0.00	108.99	0 00:00	0.00
15+0825	JUNCTION	0.00	0.00	108.59	0 00:00	0.00
15+0925	JUNCTION	0.00	0.00	108.14	0 00:00	0.00
15+1025	JUNCTION	0.00	0.00	107.59	0 00:00	0.00
17+250	JUNCTION	0.00	0.00	109.55	0 00:00	0.00
17+365	JUNCTION	0.00	0.00	109.10	0 00:00	0.00
17+512	JUNCTION	0.00	0.00	108.75	0 00:00	0.00
17+532	JUNCTION	0.00	0.00	108.88	0 00:00	0.00
17+625	JUNCTION	0.00	0.00	107.58	0 00:00	0.00
17+793	JUNCTION	0.00	0.01	106.53	0 01:32	0.01
18+282	JUNCTION	0.00	0.00	105.72	0 00:00	0.00
DICB01	JUNCTION	0.22	2.68	106.56	0 01:41	2.68
DICB02	JUNCTION	0.30	1.65	104.57	0 01:33	1.65
J001	JUNCTION	0.06	0.44	102.99	0 02:22	0.44

J002	JUNCTION	0.09	0.56	103.44	0	02:21	0.56
J002a	JUNCTION	0.08	0.32	105.21	0	01:41	0.32
J002b	JUNCTION	0.04	1.21	106.24	0	01:41	1.21
J002c	JUNCTION	0.03	1.08	106.25	0	01:41	1.08
J003	JUNCTION	0.05	0.74	106.61	0	01:41	0.74
J004	JUNCTION	0.14	0.97	107.13	0	01:40	0.97
J005	JUNCTION	0.04	0.79	107.19	0	01:41	0.79
J006	JUNCTION	0.05	0.79	107.32	0	01:42	0.79
J007	JUNCTION	0.13	0.89	107.60	0	01:41	0.89
J008	JUNCTION	0.05	0.80	107.84	0	01:41	0.80
J009	JUNCTION	0.13	0.91	108.07	0	01:41	0.91
J010	JUNCTION	0.04	0.81	108.25	0	01:41	0.81
J011	JUNCTION	0.12	0.88	108.44	0	01:40	0.88
J012	JUNCTION	0.04	0.77	108.61	0	01:40	0.77
J013	JUNCTION	0.10	0.81	108.79	0	01:40	0.81
J014	JUNCTION	0.04	0.72	108.97	0	01:39	0.72
J015	JUNCTION	0.12	0.81	109.06	0	01:39	0.81
J016	JUNCTION	0.03	0.66	109.10	0	01:39	0.66
J017	JUNCTION	0.03	0.58	109.23	0	01:38	0.58
J018	JUNCTION	0.09	0.63	109.41	0	01:36	0.63
J019	JUNCTION	0.02	0.48	109.52	0	01:36	0.48
J020	JUNCTION	0.08	0.52	109.70	0	01:35	0.52
J021	JUNCTION	0.02	0.40	109.85	0	01:34	0.40
J022	JUNCTION	0.02	0.42	110.06	0	01:32	0.42
J023	JUNCTION	0.08	0.47	110.25	0	01:31	0.47
J024	JUNCTION	0.00	0.22	110.26	0	01:31	0.22
J025	JUNCTION	0.00	0.08	110.25	0	01:32	0.08
J026	JUNCTION	0.00	0.10	110.25	0	01:31	0.10
J027	JUNCTION	0.06	1.05	107.34	0	01:32	1.05
J028	JUNCTION	0.12	1.02	107.34	0	01:31	1.02
J029	JUNCTION	0.08	1.09	107.46	0	01:40	1.09
J030	JUNCTION	0.05	0.99	107.46	0	01:40	0.99
J031	JUNCTION	0.12	0.97	107.46	0	01:40	0.97
J032	JUNCTION	0.06	1.04	107.60	0	01:41	1.04
J033	JUNCTION	0.04	0.79	107.60	0	01:41	0.79
J034	JUNCTION	0.05	0.94	107.85	0	01:34	0.93
J035	JUNCTION	0.12	0.90	107.85	0	01:34	0.90
J036	JUNCTION	0.08	1.08	108.08	0	01:32	1.08
J037	JUNCTION	0.04	0.94	108.08	0	01:32	0.94
J038	JUNCTION	0.08	0.85	108.08	0	01:33	0.85
J039	JUNCTION	0.05	0.85	108.11	0	01:39	0.85
J040	JUNCTION	0.10	0.80	108.11	0	01:34	0.80
J041	JUNCTION	0.05	1.03	108.42	0	01:34	1.02
J042	JUNCTION	0.04	0.88	108.42	0	01:34	0.88
J043	JUNCTION	0.10	0.83	108.42	0	01:34	0.83
J044	JUNCTION	0.06	0.85	108.49	0	01:38	0.85
J045	JUNCTION	0.04	0.83	108.49	0	01:38	0.83
J046	JUNCTION	0.05	1.02	108.76	0	01:33	1.02
J047	JUNCTION	0.04	0.82	108.76	0	01:33	0.82
J048	JUNCTION	0.09	0.80	108.76	0	01:33	0.80
J049	JUNCTION	0.05	0.80	108.81	0	01:40	0.80
J050	JUNCTION	0.03	0.73	108.81	0	01:40	0.73
J051	JUNCTION	0.04	0.92	109.09	0	01:42	0.92
J052	JUNCTION	0.02	0.74	109.10	0	01:42	0.74
J053	JUNCTION	0.02	0.58	109.10	0	01:42	0.58
J054	JUNCTION	0.02	0.41	109.18	0	01:31	0.41
J055	JUNCTION	0.08	0.47	109.43	0	01:33	0.47
J056	JUNCTION	0.03	0.85	109.90	0	01:33	0.85
J057	JUNCTION	0.08	0.70	109.91	0	01:33	0.70
J058	JUNCTION	0.01	0.60	109.94	0	01:34	0.60
J059	JUNCTION	0.01	0.49	109.94	0	01:34	0.49
J060	JUNCTION	0.00	0.33	109.95	0	01:34	0.33
J061	JUNCTION	0.00	0.29	110.01	0	01:34	0.29
J062	JUNCTION	0.01	0.42	110.04	0	01:33	0.42
J063	JUNCTION	0.01	0.60	110.05	0	01:33	0.60
J064	JUNCTION	0.07	0.69	110.08	0	01:32	0.69
J065	JUNCTION	0.02	0.74	110.08	0	01:32	0.74
J066	JUNCTION	0.09	0.95	110.15	0	01:30	0.95
J067	JUNCTION	0.04	1.13	110.15	0	01:31	1.13
J068	JUNCTION	0.11	0.92	109.85	0	01:31	0.91
J069	JUNCTION	0.07	0.95	109.84	0	01:31	0.95
J070	JUNCTION	0.11	0.66	109.50	0	01:38	0.66
J071	JUNCTION	0.03	0.70	109.47	0	01:39	0.70
J072	JUNCTION	0.04	0.94	109.46	0	01:39	0.94
J073	JUNCTION	0.05	1.10	109.46	0	01:39	1.10
J074	JUNCTION	0.12	1.09	109.46	0	01:39	1.09
J075	JUNCTION	0.08	1.08	109.49	0	01:40	1.08
J076	JUNCTION	0.03	0.95	109.49	0	01:40	0.95
J077	JUNCTION	0.10	0.92	109.49	0	01:40	0.92
J078	JUNCTION	0.04	0.94	109.58	0	01:34	0.94
J079	JUNCTION	0.10	0.91	109.58	0	01:34	0.91
J080	JUNCTION	0.06	0.99	109.70	0	01:32	0.99

J081	JUNCTION	0.03	0.82	109.70	0	01:32	0.82
J082	JUNCTION	0.03	0.77	109.72	0	01:34	0.77
J083	JUNCTION	0.08	0.69	109.72	0	01:34	0.69
J084	JUNCTION	0.03	0.68	109.76	0	01:36	0.68
J085	JUNCTION	0.02	0.48	109.76	0	01:36	0.48
J086	JUNCTION	0.08	0.42	109.81	0	01:36	0.42
J087	JUNCTION	0.04	0.61	110.05	0	01:34	0.61
J088	JUNCTION	0.08	0.58	110.06	0	01:34	0.57
J089	JUNCTION	0.03	0.73	110.29	0	01:33	0.73
J090	JUNCTION	0.08	0.61	110.29	0	01:33	0.61
J091	JUNCTION	0.03	0.83	110.58	0	01:31	0.82
J092	JUNCTION	0.08	0.81	110.58	0	01:31	0.80
J093	JUNCTION	0.05	0.89	110.70	0	01:31	0.89
J094	JUNCTION	0.03	0.82	110.70	0	01:31	0.82
J095	JUNCTION	0.06	0.75	110.70	0	01:31	0.75
J096	JUNCTION	0.01	0.61	110.63	0	01:32	0.61
J097	JUNCTION	0.01	0.49	110.63	0	01:32	0.49
J098	JUNCTION	0.05	0.50	110.63	0	01:32	0.50
J099	JUNCTION	0.00	0.42	110.60	0	01:33	0.42
J100	JUNCTION	0.00	0.30	110.59	0	01:33	0.30
J101	JUNCTION	0.01	0.45	110.59	0	01:33	0.45
J102	JUNCTION	0.06	0.58	110.56	0	01:32	0.58
J103	JUNCTION	0.02	0.68	110.56	0	01:31	0.68
J104	JUNCTION	0.06	0.30	110.08	0	01:32	0.30
J105	JUNCTION	0.05	0.55	104.29	0	02:20	0.54
J106	JUNCTION	0.08	0.88	104.57	0	01:33	0.88
J107	JUNCTION	0.04	0.71	104.67	0	01:33	0.71
J108	JUNCTION	0.02	0.56	104.75	0	01:34	0.56
J109	JUNCTION	0.02	0.50	104.85	0	01:34	0.50
J110	JUNCTION	0.09	0.40	104.84	0	01:34	0.40
J111	JUNCTION	0.01	0.31	104.84	0	01:35	0.31
J112	JUNCTION	0.05	0.19	104.99	0	01:30	0.19
J113	JUNCTION	0.01	0.33	105.44	0	01:30	0.33
J114	JUNCTION	0.00	0.14	105.69	0	01:30	0.14
J115	JUNCTION	0.12	1.23	105.67	0	01:37	1.23
J116	JUNCTION	0.04	1.10	105.67	0	01:37	1.10
J117	JUNCTION	0.03	0.83	105.68	0	01:37	0.83
J118	JUNCTION	0.10	0.49	105.73	0	01:32	0.49
J119	JUNCTION	0.06	0.41	105.73	0	01:32	0.41
J120	JUNCTION	0.01	0.28	105.74	0	01:33	0.28
J121	JUNCTION	0.00	0.17	105.74	0	01:33	0.17
J122	JUNCTION	0.00	0.09	106.17	0	01:30	0.09
J123	JUNCTION	0.00	0.00	106.21	0	00:00	0.00
J124	JUNCTION	0.00	0.00	106.30	0	00:00	0.00
J125	JUNCTION	0.00	0.00	106.61	0	00:00	0.00
J126	JUNCTION	0.00	0.07	106.68	0	01:33	0.07
J127	JUNCTION	0.11	0.39	106.68	0	01:34	0.39
J128	JUNCTION	0.03	0.30	106.68	0	01:34	0.30
J129	JUNCTION	0.06	0.24	106.68	0	01:34	0.24
J130	JUNCTION	0.01	0.20	106.79	0	01:31	0.20
J131	JUNCTION	0.00	0.09	107.23	0	01:30	0.09
J132	JUNCTION	0.00	0.11	107.45	0	01:48	0.11
J133	JUNCTION	0.09	0.57	108.05	0	01:48	0.56
J134	JUNCTION	0.01	0.23	107.97	0	01:48	0.23
J135	JUNCTION	0.05	0.18	107.97	0	01:31	0.18
J136	JUNCTION	0.01	0.25	108.10	0	01:30	0.25
J137	JUNCTION	0.00	0.14	108.12	0	01:30	0.14
J138	JUNCTION	0.00	0.04	108.13	0	01:30	0.03
J139	JUNCTION	0.05	0.62	108.71	0	01:55	0.62
J140	JUNCTION	0.15	0.88	108.71	0	01:55	0.88
J141	JUNCTION	0.12	0.77	108.71	0	01:56	0.77
J142	JUNCTION	0.06	0.67	108.71	0	01:55	0.67
J143	JUNCTION	0.00	0.12	108.71	0	01:55	0.12
J144	JUNCTION	0.02	0.31	108.71	0	01:55	0.31
J145	JUNCTION	0.06	0.36	108.72	0	01:54	0.35
J146	JUNCTION	0.07	0.41	108.71	0	01:55	0.41
J147	JUNCTION	0.00	0.14	108.85	0	01:31	0.13
J148	JUNCTION	0.00	0.14	109.57	0	01:30	0.14
J149	JUNCTION	0.00	0.00	110.15	0	00:00	0.00
J150	JUNCTION	0.00	0.00	110.87	0	00:00	0.00
J151	JUNCTION	0.00	0.00	111.69	0	00:00	0.00
J152	JUNCTION	0.12	1.30	106.54	0	01:32	1.30
J153	JUNCTION	0.03	0.97	106.54	0	01:32	0.97
J154	JUNCTION	0.10	0.74	106.56	0	01:32	0.74
J155	JUNCTION	0.04	1.15	107.15	0	01:30	1.15
J156	JUNCTION	0.01	0.54	107.15	0	01:30	0.54
J157	JUNCTION	0.02	0.92	107.53	0	01:33	0.92
J158	JUNCTION	0.10	1.21	107.53	0	01:34	1.21
J159	JUNCTION	0.02	0.44	107.58	0	01:30	0.44
J160	JUNCTION	0.06	0.39	107.58	0	01:30	0.39
J161	JUNCTION	0.00	0.30	107.77	0	01:34	0.30
J162	JUNCTION	0.00	0.17	107.78	0	01:34	0.17

J163	JUNCTION	0.11	0.89	108.37	0	01:33	0.89
J164	JUNCTION	0.10	0.82	108.38	0	01:33	0.82
J165	JUNCTION	0.04	1.11	108.76	0	01:33	1.11
J166	JUNCTION	0.03	1.02	108.76	0	01:32	1.02
J167	JUNCTION	0.08	0.93	108.77	0	01:32	0.92
J168	JUNCTION	0.02	0.84	108.77	0	01:32	0.84
J169	JUNCTION	0.01	0.68	108.77	0	01:32	0.68
J170	JUNCTION	0.05	0.70	108.79	0	01:33	0.70
J171	JUNCTION	0.07	0.78	108.79	0	01:34	0.78
J172	JUNCTION	0.14	0.90	108.79	0	01:34	0.90
J173	JUNCTION	0.16	0.96	108.79	0	01:33	0.96
J174	JUNCTION	0.12	0.71	108.80	0	01:33	0.71
J175	JUNCTION	0.04	0.93	109.22	0	01:31	0.93
J176	JUNCTION	0.01	0.62	109.22	0	01:31	0.62
J177	JUNCTION	0.02	0.70	109.22	0	01:31	0.70
J178	JUNCTION	0.06	0.56	108.99	0	01:33	0.56
J179	JUNCTION	0.07	0.68	108.99	0	01:34	0.68
J180	JUNCTION	0.01	0.28	108.99	0	01:34	0.28
J181	JUNCTION	0.00	0.13	109.56	0	01:30	0.13
J182	JUNCTION	0.00	0.00	110.15	0	00:00	0.00
J183	JUNCTION	0.00	0.00	110.87	0	00:00	0.00
J184	JUNCTION	0.00	0.00	111.69	0	00:00	0.00
J185	JUNCTION	0.03	0.63	107.40	0	01:53	0.63
J186	JUNCTION	0.02	0.51	107.41	0	01:53	0.51
J187	JUNCTION	0.02	0.43	107.80	0	01:49	0.43
J188	JUNCTION	0.03	0.55	108.13	0	01:46	0.55
J189	JUNCTION	0.03	0.53	106.96	0	01:46	0.53
J190	JUNCTION	0.04	0.58	107.31	0	01:44	0.58
J191	JUNCTION	0.04	0.60	107.51	0	01:42	0.60
J192	JUNCTION	0.04	0.59	107.64	0	01:41	0.59
J193	JUNCTION	0.00	0.00	107.72	0	00:00	0.00
J194	JUNCTION	0.00	0.00	108.45	0	00:00	0.00
J195	JUNCTION	0.00	0.00	108.69	0	00:00	0.00
J196	JUNCTION	0.05	0.70	109.40	0	02:17	0.70
J197	JUNCTION	0.05	0.69	109.59	0	02:13	0.69
J198	JUNCTION	0.05	0.69	109.86	0	02:11	0.69
J199	JUNCTION	0.05	0.69	110.16	0	02:09	0.69
J200	JUNCTION	0.02	0.38	110.16	0	02:10	0.38
J201	JUNCTION	0.07	0.27	110.16	0	02:08	0.27
J202	JUNCTION	0.01	0.20	110.16	0	02:08	0.20
J203	JUNCTION	0.00	0.00	110.17	0	00:00	0.00

Out-C	JUNCTION	0.04	0.11	105.38	0	03:08	0.11
Out-D	JUNCTION	0.02	0.30	106.44	0	01:49	0.30
Out-E	JUNCTION	0.03	0.26	107.64	0	01:55	0.26
Pond-A-Out	JUNCTION	0.07	0.48	103.73	0	02:20	0.48
Pond-B-Out	JUNCTION	0.04	0.13	102.40	0	03:10	0.13
OF1	OUTFALL	0.03	0.48	107.07	0	01:49	0.48
OF2	OUTFALL	0.00	0.00	107.74	0	00:00	0.00
OF3	OUTFALL	0.00	0.00	0.00	0	00:00	0.00
OF4	OUTFALL	0.03	0.53	106.83	0	01:46	0.53
OF5	OUTFALL	0.06	0.70	108.70	0	02:17	0.70
OF6	OUTFALL	0.00	0.00	0.00	0	00:00	0.00
OF7a	OUTFALL	0.01	0.25	110.04	0	01:32	0.25
OF7b	OUTFALL	0.00	0.10	109.79	0	01:31	0.10
OF-A	OUTFALL	0.06	0.44	102.25	0	02:22	0.44
OF-B	OUTFALL	0.04	0.13	101.63	0	03:10	0.13
OF-C	OUTFALL	0.04	0.11	105.33	0	03:08	0.11
OF-D	OUTFALL	0.02	0.30	106.39	0	01:49	0.30
OF-E	OUTFALL	0.03	0.26	107.59	0	01:55	0.26
LinearPondC	STORAGE	0.19	0.65	106.62	0	03:07	0.65
LinearPondD	STORAGE	0.12	1.05	108.00	0	01:49	1.05
LinearPondE	STORAGE	0.15	1.08	108.71	0	01:55	1.08
MH1	STORAGE	0.20	1.92	105.73	0	02:02	1.92
MH2	STORAGE	0.20	1.76	105.52	0	02:06	1.76
MH3	STORAGE	0.20	1.73	105.49	0	02:07	1.73
MH4	STORAGE	0.20	1.73	105.49	0	02:07	1.73
MH5	STORAGE	0.37	2.06	105.46	0	02:07	2.06
OGS-A1	STORAGE	0.20	1.74	105.50	0	02:07	1.74
OGS-A2	STORAGE	0.20	1.74	105.50	0	02:07	1.74
OGS-B	STORAGE	0.33	1.43	104.25	0	03:09	1.43
Pond-A	STORAGE	0.38	1.64	104.94	0	02:20	1.64
Pond-B	STORAGE	0.56	1.89	104.24	0	03:09	1.89

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Node Inflow Summary
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	Maximum Lateral Inflow	Maximum Total Inflow	Time of Max Occurrence	Lateral Inflow Volume	Total Inflow Volume	Flow Balance Error

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

Node	Type	LPS	LPS	days	hr:min	10^6 ltr	10^6 ltr	Percent	
15+0175	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0325	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0425	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0550	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0625	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0725	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0825	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0925	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+1025	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+250	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+365	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+512	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+532	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+625	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+793	JUNCTION	0.00	77.13	0	01:32	0	0.0071	0.006	
18+282	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB01	JUNCTION	0.00	3658.31	0	01:40	0	11.5	-0.049	
DICB02	JUNCTION	0.00	2084.88	0	01:33	0	4.97	-0.070	
J001	JUNCTION	0.00	1052.79	0	02:21	0	12.1	0.005	
J002	JUNCTION	0.00	1052.87	0	02:20	0	12.1	-0.002	
J002a	JUNCTION	0.00	2626.26	0	01:41	0	5.5	0.003	
J002b	JUNCTION	0.00	2626.22	0	01:41	0	5.5	-0.005	
J002c	JUNCTION	0.00	2626.21	0	01:41	0	5.5	0.097	
J003	JUNCTION	230.49	3663.07	0	01:40	0.242	11.5	0.022	
J004	JUNCTION	0.00	3566.98	0	01:40	0	11.3	-0.003	
J005	JUNCTION	0.00	2582.25	0	01:42	0	7.16	0.002	
J006	JUNCTION	0.00	2581.77	0	01:41	0	7.16	0.011	
J007	JUNCTION	0.00	2583.72	0	01:41	0	7.22	-0.115	
J008	JUNCTION	128.19	2522.77	0	01:41	0.15	6.94	0.014	
J009	JUNCTION	0.00	2480.29	0	01:40	0	6.79	-0.018	
J010	JUNCTION	0.00	2238.16	0	01:40	0	5.91	0.025	
J011	JUNCTION	0.00	2241.69	0	01:40	0	5.91	-0.023	
J012	JUNCTION	170.95	1972.23	0	01:40	0.198	5.06	0.022	
J013	JUNCTION	0.00	1910.34	0	01:39	0	5.06	0.215	
J014	JUNCTION	0.00	1811.83	0	01:39	0	4.87	0.030	
J015	JUNCTION	0.00	1814.04	0	01:38	0	4.87	-0.014	
J016	JUNCTION	0.00	1025.75	0	01:37	0	2.35	0.060	
J017	JUNCTION	0.00	1034.10	0	01:36	0	2.35	0.000	
J018	JUNCTION	164.32	1039.21	0	01:35	0.19	2.35	-0.064	
J019	JUNCTION	0.00	655.64	0	01:35	0	1.27	0.105	
J020	JUNCTION	0.00	663.36	0	01:34	0	1.27	-0.113	
J021	JUNCTION	0.00	521.34	0	01:33	0	0.921	0.125	
J022	JUNCTION	0.00	527.31	0	01:31	0	0.921	-0.020	
J023	JUNCTION	169.89	565.55	0	01:30	0.198	0.939	-0.078	
J024	JUNCTION	0.00	50.62	0	01:26	0	0.0221	1.132	
J025	JUNCTION	0.00	13.54	0	01:28	0	0.00643	0.572	
J026	JUNCTION	48.32	49.68	0	01:31	0.0566	0.0595	-0.018	
J027	JUNCTION	1254.27	1407.19	0	01:30	1.98	4.13	0.012	
J028	JUNCTION	0.00	564.68	0	01:55	0	2.15	0.010	
J029	JUNCTION	0.00	560.52	0	01:55	0	2.15	-0.006	
J030	JUNCTION	0.00	538.65	0	01:51	0	2.15	-0.000	
J031	JUNCTION	0.00	525.93	0	01:47	0	2.15	0.009	
J032	JUNCTION	0.00	515.09	0	01:40	0	2.15	0.005	
J033	JUNCTION	0.00	684.07	0	01:31	0	2.44	-0.016	
J034	JUNCTION	0.00	692.57	0	01:31	0	2.37	0.016	
J035	JUNCTION	0.00	701.23	0	01:30	0	2.37	0.002	
J036	JUNCTION	0.00	723.72	0	01:30	0	2.37	0.006	
J037	JUNCTION	918.26	918.26	0	01:30	1.34	2.39	-0.031	
J038	JUNCTION	0.00	299.63	0	01:55	0	1.05	0.080	
J039	JUNCTION	0.00	485.05	0	01:34	0	1.91	-0.035	
J040	JUNCTION	0.00	485.91	0	01:33	0	1.91	0.025	
J041	JUNCTION	0.00	528.68	0	01:29	0	1.91	0.005	
J042	JUNCTION	454.91	641.95	0	01:30	0.69	1.91	-0.014	
J043	JUNCTION	0.00	307.60	0	01:53	0	1.22	0.028	
J044	JUNCTION	0.00	303.14	0	01:48	0	1.22	0.001	
J045	JUNCTION	0.00	684.73	0	01:30	0	2.07	-0.004	
J046	JUNCTION	0.00	757.58	0	01:30	0	2.07	0.022	
J047	JUNCTION	929.61	929.61	0	01:30	1.32	2.1	-0.010	
J048	JUNCTION	0.00	272.28	0	01:53	0	0.801	0.032	
J049	JUNCTION	0.00	261.50	0	01:53	0	0.774	-0.016	
J050	JUNCTION	0.00	327.84	0	01:44	0	0.95	0.018	
J051	JUNCTION	0.00	330.95	0	01:38	0	0.761	0.001	
J052	JUNCTION	0.00	361.23	0	01:35	0	0.761	0.033	
J053	JUNCTION	0.00	407.29	0	01:32	0	0.763	0.246	
J054	JUNCTION	0.00	407.93	0	01:33	0	0.761	-0.220	
J055	JUNCTION	0.00	408.85	0	01:33	0	0.761	-0.058	
J056	JUNCTION	116.61	437.89	0	01:30	0.13	0.761	0.016	
J057	JUNCTION	384.20	384.20	0	01:30	0.559	0.649	-0.019	
J058	JUNCTION	0.00	149.03	0	01:36	0	0.102	-0.058	
J059	JUNCTION	0.00	133.51	0	01:35	0	0.0865	-0.372	

J060	JUNCTION	0.00	128.65	0	01:33	0	0.0751	0.752
J061	JUNCTION	0.00	139.08	0	01:32	0	0.0734	0.471
J062	JUNCTION	0.00	154.85	0	01:31	0	0.0813	-0.455
J063	JUNCTION	0.00	164.37	0	01:30	0	0.096	-0.162
J064	JUNCTION	0.00	170.73	0	01:30	0	0.109	0.076
J065	JUNCTION	0.00	180.31	0	01:30	0	0.123	0.018
J066	JUNCTION	970.96	970.96	0	01:30	1.57	1.6	-0.015
J067	JUNCTION	116.71	855.79	0	01:30	0.13	1.63	0.014
J068	JUNCTION	0.00	796.45	0	01:30	0	1.63	0.006
J069	JUNCTION	0.00	781.04	0	01:31	0	1.63	0.005
J070	JUNCTION	0.00	773.66	0	01:31	0	1.63	-0.055
J071	JUNCTION	0.00	761.81	0	01:31	0	1.63	-0.074
J072	JUNCTION	0.00	676.21	0	01:32	0	1.63	0.134
J073	JUNCTION	0.00	806.16	0	01:33	0	2.52	0.008
J074	JUNCTION	0.00	282.13	0	01:52	0	0.887	0.015
J075	JUNCTION	0.00	269.75	0	01:30	0	0.887	-0.000
J076	JUNCTION	0.00	346.84	0	01:30	0	0.888	0.041
J077	JUNCTION	0.00	392.83	0	01:29	0	0.888	-0.019
J078	JUNCTION	0.00	412.38	0	01:29	0	0.888	0.017
J079	JUNCTION	0.00	430.69	0	01:29	0	0.889	-0.004
J080	JUNCTION	0.00	531.61	0	01:29	0	0.889	0.068
J081	JUNCTION	1021.46	1021.46	0	01:30	1.45	1.79	-0.034
J082	JUNCTION	0.00	167.53	0	01:46	0	0.341	0.007
J083	JUNCTION	0.00	154.89	0	01:45	0	0.323	-0.081
J084	JUNCTION	0.00	141.55	0	01:37	0	0.319	-0.220
J085	JUNCTION	0.00	297.01	0	01:35	0	0.67	-0.163
J086	JUNCTION	0.00	300.47	0	01:34	0	0.671	0.069
J087	JUNCTION	0.00	301.15	0	01:33	0	0.671	-0.000
J088	JUNCTION	0.00	302.82	0	01:33	0	0.671	0.017
J089	JUNCTION	0.00	326.57	0	01:30	0	0.671	0.034
J090	JUNCTION	0.00	356.17	0	01:30	0	0.671	-0.012
J091	JUNCTION	114.62	362.56	0	01:30	0.12	0.671	0.025
J092	JUNCTION	0.00	255.58	0	01:30	0	0.552	0.010
J093	JUNCTION	0.00	288.11	0	01:30	0	0.552	0.010
J094	JUNCTION	895.82	895.82	0	01:30	1.32	1.36	-0.001
J095	JUNCTION	0.00	152.78	0	01:30	0	0.112	0.150
J096	JUNCTION	0.00	126.23	0	01:30	0	0.0841	-0.129
J097	JUNCTION	0.00	109.23	0	01:30	0	0.0617	0.421
J098	JUNCTION	0.00	85.85	0	01:31	0	0.0498	0.012
J099	JUNCTION	0.00	81.75	0	01:32	0	0.047	0.040
J100	JUNCTION	0.00	79.86	0	01:33	0	0.0466	0.014

J101	JUNCTION	0.00	88.57	0	01:34	0	0.0505	-0.069
J102	JUNCTION	266.91	291.35	0	01:30	0.402	0.452	0.017
J103	JUNCTION	0.00	276.09	0	01:30	0	0.448	0.008
J104	JUNCTION	0.00	269.13	0	01:32	0	0.448	0.001
J105	JUNCTION	0.00	1146.47	0	01:33	0	3.1	0.155
J106	JUNCTION	0.00	2137.80	0	01:30	0	4.98	0.190
J107	JUNCTION	1471.95	2286.26	0	01:30	2.37	4.97	-0.166
J108	JUNCTION	69.66	1150.53	0	01:35	0.0651	2.6	0.026
J109	JUNCTION	0.00	1115.97	0	01:35	0	2.54	-0.005
J110	JUNCTION	0.00	1115.21	0	01:35	0	2.54	0.004
J111	JUNCTION	0.00	119.66	0	01:30	0	0.135	0.203
J112	JUNCTION	0.00	129.54	0	01:30	0	0.135	-0.205
J113	JUNCTION	0.00	120.81	0	01:30	0	0.135	0.027
J114	JUNCTION	122.13	122.13	0	01:30	0.135	0.135	-0.057
J115	JUNCTION	0.00	1059.47	0	01:36	0	2.4	0.008
J116	JUNCTION	0.00	1107.39	0	01:33	0	2.4	0.015
J117	JUNCTION	0.00	1203.00	0	01:32	0	2.4	0.014
J118	JUNCTION	0.00	1204.87	0	01:32	0	2.41	-0.019
J119	JUNCTION	0.00	42.64	0	01:34	0	0.0578	0.107
J120	JUNCTION	0.00	42.44	0	01:31	0	0.0578	-0.001
J121	JUNCTION	0.00	50.23	0	01:30	0	0.058	0.381
J122	JUNCTION	52.25	52.25	0	01:30	0.0578	0.0578	-0.377
J123	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J124	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J125	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J126	JUNCTION	0.00	10.11	0	01:27	0	0.00498	0.861
J127	JUNCTION	0.00	814.43	0	01:34	0	2.22	-0.006
J128	JUNCTION	0.00	86.34	0	02:25	0	0.222	-0.073
J129	JUNCTION	0.00	61.26	0	02:25	0	0.155	0.330
J130	JUNCTION	0.00	57.44	0	01:30	0	0.116	-0.142
J131	JUNCTION	58.84	76.21	0	01:48	0.065	0.115	0.174
J132	JUNCTION	0.00	109.55	0	01:48	0	0.05	-0.027
J133	JUNCTION	0.00	1447.29	0	01:48	0	2.26	0.335
J134	JUNCTION	0.00	88.81	0	01:47	0	0.107	-0.155
J135	JUNCTION	0.00	59.82	0	01:30	0	0.0725	-0.111
J136	JUNCTION	0.00	61.19	0	01:30	0	0.0722	-0.422
J137	JUNCTION	65.35	65.35	0	01:30	0.0722	0.0726	0.040
J138	JUNCTION	0.00	1.80	0	01:25	0	0.000398	1.441
J139	JUNCTION	0.00	55.39	0	01:28	0	0.0391	0.207
J140	JUNCTION	0.00	708.50	0	01:33	0	1.69	-0.060
J141	JUNCTION	0.00	411.97	0	01:45	0	0.341	-16.045

J142	JUNCTION	39.12	52.72	0	01:28	0.0433	0.0684	-0.146
J143	JUNCTION	0.00	23.88	0	01:39	0	0.0097	0.191
J144	JUNCTION	0.00	17.29	0	01:37	0	0.0138	0.092
J145	JUNCTION	0.00	39.40	0	01:37	0	0.031	-0.042
J146	JUNCTION	0.00	315.97	0	01:31	0	0.513	-0.028
J147	JUNCTION	0.00	112.15	0	01:30	0	0.128	-0.125
J148	JUNCTION	115.85	115.85	0	01:30	0.128	0.128	-0.094
J149	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J150	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J151	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J152	JUNCTION	122.24	1182.69	0	01:32	0.135	2.35	0.002
J153	JUNCTION	0.00	1267.65	0	01:30	0	2.21	0.050
J154	JUNCTION	0.00	1355.74	0	01:30	0	2.21	-0.067
J155	JUNCTION	1377.95	1377.95	0	01:30	2.21	2.26	0.019
J156	JUNCTION	0.00	145.56	0	01:25	0	0.0447	0.857
J157	JUNCTION	0.00	146.68	0	01:30	0	0.0833	0.171
J158	JUNCTION	0.00	1153.42	0	01:30	0	2.03	0.193
J159	JUNCTION	1140.33	1171.31	0	01:30	1.9	1.95	-0.196
J160	JUNCTION	0.00	98.65	0	01:33	0	0.0516	0.054
J161	JUNCTION	0.00	100.12	0	01:33	0	0.0477	0.129
J162	JUNCTION	0.00	100.07	0	01:33	0	0.0473	-0.047
J163	JUNCTION	0.00	633.12	0	01:33	0	1.41	-0.022
J164	JUNCTION	0.00	641.94	0	01:32	0	1.41	0.031
J165	JUNCTION	0.00	651.60	0	01:32	0	1.41	0.010
J166	JUNCTION	819.14	819.14	0	01:30	1.34	1.47	-0.010
J167	JUNCTION	65.39	188.57	0	01:30	0.0722	0.179	0.116
J168	JUNCTION	0.00	88.25	0	01:30	0	0.0628	-0.065
J169	JUNCTION	0.00	41.79	0	01:30	0	0.019	0.247
J170	JUNCTION	0.00	7.20	0	01:26	0	0.00434	0.054
J171	JUNCTION	0.00	19.18	0	01:25	0	0.0163	0.001
J172	JUNCTION	0.00	41.47	0	01:25	0	0.0413	0.226
J173	JUNCTION	0.00	625.52	0	01:30	0	1.33	0.096
J174	JUNCTION	39.24	662.54	0	01:30	0.0433	1.3	-0.054
J175	JUNCTION	930.18	930.18	0	01:30	1.49	1.49	0.017
J176	JUNCTION	0.00	263.92	0	01:30	0	0.235	0.120
J177	JUNCTION	0.00	218.46	0	01:29	0	0.235	-0.016
J178	JUNCTION	0.00	210.41	0	01:28	0	0.235	-0.160
J179	JUNCTION	0.00	252.82	0	01:30	0	0.364	0.237
J180	JUNCTION	0.00	111.58	0	01:30	0	0.128	0.175
J181	JUNCTION	115.85	115.85	0	01:30	0.128	0.128	-0.378
J182	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J183	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J184	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J185	JUNCTION	0.00	660.61	0	01:49	0	2.38	0.023
J186	JUNCTION	0.00	666.82	0	01:49	0	2.38	0.096
J187	JUNCTION	0.00	671.72	0	01:47	0	2.38	0.034
J188	JUNCTION	675.19	675.19	0	01:45	2.38	2.38	-0.127
J189	JUNCTION	0.00	525.09	0	01:44	0	1.51	0.296
J190	JUNCTION	0.00	528.67	0	01:42	0	1.51	-0.085
J191	JUNCTION	0.00	534.78	0	01:41	0	1.51	-0.128
J192	JUNCTION	544.79	544.79	0	01:40	1.5	1.5	-0.079
J193	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J194	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J195	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J196	JUNCTION	0.00	830.68	0	02:13	0	4.6	0.151
J197	JUNCTION	0.00	833.29	0	02:11	0	4.6	-0.056
J198	JUNCTION	0.00	835.46	0	02:09	0	4.6	0.017
J199	JUNCTION	845.04	845.04	0	02:05	4.59	4.65	-0.138
J200	JUNCTION	0.00	46.43	0	01:48	0	0.071	5.841
J201	JUNCTION	0.00	15.53	0	01:54	0	0.0171	-1.172
J202	JUNCTION	0.00	6.47	0	01:55	0	0.00469	0.898
J203	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
Out-C	JUNCTION	0.00	42.79	0	03:07	0	2.24	0.000
Out-D	JUNCTION	0.00	305.45	0	01:49	0	1.42	0.001
Out-E	JUNCTION	0.00	234.35	0	01:55	0	2.06	0.001
Pond-A-Out	JUNCTION	0.00	1052.91	0	02:20	0	12.1	-0.002
Pond-B-Out	JUNCTION	0.00	102.44	0	03:09	0	5.2	0.000
OF1	OUTFALL	0.00	658.58	0	01:49	0	2.38	0.000
OF2	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
OF3	OUTFALL	1654.30	1654.30	0	01:55	8.04	8.04	0.000
OF4	OUTFALL	0.00	522.53	0	01:46	0	1.5	0.000
OF5	OUTFALL	0.00	821.76	0	02:17	0	4.59	0.000
OF6	OUTFALL	416.16	416.16	0	01:40	1.18	1.18	0.000
OF7a	OUTFALL	0.00	269.12	0	01:32	0	0.448	0.000
OF7b	OUTFALL	0.00	48.41	0	01:31	0	0.0563	0.000
OF-A	OUTFALL	0.00	1052.57	0	02:22	0	12.1	0.000
OF-B	OUTFALL	0.00	102.44	0	03:10	0	5.2	0.000
OF-C	OUTFALL	0.00	42.79	0	03:08	0	2.24	0.000
OF-D	OUTFALL	0.00	302.34	0	01:49	0	1.42	0.000
OF-E	OUTFALL	0.00	234.32	0	01:55	0	2.06	0.000
LinearPondC	STORAGE	156.54	912.37	0	01:33	0.178	2.32	0.020
LinearPondD	STORAGE	48.33	1874.89	0	01:45	0.0455	2.21	-0.085

LinearPondE	STORAGE	212.18	1066.59	0	01:32	0.231	2.4	2.848
MH1	STORAGE	0.00	1082.88	0	01:33	0	6.04	-0.000
MH2	STORAGE	0.00	1081.57	0	01:33	0	6.04	0.013
MH3	STORAGE	0.00	540.05	0	01:33	0	3	-0.040
MH4	STORAGE	0.00	540.45	0	01:33	0	3.04	-0.019
MH5	STORAGE	0.00	1080.01	0	01:33	0	6.04	-0.009
OGS-A1	STORAGE	0.00	540.30	0	01:33	0	3.01	0.047
OGS-A2	STORAGE	0.00	540.69	0	01:33	0	3.04	0.031
OGS-B	STORAGE	0.00	937.96	0	01:33	0	2.32	0.073
Pond-A	STORAGE	299.12	3871.51	0	01:40	0.613	12.1	-0.002
Pond-B	STORAGE	132.69	2195.85	0	01:33	0.234	5.64	-0.047

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
J002c	JUNCTION	0.38	0.085	0.415

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
LinearPondC	0.427	13.1	0.0	0.0	1.819	55.8	0 03:07	229.64
LinearPondD	0.054	6.1	0.0	0.0	0.614	69.2	0 01:49	1307.90
LinearPondE	0.093	7.3	0.0	0.0	0.905	70.3	0 01:55	630.86
MH1	0.000	7.2	0.0	0.0	0.002	69.2	0 02:02	1081.57
MH2	0.000	7.5	0.0	0.0	0.002	64.6	0 02:06	1080.99
MH3	0.000	7.5	0.0	0.0	0.002	64.5	0 02:07	539.81
MH4	0.000	7.5	0.0	0.0	0.002	64.5	0 02:07	540.20
MH5	0.000	12.1	0.0	0.0	0.002	67.8	0 02:07	1079.57
OGS-A1	0.000	7.4	0.0	0.0	0.002	63.8	0 02:07	540.05
OGS-A2	0.000	7.4	0.0	0.0	0.002	63.8	0 02:07	540.45
OGS-B	0.000	18.3	0.0	0.0	0.000	80.2	0 03:09	937.95
Pond-A	1.289	14.4	0.0	0.0	7.857	87.8	0 02:20	1052.91
Pond-B	0.915	18.6	0.0	0.0	4.057	82.3	0 03:09	788.72

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OF1	14.95	158.64	658.58	2.376
OF2	0.00	0.00	0.00	0.000
OF3	13.39	575.20	1654.30	8.037
OF4	12.14	130.14	522.53	1.504
OF5	16.73	224.29	821.76	4.591
OF6	10.95	119.56	416.16	1.181
OF7a	14.83	37.14	269.12	0.448
OF7b	12.14	5.88	48.41	0.056
OF-A	56.97	131.22	1052.57	12.144
OF-B	60.94	39.64	102.44	5.202
OF-C	71.31	14.36	42.79	2.236
OF-D	26.86	47.67	302.34	1.423
OF-E	30.23	53.30	234.32	2.062
System	26.27	1537.04	4825.45	41.260

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C001	CONDUIT	1052.57	0	02:22	1.04	0.16	0.44
C002	CONDUIT	1052.79	0	02:21	0.84	0.24	0.50
C003	CONDUIT	1052.87	0	02:20	0.79	0.19	0.52
C004a	CONDUIT	2626.26	0	01:41	4.69	0.05	0.61
C004b	CONDUIT	2626.22	0	01:41	0.88	0.38	1.00
C004c	CONDUIT	2626.21	0	01:41	1.04	0.38	0.83
C005	CONDUIT	3658.31	0	01:40	1.28	0.23	0.67
C006	CONDUIT	3566.71	0	01:40	1.27	0.35	0.60
C007	CONDUIT	2584.82	0	01:42	0.88	0.24	0.62
C008	CONDUIT	2582.25	0	01:42	0.96	0.29	0.59
C009	CONDUIT	2581.77	0	01:41	0.94	0.30	0.59
C010	CONDUIT	2520.76	0	01:41	0.91	0.29	0.60
C011	CONDUIT	2477.89	0	01:41	0.88	0.32	0.60
C012	CONDUIT	2235.89	0	01:41	0.79	0.29	0.61
C013	CONDUIT	2238.16	0	01:40	0.82	0.29	0.60
C014	CONDUIT	1968.76	0	01:40	0.75	0.26	0.58
C015	CONDUIT	1906.98	0	01:40	0.77	0.25	0.56
C016	CONDUIT	1809.63	0	01:39	0.77	0.23	0.55
C017	CONDUIT	1811.83	0	01:39	0.79	0.24	0.54
C018	CONDUIT	1018.95	0	01:38	0.48	0.14	0.51
C019	CONDUIT	1025.75	0	01:37	0.59	0.13	0.46
C020	CONDUIT	1034.10	0	01:36	0.67	0.14	0.43
C021	CONDUIT	650.49	0	01:36	0.48	0.08	0.39
C022	CONDUIT	655.64	0	01:35	0.59	0.09	0.35
C023	CONDUIT	513.04	0	01:34	0.53	0.07	0.32
C024	CONDUIT	521.34	0	01:33	0.58	0.07	0.30
C025	CONDUIT	527.31	0	01:31	0.57	0.07	0.31
C026	CONDUIT	48.59	0	01:26	0.15	0.01	0.23
C027	CONDUIT	11.99	0	01:31	0.06	0.00	0.11
C028	CONDUIT	10.68	0	01:32	0.11	0.00	0.07
C029	CONDUIT	48.41	0	01:31	0.39	0.00	0.07
C030	CONDUIT	571.00	0	01:55	0.35	0.11	0.76
C031	CONDUIT	560.52	0	01:55	0.27	0.10	0.80
C032	CONDUIT	538.65	0	01:51	0.31	0.10	0.75
C033	CONDUIT	515.09	0	01:40	0.46	0.06	0.67
C034	CONDUIT	692.57	0	01:31	0.37	0.10	0.67
C035	CONDUIT	723.72	0	01:30	0.35	0.10	0.78
C036	CONDUIT	317.62	0	01:55	0.29	0.05	0.69
C037	CONDUIT	485.05	0	01:34	0.43	0.07	0.60
C038	CONDUIT	528.68	0	01:29	0.32	0.09	0.73
C039	CONDUIT	325.97	0	01:54	0.29	0.05	0.65
C040	CONDUIT	303.14	0	01:48	0.29	0.05	0.61
C041	CONDUIT	757.58	0	01:30	0.41	0.12	0.71
C042	CONDUIT	282.64	0	01:53	0.27	0.04	0.63
C043	CONDUIT	261.50	0	01:53	0.25	0.04	0.57
C044	CONDUIT	330.95	0	01:38	0.30	0.05	0.64
C045	CONDUIT	361.23	0	01:35	0.66	0.04	0.55
C046	CONDUIT	407.29	0	01:32	0.61	0.07	0.40
C047	CONDUIT	407.93	0	01:33	0.59	0.07	0.34
C048	CONDUIT	340.60	0	01:31	0.38	0.06	0.60
C049	CONDUIT	149.03	0	01:36	0.18	0.02	0.43
C050	CONDUIT	133.51	0	01:35	0.19	0.02	0.35
C051	CONDUIT	128.65	0	01:33	0.30	0.03	0.26
C052	CONDUIT	139.08	0	01:32	0.28	0.03	0.29
C053	CONDUIT	154.85	0	01:31	0.20	0.02	0.40
C054	CONDUIT	170.73	0	01:30	0.13	0.03	0.55
C055	CONDUIT	741.53	0	01:30	0.49	0.13	0.81
C056	CONDUIT	781.04	0	01:31	0.43	0.15	0.71
C057	CONDUIT	761.81	0	01:31	0.67	0.14	0.53
C058	CONDUIT	676.21	0	01:32	0.54	0.12	0.68
C059	CONDUIT	578.21	0	01:32	0.39	0.09	0.82
C060	CONDUIT	286.74	0	01:52	0.15	0.05	0.81
C061	CONDUIT	269.75	0	01:30	0.22	0.05	0.78
C062	CONDUIT	346.84	0	01:30	0.32	0.05	0.72
C063	CONDUIT	412.38	0	01:29	0.29	0.07	0.68
C064	CONDUIT	531.61	0	01:29	0.40	0.08	0.67
C065	CONDUIT	167.53	0	01:46	0.22	0.03	0.54
C066	CONDUIT	141.55	0	01:37	0.27	0.02	0.42
C067	CONDUIT	297.01	0	01:35	0.51	0.05	0.31
C068	CONDUIT	301.15	0	01:33	0.26	0.04	0.43
C069	CONDUIT	326.57	0	01:30	0.33	0.05	0.49
C070	CONDUIT	253.14	0	01:30	0.22	0.03	0.60

C071	CONDUIT	288.11	0	01:30	0.28	0.04	0.63
C072	CONDUIT	152.78	0	01:30	0.12	0.02	0.58
C073	CONDUIT	109.23	0	01:30	0.18	0.02	0.42
C074	CONDUIT	85.85	0	01:31	0.16	0.01	0.37
C075	CONDUIT	79.86	0	01:33	0.15	0.01	0.27
C076	CONDUIT	88.57	0	01:34	0.19	0.01	0.28
C077	CONDUIT	276.09	0	01:30	0.33	0.03	0.46
C078	CONDUIT	269.12	0	01:32	0.61	0.03	0.20
C079	CONDUIT	102.44	0	03:10	0.59	0.01	0.13
C080	CONDUIT	1241.24	0	02:01	1.50	0.06	0.77
C081	CONDUIT	2084.88	0	01:33	0.98	0.43	0.89
C082	CONDUIT	2137.80	0	01:30	0.76	0.41	0.80
C083	CONDUIT	1179.60	0	01:35	0.52	0.24	0.63
C084	CONDUIT	1118.25	0	01:35	0.61	0.22	0.53
C085	CONDUIT	1115.97	0	01:35	0.86	0.07	0.41
C086	CONDUIT	108.20	0	01:30	0.27	0.02	0.27
C087	CONDUIT	119.66	0	01:30	0.39	0.01	0.18
C088	CONDUIT	120.81	0	01:30	0.43	0.01	0.17
C089	CONDUIT	1059.47	0	01:36	0.47	0.11	0.94
C090	CONDUIT	1107.39	0	01:33	0.60	0.11	0.80
C091	CONDUIT	1203.00	0	01:32	1.01	0.09	0.51
C092	CONDUIT	44.14	0	01:34	0.05	0.00	0.32
C093	CONDUIT	42.44	0	01:31	0.23	0.00	0.17
C094	CONDUIT	50.23	0	01:30	0.40	0.01	0.11
C095	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C096	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C098	CONDUIT	10.11	0	01:27	0.05	0.00	0.16
C099	CONDUIT	86.34	0	02:25	0.23	0.01	0.26
C100	CONDUIT	61.15	0	01:34	0.23	0.01	0.20
C101	CONDUIT	57.44	0	01:30	0.40	0.01	0.10
C102	CONDUIT	68.50	0	01:49	0.53	0.01	0.08
C104	CONDUIT	94.12	0	01:51	0.20	0.01	0.30
C105	CONDUIT	59.75	0	01:31	0.34	0.01	0.15
C106	CONDUIT	61.19	0	01:30	0.26	0.01	0.14
C107	CONDUIT	2.16	0	01:33	0.03	0.00	0.08
C109	CONDUIT	55.39	0	01:28	0.13	0.01	0.60
C110	CONDUIT	198.20	0	01:39	0.12	0.02	0.64
C111	CONDUIT	20.66	0	01:39	0.04	0.00	0.31
C112	CONDUIT	3.24	0	01:39	0.03	0.00	0.16
C113	CONDUIT	39.40	0	01:37	0.14	0.01	0.28
C114	CONDUIT	110.23	0	01:31	0.46	0.01	0.17

C115	CONDUIT	112.15	0	01:30	0.58	0.01	0.11
C116	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C117	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C118	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C119	CONDUIT	1100.40	0	01:32	0.48	0.11	0.90
C120	CONDUIT	1267.65	0	01:30	0.81	0.14	0.68
C121	CONDUIT	145.56	0	01:25	0.16	0.02	0.67
C123	CONDUIT	146.68	0	01:30	0.10	0.02	0.86
C124	CONDUIT	1153.42	0	01:30	0.66	0.10	0.64
C125	CONDUIT	122.57	0	01:33	0.17	0.01	0.33
C126	CONDUIT	100.12	0	01:33	0.39	0.01	0.20
C128	CONDUIT	633.12	0	01:33	0.29	0.09	0.65
C129	CONDUIT	651.60	0	01:32	0.31	0.11	0.86
C130	CONDUIT	124.25	0	01:29	0.10	0.02	0.79
C131	CONDUIT	41.79	0	01:30	0.13	0.01	0.61
C133	CONDUIT	7.20	0	01:26	0.02	0.00	0.59
C134	CONDUIT	41.47	0	01:25	0.05	0.01	0.72
C135	CONDUIT	625.52	0	01:30	0.46	0.07	0.64
C136	CONDUIT	263.92	0	01:30	0.20	0.03	0.61
C137	CONDUIT	218.46	0	01:29	0.32	0.03	0.53
C138	CONDUIT	189.26	0	01:28	0.32	0.03	0.48
C139	CONDUIT	87.81	0	01:27	0.19	0.01	0.38
C140	CONDUIT	111.58	0	01:30	0.57	0.01	0.16
C141	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C142	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C143	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C144	CONDUIT	660.61	0	01:49	0.62	0.14	0.52
C145	CONDUIT	666.82	0	01:49	0.64	0.15	0.47
C146	CONDUIT	671.72	0	01:47	0.56	0.25	0.49
C147	CONDUIT	522.53	0	01:46	0.63	0.18	0.53
C148	CONDUIT	525.09	0	01:44	0.58	0.22	0.55
C149	CONDUIT	528.67	0	01:42	0.51	0.25	0.59
C150	CONDUIT	534.78	0	01:41	0.51	0.24	0.59
C151	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C152	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C153	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C154	CONDUIT	821.76	0	02:17	0.55	0.39	0.70
C155	CONDUIT	830.68	0	02:13	0.59	0.38	0.70
C156	CONDUIT	833.29	0	02:11	0.58	0.37	0.69
C157	CONDUIT	835.46	0	02:09	0.58	0.37	0.69
C158	CONDUIT	46.43	0	01:48	0.11	0.02	0.54

C159	CONDUIT	15.53	0	01:54	0.11	0.01	0.30
C160	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
CULV-01	CONDUIT	1882.37	0	01:41	2.70	1.59	0.77
CULV-02	CONDUIT	564.68	0	01:55	1.12	1.48	1.00
CULV-03	CONDUIT	684.07	0	01:31	1.42	1.32	0.99
CULV-04	CONDUIT	485.91	0	01:33	1.26	1.52	1.00
CULV-05	CONDUIT	684.73	0	01:30	1.38	1.49	1.00
CULV-06	CONDUIT	327.84	0	01:44	1.16	1.42	1.00
CULV-07	CONDUIT	392.83	0	01:29	1.07	1.27	1.00
CULV-08	CONDUIT	181.52	0	01:46	0.64	0.90	1.00
CULV-09	CONDUIT	302.82	0	01:33	1.08	1.41	0.98
CULV-10	CONDUIT	356.17	0	01:30	1.27	1.74	1.00
CULV-11	CONDUIT	126.23	0	01:30	0.64	0.99	1.00
CULV-12	CONDUIT	100.40	0	01:35	0.53	0.54	0.95
CULV-13	CONDUIT	408.85	0	01:33	1.54	1.74	0.89
CULV-14	CONDUIT	154.70	0	01:36	0.55	0.57	1.00
CULV-15	CONDUIT	180.31	0	01:30	0.64	0.64	1.00
CULV-16	CONDUIT	723.91	0	01:30	1.44	1.46	1.00
CULV-17	CONDUIT	1376.16	0	01:30	1.37	1.08	1.00
CULV-18	CONDUIT	153.91	0	01:31	0.44	0.28	0.99
CULV-19	CONDUIT	450.90	0	01:30	0.91	0.81	1.00
CULV-20	CONDUIT	407.57	0	01:31	0.82	0.74	1.00
CULV-21	CONDUIT	167.23	0	01:31	0.59	0.65	1.00
CULV-22	CONDUIT	797.45	0	01:40	1.59	1.37	1.00
CULV-23	CONDUIT	370.79	0	01:30	1.32	1.44	1.00
CULV-24	CONDUIT	159.39	0	01:38	0.66	0.62	0.83
CULV-25	CONDUIT	405.45	0	01:31	1.52	1.58	0.90
CULV-26	CONDUIT	1146.47	0	01:33	1.75	0.62	0.77
CULV-27	CONDUIT	129.54	0	01:30	1.25	0.50	0.52
CULV-28	CONDUIT	1055.94	0	01:37	2.62	15.77	0.75
CULV-29	CONDUIT	1098.07	0	01:32	2.53	18.54	0.81
CULV-30	CONDUIT	1001.81	0	01:30	2.19	0.78	0.96
CULV-31	CONDUIT	98.65	0	01:33	0.77	0.39	0.65
CULV-32	CONDUIT	577.08	0	01:31	1.50	1.63	1.00
CULV-33	CONDUIT	88.25	0	01:30	0.36	0.38	1.00
CULV-34	CONDUIT	19.18	0	01:25	0.08	0.07	1.00
CULV-35	CONDUIT	624.62	0	01:30	1.65	1.20	1.00
CULV-36	CONDUIT	210.41	0	01:28	1.09	1.47	1.00
CULV-37	CONDUIT	752.93	0	01:34	2.35	3.38	0.78
CULV-38	CONDUIT	529.07	0	01:33	1.77	23.43	0.91
CULV-39	CONDUIT	557.60	0	01:32	1.53	24.82	1.00

CULV-40	CONDUIT	216.69	0	01:34	1.39	4.13	0.87
CULV-41	CONDUIT	658.58	0	01:49	1.36	0.33	0.46
CULV-42	CONDUIT	6.47	0	01:55	0.13	0.05	0.40
DICB01-MH1	CONDUIT	1082.88	0	01:33	3.83	3.44	1.00
DICB02-OGSB	CONDUIT	937.96	0	01:33	3.32	2.24	1.00
HYD-01	CONDUIT	525.93	0	01:47	1.05	0.93	1.00
HYD-02	CONDUIT	701.23	0	01:30	1.40	1.43	1.00
HYD-03	CONDUIT	299.63	0	01:55	1.07	1.40	1.00
HYD-04	CONDUIT	307.60	0	01:53	0.82	0.93	1.00
HYD-05	CONDUIT	272.28	0	01:53	0.97	1.31	1.00
HYD-06	CONDUIT	282.13	0	01:52	0.56	0.63	1.00
HYD-07	CONDUIT	430.69	0	01:29	1.12	1.41	1.00
HYD-08	CONDUIT	154.89	0	01:45	0.60	0.72	1.00
HYD-09	CONDUIT	300.47	0	01:34	1.18	1.36	0.85
HYD-10	CONDUIT	255.58	0	01:30	0.90	1.25	1.00
HYD-11	CONDUIT	81.75	0	01:32	0.45	0.60	0.91
HYD-12	CONDUIT	269.13	0	01:32	1.60	1.41	0.80
HYD-13	CONDUIT	164.37	0	01:30	0.58	0.61	1.00
HYD-14	CONDUIT	773.66	0	01:31	1.64	1.63	0.91
HYD-15	CONDUIT	42.64	0	01:34	0.30	0.17	0.70
HYD-16	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
HYD-17	CONDUIT	53.77	0	01:29	0.83	0.21	0.44
HYD-18	CONDUIT	59.82	0	01:30	0.75	0.39	0.43
HYD-19	CONDUIT	33.94	0	01:39	0.48	0.16	1.00
HYD-20	CONDUIT	17.29	0	01:37	0.26	0.13	0.67
Inflow-C	CONDUIT	804.75	0	01:34	2.13	0.06	0.45
Inflow-D	CONDUIT	1864.81	0	01:45	0.96	0.08	0.64
Inflow-E1	CONDUIT	602.25	0	01:34	0.65	0.04	0.79
Inflow-E2	CONDUIT	314.92	0	01:32	0.40	0.01	0.60
MH1-MH2	CONDUIT	1081.57	0	01:33	3.83	2.64	1.00
MH2-OGSA1	CONDUIT	540.30	0	01:33	2.50	10.98	1.00
MH2-OGSA2	CONDUIT	540.69	0	01:33	2.50	10.98	1.00
MH3-MH5	CONDUIT	539.81	0	01:33	2.49	12.31	1.00
MH4-MH5	CONDUIT	540.20	0	01:33	2.50	12.30	1.00
MH5-HWa	CONDUIT	1079.57	0	01:33	4.01	1.73	1.00
OGSA1-MH43	CONDUIT	540.05	0	01:33	2.49	9.10	1.00
OGSA2-MH4	CONDUIT	540.45	0	01:33	2.50	9.10	1.00
OGSB-HWb	CONDUIT	937.95	0	01:33	3.34	2.45	1.00
Out-C	CONDUIT	42.79	0	03:08	0.30	0.05	0.21
Out-D	CONDUIT	302.34	0	01:49	0.53	0.34	0.60
Out-E	CONDUIT	234.32	0	01:55	0.50	0.27	0.53

OVF-01	CONDUIT	743.89	0	01:41	0.95	0.23	0.47
OVF-02	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-03	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-04	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-05	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-06	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-07	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-08	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-09	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-10	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-11	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-12	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-13	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-14	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-15	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-16	CONDUIT	111.59	0	01:31	0.68	0.02	0.10
OVF-17a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-17b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-18a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-18b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-19a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-19b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-20a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-20b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-21a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-21b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-22a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-22b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-23a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-23b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-24a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-24b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-25a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-25b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-26	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-27	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-28a	CONDUIT	0.00	0	00:00	0.00	0.00	0.22
OVF-28b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-29a	CONDUIT	77.13	0	01:32	0.13	0.01	0.35
OVF-29b	CONDUIT	77.09	0	01:32	0.97	0.01	0.05
OVF-30	CONDUIT	353.97	0	01:30	1.32	0.05	0.16
OVF-31	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-32	CONDUIT	78.07	0	01:33	0.59	0.02	0.08
OVF-33	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-34	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-35	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-36	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-37a	CONDUIT	0.00	0	00:00	0.00	0.00	0.20
OVF-37b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-38a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-38b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-39a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-39b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-40a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-40b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-41a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-41b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H01	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H02	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H03	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H04	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H05	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H06	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H07	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H08	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H09	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H10	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H11	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H12	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H13	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H14	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H15	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H16	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H17	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H18	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H19	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H20	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
PondB-Upper	CONDUIT	73.43	0	03:09	2.34	3.09	1.00
O-PondA	ORIFICE	52.85	0	02:20			1.00
O-PondB	ORIFICE	29.01	0	03:09			1.00
O-PondC-Lower	ORIFICE	16.58	0	03:07			1.00
O-PondC-Upper	ORIFICE	26.21	0	03:07			1.00

O-PondD	ORIFICE	21.41	0	01:49	1.00
O-PondE	ORIFICE	21.68	0	01:55	1.00
C097	WEIR	0.00	0	00:00	0.00
C103	WEIR	109.55	0	01:48	0.14
C108	WEIR	0.00	0	00:00	0.00
C122	WEIR	0.00	0	00:00	0.00
C127	WEIR	100.07	0	01:33	0.19
C132	WEIR	0.00	0	00:00	0.00
W-PondA	WEIR	1000.06	0	02:20	0.94
W-PondA-Spill	WEIR	0.00	0	00:00	0.00
W-PondB-Spill	WEIR	0.00	0	00:00	0.00
W-PondC-Spill	WEIR	0.00	0	00:00	0.00
W-PondD	WEIR	284.03	0	01:49	0.99
W-PondD-Berm	WEIR	0.00	0	00:00	0.00
W-PondD-Spill	WEIR	0.00	0	00:00	0.00
W-PondE	WEIR	212.68	0	01:55	1.00
W-PondE-Berm	WEIR	411.97	0	01:45	0.65
W-PondE-Spill	WEIR	0.00	0	00:00	0.00

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Flow Classification Summary
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	Adjusted	Fraction of Time in Flow Class								
	/Actual		Up	Down	Sub	Sup	Up	Down	Norm	Inlet
Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl
C001	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.50	0.00
C002	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.03	0.00
C003	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.99	0.00
C004a	1.00	0.56	0.37	0.00	0.07	0.00	0.00	0.00	0.98	0.00
C004b	1.00	0.92	0.00	0.00	0.01	0.00	0.00	0.06	0.00	0.00
C004c	1.00	0.92	0.06	0.00	0.02	0.00	0.00	0.00	0.98	0.00
C005	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.98	0.01	0.00
C006	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.92	0.00
C007	1.00	0.01	0.00	0.00	0.96	0.00	0.00	0.03	0.94	0.00
C008	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
C009	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.97	0.00
C010	1.00	0.01	0.00	0.00	0.87	0.00	0.00	0.12	0.85	0.00
C011	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.01	0.00
C012	1.00	0.01	0.00	0.00	0.85	0.00	0.00	0.15	0.83	0.00
C013	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.75	0.00
C014	1.00	0.01	0.00	0.00	0.74	0.00	0.00	0.26	0.72	0.00
C015	1.00	0.01	0.01	0.00	0.99	0.00	0.00	0.00	0.66	0.00
C016	1.00	0.01	0.00	0.00	0.70	0.00	0.00	0.28	0.67	0.00
C017	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.49	0.00
C018	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.96	0.00
C019	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.98	0.00
C020	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.68	0.00
C021	1.00	0.01	0.00	0.00	0.66	0.00	0.00	0.33	0.65	0.00
C022	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.46	0.00
C023	1.00	0.01	0.00	0.00	0.77	0.00	0.00	0.22	0.77	0.00
C024	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.67	0.00
C025	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.98	0.00
C026	1.00	0.01	0.79	0.00	0.20	0.00	0.00	0.00	0.98	0.00
C027	1.00	0.80	0.12	0.00	0.08	0.00	0.00	0.00	0.98	0.00
C028	1.00	0.86	0.06	0.00	0.08	0.00	0.00	0.00	0.97	0.00
C029	1.00	0.86	0.00	0.00	0.14	0.00	0.00	0.00	0.12	0.00
C030	1.00	0.30	0.00	0.00	0.05	0.00	0.00	0.65	0.00	0.00
C031	1.00	0.74	0.00	0.00	0.05	0.00	0.00	0.21	0.00	0.00
C032	1.00	0.09	0.01	0.00	0.90	0.00	0.00	0.00	0.13	0.00
C033	1.00	0.94	0.00	0.00	0.05	0.00	0.00	0.01	0.02	0.00
C034	1.00	0.15	0.00	0.00	0.05	0.00	0.00	0.80	0.00	0.00
C035	1.00	0.43	0.00	0.00	0.05	0.00	0.00	0.52	0.00	0.00
C036	1.00	0.43	0.51	0.00	0.07	0.00	0.00	0.00	0.97	0.00
C037	1.00	0.42	0.00	0.00	0.05	0.00	0.00	0.53	0.00	0.00
C038	1.00	0.36	0.00	0.00	0.05	0.00	0.00	0.59	0.01	0.00
C039	1.00	0.05	0.04	0.00	0.91	0.00	0.00	0.00	0.50	0.00
C040	1.00	0.94	0.00	0.00	0.05	0.00	0.00	0.01	0.00	0.00
C041	1.00	0.36	0.00	0.00	0.05	0.00	0.00	0.59	0.01	0.00
C042	1.00	0.19	0.21	0.00	0.60	0.00	0.00	0.00	0.51	0.00
C043	1.00	0.95	0.00	0.00	0.04	0.00	0.00	0.01	0.01	0.00
C044	1.00	0.49	0.00	0.00	0.05	0.00	0.00	0.46	0.01	0.00
C045	1.00	0.16	0.04	0.00	0.80	0.00	0.00	0.00	0.27	0.00
C046	1.00	0.06	0.01	0.00	0.93	0.00	0.00	0.00	0.43	0.00
C047	1.00	0.06	0.02	0.00	0.92	0.00	0.00	0.00	0.91	0.00
C048	1.00	0.42	0.00	0.00	0.05	0.00	0.00	0.54	0.01	0.00
C049	1.00	0.88	0.00	0.00	0.01	0.00	0.00	0.11	0.00	0.00
C050	1.00	0.88	0.00	0.00	0.12	0.00	0.00	0.00	0.11	0.00
C051	1.00	0.88	0.04	0.00	0.08	0.00	0.00	0.00	0.98	0.00

C052	1.00	0.88	0.03	0.00	0.08	0.00	0.00	0.00	0.98	0.00
C053	1.00	0.88	0.00	0.00	0.01	0.00	0.00	0.11	0.00	0.00
C054	1.00	0.87	0.00	0.00	0.03	0.00	0.00	0.10	0.01	0.00
C055	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.01	0.00
C056	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
C057	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.96	0.00
C058	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.45	0.00
C059	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
C060	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
C061	1.00	0.01	0.00	0.00	0.05	0.00	0.00	0.94	0.00	0.00
C062	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.15	0.00
C063	1.00	0.32	0.00	0.00	0.04	0.00	0.00	0.64	0.00	0.00
C064	1.00	0.94	0.00	0.00	0.05	0.00	0.00	0.01	0.01	0.00
C065	1.00	0.44	0.00	0.00	0.03	0.00	0.00	0.53	0.01	0.00
C066	1.00	0.95	0.00	0.00	0.02	0.00	0.00	0.03	0.01	0.00
C067	1.00	0.18	0.00	0.00	0.04	0.00	0.00	0.78	0.00	0.00
C068	1.00	0.83	0.00	0.00	0.05	0.00	0.00	0.12	0.00	0.00
C069	1.00	0.83	0.00	0.00	0.05	0.00	0.00	0.12	0.01	0.00
C070	1.00	0.93	0.00	0.00	0.05	0.00	0.00	0.02	0.00	0.00
C071	1.00	0.95	0.00	0.00	0.04	0.00	0.00	0.01	0.01	0.00
C072	1.00	0.89	0.00	0.00	0.05	0.00	0.00	0.06	0.02	0.00
C073	1.00	0.91	0.00	0.00	0.01	0.00	0.00	0.07	0.00	0.00
C074	1.00	0.91	0.02	0.00	0.07	0.00	0.00	0.00	0.15	0.00
C075	1.00	0.96	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00
C076	1.00	0.96	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
C077	1.00	0.75	0.00	0.00	0.05	0.00	0.00	0.20	0.03	0.00
C078	1.00	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.44	0.00
C079	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.43	0.00
C080	1.00	0.48	0.40	0.00	0.12	0.00	0.00	0.00	0.88	0.00
C081	1.00	0.01	0.00	0.00	0.12	0.00	0.00	0.87	0.00	0.00
C082	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.85	0.00
C083	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.99	0.00
C084	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.88	0.00
C085	1.00	0.01	0.08	0.00	0.91	0.00	0.00	0.00	0.98	0.00
C086	1.00	0.09	0.73	0.00	0.18	0.00	0.00	0.00	0.93	0.00
C087	1.00	0.82	0.05	0.00	0.13	0.00	0.00	0.00	0.99	0.00
C088	1.00	0.91	0.00	0.00	0.02	0.00	0.00	0.08	0.01	0.00
C089	1.00	0.09	0.04	0.00	0.72	0.00	0.00	0.15	0.03	0.00
C090	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.72	0.00
C091	1.00	0.01	0.05	0.00	0.94	0.00	0.00	0.00	0.93	0.00
C092	1.00	0.06	0.76	0.00	0.18	0.00	0.00	0.00	0.94	0.00
C093	1.00	0.88	0.00	0.00	0.01	0.00	0.00	0.10	0.00	0.00
C094	1.00	0.85	0.00	0.00	0.15	0.00	0.00	0.00	0.10	0.00
C095	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C096	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C098	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.96	0.00
C099	1.00	0.01	0.83	0.00	0.16	0.00	0.00	0.00	0.85	0.00
C100	1.00	0.84	0.03	0.00	0.13	0.00	0.00	0.00	0.90	0.00
C101	1.00	0.88	0.00	0.00	0.02	0.00	0.00	0.10	0.01	0.00
C102	1.00	0.88	0.09	0.00	0.02	0.00	0.00	0.00	0.98	0.00
C104	1.00	0.02	0.76	0.00	0.22	0.00	0.00	0.00	0.97	0.00
C105	1.00	0.78	0.06	0.00	0.17	0.00	0.00	0.00	0.96	0.00
C106	1.00	0.87	0.00	0.00	0.01	0.00	0.00	0.12	0.01	0.00
C107	1.00	0.87	0.10	0.00	0.03	0.00	0.00	0.00	0.98	0.00
C109	1.00	0.07	0.76	0.00	0.18	0.00	0.00	0.00	0.88	0.00
C110	1.00	0.07	0.78	0.00	0.15	0.00	0.00	0.00	0.55	0.00
C111	1.00	0.90	0.03	0.00	0.07	0.00	0.00	0.00	0.96	0.00
C112	1.00	0.92	0.00	0.00	0.03	0.00	0.00	0.05	0.01	0.00
C113	1.00	0.06	0.44	0.00	0.18	0.00	0.00	0.31	0.36	0.00
C114	1.00	0.06	0.75	0.00	0.17	0.00	0.00	0.02	0.17	0.00
C115	1.00	0.81	0.01	0.00	0.17	0.00	0.00	0.00	0.15	0.00
C116	1.00	0.83	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C117	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C118	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C119	1.00	0.06	0.05	0.00	0.71	0.00	0.00	0.18	0.48	0.00
C120	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.35	0.00
C121	1.00	0.94	0.01	0.00	0.04	0.00	0.00	0.01	0.04	0.00
C123	1.00	0.86	0.01	0.00	0.13	0.00	0.00	0.00	0.09	0.00
C124	1.00	0.22	0.00	0.00	0.14	0.00	0.00	0.64	0.14	0.00
C125	1.00	0.22	0.74	0.00	0.03	0.00	0.00	0.00	0.96	0.00
C126	1.00	0.99	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
C128	1.00	0.02	0.02	0.00	0.60	0.00	0.00	0.37	0.28	0.00
C129	1.00	0.26	0.00	0.00	0.05	0.00	0.00	0.69	0.00	0.00
C130	1.00	0.26	0.59	0.00	0.15	0.00	0.00	0.00	0.66	0.00
C131	1.00	0.96	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00
C133	1.00	0.89	0.00	0.00	0.11	0.00	0.00	0.00	0.01	0.00
C134	1.00	0.12	0.71	0.00	0.17	0.00	0.00	0.00	0.85	0.00
C135	1.00	0.10	0.12	0.00	0.47	0.00	0.00	0.30	0.39	0.00
C136	1.00	0.95	0.02	0.00	0.04	0.00	0.00	0.00	0.96	0.00
C137	1.00	0.96	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00
C138	1.00	0.92	0.01	0.00	0.04	0.00	0.00	0.03	0.02	0.00
C139	1.00	0.83	0.00	0.00	0.05	0.00	0.00	0.12	0.04	0.00

C140	1.00	0.82	0.01	0.00	0.16	0.00	0.00	0.00	0.14	0.00
C141	1.00	0.84	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C142	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C143	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C144	1.00	0.70	0.00	0.00	0.04	0.00	0.00	0.26	0.00	0.00
C145	1.00	0.48	0.00	0.00	0.52	0.00	0.00	0.00	0.21	0.00
C146	1.00	0.47	0.18	0.00	0.34	0.00	0.00	0.00	0.93	0.00
C147	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.92	0.00
C148	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.94	0.00
C149	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.94	0.00
C150	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.97	0.00
C151	1.00	0.02	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C152	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C153	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C154	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.89	0.00
C155	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.96	0.00
C156	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.97	0.00
C157	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.97	0.00
C158	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.94	0.00
C159	1.00	0.02	0.00	0.00	0.97	0.00	0.00	0.00	0.96	0.00
C160	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CULV-01	1.00	0.02	0.91	0.00	0.06	0.01	0.00	0.00	0.00	0.98
CULV-02	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
CULV-03	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.02
CULV-04	1.00	0.01	0.29	0.00	0.70	0.00	0.00	0.00	0.00	0.95
CULV-05	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.31
CULV-06	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.04
CULV-07	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.07
CULV-08	1.00	0.01	0.06	0.00	0.93	0.00	0.00	0.00	0.00	0.16
CULV-09	1.00	0.01	0.83	0.00	0.17	0.00	0.00	0.00	0.00	0.96
CULV-10	1.00	0.01	0.90	0.00	0.09	0.00	0.00	0.00	0.00	0.96
CULV-11	1.00	0.01	0.90	0.00	0.09	0.00	0.00	0.00	0.00	0.97
CULV-12	1.00	0.01	0.95	0.00	0.04	0.00	0.00	0.00	0.00	0.98
CULV-13	1.00	0.01	0.55	0.00	0.44	0.00	0.00	0.00	0.00	0.97
CULV-14	1.00	0.01	0.89	0.00	0.10	0.00	0.00	0.00	0.00	0.94
CULV-15	1.00	0.01	0.88	0.00	0.11	0.00	0.00	0.00	0.00	0.94
CULV-16	1.00	0.01	0.19	0.00	0.80	0.00	0.00	0.00	0.00	0.96
CULV-17	1.00	0.01	0.26	0.00	0.74	0.00	0.00	0.00	0.00	0.93
CULV-18	1.00	0.01	0.26	0.00	0.74	0.00	0.00	0.00	0.00	0.92
CULV-19	1.00	0.01	0.41	0.00	0.58	0.00	0.00	0.00	0.00	0.92
CULV-20	1.00	0.01	0.41	0.00	0.58	0.00	0.00	0.00	0.00	0.92
CULV-21	1.00	0.01	0.42	0.00	0.57	0.00	0.00	0.00	0.00	0.93
CULV-22	1.00	0.01	0.07	0.00	0.92	0.00	0.00	0.00	0.00	0.95
CULV-23	1.00	0.01	0.23	0.00	0.76	0.00	0.00	0.00	0.00	0.96
CULV-24	1.00	0.01	0.43	0.00	0.56	0.00	0.00	0.00	0.00	0.97
CULV-25	1.00	0.01	0.39	0.00	0.61	0.00	0.00	0.00	0.00	0.96
CULV-26	1.00	0.88	0.03	0.00	0.09	0.00	0.00	0.00	0.00	0.01
CULV-27	1.00	0.01	0.89	0.00	0.10	0.00	0.00	0.00	0.00	0.99
CULV-28	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.01
CULV-29	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.01
CULV-30	1.00	0.01	0.15	0.00	0.84	0.00	0.00	0.00	0.00	0.98
CULV-31	1.00	0.02	0.97	0.00	0.02	0.00	0.00	0.00	0.00	0.98
CULV-32	1.00	0.01	0.26	0.00	0.73	0.00	0.00	0.00	0.00	0.96
CULV-33	1.00	0.01	0.95	0.00	0.05	0.00	0.00	0.00	0.00	0.97
CULV-34	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.00	0.86
CULV-35	1.00	0.01	0.27	0.00	0.73	0.00	0.00	0.00	0.00	0.96
CULV-36	1.00	0.02	0.94	0.00	0.04	0.00	0.00	0.00	0.00	0.96
CULV-37	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
CULV-38	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
CULV-39	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
CULV-40	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
CULV-41	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.93
CULV-42	1.00	0.02	0.92	0.00	0.06	0.00	0.00	0.00	0.00	0.93
DICB01-MH1	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.04	0.00
DICB02-OGSB	1.00	0.01	0.00	0.00	0.42	0.00	0.00	0.57	0.05	0.00
HYD-01	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.02
HYD-02	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.01
HYD-03	1.00	0.01	0.01	0.00	0.07	0.00	0.92	0.00	0.00	0.02
HYD-04	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.02
HYD-05	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.02
HYD-06	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
HYD-07	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
HYD-08	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.01
HYD-09	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.01
HYD-10	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.02
HYD-11	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.04
HYD-12	1.00	0.01	0.58	0.00	0.41	0.00	0.00	0.00	0.00	0.97
HYD-13	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.03
HYD-14	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
HYD-15	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.00	0.98
HYD-16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HYD-17	1.00	0.01	0.87	0.00	0.12	0.00	0.00	0.00	0.00	0.97

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

HYD-18	1.00	0.01	0.86	0.00	0.13	0.00	0.00	0.00	0.00	0.98
HYD-19	1.00	0.01	0.87	0.00	0.13	0.00	0.00	0.00	0.00	0.88
HYD-20	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
Inflow-C	1.00	0.01	0.00	0.00	0.98	0.01	0.00	0.00	0.84	0.00
Inflow-D	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.94	0.00
Inflow-E1	1.00	0.01	0.06	0.00	0.93	0.00	0.00	0.00	0.85	0.00
Inflow-E2	1.00	0.01	0.06	0.00	0.93	0.00	0.00	0.00	0.95	0.00
MH1-MH2	1.00	0.01	0.00	0.00	0.98	0.01	0.00	0.00	0.69	0.00
MH2-OGSA1	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
MH2-OGSA2	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
MH3-MH5	1.00	0.01	0.00	0.00	0.33	0.00	0.00	0.66	0.00	0.00
MH4-MH5	1.00	0.01	0.00	0.00	0.33	0.00	0.00	0.66	0.00	0.00
MH5-HWa	1.00	0.01	0.00	0.00	0.98	0.01	0.00	0.00	0.49	0.00
OGSA1-MH43	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
OGSA2-MH4	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
OGSB-HWb	1.00	0.01	0.00	0.00	0.44	0.00	0.00	0.55	0.02	0.00
Out-C	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.44	0.00
Out-D	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.85	0.00
Out-E	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.80	0.00
OVF-01	1.00	0.99	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
OVF-02	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-03	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-04	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-05	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-06	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-07	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-08	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-09	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-11	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-12	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-13	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-14	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-17a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-17b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-18a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-18b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-19a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-19b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-20a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-20b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-21a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-21b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-22a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-22b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-23a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-23b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-24a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-24b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-25a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-25b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-26	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-27	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-28a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-28b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-29a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00
OVF-29b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-30	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-31	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-32	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-33	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-34	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-35	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-36	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-37a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-37b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-38a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-38b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-39a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-39b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-40a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-40b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-41a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-41b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H01	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H02	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H03	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H04	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H05	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H06	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OVF-H07	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H08	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H09	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H11	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H12	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H13	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H14	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H17	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H18	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H19	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H20	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PondB-Upper	1.00	0.76	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.13

****
Conduit Surcharge Summary
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				Hours	Hours
	--------- Hours Full --------			Above Full	Capacity
Conduit	Both Ends	Upstream	Dnstream	Normal Flow	Limited
C004a	0.01	0.01	1.95	0.01	0.01
C004b	0.38	0.38	0.48	0.01	0.01
C004c	0.01	0.01	0.38	0.01	0.01
C080	0.01	0.01	70.31	0.01	0.01
C119	0.01	0.01	0.04	0.01	0.01
CULV-01	0.01	0.70	0.01	0.63	0.01
CULV-02	0.51	0.67	0.52	0.71	0.44
CULV-03	0.01	0.41	0.01	0.41	0.01
CULV-04	0.40	0.62	0.40	0.72	0.40
CULV-05	0.21	0.42	0.21	0.50	0.21
CULV-06	0.41	0.43	0.41	0.36	0.41
CULV-07	0.39	0.43	0.41	0.17	0.20
CULV-08	0.34	0.35	0.36	0.01	0.12
CULV-09	0.01	0.22	0.01	0.30	0.01
CULV-10	0.06	0.23	0.06	0.29	0.06
CULV-11	0.13	0.13	0.21	0.01	0.01
CULV-12	0.01	0.01	0.12	0.01	0.01
CULV-13	0.01	0.29	0.01	0.33	0.01
CULV-14	0.03	0.03	0.16	0.01	0.01
CULV-15	0.18	0.18	0.30	0.01	0.01
CULV-16	0.14	0.27	0.14	0.29	0.14
CULV-17	0.53	0.56	0.59	0.08	0.27
CULV-18	0.01	0.01	0.38	0.01	0.01
CULV-19	0.28	0.29	0.41	0.01	0.02
CULV-20	0.21	0.21	0.34	0.01	0.01
CULV-21	0.41	0.41	0.53	0.01	0.01
CULV-22	0.11	0.48	0.11	0.50	0.11
CULV-23	0.19	0.36	0.19	0.38	0.19
CULV-25	0.01	0.19	0.01	0.23	0.01
CULV-26	0.01	0.23	0.01	0.01	0.01
CULV-28	0.01	0.35	0.01	1.76	0.01
CULV-29	0.01	0.33	0.01	1.88	0.01
CULV-30	0.01	0.28	0.01	0.01	0.01
CULV-32	0.26	0.37	0.26	0.38	0.26
CULV-33	0.25	0.25	0.31	0.01	0.01
CULV-34	1.18	1.18	1.86	0.01	0.01
CULV-35	0.04	0.19	0.04	0.13	0.04
CULV-36	0.09	0.17	0.13	0.16	0.08
CULV-37	0.01	0.46	0.01	0.67	0.01
CULV-38	0.01	0.36	0.01	2.63	0.01
CULV-39	1.44	1.61	1.44	3.34	1.44
CULV-40	0.01	0.27	0.01	0.50	0.01
DICB01-MH1	3.31	3.39	3.73	1.72	1.73
DICB02-OGSB	10.58	10.58	11.80	0.57	0.56
HYD-01	0.53	0.59	0.53	0.01	0.53
HYD-02	0.33	0.49	0.33	0.48	0.33
HYD-03	0.45	0.59	0.46	0.48	0.31
HYD-04	0.38	0.43	0.38	0.01	0.38
HYD-05	0.39	0.49	0.41	0.38	0.27
HYD-06	0.46	0.46	0.47	0.01	0.01
HYD-07	0.39	0.43	0.40	0.19	0.26
HYD-08	0.24	0.24	0.26	0.01	0.01
HYD-09	0.01	0.08	0.01	0.29	0.01
HYD-10	0.21	0.24	0.21	0.19	0.21
HYD-12	0.01	0.20	0.01	0.20	0.01
HYD-13	0.01	0.01	0.13	0.01	0.01

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 4-hour Chicago Model Output

HYD-14	0.01	0.20	0.01	0.30	0.01
HYD-19	1.38	1.38	2.07	0.01	0.01
MH1-MH2	3.72	3.73	4.13	1.47	1.37
MH2-OGSA1	4.90	4.93	4.92	3.49	3.83
MH2-OGSA2	4.91	4.93	4.93	3.50	3.41
MH3-MH5	4.89	4.90	4.92	3.58	3.99
MH4-MH5	4.88	4.91	4.92	3.59	3.60
MH5-HWa	13.23	13.49	17.25	1.17	1.33
OGSA1-MH43	4.88	4.92	4.90	3.35	3.09
OGSA2-MH4	4.87	4.93	4.91	3.34	3.57
OGSB-HWb	11.84	12.11	12.33	0.60	0.47
PondB-Upper	5.18	12.16	5.18	11.69	5.18

Analysis begun on: Mon Nov 3 13:27:55 2025
Analysis ended on: Mon Nov 3 13:28:23 2025
Total elapsed time: 00:00:28

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

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  ALTERNATIVE RUNOFF METHOD (ARM) - PCSWMM VERSION 7.6.3620
  ---------------------------------------------------------

  This is a new version of ARM - your feedback and suggestions are solicited.
  Create a ticket, post on the PCSWMM feature request forum, or email us directly!

  Simulation start time:                  11/28/2023 00:00:00
  Simulation end time:                    12/01/2023 00:00:00
  Runoff wet weather time steps:          300 seconds
  Report time steps:                      60 seconds
  Number of data points:                  4321


  ******************************
  Unit Hydrographs Runoff Method
  ******************************

  ------------------------------------------------------------------------------------------------------------------------
-------------------------------------------
                                                                                  Area   Time of Concentration  Time to Peak
Time after Peak    Peak UH Flow    UH Depth
  Subcatchment         Runoff Method             Raingage                       (ha)   (min)                  (min)
(min)              (m³/s/mm)       (mm)
  ------------------------------------------------------------------------------------------------------------------------
-------------------------------------------
  EX-1                 Nash IUH                  Raingage                       4.49   26                     17.33
107.67             0.02337         0.999
  1BP-2                Nash IUH                  Raingage                       3.96   15                     10
70                 0.03573         0.996
  EX-2                 Nash IUH                  Raingage                       4.46   15                     10
70                 0.04024         0.996
  EX-3                 Nash IUH                  Raingage                       2.15   15                     10
65                 0.0194          0.996
  1BP-1                Nash IUH                  Raingage                       9      21                     14
96                 0.058           0.999
  EX-5                 Nash IUH                  Raingage                       31.08  34                     22.67
162.33             0.12371         1
  EX-4                 Nash IUH                  Raingage                       19.72  41                     27.33
182.67             0.06509         1


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  ARM Runoff Summary
  ******************

  ------------------------------------------------------------------------------------------
                      Total       Total       Total       Total       Peak        Runoff
                      Precip      Losses      Runoff      Runoff      Runoff      Coeff
  Subcatchment        (mm)        (mm)        (mm)        10^6 ltr    LPS         (fraction)
  ------------------------------------------------------------------------------------------
  EX-1                93.91       67.646      26.258      1.179       217.809     0.28
  1BP-2               93.91       51.018      42.727      1.692       421.59      0.455
  EX-2                93.91       46.27       47.444      2.116       528.292     0.505
  EX-3                93.91       52.511      41.237      0.887       220.673     0.439
  1BP-1               93.91       55.369      38.5        3.465       748.553     0.41
  EX-5                93.91       61.754      32.149      9.992       1629.17     0.342
  EX-4                93.91       59.353      34.554      6.814       1006.339    0.368


  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.3)
  ------------------------------------------------------------

  WARNING 04: minimum elevation drop used for Conduit CULV-28
  WARNING 04: minimum elevation drop used for Conduit CULV-29
  WARNING 04: minimum elevation drop used for Conduit CULV-38
  WARNING 04: minimum elevation drop used for Conduit CULV-39
  WARNING 04: minimum elevation drop used for Conduit MH2-OGSA1
  WARNING 04: minimum elevation drop used for Conduit MH2-OGSA2
  WARNING 04: minimum elevation drop used for Conduit MH3-MH5
  WARNING 04: minimum elevation drop used for Conduit MH4-MH5
  WARNING 04: minimum elevation drop used for Conduit OGSA1-MH43
  WARNING 04: minimum elevation drop used for Conduit OGSA2-MH4

  *************
  Element Count
  *************
  Number of rain gages ...... 1
  Number of subcatchments ... 45
  Number of nodes ........... 255
  Number of links ........... 336
  Number of pollutants ...... 0
  Number of land uses ....... 0
```

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	11-S12hr-100yr	INTENSITY	30 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A-01a	0.69	65.00	65.70	2.0000	Raingage	J102
A-01b	0.14	65.00	25.70	2.0000	Raingage	J026
A-02a	0.27	244.00	40.00	2.0000	Raingage	J067
A-02b	0.27	242.00	40.00	2.0000	Raingage	J056
A-03a	0.23	177.00	25.70	2.0000	Raingage	J037
A-03b	0.37	174.00	25.70	2.0000	Raingage	J008
A-04	2.15	230.00	71.40	2.0000	Raingage	J094
A-05	2.17	232.00	71.40	2.0000	Raingage	J081
A-06	2.60	108.00	71.40	2.0000	Raingage	J066
A-07	1.13	87.00	71.40	2.0000	Raingage	J042
A-08	1.94	212.00	71.40	2.0000	Raingage	J047
A-09	2.03	177.00	71.40	2.0000	Raingage	J037
A-10	3.19	139.00	71.40	2.0000	Raingage	J027
A-11	0.91	111.00	71.40	2.0000	Raingage	J057
A-12a	0.29	233.00	25.70	2.0000	Raingage	J091
A-12b	0.49	231.00	25.70	2.0000	Raingage	J023
A-13a	0.30	229.00	25.70	2.0000	Raingage	J081
A-13b	0.47	228.00	25.70	2.0000	Raingage	J018
A-14a	0.31	221.00	25.70	2.0000	Raingage	J047
A-14b	0.49	236.00	25.70	2.0000	Raingage	J012
A-15a	0.15	145.00	7.10	2.0000	Raingage	J027
A-15b	0.76	427.00	7.10	2.0000	Raingage	J003
B-01	3.91	172.00	71.40	2.0000	Raingage	J107
B-02	3.56	142.00	71.40	2.0000	Raingage	J155
B-03	2.36	107.00	64.30	2.0000	Raingage	J166
B-04	2.62	141.00	64.30	2.0000	Raingage	J175
B-05	0.73	372.00	7.10	2.0000	Raingage	LinearPondE
B-06a	0.09	89.00	40.00	2.0000	Raingage	J174
B-06b	0.09	86.00	40.00	2.0000	Raingage	J142
B-07	0.14	111.00	7.10	2.0000	Raingage	LinearPondD
B-08a	0.15	148.00	40.00	2.0000	Raingage	J167
B-08b	0.15	147.00	40.00	2.0000	Raingage	J137
B-09	3.27	107.00	64.30	2.0000	Raingage	J159
B-10	0.57	257.00	7.10	2.0000	Raingage	LinearPondC
B-11a	0.13	119.00	40.00	2.0000	Raingage	J155
B-11b	0.12	117.00	40.00	2.0000	Raingage	J122
B-12a	0.28	281.00	40.00	2.0000	Raingage	J152
B-12b	0.28	278.00	40.00	2.0000	Raingage	J114
B-13	0.20	163.00	7.10	2.0000	Raingage	J108
B-14a	0.14	131.00	40.00	2.0000	Raingage	J159
B-14b	0.14	133.00	40.00	2.0000	Raingage	J131
B-15a	0.27	270.00	40.00	2.0000	Raingage	J181
B-15b	0.27	270.00	40.00	2.0000	Raingage	J148
SWM-1	2.24	288.00	7.10	2.0000	Raingage	Pond-A
SWM-2	0.82	144.00	7.10	2.0000	Raingage	Pond-B

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Node Summary
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Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
15+0175	JUNCTION	111.19	0.30	0.0	
15+0325	JUNCTION	110.59	0.30	0.0	
15+0425	JUNCTION	110.19	0.30	0.0	
15+0550	JUNCTION	109.69	0.30	0.0	
15+0625	JUNCTION	109.39	0.30	0.0	
15+0725	JUNCTION	108.99	0.30	0.0	
15+0825	JUNCTION	108.59	0.30	0.0	
15+0925	JUNCTION	108.14	0.30	0.0	
15+1025	JUNCTION	107.59	0.30	0.0	
17+250	JUNCTION	109.55	0.30	0.0	
17+365	JUNCTION	109.10	0.30	0.0	
17+512	JUNCTION	108.75	0.30	0.0	
17+532	JUNCTION	108.88	0.30	0.0	

17+625	JUNCTION	107.58	0.30	0.0
17+793	JUNCTION	106.52	0.30	0.0
18+282	JUNCTION	105.72	0.30	0.0
DICB01	JUNCTION	103.88	3.37	0.0
DICB02	JUNCTION	102.92	2.10	0.0
J001	JUNCTION	102.55	1.50	0.0
J002	JUNCTION	102.88	1.50	0.0
J002a	JUNCTION	104.89	1.60	0.0
J002b	JUNCTION	105.03	1.50	0.0
J002c	JUNCTION	105.17	1.50	0.0
J003	JUNCTION	105.87	1.50	0.0
J004	JUNCTION	106.16	1.64	0.0
J005	JUNCTION	106.40	1.50	0.0
J006	JUNCTION	106.53	1.50	0.0
J007	JUNCTION	106.71	1.58	0.0
J008	JUNCTION	107.04	1.50	0.0
J009	JUNCTION	107.16	1.58	0.0
J010	JUNCTION	107.44	1.50	0.0
J011	JUNCTION	107.56	1.58	0.0
J012	JUNCTION	107.84	1.50	0.0
J013	JUNCTION	107.98	1.56	0.0
J014	JUNCTION	108.25	1.50	0.0
J015	JUNCTION	108.25	1.58	0.0
J016	JUNCTION	108.44	1.50	0.0
J017	JUNCTION	108.65	1.50	0.0
J018	JUNCTION	108.78	1.56	0.0
J019	JUNCTION	109.04	1.50	0.0
J020	JUNCTION	109.18	1.56	0.0
J021	JUNCTION	109.45	1.50	0.0
J022	JUNCTION	109.64	1.50	0.0
J023	JUNCTION	109.78	1.56	0.0
J024	JUNCTION	110.04	1.50	0.0
J025	JUNCTION	110.17	1.50	0.0
J026	JUNCTION	110.15	1.50	0.0
J027	JUNCTION	106.29	1.58	0.0
J028	JUNCTION	106.32	1.58	0.0
J029	JUNCTION	106.37	1.58	0.0
J030	JUNCTION	106.47	1.50	0.0
J031	JUNCTION	106.49	1.58	0.0
J032	JUNCTION	106.56	1.58	0.0
J033	JUNCTION	106.81	1.58	0.0
J034	JUNCTION	106.91	1.58	0.0
J035	JUNCTION	106.95	1.58	0.0
J036	JUNCTION	107.00	1.58	0.0
J037	JUNCTION	107.14	1.50	0.0
J038	JUNCTION	107.23	1.56	0.0
J039	JUNCTION	107.26	1.58	0.0
J040	JUNCTION	107.31	1.57	0.0
J041	JUNCTION	107.39	1.57	0.0
J042	JUNCTION	107.54	1.50	0.0
J043	JUNCTION	107.59	1.57	0.0
J044	JUNCTION	107.64	1.57	0.0
J045	JUNCTION	107.66	1.58	0.0
J046	JUNCTION	107.74	1.58	0.0
J047	JUNCTION	107.94	1.50	0.0
J048	JUNCTION	107.96	1.56	0.0
J049	JUNCTION	108.01	1.56	0.0
J050	JUNCTION	108.08	1.56	0.0
J051	JUNCTION	108.17	1.56	0.0
J052	JUNCTION	108.36	1.50	0.0
J053	JUNCTION	108.52	1.50	0.0
J054	JUNCTION	108.77	1.50	0.0
J055	JUNCTION	108.96	1.56	0.0
J056	JUNCTION	109.05	1.56	0.0
J057	JUNCTION	109.21	1.56	0.0
J058	JUNCTION	109.34	1.56	0.0
J059	JUNCTION	109.45	1.50	0.0
J060	JUNCTION	109.62	1.50	0.0
J061	JUNCTION	109.72	1.50	0.0
J062	JUNCTION	109.62	1.50	0.0
J063	JUNCTION	109.45	1.56	0.0
J064	JUNCTION	109.39	1.56	0.0
J065	JUNCTION	109.34	1.56	0.0
J066	JUNCTION	109.20	1.56	0.0
J067	JUNCTION	109.02	1.58	0.0
J068	JUNCTION	108.93	1.58	0.0
J069	JUNCTION	108.89	1.58	0.0
J070	JUNCTION	108.84	1.58	0.0
J071	JUNCTION	108.77	1.50	0.0
J072	JUNCTION	108.52	1.50	0.0
J073	JUNCTION	108.36	1.58	0.0
J074	JUNCTION	108.37	1.58	0.0

J075	JUNCTION	108.41	1.58	0.0
J076	JUNCTION	108.54	1.50	0.0
J077	JUNCTION	108.57	1.57	0.0
J078	JUNCTION	108.64	1.57	0.0
J079	JUNCTION	108.67	1.57	0.0
J080	JUNCTION	108.71	1.57	0.0
J081	JUNCTION	108.88	1.56	0.0
J082	JUNCTION	108.95	1.56	0.0
J083	JUNCTION	109.03	1.56	0.0
J084	JUNCTION	109.08	1.56	0.0
J085	JUNCTION	109.28	1.56	0.0
J086	JUNCTION	109.39	1.56	0.0
J087	JUNCTION	109.44	1.56	0.0
J088	JUNCTION	109.48	1.56	0.0
J089	JUNCTION	109.56	1.56	0.0
J090	JUNCTION	109.68	1.56	0.0
J091	JUNCTION	109.75	1.56	0.0
J092	JUNCTION	109.77	1.56	0.0
J093	JUNCTION	109.81	1.56	0.0
J094	JUNCTION	109.88	1.56	0.0
J095	JUNCTION	109.95	1.55	0.0
J096	JUNCTION	110.02	1.55	0.0
J097	JUNCTION	110.14	1.50	0.0
J098	JUNCTION	110.13	1.55	0.0
J099	JUNCTION	110.18	1.55	0.0
J100	JUNCTION	110.29	1.50	0.0
J101	JUNCTION	110.14	1.55	0.0
J102	JUNCTION	109.98	1.55	0.0
J103	JUNCTION	109.88	1.55	0.0
J104	JUNCTION	109.78	1.55	0.0
J105	JUNCTION	103.74	1.50	0.0
J106	JUNCTION	103.69	1.50	0.0
J107	JUNCTION	103.96	1.50	0.0
J108	JUNCTION	104.19	1.50	0.0
J109	JUNCTION	104.35	1.50	0.0
J110	JUNCTION	104.44	1.58	0.0
J111	JUNCTION	104.53	1.50	0.0
J112	JUNCTION	104.80	1.55	0.0
J113	JUNCTION	105.11	1.55	0.0
J114	JUNCTION	105.55	1.50	0.0
J115	JUNCTION	104.44	1.58	0.0

J116	JUNCTION	104.57	1.50	0.0
J117	JUNCTION	104.85	1.50	0.0
J118	JUNCTION	105.24	1.58	0.0
J119	JUNCTION	105.32	1.55	0.0
J120	JUNCTION	105.46	1.55	0.0
J121	JUNCTION	105.57	1.50	0.0
J122	JUNCTION	106.08	1.50	0.0
J123	JUNCTION	106.21	1.55	0.0
J124	JUNCTION	106.30	1.55	0.0
J125	JUNCTION	106.61	1.50	0.0
J126	JUNCTION	106.61	1.50	0.0
J127	JUNCTION	106.29	1.57	0.0
J128	JUNCTION	106.38	1.50	0.0
J129	JUNCTION	106.44	1.55	0.0
J130	JUNCTION	106.59	1.55	0.0
J131	JUNCTION	107.14	1.50	0.0
J132	JUNCTION	107.34	1.50	0.0
J133	JUNCTION	107.48	1.57	0.0
J134	JUNCTION	107.74	1.50	0.0
J135	JUNCTION	107.79	1.55	0.0
J136	JUNCTION	107.85	1.55	0.0
J137	JUNCTION	107.98	1.50	0.0
J138	JUNCTION	108.09	1.50	0.0
J139	JUNCTION	108.09	1.50	0.0
J140	JUNCTION	107.83	1.57	0.0
J141	JUNCTION	107.94	1.55	0.0
J142	JUNCTION	108.04	1.55	0.0
J143	JUNCTION	108.59	1.50	0.0
J144	JUNCTION	108.40	1.55	0.0
J145	JUNCTION	108.36	1.55	0.0
J146	JUNCTION	108.30	1.55	0.0
J147	JUNCTION	108.71	1.50	0.0
J148	JUNCTION	109.43	1.50	0.0
J149	JUNCTION	110.15	1.50	0.0
J150	JUNCTION	110.87	1.50	0.0
J151	JUNCTION	111.69	1.50	0.0
J152	JUNCTION	105.24	1.58	0.0
J153	JUNCTION	105.57	1.50	0.0
J154	JUNCTION	105.82	1.58	0.0
J155	JUNCTION	106.00	1.58	0.0
J156	JUNCTION	106.61	1.50	0.0

J157	JUNCTION	106.61	1.50	0.0
J158	JUNCTION	106.32	1.57	0.0
J159	JUNCTION	107.14	1.50	0.0
J160	JUNCTION	107.19	1.55	0.0
J161	JUNCTION	107.47	1.55	0.0
J162	JUNCTION	107.61	1.50	0.0
J163	JUNCTION	107.48	1.57	0.0
J164	JUNCTION	107.56	1.57	0.0
J165	JUNCTION	107.65	1.57	0.0
J166	JUNCTION	107.74	1.50	0.0
J167	JUNCTION	107.84	1.56	0.0
J168	JUNCTION	107.93	1.56	0.0
J169	JUNCTION	108.09	1.50	0.0
J170	JUNCTION	108.09	1.50	0.0
J171	JUNCTION	108.01	1.56	0.0
J172	JUNCTION	107.89	1.56	0.0
J173	JUNCTION	107.83	1.57	0.0
J174	JUNCTION	108.09	1.57	0.0
J175	JUNCTION	108.29	1.57	0.0
J176	JUNCTION	108.60	1.50	0.0
J177	JUNCTION	108.52	1.55	0.0
J178	JUNCTION	108.43	1.55	0.0
J179	JUNCTION	108.31	1.55	0.0
J180	JUNCTION	108.71	1.50	0.0
J181	JUNCTION	109.43	1.50	0.0
J182	JUNCTION	110.15	1.50	0.0
J183	JUNCTION	110.87	1.50	0.0
J184	JUNCTION	111.69	1.50	0.0
J185	JUNCTION	106.77	1.60	0.0
J186	JUNCTION	106.90	1.50	0.0
J187	JUNCTION	107.37	1.50	0.0
J188	JUNCTION	107.58	1.50	0.0
J189	JUNCTION	106.43	1.50	0.0
J190	JUNCTION	106.73	1.50	0.0
J191	JUNCTION	106.91	1.50	0.0
J192	JUNCTION	107.05	1.50	0.0
J193	JUNCTION	107.72	1.50	0.0
J194	JUNCTION	108.45	1.50	0.0
J195	JUNCTION	108.69	1.50	0.0
J196	JUNCTION	108.70	1.50	0.0
J197	JUNCTION	108.90	1.50	0.0
J198	JUNCTION	109.17	1.50	0.0
J199	JUNCTION	109.47	1.50	0.0
J200	JUNCTION	109.78	1.50	0.0
J201	JUNCTION	109.89	1.56	0.0
J202	JUNCTION	109.96	1.56	0.0
J203	JUNCTION	110.17	1.50	0.0
Out-C	JUNCTION	105.27	2.00	0.0
Out-D	JUNCTION	106.14	2.00	0.0
Out-E	JUNCTION	107.38	2.00	0.0
Pond-A-Out	JUNCTION	103.25	1.85	0.0
Pond-B-Out	JUNCTION	102.27	2.23	0.0
OF1	OUTFALL	106.59	1.20	0.0
OF2	OUTFALL	107.74	0.63	0.0
OF3	OUTFALL	0.00	0.00	0.0
OF4	OUTFALL	106.30	1.00	0.0
OF5	OUTFALL	108.00	1.00	0.0
OF6	OUTFALL	0.00	0.00	0.0
OF7a	OUTFALL	109.79	1.25	0.0
OF7b	OUTFALL	109.69	1.35	0.0
OF-A	OUTFALL	101.81	1.00	0.0
OF-B	OUTFALL	101.50	1.00	0.0
OF-C	OUTFALL	105.22	0.50	0.0
OF-D	OUTFALL	106.09	0.50	0.0
OF-E	OUTFALL	107.33	0.50	0.0
LinearPondC	STORAGE	105.97	1.03	0.0
LinearPondD	STORAGE	106.95	1.31	0.0
LinearPondE	STORAGE	107.63	1.33	0.0
MH1	STORAGE	103.81	2.77	0.0
MH2	STORAGE	103.76	2.73	0.0
MH3	STORAGE	103.76	2.68	0.0
MH4	STORAGE	103.76	2.68	0.0
MH5	STORAGE	103.40	3.04	0.0
OGS-A1	STORAGE	103.76	2.73	0.0
OGS-A2	STORAGE	103.76	2.73	0.0
OGS-B	STORAGE	102.82	1.78	0.0
Pond-A	STORAGE	103.30	1.80	0.0
Pond-B	STORAGE	102.35	2.15	0.0

****
Link Summary

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

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Name	From Node	To Node	Type	Length	%Slope	Roughness
C001	J001	OF-A	CONDUIT	59.3	1.2485	0.0450
C002	J002	J001	CONDUIT	59.6	0.5539	0.0450
C003	Pond-A-Out	J002	CONDUIT	42.7	0.8663	0.0450
C004a	J002a	Pond-A	CONDUIT	2.0	94.0233	0.0450
C004b	J002c	J002b	CONDUIT	5.9	1.3581	0.0450
C004c	DICB01	J002c	CONDUIT	55.1	1.3258	0.0450
C005	J003	DICB01	CONDUIT	20.8	1.7795	0.0450
C006	J004	J003	CONDUIT	53.2	0.6956	0.0450
C007	J005	J004	CONDUIT	19.6	0.8149	0.0450
C008	J006	J005	CONDUIT	23.8	0.5460	0.0450
C009	J007	J006	CONDUIT	51.8	0.5021	0.0450
C010	J008	J007	CONDUIT	50.2	0.4985	0.0450
C011	J009	J008	CONDUIT	49.9	0.4008	0.0450
C012	J010	J009	CONDUIT	50.0	0.3997	0.0450
C013	J011	J010	CONDUIT	50.0	0.4001	0.0450
C014	J012	J011	CONDUIT	50.1	0.3994	0.0450
C015	J013	J012	CONDUIT	50.0	0.4003	0.0450
C016	J014	J013	CONDUIT	49.9	0.4207	0.0450
C017	J015	J014	CONDUIT	20.7	0.3859	0.0450
C018	J016	J015	CONDUIT	29.2	0.3761	0.0450
C019	J017	J016	CONDUIT	50.0	0.4199	0.0450
C020	J018	J017	CONDUIT	50.2	0.3788	0.0450
C021	J019	J018	CONDUIT	49.9	0.4010	0.0450
C022	J020	J019	CONDUIT	50.1	0.3990	0.0450
C023	J021	J020	CONDUIT	50.0	0.4201	0.0450
C024	J022	J021	CONDUIT	49.9	0.3804	0.0450
C025	J023	J022	CONDUIT	50.0	0.3998	0.0450
C026	J024	J023	CONDUIT	49.9	0.4008	0.0450
C027	J025	J024	CONDUIT	37.9	0.3427	0.0450
C028	J025	J026	CONDUIT	12.2	0.1643	0.0450
C029	J026	OF7b	CONDUIT	47.3	0.9728	0.0450
C030	J028	J027	CONDUIT	10.8	0.2789	0.0450
C031	J030	J029	CONDUIT	6.2	0.3214	0.0450
C032	J031	J030	CONDUIT	33.7	0.2966	0.0450
C033	J033	J032	CONDUIT	37.5	0.6672	0.0450
C034	J035	J034	CONDUIT	8.1	0.4960	0.0450
C035	J037	J036	CONDUIT	12.3	0.4877	0.0450
C036	J038	J037	CONDUIT	37.9	0.3956	0.0450
C037	J040	J039	CONDUIT	8.9	0.4517	0.0450
C038	J042	J041	CONDUIT	21.4	0.3743	0.0450
C039	J043	J042	CONDUIT	30.0	0.4002	0.0450
C040	J045	J044	CONDUIT	8.5	0.3529	0.0450
C041	J047	J046	CONDUIT	30.7	0.3905	0.0450
C042	J048	J047	CONDUIT	18.8	0.4251	0.0450
C043	J050	J049	CONDUIT	18.3	0.3828	0.0450
C044	J052	J051	CONDUIT	28.7	0.4531	0.0450
C045	J053	J052	CONDUIT	13.9	1.1482	0.0450
C046	J054	J053	CONDUIT	50.1	0.4995	0.0450
C047	J055	J054	CONDUIT	50.0	0.5000	0.0450
C048	J057	J056	CONDUIT	31.8	0.5030	0.0450
C049	J059	J058	CONDUIT	7.9	0.6354	0.0450
C050	J060	J059	CONDUIT	26.7	0.6360	0.0450
C051	J061	J060	CONDUIT	33.1	0.3021	0.0450
C052	J061	J062	CONDUIT	32.7	0.3060	0.0450
C053	J062	J063	CONDUIT	17.6	0.6261	0.0450
C054	J064	J065	CONDUIT	7.6	0.6589	0.0450
C055	J066	J067	CONDUIT	31.1	0.5137	0.0450
C056	J068	J069	CONDUIT	8.8	0.4544	0.0450
C057	J070	J071	CONDUIT	29.9	0.5013	0.0450
C058	J071	J072	CONDUIT	49.9	0.5011	0.0450
C059	J072	J073	CONDUIT	12.2	0.6539	0.0450
C060	J074	J073	CONDUIT	3.3	0.2988	0.0450
C061	J076	J075	CONDUIT	15.2	0.3284	0.0450
C062	J077	J076	CONDUIT	23.5	0.4259	0.0450
C063	J079	J078	CONDUIT	8.0	0.3753	0.0450
C064	J081	J080	CONDUIT	39.4	0.4063	0.0450
C065	J083	J082	CONDUIT	19.0	0.4207	0.0450
C066	J085	J084	CONDUIT	50.0	0.4000	0.0450
C067	J086	J085	CONDUIT	29.8	0.3692	0.0450
C068	J088	J087	CONDUIT	9.0	0.4439	0.0450
C069	J090	J089	CONDUIT	30.6	0.3926	0.0450
C070	J092	J091	CONDUIT	3.6	0.5502	0.0450
C071	J094	J093	CONDUIT	17.3	0.4045	0.0450
C072	J095	J094	CONDUIT	15.7	0.3817	0.0450
C073	J097	J096	CONDUIT	16.4	0.4276	0.0450
C074	J098	J097	CONDUIT	9.6	0.4169	0.0450
C075	J100	J099	CONDUIT	16.7	0.3600	0.0450
C076	J100	J101	CONDUIT	12.0	0.8313	0.0450
C077	J102	J103	CONDUIT	11.9	0.8433	0.0450

C078	J104	OF7a	CONDUIT	4.9	0.8129	0.0450
C079	Pond-B-Out	OF-B	CONDUIT	48.2	1.5965	0.0450
C080	J105	Pond-B	CONDUIT	9.4	11.6745	0.0450
C081	J106	DICB02	CONDUIT	5.2	0.3839	0.0450
C082	J107	J106	CONDUIT	62.8	0.4299	0.0450
C083	J108	J107	CONDUIT	58.7	0.3920	0.0450
C084	J109	J108	CONDUIT	40.0	0.4004	0.0450
C085	J110	J109	CONDUIT	4.6	3.7364	0.0450
C086	J111	J110	CONDUIT	3.5	0.2887	0.0450
C087	J112	J111	CONDUIT	24.5	1.3064	0.0450
C088	J114	J113	CONDUIT	24.0	1.6283	0.0450
C089	J116	J115	CONDUIT	4.7	1.0712	0.0450
C090	J117	J116	CONDUIT	22.9	1.2205	0.0450
C091	J118	J117	CONDUIT	22.7	2.0730	0.0450
C092	J119	J118	CONDUIT	3.5	1.4094	0.0450
C093	J121	J120	CONDUIT	3.8	1.5733	0.0450
C094	J122	J121	CONDUIT	47.6	1.0710	0.0450
C095	J123	J122	CONDUIT	18.6	0.9697	0.0450
C096	J125	J124	CONDUIT	25.5	1.0195	0.0450
C098	J126	J127	CONDUIT	46.5	0.5374	0.0450
C099	J128	J127	CONDUIT	1.3	1.5130	0.0450
C100	J129	J128	CONDUIT	7.2	1.5210	0.0450
C101	J131	J130	CONDUIT	32.9	1.5204	0.0450
C102	J132	J131	CONDUIT	13.6	1.4742	0.0450
C104	J134	J133	CONDUIT	37.4	0.5074	0.0450
C105	J135	J134	CONDUIT	21.3	0.4700	0.0450
C106	J137	J136	CONDUIT	17.4	0.4588	0.0450
C107	J138	J137	CONDUIT	17.5	0.6276	0.0450
C109	J139	J140	CONDUIT	39.5	0.4808	0.0450
C110	J141	J140	CONDUIT	8.7	1.0324	0.0450
C111	J143	J142	CONDUIT	46.8	1.0695	0.0450
C112	J143	J144	CONDUIT	28.9	0.4850	0.0450
C113	J145	J146	CONDUIT	12.1	0.4977	0.0450
C114	J147	J146	CONDUIT	25.2	1.4288	0.0450
C115	J148	J147	CONDUIT	50.8	1.4166	0.0450
C116	J149	J148	CONDUIT	52.7	1.3667	0.0450
C117	J150	J149	CONDUIT	48.8	1.4771	0.0450
C118	J151	J150	CONDUIT	41.8	1.9609	0.0450
C119	J153	J152	CONDUIT	19.4	1.2878	0.0450
C120	J154	J153	CONDUIT	33.6	0.9827	0.0450
C121	J156	J155	CONDUIT	48.3	1.0974	0.0450
C123	J157	J158	CONDUIT	44.0	0.5004	0.0450
C124	J159	J158	CONDUIT	51.1	1.4691	0.0450
C125	J160	J159	CONDUIT	7.0	1.4257	0.0450
C126	J162	J161	CONDUIT	6.1	1.4802	0.0450
C128	J164	J163	CONDUIT	14.9	0.5381	0.0450
C129	J166	J165	CONDUIT	4.6	0.4338	0.0450
C130	J167	J166	CONDUIT	31.6	0.5071	0.0450
C131	J169	J168	CONDUIT	17.4	0.5741	0.0450
C133	J170	J171	CONDUIT	3.9	0.5132	0.0450
C134	J172	J173	CONDUIT	9.4	0.5314	0.0450
C135	J174	J173	CONDUIT	24.8	1.0468	0.0450
C136	J176	J175	CONDUIT	22.7	1.0559	0.0450
C137	J176	J177	CONDUIT	5.3	0.5626	0.0450
C138	J178	J179	CONDUIT	26.4	0.4538	0.0450
C139	J180	J179	CONDUIT	25.3	1.3809	0.0450
C140	J181	J180	CONDUIT	49.0	1.4690	0.0450
C141	J182	J181	CONDUIT	47.3	1.5233	0.0450
C142	J183	J182	CONDUIT	51.3	1.4028	0.0450
C143	J184	J183	CONDUIT	45.9	1.7849	0.0450
C144	J186	J185	CONDUIT	4.7	0.6427	0.0450
C145	J187	J186	CONDUIT	85.4	0.5505	0.0450
C146	J188	J187	CONDUIT	99.0	0.2121	0.0450
C147	J189	OF4	CONDUIT	25.8	0.5036	0.0450
C148	J190	J189	CONDUIT	86.6	0.3466	0.0450
C149	J191	J190	CONDUIT	68.5	0.2629	0.0450
C150	J192	J191	CONDUIT	45.5	0.3076	0.0450
C151	J193	J192	CONDUIT	67.0	0.9995	0.0450
C152	J194	J193	CONDUIT	78.1	0.9345	0.0450
C153	J195	J194	CONDUIT	159.4	0.1506	0.0450
C154	J196	OF5	CONDUIT	263.9	0.2653	0.0450
C155	J197	J196	CONDUIT	67.9	0.2946	0.0450
C156	J198	J197	CONDUIT	89.1	0.3029	0.0450
C157	J199	J198	CONDUIT	98.8	0.3036	0.0450
C158	J200	J199	CONDUIT	104.4	0.2970	0.0450
C159	J201	J200	CONDUIT	57.5	0.2954	0.0450
C160	J203	J202	CONDUIT	97.6	0.1537	0.0450
CULV-01	J002b	J002a	CONDUIT	10.0	1.4017	0.0240
CULV-02	J029	J028	CONDUIT	17.7	0.2824	0.0240
CULV-03	J034	J033	CONDUIT	19.0	0.5266	0.0240
CULV-04	J041	J040	CONDUIT	19.6	0.4080	0.0240
CULV-05	J046	J045	CONDUIT	19.4	0.4119	0.0240

CULV-06	J051	J050	CONDUIT	18.8	0.4788	0.0240
CULV-07	J078	J077	CONDUIT	18.4	0.3804	0.0240
CULV-08	J082	J081	CONDUIT	19.0	0.3694	0.0240
CULV-09	J089	J088	CONDUIT	19.2	0.4162	0.0240
CULV-10	J091	J090	CONDUIT	18.5	0.3781	0.0240
CULV-11	J096	J095	CONDUIT	18.1	0.3859	0.0240
CULV-12	J101	J102	CONDUIT	19.5	0.8200	0.0240
CULV-13	J056	J055	CONDUIT	18.1	0.4968	0.0240
CULV-14	J058	J057	CONDUIT	19.2	0.6756	0.0240
CULV-15	J065	J066	CONDUIT	19.5	0.7180	0.0240
CULV-16	J067	J068	CONDUIT	18.8	0.4788	0.0240
CULV-17	J027	J004	CONDUIT	16.6	0.7846	0.0240
CULV-18	J033	J007	CONDUIT	16.7	0.5988	0.0240
CULV-19	J039	J009	CONDUIT	16.7	0.5988	0.0240
CULV-20	J045	J011	CONDUIT	16.7	0.5988	0.0240
CULV-21	J050	J013	CONDUIT	16.7	0.5988	0.0240
CULV-22	J073	J015	CONDUIT	16.7	0.6572	0.0240
CULV-23	J081	J018	CONDUIT	16.7	0.5988	0.0240
CULV-24	J085	J020	CONDUIT	16.7	0.5988	0.0240
CULV-25	J094	J023	CONDUIT	16.7	0.5988	0.0240
CULV-26	DICB02	J105	CONDUIT	11.8	1.0170	0.0130
CULV-27	J113	J112	CONDUIT	19.3	1.6045	0.0240
CULV-28	J115	J110	CONDUIT	11.9	0.0026	0.0130
CULV-29	J152	J118	CONDUIT	15.2	0.0020	0.0130
CULV-30	J155	J154	CONDUIT	18.9	0.9549	0.0130
CULV-31	J161	J160	CONDUIT	18.2	1.5393	0.0240
CULV-32	J165	J164	CONDUIT	18.1	0.4985	0.0240
CULV-33	J168	J167	CONDUIT	18.5	0.4874	0.0240
CULV-34	J171	J172	CONDUIT	18.7	0.6434	0.0240
CULV-35	J175	J174	CONDUIT	18.6	1.0776	0.0240
CULV-36	J177	J178	CONDUIT	18.4	0.4897	0.0240
CULV-37	J158	J127	CONDUIT	15.2	0.1974	0.0240
CULV-38	J163	J133	CONDUIT	15.1	0.0020	0.0240
CULV-39	J173	J140	CONDUIT	15.2	0.0020	0.0240
CULV-40	J179	J146	CONDUIT	15.2	0.0658	0.0240
CULV-41	J185	OF1	CONDUIT	20.6	0.8724	0.0240
CULV-42	J202	J201	CONDUIT	52.7	0.1328	0.0240
DICB01-MH1	DICB01	MH1	CONDUIT	26.7	0.2625	0.0130
DICB02-OGSB	DICB02	OGS-B	CONDUIT	19.4	0.4642	0.0130
HYD-01	J032	J031	CONDUIT	11.2	0.6237	0.0240
HYD-02	J036	J035	CONDUIT	10.6	0.4700	0.0240
HYD-03	J039	J038	CONDUIT	12.1	0.4122	0.0240
HYD-04	J044	J043	CONDUIT	11.5	0.4336	0.0240
HYD-05	J049	J048	CONDUIT	12.9	0.3885	0.0240
HYD-06	J075	J074	CONDUIT	10.1	0.3971	0.0240
HYD-07	J080	J079	CONDUIT	10.8	0.3696	0.0240
HYD-08	J084	J083	CONDUIT	12.0	0.4181	0.0240
HYD-09	J087	J086	CONDUIT	11.3	0.4420	0.0240
HYD-10	J093	J092	CONDUIT	10.6	0.3779	0.0240
HYD-11	J099	J098	CONDUIT	11.4	0.4369	0.0240
HYD-12	J103	J104	CONDUIT	11.4	0.8768	0.0240
HYD-13	J063	J064	CONDUIT	9.1	0.6589	0.0240
HYD-14	J069	J070	CONDUIT	11.3	0.4415	0.0240
HYD-15	J120	J119	CONDUIT	9.4	1.4845	0.0240
HYD-16	J124	J123	CONDUIT	9.3	0.9654	0.0240
HYD-17	J130	J129	CONDUIT	9.6	1.5570	0.0240
HYD-18	J136	J135	CONDUIT	10.9	0.5509	0.0240
HYD-19	J142	J141	CONDUIT	9.5	1.0537	0.0240
HYD-20	J144	J145	CONDUIT	9.9	0.4051	0.0240
Inflow-C	J127	LinearPondC	CONDUIT	6.6	5.9131	0.0450
Inflow-D	J133	LinearPondD	CONDUIT	6.4	9.4165	0.0450
Inflow-E1	J140	LinearPondE	CONDUIT	6.4	4.2225	0.0450
Inflow-E2	J146	LinearPondE	CONDUIT	9.3	7.7652	0.0450
MH1-MH2	MH1	MH2	CONDUIT	11.2	0.4458	0.0130
MH2-OGSA1	MH2	OGS-A1	CONDUIT	2.3	0.0131	0.0130
MH2-OGSA2	MH2	OGS-A2	CONDUIT	2.3	0.0131	0.0130
MH3-MH5	MH3	MH5	CONDUIT	2.9	0.0104	0.0130
MH4-MH5	MH4	MH5	CONDUIT	2.9	0.0104	0.0130
MH5-HWa	MH5	Pond-A	CONDUIT	9.7	1.0284	0.0130
OGSA1-MH43	OGS-A1	MH3	CONDUIT	1.6	0.0191	0.0130
OGSA2-MH4	OGS-A2	MH4	CONDUIT	1.6	0.0191	0.0130
OGSB-HWb	OGS-B	Pond-B	CONDUIT	7.7	0.3888	0.0130
Out-C	Out-C	OF-C	CONDUIT	10.0	0.5000	0.0450
Out-D	Out-D	OF-D	CONDUIT	10.0	0.5000	0.0450
Out-E	Out-E	OF-E	CONDUIT	10.0	0.5000	0.0450
OVF-01	J002b	J002a	CONDUIT	4.0	-0.5000	0.0150
OVF-02	J029	J028	CONDUIT	8.0	0.6250	0.0150
OVF-03	J034	J033	CONDUIT	8.0	1.2501	0.0150
OVF-04	J041	J040	CONDUIT	8.0	1.0001	0.0150
OVF-05	J046	J045	CONDUIT	8.0	1.0001	0.0150
OVF-06	J051	J050	CONDUIT	8.0	1.1251	0.0150
OVF-07	J078	J077	CONDUIT	8.0	0.8750	0.0150

OVF-08	J082	J081	CONDUIT	8.0	0.8750	0.0150
OVF-09	J089	J088	CONDUIT	8.0	1.0001	0.0150
OVF-10	J091	J090	CONDUIT	8.0	0.8750	0.0150
OVF-11	J096	J095	CONDUIT	8.0	0.8750	0.0150
OVF-12	J101	J102	CONDUIT	8.0	2.0004	0.0150
OVF-13	J056	J055	CONDUIT	8.0	1.1251	0.0150
OVF-14	J058	J057	CONDUIT	8.0	1.6252	0.0150
OVF-15	J065	J066	CONDUIT	8.0	1.7503	0.0150
OVF-16	J067	J068	CONDUIT	8.0	1.1251	0.0150
OVF-17a	15+1025	J027	CONDUIT	3.0	6.0108	0.0150
OVF-17b	15+1025	J004	CONDUIT	3.0	6.0108	0.0150
OVF-18a	15+0925	J033	CONDUIT	3.0	6.0108	0.0150
OVF-18b	15+0925	J007	CONDUIT	3.0	6.0108	0.0150
OVF-19a	15+0825	J039	CONDUIT	3.0	6.0108	0.0150
OVF-19b	15+0825	J009	CONDUIT	3.0	6.0108	0.0150
OVF-20a	15+0725	J045	CONDUIT	3.0	6.0108	0.0150
OVF-20b	15+0725	J011	CONDUIT	3.0	6.0108	0.0150
OVF-21a	15+0625	J050	CONDUIT	3.0	6.0108	0.0150
OVF-21b	15+0625	J013	CONDUIT	3.0	6.0108	0.0150
OVF-22a	15+0550	J073	CONDUIT	3.0	6.0108	0.0150
OVF-22b	15+0550	J015	CONDUIT	3.0	6.3461	0.0150
OVF-23a	15+0425	J081	CONDUIT	3.0	6.0108	0.0150
OVF-23b	15+0425	J018	CONDUIT	3.0	6.0108	0.0150
OVF-24a	15+0325	J085	CONDUIT	3.0	6.0108	0.0150
OVF-24b	15+0325	J020	CONDUIT	3.0	6.0108	0.0150
OVF-25a	15+0175	J094	CONDUIT	3.0	6.0108	0.0150
OVF-25b	15+0175	J023	CONDUIT	3.0	6.0108	0.0150
OVF-26	DICB02	J105	CONDUIT	4.0	0.5000	0.0150
OVF-27	J113	J112	CONDUIT	8.0	3.8779	0.0150
OVF-28a	18+282	J115	CONDUIT	3.0	6.0108	0.0150
OVF-28b	18+282	J110	CONDUIT	3.0	6.0108	0.0150
OVF-29a	17+793	J152	CONDUIT	3.0	6.0108	0.0150
OVF-29b	17+793	J118	CONDUIT	3.0	6.0108	0.0150
OVF-30	J155	J154	CONDUIT	8.0	2.2506	0.0150
OVF-31	J161	J160	CONDUIT	8.0	3.5021	0.0150
OVF-32	J165	J164	CONDUIT	8.0	1.1251	0.0150
OVF-33	J168	J167	CONDUIT	8.0	1.1251	0.0150
OVF-34	J171	J172	CONDUIT	8.0	1.5002	0.0150
OVF-35	J175	J174	CONDUIT	8.0	2.5008	0.0150
OVF-36	J177	J178	CONDUIT	8.0	1.1251	0.0150
OVF-37a	17+625	J158	CONDUIT	3.0	5.6758	0.0150
OVF-37b	17+625	J127	CONDUIT	3.0	6.6815	0.0150
OVF-38a	17+512	J163	CONDUIT	3.0	6.0108	0.0150
OVF-38b	17+512	J133	CONDUIT	3.0	6.0108	0.0150
OVF-39a	17+365	J173	CONDUIT	3.0	6.0108	0.0150
OVF-39b	17+365	J140	CONDUIT	3.0	6.0108	0.0150
OVF-40a	17+250	J179	CONDUIT	3.0	5.6758	0.0150
OVF-40b	17+250	J146	CONDUIT	3.0	6.0108	0.0150
OVF-41a	17+532	J185	CONDUIT	3.0	28.0415	0.0150
OVF-41b	17+532	OF2	CONDUIT	3.0	28.0415	0.0150
OVF-H01	J032	J031	CONDUIT	3.0	2.3340	0.0150
OVF-H02	J036	J035	CONDUIT	3.0	1.6669	0.0150
OVF-H03	J039	J038	CONDUIT	3.0	1.6669	0.0150
OVF-H04	J044	J043	CONDUIT	3.0	1.6669	0.0150
OVF-H05	J049	J048	CONDUIT	3.0	1.6669	0.0150
OVF-H06	J075	J074	CONDUIT	3.0	1.3335	0.0150
OVF-H07	J080	J079	CONDUIT	3.0	1.3335	0.0150
OVF-H08	J084	J083	CONDUIT	3.0	1.6669	0.0150
OVF-H09	J087	J086	CONDUIT	3.0	1.6669	0.0150
OVF-H10	J093	J092	CONDUIT	3.0	1.3335	0.0150
OVF-H11	J099	J098	CONDUIT	3.0	1.6669	0.0150
OVF-H12	J103	J104	CONDUIT	3.0	3.3352	0.0150
OVF-H13	J063	J064	CONDUIT	3.0	2.0004	0.0150
OVF-H14	J069	J070	CONDUIT	3.0	1.6669	0.0150
OVF-H15	J120	J119	CONDUIT	3.0	4.6718	0.0150
OVF-H16	J124	J123	CONDUIT	3.0	3.0014	0.0150
OVF-H17	J130	J129	CONDUIT	3.0	5.0063	0.0150
OVF-H18	J136	J135	CONDUIT	3.0	2.0004	0.0150
OVF-H19	J142	J141	CONDUIT	3.0	3.3352	0.0150
OVF-H20	J144	J145	CONDUIT	3.0	1.3335	0.0150
PondB-Upper	Pond-B	Pond-B-Out	CONDUIT	9.5	0.5263	0.0130
O-PondA	Pond-A	Pond-A-Out	ORIFICE			
O-PondB	Pond-B	Pond-B-Out	ORIFICE			
O-PondC-Lower	LinearPondC	Out-C	ORIFICE			
O-PondC-Upper	LinearPondC	Out-C	ORIFICE			
O-PondD	LinearPondD	Out-D	ORIFICE			
O-PondE	LinearPondE	Out-E	ORIFICE			
C097	J126	J125	WEIR			
C103	J133	J132	WEIR			
C108	J139	J138	WEIR			
C122	J157	J156	WEIR			
C127	J163	J162	WEIR			

C132	J170	J169	WEIR
W-PondA	Pond-A	Pond-A-Out	WEIR
W-PondA-Spill	Pond-A	Pond-A-Out	WEIR
W-PondB-Spill	Pond-B	Pond-B-Out	WEIR
W-PondC-Spill	LinearPondC	Out-C	WEIR
W-PondD	LinearPondD	Out-D	WEIR
W-PondD-Berm	LinearPondD	J134	WEIR
W-PondD-Spill	LinearPondD	Out-D	WEIR
W-PondE	LinearPondE	Out-E	WEIR
W-PondE-Berm	LinearPondE	J141	WEIR
W-PondE-Spill	LinearPondE	Out-E	WEIR

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C001	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6636.14
C002	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4420.10
C003	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	5527.77
C004a	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	57589.56
C004b	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6921.44
C004c	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	6838.69
C005	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	16156.90
C006	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	10101.82
C007	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	10933.36
C008	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	8949.88
C009	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	8582.07
C010	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	8551.14
C011	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7667.80
C012	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7657.83
C013	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7661.27
C014	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7654.31
C015	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7663.19
C016	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7856.21
C017	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7523.65
C018	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7427.97
C019	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7848.51
C020	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7454.54
C021	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7670.03
C022	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7650.95
C023	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7850.63
C024	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7470.42
C025	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7657.98
C026	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7668.18
C027	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	7090.04
C028	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	4909.21
C029	TRAPEZOIDAL	1.35	6.82	0.71	9.10	1	11945.98
C030	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5318.35
C031	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5708.96
C032	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5484.17
C033	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	8225.72
C034	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	7092.49
C035	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	7032.28
C036	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6333.90
C037	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6767.91
C038	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6161.34
C039	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6370.72
C040	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5981.95
C041	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6292.61
C042	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6565.48
C043	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6230.30
C044	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6778.75
C045	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	8410.35
C046	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5547.00
C047	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5550.27
C048	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5566.68
C049	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6256.60
C050	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6259.71
C051	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	4313.96
C052	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	4341.99
C053	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6210.63
C054	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6370.98
C055	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5625.44
C056	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5290.85
C057	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5557.09
C058	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	5555.99
C059	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	6346.83
C060	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5504.45
C061	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	5771.16

C062	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6571.67
C063	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6169.48
C064	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6418.80
C065	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6531.91
C066	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6368.64
C067	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6118.71
C068	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6709.08
C069	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6309.57
C070	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	7469.77
C071	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6404.99
C072	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6221.65
C073	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6585.18
C074	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6502.05
C075	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	6041.94
C076	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	9181.55
C077	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	9247.90
C078	TRAPEZOIDAL	1.25	5.94	0.67	8.50	1	9079.28
C079	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	7504.20
C080	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	20292.95
C081	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	4901.03
C082	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	5186.69
C083	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	4952.38
C084	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	5005.34
C085	TRAPEZOIDAL	1.00	5.00	0.60	8.00	1	15290.33
C086	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	4908.48
C087	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10441.71
C088	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11657.53
C089	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9455.11
C090	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10092.64
C091	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	13153.38
C092	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10845.50
C093	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11459.00
C094	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9454.48
C095	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	8996.16
C096	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9224.19
C098	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6696.97
C099	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11237.22
C100	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11266.70
C101	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11264.52
C102	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11092.14
C104	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6507.37
C105	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6262.70
C106	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6187.94
C107	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	7237.38
C109	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6334.80
C110	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9282.37
C111	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9447.73
C112	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6361.88
C113	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6444.83
C114	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10919.84
C115	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10873.22
C116	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10679.85
C117	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11102.81
C118	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	12792.79
C119	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10367.29
C120	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9056.26
C121	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9570.10
C123	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6462.27
C124	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11072.78
C125	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10907.94
C126	TRAPEZOIDAL	1.05	4.36	0.57	7.30	1	8102.30
C128	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6701.26
C129	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6017.29
C130	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6505.34
C131	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6921.72
C133	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6544.66
C134	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6659.29
C135	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9347.06
C136	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	9387.35
C137	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6852.57
C138	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	6154.21
C139	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10735.17
C140	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11072.63
C141	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	11275.43
C142	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	10820.13
C143	TRAPEZOIDAL	1.20	5.52	0.64	8.20	1	12205.14
C144	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4761.30
C145	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	4406.54
C146	TRAPEZOIDAL	1.00	4.00	0.55	7.00	1	2735.04
C147	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2877.79
C148	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2387.35
C149	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2079.04

C150	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2248.85
C151	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	4054.03
C152	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	3919.97
C153	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	1573.58
C154	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2088.64
C155	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2200.80
C156	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2231.76
C157	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2234.47
C158	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2209.94
C159	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	2203.97
C160	TRAPEZOIDAL	1.00	3.00	0.47	6.00	1	1589.59
CULV-01	CIRCULAR	0.60	0.28	0.15	0.60	3	393.78
CULV-02	CIRCULAR	0.80	0.50	0.20	0.80	1	380.65
CULV-03	CIRCULAR	0.80	0.50	0.20	0.80	1	519.82
CULV-04	CIRCULAR	0.70	0.38	0.17	0.70	1	320.46
CULV-05	CIRCULAR	0.80	0.50	0.20	0.80	1	459.76
CULV-06	CIRCULAR	0.60	0.28	0.15	0.60	1	230.14
CULV-07	CIRCULAR	0.70	0.38	0.17	0.70	1	309.43
CULV-08	CIRCULAR	0.60	0.28	0.15	0.60	1	202.15
CULV-09	CIRCULAR	0.60	0.28	0.15	0.60	1	214.57
CULV-10	CIRCULAR	0.60	0.28	0.15	0.60	1	204.51
CULV-11	CIRCULAR	0.50	0.20	0.12	0.50	1	127.06
CULV-12	CIRCULAR	0.50	0.20	0.12	0.50	1	185.22
CULV-13	CIRCULAR	0.60	0.28	0.15	0.60	1	234.44
CULV-14	CIRCULAR	0.60	0.28	0.15	0.60	1	273.38
CULV-15	CIRCULAR	0.60	0.28	0.15	0.60	1	281.83
CULV-16	CIRCULAR	0.80	0.50	0.20	0.80	1	495.63
CULV-17	CIRCULAR	0.80	0.50	0.20	0.80	2	634.50
CULV-18	CIRCULAR	0.80	0.50	0.20	0.80	1	554.31
CULV-19	CIRCULAR	0.80	0.50	0.20	0.80	1	554.31
CULV-20	CIRCULAR	0.80	0.50	0.20	0.80	1	554.31
CULV-21	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-22	CIRCULAR	0.80	0.50	0.20	0.80	1	580.72
CULV-23	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-24	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-25	CIRCULAR	0.60	0.28	0.15	0.60	1	257.38
CULV-26	CIRCULAR	0.60	0.28	0.15	0.60	3	619.25
CULV-27	CIRCULAR	0.50	0.20	0.12	0.50	1	259.09
CULV-28	CIRCULAR	0.80	0.50	0.20	0.80	1	66.97
CULV-29	CIRCULAR	0.80	0.50	0.20	0.80	1	59.22
CULV-30	CIRCULAR	0.80	0.50	0.20	0.80	1	1292.27
CULV-31	CIRCULAR	0.50	0.20	0.12	0.50	1	253.78
CULV-32	CIRCULAR	0.70	0.38	0.17	0.70	1	354.25
CULV-33	CIRCULAR	0.60	0.28	0.15	0.60	1	232.21
CULV-34	CIRCULAR	0.60	0.28	0.15	0.60	1	266.79
CULV-35	CIRCULAR	0.70	0.38	0.17	0.70	1	520.83
CULV-36	CIRCULAR	0.50	0.20	0.12	0.50	1	143.14
CULV-37	CIRCULAR	0.70	0.38	0.17	0.70	1	222.89
CULV-38	CIRCULAR	0.70	0.38	0.17	0.70	1	22.58
CULV-39	CIRCULAR	0.70	0.38	0.17	0.70	1	22.47
CULV-40	CIRCULAR	0.50	0.20	0.12	0.50	1	52.46
CULV-41	CIRCULAR	1.20	1.13	0.30	1.20	1	1972.58
CULV-42	CIRCULAR	0.60	0.28	0.15	0.60	1	121.23
DICB01-MH1	CIRCULAR	0.60	0.28	0.15	0.60	1	314.62
DICB02-OGSB	CIRCULAR	0.60	0.28	0.15	0.60	1	418.36
HYD-01	CIRCULAR	0.80	0.50	0.20	0.80	1	565.72
HYD-02	CIRCULAR	0.80	0.50	0.20	0.80	1	491.09
HYD-03	CIRCULAR	0.60	0.28	0.15	0.60	1	213.55
HYD-04	CIRCULAR	0.70	0.38	0.17	0.70	1	330.37
HYD-05	CIRCULAR	0.60	0.28	0.15	0.60	1	207.31
HYD-06	CIRCULAR	0.80	0.50	0.20	0.80	1	451.40
HYD-07	CIRCULAR	0.70	0.38	0.17	0.70	1	305.01
HYD-08	CIRCULAR	0.60	0.28	0.15	0.60	1	215.06
HYD-09	CIRCULAR	0.60	0.28	0.15	0.60	1	221.13
HYD-10	CIRCULAR	0.60	0.28	0.15	0.60	1	204.47
HYD-11	CIRCULAR	0.50	0.20	0.12	0.50	1	135.20
HYD-12	CIRCULAR	0.50	0.20	0.12	0.50	1	191.53
HYD-13	CIRCULAR	0.60	0.28	0.15	0.60	1	269.99
HYD-14	CIRCULAR	0.80	0.50	0.20	0.80	1	475.98
HYD-15	CIRCULAR	0.50	0.20	0.12	0.50	1	249.21
HYD-16	CIRCULAR	0.50	0.20	0.12	0.50	1	200.97
HYD-17	CIRCULAR	0.50	0.20	0.12	0.50	1	255.23
HYD-18	CIRCULAR	0.50	0.20	0.12	0.50	1	151.82
HYD-19	CIRCULAR	0.50	0.20	0.12	0.50	1	209.96
HYD-20	CIRCULAR	0.50	0.20	0.12	0.50	1	130.19
Inflow-C	TRAPEZOIDAL	1.03	3.70	0.53	6.68	1	13040.26
Inflow-D	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	24085.35
Inflow-E1	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	16128.51
Inflow-E2	TRAPEZOIDAL	1.20	4.92	0.61	7.70	1	21871.89
MH1-MH2	CIRCULAR	0.60	0.28	0.15	0.60	1	409.99
MH2-OGSA1	CIRCULAR	0.53	0.22	0.13	0.53	1	49.22
MH2-OGSA2	CIRCULAR	0.53	0.22	0.13	0.53	1	49.22

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

MH3-MH5	CIRCULAR	0.53	0.22	0.13	0.53	1	43.85
MH4-MH5	CIRCULAR	0.53	0.22	0.13	0.53	1	43.93
MH5-HWa	CIRCULAR	0.60	0.28	0.15	0.60	1	622.72
OGSA1-MH43	CIRCULAR	0.53	0.22	0.13	0.53	1	59.36
OGSA2-MH4	CIRCULAR	0.53	0.22	0.13	0.53	1	59.36
OGSB-HWb	CIRCULAR	0.60	0.28	0.15	0.60	1	382.86
Out-C	TRAPEZOIDAL	0.50	1.25	0.30	4.00	1	880.91
Out-D	TRAPEZOIDAL	0.50	1.25	0.30	4.00	1	880.91
Out-E	TRAPEZOIDAL	0.50	1.25	0.30	4.00	1	880.91
OVF-01	RECT_OPEN	0.30	1.65	0.27	5.50	1	3253.44
OVF-02	RECT_OPEN	0.30	1.65	0.27	5.50	1	3637.47
OVF-03	RECT_OPEN	0.30	1.65	0.27	5.50	1	5144.31
OVF-04	RECT_OPEN	0.30	1.65	0.27	5.50	1	4601.14
OVF-05	RECT_OPEN	0.30	1.65	0.27	5.50	1	4601.14
OVF-06	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-07	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-08	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-09	RECT_OPEN	0.30	1.65	0.27	5.50	1	4601.14
OVF-10	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-11	RECT_OPEN	0.30	1.65	0.27	5.50	1	4303.95
OVF-12	RECT_OPEN	0.30	1.65	0.27	5.50	1	6507.49
OVF-13	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-14	RECT_OPEN	0.30	1.65	0.27	5.50	1	5865.57
OVF-15	RECT_OPEN	0.30	1.65	0.27	5.50	1	6087.05
OVF-16	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-17a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-17b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-18a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-18b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-19a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-19b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-20a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-20b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-21a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-21b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-22a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-22b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11590.64
OVF-23a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-23b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-24a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-24b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-25a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-25b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-26	RECT_OPEN	0.30	1.65	0.27	5.50	1	3253.44
OVF-27	RECT_OPEN	0.30	1.65	0.27	5.50	1	9060.54
OVF-28a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-28b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-29a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-29b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-30	RECT_OPEN	0.30	1.65	0.27	5.50	1	6902.42
OVF-31	RECT_OPEN	0.30	1.65	0.27	5.50	1	8610.37
OVF-32	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-33	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-34	RECT_OPEN	0.30	1.65	0.27	5.50	1	5635.40
OVF-35	RECT_OPEN	0.30	1.65	0.27	5.50	1	7276.00
OVF-36	RECT_OPEN	0.30	1.65	0.27	5.50	1	4880.28
OVF-37a	RECT_OPEN	0.30	1.65	0.27	5.50	1	10961.45
OVF-37b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11893.04
OVF-38a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-38b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-39a	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-39b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-40a	RECT_OPEN	0.30	1.65	0.27	5.50	1	10961.45
OVF-40b	RECT_OPEN	0.30	1.65	0.27	5.50	1	11280.34
OVF-41a	RECT_OPEN	0.30	1.65	0.27	5.50	1	24364.37
OVF-41b	RECT_OPEN	0.30	1.65	0.27	5.50	1	24364.37
OVF-H01	RECT_OPEN	0.30	1.65	0.27	5.50	1	7029.14
OVF-H02	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H03	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H04	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H05	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H06	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
OVF-H07	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
OVF-H08	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H09	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H10	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
OVF-H11	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H12	RECT_OPEN	0.30	1.65	0.27	5.50	1	8402.63
OVF-H13	RECT_OPEN	0.30	1.65	0.27	5.50	1	6507.49
OVF-H14	RECT_OPEN	0.30	1.65	0.27	5.50	1	5940.31
OVF-H15	RECT_OPEN	0.30	1.65	0.27	5.50	1	9944.78
OVF-H16	RECT_OPEN	0.30	1.65	0.27	5.50	1	7971.01

OVF-H17	RECT_OPEN	0.30	1.65	0.27	5.50	1	10294.65
OVF-H18	RECT_OPEN	0.30	1.65	0.27	5.50	1	6507.49
OVF-H19	RECT_OPEN	0.30	1.65	0.27	5.50	1	8402.63
OVF-H20	RECT_OPEN	0.30	1.65	0.27	5.50	1	5313.05
PondB-Upper	CIRCULAR	0.20	0.03	0.05	0.20	1	23.80

```
***************
Analysis Options
***************
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ................ NO
  Snowmelt ............ NO
  Groundwater ......... NO
  Flow Routing ........ YES
  Ponding Allowed ..... NO
  Water Quality ....... NO
Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 11/28/2023 00:00:00
Ending Date ..... 12/01/2023 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 2.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 8
Head Tolerance ..... 0.001500 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	4.119	93.910
Evaporation Loss	0.000	0.000
Infiltration Loss	1.270	28.954
Surface Runoff	2.821	64.324
Final Storage	0.039	0.890
Continuity Error (%)	-0.274	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	2.821	28.213
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	2.615	26.146
External Outflow	5.435	54.352
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.001	0.010
Continuity Error (%)	-0.004	

```
************************
Highest Continuity Errors
************************
Node J141 (-20.71%)
Node J161 (8.08%)
Node J162 (-3.97%)
Node J200 (3.62%)
Node J202 (-2.90%)

*************************
Time-Step Critical Elements
*************************
Link OGSA2-MH4 (21.46%)
Link C099 (4.93%)
Link OGSA1-MH43 (2.86%)
Link C081 (2.61%)
Link C004a (2.19%)
```

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

```
  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link MH1-MH2 (11)
  Link OGSA2-MH4 (11)
  Link OGSA1-MH43 (11)
  Link MH2-OGSA1 (10)
  Link MH2-OGSA2 (10)


  ********************************
  Most Frequent Nonconverging Nodes
  ********************************
  Node OF1 (0.02%)
  Node OF2 (0.02%)
  Node OF3 (0.02%)
  Node OF4 (0.02%)
  Node OF5 (0.02%)


  ************************
  Routing Time Step Summary
  ************************
  Minimum Time Step           :     0.50 sec
  Average Time Step           :     1.54 sec
  Maximum Time Step           :     2.00 sec
  % of Time in Steady State   :     0.00
  Average Iterations per Step :     2.13
  % of Steps Not Converging   :     0.02
  Time Step Frequencies       :
      2.000 -  1.516 sec      :    67.30 %
      1.516 -  1.149 sec      :     0.52 %
      1.149 -  0.871 sec      :     1.13 %
      0.871 -  0.660 sec      :     7.24 %
      0.660 -  0.500 sec      :    23.81 %


  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
A-01a	93.91	0.00	0.00	22.75	60.90	9.54	70.43	0.49	137.25	0.750
A-01b	93.91	0.00	0.00	48.01	23.75	22.00	45.75	0.06	26.52	0.487
A-02a	93.91	0.00	0.00	38.21	36.95	18.41	55.37	0.15	53.90	0.590
A-02b	93.91	0.00	0.00	38.22	36.95	18.41	55.36	0.15	53.89	0.590
A-03a	93.91	0.00	0.00	47.56	23.74	22.52	46.25	0.11	44.43	0.493
A-03b	93.91	0.00	0.00	48.00	23.74	22.02	45.76	0.17	70.15	0.487
A-04	93.91	0.00	0.00	18.74	66.18	8.18	74.36	1.60	444.13	0.792
A-05	93.91	0.00	0.00	18.75	66.18	8.18	74.36	1.61	448.25	0.792
A-06	93.91	0.00	0.00	19.60	66.13	7.30	73.43	1.91	501.35	0.782
A-07	93.91	0.00	0.00	18.98	66.17	7.93	74.11	0.84	229.04	0.789
A-08	93.91	0.00	0.00	18.73	66.18	8.20	74.38	1.44	401.16	0.792
A-09	93.91	0.00	0.00	18.88	66.18	8.03	74.21	1.51	414.72	0.790
A-10	93.91	0.00	0.00	19.54	66.13	7.36	73.49	2.34	617.81	0.783
A-11	93.91	0.00	0.00	18.67	66.18	8.27	74.45	0.68	189.08	0.793
A-12a	93.91	0.00	0.00	47.53	23.74	22.55	46.29	0.13	56.06	0.493
A-12b	93.91	0.00	0.00	48.00	23.74	22.02	45.76	0.22	92.92	0.487

A-13a	93.91	0.00	0.00	47.56	23.74	22.51	46.25	0.14
57.94 0.492								
A-13b	93.91	0.00	0.00	47.97	23.74	22.05	45.79	0.22
89.28 0.488								
A-14a	93.91	0.00	0.00	47.62	23.74	22.45	46.19	0.14
59.78 0.492								
A-14b	93.91	0.00	0.00	47.97	23.74	22.04	45.79	0.22
93.04 0.488								
A-15a	93.91	0.00	0.00	59.46	6.56	28.16	34.72	0.05
27.85 0.370								
A-15b	93.91	0.00	0.00	60.07	6.56	27.46	34.02	0.26
137.17 0.362								
B-01	93.91	0.00	0.00	19.53	66.14	7.37	73.50	2.87
757.90 0.783								
B-02	93.91	0.00	0.00	19.65	66.13	7.25	73.38	2.61
683.90 0.781								
B-03	93.91	0.00	0.00	24.67	59.57	8.90	68.47	1.62
430.57 0.729								
B-04	93.91	0.00	0.00	24.41	59.58	9.17	68.75	1.80
487.77 0.732								
B-05	93.91	0.00	0.00	60.21	6.56	27.30	33.86	0.25
130.51 0.361								
B-06a	93.91	0.00	0.00	38.17	36.95	18.46	55.41	0.05
17.97 0.590								
B-06b	93.91	0.00	0.00	38.19	36.95	18.44	55.39	0.05
17.97 0.590								
B-07	93.91	0.00	0.00	59.66	6.56	27.93	34.49	0.05
25.82 0.367								
B-08a	93.91	0.00	0.00	38.18	36.95	18.46	55.41	0.08
29.96 0.590								
B-08b	93.91	0.00	0.00	38.18	36.95	18.46	55.41	0.08
29.96 0.590								
B-09	93.91	0.00	0.00	25.23	59.55	8.33	67.87	2.22
573.40 0.723								
B-10	93.91	0.00	0.00	60.41	6.56	27.09	33.65	0.19
100.44 0.358								
B-11a	93.91	0.00	0.00	38.21	36.95	18.42	55.37	0.07
25.96 0.590								
B-11b	93.91	0.00	0.00	38.18	36.95	18.45	55.40	0.07
23.96 0.590								
B-12a	93.91	0.00	0.00	38.17	36.94	18.47	55.41	0.16
55.91 0.590								
B-12b	93.91	0.00	0.00	38.17	36.95	18.46	55.41	0.16
55.91 0.590								

B-13	93.91	0.00	0.00	59.63	6.56	27.96	34.52	0.07
36.93 0.368								
B-14a	93.91	0.00	0.00	38.18	36.95	18.45	55.40	0.07
26.96 0.590								
B-14b	93.91	0.00	0.00	38.18	36.95	18.46	55.41	0.07
26.95 0.590								
B-15a	93.91	0.00	0.00	38.16	36.95	18.48	55.43	0.15
52.93 0.590								
B-15b	93.91	0.00	0.00	38.16	36.95	18.48	55.43	0.15
52.93 0.590								
SWM-1	93.91	0.00	0.00	63.84	6.56	23.52	30.08	0.67
273.17 0.320								
SWM-2	93.91	0.00	0.00	62.71	6.56	24.68	31.24	0.26
114.07 0.333								

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
15+0175	JUNCTION	0.00	0.00	111.19	0 00:00	0.00
15+0325	JUNCTION	0.00	0.00	110.59	0 00:00	0.00
15+0425	JUNCTION	0.00	0.00	110.19	0 00:00	0.00
15+0550	JUNCTION	0.00	0.00	109.69	0 00:00	0.00
15+0625	JUNCTION	0.00	0.00	109.39	0 00:00	0.00
15+0725	JUNCTION	0.00	0.00	108.99	0 00:00	0.00
15+0825	JUNCTION	0.00	0.00	108.59	0 00:00	0.00
15+0925	JUNCTION	0.00	0.00	108.14	0 00:00	0.00
15+1025	JUNCTION	0.00	0.00	107.59	0 00:00	0.00
17+250	JUNCTION	0.00	0.00	109.55	0 00:00	0.00
17+365	JUNCTION	0.00	0.00	109.10	0 00:00	0.00
17+512	JUNCTION	0.00	0.00	108.75	0 00:00	0.00
17+532	JUNCTION	0.00	0.00	108.88	0 00:00	0.00
17+625	JUNCTION	0.00	0.00	107.58	0 00:00	0.00
17+793	JUNCTION	0.00	0.00	106.52	0 00:00	0.00
18+282	JUNCTION	0.00	0.00	105.72	0 00:00	0.00
DICB01	JUNCTION	0.26	2.64	106.52	0 06:33	2.64

DICB02	JUNCTION	0.37	1.49	104.41	0	06:31	1.48
J001	JUNCTION	0.08	0.46	103.01	0	07:11	0.46
J002	JUNCTION	0.11	0.58	103.46	0	07:10	0.58
J002a	JUNCTION	0.07	0.30	105.19	0	06:33	0.30
J002b	JUNCTION	0.03	1.18	106.21	0	06:33	1.18
J002c	JUNCTION	0.02	1.05	106.22	0	06:33	1.05
J003	JUNCTION	0.07	0.70	106.57	0	06:33	0.70
J004	JUNCTION	0.16	0.92	107.08	0	06:32	0.92
J005	JUNCTION	0.06	0.74	107.14	0	06:33	0.74
J006	JUNCTION	0.07	0.74	107.27	0	06:34	0.74
J007	JUNCTION	0.15	0.83	107.54	0	06:34	0.83
J008	JUNCTION	0.06	0.74	107.78	0	06:34	0.74
J009	JUNCTION	0.15	0.85	108.01	0	06:33	0.85
J010	JUNCTION	0.07	0.74	108.18	0	06:34	0.74
J011	JUNCTION	0.14	0.81	108.37	0	06:33	0.81
J012	JUNCTION	0.06	0.69	108.53	0	06:33	0.69
J013	JUNCTION	0.12	0.74	108.72	0	06:33	0.74
J014	JUNCTION	0.06	0.66	108.91	0	06:34	0.66
J015	JUNCTION	0.14	0.75	109.00	0	06:34	0.75
J016	JUNCTION	0.04	0.59	109.03	0	06:33	0.59
J017	JUNCTION	0.04	0.50	109.15	0	06:32	0.50
J018	JUNCTION	0.10	0.56	109.34	0	06:31	0.56
J019	JUNCTION	0.03	0.38	109.42	0	06:33	0.38
J020	JUNCTION	0.09	0.43	109.61	0	06:33	0.43
J021	JUNCTION	0.02	0.32	109.77	0	06:31	0.32
J022	JUNCTION	0.03	0.33	109.97	0	06:30	0.33
J023	JUNCTION	0.08	0.39	110.17	0	06:30	0.39
J024	JUNCTION	0.00	0.13	110.17	0	06:30	0.13
J025	JUNCTION	0.00	0.03	110.20	0	06:30	0.03
J026	JUNCTION	0.00	0.06	110.21	0	06:30	0.06
J027	JUNCTION	0.07	0.97	107.26	0	06:30	0.97
J028	JUNCTION	0.12	0.94	107.26	0	06:30	0.94
J029	JUNCTION	0.09	1.03	107.40	0	06:32	1.03
J030	JUNCTION	0.05	0.93	107.40	0	06:32	0.93
J031	JUNCTION	0.12	0.91	107.40	0	06:32	0.91
J032	JUNCTION	0.07	0.98	107.54	0	06:33	0.98
J033	JUNCTION	0.06	0.73	107.54	0	06:34	0.73
J034	JUNCTION	0.07	0.86	107.77	0	06:31	0.86
J035	JUNCTION	0.13	0.82	107.77	0	06:31	0.82
J036	JUNCTION	0.09	0.96	107.96	0	06:31	0.96
J037	JUNCTION	0.05	0.82	107.96	0	06:31	0.82
J038	JUNCTION	0.09	0.73	107.96	0	06:31	0.73
J039	JUNCTION	0.06	0.79	108.05	0	06:32	0.78
J040	JUNCTION	0.11	0.74	108.05	0	06:32	0.74
J041	JUNCTION	0.06	0.94	108.33	0	06:32	0.94
J042	JUNCTION	0.05	0.79	108.33	0	06:32	0.79
J043	JUNCTION	0.10	0.75	108.34	0	06:32	0.75
J044	JUNCTION	0.06	0.78	108.42	0	06:32	0.78
J045	JUNCTION	0.06	0.76	108.42	0	06:32	0.76
J046	JUNCTION	0.06	0.90	108.64	0	06:30	0.90
J047	JUNCTION	0.04	0.71	108.65	0	06:30	0.71
J048	JUNCTION	0.08	0.69	108.65	0	06:30	0.69
J049	JUNCTION	0.05	0.70	108.71	0	06:32	0.70
J050	JUNCTION	0.05	0.64	108.72	0	06:33	0.64
J051	JUNCTION	0.04	0.68	108.85	0	06:34	0.68
J052	JUNCTION	0.03	0.50	108.86	0	06:34	0.50
J053	JUNCTION	0.02	0.35	108.87	0	06:33	0.35
J054	JUNCTION	0.03	0.33	109.10	0	06:22	0.33
J055	JUNCTION	0.08	0.38	109.34	0	06:30	0.38
J056	JUNCTION	0.04	0.54	109.59	0	06:30	0.54
J057	JUNCTION	0.09	0.41	109.62	0	06:30	0.41
J058	JUNCTION	0.01	0.28	109.62	0	06:30	0.28
J059	JUNCTION	0.00	0.17	109.62	0	06:30	0.17
J060	JUNCTION	0.00	0.07	109.69	0	06:32	0.07
J061	JUNCTION	0.00	0.10	109.82	0	06:31	0.10
J062	JUNCTION	0.00	0.21	109.83	0	06:30	0.21
J063	JUNCTION	0.01	0.38	109.83	0	06:30	0.38
J064	JUNCTION	0.06	0.44	109.83	0	06:30	0.44
J065	JUNCTION	0.02	0.49	109.83	0	06:30	0.49
J066	JUNCTION	0.11	0.63	109.83	0	06:30	0.63
J067	JUNCTION	0.06	0.79	109.81	0	06:30	0.79
J068	JUNCTION	0.13	0.70	109.63	0	06:30	0.70
J069	JUNCTION	0.08	0.73	109.62	0	06:30	0.73
J070	JUNCTION	0.12	0.57	109.41	0	06:32	0.57
J071	JUNCTION	0.04	0.59	109.36	0	06:33	0.59
J072	JUNCTION	0.05	0.81	109.33	0	06:33	0.81
J073	JUNCTION	0.07	0.97	109.33	0	06:33	0.97
J074	JUNCTION	0.12	0.96	109.33	0	06:33	0.96
J075	JUNCTION	0.08	0.95	109.36	0	06:33	0.95
J076	JUNCTION	0.03	0.82	109.36	0	06:33	0.82
J077	JUNCTION	0.10	0.80	109.37	0	06:33	0.80
J078	JUNCTION	0.04	0.82	109.46	0	06:31	0.82

J079	JUNCTION	0.10	0.79	109.46	0	06:31	0.79
J080	JUNCTION	0.06	0.83	109.54	0	06:30	0.83
J081	JUNCTION	0.05	0.66	109.54	0	06:30	0.66
J082	JUNCTION	0.03	0.64	109.59	0	06:31	0.64
J083	JUNCTION	0.07	0.56	109.59	0	06:31	0.56
J084	JUNCTION	0.03	0.55	109.63	0	06:32	0.55
J085	JUNCTION	0.03	0.36	109.64	0	06:33	0.36
J086	JUNCTION	0.08	0.35	109.74	0	06:32	0.35
J087	JUNCTION	0.04	0.52	109.96	0	06:31	0.52
J088	JUNCTION	0.08	0.48	109.96	0	06:31	0.48
J089	JUNCTION	0.03	0.57	110.13	0	06:30	0.57
J090	JUNCTION	0.08	0.46	110.14	0	06:30	0.46
J091	JUNCTION	0.03	0.57	110.32	0	06:30	0.57
J092	JUNCTION	0.08	0.55	110.32	0	06:30	0.55
J093	JUNCTION	0.05	0.57	110.38	0	06:30	0.57
J094	JUNCTION	0.04	0.51	110.39	0	06:30	0.51
J095	JUNCTION	0.05	0.44	110.39	0	06:30	0.44
J096	JUNCTION	0.01	0.36	110.38	0	06:30	0.36
J097	JUNCTION	0.00	0.24	110.38	0	06:30	0.24
J098	JUNCTION	0.04	0.25	110.38	0	06:30	0.25
J099	JUNCTION	0.00	0.19	110.37	0	06:30	0.19
J100	JUNCTION	0.00	0.06	110.35	0	06:31	0.06
J101	JUNCTION	0.00	0.17	110.31	0	06:30	0.17
J102	JUNCTION	0.06	0.33	110.31	0	06:30	0.33
J103	JUNCTION	0.03	0.42	110.30	0	06:30	0.42
J104	JUNCTION	0.06	0.24	110.02	0	06:30	0.24
J105	JUNCTION	0.08	0.61	104.35	0	07:04	0.59
J106	JUNCTION	0.12	0.72	104.41	0	06:31	0.72
J107	JUNCTION	0.06	0.58	104.54	0	06:30	0.58
J108	JUNCTION	0.03	0.44	104.63	0	06:31	0.44
J109	JUNCTION	0.03	0.41	104.76	0	06:32	0.41
J110	JUNCTION	0.09	0.32	104.76	0	06:32	0.32
J111	JUNCTION	0.01	0.23	104.76	0	06:32	0.23
J112	JUNCTION	0.05	0.15	104.95	0	06:29	0.15
J113	JUNCTION	0.01	0.20	105.31	0	06:20	0.20
J114	JUNCTION	0.01	0.09	105.64	0	06:30	0.09
J115	JUNCTION	0.12	0.90	105.34	0	06:32	0.90
J116	JUNCTION	0.04	0.78	105.35	0	06:32	0.78
J117	JUNCTION	0.03	0.51	105.36	0	06:32	0.51
J118	JUNCTION	0.10	0.41	105.65	0	06:31	0.41
J119	JUNCTION	0.06	0.33	105.65	0	06:31	0.33
J120	JUNCTION	0.01	0.20	105.66	0	06:31	0.20
J121	JUNCTION	0.00	0.09	105.66	0	06:30	0.09
J122	JUNCTION	0.00	0.06	106.14	0	06:14	0.06
J123	JUNCTION	0.00	0.00	106.21	0	00:00	0.00
J124	JUNCTION	0.00	0.00	106.30	0	00:00	0.00
J125	JUNCTION	0.00	0.00	106.61	0	00:00	0.00
J126	JUNCTION	0.00	0.03	106.64	0	07:56	0.03
J127	JUNCTION	0.12	0.36	106.65	0	07:34	0.36
J128	JUNCTION	0.05	0.27	106.65	0	07:33	0.27
J129	JUNCTION	0.07	0.23	106.67	0	07:14	0.23
J130	JUNCTION	0.01	0.17	106.76	0	06:38	0.17
J131	JUNCTION	0.00	0.09	107.23	0	06:37	0.09
J132	JUNCTION	0.00	0.11	107.45	0	06:37	0.10
J133	JUNCTION	0.10	0.57	108.05	0	06:37	0.56
J134	JUNCTION	0.01	0.23	107.97	0	06:37	0.23
J135	JUNCTION	0.06	0.18	107.97	0	06:38	0.18
J136	JUNCTION	0.01	0.17	108.02	0	06:27	0.17
J137	JUNCTION	0.01	0.09	108.07	0	06:30	0.09
J138	JUNCTION	0.00	0.00	108.09	0	00:00	0.00
J139	JUNCTION	0.05	0.62	108.71	0	06:45	0.62
J140	JUNCTION	0.17	0.88	108.71	0	06:45	0.88
J141	JUNCTION	0.12	0.77	108.71	0	06:47	0.76
J142	JUNCTION	0.06	0.67	108.71	0	06:45	0.67
J143	JUNCTION	0.00	0.12	108.71	0	06:45	0.12
J144	JUNCTION	0.02	0.31	108.71	0	06:44	0.31
J145	JUNCTION	0.05	0.35	108.71	0	06:44	0.35
J146	JUNCTION	0.07	0.41	108.71	0	06:45	0.41
J147	JUNCTION	0.00	0.09	108.80	0	06:30	0.09
J148	JUNCTION	0.00	0.09	109.52	0	06:30	0.09
J149	JUNCTION	0.00	0.00	110.15	0	00:00	0.00
J150	JUNCTION	0.00	0.00	110.87	0	00:00	0.00
J151	JUNCTION	0.00	0.00	111.69	0	00:00	0.00
J152	JUNCTION	0.13	0.89	106.13	0	06:31	0.89
J153	JUNCTION	0.03	0.57	106.14	0	06:31	0.57
J154	JUNCTION	0.11	0.46	106.28	0	06:30	0.46
J155	JUNCTION	0.06	0.86	106.86	0	06:30	0.86
J156	JUNCTION	0.00	0.25	106.86	0	06:30	0.25
J157	JUNCTION	0.01	0.61	107.22	0	06:31	0.61
J158	JUNCTION	0.12	0.90	107.22	0	06:31	0.90
J159	JUNCTION	0.03	0.32	107.46	0	06:30	0.32
J160	JUNCTION	0.05	0.27	107.46	0	06:30	0.27

J161	JUNCTION	0.00	0.00	107.47	0	06:36	0.00
J162	JUNCTION	0.00	0.00	107.61	0	06:32	0.00
J163	JUNCTION	0.11	0.75	108.23	0	06:32	0.75
J164	JUNCTION	0.10	0.68	108.24	0	06:31	0.67
J165	JUNCTION	0.05	0.79	108.44	0	06:30	0.79
J166	JUNCTION	0.04	0.71	108.45	0	06:30	0.70
J167	JUNCTION	0.07	0.61	108.45	0	06:30	0.61
J168	JUNCTION	0.01	0.52	108.45	0	06:30	0.52
J169	JUNCTION	0.01	0.36	108.45	0	06:30	0.36
J170	JUNCTION	0.05	0.67	108.76	0	06:33	0.67
J171	JUNCTION	0.07	0.75	108.76	0	06:33	0.75
J172	JUNCTION	0.15	0.87	108.76	0	06:33	0.87
J173	JUNCTION	0.18	0.93	108.76	0	06:33	0.93
J174	JUNCTION	0.12	0.67	108.76	0	06:33	0.67
J175	JUNCTION	0.06	0.61	108.90	0	06:30	0.61
J176	JUNCTION	0.01	0.30	108.90	0	06:30	0.30
J177	JUNCTION	0.01	0.38	108.90	0	06:30	0.38
J178	JUNCTION	0.05	0.38	108.81	0	06:31	0.38
J179	JUNCTION	0.06	0.49	108.80	0	06:31	0.49
J180	JUNCTION	0.01	0.09	108.80	0	06:31	0.09
J181	JUNCTION	0.00	0.09	109.52	0	06:30	0.09
J182	JUNCTION	0.00	0.00	110.15	0	00:00	0.00
J183	JUNCTION	0.00	0.00	110.87	0	00:00	0.00
J184	JUNCTION	0.00	0.00	111.69	0	00:00	0.00
J185	JUNCTION	0.04	0.66	107.43	0	06:40	0.66
J186	JUNCTION	0.03	0.54	107.44	0	06:38	0.54
J187	JUNCTION	0.03	0.45	107.82	0	06:40	0.45
J188	JUNCTION	0.04	0.57	108.15	0	06:37	0.57
J189	JUNCTION	0.05	0.53	106.96	0	06:38	0.53
J190	JUNCTION	0.05	0.58	107.31	0	06:37	0.58
J191	JUNCTION	0.05	0.59	107.50	0	06:35	0.59
J192	JUNCTION	0.05	0.58	107.63	0	06:35	0.58
J193	JUNCTION	0.00	0.00	107.72	0	00:00	0.00
J194	JUNCTION	0.00	0.00	108.45	0	00:00	0.00
J195	JUNCTION	0.00	0.00	108.69	0	00:00	0.00
J196	JUNCTION	0.08	0.75	109.45	0	07:06	0.75
J197	JUNCTION	0.08	0.74	109.64	0	07:02	0.74
J198	JUNCTION	0.08	0.74	109.91	0	07:00	0.74
J199	JUNCTION	0.08	0.74	110.21	0	06:57	0.74
J200	JUNCTION	0.02	0.43	110.21	0	06:56	0.43
J201	JUNCTION	0.06	0.32	110.21	0	06:57	0.32

J202	JUNCTION	0.01	0.25	110.21	0	06:58	0.25
J203	JUNCTION	0.00	0.04	110.21	0	07:00	0.04
Out-C	JUNCTION	0.04	0.11	105.38	0	07:56	0.11
Out-D	JUNCTION	0.03	0.30	106.44	0	06:38	0.30
Out-E	JUNCTION	0.04	0.26	107.64	0	06:45	0.26
Pond-A-Out	JUNCTION	0.08	0.50	103.75	0	07:10	0.50
Pond-B-Out	JUNCTION	0.05	0.13	102.40	0	07:53	0.13
OF1	OUTFALL	0.03	0.52	107.11	0	06:40	0.52
OF2	OUTFALL	0.00	0.00	107.74	0	00:00	0.00
OF3	OUTFALL	0.00	0.00	0.00	0	00:00	0.00
OF4	OUTFALL	0.05	0.53	106.83	0	06:38	0.53
OF5	OUTFALL	0.08	0.75	108.75	0	07:05	0.75
OF6	OUTFALL	0.00	0.00	0.00	0	00:00	0.00
OF7a	OUTFALL	0.01	0.19	109.98	0	06:30	0.19
OF7b	OUTFALL	0.00	0.06	109.75	0	06:30	0.06
OF-A	OUTFALL	0.08	0.46	102.27	0	07:11	0.46
OF-B	OUTFALL	0.05	0.13	101.63	0	07:53	0.13
OF-C	OUTFALL	0.04	0.11	105.33	0	07:56	0.11
OF-D	OUTFALL	0.03	0.30	106.39	0	06:38	0.30
OF-E	OUTFALL	0.04	0.26	107.59	0	06:45	0.26
LinearPondC	STORAGE	0.22	0.67	106.64	0	07:56	0.67
LinearPondD	STORAGE	0.19	1.05	108.00	0	06:37	1.05
LinearPondE	STORAGE	0.21	1.08	108.71	0	06:45	1.08
MH1	STORAGE	0.24	1.94	105.75	0	06:51	1.94
MH2	STORAGE	0.24	1.79	105.55	0	06:55	1.79
MH3	STORAGE	0.24	1.76	105.52	0	06:57	1.76
MH4	STORAGE	0.24	1.76	105.52	0	06:57	1.76
MH5	STORAGE	0.43	2.09	105.49	0	06:57	2.09
OGS-A1	STORAGE	0.24	1.77	105.53	0	06:56	1.77
OGS-A2	STORAGE	0.24	1.77	105.53	0	06:56	1.77
OGS-B	STORAGE	0.41	1.50	104.32	0	07:49	1.50
Pond-A	STORAGE	0.46	1.69	104.99	0	07:10	1.69
Pond-B	STORAGE	0.69	1.97	104.32	0	07:52	1.97

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Node Inflow Summary
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		Maximum	Maximum		Lateral	Total	Flow

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

Node	Type	Lateral Inflow LPS	Total Inflow LPS	Time of Max Occurrence days	hr:min	Inflow Volume 10^6 ltr	Inflow Volume 10^6 ltr	Balance Error Percent	
15+0175	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0325	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0425	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0550	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0625	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0725	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0825	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+0925	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
15+1025	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+250	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+365	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+512	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+532	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+625	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
17+793	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
18+282	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB01	JUNCTION	0.00	3225.20	0	06:32	0	13.9	-0.031	
DICB02	JUNCTION	0.00	1507.95	0	06:30	0	6	-0.053	
J001	JUNCTION	0.00	1152.72	0	07:11	0	14.6	0.004	
J002	JUNCTION	0.00	1152.80	0	07:10	0	14.6	-0.002	
J002a	JUNCTION	0.00	2261.74	0	06:33	0	4.8	0.003	
J002b	JUNCTION	0.00	2261.71	0	06:33	0	4.8	-0.003	
J002c	JUNCTION	0.00	2261.77	0	06:33	0	4.81	0.071	
J003	JUNCTION	137.17	3230.68	0	06:32	0.259	13.9	0.017	
J004	JUNCTION	0.00	3129.56	0	06:32	0	13.6	0.000	
J005	JUNCTION	0.00	2174.79	0	06:34	0	8.64	0.001	
J006	JUNCTION	0.00	2173.94	0	06:34	0	8.64	0.006	
J007	JUNCTION	0.00	2177.66	0	06:33	0	8.73	-0.096	
J008	JUNCTION	70.15	2110.52	0	06:33	0.169	8.15	0.007	
J009	JUNCTION	0.00	2073.21	0	06:33	0	7.99	-0.009	
J010	JUNCTION	0.00	1833.34	0	06:33	0	7.12	0.012	
J011	JUNCTION	0.00	1838.42	0	06:32	0	7.12	-0.011	
J012	JUNCTION	93.04	1568.03	0	06:32	0.224	6.08	0.012	
J013	JUNCTION	0.00	1513.76	0	06:33	0	6.1	0.007	
J014	JUNCTION	0.00	1493.88	0	06:33	0	5.97	0.015	
J015	JUNCTION	0.00	1495.34	0	06:33	0	5.97	-0.009	
J016	JUNCTION	0.00	761.52	0	06:32	0	2.87	0.033	
J017	JUNCTION	0.00	766.97	0	06:31	0	2.87	0.001	
J018	JUNCTION	89.28	771.47	0	06:30	0.215	2.87	-0.034	
J019	JUNCTION	0.00	412.54	0	06:33	0	1.55	0.056	
J020	JUNCTION	0.00	415.17	0	06:32	0	1.55	-0.058	
J021	JUNCTION	0.00	325.00	0	06:30	0	1.16	0.070	
J022	JUNCTION	0.00	326.67	0	06:30	0	1.16	-0.009	
J023	JUNCTION	92.92	329.07	0	06:30	0.224	1.17	-0.037	
J024	JUNCTION	0.00	12.05	0	06:07	0	0.0115	1.038	
J025	JUNCTION	0.00	4.05	0	06:30	0	0.00543	0.249	
J026	JUNCTION	26.52	26.52	0	06:30	0.064	0.0641	-0.005	
J027	JUNCTION	645.66	1087.49	0	06:30	2.4	5	0.001	
J028	JUNCTION	0.00	553.89	0	06:40	0	2.6	0.007	
J029	JUNCTION	0.00	550.47	0	06:40	0	2.6	-0.001	
J030	JUNCTION	0.00	531.76	0	06:40	0	2.6	-0.000	
J031	JUNCTION	0.00	518.44	0	06:37	0	2.61	0.002	
J032	JUNCTION	0.00	549.54	0	06:21	0	2.61	0.010	
J033	JUNCTION	0.00	599.95	0	06:30	0	3.18	-0.025	
J034	JUNCTION	0.00	603.10	0	06:30	0	3.08	0.018	
J035	JUNCTION	0.00	606.40	0	06:30	0	3.08	0.002	
J036	JUNCTION	0.00	612.84	0	06:30	0	3.08	0.005	
J037	JUNCTION	459.15	636.96	0	06:30	1.61	3.08	-0.019	
J038	JUNCTION	0.00	294.06	0	06:42	0	1.47	0.044	
J039	JUNCTION	0.00	467.73	0	06:32	0	2.34	-0.040	
J040	JUNCTION	0.00	469.54	0	06:30	0	2.33	0.003	
J041	JUNCTION	0.00	483.28	0	06:24	0	2.33	0.006	
J042	JUNCTION	229.04	515.80	0	06:24	0.837	2.33	-0.010	
J043	JUNCTION	0.00	316.55	0	06:21	0	1.5	0.016	
J044	JUNCTION	0.00	321.84	0	06:21	0	1.5	0.003	
J045	JUNCTION	0.00	588.29	0	06:30	0	2.53	-0.006	
J046	JUNCTION	0.00	601.39	0	06:30	0	2.53	-0.007	
J047	JUNCTION	460.94	619.55	0	06:30	1.59	2.53	-0.012	
J048	JUNCTION	0.00	269.96	0	06:39	0	0.949	0.025	
J049	JUNCTION	0.00	261.89	0	06:39	0	0.949	-0.010	
J050	JUNCTION	0.00	254.17	0	06:39	0	1.08	-0.000	
J051	JUNCTION	0.00	228.92	0	06:33	0	0.836	-0.038	
J052	JUNCTION	0.00	237.15	0	06:31	0	0.836	-0.006	
J053	JUNCTION	0.00	247.60	0	06:29	0	0.836	0.054	
J054	JUNCTION	0.00	246.62	0	06:30	0	0.836	-0.042	
J055	JUNCTION	0.00	247.37	0	06:30	0	0.836	-0.027	
J056	JUNCTION	53.89	249.72	0	06:30	0.149	0.835	-0.032	
J057	JUNCTION	189.08	198.00	0	06:30	0.677	0.69	-0.010	

J058	JUNCTION	0.00	19.88	0	06:33	0	0.0144	-0.120	
J059	JUNCTION	0.00	12.71	0	06:32	0	0.0102	-1.143	
J060	JUNCTION	0.00	13.59	0	06:31	0	0.00831	2.640	
J061	JUNCTION	0.00	14.96	0	06:30	0	0.00923	0.273	
J062	JUNCTION	0.00	17.31	0	06:30	0	0.0153	-0.275	
J063	JUNCTION	0.00	20.65	0	06:34	0	0.0251	-0.214	
J064	JUNCTION	0.00	31.20	0	06:35	0	0.0331	0.104	
J065	JUNCTION	0.00	38.17	0	06:35	0	0.0418	0.235	
J066	JUNCTION	501.35	501.35	0	06:30	1.91	1.93	-0.007	
J067	JUNCTION	53.90	530.51	0	06:30	0.149	2.05	-0.009	
J068	JUNCTION	0.00	525.50	0	06:30	0	2.05	0.005	
J069	JUNCTION	0.00	524.41	0	06:30	0	2.05	-0.006	
J070	JUNCTION	0.00	523.61	0	06:30	0	2.05	-0.021	
J071	JUNCTION	0.00	519.85	0	06:30	0	2.05	-0.053	
J072	JUNCTION	0.00	500.59	0	06:31	0	2.05	0.077	
J073	JUNCTION	0.00	740.76	0	06:32	0	3.09	0.009	
J074	JUNCTION	0.00	275.79	0	06:42	0	1.04	0.010	
J075	JUNCTION	0.00	266.88	0	06:30	0	1.04	0.009	
J076	JUNCTION	0.00	283.77	0	06:30	0	1.04	0.023	
J077	JUNCTION	0.00	298.34	0	06:20	0	1.04	-0.012	
J078	JUNCTION	0.00	304.60	0	06:20	0	1.04	0.000	
J079	JUNCTION	0.00	310.32	0	06:20	0	1.04	0.001	
J080	JUNCTION	0.00	336.01	0	06:20	0	1.04	-0.096	
J081	JUNCTION	506.19	625.77	0	06:30	1.75	2.16	-0.012	
J082	JUNCTION	0.00	177.52	0	06:36	0	0.405	0.002	
J083	JUNCTION	0.00	166.95	0	06:36	0	0.402	-0.021	
J084	JUNCTION	0.00	154.49	0	06:22	0	0.401	0.000	
J085	JUNCTION	0.00	236.40	0	06:31	0	0.785	-0.029	
J086	JUNCTION	0.00	236.93	0	06:31	0	0.785	0.015	
J087	JUNCTION	0.00	237.12	0	06:31	0	0.785	-0.001	
J088	JUNCTION	0.00	237.49	0	06:30	0	0.785	0.015	
J089	JUNCTION	0.00	239.31	0	06:30	0	0.784	-0.075	
J090	JUNCTION	0.00	241.10	0	06:30	0	0.784	-0.000	
J091	JUNCTION	56.06	241.38	0	06:30	0.134	0.784	0.001	
J092	JUNCTION	0.00	185.78	0	06:30	0	0.651	0.011	
J093	JUNCTION	0.00	186.73	0	06:30	0	0.65	-0.035	
J094	JUNCTION	444.13	444.13	0	06:30	1.6	1.62	0.003	
J095	JUNCTION	0.00	35.38	0	06:35	0	0.0508	0.139	
J096	JUNCTION	0.00	24.13	0	06:35	0	0.0368	-0.062	
J097	JUNCTION	0.00	20.11	0	06:30	0	0.026	0.657	
J098	JUNCTION	0.00	19.24	0	06:30	0	0.0193	0.079	

J099	JUNCTION	0.00	18.95	0	06:30	0	0.0165	0.119	
J100	JUNCTION	0.00	18.69	0	06:30	0	0.0151	-0.389	
J101	JUNCTION	0.00	18.50	0	06:31	0	0.0155	0.215	
J102	JUNCTION	137.25	155.02	0	06:30	0.486	0.501	0.009	
J103	JUNCTION	0.00	154.51	0	06:30	0	0.501	0.016	
J104	JUNCTION	0.00	153.90	0	06:30	0	0.501	-0.009	
J105	JUNCTION	0.00	1220.74	0	06:48	0	3.11	0.127	
J106	JUNCTION	0.00	1539.25	0	06:30	0	6.01	0.143	
J107	JUNCTION	757.90	1566.22	0	06:30	2.87	6	-0.111	
J108	JUNCTION	36.93	824.92	0	06:31	0.069	3.13	0.006	
J109	JUNCTION	0.00	796.96	0	06:32	0	3.06	-0.014	
J110	JUNCTION	0.00	796.72	0	06:32	0	3.06	0.004	
J111	JUNCTION	0.00	55.94	0	06:29	0	0.155	0.075	
J112	JUNCTION	0.00	58.78	0	06:29	0	0.155	-0.099	
J113	JUNCTION	0.00	55.90	0	06:30	0	0.155	-0.008	
J114	JUNCTION	55.91	55.91	0	06:30	0.155	0.155	0.043	
J115	JUNCTION	0.00	748.78	0	06:32	0	2.91	0.007	
J116	JUNCTION	0.00	752.39	0	06:31	0	2.91	0.008	
J117	JUNCTION	0.00	759.17	0	06:31	0	2.91	-0.002	
J118	JUNCTION	0.00	759.26	0	06:31	0	2.91	0.001	
J119	JUNCTION	0.00	23.11	0	06:30	0	0.0665	0.090	
J120	JUNCTION	0.00	23.20	0	06:30	0	0.0665	-0.015	
J121	JUNCTION	0.00	23.95	0	06:16	0	0.0665	0.091	
J122	JUNCTION	23.96	23.96	0	06:30	0.0665	0.0665	-0.079	
J123	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J124	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J125	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J126	JUNCTION	0.00	6.72	0	07:14	0	0.00693	0.836	
J127	JUNCTION	0.00	596.05	0	06:31	0	2.6	0.000	
J128	JUNCTION	0.00	104.72	0	07:13	0	0.249	-0.058	
J129	JUNCTION	0.00	76.13	0	07:13	0	0.174	0.304	
J130	JUNCTION	0.00	54.84	0	06:37	0	0.129	-0.519	
J131	JUNCTION	26.95	74.28	0	06:37	0.0748	0.127	0.298	
J132	JUNCTION	0.00	107.80	0	06:37	0	0.0518	0.018	
J133	JUNCTION	0.00	1441.51	0	06:37	0	2.7	0.353	
J134	JUNCTION	0.00	87.61	0	06:36	0	0.119	-0.134	
J135	JUNCTION	0.00	30.02	0	06:29	0	0.0832	-0.087	
J136	JUNCTION	0.00	29.93	0	06:30	0	0.083	-0.165	
J137	JUNCTION	29.96	29.96	0	06:30	0.0831	0.0831	0.086	
J138	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J139	JUNCTION	0.00	26.40	0	06:28	0	0.0395	0.068	

J140	JUNCTION	0.00	477.33	0	06:28	0	1.99	-0.053	
J141	JUNCTION	0.00	379.67	0	06:32	0	0.301	-17.157	
J142	JUNCTION	17.97	44.59	0	06:30	0.0498	0.07	-0.283	
J143	JUNCTION	0.00	21.08	0	06:29	0	0.00993	0.182	
J144	JUNCTION	0.00	13.63	0	06:30	0	0.0132	0.088	
J145	JUNCTION	0.00	35.24	0	06:30	0	0.0303	-0.018	
J146	JUNCTION	0.00	212.40	0	06:31	0	0.537	0.017	
J147	JUNCTION	0.00	52.88	0	06:30	0	0.147	-0.172	
J148	JUNCTION	52.93	52.93	0	06:30	0.147	0.147	-0.040	
J149	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J150	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J151	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J152	JUNCTION	55.91	739.03	0	06:30	0.155	2.84	0.002	
J153	JUNCTION	0.00	693.78	0	06:30	0	2.68	0.017	
J154	JUNCTION	0.00	694.48	0	06:30	0	2.68	-0.049	
J155	JUNCTION	709.85	709.85	0	06:30	2.68	2.7	0.033	
J156	JUNCTION	0.00	29.48	0	06:09	0	0.0153	1.629	
J157	JUNCTION	0.00	36.07	0	06:05	0	0.0421	0.251	
J158	JUNCTION	0.00	597.91	0	06:30	0	2.34	0.063	
J159	JUNCTION	600.36	600.36	0	06:30	2.29	2.3	-0.050	
J160	JUNCTION	0.00	6.29	0	06:01	0	0.00224	0.932	
J161	JUNCTION	0.00	0.01	0	06:31	0	4.46e-06	0.360	ltr
J162	JUNCTION	0.00	0.16	0	06:32	0	4.29e-06	-0.170	ltr
J163	JUNCTION	0.00	437.79	0	06:30	0	1.7	-0.016	
J164	JUNCTION	0.00	425.67	0	06:30	0	1.7	0.020	
J165	JUNCTION	0.00	427.27	0	06:29	0	1.7	0.005	
J166	JUNCTION	430.57	439.57	0	06:30	1.62	1.71	-0.005	
J167	JUNCTION	29.96	43.05	0	06:35	0.0831	0.111	0.123	
J168	JUNCTION	0.00	16.85	0	06:08	0	0.0253	0.012	
J169	JUNCTION	0.00	6.93	0	06:08	0	0.00696	0.153	
J170	JUNCTION	0.00	3.63	0	06:05	0	0.00403	0.035	
J171	JUNCTION	0.00	12.45	0	06:05	0	0.0153	0.007	
J172	JUNCTION	0.00	27.45	0	06:03	0	0.0391	0.277	
J173	JUNCTION	0.00	374.91	0	06:29	0	1.66	0.058	
J174	JUNCTION	17.97	394.20	0	06:29	0.0499	1.63	-0.064	
J175	JUNCTION	487.77	487.77	0	06:30	1.8	1.8	0.028	
J176	JUNCTION	0.00	108.89	0	06:30	0	0.22	0.067	
J177	JUNCTION	0.00	105.79	0	06:30	0	0.22	-0.097	
J178	JUNCTION	0.00	105.19	0	06:30	0	0.22	-0.050	
J179	JUNCTION	0.00	154.07	0	06:29	0	0.368	0.157	
J180	JUNCTION	0.00	52.87	0	06:30	0	0.147	-0.159	

J181	JUNCTION	52.93	52.93	0	06:30	0.147	0.147	-0.040	
J182	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J183	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J184	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J185	JUNCTION	0.00	749.14	0	06:40	0	3.47	0.038	
J186	JUNCTION	0.00	743.08	0	06:40	0	3.47	0.034	
J187	JUNCTION	0.00	746.76	0	06:37	0	3.47	0.008	
J188	JUNCTION	748.54	748.54	0	06:35	3.47	3.47	-0.041	
J189	JUNCTION	0.00	519.19	0	06:37	0	2.12	0.064	
J190	JUNCTION	0.00	522.37	0	06:36	0	2.12	-0.009	
J191	JUNCTION	0.00	525.40	0	06:35	0	2.12	-0.026	
J192	JUNCTION	528.29	528.29	0	06:35	2.12	2.12	-0.028	
J193	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J194	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J195	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J196	JUNCTION	0.00	991.81	0	07:01	0	6.82	0.051	
J197	JUNCTION	0.00	994.42	0	07:00	0	6.81	-0.029	
J198	JUNCTION	0.00	996.54	0	06:58	0	6.81	0.017	
J199	JUNCTION	1006.34	1006.34	0	06:55	6.81	6.89	-0.050	
J200	JUNCTION	0.00	49.67	0	06:40	0	0.0932	3.754	
J201	JUNCTION	0.00	20.05	0	06:40	0	0.0264	-0.533	
J202	JUNCTION	0.00	8.82	0	06:41	0	0.00824	-2.815	
J203	JUNCTION	0.00	1.12	0	06:53	0	0.00071	70.883	
Out-C	JUNCTION	0.00	43.96	0	07:56	0	2.61	0.000	
Out-D	JUNCTION	0.00	303.84	0	06:37	0	1.77	0.001	
Out-E	JUNCTION	0.00	232.08	0	06:45	0	2.44	0.001	
Pond-A-Out	JUNCTION	0.00	1152.83	0	07:10	0	14.6	-0.001	
Pond-B-Out	JUNCTION	0.00	106.09	0	07:52	0	6.26	0.000	
OF1	OUTFALL	0.00	767.75	0	06:40	0	3.46	0.000	
OF2	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	ltr
OF3	OUTFALL	1995.11	1995.11	0	06:45	12.1	12.1	0.000	
OF4	OUTFALL	0.00	517.08	0	06:38	0	2.12	0.000	
OF5	OUTFALL	0.00	983.86	0	07:05	0	6.81	0.000	
OF6	OUTFALL	421.59	421.59	0	06:35	1.69	1.69	0.000	
OF7a	OUTFALL	0.00	153.87	0	06:30	0	0.501	0.000	
OF7b	OUTFALL	0.00	22.32	0	06:30	0	0.0587	0.000	
OF-A	OUTFALL	0.00	1152.52	0	07:11	0	14.6	0.000	
OF-B	OUTFALL	0.00	106.09	0	07:53	0	6.26	0.000	
OF-C	OUTFALL	0.00	43.95	0	07:56	0	2.61	0.000	
OF-D	OUTFALL	0.00	300.76	0	06:38	0	1.77	0.000	
OF-E	OUTFALL	0.00	232.05	0	06:45	0	2.44	0.000	

LinearPondC	STORAGE	100.44	680.87	0	06:30	0.192	2.71	0.012
LinearPondD	STORAGE	25.82	1865.19	0	06:33	0.0483	2.65	-0.090
LinearPondE	STORAGE	130.51	801.72	0	06:31	0.247	2.74	2.378
MH1	STORAGE	0.00	1006.53	0	06:20	0	9.09	0.000
MH2	STORAGE	0.00	1004.33	0	06:20	0	9.09	-0.000
MH3	STORAGE	0.00	500.80	0	06:20	0	4.55	-0.009
MH4	STORAGE	0.00	501.16	0	06:20	0	4.54	-0.002
MH5	STORAGE	0.00	1000.70	0	06:20	0	9.09	-0.008
OGS-A1	STORAGE	0.00	501.40	0	06:20	0	4.55	0.016
OGS-A2	STORAGE	0.00	501.77	0	06:20	0	4.54	0.004
OGS-B	STORAGE	0.00	804.70	0	06:19	0	3.19	0.048
Pond-A	STORAGE	273.17	3443.97	0	06:32	0.674	14.6	0.003
Pond-B	STORAGE	114.07	1853.31	0	06:44	0.256	6.55	-0.047

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
J002c	JUNCTION	0.22	0.046	0.454

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Node Flooding Summary
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No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
LinearPondC	0.512	15.7	0.0	0.0	1.891	58.1	0 07:56	260.05
LinearPondD	0.076	8.5	0.0	0.0	0.612	69.0	0 06:37	1301.21
LinearPondE	0.117	9.1	0.0	0.0	0.899	69.9	0 06:45	574.81
MH1	0.000	8.7	0.0	0.0	0.002	69.9	0 06:51	1004.33
MH2	0.000	8.9	0.0	0.0	0.002	65.6	0 06:55	1003.17
MH3	0.000	8.9	0.0	0.0	0.002	65.6	0 06:57	500.17
MH4	0.000	8.9	0.0	0.0	0.002	65.6	0 06:57	500.53
MH5	0.000	14.0	0.0	0.0	0.002	68.9	0 06:57	999.57
OGS-A1	0.000	8.8	0.0	0.0	0.002	64.9	0 06:56	500.80
OGS-A2	0.000	8.8	0.0	0.0	0.002	64.9	0 06:56	501.16
OGS-B	0.000	23.2	0.0	0.0	0.000	84.4	0 07:49	803.74
Pond-A	1.529	17.1	0.0	0.0	8.205	91.7	0 07:10	1152.83
Pond-B	1.144	23.2	0.0	0.0	4.309	87.4	0 07:52	913.21

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OF1	27.52	96.11	767.75	3.464
OF2	0.00	0.00	0.00	0.000
OF3	28.81	307.25	1995.11	12.058
OF4	28.34	59.51	517.08	2.117
OF5	27.14	169.77	983.86	6.812
OF6	23.28	58.76	421.59	1.692
OF7a	36.65	12.44	153.87	0.501
OF7b	29.49	1.87	22.32	0.059
OF-A	70.10	117.30	1152.52	14.567
OF-B	73.95	41.42	106.09	6.258
OF-C	82.29	15.28	43.95	2.612
OF-D	45.15	30.59	300.76	1.772
OF-E	47.61	34.83	232.05	2.441

System 40.03 945.13 5535.38 54.352

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C001	CONDUIT	1152.52	0	07:11	1.06	0.17	0.46
C002	CONDUIT	1152.72	0	07:11	0.86	0.26	0.52
C003	CONDUIT	1152.80	0	07:10	0.81	0.21	0.54
C004a	CONDUIT	2261.74	0	06:33	1.77	0.04	0.61
C004b	CONDUIT	2261.71	0	06:33	0.90	0.33	1.00
C004c	CONDUIT	2261.77	0	06:33	0.97	0.33	0.81
C005	CONDUIT	3225.20	0	06:32	1.28	0.20	0.63
C006	CONDUIT	3128.87	0	06:33	1.23	0.31	0.57
C007	CONDUIT	2179.58	0	06:35	0.82	0.20	0.59
C008	CONDUIT	2174.79	0	06:34	0.91	0.24	0.55
C009	CONDUIT	2173.94	0	06:34	0.90	0.25	0.55
C010	CONDUIT	2106.98	0	06:34	0.87	0.25	0.55
C011	CONDUIT	2069.24	0	06:33	0.84	0.27	0.56
C012	CONDUIT	1829.94	0	06:34	0.74	0.24	0.56
C013	CONDUIT	1833.34	0	06:33	0.78	0.24	0.55
C014	CONDUIT	1565.21	0	06:33	0.70	0.20	0.53
C015	CONDUIT	1510.80	0	06:33	0.72	0.20	0.51
C016	CONDUIT	1492.96	0	06:34	0.74	0.19	0.50
C017	CONDUIT	1493.88	0	06:33	0.75	0.20	0.49
C018	CONDUIT	756.60	0	06:33	0.42	0.10	0.47
C019	CONDUIT	761.52	0	06:32	0.53	0.10	0.41
C020	CONDUIT	766.97	0	06:31	0.62	0.10	0.37
C021	CONDUIT	414.78	0	06:34	0.41	0.05	0.33
C022	CONDUIT	412.54	0	06:33	0.51	0.05	0.28
C023	CONDUIT	323.44	0	06:31	0.46	0.04	0.26
C024	CONDUIT	325.00	0	06:30	0.50	0.04	0.24
C025	CONDUIT	326.67	0	06:30	0.50	0.04	0.25
C026	CONDUIT	19.80	0	06:35	0.07	0.00	0.17
C027	CONDUIT	3.95	0	06:30	0.04	0.00	0.06
C028	CONDUIT	4.05	0	06:30	0.08	0.00	0.03
C029	CONDUIT	22.32	0	06:30	0.31	0.00	0.05
C030	CONDUIT	559.34	0	06:40	0.35	0.11	0.70
C031	CONDUIT	550.47	0	06:40	0.27	0.10	0.75
C032	CONDUIT	531.76	0	06:40	0.29	0.10	0.71
C033	CONDUIT	549.54	0	06:21	0.44	0.07	0.62
C034	CONDUIT	603.10	0	06:30	0.38	0.09	0.61
C035	CONDUIT	612.84	0	06:30	0.37	0.09	0.68
C036	CONDUIT	309.64	0	06:41	0.30	0.05	0.60
C037	CONDUIT	467.73	0	06:32	0.46	0.07	0.55
C038	CONDUIT	483.28	0	06:24	0.33	0.08	0.67
C039	CONDUIT	328.06	0	06:41	0.30	0.05	0.59
C040	CONDUIT	321.84	0	06:21	0.29	0.05	0.55
C041	CONDUIT	601.39	0	06:30	0.40	0.10	0.61
C042	CONDUIT	278.52	0	06:40	0.28	0.04	0.54
C043	CONDUIT	261.89	0	06:39	0.24	0.04	0.49
C044	CONDUIT	228.92	0	06:33	0.34	0.03	0.45
C045	CONDUIT	237.15	0	06:31	0.62	0.03	0.35
C046	CONDUIT	247.60	0	06:29	0.54	0.04	0.28
C047	CONDUIT	246.62	0	06:30	0.51	0.04	0.27
C048	CONDUIT	195.92	0	06:30	0.37	0.04	0.35
C049	CONDUIT	19.88	0	06:33	0.18	0.00	0.16
C050	CONDUIT	12.71	0	06:32	0.15	0.00	0.10
C051	CONDUIT	13.59	0	06:31	0.21	0.00	0.07
C052	CONDUIT	14.96	0	06:30	0.10	0.00	0.13
C053	CONDUIT	20.65	0	06:34	0.12	0.00	0.22
C054	CONDUIT	38.17	0	06:35	0.12	0.01	0.34
C055	CONDUIT	476.69	0	06:30	0.47	0.08	0.54
C056	CONDUIT	524.41	0	06:30	0.43	0.10	0.53
C057	CONDUIT	519.85	0	06:30	0.60	0.09	0.45
C058	CONDUIT	500.59	0	06:31	0.53	0.09	0.58
C059	CONDUIT	483.75	0	06:33	0.41	0.08	0.71
C060	CONDUIT	279.71	0	06:42	0.15	0.05	0.71
C061	CONDUIT	266.88	0	06:30	0.24	0.05	0.68
C062	CONDUIT	283.77	0	06:30	0.37	0.04	0.62
C063	CONDUIT	304.60	0	06:20	0.30	0.05	0.59
C064	CONDUIT	336.01	0	06:20	0.38	0.05	0.55
C065	CONDUIT	177.52	0	06:36	0.23	0.03	0.43
C066	CONDUIT	154.49	0	06:22	0.31	0.02	0.32
C067	CONDUIT	236.40	0	06:31	0.48	0.04	0.24
C068	CONDUIT	237.12	0	06:31	0.27	0.04	0.35

C069	CONDUIT	239.31	0	06:30	0.33	0.04	0.36
C070	CONDUIT	186.33	0	06:30	0.22	0.02	0.40
C071	CONDUIT	186.73	0	06:30	0.30	0.03	0.38
C072	CONDUIT	50.99	0	06:35	0.11	0.01	0.33
C073	CONDUIT	24.13	0	06:35	0.12	0.00	0.22
C074	CONDUIT	19.24	0	06:30	0.10	0.00	0.18
C075	CONDUIT	18.69	0	06:30	0.15	0.00	0.08
C076	CONDUIT	18.50	0	06:31	0.17	0.00	0.07
C077	CONDUIT	154.51	0	06:30	0.32	0.02	0.26
C078	CONDUIT	153.87	0	06:30	0.52	0.02	0.15
C079	CONDUIT	106.09	0	07:53	0.60	0.01	0.13
C080	CONDUIT	1467.01	0	06:45	0.76	0.07	0.80
C081	CONDUIT	1507.95	0	06:30	0.97	0.31	0.73
C082	CONDUIT	1539.25	0	06:30	0.71	0.30	0.65
C083	CONDUIT	833.69	0	06:33	0.50	0.17	0.51
C084	CONDUIT	796.67	0	06:33	0.58	0.16	0.43
C085	CONDUIT	796.96	0	06:32	0.83	0.05	0.32
C086	CONDUIT	58.66	0	06:25	0.17	0.01	0.19
C087	CONDUIT	55.94	0	06:29	0.26	0.01	0.13
C088	CONDUIT	55.90	0	06:30	0.38	0.00	0.10
C089	CONDUIT	748.78	0	06:32	0.45	0.08	0.67
C090	CONDUIT	752.39	0	06:31	0.61	0.07	0.54
C091	CONDUIT	759.17	0	06:31	0.95	0.06	0.35
C092	CONDUIT	22.99	0	06:30	0.04	0.00	0.26
C093	CONDUIT	23.20	0	06:30	0.25	0.00	0.10
C094	CONDUIT	23.95	0	06:16	0.32	0.00	0.06
C095	CONDUIT	0.00	0	00:00	0.00	0.00	0.03
C096	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C098	CONDUIT	6.72	0	07:14	0.03	0.00	0.13
C099	CONDUIT	104.72	0	07:13	0.25	0.01	0.23
C100	CONDUIT	72.92	0	07:13	0.25	0.01	0.19
C101	CONDUIT	54.84	0	06:37	0.39	0.00	0.09
C102	CONDUIT	67.08	0	06:37	0.52	0.01	0.08
C104	CONDUIT	92.95	0	06:40	0.15	0.01	0.30
C105	CONDUIT	30.00	0	06:27	0.26	0.00	0.15
C106	CONDUIT	29.93	0	06:30	0.22	0.00	0.09
C107	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C109	CONDUIT	26.40	0	06:28	0.05	0.00	0.59
C110	CONDUIT	152.44	0	06:28	0.08	0.02	0.63
C111	CONDUIT	18.78	0	06:29	0.04	0.00	0.30
C112	CONDUIT	2.84	0	06:44	0.02	0.00	0.16

C113	CONDUIT	35.24	0	06:30	0.10	0.01	0.27
C114	CONDUIT	52.84	0	06:30	0.33	0.00	0.17
C115	CONDUIT	52.88	0	06:30	0.46	0.00	0.08
C116	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C117	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C118	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C119	CONDUIT	689.61	0	06:31	0.47	0.07	0.58
C120	CONDUIT	693.78	0	06:30	0.76	0.08	0.40
C121	CONDUIT	54.86	0	06:34	0.07	0.01	0.43
C123	CONDUIT	47.77	0	06:36	0.11	0.01	0.60
C124	CONDUIT	597.91	0	06:30	0.56	0.05	0.48
C125	CONDUIT	6.29	0	06:01	0.07	0.00	0.23
C126	CONDUIT	0.01	0	06:31	0.00	0.00	0.00
C128	CONDUIT	437.79	0	06:30	0.28	0.07	0.54
C129	CONDUIT	427.27	0	06:29	0.33	0.07	0.60
C130	CONDUIT	81.89	0	06:35	0.08	0.01	0.52
C131	CONDUIT	14.81	0	06:35	0.06	0.00	0.34
C133	CONDUIT	3.63	0	06:05	0.02	0.00	0.57
C134	CONDUIT	27.45	0	06:03	0.06	0.00	0.70
C135	CONDUIT	374.91	0	06:29	0.42	0.04	0.61
C136	CONDUIT	108.89	0	06:30	0.14	0.01	0.35
C137	CONDUIT	105.79	0	06:30	0.28	0.02	0.26
C138	CONDUIT	103.80	0	06:30	0.25	0.02	0.32
C139	CONDUIT	52.78	0	06:29	0.22	0.00	0.22
C140	CONDUIT	52.87	0	06:30	0.46	0.00	0.08
C141	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C142	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C143	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C144	CONDUIT	749.14	0	06:40	0.62	0.16	0.55
C145	CONDUIT	743.08	0	06:40	0.64	0.17	0.50
C146	CONDUIT	746.76	0	06:37	0.58	0.27	0.51
C147	CONDUIT	517.08	0	06:38	0.62	0.18	0.53
C148	CONDUIT	519.19	0	06:37	0.57	0.22	0.55
C149	CONDUIT	522.37	0	06:36	0.51	0.25	0.58
C150	CONDUIT	525.40	0	06:35	0.51	0.23	0.59
C151	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C152	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C153	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C154	CONDUIT	983.86	0	07:05	0.58	0.47	0.75
C155	CONDUIT	991.81	0	07:01	0.60	0.45	0.75
C156	CONDUIT	994.42	0	07:00	0.61	0.45	0.74

C157	CONDUIT	996.54	0	06:58	0.61	0.45	0.74
C158	CONDUIT	49.67	0	06:40	0.09	0.02	0.58
C159	CONDUIT	20.05	0	06:40	0.11	0.01	0.34
C160	CONDUIT	1.12	0	06:53	0.04	0.00	0.11
CULV-01	CONDUIT	1836.90	0	06:33	2.69	1.55	0.75
CULV-02	CONDUIT	553.89	0	06:40	1.10	1.46	1.00
CULV-03	CONDUIT	599.95	0	06:30	1.28	1.15	0.96
CULV-04	CONDUIT	469.54	0	06:30	1.22	1.47	1.00
CULV-05	CONDUIT	588.29	0	06:30	1.18	1.28	0.97
CULV-06	CONDUIT	228.32	0	06:35	0.81	0.99	1.00
CULV-07	CONDUIT	298.34	0	06:20	0.89	0.96	1.00
CULV-08	CONDUIT	188.94	0	06:36	0.68	0.93	1.00
CULV-09	CONDUIT	237.49	0	06:30	0.91	1.11	0.87
CULV-10	CONDUIT	241.10	0	06:30	0.94	1.18	0.86
CULV-11	CONDUIT	35.38	0	06:35	0.31	0.28	0.80
CULV-12	CONDUIT	21.68	0	06:31	0.25	0.12	0.50
CULV-13	CONDUIT	247.37	0	06:30	1.06	1.06	0.77
CULV-14	CONDUIT	24.72	0	06:33	0.20	0.09	0.57
CULV-15	CONDUIT	47.10	0	06:35	0.20	0.17	0.91
CULV-16	CONDUIT	525.50	0	06:30	1.08	1.06	0.93
CULV-17	CONDUIT	1081.83	0	06:30	1.08	0.85	1.00
CULV-18	CONDUIT	81.66	0	06:31	0.35	0.15	0.96
CULV-19	CONDUIT	268.27	0	06:30	0.56	0.48	0.99
CULV-20	CONDUIT	292.20	0	06:30	0.60	0.53	0.97
CULV-21	CONDUIT	101.96	0	06:48	0.39	0.40	1.00
CULV-22	CONDUIT	739.10	0	06:33	1.49	1.27	0.97
CULV-23	CONDUIT	296.18	0	06:30	1.06	1.15	0.97
CULV-24	CONDUIT	92.68	0	06:33	0.47	0.36	0.66
CULV-25	CONDUIT	233.69	0	06:30	1.03	0.91	0.75
CULV-26	CONDUIT	814.93	0	06:31	1.43	0.44	0.88
CULV-27	CONDUIT	58.78	0	06:29	1.02	0.23	0.35
CULV-28	CONDUIT	748.61	0	06:32	2.00	11.18	0.70
CULV-29	CONDUIT	736.41	0	06:31	1.80	12.44	0.76
CULV-30	CONDUIT	694.48	0	06:30	1.63	0.54	0.79
CULV-31	CONDUIT	0.00	0	06:36	0.00	0.00	0.27
CULV-32	CONDUIT	425.67	0	06:30	1.11	1.20	0.98
CULV-33	CONDUIT	33.89	0	06:35	0.20	0.15	0.93
CULV-34	CONDUIT	12.45	0	06:05	0.10	0.05	1.00
CULV-35	CONDUIT	376.23	0	06:29	1.29	0.72	0.91
CULV-36	CONDUIT	105.19	0	06:30	0.74	0.73	0.75
CULV-37	CONDUIT	549.73	0	06:31	1.78	2.47	0.75
CULV-38	CONDUIT	437.85	0	06:31	1.32	19.39	0.91
CULV-39	CONDUIT	330.02	0	06:30	0.97	14.69	1.00
CULV-40	CONDUIT	150.46	0	06:30	0.99	2.87	0.85
CULV-41	CONDUIT	767.75	0	06:40	1.39	0.39	0.49
CULV-42	CONDUIT	8.82	0	06:41	0.13	0.07	0.47
DICB01-MH1	CONDUIT	1006.53	0	06:20	3.56	3.20	1.00
DICB02-OGSB	CONDUIT	804.70	0	06:19	2.85	1.92	1.00
HYD-01	CONDUIT	518.44	0	06:37	1.03	0.92	1.00
HYD-02	CONDUIT	606.40	0	06:30	1.21	1.23	1.00
HYD-03	CONDUIT	294.06	0	06:42	1.05	1.38	1.00
HYD-04	CONDUIT	316.55	0	06:21	0.88	0.96	1.00
HYD-05	CONDUIT	269.96	0	06:39	0.97	1.30	1.00
HYD-06	CONDUIT	275.79	0	06:42	0.55	0.61	1.00
HYD-07	CONDUIT	310.32	0	06:20	0.84	1.02	1.00
HYD-08	CONDUIT	166.95	0	06:36	0.66	0.78	0.92
HYD-09	CONDUIT	236.93	0	06:31	1.09	1.07	0.72
HYD-10	CONDUIT	185.78	0	06:30	0.68	0.91	0.93
HYD-11	CONDUIT	18.95	0	06:30	0.23	0.14	0.44
HYD-12	CONDUIT	153.90	0	06:30	1.13	0.80	0.66
HYD-13	CONDUIT	31.20	0	06:35	0.21	0.12	0.69
HYD-14	CONDUIT	523.61	0	06:30	1.20	1.10	0.81
HYD-15	CONDUIT	23.11	0	06:30	0.23	0.09	0.53
HYD-16	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
HYD-17	CONDUIT	51.54	0	06:38	0.84	0.20	0.37
HYD-18	CONDUIT	30.02	0	06:29	0.58	0.20	0.33
HYD-19	CONDUIT	26.94	0	06:30	0.14	0.13	1.00
HYD-20	CONDUIT	13.63	0	06:30	0.19	0.10	0.66
Inflow-C	CONDUIT	595.22	0	06:32	1.38	0.05	0.47
Inflow-D	CONDUIT	1849.47	0	06:33	0.97	0.08	0.64
Inflow-E1	CONDUIT	419.85	0	06:29	0.31	0.03	0.78
Inflow-E2	CONDUIT	214.45	0	06:28	0.21	0.01	0.60
MH1-MH2	CONDUIT	1004.33	0	06:20	3.55	2.45	1.00
MH2-OGSA1	CONDUIT	501.40	0	06:20	2.32	10.19	1.00
MH2-OGSA2	CONDUIT	501.77	0	06:20	2.32	10.19	1.00
MH3-MH5	CONDUIT	500.17	0	06:20	2.31	11.41	1.00
MH4-MH5	CONDUIT	500.53	0	06:20	2.31	11.39	1.00
MH5-HWa	CONDUIT	999.57	0	06:20	3.54	1.61	1.00
OGSA1-MH43	CONDUIT	500.80	0	06:20	2.31	8.44	1.00
OGSA2-MH4	CONDUIT	501.16	0	06:20	2.32	8.44	1.00
OGSB-HWb	CONDUIT	803.74	0	06:19	2.87	2.10	1.00
Out-C	CONDUIT	43.95	0	07:56	0.30	0.05	0.22

Out-D	CONDUIT	300.76	0	06:38	0.53	0.34	0.60
Out-E	CONDUIT	232.05	0	06:45	0.49	0.26	0.53
OVF-01	CONDUIT	424.84	0	06:33	0.73	0.13	0.35
OVF-02	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-03	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-04	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-05	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-06	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-07	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-08	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-09	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-10	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-11	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-12	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-13	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-14	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-15	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-16	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-17a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-17b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-18a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-18b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-19a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-19b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-20a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-20b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-21a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-21b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-22a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-22b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-23a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-23b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-24a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-24b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-25a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-25b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-26	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-27	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-28a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-28b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-29a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-29b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-30	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-31	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-32	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-33	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-34	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-35	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-36	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-37a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-37b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-38a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-38b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-39a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-39b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-40a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-40b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-41a	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-41b	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H01	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H02	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H03	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H04	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H05	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H06	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H07	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H08	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H09	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H10	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H11	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H12	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H13	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H14	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H15	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H16	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H17	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H18	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H19	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OVF-H20	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
PondB-Upper	CONDUIT	76.49	0	07:52	2.43	3.21	1.00
O-PondA	ORIFICE	53.55	0	07:09			1.00
O-PondB	ORIFICE	29.60	0	07:52			1.00

O-PondC-Lower	ORIFICE	16.86	0	07:56	1.00
O-PondC-Upper	ORIFICE	27.10	0	07:56	1.00
O-PondD	ORIFICE	21.40	0	06:37	1.00
O-PondE	ORIFICE	21.64	0	06:45	1.00
C097	WEIR	0.00	0	00:00	0.00
C103	WEIR	107.80	0	06:37	0.14
C108	WEIR	0.00	0	00:00	0.00
C122	WEIR	0.00	0	00:00	0.00
C127	WEIR	0.16	0	06:32	0.00
C132	WEIR	0.00	0	00:00	0.00
W-PondA	WEIR	1099.29	0	07:10	1.00
W-PondA-Spill	WEIR	0.00	0	00:00	0.00
W-PondB-Spill	WEIR	0.00	0	00:00	0.00
W-PondC-Spill	WEIR	0.00	0	00:00	0.00
W-PondD	WEIR	282.44	0	06:37	0.98
W-PondD-Berm	WEIR	0.00	0	00:00	0.00
W-PondD-Spill	WEIR	0.00	0	00:00	0.00
W-PondE	WEIR	210.44	0	06:45	0.99
W-PondE-Berm	WEIR	379.67	0	06:32	0.65
W-PondE-Spill	WEIR	0.00	0	00:00	0.00

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Flow Classification Summary
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	Adjusted	Fraction of Time in Flow Class								
	/Actual		Up	Down	Sub	Sup	Up	Down	Norm	Inlet
Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl
C001	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.41	0.00
C002	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.03	0.00
C003	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.98	0.00
C004a	1.00	0.49	0.43	0.00	0.07	0.00	0.00	0.00	0.91	0.00
C004b	1.00	0.92	0.00	0.00	0.01	0.00	0.00	0.06	0.00	0.00
C004c	1.00	0.92	0.06	0.00	0.02	0.00	0.00	0.00	0.91	0.00
C005	1.00	0.02	0.00	0.00	0.02	0.00	0.00	0.97	0.01	0.00
C006	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.81	0.00
C007	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.95	0.00
C008	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C009	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.95	0.00
C010	1.00	0.02	0.00	0.00	0.95	0.00	0.00	0.04	0.93	0.00
C011	1.00	0.02	0.01	0.00	0.98	0.00	0.00	0.00	0.01	0.00
C012	1.00	0.02	0.00	0.00	0.88	0.00	0.00	0.10	0.87	0.00
C013	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.80	0.00
C014	1.00	0.02	0.00	0.00	0.80	0.00	0.00	0.19	0.78	0.00
C015	1.00	0.02	0.01	0.00	0.98	0.00	0.00	0.00	0.77	0.00
C016	1.00	0.02	0.00	0.00	0.78	0.00	0.00	0.20	0.73	0.00
C017	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.47	0.00
C018	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.95	0.00
C019	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.96	0.00
C020	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.62	0.00
C021	1.00	0.02	0.01	0.00	0.79	0.00	0.00	0.18	0.79	0.00
C022	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.57	0.00
C023	1.00	0.02	0.00	0.00	0.69	0.00	0.00	0.29	0.68	0.00
C024	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.45	0.00
C025	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.97	0.00
C026	1.00	0.02	0.78	0.00	0.20	0.00	0.00	0.00	0.91	0.00
C027	1.00	0.80	0.12	0.00	0.08	0.00	0.00	0.00	0.92	0.00
C028	1.00	0.76	0.16	0.00	0.08	0.00	0.00	0.00	0.90	0.00
C029	1.00	0.76	0.00	0.00	0.24	0.00	0.00	0.00	0.21	0.00
C030	1.00	0.37	0.00	0.00	0.14	0.00	0.00	0.49	0.00	0.00
C031	1.00	0.68	0.00	0.00	0.08	0.00	0.00	0.24	0.00	0.00
C032	1.00	0.14	0.01	0.00	0.85	0.00	0.00	0.00	0.19	0.00
C033	1.00	0.84	0.00	0.00	0.07	0.00	0.00	0.08	0.02	0.00
C034	1.00	0.11	0.00	0.00	0.14	0.00	0.00	0.74	0.00	0.00
C035	1.00	0.33	0.00	0.00	0.15	0.00	0.00	0.53	0.00	0.00
C036	1.00	0.33	0.51	0.00	0.17	0.00	0.00	0.00	0.96	0.00
C037	1.00	0.32	0.00	0.00	0.14	0.00	0.00	0.53	0.00	0.00
C038	1.00	0.27	0.00	0.00	0.11	0.00	0.00	0.62	0.01	0.00
C039	1.00	0.03	0.04	0.00	0.93	0.00	0.00	0.00	0.57	0.00
C040	1.00	0.85	0.00	0.00	0.07	0.00	0.00	0.08	0.00	0.00
C041	1.00	0.26	0.00	0.00	0.10	0.00	0.00	0.63	0.01	0.00
C042	1.00	0.13	0.20	0.00	0.67	0.00	0.00	0.00	0.63	0.00
C043	1.00	0.85	0.00	0.00	0.06	0.00	0.00	0.09	0.01	0.00
C044	1.00	0.41	0.00	0.00	0.11	0.00	0.00	0.48	0.01	0.00
C045	1.00	0.09	0.02	0.00	0.89	0.00	0.00	0.00	0.34	0.00
C046	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.42	0.00
C047	1.00	0.02	0.01	0.00	0.97	0.00	0.00	0.00	0.97	0.00
C048	1.00	0.31	0.00	0.00	0.08	0.00	0.00	0.60	0.01	0.00
C049	1.00	0.88	0.00	0.00	0.01	0.00	0.00	0.11	0.01	0.00

C050	1.00	0.88	0.00	0.00	0.12	0.00	0.00	0.00	0.12	0.00
C051	1.00	0.88	0.04	0.00	0.08	0.00	0.00	0.00	0.91	0.00
C052	1.00	0.88	0.03	0.00	0.08	0.00	0.00	0.00	0.91	0.00
C053	1.00	0.88	0.00	0.00	0.01	0.00	0.00	0.11	0.00	0.00
C054	1.00	0.87	0.01	0.00	0.03	0.00	0.00	0.09	0.01	0.00
C055	1.00	0.02	0.00	0.00	0.08	0.00	0.00	0.90	0.01	0.00
C056	1.00	0.02	0.00	0.00	0.12	0.00	0.00	0.86	0.00	0.00
C057	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.90	0.00
C058	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.53	0.00
C059	1.00	0.02	0.00	0.00	0.11	0.00	0.00	0.87	0.01	0.00
C060	1.00	0.03	0.00	0.00	0.15	0.00	0.00	0.82	0.00	0.00
C061	1.00	0.02	0.00	0.00	0.08	0.00	0.00	0.89	0.01	0.00
C062	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.24	0.00
C063	1.00	0.32	0.00	0.00	0.05	0.00	0.00	0.64	0.00	0.00
C064	1.00	0.84	0.00	0.00	0.06	0.00	0.00	0.09	0.01	0.00
C065	1.00	0.40	0.00	0.00	0.03	0.00	0.00	0.57	0.00	0.00
C066	1.00	0.90	0.00	0.00	0.02	0.00	0.00	0.08	0.01	0.00
C067	1.00	0.26	0.00	0.00	0.06	0.00	0.00	0.68	0.00	0.00
C068	1.00	0.73	0.00	0.00	0.07	0.00	0.00	0.20	0.01	0.00
C069	1.00	0.72	0.00	0.00	0.07	0.00	0.00	0.21	0.01	0.00
C070	1.00	0.82	0.00	0.00	0.07	0.00	0.00	0.10	0.00	0.00
C071	1.00	0.84	0.00	0.00	0.07	0.00	0.00	0.09	0.01	0.00
C072	1.00	0.84	0.06	0.00	0.10	0.00	0.00	0.01	0.07	0.00
C073	1.00	0.92	0.00	0.00	0.01	0.00	0.00	0.07	0.01	0.00
C074	1.00	0.92	0.02	0.00	0.06	0.00	0.00	0.00	0.12	0.00
C075	1.00	0.96	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00
C076	1.00	0.96	0.00	0.00	0.01	0.00	0.00	0.04	0.01	0.00
C077	1.00	0.65	0.00	0.00	0.11	0.00	0.00	0.25	0.04	0.00
C078	1.00	0.39	0.00	0.00	0.61	0.00	0.00	0.00	0.48	0.00
C079	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.33	0.00
C080	1.00	0.40	0.45	0.00	0.15	0.00	0.00	0.00	0.78	0.00
C081	1.00	0.02	0.00	0.00	0.16	0.00	0.00	0.83	0.00	0.00
C082	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.85	0.00
C083	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.93	0.00
C084	1.00	0.02	0.01	0.00	0.98	0.00	0.00	0.00	0.78	0.00
C085	1.00	0.02	0.03	0.00	0.95	0.00	0.00	0.00	0.97	0.00
C086	1.00	0.05	0.67	0.00	0.28	0.00	0.00	0.00	0.82	0.00
C087	1.00	0.71	0.05	0.00	0.24	0.00	0.00	0.00	0.98	0.00
C088	1.00	0.80	0.00	0.00	0.02	0.00	0.00	0.19	0.02	0.00
C089	1.00	0.05	0.02	0.00	0.86	0.00	0.00	0.08	0.08	0.00
C090	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.83	0.00
C091	1.00	0.02	0.02	0.00	0.96	0.00	0.00	0.00	0.91	0.00
C092	1.00	0.04	0.68	0.00	0.28	0.00	0.00	0.00	0.90	0.00
C093	1.00	0.78	0.00	0.00	0.01	0.00	0.00	0.21	0.00	0.00
C094	1.00	0.74	0.00	0.00	0.25	0.00	0.00	0.00	0.20	0.00
C095	1.00	0.75	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C096	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C098	1.00	0.02	0.83	0.00	0.15	0.00	0.00	0.00	0.87	0.00
C099	1.00	0.02	0.74	0.00	0.24	0.00	0.00	0.00	0.76	0.00
C100	1.00	0.76	0.01	0.00	0.23	0.00	0.00	0.00	0.86	0.00
C101	1.00	0.78	0.00	0.00	0.03	0.00	0.00	0.19	0.02	0.00
C102	1.00	0.78	0.20	0.00	0.02	0.00	0.00	0.00	0.91	0.00
C104	1.00	0.02	0.65	0.00	0.32	0.00	0.00	0.00	0.96	0.00
C105	1.00	0.67	0.06	0.00	0.27	0.00	0.00	0.00	0.85	0.00
C106	1.00	0.76	0.00	0.00	0.01	0.00	0.00	0.23	0.01	0.00
C107	1.00	0.76	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C109	1.00	0.03	0.76	0.00	0.20	0.00	0.00	0.00	0.79	0.00
C110	1.00	0.03	0.73	0.00	0.24	0.00	0.00	0.00	0.69	0.00
C111	1.00	0.87	0.05	0.00	0.07	0.00	0.00	0.00	0.90	0.00
C112	1.00	0.92	0.00	0.00	0.03	0.00	0.00	0.05	0.01	0.00
C113	1.00	0.04	0.49	0.00	0.18	0.00	0.00	0.29	0.38	0.00
C114	1.00	0.03	0.67	0.00	0.28	0.00	0.00	0.02	0.35	0.00
C115	1.00	0.70	0.02	0.00	0.28	0.00	0.00	0.00	0.19	0.00
C116	1.00	0.72	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C117	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C118	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C119	1.00	0.04	0.02	0.00	0.79	0.00	0.00	0.15	0.55	0.00
C120	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.35	0.00
C121	1.00	0.85	0.08	0.00	0.08	0.00	0.00	0.00	0.91	0.00
C123	1.00	0.78	0.07	0.00	0.15	0.00	0.00	0.00	0.86	0.00
C124	1.00	0.13	0.00	0.00	0.22	0.00	0.00	0.65	0.22	0.00
C125	1.00	0.13	0.83	0.00	0.03	0.00	0.00	0.00	0.90	0.00
C126	1.00	0.99	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
C128	1.00	0.02	0.00	0.00	0.68	0.00	0.00	0.30	0.33	0.00
C129	1.00	0.16	0.00	0.00	0.13	0.00	0.00	0.70	0.00	0.00
C130	1.00	0.16	0.58	0.00	0.26	0.00	0.00	0.00	0.77	0.00
C131	1.00	0.96	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00
C133	1.00	0.86	0.00	0.00	0.13	0.00	0.00	0.00	0.01	0.00
C134	1.00	0.06	0.69	0.00	0.25	0.00	0.00	0.00	0.75	0.00
C135	1.00	0.06	0.06	0.00	0.61	0.00	0.00	0.27	0.50	0.00
C136	1.00	0.85	0.11	0.00	0.04	0.00	0.00	0.00	0.89	0.00
C137	1.00	0.96	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00

C138	1.00	0.85	0.06	0.00	0.09	0.00	0.00	0.00	0.06	0.00
C139	1.00	0.73	0.00	0.00	0.10	0.00	0.00	0.17	0.06	0.00
C140	1.00	0.72	0.01	0.00	0.27	0.00	0.00	0.00	0.24	0.00
C141	1.00	0.73	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C142	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C143	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C144	1.00	0.64	0.00	0.00	0.09	0.00	0.00	0.27	0.00	0.00
C145	1.00	0.41	0.00	0.00	0.59	0.00	0.00	0.00	0.23	0.00
C146	1.00	0.40	0.18	0.00	0.41	0.00	0.00	0.00	0.82	0.00
C147	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.81	0.00
C148	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.83	0.00
C149	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.85	0.00
C150	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.92	0.00
C151	1.00	0.05	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C152	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C153	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C154	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.79	0.00
C155	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.89	0.00
C156	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.91	0.00
C157	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.89	0.00
C158	1.00	0.06	0.02	0.00	0.91	0.00	0.00	0.00	0.86	0.00
C159	1.00	0.09	0.00	0.00	0.91	0.00	0.00	0.00	0.88	0.00
C160	1.00	0.09	0.00	0.00	0.02	0.00	0.00	0.89	0.01	0.00
CULV-01	1.00	0.09	0.84	0.00	0.07	0.01	0.00	0.00	0.00	0.91
CULV-02	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00
CULV-03	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.10
CULV-04	1.00	0.02	0.23	0.00	0.76	0.00	0.00	0.00	0.00	0.92
CULV-05	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.41
CULV-06	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.13
CULV-07	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.17
CULV-08	1.00	0.02	0.08	0.00	0.91	0.00	0.00	0.00	0.00	0.16
CULV-09	1.00	0.02	0.71	0.00	0.27	0.00	0.00	0.00	0.00	0.95
CULV-10	1.00	0.02	0.78	0.00	0.20	0.00	0.00	0.00	0.00	0.95
CULV-11	1.00	0.08	0.84	0.00	0.08	0.00	0.00	0.00	0.00	0.90
CULV-12	1.00	0.02	0.94	0.00	0.04	0.00	0.00	0.00	0.00	0.91
CULV-13	1.00	0.02	0.44	0.00	0.54	0.00	0.00	0.00	0.00	0.95
CULV-14	1.00	0.02	0.85	0.00	0.13	0.00	0.00	0.00	0.00	0.87
CULV-15	1.00	0.02	0.82	0.00	0.17	0.00	0.00	0.00	0.00	0.83
CULV-16	1.00	0.02	0.13	0.00	0.85	0.00	0.00	0.00	0.00	0.94
CULV-17	1.00	0.02	0.19	0.00	0.79	0.00	0.00	0.00	0.00	0.83
CULV-18	1.00	0.02	0.20	0.00	0.79	0.00	0.00	0.00	0.00	0.81
CULV-19	1.00	0.02	0.33	0.00	0.65	0.00	0.00	0.00	0.00	0.80
CULV-20	1.00	0.02	0.32	0.00	0.67	0.00	0.00	0.00	0.00	0.81
CULV-21	1.00	0.02	0.33	0.00	0.65	0.00	0.00	0.00	0.00	0.83
CULV-22	1.00	0.02	0.04	0.00	0.94	0.00	0.00	0.00	0.00	0.92
CULV-23	1.00	0.02	0.15	0.00	0.83	0.00	0.00	0.00	0.00	0.94
CULV-24	1.00	0.02	0.42	0.00	0.56	0.00	0.00	0.00	0.00	0.95
CULV-25	1.00	0.02	0.29	0.00	0.69	0.00	0.00	0.00	0.00	0.94
CULV-26	1.00	0.85	0.03	0.00	0.13	0.00	0.00	0.00	0.00	0.80
CULV-27	1.00	0.02	0.78	0.00	0.21	0.00	0.00	0.00	0.00	0.98
CULV-28	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.02
CULV-29	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.01
CULV-30	1.00	0.02	0.10	0.00	0.89	0.00	0.00	0.00	0.00	0.96
CULV-31	1.00	0.08	0.91	0.00	0.01	0.00	0.00	0.00	0.00	0.91
CULV-32	1.00	0.02	0.18	0.00	0.81	0.00	0.00	0.00	0.00	0.93
CULV-33	1.00	0.02	0.95	0.00	0.04	0.00	0.00	0.00	0.00	0.90
CULV-34	1.00	0.03	0.81	0.00	0.16	0.00	0.00	0.00	0.00	0.77
CULV-35	1.00	0.02	0.19	0.00	0.79	0.00	0.00	0.00	0.00	0.94
CULV-36	1.00	0.08	0.88	0.00	0.04	0.00	0.00	0.00	0.00	0.89
CULV-37	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
CULV-38	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
CULV-39	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
CULV-40	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
CULV-41	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.00	0.88
CULV-42	1.00	0.09	0.67	0.00	0.24	0.00	0.00	0.00	0.00	0.86
DICB01-MH1	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.04	0.00
DICB02-OGSB	1.00	0.02	0.00	0.00	0.51	0.00	0.00	0.47	0.05	0.00
HYD-01	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.10
HYD-02	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.05
HYD-03	1.00	0.02	0.44	0.00	0.17	0.00	0.36	0.00	0.00	0.09
HYD-04	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.05
HYD-05	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.09
HYD-06	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00
HYD-07	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
HYD-08	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.02
HYD-09	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.03
HYD-10	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.04
HYD-11	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.04
HYD-12	1.00	0.02	0.47	0.00	0.51	0.00	0.00	0.00	0.00	0.96
HYD-13	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.05
HYD-14	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
HYD-15	1.00	0.02	0.75	0.00	0.24	0.00	0.00	0.00	0.00	0.97

HYD-16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HYD-17	1.00	0.02	0.76	0.00	0.23	0.00	0.00	0.00	0.00	0.94
HYD-18	1.00	0.02	0.74	0.00	0.24	0.00	0.00	0.00	0.00	0.97
HYD-19	1.00	0.02	0.77	0.00	0.21	0.00	0.00	0.00	0.00	0.84
HYD-20	1.00	0.09	0.00	0.00	0.91	0.00	0.00	0.00	0.00	0.00
Inflow-C	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.82	0.00
Inflow-D	1.00	0.02	0.01	0.00	0.98	0.00	0.00	0.00	0.91	0.00
Inflow-E1	1.00	0.02	0.02	0.00	0.97	0.00	0.00	0.00	0.80	0.00
Inflow-E2	1.00	0.02	0.02	0.00	0.96	0.00	0.00	0.00	0.94	0.00
MH1-MH2	1.00	0.02	0.00	0.00	0.93	0.06	0.00	0.00	0.63	0.00
MH2-OGSA1	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
MH2-OGSA2	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
MH3-MH5	1.00	0.02	0.00	0.00	0.36	0.00	0.00	0.63	0.00	0.00
MH4-MH5	1.00	0.02	0.00	0.00	0.36	0.00	0.00	0.63	0.00	0.00
MH5-HWa	1.00	0.02	0.01	0.00	0.98	0.00	0.00	0.00	0.40	0.00
OGSA1-MH43	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
OGSA2-MH4	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
OGSB-HWb	1.00	0.02	0.00	0.00	0.47	0.00	0.00	0.51	0.02	0.00
Out-C	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.35	0.00
Out-D	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.77	0.00
Out-E	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.72	0.00
OVF-01	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-02	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-03	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-04	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-05	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-06	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-07	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-08	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-09	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-11	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-12	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-13	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-14	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-17a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-17b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-18a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-18b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-19a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-19b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-20a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-20b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-21a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-21b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-22a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-22b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-23a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-23b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-24a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-24b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-25a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-25b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-26	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-27	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-28a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-28b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-29a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-29b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-30	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-31	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-32	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-33	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-34	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-35	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-36	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-37a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-37b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-38a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-38b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-39a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-39b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-40a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-40b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-41a	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-41b	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H01	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H02	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H03	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H04	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OVF-H05	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H06	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H07	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H08	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H09	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H11	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H12	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H13	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H14	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H15	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H16	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H17	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H18	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H19	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OVF-H20	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PondB-Upper	1.00	0.73	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.14

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Conduit Surcharge Summary
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Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C004a	0.01	0.01	2.14	0.01	0.01
C004b	0.22	0.22	0.34	0.01	0.01
C004c	0.01	0.01	0.22	0.01	0.01
C080	0.01	0.01	65.54	0.01	0.01
CULV-01	0.01	0.66	0.01	0.57	0.01
CULV-02	0.39	0.61	0.39	0.82	0.39
CULV-03	0.01	0.23	0.01	0.35	0.01
CULV-04	0.18	0.56	0.18	0.75	0.18
CULV-05	0.01	0.27	0.01	0.44	0.01
CULV-06	0.21	0.25	0.21	0.01	0.21
CULV-07	0.29	0.32	0.30	0.01	0.19
CULV-08	0.14	0.15	0.18	0.01	0.02
CULV-09	0.01	0.01	0.01	0.26	0.01
CULV-10	0.01	0.01	0.01	0.33	0.01
CULV-13	0.01	0.01	0.01	0.13	0.01
CULV-15	0.01	0.01	0.17	0.01	0.01
CULV-16	0.01	0.01	0.01	0.17	0.01
CULV-17	0.45	0.46	0.52	0.01	0.24
CULV-18	0.01	0.01	0.19	0.01	0.01
CULV-19	0.01	0.01	0.26	0.01	0.01
CULV-20	0.01	0.01	0.12	0.01	0.01
CULV-21	0.21	0.21	0.50	0.01	0.01
CULV-22	0.01	0.43	0.01	0.47	0.01
CULV-23	0.01	0.18	0.01	0.20	0.01
CULV-26	0.01	0.01	0.01	0.01	0.01
CULV-28	0.01	0.30	0.01	1.94	0.01
CULV-29	0.01	0.28	0.01	2.07	0.01
CULV-30	0.01	0.21	0.01	0.01	0.01
CULV-32	0.01	0.25	0.01	0.32	0.01
CULV-33	0.01	0.01	0.04	0.01	0.01
CULV-34	1.13	1.13	1.87	0.01	0.01
CULV-37	0.01	0.41	0.01	0.74	0.01
CULV-38	0.01	0.22	0.01	3.31	0.01
CULV-39	1.50	1.60	1.50	4.79	1.50
CULV-40	0.01	0.01	0.01	0.54	0.01
DICB01-MH1	3.82	3.87	4.31	1.79	1.80
DICB02-OGSB	12.89	12.89	14.11	0.60	0.60
HYD-01	0.41	0.52	0.41	0.01	0.41
HYD-02	0.11	0.37	0.11	0.42	0.11
HYD-03	0.33	0.52	0.33	0.40	0.33
HYD-04	0.17	0.29	0.17	0.01	0.17
HYD-05	0.26	0.40	0.26	0.25	0.26
HYD-06	0.40	0.40	0.42	0.01	0.01
HYD-07	0.26	0.31	0.27	0.08	0.22
HYD-09	0.01	0.01	0.01	0.21	0.01
HYD-14	0.01	0.01	0.01	0.23	0.01
HYD-19	1.44	1.44	2.14	0.01	0.01
MH1-MH2	4.30	4.31	4.95	1.56	1.48
MH2-OGSA1	6.48	6.49	6.48	7.28	4.12
MH2-OGSA2	6.48	6.49	6.48	7.55	4.21
MH3-MH5	6.47	6.48	6.47	8.76	4.84
MH4-MH5	6.47	6.48	6.47	8.91	4.40
MH5-HWa	15.42	15.50	19.45	1.31	1.62
OGSA1-MH43	6.47	6.48	6.48	5.93	4.18

Carp Airport Phase 2 Business Park (102085-14)
Post-Development - 100-year 12-hour SCS Model Output

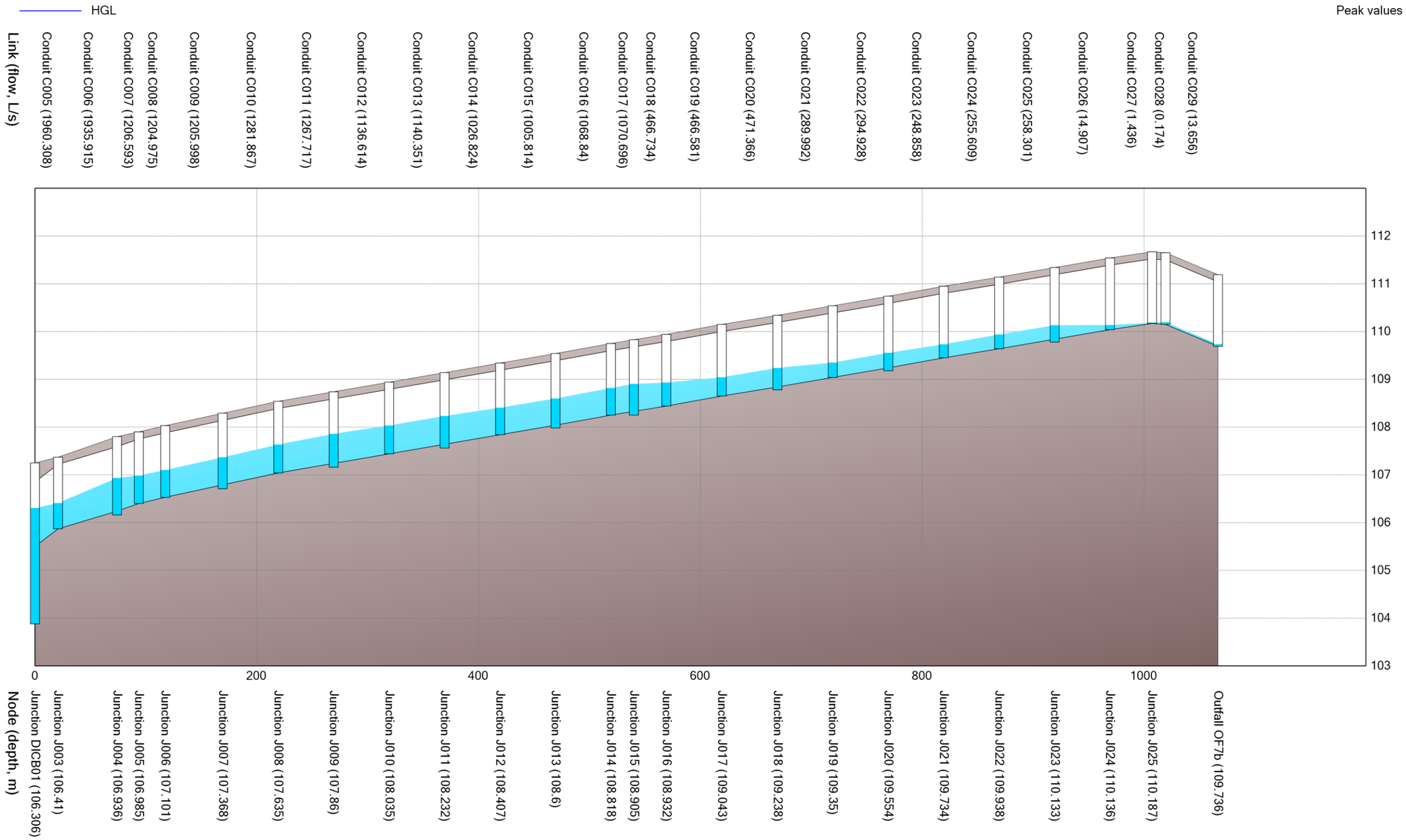
OGSA2-MH4	6.47	6.48	6.48	5.99	3.95
OGSB-HWb	14.18	14.42	14.68	0.63	0.53
PondB-Upper	7.47	14.50	7.47	14.03	7.47

Analysis begun on: Mon Nov 3 10:48:07 2025
Analysis ended on: Mon Nov 3 10:48:38 2025
Total elapsed time: 00:00:31

Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

NOVATECH
Engineers, Planners & Landscape Architects

Street 15 North Ditch (to Pond A DICB)

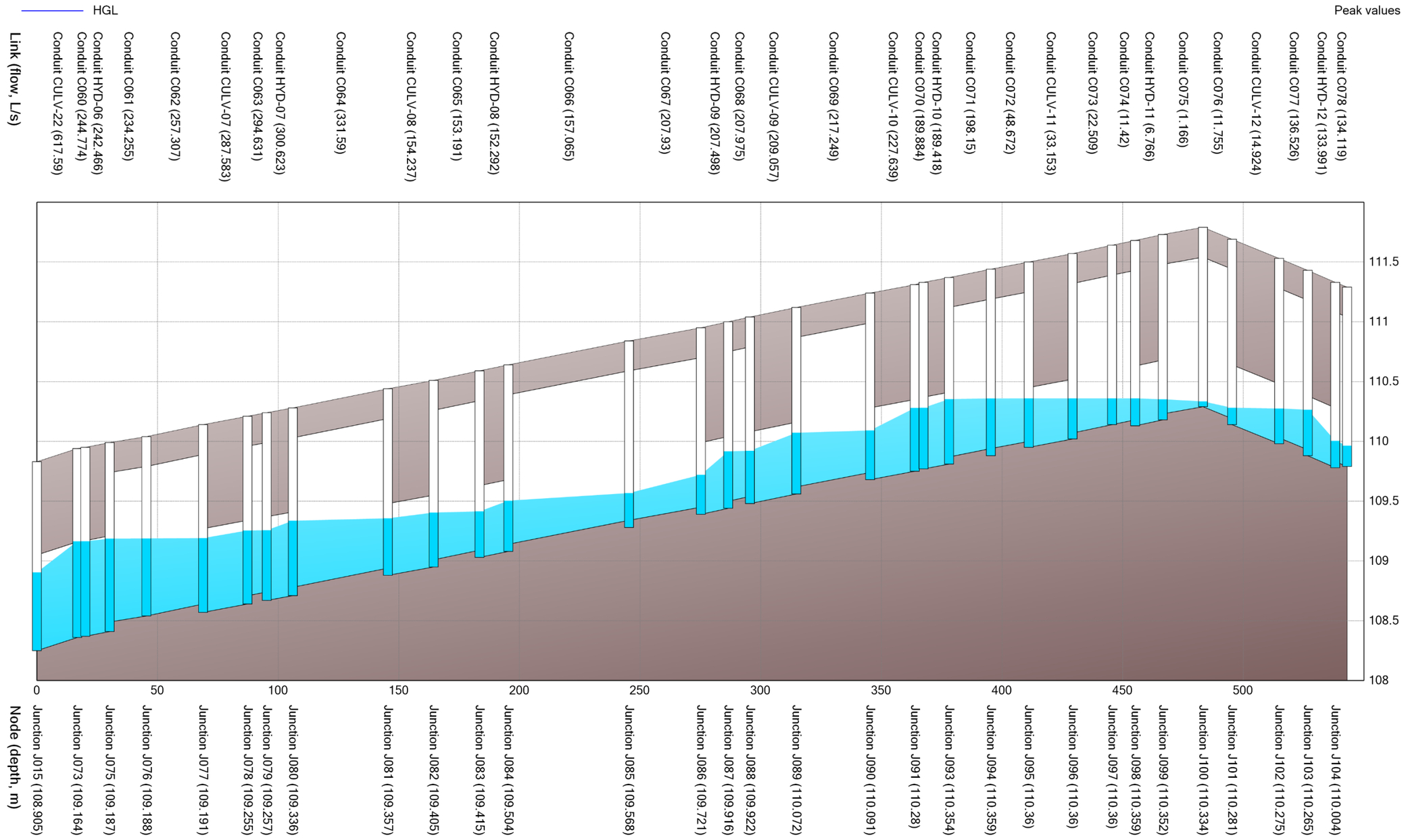


Date: 2025-11-03
M:\2002\102085\DATA\Phase 2 BPark\Calculations\SWM\PCSWMM\Sub 2\Profiles\102085-BP-Ditch HGL Profiles-5yrChi.docx

Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

NOVATECH
Engineers, Planners & Landscape Architects

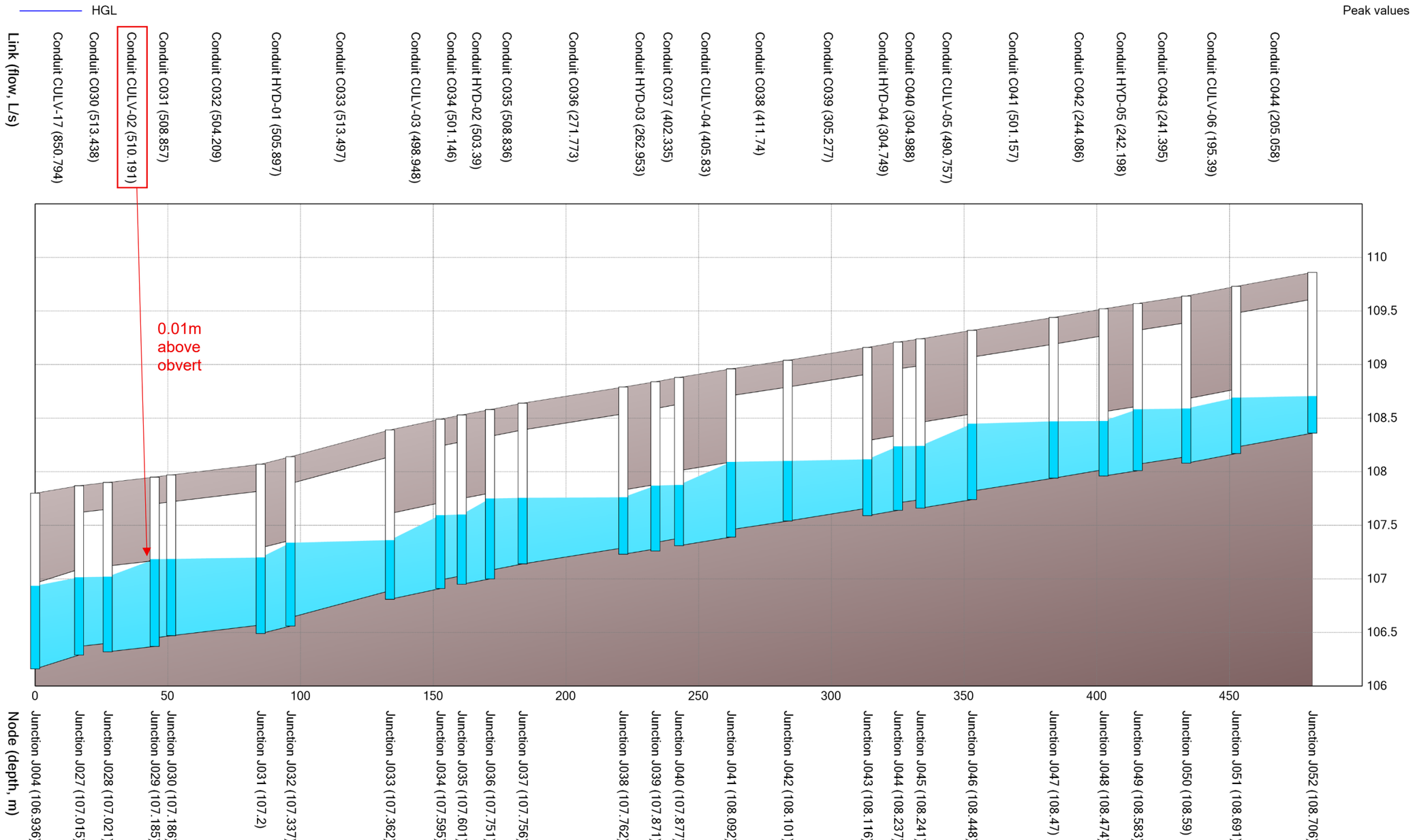
Street 15 South Ditch (to Culvert crossing at Street 16)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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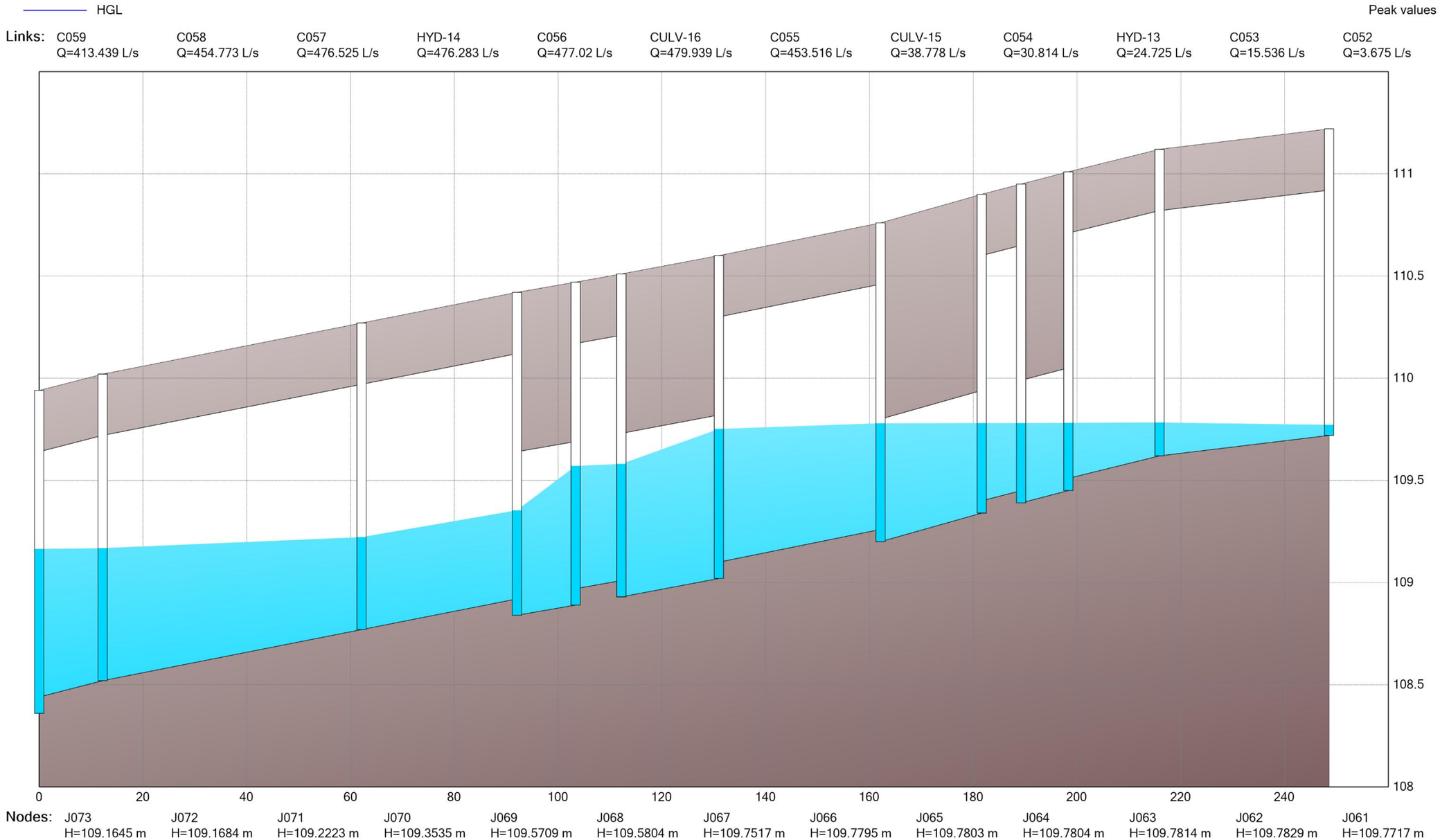
Street 15 South Ditch (to Culvert crossing at cul-de-sac)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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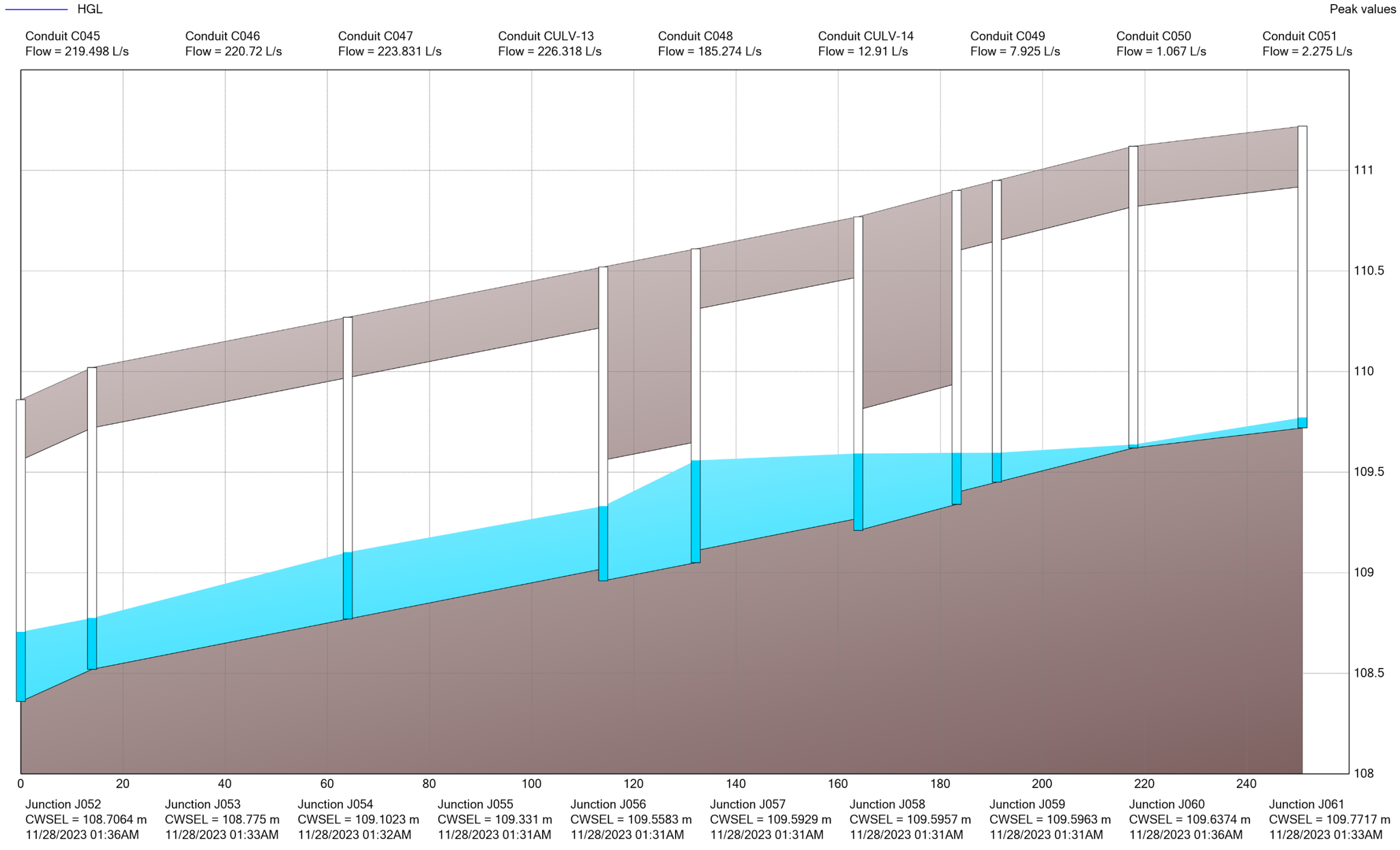
Street 16 West Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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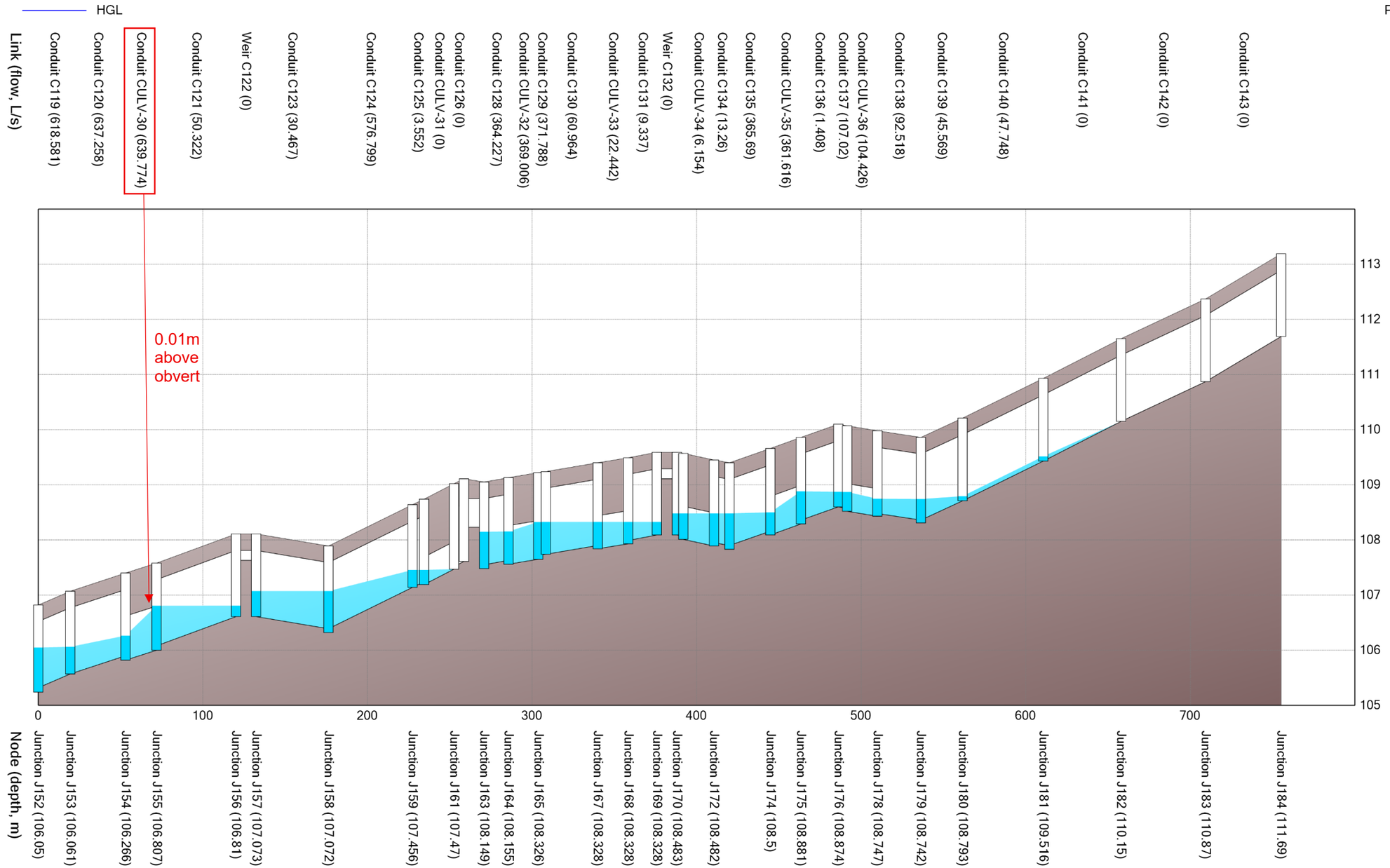
Street 16 East Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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Street 17 West Ditch

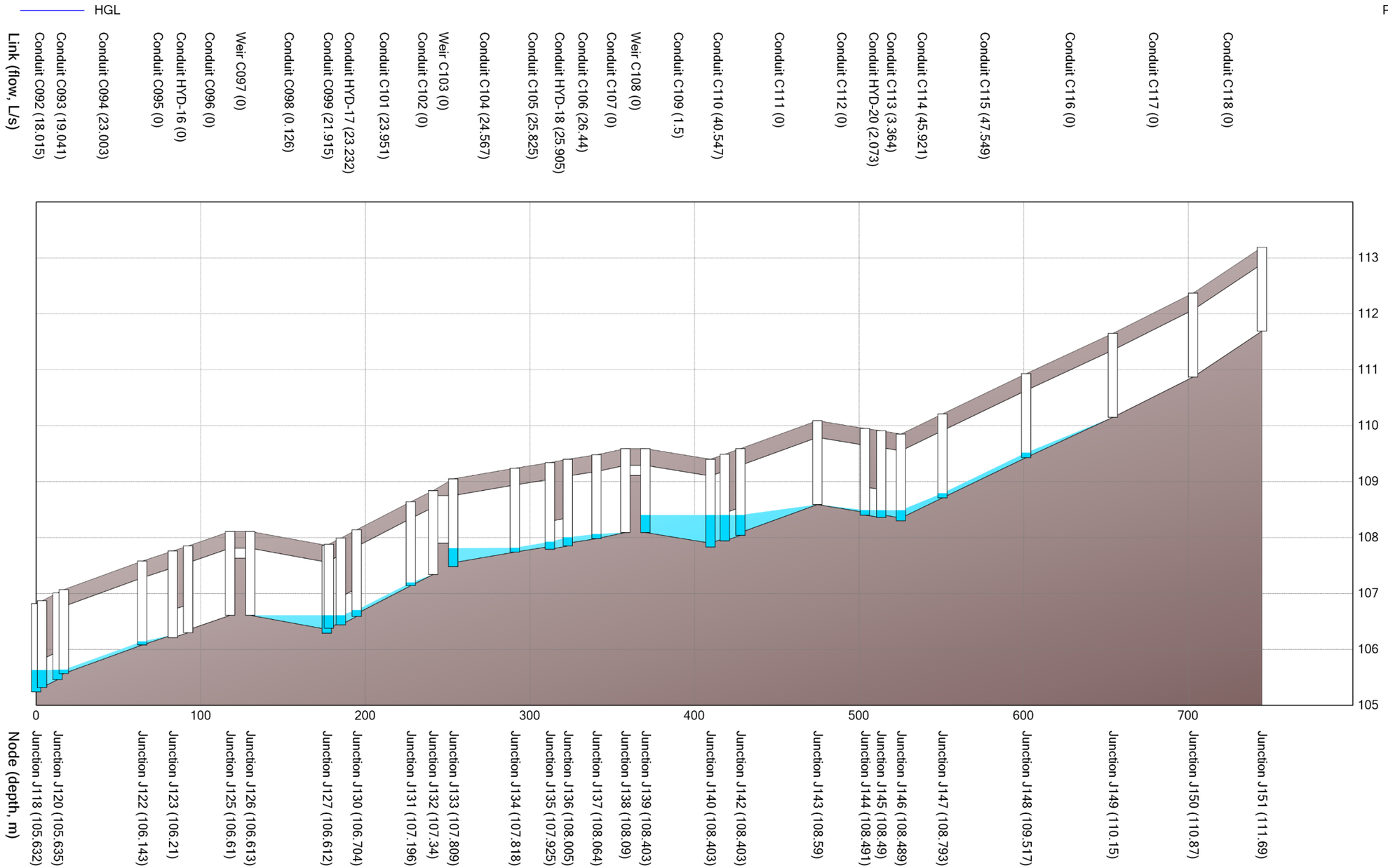


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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Street 17 East Ditch



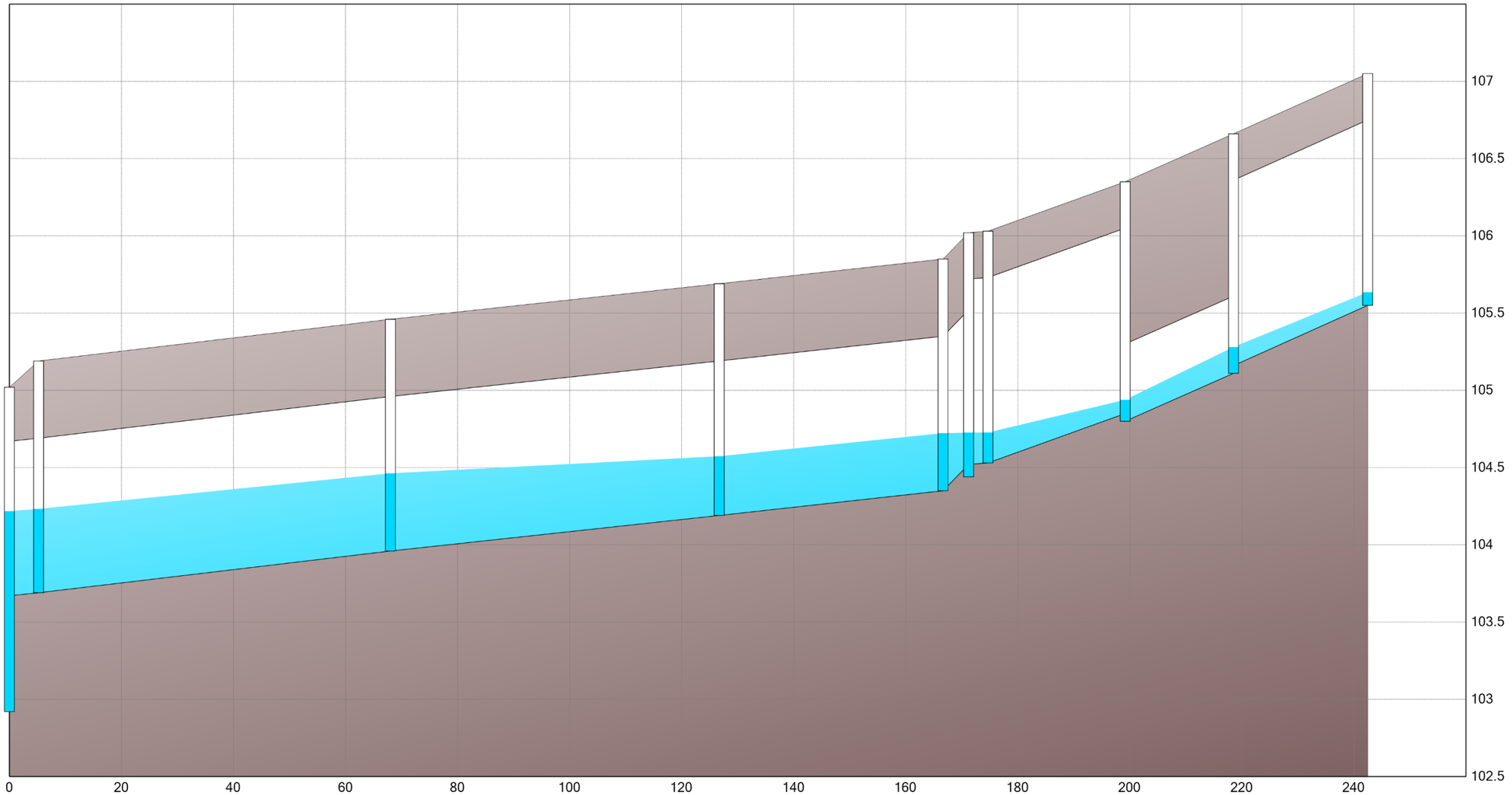
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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Street 18 North and Pond B Easement (to Pond B DICB West Ditch)

HGL

Peak values

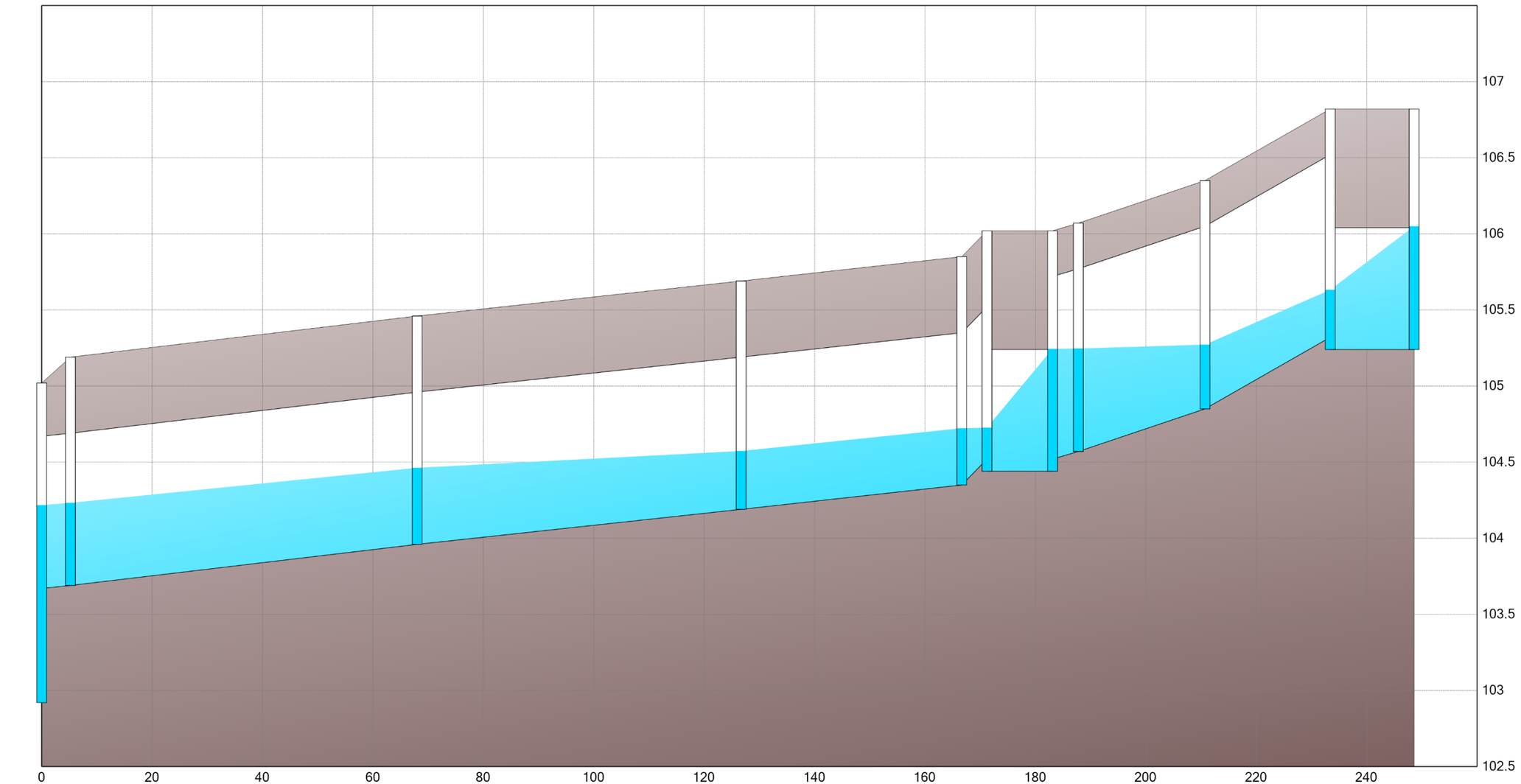


Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 5-year 4-hour Chicago

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Street 18 South and Pond B Easement (to Pond B DICB West Ditch)

HGL — Peak values

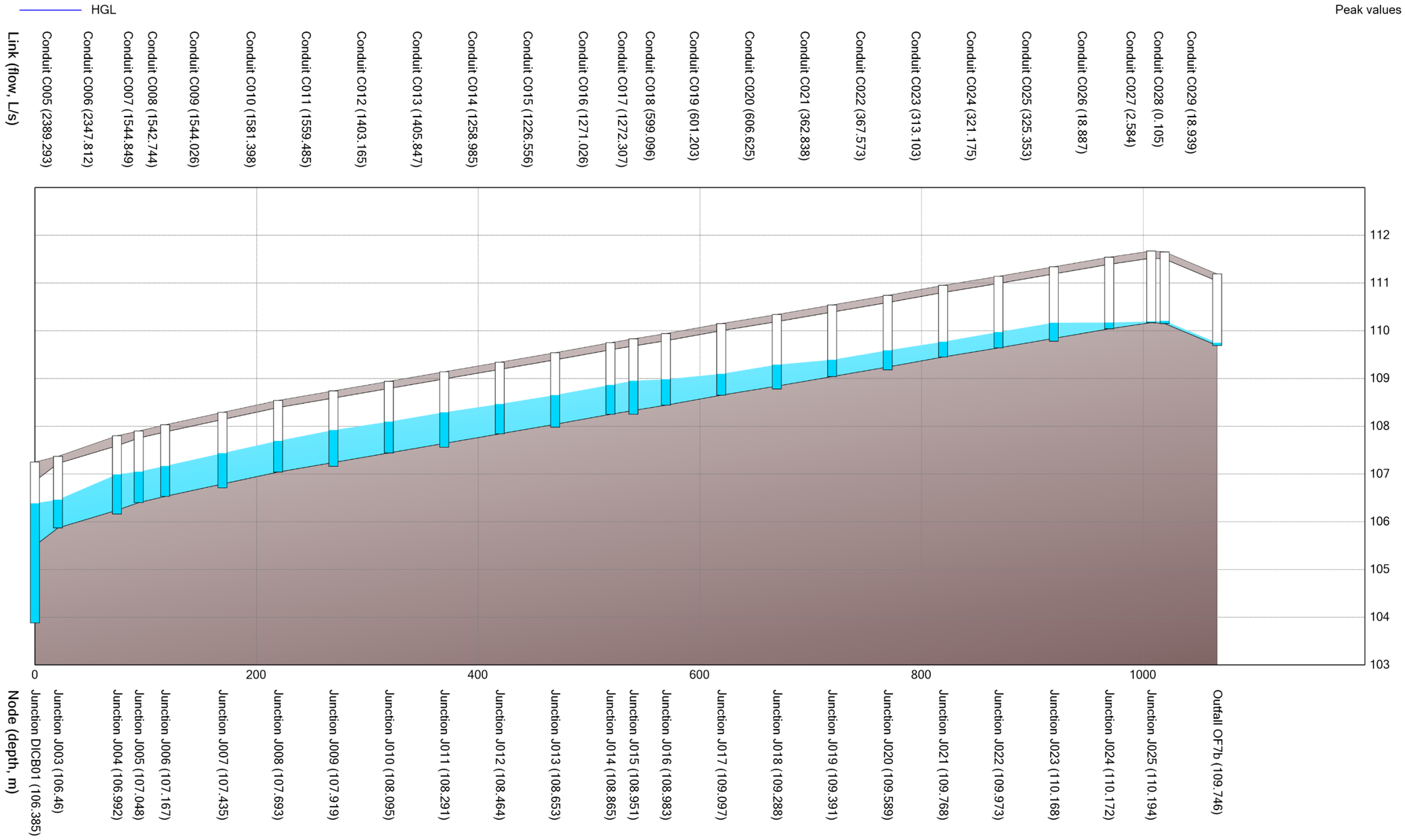


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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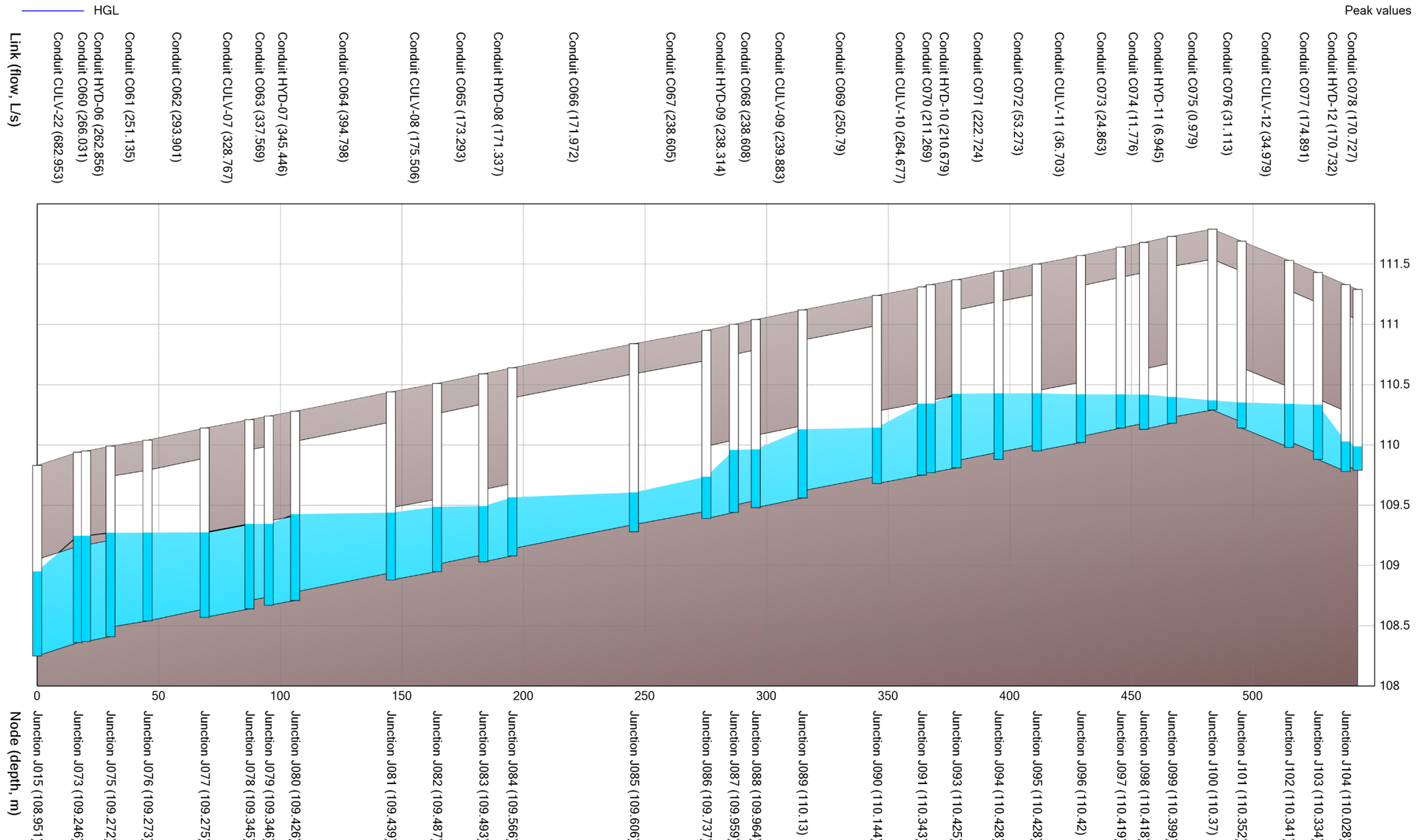
Street 15 North Ditch (to Pond A DICB)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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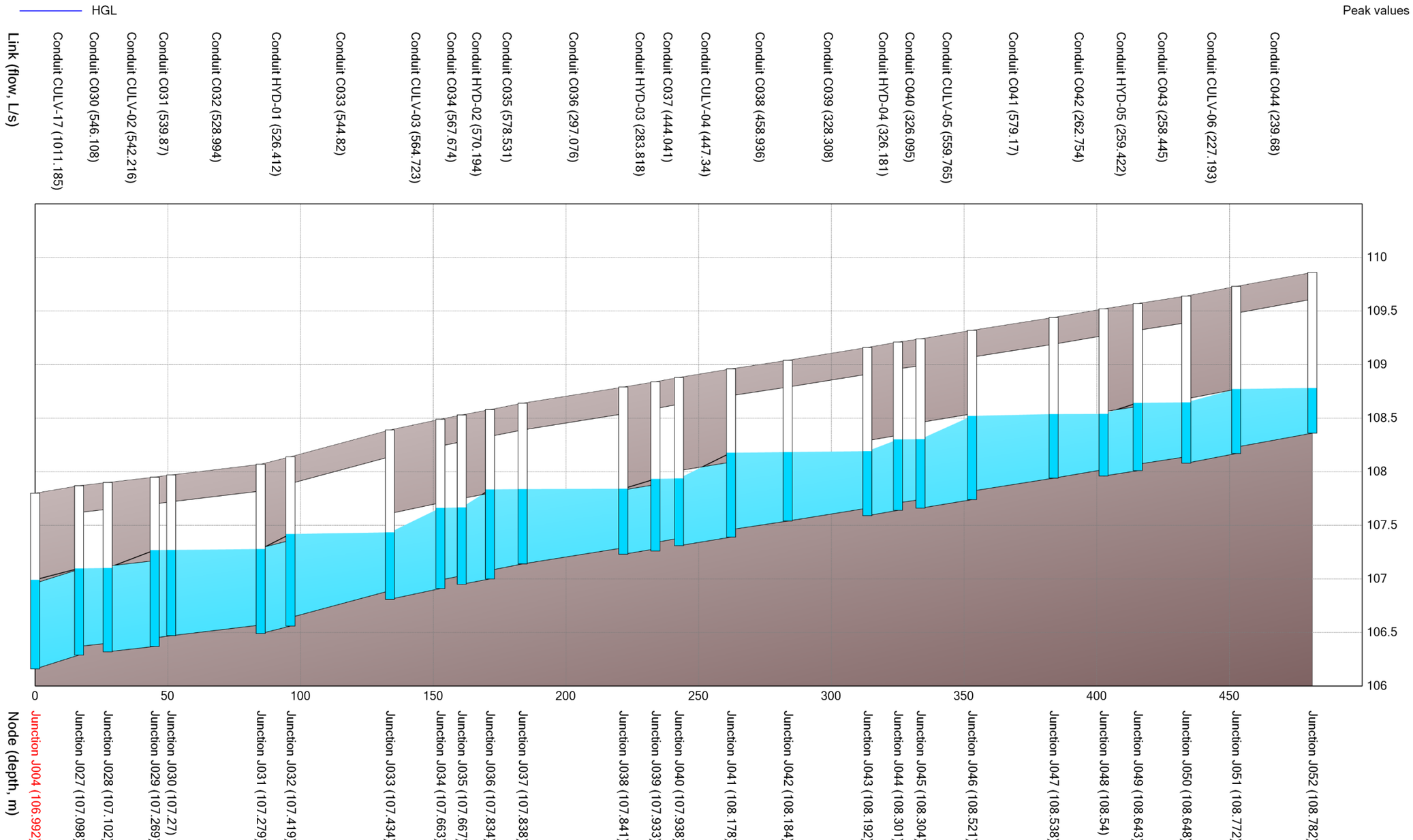
Street 15 South Ditch (to Culvert crossing at Street 16)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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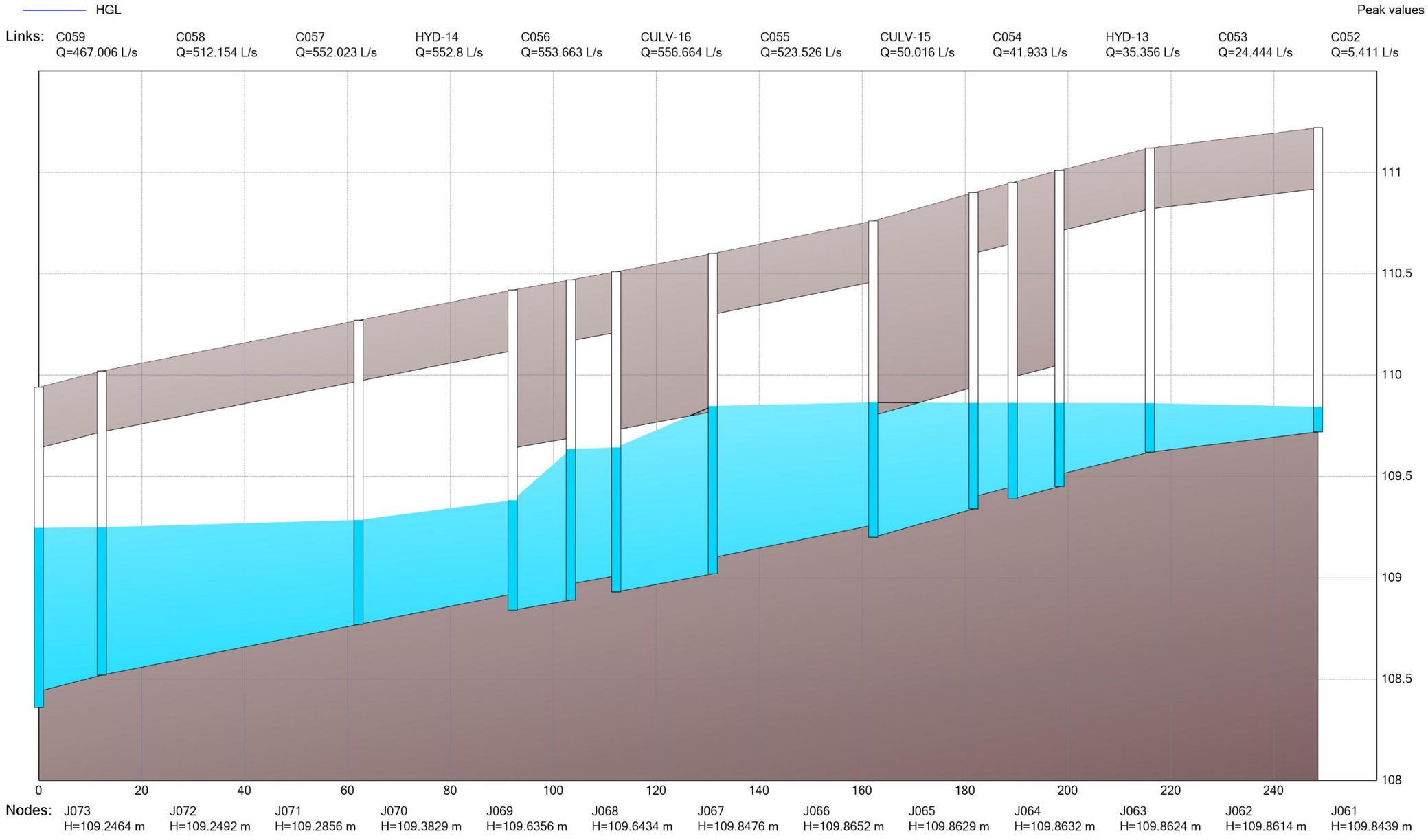
Street 15 South Ditch (to Culvert crossing at cul-de-sac)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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Street 16 West Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

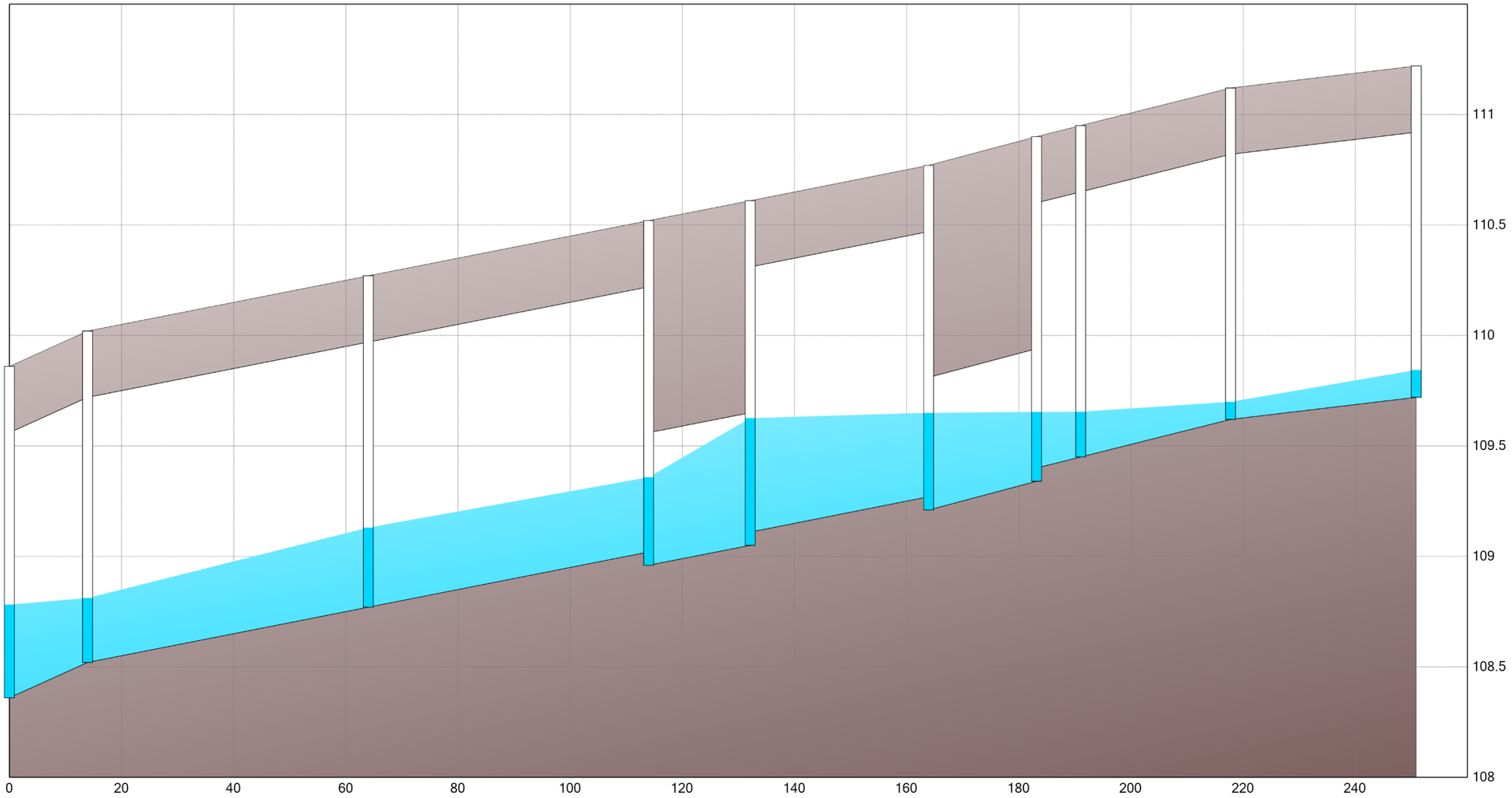
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Street 16 East Ditch

HGL

Peak values

Conduit C045	Conduit C046	Conduit C047	Conduit CULV-13	Conduit C048	Conduit CULV-14	Conduit C049	Conduit C050	Conduit C051
Flow = 263.644 L/s	Flow = 267.394 L/s	Flow = 270.007 L/s	Flow = 271.842 L/s	Flow = 215.951 L/s	Flow = 32.289 L/s	Flow = 25.903 L/s	Flow = 15.681 L/s	Flow = 19.109 L/s

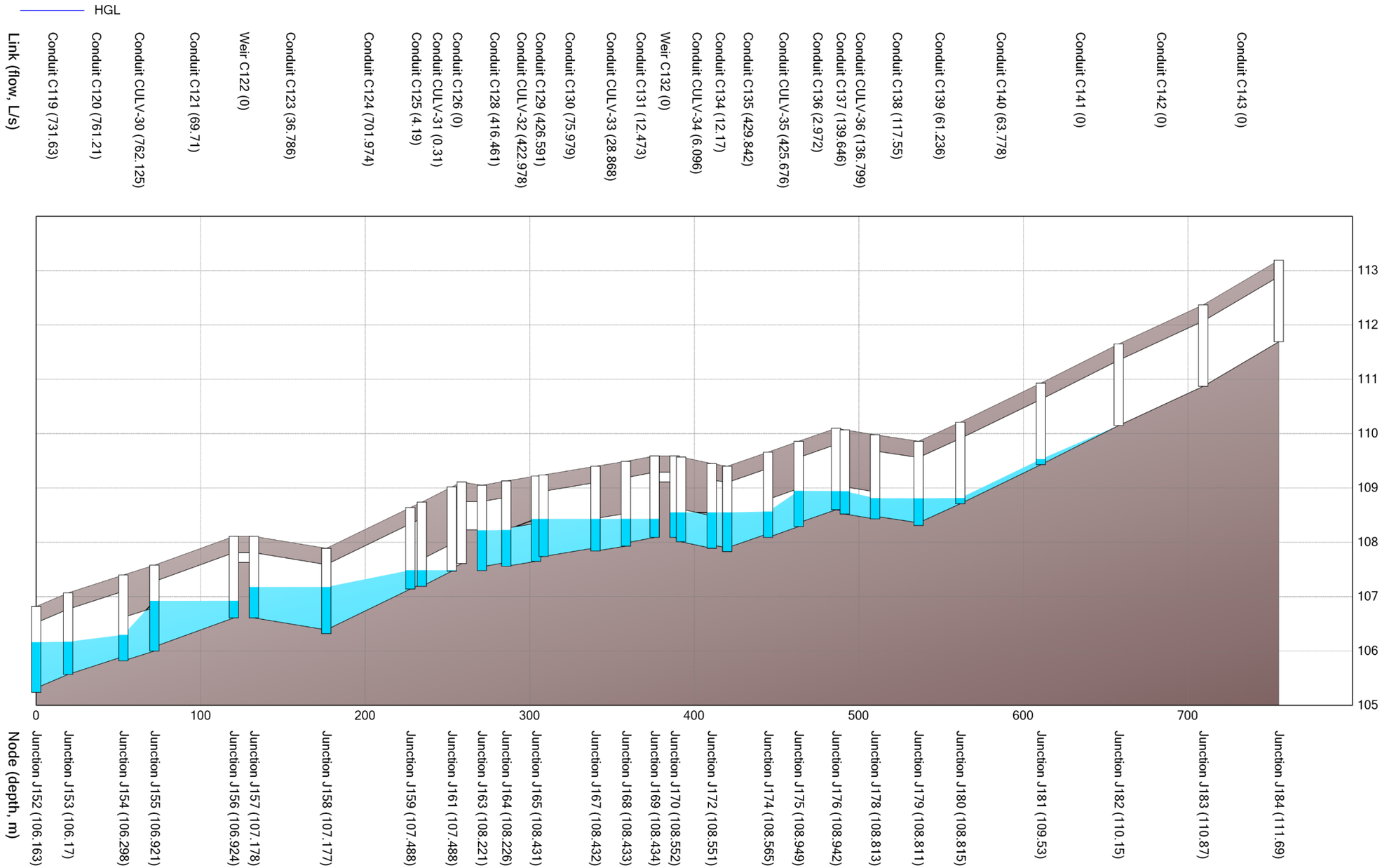


Junction J052	Junction J053	Junction J054	Junction J055	Junction J056	Junction J057	Junction J058	Junction J059	Junction J060	Junction J061
CWSEL = 108.7816 m	CWSEL = 108.8113 m	CWSEL = 109.1303 m	CWSEL = 109.3583 m	CWSEL = 109.6259 m	CWSEL = 109.6499 m	CWSEL = 109.6537 m	CWSEL = 109.6547 m	CWSEL = 109.6995 m	CWSEL = 109.8439 m
11/28/2023 01:37AM	11/28/2023 01:36AM	11/28/2023 01:33AM	11/28/2023 01:32AM	11/28/2023 01:31AM	11/28/2023 01:31AM	11/28/2023 01:31AM	11/28/2023 01:31AM	11/28/2023 01:35AM	11/28/2023 01:33AM

Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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Street 17 West Ditch



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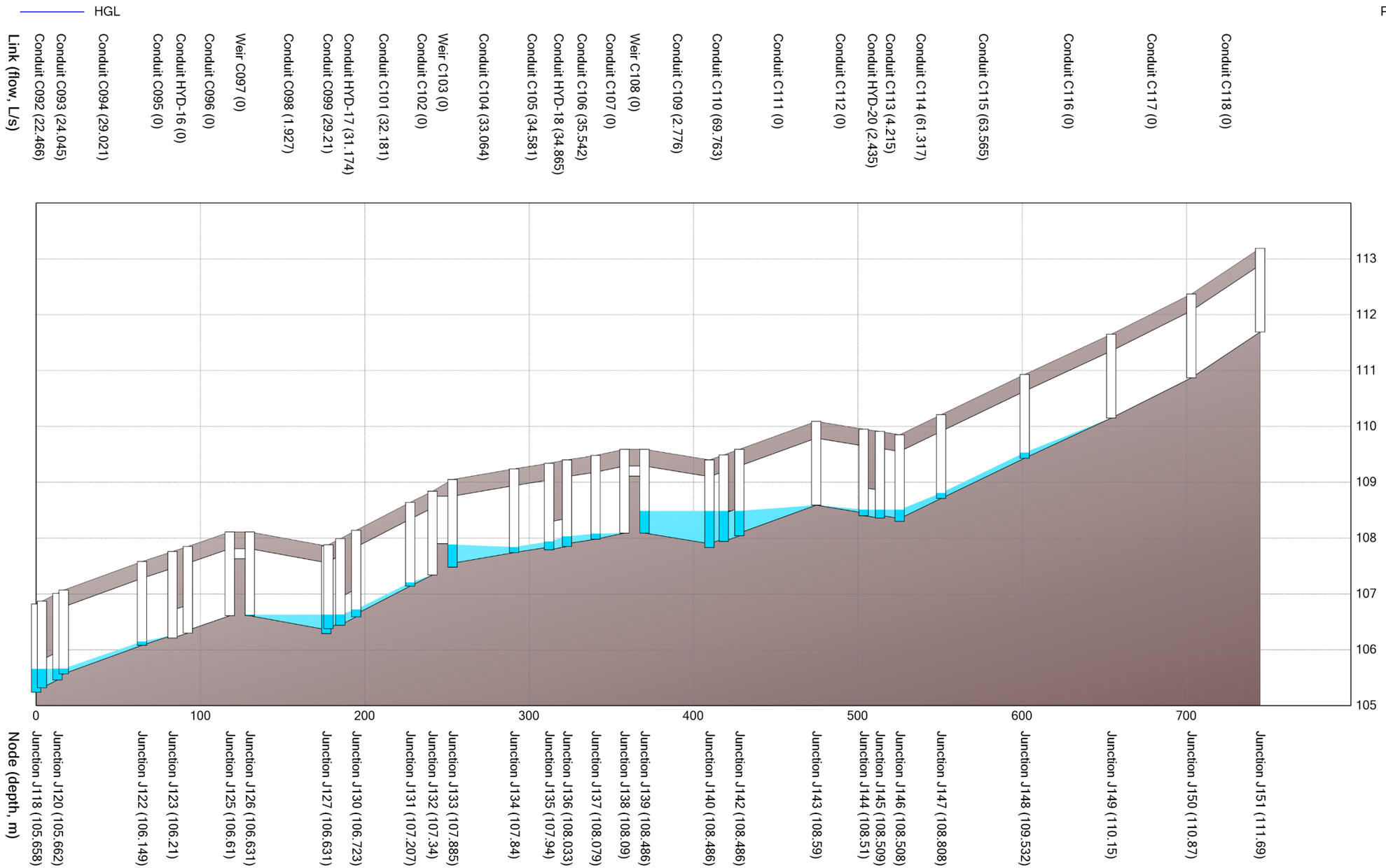
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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Street 17 East Ditch

HGL

Peak values



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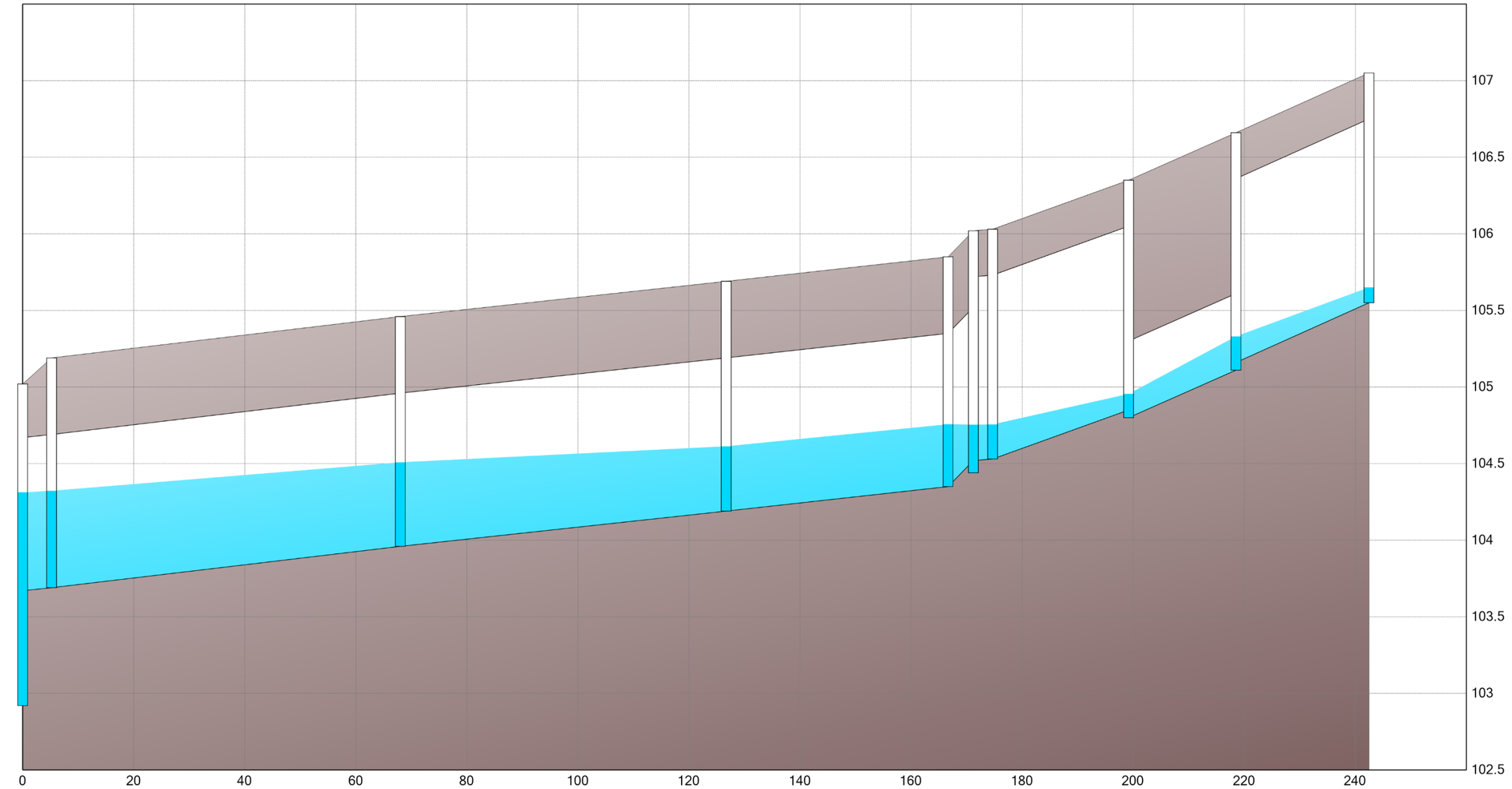
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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Street 18 North and Pond B Easement (to Pond B DICB West Ditch)

HGL

Peak values



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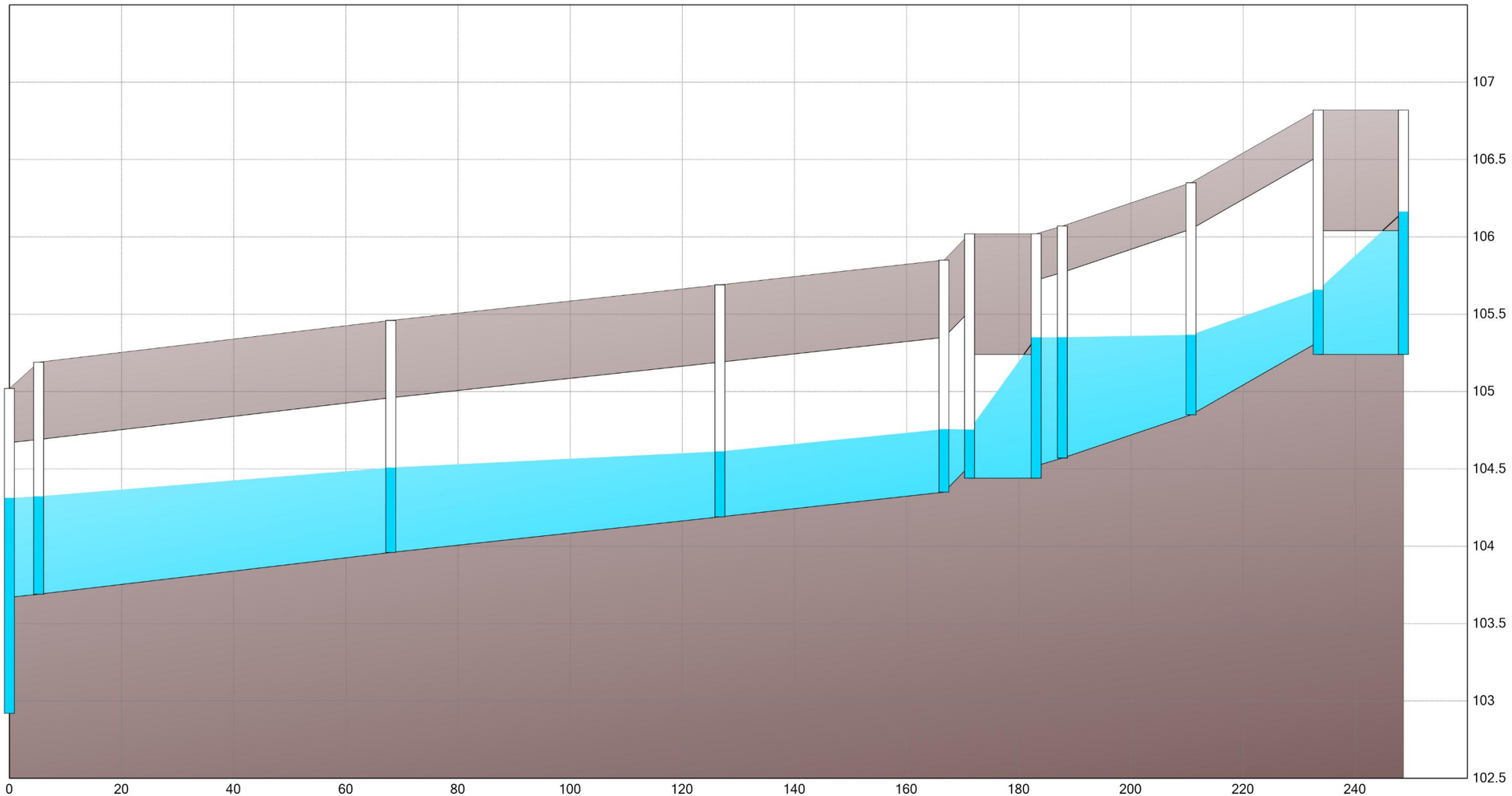
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 10-year 4-hour Chicago

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Street 18 South and Pond B Easement (to Pond B DICB West Ditch)

HGL — Peak values

Links:
- C081 Q=1449.926 L/s
- C082 Q=1485.384 L/s
- C083 Q=818.542 L/s
- C084 Q=795.248 L/s
- C085 Q=796.339 L/s
- CULV-28 Q=754.466 L/s
- C089 Q=754.385 L/s
- C090 Q=765.018 L/s
- C091 Q=788.789 L/s
- CULV-29 Q=768.417 L/s

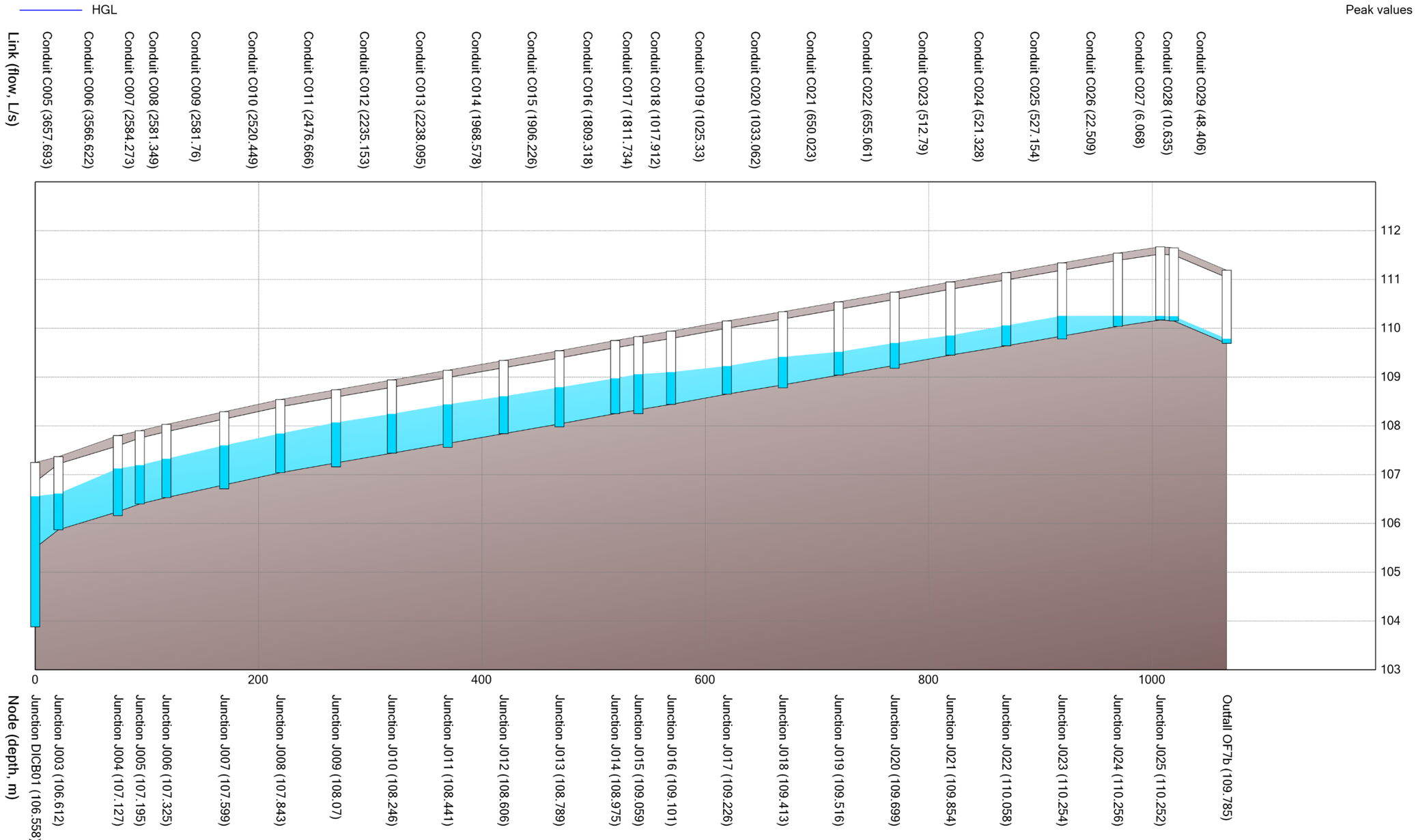


Nodes:
- DICB02 H=104.3119 m
- J106 H=104.3227 m
- J107 H=104.5085 m
- J108 H=104.6129 m
- J109 H=104.757 m
- J110 H=104.7547 m
- J115 H=105.3497 m
- J116 H=105.351 m
- J117 H=105.3665 m
- J118 H=105.6585 m
- J152 H=106.1632 m

Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Street 15 North Ditch (to Pond A DICB)

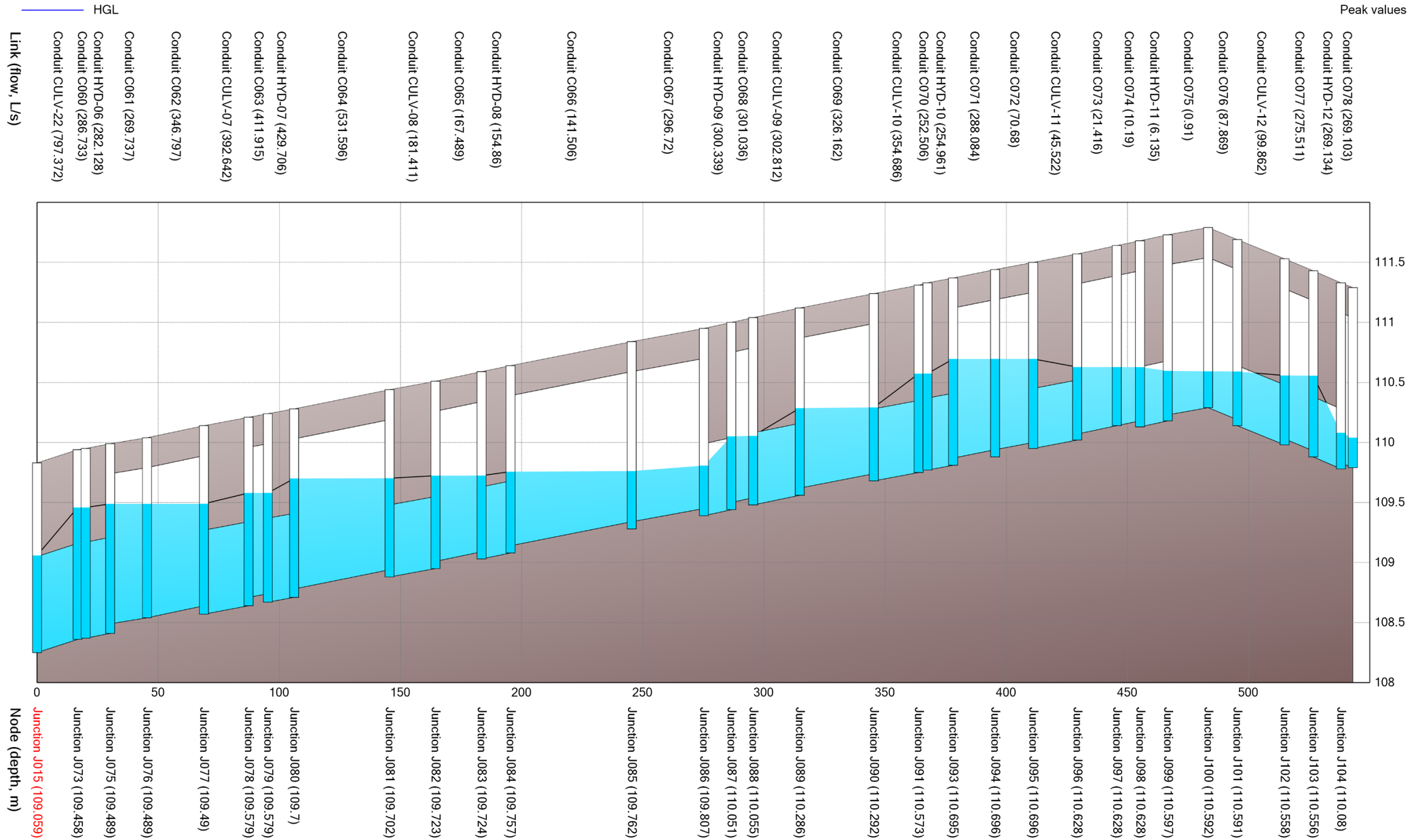


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Street 15 South Ditch (to Culvert crossing at Street 16)

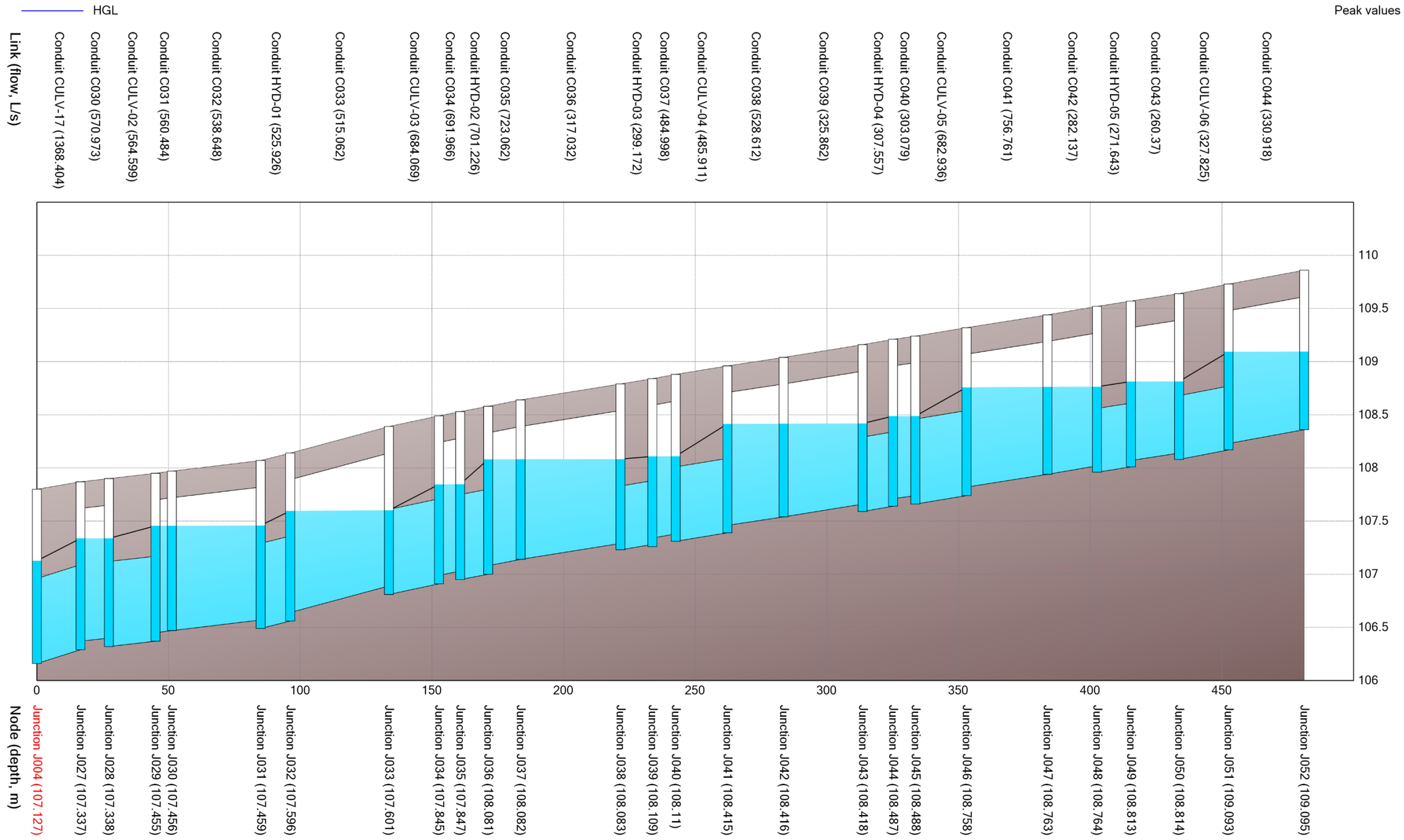


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Street 15 South Ditch (to Culvert crossing at cul-de-sac)

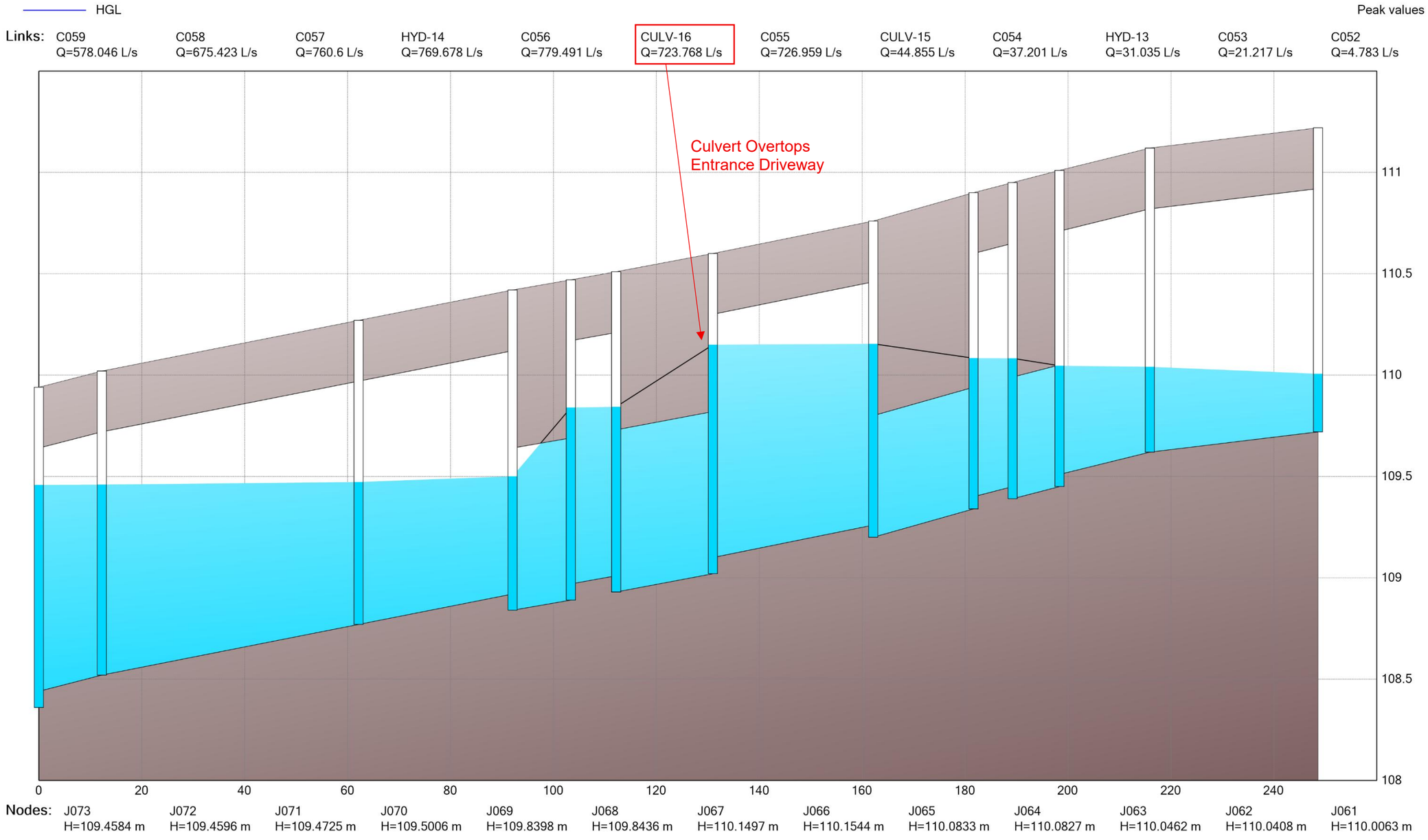


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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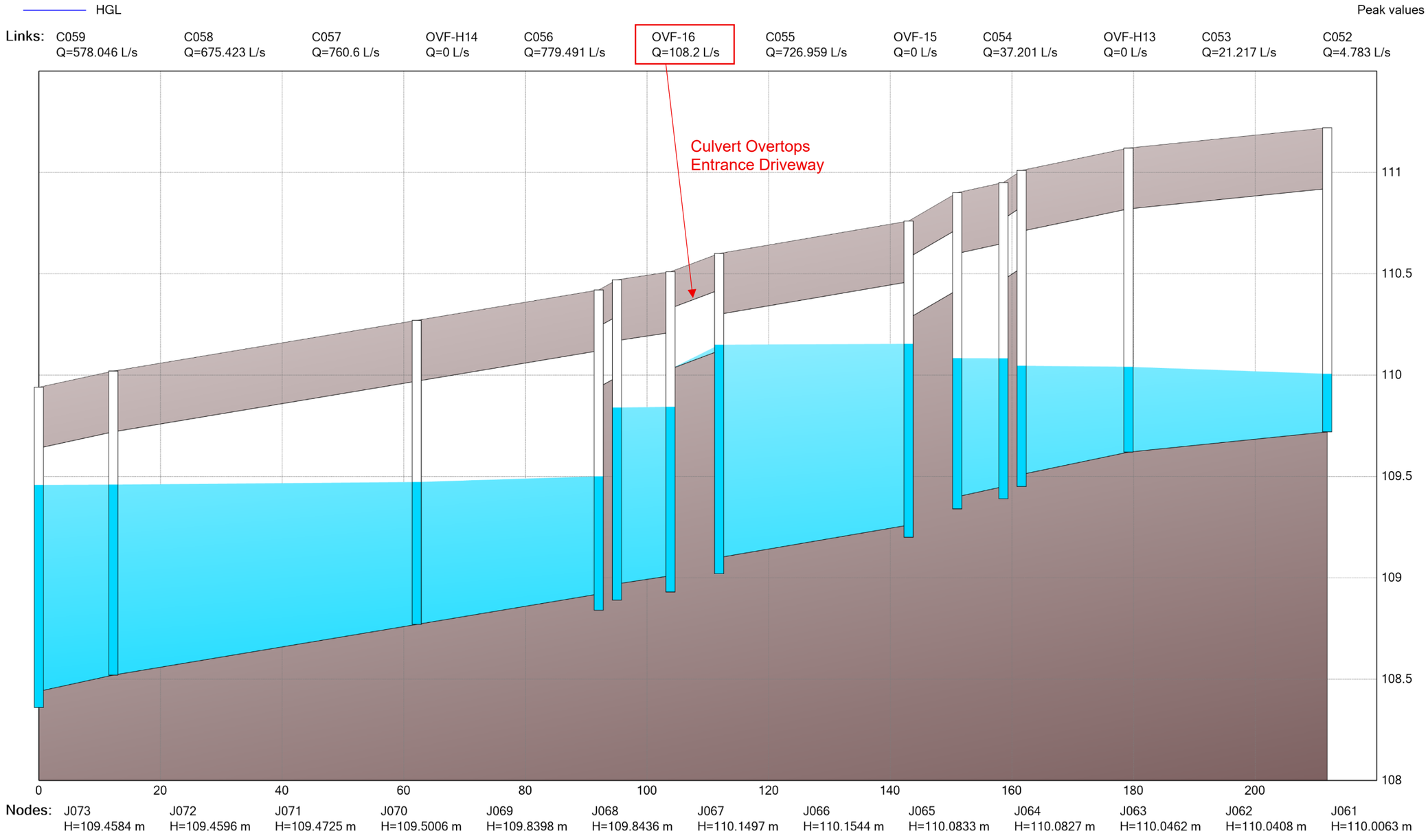
Street 16 West Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Engineers, Planners & Landscape Architects

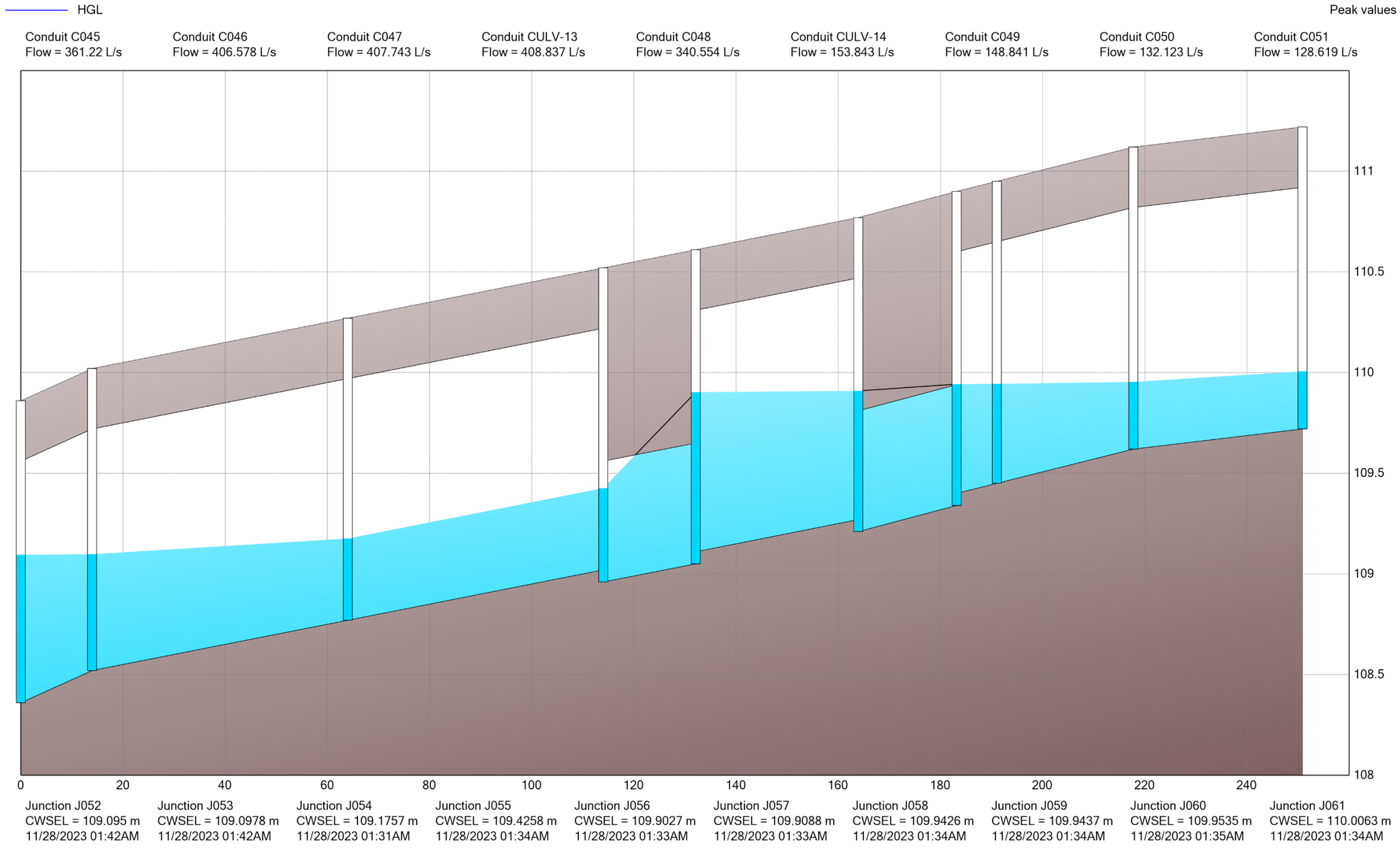
Show Overtopping – Street 16 West Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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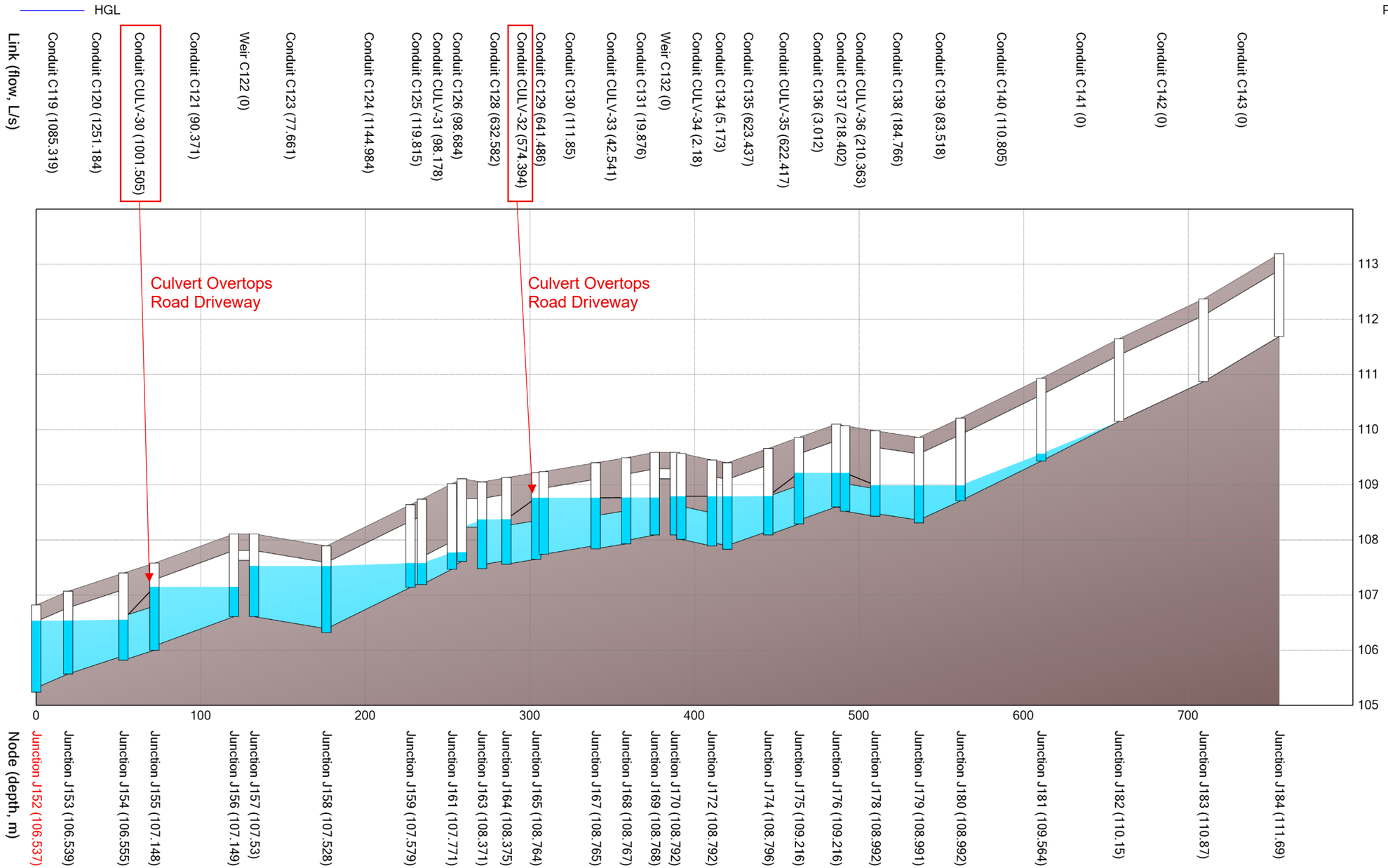
Street 16 East Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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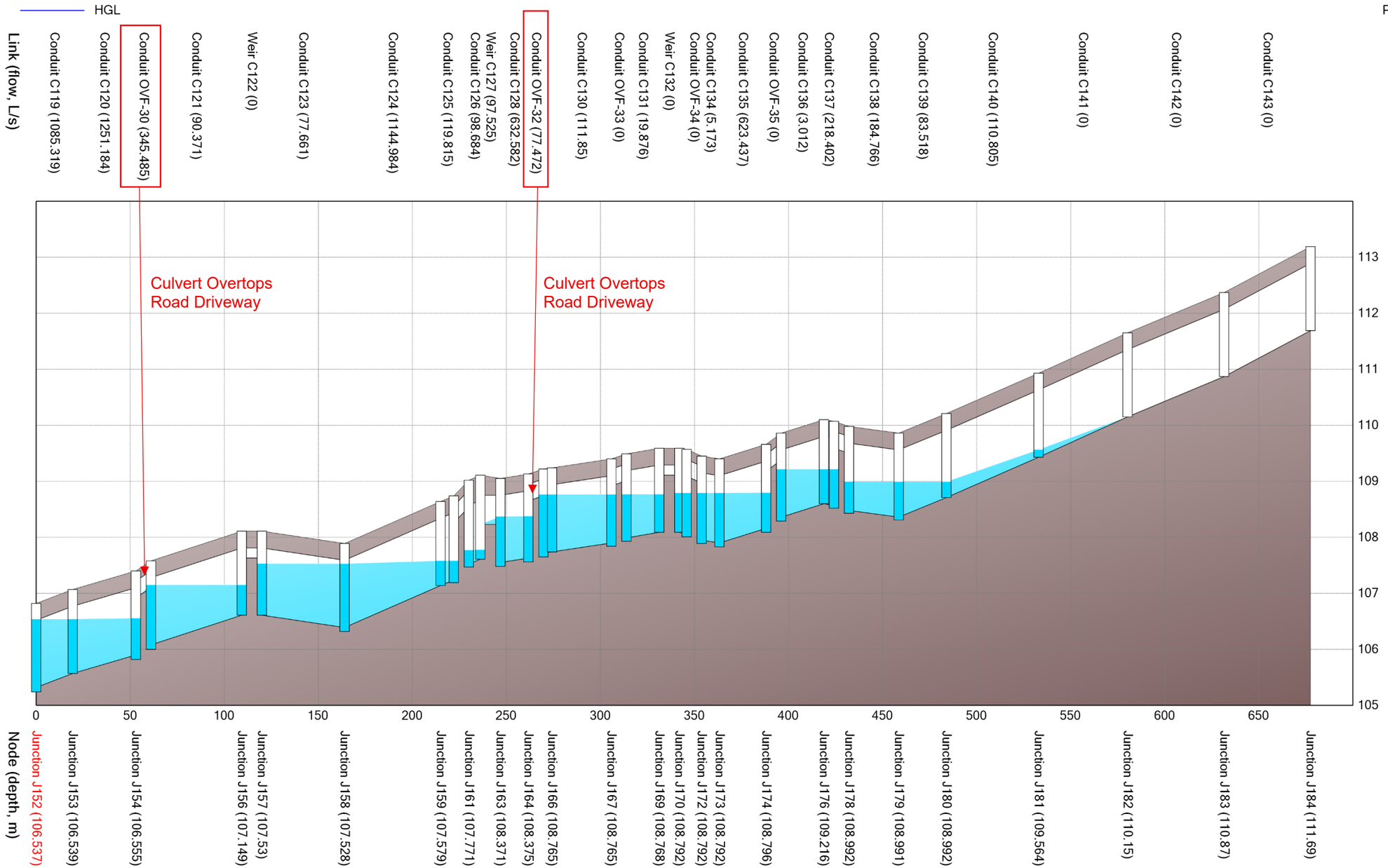
Street 17 West Ditch



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Show Overtopping – Street 17 West Ditch

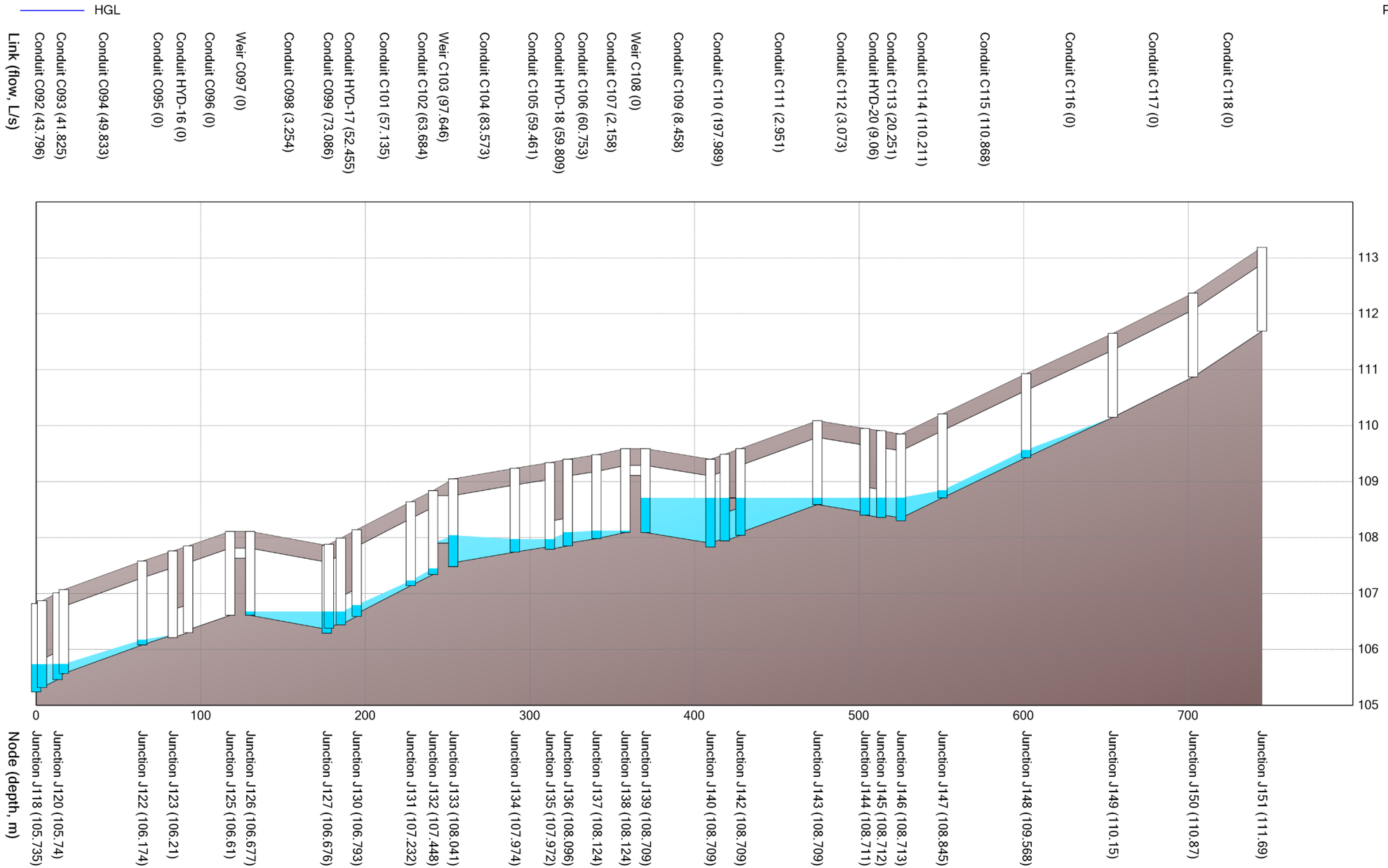


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Street 17 East Ditch



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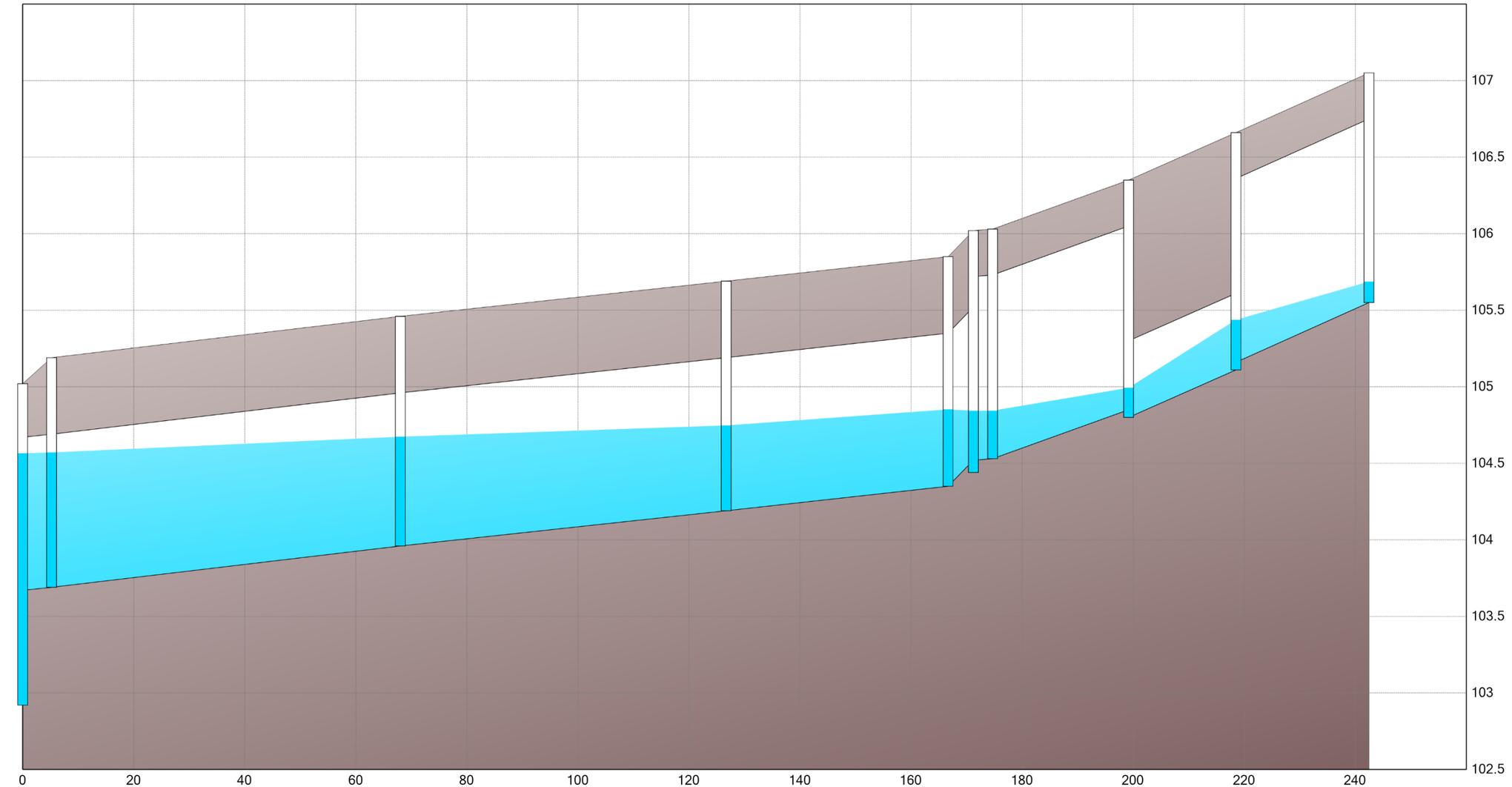
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Street 18 North and Pond B Easement (to Pond B DICB West Ditch)

HGL

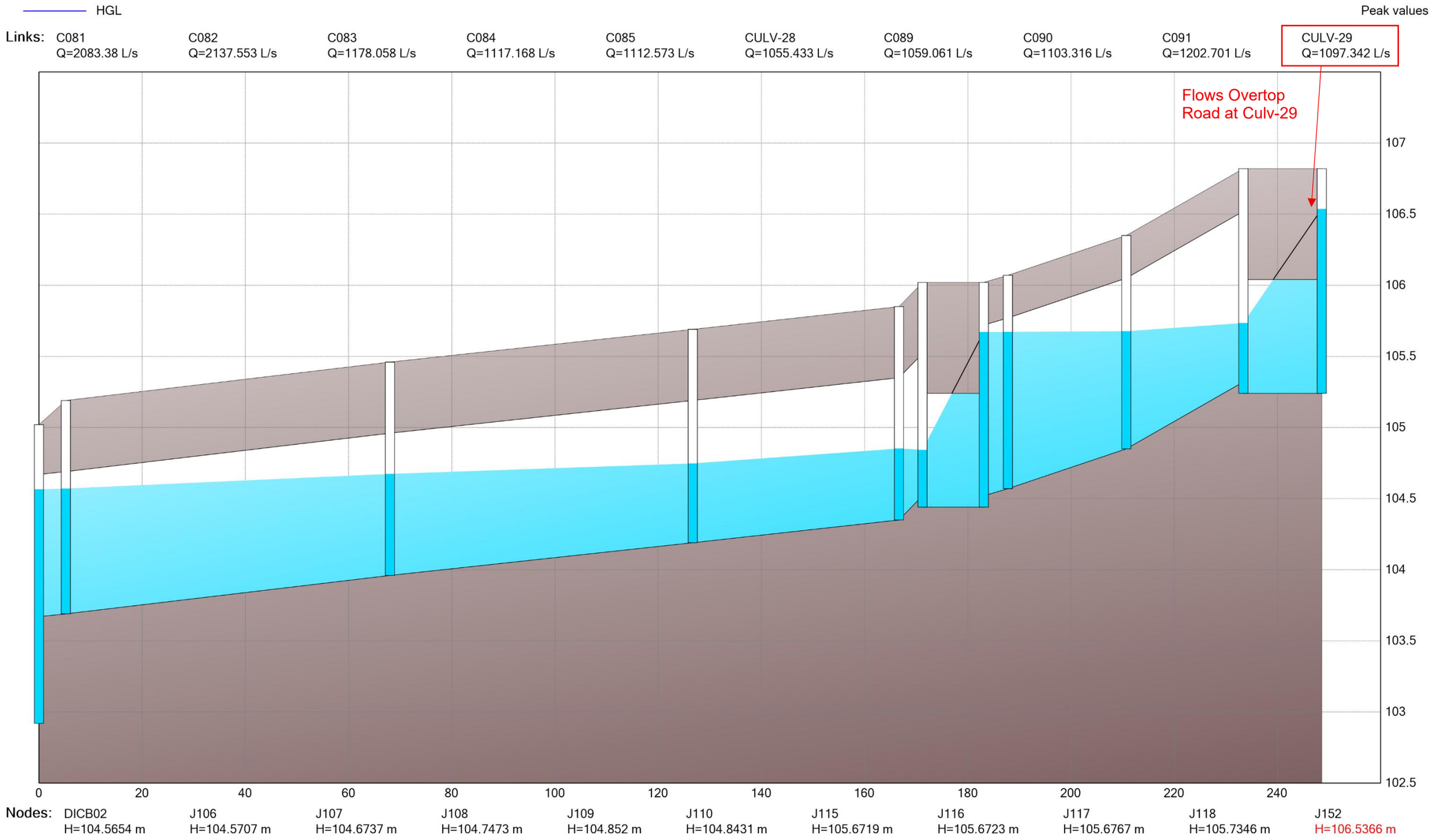
Peak values



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Street 18 South and Pond B Easement (to Pond B DICB West Ditch)

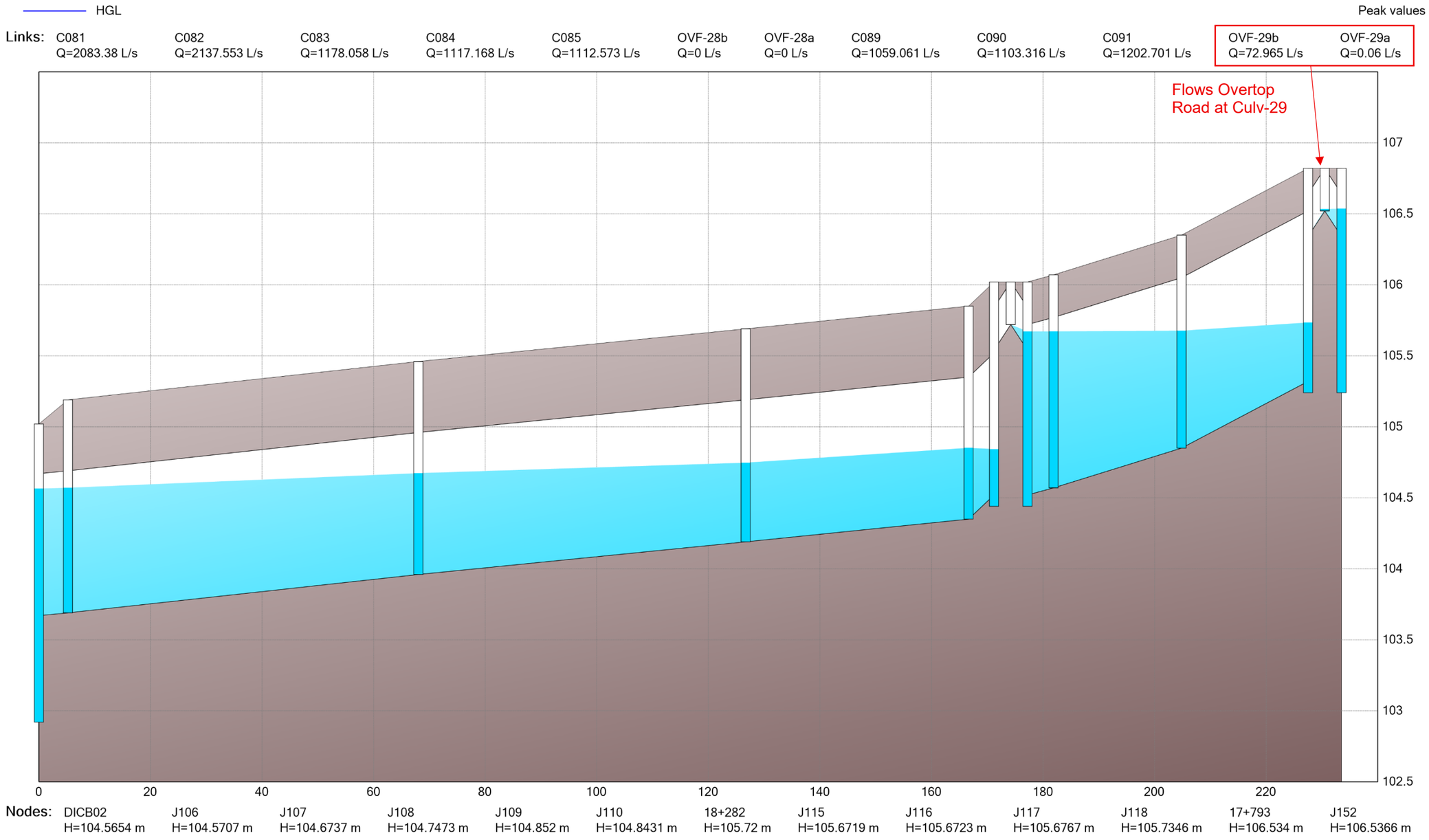


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year 4-hour Chicago

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Show Overtopping – Culv-29

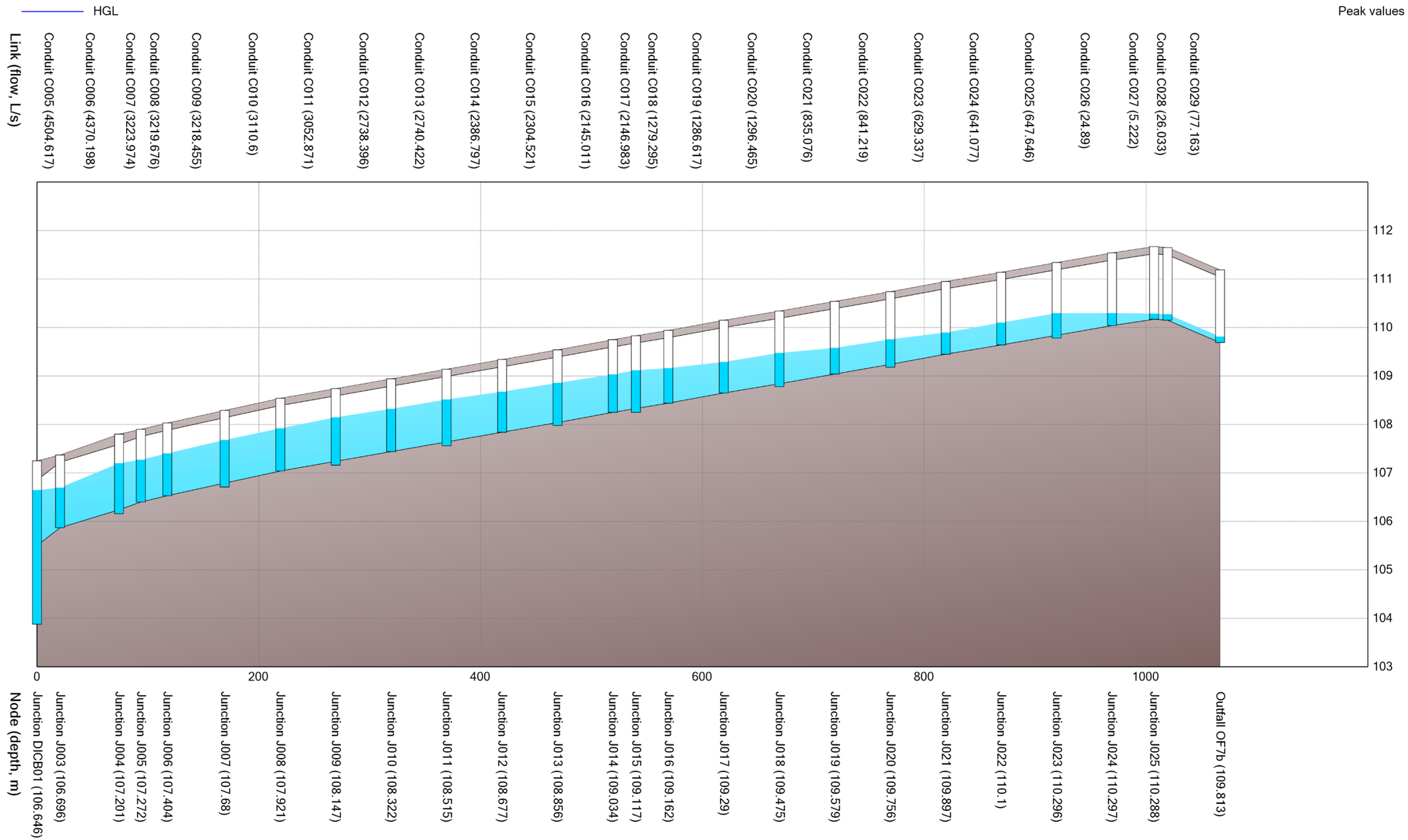


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 15 North Ditch (to Pond A DICB)

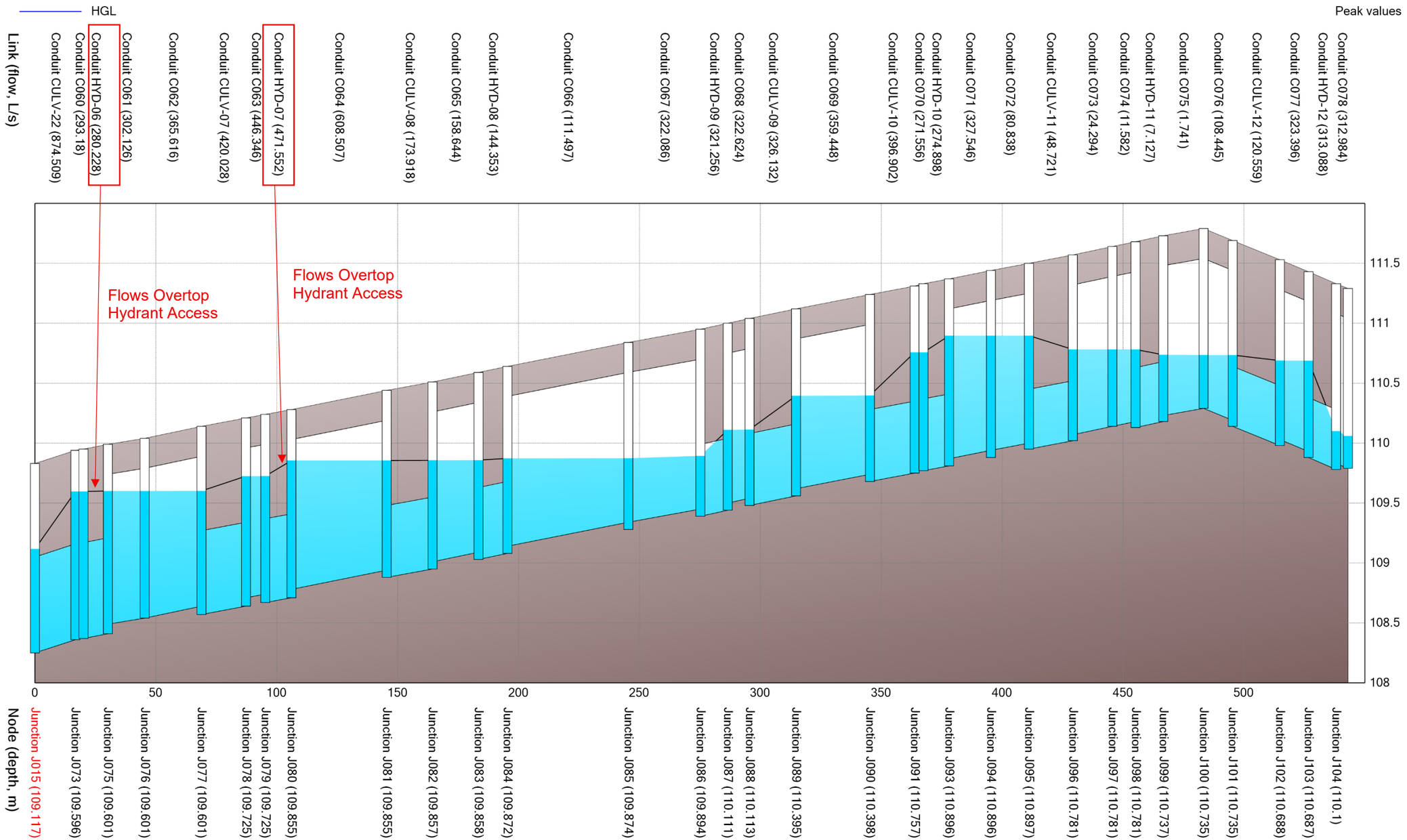


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 15 South Ditch (to Culvert crossing at Street 16)

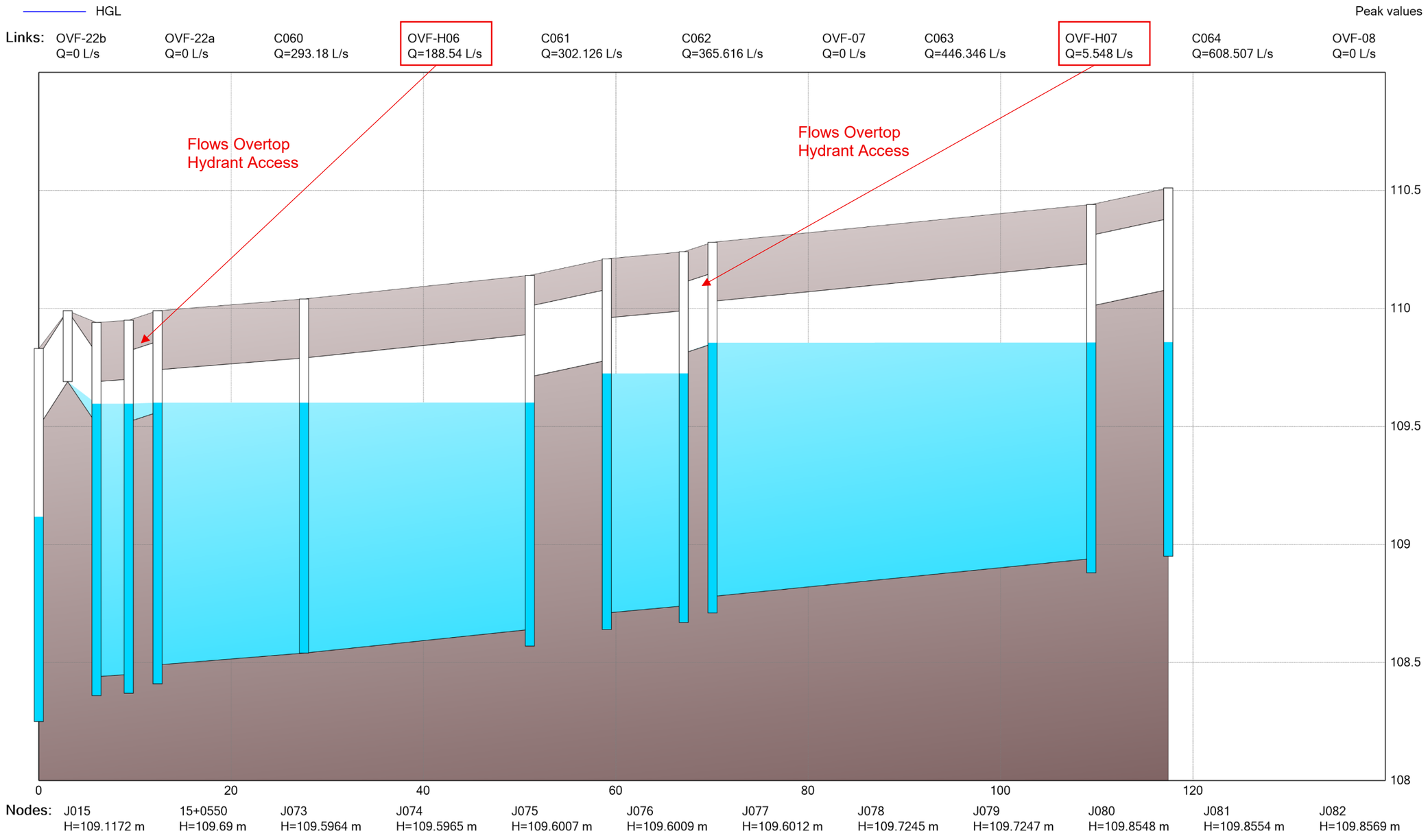


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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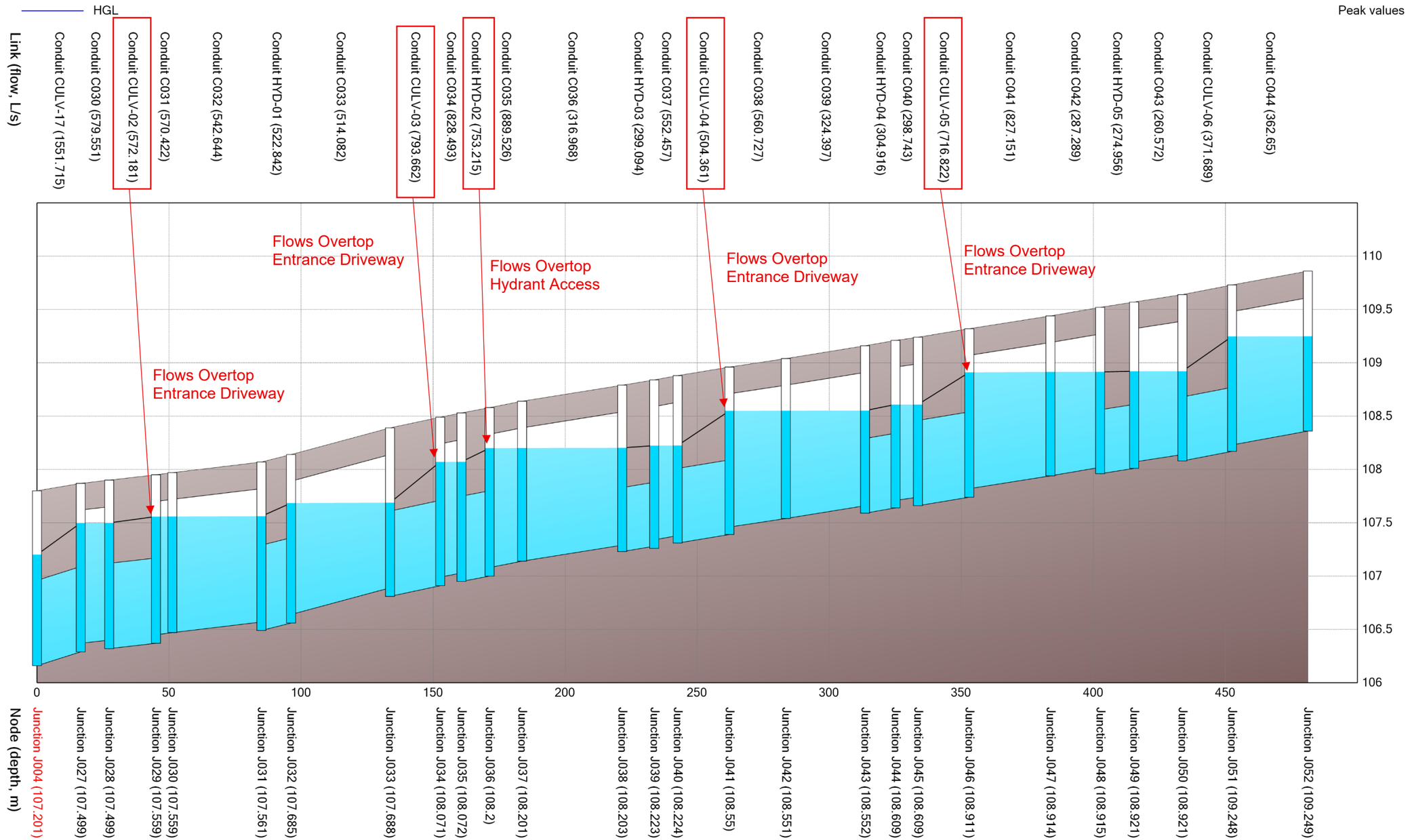
Show Overtopping – Street 15 South Ditch (HYD-06 and HYD-07)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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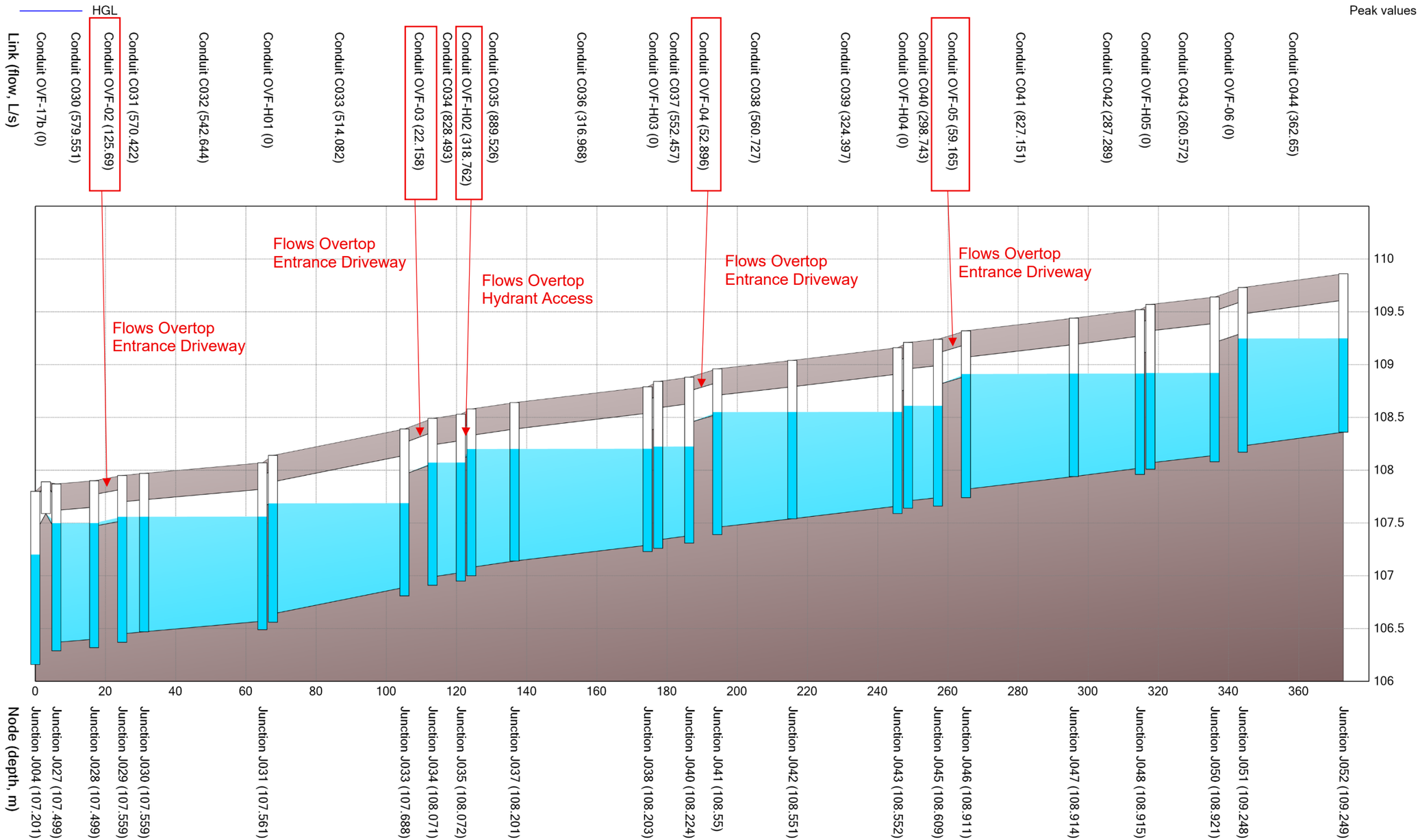
Street 15 South Ditch (to Culvert crossing at cul-de-sac)



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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<u>Show Overtopping</u> – Street 15 South Ditch (to Culvert crossing at cul-de-sac)

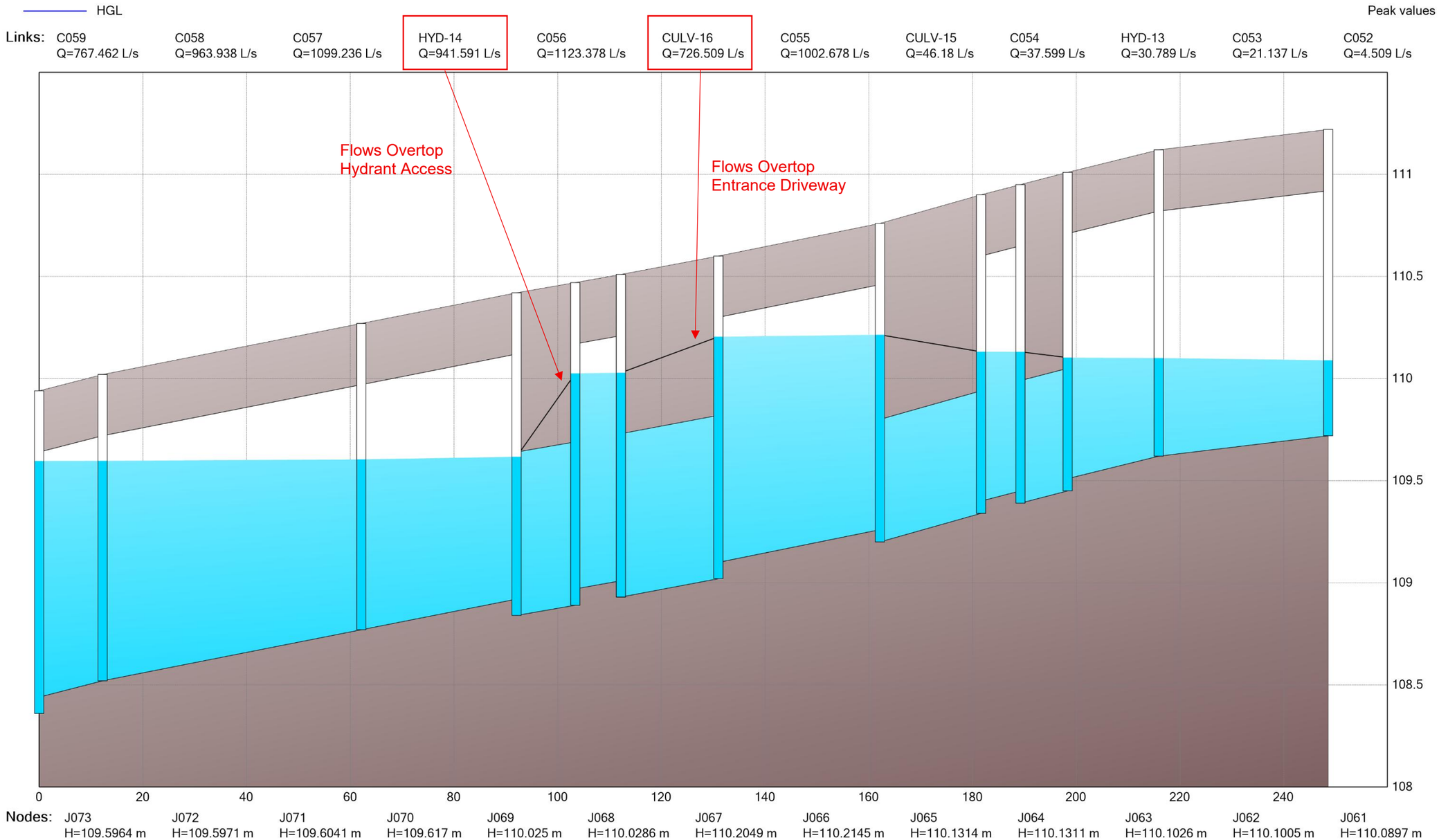


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 16 West Ditch

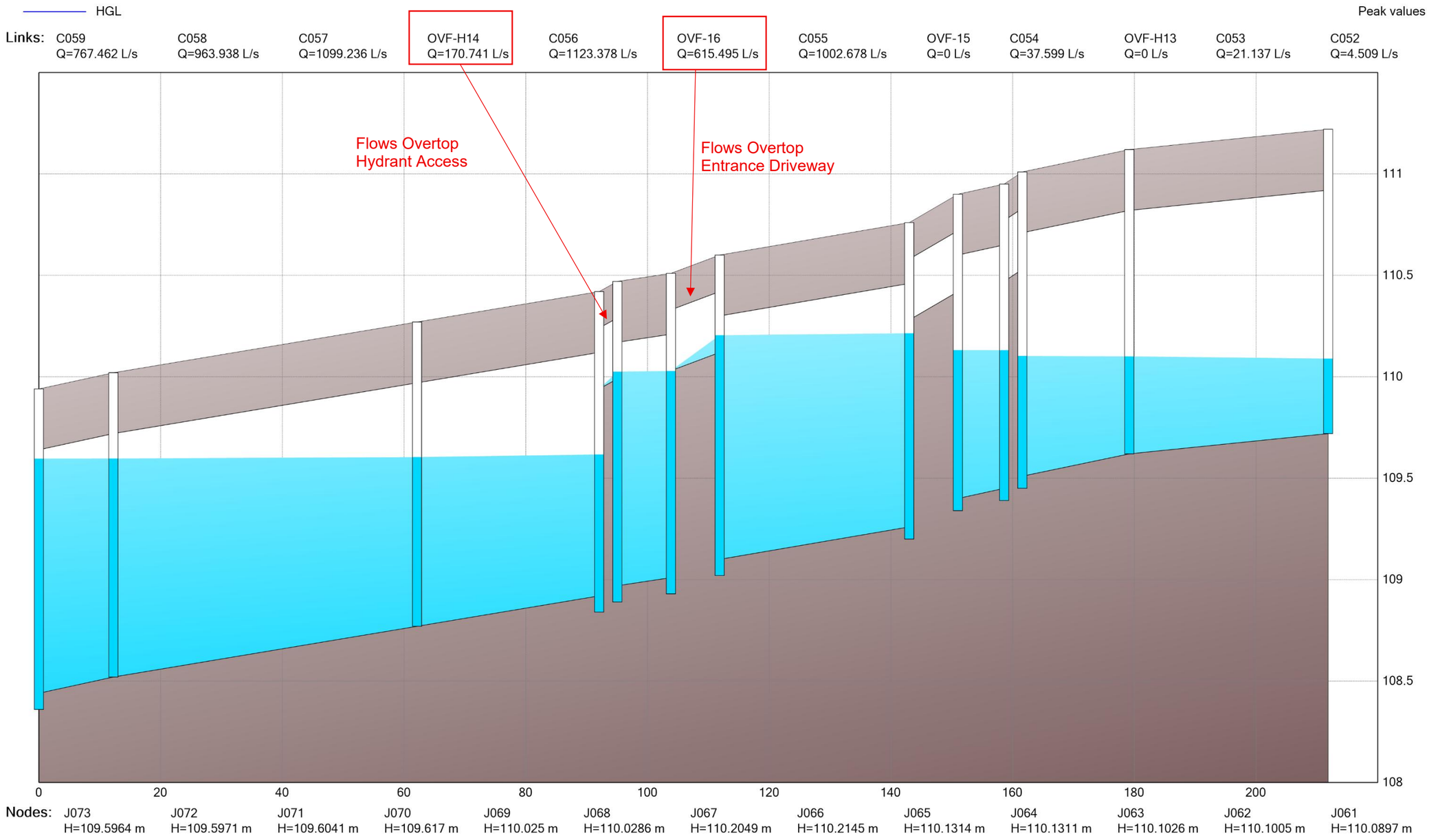


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Show Overtopping – Street 16 West Ditch



Date: 2025-11-03
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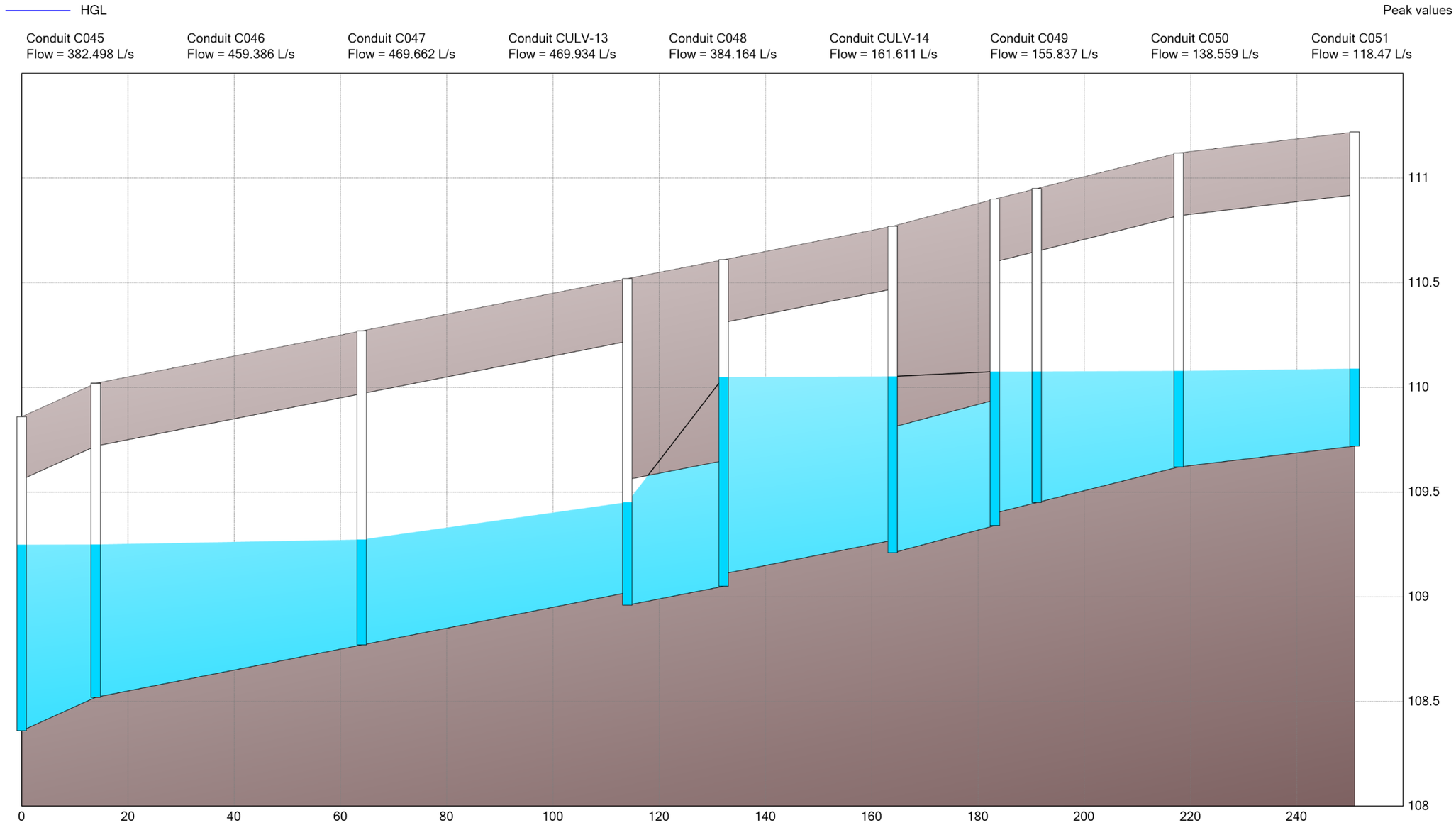
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 16 East Ditch

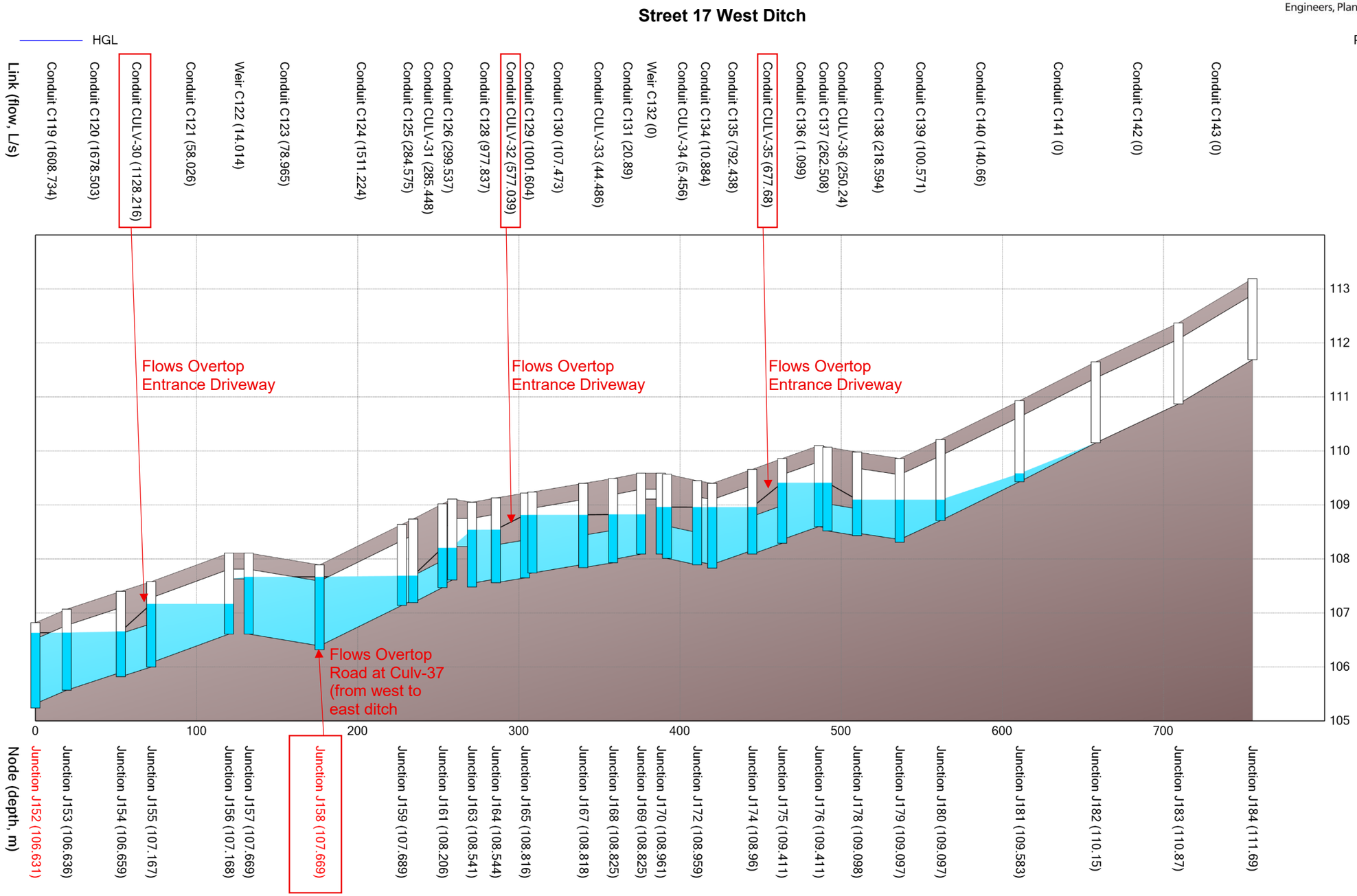
HGL

Peak values



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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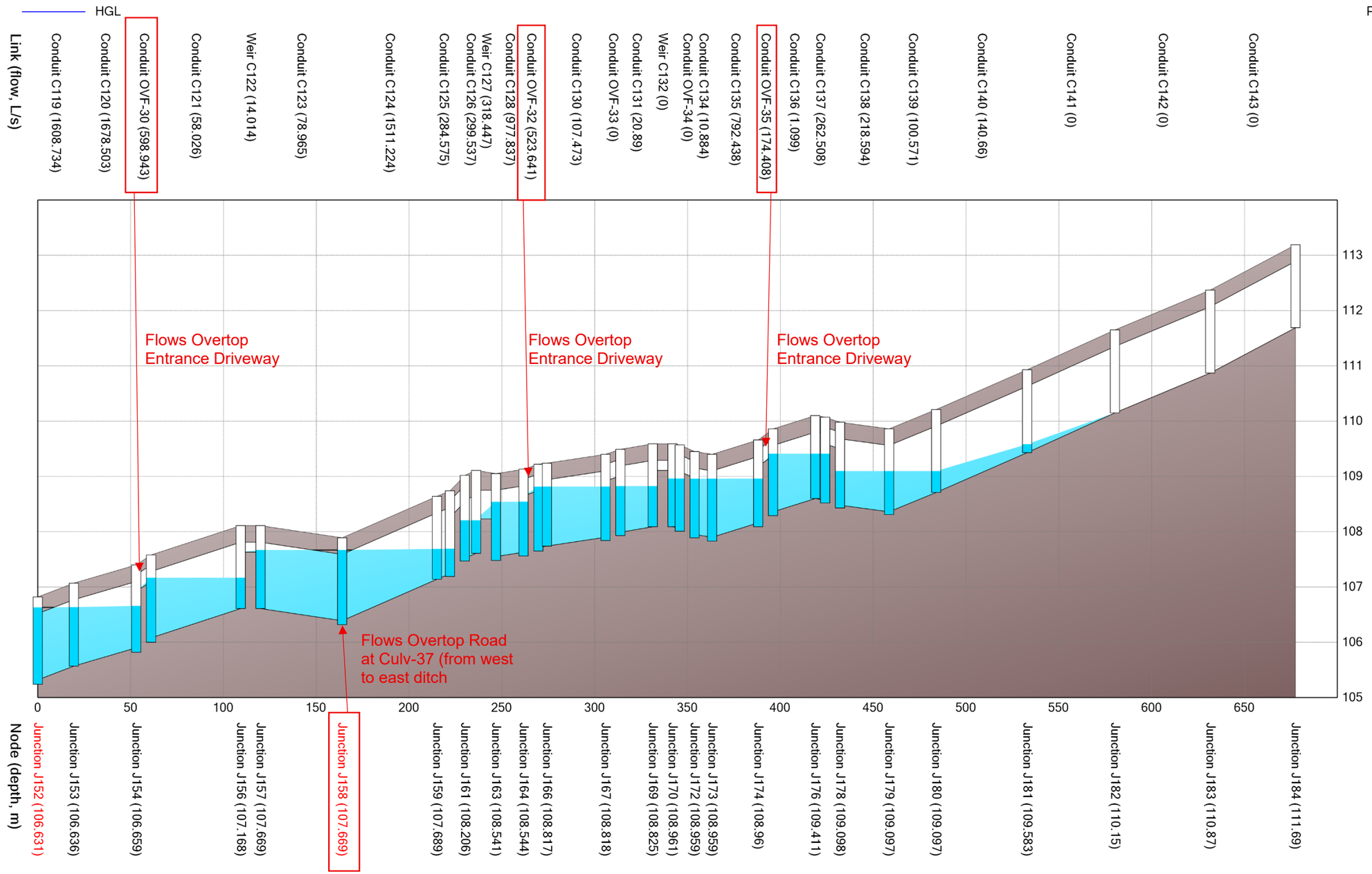


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Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Show Overtopping – Street 17 West Ditch

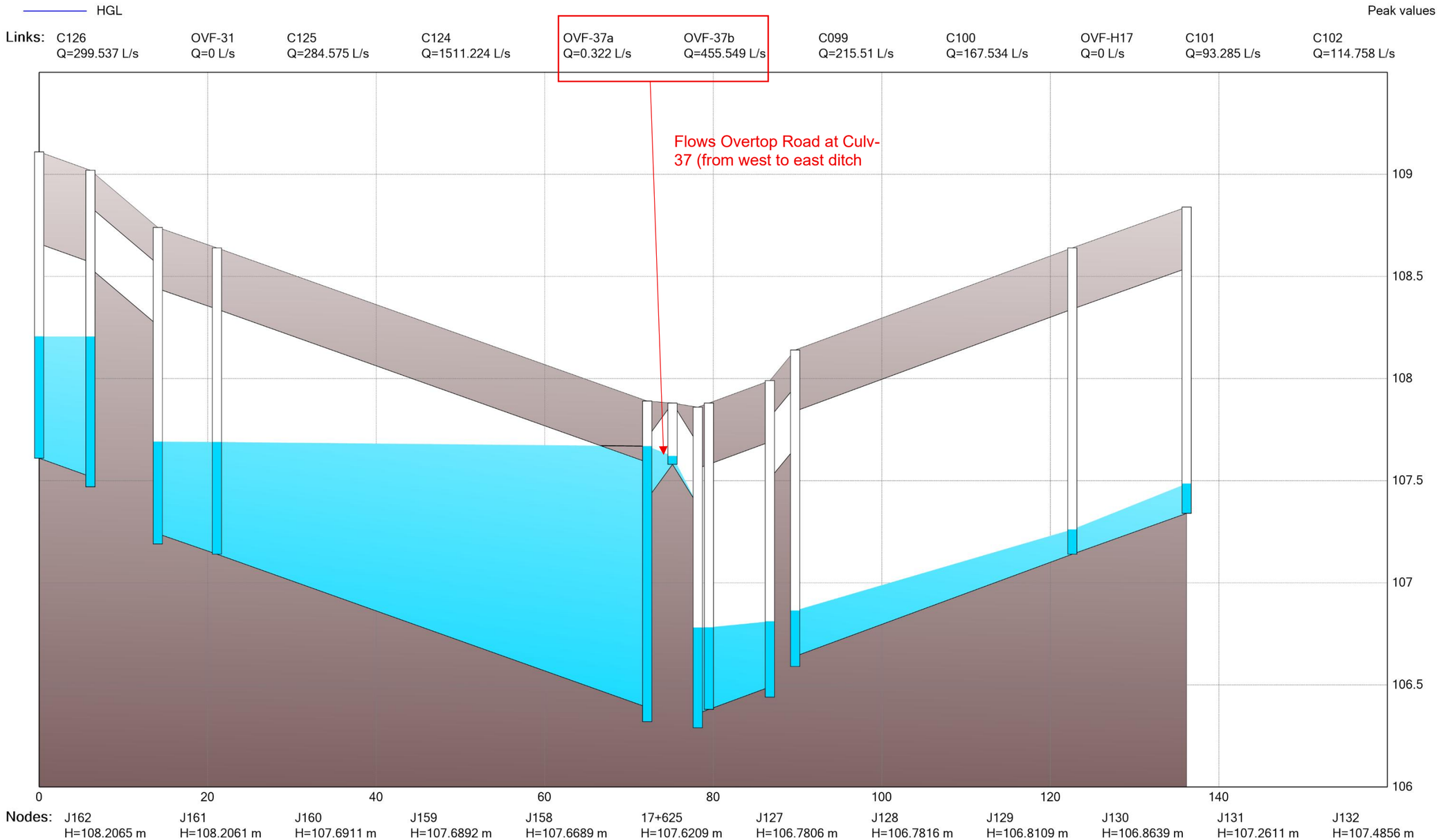


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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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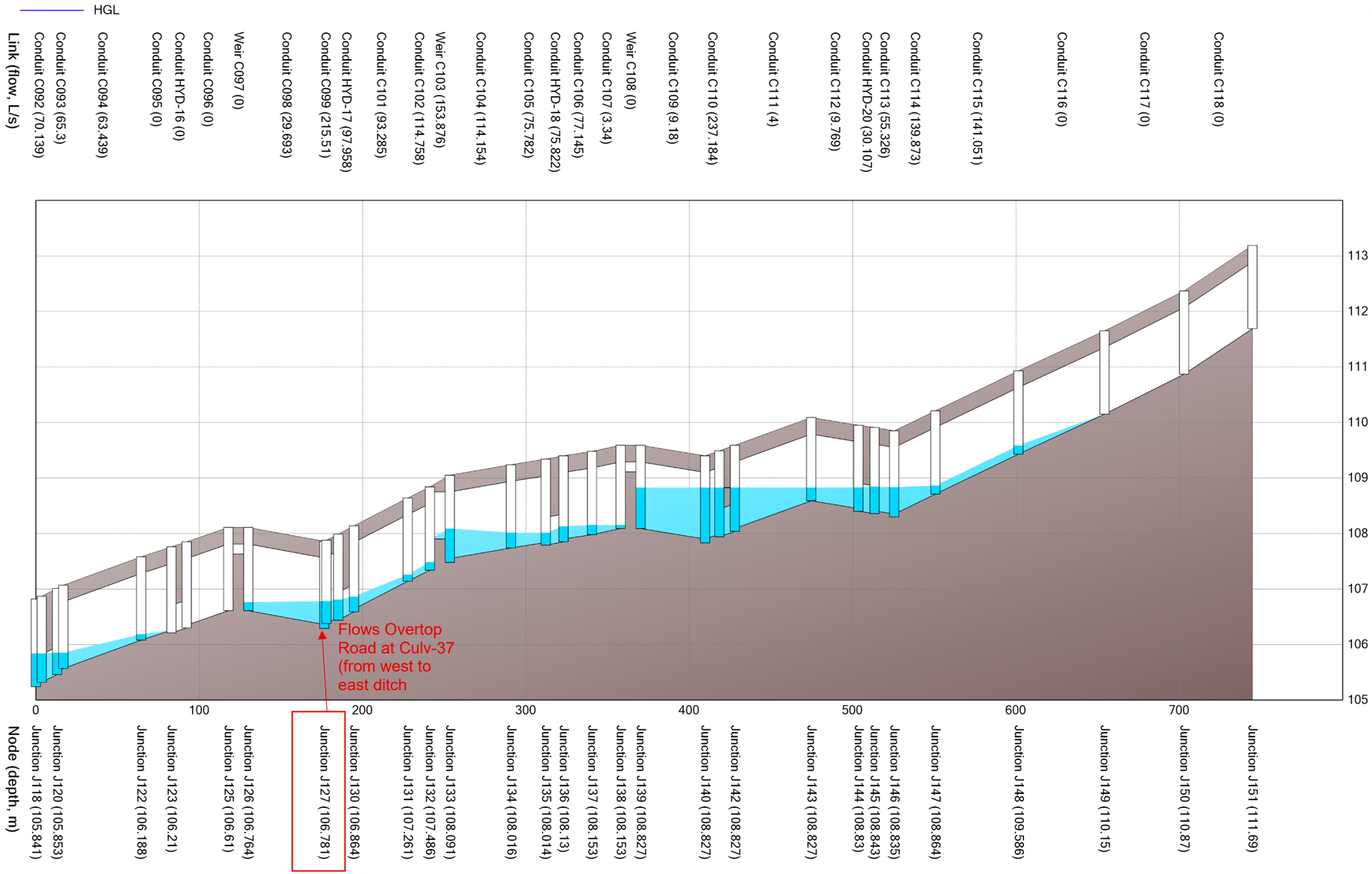
Show Overtopping – At Culv-37 Crossing Street 17



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 17 East Ditch



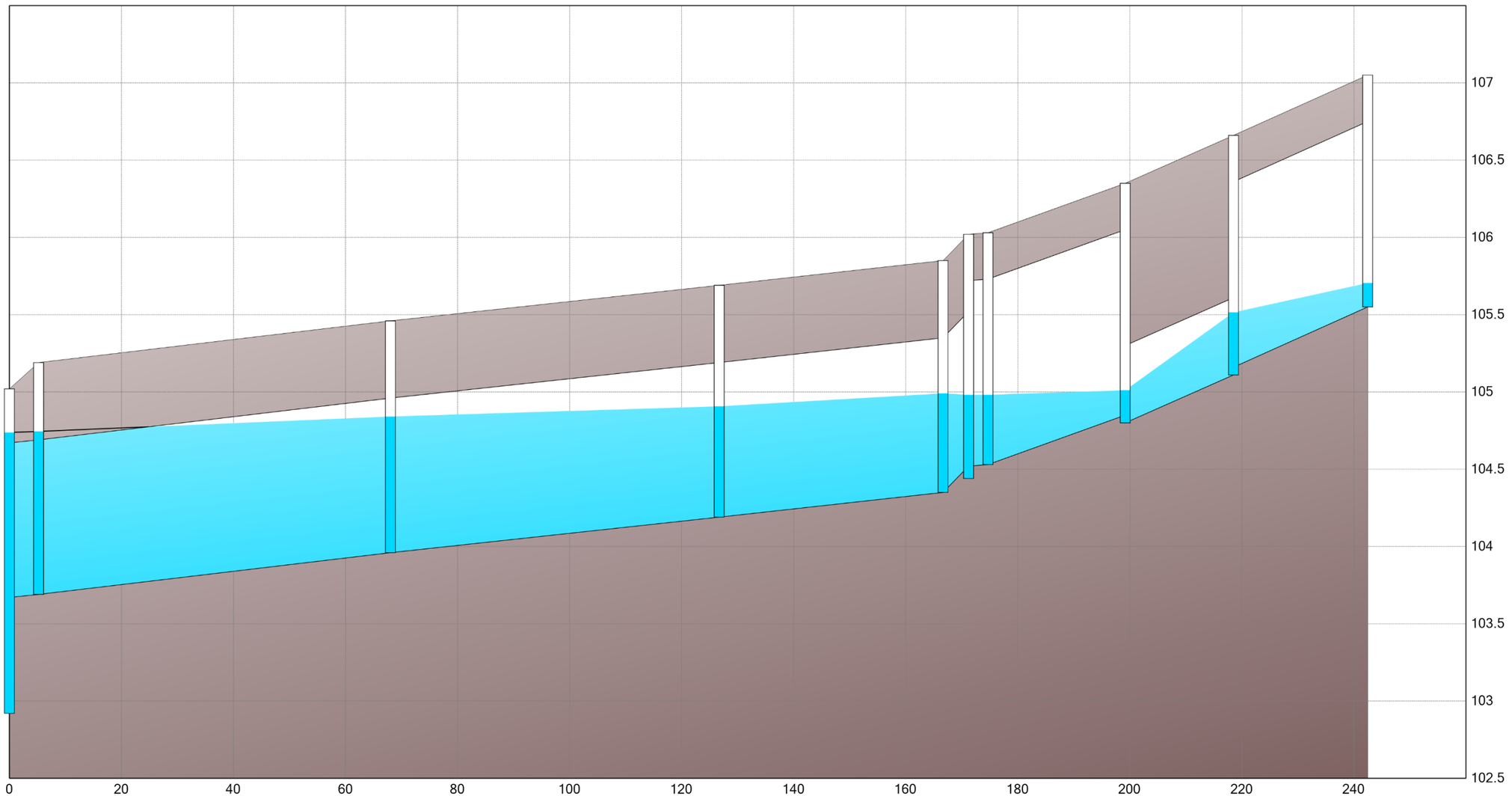
Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 18 North and Pond B Easement (to Pond B DICB)

HGL

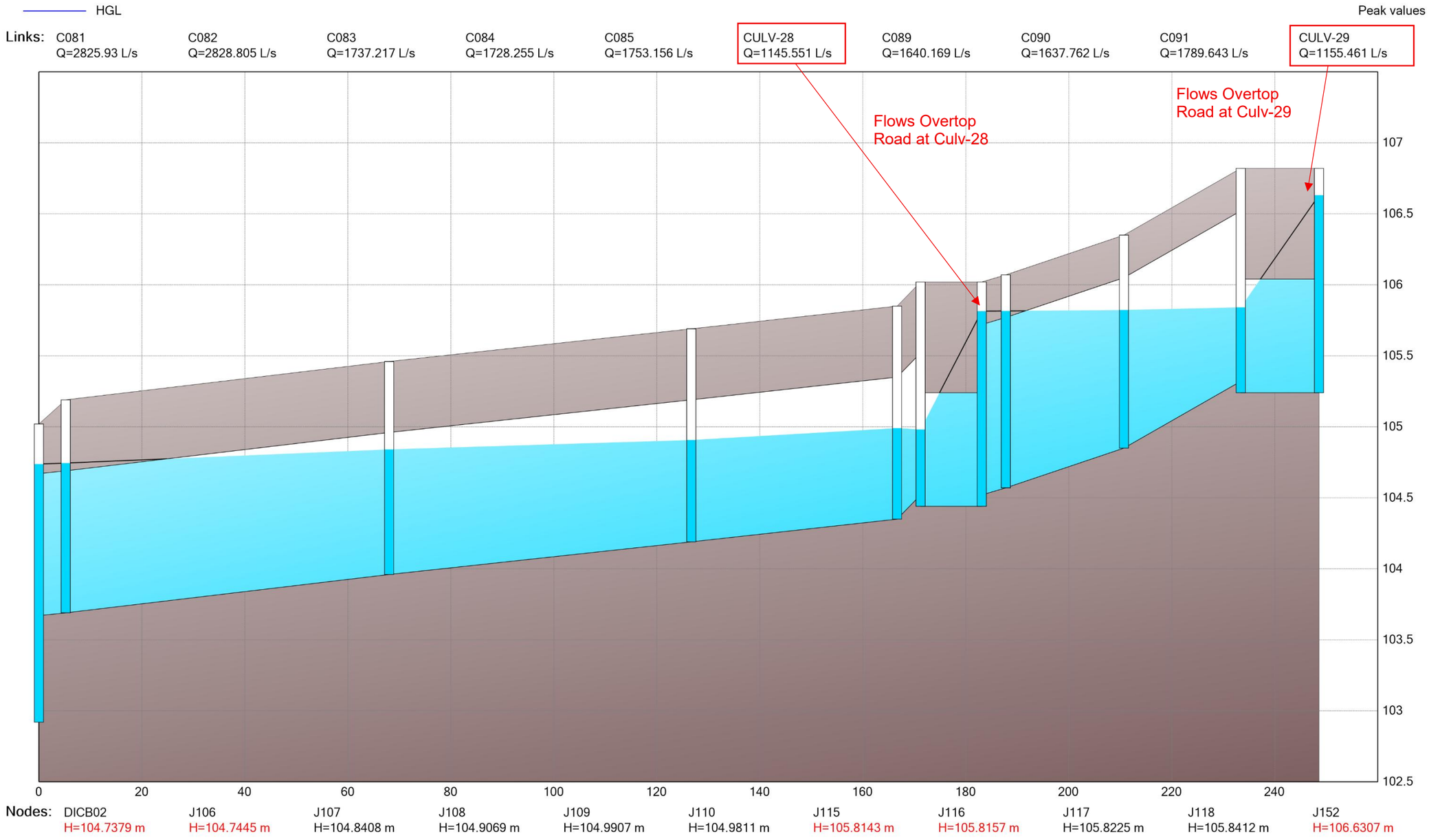
Peak values



Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Street 18 South and Pond B Easement (to Pond B DICB)

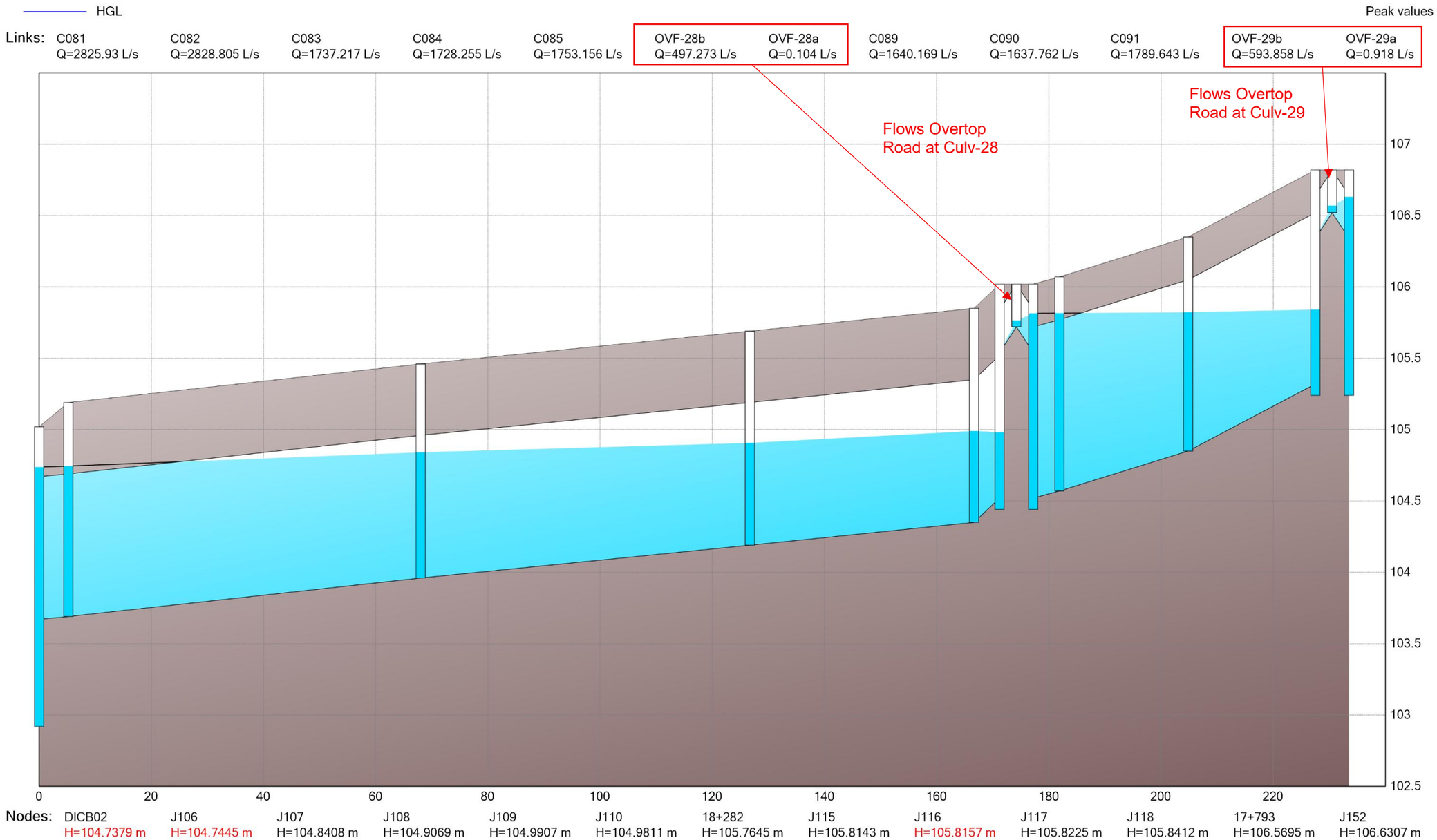


Date: 2025-11-03
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Carp Airport Phase 2 Business Park (102085-14)
Ditch HGL Profiles – 100-year + 20% 4-hour Chicago (Stress Test)

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Show Overtopping –Culv-28 and Culv-29



Date: 2025-11-03
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Appendix C
Northeast and Southeast Tributaries
100-year Water Levels

- *'Carp Airport – Channel and Culvert Design Realigned Tributaries (Phase 1 Business Park)'* Memorandum prepared by Novatech dated September 11, 2018
- Receiving Watercourse Water Levels
- HY-8 Culvert Results
    - Northeast Tributary Carp Road Crossing
    - Southeast Tributary Carp Road Crossing

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M E M O R A N D U M

DATE: **SEPTEMBER 11, 2018**

TO: **SUSAN GORDON**

FROM: **CONRAD STANG**

RE: **CARP AIRPORT – CHANNEL AND CULVERT DESIGN**
REALIGNED TRIBUTARIES (PHASE 1 BUSINESS PARK)

CC: **MIKE PETEPIECE**

JOB NO. **102085-12**

This memorandum provides information on the channel and culvert design for the proposed realignment of the Southeast and Northeast Tributaries in Phase 1 of the West Capital Airpark Business Park. The tributaries are considered fish habitat and the realigned watercourses and proposed culverts have been sized for stormwater conveyance and fish passage.

Background

Immediately south of Russ Bradley Road, the watercourse referred to as the Southeast Tributary diverges into two channels: Southeast Tributary (East) and Northeast Tributary. The proposed works include the realignment of a section of each watercourse and new culvert crossings. No changes are proposed south of the diversion.

- Southeast Tributary (East)
    - Approximately 500m of the existing Southeast Tributary will be realigned through the business park lands south of Russ Bradley Road.
    - The conceptual site layout for the lands south of Russ Bradley Road includes three (3) entrances crossing the Southeast Tributary, which will consist of 2x 900mm dia. CSP culverts at each crossing.
- Northeast Tributary
    - Approximately 100m of the existing Northeast Tributary will be realigned through the business park lands east of Huisson Road.
    - The culvert crossing for the proposed taxiway will consist of 2x 900mm dia. CSP culverts.

The proposed works for the realignment of the Tributaries are shown on the following drawings (attached):

- Realigned Fish Habitat Ditch Russ Bradley Road – (Drawings 102085-FH1 and FH2)
- Fish Habitat Realignment Huisson Road (Drawing 102085-FH3)

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Existing Conditions

The Southeast Tributary has a contributing drainage area of approximately 285 ha upstream of the Business Park. The upstream area is mix of agricultural fields, woodlots, and sand/gravel pits. Refer to Subcatchment C-EX1 on the *Business Park Development Pre-Development Storm Drainage Areas Plan* (Drawing 102085-SWM5).

The Southeast Tributary (East) crosses Russ Bradley Road through an existing 1200mm CSP culvert at the intersection with Carp Road and flows north on the west side of Carp Road. The Northeast Tributary crosses Russ Bradley Road through an existing 1200mm CSP just east of Huisson Road and flows northeast through the Business Park towards Carp Road. Both tributaries ultimately drain to the Carp River.

Proposed 50/50 Split of Flows

The proposed design will maintain an approximate 50/50 split of flows from the upstream drainage area between the Southeast Tributary (East) and the Northeast Tributary. The flow split is consistent with the hydrologic modeling completed as part of the approved S*tormwater Management Report for the West Capital Airpark (Novatech, November 29, 2013).* The model input and output data (SWMHYMO) are attached.

The proposed works include the construction of a small, riprap lined pool immediately upstream of the flow split to reduce flow velocities and promote a roughly equal distribution of flow between the two tributaries. Refer to the Ditch Diversion Detail shown on the attached *Realigned Fish Habitat Ditch Russ Bradley Road – Notes and Details* (Drawing 102085-FH2).

Peak Flows Through Tributaries

Design flows were calculated using the SWMHYMO hydrologic model. Flows from the upstream drainage area will be split 50/50 between the Southeast Tributary (East) and the Northeast Tributary. Storm runoff from the Carp Airport runway and the existing lands west of Huisson Road will be directed to the Northeast Tributary. Storm runoff from planned development in the Business Park east of Huisson Road will be directed to the Southeast Tributary (East), which serves as the roadside ditch for the west side of Carp Road adjacent to the Business Park.

Individual sites within the business park will provide on-site stormwater management for water quantity control to ensure no increase in pre-development peak flows for all storms up to and including the 100-year event.

The peak flows from the hydrologic analysis are shown in **Table 1** and **Table 2** for the Southeast and Northeast Tributaries, respectively.

Table 1: Peak Flows from Hydrologic Analysis (SWMHYMO): Southeast Tributary

SWMHYMO Node ID	Drainage Area (ha)	Peak Flow – 12-hour SCS Storm Distribution (m^3/s)		
		2-year	5-year	100-year
Southeast Tributary (upstream of 50/50 split)				
C-EX1	285.00	0.297	0.665	2.235
Southeast Tributary (East) (Proposed 2x 900mm dia. CSP entrance culverts)				
SE *(50% of C-EX1)*	142.50	0.149	0.332	1.117
C1	7.10	0.077	0.157	0.463
SE-TOT	**149.60**	**0.158**	**0.352**	**1.166**

Source: Stormwater Management Report for the West Capital Airpark (Novatech, November 29, 2013)

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Table 2: Peak Flows from Hydrologic Analysis (SWMHYMO): Northeast Tributary

SWMHYMO Node ID	Drainage Area (ha)	Peak Flow – 12-hour SCS Storm Distribution (m^3/s)		
		2-year	5-year	100-year
Northeast Tributary (Existing 1200mm dia. CSP culvert crossing Russ Bradley Road)				
NE *(50% of C-EX1)*	142.50	0.149	0.332	1.117
C-EX2	4.79	0.039	0.055	0.211
C-EX3	5.31	0.045	0.180	0.611
NE-1 (CulvIN)	**152.60**	**0.171**	**0.380**	**1.220**
Northeast Tributary (Proposed 2x 900mm dia. culverts crossing Taxiway)				
C-EX4	5.95	0.195	0.404	0.985
C-EX5	13.86	0.271	0.734	2.081
NE-2 (CulvTX)	**172.41**	**0.514**	**1.347**	**3.888**

Source: Stormwater Management Report for the West Capital Airpark (Novatech, November 29, 2013)

Proposed Ditch Cross-Sections

The realigned portions of the Southeast Tributary (East) and the Northeast Tributary will consist of a meandering low-flow channel to convey snowmelt and runoff from frequent storm events (<1:5 year storm event) and an overbank floodplain channel to convey runoff from larger more infrequent storm events.

The proposed dimensions and capacities of the realigned channels are summarized in **Table 3**:

Table 3: Realigned Channel Cross-Sections and Capacities

Parameter	Units	Southeast Tributary (East)		Northeast Tributary	
		Low-Flow Channel	Floodplain Channel	Low-Flow Channel	Floodplain Channel
Depth	m	0.60	0.80	0.50	0.70
Bottom Width	m	0	4.20	0	5.40
Side slopes	1 to X	3	3	3	3
Top Width	m	3.00	8.50	3.00	8.50
Area	m^2	0.75	3.50	0.75	3.50
Perimeter	m	3.16	8.66	3.16	8.66
R=A/P	m	0.24	0.40	0.24	0.40
n		0.040	0.040	0.040	0.040
Slope	m/m	0.0033	0.0033	0.010	0.010
V_{cap}	**m/s**	**0.55**	**0.78**	**0.97**	**1.36**
Q_{cap}	**m^3/s**	**0.42**	**2.73**	**0.72**	**4.75**
Total Q_{cap}	**m^3/s**	**3.14**		**5.47**	

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Culvert Analysis

The flow depths and velocities for the existing and proposed culvert crossings for the Southeast Tributary (East) and the Northeast Tributary were analyzed using PCSWMM - refer to **Table 4** for results.

Southeast Tributary (East)

- The proposed 2x 900mm dia. CSP culverts for the three proposed entrances crossing the Southeast Tributary are sized to convey the 100-year peak flow with minimal surcharge (0.10m).
- The existing 1200mm culvert crossing Russ Bradley Road at the intersection with Carp Road has sufficient capacity to convey the 100-year peak flow.

Northeast Tributary

- The proposed 2x 900mm dia. CSP culverts for the Taxiway will convey the 5-year peak flow but will overtop during a 100-year event (approximately 0.12m depth).
- The existing 1200mm culvert crossing Russ Bradley Road just east of Huisson Road has sufficient capacity to convey the 100-year peak flow.

The proposed 900mm culverts will be embedded approximately 200mm below the invert of the channel. The flow velocities for all culverts will be 0.80 m/s or less for the 2-year event.

Table 4: Culvert Analysis for Southeast Tributary (East) and Northeast Tributary (PCSWMM)

Culvert Location	Culvert Dia. (mm)	Upstream Water Depth (m)			Culvert Velocity (m/s)		
		2-year	5-year	100-year	2-year	5-year	100-year
Southeast Tributary (East)							
Proposed Entrance Culverts (3x Crossings)	2x 900mm	0.54	0.66	0.96	0.19	0.34	0.86
Existing Russ Bradley Road Culvert for SE Trib.	1200mm	0.26	0.42	0.87	0.63	0.84	1.31
Northeast Tributary							
Existing Russ Bradley Road Culvert for NE Trib.	1200mm	0.28	0.46	0.96	0.77	1.01	1.58
Proposed Taxiway Culverts	2x 900mm	0.43	0.76	1.17	0.80	1.26	1.88

Spring and Summer Flows and Velocities

Table 5 below provides a summary of the measured water depths and wetted widths from a 2017 field survey completed by Bowfin Environmental Consulting. The spring water levels are assumed to represent the approximate bankfull depth. The June 21st and August 21st measurements represent early and late summer, respectively.

Peak flows and channel velocities (**Table 6**) were calculated using Manning's equation for open channel flow. Supporting calculations are attached.

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The flow velocities through the proposed culverts (**Table 7**) were calculated using PCSWMM. While there is a 50/50 flow split just south of Russ Bradley Road, the flows in the Northeast Tributary at the proposed taxiway culvert crossing are approximately 13% higher due to the additional flow contributions from the airport lands and the business park.

Table 5: 2017 Field Survey: Summary

Location (Bowfin Station ID)	Measured Water Depth			Measured Wetted Width		
	Spring (Bankfull)	Early Summer	Late Summer	Spring (Bankfull)	Early Summer	Late Summer
N.E. Tributary (Station 3)	40 cm	17 cm	12 cm	3.9 m	3.0 m	2.9 m
S.E. Tributary (Station 4)	51 cm	31 cm	25 cm	5.2 m	4.1 m	4.4 m
S.E. Tributary (East): (Station 5)	24 cm	5 cm	1 cm	3.3 m	0.7 m	0.5 m

Table 6: 2017 Field Survey: Peak Flows and Velocities - Channel (Manning's Equation)

Location (Station ID)	Peak Flow (L/s)			Channel Velocity (m/s)		
	Spring (Bankfull)	Early Summer	Late Summer	Spring (Bankfull)	Early Summer	Late Summer
N. E. Tributary (Station 3)	416	38	14	0.53	0.27	0.19
S.E. Tributary (Station 4)	757	178	89	0.57	0.36	0.28
S.E. Tributary (East): (Station 5)	138	1.9	0.02	0.35	0.11	0.03

Table 7: 2017 Field Survey: Peak Flows and Velocities - Culverts (PCSWMM)

Culvert Location	Culvert Dia. (mm)	Peak Flow (m^3/s)			Culvert Velocity (m/s)		
		Spring (Bankfull)	Early Summer	Late Summer	Spring (Bankfull)	Early Summer	Late Summer
Southeast Tributary (East)							
Proposed Entrance Culverts (3x Crossings)	2x 900mm	0.138	0.002	0.001	0.17	0.01	<0.01
Existing Russ Bradley Road Culvert for SE Trib.	1200mm	0.138	0.002	0.001	0.59	0.04	0.03
Northeast Tributary							
Existing Russ Bradley Road Culvert for NE Trib.	1200mm	0.416	0.038	0.014	1.01	0.42	0.29
Proposed Taxiway Culverts	2x 900mm	0.470	0.043	0.016	0.77	0.26	0.17

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Attachments:

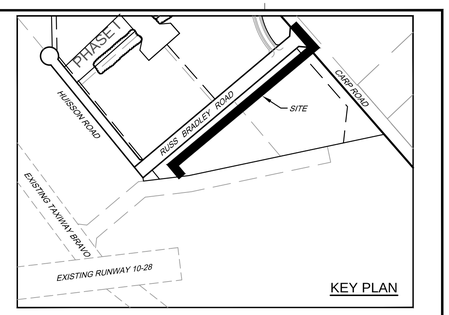
- Drawings:
  - Realigned Fish Habitat Ditch Russ Bradley Road – Plan and Profile
    Drawing 102085-FH1 (rev. 4)
  - Realigned Fish Habitat Ditch Russ Bradley Road – Notes and Details
    Drawing 102085-FH2 (rev. 4)
  - Fish Habitat Realignment Huisson Road
    Drawing 102085-FH3 (rev. 1)
  - Business Park Development Pre-Development Storm Drainage Areas Plan (SWMHYMO)
    Drawing 102085-SWM5 (rev. 4)
- SWMHYMO Model Input and Summary Output Data
- PCSWMM Model Schematic and Model Output Data (100-year, 12-hour SCS Storm)
- Manning's Calculations for 2017 Survey



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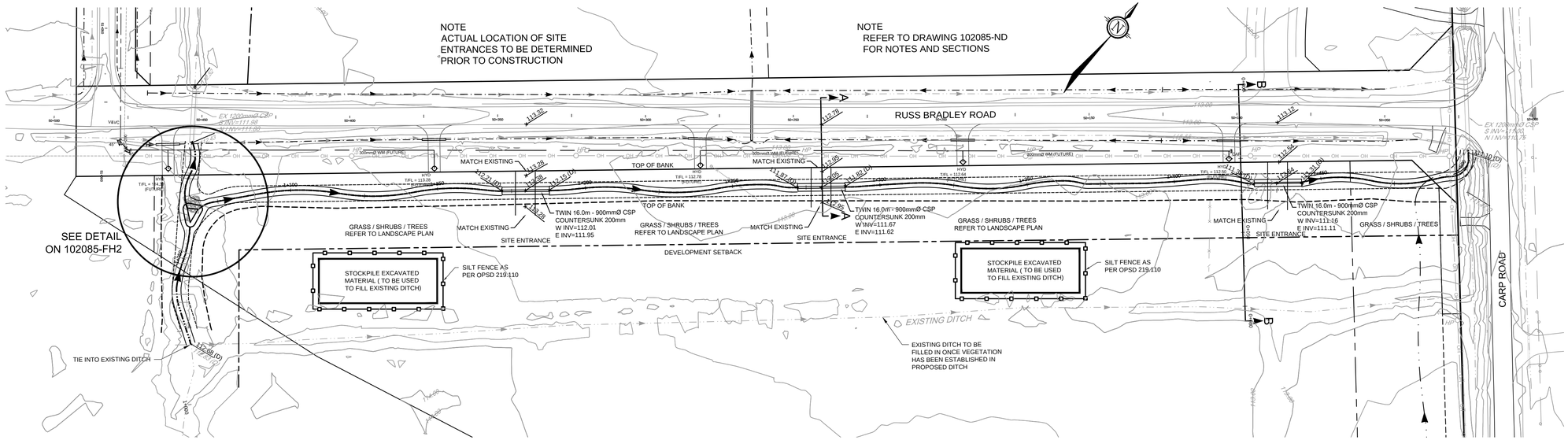
- 113.30 (D) — PROPOSED GRADE
- PROPOSED DITCH AND DIRECTION OF FLOW
- PROPOSED TOP OF BANK
- PROPOSED MEANDER CORRIDOR
- PROPOSED TOP BANK LOW FLOW CHANNEL
- PROPOSED DEVELOMENT SETBACK
- PROPOSED ENTRANCE CULVERT
- HP — EXISTING HYDRO POLE
- OH — EXISTING OVERHEAD HYDRO

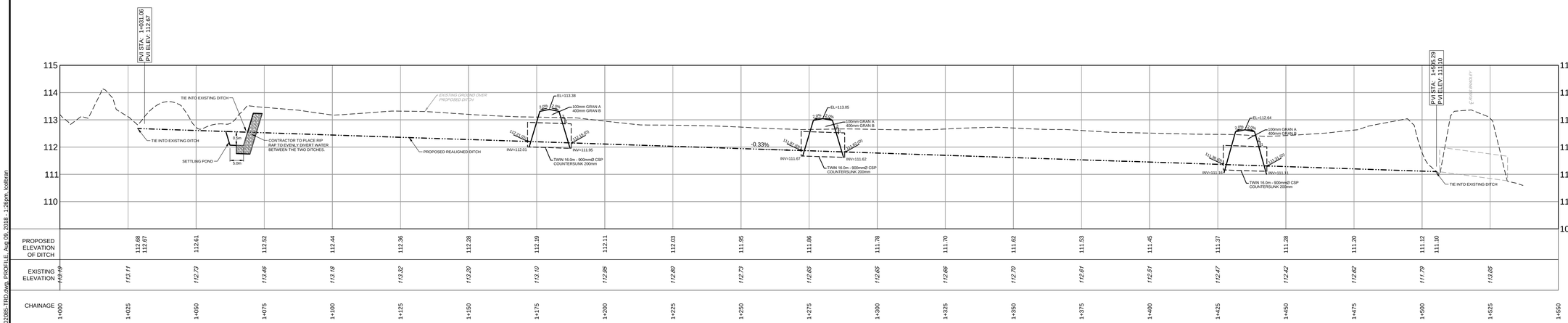


KEY PLAN

NOTE
ACTUAL LOCATION OF SITE ENTRANCES TO BE DETERMINED PRIOR TO CONSTRUCTION

NOTE
REFER TO DRAWING 102085-ND FOR NOTES AND SECTIONS





CHAINAGE	PROPOSED ELEVATION OF DITCH	EXISTING ELEVATION
1+000	112.88	f113.49
1+025	112.67	f113.11
1+050	112.61	f112.73
1+075	112.52	f112.46
1+100	112.44	f113.18
1+125	112.36	f113.32
1+150	112.28	f113.20
1+175	112.19	f113.10
1+200	112.11	f112.85
1+225	112.03	f112.80
1+250	111.95	f112.73
1+275	111.86	f112.65
1+300	111.78	f112.65
1+325	111.70	f112.66
1+350	111.62	f112.70
1+375	111.53	f112.61
1+400	111.45	f112.51
1+425	111.37	f112.47
1+450	111.28	f112.42
1+475	111.20	f112.62
1+500	111.12	f111.79
1+525	111.10	f113.05
1+550		

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
4	ISSUED FOR REVIEW	AUG 09/18	LSC
3	ISSUED FOR COORDINATION	JUNE 18/18	LSC
2	ISSUED FOR COMMENT	JAN 31/18	LSC
1	ISSUED FOR DISCUSSION	DEC 01/17	LSC

SCALE
1:750
1:750
0 6 12 18 24 30

DESIGN LSC
CHECKED SMG
DRAWN LSC
CHECKED SMG
APPROVED SMG

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER A.R. MCAULEY 100141256 Sept 11/18 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER S.M. GORDON Sept 11/18 PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 1 BUSINESS PARK

DRAWING NAME
REALIGNED FISH HABITAT DITCH
RUSS BRADLEY RD
PLAN AND PROFILE

PROJECT No. 102085
REV REV # 4
DRAWING No. 102085-FH1

PLAN&PROFILE - 24 Frame(Metric)

M:\2002\102085\CAD\102085-1CAD\design\102085-TRD.dwg, PROFILE, Aug 09, 2018 - 1:29pm, kcothran

GENERAL NOTES:

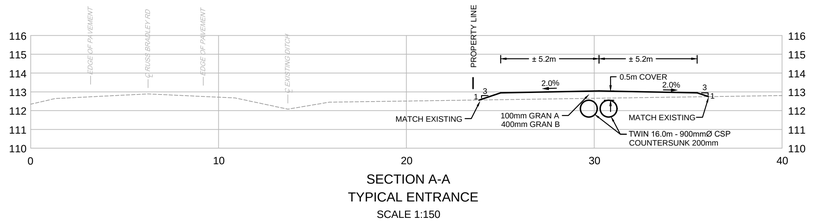
1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA, THE MINISTRY OF THE ENVIRONMENT AND THE MISSISSIPPI VALLEY CONSERVATION AUTHORITY BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS AND ENGINEERS AS CO-INSURED.
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
8. TO PROTECT BREEDING BIRDS, NO TREE OR SHRUB REMOVAL IS TO OCCUR BETWEEN APRIL1ST AND AUGUST 15TH (MUNCASTER ENVIRONMENTAL PLANNING)
9. NO IN-STREAM WORKS WITHIN THE WATERCOURSE IS TO OCCUR BETWEEN MARCH 15TH AND JUNE 30TH.
10. THE CONTRACTOR IS RESPONSIBLE FOR SURVEYING ASBUILT ELEVATIONS AND LOCATIONS AND PROVIDING A MARKED UP DRAWING TO THE ENGINEER FOR PREPARATION OF RECORD DRAWINGS.

GRADING NOTES:

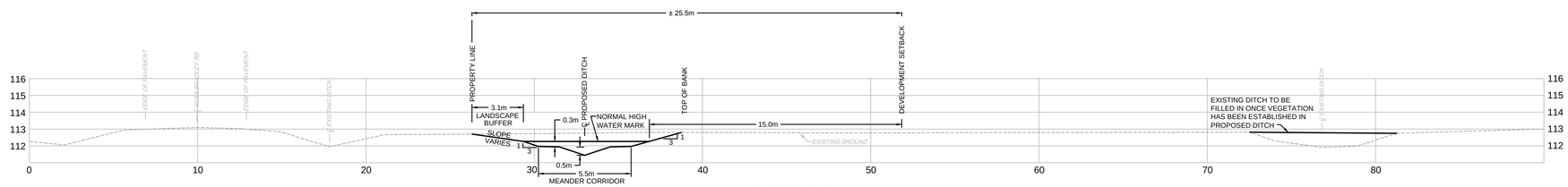
1. ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH CURRENT CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS.
2. ROADWAY CROSSING CULVERTS ARE TO BE INSTALLED PER OPSD 802.010. PROVIDE FROST TAPERS PER OPSD 803.030.
3. BACKSLOPES OF ROADSIDE DITCHES SHALL BE GRADED AT 3:1 (max) INTO LOTS (AS REQUIRED)
4. ENSURE POSITIVE DRAINAGE WHETHER INDICATED OR NOT.
5. MATCH EXISTING ELEVATIONS AT ALL BOUNDARIES WITH ADJACENT LOTS.
6. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
7. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
8. ALL DRIVEWAY SLOPES ARE TO BE BETWEEN 2% AND 6%.

EROSION AND SEDIMENT CONTROL NOTES

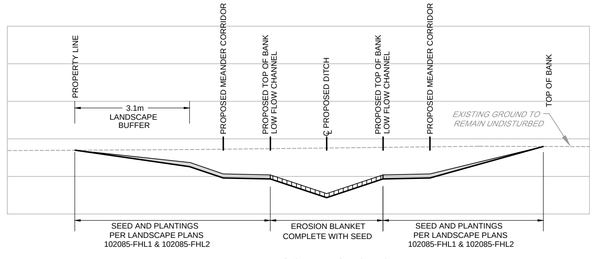
1. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, THE CITY OF OTTAWA, AND THE MISSISSIPPI VALLEY CONSERVATION AUTHORITY. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL SUCH AS BUT NOT LIMITED TO: INSTALLING INLET INSERTS UNDER MANHOLE/CATCHBASIN LIDS TO PREVENT SEDIMENT FROM ENTERING THE STRUCTURE, INSTALLING AND MAINTAINING A LIGHT DUTY SILT FENCE, AND INSTALLING ROCK FLOW CHECK DAMS.
2. TO LIMIT EROSION: MINIMIZE THE AMOUNT OF EXPOSED SOILS AT ANY GIVEN TIME, RE-VEGETATE EXPOSED AREAS AND SLOPES AS SOON AS POSSIBLE AND PROTECT EXPOSED SLOPES WITH NATURAL OR SYNTHETIC MULCHES.
3. ANY ONSITE STOCKPILES SHALL BE LOCATED IN AREAS TO BE DESIGNATED BY THE ENGINEER AND WELL AWAY FROM DRAINAGE SWALES AND OUTLET DITCHES.
4. THE CONTRACTOR SHALL IMPLEMENT SEQUENTIAL MEASURES ARRANGED SO AS TO ACHIEVE THE REQUIRED LEVEL OF SEDIMENT AND RUNOFF CONTROL. SOME ONSITE MEASURES INCLUDE, BUT ARE NOT LIMITED TO: SEDIMENT PONDS, SILT FENCES, STRAW BALES, FILTER CLOTHS, CATCHBASIN FILTERS, DAMS AND/OR BERMS, OR OTHER RECOGNIZED TECHNOLOGIES. SPECIFIC MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF OPSS 577 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. EROSION AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED DURING CONSTRUCTION IN ACCORDANCE WITH THE "GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES" (GOVERNMENT OF ONTARIO, MAY 1987). THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEETING ALL REGULATORY AGENCY REQUIREMENTS.
6. WHERE, IN THE OPINION OF THE ENGINEER OR REGULATORY AGENCY, THE INSTALLED CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE MEASURES AS DIRECTED BY THE ENGINEER OR REGULATORY AGENCY. THE ENGINEER OR THE REGULATORY AGENCY HAS THE RIGHT TO IMMEDIATELY WITHDRAW ITS PERMISSION TO CONTINUE THE WORK. THE ENGINEER OR REGULATORY AGENCY MAY RENEW ITS PERMISSION TO CONTINUE THE WORK UPON BEING SATISFIED THAT THE DEFAULTS OR DEFICIENCIES HAVE BEEN RECTIFIED.
7. A VISUAL INSPECTION OF THE SEDIMENT CONTROL MEASURES WILL BE PERFORMED DAILY BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR WEEKLY INSPECTION REPORTS DETAILING AND PROVING THE SPECIFIED AND REQUIRED PERFORMANCE OF THE INSTALLED MEASURES. THE CONTRACTOR SHALL PERIODICALLY, AND WHEN REQUESTED BY THE ENGINEER, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES WITHOUT DAMAGING THE DEVICES OR CAUSING DISCHARGE INTO THE SEWERS OR NEARBY WATERCOURSES.
8. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURE OR MEASURES, IS NO LONGER REQUIRED. NO CONTROL MEASURE MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
9. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
10. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
11. ALL SURROUNDING STREETS TO BE SWEPT REGULARLY FOR THE DURATION OF CONSTRUCTION. SURROUNDING EXISTING STREETS TO BE SWEPT REGULARLY AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR CITY OF OTTAWA.
12. THE CONTRACTOR SHALL ENSURE THAT ALL WORKS, INCLUDING SUB-CONTRACTORS, IN THE WORKING AREA ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES AND THE SPECIFICATIONS DETAILED HEREIN.
13. THE CONTRACTOR SHALL MONITOR ALL WEATHER FORECASTS AND SCHEDULE THE WORK IN ORDER TO MINIMIZE THE RISK OF SEDIMENT-LADEN RUNOFF ENTERING ANY WATERCOURSE OR SEWER SYSTEM.
14. THE CONTRACTOR SHALL KEEP MATERIAL FOR ADDITIONAL EROSION AND SEDIMENT CONTROLS ONSITE AT ALL TIMES. THESE MATERIALS INCLUDE BUT ARE NOT LIMITED TO: SILT FENCES, STRAW BALES, SEDIMENT BAGS AND CLEAR STONE. A CONTINGENCY PLAN TO INCLUDE THE PROVISION OF ADDITIONAL LABOUR, EQUIPMENT OR MATERIALS TO INSTALL ADDITIONAL CONTROL MEASURES, AS WELL AS PROVIDE AN EMERGENCY RESPONSE PLAN IN CASE OF AN ACCIDENTAL EVENT. AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIMES WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED AT A MOMENT'S NOTICE.
15. IN ADDITION TO ANY OTHER REMEDY AND/OR PENALTY PROVIDED BY LAW, WHERE THERE HAS BEEN DEFAULT OR NON-COMPLIANCE WITH ANY OF THE TERMS SPECIFIED HEREIN AND THE CONTRACTOR REFUSES TO PERFORM OR RECTIFY SAME WITHIN FORTY-EIGHT (48) HOURS OF THE RECEIPT OF THE WRITTEN DEMAND OF THE CONTRACT ADMINISTRATOR TO DO SO, THE OWNER IS HEREBY ENTITLED TO ENTER UPON THE WORKING AREA AND EITHER COMPLETE THE WORK IN CONFORMITY WITH THE CONTRACT OR HAVE THE WORK DONE THAT IT CONSIDERS NECESSARY TO COMPLETE THE WORK TO ITS INTENDED CONDITION, WHICHEVER, IN THE OWNER'S SOLE OPINION, IS THE MOST REASONABLE COURSE OF ACTION. THE CONTRACTOR AND THE OWNER FURTHER AGREE THAT THE COST INCURRED FOR ANY SUCH WORK SHALL BE RETAINED BY THE OWNER FROM MONIES OTHERWISE DUE TO THE CONTRACTOR.
16. ENSURE PROPER DUST CONTROL WITH (AT MINIMUM) THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.
17. IF REQUIRED, ONSITE DEWATERING TO BE DIRECTED TO A SEDIMENT TRAP AND/OR GRAVEL SPLASH PAD AND DISCHARGED SAFELY TO AN AREA AS DIRECTED BY THE ENGINEER.



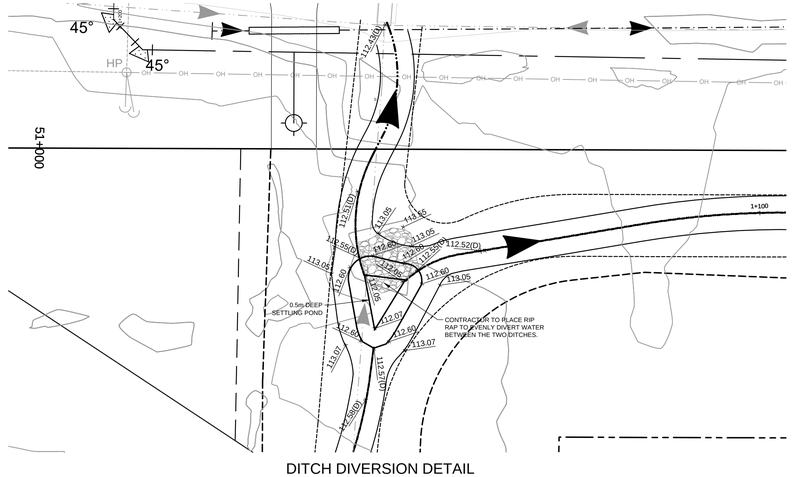
SECTION A-A
TYPICAL ENTRANCE
SCALE 1:150



SECTION B-B
SCALE 1:150



LANDSCAPE SECTION



DITCH DIVERSION DETAIL
SCALE 1:250

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
4	ISSUED FOR REVIEW	AUG 09/18	LSC
3	ISSUED FOR COORDINATION	JUNE 18/18	LSC
2	ISSUED FOR COMMENT	JAN 31/18	LSC
1	ISSUED FOR DISCUSSION	DEC 01/17	LSC

SCALE
1:750
1:750
0 6 12 18 24 30

DESIGN LSC
CHECKED SMG
DRAWN LSC
CHECKED SMG
APPROVED SMG

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Sept 11/18
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
S.M. GORDON
PROVINCE OF ONTARIO

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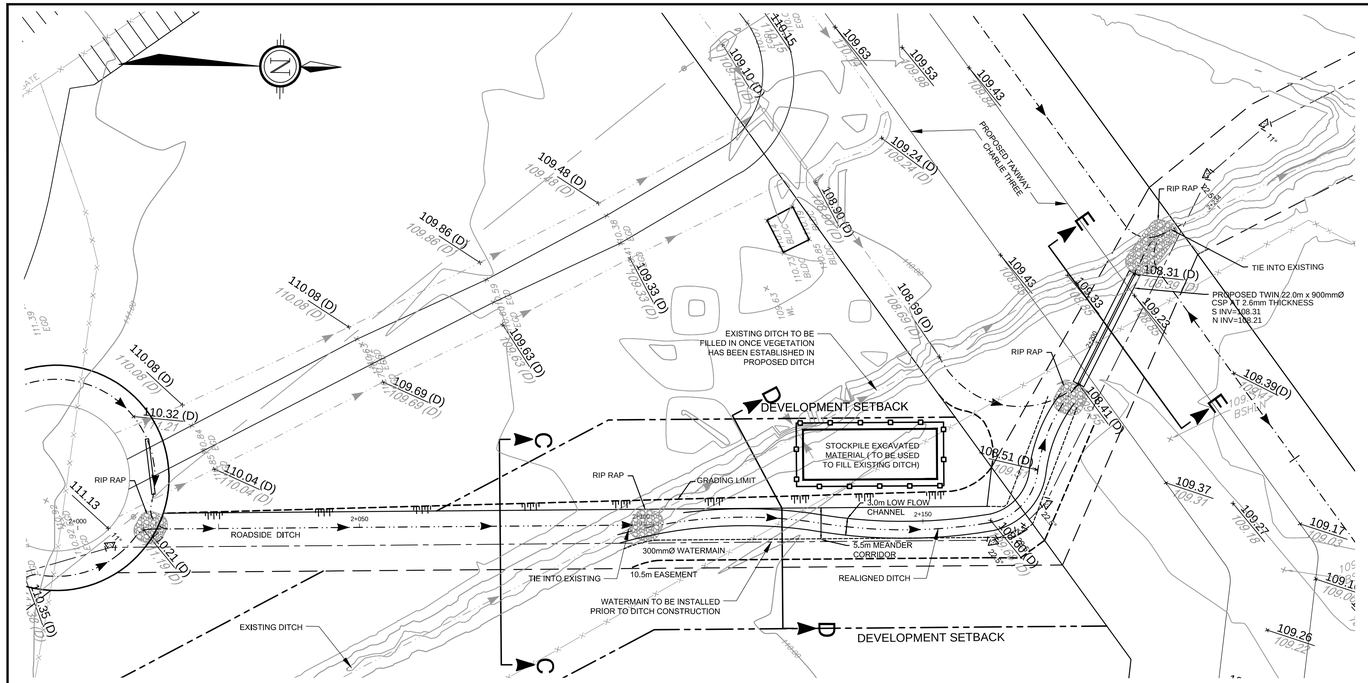
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 1 BUSINESS PARK

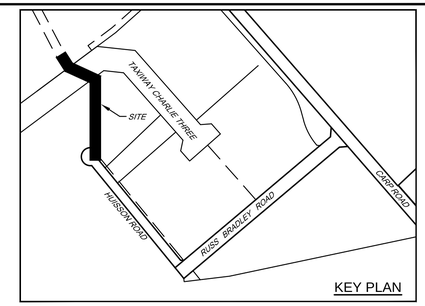
DRAWING NAME
REALIGNED FISH HABITAT DITCH
RUSS BRADLEY RD
NOTES AND DETAILS

PROJECT No. 102085
REV REV # 4
DRAWING No. 102085-FH2

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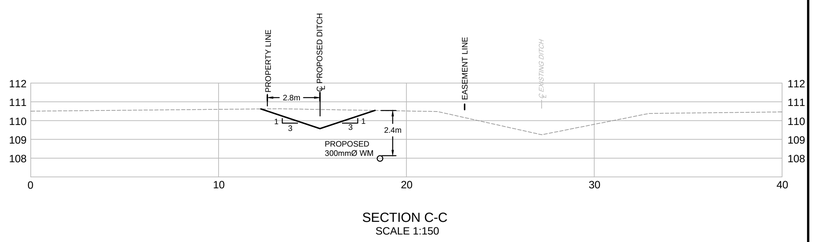
PLANOT.DWG - 04 Arrow(Blank)



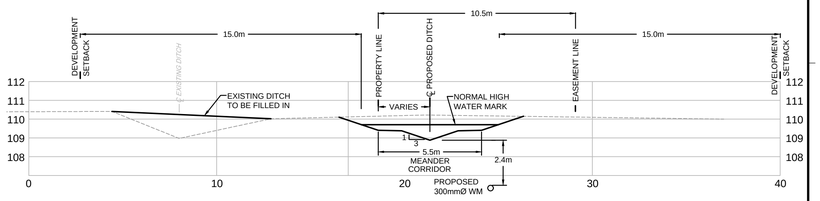


LEGEND

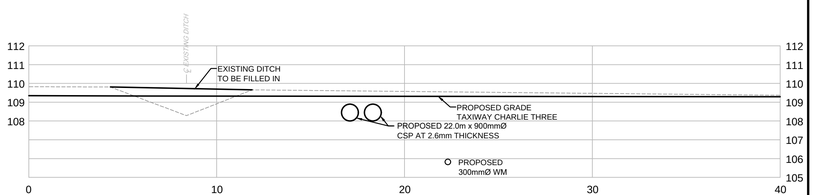
- 113.30 (D) — PROPOSED GRADE
- PROPOSED DITCH AND DIRECTION OF FLOW
- PROPOSED TOP OF BANK
- PROPOSED MEANDER CORRIDOR
- PROPOSED TOP BANK LOW FLOW CHANNEL
- PROPOSED DEVELOMENT SETBACK
- PROPOSED ENTRANCE CULVERT
- HP — EXISTING HYDRO POLE
- OH — EXISTING OVERHEAD HYDRO



SECTION C-C
SCALE 1:150



SECTION D-D
SCALE 1:150



SECTION E-E
SCALE 1:150

NOTE:
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No.	REVISION	DATE	BY
1	ISSUED FOR REVIEW	AUG 09/18	ARM

SCALE
1:500 H
1:50 V
1:500 H
0 10 20 30 40
0 1 2 3 4
1:50 V

DESIGN LSC
CHECKED SMG
DRAWN LSC
CHECKED SMG
APPROVED SMG

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Sept 11/18
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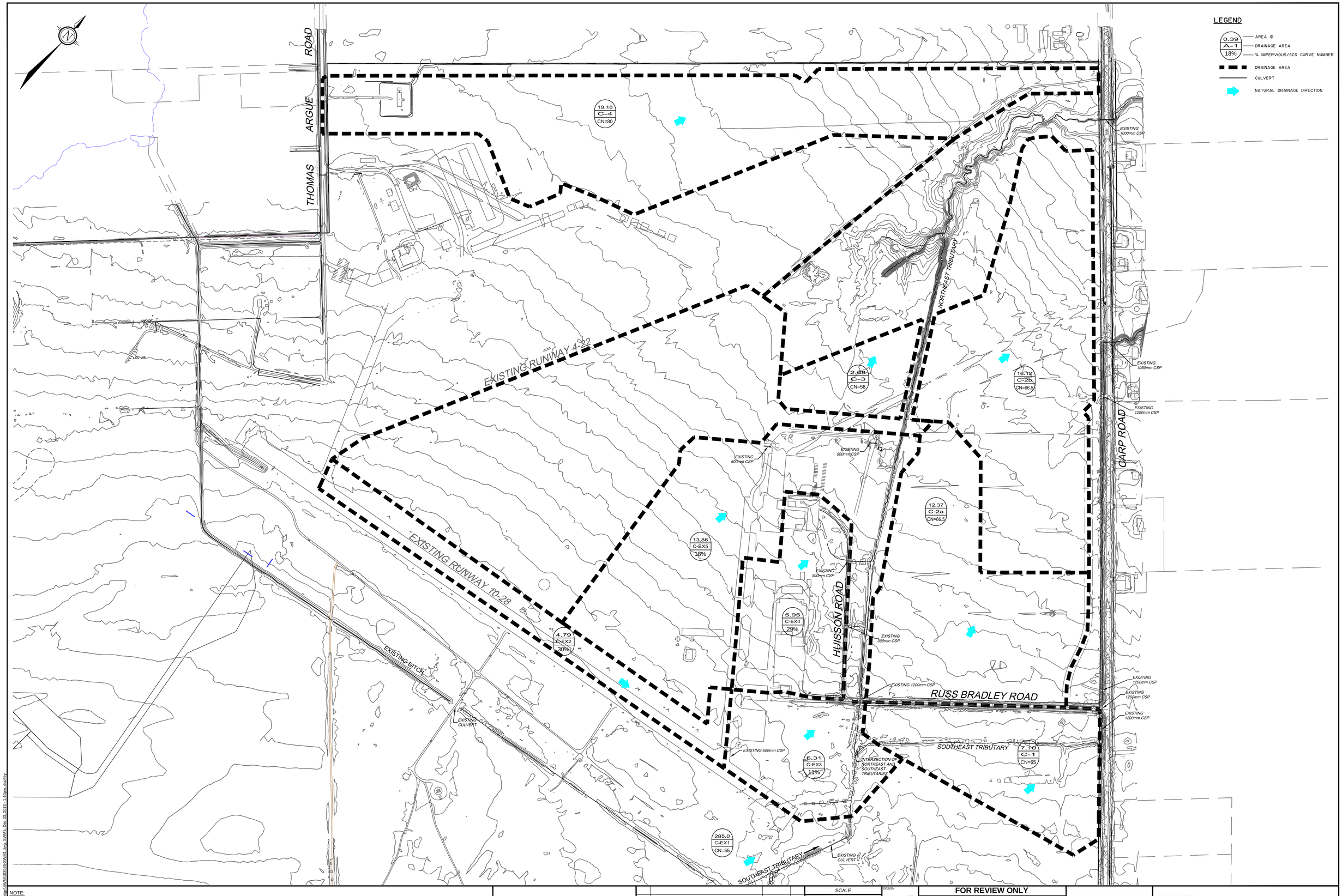
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
FISH HABITAT REALIGNMENT
HUISSON RD

PROJECT No. 102085
REV REV # 1
DRAWING No. 102085-FH3

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PLAN1.DWG - 3/7/mm/dd/aaaa



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WEST CAPITAL Developments

No.	REVISION	DATE	BY
4.	REVISED AS PER CITY / MVC COMMENTS	NOV 29/13	MJP
3.	ISSUED WITH REVISED STORMWATER SITE MANAGEMENT REPORT	SEPT 26/13	MJP
2.	ISSUED WITH REVISED STORMWATER SITE MANAGEMENT REPORT	MAY 28/13	MJP
1.	ISSUED WITH STORMWATER MANAGEMENT REPORT (NOV 2011)	NOV 22/11	MJP

SCALE
1:2500
1:2500
0 25 50 75 100

DESIGN RTL
CHECKED MJP
DRAWN RBG
CHECKED MJP
APPROVED MJP

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
M.J. PETEPIECE
100079354
Nov 29/13
PROVINCE OF ONTARIO

NOVATECH
ENGINEERING CONSULTANTS LTD.
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Ottawa, Ontario, Canada
K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Email: novainfo@novatech-eng.com

CITY OF OTTAWA
WEST CAPITAL AIRPARK

BUSINESS PARK DEVELOPMENT
PRE DEVELOPMENT
STORM DRAINAGE AREAS PLAN
(SWMHYMO)

PROJECT No. 102085-01
REV REV # 4
DRAWING No. 102085-SWM5

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PLANBY_DWG - (DEMING)(27mm

```
2     Metric units
*#*************************************************************************
*#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
*#  Date        : 25-11-2013
*#  Modeller    : [R.Langlois]
*#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
*#  License #   :  5320763
*#*************************************************************************
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[1]
                    C25mm-4.stm
*%-----------------|-------------------------------------------------------|
DEFAULT VALUES      ICASEdef=[1],  read and print values
                    DEFVAL_FILENAME=["ottawa.def"]
*%-----------------|-------------------------------------------------------|
READ STORM          STORM_FILENAME=["storm.001"]
*************************************************************************
*MODEL UPDATED TO REFLECT REALIGNMENT OF SOUTHEAST TRIBUTARY
*                        External Drainage Areas
*************************************************************************
* Upstream Area (to Fish Habitat Ditch)
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                    DWF=[0](cms),  CN/C=[53.5], IA=[15.6](mm),
                    N=[2], TP=[2.00]hrs, END=-1
*%-----------------|-------------------------------------------------------|
* Split between realigned SE-Tributary and natural Northeast Triburary along Huission Road
*%-----------------|-------------------------------------------------------|
DIVERT HYD          IDin=[1], NIDout=[2]max five,
                    outflow hydrographs (ID, NHYD)=[8,"NE" 9,"Re.SE"]
                    flow distribution table: (modify as necessary)
                    Note: all flows are in (cms)
                          QIDi  +  QIDii  =  QTOTAL
                       [ 0.000  +  0.000  =  0.000 ]
                       [ 0.250  +  0.250  =  0.500 ]
                       [ 0.500  +  0.500  =  1.000 ]
                       [ 1.000  +  1.000  =  2.000 ]
                       [ 1.500  +  1.500  =  3.000 ]
                       [ 2.000  +  2.000  =  4.000 ]
                       [ 2.500  +  2.500  =  5.000 ] end
*%-----------------|-------------------------------------------------------|
* North Runway Ditch
CALIB STANDHYD      ID=[2], NHYD=["C-EX2"], DT=[1](min), AREA=[4.79](ha),
                    XIMP=[0.01], TIMP=[0.30], DWF=[0](cms), LOSS=[1],
                    Horton: Fo=[76.2](mm/hr), Fc=[13.2](mm/hr),
                            DCAY=[4.14](/hr), F=[0](mm),
                    Pervious   surfaces: IAper=[4.67](mm), SLPP=[0.15](%),
                                         LGP=[870](m), MNP=[0.100], SCP=[0](min),
                    Impervious surfaces: IAimp=[1.57](mm), SLPI=[2.0](%),
                                         LGI=[870](m), MNI=[0.013], SCI=[0](min),
                    END=-1
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* Ex. Business Park South of Russ Bradley
DESIGN STANDHYD     ID=[3], NHYD=["C-EX3"], DT=[1]min, AREA=[5.31](ha),
                    XIMP=[0.01], TIMP=[0.11], DWF=[0](cms),  LOSS=[1],
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ADD HYD             IDsum=[1], NHYD=["NE-1"], IDs to add=[8,2,3]
*%-----------------|-------------------------------------------------------|
* Culvert Crossing Russ Bradley Road to NE tributary(1200mm)
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[1], CINLET=[1.800](cms), NINLET=[1],
                    MAJID=[4], MajNHYD=["OVF"],
                    MINID=[10], MinNHYD=["CulvIN"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
* South of Russ Bradley Road
*%-----------------|-------------------------------------------------------|
*************************************************************************
*             Proposed Business Park (South C-1) - Existing Conditions
*************************************************************************
CALIB NASHYD        ID=[5], NHYD=["C1"], DT=[1]min, AREA=[7.10](ha),
                    DWF=[0](cms),  CN/C=[64.5], IA=[10.3](mm),
                    N=[3], TP=[0.25]hrs,  END=-1
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```
*%-----------------|---------------------------------------------------------|
*%-----------------|---------------------------------------------------------|
*TOTAL FLOW TO CARP ROAD
ADD HYD             IDsum=[8], NHYD=["SE-TOT"], IDs to add=[9,4,5]
*%-----------------|---------------------------------------------------------|
*************************************************************************
*             Proposed Business Park (South C-2A) - Existing Conditions
*************************************************************************
* North of Russ Bradley Road (South Business Park Area)
*%-----------------|---------------------------------------------------------|
CALIB NASHYD        ID=[6], NHYD=["C2a"], DT=[1]min, AREA=[12.37](ha),
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*ADDHYD USED TO DETERMINE ALLOWABLE RELEASE RATE FOR SOUTH BUSINESS PARK
*%-----------------|---------------------------------------------------------|
ADD HYD             IDsum=[4], NHYD=["SOUTH"], IDs to add=[5,6]
*%-----------------|---------------------------------------------------------|
*%-----------------|---------------------------------------------------------|
* Ex. Business Park Between Taxiway and Huisson
*%-----------------|---------------------------------------------------------|
DESIGN STANDHYD     ID=[2], NHYD=["C-EX4"], DT=[1]min, AREA=[5.95](ha),
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* Ex. Business Park North/West
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                    SLOPE=[1.00](%), END=-1
*%-----------------|---------------------------------------------------------|
* Culvert Crossing Taxiway
*%-----------------|---------------------------------------------------------|
ADD HYD             IDsum=[5], NHYD=["CulvTX"], IDs to add=[2,3,10]
*%-----------------|---------------------------------------------------------|
*             Proposed Business Park (North) - Existing Conditions
*************************************************************************
* North of Russ Bradley Road
*%-----------------|---------------------------------------------------------|
CALIB NASHYD        ID=[10], NHYD=["C-2b"], DT=[1]min, AREA=[16.12](ha),
                    DWF=[0](cms),  CN/C=[64.8], IA=[9.6](mm),
                    N=[3], TP=[0.25]hrs,  END=-1
*%-----------------|---------------------------------------------------------|
* West of Ex. Watercourse
CALIB NASHYD        ID=[9], NHYD=["C-3"], DT=[1]min, AREA=[2.68](ha),
                    DWF=[0](cms),  CN/C=[55.6], IA=[13.8](mm),
                    N=[3], TP=[0.25]hrs,  END=-1
*%-----------------|---------------------------------------------------------|
* North Business Park
*%-----------------|---------------------------------------------------------|
CALIB NASHYD        ID=[8], NHYD=["C-4"], DT=[1]min, AREA=[19.18](ha),
                    DWF=[0](cms),  CN/C=[79.9], IA=[4.8](mm),
                    N=[3], TP=[0.25]hrs,  END=-1
*%-----------------|---------------------------------------------------------|
*ADDHYD USED TO DETERMINE ALLOWABLE RELEASE RATE FOR NORTH BUSINESS PARK
* --------------------------
ADD HYD             IDsum=[4], NHYD=["NORTH"], IDs to add=[10,9,8]
*%-----------------|---------------------------------------------------------|
*************************************************************************
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[2]
                    C2-4.stm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[3]
                    C5-4.stm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[4]
                    C100-4.stm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[5]
                    S2-12.stm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[6]
                    S5-12.stm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[7]
                    S100-12.stm
FINISH
```

```
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 RUN:COMMAND#
 001:0001-------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   1 ]
 001:0002-------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 001:0003-------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  25mm-4hr Chicago (10 minute time step)
      [SDT=10.00:SDUR=   4.00:PTOT=  25.00]
 001:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00     .053 No_date    4:50     .38 .015
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 001:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00     .053 No_date    4:50     .38  n/a
            diverted <= 08:NE       142.50     .027 No_date    4:50     .38  n/a
            diverted <= 09:Re.SE    142.50     .027 No_date    4:50     .38  n/a
 001:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .022 No_date    3:07    4.14 .166
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 001:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .028 No_date    2:14    1.98 .079
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 001:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50     .027 No_date    4:50     .38  n/a
                    +   02:C-EX2      4.79     .022 No_date    3:07    4.14  n/a
                    +   03:C-EX3      5.31     .028 No_date    2:14    1.98  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60     .044 No_date    3:08     .56  n/a
 001:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60     .044 No_date    3:08     .56  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60     .044 No_date    3:08     .56  n/a
 001:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .022 No_date    2:04    1.40 .056
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 001:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50     .027 No_date    4:50     .38  n/a
                    +   04:OVF         .00     .000 No_date    0:00     .00  n/a
                    +   05:C1         7.10     .022 No_date    2:04    1.40  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60     .029 No_date    4:06     .43  n/a
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 001:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .044 No_date    2:03    1.55 .062
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 001:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .022 No_date    2:04    1.40  n/a
                    +   06:C2a       12.37     .044 No_date    2:03    1.55  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47     .066 No_date    2:04    1.49  n/a
 001:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95     .097 No_date    2:00    4.03 .161
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 001:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86     .109 No_date    2:10    2.74 .109
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 001:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95     .097 No_date    2:00    4.03  n/a
                    +   03:C-EX5     13.86     .109 No_date    2:10    2.74  n/a
                    +   10:CulvIN   152.60     .044 No_date    3:08     .56  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41     .219 No_date    2:06     .85  n/a
 001:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12     .058 No_date    2:03    1.55 .062
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 001:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .003 No_date    2:13     .59 .023
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 001:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18     .263 No_date    1:58    4.85 .194
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 001:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12     .058 No_date    2:03    1.55  n/a
                    +   09:C-3        2.68     .003 No_date    2:13     .59  n/a
                    +   08:C-4       19.18     .263 No_date    1:58    4.85  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98     .320 No_date    1:59    3.15  n/a
  ** END OF RUN :   1

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```

```
RUN:COMMAND#
 002:0001-----------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   2 ]
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 002:0002-----------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 002:0003-----------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  2yr-4hr Chicago (10 minute time step)
      [SDT=10.00:SDUR=   4.00:PTOT=  33.89]
 002:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00     .192 No_date    4:36    1.40 .041
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 002:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00     .192 No_date    4:36    1.40  n/a
            diverted <= 08:NE       142.50     .096 No_date    4:36    1.40  n/a
            diverted <= 09:Re.SE    142.50     .096 No_date    4:36    1.40  n/a
 002:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .056 No_date    2:40    8.42 .248
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 002:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .066 No_date    2:11    5.62 .166
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 002:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50     .096 No_date    4:36    1.40  n/a
                    +   02:C-EX2      4.79     .056 No_date    2:40    8.42  n/a
                    +   03:C-EX3      5.31     .066 No_date    2:11    5.62  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60     .140 No_date    2:40    1.77  n/a
 002:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60     .140 No_date    2:40    1.77  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60     .140 No_date    2:40    1.77  n/a
 002:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .056 No_date    1:52    3.41 .101
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 002:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50     .096 No_date    4:36    1.40  n/a
                    +   04:OVF         .00     .000 No_date    0:00     .00  n/a
                    +   05:C1         7.10     .056 No_date    1:52    3.41  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60     .102 No_date    4:06    1.50  n/a
```

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 002:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .106 No_date    1:51    3.64 .107
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 002:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .056 No_date    1:52    3.41  n/a
                    +  06:C2a       12.37     .106 No_date    1:51    3.64  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47     .161 No_date    1:52    3.55  n/a
 002:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95     .262 No_date    1:43    8.26 .244
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 002:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86     .400 No_date    1:47    6.58 .194
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 002:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95     .262 No_date    1:43    8.26  n/a
                    +  03:C-EX5     13.86     .400 No_date    1:47    6.58  n/a
                    +  10:CulvIN   152.60     .140 No_date    2:40    1.77  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41     .703 No_date    1:45    2.38  n/a
 002:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12     .138 No_date    1:51    3.64 .107
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 002:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .010 No_date    1:56    1.81 .053
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 002:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18     .480 No_date    1:47    9.10 .269
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 002:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12     .138 No_date    1:51    3.64  n/a
                    +  09:C-3        2.68     .010 No_date    1:56    1.81  n/a
                    +  08:C-4       19.18     .480 No_date    1:47    9.10  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98     .624 No_date    1:48    6.27  n/a
  ** END OF RUN :   2

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```
 RUN:COMMAND#
 003:0001-----------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   3 ]
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 003:0002-----------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 003:0003-----------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  5yr-4hr Chicago (10 minute time step)
      [SDT=10.00:SDUR=   4.00:PTOT=  45.18]
 003:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00     .482 No_date    4:31    3.49 .077
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 003:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00     .482 No_date    4:31    3.49  n/a
            diverted <= 08:NE       142.50     .241 No_date    4:31    3.49  n/a
            diverted <= 09:Re.SE    142.50     .241 No_date    4:31    3.49  n/a
 003:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .132 No_date    2:37   16.48 .365
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 003:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .217 No_date    2:05   12.52 .277
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 003:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50     .241 No_date    4:31    3.49  n/a
                    +   02:C-EX2      4.79     .132 No_date    2:37   16.48  n/a
                    +   03:C-EX3      5.31     .217 No_date    2:05   12.52  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60     .346 No_date    2:09    4.22  n/a
 003:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60     .346 No_date    2:09    4.22  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60     .346 No_date    2:09    4.22  n/a
 003:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .133 No_date    1:59    6.96 .154
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 003:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50     .241 No_date    4:31    3.49  n/a
                    +   04:OVF         .00     .000 No_date    0:00     .00  n/a
                    +   05:C1         7.10     .133 No_date    1:59    6.96  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60     .252 No_date    4:07    3.66  n/a
```

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 003:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .246 No_date    1:58    7.29 .161
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 003:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .133 No_date    1:59    6.96  n/a
                    +  06:C2a       12.37     .246 No_date    1:58    7.29  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47     .379 No_date    1:58    7.17  n/a
 003:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95     .600 No_date    1:49   16.25 .360
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 003:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86    1.066 No_date    1:52   13.90 .308
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 003:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95     .600 No_date    1:49   16.25  n/a
                    +  03:C-EX5     13.86    1.066 No_date    1:52   13.90  n/a
                    +  10:CulvIN   152.60     .346 No_date    2:09    4.22  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41    1.838 No_date    1:51    5.41  n/a
 003:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12     .320 No_date    1:58    7.29 .161
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 003:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .028 No_date    2:01    4.20 .093
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 003:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18     .906 No_date    1:56   15.63 .346
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 003:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12     .320 No_date    1:58    7.29  n/a
                    +  09:C-3        2.68     .028 No_date    2:01    4.20  n/a
                    +  08:C-4       19.18     .906 No_date    1:56   15.63  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98    1.250 No_date    1:57   11.29  n/a
  ** END OF RUN :   3

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 RUN:COMMAND#
 004:0001-----------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   4 ]
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 004:0002-----------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 004:0003-----------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  100yr-4hr Chicago (10 minute time step)
      [SDT=10.00:SDUR=   4.00:PTOT=  76.02]
 004:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00    1.794 No_date    4:22   12.98 .171
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 004:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00    1.794 No_date    4:22   12.98  n/a
            diverted <= 08:NE       142.50     .897 No_date    4:22   12.98  n/a
            diverted <= 09:Re.SE    142.50     .897 No_date    4:22   12.98  n/a
 004:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .405 No_date    2:22   41.28 .543
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 004:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .849 No_date    1:54   35.50 .467
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 004:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50     .897 No_date    4:22   12.98  n/a
                    +   02:C-EX2      4.79     .405 No_date    2:22   41.28  n/a
                    +   03:C-EX3      5.31     .849 No_date    1:54   35.50  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60    1.197 No_date    1:57   14.65  n/a
 004:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60    1.197 No_date    1:57   14.65  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60    1.197 No_date    1:57   14.65  n/a
 004:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .444 No_date    1:56   21.02 .276
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 004:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50     .897 No_date    4:22   12.98  n/a
                    +   04:OVF         .00     .000 No_date    0:00     .00  n/a
                    +   05:C1         7.10     .444 No_date    1:56   21.02  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60     .930 No_date    4:06   13.36  n/a
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 004:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .799 No_date    1:56   21.58 .284
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 004:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .444 No_date    1:56   21.02  n/a
                    +  06:C2a       12.37     .799 No_date    1:56   21.58  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47    1.243 No_date    1:56   21.38  n/a
 004:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95    1.612 No_date    1:45   40.93 .538
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 004:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86    3.225 No_date    1:47   37.41 .492
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 004:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95    1.612 No_date    1:45   40.93  n/a
                    +  03:C-EX5     13.86    3.225 No_date    1:47   37.41  n/a
                    +  10:CulvIN   152.60    1.197 No_date    1:57   14.65  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41    5.634 No_date    1:47   17.39  n/a
 004:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12    1.041 No_date    1:56   21.58 .284
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 004:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .111 No_date    1:57   14.61 .192
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 004:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18    2.300 No_date    1:55   37.54 .494
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 004:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12    1.041 No_date    1:56   21.58  n/a
                    +  09:C-3        2.68     .111 No_date    1:57   14.61  n/a
                    +  08:C-4       19.18    2.300 No_date    1:55   37.54  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98    3.448 No_date    1:55   29.15  n/a
  ** END OF RUN :   4

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 RUN:COMMAND#
 005:0001-----------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   5 ]
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 005:0002-----------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 005:0003-----------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  2yr-12hr SCS Type II (30 min time step)
      [SDT=30.00:SDUR=  12.00:PTOT=  42.34]
 005:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00     .297 No_date    9:36    2.89 .068
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 005:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00     .297 No_date    9:36    2.89  n/a
            diverted <= 08:NE       142.50     .149 No_date    9:36    2.89  n/a
            diverted <= 09:Re.SE    142.50     .149 No_date    9:36    2.89  n/a
 005:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .039 No_date    7:38    8.89 .210
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 005:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .045 No_date    6:46    4.79 .113
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 005:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50     .149 No_date    9:36    2.89  n/a
                    +   02:C-EX2      4.79     .039 No_date    7:38    8.89  n/a
                    +   03:C-EX3      5.31     .045 No_date    6:46    4.79  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60     .171 No_date    8:05    3.14  n/a
 005:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60     .171 No_date    8:05    3.14  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60     .171 No_date    8:05    3.14  n/a
 005:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .077 No_date    6:10    5.97 .141
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 005:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50     .149 No_date    9:36    2.89  n/a
                    +   04:OVF         .00     .000 No_date    0:00     .00  n/a
                    +   05:C1         7.10     .077 No_date    6:10    5.97  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60     .158 No_date    9:11    3.03  n/a
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 005:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .144 No_date    6:10    6.28 .148
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 005:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .077 No_date    6:10    5.97  n/a
                    +  06:C2a       12.37     .144 No_date    6:10    6.28  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47     .221 No_date    6:10    6.17  n/a
 005:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95     .195 No_date    6:10    8.48 .200
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 005:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86     .271 No_date    6:18    5.88 .139
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 005:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95     .195 No_date    6:10    8.48  n/a
                    +  03:C-EX5     13.86     .271 No_date    6:18    5.88  n/a
                    +  10:CulvIN   152.60     .171 No_date    8:05    3.14  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41     .514 No_date    6:16    3.55  n/a
 005:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12     .188 No_date    6:10    6.28 .148
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 005:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .015 No_date    6:12    3.52 .083
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 005:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18     .555 No_date    6:08   13.89 .328
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 005:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12     .188 No_date    6:10    6.28  n/a
                    +  09:C-3        2.68     .015 No_date    6:12    3.52  n/a
                    +  08:C-4       19.18     .555 No_date    6:08   13.89  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98     .755 No_date    6:08    9.93  n/a
  ** END OF RUN :   5

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```

```
 RUN:COMMAND#
 006:0001-----------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   6 ]
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 006:0002-----------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 006:0003-----------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  5yr-12hr SCS Type II (30 min time step)
      [SDT=30.00:SDUR=  12.00:PTOT=  56.18]
 006:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00     .665 No_date    9:18    6.30 .112
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 006:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00     .665 No_date    9:18    6.30  n/a
            diverted <= 08:NE       142.50     .332 No_date    9:18    6.30  n/a
            diverted <= 09:Re.SE    142.50     .332 No_date    9:18    6.30  n/a
 006:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .055 No_date    8:22   17.46 .311
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 006:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .180 No_date    6:22   12.72 .226
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 006:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50     .332 No_date    9:18    6.30  n/a
                    +   02:C-EX2      4.79     .055 No_date    8:22   17.46  n/a
                    +   03:C-EX3      5.31     .180 No_date    6:22   12.72  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60     .380 No_date    8:43    6.87  n/a
 006:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60     .380 No_date    8:43    6.87  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60     .380 No_date    8:43    6.87  n/a
 006:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .157 No_date    6:09   11.34 .202
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 006:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50     .332 No_date    9:18    6.30  n/a
                    +   04:OVF         .00     .000 No_date    0:00     .00  n/a
                    +   05:C1         7.10     .157 No_date    6:09   11.34  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60     .352 No_date    9:06    6.54  n/a
```

```
 006:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .287 No_date    6:09   11.76 .209
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 006:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .157 No_date    6:09   11.34  n/a
                    +  06:C2a       12.37     .287 No_date    6:09   11.76  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47     .444 No_date    6:09   11.60  n/a
 006:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95     .404 No_date    6:06   17.23 .307
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 006:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86     .734 No_date    6:09   13.99 .249
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 006:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95     .404 No_date    6:06   17.23  n/a
                    +  03:C-EX5     13.86     .734 No_date    6:09   13.99  n/a
                    +  10:CulvIN   152.60     .380 No_date    8:43    6.87  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41    1.347 No_date    6:10    7.80  n/a
 006:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12     .373 No_date    6:09   11.76 .209
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 006:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .035 No_date    6:10    7.32 .130
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 006:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18     .935 No_date    6:07   22.90 .408
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 006:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12     .373 No_date    6:09   11.76  n/a
                    +  09:C-3        2.68     .035 No_date    6:10    7.32  n/a
                    +  08:C-4       19.18     .935 No_date    6:07   22.90  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98    1.342 No_date    6:08   17.07  n/a
  ** END OF RUN :   6

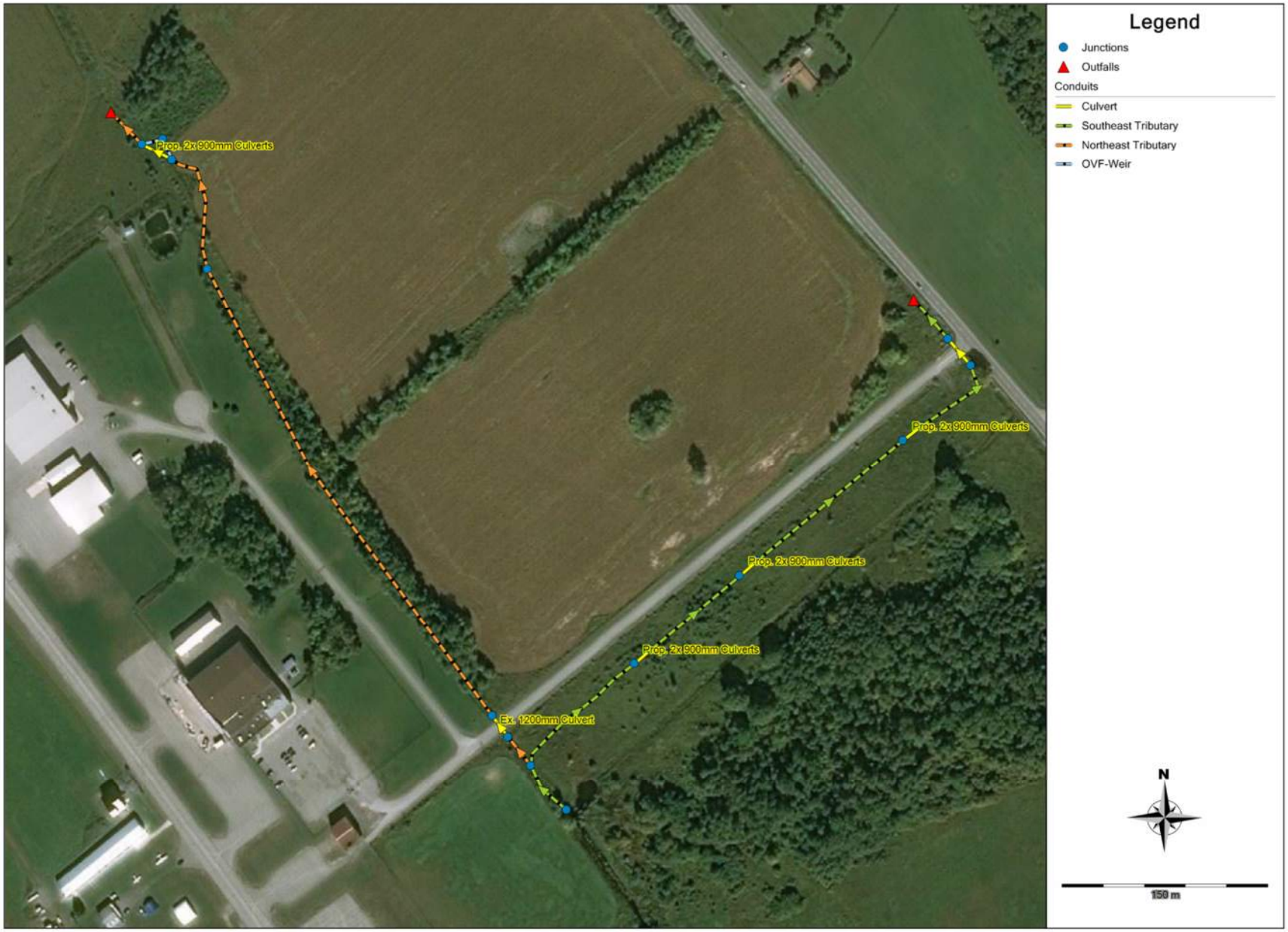
********************************************************************************
```

```
 RUN:COMMAND#
 007:0001-----------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   7 ]
#*******************************************************************************
#  Project Name: [West Capital Airpark-Business Park]  Project Number: [102085]
#  Date        : 25-11-2013
#  Modeller    : [R.Langlois]
#  Company     : NOVATECH ENGINEERING CONSULTANTS LTD
#  License #   :  5320763
#*******************************************************************************
 007:0002-----------------------------------------------------------------------
     DEFAULT VALUES
      Filename = M:\2002\102085\DATA\CALCUL~1\SWMHYMO\ottawa.def
      ICASEdv  = 1 (read and print data)
      FileTitle= ------ ENTER YOUR COMMENTS ON THIS LINE AND THE NEXT ONE ---
                 ------ PARAMETER VALUES MUST BE ENTERD AFTER COLUMN 60 ----
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
      Parameters used in NASHYD:
      [Ia=   4.67 mm] [N= 3.00]
 007:0003-----------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  = City of Ottawa:  100yr-12hr SCS Type II (10 min time step)
      [SDT=10.00:SDUR=  12.00:PTOT=  93.91]
 007:0004--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:C-EX1    285.00    2.235 No_date    8:59   20.50 .218
      [CN= 53.5: N= 2.00]
      [Tp= 2.00:DT= 1.00]
 007:0005--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DIVERT HYD      -> 01:C-EX1    285.00    2.235 No_date    8:59   20.50  n/a
            diverted <= 08:NE       142.50    1.117 No_date    8:59   20.50  n/a
            diverted <= 09:Re.SE    142.50    1.117 No_date    8:59   20.50  n/a
 007:0006--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     02:C-EX2      4.79     .211 No_date    7:19   41.38 .441
      [XIMP=.01:TIMP=.30]
      [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
      [Pervious     area: IAper= 4.67:SLPP= .15:LGP= 870.:MNP=.100:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI=2.00:LGI= 870.:MNI=.013:SCI=   .0]
 007:0007--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX3      5.31     .611 No_date    6:11   37.18 .396
      [XIMP=.01:TIMP=.11]
      [SLP= .20:DT= 1.00]
      [LOSS= 1 : HORTONS]
 007:0008--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            08:NE       142.50    1.117 No_date    8:59   20.50  n/a
                      +  02:C-EX2      4.79     .211 No_date    7:19   41.38  n/a
                      +  03:C-EX3      5.31     .611 No_date    6:11   37.18  n/a
      [DT= 1.00]  SUM=  01:NE-1     152.60    1.220 No_date    8:18   21.74  n/a
 007:0009--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     COMPUTE DUALHYD    01:NE-1     152.60    1.220 No_date    8:18   21.74  n/a
        Major System /  04:OVF         .00     .000 No_date    0:00     .00  n/a
        Minor System \  10:CulvIN   152.60    1.220 No_date    8:18   21.74  n/a
 007:0010--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:C1         7.10     .463 No_date    6:08   31.29 .333
      [CN= 64.5: N= 3.00]
      [Tp=  .25:DT= 1.00]
 007:0011--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            09:Re.SE    142.50    1.117 No_date    8:59   20.50  n/a
                      +  04:OVF         .00     .000 No_date    0:00     .00  n/a
                      +  05:C1         7.10     .463 No_date    6:08   31.29  n/a
      [DT= 1.00]  SUM=  08:SE-TOT   149.60    1.166 No_date    9:00   21.01  n/a
```

```
 007:0012--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:C2a       12.37     .826 No_date    6:08   31.97 .340
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 007:0013--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            05:C1         7.10     .463 No_date    6:08   31.29  n/a
                    +  06:C2a       12.37     .826 No_date    6:08   31.97  n/a
      [DT= 1.00]  SUM=  04:SOUTH     19.47    1.290 No_date    6:08   31.72  n/a
 007:0014--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     DESIGN STANDHYD    02:C-EX4      5.95     .985 No_date    6:02   41.11 .438
      [XIMP=.01:TIMP=.29]
      [SLP=1.04:DT= 1.00]
      [LOSS= 1 : HORTONS]
 007:0015--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
  *  DESIGN STANDHYD    03:C-EX5     13.86    2.081 No_date    6:04   38.93 .415
      [XIMP=.01:TIMP=.18]
      [SLP=1.00:DT= 1.00]
      [LOSS= 1 : HORTONS]
 007:0016--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            02:C-EX4      5.95     .985 No_date    6:02   41.11  n/a
                    +  03:C-EX5     13.86    2.081 No_date    6:04   38.93  n/a
                    +  10:CulvIN   152.60    1.220 No_date    8:18   21.74  n/a
      [DT= 1.00]  SUM=  05:CulvTX   172.41    3.888 No_date    6:05   23.79  n/a
 007:0017--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       10:C-2b      16.12    1.077 No_date    6:08   31.97 .340
      [CN= 64.8: N= 3.00]
      [Tp=  .25:DT= 1.00]
 007:0018--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       09:C-3        2.68     .122 No_date    6:08   22.68 .242
      [CN= 55.6: N= 3.00]
      [Tp=  .25:DT= 1.00]
 007:0019--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       08:C-4       19.18    2.173 No_date    6:06   51.89 .553
      [CN= 79.9: N= 3.00]
      [Tp=  .25:DT= 1.00]
 007:0020--------------ID:NHYD-------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            10:C-2b      16.12    1.077 No_date    6:08   31.97  n/a
                    +  09:C-3        2.68     .122 No_date    6:08   22.68  n/a
                    +  08:C-4       19.18    2.173 No_date    6:06   51.89  n/a
      [DT= 1.00]  SUM=  04:NORTH     37.98    3.371 No_date    6:07   41.38  n/a
 007:0002--------------------------------------------------------------------------
      FINISH
-------------------------------------------------------------------------------
```

```
********************************************************************************
     WARNINGS / ERRORS / NOTES
     -------------------------
 001:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 001:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 002:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 002:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 003:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 003:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 004:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 004:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 005:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 005:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 006:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 006:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 007:0007 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
 007:0015 DESIGN STANDHYD
      *** WARNING: For areas with impervious ratios below
                   20%, this routine may not be applicable.
   Simulation ended on 2013-11-25     at 11:34:09
================================================================================
```

Carp Airport: Southeast and Northeast Tributaries (102085)
PCSWMM Model Schematic



Date: 21/08/2018
M:\2002\102085\DATA\Calculations\SWM\SE-NE Trib Culverts\PCSWMM Model Schematic.docx

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

WARNING 02: maximum depth increased for Node J10
WARNING 02: maximum depth increased for Node J3
WARNING 02: maximum depth increased for Node J6
WARNING 02: maximum depth increased for Node J7
WARNING 02: maximum depth increased for Node J9

*************
Element Count
*************
Number of rain gages ...... 0
Number of subcatchments ... 0
Number of nodes ........... 18
Number of links ........... 18
Number of pollutants ...... 0
Number of land uses ....... 0


************
Node Summary
************
                                  Invert      Max.    Ponded    External
Name                Type           Elev.     Depth      Area    Inflow
-------------------------------------------------------------------------
J1                  JUNCTION       112.68      2.00       0.0
J10                 JUNCTION       111.11      2.20       0.0
J11                 JUNCTION       111.00      2.10       0.0
J12                 JUNCTION       110.75      2.10       0.0
J13                 JUNCTION       109.08      2.00       0.0
J14                 JUNCTION       108.15      3.05       0.0    Yes
J15                 JUNCTION       108.05      3.15       0.0
J16                 JUNCTION       109.20      1.00       0.0
J2                  JUNCTION       112.61      2.00       0.0
J3                  JUNCTION       111.98      2.53       0.0    Yes
J4                  JUNCTION       111.88      2.00       0.0
J5                  JUNCTION       112.01      2.20       0.0    Yes
J6                  JUNCTION       111.95      2.20       0.0
J7                  JUNCTION       111.67      2.20       0.0
J8                  JUNCTION       111.62      2.20       0.0
J9                  JUNCTION       111.16      2.20       0.0
OF1                 OUTFALL        107.80      2.00       0.0
OF2                 OUTFALL        110.75      2.00       0.0



************
Link Summary
************
Name              From Node        To Node          Type            Length    %Slope Roughness
-----------------------------------------------------------------------------------------------
1                 J1               J2               CONDUIT           42.0    0.1667    0.0400
10                J6               J7               CONDUIT           83.0    0.3374    0.0400
11                J7               J8               CONDUIT           16.0    0.3125    0.0240
12                J8               J9               CONDUIT          140.0    0.3286    0.0400
13                J9               J10              CONDUIT           16.0    0.3125    0.0240
14                J10              J11              CONDUIT           63.0    0.3333    0.0400
15                J11              J12              CONDUIT           24.7    1.0122    0.0240
16                J12              OF2              CONDUIT           20.0    0.5000    0.0400
17                J14              J16              CONDUIT            5.0   -1.0001    0.0130
18                J16              J15              CONDUIT            5.0    1.0001    0.0130
2                 J2               J3               CONDUIT           25.0    0.4000    0.0400
3                 J3               J4               CONDUIT           18.3    0.5465    0.0240
4                 J4               J13              CONDUIT          385.0    0.7273    0.0400
5                 J13              J14              CONDUIT           93.0    1.0001    0.0400
6                 J14              J15              CONDUIT           22.0    0.4546    0.0240
7                 J15              OF1              CONDUIT           30.0    0.8334    0.0400
8                 J2               J5               CONDUIT          108.0    0.3704    0.0400
9                 J5               J6               CONDUIT           16.0    0.3750    0.0240


**********************
Cross Section Summary
**********************
                                    Full      Full      Hyd.      Max.   No. of      Full
Conduit           Shape            Depth      Area      Rad.     Width  Barrels      Flow
-----------------------------------------------------------------------------------------
1                 SE_Trib           2.00     14.66      1.04     12.50        1     15.34
10                SE_Trib           2.00     14.66      1.04     12.50        1     21.83
11                CIRCULAR          0.90      0.64      0.23      0.90        2      0.55
12                SE_Trib           2.00     14.66      1.04     12.50        1     21.54
13                CIRCULAR          0.90      0.64      0.23      0.90        2      0.55
14                SE_Trib           2.00     14.66      1.04     12.50        1     21.70
15                CIRCULAR          1.20      1.13      0.30      1.20        1      2.13
16                SE_Trib           2.00     14.66      1.04     12.50        1     26.57
17                RECT_OPEN         1.00     10.00      0.83     10.00        1     68.13
18                RECT_OPEN         1.00     10.00      0.83     10.00        1     68.13
2                 SE_Trib           2.00     14.66      1.04     12.50        1     23.77
3                 CIRCULAR          1.20      1.13      0.30      1.20        1      1.56
4                 NE_Trib           2.00     13.67      1.18      9.60        1     32.47
5                 NE_Trib           2.00     13.67      1.18      9.60        1     38.07
```

6	CIRCULAR	0.90	0.64	0.23	0.90	2	0.66
7	NE_Trib	2.00	13.67	1.18	9.60	1	34.76
8	SE_Trib	2.00	14.66	1.04	12.50	1	22.87
9	CIRCULAR	0.90	0.64	0.23	0.90	2	0.60

****
Transect Summary
****

Transect NE_Trib
Area:

0.0004	0.0014	0.0032	0.0056	0.0088
0.0126	0.0172	0.0225	0.0285	0.0351
0.0425	0.0506	0.0629	0.0794	0.0966
0.1145	0.1331	0.1524	0.1724	0.1931
0.2145	0.2366	0.2594	0.2829	0.3071
0.3320	0.3576	0.3839	0.4109	0.4386
0.4666	0.4947	0.5227	0.5508	0.5788
0.6069	0.6349	0.6630	0.6911	0.7191
0.7472	0.7753	0.8034	0.8314	0.8595
0.8876	0.9157	0.9438	0.9719	1.0000

Hrad:

0.0161	0.0321	0.0482	0.0643	0.0803
0.0964	0.1125	0.1285	0.1446	0.1607
0.1767	0.1928	0.1279	0.1546	0.1805
0.2056	0.2300	0.2538	0.2771	0.2998
0.3222	0.3441	0.3657	0.3870	0.4079
0.4286	0.4490	0.4692	0.4892	0.5089
0.5372	0.5650	0.5923	0.6193	0.6458
0.6719	0.6976	0.7230	0.7480	0.7726
0.7968	0.8207	0.8442	0.8674	0.8903
0.9129	0.9351	0.9570	0.9787	1.0000

Width:

0.0250	0.0500	0.0750	0.1000	0.1250
0.1500	0.1750	0.2000	0.2250	0.2500
0.2750	0.3000	0.5749	0.5998	0.6247
0.6496	0.6745	0.6993	0.7242	0.7491
0.7740	0.7989	0.8237	0.8486	0.8735
0.8984	0.9233	0.9482	0.9730	0.9979
0.9980	0.9981	0.9982	0.9983	0.9984
0.9985	0.9986	0.9988	0.9989	0.9990
0.9991	0.9992	0.9993	0.9994	0.9995
0.9996	0.9997	0.9998	0.9999	1.0000

Transect SE_Trib
Area:

0.0003	0.0011	0.0025	0.0044	0.0068
0.0098	0.0134	0.0175	0.0221	0.0273
0.0330	0.0393	0.0461	0.0535	0.0614
0.0732	0.0858	0.0992	0.1133	0.1282
0.1439	0.1603	0.1775	0.1961	0.2160
0.2372	0.2598	0.2837	0.3090	0.3356
0.3636	0.3929	0.4236	0.4556	0.4890
0.5230	0.5570	0.5911	0.6252	0.6592
0.6933	0.7273	0.7614	0.7955	0.8296
0.8636	0.8977	0.9318	0.9659	1.0000

Hrad:

0.0178	0.0357	0.0535	0.0713	0.0891
0.1070	0.1248	0.1426	0.1604	0.1783
0.1961	0.2139	0.2317	0.2496	0.2674
0.2182	0.2409	0.2632	0.2850	0.3065
0.3277	0.3487	0.3640	0.3746	0.3863
0.3989	0.4122	0.4262	0.4406	0.4554
0.4707	0.4862	0.5021	0.5182	0.5345
0.5682	0.6015	0.6344	0.6668	0.6989
0.7306	0.7620	0.7930	0.8236	0.8538
0.8837	0.9133	0.9425	0.9714	1.0000

Width:

0.0160	0.0320	0.0480	0.0640	0.0800
0.0960	0.1120	0.1280	0.1440	0.1600
0.1760	0.1920	0.2080	0.2240	0.2400
0.3584	0.3808	0.4032	0.4256	0.4480
0.4704	0.4928	0.5238	0.5633	0.6029
0.6424	0.6820	0.7215	0.7611	0.8006
0.8402	0.8797	0.9193	0.9588	0.9984
0.9985	0.9986	0.9987	0.9988	0.9989
0.9990	0.9991	0.9993	0.9994	0.9995
0.9996	0.9997	0.9998	0.9999	1.0000

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CMS

```
Process Models:
  Rainfall/Runoff ........ NO
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Flow Routing Method ...... DYNWAVE
Starting Date ............ 08/07/2018 00:00:00
Ending Date .............. 08/08/2018 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Routing Time Step ........ 2.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 4
Head Tolerance ........... 0.001500 m


**************************        Volume         Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------      ---------
Dry Weather Inflow .......         0.000          0.000
Wet Weather Inflow .......         0.000          0.000
Groundwater Inflow .......         0.000          0.000
RDII Inflow ..............         0.000          0.000
External Inflow ..........        43.662        436.620
External Outflow .........        43.697        436.975
Flooding Loss ............         0.000          0.000
Evaporation Loss .........         0.000          0.000
Exfiltration Loss ........         0.000          0.000
Initial Stored Volume ....         0.173          1.729
Final Stored Volume ......         0.179          1.790
Continuity Error (%) .....        -0.095


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
```

```
Link 12 (18)
Link 13 (12)
Link 14 (10)
Link 11 (3)


************************
Routing Time Step Summary
************************
Minimum Time Step           :     1.50 sec
Average Time Step           :     2.00 sec
Maximum Time Step           :     2.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     2.04
Percent Not Converging      :     0.05


******************
Node Depth Summary
******************
```

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
J1	JUNCTION	0.28	0.28	112.96	0 20:31	0.28
J10	JUNCTION	0.97	0.97	112.08	0 02:21	0.97
J11	JUNCTION	0.87	0.87	111.87	0 08:45	0.87
J12	JUNCTION	0.80	0.80	111.55	0 08:45	0.80
J13	JUNCTION	0.61	0.61	109.69	0 00:00	0.61
J14	JUNCTION	1.17	1.17	109.32	0 00:00	1.17
J15	JUNCTION	0.87	0.87	108.92	0 00:00	0.87
J16	JUNCTION	0.10	0.10	109.30	0 00:00	0.10
J2	JUNCTION	0.35	0.35	112.96	0 15:56	0.35
J3	JUNCTION	0.96	0.96	112.94	0 07:30	0.96
J4	JUNCTION	0.66	0.66	112.54	0 15:57	0.66
J5	JUNCTION	0.96	0.96	112.97	0 07:30	0.96
J6	JUNCTION	0.97	0.97	112.92	0 11:20	0.97
J7	JUNCTION	0.97	0.97	112.64	0 06:06	0.97
J8	JUNCTION	0.97	0.97	112.59	0 06:06	0.97
J9	JUNCTION	0.97	0.97	112.13	0 02:21	0.97
OF1	OUTFALL	0.74	0.74	108.54	0 00:00	0.74
OF2	OUTFALL	0.52	0.52	111.27	0 08:45	0.52

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
J1	JUNCTION	0.000	0.000	0 02:55	0	3.6e-005	0.198
J10	JUNCTION	0.000	1.121	0 02:21	0	95.2	0.001
J11	JUNCTION	0.000	1.109	0 02:21	0	95.2	-0.001
J12	JUNCTION	0.000	1.104	0 08:45	0	95.2	-0.000
J13	JUNCTION	0.000	1.288	0 00:00	0	111	-0.000
J14	JUNCTION	2.668	3.956	0 00:00	230	342	-0.000
J15	JUNCTION	0.000	3.956	0 00:00	0	342	0.000
J16	JUNCTION	0.000	1.572	0 00:00	0	136	-0.000
J2	JUNCTION	0.000	0.068	0 15:56	0	5.86	-0.000
J3	JUNCTION	1.220	1.288	0 15:56	105	111	0.000
J4	JUNCTION	0.000	1.288	0 07:30	0	111	-0.000
J5	JUNCTION	1.166	1.166	0 00:00	101	101	0.000
J6	JUNCTION	0.000	1.098	0 20:33	0	94.9	-0.000
J7	JUNCTION	0.000	1.098	0 11:20	0	94.9	0.000
J8	JUNCTION	0.000	1.100	0 06:06	0	94.9	0.000
J9	JUNCTION	0.000	1.105	0 23:35	0	94.9	-0.374
OF1	OUTFALL	0.000	3.956	0 00:00	0	342	0.000
OF2	OUTFALL	0.000	1.104	0 08:45	0	95.2	0.000

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF1	100.00	3.956	3.956	341.749
OF2	100.00	1.102	1.104	95.225
System	100.00	5.058	5.060	436.974

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
1	CHANNEL	0.000	0 02:55	0.00	0.00	0.16
10	CHANNEL	1.098	0 11:20	0.65	0.05	0.38
11	CONDUIT	1.100	0 06:06	0.86	1.00	1.00
12	CHANNEL	1.105	0 23:35	0.65	0.05	0.39
13	CONDUIT	1.121	0 02:21	0.88	1.02	1.00
14	CHANNEL	1.109	0 02:21	0.64	0.05	0.39
15	CONDUIT	1.104	0 08:45	1.31	0.52	0.70
16	CHANNEL	1.104	0 08:45	1.17	0.04	0.30
17	CONDUIT	1.572	0 00:00	1.19	0.02	0.13
18	CONDUIT	1.572	0 00:00	1.61	0.02	0.10
2	CHANNEL	0.068	0 15:56	0.18	0.00	0.20
3	CONDUIT	1.288	0 07:30	1.58	0.82	0.68
4	CHANNEL	1.288	0 00:00	0.83	0.04	0.32
5	CHANNEL	1.288	0 00:00	0.39	0.03	0.44
6	CONDUIT	2.384	0 00:00	1.88	1.80	0.98
7	CHANNEL	3.956	0 00:00	1.48	0.11	0.40
8	CHANNEL	0.068	0 15:58	0.09	0.00	0.28
9	CONDUIT	1.098	0 20:33	0.86	0.91	1.00

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
10	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
11	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
12	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.12	0.00
13	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
14	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.53	0.00
15	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
16	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
17	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
18	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
4	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
6	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
7	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
8	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
9	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
11	24.00	24.00	24.00	24.00	23.57
13	24.00	24.00	24.00	18.05	18.23
6	0.01	24.00	0.01	24.00	0.01
9	24.00	24.00	24.00	0.01	0.01

Analysis begun on: Tue Aug 21 11:34:22 2018
Analysis ended on: Tue Aug 21 11:34:24 2018
Total elapsed time: 00:00:02

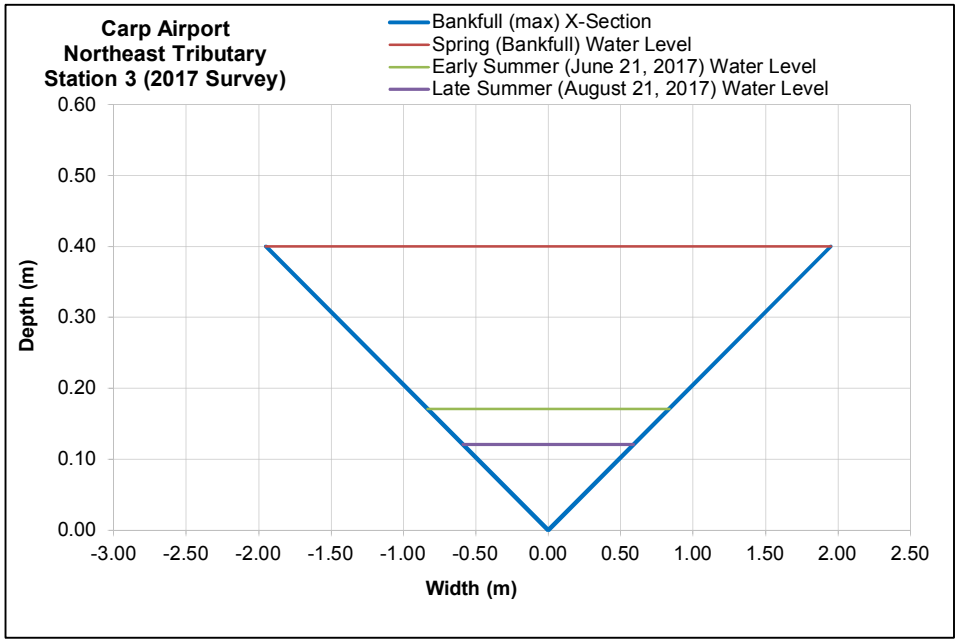
Capr Airport (102085)
Manning's Equation for Northeast Tributary (Station 3)

Information from Fisheries Technical Report (Bowfin, 2018)
Measured Data from 2017 Survey

Channel Parameters[1]	
Parameter	**Value**
Bankfull (max) Depth	0.40 m
Bankfull (top) Width	3.90 m
Bottom Width	0.00 m
Right Side Slopes (H:V)	4.88
Left Side Slopes (H:V)	4.88
Longitudinal Slope	0.40%
Mannings 'n' (Spring)	0.040
Mannings 'n' (Early Summer)	0.045
Mannings 'n' (Late Summer)	0.050

Description[1]
Station 3 is located within the Northeast Tributary, immediatly downstream the 50/50 split between the Northeast Tributary and Southeast Tributary (east). The measured length of this station was 50.5m.

Measured Flow Data[1]			
Parameter	**Spring (Bankfull)**	**Early Summer (June 21, 2017)**	**Late Summer (August 21, 2017)**
Flow Depth	0.40 m	0.171 m	0.121 m
Wetted Top Width	3.90 m	3.00 m	2.90 m
Area	0.78 m²	0.14 m²	0.07 m²
Hydraulic R.	0.20 m	0.08 m	0.06 m
Velocity	**0.53 m/s**	**0.27 m/s**	**0.19 m/s**
Flow	**416 L/s**	**38 L/s**	**14 L/s**
Measured Depth Range	*(0.35m - 0.67m)*	*(0.09m - 0.29m)*	*(0.13m - 0.29m)*



[1] *West Capital Airpark Subdivision: Carp River Crossing - Fisheries Technical Report, Bowfin Environmental Consulting Inc. (2018)*

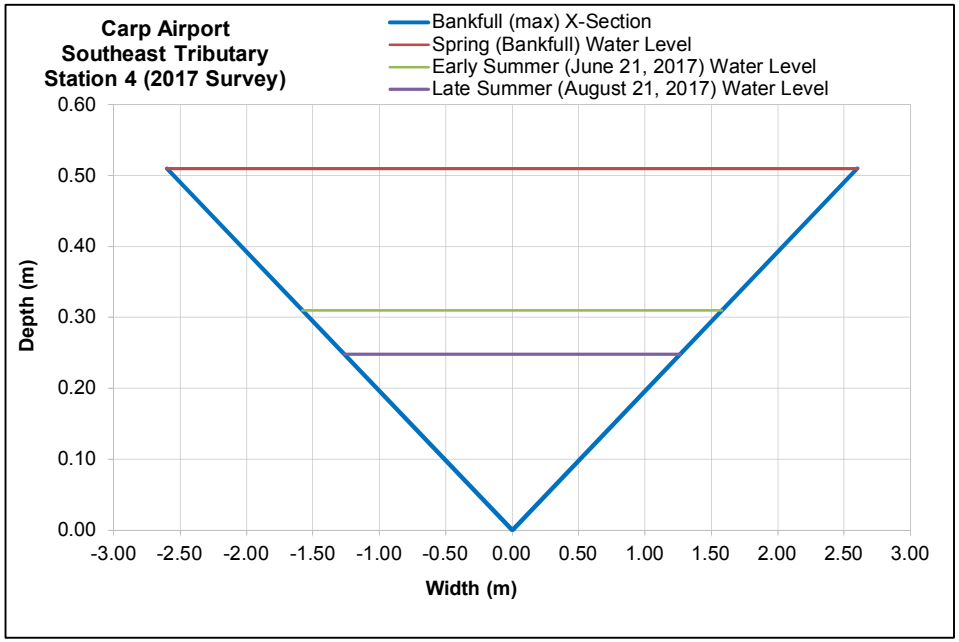
Capr Airport (102085)
Manning's Equation for Southeast Tributary (Station 4)

Information from Fisheries Technical Report (Bowfin, 2018)
Measured Data from 2017 Survey

Channel Parameters[1]	
Parameter	**Value**
Bankfull (max) Depth	0.51 m
Bankfull (top) Width	5.20 m
Bottom Width	0.00 m
Right Side Slopes (H:V)	5.10
Left Side Slopes (H:V)	5.10
Longitudinal Slope	0.33%
Mannings 'n' (Spring)	0.040
Mannings 'n' (Early Summer)	0.045
Mannings 'n' (Late Summer)	0.050

Description[1]
Station 4 is located within the Southeast Tributary, upstream the 50/50 split between the Northeast Tributary and Southeast Tributary (east). The measured length of this station was 84m.

Measured Flow Data[1]			
Parameter	**Spring (Bankfull)**	**Early Summer (June 21, 2017)**	**Late Summer (August 21, 2017)**
Flow Depth	0.51 m	0.31 m	0.248 m
Wetted Top Width	5.20 m	4.10 m	4.40 m
Area	1.33 m²	0.49 m²	0.31 m²
Hydraulic R.	0.25 m	0.15 m	0.12 m
Velocity	**0.57 m/s**	**0.36 m/s**	**0.28 m/s**
Flow	**757 L/s**	**178 L/s**	**89 L/s**
Measured Depth Range	*(0.35m - 0.95m)*	*(0.11m - 0.70m)*	*(0.11m - 0.52m)*



[1] *West Capital Airpark Subdivision: Carp River Crossing - Fisheries Technical Report, Bowfin Environmental Consulting Inc. (2018)*

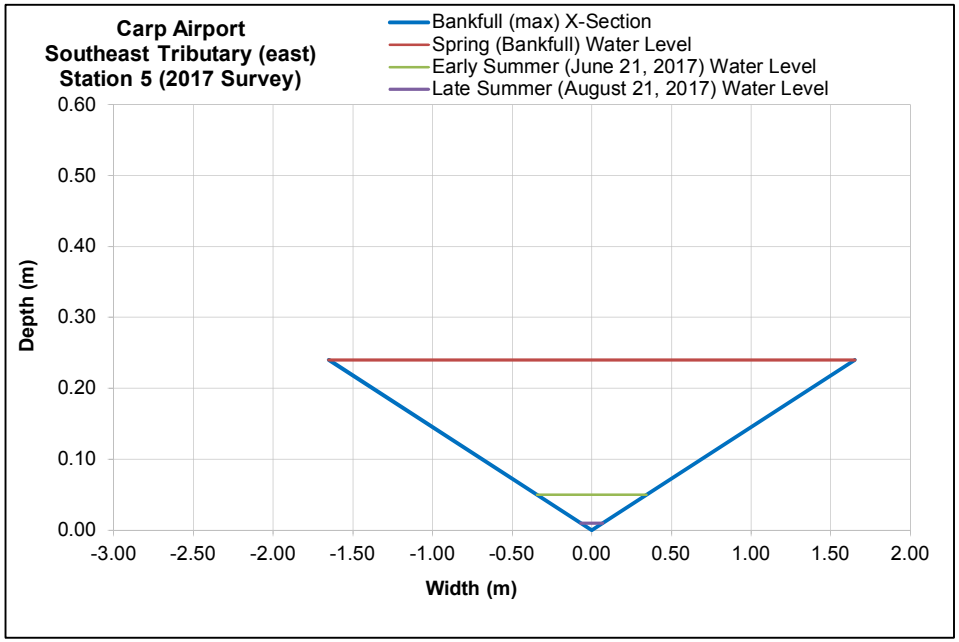
Capr Airport (102085)
Manning's Equation for Southeast Tributary - East (Station 5)

Information from Fisheries Technical Report (Bowfin, 2018)
Measured Data from 2017 Survey

Channel Parameters[1]	
Parameter	**Value**
Bankfull (max) Depth	0.24 m
Bankfull (top) Width	3.30 m
Bottom Width	0.00 m
Right Side Slopes (H:V)	6.88
Left Side Slopes (H:V)	6.88
Longitudinal Slope	0.33%
Mannings 'n' (Spring)	0.040
Mannings 'n' (Early Summer)	0.045
Mannings 'n' (Late Summer)	0.050

Description[1]
Station 5 is located within the Southeast Tributary (east), approximately 308m downstream the confluence with the Northeast Tributary; 80m upstream from Carp Road. The measured length of this station was 57m.

Measured Flow Data[1]			
Parameter	**Spring (Bankfull)**	**Early Summer (June 21, 2017)**	**Late Summer (August 21, 2017)**
Flow Depth	0.24 m	0.05 m	0.01 m
Wetted Top Width	3.30 m	0.70 m	0.50 m
Area	0.40 m²	0.02 m²	0.00 m²
Hydraulic R.	0.12 m	0.02 m	0.00 m
Velocity	**0.35 m/s**	**0.11 m/s**	**0.03 m/s**
Flow	**138 L/s**	**1.9 L/s**	**0.02 L/s**
Measured Depth Range	*(0.26m - 0.36m)*	*(0.02m - 0.11m)*	*(0.01m - 0.04m)*



[1] *West Capital Airpark Subdivision: Carp River Crossing - Fisheries Technical Report, Bowfin Environmental Consulting Inc. (2018)*

Carp Airport Business Park Phase 2 (102085-14)
Estimate of Receiving Tributary Water Elevations
Manning's Equation

NOVATECH
Engineers, Planners & Landscape Architects

Northeast and Southeast Flows from Phase 1 Business Park SWMHYMO Model

Storm	NE Tributary [1]	SE Tributary [1]
2yr - 12hr SCS	**0.514**	**0.158**
5yr - 12hr SCS	**1.347**	**0.352**
100yr - 12hr SCS	**3.888**	**1.166**

[(1)] *Flows from Carp Airport – Channel and Culvert Design Realigned Tributaries (Phase 1 Business Park) Memo (Novatech, September 2018)*

Summary of Receiving Watercourse 100-year HGLs

Pond	Tributary Bottom Elevation (m)	100-year Depth (m)	100-year HGL (m)	Bottom of Pond (m)	Clearance (m)
Pond A	100.81	0.674	101.48	103.30	1.82
Pond B	101.01	0.508	101.52	102.35	0.83
Linear Pond C	104.74	0.837	105.58	105.97	0.39
Linear Pond D	106.26	0.79	107.05	106.95	-0.10
Linear Pond E	107.40	0.663	108.06	107.70	-0.36

Pond A Outlet - NE Tributary Cross-Section

V-bottom ditch (different side slopes)		*Full Flow*	2-year	5-year	100-year
Flow Depth	m	2.01	0.316	0.453	**0.674**
Side slope (L)	1 to X	9.2	9.2	9.2	9.2
Side slope (R)	1 to X	19.8	19.8	19.8	19.8
Top Width (L)	m	18.5	2.9	4.2	6.2
Top Width (R)	m	39.7	6.2	9.0	13.3
Area	m^2	58.462	1.445	2.969	6.574
Perimeter	m	58.33	9.17	13.15	19.56
R=A/P	m	1.00	0.16	0.23	0.34
n		0.035	0.035	0.035	0.035
Slope	m/m	0.002	0.002	0.002	0.002
Q_{max}	**m^3/s**	**71.652**	**0.516**	**1.348**	**3.889**
V_{max}	m/s	1.226	0.357	0.454	0.592

Pond B Outlet - NE Tributary Cross-Section

V-bottom ditch (different side slopes)		*Full Flow*	2-year	5-year	100-year
Flow Depth	m	1.99	0.238	0.342	**0.508**
Side slope (L)	1 to X	13.7	13.7	13.7	13.7
Side slope (R)	1 to X	3.1	3.1	3.1	3.1
Top Width (L)	m	27.2	3.3	4.7	6.9
Top Width (R)	m	6.1	0.7	1.0	1.6
Area	m^2	33.134	0.474	0.979	2.159
Perimeter	m	33.69	4.03	5.79	8.60
R=A/P	m	0.98	0.12	0.17	0.25
n		0.035	0.035	0.035	0.035
Slope	m/m	0.025	0.025	0.025	0.025
Q_{max}	**m^3/s**	**148.596**	**0.516**	**1.357**	**3.897**
V_{max}	m/s	4.485	1.089	1.386	1.805

Carp Airport Business Park Phase 2 (102085-14)
Estimate of Receiving Tributary Water Elevations
Manning's Equation

NOVATECH
Engineers, Planners & Landscape Architects

Pond C Outlet - Carp Road Ditch Cross-section

V-bottom ditch (different side slopes)		*Full Flow*	2-year	5-year	100-year
Flow Depth	m	1.75	0.396	0.534	**0.837**
Side slope (L)	1 to X	2.1	2.1	2.1	2.1
Side slope (R)	1 to X	0.9	0.9	0.9	0.9
Top Width (L)	m	3.7	0.8	1.1	1.8
Top Width (R)	m	1.6	0.4	0.5	0.8
Area	m^2	4.592	0.235	0.428	1.051
Perimeter	m	6.42	1.45	1.96	3.07
R=A/P	m	0.71	0.16	0.22	0.34
n		0.035	0.035	0.035	0.035
Slope	m/m	0.006	0.006	0.006	0.006
Q_{max}	**m^3/s**	**8.349**	**0.159**	**0.352**	**1.168**
V_{max}	m/s	1.818	0.675	0.824	1.112

Pond D Outlet - Carp Road Ditch Cross-section

V-bottom ditch (different side slopes)		*Full Flow*	2-year	5-year	100-year
Flow Depth	m	1.07	0.374	0.505	**0.79**
Side slope (L)	1 to X	1.9	1.9	1.9	1.9
Side slope (R)	1 to X	1.5	1.5	1.5	1.5
Top Width (L)	m	2.0	0.7	0.9	1.5
Top Width (R)	m	1.6	0.6	0.8	1.2
Area	m^2	1.933	0.236	0.431	1.054
Perimeter	m	4.20	1.47	1.98	3.10
R=A/P	m	0.46	0.16	0.22	0.34
n		0.035	0.035	0.035	0.035
Slope	m/m	0.006	0.006	0.006	0.006
Q_{max}	**m^3/s**	**2.618**	**0.159**	**0.354**	**1.166**
V_{max}	m/s	1.354	0.672	0.821	1.106

Pond E Outlet - Carp Road Ditch Cross-section

V-bottom ditch (different side slopes)		*Full Flow*	2-year	5-year	100-year
Flow Depth	m	1.46	0.313	0.423	**0.663**
Side slope (L)	1 to X	2.0	2.0	2.0	2.0
Side slope (R)	1 to X	2.0	2.0	2.0	2.0
Top Width (L)	m	3.0	0.6	0.9	1.3
Top Width (R)	m	2.9	0.6	0.9	1.3
Area	m^2	4.297	0.197	0.361	0.886
Perimeter	m	6.57	1.41	1.90	2.98
R=A/P	m	0.65	0.14	0.19	0.30
n		0.035	0.035	0.035	0.035
Slope	m/m	0.011	0.011	0.011	0.011
Q_{max}	**m^3/s**	**9.604**	**0.158**	**0.353**	**1.170**
V_{max}	m/s	2.235	0.801	0.979	1.321

HY-8 Culvert Analysis Report – NE Trib.

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.51 cms

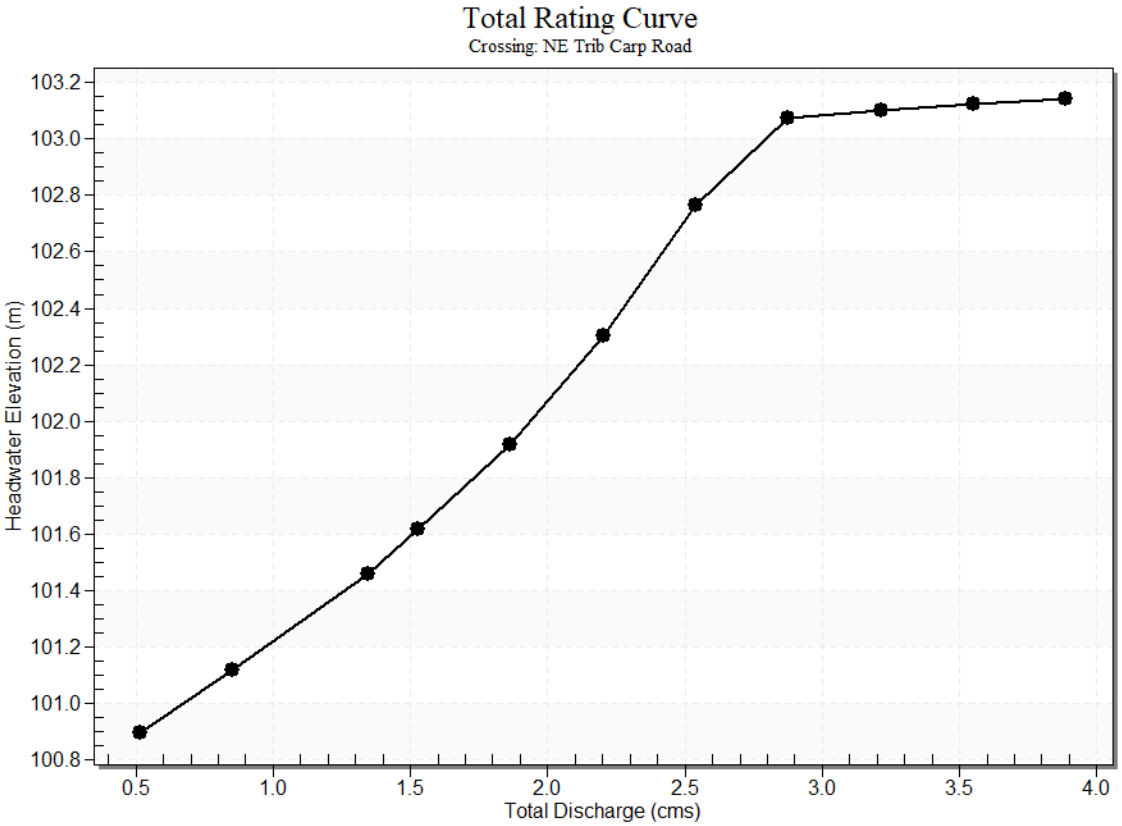
Design Flow: 1.35 cms

Maximum Flow: 3.89 cms

Table 1 - Summary of Culvert Flows at Crossing: NE Trib Carp Road

Headwater Elevation (m)	Total Discharge (cms)	Culvert Discharge (cms)	Roadway Discharge (cms)	Iterations
100.90	0.51	0.51	0.00	1
101.12	0.85	0.85	0.00	1
101.46	1.35	1.35	0.00	1
101.62	1.53	1.53	0.00	1
101.92	1.86	1.86	0.00	1
102.30	2.20	2.20	0.00	1
102.77	2.54	2.54	0.00	1
103.07	2.88	2.73	0.14	4
103.10	3.21	2.75	0.46	6
103.12	3.55	2.76	0.79	5
103.14	3.89	2.76	1.12	4
103.05	2.72	2.72	0.00	Overtopping

Rating Curve Plot for Crossing: NE Trib Carp Road



Culvert Data: Culvert

Table 2 - Culvert Summary Table: Culvert

Total Discharge (cms)	Culvert Discharge (cms)	Headwater Elevation (m)	Inlet Control Depth (m)	Outlet Control Depth (m)	Flow Type	Normal Depth (m)	Critical Depth (m)	Outlet Depth (m)	Tailwater Depth (m)	Outlet Velocity (m/s)	Tailwater Velocity (m/s)
0.51 cms	0.51 cms	100.90	0.60	0.530	1-JS1f	0.32	0.40	1.00	0.26	0.65	1.48
0.85 cms	0.85 cms	101.12	0.82	0.709	1-JS1f	0.42	0.53	1.00	0.31	1.08	1.67
1.35 cms	1.35 cms	101.46	1.16	1.066	5-JS1f	0.55	0.67	1.00	0.37	1.72	1.88
1.53 cms	1.53 cms	101.62	1.30	1.319	1-S1f	0.59	0.71	1.00	0.39	1.94	1.94
1.86 cms	1.86 cms	101.92	1.62	1.568	4-FFf	0.68	0.79	1.00	0.42	2.37	2.04
2.20 cms	2.20 cms	102.30	2.00	1.970	4-FFf	0.78	0.85	1.00	0.44	2.80	2.12
2.54 cms	2.54 cms	102.77	2.47	2.432	4-FFf	1.00	0.89	1.00	0.47	3.23	2.20
2.88 cms	2.73 cms	103.07	2.77	2.736	4-FFf	1.00	0.91	1.00	0.49	3.48	2.27
3.21 cms	2.75 cms	103.10	2.80	2.782	4-FFf	1.00	0.92	1.00	0.51	3.50	2.33
3.55 cms	2.76 cms	103.12	2.82	2.820	4-FFf	1.00	0.92	1.00	0.53	3.52	2.39
3.89 cms	2.76 cms	103.14	2.82	2.840	4-FFf	1.00	0.92	1.00	0.55	3.52	2.45

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

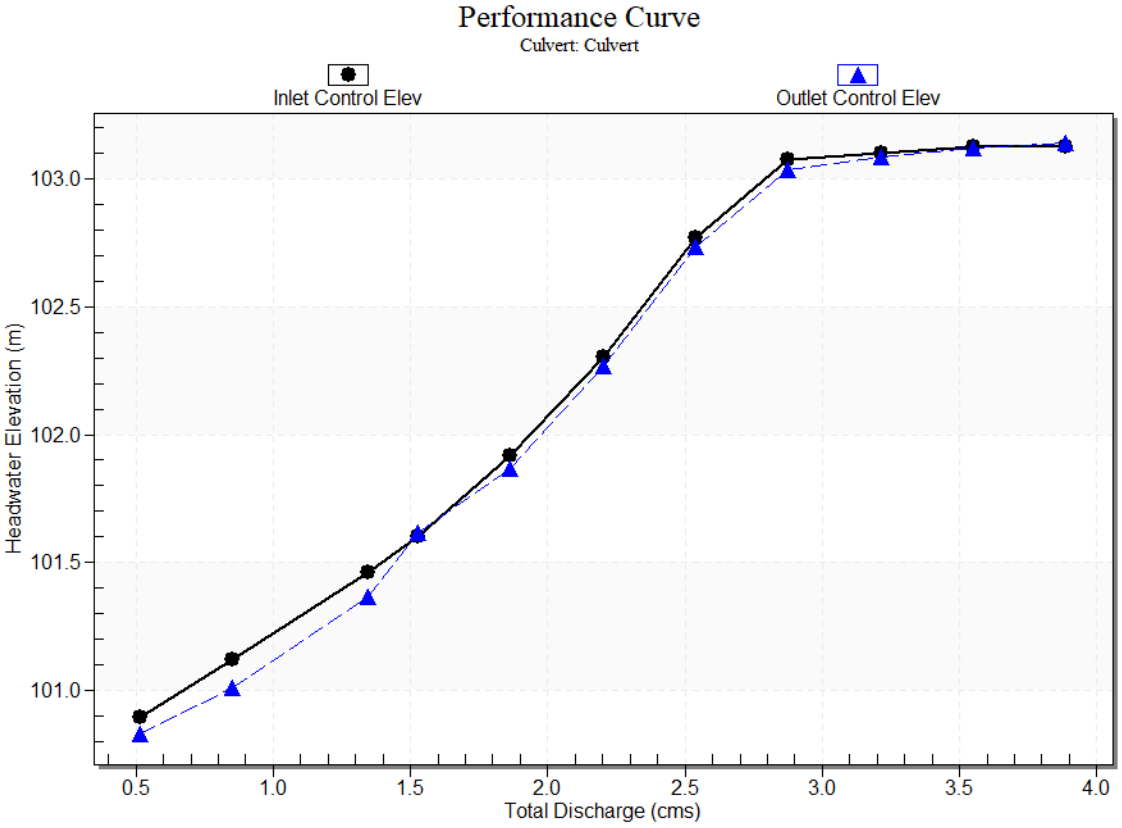
Inlet Elevation (invert): 100.30 m,

Outlet Elevation (invert): 99.68 m

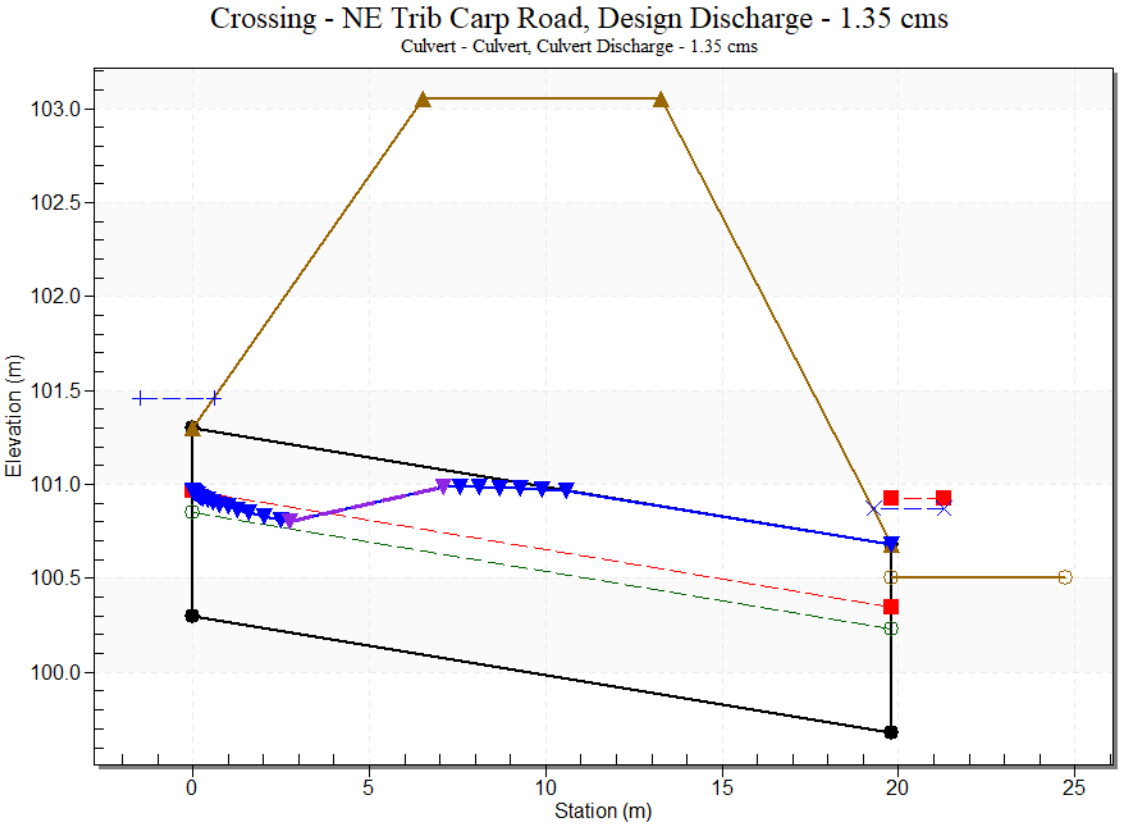
Culvert Length: 19.81 m,

Culvert Slope: 0.0313

Culvert Performance Curve Plot: Culvert



Water Surface Profile Plot for Culvert: Culvert



Site Data - Culvert

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 m

Inlet Elevation: 100.30 m

Outlet Station: 19.80 m

Outlet Elevation: 99.68 m

Number of Barrels: 1

Culvert Data Summary - Culvert

Barrel Shape: Circular

Barrel Diameter: 1000.00 mm

Barrel Material: Corrugated Steel

Embedment: 0.00 mm

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Tailwater Data for Crossing: NE Trib Carp Road

Table 3 - Downstream Channel Rating Curve (Crossing: NE Trib Carp Road)

Flow (cms)	Water Surface Elev (m)	Velocity (m/s)	Depth (m)	Shear (Pa)	Froude Number
0.51	100.76	0.26	1.48	106.04	1.31
0.85	100.81	0.31	1.67	128.13	1.35
1.35	100.87	0.37	1.88	152.19	1.39
1.53	100.89	0.39	1.94	159.48	1.40
1.86	100.92	0.42	2.04	171.89	1.42
2.20	100.94	0.44	2.12	182.96	1.44
2.54	100.97	0.47	2.20	193.01	1.45
2.88	100.99	0.49	2.27	202.25	1.46
3.21	101.01	0.51	2.33	210.85	1.47
3.55	101.03	0.53	2.39	218.89	1.48
3.89	101.05	0.55	2.45	226.47	1.49

Tailwater Channel Data - NE Trib Carp Road

Tailwater Channel Option: Triangular Channel

Side Slope (H:V): 5.25 (_:1)

Channel Slope: 0.0420

Channel Manning's n: 0.0350

Channel Invert Elevation: 100.50 m

Roadway Data for Crossing: NE Trib Carp Road

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 25.00 m

Crest Elevation: 103.05 m

Roadway Surface: Paved

Roadway Top Width: 6.75 m

HY-8 Culvert Analysis Report – SE Trib

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.16 cms

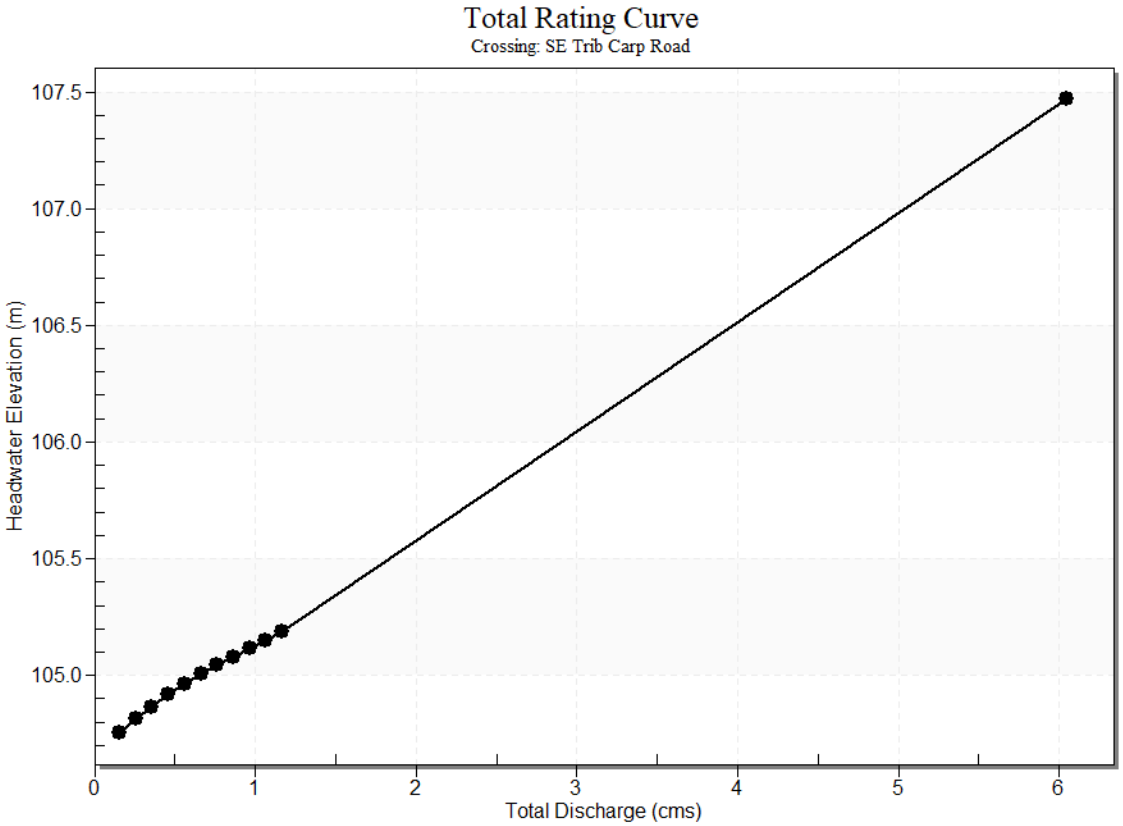
Design Flow: 0.35 cms

Maximum Flow: 1.17 cms

Table 1 - Summary of Culvert Flows at Crossing: SE Trib Carp Road

Headwater Elevation (m)	Total Discharge (cms)	Box Culv Discharge (cms)	Roadway Discharge (cms)	Iterations
104.76	0.16	0.16	0.00	1
104.82	0.26	0.26	0.00	1
104.87	0.35	0.35	0.00	1
104.92	0.46	0.46	0.00	1
104.96	0.56	0.56	0.00	1
105.00	0.66	0.66	0.00	1
105.04	0.76	0.76	0.00	1
105.08	0.86	0.86	0.00	1
105.12	0.96	0.96	0.00	1
105.15	1.07	1.07	0.00	1
105.19	1.17	1.17	0.00	1
107.43	5.81	5.81	0.00	Overtopping

Rating Curve Plot for Crossing: SE Trib Carp Road



Culvert Data: Box Culv

Table 2 - Culvert Summary Table: Box Culv

Total Discharge (cms)	Culvert Discharge (cms)	Headwater Elevation (m)	Inlet Control Depth (m)	Outlet Control Depth (m)	Flow Type	Normal Depth (m)	Critical Depth (m)	Outlet Depth (m)	Tailwater Depth (m)	Outlet Velocity (m/s)	Tailwater Velocity (m/s)
0.16 cms	0.16 cms	104.76	0.16	0.072	1-JS1t	0.06	0.09	0.40	0.17	0.22	1.97
0.26 cms	0.26 cms	104.82	0.22	0.108	1-JS1t	0.08	0.13	0.44	0.21	0.33	2.23
0.35 cms	0.35 cms	104.87	0.27	0.136	1-JS1t	0.09	0.16	0.46	0.23	0.42	2.41
0.46 cms	0.46 cms	104.92	0.32	0.164	1-JS1t	0.11	0.19	0.48	0.25	0.53	2.58
0.56 cms	0.56 cms	104.96	0.36	0.189	1-JS1t	0.13	0.21	0.50	0.27	0.62	2.71
0.66 cms	0.66 cms	105.00	0.40	0.212	1-JS1t	0.14	0.24	0.52	0.29	0.70	2.82
0.76 cms	0.76 cms	105.04	0.44	0.234	1-JS1t	0.15	0.26	0.54	0.31	0.79	2.92
0.86 cms	0.86 cms	105.08	0.48	0.256	1-JS1t	0.17	0.29	0.55	0.32	0.87	3.02
0.96 cms	0.96 cms	105.12	0.52	0.278	1-JS1t	0.18	0.31	0.57	0.34	0.95	3.10
1.07 cms	1.07 cms	105.15	0.55	0.300	1-JS1t	0.19	0.33	0.58	0.35	1.02	3.18
1.17 cms	1.17 cms	105.19	0.59	0.322	1-JS1t	0.20	0.35	0.59	0.36	1.10	3.25

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

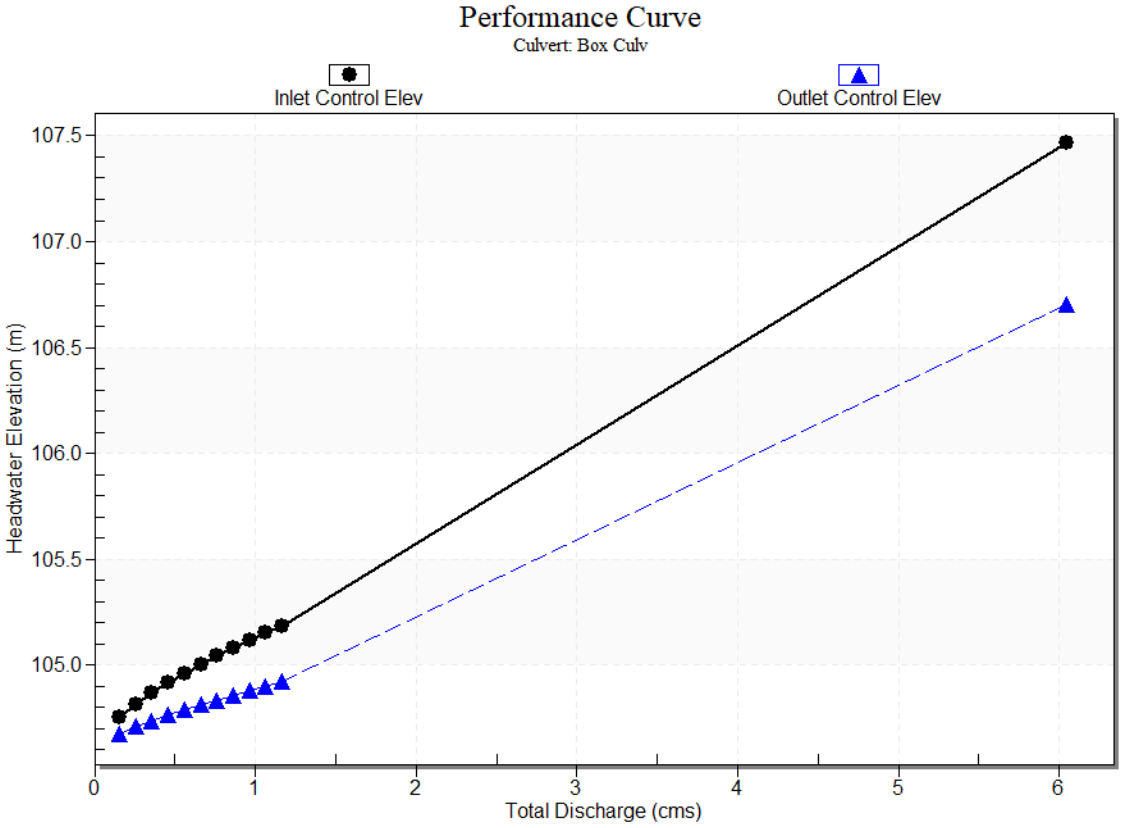
Inlet Elevation (invert): 104.60 m,

Outlet Elevation (invert): 104.27 m

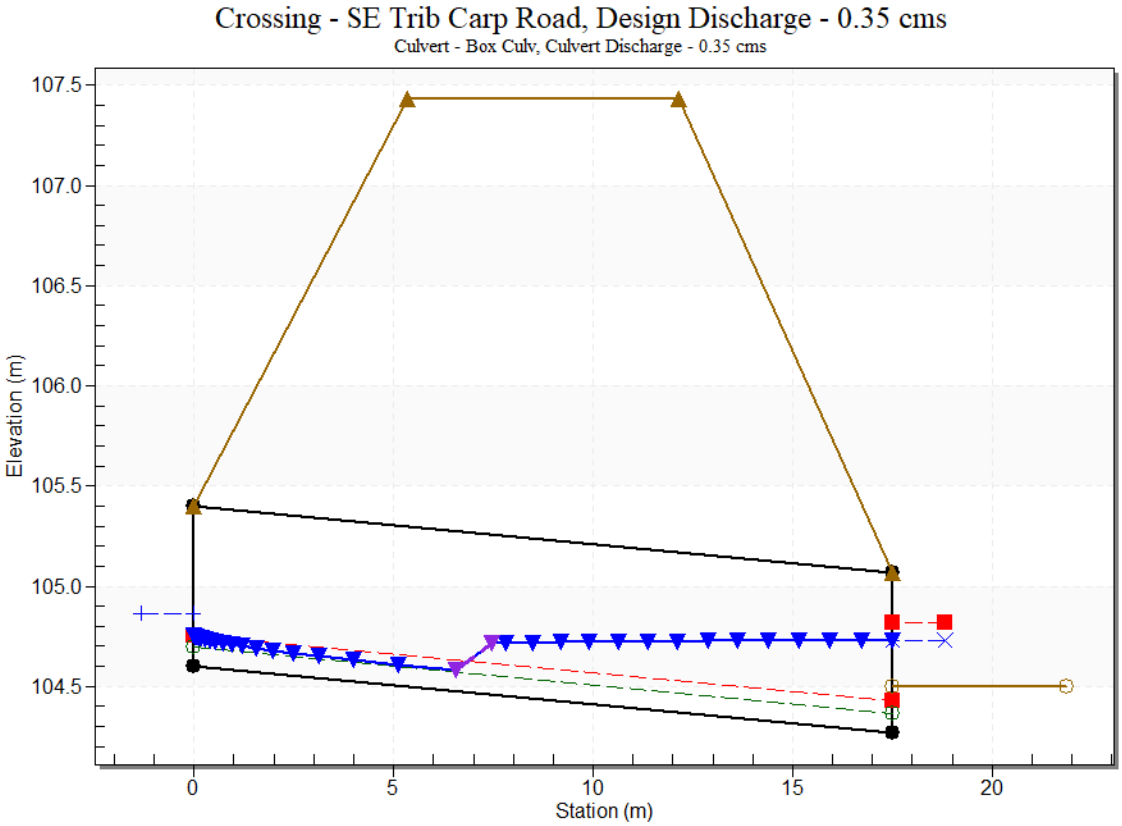
Culvert Length: 17.50 m,

Culvert Slope: 0.0189

Culvert Performance Curve Plot: Box Culv



Water Surface Profile Plot for Culvert: Box Culv



Site Data - Box Culv

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 m

Inlet Elevation: 104.60 m

Outlet Station: 17.50 m

Outlet Elevation: 104.27 m

Number of Barrels: 1

Culvert Data Summary - Box Culv

Barrel Shape: Concrete Box

Barrel Span: 1800.00 mm

Barrel Rise: 800.00 mm

Barrel Material: Concrete

Embedment: 0.00 mm

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Tailwater Data for Crossing: SE Trib Carp Road

Table 3 - Downstream Channel Rating Curve (Crossing: SE Trib Carp Road)

Flow (cms)	Water Surface Elev (m)	Velocity (m/s)	Depth (m)	Shear (Pa)	Froude Number
0.16	104.67	0.17	1.97	230.67	2.16
0.26	104.71	0.21	2.23	277.55	2.22
0.35	104.73	0.23	2.41	311.49	2.27
0.46	104.75	0.25	2.58	344.48	2.31
0.56	104.77	0.27	2.71	371.03	2.33
0.66	104.79	0.29	2.82	394.74	2.36
0.76	104.81	0.31	2.92	416.28	2.38
0.86	104.82	0.32	3.02	436.12	2.40
0.96	104.84	0.34	3.10	454.55	2.41
1.07	104.85	0.35	3.18	471.82	2.43
1.17	104.86	0.36	3.25	488.09	2.44

Tailwater Channel Data - SE Trib Carp Road

Tailwater Channel Option: Triangular Channel

Side Slope (H:V): 2.75 (_:1)

Channel Slope: 0.1379

Channel Manning's n: 0.0350

Channel Invert Elevation: 104.50 m

Roadway Data for Crossing: SE Trib Carp Road

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 15.00 m

Crest Elevation: 107.43 m

Roadway Surface: Paved

Roadway Top Width: 6.80 m

Appendix D
SWMF Design

- Pond 'A' OGS Sizing – Two Vortechs 16000 in parallel
- Pond 'B' OGS Sizing – Single Vortechs 16000
- Ditch Inlet Calculations
- Pond Stage-Storage Curves
- Pond Drawdown Time
    - 25mm 4-hour Chicago Drawdown Time
    - 10-year 12-hour SCS Drawdown Time
- Temperature Impacts from Ponds onto Tributaries

VORTECHS SYSTEM® ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON AN AVERAGE PARTICLE SIZE OF TYPICAL MICRONS

CONTECH ENGINEERED SOLUTIONS

Carp Airport Business Park P2
Carp, ON
2x VORTECHS 16000
Pond A

Design Ratio[1] = $\frac{\text{(11.38 hectares) x (0.58) x (2.775)}}{\text{(10.5 m2)}}$ **= 1.73**

Bypass occurs at an elevation of 320.7' (at approximately 20 l/s/m2)

Rainfall Intensity mm/hr	Operating Rate[2] % of capacity	Flow Treated (l/s)	% Total Rainfall Volume[3]	Rmvl. Effcy[4] (%)	Rel. Effcy (%)
0.5	1.3	9.0	9.2%	98.0%	9.0%
1.0	2.5	18.0	10.6%	98.0%	10.4%
1.5	3.8	27.1	9.9%	98.0%	9.7%
2.0	5.1	36.1	8.4%	98.0%	8.2%
2.5	6.4	45.1	7.7%	98.0%	7.5%
3.0	7.6	54.1	5.9%	97.6%	5.8%
3.5	8.9	63.1	4.4%	96.9%	4.2%
4.0	10.2	72.1	4.7%	96.0%	4.5%
4.5	11.5	81.2	3.3%	95.3%	3.2%
5.0	12.7	90.2	3.0%	94.7%	2.9%
6.0	15.3	108.2	5.4%	91.8%	4.9%
7.0	17.8	126.2	4.4%	89.9%	3.9%
8.0	20.4	144.3	3.5%	87.3%	3.1%
9.0	22.9	162.3	2.8%	86.1%	2.4%
10.0	25.5	180.3	2.2%	84.9%	1.9%
15.0	38.2	270.5	6.7%	77.2%	5.1%
20.0	50.9	360.7	3.6%	64.4%	2.3%
25.0	63.7	450.9	1.0%	55.7%	0.6%
30.0	76.4	541.0	0.4%	41.4%	0.2%
35.0	89.2	631.2	0.3%	20.0%	0.1%
40.0	101.9	721.4	0.3%	8.0%	0.0%
					89.9%

Predicted Annual Runoff Volume Treated =	97.7%
Assumed removal efficiency for bypassed flows =	0.0%
Estimated reduction in efficiency[5] =	6.5%
Predicted Net Annual Load Removal Efficiency =	**83%**

1 - Design Ratio = (Total Drainage Area) x (Runoff Coefficient) x (Rational Method Conversion) / Grit Chamber Area
- The Total Drainage Area and Runoff Coefficient are specified by the site engineer.
- The rational method conversion based on the units in the above equation is 2.775.

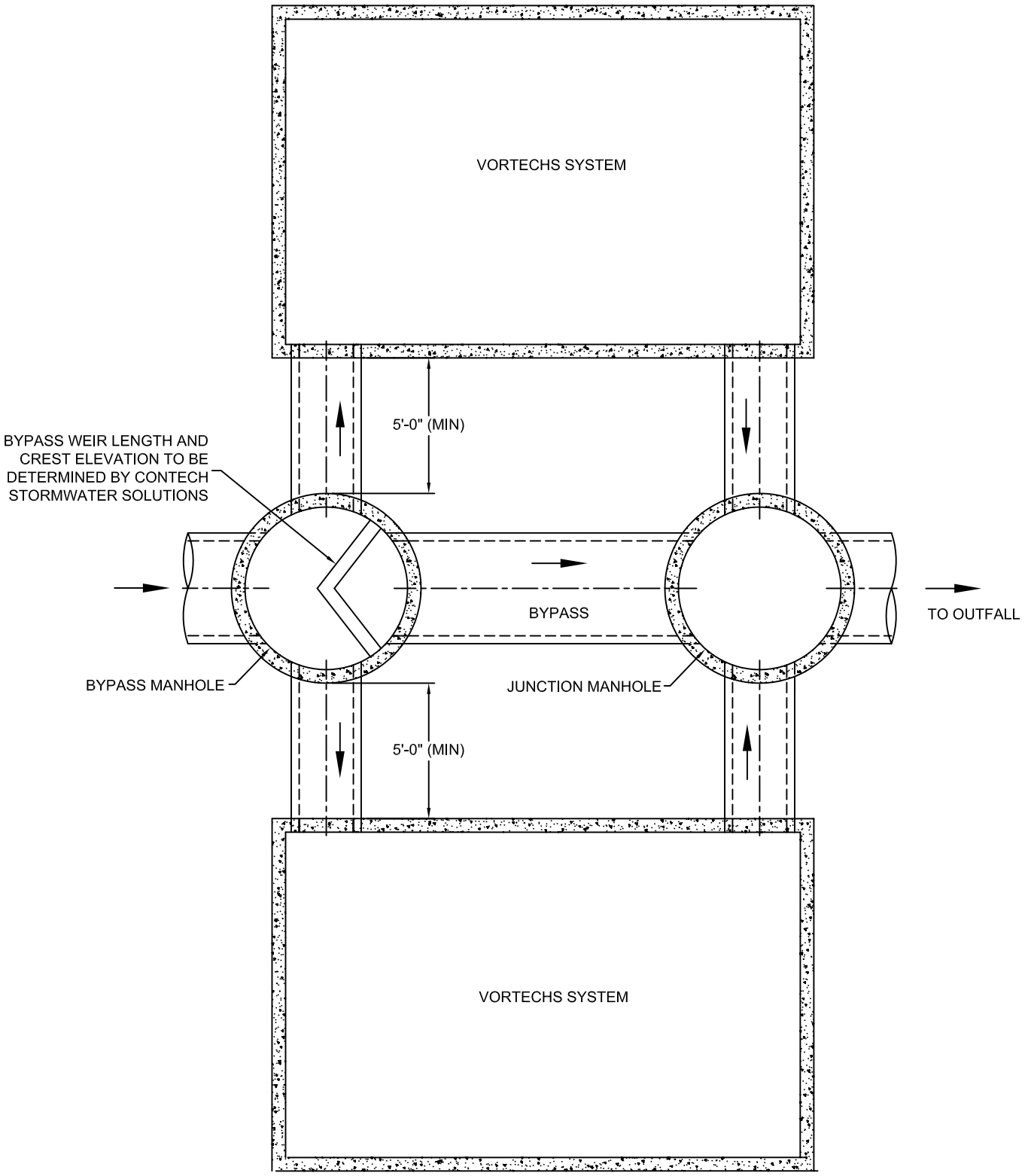
2 - Operating Rate (% of capacity) = percentage of peak operating rate of 68 l/s/m^2.

3 - Based on 42 years of hourly rainfall data from Canadian Station 6105976, Ottawa CDA, ON

4 - Based on Contech Construction Products laboratory verified removal of an average particle size of TYPICAL microns (see Technical Bulletin #1).

5- Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Calculated by:	NP	19-Aug-24	Checked by:



ACTUAL ORIENTATION AND LAYOUT MAY VARY
DUE TO SITE SPECIFIC CONSIDERATIONS

This CADD file is for the purpose of specifying stormwater treatment equipment to be furnished by CONTECH Stormwater Solutions and may only be transferred to other documents exactly as provided by CONTECH Stormwater Solutions. Title block information, **excluding** the CONTECH Stormwater Solutions logo and the Vortechs Stormwater Treatment System designation and patent number, may be deleted if necessary. Revisions to any part of this CADD file without prior coordination with CONTECH Stormwater Solutions shall be considered unauthorized use of proprietary information.

CONTECH® STORMWATER SOLUTIONS INC.
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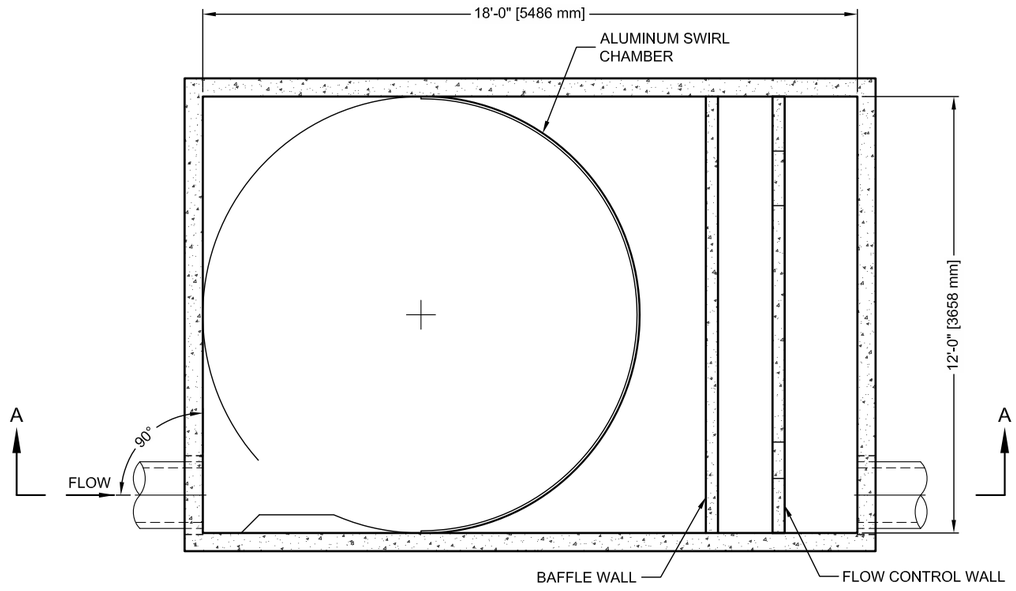
TYPICAL PARALLEL BYPASS LAYOUT
VORTECHS® STORMWATER TREATMENT SYSTEM

DATE: 4/7/06	SCALE: NONE	FILE NAME: Typical VX Parallel Bypass LO	DRAWN: GMC	CHECKED: NDG

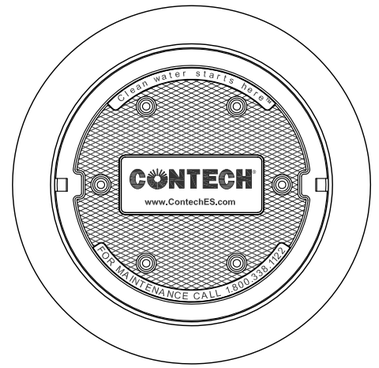
VORTECHS 16000 DESIGN NOTES

VORTECHS 16000 RATED TREATMENT CAPACITY IS 25 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS , PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. www.ContechES.com



SECTION B-B



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (CFS)	*
PEAK FLOW RATE (CFS)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*

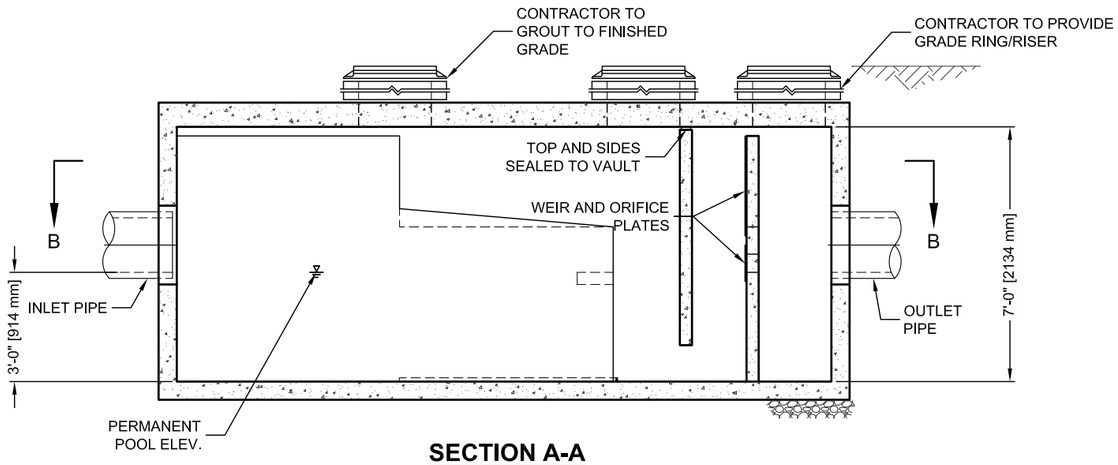
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD



SECTION A-A

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. INLET PIPE(S) MUST BE PERPEDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
7. OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

Vortechs®

THIS PRODUCT MAY BE PROTECTED BY THE FOLLOWING U.S. PATENT: 5,759,415; RELATED FOREIGN PATENTS.

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 16000
STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\20 VORTECHS\40 STANDARD DRAWINGS\DWG\VX-16000-DTL.DWG 8/6/2014 2:41 PM

VORTECHS SYSTEM® ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON AN AVERAGE PARTICLE SIZE OF TYPICAL MICRONS

CONTECH ENGINEERED SOLUTIONS

Carp Airport Business Park P2
Carp, ON
VORTECHS 16000
Pond B

Design Ratio[1] = $\frac{\text{(9.3 hectares) x (0.63) x (2.775)}}{\text{(10.5 m2)}}$ **= 1.54**

Bypass occurs at an elevation of 320.2' (at approximately 12 l/s/m2)

Rainfall Intensity mm/hr	Operating Rate[2] % of capacity	Flow Treated (l/s)	% Total Rainfall Volume[3]	Rmvl. Effcy[4] (%)	Rel. Effcy (%)
0.5	1.1	8.0	9.2%	98.0%	9.0%
1.0	2.3	16.0	10.6%	98.0%	10.4%
1.5	3.4	24.0	9.9%	98.0%	9.7%
2.0	4.5	32.1	8.4%	98.0%	8.2%
2.5	5.7	40.1	7.7%	98.0%	7.5%
3.0	6.8	48.1	5.9%	98.0%	5.8%
3.5	7.9	56.1	4.4%	97.6%	4.3%
4.0	9.1	64.1	4.7%	96.3%	4.5%
4.5	10.2	72.1	3.3%	96.0%	3.2%
5.0	11.3	80.1	3.0%	95.3%	2.9%
6.0	13.6	96.2	5.4%	93.8%	5.1%
7.0	15.8	112.2	4.4%	91.8%	4.0%
8.0	18.1	128.2	3.5%	88.8%	3.2%
9.0	20.4	144.2	2.8%	87.3%	2.4%
10.0	22.6	160.3	2.1%	86.1%	1.8%
15.0	34.0	240.4	5.0%	80.4%	4.0%
20.0	45.3	320.6	2.8%	69.9%	1.9%
25.0	56.6	400.7	0.8%	60.8%	0.5%
30.0	67.9	480.8	0.3%	52.0%	0.2%
35.0	79.2	561.0	0.2%	36.3%	0.1%
40.0	90.6	641.1	0.2%	18.2%	0.0%
0.0	0.0	0.0	0.0%	100.0%	0.0%
0.0	0.0	0.0	0.0%	100.0%	0.0%
0.0	0.0	0.0	0.0%	100.0%	0.0%
					88.7%

Predicted Annual Runoff Volume Treated = 94.6%
Assumed removal efficiency for bypassed flows = 0.0%
Estimated reduction in efficiency[5] = 6.5%
Predicted Net Annual Load Removal Efficiency = **82%**

1 - Design Ratio = (Total Drainage Area) x (Runoff Coefficient) x (Rational Method Conversion) / Grit Chamber Area
- The Total Drainage Area and Runoff Coefficient are specified by the site engineer.
- The rational method conversion based on the units in the above equation is 2.775.

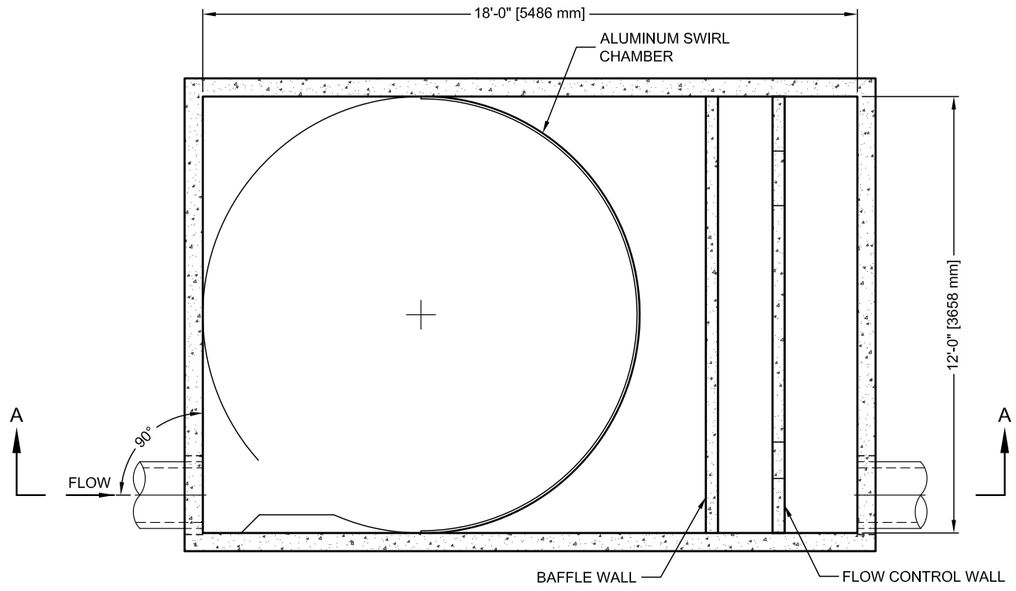
2 - Operating Rate (% of capacity) = percentage of peak operating rate of 68 l/s/m^2.
3 - Based on 42 years of hourly rainfall data from Canadian Station 6105976, Ottawa CDA, ON
4 - Based on Contech Construction Products laboratory verified removal of an average particle size of TYPICAL microns (see Technical Bulletin #1).
5- Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Calculated by:	NP	19-Aug-24	Checked by:

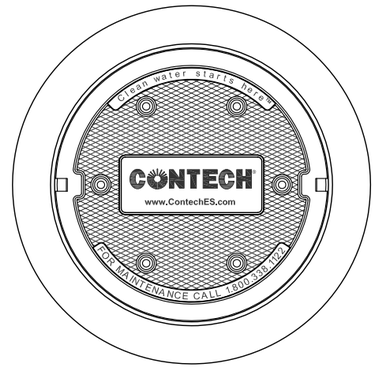
VORTECHS 16000 DESIGN NOTES

VORTECHS 16000 RATED TREATMENT CAPACITY IS 25 CFS, OR PER LOCAL REGULATIONS. IF THE SITE CONDITIONS EXCEED RATED TREATMENT CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD INLET/OUTLET CONFIGURATION IS SHOWN. FOR OTHER CONFIGURATION OPTIONS , PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. www.ContechES.com



SECTION B-B



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (CFS)	*
PEAK FLOW RATE (CFS)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*

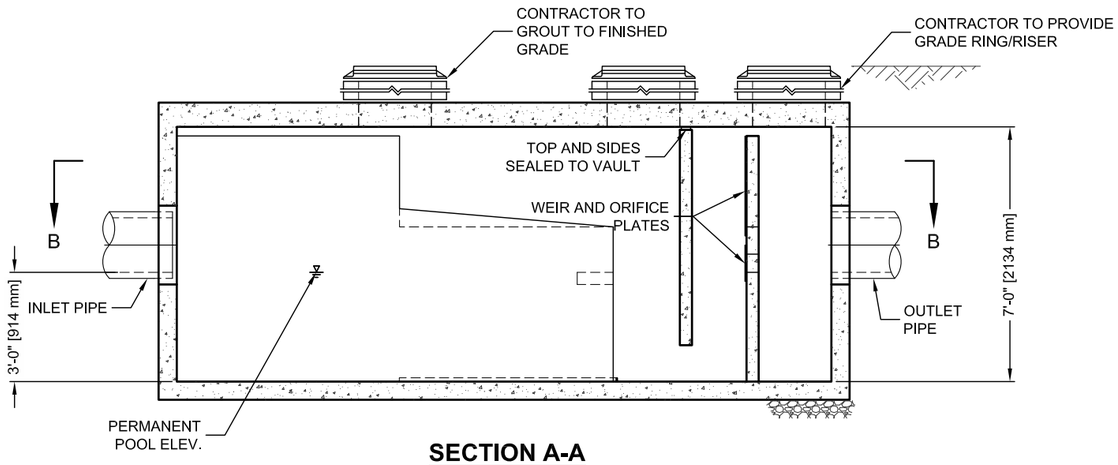
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD



SECTION A-A

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTECHS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. INLET PIPE(S) MUST BE PERPEDICULAR TO THE VAULT AND AT THE CORNER TO INTRODUCE THE FLOW TANGENTIALLY TO THE SWIRL CHAMBER. DUAL INLETS NOT TO HAVE OPPOSING TANGENTIAL FLOW DIRECTIONS.
7. OUTLET PIPE(S) MUST BE DOWN STREAM OF THE FLOW CONTROL BAFFLE AND MAY BE LOCATED ON THE SIDE OR END OF THE VAULT. THE FLOW CONTROL WALL MAY BE TURNED TO ACCOMODATE OUTLET PIPE KNOCKOUTS ON THE SIDE OF THE VAULT.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTECHS STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

Vortechs®

THIS PRODUCT MAY BE PROTECTED BY THE FOLLOWING U.S. PATENT: 5,759,415; RELATED FOREIGN PATENTS.

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTECHS 16000
STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\20 VORTECHS\40 STANDARD DRAWINGS\DWG\VX-16000-DTL.DWG 8/6/2014 2:41 PM

Carp Airport Phase 2 Business Park (102085-14)
DICB Inlet Capacity

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Refer to MTO Drainage Management Manual
Design Chart 4.20 - Ditch Inlet Capacity

Grate Slope 3:1					
Flow Depth (m)	Capacity per Meter Width (L/s)	Capacity for 600x600mm dia. DI Grate [1] (L/s)	Assume 50% Blockage (L/s)	Capacity for 600x1200mm dia. DI Grate [2] (L/s)	Assume 50% Blockage (L/s)
0.00	0	0	0	0	0
0.02	13	8	4	16	8
0.04	25	15	8	30	15
0.06	40	24	12	48	24
0.08	61	37	18	73	37
0.10	84	50	25	101	50
0.12	114	68	34	137	68
0.14	146	88	44	175	88
0.16	183	110	55	220	110
0.18	221	133	66	265	133
0.20	260	156	78	312	156
0.22	307	184	92	368	184
0.24	355	213	107	426	213
0.26	409	245	123	491	245
0.28	469	281	141	563	281
0.30	535	321	161	642	321
0.35	683	410	205	820	410
0.40	869	521	261	1043	521
0.45	1079	647	324	1295	647
0.50	1310	786	393	1572	786

[1] Used 0.6m width for 600x600mm ditch inlet grate
[2] Used 1.2m width for 600x1200mm ditch inlet grate

Ditch Inlet for Pond A - North Ditch

25mm Storm Event Treatment Flow Rate of OGS (Two Vortech 16000's in Parallel) =	933	L/s
Max. inlet capacity at 0.50m Ponding =	1572	L/s
Difference =	639	L/s
Max. inlet capacity at 0.50m Ponding (assuming 50% Blockage) =	786	L/s
Difference =	-147	L/s
Max Blockage able to convey flows=	41%	L/s

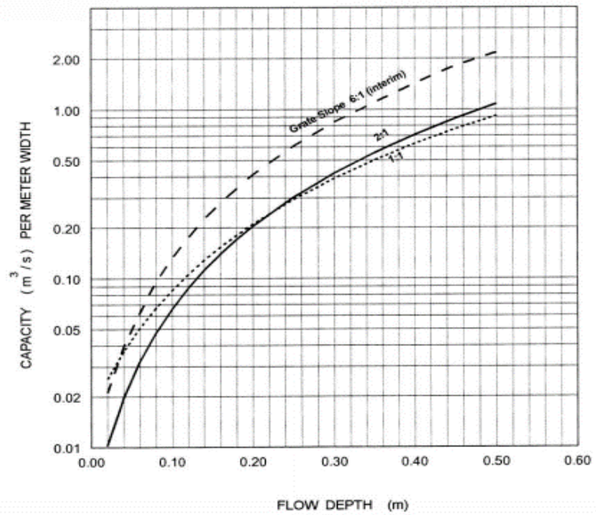
Full Flowing Twin Ditch Inlet has adequate capacity for the flows to the Pond A OGS unit

Ditch Inlet for Pond B

25mm Storm Event Treatment Flow Rate of OGS (Vortech 16000) =	614	L/s
Max. inlet capacity at 0.50m Ponding =	1572	L/s
Difference =	958	L/s
Max. inlet capacity at 0.50m Ponding (assuming 50% Blockage) =	786	L/s
Difference =	172	L/s
Max Blockage able to convey flows=	61%	L/s

Twin Ditch Inlet with 50% Blockage has adequate capacity for the flows to the Pond B OGS unit

Design Chart 4.20: Ditch Inlet Capacity



Notes:
1. Curves apply to grate Type 403.01, but may be used for straight - bar inlets without significant loss of accuracy.
2. Capacities given by curves are for unobstructed grates only. For design use working capacity ≯ 0.5 x unobstructed capacity.
3. Capacities of grates operating in high velocity flows are less than indicated.

Carp Airport Business Park Phase 2 (102085-14)
SWM Facilities - Stage-Storage

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Engineers, Planners & Landscape Architects

Dry Pond A

Stage	Elevation (m)	Depth (m)	Area m^2	Volume Stage m^3	Volume Total m^3
Bottom of Low Flow Swale	103.30	0.00	0.0	0.0	0.0
	103.40	0.10	28.6	1.4	1.4
	103.50	0.20	449.0	23.9	25.3
Bottom of Pond	103.60	0.30	4741.8	259.5	284.8
	103.70	0.40	4884.2	481.3	766.1
	103.80	0.50	5018.8	495.1	1261.3
	103.90	0.60	5154.1	508.6	1769.9
	104.00	0.70	5290.2	522.2	2292.2
	104.10	0.80	5427.0	535.9	2828.0
	104.20	0.90	5564.6	549.6	3377.6
	104.30	1.00	5703.0	563.4	3941.0
	104.40	1.10	5842.1	577.3	4518.2
	104.50	1.20	5982.0	591.2	5109.4
	104.60	1.30	6122.7	605.2	5714.7
	104.70	1.40	6264.1	619.3	6334.0
	104.80	1.50	6406.3	633.5	6967.5
	104.90	1.60	6549.3	647.8	7615.3
	105.00	1.70	6669.1	660.9	8276.2
Top of Pond	105.10	1.80	6849.6	675.9	8952.2

Dry Pond B

Stage	Elevation (m)	Depth (m)	Area m^2	Volume Stage m^3	Volume Total m^3
Bottom of Low Flow Swale	102.35	0.00	0.0	0.0	0.0
	102.40	0.05	2.5	0.1	0.1
	102.50	0.15	27.2	1.5	1.5
Bottom of Pond	102.60	0.25	697.7	36.2	37.8
	102.70	0.35	1804.0	125.1	162.9
	102.80	0.45	1893.1	184.9	347.7
	102.90	0.55	1983.2	193.8	541.5
	103.00	0.65	2074.1	202.9	744.4
	103.10	0.75	2165.8	212.0	956.4
	103.20	0.85	2258.4	221.2	1177.6
	103.30	0.95	2351.8	230.5	1408.1
	103.40	1.05	2446.0	239.9	1648.0
	103.50	1.15	2541.1	249.4	1897.4
	103.60	1.25	2637.1	258.9	2156.3
	103.70	1.35	2733.8	268.5	2424.8
	103.80	1.45	2831.5	278.3	2703.1
	103.90	1.55	2929.9	288.1	2991.1
	104.00	1.65	3029.2	298.0	3289.1
	104.10	1.75	3129.4	307.9	3597.0
	104.20	1.85	3230.4	318.0	3915.0
	104.30	1.95	3332.3	328.1	4243.2
	104.40	2.05	3434.9	338.4	4581.5
Top of Pond	104.50	2.15	3538.5	348.7	4930.2

Carp Airport Business Park Phase 2 (102085-14)
SWM Facilities - Stage-Storage

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Linear Dry Pond C

Stage	Elevation (m)	Depth (m)	Area m^2	Volume	
				Stage m^3	Total m^3
Bottom of Pond	105.97	0.00	0.0	0.0	0.0
	106.00	0.03	268.4	4.0	4.0
	106.10	0.13	2821.3	154.5	158.5
	106.20	0.23	2956.5	288.9	447.4
	106.30	0.33	3093.7	302.5	749.9
	106.40	0.43	3231.6	316.3	1066.2
	106.50	0.53	3370.3	330.1	1396.3
	106.60	0.63	3509.6	344.0	1740.3
	106.70	0.73	3649.7	358.0	2098.2
	106.80	0.83	3790.6	372.0	2470.2
	106.90	0.93	3932.4	386.1	2856.4
Top of Pond	107.00	1.03	4071.4	400.2	3256.6

Linear Dry Pond D

Stage	Elevation (m)	Depth (m)	Area m^2	Volume	
				Stage m^3	Total m^3
Bottom of Pond	106.95	0.00	0.0	0.0	0.0
	107.00	0.05	194.5	4.9	4.9
	107.10	0.15	319.1	25.7	30.5
	107.20	0.25	389.0	35.4	65.9
	107.30	0.35	459.7	42.4	108.4
	107.40	0.45	531.2	49.5	157.9
	107.50	0.55	604.1	56.8	214.7
	107.60	0.65	677.5	64.1	278.8
	107.70	0.75	751.2	71.4	350.2
	107.80	0.85	825.6	78.8	429.1
	107.90	0.95	900.3	86.3	515.3
	108.00	1.05	975.6	93.8	609.1
	108.10	1.15	1046.5	101.1	710.2
	108.20	1.25	1119.3	108.3	818.5
Top of Pond	108.26	1.31	1166.6	68.6	887.1

Linear Dry Pond E

Stage	Elevation (m)	Depth (m)	Area m^2	Volume	
				Stage m^3	Total m^3
Bottom of Pond	107.63	0.00	0.0	0.0	0.0
	107.70	0.07	186.0	6.5	6.5
	107.80	0.17	462.4	32.4	38.9
	107.90	0.27	567.6	51.5	90.4
	108.00	0.37	675.8	62.2	152.6
	108.10	0.47	784.6	73.0	225.6
	108.20	0.57	894.0	83.9	309.5
	108.30	0.67	1004.1	94.9	404.4
	108.40	0.77	1114.8	105.9	510.4
	108.50	0.87	1221.6	116.8	627.2
	108.60	0.97	1323.3	127.2	754.5
	108.70	1.07	1413.1	136.8	891.3
	108.80	1.17	1499.2	145.6	1036.9
	108.90	1.27	1581.2	154.0	1190.9
Top of Pond	108.96	1.33	1623.2	96.1	1287.0

Carp Airport Business Park Phase 2 (102085-14)
SWM Facilities - Drawdown Time

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Pond	25mm				100yr SCS			
	Time of Peak	Time of depth < 0.05m	Drawdown time (days)	Drawdown time (hrs)	Time of Peak	Time of depth < 0.005m	Drawdown time (hrs)	Drawdown time (days)
Pond-A	11/28/2023 4:36	11/29/2023 5:05	1.0	24.5	11/28/2023 7:10	11/29/2023 20:04	1.5	36.9
Pond-B	11/28/2023 4:24	11/29/2023 2:46	0.9	22.4	11/28/2023 7:54	11/30/2023 0:36	1.7	40.7
LinearPondC	11/28/2023 4:13	11/29/2023 5:42	1.1	25.5	11/28/2023 7:55	11/30/2023 7:16	2.0	47.3
LinearPondD	11/28/2023 2:36	11/28/2023 12:43	0.4	10.1	11/28/2023 6:39	11/28/2023 21:30	0.6	14.9
LinearPondE	11/28/2023 2:52	11/28/2023 14:25	0.5	11.6	11/28/2023 6:45	11/28/2023 23:42	0.7	17.0

Carp Airport Business Park Phase 2 (102085-14)
SWM Facilities - Outlet Swales Erosion Protection

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Pond Outlets (Swale)

MTO Highway Drainage Design Standards (January 2008)
WC-3 Scour and Armouring - Section 3.3

Stone Sizes For Scour And Erosion Protection – Low Volume Roads							
Velocity (m/s)	< 2.0	< 2.6	< 3.0	< 3.5	< 4.0	< 4.7	< 5.2
Nominal Stone Size[(1)] (mm)	100	200	300	400	500	800	1000
Notes 1) Maximum stone size to be 1.5 times the nominal stone size. 80% of stones (by mass) must have a diameter of at least 60% of nominal stone size.							

Dry Pond A

Swale Velocity	0.81	m/s	(100-year 12-hour SCS from PCSWMM)
Minimum Riprap Size	100	mm	

Dry Pond B

Swale Velocity	0.60	m/s	(100-year 12-hour SCS from PCSWMM)
Minimum Riprap Size	100	mm	

Linear Dry Pond C

Swale Velocity	0.30	m/s	(100-year 12-hour SCS from PCSWMM)
Minimum Riprap Size	100	mm	

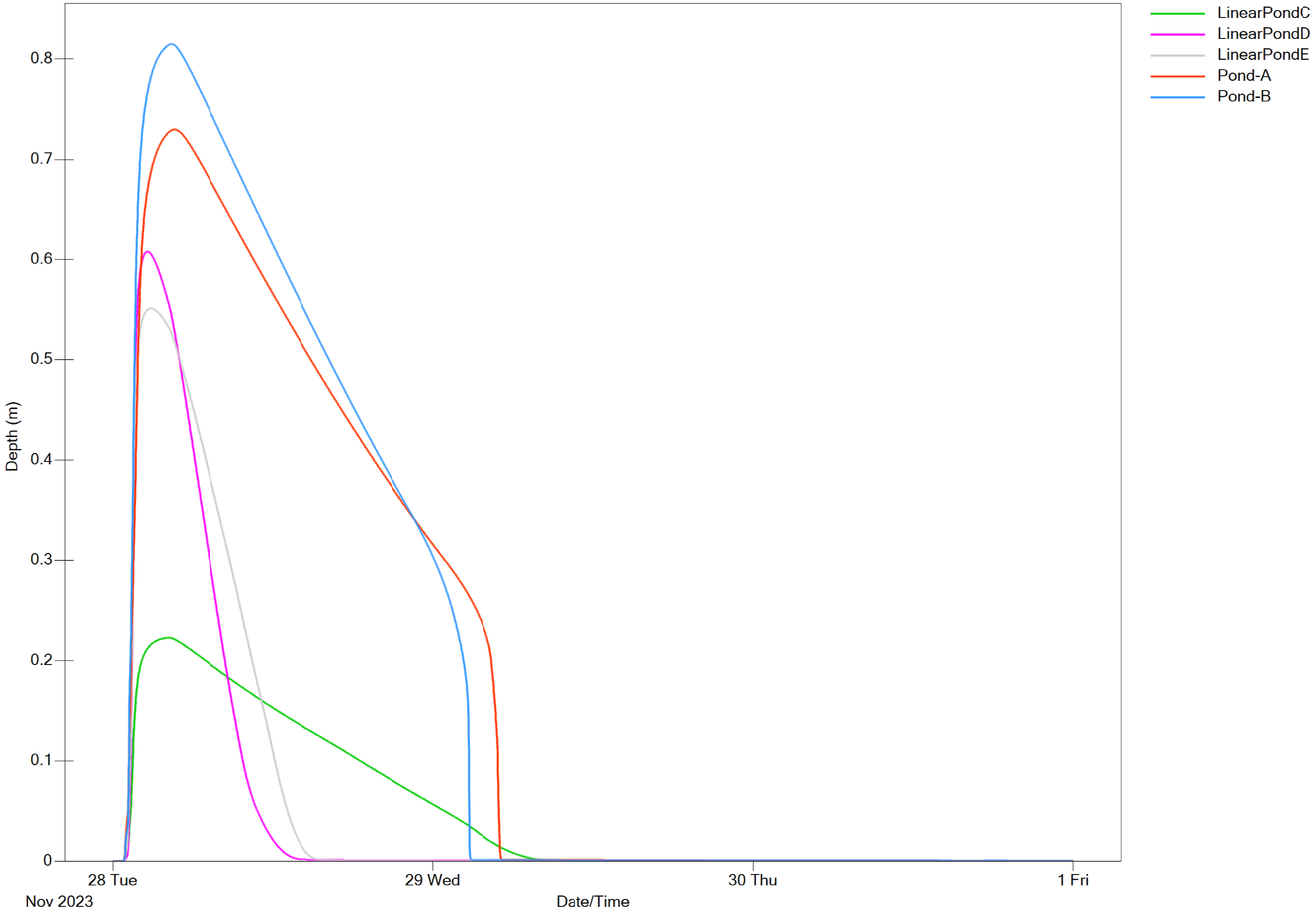
Linear Dry Pond D

Swale Velocity	0.53	m/s	(100-year 12-hour SCS from PCSWMM)
Minimum Riprap Size	100	mm	

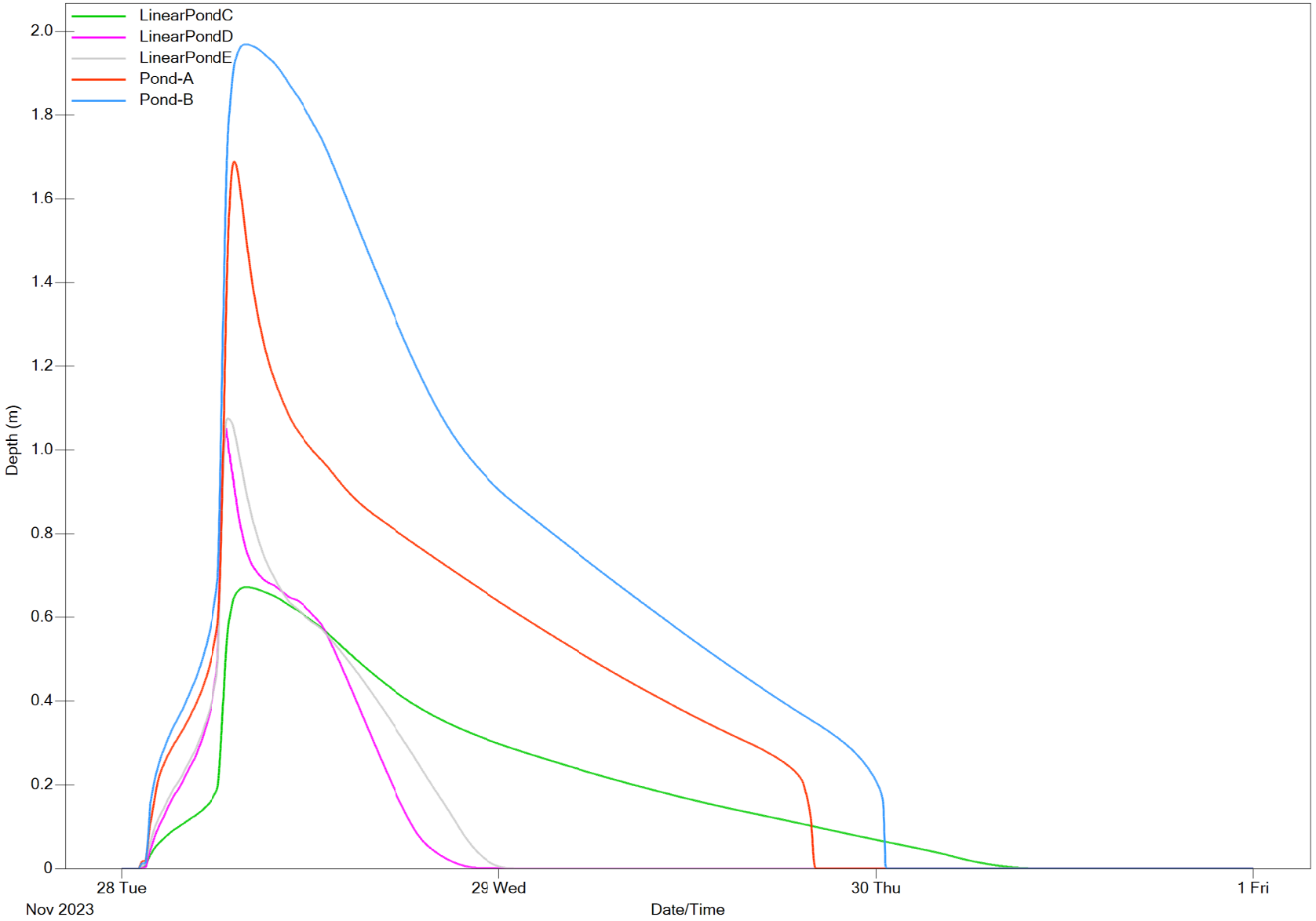
Linear Dry Pond E

Swale Velocity	0.49	m/s	(100-year 12-hour SCS from PCSWMM)
Minimum Riprap Size	100	mm	

25mm 4-hour Chicago Drawdown



100-year 12-hour SCS Drawdown



Carp Airport Phase 2 Business Park (102085-14)
Temperature Impact Calculations

NOVATECH
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MOE SWMP Manual page H-8

Temperature

Since the receiving water course is sensitive to temperature changes, Equation H.2 was used to calculate the temperature change in the stream. Equation H.3 was used to calculate the average urban runoff temperature.

$$\Delta T_{stream} = \left(\frac{QT + q(T_{urb} + \Delta T_{SWMP})}{(Q + q)} \right) - T$$

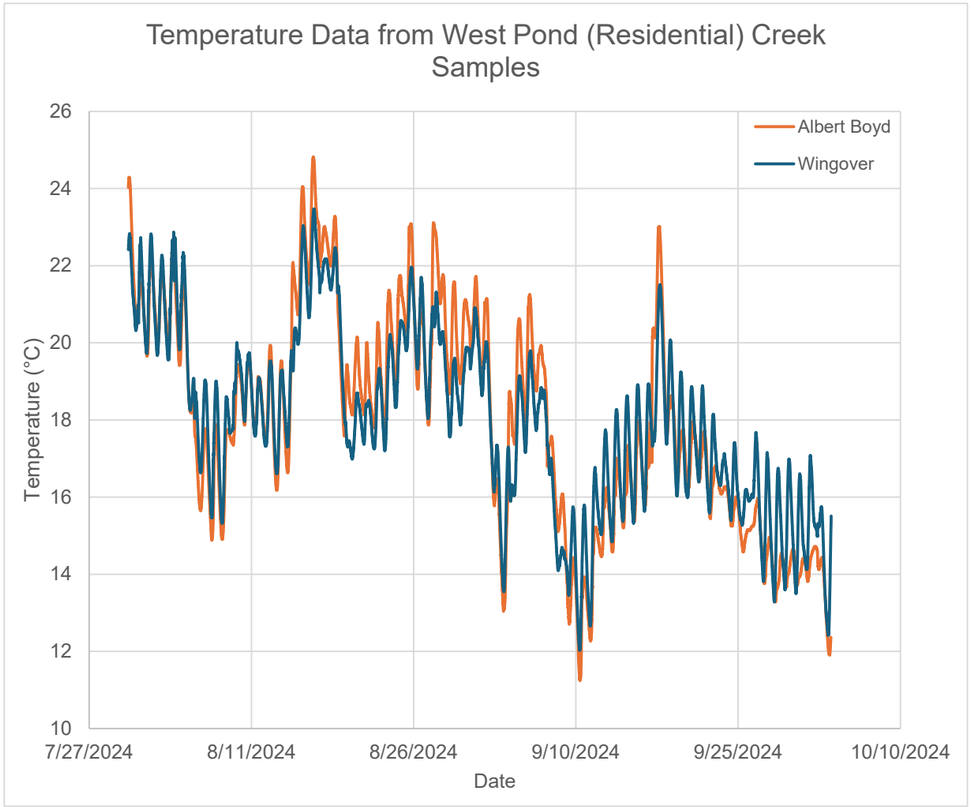
Equation H.2: Temperature Mass Balance

where Q = 0.233 m³/s (average monthly summer daily maximum flow rate in the stream)
T = 20°C (average monthly summer temperature in the stream)
T_{urb} = 20.2 (average urban runoff summer temperature)
q = 0.03 m³/s (average flow from SWMP during a 15 mm storm event)
ΔT_{SWMP} = 5.1°C (average increase in temperature by SWMP type (Table 4.3))

Table 4.3: Average Temperature Increases by SWMP Type*

SWMP Type	Temperature Increase
Infiltration Basin	1.4°C
Wetland (extended detention)	3.4°C**
Dry Pond (extended detention)	2.9°C
Wet Pond (extended detention)	5.1°C

** Guideline based on monitoring – detailed calculations supersede this table.*
*** Original report value modified since the wetland design permanent pool was undersized resulting in a low ΔT.*



Results from PCSWMM Model

Pond Outfalls	15mm Storm Max. Flow (L/s)
OF-A	27.02
OF-B	13.3
OF-C	5.41
OF-D	10.18
OF-E	10.07

Temperature Calculations	**NE Trib**	**SE Trib**	
Average Stream Flow (cms)	0.514	0.158	(average - used 2yr from SWMHYMO)
Average Summer Temp in Stream (°C)	20	20	(round up average from Summer 2024 monitoring for Reasidential West Pond)
Urban Runoff Temperature (°C)	35	35	(conservative Assumption
15mm SWMF Outflow (cms)	0.040	0.026	
Average Temperature Increase for Dry Pond (°C)	2.9	2.9	
Increase in Temp (°C)	1.3	0.9	
New Stream Temp (°C)	21.3	20.9	

Appendix E
Servicing Study Checklist

Development Servicing Study Checklist

1.0 General Content	Addressed (Y/N/NA)	Section	Comments
Executive Summary (for larger reports only).	N/A		
Date and revision number of the report.	Y		Title Page
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y		Draft Plan of Subdivision, Figure 1, and Figure 2
Plan showing the site and location of all existing services.	Y		Figure 4
Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Y		Section 1.0
Summary of Pre-consultation Meetings with City and other approval agencies.	N		
Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Y		Hydraulic Network Analysis, Water Storage Facility Design Report, Carp Riverhsed Study
Statement of objectives and servicing criteria.	Y		Section 1.0
Identification of existing and proposed infrastructure available in the immediate area.	Y		General Plan of Services (102085-GP5, 102085-GP6, 102085-GP7, 102085-GP8, 102085-GP9,and 102085-GP10)
Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Y		Section 3.0 - reference to ECA approval for SWM Facility
Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Y		Grading Plans (102085-GR5, 102085-GR6, 102085-GR7, 102085-GR8, and 102085-GR9) Interim Grading Plans (102085-IGR5, 102085-IGR6, 102085-IGR7, 102085-IGR8, and 102085-IGR9)

Development Servicing Study Checklist

1.0 General Content	Addressed (Y/N/NA)	Section	Comments
Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	NA		
Proposed phasing of the development, if applicable.	NA		
Reference to geotechnical studies and recommendations concerning servicing.	Y		Geotechnical Investigation and Slope Stability Assessment- Proposed Carp Airport Phase 2 Commercial Development, dated November 4, 2025, prepared by Gemtec
All preliminary and formal site plan submissions should have the following information:			
Metric scale	Y		
North arrow (including construction North)	Y		
Key plan	Y		
Name and contact information of applicant and property owner	Y		
Property limits including bearings and	Y		
Existing and proposed structures and	Y		
Easements, road widening and rights-of-way	Y		
Adjacent street names	Y		

Development Servicing Study Checklist

2.0 Water	Addressed (Y/N/NA)	Section	Comments
Confirm consistency with Master Servicing Study, if available.	Y		Section 4.0
Availability of public infrastructure to service proposed development.	Y		Section 4.0
Identification of system constraints.	Y		Section 4.0
Identify boundary conditions.	NA		Section 4.0
Confirmation of adequate domestic supply and pressure.	Y		Section 4.0
Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Y		Section 4.0
Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Y		Section 4.0
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	Y		Section 4.0
Address reliability requirements such as appropriate location of shut-off valves.	Y		Section 4.0
Check on the necessity of a pressure zone boundary modification.	NA		Section 4.0
Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Y		Section 4.0
Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Y		Section 4.0
Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	Y		Section 4.0
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y		Section 4.0
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Y		Section 4.0

Development Servicing Study Checklist

Development Servicing Study Checklist

3.0 Wastewater	Addressed (Y/N/NA)	Section	Comments
Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Y		Refer to Sanitary Collection System report (Clearford, November 2024) and Section 5.0
Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A		
Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	Y		Refer to Sanitary Collection System report (Clearford, November 2024) and Section 5.0
Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Y		Refer to Sanitary Collection System report (Clearford, November 2024) and Section 5.0
Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Y		Refer to Sanitary Collection System report (Clearford, November 2024) and Section 5.0
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Y		Refer to Sanitary Collection System report (Clearford, November 2024) and Section 5.0
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y		Refer to Sanitary Pump Station Design Brief (Novatech, November 2024) and Section 5.0
Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N		
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	Y		Refer to Sanitary Collection System report (Clearford, November 2024) and Section 5.0
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	Y		Refer to Sanitary Pump Station Design Brief (Novatech, November 2024) and Section 5.0
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	Y		Refer to Sanitary Pump Station Design Brief (Novatech, November 2024) and Section 5.0
Special considerations such as contamination, corrosive environment etc.	Y		Geotechnical Investigation and Slope Stability Assessment- Proposed Carp Airport Phase 2 Commercial Development, dated November 4, 2025, prepared by Gemtec

Development Servicing Study Checklist

4.0 Stormwater	Addressed (Y/N/NA)	Section	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Analysis of the available capacity in existing public infrastructure.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Set-back from private sewage disposal systems.	Y		
Watercourse and hazard lands setbacks.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Any proposed diversion of drainage catchment areas from one outlet to another.	N/A		
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A		

Development Servicing Study Checklist

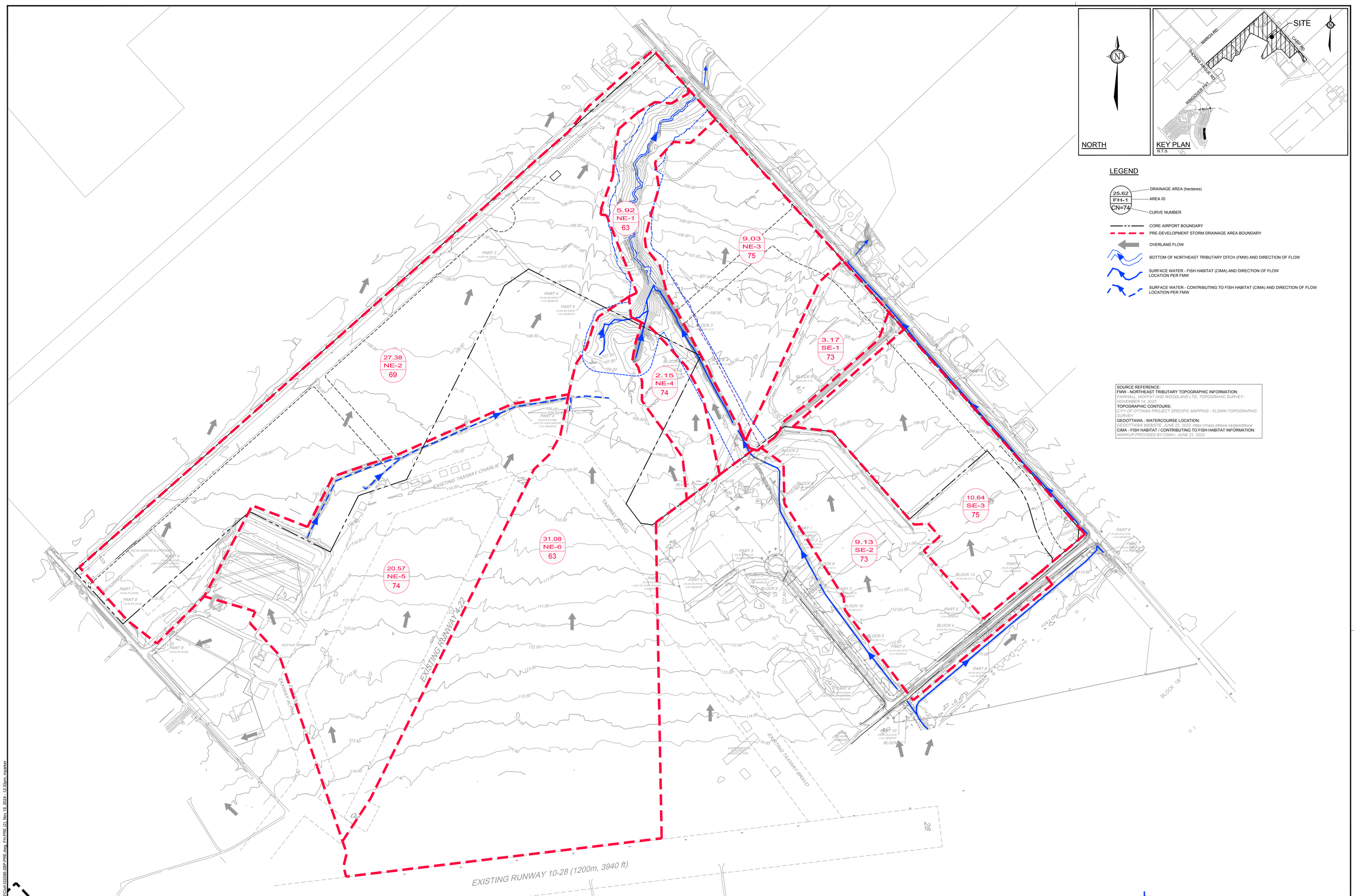
4.0 Stormwater	Addressed (Y/N/NA)	Section	Comments
Identification of municipal drains and related approval requirements.	N/A		
Description of how the conveyance and storage capacity will be achieved for the development.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Inclusion of hydraulic analysis including HGL elevations.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Y		Refer to Stormwater Management Report (Novatech November 2025) and Section 6.0
Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A		
Identification of fill constrains related to floodplain and geotechnical investigation.	Y		Geotechnical Investigation and Slope Stability Assessment- Proposed Carp Airport Phase 2 Commercial Development, dated November 4, 2025, prepared by Gemtec

Development Servicing Study Checklist

5.0 Approval and Permit Requirements	Addressed (Y/N/NA)	Section	Comments
Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Y		Refer to existing ECA approval - Appendix F
Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A		
Changes to Municipal Drains.	N/A		
Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A		

6.0 Conclusion	Addressed (Y/N/NA)	Section	Comments
Clearly stated conclusions and recommendations.	Y		Section 10.0
Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N/A		
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario.	Y		Report and Drawings

Appendix F
Drawings



SOURCE REFERENCE:
FMW - NORTHEAST TRIBUTARY TOPOGRAPHIC INFORMATION:
FAIRHALL, MOFFAT AND WOODLAND LTD, TOPOGRAPHIC SURVEY - NOVEMBER 14, 2023
TOPOGRAPHIC CONTOURS:
CITY OF OTTAWA PROJECT SPECIFIC MAPPING - FLOWN TOPOGRAPHIC SURVEY
GEOOTTAWA - WATERCOURSE LOCATION:
GEOOTTAWA WEBSITE, JUNE 22, 2023: https://maps.ottawa.ca/geoottawa/
CIMA - FISH HABITAT / CONTRIBUTING TO FISH HABITAT INFORMATION:
MARKUP PROVIDED BY CIMA+, JUNE 21, 2023

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
1.	ISSUED WITH SWM REPORT	NOV 19/24	ARM

SCALE 1:2500
1:2500 (0 25 50 75 100)

DESIGN MNP
CHECKED MLS
DRAWN MNP
CHECKED MLS
APPROVED MLS

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. L. SCHROEDER — 100213677 — Nov 19, 2024 — PROVINCE OF ONTARIO

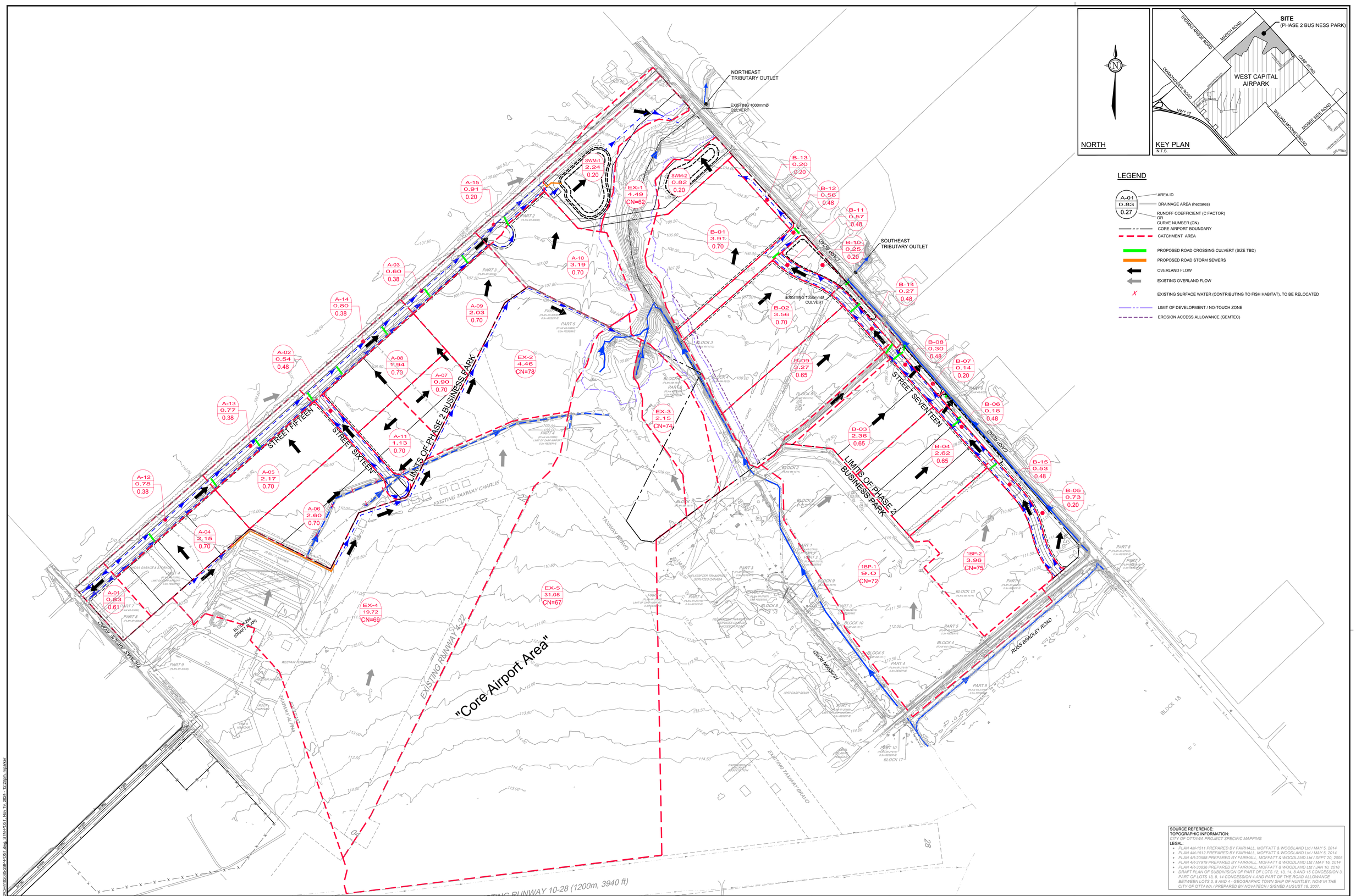
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

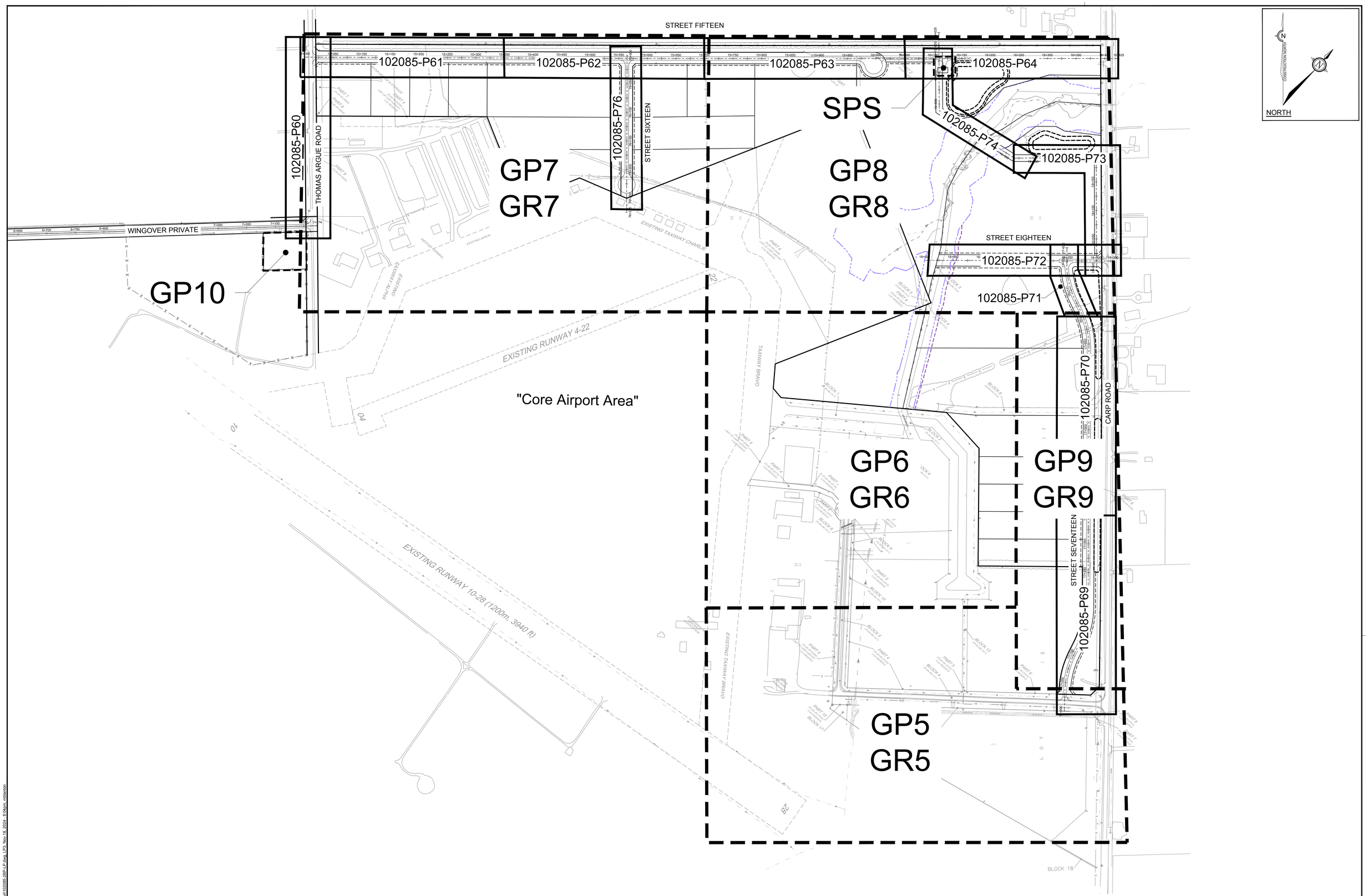
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
PRE-DEVELOPMENT STORM DRAINAGE AREA PLAN

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-2BP-PRE

M:\2021\102085\CAD_BUSINESS PARK PHC\Dwg\102085-2BP-PRE.dwg, FH-PRE (2), Nov 19, 2024 - 12:35pm, mparker


NORTHEAST TRIBUTARY OUTLET
EXISTING 1000mmØ CULVERT
SOUTHEAST TRIBUTARY OUTLET
EXISTING 1050mmØ CULVERT
SWM-1 2.24 0.20
SWM-2 0.82 0.20
EX-1 4.49 CN=62
EX-2 4.46 CN=78
EX-3 2.15 CN=74
EX-4 19.72 CN=69
EX-5 31.08 CN=67
1BP-1 9.0 CN=72
1BP-2 3.96 CN=75
A-01 0.83 0.27
A-02 0.54 0.48
A-03 0.60 0.38
A-04 2.15 0.70
A-05 2.17 0.70
A-06 2.60 0.70
A-07 0.90 0.70
A-08 1.94 0.70
A-09 2.03 0.70
A-10 3.19 0.70
A-11 1.13 0.70
A-12 0.78 0.38
A-13 0.77 0.38
A-14 0.80 0.38
A-15 0.91 0.20
B-01 3.91 0.70
B-02 3.56 0.70
B-03 2.36 0.65
B-04 2.62 0.65
B-05 0.73 0.20
B-06 0.18 0.48
B-07 0.14 0.20
B-08 0.30 0.48
B-09 3.27 0.65
B-10 0.25 0.20
B-11 0.57 0.48
B-12 0.56 0.48
B-13 0.20 0.20
B-14 0.27 0.48
B-15 0.53 0.48
STREET FIFTEEN
STREET SIXTEEN
STREET SEVENTEEN
LIMITS OF PHASE 2 BUSINESS PARK
LIMITS OF PHASE 2 BUSINESS PARK
THOMAS ARGUE ROAD
RUSS BRADLEY ROAD
CARP ROAD
EXISTING TAXIWAY CHARLIE
TAXIWAY BRAVO
EXISTING RUNWAY 04-22
EXISTING TAXIWAY BRAVO
"Core Airport Area"
EXISTING RUNWAY 10-28 (1200m, 3940 ft)
BLOCK 18
BLOCK 17
BLOCK 16
BLOCK 15
BLOCK 14
BLOCK 13
BLOCK 12
BLOCK 11
BLOCK 10
BLOCK 9
BLOCK 8
BLOCK 7
BLOCK 6
BLOCK 5
BLOCK 4
BLOCK 3
BLOCK 2
BLOCK 1
PART 1 (PLAN 4R-27919)
PART 2 (PLAN 4R-27919)
PART 3 (PLAN 4R-27919)
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PART 9 (PLAN 4R-30836)
PART 10 (PLAN 4R-30836



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No.	REVISION	DATE	BY
3.	ISSUED FOR REVIEW	NOV 19/24	ARM
2.	ISSUED FOR COORDINATION	AUG 21/24	ARM
1.	ISSUED FOR COORDINATION	APR 23/24	ARM

SCALE
1 : 2500
1 : 2500
0 25 50 75 100

DESIGN MJB
CHECKED ARM
DRAWN MJB
CHECKED ARM
APPROVED SMG

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
LAYOUT PLAN

PROJECT No. 102085-14
REV REV # 3
DRAWING No. 102085-LP3

M:\2020\102085\CAD_BUSINESS PARK PHASE\civil\102085-26P-LP.dwg, LP3, Nov 19, 2024 - 8:04pm, mblanton
PLANIT CIVIL - XXXtreme Screw

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. 100011.049, DATED OCTOBER 25, 2024), PREPARED BY GEMTEC, FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO STORMWATER MANAGEMENT REPORT(R-2024-125) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
10. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

GRADING NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
3. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
4. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
6. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
7. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCH BASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
SEWER TRENCH - BEDDING (GRANULAR A)		
COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)		
STORM SEWER	PVC DR 35	
SANITARY SEWER	HDPE PER CLEARFORD SPECIFICATION	
SANITARY SEWER FORCEMAIN	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

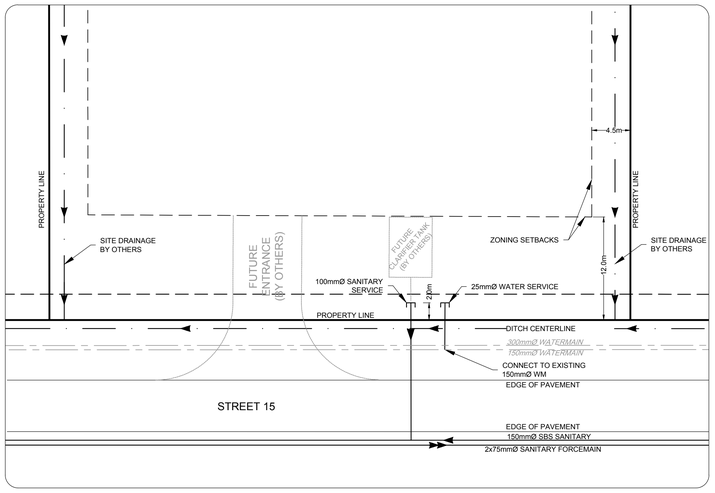
2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 2.0m PAST THE PROPERTY LINE AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
5. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX: POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
6. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
7. STORM MANHOLES AND CBMHS ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
8. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

WATERMAIN NOTES:

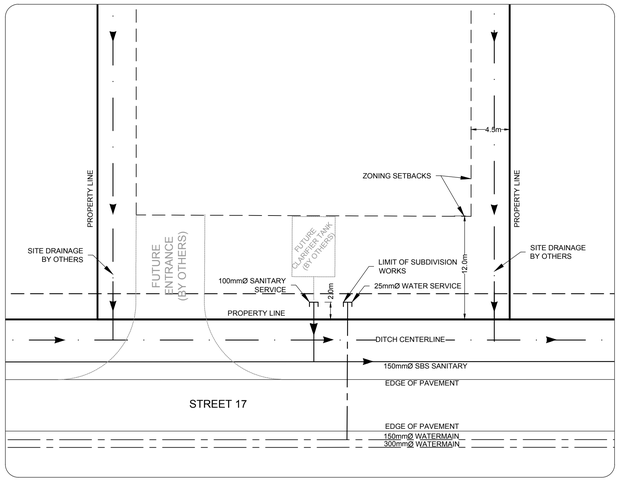
1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN	PVC DR 18	

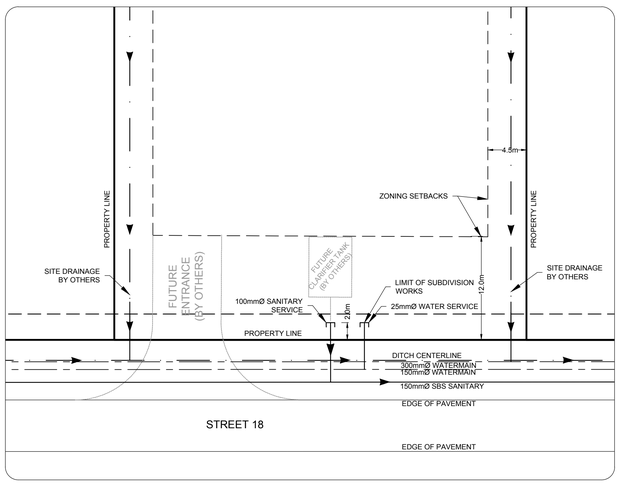
2. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
4. PROVIDE MINIMUM 0.25m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.
5. WATER SERVICE IS TO BE CONSTRUCTED TO 2.0m PAST THE PROPERTY LINE AND CAPPED, UNLESS OTHERWISE INDICATED.
6. WATER DEMAND = TBD



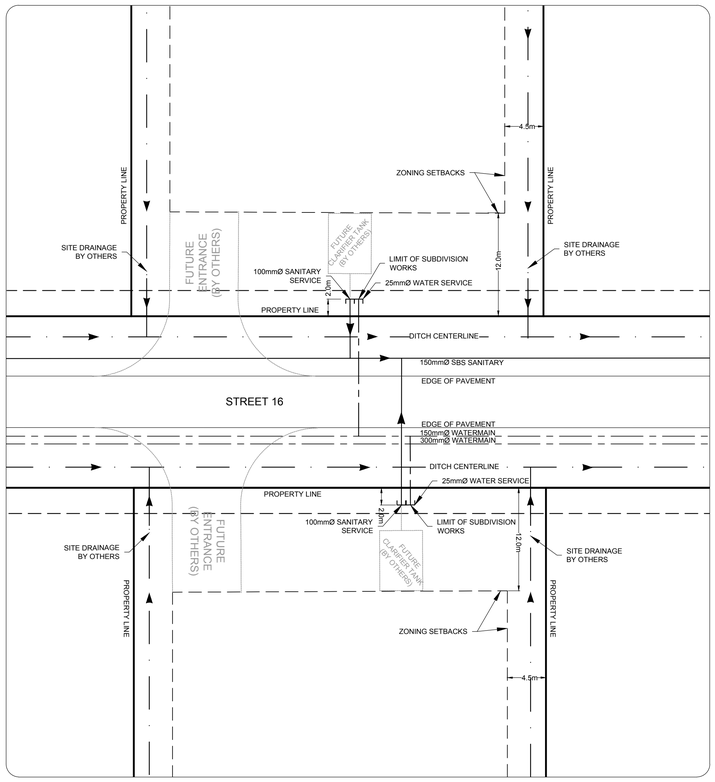
TYPICAL STREET 15 LOT SERVICING DETAIL
SCALE: N.T.S.



TYPICAL STREET 17 LOT SERVICING DETAIL
SCALE: N.T.S.



TYPICAL STREET 18 LOT SERVICING DETAIL
SCALE: N.T.S.



TYPICAL STREET 16 LOT SERVICING DETAIL
SCALE: N.T.S.

NOTE:
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CLEARFORD

CLEARFORD WATER SYSTEMS INC.

WEST CAPITAL Developments

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE: AS SHOWN

DESIGN: RJK
CHECKED: ARM
DRAWN: RJK
CHECKED: ARM
APPROVED: SMG

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
NOV 19, 2024
PROVINCE OF ONTARIO

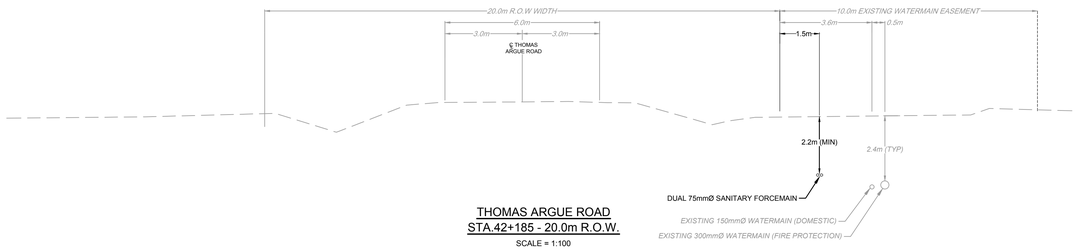
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

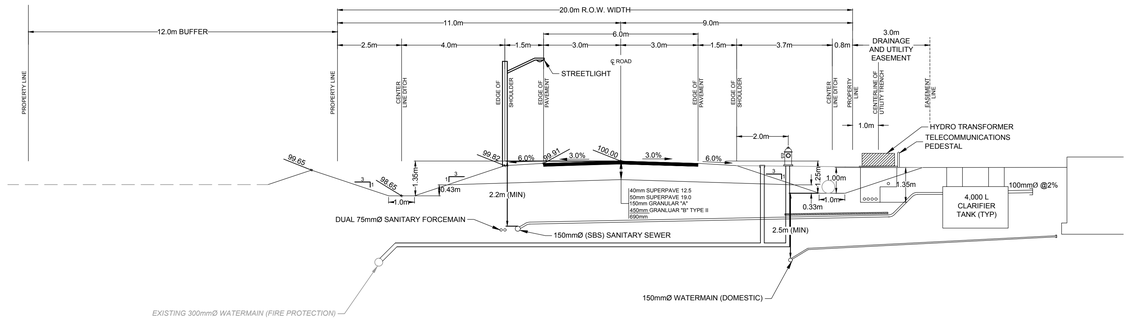
DRAWING NAME
NOTES & DETAILS

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-BPND1

M:\2025\102085\CAD\...\102085-BPND1.dwg, NOTES & DETAILS, Nov 19, 2024 - 2:48pm, mbarton

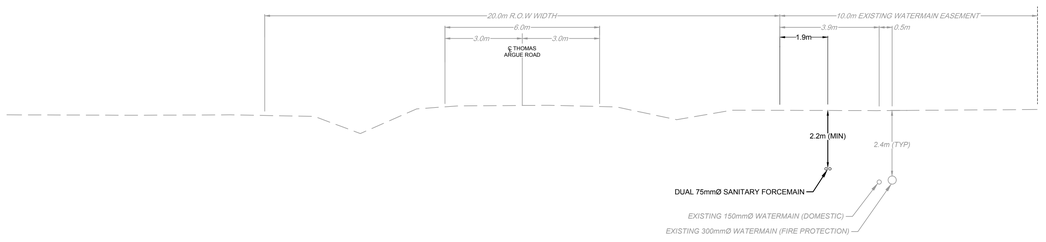


THOMAS ARGUE ROAD
STA.42+185 - 20.0m R.O.W.
SCALE = 1:100

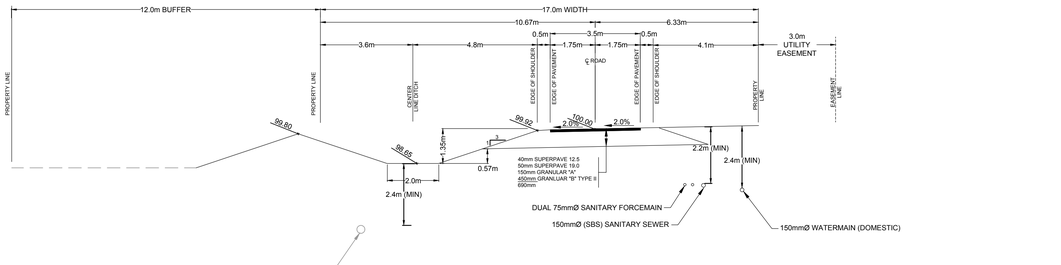


STREET 15 - STA. 15+875 TO 15+975
TYPICAL CROSS SECTION - 20.0m R.O.W.
SCALE = 1:100

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE

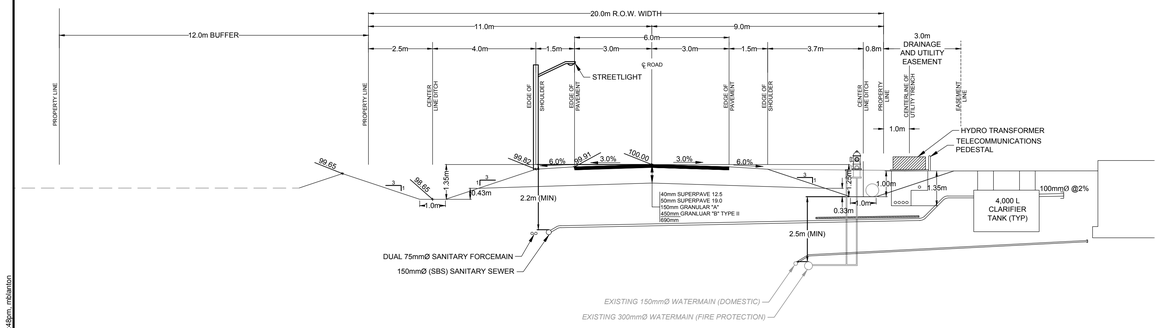


THOMAS ARGUE ROAD
STA.42+065 - 20.0m R.O.W.
SCALE = 1:100



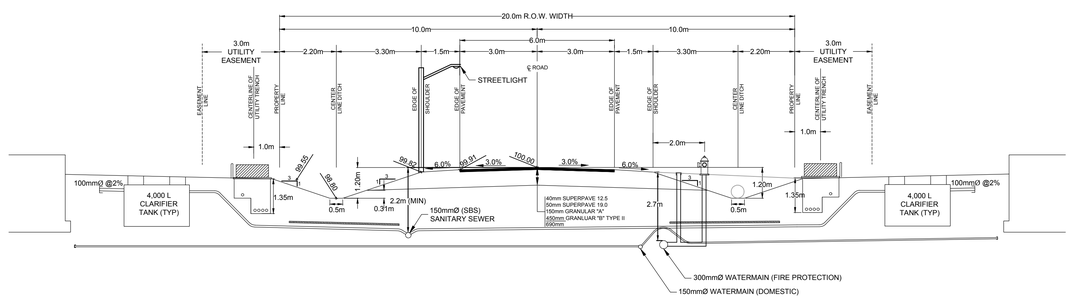
STREET 15 - ACCESS ROAD - STA 16+000 TO 16+100
TYPICAL CROSS SECTION - 15.0m R.O.W.
SCALE = 1:100

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE



STREET 15 - STA. 15+025 TO 15+875
TYPICAL CROSS SECTION - 20.0m R.O.W.
SCALE = 1:100

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE



STREET 16
TYPICAL CROSS SECTION - 20.0m R.O.W.
SCALE = 1:100

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

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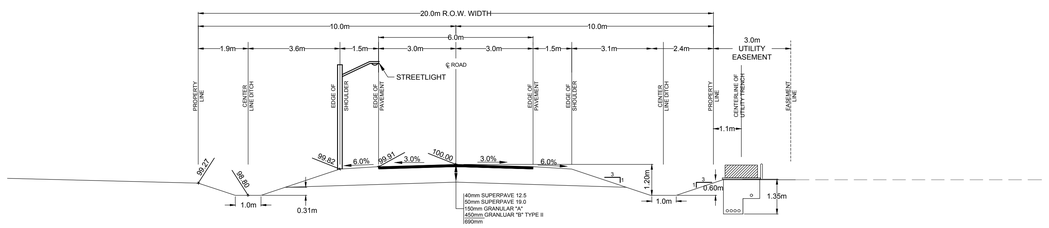
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
NOTES & DETAILS

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-BPND2

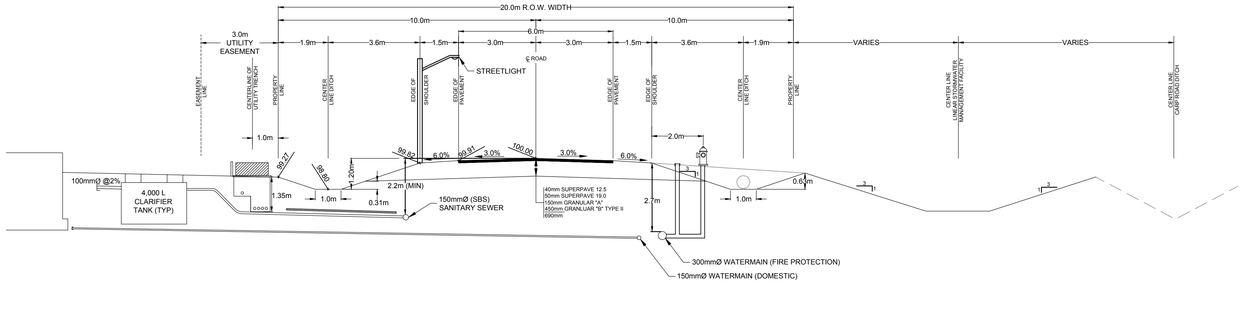
M:\2025\102085\CAD\...BUSINESS PARK PH2\Civil\102085-2SP-NS2.dwg, NS2, Nov 19, 2024 - 2:49pm, mtolanton

PLANS_DWG - Address/Scale



STREET 17 - STA. 17+000 TO 17+250
TYPICAL CROSS SECTION - 20.0m R.O.W.

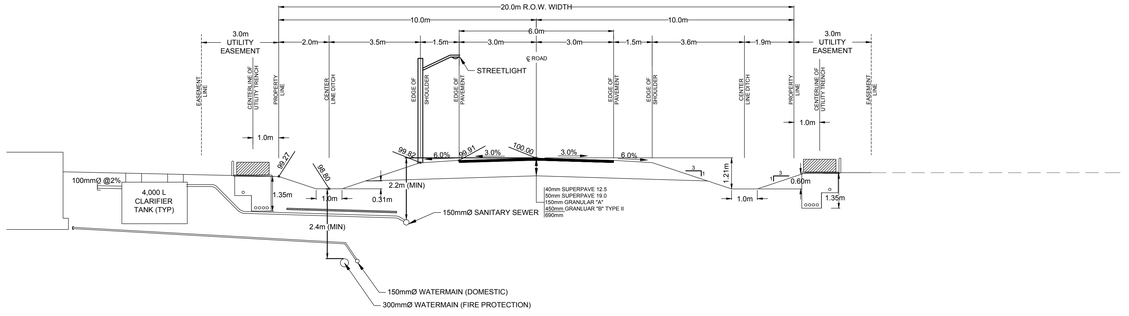
SCALE = 1:100



STREET 17 - STA. 17+250 TO 17+800
TYPICAL CROSS SECTION - 20.0m R.O.W.

SCALE = 1:100

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE



STREET 18
TYPICAL CROSS SECTION - 20.0m R.O.W.

SCALE = 1:100

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE

ROAD CROSSING CULVERT SCHEDULE

CULVERT	PLAN AND PROFILE SHEET	STREET	SIZE (mm)	LENGTH (m)	MATERIAL	THICKNESS (mm)	COUNTERSINK DEPTH (mm)	UPSTREAM INVERT	DOWNSTREAM INVERT
C17	102085-P63	STREET 15	2 x 800	16.5	ALUMINIZED CSP	2.8	80 [1]	106.35	106.31
C18	102085-P63	STREET 15	900	17.0	ALUMINIZED CSP	2.8	90 [1]	106.80	106.70
C19	102085-P63	STREET 15	800	17.0	ALUMINIZED CSP	2.8	80 [1]	107.26	107.16
C20	102085-P63	STREET 15	900	17.0	ALUMINIZED CSP	2.8	90 [1]	107.65	107.55
C21	102085-P62	STREET 15	600	17.0	ALUMINIZED CSP	2.8	60 [1]	108.08	107.98
C22	102085-P62	STREET 15	800	17.0	ALUMINIZED CSP	2.8	80 [1]	108.35	108.25
C23	102085-P62	STREET 15	600	17.0	ALUMINIZED CSP	2.8	60 [1]	108.88	108.78
C24	102085-P61	STREET 15	600	17.0	ALUMINIZED CSP	2.8	60 [1]	109.28	109.18
C25	102085-P61	STREET 15	600	17.0	ALUMINIZED CSP	2.8	60 [1]	109.88	109.78
C28	102085-P72	STREET 18	800	12.0	ALUMINIZED CSP	2.8	80 [1]	104.42	104.42
C29	102085-P71	STREET 17	800	15.5	ALUMINIZED CSP	2.8	80 [1]	105.32	105.32
C37	102085-P70	STREET 17	700	15.5	ALUMINIZED CSP	2.8	70 [1]	106.32	106.32
C38	102085-P70	STREET 17	700	15.5	ALUMINIZED CSP	2.8	70 [1]	107.49	107.49
C39	102085-P70	STREET 17	700	15.5	ALUMINIZED CSP	2.8	70 [1]	107.83	107.83
C40	102085-P61	STREET 17	500	15.5	ALUMINIZED CSP	2.8	50 [1]	108.31	108.31
C41	102085-P70	STREET 17	1200	20.5	ALUMINIZED CSP	2.8	120 [1]	106.75	106.57
C43	102085-P61	STREET 17	600	15.5	ALUMINIZED CSP	2.8	60 [1]	111.81	111.78
C44	102085-P61	STREET 18	600	20.0	ALUMINIZED CSP	2.8	60 [1]	107.78	107.71
C46	102085-P61	STREET 15	600	14.5	ALUMINIZED CSP	2.8	60 [1]	110.10	110.05

[1] ROADWAY CROSSING CULVERTS ARE TO BE INSTALLED 1/10TH THEIR DIAMETER BELOW INVERT OF DITCH.

HYDRANT CULVERT SCHEDULE

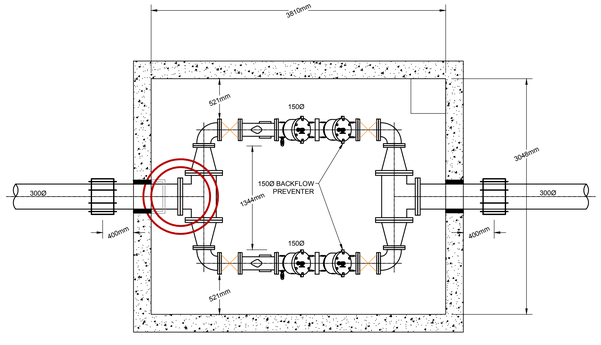
CULVERT	PLAN AND PROFILE SHEET	LOCATION	SIZE (mm)	LENGTH (m)	MATERIAL	THICKNESS (mm)	COUNTERSINK DEPTH (mm)	UPSTREAM INVERT	DOWNSTREAM INVERT
HYD-01	102085-P63	STREET 15 BLCOK 13	600	6.0	ALUMINIZED CSP	1.6	60 [2]	106.63	106.61
HYD-02	102085-P63	STREET 15 BLCOK 12	700	6.0	ALUMINIZED CSP	1.6	70 [2]	106.99	106.97
HYD-03	102085-P63	STREET 15 BLCOK 12	600	6.0	ALUMINIZED CSP	1.6	60 [2]	107.27	107.25
HYD-04	102085-P63	STREET 15 BLCOK 11	700	6.0	ALUMINIZED CSP	1.6	70 [2]	107.62	107.60
HYD-05	102085-P62	STREET 15 BLCOK 10	600	6.0	ALUMINIZED CSP	1.6	60 [2]	107.97	107.95
HYD-06	102085-P62	STREET 15 BLCOK 5	800	6.0	ALUMINIZED CSP	1.6	80 [2]	108.37	108.35
HYD-07	102085-P62	STREET 15 BLCOK 5	700	6.0	ALUMINIZED CSP	1.6	70 [2]	108.70	108.68
HYD-08	102085-P62	STREET 15 BLCOK 5	600	6.0	ALUMINIZED CSP	1.6	60 [2]	109.07	109.05
HYD-09	102085-P61	STREET 15 BLCOK 4	600	6.0	ALUMINIZED CSP	1.6	60 [2]	109.43	109.41
HYD-10	102085-P61	STREET 15 BLCOK 3	600	6.0	ALUMINIZED CSP	1.6	60 [2]	109.79	109.77
HYD-11	102085-P61	STREET 15 BLCOK 1	500	6.0	ALUMINIZED CSP	1.6	50 [2]	110.16	110.14
HYD-12	102085-P61	STREET 15 BLCOK 1	500	6.0	ALUMINIZED CSP	1.6	50 [2]	110.13	110.12
HYD-13	102085-P76	STREET 16 BLCOK 7	600	6.0	ALUMINIZED CSP	1.6	60 [2]	109.23	109.20
HYD-14	102085-P76	STREET 16 BLCOK 6	800	6.0	ALUMINIZED CSP	1.6	80 [2]	108.77	108.75
HYD-15	102085-P71	STREET 17 BLCOK 15	500	6.0	ALUMINIZED CSP	1.6	50 [2]	105.46	105.40
HYD-16	102085-P71	STREET 17 BLCOK 15	500	6.0	ALUMINIZED CSP	1.6	50 [2]	106.29	106.24
HYD-17	102085-P70	STREET 17 BLCOK 16	500	6.0	ALUMINIZED CSP	1.6	50 [2]	106.55	106.24
HYD-18	102085-P70	STREET 17 BLCOK 18	500	6.0	ALUMINIZED CSP	1.6	50 [2]	107.84	107.82
HYD-19	102085-P69	STREET 17 BLCOK 20	500	6.0	ALUMINIZED CSP	1.6	50 [2]	108.02	107.98
HYD-20	102085-P69	STREET 17 BLCOK 21	500	6.0	ALUMINIZED CSP	1.6	50 [2]	108.40	108.37

[2] PATHWAY CULVERTS ARE TO BE INSTALLED 1/10TH THEIR DIAMETER BELOW INVERT OF DITCH.

MISCELLANEOUS CULVERT SCHEDULE

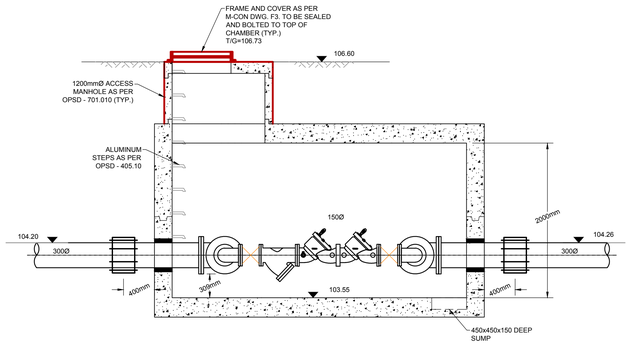
CULVERT	PLAN AND PROFILE SHEET	STREET	SIZE (mm)	LENGTH (m)	MATERIAL	THICKNESS (mm)	COUNTERSINK DEPTH (mm)	UPSTREAM INVERT	DOWNSTREAM INVERT
C26		POND B ACCESS ROAD	3 x 600	20.0	ALUMINIZED CSP	2.8	60 [3]	103.46	103.43
C42		CORE AIRPORT DRAINAGE DITCH	600	57.5	ALUMINIZED CSP	2.8	60 [1]	109.94	109.88
C45		POND B ACCESS ROAD	600	20.0	ALUMINIZED CSP	2.8	60 [3]	104.65	104.61

[3] HYDRANT CULVERTS ARE TO BE INSTALLED 1/10TH THEIR DIAMETER BELOW INVERT OF DITCH.



TYPICAL BACKFLOW PREVENTER CHAMBER - PLAN VIEW

N. T. S.



TYPICAL BACKFLOW PREVENTER CHAMBER - SECTION VIEW

N. T. S.

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CLEARFORD

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LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
NOTES & DETAILS

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-BPND3

M:\2025\102085\CAD\...BUSINESS PARK PH2\Civil\102085-BPP-ND.dwg, ND3, Nov 19, 2024 - 2:48pm, mtolanton

SEE SHEET 102085-GP6

SEE SHEET 102085-GP9

HUISSON ROAD

BLOCK 12, PLAN 4M-1511

PHASE 1 BUSINESS PARK

BLOCK 14, PLAN 4M-1511

LIMITS OF PHASE 2 BUSINESS PARK

STREET 17

OPEN SPACE BLOCK

CARP ROAD

KITIKMEOT DILAWRI HANGAR

EXISTING 18.3m 1200mmØ CSP
S.INV = 111.98
N.INV = 111.88

RUSS BRADLEY ROAD

CORE AIRPORT AREA

EXISTING SOUTHEAST TRIBUTARY

PHASE 1 BUSINESS PARK

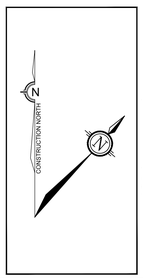
CORE AIRPORT AREA

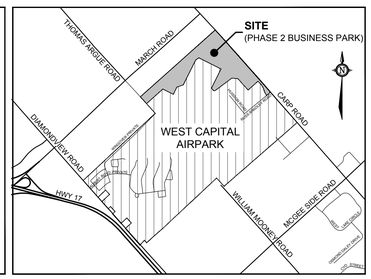
CARP ROAD

28

LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
V&VB	PROPOSED VALVE & VALVE BOX
HYD	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
200mmØ WM	EXISTING WATERMAIN AND DIAMETER
V&VB	EXISTING VALVE & VALVE BOX
HYD	EXISTING HYDRANT C/W VALVE & LEAD
SBS SAN	PROPOSED SMALL BORE SEWER-SANITARY AND DIRECTION OF FLOW
SAN FORCEMAIN	PROPOSED SANITARY SEWER FORCEMAIN AND DIRECTION OF FLOW
SAP	PROPOSED SANITARY SYSTEM ACCESS POINT
CB	PROPOSED CATCHBASIN
SB	PROPOSED SEEPAGE BARRIER
C/U	PROPOSED CULVERT AND NUMBER
	PROPOSED CENTRELINE OF ROAD
	PROPOSED EDGE OF PAVEMENT
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	LIMIT OF DEVELOPMENT (NO TOUCH)
	EROSION ACCESS ALLOWANCE (NO STRUCTURES)





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No.	REVISION	DATE	BY
16.	ISSUED FOR REVIEW	NOV 19/24	ARM
15.	ISSUED FOR REVIEW	OCT 29/24	ARM
14.	ISSUED FOR COORDINATION	AUG 22/24	ARM
13.	ISSUED FOR COORDINATION	APR 23/24	ARM
12.	ISSUED FOR CONSTRUCTION (NO CHANGES)	AUG 20/20	ARM
11.	ISSUED FOR TENDER ROADS, TAXIWAY & DITCHING	JULY 17/20	ARM
10.	ISSUED FOR TENDER ROADS, TAXIWAY & DITCHING	JULY 17/20	ARM
9.	ISSUED FOR WATERMAIN CONSTRUCTION	SEPT 07/18	ARM
8.	ISSUED FOR TENDER	FEB 26/15	DJC
7.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	FEB 19/14	DJC
6.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO OLS	MAR 11/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE
1:750
1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
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PROVINCE OF ONTARIO
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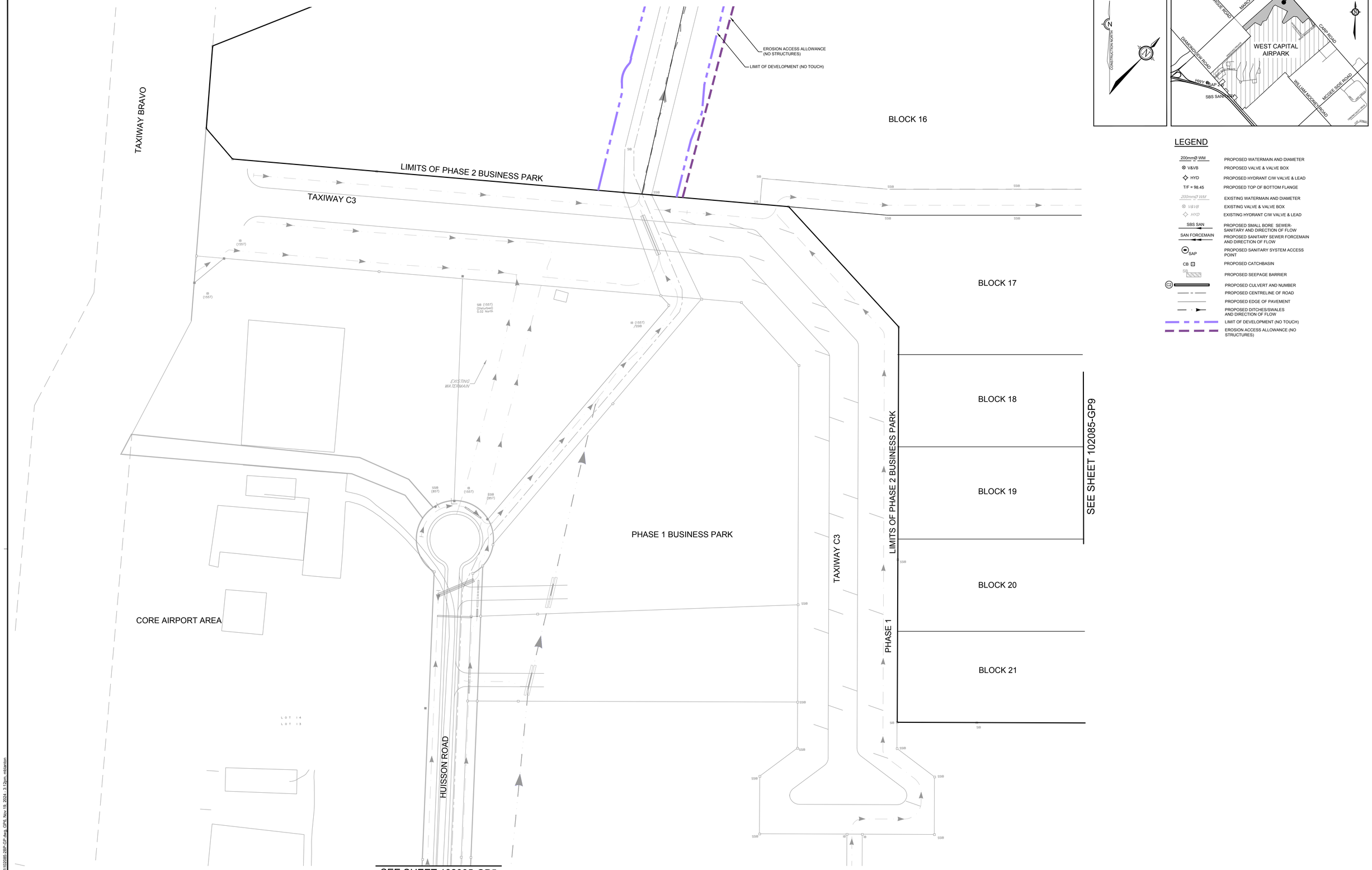
CITY OF OTTAWA
WEST CAPITAL AIRPARK

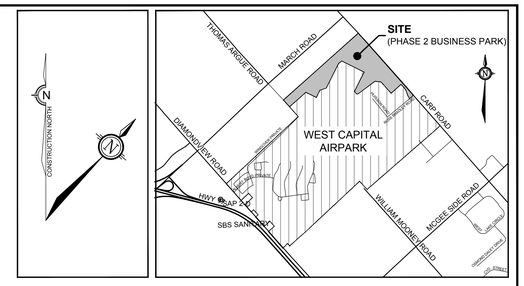
GENERAL PLAN OF SERVICES

PROJECT No. 102085-14
REV REV # 16
DRAWING No. 102085-GP5

M:\2021\102085\CAD_BUSINESS PARK PH2\Civil\102085-PBP-GP.dwg, GP5, Nov 19, 2024 - 3:12pm, mblanton

PLAN1:1943 - Widthew.ctb





LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
V&VB	PROPOSED VALVE & VALVE BOX
HYD	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
200mmØ WM	EXISTING WATERMAIN AND DIAMETER
V&VB	EXISTING VALVE & VALVE BOX
HYD	EXISTING HYDRANT C/W VALVE & LEAD
SBS SAN	PROPOSED SMALL BORE SEWER-SANITARY AND DIRECTION OF FLOW
SAN FORCEMAIN	PROPOSED SANITARY SEWER FORCEMAIN AND DIRECTION OF FLOW
SAP	PROPOSED SANITARY SYSTEM ACCESS POINT
CB	PROPOSED CATCHBASIN
SB	PROPOSED SEEPAGE BARRIER
C3	PROPOSED CULVERT AND NUMBER
	PROPOSED CENTRELINE OF ROAD
	PROPOSED EDGE OF PAVEMENT
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	LIMIT OF DEVELOPMENT (NO TOUCH)
	EROSION ACCESS ALLOWANCE (NO STRUCTURES)

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

CLEARFORD WATER SYSTEMS INC.

CLEARFORD

WEST CAPITAL Developments

No.	REVISION	DATE	BY
15.	ISSUED FOR REVIEW	NOV 19/24	ARM
14.	ISSUED FOR REVIEW	OCT 29/24	ARM
13.	ISSUED FOR COORDINATION	AUG 22/24	ARM
12.	ISSUED FOR COORDINATION	APR 23/24	ARM
11.	ISSUED FOR CONSTRUCTION (NO CHANGES)	AUG 20/20	ARM
10.	ISSUED FOR TENDER ROADS, TAXIWAY & DITCHING	JUL 17/20	ARM
9.	ISSUED FOR WATERMAIN CONSTRUCTION	SEPT 07/18	ARM
8.	ISSUED FOR TENDER	FEB 26/15	DJC
7.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	FEB 19/14	DJC
6.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO OLS	MAR 11/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE
1:750
1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

NOVATECH
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Ottawa, Ontario, Canada K2M 1P6
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Website www.novatech-eng.com

CITY OF OTTAWA
WEST CAPITAL AIRPARK

GENERAL PLAN OF SERVICES

PROJECT No. 102085-14
REV REV # 15
DRAWING No. 102085-GP6

M:\2002\102085\CAD\...BUSINESS PARK PH2\Civil\102085-2BP-GP.dwg, GP6, Nov 19, 2024, 3:12pm, mbolanton

SEE SHEET 102085-GP8

STREET 15

THOMAS ARGUE ROAD

STREET 16

WCAA GARAGE & STORAGE

BLOCK 1

BLOCK 2

BLOCK 3

BLOCK 4

BLOCK 5

BLOCK 6

BLOCK 7

BLOCK 8

BLOCK 9

BLOCK 10

BLOCK 9 HIGH POINT

BLOCK 8 HIGH POINT

BLOCK 294
(DRAFT PLAN)

LIMITS OF PHASE 2 BUSINESS PARK

EXISTING APRON
14 T-HANGERS

EXISTING APRON

EXISTING TAXIWAY

WESTAIR TERMINAL

EXISTING TAXIWAY ALPHA

CORE AIRPORT AREA

EXISTING FIRE HYDRANT TO BE RELOCATED

6.0m
6.7m
13.3m EASEMENT

2x75mmØ SAN FORCEMAIN

150mmØ SBS SAN

200mmØ WM

SAP

HYD

VALVE

CB

SB

C2

C3

C4

C5

C6

C7

C8

C9

C10

C11

C12

C13

C14

C15

C16

C17

C18

C19

C20

C21

C22

C23

C24

C25

C26

C27

C28

C29

C30

C31

C32

C33

C34

C35

C36

C37

C38

C39

C40

C41

STREET 15

EXISTING FIRE HYDRANT TO BE RELOCATED

CONNECT TO EXISTING 150mmØ WATERMAIN

2x75mmØ SAN FORCEMAIN

150mmØ SBS SAN

200mmØ SBS SAN

200mmØ WM

150mmØ WM

BACKFLOW PREVENTER

300mm X 200mm REDUCER

BACKFLOW PREVENTER (SEE DRAWING 102085-BPND3 FOR DETAILS)

200MM X 200MM TEE C/W 300MM TO 200MM REDUCER

OIL AND GRIT SEPARATOR (SEE DRAWING 102085-SWMF7 FOR DETAILS)

SANITARY PUMPING STATION (SEE DRAWING 102085-SPS FOR DETAILS)

26.0m-675mmØ STM @ 0.25%

6.0m EASEMENT

SWM POND 'A' (REFER TO DRAWING 102085-SWMF5)

SWM POND 'B' (REFER TO DRAWING 102085-SWMF 7)

SWM POND 'C' (REFER TO DRAWING 102085-SWMF 8)

BLOCK 11

BLOCK 12

BLOCK 13

BLOCK 14

BLOCK 15

BLOCK 9

CAP INV: 106.17

LIMIT OF PHASE 2 BUSINESS PARK

CORE AIRPORT AREA

CARP ROAD

STREET 18

STREET 17

SEE SHEET 102085-GP7

SEE SHEET 102085-GP9

LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
V&VB	PROPOSED VALVE & VALVE BOX
HYD	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
200mmØ WM	EXISTING WATERMAIN AND DIAMETER
V&VB	EXISTING VALVE & VALVE BOX
HYD	EXISTING HYDRANT C/W VALVE & LEAD
SBS SAN	PROPOSED SMALL BORE SEWER-SANITARY AND DIRECTION OF FLOW
SAN FORCEMAIN	PROPOSED SANITARY SEWER FORCEMAIN AND DIRECTION OF FLOW
SAP	PROPOSED SANITARY SYSTEM ACCESS POINT
CB	PROPOSED CATCHBASIN
SB	PROPOSED SEEPAGE BARRIER
C2	PROPOSED CULVERT AND NUMBER
	PROPOSED CENTRELINE OF ROAD
	PROPOSED EDGE OF PAVEMENT
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	LIMIT OF DEVELOPMENT (NO TOUCH)
	EROSION ACCESS ALLOWANCE (NO STRUCTURES)

CONSTRUCTION NORTH

SITE (PHASE 2 BUSINESS PARK)

THOMAS ARGUE ROAD

MARCH ROAD

DIAMONDVIEW ROAD

WEST CAPITAL AIRPARK

CARP ROAD

HWY 17

WILLIAM MOONEY ROAD

MCGEE SIDE ROAD

NOTE:
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CLEARFORD WATER SYSTEMS INC.

CLEARFORD

WEST CAPITAL Developments

No.	REVISION	DATE	BY
13.	ISSUED FOR REVIEW	NOV 19/24	ARM
12.	ISSUED FOR REVIEW	OCT 29/24	ARM
11.	ISSUED FOR COORDINATION	AUG 22/24	ARM
10.	ISSUED FOR COORDINATION	APR 23/24	ARM
9.	ISSUED FOR WATERMAIN CONSTRUCTION	SEPT 07/18	ARM

No.	REVISION	DATE	BY
8.	ISSUED FOR TENDER	FEB 26/15	DJC
7.	ISSUED FOR PHASE 1 RESIDENTIAL REGISTRATION	OCT 15/14	DJC
6.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO OLS	MAR 11/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE 1:750

1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

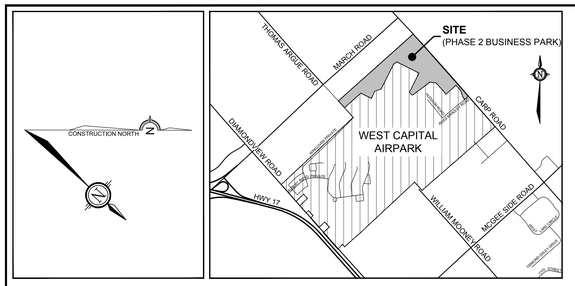
NOVATECH
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CITY OF OTTAWA
WEST CAPITAL AIRPARK

GENERAL PLAN OF SERVICES

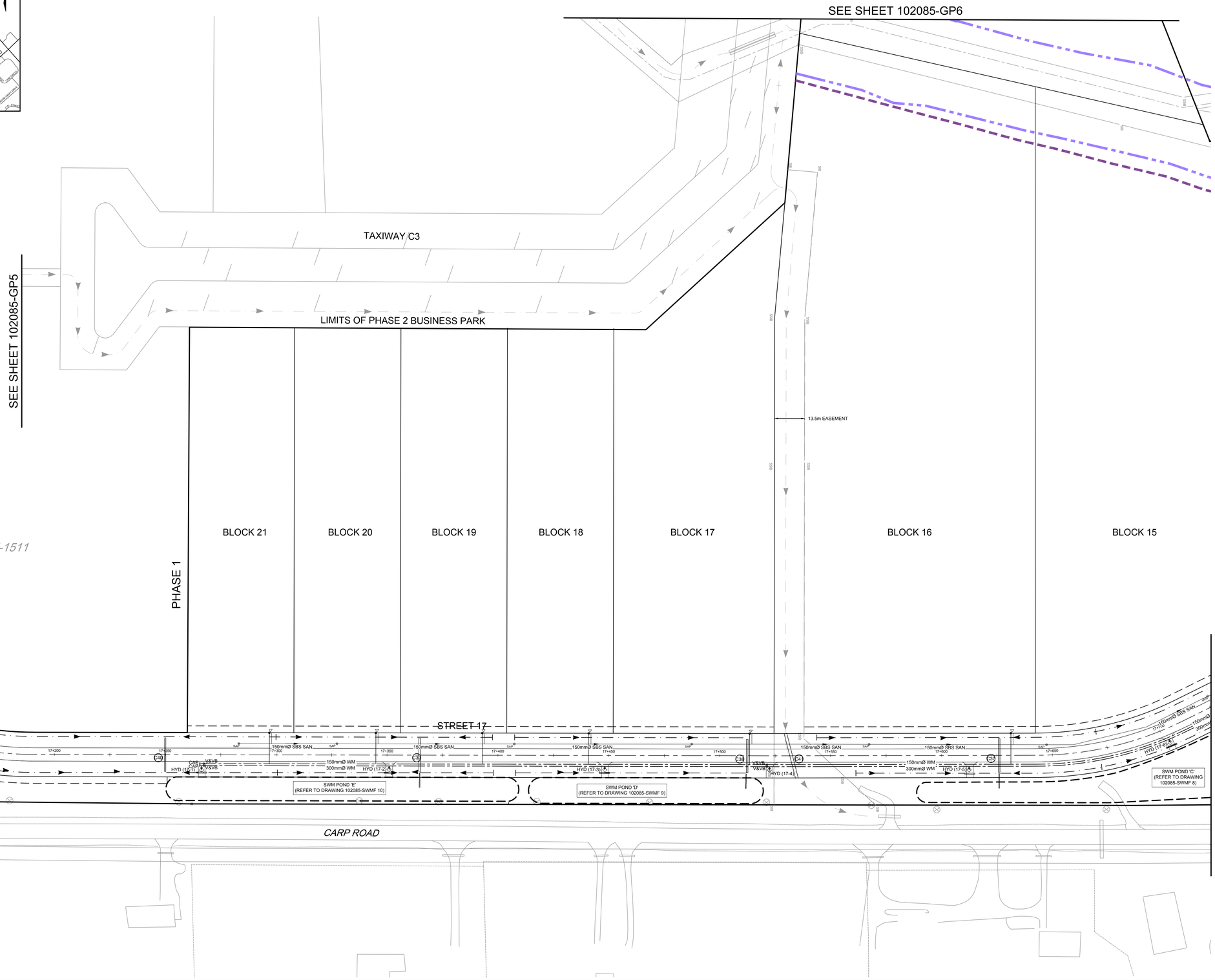
PROJECT No. 102085-14
REV REV # 13
DRAWING No. 102085-GP8

M:\2020\102085\CAD_BUSINESS PARK PH2\Civil\102085-2BA-GP.dwg, GP8, Nov 19, 2024, 3:12pm, mclanton



LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
V&VB	PROPOSED VALVE & VALVE BOX
HYD	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
200mmØ WM	EXISTING WATERMAIN AND DIAMETER
V&VB	EXISTING VALVE & VALVE BOX
HYD	EXISTING HYDRANT C/W VALVE & LEAD
SBS SAN	PROPOSED SMALL BORE SEWER-SANITARY AND DIRECTION OF FLOW
SAN FORCEMAIN	PROPOSED SANITARY SEWER FORCEMAIN AND DIRECTION OF FLOW
SAP	PROPOSED SANITARY SYSTEM ACCESS POINT
CB	PROPOSED CATCHBASIN
SB	PROPOSED SEEPAGE BARRIER
C2	PROPOSED CULVERT AND NUMBER
	PROPOSED CENTRELINE OF ROAD
	PROPOSED EDGE OF PAVEMENT
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	LIMIT OF DEVELOPMENT (NO TOUCH)
	EROSION ACCESS ALLOWANCE (NO STRUCTURES)



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CLEARFORD WATER SYSTEMS INC.

WEST CAPITAL Developments

No.	REVISION	DATE	BY
14.	ISSUED FOR REVIEW	NOV 19/24	ARM
13.	ISSUED FOR REVIEW	OCT 29/24	ARM
12.	ISSUED FOR COORDINATION	AUG 22/24	ARM
11.	ISSUED FOR COORDINATION	APR 23/24	ARM
10.	ISSUED FOR CONSTRUCTION (NO CHANGES)	AUG 20/20	ARM
9.	ISSUED FOR TENDER ROADS, TAXIWAY & DITCHING	JUL 17/20	ARM
8.	ISSUED FOR TENDER	MAR 9/15	DJC
7.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	FEB 19/14	DJC
6.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO OLS	MAR 11/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE 1:750 (1:750 0 10 20 30)

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

NOVATECH
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Website www.novatech-eng.com

CITY OF OTTAWA
WEST CAPITAL AIRPARK

GENERAL PLAN OF SERVICES

PROJECT No. 102085-14
REV. REV # 14
DRAWING No. 102085-GP9

M:\2024\102085\CAD_BUSINESS PARK PHASE\Civil\102085-2BP-GP.dwg, GP9, Nov 19, 2024 - 3:12pm, mtolanton

SEE SHEET 102085-GR6

SEE SHEET 102085-GR9

HUISSON ROAD

PHASE 1 BUSINESS PARK

BLOCK 12, PLAN 4M-1511

PHASE 1 BUSINESS PARK

BLOCK 14, PLAN 4M-1511

LIMITS OF PHASE 2 BUSINESS PARK

STREET 17

OPEN SPACE BLOCK

KINNAL DILAWRI HANGAR

RUSS BRADLEY ROAD

CARP ROAD

CORE AIRPORT AREA

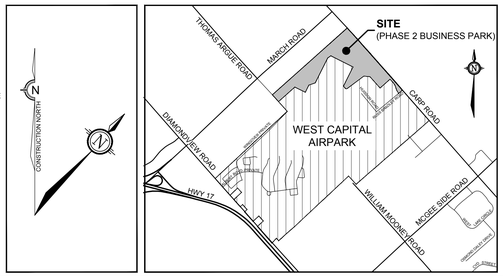
PHASE 1 BUSINESS PARK

CORE AIRPORT AREA

28

LEGEND

117.50 / 117.15	PROPOSED ELEVATION / EXISTING ELEVATION
118.56(D)	PROPOSED DITCH ELEVATION
118.43HP	HIGH POINT
117.88LP	LOW POINT
119.75(TB)	TOP OF BANK
3.0%	PROPOSED GRADING DIRECTION AND SLOPE
	GENERAL BLOCK DRAINAGE DIRECTION (DETAILS BY OTHERS)
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	PROPOSED DITCHES/SWALES WITH SUBDRAIN AND DIRECTION OF FLOW
C1	PROPOSED CULVERT
	EASEMENT LIMIT
	LIMIT OF DEVELOPMENT (NO TOUCH)
	EROSION ACCESS ALLOWANCE (NO STRUCTURES)



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WEST CAPITAL Developments

No.	REVISION	DATE	BY
15.	ISSUED FOR REVIEW	NOV 19/24	ARM
14.	ISSUED FOR COORDINATION	AUG 29/24	ARM
13.	AS-BUILT GRADES ADDED	JUL 15/22	ARM
12.	ISSUED FOR CONSTRUCTION (NO CHANGES)	AUG 20/20	ARM
11.	ISSUED FOR TENDER ROADS, TAXIWAY & DITCHING	JUL 17/20	ARM
10.	ISSUED FOR TENDER	FEB 26/15	DJC
9.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	FEB 19/14	DJC
8.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
7.	REVISED AS PER MVC COMMENTS	DEC 20/13	DJC
6.	REVISED AS PER CITY / MVC COMMENTS	NOV 29/13	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO GEOTECHNICAL CONSULTANT	APR 24/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE
1:750
1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 11, 2024
PROVINCE OF ONTARIO

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Suite 200, 240 Michael Cowpland Drive
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Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
WEST CAPITAL AIRPARK

GRADING PLAN

PROJECT No. 102085-14
REV REV # 15
DRAWING No. 102085-GR5

M:\2010\102085\CAD\...BUSINESS PARK PH2\Civil\102085-2SP-GR.dwg, GR5, Nov 19, 2024, 3:56pm, mbarton



NOTE:
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WEST CAPITAL Developments

No.	REVISION	DATE	BY
16.	ISSUED FOR REVIEW	NOV 19/24	ARM
15.	ISSUED FOR COORDINATION	AUG 29/24	ARM
14.	AS-BUILT GRADES ADDED	JUL 15/22	ARM
13.	ISSUED FOR CONSTRUCTION	AUG 20/20	ARM
12.	ISSUED FOR TENDER ROADS, TAXIWAY & DITCHING	JUL 17/20	ARM
11.	ISSUED FOR TENDER	FEB 26/15	DJC
10.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	FEB 19/14	DJC
9.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
8.	REVISED AS PER MVC COMMENTS	DEC 20/13	DJC
7.	REVISED AS PER CITY / MVC COMMENTS	NOV 29/13	DJC
6.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
4.	TREE PROTECTION AREAS ADDED	APR 30/13	BBH
3.	ISSUED TO GEOTECHNICAL CONSULTANT	APR 24/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE
1:750
1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

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Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
GRADING PLAN

PROJECT No. 102085-14
REV REV # 16
DRAWING No. 102085-2BP-GR6

M:\2020\102085\CAD_BUSINESS PARK PH2\Civil\102085-2BP-GR6.dwg, GR6, Nov 19, 2024 - 3:56pm, mbarton

STREET 15

THOMAS ARGUE ROAD

BLOCK 1

BLOCK 2

BLOCK 3

BLOCK 4

BLOCK 5

BLOCK 6

BLOCK 7

BLOCK 8

BLOCK 9

BLOCK 10

STREET 16

NCAA GARAGE & STORAGE

EXISTING FIRE HYDRANT TO BE RELOCATED

EXISTING SWALE TO BE DIRECTED TO PROPOSED SWALE

LIMITS OF PHASE 2 BUSINESS PARK

TIE TO EXISTING SWALE

BLOCK 9 HIGH POINT

BLOCK 8 HIGH POINT

SEE SHEET 102085-GR8

14 T-HANGERS

EXISTING APRON

WESTAIR TERMINAL

EXISTING TAXIWAY CHARLIE

CORE AIRPORT AREA

LEGEND

117.50 / 117.15	PROPOSED ELEVATION / *EXISTING ELEVATION*
116.56(D)	PROPOSED DITCH ELEVATION
118.43(HP)	HIGH POINT
117.88(LP)	LOW POINT
115.75(TB)	TOP OF BANK
3.0%	PROPOSED GRADING DIRECTION AND SLOPE
	GENERAL BLOCK DRAINAGE DIRECTION (DETAILS BY OTHERS)
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	PROPOSED DITCHES/SWALES WITH SUBDRAIN AND DIRECTION OF FLOW
	PROPOSED CULVERT
	EASEMENT LIMIT
	LIMIT OF DEVELOPMENT (NO TOUCH)
	EROSION ACCESS ALLOWANCE (NO STRUCTURES)

NORTH

KEY PLAN
N.T.S.

SITE
(PHASE 2 BUSINESS PARK)

THOMAS ARGUE ROAD
MARCH ROAD
CARP ROAD
DIAMOND VIEW ROAD
HWY 17
WILLIAM MOONEY ROAD
MOSES GRE ROAD
WEST CAPITAL AIRPARK

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WEST CAPITAL Developments

No.	REVISION	DATE	BY
11.	ISSUED FOR REVIEW	NOV 19/24	ARM
10.	ISSUED FOR COORDINATION	AUG 29/24	ARM
9.	ISSUED FOR TENDER	FEB 26/15	DJC
8.	ISSUED FOR PHASE 1 RESIDENTIAL REGISTRATION	OCT 15/14	DJC
7.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
6.	REVISED AS PER CITY / MVC COMMENTS	NOV 29/13	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO GEOTECHNICAL CONSULTANT	APR 24/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE
1:750
1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
GRADING PLAN

PROJECT No. 102085-14
REV # 11
DRAWING No. 102085-2BP-GR7

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STREET 15

OPEN SPACE BLOCK (BLOCK 25)

SEE SHEET 102085-GR7

BLOCK 11

BLOCK 12

BLOCK 13

BLOCK 9

BLOCK 14

BLOCK 15

LIMIT OF PHASE 2 BUSINESS PARK

LIMIT OF PHASE 2 BUSINESS PARK

"Core Airport Area"

SWM POND 'A'
SEE SWMF5 &
SWMF6

SWM POND 'B'
SEE SWMF7

(SWM POND 'C')

APPROXIMATE LIMIT OF BLOCK FILL FOR POSITIVE GRADING TO SWM FACILITY

CARP ROAD

SEE SHEET 102085-GR6

SEE SHEET 102085-GR9

LEGEND

- PROPOSED ELEVATION / *EXISTING ELEVATION*
- PROPOSED DITCH ELEVATION
- HIGH POINT
- LOW POINT
- TOP OF BANK
- PROPOSED GRADING DIRECTION AND SLOPE
- GENERAL BLOCK DRAINAGE DIRECTION (DETAILS BY OTHERS)
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED DITCHES/SWALES WITH SUBDRAIN AND DIRECTION OF FLOW
- PROPOSED CULVERT
- EASEMENT LIMIT
- LIMIT OF DEVELOPMENT (NO TOUCH)
- EROSION ACCESS ALLOWANCE (NO STRUCTURES)

NORTH

KEY PLAN
N.T.S.

SITE
(PHASE 2 BUSINESS PARK)

THOMAS ARDIRE ROAD
MARCH ROAD
CARP ROAD
DIAMOND VIEW ROAD
WEST CAPITAL AIRPARK
HWY 17
MELISSA MOONEY ROAD
MOORE SIDE ROAD

NOTE:
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10.	ISSUED FOR TENDER	FEB 26/15	DJC
9.	ISSUED FOR PHASE 1 RESIDENTIAL REGISTRATION	OCT 15/14	DJC
8.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
7.	REVISED AS PER MVC COMMENTS	DEC 20/13	DJC
6.	REVISED AS PER CITY / MVC COMMENTS	NOV 29/13	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
3.	ISSUED TO GEOTECHNICAL CONSULTANT	APR 24/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE 1:750

1:750
0 10 20 30

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

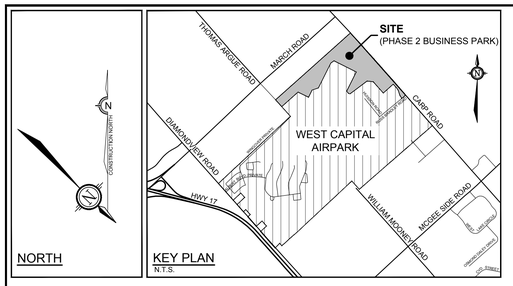
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

DRAWING NAME
GRADING PLAN

PROJECT No. 102085-14
REV REV # 12
DRAWING No. 102085-2BP-GR8

M:\2024\102085\CAD\...\102085-2BP-GR8.dwg, GR8, Nov 19, 2024 - 8:31pm, mbalanton
PLA1087.DWG - 600mm(H)



LEGEND

- PROPOSED ELEVATION / EXISTING ELEVATION
- PROPOSED DITCH ELEVATION
- HIGH POINT
- LOW POINT
- TOP OF BANK
- PROPOSED GRADING DIRECTION AND SLOPE
- GENERAL BLOCK DRAINAGE DIRECTION (DETAILS BY OTHERS)
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED DITCHES/SWALES WITH SUBDRAIN AND DIRECTION OF FLOW
- PROPOSED CULVERT
- EASEMENT LIMIT
- LIMIT OF DEVELOPMENT (NO TOUCH)
- EROSION ACCESS ALLOWANCE (NO STRUCTURES)

SEE SHEET 102085-GR6

NORTHEAST TRIBUTARY

TAXIWAY C3

LIMITS OF PHASE 2 BUSINESS PARK

EXISTING PHASE 1 BUSINESS PARK

BLOCK 21 | BLOCK 20 | BLOCK 19 | BLOCK 18 | BLOCK 17 | BLOCK 16 | BLOCK 15

STREET 17

OPEN SPACE BLOCK

CARP ROAD

13.5m EXISTING EASEMENT

EXISTING 1050mmØ CULVERT (SOUTHEAST TRIBUTARY OUTLET)

SWM POND 'E' SEE SWMF10

SWM POND 'D' SEE SWMF9

SWM POND 'C' SEE SWMF8

SEE SHEET 102085-GR8

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

WEST CAPITAL Developments

No.	REVISION	DATE	BY
16.	ISSUED FOR REVIEW	NOV 19/24	ARM
15.	ISSUED FOR COORDINATION	AUG 29/24	ARM
14.	AS-BUILT GRADES ADDED	JUL 15/22	ARM
13.	ISSUED FOR CONSTRUCTION	AUG 20/20	ARM
12.	ISSUED FOR TENDER ROADS, TAXIWAY & DTICHING	JUL 17/20	ARM
11.	ISSUED FOR TENDER	MAR 9/15	DJC
10.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	FEB 19/14	DJC
9.	ISSUED FOR PHASE 1 BUSINESS PARK REGISTRATION	JAN 30/14	DJC
8.	REVISED AS PER MVC COMMENTS	DEC 20/13	DJC
7.	REVISED AS PER CITY / MVC COMMENTS	NOV 29/13	DJC
6.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
5.	REVISED AS PER CITY / MVC COMMENTS	MAY 28/13	DJC
4.	TREE PROTECTION AREAS ADDED	APR 30/13	BBH
3.	ISSUED TO GEOTECHNICAL CONSULTANT	APR 24/13	DJC
2.	REVISED AS PER CITY COMMENTS	MAR 8/12	DJC
1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE 1:750 (1:750 0 10 20 30)

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

LICENSED PROFESSIONAL ENGINEER A.R. MCAULEY 100141256 Nov 19, 2024 PROVINCE OF ONTARIO

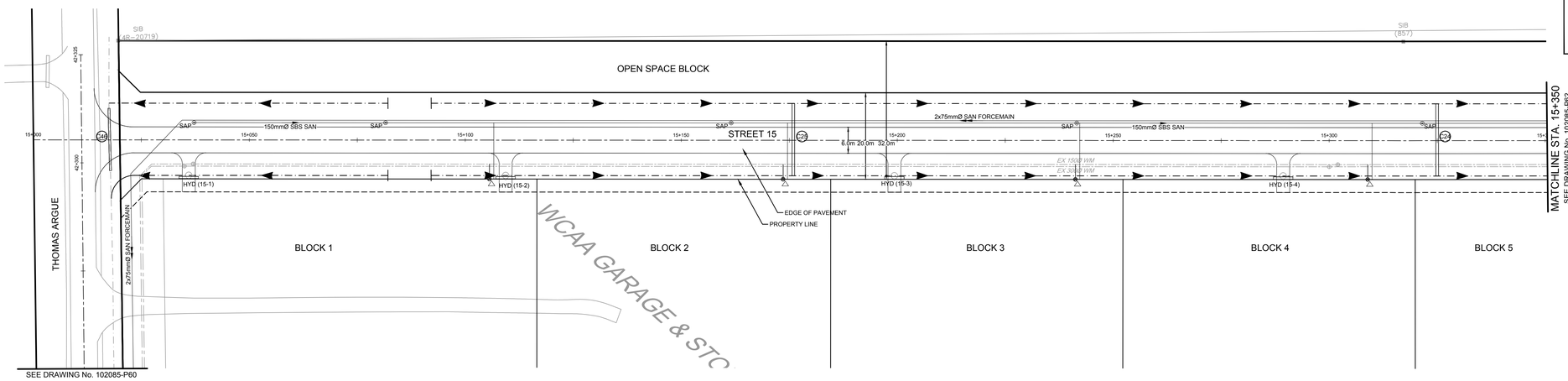
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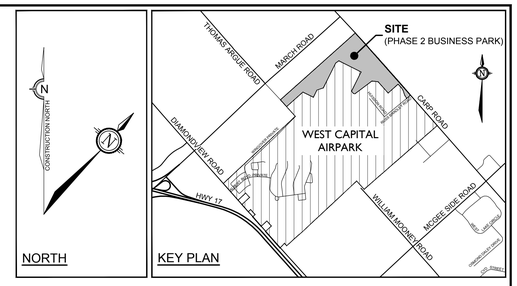
CITY OF OTTAWA
WEST CAPITAL AIRPARK

GRADING PLAN

PROJECT No. 102085-14
REV REV # 16
DRAWING No. 102085-GR9

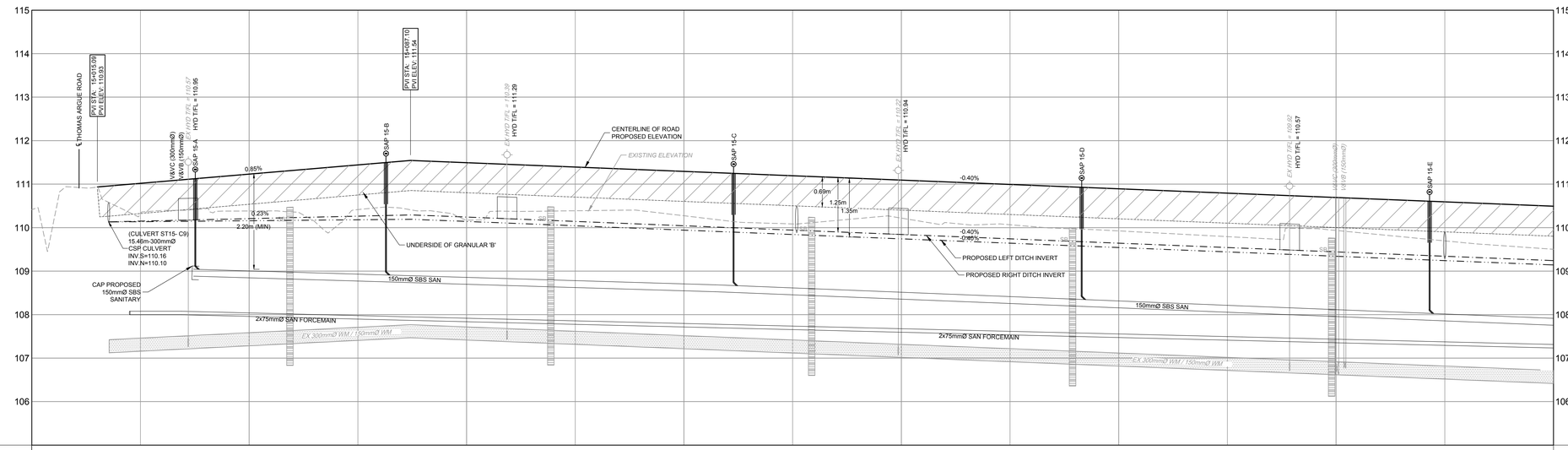
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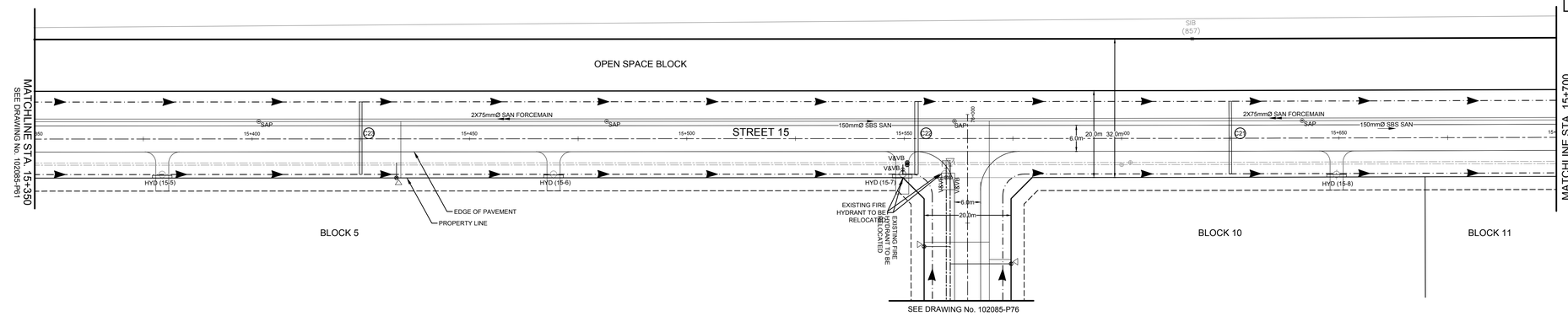


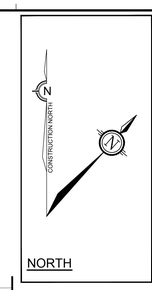
LEGEND

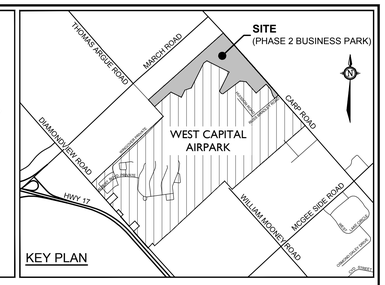
- 200mmØ WM — PROPOSED WATERMAIN AND DIAMETER
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- PROPOSED EDGE OF PAVEMENT
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED ROAD STRUCTURE (REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR DEPTHS)



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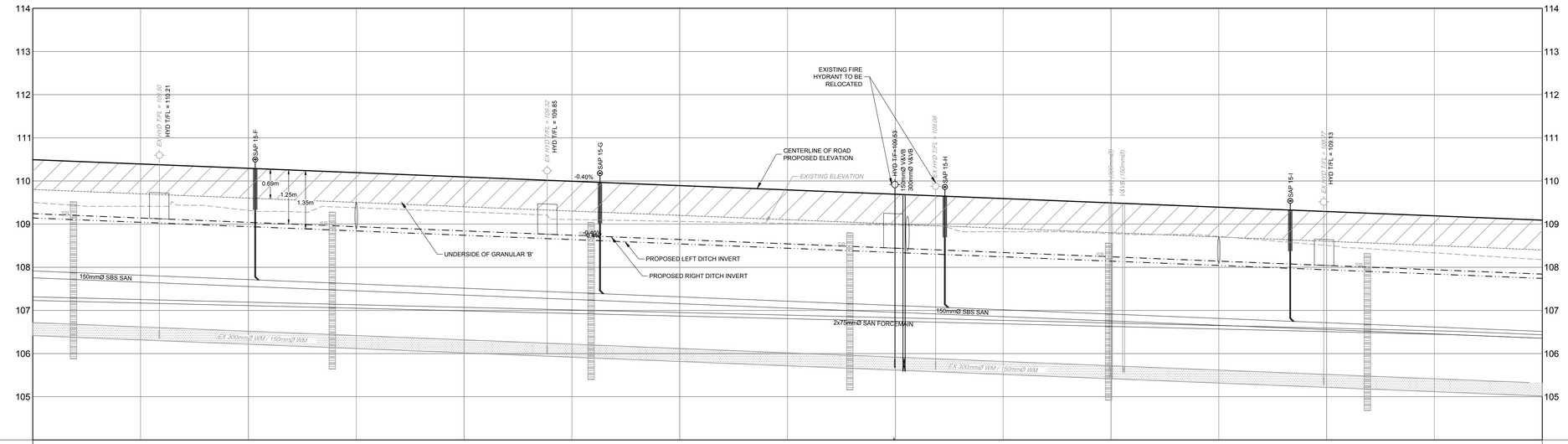




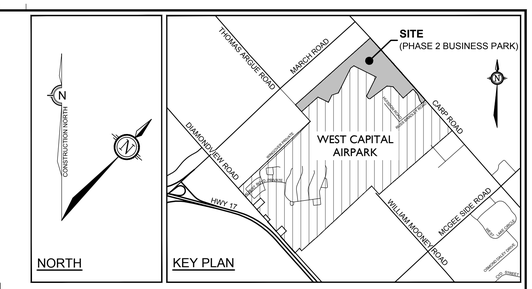


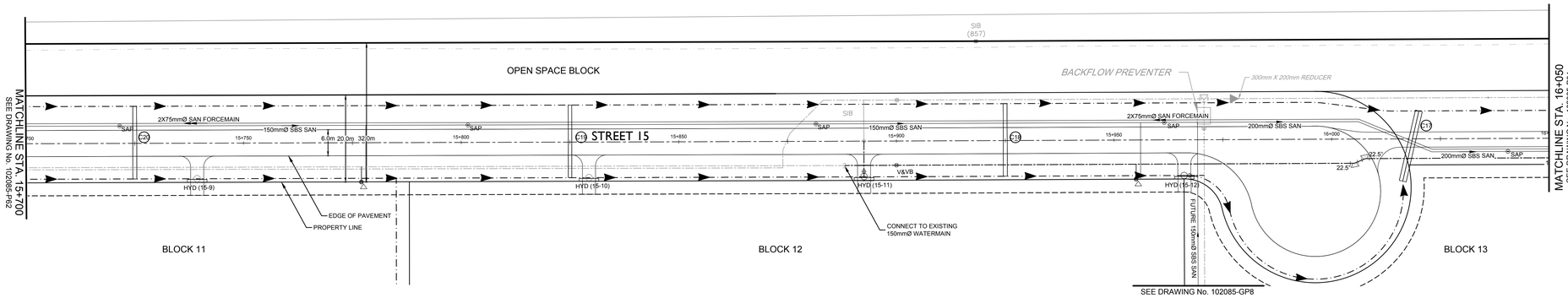
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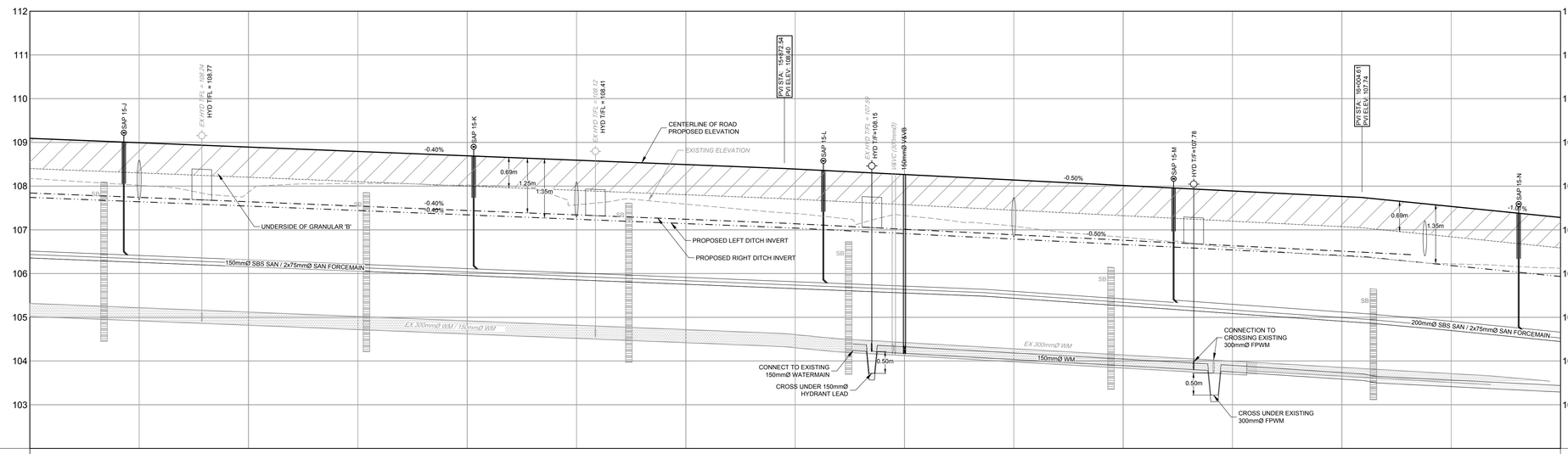
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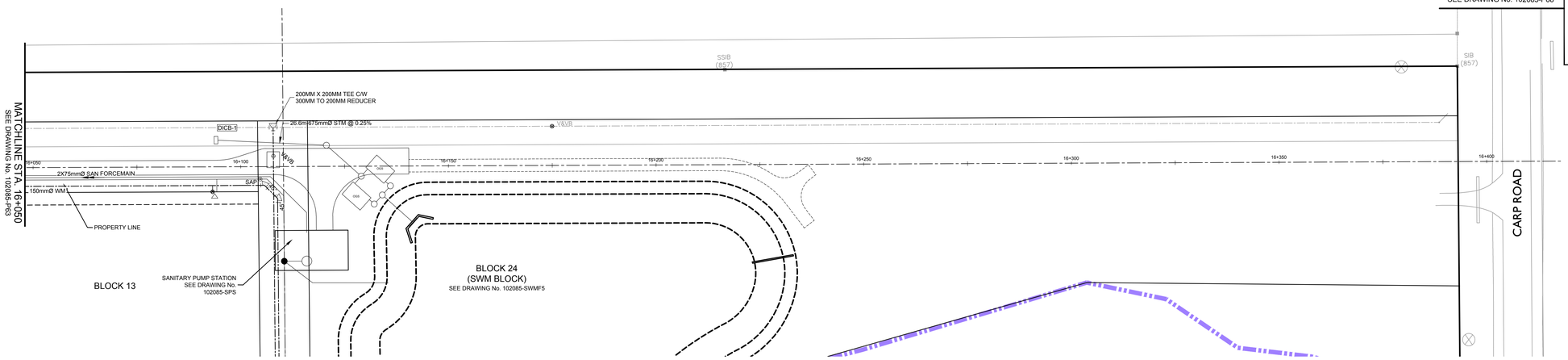


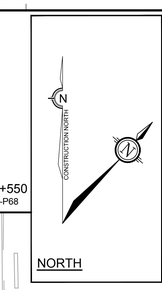
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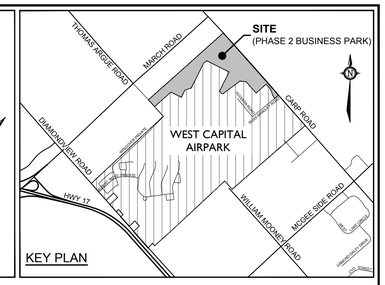
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| | | |

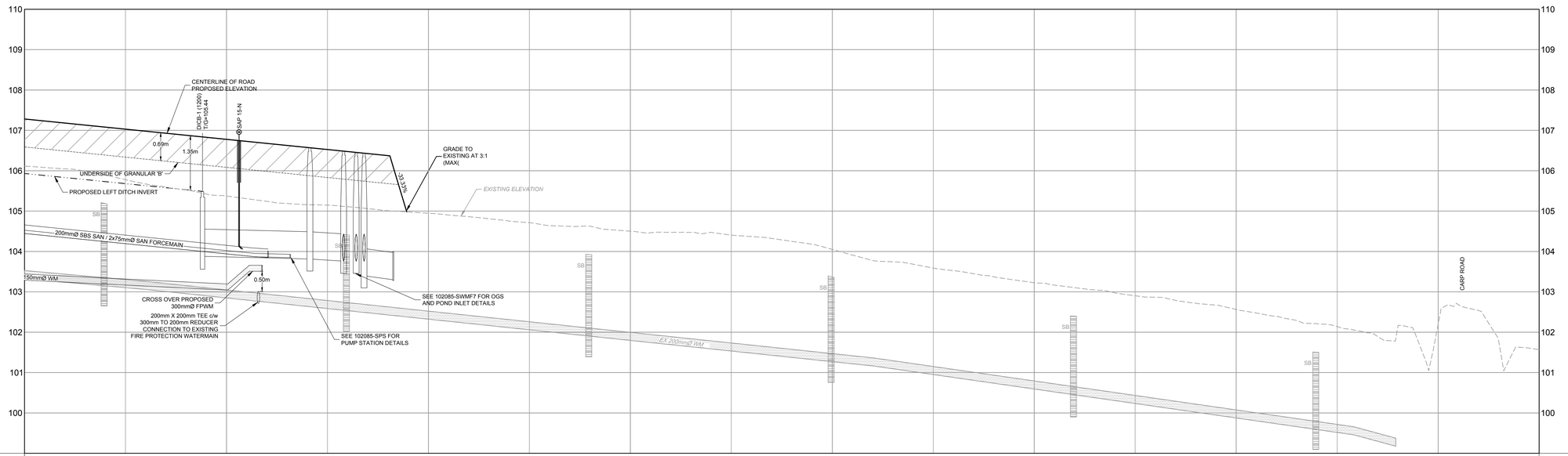






LEGEND

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CHAINAGE	16+050	16+075	16+100	16+125	16+150	16+175	16+200	16+225	16+250	16+275	16+300	16+325	16+350	16+375	16+400	16+425	CHAINAGE
EXISTING ELEVATION	106.42	105.76	105.37	105.15	104.86	104.71	104.50	104.40	104.05	103.69	103.23	102.90	102.56	102.14	102.19	101.67	EXISTING ELEVATION
SANITARY SEWER INVERTS	104.53	104.27	104.02	103.95	103.93												SANITARY SEWER INVERTS
SANITARY FORCEMAIN OBVERTS	104.53	104.27	104.02		103.93												SANITARY FORCEMAIN OBVERTS
PROPOSED LEFT DITCH INVERTS	105.93	105.68	105.49														PROPOSED LEFT DITCH INVERTS
PROPOSED RIGHT DITCH INVERTS																	PROPOSED RIGHT DITCH INVERTS
PROPOSED TOP OF WATERMAIN	103.46	103.34	103.32	103.21	103.18	103.16	103.66										TOP OF WM ELEVATION
PROPOSED ELEVATION	107.26	107.03		106.78			106.53		106.37	104.86							PROPOSED ELEVATION

REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR NOTES & DETAILS

REFER TO 102085-LP3 FOR BUSINESS PARK LAYOUT

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

CLEARFORD WATER SYSTEMS INC.

CLEARFORD

WEST CAPITAL Developments

No.	REVISION	DATE	BY
10.	ISSUED FOR REVIEW	NOV 19/24	ARM
9.	ISSUED FOR REVIEW	OCT 29/24	ARM
8.	ISSUED FOR COORDINATION	AUG 22/24	ARM
7.	ISSUED FOR COORDINATION	APR 23/24	ARM
6.	ISSUED FOR TENDER	FEB 26/15	DJC
5.	ISSUED FOR PHASE 1 RESIDENTIAL REGISTRATION	OCT 15/14	DJC
4.	REVISED AS PER CITY / MVC COMMENTS	SEPT 26/13	DJC
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1.	ISSUED FOR REVIEW	NOV 21/11	DJC

SCALE
1:500
0 5 10 15 20
HORIZONTAL
1:50
0 0.5 1.0 1.5 2.0
VERTICAL

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
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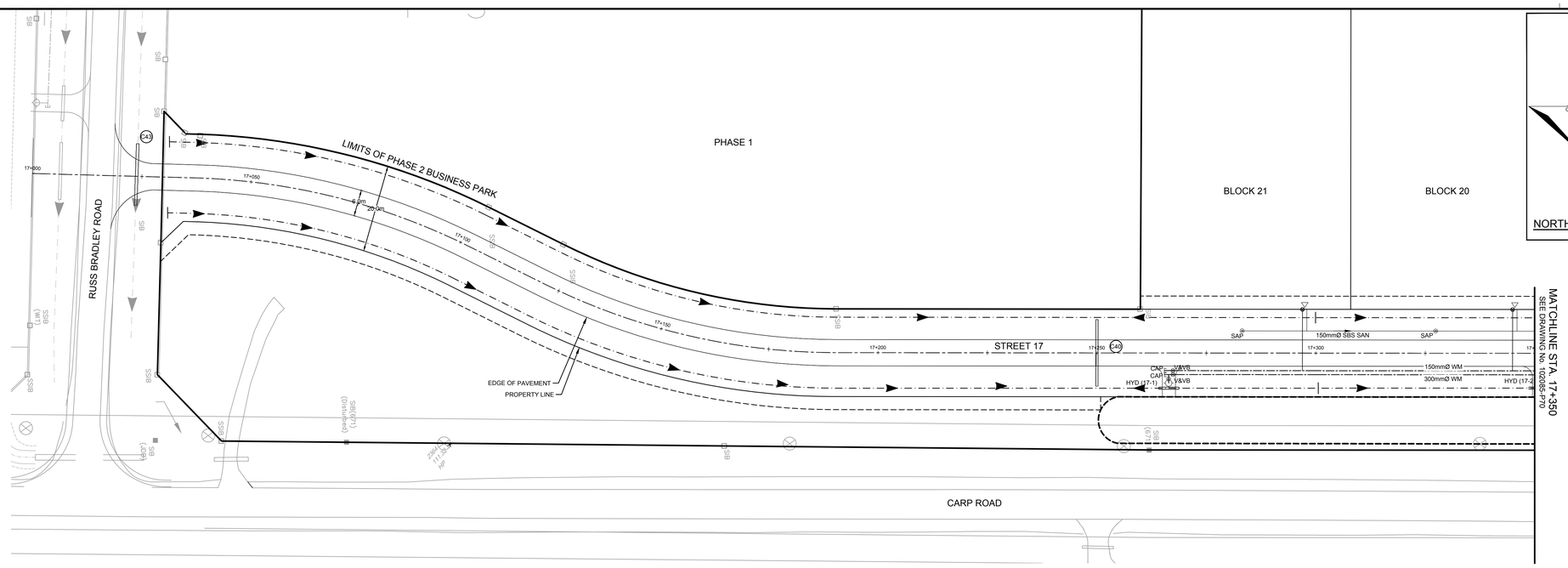
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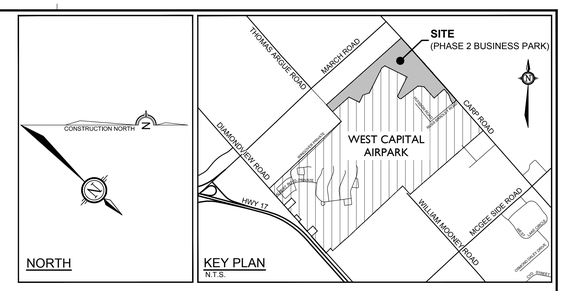
CITY OF OTTAWA
WEST CAPITAL AIRPARK

PLAN & PROFILE
EASEMENT
STA. 16+050 TO 16+425

PROJECT No. 102085-14
REV REV # 10
DRAWING No 102085-P64

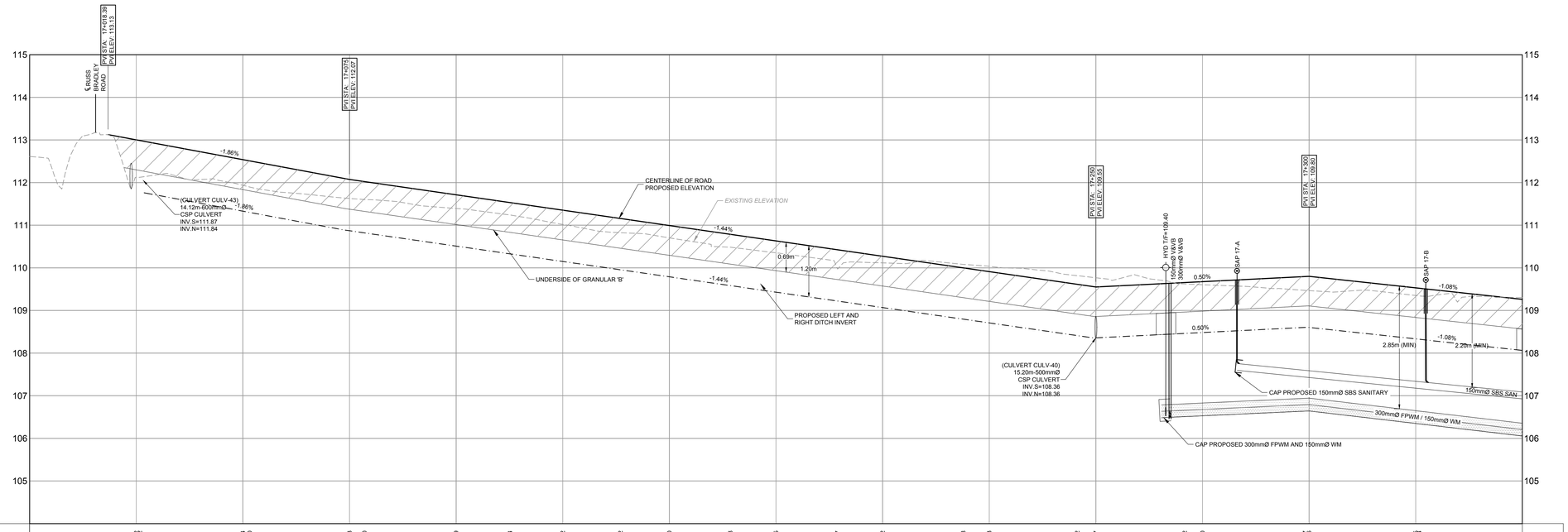
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LEGEND

- 200mmØ WM — PROPOSED WATERMAIN AND DIAMETER
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- HYD — PROPOSED HYDRANT C/W VALVE & LEAD
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- PROPOSED ROAD STRUCTURE (REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR DEPTHS)



CHAINAGE	17+000	17+025	17+050	17+075	17+100	17+125	17+150	17+175	17+200	17+225	17+250	17+275	17+300	17+325	17+350	CHAINAGE
EXISTING ELEVATION	112.61	112.12	111.84	111.63	111.39	111.02	110.70	110.35	110.12	110.03	109.77	109.60	109.46	109.35	109.30	EXISTING ELEVATION
SANITARY SEWER OBVERTS												107.75	107.59	107.34	SANITARY SEWER / SANITARY FORCEMAIN OBVERTS	
PROPOSED LEFT DITCH INVERTS		111.76	111.33	110.89 110.87	110.51	110.15	109.79	109.43	109.07	108.71	108.35 108.33	108.48	108.61 108.63	108.33	PROPOSED LEFT DITCH INVERTS	
PROPOSED RIGHT DITCH INVERTS		111.76	111.33	110.89 110.87	110.51	110.15	109.79	109.43	109.07	108.71	108.35 108.33	108.48	108.61 108.63	108.33	PROPOSED RIGHT DITCH INVERTS	
PROPOSED TOP OF WATERMAIN												106.78	106.83	106.94	106.65	TOP OF WM ELEVATION
PROPOSED ELEVATION	112.61	112.12	111.94 111.90	111.63 111.60	111.39	111.24	111.02	110.82	110.70	110.48	110.35	109.97	110.12	110.08	110.03	109.82 109.77	109.62	109.60	109.47 109.46	109.35 109.34	PROPOSED ELEVATION
CHAINAGE	17+000	17+025	17+050	17+075	17+100	17+125	17+150	17+175	17+200	17+225	17+250	17+275	17+300	17+325	17+350	CHAINAGE

REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR NOTES & DETAILS

REFER TO 102085-LP3 FOR BUSINESS PARK LAYOUT

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CLEARFORD

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3.	ISSUED FOR REVIEW	OCT 29/24	ARM
2.	ISSUED FOR COORDINATION	AUG 22/24	ARM
1.	ISSUED FOR COORDINATION	APR 23/24	ARM

SCALE
1:500
0 5 10 15 20
HORIZONTAL
1:50
0 0.5 1.0 1.5 2.0
VERTICAL

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

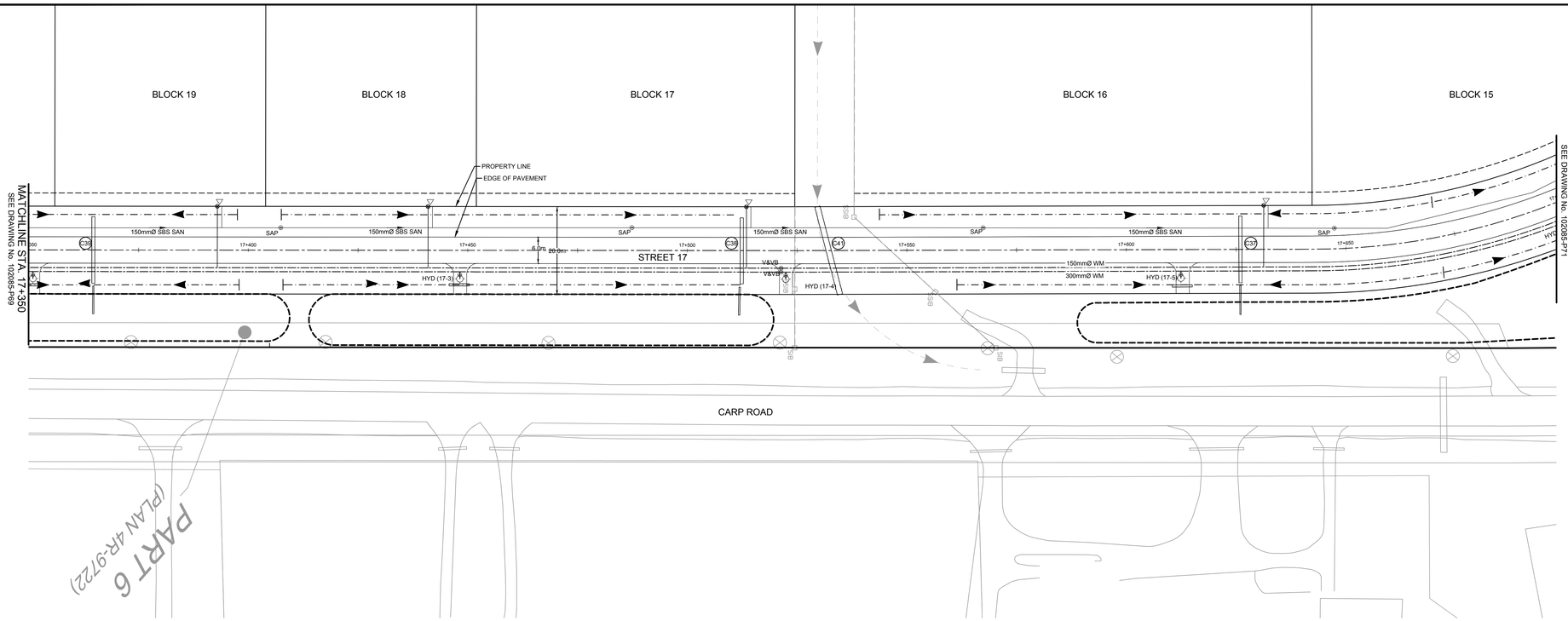
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

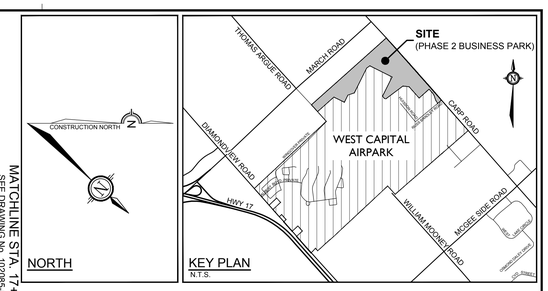
DRAWING NAME
PLAN & PROFILE
STREET 17
STA. 17+000 TO 17+350

PROJECT No. 102085-14
REV REV # 4
DRAWING No. 102085-P69

K:\2024\102085\CAD_BUSINESS PARK PH2\Civil\102085-2BP-P.dwg, Wed, Nov 19, 2024, 4:59pm, mstanton

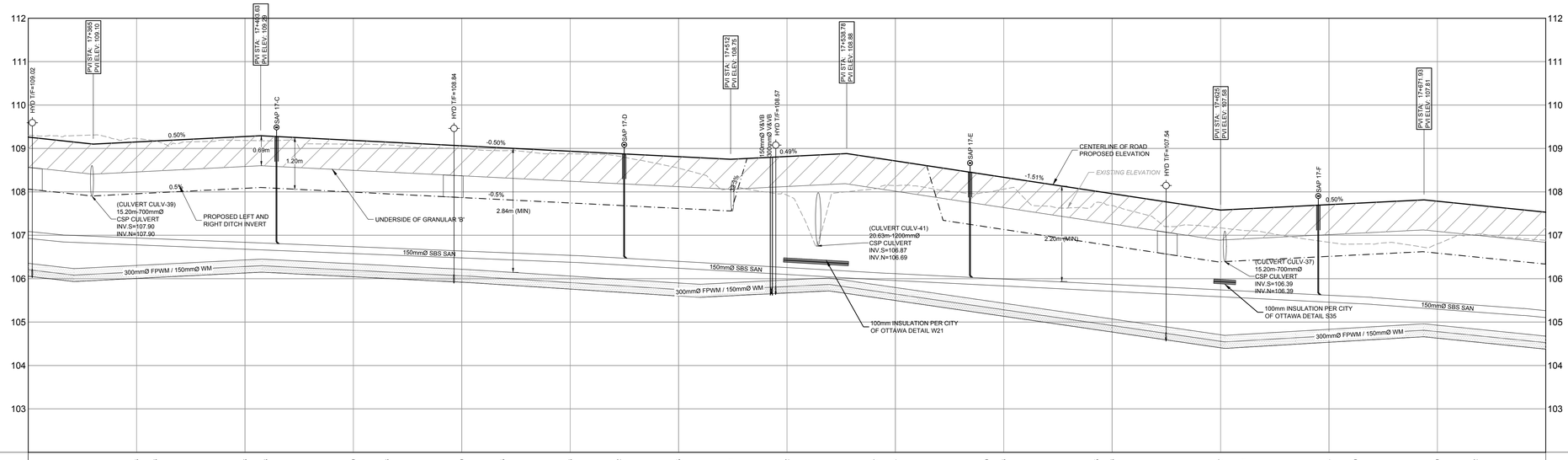
PLAN&PROFILE - 1500mmx750mm





LEGEND

- 200mmØ WM — PROPOSED WATERMAIN AND DIAMETER
- V&VB — PROPOSED VALVE & VALVE BOX
- HYD — PROPOSED HYDRANT C/W VALVE & LEAD
- T/F = 98.45 — PROPOSED TOP OF BOTTOM FLANGE
- *200mmØ WM* — EXISTING WATERMAIN AND DIAMETER
- *V&VB* — EXISTING VALVE & VALVE BOX
- *HYD* — EXISTING HYDRANT C/W VALVE & LEAD
- SBS SANITARY — PROPOSED SMALL BORE SEWER-SANITARY AND DIRECTION OF FLOW
- SANI FORCEMAIN — PROPOSED SANITARY SEWER FORCEMAIN AND DIRECTION OF FLOW
- SAP 1-A — PROPOSED SANITARY SYSTEM ACCESS POINT
- 222 — PROPOSED STORM MANHOLE
- CB — PROPOSED CATCHBASIN
- CB — PROPOSED CATCHBASIN WITH INLET CONTROL DEVICE
- SB — PROPOSED SEEPAGE BARRIER
- C-2 — PROPOSED CULVERT AND NUMBER
- PROPOSED CENTRELINE OF ROAD
- PROPOSED EDGE OF PAVEMENT
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED ROAD STRUCTURE (REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR DEPTHS)



PROPOSED ELEVATION			109.23	109.18		109.18	109.18		109.10	109.08		109.00	108.95		108.88	108.82		108.55		108.11	107.92		108.07	108.14		107.99	108.06		107.75	107.68		107.17	107.11		106.84	106.80		106.80	107.02		PROPOSED ELEVATION
PROPOSED TOP OF WATERMAIN	106.35	106.23	106.30		106.43	106.45		106.34		106.23	106.22	106.21	106.06		105.90	105.87		105.96	105.97	106.02	105.80	105.72		105.43		105.57		104.71	104.69		104.83			104.96	104.93				104.89	TOP OF WM ELEVATION
PROPOSED RIGHT DITCH INVERTS	108.00	107.90	107.96		108.08	108.10		107.99		107.87			107.74		107.62		107.56	108.77																					PROPOSED RIGHT DITCH INVERTS
PROPOSED LEFT DITCH INVERTS	108.00	107.90	107.96		108.08	108.10		107.99		107.87			107.74		107.62		107.56	108.77																					PROPOSED LEFT DITCH INVERTS
SANITARY SEWER OBVERTS	107.69		106.94		108.84			106.74		106.64			106.54	105.53	106.40			106.26			106.12			105.99		105.87			105.74			105.62		105.57		105.46				SANITARY SEWER / SANITARY FORCEMAIN OBVERTS
EXISTING ELEVATION	*108.20*		*109.23*		*109.18*			*109.10*		*109.00*			*108.89*		*108.55*			*107.92*			*108.14*			*108.06*		*107.68*			*107.17*			*106.84*				*106.80*			*106.80*	EXISTING ELEVATION
CHAINAGE	17+350		17+375		17+400			17+425		17+450			17+475		17+500			17+525			17+550			17+575		17+600			17+625			17+650				17+675			17+700	CHAINAGE

REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR NOTES & DETAILS

REFER TO 102085-LP3 FOR BUSINESS PARK LAYOUT

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

CLEARFORD WATER SYSTEMS INC.

CLEARFORD

WEST CAPITAL Developments

No.	REVISION	DATE	BY
4.	ISSUED FOR REVIEW	NOV 19/24	ARM
3.	ISSUED FOR REVIEW	OCT 29/24	ARM
2.	ISSUED FOR COORDINATION	AUG 22/24	ARM
1.	ISSUED FOR COORDINATION	APR 23/24	ARM

SCALE
1:500 HORIZONTAL (0 5 10 15 20)
1:50 VERTICAL (0 0.5 1.0 1.5 2.0)

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
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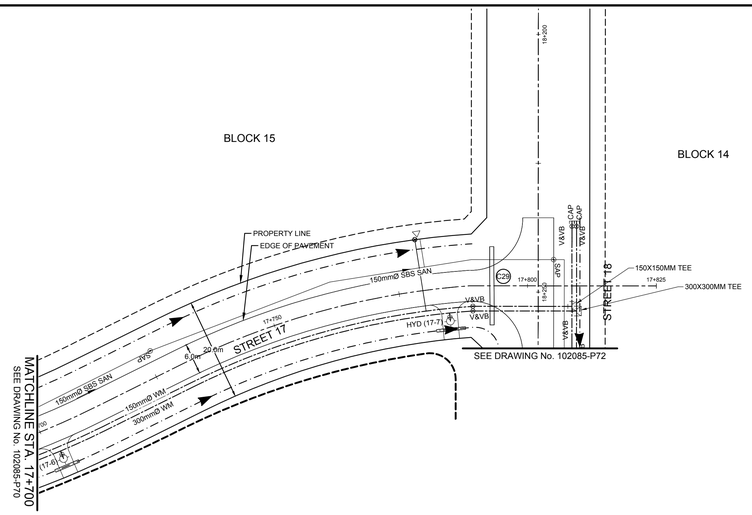
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

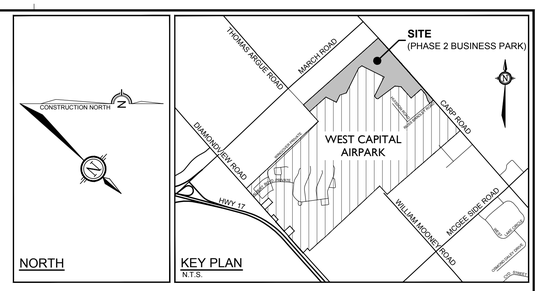
DRAWING NAME
PLAN & PROFILE
STREET 17
STA. 17+350 TO 17+700

PROJECT No. 102085-14
REV REV # 4
DRAWING No. 102085-P70

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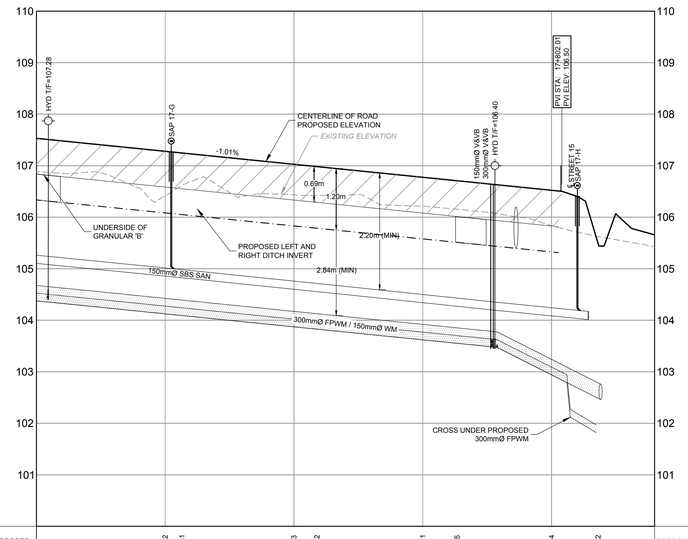
PLEASE PRINT - 11x17(Ledger)





LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
V&VB	PROPOSED VALVE & VALVE BOX
HYD	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
200mmØ WM	EXISTING WATERMAIN AND DIAMETER
V&VB	EXISTING VALVE & VALVE BOX
HYD	EXISTING HYDRANT C/W VALVE & LEAD
SBS SANITARY	PROPOSED SMALL BORE SEWER-SANITARY AND DIRECTION OF FLOW
SANI FORCEMAIN	PROPOSED SANITARY SEWER FORCEMAIN AND DIRECTION OF FLOW
SAP 1-A	PROPOSED SANITARY SYSTEM ACCESS POINT
	PROPOSED STORM MANHOLE
CB	PROPOSED CATCHBASIN
CB	PROPOSED CATCHBASIN WITH INLET CONTROL DEVICE
SB	PROPOSED SEEPAGE BARRIER
C2	PROPOSED CULVERT AND NUMBER
	PROPOSED CENTRELINE OF ROAD
	PROPOSED EDGE OF PAVEMENT
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	PROPOSED ROAD STRUCTURE (REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR DEPTHS)



PROPOSED ELEVATION		106.42	106.61	106.43	106.42	106.21	106.15	105.84	105.62			PROPOSED ELEVATION
PROPOSED TOP OF WATERMAIN	104.66	104.42		104.17		103.92		103.24	102.76			TOP OF WM ELEVATION
PROPOSED RIGHT DITCH INVERTS												PROPOSED RIGHT DITCH INVERTS
PROPOSED LEFT DITCH INVERTS												PROPOSED LEFT DITCH INVERTS
SANITARY SEWER OBVERTS	105.90	105.00		104.75		104.50		104.24	104.17			SANITARY SEWER / SANITARY FORCEMAIN OBVERTS
EXISTING ELEVATION	*106.88*	*106.42*		*106.43*		*106.21*		*105.64*		*105.42*		EXISTING ELEVATION
CHAINAGE	17+700	17+725		17+750		17+775		17+800		17+820		CHAINAGE

REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR NOTES & DETAILS

REFER TO 102085-LP3 FOR BUSINESS PARK LAYOUT

NOTE:
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CLEARFORD WATER SYSTEMS INC.

CLEARFORD

WEST CAPITAL Developments

No.	REVISION	DATE	BY
4.	ISSUED FOR REVIEW	NOV 19/24	ARM
3.	ISSUED FOR REVIEW	OCT 29/24	ARM
2.	ISSUED FOR COORDINATION	AUG 22/24	ARM
1.	ISSUED FOR COORDINATION	APR 23/24	ARM

SCALE
1:500 HORIZONTAL (0 5 10 15 20)
1:50 VERTICAL (0 0.5 1.0 1.5 2.0)

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

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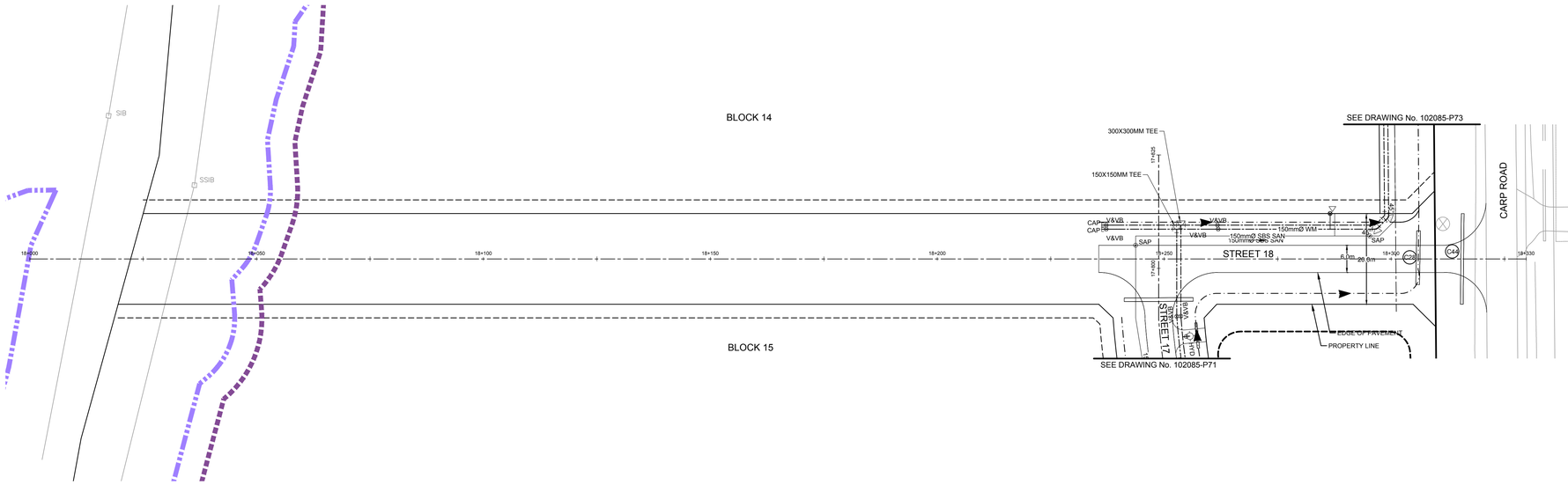
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

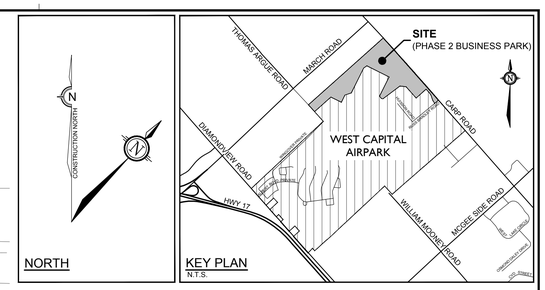
DRAWING NAME
PLAN & PROFILE
STREET 17
STA. 17+700 TO 17+822

PROJECT No. 102085-14
REV REV # 4
DRAWING No. 102085-P71

PLANOT12X30 - 1000mmx597mm

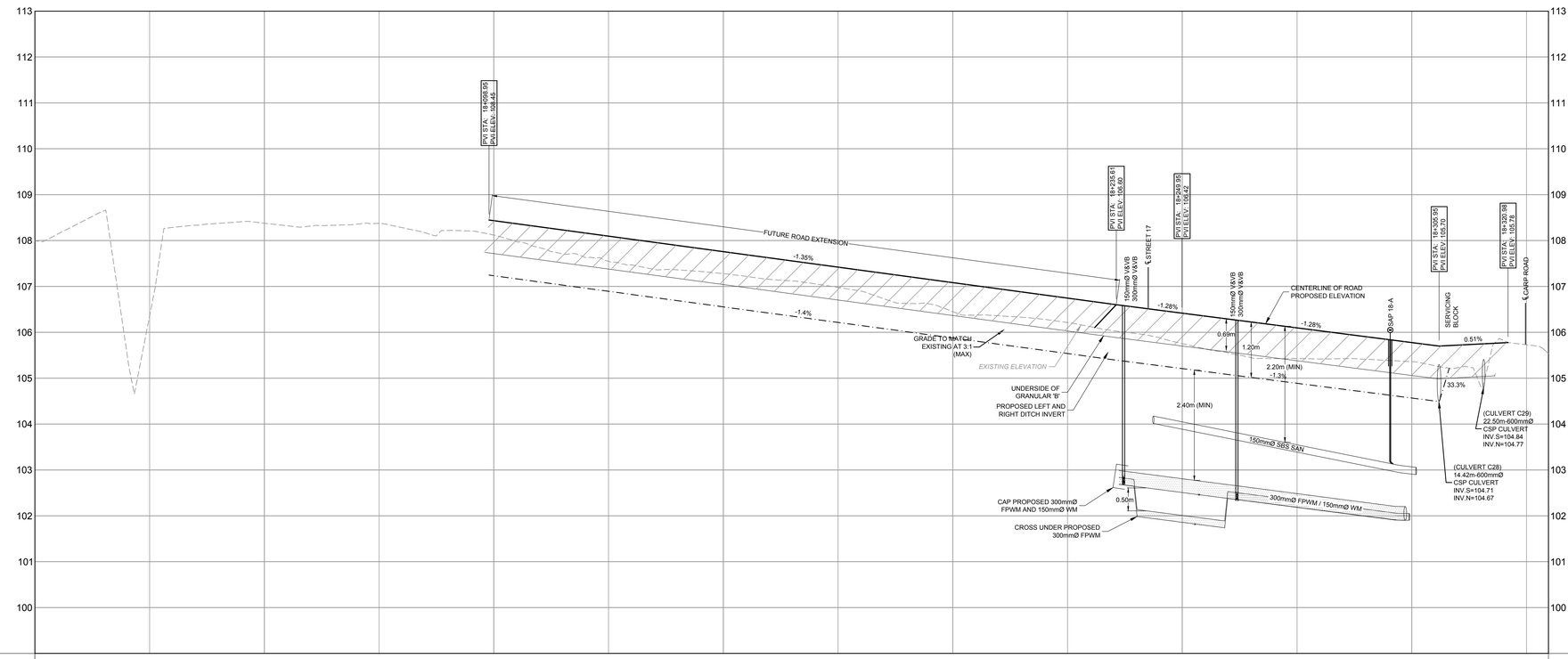
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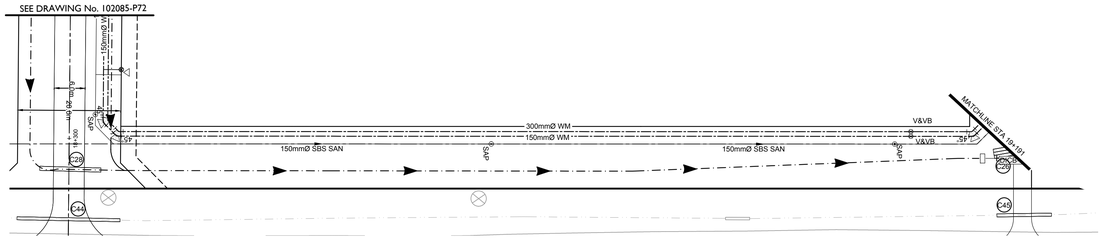


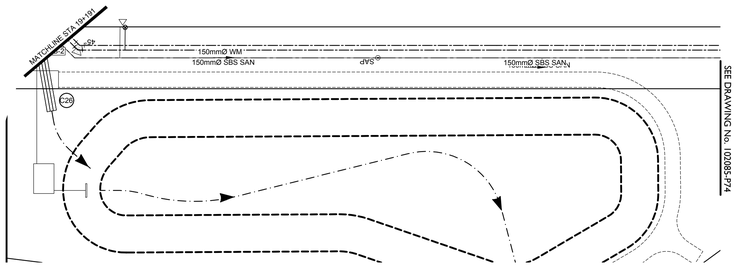
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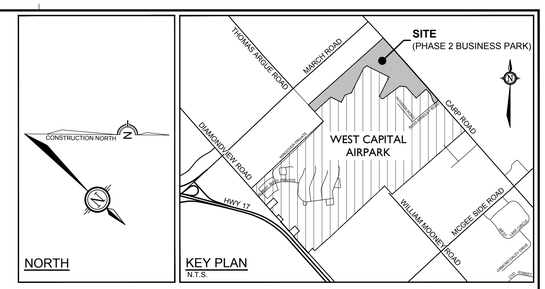
- 200mmØ WM — PROPOSED WATERMAIN AND DIAMETER
- V&VB — PROPOSED VALVE & VALVE BOX
- HYD — PROPOSED HYDRANT C/W VALVE & LEAD
- T/F = 98.45 — PROPOSED TOP OF BOTTOM FLANGE
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- PROPOSED STORM MANHOLE
- CB — PROPOSED CATCHBASIN
- CB — PROPOSED CATCHBASIN WITH INLET CONTROL DEVICE
- SB — PROPOSED SEEPAGE BARRIER
- C29 — PROPOSED CULVERT AND NUMBER
- PROPOSED CENTRELINE OF ROAD
- PROPOSED EDGE OF PAVEMENT
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED ROAD STRUCTURE (REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR DEPTHS)



| | | |

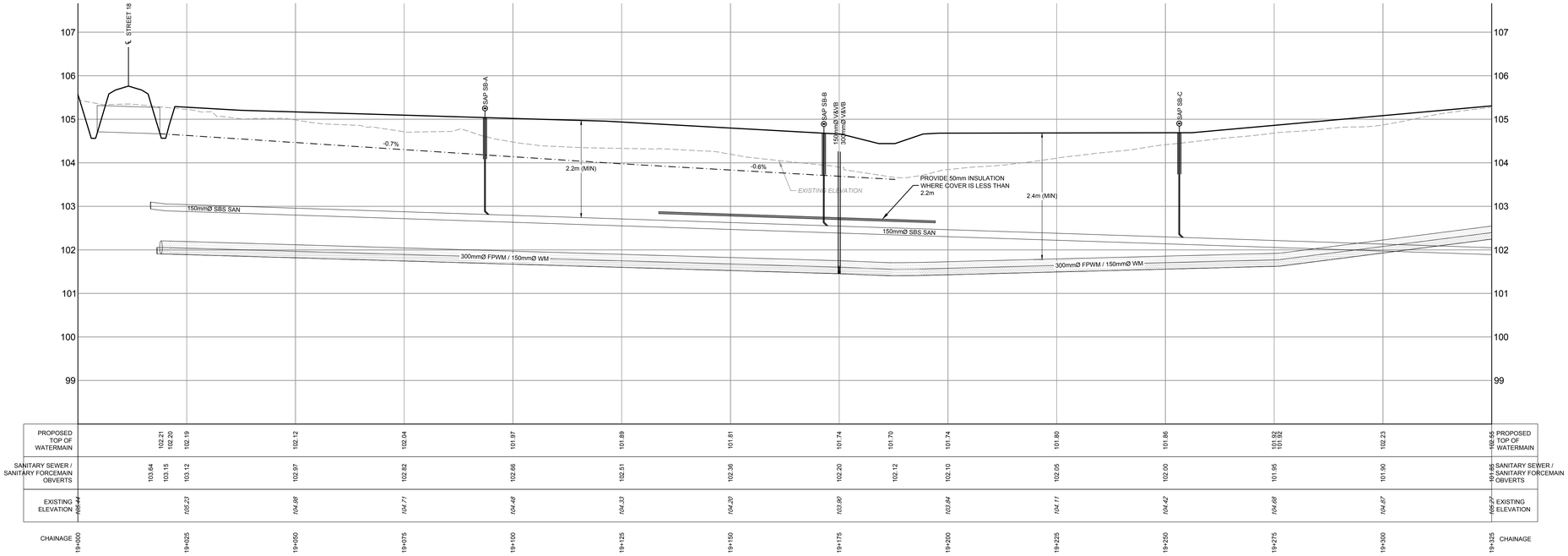






LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
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SAP 1-A	PROPOSED SANITARY SYSTEM ACCESS POINT
222	PROPOSED STORM MANHOLE
CB	PROPOSED CATCHBASIN
CB	PROPOSED CATCHBASIN WITH INLET CONTROL DEVICE
SB	PROPOSED SEEPAGE BARRIER
C27	PROPOSED CULVERT AND NUMBER
	PROPOSED CENTRELINE OF ROAD
	PROPOSED EDGE OF PAVEMENT
	PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
	PROPOSED ROAD STRUCTURE (REFER TO 102085-ND FOR DEPTHS)



PROPOSED TOP OF WATERMAIN		102.21	102.20	102.19	102.12	102.04	101.97	101.89	101.81	101.74	101.70	101.74	101.80	101.86	101.92	101.92	102.23	102.55	PROPOSED TOP OF WATERMAIN
SANITARY SEWER / SANITARY FORCEMAIN OBVERTS		103.64	103.15	103.12	102.97	102.82	102.66	102.51	102.36	102.20	102.12	102.10	102.05	102.00	101.95		101.90	101.65	SANITARY SEWER / SANITARY FORCEMAIN OBVERTS
EXISTING ELEVATION	*105.44*		*105.23*		*104.96*	*104.71*	*104.48*	*104.33*	*104.20*	*103.90*		*103.84*	*104.11*	*104.42*	*104.68*		*104.87*	*105.21*	EXISTING ELEVATION
CHAINAGE	19+000		19+025		19+050	19+075	19+100	19+125	19+150	19+175		19+200	19+225	19+250	19+275		19+300	19+325	CHAINAGE

REFER TO 102085-ND FOR NOTES & DETAILS

REFER TO 102085-LP FOR BUSINESS PARK LAYOUT

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CLEARFORD

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5.	ISSUED FOR REVIEW	NOV 19/24	ARM
4.	ISSUED FOR COORDINATION	NOV 14/24	ARM
3.	ISSUED FOR REVIEW	OCT 29/24	ARM
2.	ISSUED FOR COORDINATION	AUG 22/24	ARM
1.	ISSUED FOR COORDINATION	APR 23/24	ARM

SCALE
1:500
0 5 10 15 20
HORIZONTAL
1:50
0 0.5 1.0 1.5 2.0
VERTICAL

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

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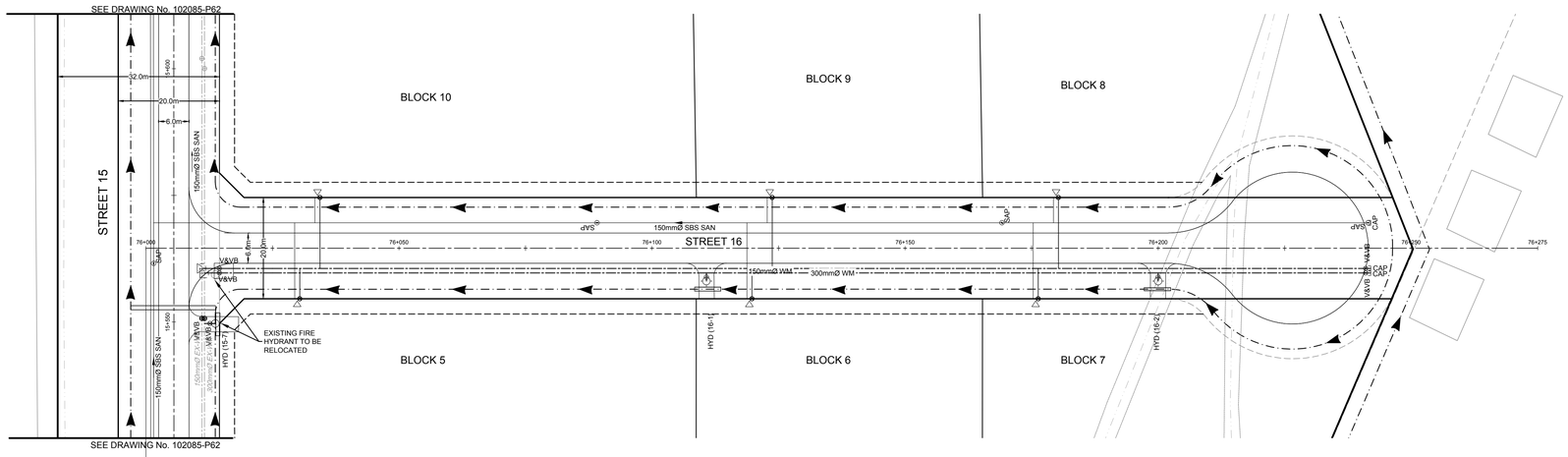
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK

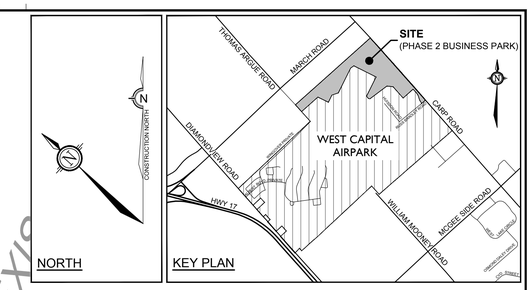
DRAWING NAME
PLAN & PROFILE
SERVICE EASEMENT
STA. 19+000 TO 19+300

PROJECT No. 102085-14
REV REV # 5
DRAWING No. 102085-P73

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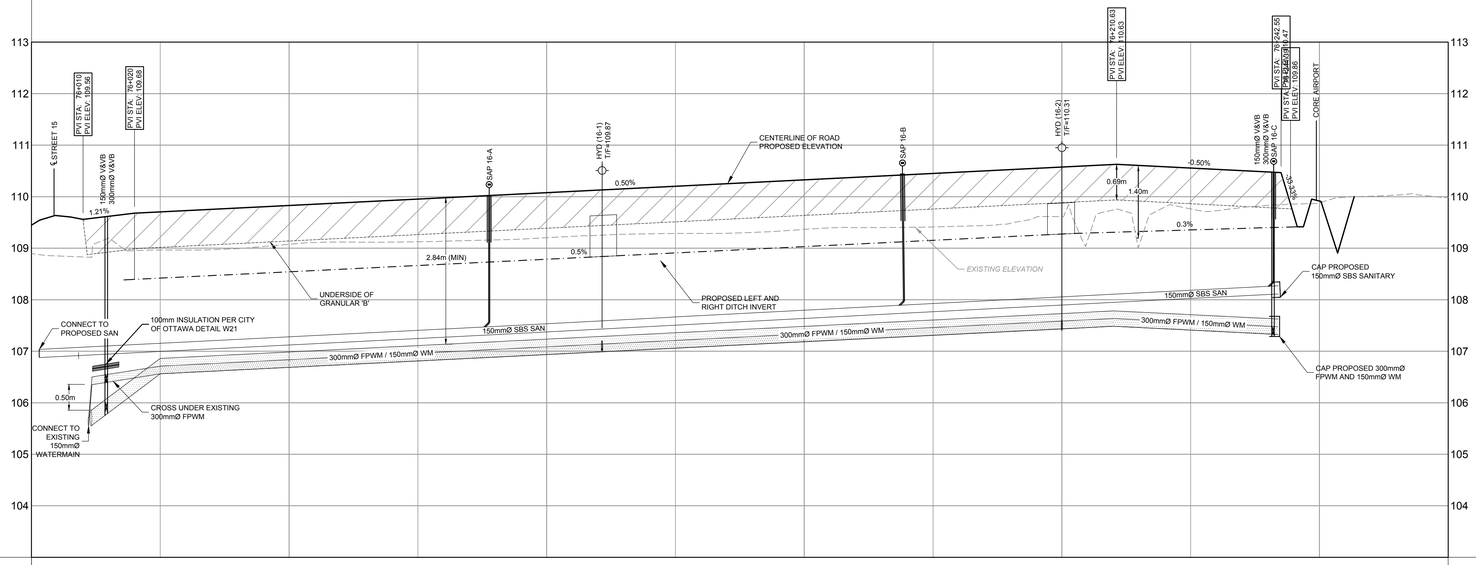
PLEMBP_ENG - ISSEWMAIN





LEGEND

- 200mmØ WM — PROPOSED WATERMAIN AND DIAMETER
- V&VB — PROPOSED VALVE & VALVE BOX
- HYD — PROPOSED HYDRANT C/W VALVE & LEAD
- T/F = 98.45 — PROPOSED TOP OF BOTTOM FLANGE
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- CB — PROPOSED CATCHBASIN WITH INLET CONTROL DEVICE
- SB C2 — PROPOSED SEEPAGE BARRIER
- PROPOSED CULVERT AND NUMBER
- PROPOSED CENTRELINE OF ROAD
- PROPOSED EDGE OF PAVEMENT
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED ROAD STRUCTURE (REFER TO 102085-ND FOR DEPTHS)



PROPOSED ELEVATION		109.56	109.68	109.70	109.83	109.95	110.08	110.20	110.33	110.45	110.57	110.63	110.56	110.47	110.86			PROPOSED ELEVATION
PROPOSED TOP OF WATERMAIN		109.56	109.68	109.70	109.83	109.95	110.08	110.20	110.33	110.45	110.57	110.63	110.56	110.47	109.86			TOP OF WM ELEVATION
PROPOSED RIGHT DITCH INVERTS		106.60		106.71	106.84	106.96	107.09	107.21	107.33	107.46	107.58	107.63	107.56	107.47				PROPOSED RIGHT DITCH INVERTS
PROPOSED LEFT DITCH INVERTS			108.38	108.42	108.54	108.66	108.79	108.91	109.03	109.15	109.28 109.29		109.35		109.42			PROPOSED LEFT DITCH INVERTS
SANITARY FORCEMAIN OBVERTS	107.04			107.16	107.29	107.41	107.54	107.67	107.80	107.93	108.05		108.18		108.27			SANITARY SEWER / SANITARY FORCEMAIN OBVERTS
EXISTING ELEVATION	108.89		108.86		109.08	109.13	109.20	109.29	109.37	109.41	109.61		109.76		109.88		109.88	EXISTING ELEVATION
CHAINAGE	76+000		76+025		76+050	76+075	76+100	76+125	76+150	76+175	76+200		76+225		76+250		76+275	CHAINAGE

REFER TO 102085-ND1, 102085-ND2, AND 102085-ND3 FOR NOTES & DETAILS

REFER TO 102085-LP3 FOR BUSINESS PARK LAYOUT

NOTE:
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CLEARFORD WATER SYSTEMS INC.

CLEARFORD

WEST CAPITAL Developments

No.	REVISION	DATE	BY
4.	ISSUED FOR REVIEW	NOV 19/24	ARM
3.	ISSUED FOR REVIEW	OCT 29/24	ARM
2.	ISSUED FOR COORDINATION	AUG 22/24	ARM
1.	ISSUED FOR COORDINATION	APR 23/24	ARM

SCALE
1:500 HORIZONTAL (0 5 10 15 20)
1:50 VERTICAL (0 0.5 1.0 1.5 2.0)

DESIGN MJB
CHECKED MNP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
Nov 19, 2024
PROVINCE OF ONTARIO

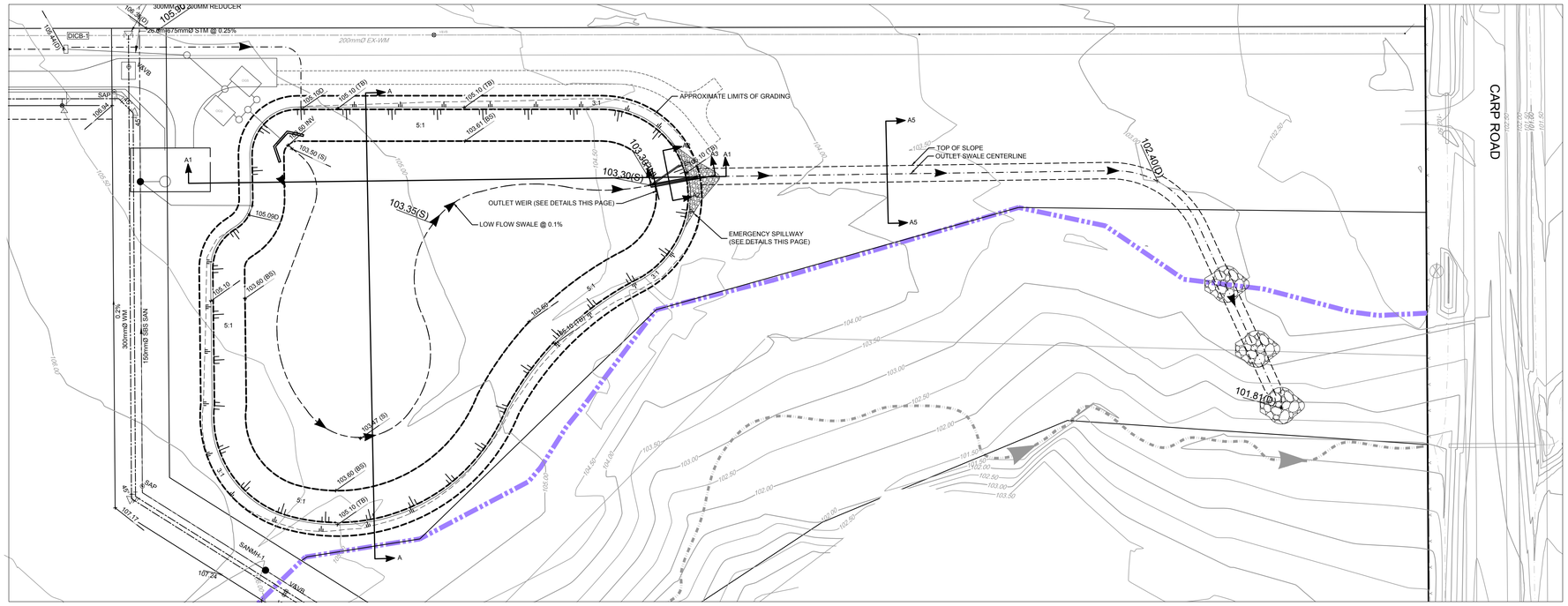
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
WEST CAPITAL AIRPARK

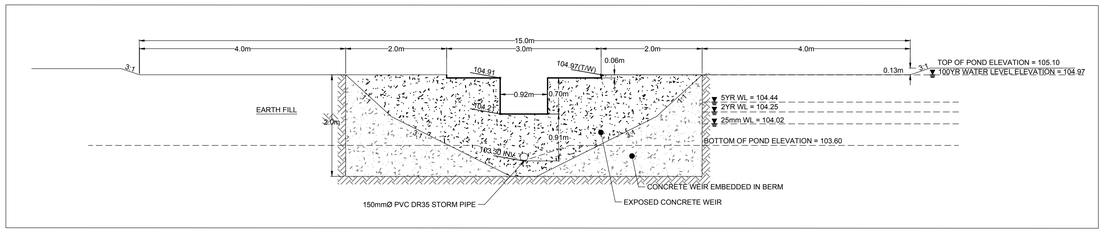
PLAN & PROFILE
STREET 16
STA. 76+000 TO 76+253.13

PROJECT No. 102085-14
REV # 4
DRAWING No. 102085-P76

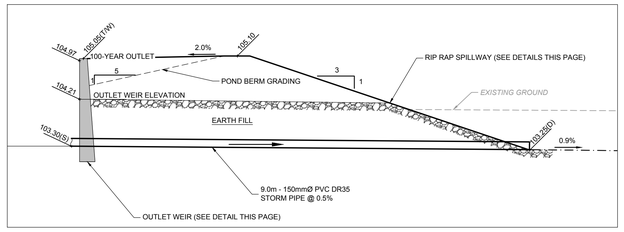
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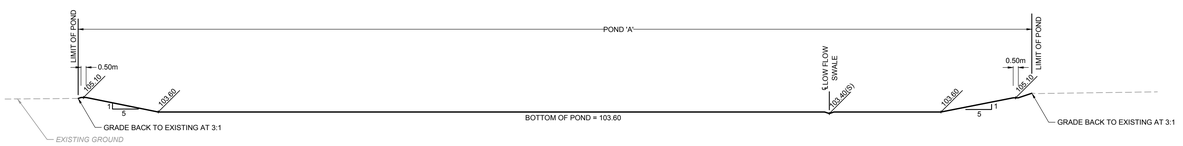
POND 'A' PLAN VIEW
SCALE 1:500



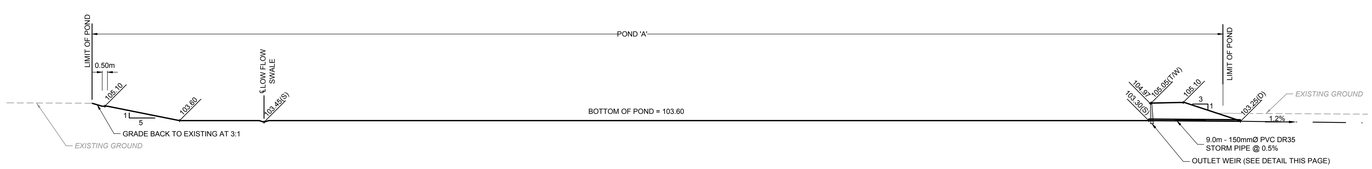
POND 'A' OUTLET STRUCTURE CROSS SECTION A2-A2
SCALE 1:50



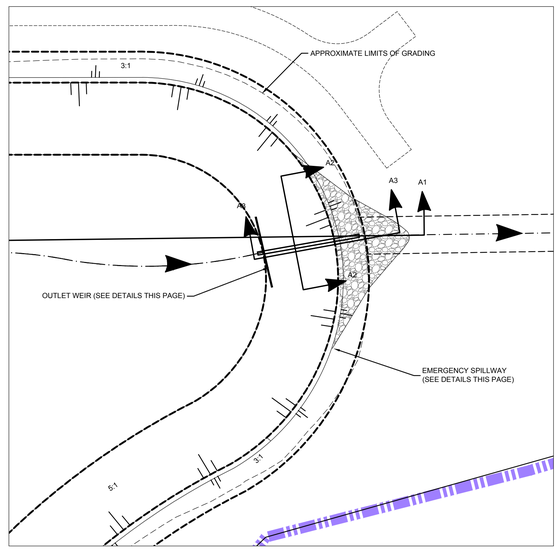
POND 'A' OUTLET STRUCTURE CROSS SECTION A3-A3
SCALE 1:50



POND 'A' CROSS SECTION A-A
SCALE 1:250

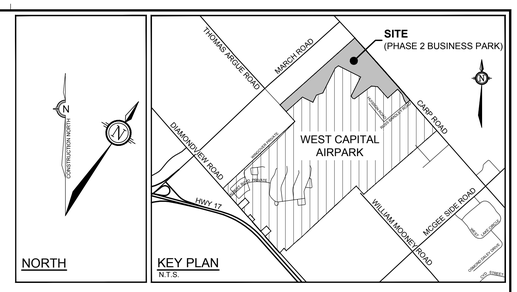


POND 'A' CROSS SECTION A1-A1
SCALE 1:250



POND 'A' OUTLET STRUCTURE BLOWUP
SCALE 1:250

REFER TO 102085-GR8 FOR POND GRADING



LEGEND (TBC)

- PROPOSED STORM MH & SEWER
- C-1 — CULVERT ID, PROPOSED CSP CULVERT (REFER TO DRAWING 102085-NT)
- PROPOSED ROADSIDE DITCH
- SWALE @ 0.10% — C SWALE AND DIRECTION OF FLOW
- PROPOSED STONE COOLING TRENCH
- DEVELOPMENT SETBACK
- PROPOSED TERRACING (AS NOTED)
- POST AND RAIL FENCE
- LIMIT OF DEVELOPMENT (NO TOUCH)
- PROPOSED RIP-RAP TREATMENT (OPSD 810.010)
- 113.88 / 113.88 — PROPOSED ELEVATION, EXISTING ELEVATION
- 113.40(D) — PROPOSED DITCH ELEVATION
- 111.05(S) — PROPOSED SWALE ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- EXISTING DRAINAGE FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE

NOTE:
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WEST CAPITAL Developments

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE: AS NOTED

DESIGN: MLS
CHECKED: MJP
DRAWN: MJB
CHECKED: ARM
APPROVED: ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. L. SCHROEDER — 100213677 — Nov 19, 2024 — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — A.R. MCAULEY — 100141256 — Nov 19, 2024 — PROVINCE OF ONTARIO

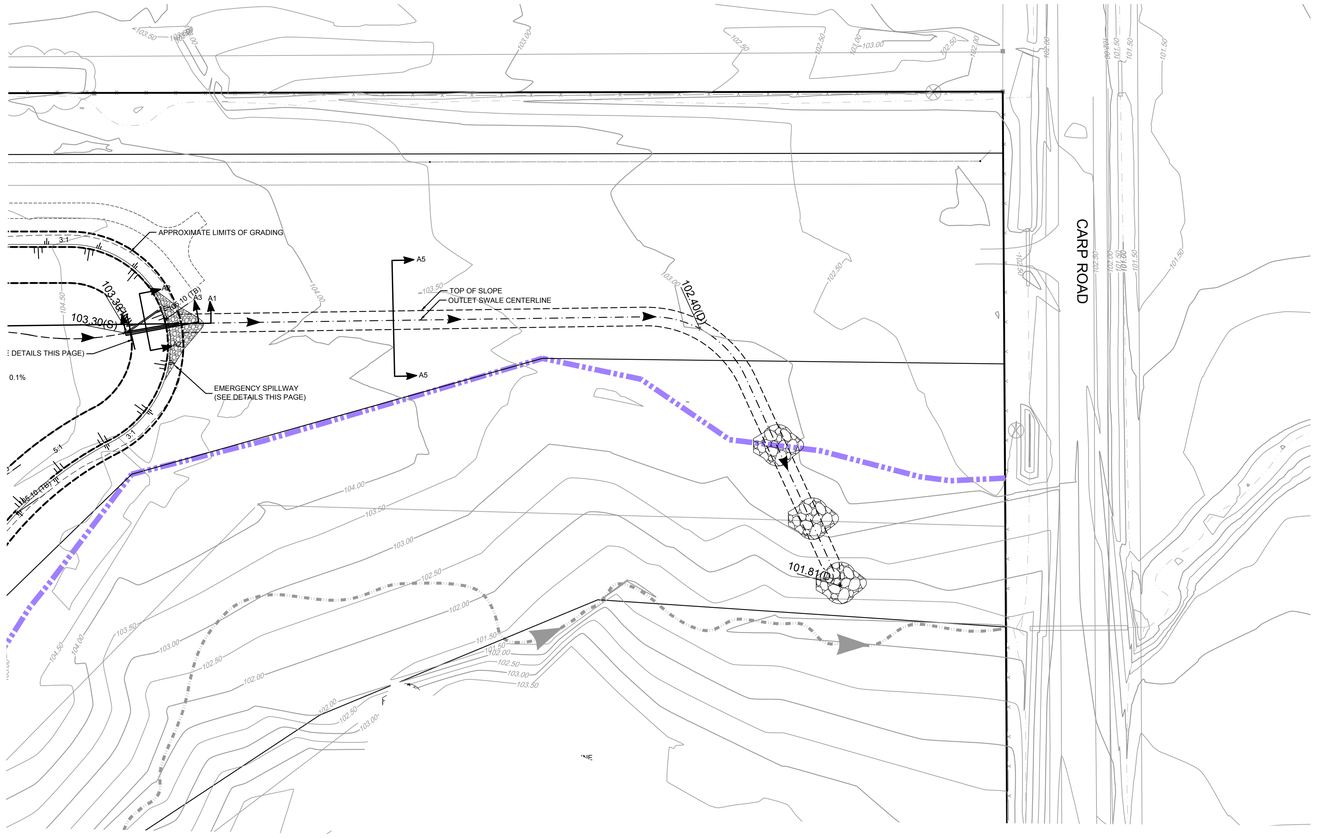
NOVATECH
Engineers, Planners & Landscape Architects
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Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
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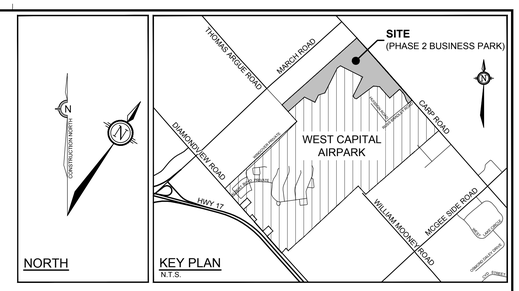
LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 2 BUSINESS PARK

DRAWING NAME
STORMWATER MANAGEMENT
POND FACILITY - POND 'A'
LAYOUT AND CROSS SECTIONS

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-SWMF7

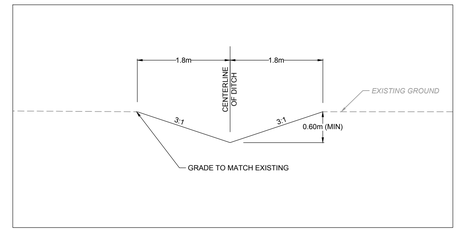
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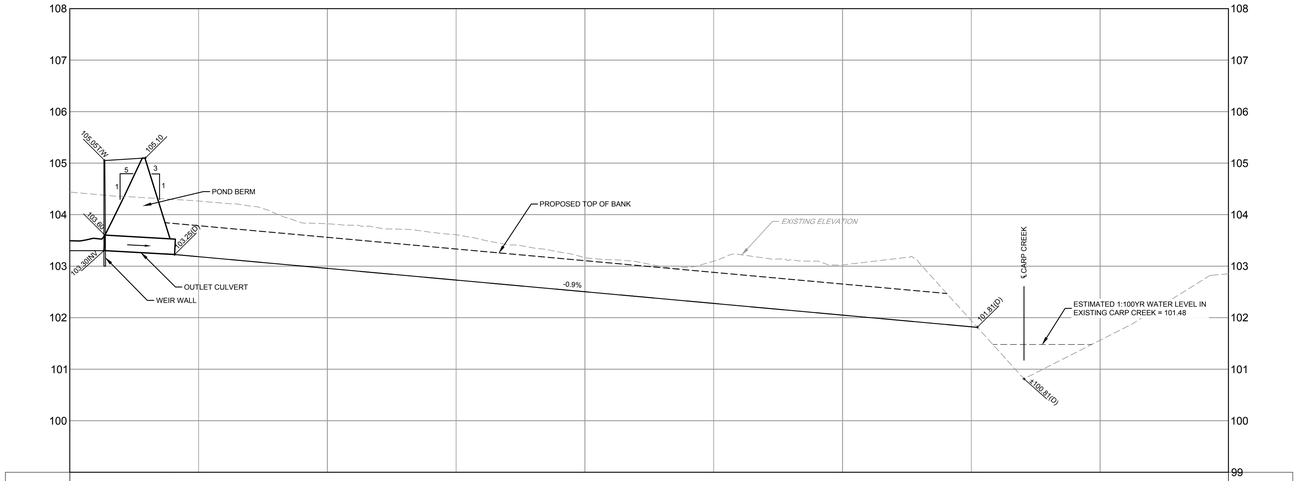


LEGEND (TBC)

- PROPOSED STORM MH & SEWER
- CULVERT ID — PROPOSED CSP CULVERT (REFER TO DRAWING 102085-NT)
- PROPOSED ROADSIDE DITCH
- SWALE @ 0.10% — C SWALE AND DIRECTION OF FLOW
- PROPOSED STONE COOLING TRENCH
- DEVELOPMENT SETBACK
- 6:1 — PROPOSED 6:1 SIDESLOPING
- POST AND RAIL FENCE
- S — PROPOSED SUBDRAIN (100mmØ PERFORATED PIPE C/W SOCK)
- LIMIT OF DEVELOPMENT (NO TOUCH)
- PROPOSED RIP-RAP TREATMENT (OPSD 810.010)
- 113.88 / 113.68 — PROPOSED ELEVATION / EXISTING ELEVATION
- 113.40(D) — PROPOSED DITCH ELEVATION
- 111.05(S) — PROPOSED SWALE ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- EXISTING DRAINAGE FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE



POND 'A' OUTLET SWALE CROSS SECTION A5-A5
SCALE 1:50



PROPOSED DITCH INVERTS	103.24	103.18	102.96	102.73	102.50	102.28	102.05	101.82 / 101.81		PROPOSED DITCH INVERTS
PROPOSED TOP OF BANK	103.64	103.79	103.56	103.33	103.11	102.88	102.65	102.47		PROPOSED TOP OF BANK
EXISTING ELEVATION	104.44	104.26	103.82	103.61	103.17	103.10	103.02	101.64	101.56	EXISTING ELEVATION
CHAINAGE	0+100	0+125	0+150	0+175	0+200	0+225	0+250	0+275	0+300	CHAINAGE

REFER TO 102085-SWMF-7 FOR POND DETAILS

REFER TO 102085-GR8 FOR POND GRADING

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WEST CAPITAL Developments

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE
1:500
0 5 10 15 20
HORIZONTAL
1:50
0 0.5 1.0 1.5 2.0
VERTICAL

DESIGN MLS
CHECKED MJP
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
M. L. SCHROEDER
100213677
Nov 19, 2024
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
NOV 19, 2024
PROVINCE OF ONTARIO

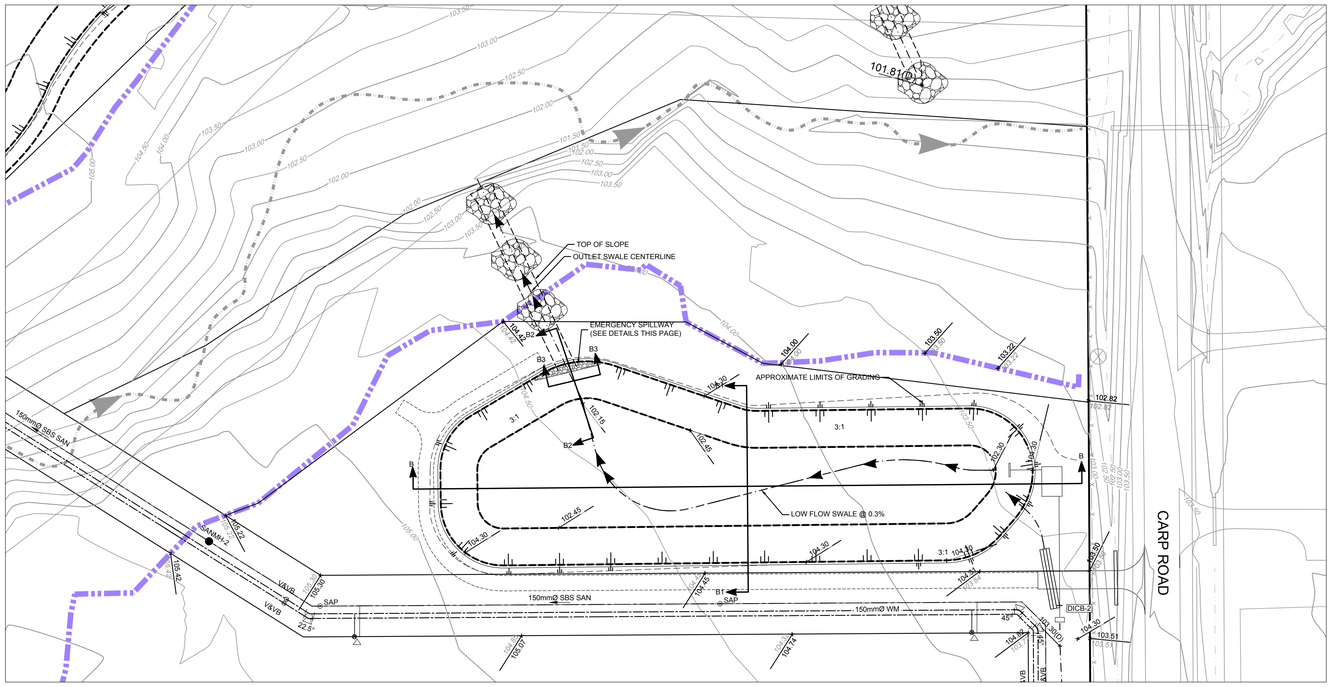
NOVATECH
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Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK PHASE 2 BUSINESS PARK

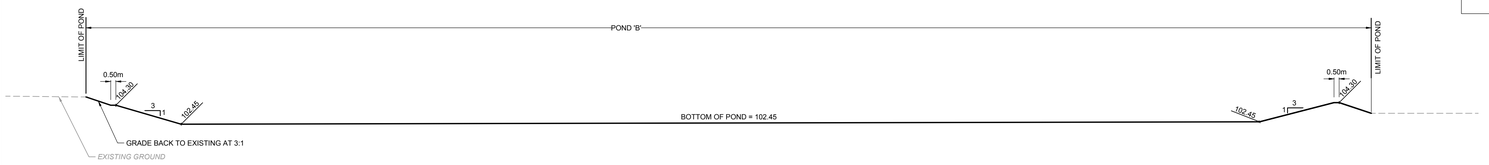
DRAWING NAME
STORMWATER MANAGEMENT
POND FACILITY - POND 'A'
OUTLET PLAN & PROFILE

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-SWMF8

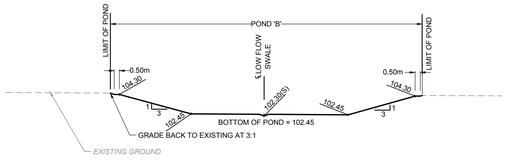
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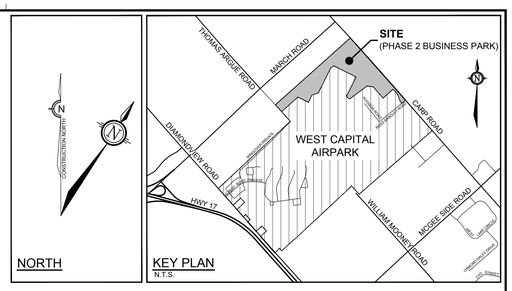
POND 'B' PLAN VIEW
SCALE 1:500



POND 'B' CROSS SECTION B-B
SCALE 1:250

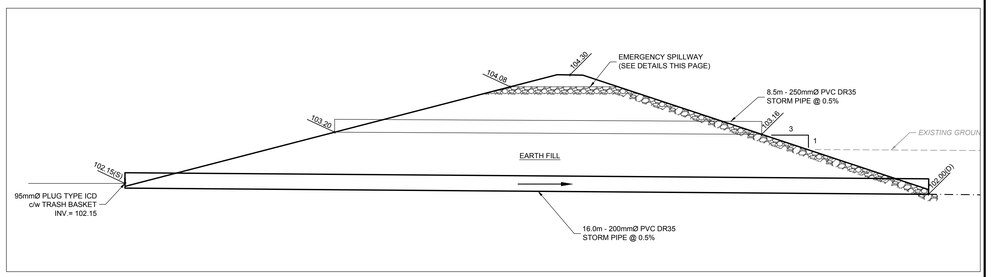


POND 'B' CROSS SECTION B1-B1
SCALE 1:250

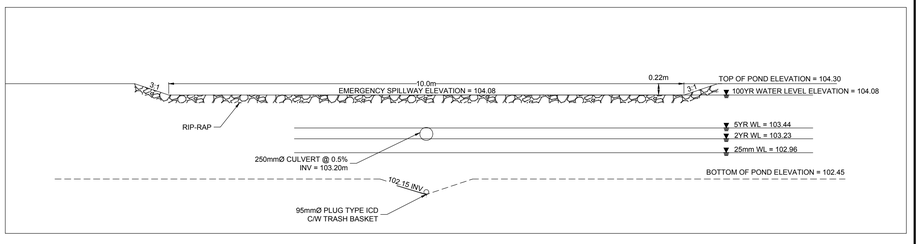


LEGEND (TBC)

- PROPOSED STORM MH & SEWER
- C-1 — CULVERT ID / PROPOSED CSP CULVERT (REFER TO DRAWING 102085-NT)
- PROPOSED ROADSIDE DITCH
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- LIMIT OF DEVELOPMENT (NO TOUCH)
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- 113.88 / #3.88 — PROPOSED ELEVATION / EXISTING ELEVATION
- 113.40(D) — PROPOSED DITCH ELEVATION
- 111.05(S) — PROPOSED SWALE ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- EXISTING DRAINAGE FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE



POND 'B' OUTLET STRUCTURE CROSS SECTION B2-B2
SCALE 1:50



POND 'B' OUTLET STRUCTURE CROSS SECTION B4-B4
SCALE 1:50

REFER TO 102085-GR8 FOR POND GRADING

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WEST CAPITAL Developments

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE: AS NOTED

DESIGN: MLS
CHECKED: MJP
DRAWN: MJB
CHECKED: ARM
APPROVED: ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. L. SCHROEDER — 100213677 — Nov 19, 2024 — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — A.R. MCAULEY — 100141256 — Nov 19, 2024 — PROVINCE OF ONTARIO

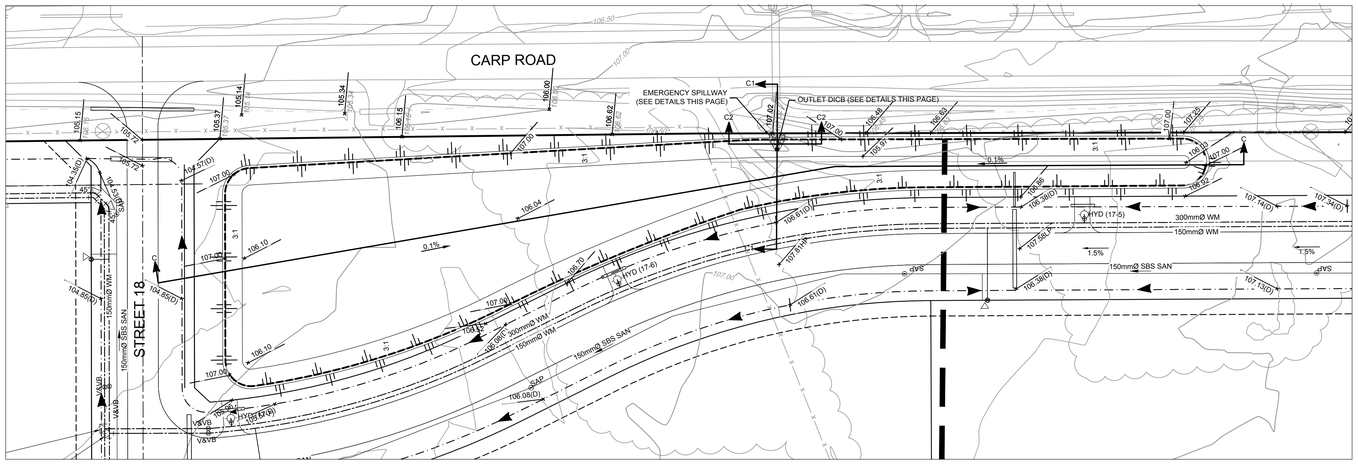
NOVATECH
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Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
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Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 2 BUSINESS PARK

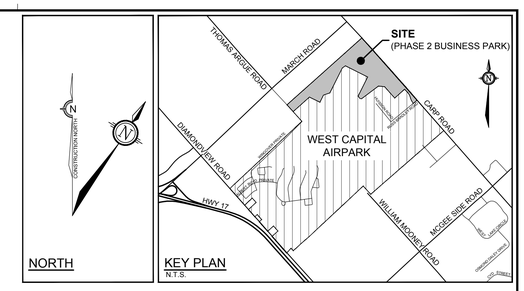
DRAWING NAME
STORMWATER MANAGEMENT
POND FACILITY - POND 'B'
LAYOUT AND CROSS SECTIONS

PROJECT No. 102085-14
REV # 1
DRAWING No. 102085-SWMF9

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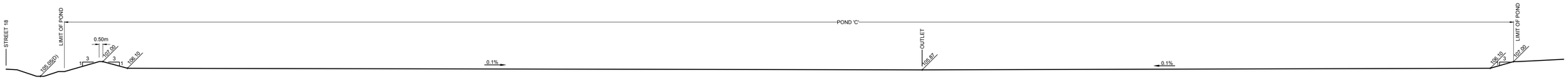


POND 'C' PLAN VIEW
SCALE 1:500

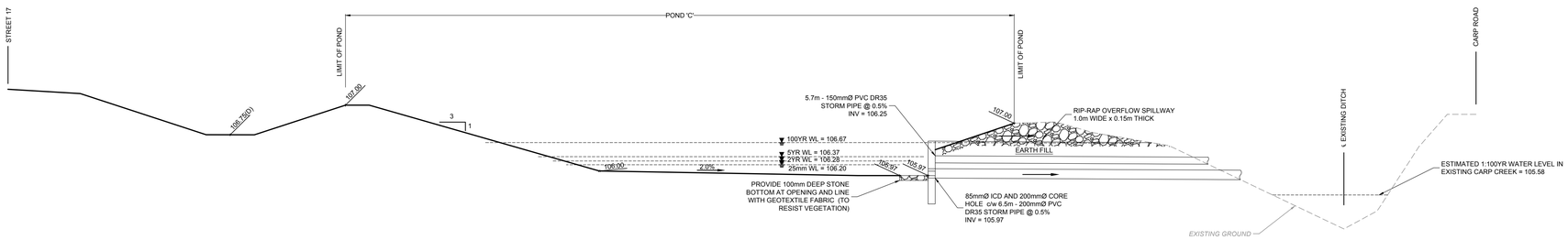


LEGEND (TBC)

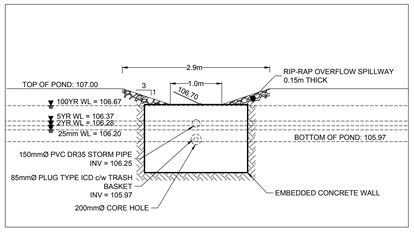
- PROPOSED STORM MH & SEWER
- C-1 — CULVERT ID; PROPOSED CSP CULVERT (REFER TO DRAWING 102085-NT)
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- SWALE @ 0.10% — C SWALE AND DIRECTION OF FLOW
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- 6:1 — PROPOSED 6:1 SIDESLOPING
- POST AND RAIL FENCE
- S — PROPOSED SUBDRAIN (100mmØ PERFORATED PIPE C/W SOCK)
- LIMIT OF DEVELOPMENT (NO TOUCH)
- PROPOSED RIP-RAP TREATMENT (OPSD 810.010)
- 113.88 / 113.68 — PROPOSED ELEVATION; EXISTING ELEVATION
- 113.40(D) — PROPOSED DITCH ELEVATION
- 111.05(S) — PROPOSED SWALE ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- EXISTING DRAINAGE FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE



POND 'C' CROSS SECTION C-C
SCALE 1:250



POND 'C' OUTLET STRUCTURE CROSS SECTION C1-C1
SCALE 1:50



POND 'C' OUTLET STRUCTURE CROSS SECTION C2-C2
SCALE 1:50

REFER TO 102085-GR8 FOR POND GRADING

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WEST CAPITAL Developments

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1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE: AS NOTED

DESIGN: MLS
CHECKED: MJP
DRAWN: MJB
CHECKED: ARM
APPROVED: ARM

FOR REVIEW ONLY

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LICENSED PROFESSIONAL ENGINEER — A.R. MCAULEY — 100141256 — NOV 19, 2024 — PROVINCE OF ONTARIO

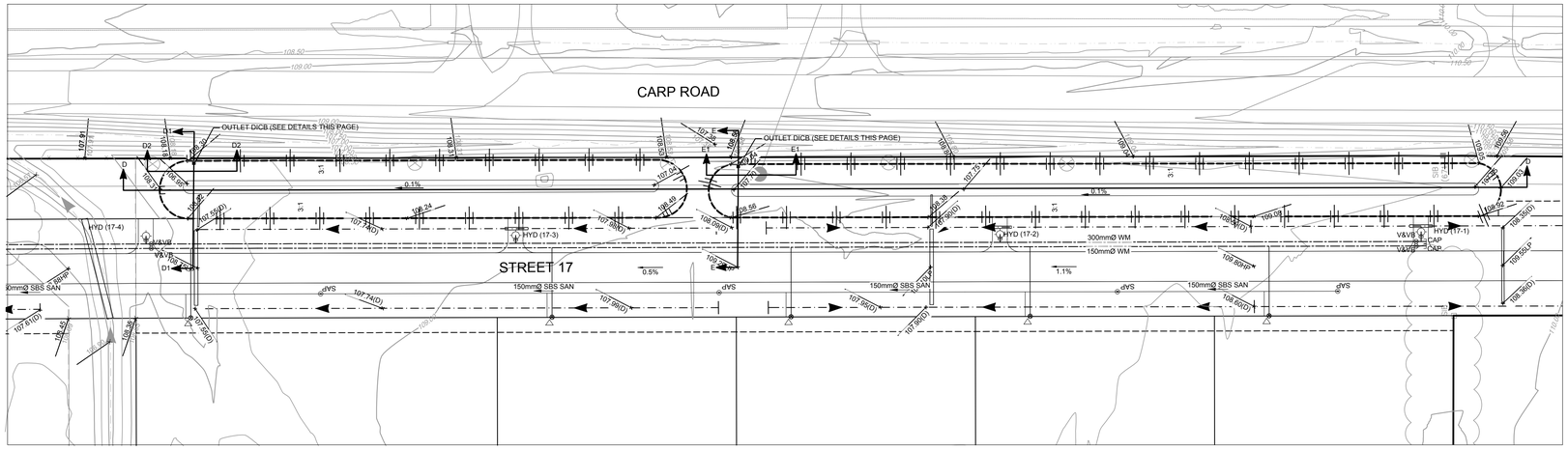
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Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 2 BUSINESS PARK

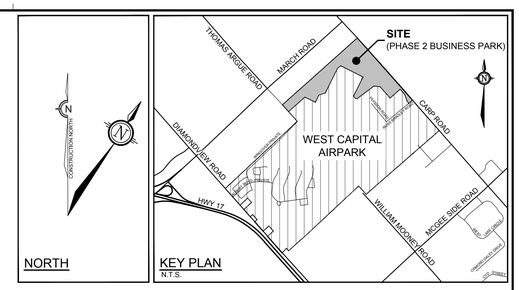
DRAWING NAME
STORMWATER MANAGEMENT
POND FACILITY - POND 'C'
LAYOUT AND CROSS SECTIONS

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-SWMF10

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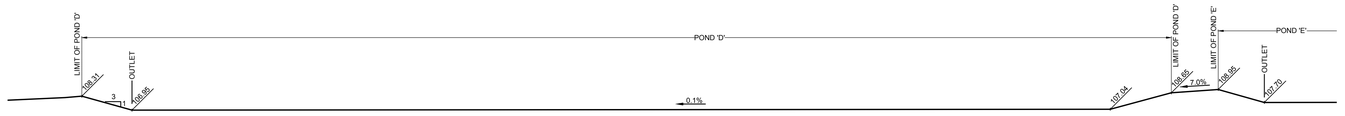


POND 'D&E' PLAN VIEW
SCALE 1:500

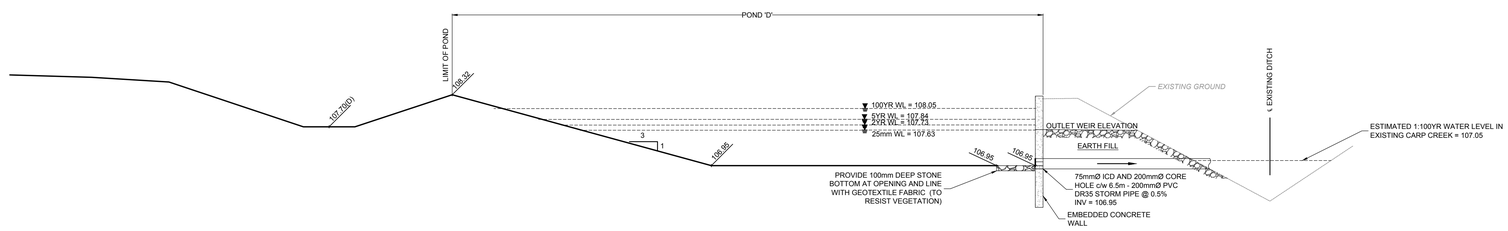


LEGEND (TBC)

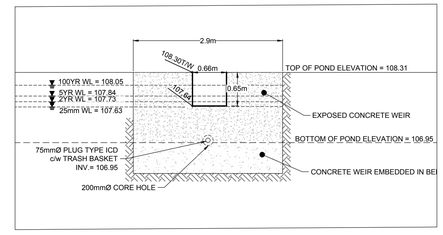
- PROPOSED STORM MH & SEWER
- CULVERT ID / PROPOSED CSP CULVERT (REFER TO DRAWING 102085-NT)
- PROPOSED ROADSIDE DITCH
- SWALE @ 0.10% — C SWALE AND DIRECTION OF FLOW
- PROPOSED STONE COOLING TRENCH
- DEVELOPMENT SETBACK
- PROPOSED 6:1 SIDESLOPING
- POST AND RAIL FENCE
- S — PROPOSED SUBDRAIN (100mmØ PERFORATED PIPE C/W SOCK)
- LIMIT OF DEVELOPMENT (NO TOUCH)
- PROPOSED RIP-RAP TREATMENT (OPSD 810.010)
- PROPOSED ELEVATION / EXISTING ELEVATION
- PROPOSED DITCH ELEVATION
- PROPOSED SWALE ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- EXISTING DRAINAGE FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE



POND 'D' CROSS SECTION D-D
SCALE 1:500



POND 'D' CROSS SECTION D1-D1
SCALE 1:500



POND 'D' OUTLET STRUCTURE CROSS SECTION D2-D2
SCALE 1:50

REFER TO 102085-GR9 FOR POND GRADING

NOTE:
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WEST CAPITAL Developments

No.	REVISION	DATE	BY
1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE: AS NOTED

DESIGN: MLS
CHECKED: MJP
DRAWN: MJB
CHECKED: ARM
APPROVED: ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. L. SCHROEDER — 100213677 — Nov 19, 2024 — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — A.R. MCAULEY — 100141256 — Nov 19, 2024 — PROVINCE OF ONTARIO

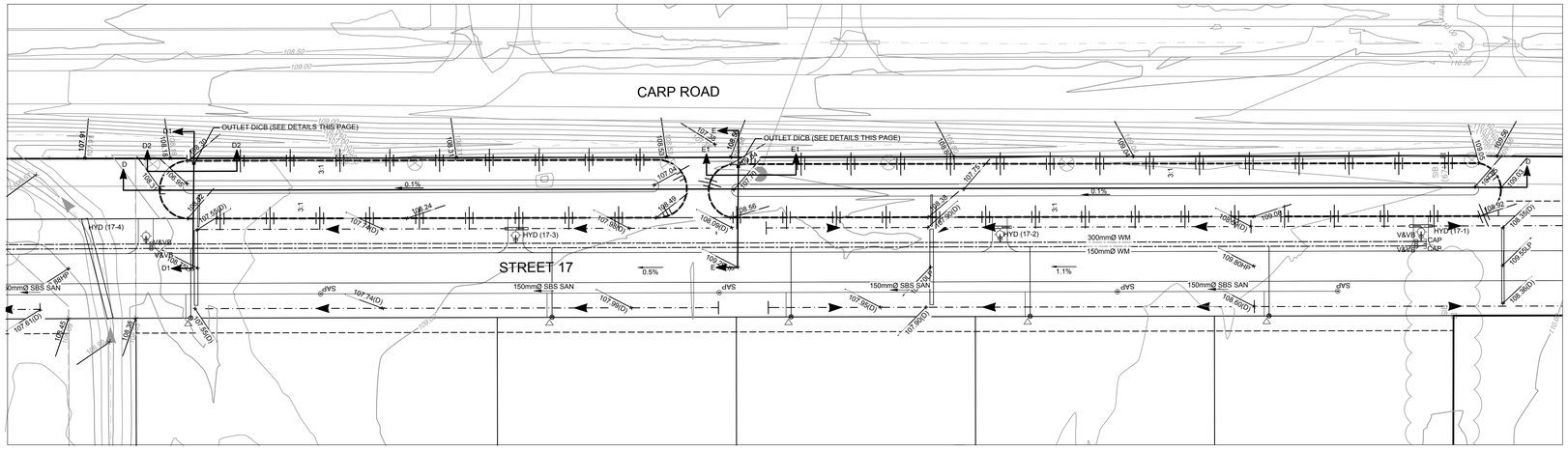
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 2 BUSINESS PARK

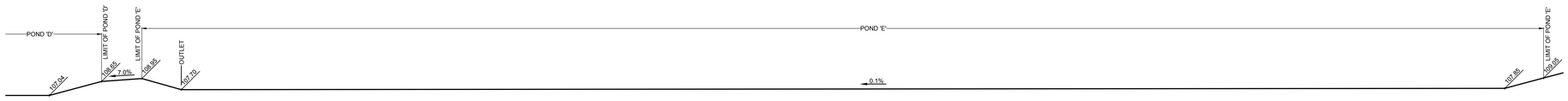
DRAWING NAME
LINEAR STORMWATER MANAGEMENT POND FACILITY - POND 'D'
LAYOUT AND CROSS SECTIONS

PROJECT No. 102085-14
REV REV # 1
DRAWING No. 102085-SWMF11

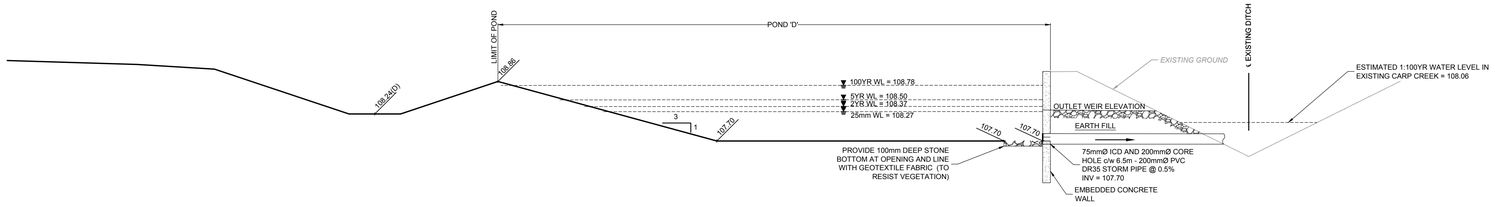
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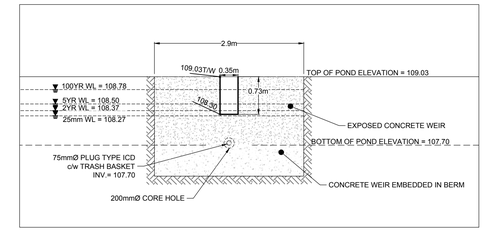
POND 'D&E' PLAN VIEW
SCALE 1:500



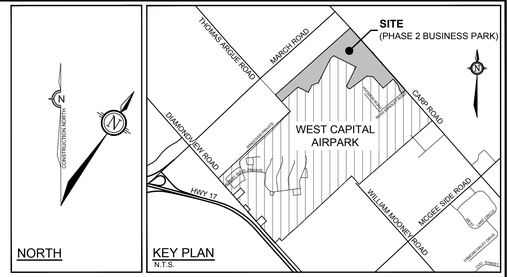
POND 'E' CROSS SECTION D-D
SCALE 1:250



POND 'E' CROSS SECTION E-E
SCALE 1:50



POND 'E' OUTLET STRUCTURE CROSS SECTION E1-E1
SCALE 1:50



LEGEND (TBC)

- PROPOSED STORM MH & SEWER
- CULVERT ID / PROPOSED CSP CULVERT (REFER TO DRAWING 102085-NT)
- PROPOSED ROADSIDE DITCH
- SWALE @ 0.10% — C SWALE AND DIRECTION OF FLOW
- PROPOSED STONE COOLING TRENCH
- DEVELOPMENT SETBACK
- 6:1 — PROPOSED 6:1 SIDESLOPING
- POST AND RAIL FENCE
- S — PROPOSED SUBDRAIN (100mmØ PERFORATED PIPE C/W SOCK)
- LIMIT OF DEVELOPMENT (NO TOUCH)
- PROPOSED RIP-RAP TREATMENT (OPSD 810.010)
- 113.88 / 113.88 — PROPOSED ELEVATION / EXISTING ELEVATION
- 113.40(D) — PROPOSED DITCH ELEVATION
- 111.05(S) — PROPOSED SWALE ELEVATION
- PROPOSED DRAINAGE FLOW DIRECTION
- EXISTING DRAINAGE FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE

REFER TO 102085-GR9 FOR POND GRADING

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WEST CAPITAL Developments

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1.	ISSUED FOR REVIEW	NOV 19/24	ARM

SCALE: AS NOTED

DESIGN: MLS
CHECKED: MJP
DRAWN: MJB
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LOCATION
CITY OF OTTAWA
WEST CAPITAL AIRPARK - PHASE 2 BUSINESS PARK

DRAWING NAME
LINEAR STORMWATER MANAGEMENT POND FACILITY - POND 'E'
LAYOUT AND CROSS SECTIONS

PROJECT No.: 102085-14
REV: REV # 1
DRAWING No.: 102085-SWMF12

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