

COMMITTENTE / PROPRIETARIO / RAPPRESENTANTE LEGALE	RESPONSABILE DEL PROCEDIMENTO / RESPONSABILE DEI LAVORI
PROGETTISTA	DIRETTORE DEI LAVORI
COORDINATORE PER LA PROGETTAZIONE DEI LAVORI	COORDINATORE PER LA ESECUZIONE DEI LAVORI
IMPRESA APPALTATRICE	IMPRESA SUBAPPALTATRICE / IMPRESA ADDETTA AI LAVORI



ASSEGNAZIONI FSC
STRATEGIE TERRITORIALI D'AREA OMOGENEA - PROGRAMMA AMBIENTALE E DI RIGENERAZIONE CULTURALE
ATTRaverso L'UTILIZZO DI TECNOLOGIE SMART E DI ARTE CONTEMPORANEA
PER INNOVARE I PROCESSI E ACCOMUNARE I BISOGNI, NEGOZIARE I PROGETTI,
UNIRE E RIVITALIZZARE IL TERRITORIO, AUMENTARE L'ATTRATTIVA DELL'AREA
AREA OMOGENEA - PIANURA TORINESE - "P.A.R.C.O. SM.ART. PIANURA"

0	27/03/2026	Elaborazione alfa - numerica per progetto esecutivo			M N M
REV.	DATA	DESCRIZIONE			DIS. CON. APP.
MASSIMILIANO VIARENGO ARCHITETTO Via XXIV Maggio, 4 bis - Moncalieri (TO) Tel. 011/641.827 - Fax 011/641.827 e-mail: viarengo.massimiliano@studiogiallo.com pec: viarengo.max@architettitorinopec.it		COMMITTENTE COMUNE DI CANTALUPA VIA CHIESA, 43 - CANTALUPA (TO)			
		UBICAZIONE INTERVENTO COMUNE DI CANTALUPA (TO)			
OGGETTO LAVORI DI RIQUALIFICAZIONE URBANA ALL'INTERNO DEL CENTRO ABITATO TRA VIA TORINO ED IL TORRENTE NOCE					
DESCRIZIONE ELABORATO RELAZIONE IDRAULICA					
ALL.	DATA	COMMESSA / NOME FILE			
22		PROGETTO ESECUTIVO			
		0	3	2	5
		E	R	S	3
					0

**Città Metropolitana di Torino
Comune di Cantalupa**

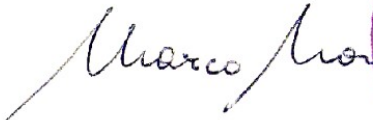
**Progetto "P.A.R.C.O. SM.ART. URBANO
Riqualificazione area urbana in via Torino"**

RELAZIONE IDRAULICA

ADEMPIMENTI NORMATIVI: D.M. 17 gennaio 2018 –NTA PRG –

**Committente: Comune di CANTALUPA
Via Chiesa 43
10060 CANTALUPA**

Dott. Geol. Marco NOVO



10 Febbraio 2026

**Studio
PR GEA**

di Marco Novo Geologo

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PIVA 07633500017 CF NVOMRC62B13L219H

1 **PREMESSA**

Su incarico della committenza, in ottemperanza al D.M. 17/01/2018 (Norme tecniche per le costruzioni) ed alle NTA del PRG comunale, viene redatta una Relazione Idraulica, a supporto del progetto "P.A.R.C.O. SM.ART. URBANO - Riqualificazione area urbana in via Torino".

Nella presente relazione vengono esposti i risultati della modellazione idraulica 1D, elaborata sul tratto di torrente Noce su cui insiste l'intervento, sulla base delle portate definite nell'ambito della Relazione Idrologica.

2 IMPLEMENTAZIONE DEL MODELLO DI SIMULAZIONE IN MOTO PERMANENTE

Procedimento di analisi

La determinazione del profilo di moto permanente nel tratto d'alveo in esame è stata prodotta mediante l'uso dello specifico codice di calcolo HEC - RAS (U.S. Army Corps of Engineers - Hydrologic Engineering Center; versione 5.0.7).

La procedura utilizzata dal codice citato è basata sulla risoluzione dell'equazione del moto delle correnti a pelo libero con nella schematizzazione monodimensionale, con procedura iterativa. Il calcolo delle perdite di carico viene effettuato in base alla scabrezza (numero di Manning) e ad un coefficiente di espansione/contrazione che tiene conto delle variazioni della sezione di deflusso.

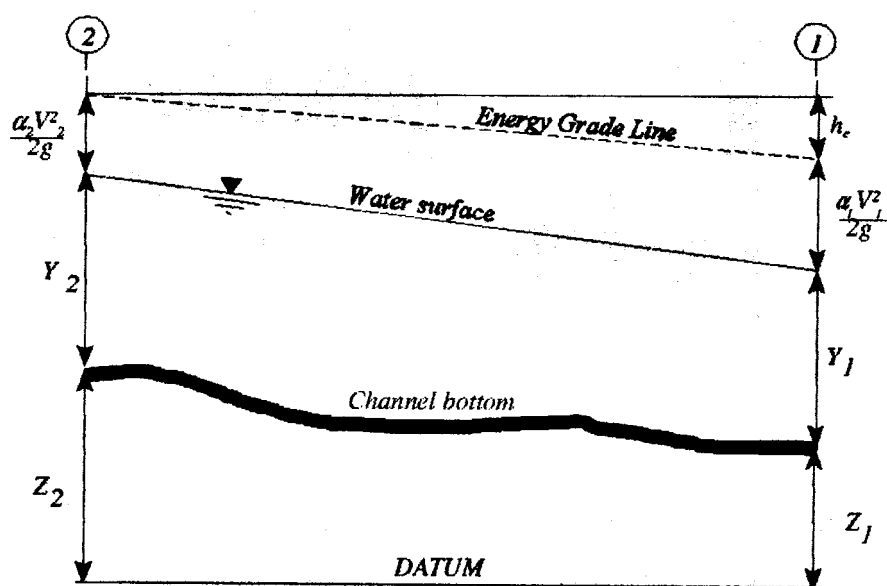


Figura 1: rappresentazione dei termini delle equazioni del codice di calcolo

Le equazioni fondamentali su cui essa si basa sono le seguenti:

$$Y_2 + Z_2 + \alpha_2 V_2^2 / 2g = Y_1 + Z_1 + \alpha_1 V_1^2 / 2g + h_e$$

$$h_e = L S_f + C / \alpha_2 V_2^2 / 2g - \alpha_1 V_1^2 / 2g$$

dove (con riferimento alla Fig. 1):

Y_1, Y_2 = profondità della corrente nelle sezioni agli estremi del tratto
 Z_1, Z_2 = quote del punto più basso del fondo alveo nelle sezioni agli estremi del tratto
 V_1, V_2 = velocità medie (rapporto portata / sezione bagnata)
 α_1, α_2 = coefficienti di ragguaglio dell'energia cinetica
 g = accelerazione di gravità
 h_e = perdita di carico
 L = lunghezza del tratto (corretta secondo la distribuzione delle portate)
 S_c = cadente del carico totale
 C = coefficiente di perdita per contrazione - espansione.

Il calcolo utilizza un processo iterativo passo a passo basato sulla soluzione di bilancio energetico tra sezioni contigue, a partire da una condizione al contorno definita (all'estremo di monte o di valle del tronco torrentizio); la soluzione si propaga alla sezione successiva dopo aver bilanciato il carico fra due sezioni con uno scarto assegnato, che nel caso in esame è stato posto inferiore a 5 centimetri.

Per i dettagli computazionali si rimanda alla documentazione del codice di calcolo (U.S. Army Corps of Engineers - Hydrologic Engineering Center: HEC-RAS River Analysis System, HYDRAULIC REFERENCE MANUAL; Version 5.0.7).

L'applicazione della procedura per la determinazione del profilo di moto permanente associato alle portate di progetto richiede di disporre dei seguenti dati fondamentali, necessari per una corretta modellazione del corso d'acqua:

- descrizione geometrica completa del tronco fluviale: deve essere costituita dalla rappresentazione geometrica delle sezioni trasversali e dal loro posizionamento piani - altimetrico;
- definizione del tipo di corrente (lenta o veloce) nel tronco;
- condizioni al contorno di valle o di monte, rispettivamente per correnti lente o veloci;
- caratterizzazione della resistenza dell'alveo mediante la definizione del coefficiente di scabrezza n (secondo Manning) e dei coefficienti di contrazione C_c e di espansione C_e ;
- definizione geometrica ed idraulica di eventuali singolarità presenti in alveo (ponti, confluenze, salti di fondo, etc.).

Dati di input del modello di simulazione

A partire dal modello digitale del terreno derivato dal rilievo topografico effettuato, sono state ricavate in automatico con il plugin interno Ras Mapper, n. 11 sezioni topografiche trasversali all'asse della situazione di progetto (scogliera in massi ciclopici tra le sezioni 259 e 212).

Le simulazioni sono state prodotte selezionando l'opzione corrente mista (lenta o veloce) che consente al sistema di determinare le eventuali variazioni locali di situazione.

Le condizioni al contorno di monte e di valle sono state imposte coincidenti con l'altezza critica.

Per la caratterizzazione della scabrezza dell'alveo e delle aree circostanti, da esprimere in termini del coefficiente n di Manning, si è fatto ricorso ai valori riportati nelle tabelle del manuale di riferimento. Per le sezioni d'alveo naturale nel tratto analizzato, caratterizzato da fondo in ghiaie e blocchi, tale parametro è stato imposto pari a 0,045 (valore valido per corsi d'acqua naturali piuttosto regolari, ma con ghiaia, ciottoli e massi); il valore stimato per le sponde spesso con materiali cementati è di 0,035, mentre alle scogliere in massi ciclopici esistenti (sezione 312) ed in progetto è stato attribuito un valore di 0,030

Per quanto riguarda invece i coefficienti di espansione e contrazione, il loro valore è stato imposto rispettivamente uguale a 0,1 - 0,3 per l'intero tratto.

La simulazione ha previsto la ricostruzione del profilo di piena in modo permanente per la portata relativa al Tempo di Ritorno di 200 anni (131 mc/s)

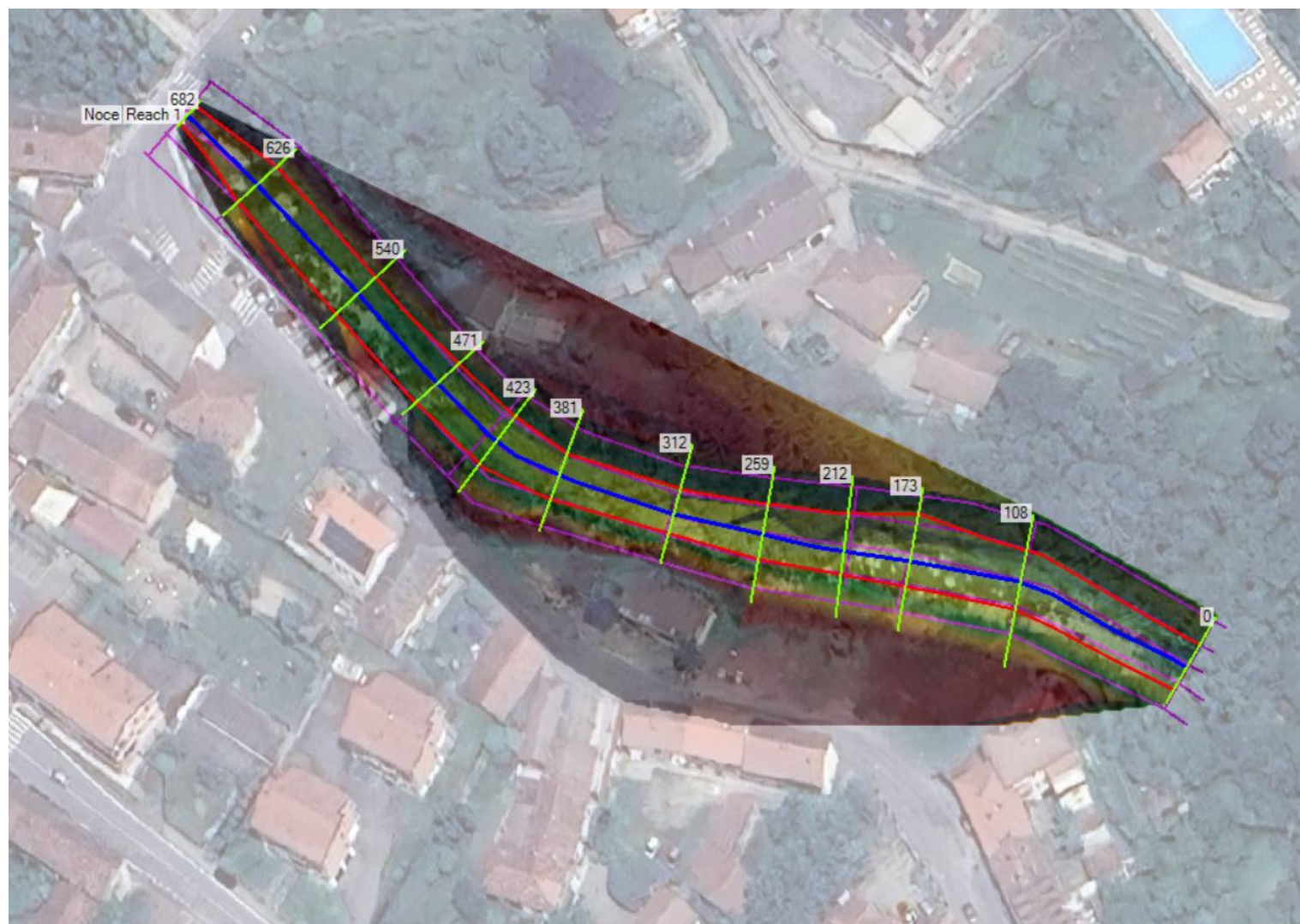
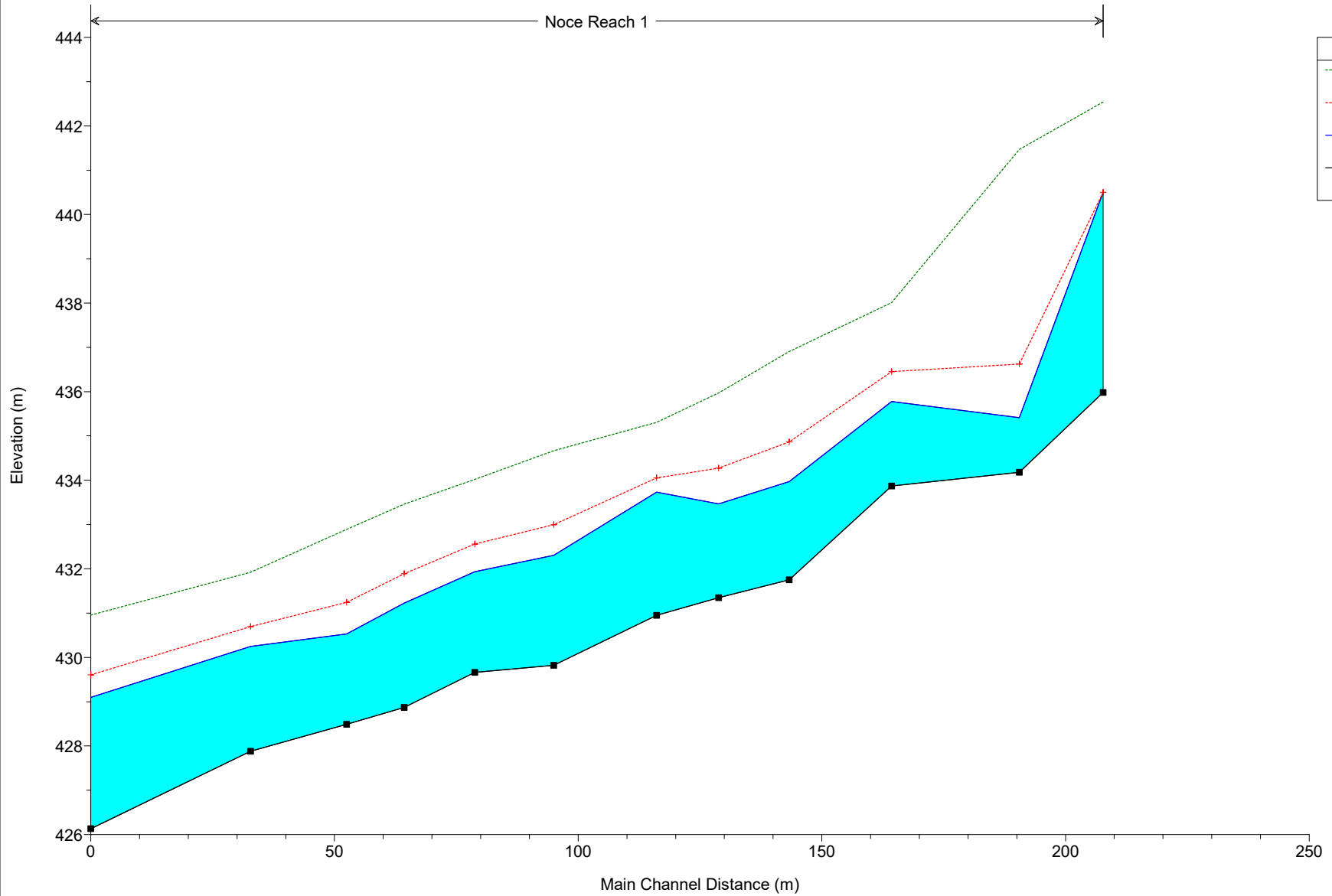


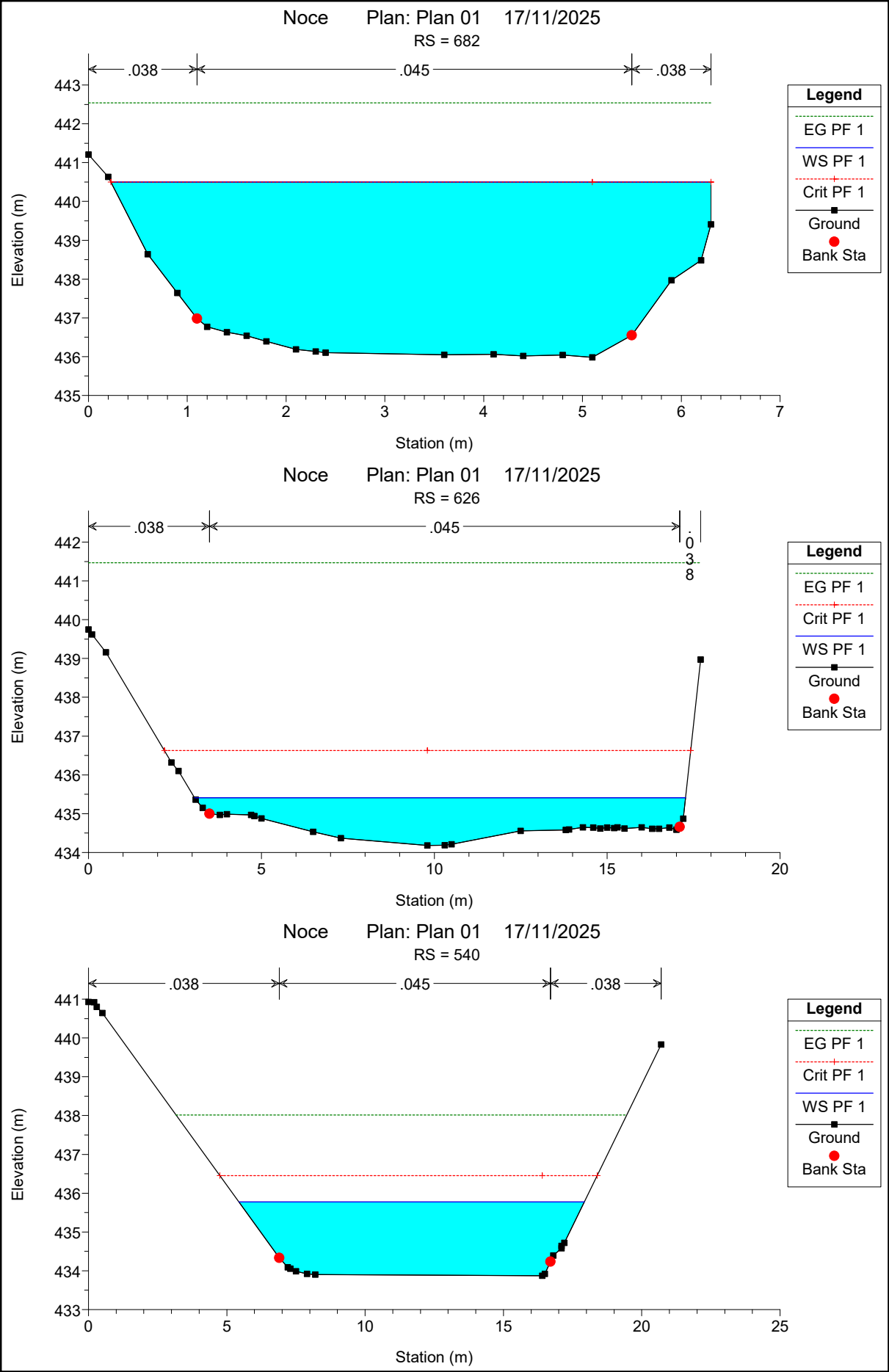
Figura 2 Planimetria di ubicazione delle sezioni di simulazione

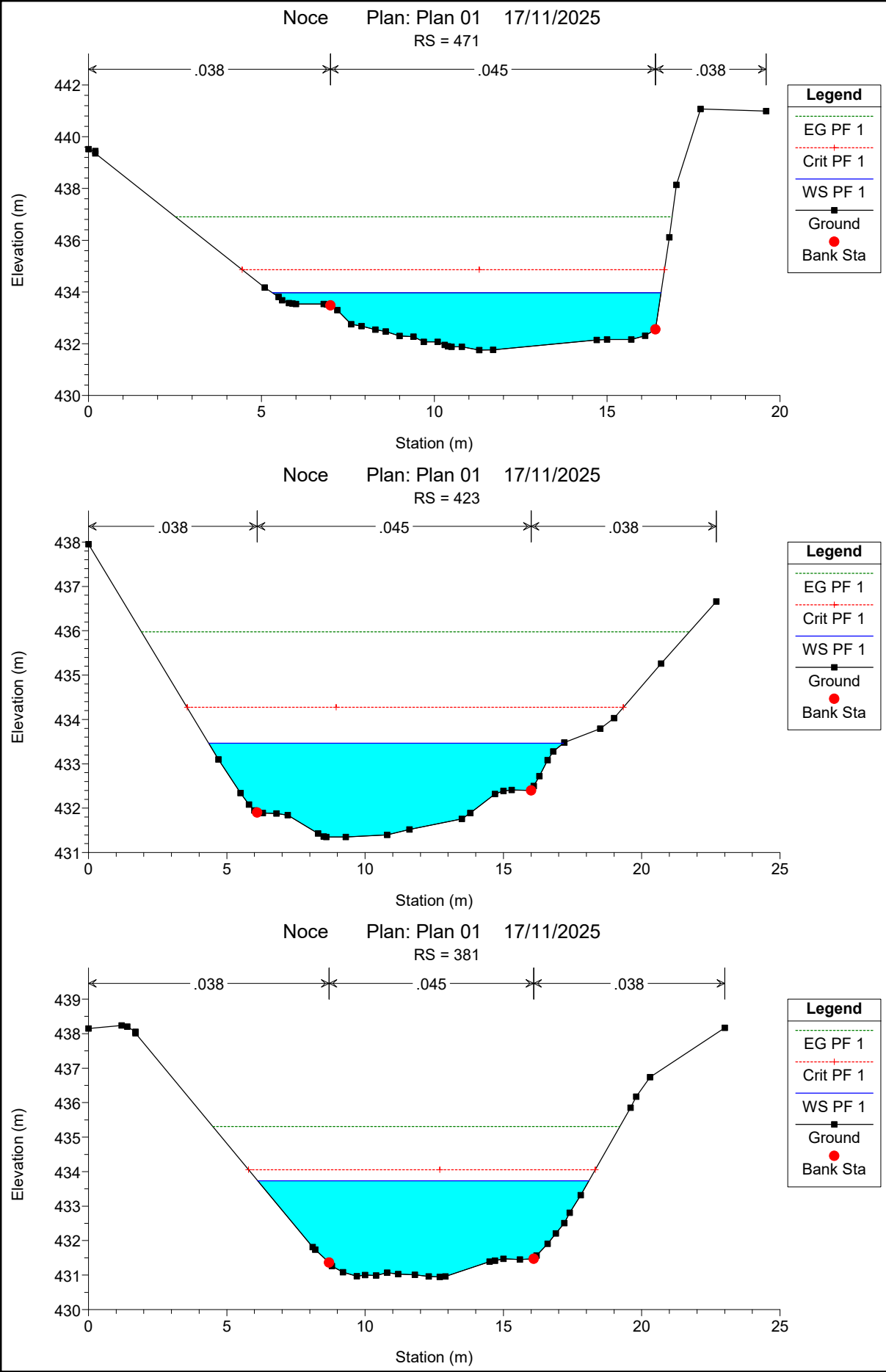
Noce Plan: Plan 01 17/11/2025

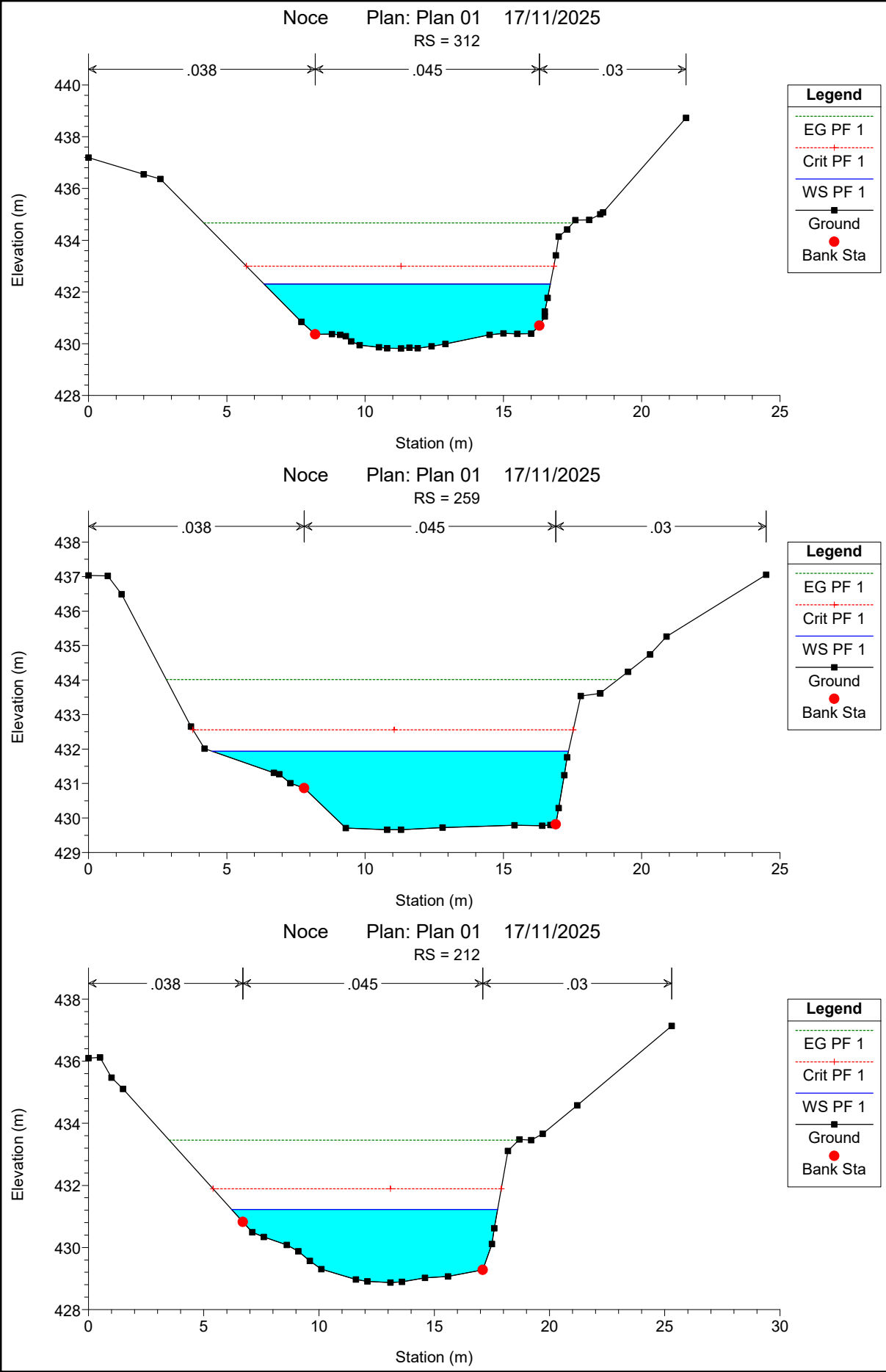
Noce Reach 1

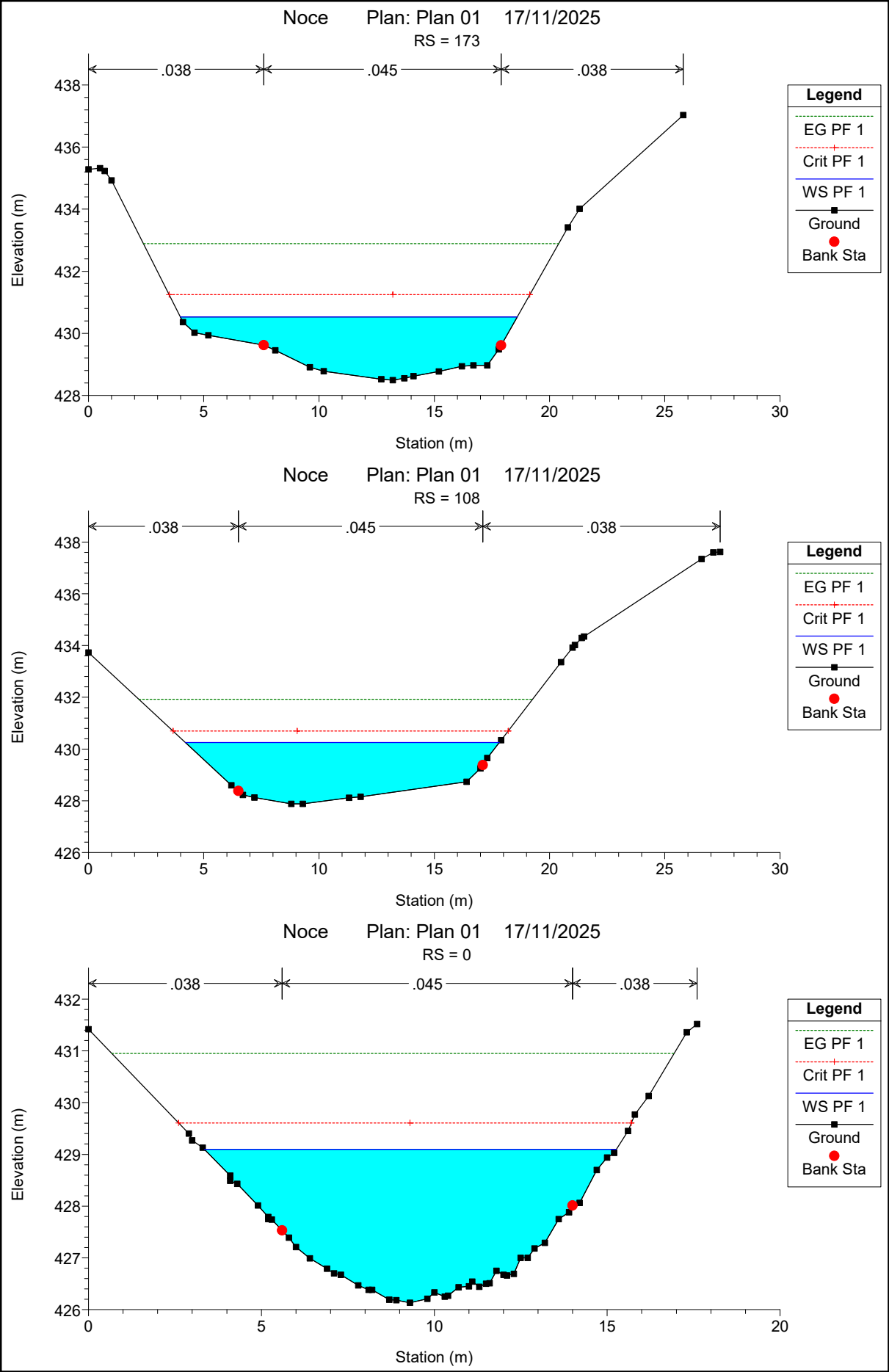


SEZIONI IDRAULICHE HEC RAS CON PROFILO DI PIENA PER TR200







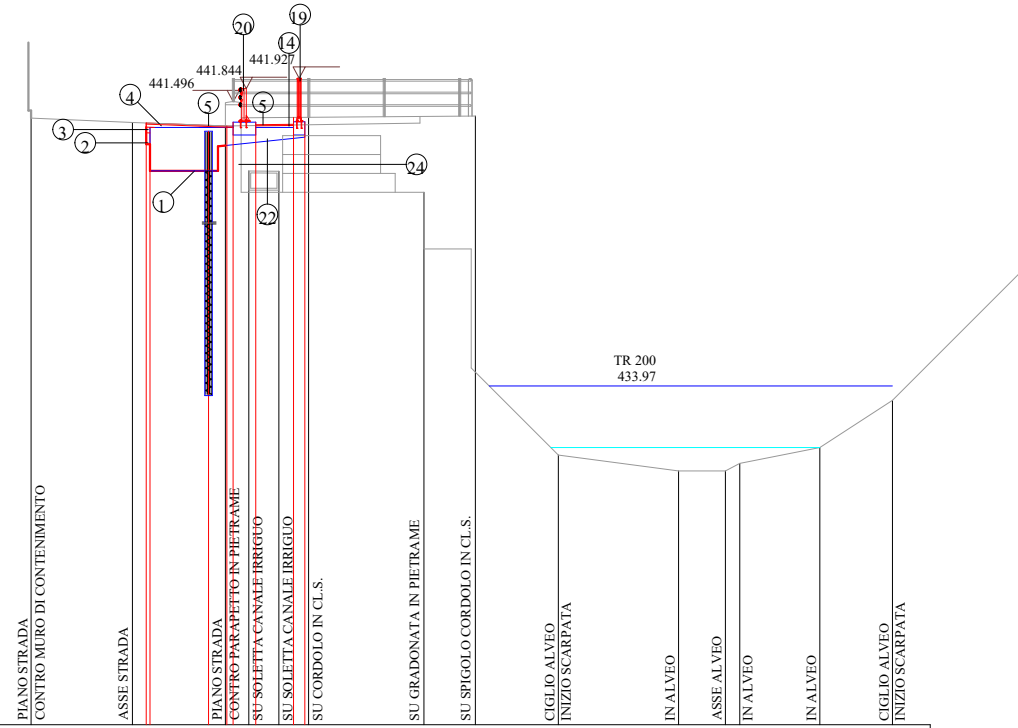


PROFILO DI PIENA PER TR200 SU SEZIONI DI PROGETTO (scala 1:200)

SEZIONE 1 - 1

Scavi: mq. 2.378 + 0.470
Riporti: mq. 0.000

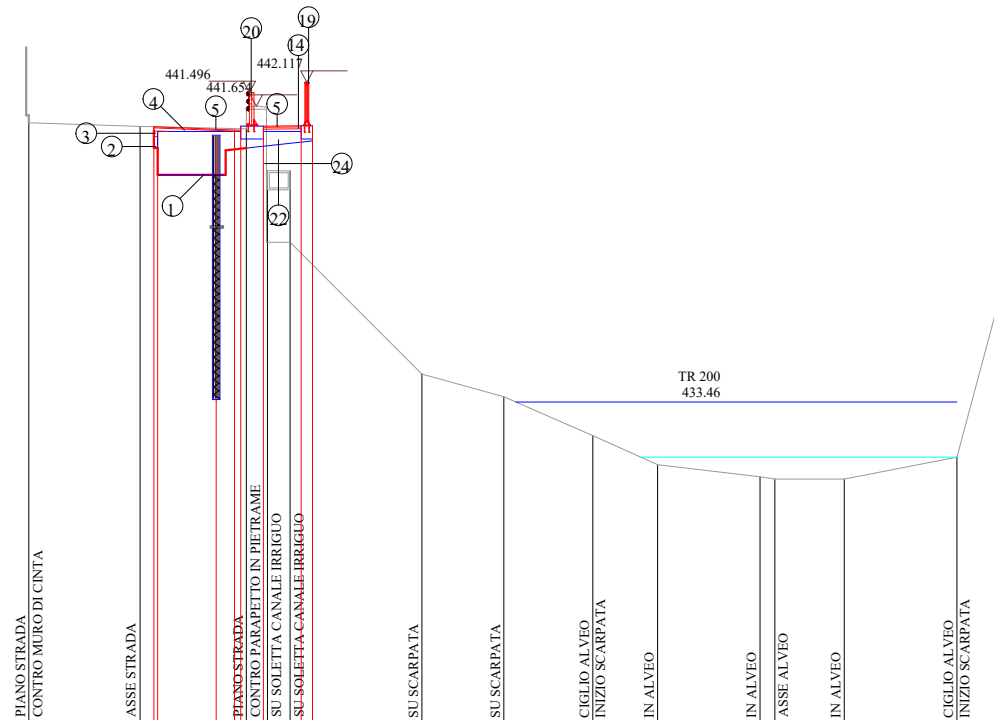
Scala lunghezza 1:200
Scala altezza 1:200
Q.s.l.m. 425.000

[illegible]

SEZIONE 2 - 2

Scavi: mq. 2.608 + 0.568
Riporti: mq. 0.000

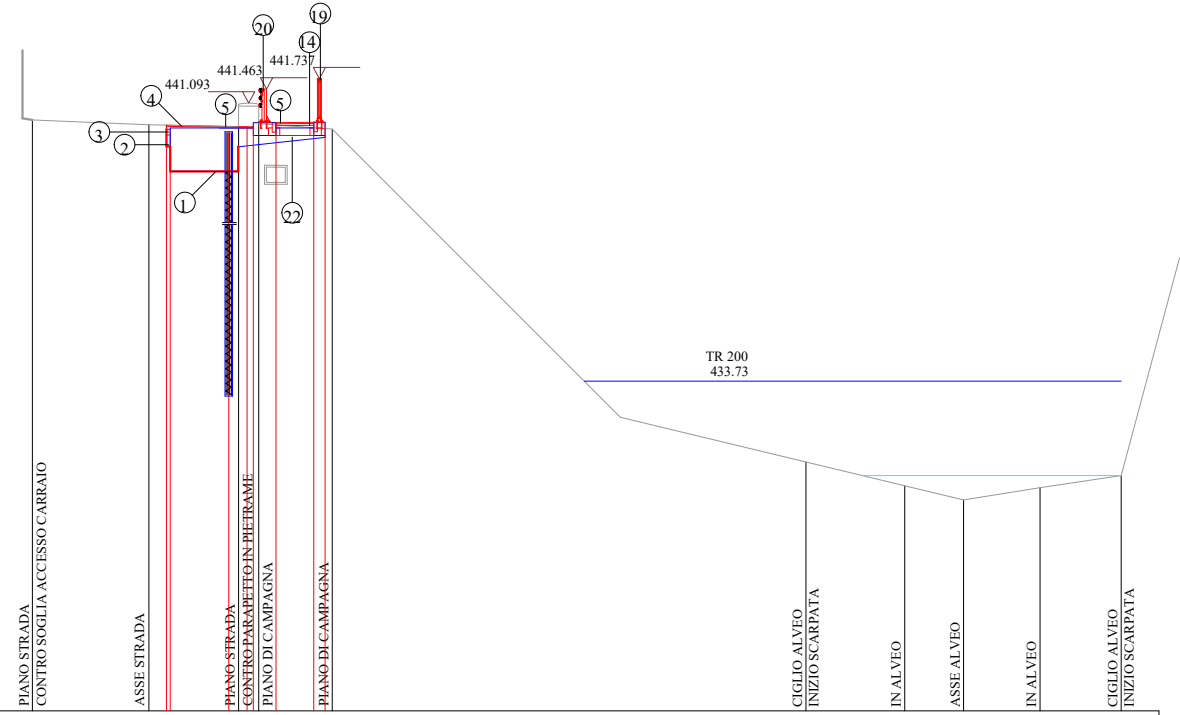
Scala lunghezza 1:200
Scala altezza 1:200
Q.s.l.m. 425.000

[illegible]

SEZIONE 3 - 3

Scavi: mq. 2.222 + 0.594
Riporti: mq. 0.000

Scala lunghezza 1:200
Scala altezza 1:200
Q.s.l.m. 425.000



PUNTI RILEVATI										
PUNTI RICAVATI	348/a	356/a	345/a	344/a	341/a					
DISTANZE PARZIALI		3.085	2.375	0.534	1.946	12.541	2.615	1.558	2.025	2.148
DISTANZE PROGRESSIVE	0.000	3.085	5.460	5.994	7.940		20.481	23.096	24.654	26.679
QUOTE TERRENO ESISTENTE	440.647	440.519	440.463	440.548	440.404		431.590	430.960	430.585	430.910
DISTANZE PARZIALI IN PROGETTO		3.549	0.100	1.550	0.485	21.078				
QUOTE TERRENO IN PROGETTO			440.508	440.434	440.334					
QUOTE CORDOLI IN PROGETTO			440.574	440.468	440.574					
SEZIONI TIPO - NUMERAZIONE			4	4						
SEZIONI TIPO - DISTANZE PARZIALI		5.685				23.143				
SEZIONI TIPO - DISTANZE PROGRESSIVE	5.685		0.000							23.143

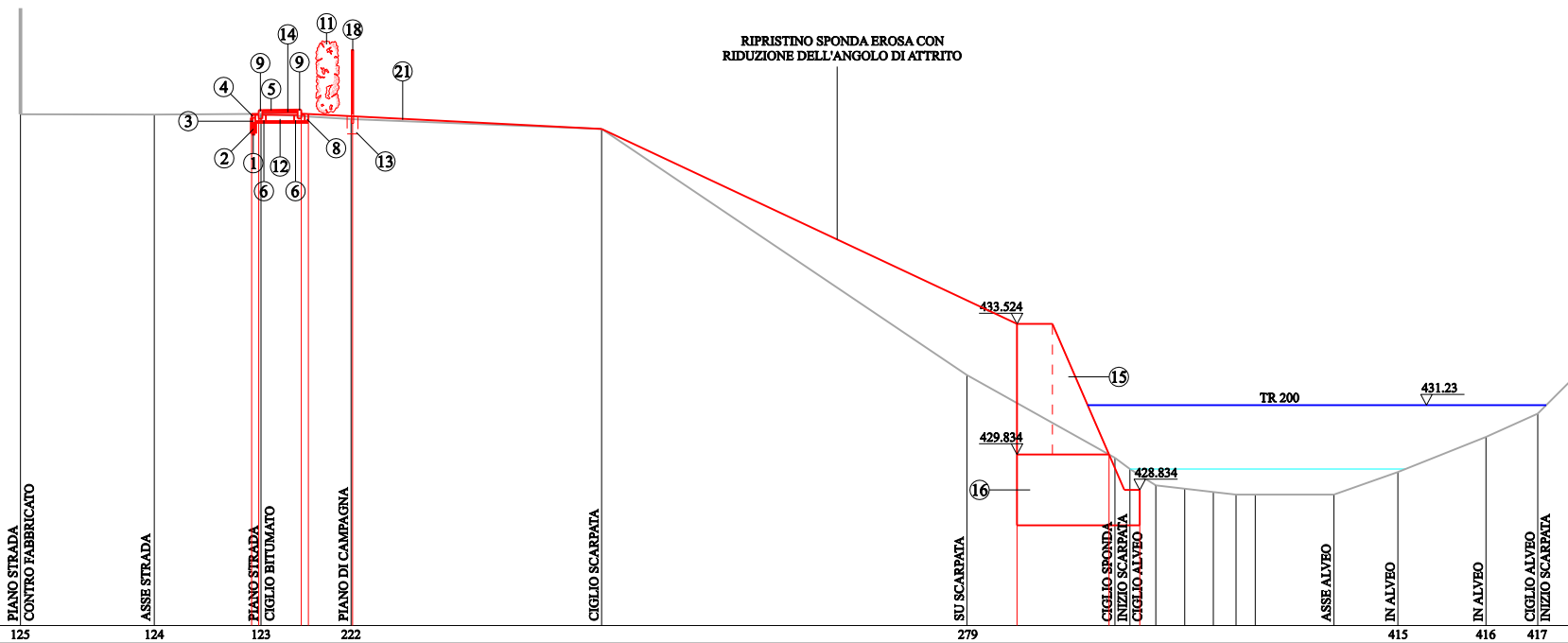
Scala lunghezza 1:200
Scala altezza 1:200
Q.s.l.m. 425.000

[illegible]

SEZIONE 8 - 8

Scavi: mq. 0.652 + 9.141
Riporti: mq. 0.160

Scala lunghezza 1:200
Scala altezza 1:200
Q.s.l.m. 425.000



PUNTI RILEVATI		125		124		123		222		279		415		416		417	
PUNTI RICAVATI								299/h									
DISTANZE PARZIALI			3.780		3.014		2.544		7.076		10.319		4.182				
DISTANZE PROGRESSIVE		0.000		3.780		6.794		9.338		16.414							
QUOTE TERRENO ESISTENTE		439.446		439.437		439.439		439.312		439.032		432.080		429.741	30.915	429.423	0.624
														0.729	31.339	0.424	0.818
														32.068	32.886	0.808	0.643
														33.694	34.337	0.540	0.540
														428.774	428.700	428.700	428.700
														34.877	37.100	38.909	41.595
														428.700	429.340	430.330	430.990
DISTANZE PARZIALI IN PROGETTO			6.530		0.200	1.201	1.247		7.237		11.734		2.600		0.867		11.245
QUOTE TERRENO IN PROGETTO				439.437	439.439	439.465	439.452	439.391		439.032		427.834		429.834	427.834		
QUOTE CORDOLI IN PROGETTO				439.569		439.578											
SEZIONI TIPO - NUMERAZIONE																	
SEZIONI TIPO - DISTANZE PARZIALI																	
SEZIONI TIPO - DISTANZE PROGRESSIVE																	

HEC-RAS HEC-RAS 5.0.7 March 2019
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```

X      X  XXXXXX   XXXX           XXXX      XX      XXXX
X      X  X        X      X      X      X      X      X
X      X  X        X              X      X      X      X
XXXXXXXX XXXX      X              XXX XXXX      XXXXXX   XXXX
X      X  X        X              X      X      X      X      X
X      X  X        X      X      X      X      X      X      X
X      X  XXXXXX   XXXX           X      X      X      X      XXXXX

```

PROJECT DATA

Project Title: Noce
Project File : Noce.prj
Run Date and Time: 17/11/2025 11:22:09

Project in SI units

PLAN DATA

Plan Title: Plan 01
Plan File : C:\Users\Marco\Documents\Hec Ras\Noce.p01

Geometry Title: Noce
Geometry File : C:\Users\Marco\Documents\Hec Ras\Noce.g01

Flow Title : Flow 01
Flow File : C:\Users\Marco\Documents\Hec Ras\Noce.f01

Plan Summary Information:

Number of: Cross Sections	=	12	Multiple Openings	=	0
Culverts	=	0	Inline Structures	=	0
Bridges	=	0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance = 0.003
Critical depth calculation tolerance = 0.003

Maximum number of iterations	=	20
Maximum difference tolerance	=	0.1
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Mixed Flow

FLOW DATA

Flow Title: Flow 01

Flow File : C:\Users\Marco\Documents\Hec Ras\Noce.f01

Flow Data (m3/s)

River	Reach	RS	PF 1
Noce	Reach 1	682	131

Boundary Conditions

River	Reach	Profile	Upstream
	Downstream		
Noce	Reach 1	PF 1	
Critical	Critical		

GEOMETRY DATA

Geometry Title: Noce

Geometry File : C:\Users\Marco\Documents\Hec Ras\Noce.g01

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 682

INPUT

Description:

Station Elevation Data		num=		21					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	441.21	.2	440.63	.6	438.64	.9	437.64	1.1	436.98
1.2	436.77	1.4	436.63	1.6	436.54	1.8	436.39	2.1	436.19
2.3	436.13	2.4	436.1	3.6	436.05	4.1	436.06	4.4	436.02
4.8	436.04	5.1	435.98	5.5	436.55	5.9	437.97	6.2	438.48
6.3	439.41								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.038	1.1	.045	5.5	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.	1.1	5.5		17.2	17.2	.1
	.3					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	442.54	Element	Left OB
Channel Right OB			
Vel Head (m)	2.04	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	440.50	Reach Len. (m)	17.20
17.20 17.20			
Crit W.S. (m)	440.50	Flow Area (m2)	1.69
18.97 2.13			
E.G. Slope (m/m)	0.014571	Area (m2)	1.69
18.97 2.13			
Q Total (m3/s)	131.00	Flow (m3/s)	3.23
123.38 4.39			
Top Width (m)	6.07	Top Width (m)	0.87
4.40 0.80			
Vel Total (m/s)	5.75	Avg. Vel. (m/s)	1.91
6.50 2.06			
Max Chl Dpth (m)	4.52	Hydr. Depth (m)	1.94
4.31 2.67			
Conv. Total (m3/s)	1085.2	Conv. (m3/s)	26.8
1022.1 36.3			

Length	Wtd. (m)	17.20	Wetted Per. (m)	3.63
5.03	4.09			
Min Ch El (m)	435.98	Shear (N/m2)	66.61	
539.37	74.48			
Alpha	1.21	Stream Power (N/m s)	127.22	
3507.55	153.22			
Frctn Loss (m)	0.67	Cum Volume (1000 m3)	0.31	
3.74	0.14			
C & E Loss (m)	0.40	Cum SA (1000 m2)	0.39	
2.00	0.17			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 626

INPUT

Description:

Station Elevation Data

num=

36

Sta

Elev

Sta

Elev

Sta

Elev

Sta

Elev

Sta

Elev

0 439.75

.1 439.62

.5 439.16

2.4 436.32

2.6

436.1

3.1 435.36

3.3 435.15

3.5 435

3.8 434.97

4

434.99

4.7	434.97	4.8	434.94	5	434.88	6.5	434.53	7.3
434.37								
9.8	434.18	10.3	434.19	10.5	434.21	12.5	434.56	13.8
434.58								
13.9	434.594	14.3	434.65	14.6	434.64	14.8	434.62	15
434.64								
15.2	434.63	15.3	434.65	15.5	434.62	16	434.65	16.3
434.61								
16.5	434.61	16.8	434.64	17	434.59	17.1	434.66	17.2
434.87								
17.7	438.97							

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.038	3.5	.045	17.1	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	3.5	17.1		26.2	26.2	.1
.3						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	441.47	Element	Left OB
Channel Right OB			
Vel Head (m)	6.06	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	435.41	Reach Len. (m)	26.20
26.20 26.20			
Crit W.S. (m)	436.63	Flow Area (m2)	0.10
11.93 0.08			
E.G. Slope (m/m)	0.292306	Area (m2)	0.10
11.93 0.08			
Q Total (m3/s)	131.00	Flow (m3/s)	0.43
130.31 0.26			
Top Width (m)	14.20	Top Width (m)	0.44
13.60 0.17			
Vel Total (m/s)	10.82	Avg. Vel. (m/s)	4.29
10.92 3.19			
Max Chl Dpth (m)	1.23	Hydr. Depth (m)	0.23
0.88 0.50			
Conv. Total (m3/s)	242.3	Conv. (m3/s)	0.8
241.0 0.5			
Length Wtd. (m)	26.20	Wetted Per. (m)	0.60
13.76 0.78			
Min Ch El (m)	434.18	Shear (N/m2)	474.32
2485.55 304.10			
Alpha	1.02	Stream Power (N/m s)	2034.01

27154.53	969.61		
Frctn Loss (m)	2.31	Cum Volume (1000 m3)	0.29
3.47	0.12		
C & E Loss (m)	1.15	Cum SA (1000 m2)	0.38
1.84	0.16		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 540

INPUT

Description:

Station Elevation Data		num=		18					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	440.93	.2	440.92	.3	440.8	.5	440.64	6.9	
434.33									
7.2	434.09	7.34	434.0567	7.5	433.99	7.9	433.92	8.2	
433.9									
16.4	433.87	16.5	433.92	16.74	434.2333	16.8	434.39	17.1	
434.58									
17.1	434.64	17.2	434.72	20.7	439.83				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.038	6.9	.045	16.7	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	6.9	16.7		21	21	.1
	.3					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	438.01	Element	Left OB
Channel Right OB			
Vel Head (m)	2.24	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	435.77	Reach Len. (m)	21.00
21.00 21.00			
Crit W.S. (m)	436.45	Flow Area (m2)	1.06
18.30 1.02			
E.G. Slope (m/m)	0.041904	Area (m2)	1.06
18.30 1.02			
Q Total (m3/s)	131.00	Flow (m3/s)	3.66
123.82 3.52			
Top Width (m)	12.49	Top Width (m)	1.47
9.80 1.22			
Vel Total (m/s)	6.43	Avg. Vel. (m/s)	3.46
6.77 3.44			
Max Chl Dpth (m)	1.90	Hydr. Depth (m)	0.72
1.87 0.84			
Conv. Total (m3/s)	639.9	Conv. (m3/s)	17.9
604.9 17.2			
Length Wtd. (m)	21.00	Wetted Per. (m)	2.06
10.09 2.01			
Min Ch El (m)	433.87	Shear (N/m2)	211.40
745.31 209.53			
Alpha	1.06	Stream Power (N/m s)	731.16
5042.34 720.42			
Frctn Loss (m)	1.04	Cum Volume (1000 m3)	0.28
3.07 0.11			
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.36
1.54 0.14			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 471

INPUT

Description:

Station Elevation Data		num= 36							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	439.52	.2	439.45	.2	439.36	5.1	434.17	5.5	
433.81									
5.6	433.68	5.8	433.57	5.9	433.55	6	433.53	6.8	
433.53									
6.9	433.52	7	433.48	7.2	433.3	7.6	432.75	7.9	
432.68									
8.3	432.54	8.6	432.47	9	432.3	9.4	432.27	9.7	
432.07									
10.1	432.07	10.3	431.95	10.4	431.9	10.5	431.88	10.8	
431.88									
11.3	431.75	11.7	431.76	14.7	432.14	15	432.16	15.7	
432.16									
16.1	432.31	16.4	432.55	16.8	436.11	17	438.14	17.7	
441.07									
19.6	440.99								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.038	7	.045	16.4	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	7	16.4		14.5	14.5	.1
.3						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	436.90	Element	Left OB
Channel Right OB			
Vel Head (m)	2.94	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	433.97	Reach Len. (m)	14.50
14.50 14.50			
Crit W.S. (m)	434.86	Flow Area (m2)	0.63
16.87 0.11			
E.G. Slope (m/m)	0.059507	Area (m2)	0.63
16.87 0.11			
Q Total (m3/s)	131.00	Flow (m3/s)	1.98
128.89 0.13			
Top Width (m)	11.24	Top Width (m)	1.68
9.40 0.16			
Vel Total (m/s)	7.44	Avg. Vel. (m/s)	3.14
7.64 1.18			

Max Chl Dpth (m)	2.22	Hydr. Depth (m)	0.38
1.79 0.71			
Conv. Total (m3/s)	537.0	Conv. (m3/s)	8.1
528.3 0.5			
Length Wtd. (m)	14.50	Wetted Per. (m)	1.84
10.09 1.43			
Min Ch El (m)	431.75	Shear (N/m2)	199.80
976.23 46.20			
Alpha	1.04	Stream Power (N/m s)	627.75
7457.73 54.69			
Frctn Loss (m)	0.80	Cum Volume (1000 m3)	0.26
2.70 0.10			
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.33
1.33 0.12			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section. This may indicate
the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 423

INPUT

Description:

Station	Elevation	Data	num=	30					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	
Elev									
0	437.95	4.7	433.1	5.5	432.34	5.8	432.08		6
431.95									
6.1	431.9	6.3	431.89	6.8	431.88	7.2	431.84		8.3
431.43									
8.5	431.36	8.6	431.35	9.3	431.35	10.8	431.4		11.6
431.52									
13.5	431.76	13.8	431.89	14.7	432.32	15	432.39		15.3
432.41									
16	432.4	16.1	432.5	16.3	432.72	16.6	433.08		16.8
433.28									
17.2	433.48	18.5	433.79	19	434.03	20.7	435.26		22.7
436.66									

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
0	.038	6.1	.045	16	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.	6.1	16		12.7	12.7	.1
.3						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	435.97	Element	Left OB
Channel Right OB			
Vel Head (m)	2.51	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	433.46	Reach Len. (m)	12.70
12.70 12.70			
Crit W.S. (m)	434.27	Flow Area (m2)	1.48
17.17 0.53			
E.G. Slope (m/m)	0.051511	Area (m2)	1.48
17.17 0.53			
Q Total (m3/s)	131.00	Flow (m3/s)	6.48
123.00 1.53			
Top Width (m)	12.82	Top Width (m)	1.75
9.90 1.17			
Vel Total (m/s)	6.83	Avg. Vel. (m/s)	4.38
7.16 2.87			
Max Chl Dpth (m)	2.11	Hydr. Depth (m)	0.84
1.73 0.46			
Conv. Total (m3/s)	577.2	Conv. (m3/s)	28.5
541.9 6.7			
Length Wtd. (m)	12.70	Wetted Per. (m)	2.36
10.15 1.60			
Min Ch El (m)	431.35	Shear (N/m2)	316.95
854.91 167.87			
Alpha	1.06	Stream Power (N/m s)	1387.45
6123.40 481.03			
Frctn Loss (m)	0.39	Cum Volume (1000 m3)	0.25
2.46 0.09			
C & E Loss (m)	0.28	Cum SA (1000 m2)	0.30
1.19 0.11			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 381

INPUT

Description:

Station Elevation Data		num= 34							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	438.15	1.2	438.24	1.4	438.2	1.7	438.05	1.7	
438.01									
8.1	431.81	8.2	431.735	8.7	431.36	8.8	431.26	9.2	
431.08									
9.7	430.97	10	431	10.4	430.99	10.8	431.07	11.2	
431.03									
11.8	431.01	12.3	430.96	12.7	430.95	12.9	430.96	14.5	
431.39									
14.7	431.42	15	431.47	15.6	431.45	16.1	431.47	16.2	
431.57									
16.6	431.91	16.9	432.21	17.2	432.51	17.4	432.81	17.8	
433.32									
19.6	435.85	19.8	436.17	20.3	436.74	23	438.17		

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
0	.038	8.7	.045	16.1	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.
Expan.							
	8.7	16.1		21.1	21.1	21.1	.1
.3							

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	435.31	Element	Left OB
Channel Right OB			
Vel Head (m)	1.58	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	433.73	Reach Len. (m)	21.10
21.10 21.10			
Crit W.S. (m)	434.05	Flow Area (m2)	3.19
19.09 2.47			
E.G. Slope (m/m)	0.020213	Area (m2)	3.19
19.09 2.47			

Q Total (m3/s)	131.00	Flow (m3/s)	11.20
111.73 8.06			
Top Width (m)	11.97	Top Width (m)	2.58
7.40 1.99			
Vel Total (m/s)	5.29	Avg. Vel. (m/s)	3.51
5.85 3.27			
Max Chl Dpth (m)	2.78	Hydr. Depth (m)	1.24
2.58 1.24			
Conv. Total (m3/s)	921.4	Conv. (m3/s)	78.8
785.9 56.7			
Length Wtd. (m)	21.10	Wetted Per. (m)	3.51
7.57 3.03			
Min Ch El (m)	430.95	Shear (N/m2)	180.18
499.81 161.68			
Alpha	1.10	Stream Power (N/m s)	632.59
2925.34 528.10			
Frctn Loss (m)	0.56	Cum Volume (1000 m3)	0.22
2.23 0.07			
C & E Loss (m)	0.08	Cum SA (1000 m2)	0.27
1.08 0.09			

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Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 312

INPUT

Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta
0	437.19	2	436.55	2.6	436.37	7.7	430.84	8.2
430.36								
8.8	430.37	9.1	430.34	9.3	430.29	9.5	430.09	9.8
429.94								
10.5	429.86	10.8	429.83	11.3	429.82	11.6	429.84	11.9

429.83									
12.4	429.9	12.9	429.99	14.5	430.34	15	430.4	15.5	
430.38									
16	430.39	16.3	430.7	16.5	431.05	16.5	431.24	16.6	
431.77									
16.9	433.41	17	434.14	17.3	434.41	17.6	434.78	18.1	
434.79									
18.5	435	18.6	435.08	21.6	438.73				

Manning's n Values		num=	3
Sta n Val	Sta n Val	Sta n Val	
0 .038	8.2 .045	16.3 .03	

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.
Expan.				
8.2	16.3	16.2	16.2	.1
.3				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	434.67	Element	Left OB
Channel Right OB			
Vel Head (m)	2.36	Wt. n-Val.	0.038
0.045 0.030			
W.S. Elev (m)	432.31	Reach Len. (m)	16.20
16.20 16.20			
Crit W.S. (m)	433.00	Flow Area (m2)	1.84
17.64 0.39			
E.G. Slope (m/m)	0.036590	Area (m2)	1.84
17.64 0.39			
Q Total (m3/s)	131.00	Flow (m3/s)	7.22
122.83 0.95			
Top Width (m)	10.35	Top Width (m)	1.85
8.10 0.40			
Vel Total (m/s)	6.59	Avg. Vel. (m/s)	3.92
6.96 2.42			
Max Chl Dpth (m)	2.49	Hydr. Depth (m)	1.00
2.18 0.99			
Conv. Total (m3/s)	684.8	Conv. (m3/s)	37.7
642.1 5.0			
Length Wtd. (m)	16.20	Wetted Per. (m)	2.69
8.42 1.68			
Min Ch El (m)	429.82	Shear (N/m2)	246.20
751.99 83.95			
Alpha	1.07	Stream Power (N/m s)	964.14
5234.83 203.26			
Frctn Loss (m)	0.57	Cum Volume (1000 m3)	0.16
1.84 0.04			

C & E Loss (m)	0.08	Cum SA (1000 m2)	0.23
0.92 0.07			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section. This may indicate
the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 259

INPUT

Description:

Station	Elevation	Data	num=	28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	437.03	.7	437.02	1.2	436.49	3.7	432.65	4.2	
432.01									
6.7	431.31	6.9	431.27	7.3	431.01	7.8	430.87	9.3	
429.71									
10.8	429.66	11.3	429.66	12.8	429.72	15.4	429.79	16.4	
429.78									
16.7	429.795	16.8	429.8	16.9	429.82	17	430.29	17.2	
431.24									
17.3	431.76	17.8	433.54	18.5	433.61	18.5	433.62	19.5	
434.24									
20.3	434.74	20.9	435.26	24.5	437.05				

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
0	.038	7.8	.045
		16.9	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	7.8	16.9		14.5	14.5	.1
.3						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	434.02	Element	Left OB
Channel Right OB			

Vel Head (m)	2.08	Wt. n-Val.	0.038
0.045 0.030			
W.S. Elev (m)	431.94	Reach Len. (m)	14.50
14.50 14.50			
Crit W.S. (m)	432.56	Flow Area (m2)	1.64
19.24 0.47			
E.G. Slope (m/m)	0.033475	Area (m2)	1.64
19.24 0.47			
Q Total (m3/s)	131.00	Flow (m3/s)	4.76
125.20 1.04			
Top Width (m)	12.88	Top Width (m)	3.33
9.10 0.45			
Vel Total (m/s)	6.13	Avg. Vel. (m/s)	2.90
6.51 2.20			
Max Chl Dpth (m)	2.28	Hydr. Depth (m)	0.49
2.11 1.05			
Conv. Total (m3/s)	716.0	Conv. (m3/s)	26.0
684.3 5.7			
Length Wtd. (m)	14.50	Wetted Per. (m)	3.52
9.50 2.16			
Min Ch El (m)	429.66	Shear (N/m2)	153.29
664.72 71.33			
Alpha	1.08	Stream Power (N/m s)	444.23
4325.67 157.23			
Frctn Loss (m)	0.54	Cum Volume (1000 m3)	0.14
1.54 0.04			
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.18
0.78 0.06			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section. This may indicate
the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 212

INPUT

Description:

Station Elevation Data

num=

26

Sta Elev
Elev

Sta

Elev

Sta

Elev

Sta

Elev

Sta

0	436.1	.5	436.12	1	435.47	1.5	435.11	6.7
430.82								
7.1	430.49	7.6	430.34	8.6	430.08	9.1	429.88	9.6
429.57								
10.1	429.3	11.6	428.97	12.1	428.91	13.1	428.87	13.6
428.89								
14.6	429.02	15.6	429.07	17.1	429.28	17.5	430.11	17.6
430.62								
18.2	433.11	18.7	433.48	19.2	433.46	19.7	433.66	21.2
434.58								
25.3	437.14							

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.038	6.7	.045	17.1	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	6.7	17.1		11.8	11.8	.1
.3						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	433.46	Element	Left OB
Channel Right OB			
Vel Head (m)	2.23	Wt. n-Val.	0.038
0.045 0.030			
W.S. Elev (m)	431.23	Reach Len. (m)	11.80
11.80 11.80			
Crit W.S. (m)	431.89	Flow Area (m2)	0.10
19.23 0.74			
E.G. Slope (m/m)	0.041950	Area (m2)	0.10
19.23 0.74			
Q Total (m3/s)	131.00	Flow (m3/s)	0.16
128.28 2.56			
Top Width (m)	11.54	Top Width (m)	0.49
10.40 0.65			
Vel Total (m/s)	6.53	Avg. Vel. (m/s)	1.56
6.67 3.45			
Max Chl Dpth (m)	2.36	Hydr. Depth (m)	0.20
1.85 1.15			
Conv. Total (m3/s)	639.6	Conv. (m3/s)	0.8
626.3 12.5			
Length Wtd. (m)	11.80	Wetted Per. (m)	0.64
10.83 2.06			
Min Ch El (m)	428.87	Shear (N/m2)	64.31
730.11 148.02			
Alpha	1.03	Stream Power (N/m s)	100.58

4871.18	511.22		
Frctn Loss (m)	0.55	Cum Volume (1000 m3)	0.12
1.26	0.03		
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.16
0.64	0.05		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section. This may indicate
the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 173

INPUT

Description:

Station	Elevation	Data	num=	24					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	435.28	.5	435.32	.7	435.23	1	434.93	4.1	
430.36									
4.6	430.02	5.2	429.94	7.6	429.62	8.1	429.45	9.6	
428.91									
10.2	428.78	12.7	428.52	13.2	428.49	13.7	428.55	14.1	
428.62									
15.2	428.77	16.2	428.94	16.7	428.97	17.3	428.97	17.8	
429.48									
17.9	429.611	20.8	433.41	21.3	434.01	25.8	437.03		

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
0	.038	7.6	.045
		17.9	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	7.6	17.9		19.7	19.7	.1
	.3					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	432.89	Element	Left OB
---------------	--------	---------	---------

Channel	Right OB		
Vel Head (m)	2.36	Wt. n-Val.	0.038
0.045	0.038		
W.S. Elev (m)	430.53	Reach Len. (m)	19.70
19.70	19.70		
Crit W.S. (m)	431.24	Flow Area (m2)	2.31
17.19	0.32		
E.G. Slope (m/m)	0.053095	Area (m2)	2.31
17.19	0.32		
Q Total (m3/s)	131.00	Flow (m3/s)	9.96
120.21	0.83		
Top Width (m)	14.62	Top Width (m)	3.61
10.30	0.70		
Vel Total (m/s)	6.61	Avg. Vel. (m/s)	4.32
6.99	2.59		
Max Chl Dpth (m)	2.04	Hydr. Depth (m)	0.64
1.67	0.46		
Conv. Total (m3/s)	568.5	Conv. (m3/s)	43.2
521.7	3.6		
Length Wtd. (m)	19.70	Wetted Per. (m)	3.84
10.76	1.15		
Min Ch El (m)	428.49	Shear (N/m2)	313.09
831.24	145.00		
Alpha	1.06	Stream Power (N/m s)	1352.56
5814.11	374.95		
Frctn Loss (m)	0.76	Cum Volume (1000 m3)	0.11
1.05	0.02		
C & E Loss (m)	0.21	Cum SA (1000 m2)	0.13
0.52	0.05		

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 108

INPUT

Description:

Station Elevation Data

num=

22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta
Elev								

0	433.73	6.2	428.6	6.5	428.378	6.7	428.23	7.2
428.13								

8.8	427.88	9.3	427.88	11.3	428.12	11.8	428.15	16.4
428.73								
17	429.25	17.1	429.3833	17.3	429.65	17.9	430.34	20.5
433.36								
21	433.92	21.1	434.02	21.4	434.29	21.5	434.35	26.6
437.35								
27.1	437.6	27.4	437.62					

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
0	.038	6.5	.045	17.1	.038

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.
Expan.						
	6.5	17.1		32.8	32.8	.1
.3						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	431.92	Element	Left OB
Channel Right OB			
Vel Head (m)	1.68	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	430.25	Reach Len. (m)	32.80
32.80 32.80			
Crit W.S. (m)	430.70	Flow Area (m2)	2.17
20.92 0.30			
E.G. Slope (m/m)	0.029412	Area (m2)	2.17
20.92 0.30			
Q Total (m3/s)	131.00	Flow (m3/s)	7.97
122.47 0.57			
Top Width (m)	13.61	Top Width (m)	2.29
10.60 0.72			
Vel Total (m/s)	5.60	Avg. Vel. (m/s)	3.67
5.85 1.88			
Max Chl Dpth (m)	2.37	Hydr. Depth (m)	0.95
1.97 0.42			
Conv. Total (m3/s)	763.9	Conv. (m3/s)	46.5
714.1 3.3			
Length Wtd. (m)	32.80	Wetted Per. (m)	2.96
10.99 1.13			
Min Ch El (m)	427.88	Shear (N/m2)	211.54
549.03 77.41			
Alpha	1.05	Stream Power (N/m s)	776.43
3213.85 145.35			
Frctn Loss (m)	0.95	Cum Volume (1000 m3)	0.06
0.67 0.02			
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.07

0.31 0.03

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section. This may indicate
the need for additional cross sections.

CROSS SECTION

RIVER: Noce

REACH: Reach 1

RS: 0

INPUT

Description:

Station	Elevation	Data	num=	54					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	
0	431.42	2.9	429.4	3	429.27	3.3	429.13	4.1	
428.59									
4.1	428.49	4.3	428.43	4.9	428.01	5.2	427.79	5.2	
427.75									
5.3	427.74	5.6	427.53	5.8	427.39	6	427.21	6.4	
426.99									
6.9	426.79	7.1	426.7	7.3	426.67	7.8	426.47	8.1	
426.38									
8.2	426.38	8.7	426.19	8.9	426.18	9.3	426.13	9.8	
426.21									
10	426.33	10.3	426.25	10.4	426.27	10.7	426.43	11	
426.45									
11.1	426.54	11.3	426.44	11.5	426.5	11.6	426.51	11.8	
426.75									
12	426.67	12.1	426.66	12.3	426.69	12.5	427	12.7	
427									
12.9	427.18	13.2	427.29	13.6	427.75	13.9	427.88	14	
428.01									
14.2	428.06	14.7	428.7	15	428.94	15.2	429.03	15.6	
429.45									
15.8	429.77	16.2	430.13	17.3	431.36	17.6	431.52		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.038	5.6	.045	14	.038

Bank Sta: Left Right Coeff Contr. Expan.

5.6 14 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (m)	430.95	Element	Left OB
Channel Right OB			
Vel Head (m)	1.86	Wt. n-Val.	0.038
0.045 0.038			
W.S. Elev (m)	429.10	Reach Len. (m)	
Crit W.S. (m)	429.61	Flow Area (m2)	1.77
20.04 0.68			
E.G. Slope (m/m)	0.028749	Area (m2)	1.77
20.04 0.68			
Q Total (m3/s)	131.00	Flow (m3/s)	5.81
123.56 1.63			
Top Width (m)	11.91	Top Width (m)	2.25
8.40 1.26			
Vel Total (m/s)	5.83	Avg. Vel. (m/s)	3.27
6.17 2.40			
Max Chl Dpth (m)	2.97	Hydr. Depth (m)	0.79
2.39 0.54			
Conv. Total (m3/s)	772.6	Conv. (m3/s)	34.3
728.7 9.6			
Length Wtd. (m)		Wetted Per. (m)	2.82
9.57 1.71			
Min Ch El (m)	426.13	Shear (N/m2)	177.17
590.35 111.46			
Alpha	1.07	Stream Power (N/m s)	580.00
3640.76 267.90			
Frctn Loss (m)		Cum Volume (1000 m3)	
C & E Loss (m)		Cum SA (1000 m2)	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for additional cross
sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section. This may indicate
the need for additional cross sections.

SUMMARY OF MANNING'S N VALUES

River:Noce

Reach	River Sta.	n1	n2	n3
Reach 1	682	.038	.045	.038
Reach 1	626	.038	.045	.038
Reach 1	540	.038	.045	.038
Reach 1	471	.038	.045	.038
Reach 1	423	.038	.045	.038
Reach 1	381	.038	.045	.038
Reach 1	312	.038	.045	.03
Reach 1	259	.038	.045	.03
Reach 1	212	.038	.045	.03
Reach 1	173	.038	.045	.038
Reach 1	108	.038	.045	.038
Reach 1	0	.038	.045	.038

SUMMARY OF REACH LENGTHS

River: Noce

Reach	River Sta.	Left	Channel	Right
Reach 1	682	17.2	17.2	17.2
Reach 1	626	26.2	26.2	26.2
Reach 1	540	21	21	21
Reach 1	471	14.5	14.5	14.5
Reach 1	423	12.7	12.7	12.7
Reach 1	381	21.1	21.1	21.1
Reach 1	312	16.2	16.2	16.2
Reach 1	259	14.5	14.5	14.5
Reach 1	212	11.8	11.8	11.8
Reach 1	173	19.7	19.7	19.7
Reach 1	108	32.8	32.8	32.8
Reach 1	0			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Noce

Reach	River Sta.	Contr.	Expan.
Reach 1	682	.1	.3
Reach 1	626	.1	.3
Reach 1	540	.1	.3
Reach 1	471	.1	.3
Reach 1	423	.1	.3
Reach 1	381	.1	.3
Reach 1	312	.1	.3
Reach 1	259	.1	.3
Reach 1	212	.1	.3
Reach 1	173	.1	.3
Reach 1	108	.1	.3
Reach 1	0	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width
Froude # Chl					
(m)	(m)	(m/m)	(m3/s) (m/s)	(m) (m2)	(m) (m)
Reach 1	682	PF 1	131.00	435.98	440.50
440.50	442.54	0.014571	6.50	22.80	6.07
1.00					
Reach 1	626	PF 1	131.00	434.18	435.41
436.63	441.47	0.292306	10.92	12.11	14.20
3.73					
Reach 1	540	PF 1	131.00	433.87	435.77
436.45	438.01	0.041904	6.77	20.38	12.49
1.58					
Reach 1	471	PF 1	131.00	431.75	433.97
434.86	436.90	0.059507	7.64	17.61	11.24
1.82					
Reach 1	423	PF 1	131.00	431.35	433.46
434.27	435.97	0.051511	7.16	19.18	12.82
1.74					
Reach 1	381	PF 1	131.00	430.95	433.73
434.05	435.31	0.020213	5.85	24.75	11.97
1.16					
Reach 1	312	PF 1	131.00	429.82	432.31
433.00	434.67	0.036590	6.96	19.88	10.35

1.51					
Reach 1	259	PF 1	131.00	429.66	431.94
432.56	434.02	0.033475	6.51	21.35	12.88
1.43					
Reach 1	212	PF 1	131.00	428.87	431.23
431.89	433.46	0.041950	6.67	20.07	11.54
1.57					
Reach 1	173	PF 1	131.00	428.49	430.53
431.24	432.89	0.053095	6.99	19.81	14.62
1.73					
Reach 1	108	PF 1	131.00	427.88	430.25
430.70	431.92	0.029412	5.85	23.39	13.61
1.33					
Reach 1	0	PF 1	131.00	426.13	429.10
429.61	430.95	0.028749	6.17	22.49	11.91
1.28					

Profile Output Table - Standard Table 2

Reach Frctn	Loss	River Sta C & E	Sta Loss	Profile Q Left	E.G. Elev Q Channel	W.S. Elev Q Right	Top Width	Vel Head
	(m)		(m)	(m3/s)	(m3/s)	(m3/s)	(m)	(m)
Reach 1	0.67	682	0.40	PF 1	442.54	440.50		2.04
				3.23	123.38	4.39	6.07	
Reach 1	2.31	626	1.15	PF 1	441.47	435.41		6.06
				0.43	130.31	0.26	14.20	
Reach 1	1.04	540	0.07	PF 1	438.01	435.77		2.24
				3.66	123.82	3.52	12.49	
Reach 1	0.80	471	0.13	PF 1	436.90	433.97		2.94
				1.98	128.89	0.13	11.24	
Reach 1	0.39	423	0.28	PF 1	435.97	433.46		2.51
				6.48	123.00	1.53	12.82	
Reach 1	0.56	381	0.08	PF 1	435.31	433.73		1.58
				11.20	111.73	8.06	11.97	
Reach 1	0.57	312	0.08	PF 1	434.67	432.31		2.36
				7.22	122.83	0.95	10.35	
Reach 1	0.54	259	0.02	PF 1	434.02	431.94		2.08
				4.76	125.20	1.04	12.88	
Reach 1	0.55	212	0.01	PF 1	433.46	431.23		2.23
				0.16	128.28	2.56	11.54	
Reach 1	0.76	173	0.21	PF 1	432.89	430.53		2.36
				9.96	120.21	0.83	14.62	

Reach 1	108	PF 1	431.92	430.25	1.68
0.95	0.02	7.97	122.47	0.57	13.61
Reach 1	0	PF 1	430.95	429.10	1.86
		5.81	123.56	1.63	11.91