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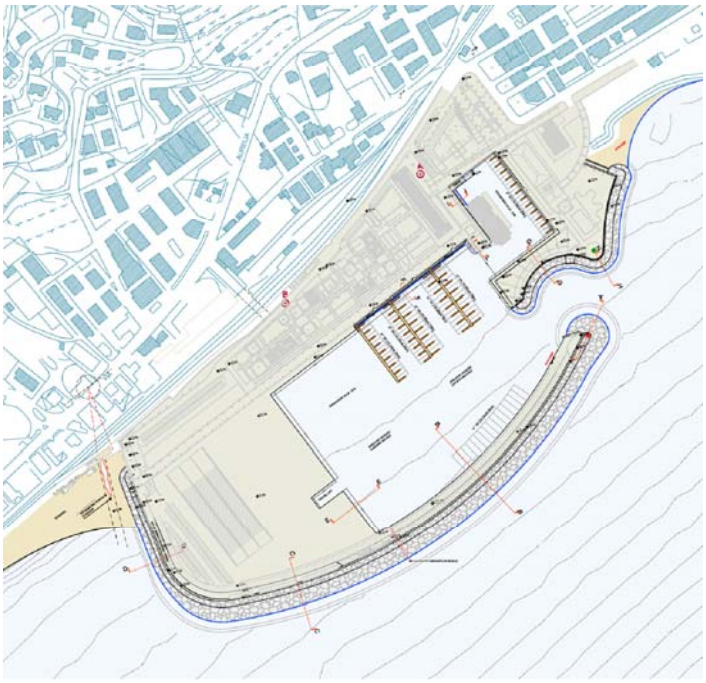
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Amministratore Delegato
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Regione Liguria
Provincia di Savona
Comune di Pietra Ligure

S.U.A. Strumento urbanistico attuativo di approvazione regionale L. 24 / 87

D.P.R. 509/97
Decr. Min. Trasporti e Navigazione 14.04.98
Conf. Servizi L. 241/90 e s.m.i.

PROGETTO PER LA TRASFORMAZIONE URBANISTICA DEI CANTIERI NAVALI RODRIQUEZ IN UN PORTO TURISTICO CON ANNESSE STRUTTURE PUBBLICHE, RICETTIVE, RESIDENZIALI E PRODUTTIVE



PROGETTO DEFINITIVO OO.MM.

Relazione di studio con modello idrologico Rio Ranzi

COMMESSA	OPERA	FASE	SETTORE	TAVOLA N°	REV	FILE
A21650 9	OA	PD	OM	DB3	0	

	GIUGNO 2012	0		1:2.000
Rif. Dis.	Data	Rev.	DESCRIZIONE	SCALA

REGIONE LIGURIA

PROVINCIA DI SAVONA

COMUNE DI PIETRA LIGURE

RODRIGUEZ CANTIERI NAVALI S.p.A.

PROGETTO PER LA TRASFORMAZIONE URBANISTICA DEI CANTIERI NAVALI RODRIQUEZ IN UN PORTO TURISTICO CON ANNESSE STRUTTURE PUBBLICHE, RICETTIVE, RESIDENZIALI E PRODUTTIVE

Progetto Definitivo

VERIFICA DEL DEFLUSSO DEL RIO RANZI

COMMITTENTE: Rodriguez Cantieri Navali S.p.A.

Progettista idraulico marittimo

Acquatecno S.r.l.

Collaboratore allo studio specialistico

Modiferr S.r.l.

Roma, dicembre 2011

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1. PREMESSE

Rodriguez Cantieri Navali S.p.A. ha affidato alla società Acquatecno S.r.l. l'incarico di eseguire il progetto idraulico marittimo per la "*Trasformazione urbanistica dei cantieri navali Rodriguez in un porto turistico con annesse strutture pubbliche ricettive, residenziali e produttive"*. Il porto ricade nel territorio comunale di Pietra Ligure in provincia di Savona nella Regione Liguria.

Nella seduta del giorno 2.*8.2011* della conferenza di servizi del Comune di Pietra Ligure convocata per l'ammissibilità del progetto preliminare è stato richiesto dal Comitato Tecnico Regionale per il Territorio tra l'altro:

- di modellare la configurazione finale della spiaggia adiacente il porto valutando anche eventuali necessità di ripascimento artificiale al fine di ottenere un assetto di equilibrio compatibile con la configurazione delle opere foranee e senza alterazione del deflusso dei corsi d'acqua;

Lo studio di modellazione della configurazione finale della spiaggia adiacente il porto allegato alla presente relazione ha messo in luce che l'assetto di equilibrio compatibile con la configurazione delle opere foranee presenta un avanzamento della foce del Rio Ranzi di circa 45 m.

Per verificare il deflusso del Rio Ranzi nelle condizione ante e post opera il progettista si è avvalso della collaborazione della Modiferr s.r.l.

1.1 Oggetto del presente rapporto

Oggetto del presente rapporto sono le verifiche idrauliche del deflusso del Rio Ranzi, che sfocia in prossimità del molo occidentale del Porto Turistico dei Cantieri Navali Rodriguez nel Comune di Pietra Ligure. Le verifiche idrauliche sono state condotte nelle condizioni ante e post opera, verificando che il deflusso del corso d'acqua non risulti alterato dal nuovo assetto di equilibrio assunto dalla spiaggia con la configurazione delle opere foranee di progetto.

Per le condizioni al contorno delle verifiche idrauliche (sezioni d'alveo e degli attraversamenti, portate massime di piena, coefficienti di scabrezza e livelli idrici di monte) si è fatto riferimento al *Piano di Bacino Stralcio sul Rischio Idrogeologico* redatto dalla Provincia di Savona - Settore Difesa del Suolo e Tutela Ambientale aggiornato con D.G.P. n 245 del 14/11/2008.

Per quanto riguarda il Rio Ranzi la Valutazione del Rischio Idraulico e Geomorfologico del Piano di Bacino sopra indicato è stata effettuata lungo il tratto vallivo del corso d'acqua lungo circa 793,34 m che va da località Vigne al Ponte FF.SS. in prossimità della foce. Nel presente studio il tratto d'alveo investigato è stato prolungato fino al mare.

Le verifiche idrauliche sono state condotte a moto permanente per tempi di ritorno di 50, 200 e 500 anni, in analogia a quanto riportato nella Valutazione del Rischio Idraulico e Geomorfologico del Piano di Bacino della Provincia di Savona.

Dopo un inquadramento territoriale del bacino e della rete idrografica del Rio Ranzi su base cartografica ed un inquadramento degli attraversamenti stradali su base fotografica è stata sintetizzata l'analisi della Valutazione del Rischio Idraulico e Geomorfologico del Piano di Bacino della Provincia di Savona.

Successivamente sono state riportate le condizioni al contorno (sezioni d'alveo e degli attraversamenti, portate massime di piena, coefficienti di scabrezza e livelli idrici di monte) assunte come dati di base per le verifiche idrauliche

Infine è stata condotta l'analisi a moto permanente nelle condizione ante e post opera, mediante l'utilizzo del modello di calcolo HEC RAS prodotto dall'Hydroligic Engineering Center del U.S. Army Corps of Engenners.

1.2 Conclusioni

Lo studio idraulico condotto nell'ambito del presente rapporto ha evidenziato alcune importanti caratteristiche del tratto vallivo del Rio Ranzi, già evidenziate nella Relazione Generale della Valutazione del Rischio Idraulico e Geomorfologico del Piano di Bacino della Provincia di Savona:

- esso si sviluppa interamente in aree fortemente urbanizzate e ad alta densità abitativa, con evidenti implicazioni sia per quanto riguarda la sicurezza delle persone sia per quanto riguarda la valenza economica dei potenziali danni materiali;
- solamente gli attraversamenti n. 1 e n. 2 di Viale Riviera consentono il deflusso della portata massima di piena con tempo di ritorno 200 anni, sebbene con funzionamento a sezione piena;

- gli altri attraversamenti, ad eccezione di quello sulla strada privata a monte dell'attraversamento n 2 di Viale Riviera, risultano insufficienti al libero deflusso della portata di progetto con tempo di ritorno di 50 anni;
- a causa dell'insufficienza delle sezioni di attraversamento presenti lungo l'asta investigata il deflusso delle portate di piena con tempo di ritorno di 50, 200 e 500 anni coinvolge la viabilità limitrofa che si sviluppa in affiancamento, o come nel caso del tratto tombinato in corrispondenza della rotonda del Corso 25 aprile al disopra dell'alveo stesso;
- la presenza del ponte dell'attraversamento n. 1 di Viale Riviera determina la disconnessione idraulica del tratto vallivo del Rio Ranzi investigato rispetto a quello montano, con il passaggio attraverso la condizione critica per le portate di piena;
- la presenza del ponte dell'attraversamento FF.SS..ed il tombinamento in corrispondenza del Corso 25 aprile determina il rigurgito delle portate di piena il cui profilo raggiunge quasi la sezione del ponte di Via Guglielmo Oberdam.

Lo studio idraulico condotto nell'ambito del presente rapporto ha inoltre evidenziato che:

- a valle dell'attraversamento FF.SS. si determina la disconnessione idraulica del tratto vallivo del Rio Ranzi a monte dell'attraversamento ferroviario con quello finale in corrispondenza della spiaggia, con il passaggio attraverso la condizione critica per le portate di piena;
- tale disconnessione idraulica fa si che il deflusso delle portate di piena nelle condizioni ante e post opera del tratto vallivo del Rio Ranzi risulta inalterato.

In conclusione, come risulta evidente dal confronto delle figure e delle tabelle dell'analisi a moto permanente per le portate di piena di 50, 200 e 500 anni in condizioni ante e post opera, il deflusso del tratto vallivo del Rio Ranzi tra località Vigne e il ponte FF.SS. in prossimità della foce non risulta essere alterato dal nuovo assetto di equilibrio assunto dalla spiaggia con la configurazione delle opere foranee di progetto.

2. CARATTERISTICHE IDROGRAFICHE DEL RIO RANZI

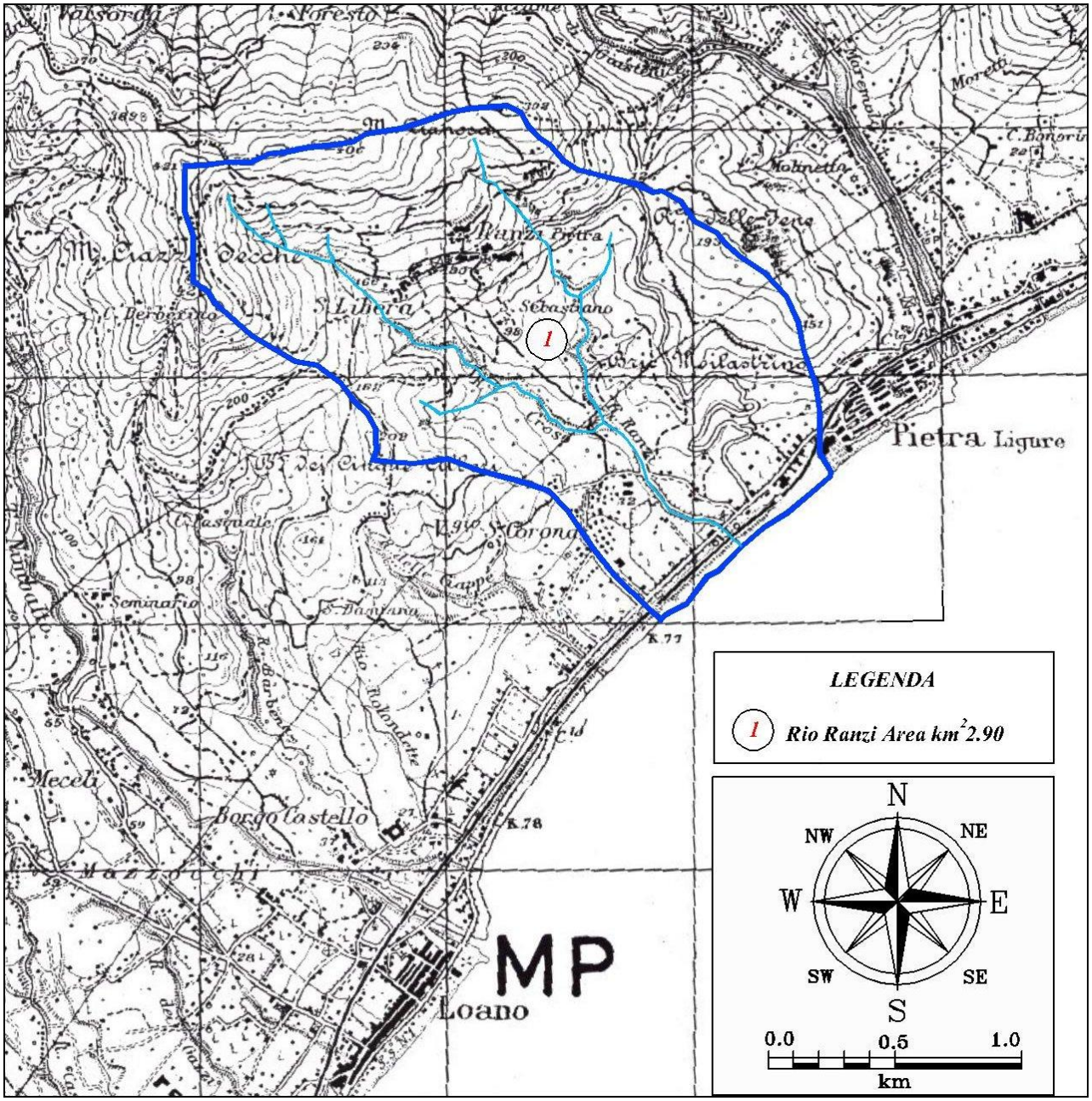
Il bacino idrografico del Rio Ranzi si estende dalle pendici del Monte Ciazze Secche (421 m s.l.m.) e del Monte Pianosa (406 m s.l.m.) fino al litorale di Pietra Ligure ad ovest dei Cantieri Navali Rodriguez (vedi Figura 2.1). L'estensione del bacino è di circa 2,90 km^2. La lunghezza dell'asta principale risulta di circa 2,69 km.

Il Rio Ranzi, nel tratto di valle da località Vigne al mare di circa 825 m di lunghezza (vedi Figura 2.2), attraversa una serie di infrastrutture stradali costituite nell'ordine da:

1. Ponte Viale Riviera n 1 (vedi Figura 2.3);
2. Ponte Via Moilastini (vedi Figura 2.4);
3. Ponte su Strada Privata (vedi Figura 2.5);
4. Ponte Viale Riviera n 2 (vedi Figura 2.6);
5. Ponticello Laterale Viale Riviera (vedi Figura 2.7);
6. Ponte Via Guglielmo Oberdam (vedi Figura 2.8);
7. Rotonda Corso 25 Aprile (vedi Figura 2.9);
8. Ponte FFSS (vedi Figura 2.10).

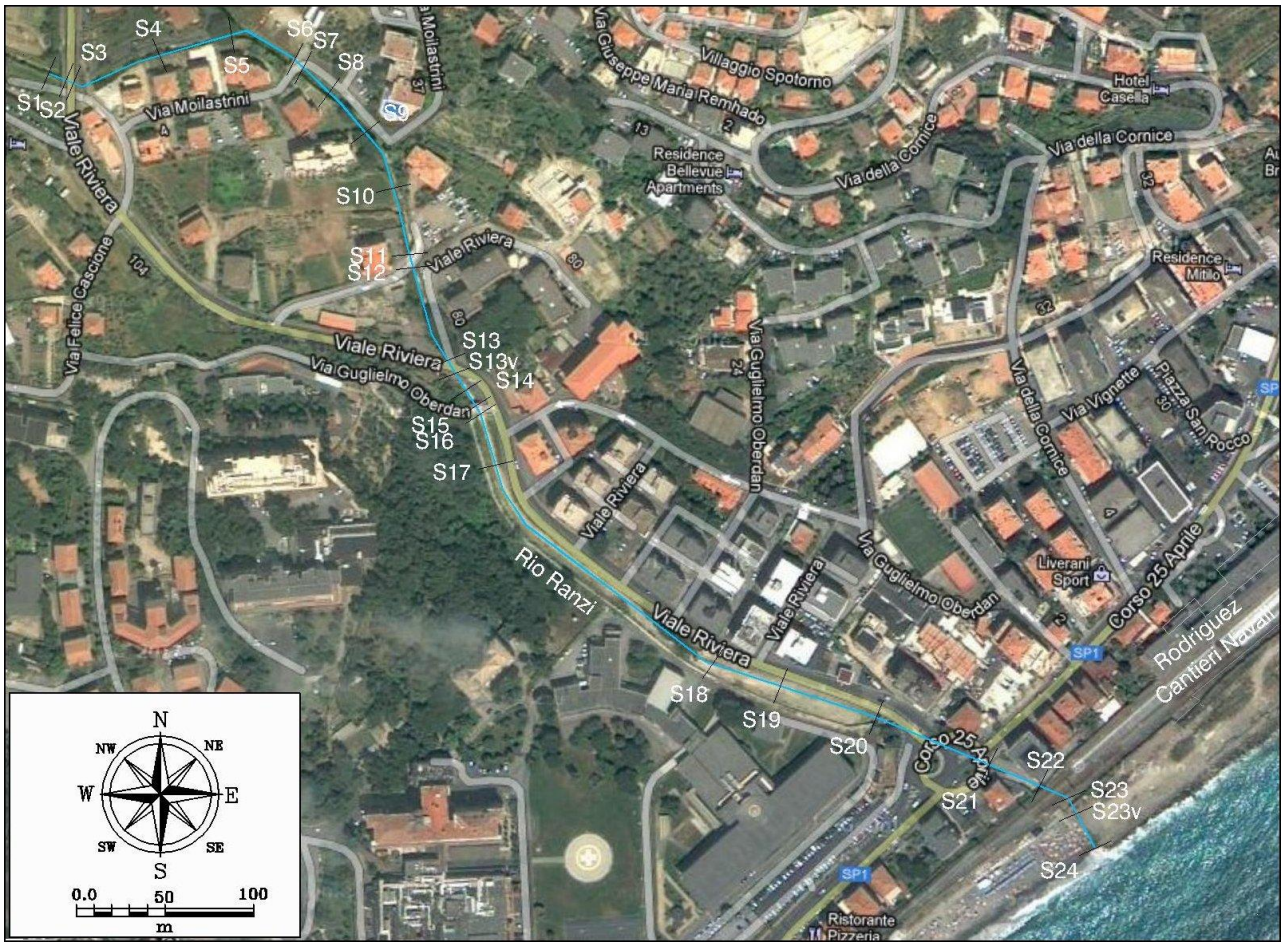
In Figura 2.2 è riportato il tratto d'alveo investigato (linea celeste) e l'ubicazione delle sezioni di calcolo lungo l'asta fluviale.

Figura 2.1 – Bacino idrografico del Rio Ranzi



Fonte "IGM" anno 1933, scala 1:25 000

Figura 2.2 – Planimetria e sezioni di calcolo del tratto di valle del Rio Ranzi tra località Vigne e la foce



Fonte Google

Figura 2.3 - Ponte Viale Riviera n 1 (sezione 3)– Vista da valle



Figura 2.4 - Ponte Via Moilastini (sezione 7) – Vista da valle



Figura 2.5 - Ponte su Strada Privata (sezione 11) – Vista da monte



Figura 2.6 - Ponte Viale Riviera (sezione 13) – Vista da Valle



Figura 2.7 – Serie di attraversamenti – Ponte Via Guglielmo Oberdam (sezione 16), Ponticello Laterale (sezione 14) e Ponte Viale Riviera (sezione 13) – Vista da valle



Figura 2.8 - Ponte Via Guglielmo Oberdam (sezione 16) – Vista da valle



Figura 2.9 – Imbocco Rotonda Corso 25 Aprile (sezione 20) – Vista da monte



Figura 2.10 – Sbocco Rotonda Corso 25 Aprile (sezione 21) e Ponte FFSS (sezione 22) – Vista da monte



3. PIANO DI BACINO STRALCIO SUL RISCHIO IDROGEOLOGICO DELLA PROVINCIA DI SAVONA

I dati di base utilizzati nel presente studio per l'analisi a moto permanente del Rio Ranzi sono quelli adottati nella Valutazione del Rischio Idraulico e Geomorfologico del Piano di Bacino della Provincia di Savona aggiornato con D.G.P. n 245 del 14/11/2008.

Per una maggior comprensione del Rischio idraulico e geomorfologico del bacino idrografico del Rio Ranzi di seguito si riporta la sintesi di quanto riportato nella Relazione Generale della Valutazione del Rischio Idraulico e Geomorfologico in riferimento al bacino in oggetto.

*"Le principali criticità di tipo **geomorfologico** si individuano in corrispondenza delle aree ricadenti in classe di suscettività alta e molto alta localizzate sul territorio lungo le porzioni inferiori e medie dei versanti vallivi. **Le aree ricadenti in alta suscettività comprendono** aree in frana quiescente, cave dismesse ed **aree la cui classe di suscettività è stata determinala per sommatoria dei punteggi relativi agli elementi principali ed aggravati riportati nella cartografia di base.** Un tratto, abitato, del versante sinistro di Rio Ranzi dove si sommano i pesi dovuti a vari elementi di criticità (coltre acclività etc.) presenza il rischio R4 (area ad alta suscettività)".*

Dal punto di vista ***idraulico*** nello studio di Valutazione del Rischio del Piano di Bacino si è scelto di approfondire l'analisi delle verifiche idrauliche nel tratto terminale del Rio Ranzi in ragione del fatto che "*la zona risulta in assoluto a più alta criticità idraulica, come conferma la mappatura delle aree storicamente inondate e potenzialmente inondabili redatta nell'ambito del Piano stesso; essa si sviluppa interamente in aree fortemente urbanizzate e ad alta densità abitativa, con evidenti implicazioni sia per quanto riguarda la sicurezza delle persone sia per quanto riguarda la valenza economica dei potenziali danni materiali. Prima di passare alla descrizione dei risultati si ritiene doveroso, per meglio interpretare e valutare l'entità dei fenomeni studiati, segnalare che tutte le verifiche sono state effettuate nell'ipotesi di "fluido ideale" in assenza di trasporto solido al fondo e/o di materiale galleggiante trascinato dalla corrente. Del trasporto in sospensione si è parzialmente tenuto conto inasprendo i coefficienti di resistenza al moto come usualmente operato nella pratica corrente.*"

Oggetto di indagine nello studio di Valutazione del Rischio del Piano di Bacino sono state tre diverse aree presso Pietra Ligure, mappate nel Piano di Bacino come "Area Storicamente Inondata

non indagata", adiacenti al Rio Ranzi. Tali aree sono riportate nello stralcio cartografico di Figura 3.1:

1. l'area A individua il versante presso l'abitato di Bric Monastrino, posto a quota notevolmente elevata rispetto a loc. Ponti, ove scorre il Rio Ranzi a monte della confluenza con il Rio Croso. L'area in studio risulta quindi essere solo un versante, peraltro sistemato a terrazzi, ove non sussistono problematiche di inondabilità data l'assenza di corsi d'acqua. L'area in oggetto risulta da non includere in alcuna fascia di inondabilità ai sensi della normativa dei Piano di Bacino, mentre le principali problematiche dell'area sono riconducibili a natura geomorfologica.
2. l'area B individua l'area in sponda sinistra del Rio Ranzi presso la zona di Vignette, L'area si presenta come versante scosceso, con elevato tasso di urbanizzazione, sistemato artificialmente con trincee a difesa della strada che sale a tornanti verso loc. Crovare. La maggior parte dell'area è occupata dal centro residenziale Le Mimose che si sviluppa su terrazzi. A monte è presente la cava di estrazione dell'Italcementi. In tutta l'area, versante scosceso privo di corsi d'acqua, non si evidenziano possibili problematiche di tipo idraulico. Possibili allagamenti localizzati possono essere dovuti ad insufficienze della rete di drenaggio all'occorrere di piogge intense. E' comunque possibile che l'area sia stata perimetrata come storicamente inondata a causa di un errore. Ulteriori possibili problematiche dell'area risultano essere di natura geomorfologica. L'area in oggetto risulta da non includere in alcuna fascia di inondabilità ai sensi della normativa dei Piano di Bacino.
3. l'area C risulta essere il versante a monte della S.S. Aurelia che attraversa Pietra Ligure. Tale area è stata inserita nelle "aree storicamente inondate" a causa di possibili allagamenti della strada statale dovuti a piogge intense sul versante per le quali gli scatolari di attraversamento della strada risultano insufficienti. L'area in oggetto risulta da non includere in alcuna fascia di inondabilità ai sensi della normativa dei Piano di Bacino.

In conclusione lo studio di Valutazione del Rischio del Piano di Bacino afferma che l'area mappate nel Piano di Bacino come "Area Storicamente Inondata non indagata" risulta da non includere in alcuna fascia di inondabilità ai sensi della normativa dei Piano di Bacino.

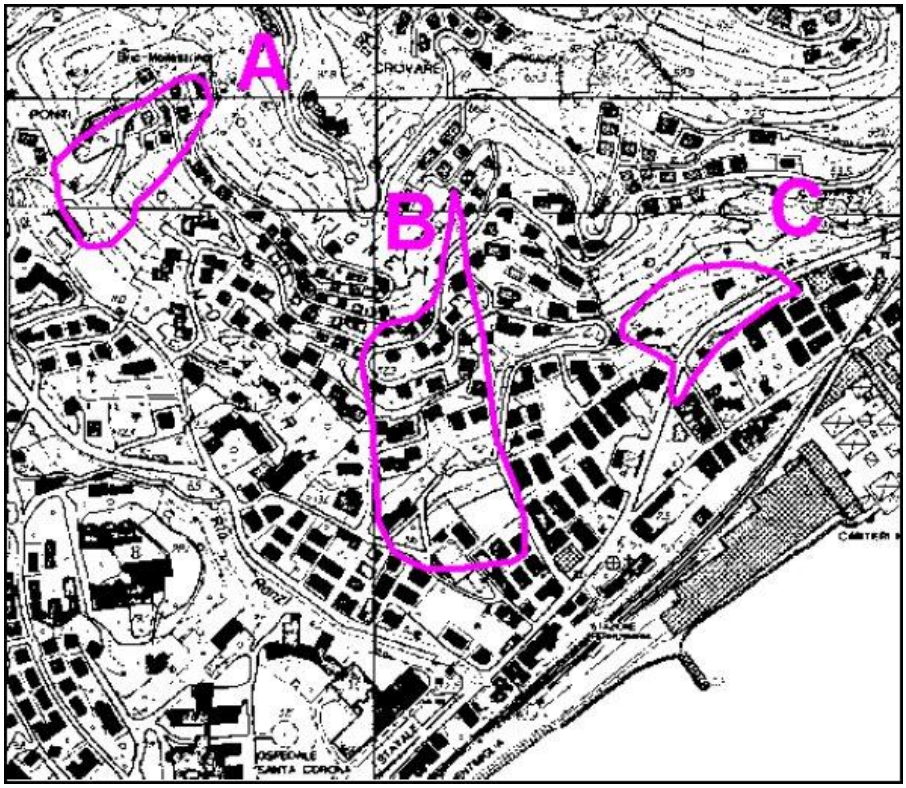
Nella Figura 3.2 è riportato lo stralcio relativo al Rio Ranzi della *"Carta delle aree inondabili"* redatta dalla Provincia di Savona nell'ambito dello studio di Valutazione del Rischio del Piano di Bacino del Nimbato.

Sulla carta sono riportate anche l'ubicazione delle sezioni di calcolo e il tratto d'asta investigato mediante le verifiche idrauliche a moto permanente per le portate di piena di 50, 200 e 500 anni.

Il tratto analizzato è quello che va da Località Vigne al ponte FF.SS. in prossimità della foce.

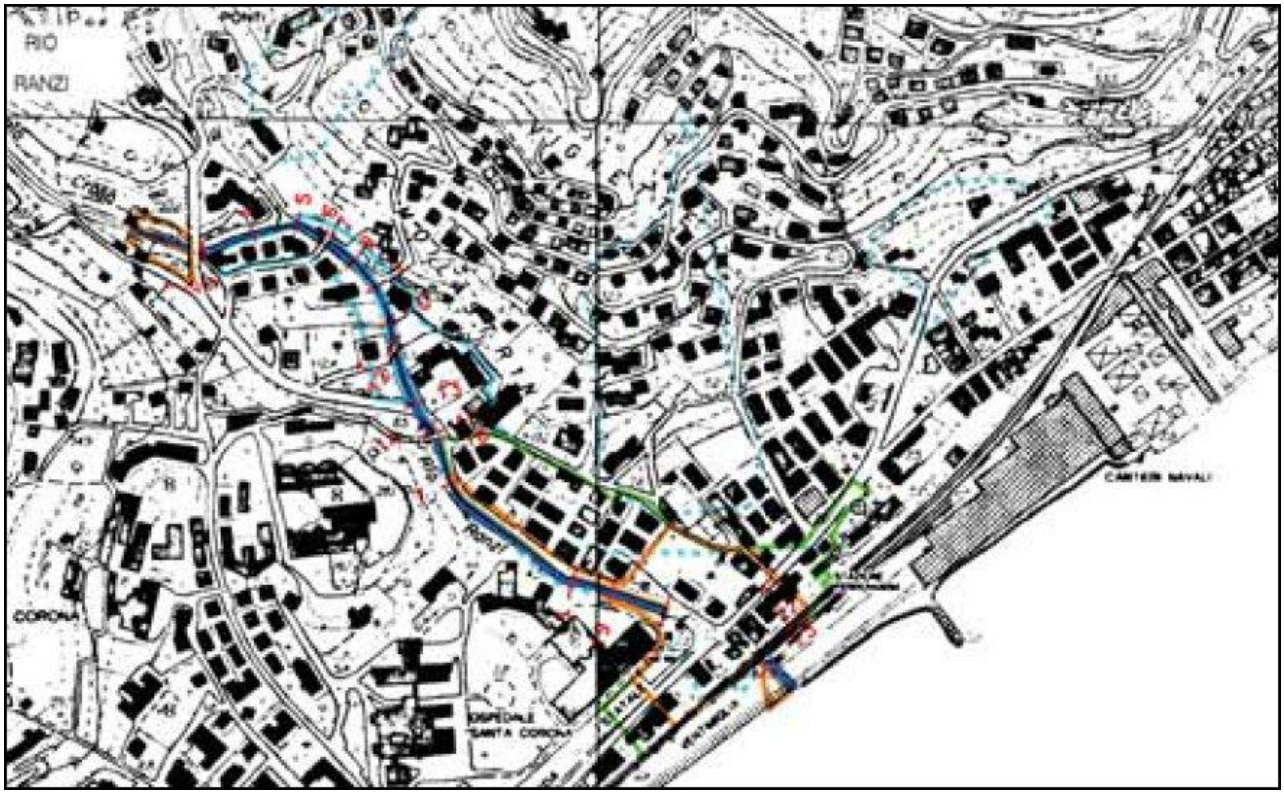
Dalla figura risulta evidente come l'area del Comune di Pietra Ligure, soprattutto il tratto in cui il Rio Ranzi costeggia Viale Riviera e il tratto tombinato di Corso 25 aprile, risulti a rischio inondazione anche per eventi con tempi di ritorno di 50 anni.

Figura 3.1 - Individuazione delle aree del bacino del Rio Ranzi "storicamente inondate"



Fonte Piano di Bacino – Relazione generale

Figura 3.2 – Carta delle Aree inondabili del Rio Ranzi





Fonte: Piano di Bacino Nimbato - Provincia di Savona – Tavola 14 scala 1:5.000

3.1 Portate massime di progetto del Rio Ranzi

La fase di verifica della documentazione tecnica relativa ai Piani 180/98 approvati con D.C.P. n. 43 del 28/10/2002, svolta a seguito del parere vincolante della Regione Liguria e dell'attuazione delle linee di pianificazione previste nel piano stesso, ha determinato la necessità di riordinare, con approvati dal Comitato Tecnico Provinciale nella seduta dell'11/09/2003, la metodologia di calcolo delle portate al colmo di piena, cui fa riferimento la Normativa di Piano, in alcuni casi specifici, come quello del Rio Ranzi, che presentavano difformità del valore di portata rispetto alla metodologia suggerita nel piano stesso.

Si riportano di seguito i valori di portata al colmo di piena approvati dal Comitato Tecnico Provinciale nella seduta dell'11/09/2003 per il Rio Ranzi.

Tabella 3.1 – Valori delle portate al colmo di piena per il Rio Ranzi (C.T.P. seduta del 11/09/2003)

Corso d'acqua	*Sezione*	*Superficie bacino [Km^2]*	*Classe bacino*	*Long. Gradi Sessagesimali*	*Cq*	*Portata [m^3 s^{-1}]*		
						T=50 anni	*T=200 anni*	*T=500 anni*
Rio Ranzi	1	2.4	D	8°15'	3.88	40	55	75

3.2 Condizioni al contorno per le verifiche idrauliche

I valori di riferimento del parametro di scabrezza Ks proposti dalla Regione Liguria sono riportati in Normativa di Piano.

Nella tabella seguente si riportano i valori assegnati del parametro di scabrezza e i programmi di modellazione utilizzati per i tratti d'alveo indagati nelle verifiche idrauliche dello studio di Valutazione del Rischio del Piano di Bacino del Nimbato della Provincia di Savona aggiornato con D.G.P. n 245 del 14/11/2008. Dalla tabella si evince che il modello di calcolo adottato per il Rio Ranzi è il Mike11.

Le condizioni al contorno assunte nelle verifiche idrauliche dello studio di Valutazione del Rischio per il livello idrico del Rio Ranzi sono quelle ottenute attraverso una scala di deflusso in moto uniforme.

Tabella 3.2 – Parametri di scabrezza assegnati e i programmi di modellazione utilizzati per i tratti d'alveo indagati nel Piano di Bacino del Nimbato

Corso d'acqua	Sezioni	Descrizione del tratto	Coefficiente di scabrezza K_s [$m^{1/3}s$]	Programma di modellazione idraulica utilizzato
T. Nimbalto	52 - 1	Da località Bulaxe alla foce (giugno 2003)		HEC-RAS
Rio Berbena	5.2 - 1	Da Borgo Castello alla foce (marzo 2001)		HEC-RAS
Rio Ciappe	3 - 15	Da località Pinè alla foce (giugno 2002)	30	MIKE 11
Rio Ranzi	1 - 23	Da località Vigne alla foce (giugno 2002)	25	MIKE 11
Rio Casazza	1 - 34	Dalla foce alla località Madonna degli Angeli (marzo 2006)	35 - 40	HEC-RAS
Rio Castellaro	1 - 18	Dalla confluenza con il Rio Casazza alla località Madonna degli Angeli (marzo 2006)	35 - 40	HEC-RAS

3.3 Sezioni d'alveo e degli attraversamenti

Nelle figure seguenti sono riportate le sezioni di calcolo adottate nella Valutazione del Rischio del Piano di Bacino del Nimbato della Provincia di Savona e nel presente studio.

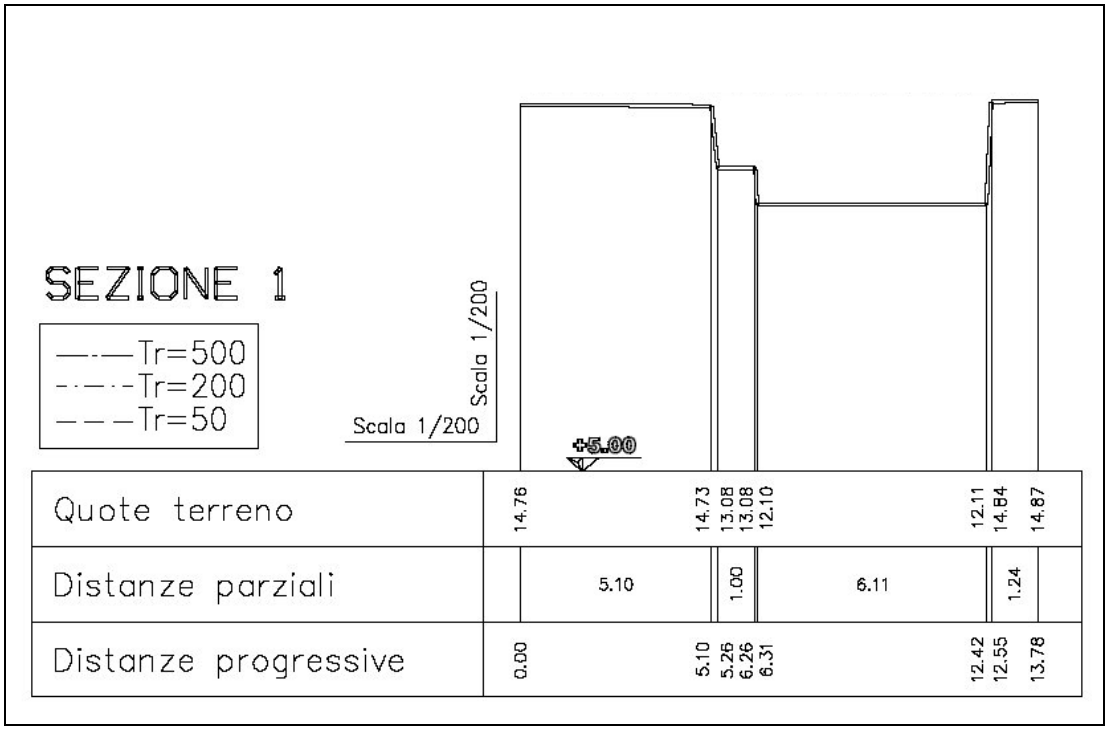
Nello studio di Valutazione del Rischio del Piano di Bacino è stata esaminata in dettaglio la capacità di smaltimento delle opere in alveo al fine di individuare eventuali criticità localizzate e di determinare se siano causa di condizioni di rischio, determinandone la portata massima transitante senza esondazioni. Nelle tabella seguente vengono riportate per le opere edificate in alveo (attraversamenti con e senza pile in alveo, tombinature), indicate con il numero della sezione, il minor tempo di ritorno per cui l'opera non risulta verificata. Si è considerata l'opera non verificata se il franco è risultato inferiore a 50 cm. Nelle figure successive sono riportate le sezioni dell'alveo e degli attraversamenti considerati nello studio di Valutazione del Rischio del Piano di Bacino del Nimbato.

Tabella 3.3 –Capacità di smaltimento della portata da parte delle opere in alveo

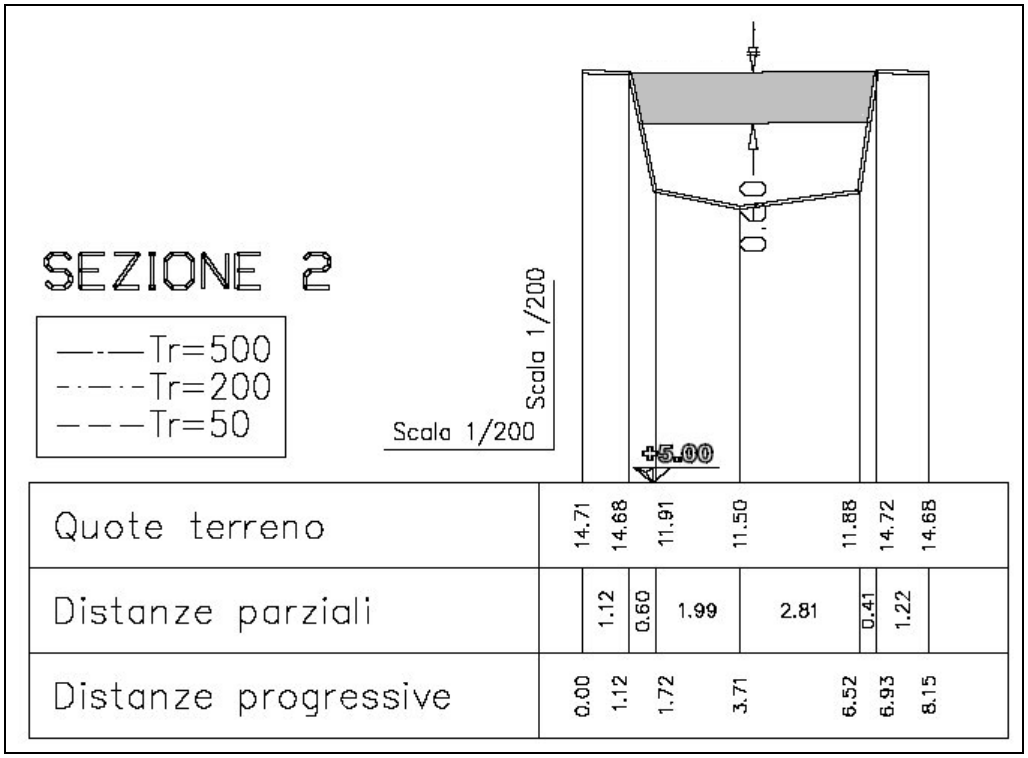
Rio Ranzi		
N.°Sezione	**Tipologia dell'opera**	**Tempo di ritorno**
2	Attraversamento senza pile	T < 50
6	Attraversamento	T < 50
11	Attraversamento	T < 200
12	Attraversamento	T < 50
15	Attraversamento	

Figura 3.3 – Sezioni Rio Ranzi

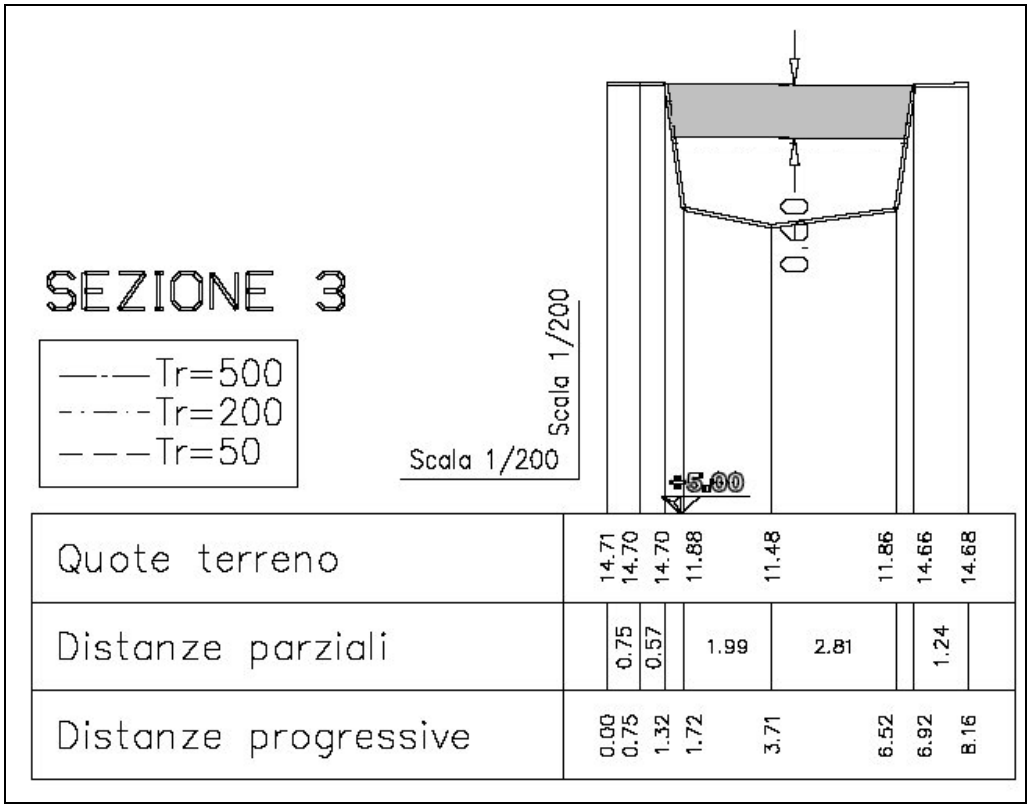
Sezione n 1



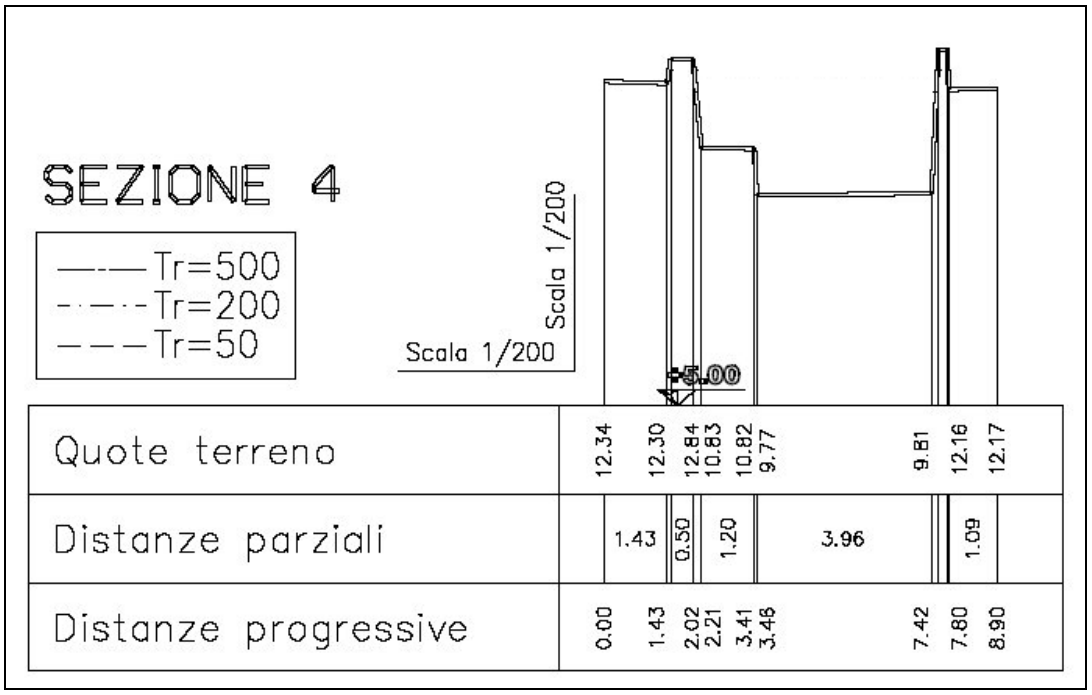
Sezione n 2 di monte attraversamento Viale Riviera n 1



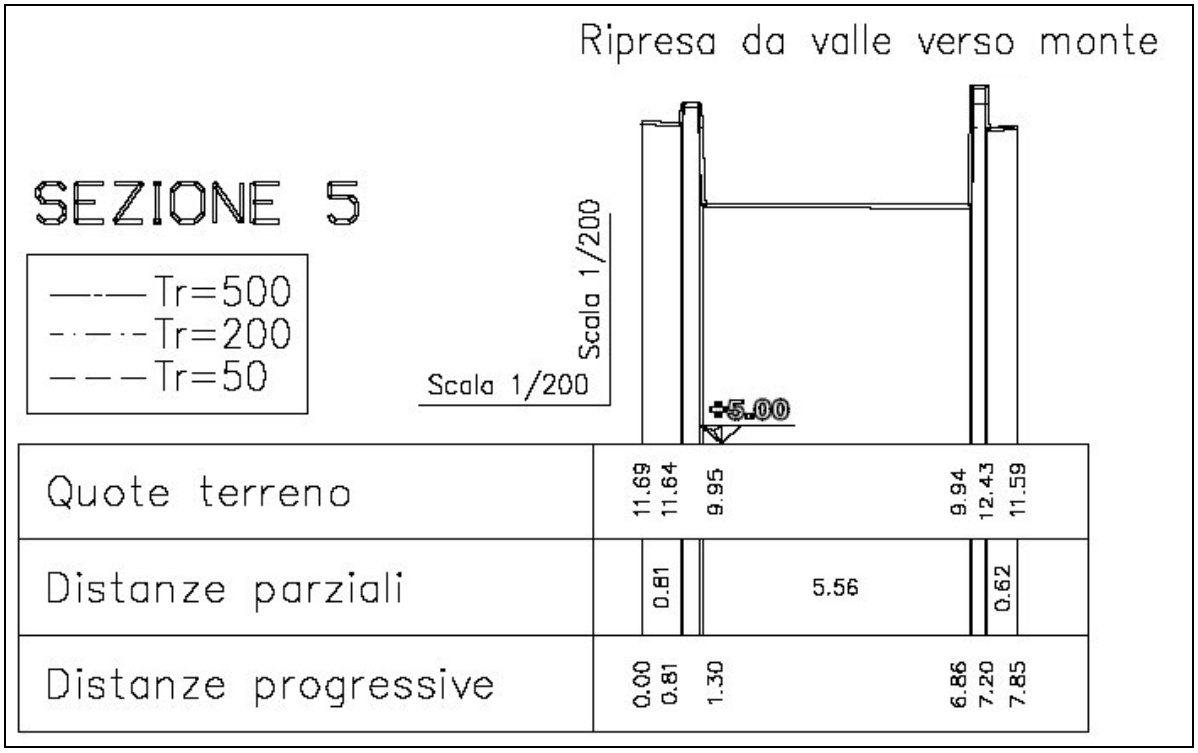
Sezione n 3 di valle attraversamento Viale Riviera n 1



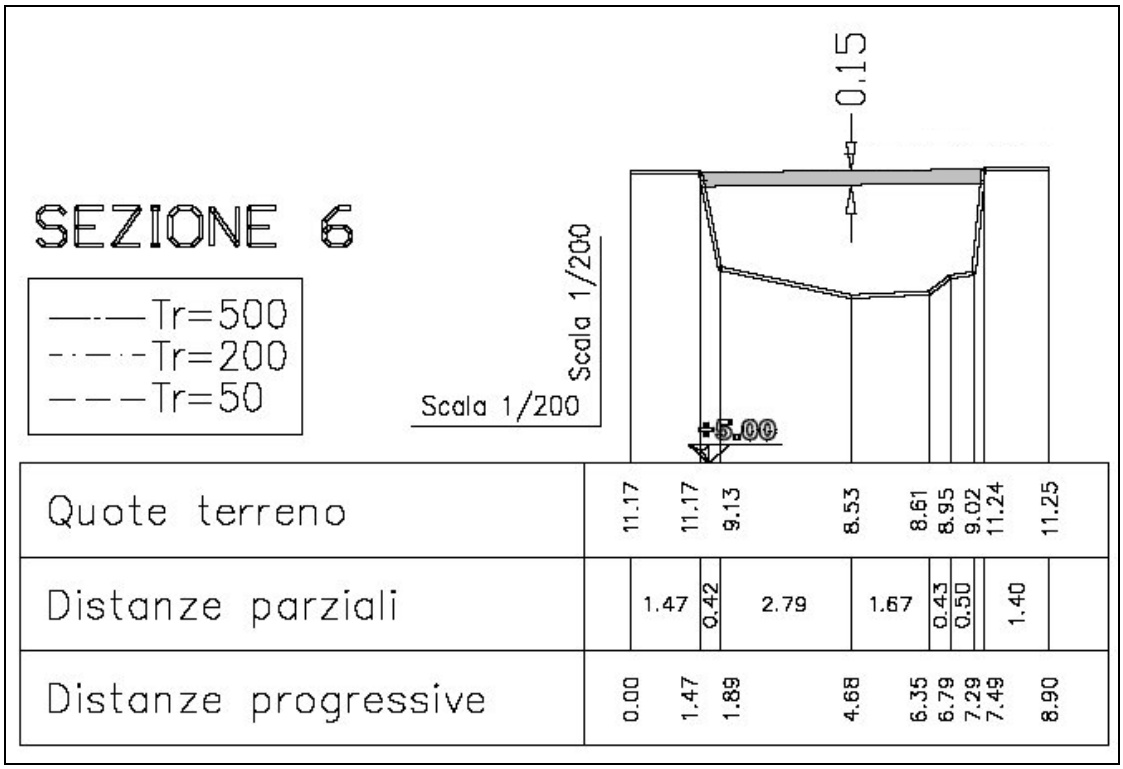
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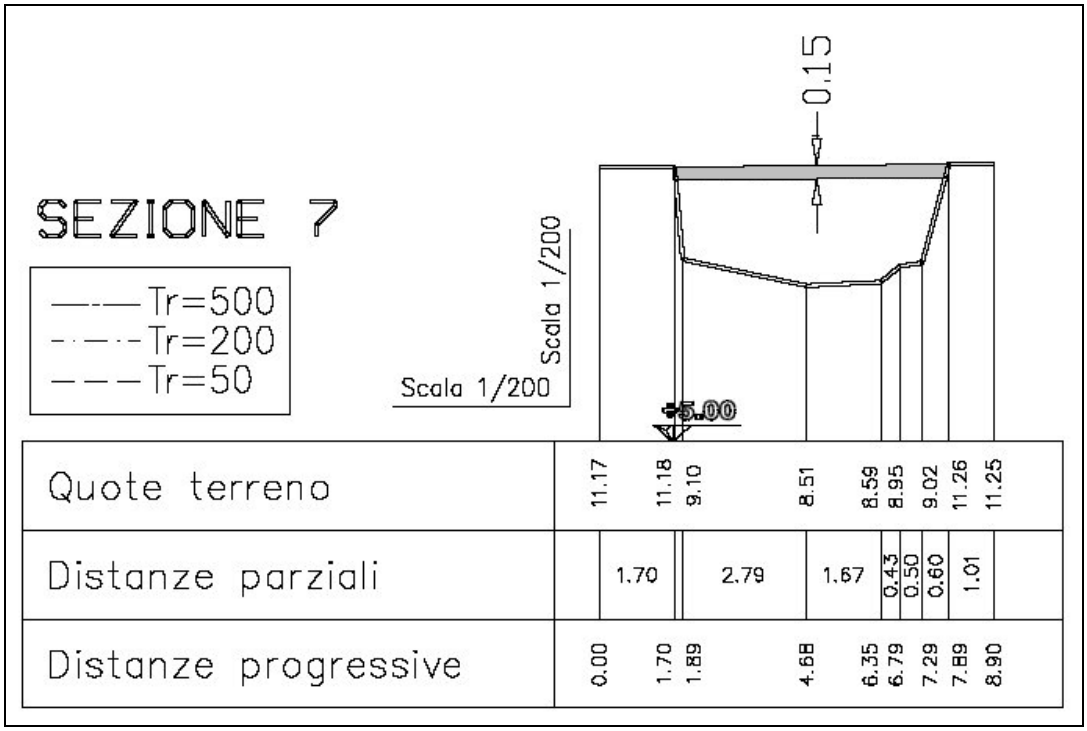
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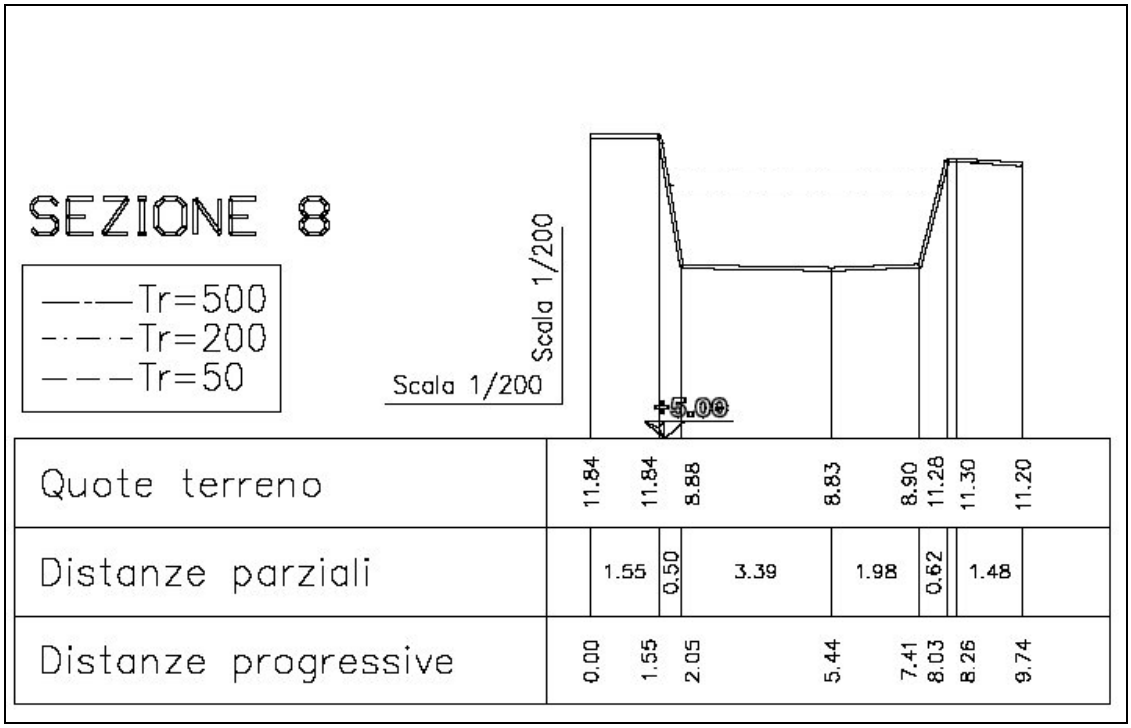
Sezione n 6 di monte attraversamento Via Moilastini



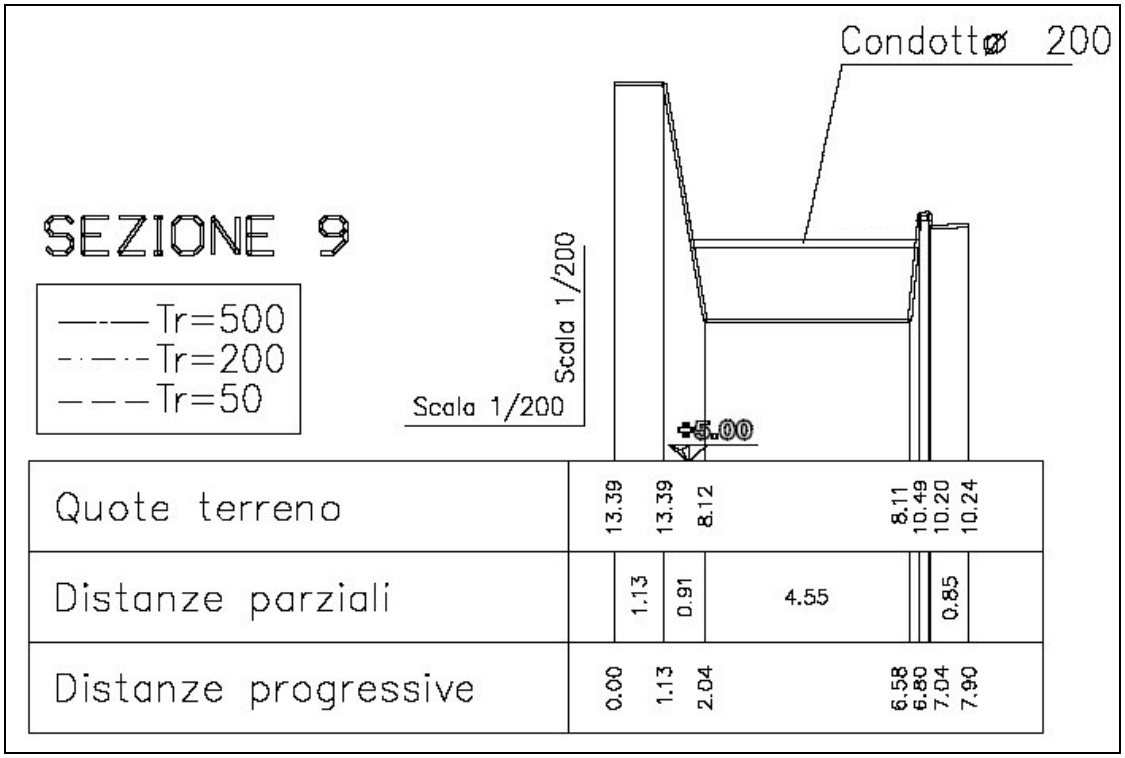
Sezione n 7 di valle attraversamento Via Moilastini



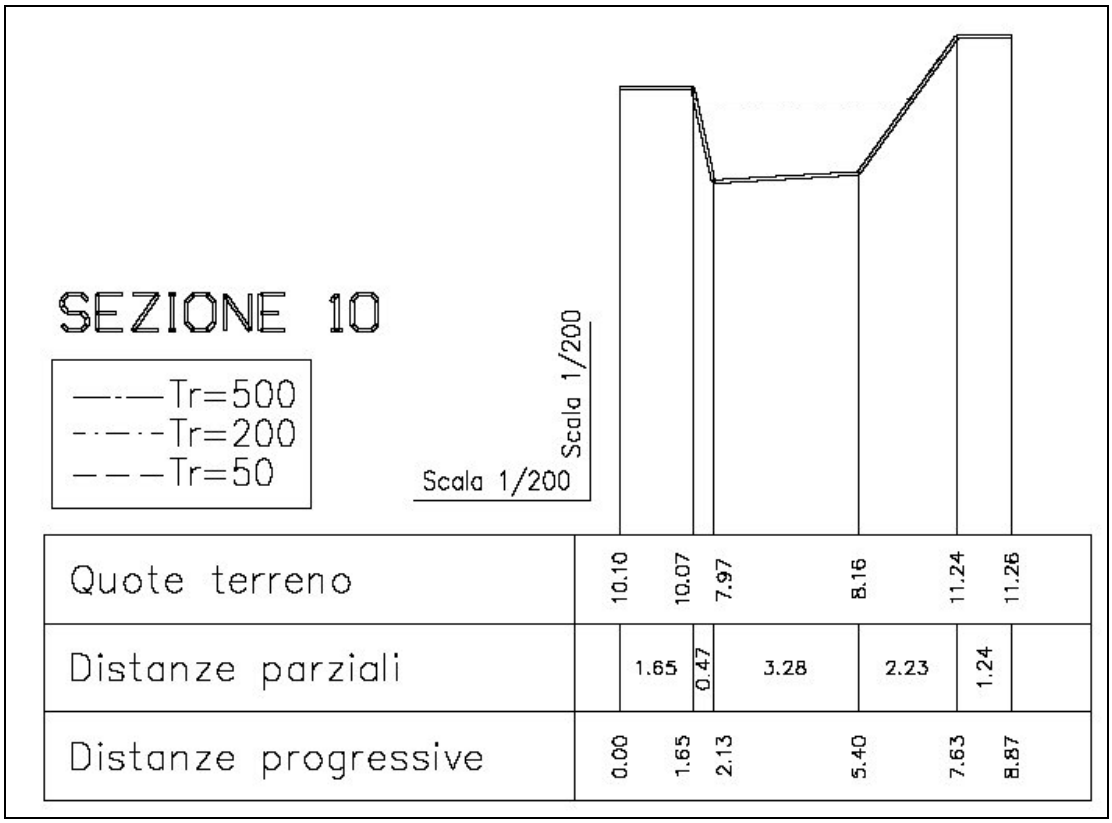
Sezione n 8



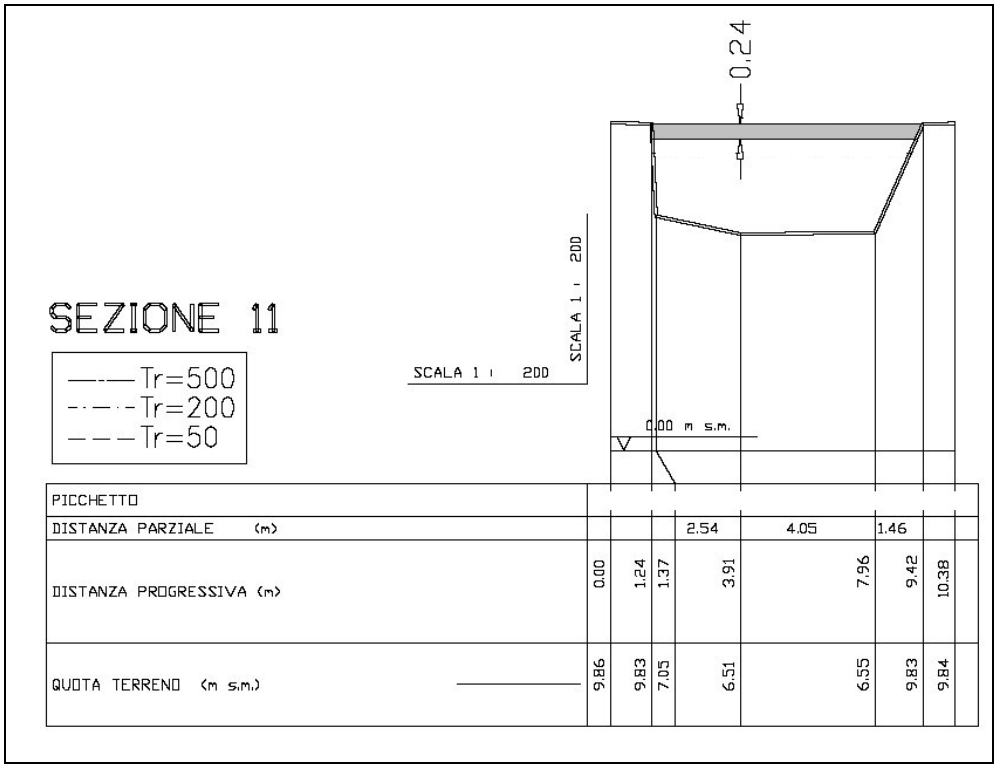
Sezione n 9



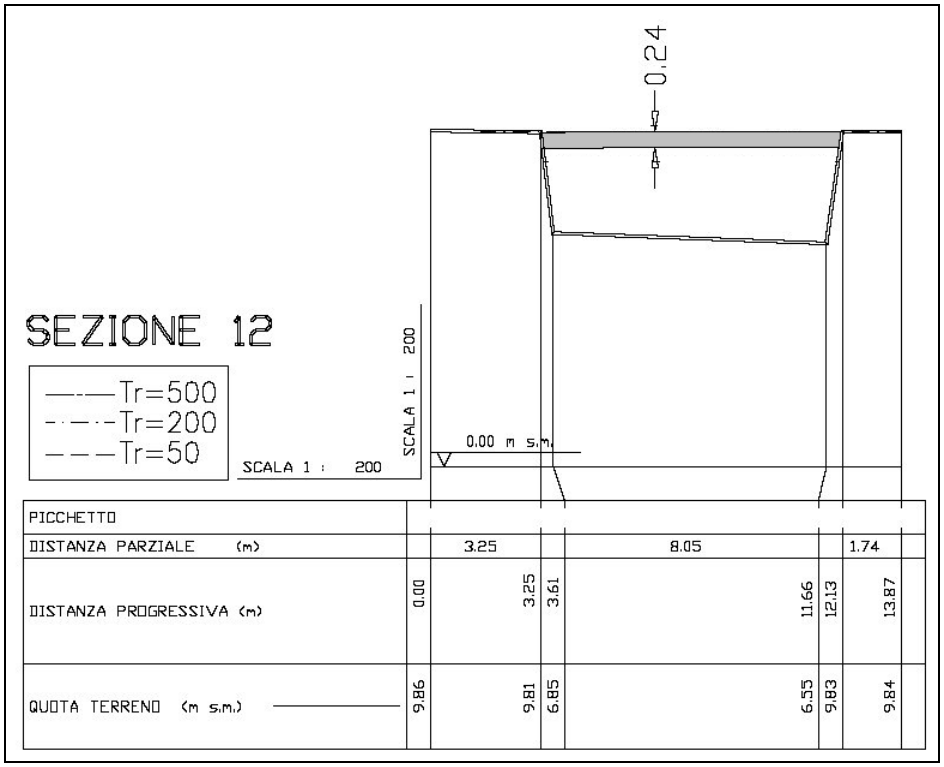
Sezione n 10



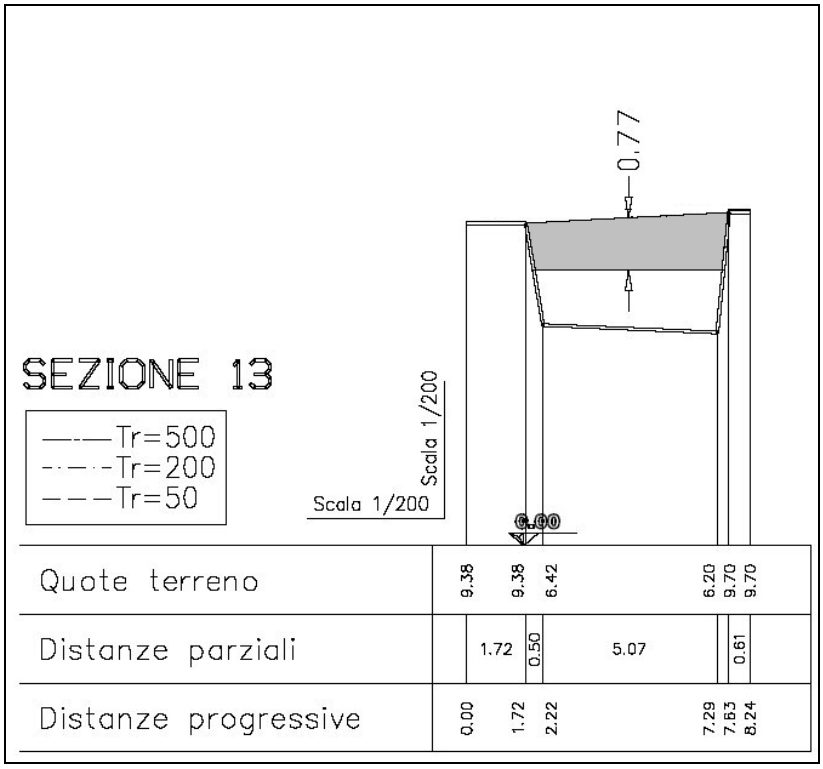
Sezione n 11 di monte attraversamento Strada Privata



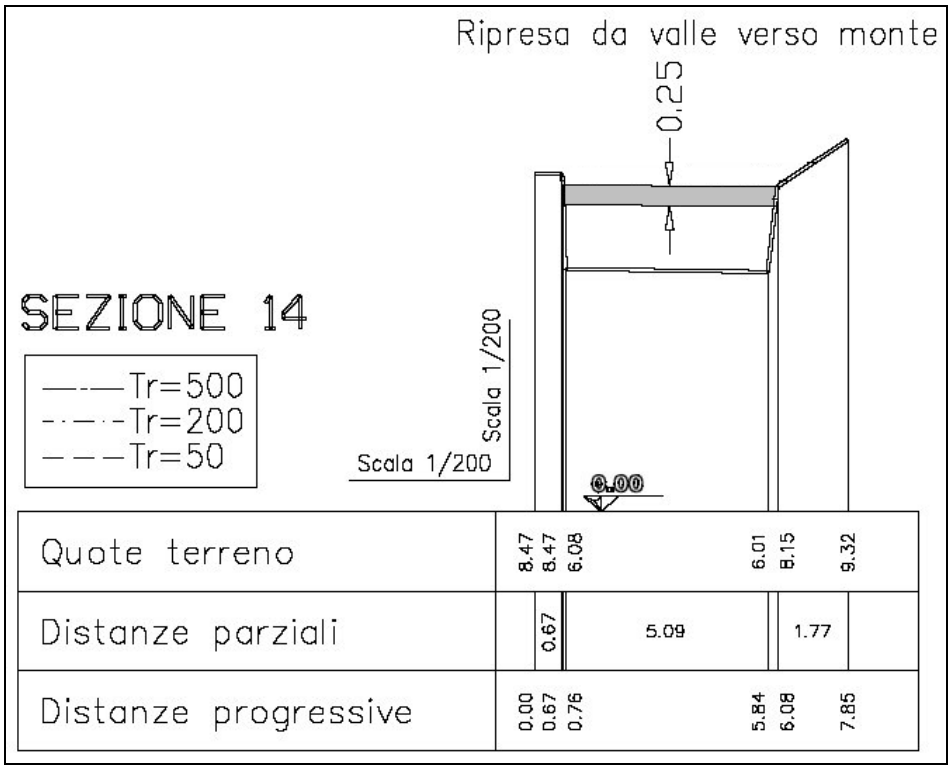
Sezione n 12 di valle attraversamento Strada Privata



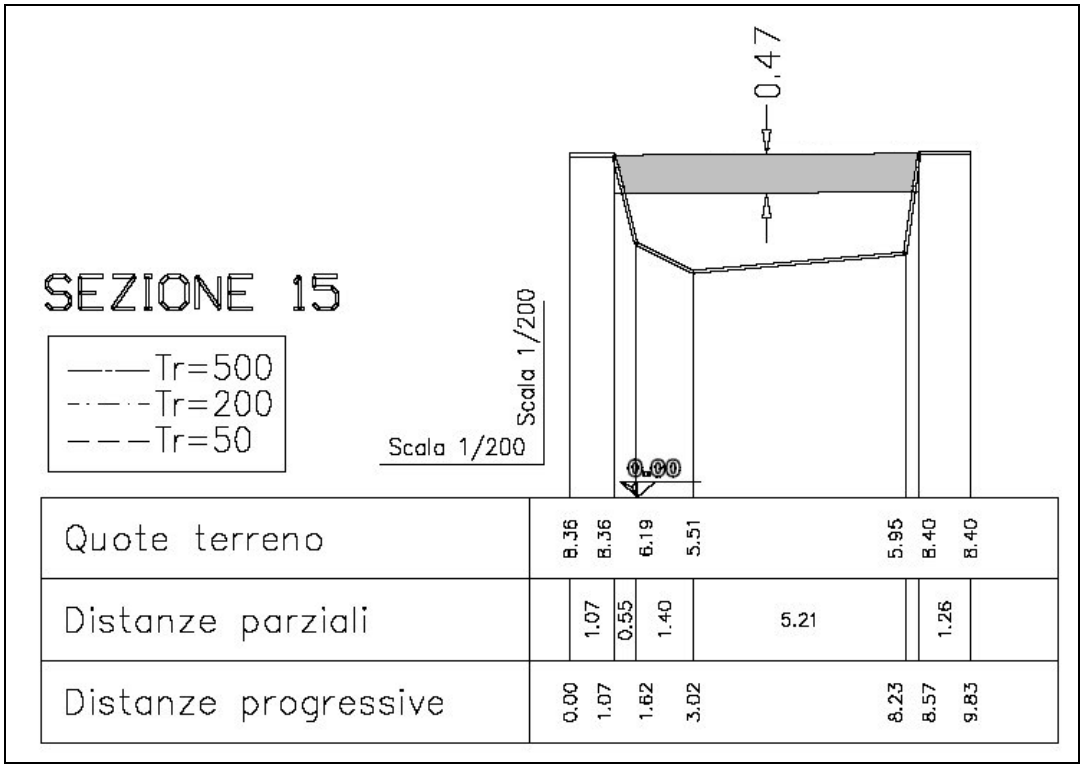
Sezione n 13 di monte attraversamento Viale Riviera n 2



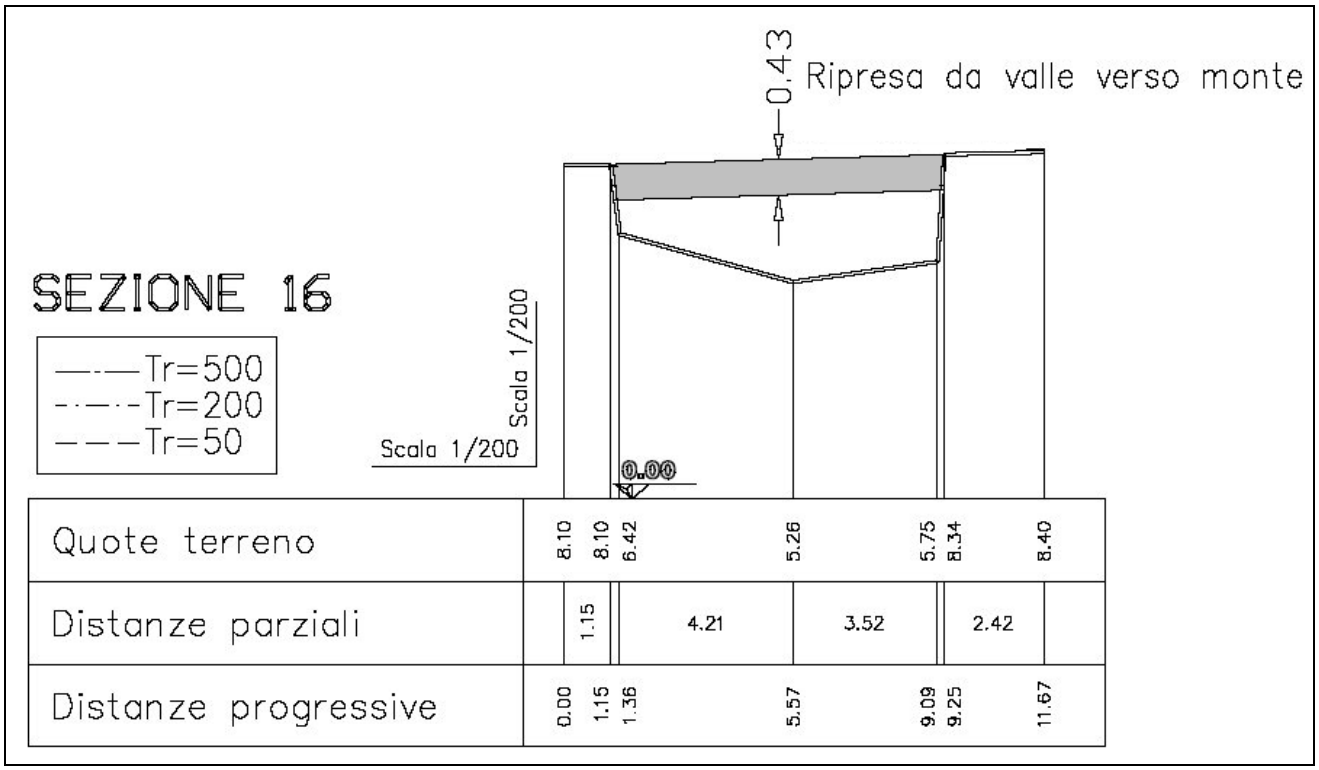
Sezione n 14 di valle attraversamento strada laterale Viale Riviera



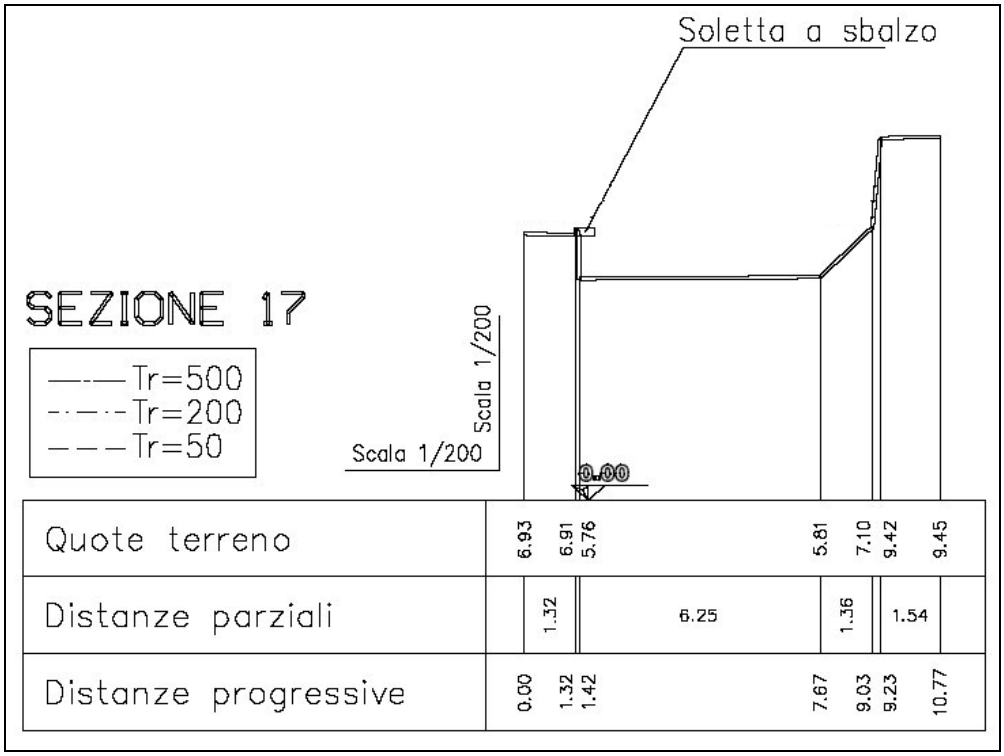
Sezione n 15 di monte attraversamento Via Guglielmo Oberdam



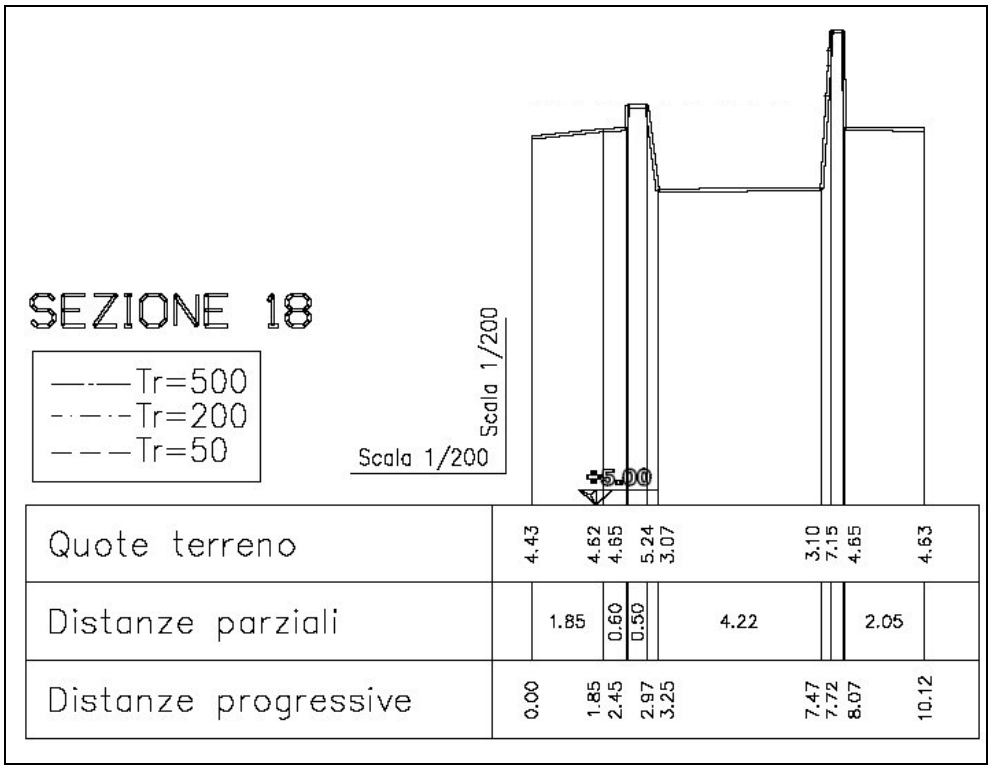
Sezione n 16 di valle attraversamento Via Guglielmo Oberdam



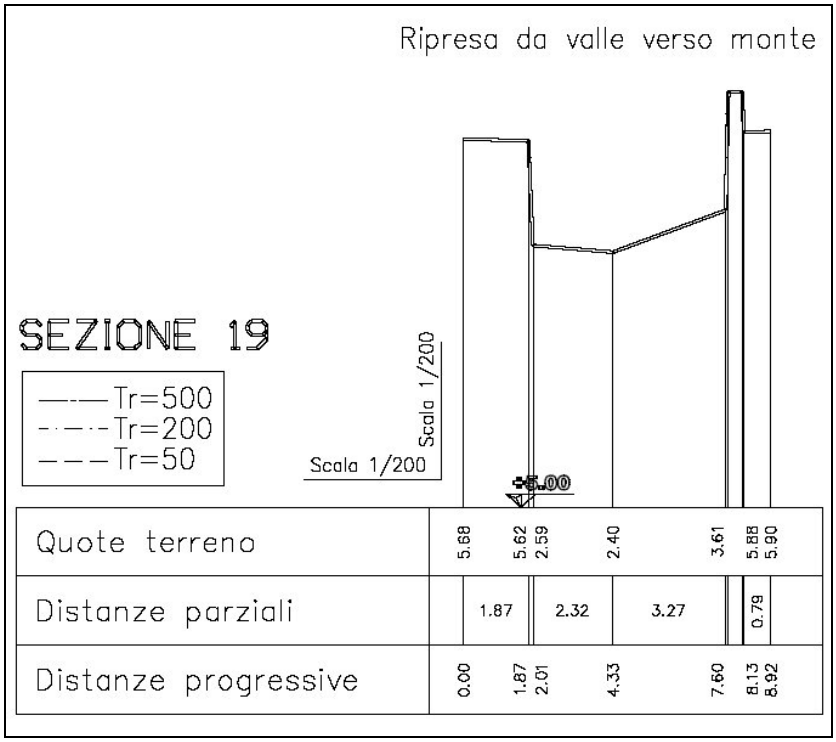
Sezione n 17



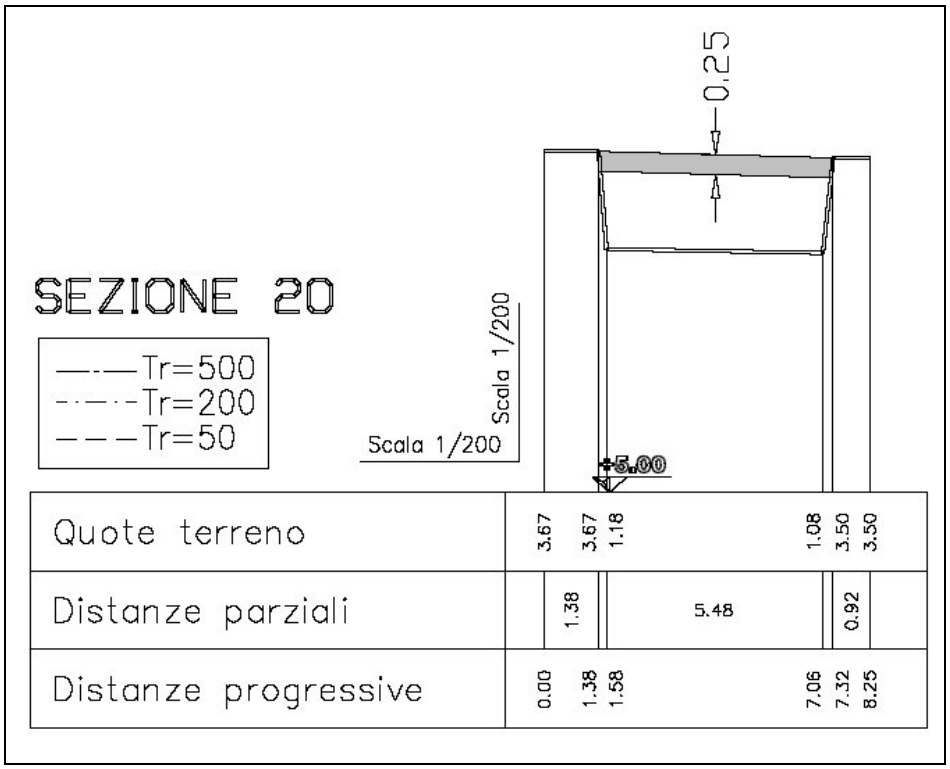
Sezione n 18



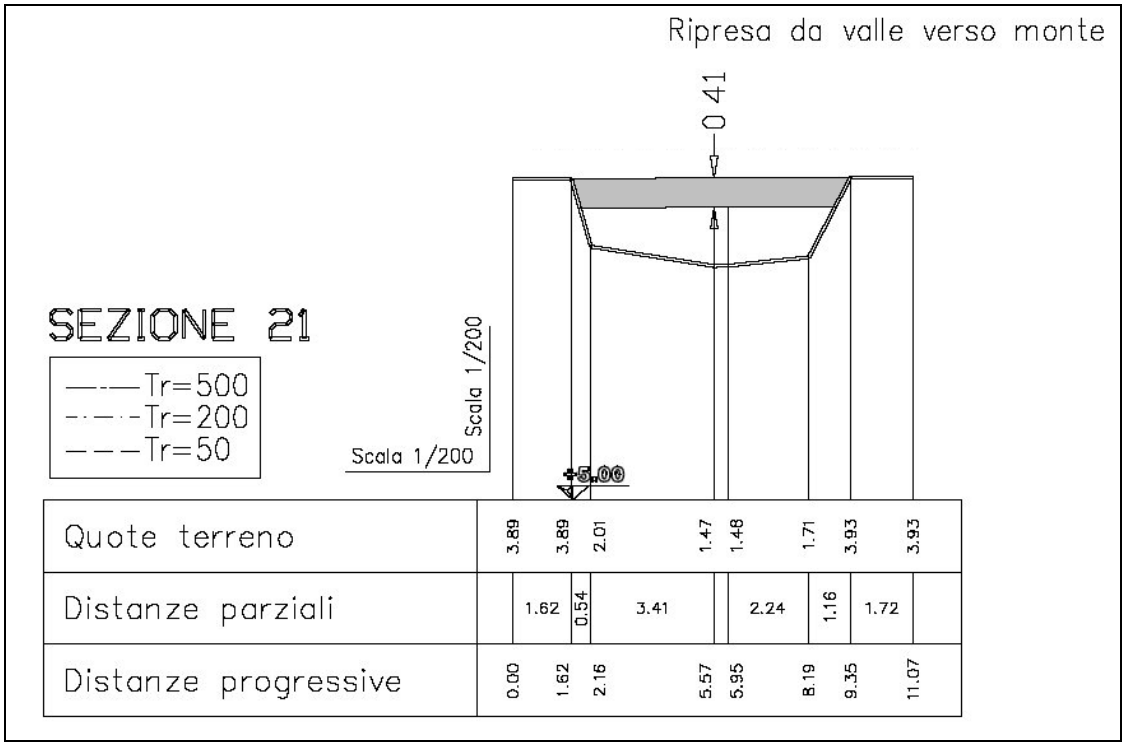
Sezione n 19



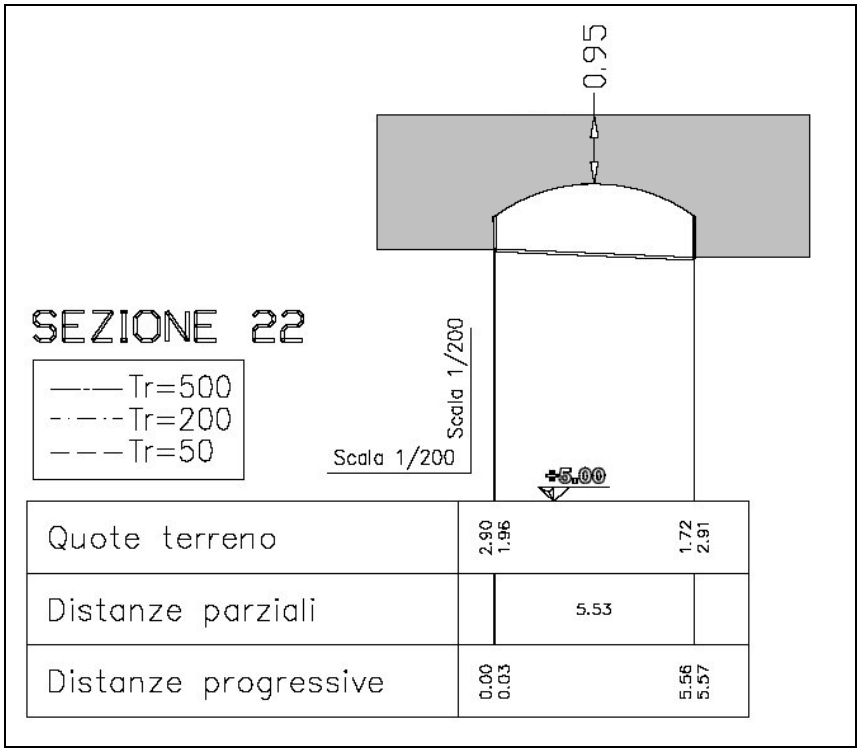
Sezione n 20 di monte attraversamento Rotonda Corso 25 Aprile



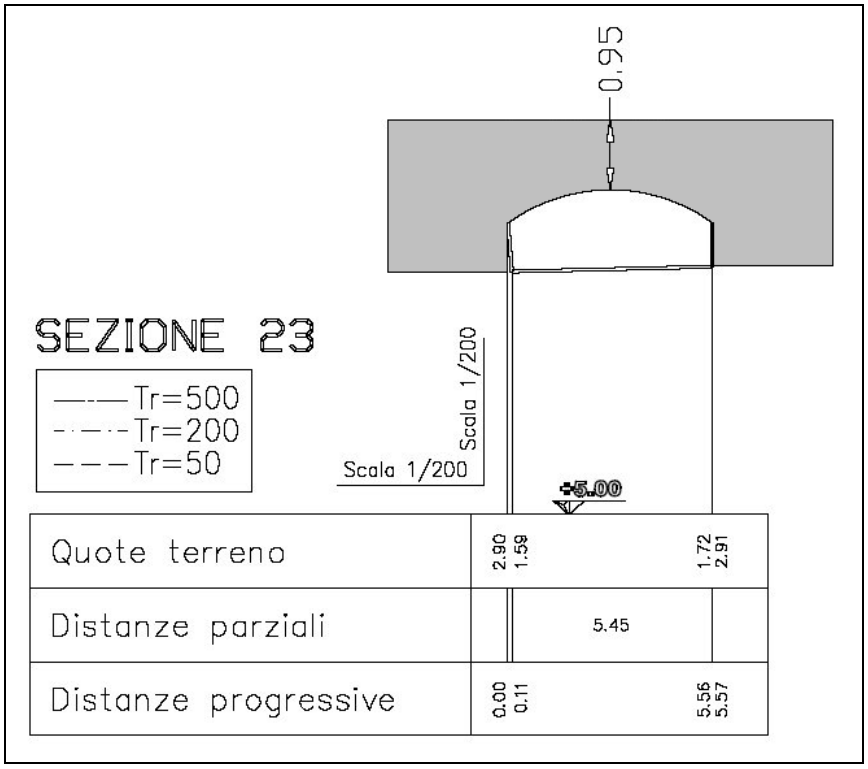
Sezione n 21 di valle attraversamento Rotonda Corso 25 Aprile



Sezione n 22 di monte attraversamento FFSS



Sezione n 23 di valle attraversamento FFSS



4. ANALISI A MOTO PERMANENTE

4.1 Metodologia e schematizzazioni utilizzate

Nel presente studio, l'analisi a moto permanente è stata eseguita utilizzando il modello monodimensionale HECRAS sviluppato dal Hydraulic Engineering Center del US Army Corps of Enginneers, oggi diffusamente utilizzato.

Per le formulazioni utilizzate si rimanda al manuale specialistico di HECRAS (www.hec.usace.army.mil/ software/ hec-ras).

Il modello di calcolo utilizzato è in grado di determinare il profilo idrico a moto permanente in corrente lenta e veloce anche in presenza di ponti e tombini.

Le sezioni di calcolo utilizzate sono quelle dello studio di Valutazione del Rischio del Piano di Bacino del Nimbato redatto dalla Provincia di Savona riportate nel paragrafo precedente.

Per estendere il modello fino a mare sono state introdotte le sezioni d'alveo lungo la spiaggia.

In particolare è stata inserita una sezione 10 m a valle dell'attraversamento ferroviario. Tale sezione, posta al limite superiore della spiaggia, si considera inalterata allorché la spiaggia assumi la nuova configurazione in presenza delle opere portuali in progetto.

E' stata inoltre inserita una sezione in corrispondenza della riva. Tale sezione nelle condizioni post opera è stata traslata di circa 45 m verso il mare, con conseguente riduzione della pendenza dell'alveo del tratto terminale della spiaggia. Tale pendenza, pari al 7,6% nelle condizioni ante operam, è stata ridotta a valori del 2,1% nelle condizioni post opera.

La sezione del Rio Ranzi in corrispondenza della spiaggia risulta approssimabile ad una sezione trapezia avente una larghezza in sommità pari a quella dell'attraversamento del ponte FF.SS., incisa di circa 73 cm rispetto alla spiaggia circostante e pendenza delle scarpate di circa 1,5. Le sezioni introdotte lungo la spiaggia sono riportate in Figura 4.1.

Le verifiche per tempi di ritorno di 50, 200 e 500 anni sono state condotte con i valori di portata al colmo di piena del Rio Ranzi approvati dal Comitato Tecnico Provinciale nella seduta dell'11/09/2003 e riportate in precedenza.

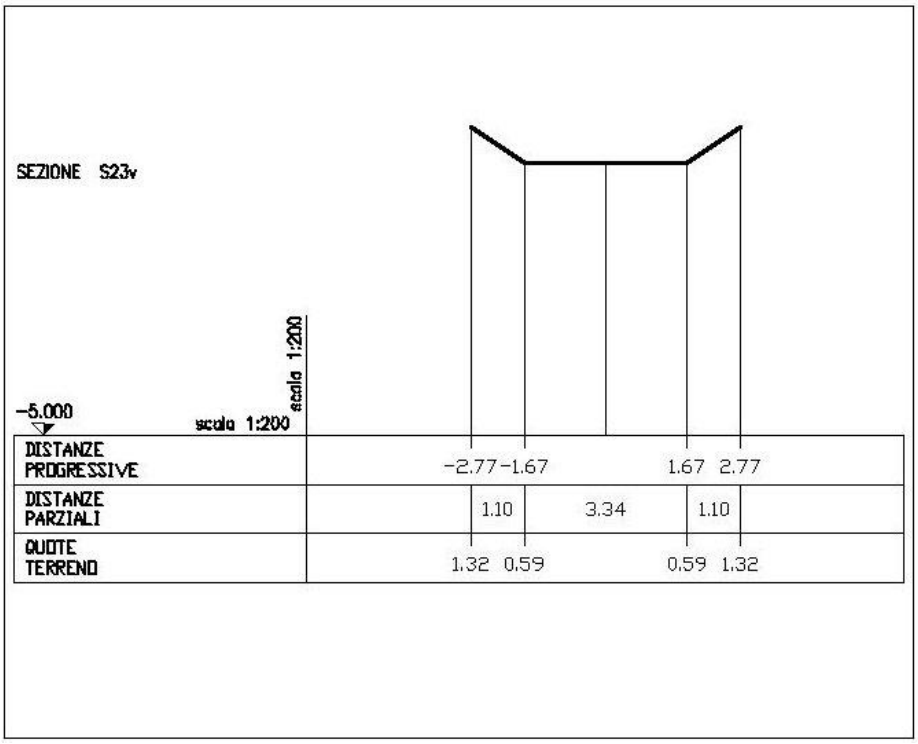
Per le verifiche ante e post opera sono state imposte le condizione al contorno dei livelli idrici di monte ottenute attraverso una scala di deflusso in moto uniforme.

Per quanto riguarda le la condizione al contorno dei livelli idrici di valle è stato imposto un livello idrico del mare in condizioni di tempesta di 0,85m, pari alla somma del sovralzo meteorologico ed astronomico di 0,45 m e del sovralzo d'onda, stimato di circa 0,40 m su spiagge con pendenza dell'ordine del 7% per altezze d'onda significativa al largo di. 7,2 m.

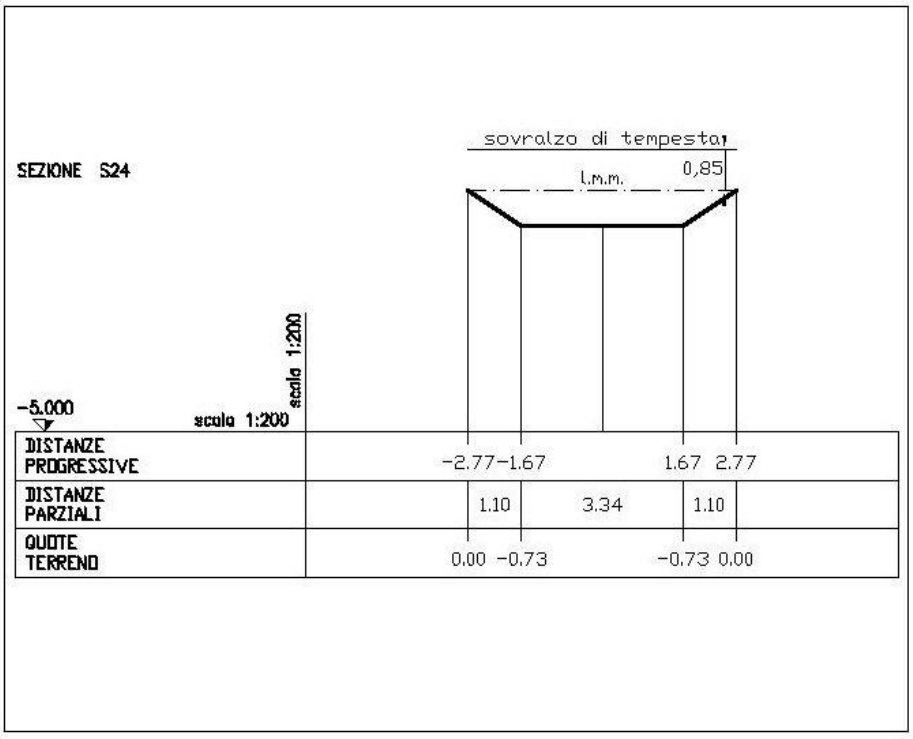
I valori del parametro di scabrezza Ks utilizzati sono quelli proposti dalla Regione Liguria per il Rio Ranzi riportati in Normativa di Piano, pari a 25 $m^{1/3}$ s.

Figura 4.1 – Sezioni del Rio Ranzi lungo la spiaggia

Sezione n 23v



Sezione n 24 in corrispondenza della riva



4.2 Verifiche ante operam

Lo schema planimetrico utilizzato per le verifiche ante operam è riportato in Figura 4.2, mentre in Figura 4.3 è riportato il modello tridimensionale. Nell'ultima figura i livelli idrici sono quelli ottenuti per le portate di piena con tempo di ritorno di 200 anni.

Il profilo idraulico ottenuto nelle condizioni ante operam per le portate con tempo di ritorno di 50, 200 e 500 anni è riportato in forma grafica rispettivamente nella Figura 4.4, Figura 4.5 e Figura 4.6 ed in forma numerica in Tabella 4.1, Tabella 4.2 e Tabella 4.3.

Dall'esame delle figure e delle tabelle sopra indicate si evince che:

- per le portate con tempo di ritorno di 50, 200 e 500 anni il deflusso avviene: in corrente veloce a valle del ponte dell'attraversamento di Viale Riviera n 1, mentre a monte dello stesso attraversamento il deflusso avviene in corrente lenta; tale attraversamento pertanto determina la disconnessione idraulica del tratto vallivo del Rio Ranzi con quello montano;
- per le portate con tempo di ritorno di 50, 200 e 500 anni si determina la formazione di un risalto idraulico a valle del ponte dell'attraversamento di Viale Riviera n 1 e a monte del ponte della strada privata posto prima dell'attraversamento n 2 di Viale Riviera;
- per le portate con tempo di ritorno di 50, 200 e 500 anni il deflusso avviene: in corrente veloce a valle dell'attraversamento del ponte delle FF.SS., mentre a monte dello stesso attraversamento il deflusso avviene in corrente lenta; tale attraversamento pertanto determina la disconnessione idraulica del tratto vallivo del Rio Ranzi che scorre in corrispondenza dell'abitato di Pietra Ligure con quello terminale che scorre lungo la spiaggia.

Dall'esame delle figure e delle tabelle sopra riportate si evince inoltre che gli attraversamenti stradali presenti lungo il tratto vallivo del Rio Ranzi che presentano sezioni sufficienti al deflusso delle portate sono:

- per le portate con tempo di ritorno di 50 anni solamente quelli di Viale Riviera n 1 e n 2 e quello della strada privata a monte dell'attraversamento n 2 di Viale Riviera;

- per le portate con tempo di ritorno di 200 anni solamente quelli di Viale Riviera n 1 e n 2, ma con funzionamento a sezione piena.

Per le portate con tempo di ritorno di 500 anni nessun attraversamento stradale presenterebbe sezioni sufficienti al deflusso delle portate di piena.

In Figura 4.7 sono riportate le sezioni di calcolo con i livelli idrici calcolati nelle condizioni ante operam per tempi di ritorno di 200 anni.

Nelle sezioni 23v e 24 in favore di sicurezza si è ipotizzato che lungo la spiaggia la larghezza della sezione che concorre al deflusso delle portate sia pari a quella dell'attraversamento ferroviario. In realtà lungo la spiaggia in corrispondenza degli eventi di piena si dovrebbe verificare un'espansione laterale della vena fluida con conseguente riduzione dell'altezza liquida.

Figura 4.2 – Rio Ranzi - Planimetria sezioni di calcolo - condizione ante operam

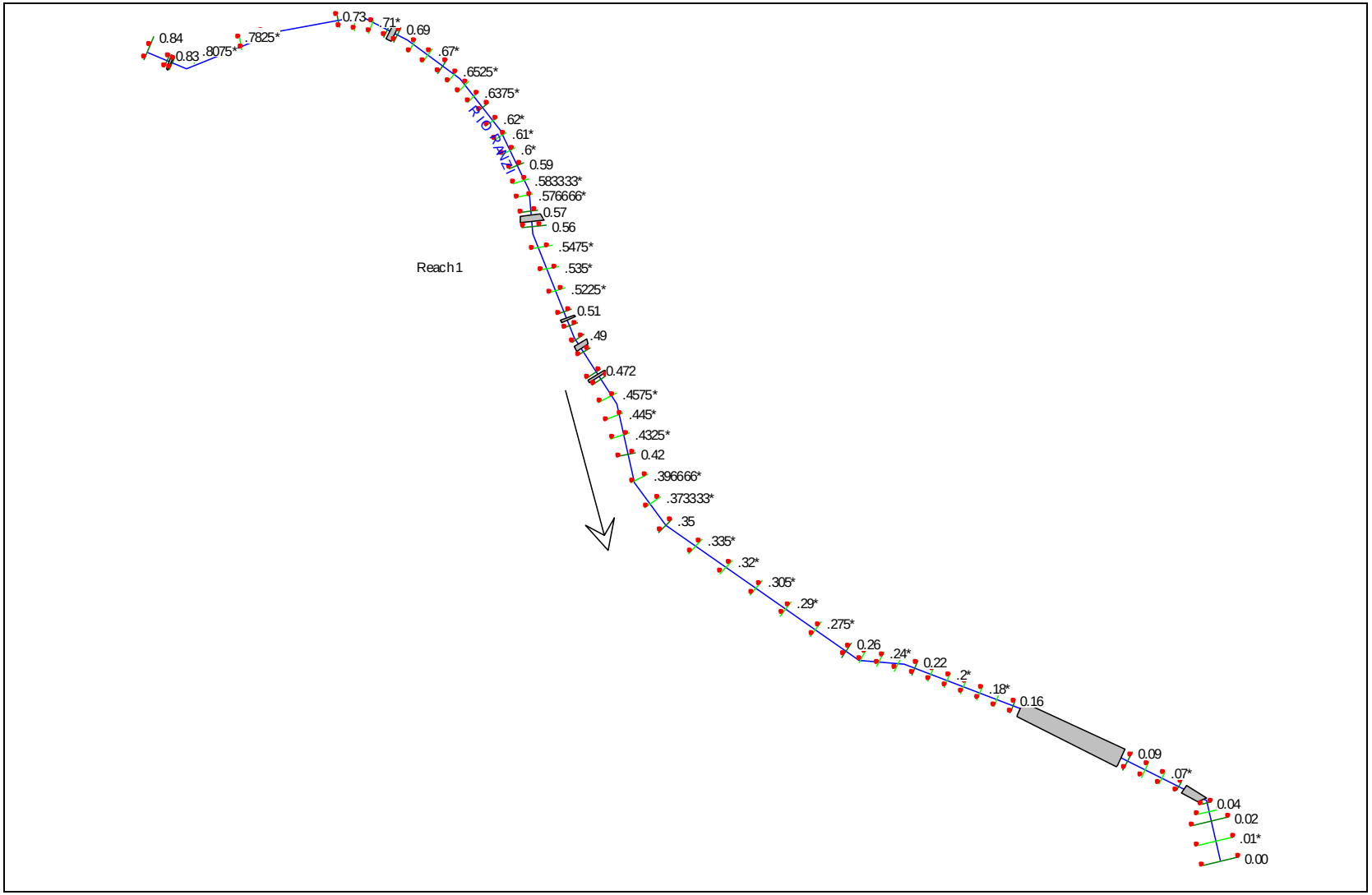


Figura 4.3 – Rio Ranzi - modello 3D condizione ante operam

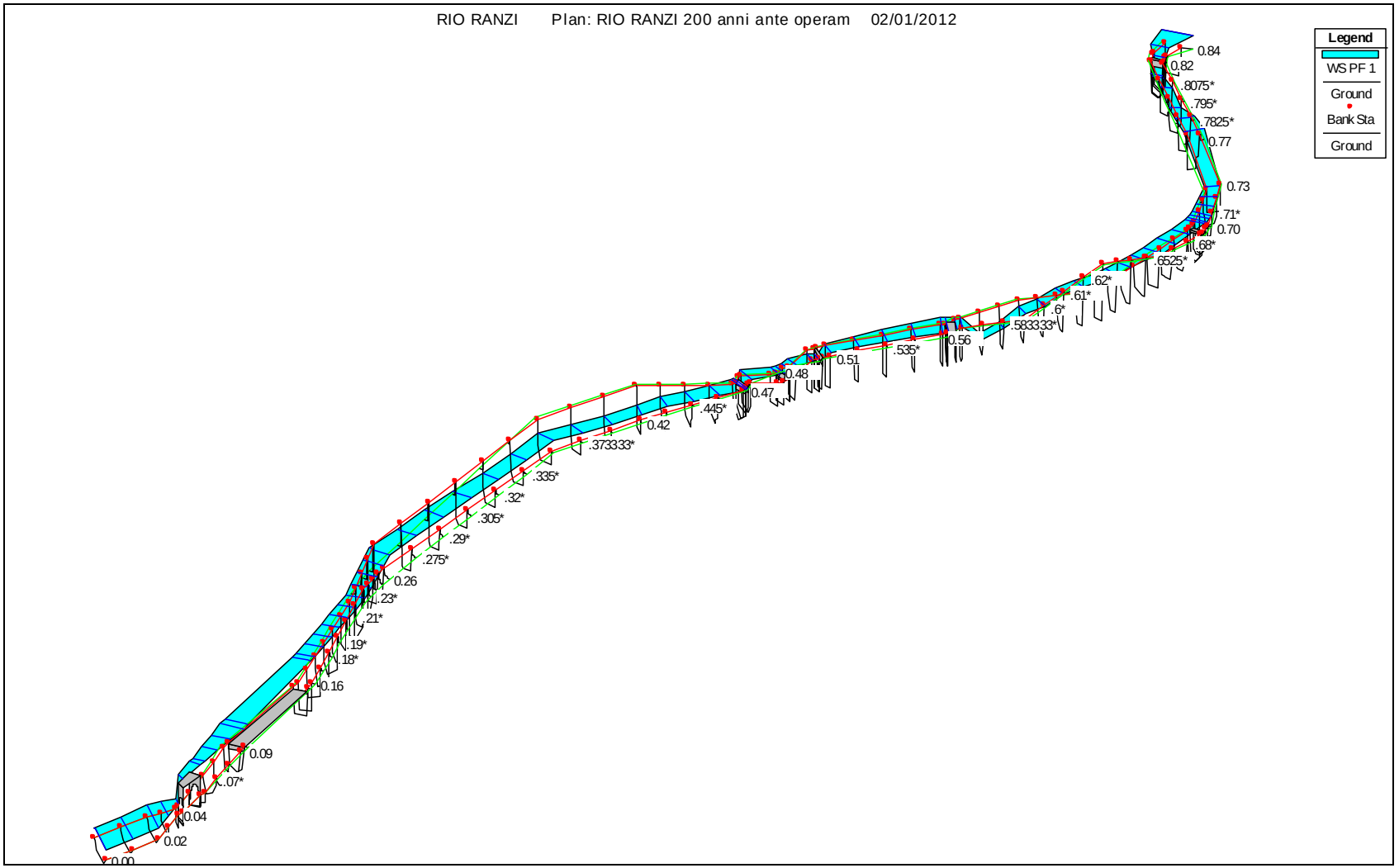


Figura 4.4 – Rio Ranzi – Profilo a moto permanente Tr=50 anni - condizione ante operam

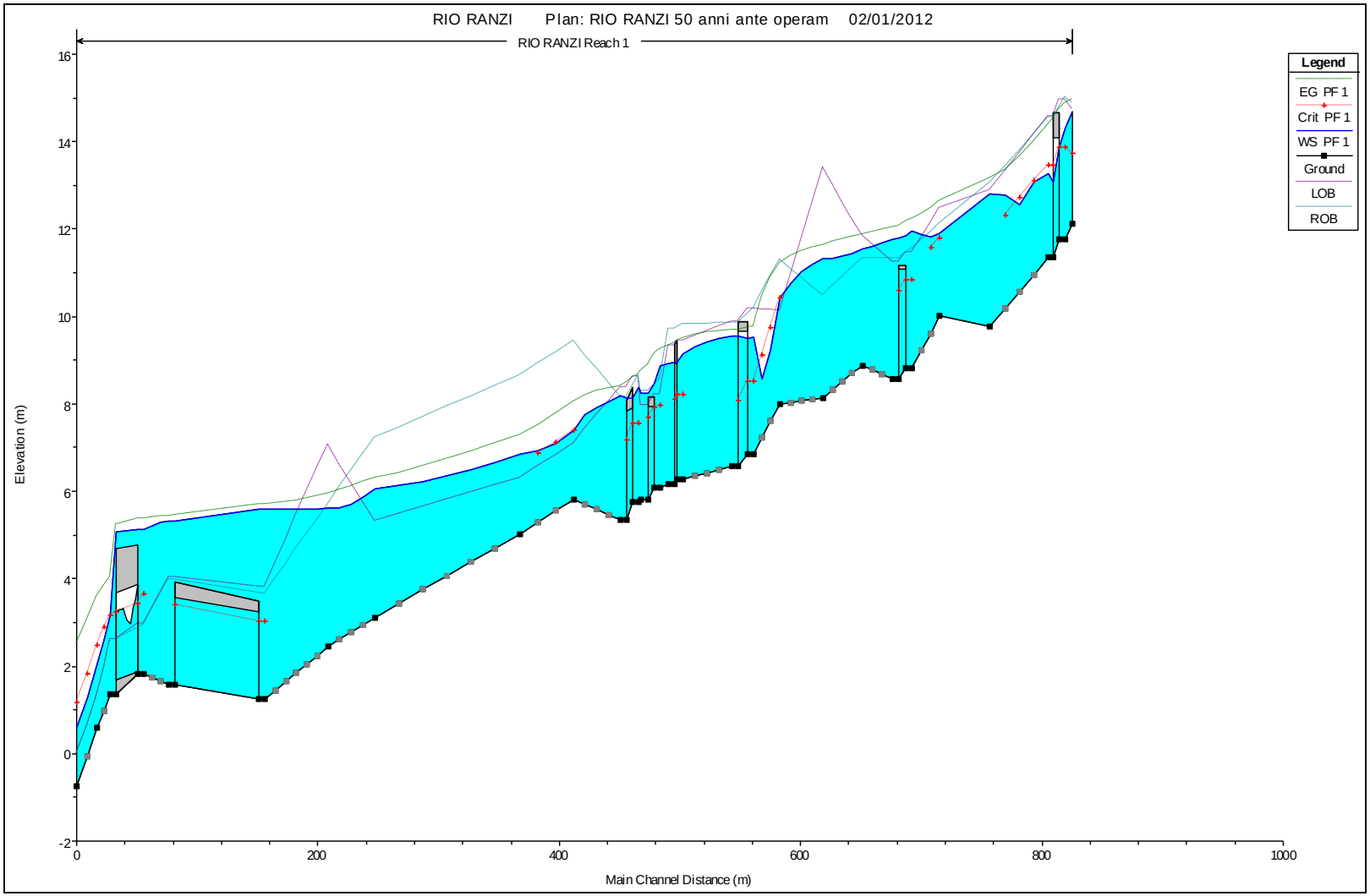


Tabella 4.1 – Rio Ranzi – risultati delle simulazioni idrauliche a moto permanente Tr=50 anni - condizione ante operam

HEC-RAS Plan: RIO RANZI 50 River: RIO RANZI Reach: Reach 1 Profile: PF 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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.84	PF 1	40.00	12.11	14.69	13.74	14.95	0.005013	2.27	17.64	7.52	0.47
Reach 1	0.83	PF 1	40.00	11.77	14.30	13.86	14.87	0.012568	3.35	11.96	5.57	0.73
Reach 1	.825		Bridge									
Reach 1	0.82	PF 1	40.00	11.35	13.28	13.46	14.40	0.031671	4.69	8.53	5.22	1.17
Reach 1	0.77	PF 1	40.00	9.78	12.81		13.16	0.007846	2.66	15.86	8.05	0.52
Reach 1	0.73	PF 1	40.00	10.01	11.90	11.78	12.64	0.019527	3.79	10.66	6.49	0.89
Reach 1	0.70	PF 1	40.00	8.83	11.95	10.84	12.23	0.004530	2.37	17.71	8.92	0.46
Reach 1	0.695		Bridge									
Reach 1	0.69	PF 1	40.00	8.58	11.78		12.04	0.004011	2.28	18.43	8.91	0.44
Reach 1	0.66	PF 1	40.00	8.88	11.56		11.89	0.006037	2.54	16.08	8.16	0.52
Reach 1	0.63	PF 1	40.00	8.14	11.33		11.64	0.005387	2.47	16.84	6.41	0.46
Reach 1	0.59	PF 1	40.00	8.00	10.43	10.43	11.21	0.019065	3.94	10.47	7.01	0.92
Reach 1	0.57	PF 1	40.00	6.86	9.53	8.51	9.78	0.004147	2.19	18.31	7.83	0.46
Reach 1	0.565		Bridge									
Reach 1	0.56	PF 1	40.00	6.57	9.54		9.69	0.002217	1.69	23.62	8.76	0.33
Reach 1	0.51	PF 1	40.00	6.27	9.15	8.22	9.51	0.007293	2.68	14.92	5.79	0.53
Reach 1	0.505		Bridge									
Reach 1	.5	PF 1	40.00	6.16	8.92		9.32	0.008244	2.81	14.25	5.76	0.57
Reach 1	.49	PF 1	40.00	6.08	8.88	7.96	9.26	0.006994	2.74	14.95	7.07	0.54
Reach 1	.485		Bridge									
Reach 1	0.48	PF 1	40.00	5.82	8.23		8.77	0.011860	3.24	12.39	5.80	0.68
Reach 1	0.472	PF 1	40.00	5.76	8.37	7.55	8.68	0.005575	2.44	16.37	7.36	0.52
Reach 1	0.471		Bridge									
Reach 1	0.47	PF 1	40.00	5.34	8.18		8.41	0.003892	2.12	18.90	9.22	0.44
Reach 1	0.42	PF 1	40.00	5.82	7.40	7.40	8.04	0.017402	3.59	11.47	9.02	0.96
Reach 1	.35	PF 1	40.00	5.02	6.84		7.30	0.010428	3.04	13.66	9.05	0.75
Reach 1	0.26	PF 1	40.00	3.12	6.06		6.29	0.005527	2.32	19.73	9.68	0.44
Reach 1	0.22	PF 1	40.00	2.44	5.61		5.94	0.006343	2.56	15.60	5.75	0.50
Reach 1	0.16	PF 1	40.00	1.25	5.61	3.03	5.71	0.001081	1.48	29.31	8.24	0.23
Reach 1	.12		Bridge									
Reach 1	0.09	PF 1	40.00	1.59	5.33		5.43	0.001059	1.46	29.73	11.08	0.26
Reach 1	0.06	PF 1	40.00	1.82	5.12	3.66	5.38	0.004695	2.24	17.88	5.60	0.40

HEC-RAS Plan: RIO RANZI 50 River: RIO RANZI Reach: Reach 1 Profile: PF 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.05		Culvert									
Reach 1	0.04	PF 1	40.00	1.35	3.16	3.16	4.04	0.024726	4.14	9.66	5.53	1.00
Reach 1	0.02	PF 1	40.00	0.59	2.04	2.48	3.60	0.050609	5.53	7.23	5.53	1.54
Reach 1	0.00	PF 1	40.00	-0.73	0.59	1.16	2.51	0.068377	6.14	6.51	5.53	1.81

Figura 4.5 – Rio Ranzi – Profilo a moto permanente Tr=200 anni - condizione ante operam

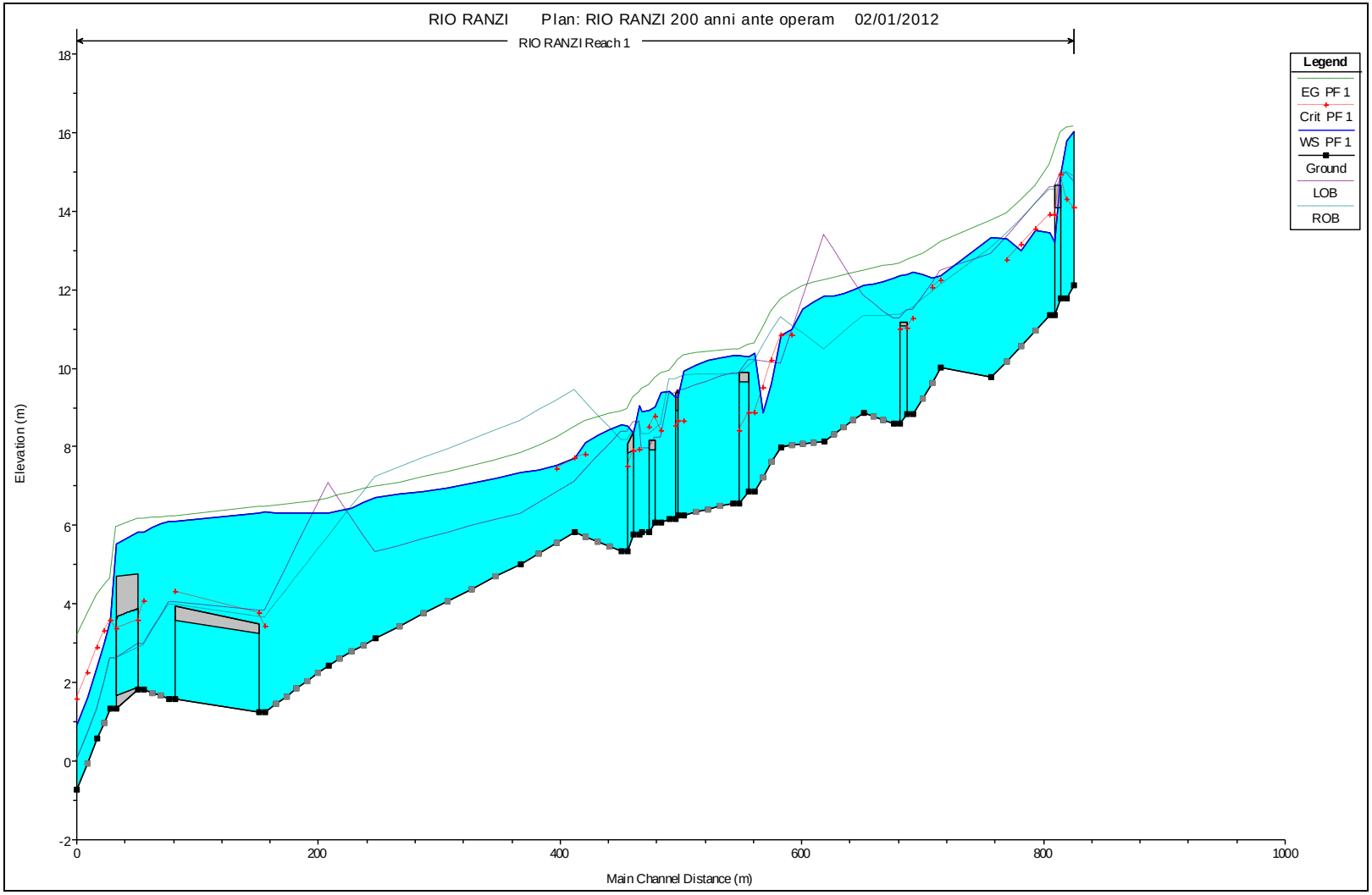


Tabella 4.2 – Rio Ranzi – risultati delle simulazioni idrauliche a moto permanente Tr=200 anni - condizione ante operam

HEC-RAS Plan: RANZI 200 River: RIO RANZI Reach: Reach 1 Profile: PF 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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.84	PF 1	55.00	12.11	16.02	14.09	16.16	0.001630	1.72	35.35	13.80	0.29
Reach 1	0.83	PF 1	55.00	11.77	15.79	14.29	16.12	0.004421	2.59	22.36	8.14	0.44
Reach 1	.825		Bridge									
Reach 1	0.82	PF 1	55.00	11.35	13.46	13.90	15.17	0.044476	5.79	9.50	5.28	1.38
Reach 1	0.77	PF 1	55.00	9.78	13.33		13.75	0.007794	2.93	20.40	8.90	0.53
Reach 1	0.73	PF 1	55.00	10.01	12.34	12.23	13.21	0.019455	4.17	13.59	6.87	0.88
Reach 1	0.70	PF 1	55.00	8.83	12.45	11.25	12.80	0.004559	2.66	22.19	8.92	0.47
Reach 1	0.695		Bridge									
Reach 1	0.69	PF 1	55.00	8.58	12.31		12.62	0.003981	2.55	23.15	8.91	0.45
Reach 1	0.66	PF 1	55.00	8.88	12.11		12.49	0.005654	2.76	20.96	9.76	0.51
Reach 1	0.63	PF 1	55.00	8.14	11.83		12.24	0.006308	2.87	20.05	6.50	0.50
Reach 1	0.59	PF 1	55.00	8.00	10.83	10.83	11.74	0.018985	4.32	13.32	7.30	0.94
Reach 1	0.57	PF 1	55.00	6.86	10.39	8.86	10.63	0.003112	2.17	25.62	10.39	0.39
Reach 1	0.565		Bridge									
Reach 1	0.56	PF 1	55.00	6.57	10.31		10.47	0.001836	1.77	32.64	13.88	0.30
Reach 1	0.51	PF 1	55.00	6.27	9.93	8.64	10.32	0.006138	2.77	20.41	8.27	0.49
Reach 1	0.505		Bridge									
Reach 1	.5	PF 1	55.00	6.16	9.40		9.93	0.009579	3.22	17.15	7.61	0.60
Reach 1	.49	PF 1	55.00	6.08	9.38	8.40	9.85	0.007128	3.11	18.64	7.81	0.56
Reach 1	.485		Bridge									
Reach 1	0.48	PF 1	55.00	5.82	8.88		9.46	0.009404	3.39	16.87	7.46	0.63
Reach 1	0.472	PF 1	55.00	5.76	9.04	7.91	9.37	0.004529	2.55	22.27	9.83	0.48
Reach 1	0.471		Bridge									
Reach 1	0.47	PF 1	55.00	5.34	8.58		8.88	0.004397	2.47	22.81	11.69	0.48
Reach 1	0.42	PF 1	55.00	5.82	7.71	7.70	8.50	0.017275	4.00	14.29	9.05	0.97
Reach 1	.35	PF 1	55.00	5.02	7.33		7.83	0.008548	3.16	18.15	9.09	0.69
Reach 1	0.26	PF 1	55.00	3.12	6.72		6.97	0.004878	2.41	26.22	9.74	0.41
Reach 1	0.22	PF 1	55.00	2.44	6.33		6.69	0.005717	2.71	21.18	8.42	0.47
Reach 1	0.16	PF 1	55.00	1.25	6.33	3.44	6.47	0.001176	1.72	35.30	8.24	0.25
Reach 1	.12		Bridge									
Reach 1	0.09	PF 1	55.00	1.59	6.09		6.21	0.000953	1.60	38.21	11.08	0.25
Reach 1	0.06	PF 1	55.00	1.82	5.84	4.07	6.16	0.005271	2.52	21.87	5.60	0.41

HEC-RAS Plan: RANZI 200 River: RIO RANZI Reach: Reach 1 Profile: PF 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.05		Culvert									
Reach 1	0.04	PF 1	55.00	1.35	3.57	3.57	4.66	0.026018	4.61	11.93	5.53	1.00
Reach 1	0.02	PF 1	55.00	0.59	2.40	2.89	4.22	0.048515	5.98	9.20	5.53	1.48
Reach 1	0.00	PF 1	55.00	-0.73	0.91	1.57	3.17	0.065781	6.67	8.25	5.53	1.74

Figura 4.6 – Rio Ranzi – Profilo a moto permanente Tr=500 anni - condizione ante operam

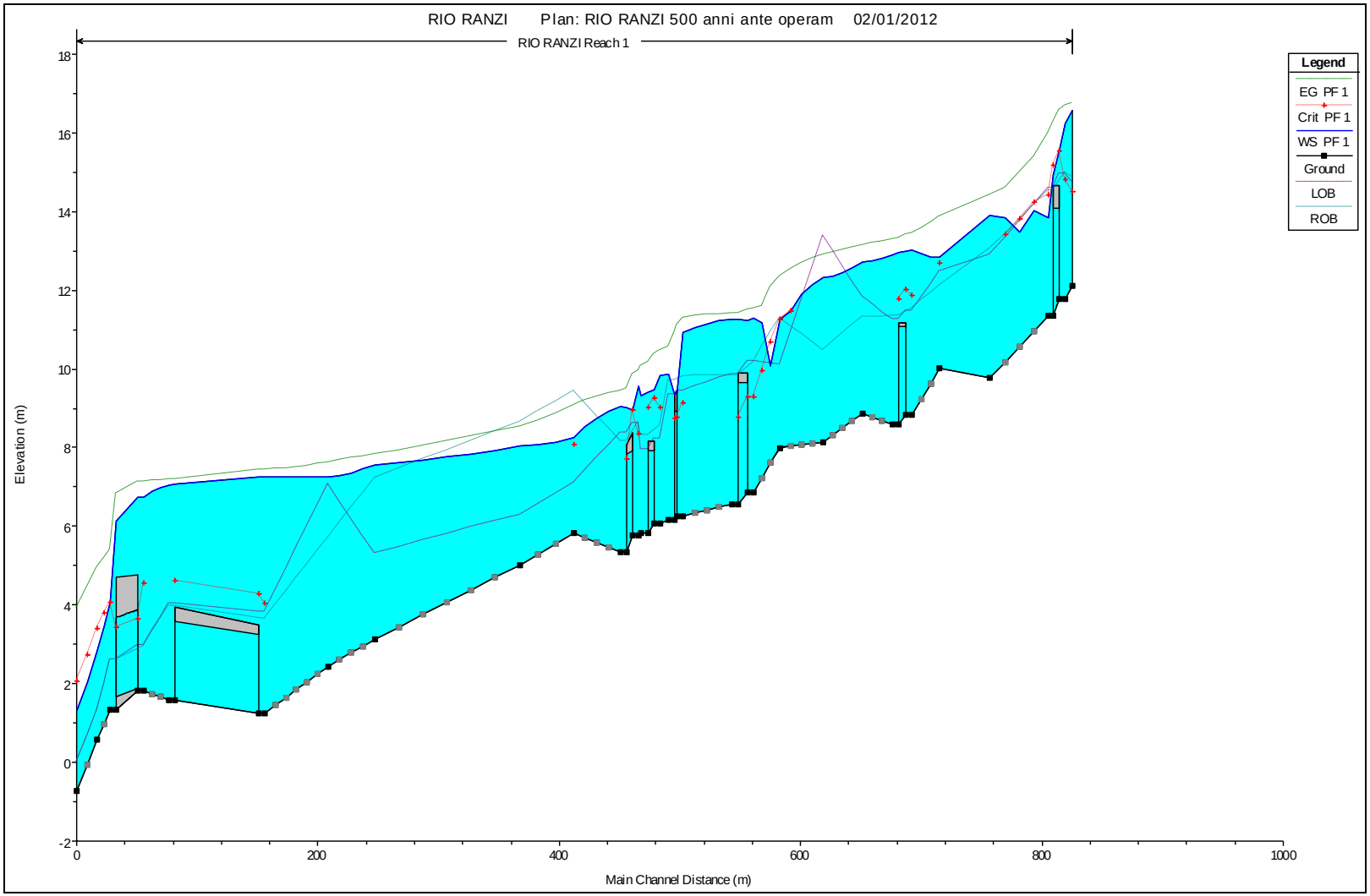


Tabella 4.3 – Rio Ranzi – risultati delle simulazioni idrauliche a moto permanente Tr=500 anni - condizione ante operam

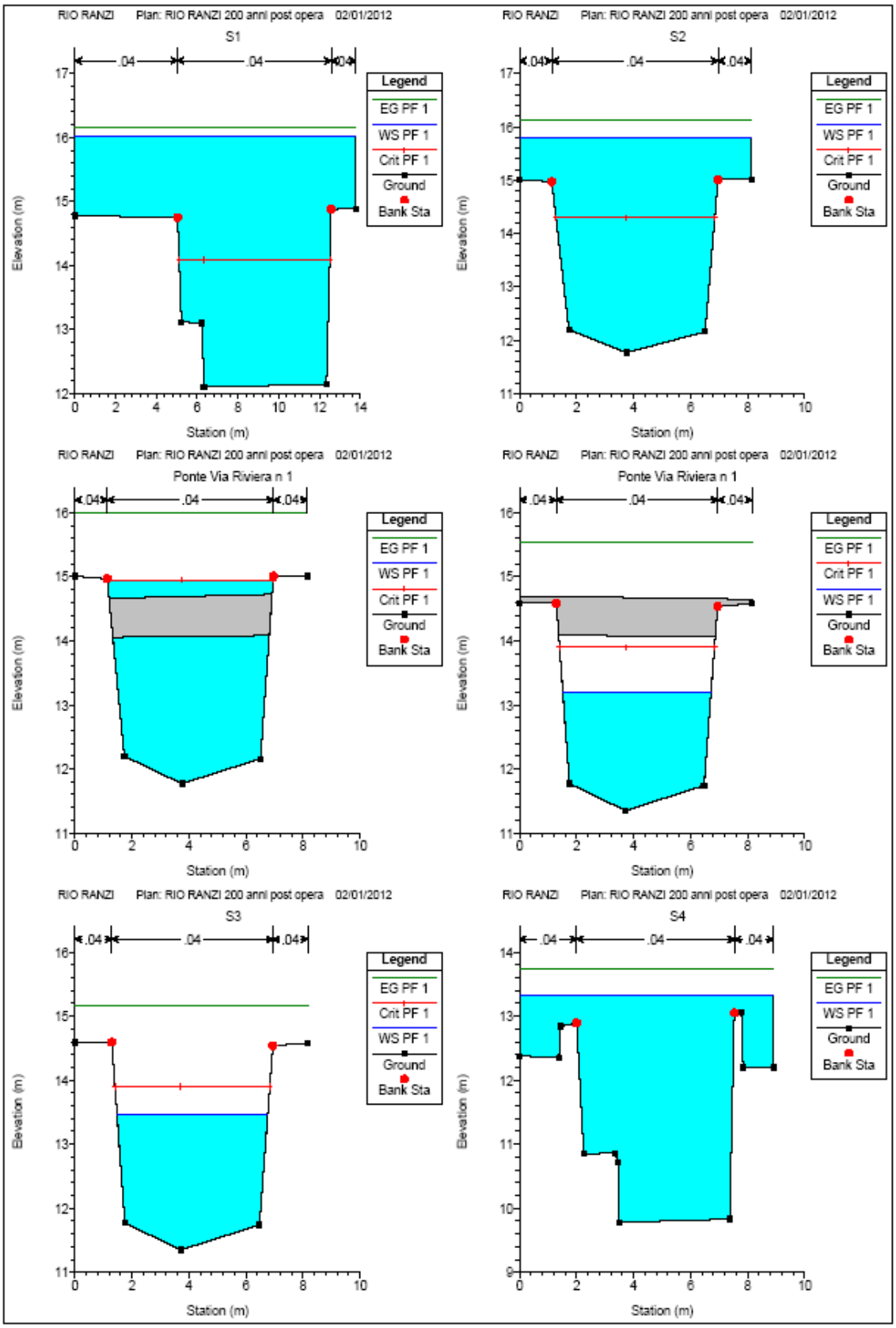
HEC-RAS Plan: RANZI 500 River: RIO RANZI Reach: Reach 1 Profile: PF 1

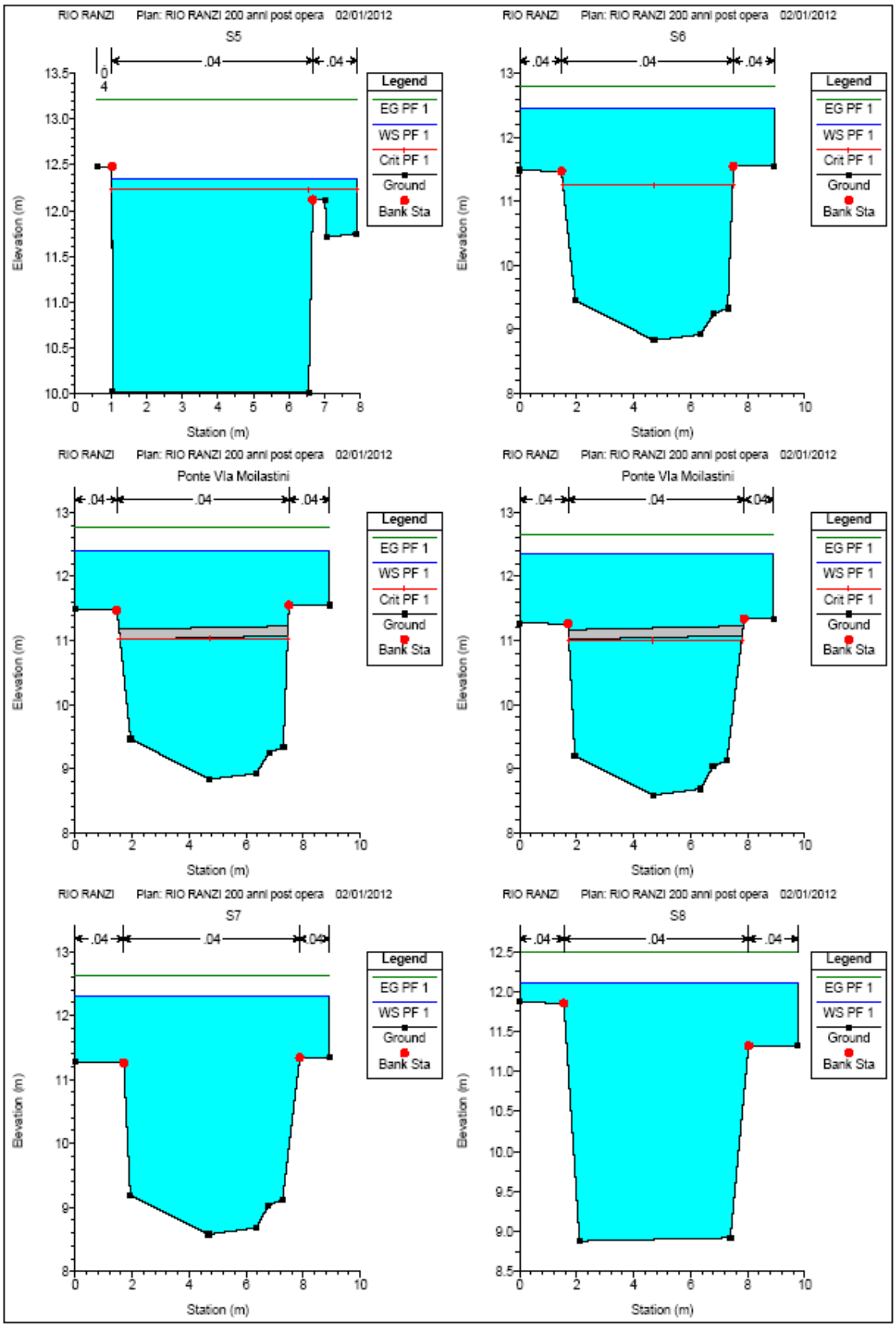
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.84	PF 1	75.00	12.11	16.57	14.50	16.74	0.001724	1.94	42.98	13.80	0.30
Reach 1	0.83	PF 1	75.00	11.77	16.23	14.81	16.69	0.005365	3.08	25.96	8.14	0.49
Reach 1	.825		Bridge									
Reach 1	0.82	PF 1	75.00	11.35	13.84	14.42	16.00	0.048798	6.50	11.53	5.41	1.42
Reach 1	0.77	PF 1	75.00	9.78	13.91		14.41	0.007639	3.25	25.54	8.90	0.54
Reach 1	0.73	PF 1	75.00	10.01	12.84	12.70	13.88	0.018561	4.59	17.13	7.29	0.88
Reach 1	0.70	PF 1	75.00	8.83	13.03	11.88	13.46	0.004679	3.01	27.29	8.92	0.49
Reach 1	0.695		Bridge									
Reach 1	0.69	PF 1	75.00	8.58	12.89		13.29	0.004125	2.89	28.32	8.91	0.47
Reach 1	0.66	PF 1	75.00	8.88	12.72		13.15	0.005237	3.01	26.91	9.76	0.51
Reach 1	0.63	PF 1	75.00	8.14	12.33		12.89	0.007786	3.39	23.30	6.59	0.55
Reach 1	0.59	PF 1	75.00	8.00	11.27	11.27	12.36	0.019335	4.75	16.61	7.63	0.96
Reach 1	0.57	PF 1	75.00	6.86	11.28	9.29	11.53	0.002379	2.25	34.85	10.39	0.36
Reach 1	0.565		Bridge									
Reach 1	0.56	PF 1	75.00	6.57	11.26		11.41	0.001337	1.78	45.87	13.88	0.27
Reach 1	0.51	PF 1	75.00	6.27	10.92	9.14	11.30	0.004374	2.79	28.60	8.27	0.43
Reach 1	0.505		Bridge									
Reach 1	.5	PF 1	75.00	6.16	9.87		10.56	0.010775	3.71	20.84	8.27	0.65
Reach 1	.49	PF 1	75.00	6.08	9.85	9.01	10.47	0.007923	3.59	22.34	7.86	0.60
Reach 1	.485		Bridge									
Reach 1	0.48	PF 1	75.00	5.82	9.33		10.08	0.010349	3.91	20.35	7.86	0.68
Reach 1	0.472	PF 1	75.00	5.76	9.55	8.34	9.97	0.004688	2.89	27.29	9.83	0.50
Reach 1	0.471		Bridge									
Reach 1	0.47	PF 1	75.00	5.34	9.05		9.44	0.004531	2.79	28.39	11.69	0.50
Reach 1	0.42	PF 1	75.00	5.82	8.24	8.06	9.07	0.013589	4.10	19.15	9.10	0.87
Reach 1	.35	PF 1	75.00	5.02	8.03		8.54	0.006611	3.22	24.54	9.16	0.61
Reach 1	0.26	PF 1	75.00	3.12	7.57		7.84	0.004235	2.51	34.59	10.13	0.39
Reach 1	0.22	PF 1	75.00	2.44	7.25		7.63	0.004748	2.78	29.08	8.95	0.43
Reach 1	0.16	PF 1	75.00	1.25	7.25	4.05	7.44	0.001221	1.97	42.88	8.24	0.26
Reach 1	.12		Bridge									
Reach 1	0.09	PF 1	75.00	1.59	7.05		7.19	0.000851	1.74	48.81	11.08	0.25
Reach 1	0.06	PF 1	75.00	1.82	6.74	4.56	7.13	0.005804	2.79	26.92	5.60	0.41

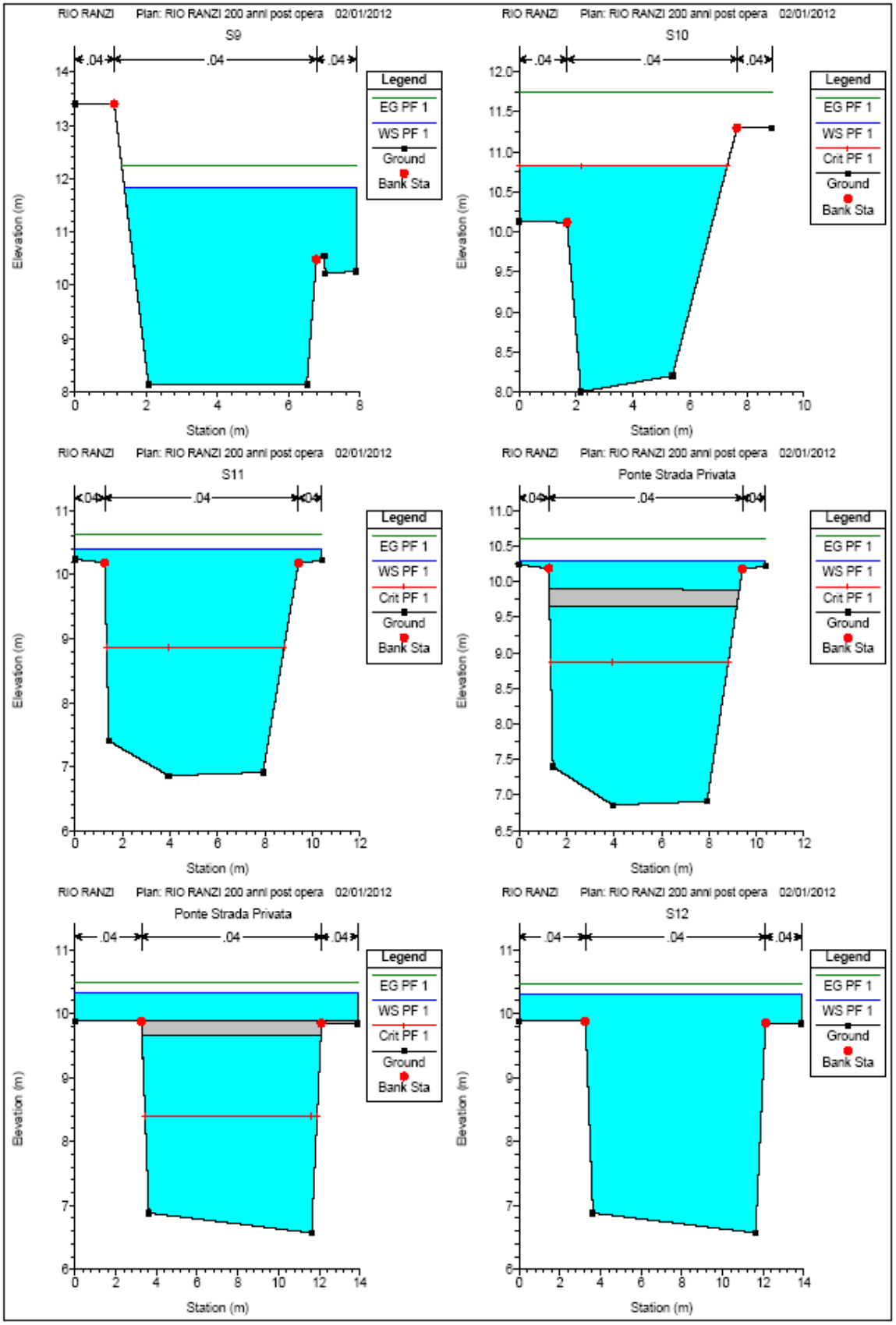
HEC-RAS Plan: RANZI 500 River: RIO RANZI Reach: Reach 1 Profile: PF 1 (Continued)

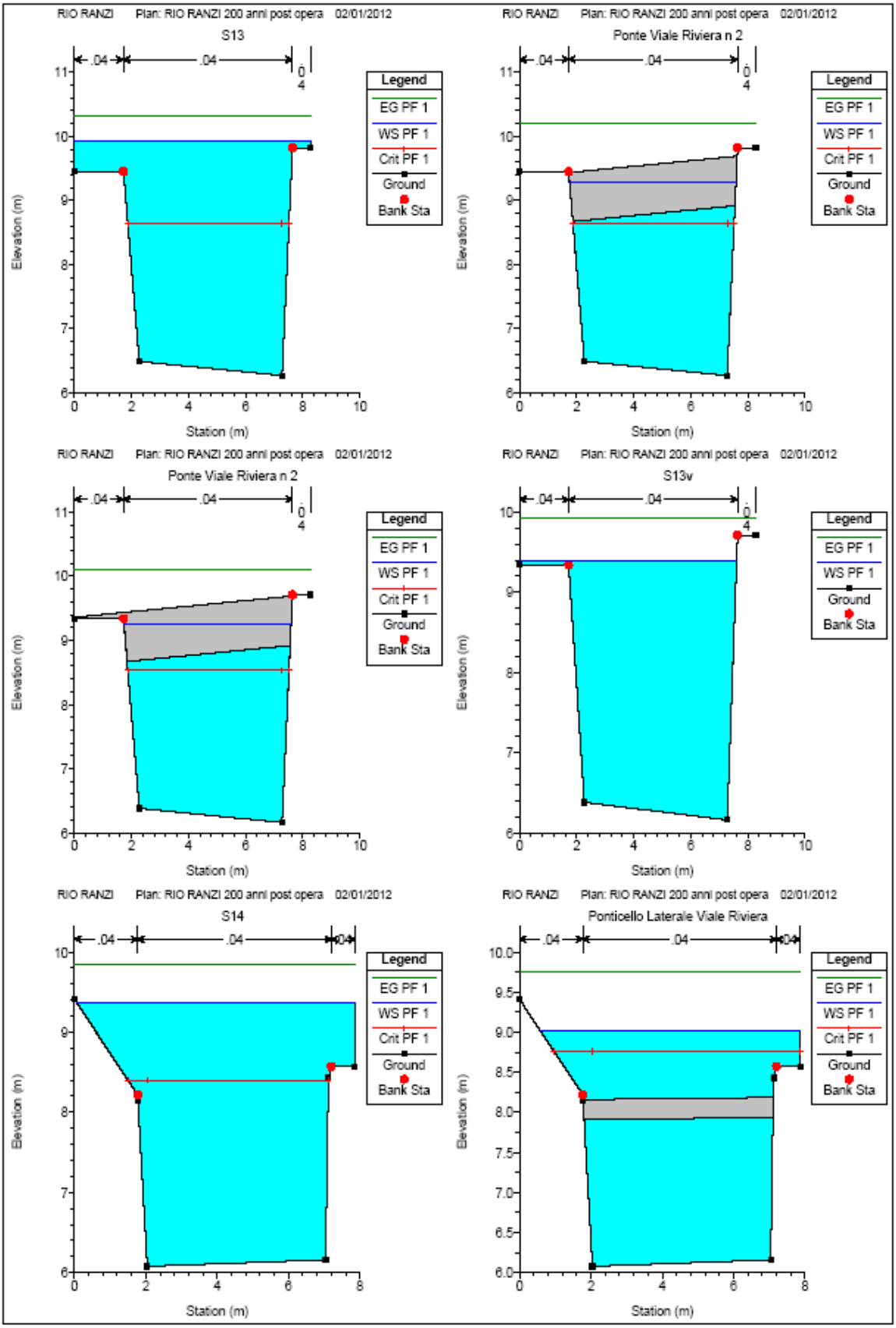
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.05		Culvert									
Reach 1	0.04	PF 1	75.00	1.35	4.07	4.07	5.40	0.027499	5.10	14.69	5.53	1.00
Reach 1	0.02	PF 1	75.00	0.59	2.83	3.39	4.96	0.047489	6.46	11.62	5.53	1.42
Reach 1	0.00	PF 1	75.00	-0.73	1.30	2.07	3.93	0.063555	7.18	10.44	5.53	1.67

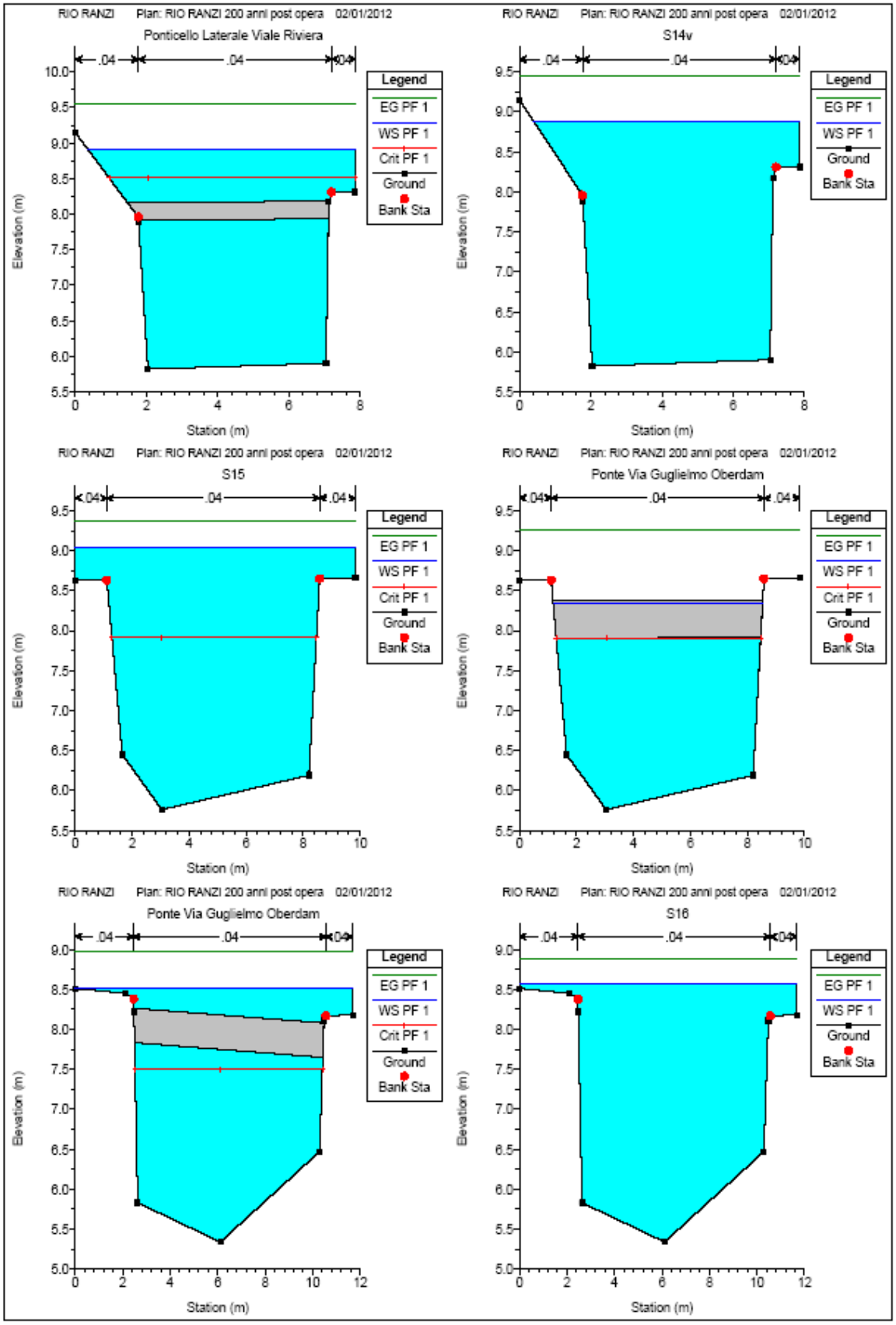
Figura 4.7 – Rio Ranzi – Sezioni idrauliche Tr=200 anni - condizione ante operam

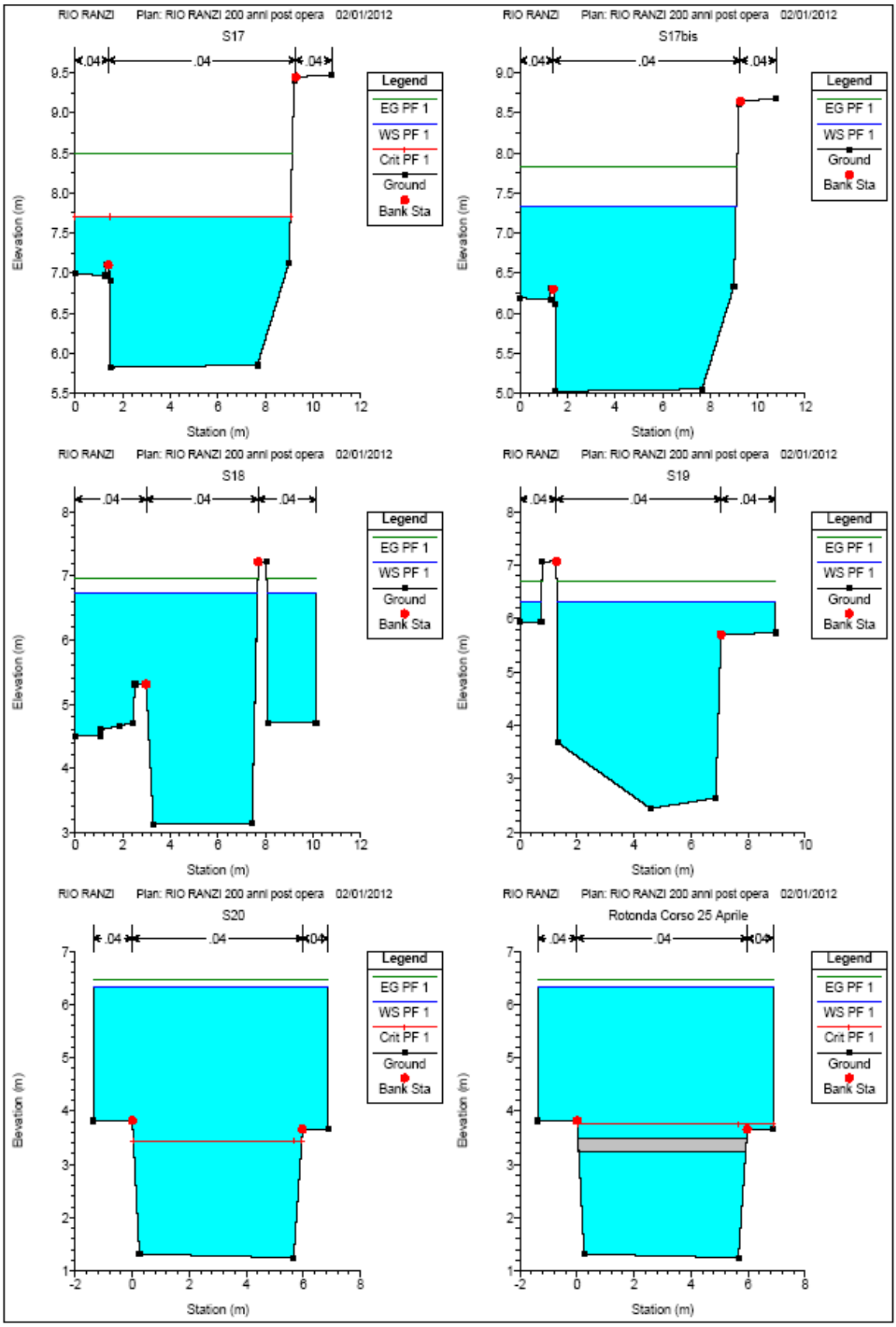


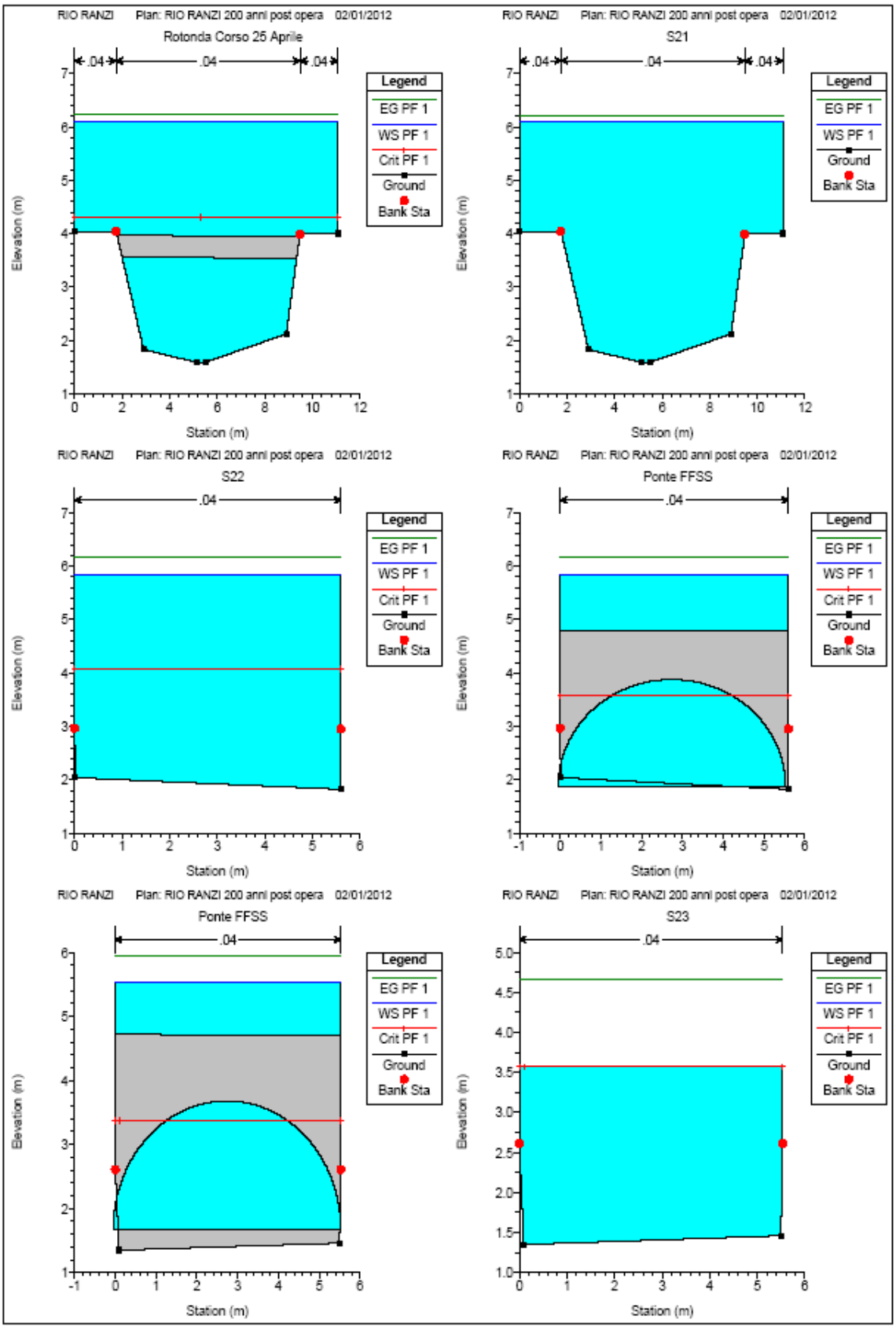

RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S6
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Moilastini
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Moilastini
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S7
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S8
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

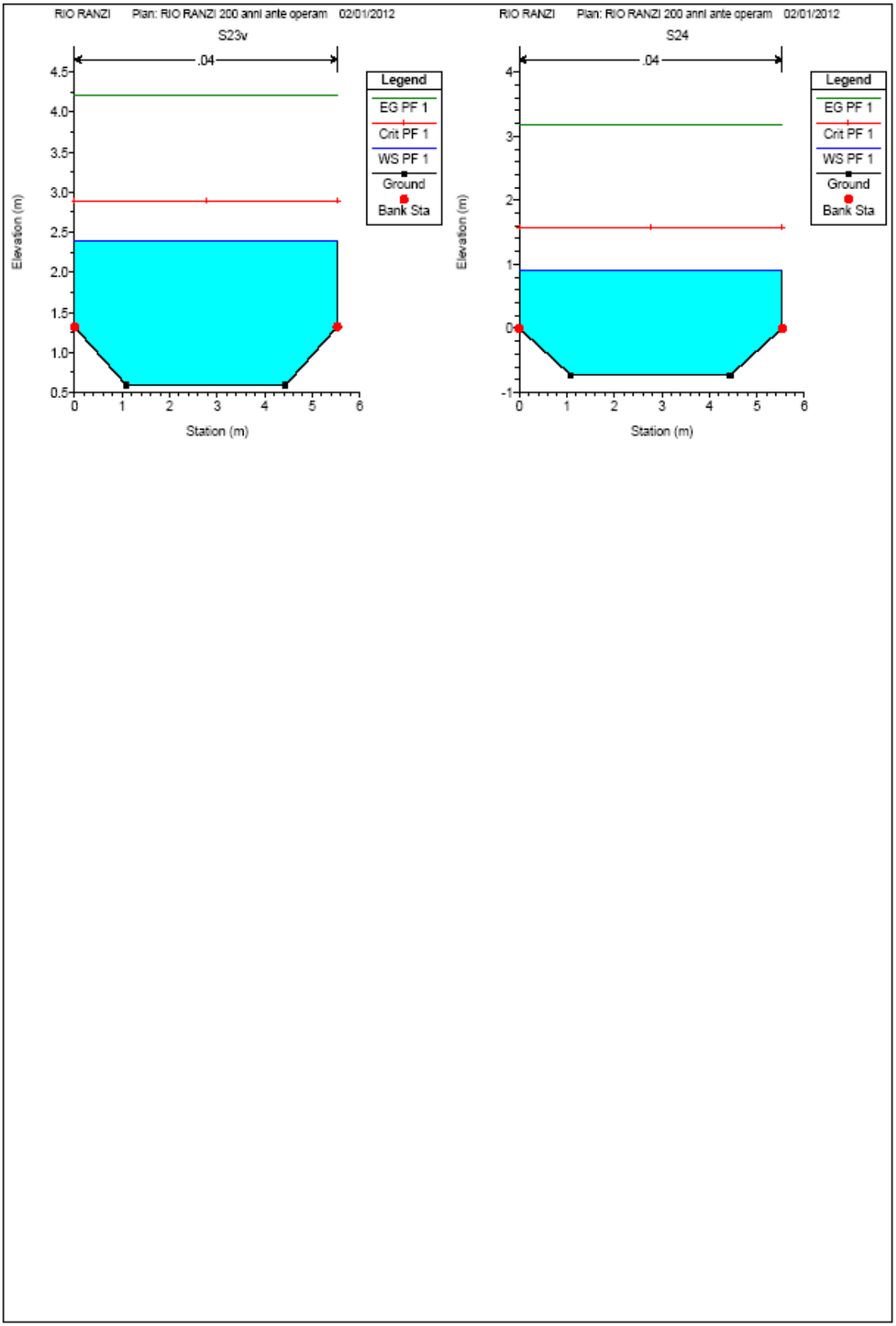

RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S9
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S10
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S11
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Strada Privata
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Strada Privata
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S12
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S13
Ponte Viale Riviera n 2
S13v
S14
Ponticello Laterale Viale Riviera
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponticello Laterale Viale Riviera
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S14v
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S15
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Guglielmo Oberdam
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Guglielmo Oberdam
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S16
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S17
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S17bis
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S18
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S19
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S20
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Rotonda Corso 25 Aprile
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Rotonda Corso 25 Aprile
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S21
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S22
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte FFSS
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte FFSS
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S23
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni ante operam 02/01/2012
S23v
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni ante operam 02/01/2012
S24
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

4.3 Verifiche post opera

Lo schema planimetrico utilizzato per le verifiche post opera, con la foce avanzata di 45 m, è riportato in Figura 4.8, mentre in Figura 4.9 è riportato il modello tridimensionale. Nell'ultima figura i livelli idrici sono quelli ottenuti per le portate di piena con tempo di ritorno di 200 anni.

Il profilo idraulico ottenuto nelle condizioni post opera per le portate con tempo di ritorno di 50, 200 e 500 anni è riportato in forma grafica rispettivamente nella Figura 4.10, Figura 4.11 e Figura 4.12 ed in forma numerica in Tabella 4.4, Tabella 4.5 e Tabella 4.6.

Dall'esame delle figure e delle tabelle sopra indicate si evince che nella configurazione della spiaggia compatibile con le opere esterne del porto in progetto:

- per le portate con tempo di ritorno di 50, 200 e 500 anni il deflusso avverrebbe ancora in corrente veloce a valle dell'attraversamento del ponte delle FF.SS. e in corrente lenta a monte dello stesso ponte; tale attraversamento pertanto determinerebbe ancora la disconnessione idraulica del tratto vallivo del Rio Ranzi che scorre in corrispondenza dell'abitato di Pietra Ligure con quello terminale che scorre lungo la spiaggia;
- a causa della disconnessione operata dall'attraversamento del ponte delle FF.SS. il deflusso del tratto vallivo del Rio Ranzi che va da località Vigne allo stesso ponte ferroviario risulterebbe inalterato rispetto alle condizioni attuali.

In Figura 4.13 sono riportate le sezioni di calcolo con i livelli idrici calcolati nelle condizioni post opera per tempi di ritorno di 200 anni.

Dal confronto della Figura 4.13 con la Figura 4.7 si evince che:

- i livelli idrici delle sezioni S1-S23 sono identici nelle condizioni ante e post opera;
- il livello idrico della sezione S23 posta a valle del ponte ferroviario coincide con quello critico sia nelle condizioni ante operam che nelle condizioni post opera;
- i livelli idrici delle sezioni S23v e S24 lungo la spiaggia sono chiaramente diversi nelle condizioni ante e post opera.

In conclusione dal confronto delle figura e delle tabelle relative alle condizioni ante e post opera si può affermare che il nuovo assetto di equilibrio assunto dalla spiaggia con la configurazione delle opere foranee di progetto non altera il deflusso del tratto vallivo del Rio Ranzi che va da località Vigne alla sezione di valle del ponte ferroviario.

Figura 4.8 – Rio Ranzi – Planimetria post opera

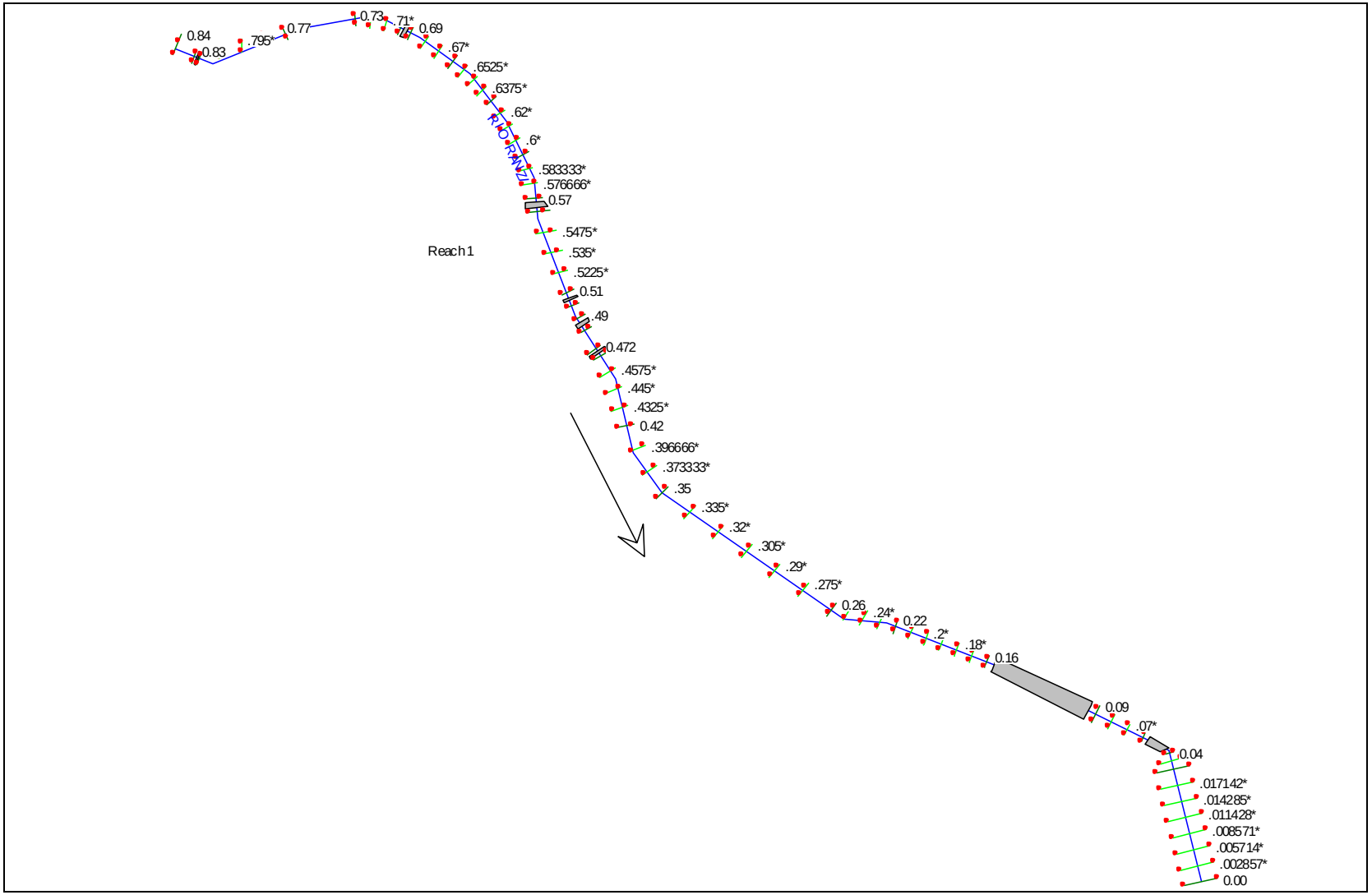


Figura 4.9 – Rio Ranzi - modello 3D post opera

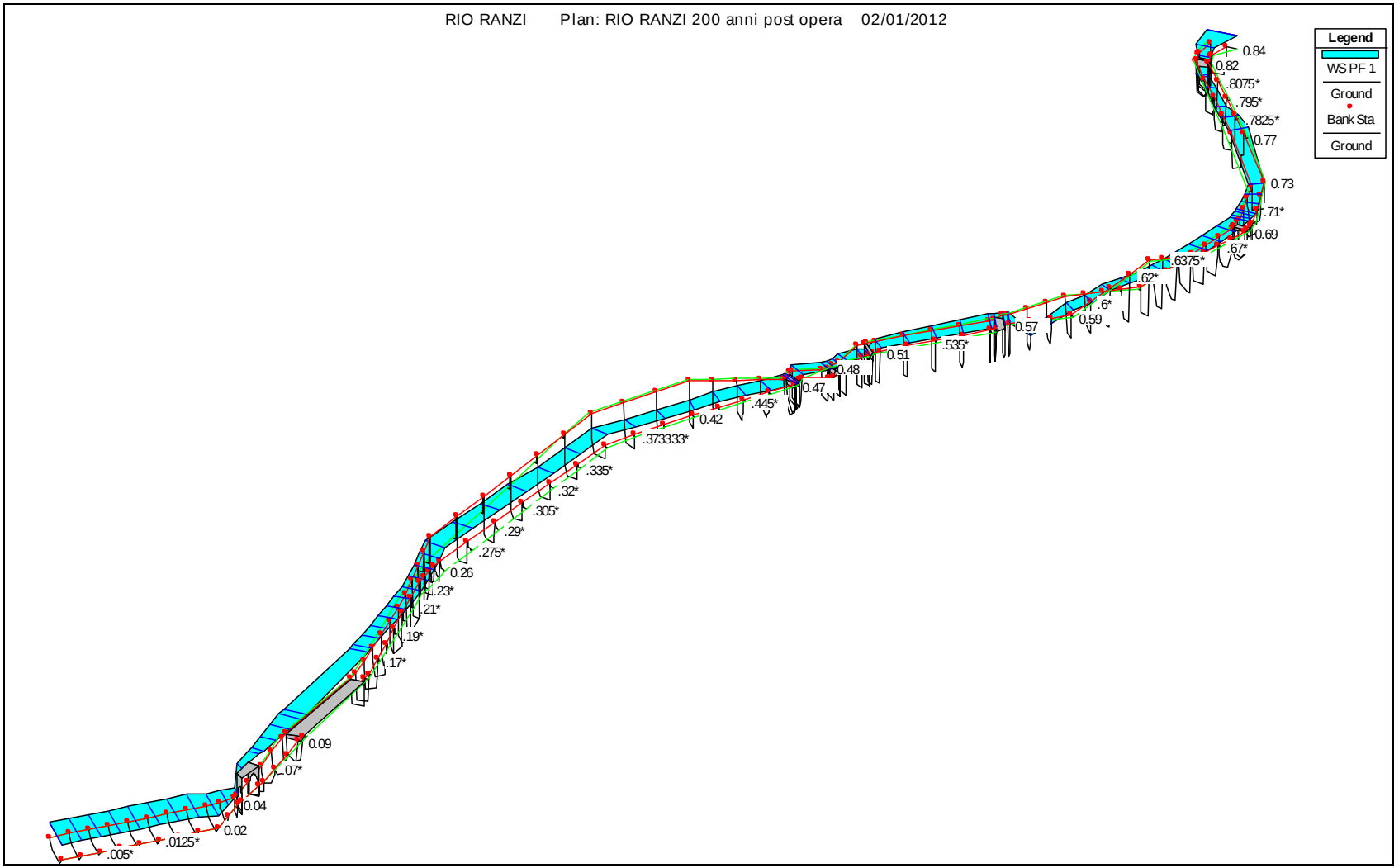


Figura 4.10 – Rio Ranzi – Profilo a moto permanente Tr=50 anni - condizione post opera

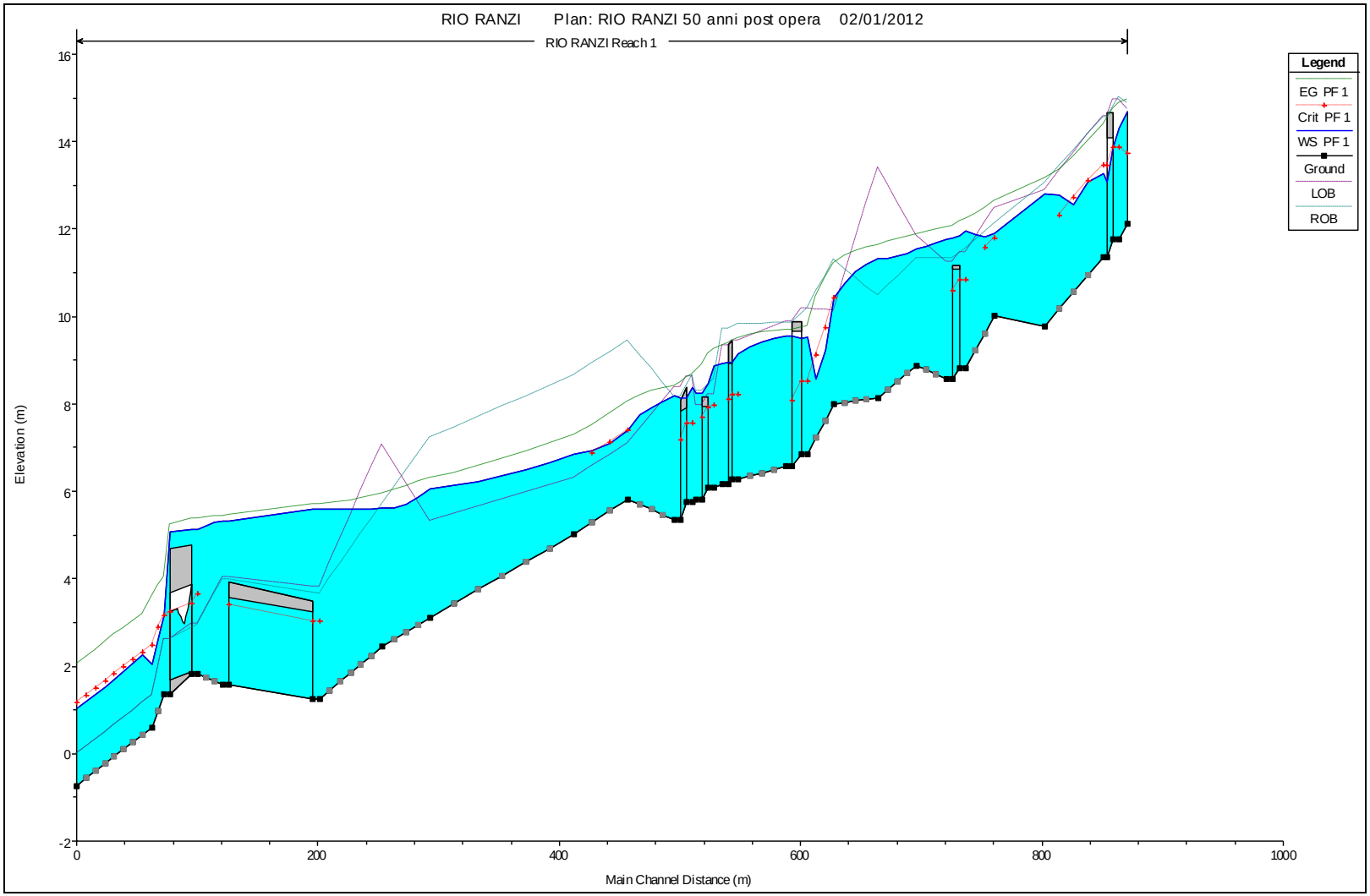


Tabella 4.4 – Rio Ranzi – risultati delle simulazioni idrauliche a moto permanente Tr=50 anni - condizione post opera

HEC-RAS Plan: RANZI 50 P River: RIO RANZI Reach: Reach 1 Profile: PF 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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.84	PF 1	40.00	12.11	14.69	13.74	14.95	0.005013	2.27	17.64	7.52	0.47
Reach 1	0.83	PF 1	40.00	11.77	14.30	13.86	14.87	0.012568	3.35	11.96	5.57	0.73
Reach 1	.825		Bridge									
Reach 1	0.82	PF 1	40.00	11.35	13.28	13.46	14.40	0.031671	4.69	8.53	5.22	1.17
Reach 1	0.77	PF 1	40.00	9.78	12.81		13.16	0.007846	2.66	15.86	8.05	0.52
Reach 1	0.73	PF 1	40.00	10.01	11.90	11.78	12.64	0.019527	3.79	10.66	6.49	0.89
Reach 1	0.70	PF 1	40.00	8.83	11.95	10.84	12.23	0.004530	2.37	17.71	8.92	0.46
Reach 1	0.695		Bridge									
Reach 1	0.69	PF 1	40.00	8.58	11.78		12.04	0.004011	2.28	18.43	8.91	0.44
Reach 1	0.66	PF 1	40.00	8.88	11.56		11.89	0.006037	2.54	16.08	8.16	0.52
Reach 1	0.63	PF 1	40.00	8.14	11.33		11.64	0.005387	2.47	16.84	6.41	0.46
Reach 1	0.59	PF 1	40.00	8.00	10.43	10.43	11.21	0.019065	3.94	10.47	7.01	0.92
Reach 1	0.57	PF 1	40.00	6.86	9.53	8.51	9.78	0.004147	2.19	18.31	7.83	0.46
Reach 1	0.565		Bridge									
Reach 1	0.56	PF 1	40.00	6.57	9.54		9.69	0.002217	1.69	23.62	8.76	0.33
Reach 1	0.51	PF 1	40.00	6.27	9.15	8.22	9.51	0.007293	2.68	14.92	5.79	0.53
Reach 1	0.505		Bridge									
Reach 1	.5	PF 1	40.00	6.16	8.92		9.32	0.008244	2.81	14.25	5.76	0.57
Reach 1	.49	PF 1	40.00	6.08	8.88	7.96	9.26	0.006994	2.74	14.95	7.07	0.54
Reach 1	.485		Bridge									
Reach 1	0.48	PF 1	40.00	5.82	8.23		8.77	0.011860	3.24	12.39	5.80	0.68
Reach 1	0.472	PF 1	40.00	5.76	8.37	7.55	8.68	0.005575	2.44	16.37	7.36	0.52
Reach 1	0.471		Bridge									
Reach 1	0.47	PF 1	40.00	5.34	8.18		8.41	0.003892	2.12	18.90	9.22	0.44
Reach 1	0.42	PF 1	40.00	5.82	7.40	7.40	8.04	0.017402	3.59	11.47	9.02	0.96
Reach 1	.35	PF 1	40.00	5.02	6.84		7.30	0.010428	3.04	13.66	9.05	0.75
Reach 1	0.26	PF 1	40.00	3.12	6.06		6.29	0.005527	2.32	19.73	9.68	0.44
Reach 1	0.22	PF 1	40.00	2.44	5.61		5.94	0.006343	2.56	15.60	5.75	0.50
Reach 1	0.16	PF 1	40.00	1.25	5.61	3.03	5.71	0.001081	1.48	29.31	8.24	0.23
Reach 1	.12		Bridge									
Reach 1	0.09	PF 1	40.00	1.59	5.33		5.43	0.001059	1.46	29.73	11.08	0.26
Reach 1	0.06	PF 1	40.00	1.82	5.12	3.66	5.38	0.004695	2.24	17.88	5.60	0.40

HEC-RAS Plan: RANZI 50 P River: RIO RANZI Reach: Reach 1 Profile: PF 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.05		Culvert									
Reach 1	0.04	PF 1	40.00	1.35	3.16	3.16	4.04	0.024726	4.14	9.66	5.53	1.00
Reach 1	0.02	PF 1	40.00	0.59	2.04	2.48	3.60	0.050609	5.53	7.23	5.53	1.54
Reach 1	0.00	PF 1	40.00	-0.73	1.02	1.16	2.05	0.028368	4.51	8.87	5.53	1.14

Figura 4.11 – Rio Ranzi – Profilo a moto permanente Tr=200 anni - condizione post opera

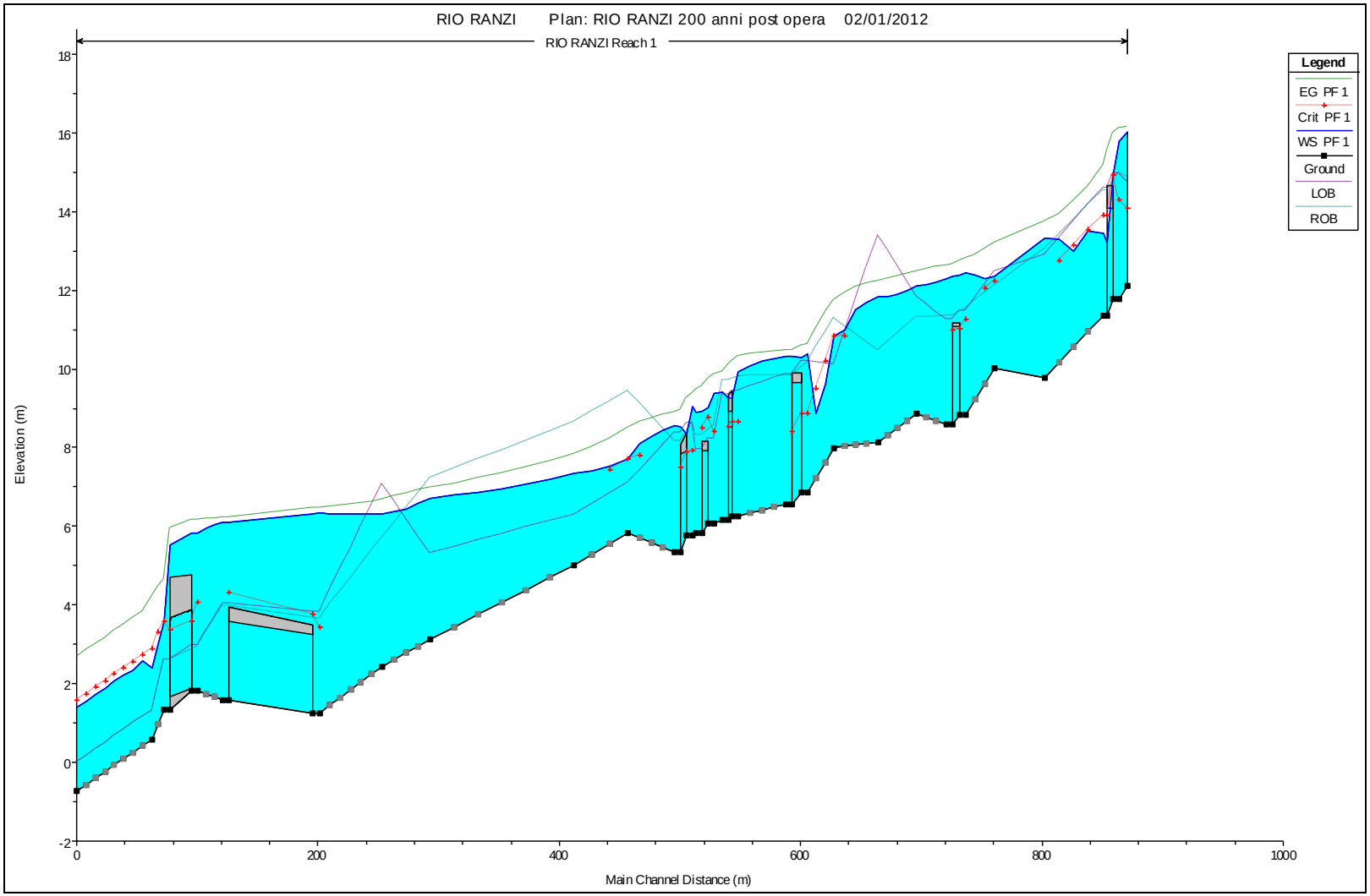


Tabella 4.5 – Rio Ranzi – risultati delle simulazioni idrauliche a moto permanente Tr=200 anni - condizione post opera

HEC-RAS Plan: RANZI 200 P River: RIO RANZI Reach: Reach 1 Profile: PF 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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.84	PF 1	55.00	12.11	16.02	14.09	16.16	0.001630	1.72	35.35	13.80	0.29
Reach 1	0.83	PF 1	55.00	11.77	15.79	14.29	16.12	0.004421	2.59	22.36	8.14	0.44
Reach 1	.825		Bridge									
Reach 1	0.82	PF 1	55.00	11.35	13.46	13.90	15.17	0.044476	5.79	9.50	5.28	1.38
Reach 1	0.77	PF 1	55.00	9.78	13.33		13.75	0.007794	2.93	20.40	8.90	0.53
Reach 1	0.73	PF 1	55.00	10.01	12.34	12.23	13.21	0.019455	4.17	13.59	6.87	0.88
Reach 1	0.70	PF 1	55.00	8.83	12.45	11.25	12.80	0.004559	2.66	22.19	8.92	0.47
Reach 1	0.695		Bridge									
Reach 1	0.69	PF 1	55.00	8.58	12.31		12.62	0.003981	2.55	23.15	8.91	0.45
Reach 1	0.66	PF 1	55.00	8.88	12.11		12.49	0.005654	2.76	20.96	9.76	0.51
Reach 1	0.63	PF 1	55.00	8.14	11.83		12.24	0.006308	2.87	20.05	6.50	0.50
Reach 1	0.59	PF 1	55.00	8.00	10.83	10.83	11.74	0.018985	4.32	13.32	7.30	0.94
Reach 1	0.57	PF 1	55.00	6.86	10.39	8.86	10.63	0.003112	2.17	25.62	10.39	0.39
Reach 1	0.565		Bridge									
Reach 1	0.56	PF 1	55.00	6.57	10.31		10.47	0.001836	1.77	32.64	13.88	0.30
Reach 1	0.51	PF 1	55.00	6.27	9.93	8.64	10.32	0.006138	2.77	20.41	8.27	0.49
Reach 1	0.505		Bridge									
Reach 1	.5	PF 1	55.00	6.16	9.40		9.93	0.009579	3.22	17.15	7.61	0.60
Reach 1	.49	PF 1	55.00	6.08	9.38	8.40	9.85	0.007128	3.11	18.64	7.81	0.56
Reach 1	.485		Bridge									
Reach 1	0.48	PF 1	55.00	5.82	8.88		9.46	0.009404	3.39	16.87	7.46	0.63
Reach 1	0.472	PF 1	55.00	5.76	9.04	7.91	9.37	0.004529	2.55	22.27	9.83	0.48
Reach 1	0.471		Bridge									
Reach 1	0.47	PF 1	55.00	5.34	8.58		8.88	0.004397	2.47	22.81	11.69	0.48
Reach 1	0.42	PF 1	55.00	5.82	7.71	7.70	8.50	0.017275	4.00	14.29	9.05	0.97
Reach 1	.35	PF 1	55.00	5.02	7.33		7.83	0.008548	3.16	18.15	9.09	0.69
Reach 1	0.26	PF 1	55.00	3.12	6.72		6.97	0.004878	2.41	26.22	9.74	0.41
Reach 1	0.22	PF 1	55.00	2.44	6.33		6.69	0.005717	2.71	21.18	8.42	0.47
Reach 1	0.16	PF 1	55.00	1.25	6.33	3.44	6.47	0.001176	1.72	35.30	8.24	0.25
Reach 1	.12		Bridge									
Reach 1	0.09	PF 1	55.00	1.59	6.09		6.21	0.000953	1.60	38.21	11.08	0.25
Reach 1	0.06	PF 1	55.00	1.82	5.84	4.07	6.16	0.005271	2.52	21.87	5.60	0.41

HEC-RAS Plan: RANZI 200 P River: RIO RANZI Reach: Reach 1 Profile: PF 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.05		Culvert									
Reach 1	0.04	PF 1	55.00	1.35	3.57	3.57	4.66	0.026018	4.61	11.93	5.53	1.00
Reach 1	0.02	PF 1	55.00	0.59	2.40	2.89	4.22	0.048515	5.98	9.20	5.53	1.48
Reach 1	0.00	PF 1	55.00	-0.73	1.39	1.57	2.68	0.029949	5.02	10.95	5.53	1.14

Figura 4.12 – Rio Ranzi – Profilo a moto permanente Tr=500 anni - condizione post opera

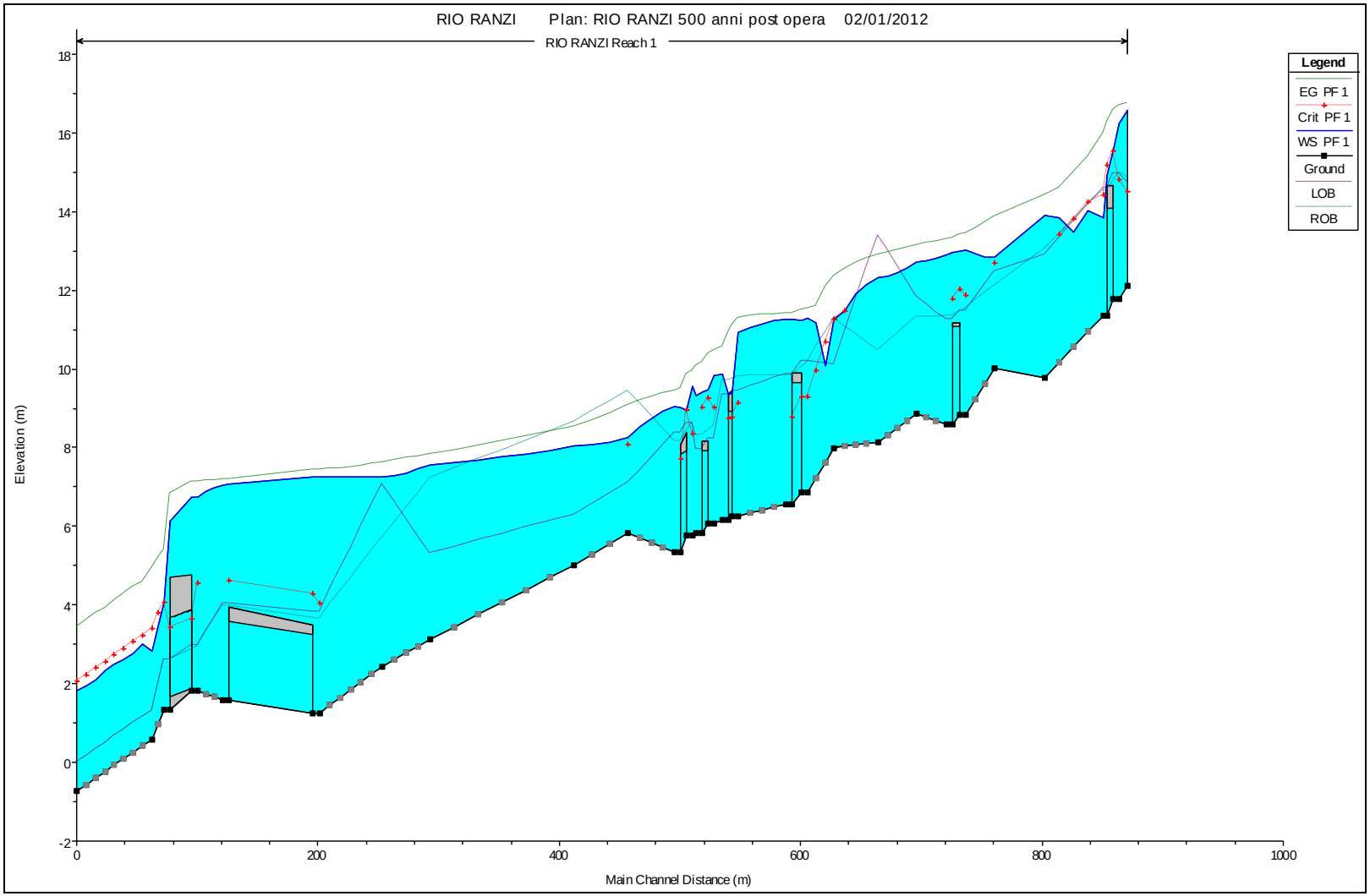


Tabella 4.6 – Rio Ranzi – risultati delle simulazioni idrauliche a moto permanente Tr=500 anni - condizione post opera

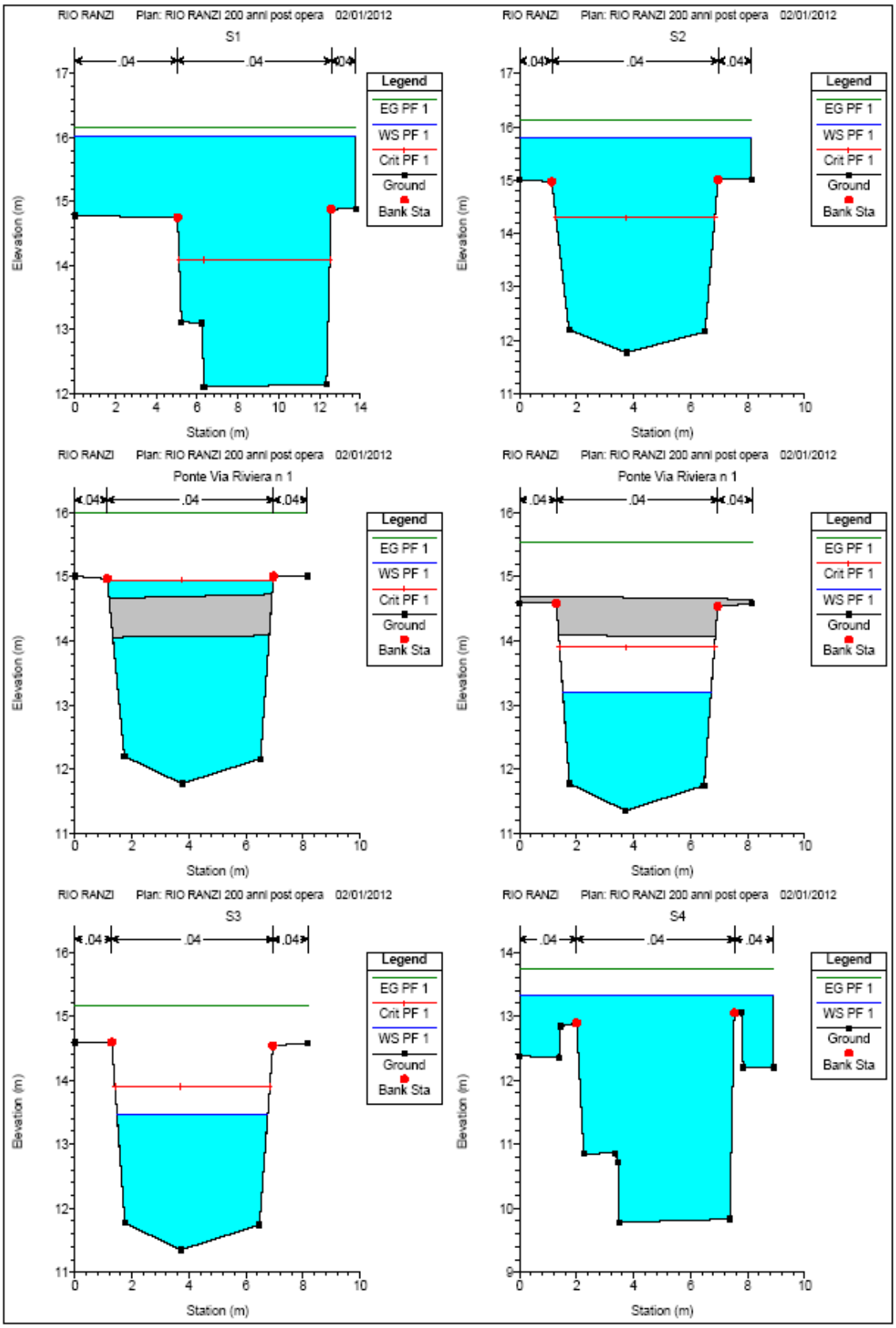
HEC-RAS Plan: RANZI 500 P River: RIO RANZI Reach: Reach 1 Profile: PF 1

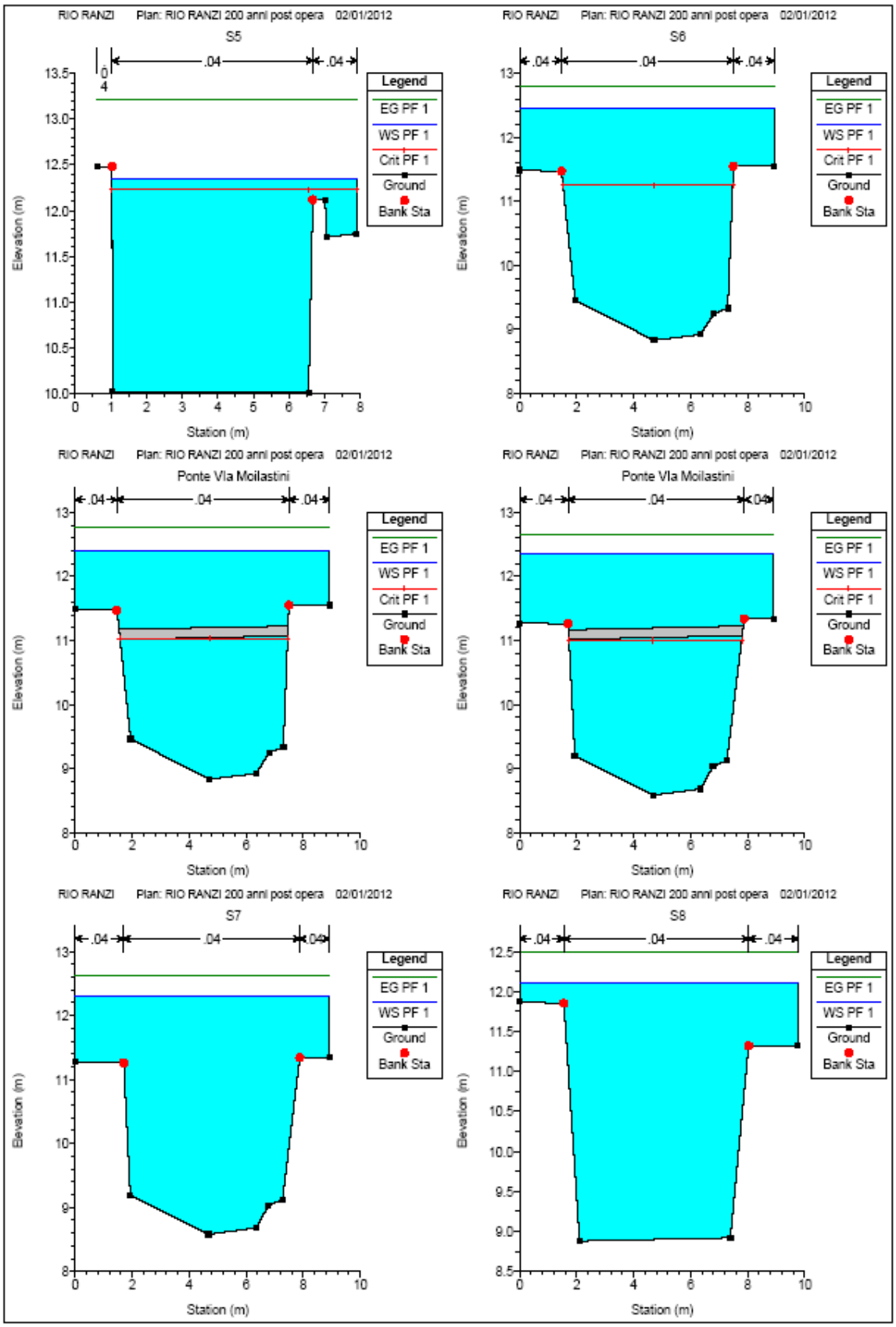
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.84	PF 1	75.00	12.11	16.57	14.50	16.74	0.001724	1.94	42.98	13.80	0.30
Reach 1	0.83	PF 1	75.00	11.77	16.23	14.81	16.69	0.005365	3.08	25.96	8.14	0.49
Reach 1	.825		Bridge									
Reach 1	0.82	PF 1	75.00	11.35	13.84	14.42	16.00	0.048798	6.50	11.53	5.41	1.42
Reach 1	0.77	PF 1	75.00	9.78	13.91		14.41	0.007639	3.25	25.54	8.90	0.54
Reach 1	0.73	PF 1	75.00	10.01	12.84	12.70	13.88	0.018561	4.59	17.13	7.29	0.88
Reach 1	0.70	PF 1	75.00	8.83	13.03	11.88	13.46	0.004679	3.01	27.29	8.92	0.49
Reach 1	0.695		Bridge									
Reach 1	0.69	PF 1	75.00	8.58	12.89		13.29	0.004125	2.89	28.32	8.91	0.47
Reach 1	0.66	PF 1	75.00	8.88	12.72		13.15	0.005237	3.01	26.91	9.76	0.51
Reach 1	0.63	PF 1	75.00	8.14	12.33		12.89	0.007786	3.39	23.30	6.59	0.55
Reach 1	0.59	PF 1	75.00	8.00	11.27	11.27	12.36	0.019335	4.75	16.61	7.63	0.96
Reach 1	0.57	PF 1	75.00	6.86	11.28	9.29	11.53	0.002379	2.25	34.85	10.39	0.36
Reach 1	0.565		Bridge									
Reach 1	0.56	PF 1	75.00	6.57	11.26		11.41	0.001337	1.78	45.87	13.88	0.27
Reach 1	0.51	PF 1	75.00	6.27	10.92	9.14	11.30	0.004374	2.79	28.60	8.27	0.43
Reach 1	0.505		Bridge									
Reach 1	.5	PF 1	75.00	6.16	9.87		10.56	0.010775	3.71	20.84	8.27	0.65
Reach 1	.49	PF 1	75.00	6.08	9.85	9.01	10.47	0.007923	3.59	22.34	7.86	0.60
Reach 1	.485		Bridge									
Reach 1	0.48	PF 1	75.00	5.82	9.33		10.08	0.010349	3.91	20.35	7.86	0.68
Reach 1	0.472	PF 1	75.00	5.76	9.55	8.34	9.97	0.004688	2.89	27.29	9.83	0.50
Reach 1	0.471		Bridge									
Reach 1	0.47	PF 1	75.00	5.34	9.05		9.44	0.004531	2.79	28.39	11.69	0.50
Reach 1	0.42	PF 1	75.00	5.82	8.24	8.06	9.07	0.013589	4.10	19.15	9.10	0.87
Reach 1	.35	PF 1	75.00	5.02	8.03		8.54	0.006611	3.22	24.54	9.16	0.61
Reach 1	0.26	PF 1	75.00	3.12	7.57		7.84	0.004235	2.51	34.59	10.13	0.39
Reach 1	0.22	PF 1	75.00	2.44	7.25		7.63	0.004748	2.78	29.08	8.95	0.43
Reach 1	0.16	PF 1	75.00	1.25	7.25	4.05	7.44	0.001221	1.97	42.88	8.24	0.26
Reach 1	.12		Bridge									
Reach 1	0.09	PF 1	75.00	1.59	7.05		7.19	0.000851	1.74	48.81	11.08	0.25
Reach 1	0.06	PF 1	75.00	1.82	6.74	4.56	7.13	0.005804	2.79	26.92	5.60	0.41

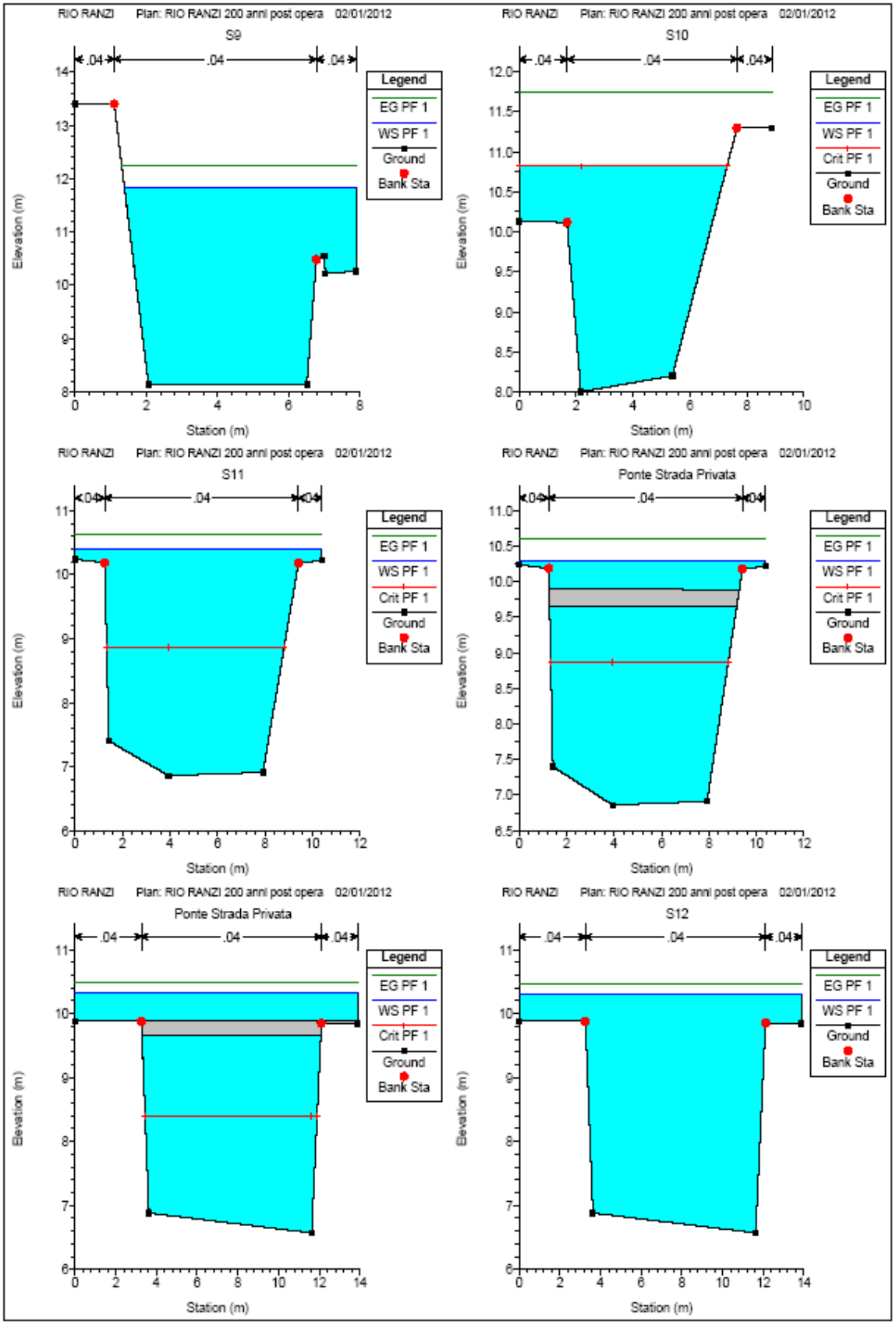
HEC-RAS Plan: RANZI 500 P River: RIO RANZI Reach: Reach 1 Profile: PF 1 (Continued)

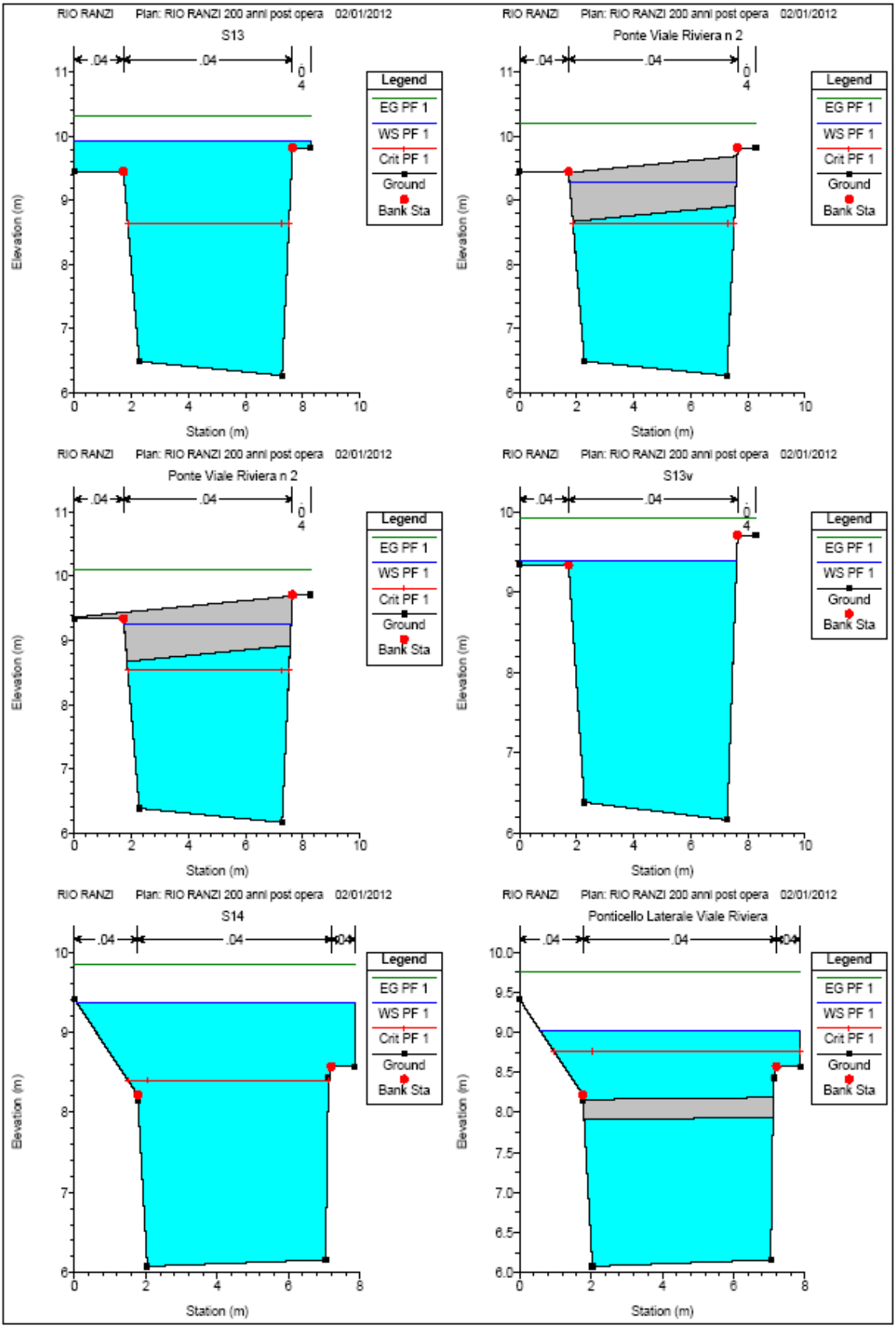
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	0.05		Culvert									
Reach 1	0.04	PF 1	75.00	1.35	4.07	4.07	5.40	0.027499	5.10	14.69	5.53	1.00
Reach 1	0.02	PF 1	75.00	0.59	2.83	3.39	4.96	0.047489	6.46	11.62	5.53	1.42
Reach 1	0.00	PF 1	75.00	-0.73	1.83	2.07	3.43	0.032457	5.60	13.38	5.53	1.15

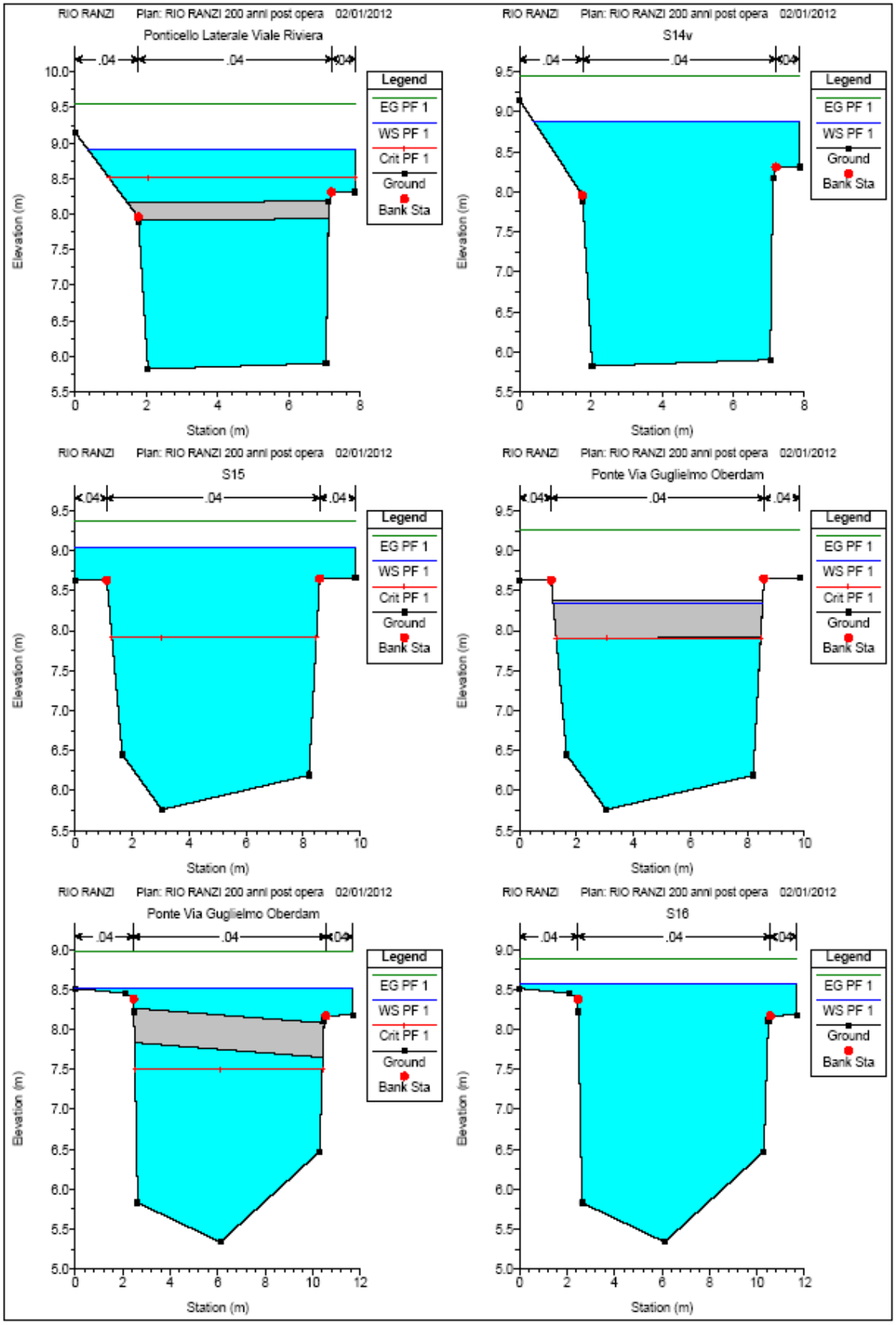
Figura 4.13 – Rio Ranzi – Sezioni idrauliche Tr=200 anni - condizione post opera

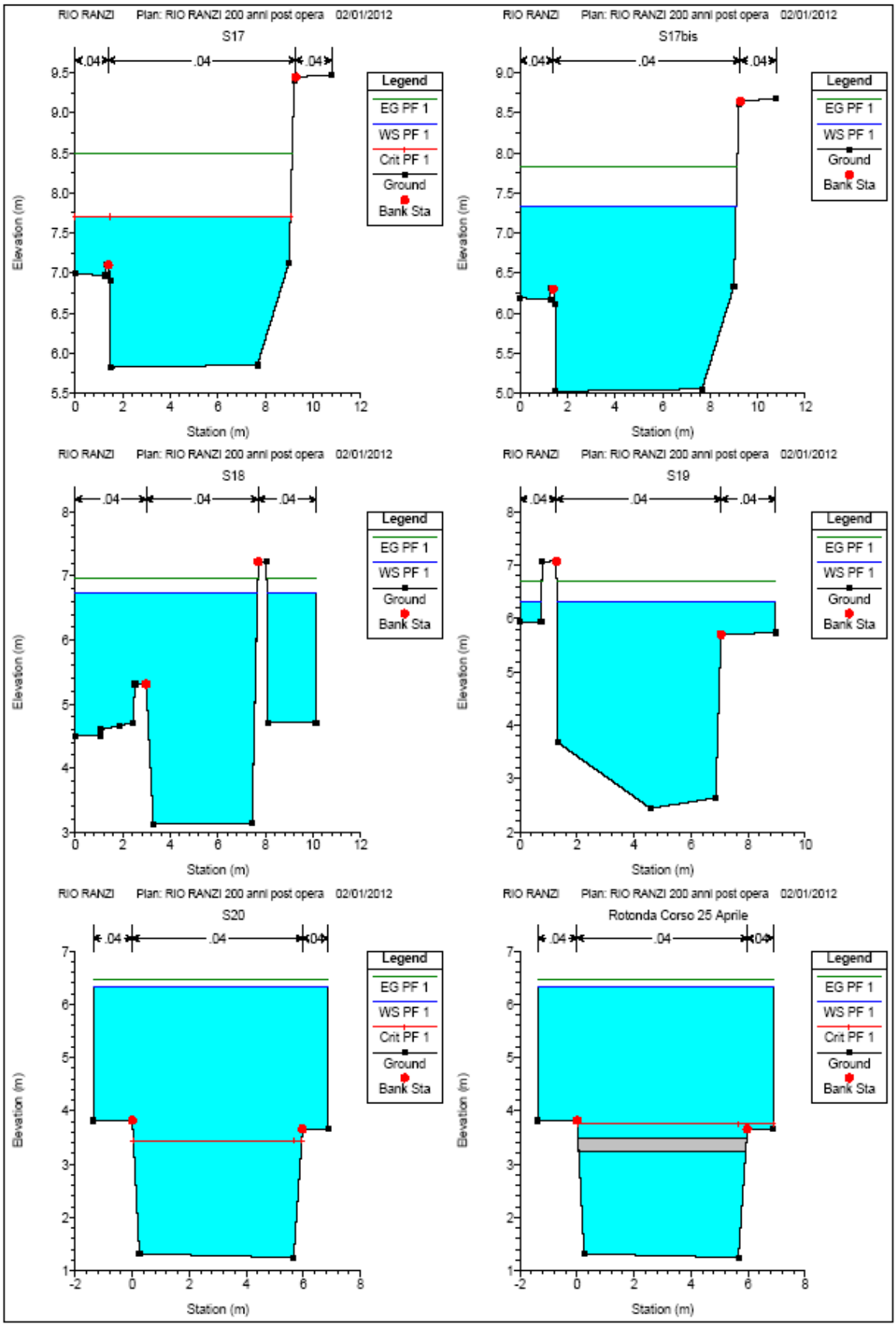


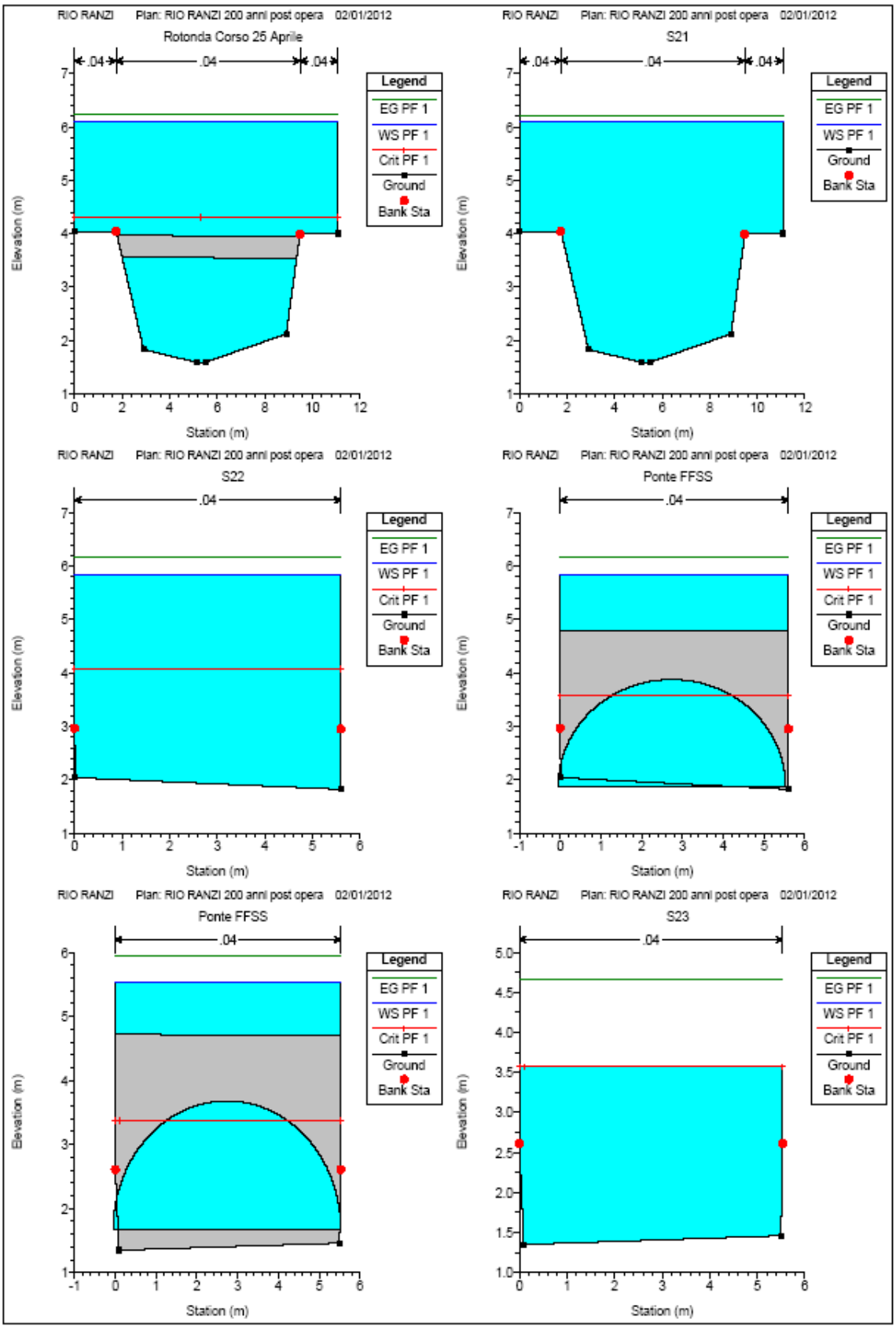

RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S6
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Moilastini
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Moilastini
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S7
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S8
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

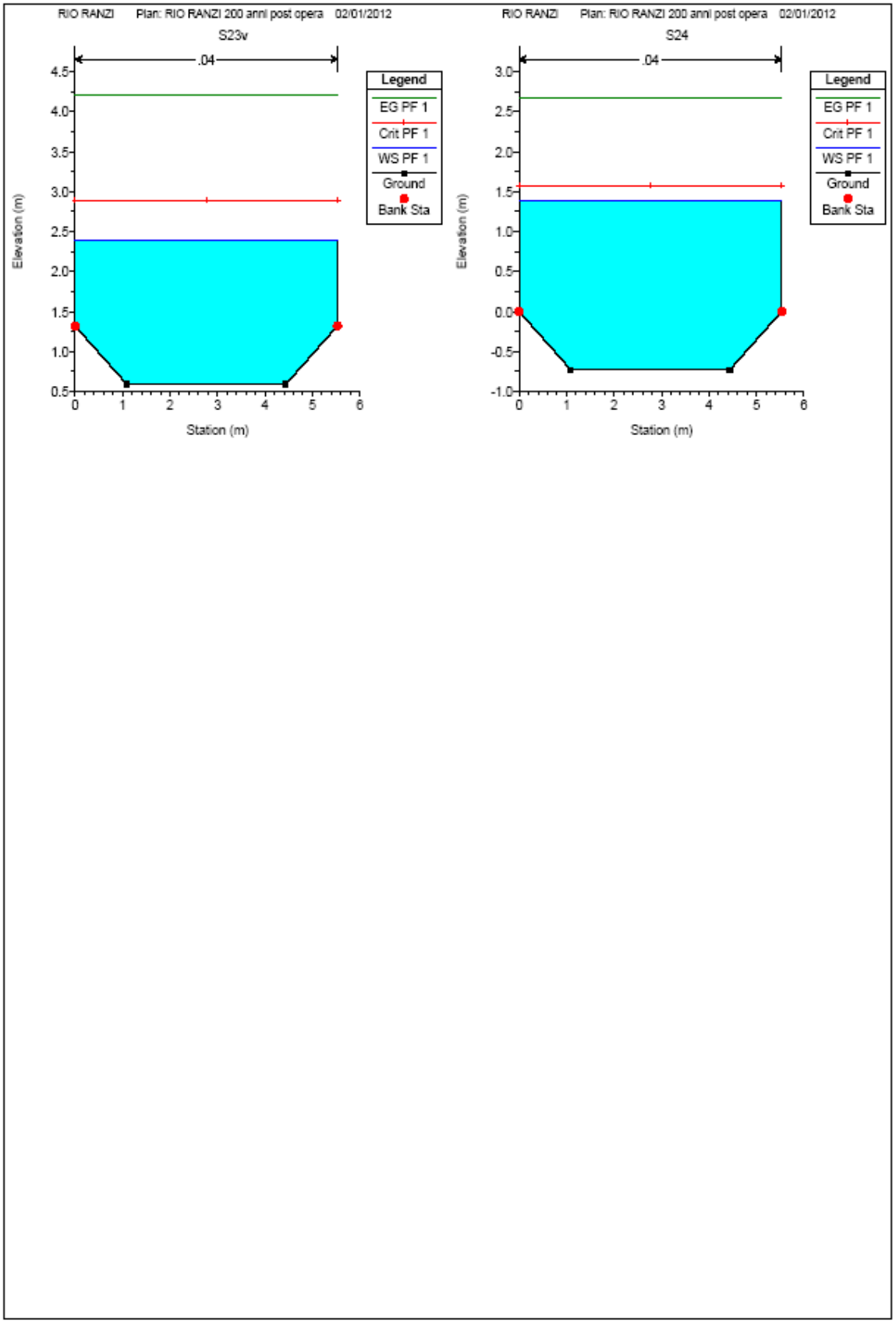

RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S9
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S10
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S11
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Strada Privata
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Strada Privata
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S12
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S13
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Viale Riviera n 2
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Viale Riviera n 2
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S13v
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S14
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponticello Laterale Viale Riviera
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponticello Laterale Viale Riviera
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S14v
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S15
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Guglielmo Oberdam
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte Via Guglielmo Oberdam
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S16
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S17
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S17bis
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S18
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S19
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S20
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Rotonda Corso 25 Aprile
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Rotonda Corso 25 Aprile
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S21
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S22
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte FFSS
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
Ponte FFSS
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S23
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (m)
Station (m)


RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S23v
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)
RIO RANZI Plan: RIO RANZI 200 anni post opera 02/01/2012
S24
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (m)
Station (m)

REGIONE LIGURIA

PROVINCIA DI SAVONA

COMUNE DI PIETRA LIGURE

RODRIGUEZ CANTIERI NAVALI S.p.A.

PROGETTO PER LA TRASFORMAZIONE URBANISTICA DEI CANTIERI NAVALI RODRIQUEZ IN UN PORTO TURISTICO CON ANNESSE STRUTTURE PUBBLICHE, RICETTIVE, RESIDENZIALI E PRODUTTIVE

Progetto Definitivo

VERIFICA DEL DEFLUSSO DEL RIO RANZI

ALLEGATO I

Verifiche a Moto permanente - Sezioni di calcolo

COMMITTENTE: Rodriguez Cantieri Navali S.p.A.

Progettista idraulico marittimo

Acquatecno S.r.l.

Collaboratore allo studio specialistico

Modiferr S.r.l.

Roma, dicembre 2011

RIO RANZI

CONDIZIONE ATTUALE

Tempo di ritorno 50 anni

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.84 Profile: PF 1

E.G. Elev (m)	14.95	Element	Left OB	Channel	Right OB
Vel Head (m)	0.26	Wt. n-Val.		0.040	
W.S. Elev (m)	14.69	Reach Len. (m)	6.83	6.82	6.82
Crit W.S. (m)	13.74	Flow Area (m2)		17.64	
E.G. Slope (m/m)	0.005013	Area (m2)		17.64	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.52	Top Width (m)		7.52	
Vel Total (m/s)	2.27	Avg. Vel. (m/s)		2.27	
Max Chl Dpth (m)	2.58	Hydr. Depth (m)		2.35	
Conv. Total (m3/s)	565.0	Conv. (m3/s)		565.0	
Length Wtd. (m)	6.82	Wetted Per. (m)		12.16	
Min Ch El (m)	12.11	Shear (N/m2)		71.29	
Alpha	1.00	Stream Power (N/m s)		161.66	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.65	12.30	0.43
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.74	5.07	0.55

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.83 Profile: PF 1

E.G. Elev (m)	14.87	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.		0.040	
W.S. Elev (m)	14.30	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	13.86	Flow Area (m2)		11.96	
E.G. Slope (m/m)	0.012568	Area (m2)		11.96	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.57	Top Width (m)		5.57	
Vel Total (m/s)	3.35	Avg. Vel. (m/s)		3.35	
Max Chl Dpth (m)	2.53	Hydr. Depth (m)		2.15	
Conv. Total (m3/s)	356.8	Conv. (m3/s)		356.8	
Length Wtd. (m)	5.00	Wetted Per. (m)		9.17	
Min Ch El (m)	11.77	Shear (N/m2)		160.75	
Alpha	1.00	Stream Power (N/m s)		537.85	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	0.65	12.20	0.43
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.74	5.02	0.55

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .825 BR U Profile: PF 1

E.G. Elev (m)	14.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.89	Wt. n-Val.		0.040	
W.S. Elev (m)	13.87	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	13.87	Flow Area (m2)		9.59	
E.G. Slope (m/m)	0.022929	Area (m2)		9.59	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.41	Top Width (m)		5.41	
Vel Total (m/s)	4.17	Avg. Vel. (m/s)		4.17	
Max Chl Dpth (m)	2.10	Hydr. Depth (m)		1.77	
Conv. Total (m3/s)	264.2	Conv. (m3/s)		264.2	
Length Wtd. (m)	5.00	Wetted Per. (m)		8.29	
Min Ch El (m)	11.77	Shear (N/m2)		260.11	
Alpha	1.00	Stream Power (N/m s)		1085.08	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.65	12.15	0.43
C & E Loss (m)	0.08	Cum SA (1000 m2)	0.74	5.00	0.55

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .825 BR D Profile: PF 1

E.G. Elev (m)	14.54	Element	Left OB	Channel	Right OB
Vel Head (m)	1.47	Wt. n-Val.		0.040	
W.S. Elev (m)	13.07	Reach Len. (m)	3.20	3.20	3.20
Crit W.S. (m)	13.46	Flow Area (m2)		7.45	
E.G. Slope (m/m)	0.046215	Area (m2)		7.45	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.15	Top Width (m)		5.15	
Vel Total (m/s)	5.37	Avg. Vel. (m/s)		5.37	
Max Chl Dpth (m)	1.72	Hydr. Depth (m)		1.44	
Conv. Total (m3/s)	186.1	Conv. (m3/s)		186.1	
Length Wtd. (m)	3.20	Wetted Per. (m)		7.45	
Min Ch El (m)	11.35	Shear (N/m2)		452.76	
Alpha	1.00	Stream Power (N/m s)		2431.70	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)	0.65	12.11	0.43
C & E Loss (m)	0.06	Cum SA (1000 m2)	0.74	4.97	0.55

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.82 Profile: PF 1

E.G. Elev (m)	14.40	Element	Left OB	Channel	Right OB
Vel Head (m)	1.12	Wt. n-Val.		0.040	
W.S. Elev (m)	13.28	Reach Len. (m)	11.17	12.17	12.21
Crit W.S. (m)	13.46	Flow Area (m2)		8.53	
E.G. Slope (m/m)	0.031671	Area (m2)		8.53	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.22	Top Width (m)		5.22	
Vel Total (m/s)	4.69	Avg. Vel. (m/s)		4.69	
Max Chl Dpth (m)	1.93	Hydr. Depth (m)		1.63	
Conv. Total (m3/s)	224.8	Conv. (m3/s)		224.8	
Length Wtd. (m)	12.17	Wetted Per. (m)		7.88	
Min Ch El (m)	11.35	Shear (N/m2)		336.24	
Alpha	1.00	Stream Power (N/m s)		1577.23	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)	0.65	12.08	0.43
C & E Loss (m)	0.17	Cum SA (1000 m2)	0.74	4.95	0.55

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.77 Profile: PF 1

E.G. Elev (m)	13.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.35	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.81	Reach Len. (m)	42.11	41.59	40.95
Crit W.S. (m)		Flow Area (m2)	0.63	14.57	0.66
E.G. Slope (m/m)	0.007846	Area (m2)	0.63	14.57	0.66
Q Total (m3/s)	40.00	Flow (m3/s)	0.59	38.77	0.64
Top Width (m)	8.05	Top Width (m)	1.44	5.51	1.10
Vel Total (m/s)	2.52	Avg. Vel. (m/s)	0.94	2.66	0.97
Max Chl Dpth (m)	3.03	Hydr. Depth (m)	0.44	2.64	0.60
Conv. Total (m3/s)	451.6	Conv. (m3/s)	6.7	437.7	7.2
Length Wtd. (m)	41.59	Wetted Per. (m)	2.28	11.05	2.28
Min Ch El (m)	9.78	Shear (N/m2)	21.25	101.39	22.26
Alpha	1.08	Stream Power (N/m s)	19.96	269.86	21.57
Frctn Loss (m)	0.49	Cum Volume (1000 m3)	0.64	11.57	0.42
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.74	4.69	0.54

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.73 Profile: PF 1

E.G. Elev (m)	12.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.73	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.90	Reach Len. (m)	7.94	7.74	6.73
Crit W.S. (m)	11.78	Flow Area (m2)		10.51	0.15
E.G. Slope (m/m)	0.019527	Area (m2)		10.51	0.15
Q Total (m3/s)	40.00	Flow (m3/s)		39.87	0.13
Top Width (m)	6.49	Top Width (m)		5.62	0.86
Vel Total (m/s)	3.75	Avg. Vel. (m/s)		3.79	0.87
Max Chl Dpth (m)	1.89	Hydr. Depth (m)		1.87	0.17
Conv. Total (m3/s)	286.2	Conv. (m3/s)		285.3	0.9
Length Wtd. (m)	7.73	Wetted Per. (m)		9.28	1.19
Min Ch El (m)	10.01	Shear (N/m2)		216.78	23.89
Alpha	1.02	Stream Power (N/m s)		822.58	20.84
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	0.63	11.05	0.41
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.71	4.46	0.50

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.70 Profile: PF 1

E.G. Elev (m)	12.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	10.84	Flow Area (m2)	0.69	16.44	0.57
E.G. Slope (m/m)	0.004530	Area (m2)	0.69	16.44	0.57
Q Total (m3/s)	40.00	Flow (m3/s)	0.59	38.97	0.44
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.26	Avg. Vel. (m/s)	0.85	2.37	0.78
Max Chl Dpth (m)	3.12	Hydr. Depth (m)	0.47	2.73	0.40
Conv. Total (m3/s)	594.3	Conv. (m3/s)	8.7	579.0	6.6
Length Wtd. (m)	5.00	Wetted Per. (m)	1.93	9.84	1.82
Min Ch El (m)	8.83	Shear (N/m2)	15.94	74.26	13.90
Alpha	1.08	Stream Power (N/m s)	13.54	176.01	10.78
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.63	10.76	0.40
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.69	4.33	0.47

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.695 BR U Profile: PF 1

E.G. Elev (m)	12.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.85	Reach Len. (m)	6.40	6.40	6.40
Crit W.S. (m)	10.84	Flow Area (m2)	0.55	14.94	0.43
E.G. Slope (m/m)	0.017193	Area (m2)	0.55	14.94	0.43
Q Total (m3/s)	40.00	Flow (m3/s)	0.81	38.63	0.56
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.51	Avg. Vel. (m/s)	1.47	2.59	1.30
Max Chl Dpth (m)	3.02	Hydr. Depth (m)	0.37	2.48	0.30
Conv. Total (m3/s)	305.1	Conv. (m3/s)	6.2	294.6	4.3
Length Wtd. (m)	6.40	Wetted Per. (m)	1.83	21.33	1.72
Min Ch El (m)	8.83	Shear (N/m2)	50.54	118.09	42.21
Alpha	1.03	Stream Power (N/m s)	74.21	305.29	54.96
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.62	10.68	0.40
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.68	4.30	0.47

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.695 BR D Profile: PF 1

E.G. Elev (m)	12.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.27	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.81	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	10.59	Flow Area (m2)	0.92	16.36	0.48
E.G. Slope (m/m)	0.012655	Area (m2)	0.92	16.36	0.48
Q Total (m3/s)	40.00	Flow (m3/s)	1.43	37.94	0.63
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.25	Avg. Vel. (m/s)	1.56	2.32	1.32
Max Chl Dpth (m)	3.23	Hydr. Depth (m)	0.54	2.65	0.47
Conv. Total (m3/s)	355.6	Conv. (m3/s)	12.7	337.2	5.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.24	21.84	1.50
Min Ch El (m)	8.58	Shear (N/m2)	51.07	92.94	39.83
Alpha	1.03	Stream Power (N/m s)	79.45	215.55	52.50
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	0.62	10.58	0.40
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.67	4.26	0.46

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.69 Profile: PF 1

E.G. Elev (m)	12.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.26	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.78	Reach Len. (m)	8.42	8.28	8.14
Crit W.S. (m)		Flow Area (m2)	0.87	17.11	0.45
E.G. Slope (m/m)	0.004011	Area (m2)	0.87	17.11	0.45
Q Total (m3/s)	40.00	Flow (m3/s)	0.75	38.93	0.33
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.17	Avg. Vel. (m/s)	0.85	2.28	0.72
Max Chl Dpth (m)	3.20	Hydr. Depth (m)	0.51	2.77	0.44
Conv. Total (m3/s)	631.6	Conv. (m3/s)	11.8	614.7	5.2
Length Wtd. (m)	8.28	Wetted Per. (m)	2.21	9.93	1.47
Min Ch El (m)	8.58	Shear (N/m2)	15.57	67.77	12.11
Alpha	1.07	Stream Power (N/m s)	13.29	154.22	8.74
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.61	10.50	0.39
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.67	4.23	0.45

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.66 Profile: PF 1

E.G. Elev (m)	11.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.56	Reach Len. (m)	8.12	7.98	7.71
Crit W.S. (m)		Flow Area (m2)		15.66	0.42
E.G. Slope (m/m)	0.006037	Area (m2)		15.66	0.42
Q Total (m3/s)	40.00	Flow (m3/s)		39.71	0.29
Top Width (m)	8.16	Top Width (m)		6.43	1.73
Vel Total (m/s)	2.49	Avg. Vel. (m/s)		2.54	0.69
Max Chl Dpth (m)	2.68	Hydr. Depth (m)		2.44	0.24
Conv. Total (m3/s)	514.8	Conv. (m3/s)		511.1	3.7
Length Wtd. (m)	7.97	Wetted Per. (m)		10.50	1.97
Min Ch El (m)	8.88	Shear (N/m2)		88.31	12.50
Alpha	1.03	Stream Power (N/m s)		223.92	8.61
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.61	10.10	0.38
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.64	4.07	0.42

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.63 Profile: PF 1

E.G. Elev (m)	11.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.33	Reach Len. (m)	9.26	9.15	8.93
Crit W.S. (m)		Flow Area (m2)		15.69	1.15
E.G. Slope (m/m)	0.005387	Area (m2)		15.69	1.15
Q Total (m3/s)	40.00	Flow (m3/s)		38.74	1.26
Top Width (m)	6.41	Top Width (m)		5.30	1.11
Vel Total (m/s)	2.38	Avg. Vel. (m/s)		2.47	1.10
Max Chl Dpth (m)	3.19	Hydr. Depth (m)		2.96	1.04
Conv. Total (m3/s)	545.0	Conv. (m3/s)		527.8	17.2
Length Wtd. (m)	9.15	Wetted Per. (m)		10.05	2.48
Min Ch El (m)	8.14	Shear (N/m2)		82.45	24.47
Alpha	1.05	Stream Power (N/m s)		203.56	26.87
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.61	9.64	0.36
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.64	3.88	0.38

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.59 Profile: PF 1

E.G. Elev (m)	11.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.78	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	10.43	Reach Len. (m)	7.33	7.18	6.54
Crit W.S. (m)	10.43	Flow Area (m2)	0.51	9.96	
E.G. Slope (m/m)	0.019065	Area (m2)	0.51	9.96	
Q Total (m3/s)	40.00	Flow (m3/s)	0.71	39.29	
Top Width (m)	7.01	Top Width (m)	1.68	5.33	
Vel Total (m/s)	3.82	Avg. Vel. (m/s)	1.40	3.94	
Max Chl Dpth (m)	2.43	Hydr. Depth (m)	0.30	1.87	
Conv. Total (m3/s)	289.7	Conv. (m3/s)	5.1	284.5	
Length Wtd. (m)	7.18	Wetted Per. (m)	1.98	8.15	
Min Ch El (m)	8.00	Shear (N/m2)	48.11	228.39	
Alpha	1.05	Stream Power (N/m s)	67.18	900.93	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.60	9.16	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.64	3.68	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.57 Profile: PF 1

E.G. Elev (m)	9.78	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.040	
W.S. Elev (m)	9.53	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.51	Flow Area (m2)		18.31	
E.G. Slope (m/m)	0.004147	Area (m2)		18.31	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.83	Top Width (m)		7.83	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	2.67	Hydr. Depth (m)		2.34	
Conv. Total (m3/s)	621.1	Conv. (m3/s)		621.1	
Length Wtd. (m)	5.00	Wetted Per. (m)		11.58	
Min Ch El (m)	6.86	Shear (N/m2)		64.30	
Alpha	1.00	Stream Power (N/m s)		140.51	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	8.96	0.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.63	3.55	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.565 BR U Profile: PF 1

E.G. Elev (m)	9.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.		0.040	
W.S. Elev (m)	9.51	Reach Len. (m)	8.16	8.16	8.16
Crit W.S. (m)	8.51	Flow Area (m2)		18.09	
E.G. Slope (m/m)	0.004285	Area (m2)		18.09	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.81	Top Width (m)		7.81	
Vel Total (m/s)	2.21	Avg. Vel. (m/s)		2.21	
Max Chl Dpth (m)	2.65	Hydr. Depth (m)		2.32	
Conv. Total (m3/s)	611.1	Conv. (m3/s)		611.1	
Length Wtd. (m)	8.16	Wetted Per. (m)		11.52	
Min Ch El (m)	6.86	Shear (N/m2)		65.99	
Alpha	1.00	Stream Power (N/m s)		145.90	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	8.87	0.35
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.63	3.51	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.565 BR D Profile: PF 1

E.G. Elev (m)	9.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.040	
W.S. Elev (m)	9.55	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.08	Flow Area (m2)		23.73	
E.G. Slope (m/m)	0.002189	Area (m2)		23.73	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	8.77	Top Width (m)		8.77	
Vel Total (m/s)	1.69	Avg. Vel. (m/s)		1.69	
Max Chl Dpth (m)	2.98	Hydr. Depth (m)		2.71	
Conv. Total (m3/s)	855.0	Conv. (m3/s)		855.0	
Length Wtd. (m)	5.00	Wetted Per. (m)		13.72	
Min Ch El (m)	6.57	Shear (N/m2)		37.13	
Alpha	1.00	Stream Power (N/m s)		62.59	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.60	8.70	0.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.63	3.44	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.56 Profile: PF 1

E.G. Elev (m)	9.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.		0.040	
W.S. Elev (m)	9.54	Reach Len. (m)	9.69	10.00	10.27
Crit W.S. (m)		Flow Area (m2)		23.62	
E.G. Slope (m/m)	0.002217	Area (m2)		23.62	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	8.76	Top Width (m)		8.76	
Vel Total (m/s)	1.69	Avg. Vel. (m/s)		1.69	
Max Chl Dpth (m)	2.97	Hydr. Depth (m)		2.70	
Conv. Total (m3/s)	849.5	Conv. (m3/s)		849.5	
Length Wtd. (m)	10.00	Wetted Per. (m)		13.69	
Min Ch El (m)	6.57	Shear (N/m2)		37.51	
Alpha	1.00	Stream Power (N/m s)		63.52	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	8.58	0.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.63	3.40	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.51 Profile: PF 1

E.G. Elev (m)	9.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.040	
W.S. Elev (m)	9.15	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.22	Flow Area (m2)		14.92	
E.G. Slope (m/m)	0.007293	Area (m2)		14.92	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.79	Top Width (m)		5.79	
Vel Total (m/s)	2.68	Avg. Vel. (m/s)		2.68	
Max Chl Dpth (m)	2.88	Hydr. Depth (m)		2.57	
Conv. Total (m3/s)	468.4	Conv. (m3/s)		468.4	
Length Wtd. (m)	5.00	Wetted Per. (m)		10.60	
Min Ch El (m)	6.27	Shear (N/m2)		100.67	
Alpha	1.00	Stream Power (N/m s)		269.95	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.60	7.80	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.10	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.505 BR U Profile: PF 1

E.G. Elev (m)	9.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.49	Wt. n-Val.		0.040	
W.S. Elev (m)	8.95	Reach Len. (m)	2.00	2.00	2.00
Crit W.S. (m)	8.22	Flow Area (m2)		12.90	
E.G. Slope (m/m)	0.019787	Area (m2)		12.90	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	3.10	Avg. Vel. (m/s)		3.10	
Max Chl Dpth (m)	2.68	Hydr. Depth (m)			
Conv. Total (m3/s)	284.4	Conv. (m3/s)		284.4	
Length Wtd. (m)	2.00	Wetted Per. (m)		15.57	
Min Ch El (m)	6.27	Shear (N/m2)		160.71	
Alpha	1.00	Stream Power (N/m s)		498.41	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.60	7.73	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.09	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.505 BR D Profile: PF 1

E.G. Elev (m)	9.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.45	Wt. n-Val.		0.040	
W.S. Elev (m)	8.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.11	Flow Area (m2)		13.52	
E.G. Slope (m/m)	0.017260	Area (m2)		13.52	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	2.96	Avg. Vel. (m/s)		2.96	
Max Chl Dpth (m)	2.79	Hydr. Depth (m)			
Conv. Total (m3/s)	304.5	Conv. (m3/s)		304.5	
Length Wtd. (m)	5.00	Wetted Per. (m)		15.83	
Min Ch El (m)	6.16	Shear (N/m2)		144.64	
Alpha	1.00	Stream Power (N/m s)		427.78	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.60	7.71	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.09	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .5 Profile: PF 1

E.G. Elev (m)	9.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.		0.040	
W.S. Elev (m)	8.92	Reach Len. (m)	6.82	7.50	7.93
Crit W.S. (m)		Flow Area (m2)		14.25	
E.G. Slope (m/m)	0.008244	Area (m2)		14.25	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.76	Top Width (m)		5.76	
Vel Total (m/s)	2.81	Avg. Vel. (m/s)		2.81	
Max Chl Dpth (m)	2.76	Hydr. Depth (m)		2.47	
Conv. Total (m3/s)	440.5	Conv. (m3/s)		440.5	
Length Wtd. (m)	7.50	Wetted Per. (m)		10.36	
Min Ch El (m)	6.16	Shear (N/m2)		111.16	
Alpha	1.00	Stream Power (N/m s)		312.01	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.60	7.64	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.08	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .49 Profile: PF 1

E.G. Elev (m)	9.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.38	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.88	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.96	Flow Area (m2)	0.32	14.42	0.20
E.G. Slope (m/m)	0.006994	Area (m2)	0.32	14.42	0.20
Q Total (m3/s)	40.00	Flow (m3/s)	0.28	39.56	0.15
Top Width (m)	7.07	Top Width (m)	0.98	5.43	0.66
Vel Total (m/s)	2.68	Avg. Vel. (m/s)	0.88	2.74	0.74
Max Chl Dpth (m)	2.80	Hydr. Depth (m)	0.33	2.66	0.31
Conv. Total (m3/s)	478.3	Conv. (m3/s)	3.4	473.1	1.8
Length Wtd. (m)	5.00	Wetted Per. (m)	1.18	9.59	0.97
Min Ch El (m)	6.08	Shear (N/m2)	18.75	103.12	14.43
Alpha	1.04	Stream Power (N/m s)	16.52	282.95	10.68
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	0.60	7.53	0.34
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.63	3.03	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .485 BR U Profile: PF 1

E.G. Elev (m)	9.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.46	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.91	Flow Area (m2)	0.04	10.83	
E.G. Slope (m/m)	0.048031	Area (m2)	0.04	10.83	
Q Total (m3/s)	40.00	Flow (m3/s)	0.05	39.95	
Top Width (m)	5.73	Top Width (m)	0.36	5.37	
Vel Total (m/s)	3.68	Avg. Vel. (m/s)	1.18	3.69	
Max Chl Dpth (m)	2.38	Hydr. Depth (m)	0.12	2.02	
Conv. Total (m3/s)	182.5	Conv. (m3/s)	0.2	182.3	
Length Wtd. (m)	5.00	Wetted Per. (m)	0.43	19.59	
Min Ch El (m)	6.08	Shear (N/m2)	47.17	260.30	
Alpha	1.00	Stream Power (N/m s)	55.74	960.46	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)	0.60	7.47	0.34
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.62	3.01	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .485 BR D Profile: PF 1

E.G. Elev (m)	8.91	Element	Left OB	Channel	Right OB
Vel Head (m)	0.66	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.25	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.71	Flow Area (m2)	0.03	11.07	
E.G. Slope (m/m)	0.045574	Area (m2)	0.03	11.07	
Q Total (m3/s)	40.00	Flow (m3/s)	0.03	39.97	
Top Width (m)	5.82	Top Width (m)	0.43	5.40	
Vel Total (m/s)	3.60	Avg. Vel. (m/s)	0.92	3.61	
Max Chl Dpth (m)	2.43	Hydr. Depth (m)	0.08	2.05	
Conv. Total (m3/s)	187.4	Conv. (m3/s)	0.1	187.2	
Length Wtd. (m)	5.00	Wetted Per. (m)	0.46	19.91	
Min Ch El (m)	5.82	Shear (N/m2)	32.02	248.56	
Alpha	1.00	Stream Power (N/m s)	29.48	897.16	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)	0.60	7.41	0.34
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.62	2.98	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.48 Profile: PF 1

E.G. Elev (m)	8.77	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.23	Reach Len. (m)	2.61	2.58	2.90
Crit W.S. (m)		Flow Area (m2)	0.06	12.34	
E.G. Slope (m/m)	0.011860	Area (m2)	0.06	12.34	
Q Total (m3/s)	40.00	Flow (m3/s)	0.04	39.96	
Top Width (m)	5.80	Top Width (m)	0.41	5.39	
Vel Total (m/s)	3.23	Avg. Vel. (m/s)	0.64	3.24	
Max Chl Dpth (m)	2.42	Hydr. Depth (m)	0.14	2.29	
Conv. Total (m3/s)	367.3	Conv. (m3/s)	0.3	367.0	
Length Wtd. (m)	2.58	Wetted Per. (m)	0.49	9.50	
Min Ch El (m)	5.82	Shear (N/m2)	13.28	150.97	
Alpha	1.01	Stream Power (N/m s)	8.51	489.08	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	7.35	0.34
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.62	2.95	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.472 Profile: PF 1

E.G. Elev (m)	8.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.		0.040	
W.S. Elev (m)	8.37	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.55	Flow Area (m2)		16.37	
E.G. Slope (m/m)	0.005575	Area (m2)		16.37	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.36	Top Width (m)		7.36	
Vel Total (m/s)	2.44	Avg. Vel. (m/s)		2.44	
Max Chl Dpth (m)	2.61	Hydr. Depth (m)		2.22	
Conv. Total (m3/s)	535.7	Conv. (m3/s)		535.7	
Length Wtd. (m)	5.00	Wetted Per. (m)		10.92	
Min Ch El (m)	5.76	Shear (N/m2)		81.91	
Alpha	1.00	Stream Power (N/m s)		200.18	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.60	7.32	0.34
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.62	2.94	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.471 BR U Profile: PF 1

E.G. Elev (m)	8.61	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	Wt. n-Val.		0.040	
W.S. Elev (m)	8.13	Reach Len. (m)	4.79	4.79	4.79
Crit W.S. (m)	7.56	Flow Area (m2)		12.99	
E.G. Slope (m/m)	0.021998	Area (m2)		12.99	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	3.08	Avg. Vel. (m/s)		3.08	
Max Chl Dpth (m)	2.37	Hydr. Depth (m)			
Conv. Total (m3/s)	269.7	Conv. (m3/s)		269.7	
Length Wtd. (m)	4.79	Wetted Per. (m)		17.15	
Min Ch El (m)	5.76	Shear (N/m2)		163.33	
Alpha	1.00	Stream Power (N/m s)		503.11	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.60	7.24	0.34
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.62	2.92	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.471 BR D Profile: PF 1

E.G. Elev (m)	8.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	Wt. n-Val.		0.040	
W.S. Elev (m)	8.14	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.16	Flow Area (m2)		15.46	
E.G. Slope (m/m)	0.016683	Area (m2)		15.46	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	2.56	Top Width (m)		2.56	
Vel Total (m/s)	2.59	Avg. Vel. (m/s)		2.59	
Max Chl Dpth (m)	2.80	Hydr. Depth (m)		6.04	
Conv. Total (m3/s)	309.7	Conv. (m3/s)		309.7	
Length Wtd. (m)	5.00	Wetted Per. (m)		21.57	
Min Ch El (m)	5.34	Shear (N/m2)		117.29	
Alpha	1.00	Stream Power (N/m s)		303.38	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.60	7.17	0.34
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.62	2.91	0.35

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.47 Profile: PF 1

E.G. Elev (m)	8.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.23	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	8.18	Reach Len. (m)	9.95	9.81	9.26
Crit W.S. (m)		Flow Area (m2)		18.90	0.01
E.G. Slope (m/m)	0.003892	Area (m2)		18.90	0.01
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	0.00
Top Width (m)	9.22	Top Width (m)		8.09	1.13
Vel Total (m/s)	2.12	Avg. Vel. (m/s)		2.12	0.05
Max Chl Dpth (m)	2.84	Hydr. Depth (m)		2.34	0.01
Conv. Total (m3/s)	641.2	Conv. (m3/s)		641.2	0.0
Length Wtd. (m)	9.81	Wetted Per. (m)		11.95	1.13
Min Ch El (m)	5.34	Shear (N/m2)		60.35	0.19
Alpha	1.00	Stream Power (N/m s)		127.75	0.01
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.60	7.09	0.34
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.62	2.89	0.34

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.42 Profile: PF 1

E.G. Elev (m)	8.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.65	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	7.40	Reach Len. (m)	14.28	14.89	15.52
Crit W.S. (m)	7.40	Flow Area (m2)	0.57	10.90	
E.G. Slope (m/m)	0.017402	Area (m2)	0.57	10.90	
Q Total (m3/s)	40.00	Flow (m3/s)	0.83	39.17	
Top Width (m)	9.02	Top Width (m)	1.40	7.62	
Vel Total (m/s)	3.49	Avg. Vel. (m/s)	1.46	3.59	
Max Chl Dpth (m)	1.58	Hydr. Depth (m)	0.41	1.43	
Conv. Total (m3/s)	303.2	Conv. (m3/s)	6.3	296.9	
Length Wtd. (m)	14.88	Wetted Per. (m)	1.94	9.59	
Min Ch El (m)	5.82	Shear (N/m2)	50.20	194.03	
Alpha	1.04	Stream Power (N/m s)	73.22	697.10	
Frctn Loss (m)	0.26	Cum Volume (1000 m3)	0.59	6.51	0.34
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.58	2.58	0.34

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .35 Profile: PF 1

E.G. Elev (m)	7.30	Element	Left OB	Channel	Right OB
Vel Head (m)	0.46	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	6.84	Reach Len. (m)	19.82	19.91	20.18
Crit W.S. (m)		Flow Area (m2)	0.91	12.75	
E.G. Slope (m/m)	0.010428	Area (m2)	0.91	12.75	
Q Total (m3/s)	40.00	Flow (m3/s)	1.29	38.71	
Top Width (m)	9.05	Top Width (m)	1.40	7.65	
Vel Total (m/s)	2.93	Avg. Vel. (m/s)	1.42	3.04	
Max Chl Dpth (m)	1.82	Hydr. Depth (m)	0.65	1.67	
Conv. Total (m3/s)	391.7	Conv. (m3/s)	12.7	379.0	
Length Wtd. (m)	19.91	Wetted Per. (m)	2.18	9.83	
Min Ch El (m)	5.02	Shear (N/m2)	42.63	132.61	
Alpha	1.05	Stream Power (N/m s)	60.72	402.60	
Frctn Loss (m)	0.20	Cum Volume (1000 m3)	0.56	6.00	0.34
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.52	2.24	0.34

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.26 Profile: PF 1

E.G. Elev (m)	6.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.23	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.06	Reach Len. (m)	9.46	9.83	9.75
Crit W.S. (m)		Flow Area (m2)	4.01	12.98	2.74
E.G. Slope (m/m)	0.005527	Area (m2)	4.01	12.98	2.74
Q Total (m3/s)	40.00	Flow (m3/s)	6.28	30.17	3.55
Top Width (m)	9.68	Top Width (m)	2.98	4.65	2.05
Vel Total (m/s)	2.03	Avg. Vel. (m/s)	1.57	2.32	1.29
Max Chl Dpth (m)	2.94	Hydr. Depth (m)	1.34	2.79	1.33
Conv. Total (m3/s)	538.1	Conv. (m3/s)	84.5	405.8	47.7
Length Wtd. (m)	9.79	Wetted Per. (m)	5.16	9.28	4.71
Min Ch El (m)	3.12	Shear (N/m2)	42.03	75.79	31.51
Alpha	1.12	Stream Power (N/m s)	65.93	176.14	40.80
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.30	4.43	0.28
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.26	1.50	0.24

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.22 Profile: PF 1

E.G. Elev (m)	5.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.		0.040	
W.S. Elev (m)	5.61	Reach Len. (m)	8.67	8.67	8.67
Crit W.S. (m)		Flow Area (m2)		15.60	
E.G. Slope (m/m)	0.006343	Area (m2)		15.60	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.75	Top Width (m)		5.75	
Vel Total (m/s)	2.56	Avg. Vel. (m/s)		2.56	
Max Chl Dpth (m)	3.17	Hydr. Depth (m)		2.72	
Conv. Total (m3/s)	502.3	Conv. (m3/s)		502.3	
Length Wtd. (m)	8.67	Wetted Per. (m)		10.68	
Min Ch El (m)	2.44	Shear (N/m2)		90.87	
Alpha	1.00	Stream Power (N/m s)		232.93	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.26	3.90	0.24
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.20	1.30	0.18

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.16 Profile: PF 1

E.G. Elev (m)	5.71	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.61	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.03	Flow Area (m2)	2.45	25.11	1.75
E.G. Slope (m/m)	0.001081	Area (m2)	2.45	25.11	1.75
Q Total (m3/s)	40.00	Flow (m3/s)	1.70	37.26	1.04
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.36	Avg. Vel. (m/s)	0.69	1.48	0.59
Max Chl Dpth (m)	4.36	Hydr. Depth (m)	1.79	4.21	1.95
Conv. Total (m3/s)	1216.4	Conv. (m3/s)	51.6	1133.2	31.7
Length Wtd. (m)	5.00	Wetted Per. (m)	3.16	10.35	2.85
Min Ch El (m)	1.25	Shear (N/m2)	8.22	25.72	6.52
Alpha	1.12	Stream Power (N/m s)	5.70	38.16	3.88
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.22	2.87	0.18
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	0.99	0.12

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .12 BR U Profile: PF 1

E.G. Elev (m)	5.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.59	Reach Len. (m)	69.57	69.57	69.57
Crit W.S. (m)	3.04	Flow Area (m2)	2.43	23.57	1.74
E.G. Slope (m/m)	0.003205	Area (m2)	2.43	23.57	1.74
Q Total (m3/s)	40.00	Flow (m3/s)	2.90	35.32	1.78
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.44	Avg. Vel. (m/s)	1.19	1.50	1.02
Max Chl Dpth (m)	4.34	Hydr. Depth (m)	1.77	3.95	1.93
Conv. Total (m3/s)	706.6	Conv. (m3/s)	51.2	624.0	31.4
Length Wtd. (m)	69.57	Wetted Per. (m)	3.14	21.63	2.83
Min Ch El (m)	1.25	Shear (N/m2)	24.29	34.25	19.30
Alpha	1.03	Stream Power (N/m s)	28.96	51.34	19.73
Frctn Loss (m)	0.26	Cum Volume (1000 m3)	0.20	2.75	0.17
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	0.96	0.11

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .12 BR D Profile: PF 1

E.G. Elev (m)	5.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.33	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.40	Flow Area (m2)	2.26	22.30	2.14
E.G. Slope (m/m)	0.004286	Area (m2)	2.26	22.30	2.14
Q Total (m3/s)	40.00	Flow (m3/s)	3.03	34.14	2.83
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.50	Avg. Vel. (m/s)	1.34	1.53	1.33
Max Chl Dpth (m)	3.74	Hydr. Depth (m)	1.29	2.88	1.34
Conv. Total (m3/s)	611.0	Conv. (m3/s)	46.3	521.4	43.3
Length Wtd. (m)	5.00	Wetted Per. (m)	3.04	24.64	2.93
Min Ch El (m)	1.59	Shear (N/m2)	31.21	38.03	30.64
Alpha	1.01	Stream Power (N/m s)	41.89	58.23	40.63
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.04	1.16	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.03	0.49	0.02

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.09 Profile: PF 1

E.G. Elev (m)	5.43	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.33	Reach Len. (m)	6.97	6.96	6.97
Crit W.S. (m)		Flow Area (m2)	2.26	25.34	2.13
E.G. Slope (m/m)	0.001059	Area (m2)	2.26	25.34	2.13
Q Total (m3/s)	40.00	Flow (m3/s)	1.50	37.09	1.41
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.35	Avg. Vel. (m/s)	0.67	1.46	0.66
Max Chl Dpth (m)	3.74	Hydr. Depth (m)	1.29	3.28	1.33
Conv. Total (m3/s)	1229.0	Conv. (m3/s)	46.2	1139.5	43.2
Length Wtd. (m)	6.96	Wetted Per. (m)	3.04	10.50	2.93
Min Ch El (m)	1.59	Shear (N/m2)	7.71	25.06	7.57
Alpha	1.12	Stream Power (N/m s)	5.14	36.68	4.99
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.03	1.04	0.03
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.02	0.45	0.02

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.06 Profile: PF 1

E.G. Elev (m)	5.38	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.		0.040	
W.S. Elev (m)	5.12	Reach Len. (m)	29.96	28.30	25.61
Crit W.S. (m)	3.66	Flow Area (m2)		17.88	
E.G. Slope (m/m)	0.004695	Area (m2)		17.88	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.60	Top Width (m)		5.60	
Vel Total (m/s)	2.24	Avg. Vel. (m/s)		2.24	
Max Chl Dpth (m)	3.30	Hydr. Depth (m)		3.19	
Conv. Total (m3/s)	583.8	Conv. (m3/s)		583.8	
Length Wtd. (m)	28.30	Wetted Per. (m)		11.98	
Min Ch El (m)	1.82	Shear (N/m2)		68.70	
Alpha	1.00	Stream Power (N/m s)		153.68	
Frctn Loss (m)		Cum Volume (1000 m3)		0.59	
C & E Loss (m)		Cum SA (1000 m2)		0.31	

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.04 Profile: PF 1

E.G. Elev (m)	4.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.87	Wt. n-Val.		0.040	
W.S. Elev (m)	3.16	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.16	Flow Area (m2)		9.66	
E.G. Slope (m/m)	0.024726	Area (m2)		9.66	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	4.14	Avg. Vel. (m/s)		4.14	
Max Chl Dpth (m)	1.81	Hydr. Depth (m)		1.75	
Conv. Total (m3/s)	254.4	Conv. (m3/s)		254.4	
Length Wtd. (m)	5.00	Wetted Per. (m)		8.93	
Min Ch El (m)	1.35	Shear (N/m2)		262.16	
Alpha	1.00	Stream Power (N/m s)		1085.63	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)		0.20	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.15	

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.02 Profile: PF 1

E.G. Elev (m)	3.60	Element	Left OB	Channel	Right OB
Vel Head (m)	1.56	Wt. n-Val.		0.040	
W.S. Elev (m)	2.04	Reach Len. (m)	8.68	8.68	8.68
Crit W.S. (m)	2.48	Flow Area (m2)		7.23	
E.G. Slope (m/m)	0.050609	Area (m2)		7.23	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.53	Avg. Vel. (m/s)		5.53	
Max Chl Dpth (m)	1.45	Hydr. Depth (m)		1.31	
Conv. Total (m3/s)	177.8	Conv. (m3/s)		177.8	
Length Wtd. (m)	8.68	Wetted Per. (m)		7.42	
Min Ch El (m)	0.59	Shear (N/m2)		483.95	
Alpha	1.00	Stream Power (N/m s)		2676.43	
Frctn Loss (m)	0.22	Cum Volume (1000 m3)		0.12	
C & E Loss (m)	0.03	Cum SA (1000 m2)		0.10	

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.00 Profile: PF 1

E.G. Elev (m)	2.51	Element	Left OB	Channel	Right OB
Vel Head (m)	1.92	Wt. n-Val.		0.040	
W.S. Elev (m)	0.59	Reach Len. (m)			
Crit W.S. (m)	1.16	Flow Area (m2)		6.51	
E.G. Slope (m/m)	0.068377	Area (m2)		6.51	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	6.14	Avg. Vel. (m/s)		6.14	
Max Chl Dpth (m)	1.32	Hydr. Depth (m)		1.18	
Conv. Total (m3/s)	153.0	Conv. (m3/s)		153.0	
Length Wtd. (m)		Wetted Per. (m)		7.16	
Min Ch El (m)	-0.73	Shear (N/m2)		610.32	
Alpha	1.00	Stream Power (N/m s)		3747.21	
Frctn Loss (m)	0.57	Cum Volume (1000 m3)			
C & E Loss (m)	0.01	Cum SA (1000 m2)			

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .825 Profile: PF 1

E.G. US. (m)	14.87	Element	Inside BR US	Inside BR DS
W.S. US. (m)	14.30	E.G. Elev (m)	14.75	14.54
Q Total (m3/s)	40.00	W.S. Elev (m)	13.87	13.07
Q Bridge (m3/s)	40.00	Crit W.S. (m)	13.87	13.46
Q Weir (m3/s)		Max Chl Dpth (m)	2.10	1.72
Weir Sta Lft (m)		Vel Total (m/s)	4.17	5.37
Weir Sta Rgt (m)		Flow Area (m2)	9.59	7.45
Weir Submerg		Froude # Chl	1.00	1.43
Weir Max Depth (m)		Specif Force (m3)	25.91	27.48
Min El Weir Flow (m)	14.74	Hydr Depth (m)	1.77	1.44
Min El Prs (m)	14.08	W.P. Total (m)	8.29	7.45
Delta EG (m)	0.47	Conv. Total (m3/s)	264.2	186.1
Delta WS (m)	1.02	Top Width (m)	5.41	5.15
BR Open Area (m2)	10.69	Frctn Loss (m)	0.09	0.16
BR Open Vel (m/s)	5.37	C & E Loss (m)	0.08	0.06
Coef of Q		Shear Total (N/m2)	260.11	452.76
Br Sel Method	Energy only	Power Total (N/m s)	1085.08	2431.70

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.695 Profile: PF 1

E.G. US. (m)	12.23	Element	Inside BR US	Inside BR DS
W.S. US. (m)	11.95	E.G. Elev (m)	12.19	12.07
Q Total (m3/s)	40.00	W.S. Elev (m)	11.85	11.81
Q Bridge (m3/s)	29.50	Crit W.S. (m)	10.84	10.59
Q Weir (m3/s)		Max Chl Dpth (m)	3.02	3.23
Weir Sta Lft (m)		Vel Total (m/s)	2.51	2.25
Weir Sta Rgt (m)		Flow Area (m2)	15.92	17.76
Weir Submerg		Froude # Chl	0.49	0.43
Weir Max Depth (m)		Specif Force (m3)	31.51	34.13
Min El Weir Flow (m)	11.23	Hydr Depth (m)	1.79	1.99
Min El Prs (m)	11.07	W.P. Total (m)	24.89	25.57
Delta EG (m)	0.19	Conv. Total (m3/s)	305.1	355.6
Delta WS (m)	0.17	Top Width (m)	8.92	8.91
BR Open Area (m2)	11.01	Frctn Loss (m)	0.09	0.03
BR Open Vel (m/s)	2.68	C & E Loss (m)	0.02	0.00
Coef of Q		Shear Total (N/m2)	107.86	86.17
Br Sel Method	Energy only	Power Total (N/m s)	270.93	194.11

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.565 Profile: PF 1

E.G. US. (m)	9.78	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.53	E.G. Elev (m)	9.76	9.70
Q Total (m3/s)	40.00	W.S. Elev (m)	9.51	9.55
Q Bridge (m3/s)	40.00	Crit W.S. (m)	8.51	8.08
Q Weir (m3/s)		Max Chl Dpth (m)	2.65	2.98
Weir Sta Lft (m)		Vel Total (m/s)	2.21	1.69
Weir Sta Rgt (m)		Flow Area (m2)	18.09	23.73
Weir Submerg		Froude # Chl	0.46	0.33
Weir Max Depth (m)		Specif Force (m3)	31.25	39.97
Min El Weir Flow (m)	9.90	Hydr Depth (m)	2.32	2.71
Min El Prs (m)	9.66	W.P. Total (m)	11.52	13.72
Delta EG (m)	0.09	Conv. Total (m3/s)	611.1	855.0
Delta WS (m)	-0.01	Top Width (m)	7.81	8.77
BR Open Area (m2)	19.26	Frctn Loss (m)	0.02	0.01
BR Open Vel (m/s)	2.21	C & E Loss (m)	0.03	0.00
Coef of Q		Shear Total (N/m2)	65.99	37.13
Br Sel Method	Energy only	Power Total (N/m s)	145.90	62.59

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.505 Profile: PF 1

E.G. US. (m)	9.51	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.15	E.G. Elev (m)	9.44	9.39
Q Total (m3/s)	40.00	W.S. Elev (m)	8.95	8.95
Q Bridge (m3/s)	40.00	Crit W.S. (m)	8.22	8.11
Q Weir (m3/s)		Max Chl Dpth (m)	2.68	2.79
Weir Sta Lft (m)		Vel Total (m/s)	3.10	2.96
Weir Sta Rgt (m)		Flow Area (m2)	12.90	13.52
Weir Submerg		Froude # Chl	0.64	0.59
Weir Max Depth (m)		Specif Force (m3)	29.92	30.80
Min El Weir Flow (m)	9.72	Hydr Depth (m)		
Min El Prs (m)	8.92	W.P. Total (m)	15.57	15.83
Delta EG (m)	0.19	Conv. Total (m3/s)	284.4	304.5
Delta WS (m)	0.23	Top Width (m)		
BR Open Area (m2)	12.90	Frctn Loss (m)	0.04	0.06
BR Open Vel (m/s)	3.10	C & E Loss (m)	0.01	0.01
Coef of Q		Shear Total (N/m2)	160.71	144.64
Br Sel Method	Energy only	Power Total (N/m s)	498.41	427.78

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .485 Profile: PF 1

E.G. US. (m)	9.26	Element	Inside BR US	Inside BR DS
W.S. US. (m)	8.88	E.G. Elev (m)	9.15	8.91
Q Total (m3/s)	40.00	W.S. Elev (m)	8.46	8.25
Q Bridge (m3/s)	36.60	Crit W.S. (m)	7.91	7.71
Q Weir (m3/s)		Max Chl Dpth (m)	2.38	2.43
Weir Sta Lft (m)		Vel Total (m/s)	3.68	3.60
Weir Sta Rgt (m)		Flow Area (m2)	10.87	11.11
Weir Submerg		Froude # Chl	0.78	0.75
Weir Max Depth (m)		Specif Force (m3)	28.54	29.08
Min El Weir Flow (m)	8.19	Hydr Depth (m)	1.90	1.91
Min El Prs (m)	7.94	W.P. Total (m)	20.02	20.37
Delta EG (m)	0.49	Conv. Total (m3/s)	182.5	187.4
Delta WS (m)	0.64	Top Width (m)	5.73	5.82
BR Open Area (m2)	9.28	Frctn Loss (m)	0.23	0.10
BR Open Vel (m/s)	3.94	C & E Loss (m)	0.01	0.04
Coef of Q		Shear Total (N/m2)	255.70	243.70
Br Sel Method	Energy only	Power Total (N/m s)	940.92	877.67

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.471 Profile: PF 1

E.G. US. (m)	8.68	Element	Inside BR US	Inside BR DS
W.S. US. (m)	8.37	E.G. Elev (m)	8.61	8.48
Q Total (m3/s)	40.00	W.S. Elev (m)	8.13	8.14
Q Bridge (m3/s)	40.00	Crit W.S. (m)	7.56	7.16
Q Weir (m3/s)		Max Chl Dpth (m)	2.37	2.80
Weir Sta Lft (m)		Vel Total (m/s)	3.08	2.59
Weir Sta Rgt (m)		Flow Area (m2)	12.99	15.46
Weir Submerg		Froude # Chl	0.69	0.54
Weir Max Depth (m)		Specif Force (m3)	27.64	32.12
Min El Weir Flow (m)	8.39	Hydr Depth (m)		6.04
Min El Prs (m)	7.92	W.P. Total (m)	17.15	21.57
Delta EG (m)	0.27	Conv. Total (m3/s)	269.7	309.7
Delta WS (m)	0.19	Top Width (m)		2.56
BR Open Area (m2)	12.99	Frctn Loss (m)	0.09	0.04
BR Open Vel (m/s)	3.08	C & E Loss (m)	0.04	0.03
Coef of Q		Shear Total (N/m2)	163.33	117.29
Br Sel Method	Energy only	Power Total (N/m s)	503.11	303.38

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: .12 Profile: PF 1

E.G. US. (m)	5.71	Element	Inside BR US	Inside BR DS
W.S. US. (m)	5.61	E.G. Elev (m)	5.70	5.45
Q Total (m3/s)	40.00	W.S. Elev (m)	5.59	5.33
Q Bridge (m3/s)	11.24	Crit W.S. (m)	3.04	3.40
Q Weir (m3/s)		Max Chl Dpth (m)	4.34	3.74
Weir Sta Lft (m)		Vel Total (m/s)	1.44	1.50
Weir Sta Rgt (m)		Flow Area (m2)	27.74	26.69
Weir Submerg		Froude # Chl	0.22	0.26
Weir Max Depth (m)		Specif Force (m3)	59.53	47.09
Min El Weir Flow (m)	3.94	Hydr Depth (m)	3.37	2.41
Min El Prs (m)	3.25	W.P. Total (m)	27.60	30.61
Delta EG (m)	0.28	Conv. Total (m3/s)	706.6	611.0
Delta WS (m)	0.28	Top Width (m)	8.24	11.08
BR Open Area (m2)	11.06	Frctn Loss (m)	0.26	0.01
BR Open Vel (m/s)	1.02	C & E Loss (m)	0.00	0.00
Coef of Q		Shear Total (N/m2)	31.58	36.65
Br Sel Method	Energy only	Power Total (N/m s)	45.54	54.93

Plan: RIO RANZI 50 RIO RANZI Reach 1 RS: 0.05 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (m3/s)	36.28	Culv Full Len (m)	12.35
# Barrels	1	Culv Vel US (m/s)	4.14
Q Barrel (m3/s)	36.28	Culv Vel DS (m/s)	4.68
E.G. US. (m)	5.38	Culv Inv El Up (m)	1.88
W.S. US. (m)	5.12	Culv Inv El Dn (m)	1.68
E.G. DS (m)	4.04	Culv Frctn Ls (m)	0.84
W.S. DS (m)	3.16	Culv Exit Loss (m)	0.33
Delta EG (m)	1.34	Culv Entr Loss (m)	0.17
Delta WS (m)	1.96	Q Weir (m3/s)	3.72
E.G. IC (m)	5.38	Weir Sta Lft (m)	0.00
E.G. OC (m)	5.38	Weir Sta Rgt (m)	5.60
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (m)	3.88	Weir Max Depth (m)	0.60
Culv WS Outlet (m)	3.25	Weir Avg Depth (m)	0.60
Culv Nml Depth (m)	2.00	Weir Flow Area (m2)	3.34
Culv Crt Depth (m)	1.57	Min El Weir Flow (m)	4.78

RIO RANZI

CONDIZIONE ATTUALE

Tempo di ritorno 200 anni

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.84 Profile: PF 1

E.G. Elev (m)	16.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	16.02	Reach Len. (m)	6.83	6.82	6.82
Crit W.S. (m)	14.09	Flow Area (m2)	6.32	27.66	1.38
E.G. Slope (m/m)	0.001630	Area (m2)	6.32	27.66	1.38
Q Total (m3/s)	55.00	Flow (m3/s)	6.40	47.62	0.98
Top Width (m)	13.80	Top Width (m)	5.04	7.54	1.22
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	1.01	1.72	0.71
Max Chl Dpth (m)	3.91	Hydr. Depth (m)	1.25	3.67	1.13
Conv. Total (m3/s)	1362.1	Conv. (m3/s)	158.6	1179.3	24.3
Length Wtd. (m)	6.82	Wetted Per. (m)	6.28	12.41	2.35
Min Ch El (m)	12.11	Shear (N/m2)	16.09	35.62	9.41
Alpha	1.11	Stream Power (N/m s)	16.30	61.33	6.68
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.24	15.25	0.85
C & E Loss (m)	0.02	Cum SA (1000 m2)	1.10	5.14	0.74

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.83 Profile: PF 1

E.G. Elev (m)	16.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	15.79	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	14.29	Flow Area (m2)	0.90	20.54	0.92
E.G. Slope (m/m)	0.004421	Area (m2)	0.90	20.54	0.92
Q Total (m3/s)	55.00	Flow (m3/s)	0.91	53.17	0.92
Top Width (m)	8.14	Top Width (m)	1.13	5.83	1.18
Vel Total (m/s)	2.46	Avg. Vel. (m/s)	1.01	2.59	1.00
Max Chl Dpth (m)	4.02	Hydr. Depth (m)	0.80	3.52	0.78
Conv. Total (m3/s)	827.2	Conv. (m3/s)	13.7	799.7	13.8
Length Wtd. (m)	5.00	Wetted Per. (m)	1.91	10.57	1.96
Min Ch El (m)	11.77	Shear (N/m2)	20.47	84.24	20.32
Alpha	1.08	Stream Power (N/m s)	20.63	218.04	20.37
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.21	15.08	0.84
C & E Loss (m)	0.07	Cum SA (1000 m2)	1.07	5.09	0.73

Plan: RANZI 200 RIO RANZI Reach 1 RS: .825 BR U Profile: PF 1

E.G. Elev (m)	15.99	Element	Left OB	Channel	Right OB
Vel Head (m)	1.05	Wt. n-Val.		0.040	
W.S. Elev (m)	14.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	14.95	Flow Area (m2)		12.14	
E.G. Slope (m/m)	0.065664	Area (m2)		12.14	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.82	Top Width (m)		5.82	
Vel Total (m/s)	4.53	Avg. Vel. (m/s)		4.53	
Max Chl Dpth (m)	3.18	Hydr. Depth (m)		2.09	
Conv. Total (m3/s)	214.6	Conv. (m3/s)		214.6	
Length Wtd. (m)	5.00	Wetted Per. (m)		20.42	
Min Ch El (m)	11.77	Shear (N/m2)		382.90	
Alpha	1.00	Stream Power (N/m s)		1734.57	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	1.21	15.00	0.84
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.07	5.07	0.73

Plan: RANZI 200 RIO RANZI Reach 1 RS: .825 BR D Profile: PF 1

E.G. Elev (m)	15.53	Element	Left OB	Channel	Right OB
Vel Head (m)	2.33	Wt. n-Val.		0.040	
W.S. Elev (m)	13.20	Reach Len. (m)	3.20	3.20	3.20
Crit W.S. (m)	13.90	Flow Area (m2)		8.14	
E.G. Slope (m/m)	0.068210	Area (m2)		8.14	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.20	Top Width (m)		5.20	
Vel Total (m/s)	6.76	Avg. Vel. (m/s)		6.76	
Max Chl Dpth (m)	1.85	Hydr. Depth (m)		1.57	
Conv. Total (m3/s)	210.6	Conv. (m3/s)		210.6	
Length Wtd. (m)	3.20	Wetted Per. (m)		7.72	
Min Ch El (m)	11.35	Shear (N/m2)		704.57	
Alpha	1.00	Stream Power (N/m s)		4762.48	
Frctn Loss (m)	0.33	Cum Volume (1000 m3)	1.21	14.95	0.84
C & E Loss (m)	0.13	Cum SA (1000 m2)	1.07	5.04	0.73

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.82 Profile: PF 1

E.G. Elev (m)	15.17	Element	Left OB	Channel	Right OB
Vel Head (m)	1.71	Wt. n-Val.		0.040	
W.S. Elev (m)	13.46	Reach Len. (m)	11.17	12.17	12.21
Crit W.S. (m)	13.90	Flow Area (m2)		9.50	
E.G. Slope (m/m)	0.044476	Area (m2)		9.50	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.28	Top Width (m)		5.28	
Vel Total (m/s)	5.79	Avg. Vel. (m/s)		5.79	
Max Chl Dpth (m)	2.11	Hydr. Depth (m)		1.80	
Conv. Total (m3/s)	260.8	Conv. (m3/s)		260.8	
Length Wtd. (m)	12.17	Wetted Per. (m)		8.25	
Min Ch El (m)	11.35	Shear (N/m2)		502.05	
Alpha	1.00	Stream Power (N/m s)		2907.27	
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	1.21	14.92	0.84
C & E Loss (m)	0.19	Cum SA (1000 m2)	1.07	5.02	0.73

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.77 Profile: PF 1

E.G. Elev (m)	13.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.41	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	13.33	Reach Len. (m)	42.11	41.59	40.95
Crit W.S. (m)		Flow Area (m2)	1.64	17.45	1.31
E.G. Slope (m/m)	0.007794	Area (m2)	1.64	17.45	1.31
Q Total (m3/s)	55.00	Flow (m3/s)	2.23	51.20	1.56
Top Width (m)	8.90	Top Width (m)	2.00	5.54	1.36
Vel Total (m/s)	2.70	Avg. Vel. (m/s)	1.36	2.93	1.19
Max Chl Dpth (m)	3.55	Hydr. Depth (m)	0.82	3.15	0.96
Conv. Total (m3/s)	623.0	Conv. (m3/s)	25.3	580.0	17.7
Length Wtd. (m)	41.59	Wetted Per. (m)	3.39	11.38	3.29
Min Ch El (m)	9.78	Shear (N/m2)	37.01	117.17	30.37
Alpha	1.12	Stream Power (N/m s)	50.38	343.83	36.22
Frctn Loss (m)	0.49	Cum Volume (1000 m3)	1.20	14.30	0.83
C & E Loss (m)	0.05	Cum SA (1000 m2)	1.05	4.76	0.71

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.73 Profile: PF 1

E.G. Elev (m)	13.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.87	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	12.34	Reach Len. (m)	7.94	7.74	6.73
Crit W.S. (m)	12.23	Flow Area (m2)		12.98	0.61
E.G. Slope (m/m)	0.019455	Area (m2)		12.98	0.61
Q Total (m3/s)	55.00	Flow (m3/s)		54.09	0.91
Top Width (m)	6.87	Top Width (m)		5.64	1.23
Vel Total (m/s)	4.05	Avg. Vel. (m/s)		4.17	1.49
Max Chl Dpth (m)	2.33	Hydr. Depth (m)		2.30	0.50
Conv. Total (m3/s)	394.3	Conv. (m3/s)		387.8	6.5
Length Wtd. (m)	7.72	Wetted Per. (m)		9.94	2.19
Min Ch El (m)	10.01	Shear (N/m2)		249.22	53.40
Alpha	1.05	Stream Power (N/m s)		1038.46	79.68
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	1.16	13.67	0.79
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.00	4.52	0.66

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.70 Profile: PF 1

E.G. Elev (m)	12.80	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.45	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.25	Flow Area (m2)	1.43	19.48	1.28
E.G. Slope (m/m)	0.004559	Area (m2)	1.43	19.48	1.28
Q Total (m3/s)	55.00	Flow (m3/s)	1.70	51.84	1.46
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.48	Avg. Vel. (m/s)	1.19	2.66	1.14
Max Chl Dpth (m)	3.62	Hydr. Depth (m)	0.97	3.23	0.90
Conv. Total (m3/s)	814.6	Conv. (m3/s)	25.2	767.8	21.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.43	9.84	2.32
Min Ch El (m)	8.83	Shear (N/m2)	26.31	88.53	24.70
Alpha	1.10	Stream Power (N/m s)	31.18	235.64	28.08
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.15	13.31	0.77
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.98	4.39	0.63

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.695 BR U Profile: PF 1

E.G. Elev (m)	12.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.39	Reach Len. (m)	6.40	6.40	6.40
Crit W.S. (m)	11.03	Flow Area (m2)	1.34	18.18	1.20
E.G. Slope (m/m)	0.014864	Area (m2)	1.34	18.18	1.20
Q Total (m3/s)	55.00	Flow (m3/s)	2.79	49.83	2.38
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.65	Avg. Vel. (m/s)	2.08	2.74	1.99
Max Chl Dpth (m)	3.56	Hydr. Depth (m)	0.91	3.02	0.84
Conv. Total (m3/s)	451.1	Conv. (m3/s)	22.9	408.7	19.5
Length Wtd. (m)	6.40	Wetted Per. (m)	2.37	21.33	2.26
Min Ch El (m)	8.83	Shear (N/m2)	82.37	124.24	77.02
Alpha	1.02	Stream Power (N/m s)	171.59	340.43	153.45
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.14	13.22	0.76
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.98	4.36	0.62

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.695 BR D Profile: PF 1

E.G. Elev (m)	12.66	Element	Left OB	Channel	Right OB
Vel Head (m)	0.31	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.35	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.00	Flow Area (m2)	1.84	19.71	1.04
E.G. Slope (m/m)	0.011549	Area (m2)	1.84	19.71	1.04
Q Total (m3/s)	55.00	Flow (m3/s)	3.76	49.45	1.78
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.43	Avg. Vel. (m/s)	2.04	2.51	1.71
Max Chl Dpth (m)	3.77	Hydr. Depth (m)	1.08	3.19	1.01
Conv. Total (m3/s)	511.8	Conv. (m3/s)	35.0	460.2	16.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.78	21.84	2.04
Min Ch El (m)	8.58	Shear (N/m2)	75.10	102.21	57.72
Alpha	1.02	Stream Power (N/m s)	153.44	256.45	98.95
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	1.13	13.10	0.76
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.96	4.32	0.61

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.69 Profile: PF 1

E.G. Elev (m)	12.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.32	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.31	Reach Len. (m)	8.42	8.28	8.14
Crit W.S. (m)		Flow Area (m2)	1.77	20.38	1.00
E.G. Slope (m/m)	0.003981	Area (m2)	1.77	20.38	1.00
Q Total (m3/s)	55.00	Flow (m3/s)	2.10	51.91	0.99
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.38	Avg. Vel. (m/s)	1.18	2.55	0.99
Max Chl Dpth (m)	3.73	Hydr. Depth (m)	1.04	3.30	0.97
Conv. Total (m3/s)	871.7	Conv. (m3/s)	33.2	822.8	15.7
Length Wtd. (m)	8.28	Wetted Per. (m)	2.74	9.93	2.00
Min Ch El (m)	8.58	Shear (N/m2)	25.29	80.14	19.49
Alpha	1.10	Stream Power (N/m s)	29.87	204.16	19.34
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.12	13.00	0.75
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.96	4.29	0.61

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.66 Profile: PF 1

E.G. Elev (m)	12.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.38	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.11	Reach Len. (m)	8.12	7.98	7.71
Crit W.S. (m)		Flow Area (m2)	0.39	19.21	1.37
E.G. Slope (m/m)	0.005654	Area (m2)	0.39	19.21	1.37
Q Total (m3/s)	55.00	Flow (m3/s)	0.26	53.03	1.71
Top Width (m)	9.76	Top Width (m)	1.55	6.48	1.73
Vel Total (m/s)	2.62	Avg. Vel. (m/s)	0.68	2.76	1.25
Max Chl Dpth (m)	3.23	Hydr. Depth (m)	0.25	2.96	0.79
Conv. Total (m3/s)	731.4	Conv. (m3/s)	3.5	705.3	22.7
Length Wtd. (m)	7.97	Wetted Per. (m)	1.79	10.79	2.52
Min Ch El (m)	8.88	Shear (N/m2)	11.97	98.68	30.06
Alpha	1.07	Stream Power (N/m s)	8.10	272.42	37.56
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.10	12.52	0.72
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.92	4.13	0.57

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.63 Profile: PF 1

E.G. Elev (m)	12.24	Element	Left OB	Channel	Right OB
Vel Head (m)	0.41	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.83	Reach Len. (m)	9.26	9.15	8.93
Crit W.S. (m)		Flow Area (m2)		18.35	1.70
E.G. Slope (m/m)	0.006308	Area (m2)		18.35	1.70
Q Total (m3/s)	55.00	Flow (m3/s)		52.67	2.33
Top Width (m)	6.50	Top Width (m)		5.39	1.11
Vel Total (m/s)	2.74	Avg. Vel. (m/s)		2.87	1.37
Max Chl Dpth (m)	3.69	Hydr. Depth (m)		3.40	1.53
Conv. Total (m3/s)	692.5	Conv. (m3/s)		663.2	29.3
Length Wtd. (m)	9.15	Wetted Per. (m)		10.56	2.98
Min Ch El (m)	8.14	Shear (N/m2)		107.51	35.33
Alpha	1.06	Stream Power (N/m s)		308.60	48.28
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.10	11.96	0.68
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.91	3.94	0.53

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.59 Profile: PF 1

E.G. Elev (m)	11.74	Element	Left OB	Channel	Right OB
Vel Head (m)	0.92	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	10.83	Reach Len. (m)	7.33	7.18	6.54
Crit W.S. (m)	10.83	Flow Area (m2)	1.18	12.14	
E.G. Slope (m/m)	0.018985	Area (m2)	1.18	12.14	
Q Total (m3/s)	55.00	Flow (m3/s)	2.54	52.46	
Top Width (m)	7.30	Top Width (m)	1.68	5.62	
Vel Total (m/s)	4.13	Avg. Vel. (m/s)	2.16	4.32	
Max Chl Dpth (m)	2.83	Hydr. Depth (m)	0.70	2.16	
Conv. Total (m3/s)	399.2	Conv. (m3/s)	18.5	380.7	
Length Wtd. (m)	7.19	Wetted Per. (m)	2.38	8.65	
Min Ch El (m)	8.00	Shear (N/m2)	92.33	261.44	
Alpha	1.06	Stream Power (N/m s)	199.28	1129.34	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	1.09	11.40	0.65
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.89	3.73	0.51

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.57 Profile: PF 1

E.G. Elev (m)	10.63	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.39	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.86	Flow Area (m2)	0.22	25.21	0.19
E.G. Slope (m/m)	0.003112	Area (m2)	0.22	25.21	0.19
Q Total (m3/s)	55.00	Flow (m3/s)	0.09	54.83	0.08
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.15	Avg. Vel. (m/s)	0.41	2.17	0.42
Max Chl Dpth (m)	3.53	Hydr. Depth (m)	0.18	3.09	0.19
Conv. Total (m3/s)	985.9	Conv. (m3/s)	1.6	982.8	1.4
Length Wtd. (m)	5.00	Wetted Per. (m)	1.40	12.95	1.15
Min Ch El (m)	6.86	Shear (N/m2)	4.83	59.43	5.00
Alpha	1.02	Stream Power (N/m s)	1.97	129.26	2.09
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	1.09	11.14	0.65
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.88	3.59	0.50

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.565 BR U Profile: PF 1

E.G. Elev (m)	10.60	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.30	Reach Len. (m)	8.16	8.16	8.16
Crit W.S. (m)	8.87	Flow Area (m2)	0.10	22.52	0.09
E.G. Slope (m/m)	0.012919	Area (m2)	0.10	22.52	0.09
Q Total (m3/s)	55.00	Flow (m3/s)	0.05	54.89	0.05
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.42	Avg. Vel. (m/s)	0.52	2.44	0.57
Max Chl Dpth (m)	3.44	Hydr. Depth (m)	0.08	2.76	0.10
Conv. Total (m3/s)	483.9	Conv. (m3/s)	0.5	483.0	0.5
Length Wtd. (m)	8.16	Wetted Per. (m)	1.31	28.34	1.06
Min Ch El (m)	6.86	Shear (N/m2)	9.89	100.67	11.36
Alpha	1.01	Stream Power (N/m s)	5.14	245.39	6.47
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.08	11.02	0.65
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.87	3.55	0.50

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.565 BR D Profile: PF 1

E.G. Elev (m)	10.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.32	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.40	Flow Area (m2)	1.36	28.33	0.75
E.G. Slope (m/m)	0.006435	Area (m2)	1.36	28.33	0.75
Q Total (m3/s)	55.00	Flow (m3/s)	1.40	52.86	0.74
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.81	Avg. Vel. (m/s)	1.03	1.87	0.98
Max Chl Dpth (m)	3.75	Hydr. Depth (m)	0.42	3.20	0.42
Conv. Total (m3/s)	685.6	Conv. (m3/s)	17.5	659.0	9.2
Length Wtd. (m)	5.00	Wetted Per. (m)	3.68	31.56	2.19
Min Ch El (m)	6.57	Shear (N/m2)	23.30	56.64	21.59
Alpha	1.04	Stream Power (N/m s)	24.05	105.70	21.18
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.08	10.81	0.65
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.85	3.48	0.49

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.56 Profile: PF 1

E.G. Elev (m)	10.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.16	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.31	Reach Len. (m)	9.69	10.00	10.27
Crit W.S. (m)		Flow Area (m2)	1.40	30.41	0.82
E.G. Slope (m/m)	0.001836	Area (m2)	1.40	30.41	0.82
Q Total (m3/s)	55.00	Flow (m3/s)	0.79	53.76	0.45
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.69	Avg. Vel. (m/s)	0.56	1.77	0.55
Max Chl Dpth (m)	3.74	Hydr. Depth (m)	0.43	3.44	0.47
Conv. Total (m3/s)	1283.6	Conv. (m3/s)	18.4	1254.6	10.6
Length Wtd. (m)	10.00	Wetted Per. (m)	3.69	14.34	2.24
Min Ch El (m)	6.57	Shear (N/m2)	6.85	38.17	6.63
Alpha	1.08	Stream Power (N/m s)	3.85	67.47	3.64
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.07	10.66	0.64
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.84	3.44	0.48

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.51 Profile: PF 1

E.G. Elev (m)	10.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.39	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.93	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.64	Flow Area (m2)	0.82	19.52	0.07
E.G. Slope (m/m)	0.006138	Area (m2)	0.82	19.52	0.07
Q Total (m3/s)	55.00	Flow (m3/s)	0.84	54.13	0.03
Top Width (m)	8.27	Top Width (m)	1.72	5.92	0.63
Vel Total (m/s)	2.69	Avg. Vel. (m/s)	1.02	2.77	0.40
Max Chl Dpth (m)	3.66	Hydr. Depth (m)	0.48	3.30	0.11
Conv. Total (m3/s)	702.0	Conv. (m3/s)	10.7	691.0	0.4
Length Wtd. (m)	5.00	Wetted Per. (m)	2.20	11.58	0.74
Min Ch El (m)	6.27	Shear (N/m2)	22.55	101.42	5.59
Alpha	1.04	Stream Power (N/m s)	22.95	281.26	2.25
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.02	9.65	0.62
C & E Loss (m)	0.05	Cum SA (1000 m2)	0.74	3.14	0.43

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.505 BR U Profile: PF 1

E.G. Elev (m)	10.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.93	Wt. n-Val.		0.040	
W.S. Elev (m)	9.27	Reach Len. (m)	2.00	2.00	2.00
Crit W.S. (m)	8.64	Flow Area (m2)		12.90	
E.G. Slope (m/m)	0.037410	Area (m2)		12.90	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	4.26	Avg. Vel. (m/s)		4.26	
Max Chl Dpth (m)	3.00	Hydr. Depth (m)			
Conv. Total (m3/s)	284.4	Conv. (m3/s)		284.4	
Length Wtd. (m)	2.00	Wetted Per. (m)		15.57	
Min Ch El (m)	6.27	Shear (N/m2)		303.84	
Alpha	1.00	Stream Power (N/m s)		1295.68	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.02	9.57	0.62
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.73	3.13	0.43

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.505 BR D Profile: PF 1

E.G. Elev (m)	10.10	Element	Left OB	Channel	Right OB
Vel Head (m)	0.84	Wt. n-Val.		0.040	
W.S. Elev (m)	9.26	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.53	Flow Area (m2)		13.52	
E.G. Slope (m/m)	0.032633	Area (m2)		13.52	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	4.07	Avg. Vel. (m/s)		4.07	
Max Chl Dpth (m)	3.10	Hydr. Depth (m)			
Conv. Total (m3/s)	304.5	Conv. (m3/s)		304.5	
Length Wtd. (m)	5.00	Wetted Per. (m)		15.83	
Min Ch El (m)	6.16	Shear (N/m2)		273.46	
Alpha	1.00	Stream Power (N/m s)		1112.07	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.02	9.54	0.62
C & E Loss (m)	0.09	Cum SA (1000 m2)	0.73	3.13	0.43

Plan: RANZI 200 RIO RANZI Reach 1 RS: .5 Profile: PF 1

E.G. Elev (m)	9.93	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	9.40	Reach Len. (m)	6.82	7.50	7.93
Crit W.S. (m)		Flow Area (m2)	0.10	17.05	
E.G. Slope (m/m)	0.009579	Area (m2)	0.10	17.05	
Q Total (m3/s)	55.00	Flow (m3/s)	0.04	54.96	
Top Width (m)	7.61	Top Width (m)	1.72	5.89	
Vel Total (m/s)	3.21	Avg. Vel. (m/s)	0.37	3.22	
Max Chl Dpth (m)	3.24	Hydr. Depth (m)	0.06	2.90	
Conv. Total (m3/s)	562.0	Conv. (m3/s)	0.4	561.6	
Length Wtd. (m)	7.49	Wetted Per. (m)	1.78	11.27	
Min Ch El (m)	6.16	Shear (N/m2)	5.52	142.06	
Alpha	1.01	Stream Power (N/m s)	2.04	457.95	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.02	9.47	0.62
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.73	3.11	0.43

Plan: RANZI 200 RIO RANZI Reach 1 RS: .49 Profile: PF 1

E.G. Elev (m)	9.85	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.38	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.40	Flow Area (m2)	0.99	17.11	0.53
E.G. Slope (m/m)	0.007128	Area (m2)	0.99	17.11	0.53
Q Total (m3/s)	55.00	Flow (m3/s)	1.28	53.15	0.57
Top Width (m)	7.81	Top Width (m)	1.72	5.43	0.66
Vel Total (m/s)	2.95	Avg. Vel. (m/s)	1.29	3.11	1.07
Max Chl Dpth (m)	3.30	Hydr. Depth (m)	0.58	3.15	0.81
Conv. Total (m3/s)	651.5	Conv. (m3/s)	15.2	629.5	6.8
Length Wtd. (m)	5.00	Wetted Per. (m)	2.07	9.59	1.47
Min Ch El (m)	6.08	Shear (N/m2)	33.51	124.74	25.35
Alpha	1.08	Stream Power (N/m s)	43.32	387.35	27.22
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.02	9.34	0.62
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.72	3.07	0.42

Plan: RANZI 200 RIO RANZI Reach 1 RS: .485 BR U Profile: PF 1

E.G. Elev (m)	9.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.74	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.02	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.76	Flow Area (m2)	0.47	13.84	0.29
E.G. Slope (m/m)	0.038066	Area (m2)	0.47	13.84	0.29
Q Total (m3/s)	55.00	Flow (m3/s)	1.10	53.31	0.59
Top Width (m)	7.27	Top Width (m)	1.18	5.43	0.66
Vel Total (m/s)	3.77	Avg. Vel. (m/s)	2.33	3.85	2.02
Max Chl Dpth (m)	2.94	Hydr. Depth (m)	0.40	2.55	0.45
Conv. Total (m3/s)	281.9	Conv. (m3/s)	5.6	273.2	3.0
Length Wtd. (m)	5.00	Wetted Per. (m)	1.43	19.72	1.11
Min Ch El (m)	6.08	Shear (N/m2)	123.37	262.00	99.42
Alpha	1.02	Stream Power (N/m s)	287.63	1009.27	200.72
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	1.01	9.26	0.62
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.71	3.05	0.42

Plan: RANZI 200 RIO RANZI Reach 1 RS: .485 BR D Profile: PF 1

E.G. Elev (m)	9.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.64	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.92	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.51	Flow Area (m2)	0.65	14.71	0.40
E.G. Slope (m/m)	0.030829	Area (m2)	0.65	14.71	0.40
Q Total (m3/s)	55.00	Flow (m3/s)	1.54	52.64	0.82
Top Width (m)	7.52	Top Width (m)	1.43	5.43	0.66
Vel Total (m/s)	3.49	Avg. Vel. (m/s)	2.36	3.58	2.04
Max Chl Dpth (m)	3.10	Hydr. Depth (m)	0.46	2.71	0.61
Conv. Total (m3/s)	313.2	Conv. (m3/s)	8.8	299.8	4.7
Length Wtd. (m)	5.00	Wetted Per. (m)	1.66	19.98	1.27
Min Ch El (m)	5.82	Shear (N/m2)	119.27	222.55	95.69
Alpha	1.02	Stream Power (N/m s)	281.61	796.43	195.09
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.01	9.19	0.62
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.70	3.02	0.42

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.48 Profile: PF 1

E.G. Elev (m)	9.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.88	Reach Len. (m)	2.61	2.58	2.90
Crit W.S. (m)		Flow Area (m2)	0.64	15.86	0.38
E.G. Slope (m/m)	0.009404	Area (m2)	0.64	15.86	0.38
Q Total (m3/s)	55.00	Flow (m3/s)	0.81	53.77	0.42
Top Width (m)	7.46	Top Width (m)	1.37	5.43	0.66
Vel Total (m/s)	3.26	Avg. Vel. (m/s)	1.28	3.39	1.10
Max Chl Dpth (m)	3.06	Hydr. Depth (m)	0.46	2.92	0.57
Conv. Total (m3/s)	567.2	Conv. (m3/s)	8.4	554.5	4.3
Length Wtd. (m)	2.58	Wetted Per. (m)	1.66	9.59	1.23
Min Ch El (m)	5.82	Shear (N/m2)	35.37	152.50	28.31
Alpha	1.06	Stream Power (N/m s)	45.26	517.03	31.24
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.01	9.12	0.62
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.70	2.99	0.41

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.472 Profile: PF 1

E.G. Elev (m)	9.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.04	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.91	Flow Area (m2)	0.46	21.33	0.48
E.G. Slope (m/m)	0.004529	Area (m2)	0.46	21.33	0.48
Q Total (m3/s)	55.00	Flow (m3/s)	0.34	54.29	0.36
Top Width (m)	9.83	Top Width (m)	1.11	7.47	1.25
Vel Total (m/s)	2.47	Avg. Vel. (m/s)	0.75	2.55	0.75
Max Chl Dpth (m)	3.28	Hydr. Depth (m)	0.41	2.86	0.39
Conv. Total (m3/s)	817.3	Conv. (m3/s)	5.1	806.8	5.4
Length Wtd. (m)	5.00	Wetted Per. (m)	1.52	11.47	1.63
Min Ch El (m)	5.76	Shear (N/m2)	13.33	82.64	13.15
Alpha	1.05	Stream Power (N/m s)	10.06	210.32	9.83
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.01	9.07	0.61
C & E Loss (m)	0.06	Cum SA (1000 m2)	0.69	2.97	0.41

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.471 BR U Profile: PF 1

E.G. Elev (m)	9.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.91	Wt. n-Val.		0.040	
W.S. Elev (m)	8.34	Reach Len. (m)	4.79	4.79	4.79
Crit W.S. (m)	7.91	Flow Area (m2)		12.99	
E.G. Slope (m/m)	0.041590	Area (m2)		12.99	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	4.24	Avg. Vel. (m/s)		4.24	
Max Chl Dpth (m)	2.58	Hydr. Depth (m)			
Conv. Total (m3/s)	269.7	Conv. (m3/s)		269.7	
Length Wtd. (m)	4.79	Wetted Per. (m)		17.15	
Min Ch El (m)	5.76	Shear (N/m2)		308.80	
Alpha	1.00	Stream Power (N/m s)		1307.89	
Frctn Loss (m)	0.15	Cum Volume (1000 m3)	1.01	8.98	0.61
C & E Loss (m)	0.14	Cum SA (1000 m2)	0.69	2.96	0.41

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.471 BR D Profile: PF 1

E.G. Elev (m)	8.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.45	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.52	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.50	Flow Area (m2)	0.12	18.23	0.39
E.G. Slope (m/m)	0.024243	Area (m2)	0.12	18.23	0.39
Q Total (m3/s)	55.00	Flow (m3/s)	0.06	54.31	0.63
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	2.93	Avg. Vel. (m/s)	0.53	2.98	1.61
Max Chl Dpth (m)	3.18	Hydr. Depth (m)	0.05	2.25	0.35
Conv. Total (m3/s)	353.2	Conv. (m3/s)	0.4	348.8	4.0
Length Wtd. (m)	5.00	Wetted Per. (m)	2.48	27.23	1.47
Min Ch El (m)	5.34	Shear (N/m2)	11.81	159.16	63.21
Alpha	1.02	Stream Power (N/m s)	6.21	474.10	101.73
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.01	8.91	0.61
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.69	2.94	0.41

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.47 Profile: PF 1

E.G. Elev (m)	8.88	Element	Left OB	Channel	Right OB
Vel Head (m)	0.31	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.58	Reach Len. (m)	9.95	9.81	9.26
Crit W.S. (m)		Flow Area (m2)	0.26	22.10	0.45
E.G. Slope (m/m)	0.004397	Area (m2)	0.26	22.10	0.45
Q Total (m3/s)	55.00	Flow (m3/s)	0.09	54.57	0.33
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	2.41	Avg. Vel. (m/s)	0.36	2.47	0.74
Max Chl Dpth (m)	3.24	Hydr. Depth (m)	0.10	2.73	0.40
Conv. Total (m3/s)	829.4	Conv. (m3/s)	1.4	823.0	5.0
Length Wtd. (m)	9.80	Wetted Per. (m)	2.53	12.15	1.53
Min Ch El (m)	5.34	Shear (N/m2)	4.36	78.41	12.79
Alpha	1.04	Stream Power (N/m s)	1.57	193.67	9.43
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.00	8.81	0.61
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.67	2.90	0.40

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.42 Profile: PF 1

E.G. Elev (m)	8.50	Element	Left OB	Channel	Right OB
Vel Head (m)	0.79	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	7.71	Reach Len. (m)	14.28	14.89	15.52
Crit W.S. (m)	7.70	Flow Area (m2)	1.01	13.28	
E.G. Slope (m/m)	0.017275	Area (m2)	1.01	13.28	
Q Total (m3/s)	55.00	Flow (m3/s)	1.93	53.07	
Top Width (m)	9.05	Top Width (m)	1.40	7.65	
Vel Total (m/s)	3.85	Avg. Vel. (m/s)	1.92	4.00	
Max Chl Dpth (m)	1.89	Hydr. Depth (m)	0.72	1.74	
Conv. Total (m3/s)	418.5	Conv. (m3/s)	14.7	403.8	
Length Wtd. (m)	14.87	Wetted Per. (m)	2.25	9.90	
Min Ch El (m)	5.82	Shear (N/m2)	75.74	227.21	
Alpha	1.05	Stream Power (N/m s)	145.52	907.99	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	0.97	8.11	0.61
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.60	2.59	0.39

Plan: RANZI 200 RIO RANZI Reach 1 RS: .35 Profile: PF 1

E.G. Elev (m)	7.83	Element	Left OB	Channel	Right OB
Vel Head (m)	0.49	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	7.33	Reach Len. (m)	19.82	19.91	20.18
Crit W.S. (m)		Flow Area (m2)	1.60	16.55	
E.G. Slope (m/m)	0.008548	Area (m2)	1.60	16.55	
Q Total (m3/s)	55.00	Flow (m3/s)	2.63	52.37	
Top Width (m)	9.09	Top Width (m)	1.40	7.69	
Vel Total (m/s)	3.03	Avg. Vel. (m/s)	1.64	3.16	
Max Chl Dpth (m)	2.31	Hydr. Depth (m)	1.14	2.15	
Conv. Total (m3/s)	594.9	Conv. (m3/s)	28.5	566.4	
Length Wtd. (m)	19.91	Wetted Per. (m)	2.68	10.33	
Min Ch El (m)	5.02	Shear (N/m2)	50.19	134.29	
Alpha	1.05	Stream Power (N/m s)	82.42	425.00	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)	0.91	7.46	0.61
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.54	2.24	0.39

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.26 Profile: PF 1

E.G. Elev (m)	6.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.72	Reach Len. (m)	9.46	9.83	9.75
Crit W.S. (m)		Flow Area (m2)	6.00	16.11	4.12
E.G. Slope (m/m)	0.004878	Area (m2)	6.00	16.11	4.12
Q Total (m3/s)	55.00	Flow (m3/s)	10.68	38.76	5.56
Top Width (m)	9.74	Top Width (m)	2.98	4.69	2.07
Vel Total (m/s)	2.10	Avg. Vel. (m/s)	1.78	2.41	1.35
Max Chl Dpth (m)	3.60	Hydr. Depth (m)	2.01	3.44	1.99
Conv. Total (m3/s)	787.5	Conv. (m3/s)	152.8	555.0	79.7
Length Wtd. (m)	9.77	Wetted Per. (m)	5.83	9.95	6.05
Min Ch El (m)	3.12	Shear (N/m2)	49.20	77.40	32.56
Alpha	1.11	Stream Power (N/m s)	87.53	186.28	44.00
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.50	5.46	0.47
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.28	1.50	0.27

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.22 Profile: PF 1

E.G. Elev (m)	6.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.33	Reach Len. (m)	8.67	8.67	8.67
Crit W.S. (m)		Flow Area (m2)	0.29	19.74	1.15
E.G. Slope (m/m)	0.005717	Area (m2)	0.29	19.74	1.15
Q Total (m3/s)	55.00	Flow (m3/s)	0.18	53.51	1.31
Top Width (m)	8.42	Top Width (m)	0.75	5.76	1.90
Vel Total (m/s)	2.60	Avg. Vel. (m/s)	0.63	2.71	1.13
Max Chl Dpth (m)	3.89	Hydr. Depth (m)	0.38	3.43	0.61
Conv. Total (m3/s)	727.4	Conv. (m3/s)	2.4	707.7	17.3
Length Wtd. (m)	8.67	Wetted Per. (m)	1.51	11.49	2.49
Min Ch El (m)	2.44	Shear (N/m2)	10.70	96.31	26.00
Alpha	1.07	Stream Power (N/m s)	6.71	261.12	29.44
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.41	4.77	0.38
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.20	1.30	0.19

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.16 Profile: PF 1

E.G. Elev (m)	6.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.33	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.44	Flow Area (m2)	3.44	29.45	2.40
E.G. Slope (m/m)	0.001176	Area (m2)	3.44	29.45	2.40
Q Total (m3/s)	55.00	Flow (m3/s)	2.72	50.69	1.58
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	0.79	1.72	0.66
Max Chl Dpth (m)	5.08	Hydr. Depth (m)	2.51	4.93	2.67
Conv. Total (m3/s)	1603.6	Conv. (m3/s)	79.4	1478.0	46.2
Length Wtd. (m)	5.00	Wetted Per. (m)	3.88	10.35	3.57
Min Ch El (m)	1.25	Shear (N/m2)	10.23	32.81	7.76
Alpha	1.14	Stream Power (N/m s)	8.09	56.48	5.11
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.32	3.53	0.27
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	0.99	0.12

Plan: RANZI 200 RIO RANZI Reach 1 RS: .12 BR U Profile: PF 1

E.G. Elev (m)	6.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.32	Reach Len. (m)	69.57	69.57	69.57
Crit W.S. (m)	3.76	Flow Area (m2)	3.43	27.93	2.40
E.G. Slope (m/m)	0.003331	Area (m2)	3.43	27.93	2.40
Q Total (m3/s)	55.00	Flow (m3/s)	4.56	47.78	2.65
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.63	Avg. Vel. (m/s)	1.33	1.71	1.11
Max Chl Dpth (m)	5.07	Hydr. Depth (m)	2.50	4.68	2.66
Conv. Total (m3/s)	953.0	Conv. (m3/s)	79.1	827.9	46.0
Length Wtd. (m)	69.57	Wetted Per. (m)	3.87	21.63	3.56
Min Ch El (m)	1.25	Shear (N/m2)	28.92	42.18	21.97
Alpha	1.04	Stream Power (N/m s)	38.48	72.16	24.33
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	0.31	3.38	0.26
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	0.96	0.11

Plan: RANZI 200 RIO RANZI Reach 1 RS: .12 BR D Profile: PF 1

E.G. Elev (m)	6.22	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.10	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.31	Flow Area (m2)	3.60	28.24	3.37
E.G. Slope (m/m)	0.003431	Area (m2)	3.60	28.24	3.37
Q Total (m3/s)	55.00	Flow (m3/s)	5.08	45.29	4.63
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	1.41	1.60	1.38
Max Chl Dpth (m)	4.51	Hydr. Depth (m)	2.06	3.65	2.10
Conv. Total (m3/s)	939.0	Conv. (m3/s)	86.8	773.1	79.0
Length Wtd. (m)	5.00	Wetted Per. (m)	3.81	24.64	3.70
Min Ch El (m)	1.59	Shear (N/m2)	31.83	38.56	30.62
Alpha	1.01	Stream Power (N/m s)	44.91	61.83	42.11
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.06	1.43	0.06
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.03	0.49	0.02

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.09 Profile: PF 1

E.G. Elev (m)	6.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.09	Reach Len. (m)	6.97	6.96	6.97
Crit W.S. (m)		Flow Area (m2)	3.59	31.25	3.36
E.G. Slope (m/m)	0.000953	Area (m2)	3.59	31.25	3.36
Q Total (m3/s)	55.00	Flow (m3/s)	2.67	49.90	2.43
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.44	Avg. Vel. (m/s)	0.74	1.60	0.72
Max Chl Dpth (m)	4.50	Hydr. Depth (m)	2.05	4.04	2.10
Conv. Total (m3/s)	1781.8	Conv. (m3/s)	86.5	1616.5	78.8
Length Wtd. (m)	6.96	Wetted Per. (m)	3.80	10.50	3.69
Min Ch El (m)	1.59	Shear (N/m2)	8.83	27.80	8.50
Alpha	1.14	Stream Power (N/m s)	6.56	44.39	6.15
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.04	1.28	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.02	0.45	0.02

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.06 Profile: PF 1

E.G. Elev (m)	6.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.32	Wt. n-Val.		0.040	
W.S. Elev (m)	5.84	Reach Len. (m)	29.96	28.30	25.61
Crit W.S. (m)	4.07	Flow Area (m2)		21.87	
E.G. Slope (m/m)	0.005271	Area (m2)		21.87	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.60	Top Width (m)		5.60	
Vel Total (m/s)	2.52	Avg. Vel. (m/s)		2.52	
Max Chl Dpth (m)	4.02	Hydr. Depth (m)		3.90	
Conv. Total (m3/s)	757.6	Conv. (m3/s)		757.6	
Length Wtd. (m)	28.30	Wetted Per. (m)		13.41	
Min Ch El (m)	1.82	Shear (N/m2)		84.32	
Alpha	1.00	Stream Power (N/m s)		212.06	
Frctn Loss (m)		Cum Volume (1000 m3)		0.73	
C & E Loss (m)		Cum SA (1000 m2)		0.31	

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.04 Profile: PF 1

E.G. Elev (m)	4.66	Element	Left OB	Channel	Right OB
Vel Head (m)	1.08	Wt. n-Val.		0.040	
W.S. Elev (m)	3.57	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.57	Flow Area (m2)		11.93	
E.G. Slope (m/m)	0.026018	Area (m2)		11.93	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	4.61	Avg. Vel. (m/s)		4.61	
Max Chl Dpth (m)	2.22	Hydr. Depth (m)		2.16	
Conv. Total (m3/s)	341.0	Conv. (m3/s)		341.0	
Length Wtd. (m)	5.00	Wetted Per. (m)		9.75	
Min Ch El (m)	1.35	Shear (N/m2)		312.00	
Alpha	1.00	Stream Power (N/m s)		1438.69	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		0.25	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.15	

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.02 Profile: PF 1

E.G. Elev (m)	4.22	Element	Left OB	Channel	Right OB
Vel Head (m)	1.82	Wt. n-Val.		0.040	
W.S. Elev (m)	2.40	Reach Len. (m)	8.68	8.68	8.68
Crit W.S. (m)	2.89	Flow Area (m2)		9.20	
E.G. Slope (m/m)	0.048515	Area (m2)		9.20	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.98	Avg. Vel. (m/s)		5.98	
Max Chl Dpth (m)	1.81	Hydr. Depth (m)		1.66	
Conv. Total (m3/s)	249.7	Conv. (m3/s)		249.7	
Length Wtd. (m)	8.68	Wetted Per. (m)		8.13	
Min Ch El (m)	0.59	Shear (N/m2)		538.38	
Alpha	1.00	Stream Power (N/m s)		3219.37	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		0.15	
C & E Loss (m)	0.04	Cum SA (1000 m2)		0.10	

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.00 Profile: PF 1

E.G. Elev (m)	3.17	Element	Left OB	Channel	Right OB
Vel Head (m)	2.26	Wt. n-Val.		0.040	
W.S. Elev (m)	0.91	Reach Len. (m)			
Crit W.S. (m)	1.57	Flow Area (m2)		8.25	
E.G. Slope (m/m)	0.065781	Area (m2)		8.25	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	6.67	Avg. Vel. (m/s)		6.67	
Max Chl Dpth (m)	1.64	Hydr. Depth (m)		1.49	
Conv. Total (m3/s)	214.4	Conv. (m3/s)		214.4	
Length Wtd. (m)		Wetted Per. (m)		7.79	
Min Ch El (m)	-0.73	Shear (N/m2)		683.68	
Alpha	1.00	Stream Power (N/m s)		4556.88	
Frctn Loss (m)	0.54	Cum Volume (1000 m3)			
C & E Loss (m)	0.02	Cum SA (1000 m2)			

Plan: RANZI 200 RIO RANZI Reach 1 RS: .825 Profile: PF 1

E.G. US. (m)	16.12	Element	Inside BR US	Inside BR DS
W.S. US. (m)	15.79	E.G. Elev (m)	15.99	15.53
Q Total (m3/s)	55.00	W.S. Elev (m)	14.95	13.20
Q Bridge (m3/s)	51.78	Crit W.S. (m)	14.95	13.90
Q Weir (m3/s)		Max Chl Dpth (m)	3.18	1.85
Weir Sta Lft (m)		Vel Total (m/s)	4.53	6.76
Weir Sta Rgt (m)		Flow Area (m2)	12.14	8.14
Weir Submerg		Froude # Chl	0.86	1.72
Weir Max Depth (m)		Specif Force (m3)	45.90	44.51
Min El Weir Flow (m)	14.74	Hydr Depth (m)	2.09	1.57
Min El Prs (m)	14.08	W.P. Total (m)	20.42	7.72
Delta EG (m)	0.95	Conv. Total (m3/s)	214.6	210.6
Delta WS (m)	2.33	Top Width (m)	5.82	5.20
BR Open Area (m2)	10.69	Frctn Loss (m)	0.24	0.33
BR Open Vel (m/s)	6.36	C & E Loss (m)	0.03	0.13
Coef of Q		Shear Total (N/m2)	382.90	704.57
Br Sel Method	Energy only	Power Total (N/m s)	1734.57	4762.48

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.695 Profile: PF 1

E.G. US. (m)	12.80	Element	Inside BR US	Inside BR DS
W.S. US. (m)	12.45	E.G. Elev (m)	12.76	12.66
Q Total (m3/s)	55.00	W.S. Elev (m)	12.39	12.35
Q Bridge (m3/s)	27.09	Crit W.S. (m)	11.03	11.00
Q Weir (m3/s)		Max Chl Dpth (m)	3.56	3.77
Weir Sta Lft (m)		Vel Total (m/s)	2.65	2.43
Weir Sta Rgt (m)		Flow Area (m2)	20.72	22.59
Weir Submerg		Froude # Chl	0.47	0.42
Weir Max Depth (m)		Specif Force (m3)	45.97	49.54
Min El Weir Flow (m)	11.23	Hydr Depth (m)	2.32	2.54
Min El Prs (m)	11.07	W.P. Total (m)	25.97	26.66
Delta EG (m)	0.17	Conv. Total (m3/s)	451.1	511.8
Delta WS (m)	0.15	Top Width (m)	8.92	8.91
BR Open Area (m2)	11.01	Frctn Loss (m)	0.08	0.03
BR Open Vel (m/s)	2.46	C & E Loss (m)	0.02	0.00
Coef of Q		Shear Total (N/m2)	116.30	95.98
Br Sel Method	Energy only	Power Total (N/m s)	308.72	233.67

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.565 Profile: PF 1

E.G. US. (m)	10.63	Element	Inside BR US	Inside BR DS
W.S. US. (m)	10.39	E.G. Elev (m)	10.60	10.49
Q Total (m3/s)	55.00	W.S. Elev (m)	10.30	10.32
Q Bridge (m3/s)	50.38	Crit W.S. (m)	8.87	8.40
Q Weir (m3/s)		Max Chl Dpth (m)	3.44	3.75
Weir Sta Lft (m)		Vel Total (m/s)	2.42	1.81
Weir Sta Rgt (m)		Flow Area (m2)	22.72	30.44
Weir Submerg		Froude # Chl	0.44	0.31
Weir Max Depth (m)		Specif Force (m3)	51.69	63.26
Min El Weir Flow (m)	9.90	Hydr Depth (m)	2.19	2.19
Min El Prs (m)	9.66	W.P. Total (m)	30.70	37.43
Delta EG (m)	0.17	Conv. Total (m3/s)	483.9	685.6
Delta WS (m)	0.08	Top Width (m)	10.39	13.88
BR Open Area (m2)	19.26	Frctn Loss (m)	0.07	0.02
BR Open Vel (m/s)	2.62	C & E Loss (m)	0.04	0.00
Coef of Q		Shear Total (N/m2)	93.72	51.31
Br Sel Method	Energy only	Power Total (N/m s)	226.93	92.73

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.505 Profile: PF 1

E.G. US. (m)	10.32	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.93	E.G. Elev (m)	10.20	10.10
Q Total (m3/s)	55.00	W.S. Elev (m)	9.27	9.26
Q Bridge (m3/s)	55.00	Crit W.S. (m)	8.64	8.53
Q Weir (m3/s)		Max Chl Dpth (m)	3.00	3.10
Weir Sta Lft (m)		Vel Total (m/s)	4.26	4.07
Weir Sta Rgt (m)		Flow Area (m2)	12.90	13.52
Weir Submerg		Froude # Chl	0.82	0.77
Weir Max Depth (m)		Specif Force (m3)	45.30	45.79
Min El Weir Flow (m)	9.72	Hydr Depth (m)		
Min El Prs (m)	8.92	W.P. Total (m)	15.57	15.83
Delta EG (m)	0.39	Conv. Total (m3/s)	284.4	304.5
Delta WS (m)	0.53	Top Width (m)		
BR Open Area (m2)	12.90	Frctn Loss (m)	0.07	0.08
BR Open Vel (m/s)	4.26	C & E Loss (m)	0.03	0.09
Coef of Q		Shear Total (N/m2)	303.84	273.46
Br Sel Method	Energy only	Power Total (N/m s)	1295.68	1112.07

Plan: RANZI 200 RIO RANZI Reach 1 RS: .485 Profile: PF 1

E.G. US. (m)	9.85	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.38	E.G. Elev (m)	9.76	9.55
Q Total (m3/s)	55.00	W.S. Elev (m)	9.02	8.92
Q Bridge (m3/s)	34.46	Crit W.S. (m)	8.76	8.51
Q Weir (m3/s)		Max Chl Dpth (m)	2.94	3.10
Weir Sta Lft (m)		Vel Total (m/s)	3.77	3.49
Weir Sta Rgt (m)		Flow Area (m2)	14.60	15.76
Weir Submerg		Froude # Chl	0.71	0.64
Weir Max Depth (m)		Specif Force (m3)	41.85	43.06
Min El Weir Flow (m)	8.19	Hydr Depth (m)	2.01	2.10
Min El Prs (m)	7.94	W.P. Total (m)	22.25	22.91
Delta EG (m)	0.39	Conv. Total (m3/s)	281.9	313.2
Delta WS (m)	0.49	Top Width (m)	7.27	7.52
BR Open Area (m2)	9.28	Frctn Loss (m)	0.17	0.08
BR Open Vel (m/s)	3.71	C & E Loss (m)	0.03	0.02
Coef of Q		Shear Total (N/m2)	245.02	208.05
Br Sel Method	Energy only	Power Total (N/m s)	922.76	725.89

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.471 Profile: PF 1

E.G. US. (m)	9.37	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.04	E.G. Elev (m)	9.26	8.97
Q Total (m3/s)	55.00	W.S. Elev (m)	8.34	8.52
Q Bridge (m3/s)	55.00	Crit W.S. (m)	7.91	7.50
Q Weir (m3/s)		Max Chl Dpth (m)	2.58	3.18
Weir Sta Lft (m)		Vel Total (m/s)	4.24	2.93
Weir Sta Rgt (m)		Flow Area (m2)	12.99	18.74
Weir Submerg		Froude # Chl	0.90	0.57
Weir Max Depth (m)		Specif Force (m3)	41.62	44.67
Min El Weir Flow (m)	8.39	Hydr Depth (m)		1.60
Min El Prs (m)	7.92	W.P. Total (m)	17.15	31.18
Delta EG (m)	0.48	Conv. Total (m3/s)	269.7	353.2
Delta WS (m)	0.47	Top Width (m)		11.69
BR Open Area (m2)	12.99	Frctn Loss (m)	0.15	0.04
BR Open Vel (m/s)	4.24	C & E Loss (m)	0.14	0.04
Coef of Q		Shear Total (N/m2)	308.80	142.91
Br Sel Method	Energy only	Power Total (N/m s)	1307.89	419.34

Plan: RANZI 200 RIO RANZI Reach 1 RS: .12 Profile: PF 1

E.G. US. (m)	6.47	Element	Inside BR US	Inside BR DS
W.S. US. (m)	6.33	E.G. Elev (m)	6.46	6.22
Q Total (m3/s)	55.00	W.S. Elev (m)	6.32	6.10
Q Bridge (m3/s)	10.66	Crit W.S. (m)	3.76	4.31
Q Weir (m3/s)		Max Chl Dpth (m)	5.07	4.51
Weir Sta Lft (m)		Vel Total (m/s)	1.63	1.56
Weir Sta Rgt (m)		Flow Area (m2)	33.75	35.21
Weir Submerg		Froude # Chl	0.23	0.25
Weir Max Depth (m)		Specif Force (m3)	85.29	73.55
Min El Weir Flow (m)	3.94	Hydr Depth (m)	4.10	3.18
Min El Prs (m)	3.25	W.P. Total (m)	29.06	32.15
Delta EG (m)	0.26	Conv. Total (m3/s)	953.0	939.0
Delta WS (m)	0.24	Top Width (m)	8.24	11.08
BR Open Area (m2)	11.06	Frctn Loss (m)	0.24	0.01
BR Open Vel (m/s)	0.96	C & E Loss (m)	0.00	0.00
Coef of Q		Shear Total (N/m2)	37.93	36.85
Br Sel Method	Energy only	Power Total (N/m s)	61.81	57.56

Plan: RANZI 200 RIO RANZI Reach 1 RS: 0.05 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (m3/s)	41.99	Culv Full Len (m)	16.79
# Barrels	1	Culv Vel US (m/s)	4.79
Q Barrel (m3/s)	41.99	Culv Vel DS (m/s)	4.86
E.G. US. (m)	6.16	Culv Inv El Up (m)	1.88
W.S. US. (m)	5.84	Culv Inv El Dn (m)	1.68
E.G. DS (m)	4.66	Culv Frctn Ls (m)	1.15
W.S. DS (m)	3.57	Culv Exit Loss (m)	0.12
Delta EG (m)	1.50	Culv Entr Loss (m)	0.23
Delta WS (m)	2.26	Q Weir (m3/s)	13.01
E.G. IC (m)	6.14	Weir Sta Lft (m)	0.00
E.G. OC (m)	6.16	Weir Sta Rgt (m)	5.60
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (m)	3.88	Weir Max Depth (m)	1.38
Culv WS Outlet (m)	3.57	Weir Avg Depth (m)	1.38
Culv Nml Depth (m)	2.00	Weir Flow Area (m2)	7.70
Culv Crt Depth (m)	1.69	Min El Weir Flow (m)	4.78

RIO RANZI

CONDIZIONE ATTUALE

Tempo di ritorno 500 anni

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.84 Profile: PF 1

E.G. Elev (m)	16.74	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	16.57	Reach Len. (m)	6.83	6.82	6.82
Crit W.S. (m)	14.50	Flow Area (m2)	9.10	31.82	2.06
E.G. Slope (m/m)	0.001724	Area (m2)	9.10	31.82	2.06
Q Total (m3/s)	75.00	Flow (m3/s)	11.44	61.86	1.70
Top Width (m)	13.80	Top Width (m)	5.04	7.54	1.22
Vel Total (m/s)	1.75	Avg. Vel. (m/s)	1.26	1.94	0.83
Max Chl Dpth (m)	4.46	Hydr. Depth (m)	1.81	4.22	1.69
Conv. Total (m3/s)	1806.2	Conv. (m3/s)	275.4	1489.8	40.9
Length Wtd. (m)	6.82	Wetted Per. (m)	6.83	12.41	2.90
Min Ch El (m)	12.11	Shear (N/m2)	22.53	43.34	11.99
Alpha	1.11	Stream Power (N/m s)	28.31	84.26	9.90
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	2.11	19.00	1.47
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.21	5.21	0.87

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.83 Profile: PF 1

E.G. Elev (m)	16.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.47	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	16.23	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	14.81	Flow Area (m2)	1.40	23.12	1.44
E.G. Slope (m/m)	0.005365	Area (m2)	1.40	23.12	1.44
Q Total (m3/s)	75.00	Flow (m3/s)	1.81	71.31	1.87
Top Width (m)	8.14	Top Width (m)	1.13	5.83	1.18
Vel Total (m/s)	2.89	Avg. Vel. (m/s)	1.30	3.08	1.30
Max Chl Dpth (m)	4.46	Hydr. Depth (m)	1.24	3.97	1.22
Conv. Total (m3/s)	1024.0	Conv. (m3/s)	24.8	973.6	25.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.35	10.57	2.40
Min Ch El (m)	11.77	Shear (N/m2)	31.34	115.04	31.54
Alpha	1.09	Stream Power (N/m s)	40.64	354.87	41.06
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	2.07	18.82	1.46
C & E Loss (m)	0.06	Cum SA (1000 m2)	1.19	5.17	0.86

Plan: RANZI 500 RIO RANZI Reach 1 RS: .825 BR U Profile: PF 1

E.G. Elev (m)	16.58	Element	Left OB	Channel	Right OB
Vel Head (m)	1.03	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	15.55	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	15.55	Flow Area (m2)	0.63	15.67	0.64
E.G. Slope (m/m)	0.047538	Area (m2)	0.63	15.67	0.64
Q Total (m3/s)	75.00	Flow (m3/s)	1.81	71.39	1.80
Top Width (m)	8.14	Top Width (m)	1.13	5.83	1.18
Vel Total (m/s)	4.43	Avg. Vel. (m/s)	2.86	4.56	2.82
Max Chl Dpth (m)	3.78	Hydr. Depth (m)	0.56	2.69	0.54
Conv. Total (m3/s)	344.0	Conv. (m3/s)	8.3	327.4	8.3
Length Wtd. (m)	5.00	Wetted Per. (m)	1.67	20.51	1.72
Min Ch El (m)	11.77	Shear (N/m2)	176.95	356.22	173.11
Alpha	1.03	Stream Power (N/m s)	505.65	1622.87	487.51
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	2.06	18.72	1.46
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.18	5.14	0.86

Plan: RANZI 500 RIO RANZI Reach 1 RS: .825 BR D Profile: PF 1

E.G. Elev (m)	16.26	Element	Left OB	Channel	Right OB
Vel Head (m)	1.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	14.93	Reach Len. (m)	3.20	3.20	3.20
Crit W.S. (m)	15.19	Flow Area (m2)	0.30	14.25	0.34
E.G. Slope (m/m)	0.069790	Area (m2)	0.30	14.25	0.34
Q Total (m3/s)	75.00	Flow (m3/s)	0.68	73.50	0.82
Top Width (m)	8.16	Top Width (m)	1.29	5.65	1.22
Vel Total (m/s)	5.04	Avg. Vel. (m/s)	2.25	5.16	2.44
Max Chl Dpth (m)	3.58	Hydr. Depth (m)	0.23	2.52	0.28
Conv. Total (m3/s)	283.9	Conv. (m3/s)	2.6	278.2	3.1
Length Wtd. (m)	3.20	Wetted Per. (m)	1.52	20.63	1.50
Min Ch El (m)	11.35	Shear (N/m2)	136.01	472.53	153.89
Alpha	1.03	Stream Power (N/m s)	305.92	2437.86	375.84
Frctn Loss (m)	0.29	Cum Volume (1000 m3)	2.06	18.64	1.45
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.17	5.11	0.85

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.82 Profile: PF 1

E.G. Elev (m)	16.00	Element	Left OB	Channel	Right OB
Vel Head (m)	2.16	Wt. n-Val.		0.040	
W.S. Elev (m)	13.84	Reach Len. (m)	11.17	12.17	12.21
Crit W.S. (m)	14.42	Flow Area (m2)		11.53	
E.G. Slope (m/m)	0.048798	Area (m2)		11.53	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.41	Top Width (m)		5.41	
Vel Total (m/s)	6.50	Avg. Vel. (m/s)		6.50	
Max Chl Dpth (m)	2.49	Hydr. Depth (m)		2.13	
Conv. Total (m3/s)	339.5	Conv. (m3/s)		339.5	
Length Wtd. (m)	12.17	Wetted Per. (m)		9.02	
Min Ch El (m)	11.35	Shear (N/m2)		611.63	
Alpha	1.00	Stream Power (N/m s)		3978.12	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)	2.06	18.60	1.45
C & E Loss (m)	0.08	Cum SA (1000 m2)	1.17	5.09	0.85

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.77 Profile: PF 1

E.G. Elev (m)	14.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.50	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	13.91	Reach Len. (m)	42.11	41.59	40.95
Crit W.S. (m)		Flow Area (m2)	2.80	20.65	2.09
E.G. Slope (m/m)	0.007639	Area (m2)	2.80	20.65	2.09
Q Total (m3/s)	75.00	Flow (m3/s)	4.84	67.12	3.04
Top Width (m)	8.90	Top Width (m)	2.00	5.54	1.36
Vel Total (m/s)	2.94	Avg. Vel. (m/s)	1.73	3.25	1.45
Max Chl Dpth (m)	4.13	Hydr. Depth (m)	1.40	3.73	1.54
Conv. Total (m3/s)	858.1	Conv. (m3/s)	55.4	767.9	34.8
Length Wtd. (m)	41.58	Wetted Per. (m)	3.97	11.38	3.87
Min Ch El (m)	9.78	Shear (N/m2)	52.82	135.91	40.52
Alpha	1.13	Stream Power (N/m s)	91.43	441.77	58.78
Frctn Loss (m)	0.47	Cum Volume (1000 m3)	2.03	17.84	1.42
C & E Loss (m)	0.05	Cum SA (1000 m2)	1.12	4.82	0.80

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.73 Profile: PF 1

E.G. Elev (m)	13.88	Element	Left OB	Channel	Right OB
Vel Head (m)	1.04	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.84	Reach Len. (m)	7.94	7.74	6.73
Crit W.S. (m)	12.70	Flow Area (m2)	0.15	15.76	1.22
E.G. Slope (m/m)	0.018561	Area (m2)	0.15	15.76	1.22
Q Total (m3/s)	75.00	Flow (m3/s)	0.17	72.37	2.46
Top Width (m)	7.29	Top Width (m)	0.42	5.64	1.23
Vel Total (m/s)	4.38	Avg. Vel. (m/s)	1.14	4.59	2.01
Max Chl Dpth (m)	2.83	Hydr. Depth (m)	0.36	2.80	0.99
Conv. Total (m3/s)	550.5	Conv. (m3/s)	1.3	531.2	18.0
Length Wtd. (m)	7.70	Wetted Per. (m)	0.78	10.07	2.68
Min Ch El (m)	10.01	Shear (N/m2)	35.11	284.84	82.80
Alpha	1.07	Stream Power (N/m s)	39.92	1307.65	166.81
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	1.97	17.08	1.35
C & E Loss (m)	0.05	Cum SA (1000 m2)	1.07	4.59	0.75

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.70 Profile: PF 1

E.G. Elev (m)	13.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.43	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	13.03	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.88	Flow Area (m2)	2.27	22.92	2.10
E.G. Slope (m/m)	0.004679	Area (m2)	2.27	22.92	2.10
Q Total (m3/s)	75.00	Flow (m3/s)	3.22	68.89	2.89
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.75	Avg. Vel. (m/s)	1.42	3.01	1.38
Max Chl Dpth (m)	4.20	Hydr. Depth (m)	1.55	3.80	1.48
Conv. Total (m3/s)	1096.4	Conv. (m3/s)	47.1	1007.1	42.2
Length Wtd. (m)	5.00	Wetted Per. (m)	3.01	9.84	2.90
Min Ch El (m)	8.83	Shear (N/m2)	34.69	106.93	33.20
Alpha	1.12	Stream Power (N/m s)	49.22	321.40	45.77
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.94	16.65	1.32
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.05	4.45	0.72

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.695 BR U Profile: PF 1

E.G. Elev (m)	13.42	Element	Left OB	Channel	Right OB
Vel Head (m)	0.43	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.99	Reach Len. (m)	6.40	6.40	6.40
Crit W.S. (m)	12.03	Flow Area (m2)	2.22	21.79	2.04
E.G. Slope (m/m)	0.013778	Area (m2)	2.22	21.79	2.04
Q Total (m3/s)	75.00	Flow (m3/s)	5.36	64.84	4.79
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.88	Avg. Vel. (m/s)	2.42	2.98	2.35
Max Chl Dpth (m)	4.16	Hydr. Depth (m)	1.51	3.61	1.44
Conv. Total (m3/s)	638.9	Conv. (m3/s)	45.7	552.4	40.8
Length Wtd. (m)	6.40	Wetted Per. (m)	2.97	21.33	2.86
Min Ch El (m)	8.83	Shear (N/m2)	100.96	137.99	96.58
Alpha	1.02	Stream Power (N/m s)	243.96	410.67	226.58
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.93	16.54	1.31
C & E Loss (m)	0.02	Cum SA (1000 m2)	1.04	4.42	0.71

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.695 BR D Profile: PF 1

E.G. Elev (m)	13.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.78	Flow Area (m2)	2.86	23.41	1.66
E.G. Slope (m/m)	0.011238	Area (m2)	2.86	23.41	1.66
Q Total (m3/s)	75.00	Flow (m3/s)	6.79	64.99	3.22
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.69	Avg. Vel. (m/s)	2.37	2.78	1.94
Max Chl Dpth (m)	4.37	Hydr. Depth (m)	1.68	3.79	1.61
Conv. Total (m3/s)	707.5	Conv. (m3/s)	64.0	613.1	30.4
Length Wtd. (m)	5.00	Wetted Per. (m)	3.38	21.84	2.64
Min Ch El (m)	8.58	Shear (N/m2)	93.34	118.13	69.19
Alpha	1.02	Stream Power (N/m s)	221.44	327.93	134.44
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	1.92	16.40	1.30
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.03	4.38	0.70

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.69 Profile: PF 1

E.G. Elev (m)	13.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.89	Reach Len. (m)	8.42	8.28	8.14
Crit W.S. (m)		Flow Area (m2)	2.76	23.96	1.59
E.G. Slope (m/m)	0.004125	Area (m2)	2.76	23.96	1.59
Q Total (m3/s)	75.00	Flow (m3/s)	3.92	69.22	1.86
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.65	Avg. Vel. (m/s)	1.42	2.89	1.17
Max Chl Dpth (m)	4.31	Hydr. Depth (m)	1.62	3.88	1.55
Conv. Total (m3/s)	1167.8	Conv. (m3/s)	61.0	1077.8	28.9
Length Wtd. (m)	8.28	Wetted Per. (m)	3.32	9.93	2.58
Min Ch El (m)	8.58	Shear (N/m2)	33.64	97.62	25.02
Alpha	1.12	Stream Power (N/m s)	47.77	282.03	29.16
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.90	16.28	1.29
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.02	4.35	0.70

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.66 Profile: PF 1

E.G. Elev (m)	13.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.44	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.72	Reach Len. (m)	8.12	7.98	7.71
Crit W.S. (m)		Flow Area (m2)	1.33	23.16	2.42
E.G. Slope (m/m)	0.005237	Area (m2)	1.33	23.16	2.42
Q Total (m3/s)	75.00	Flow (m3/s)	1.63	69.69	3.69
Top Width (m)	9.76	Top Width (m)	1.55	6.48	1.73
Vel Total (m/s)	2.79	Avg. Vel. (m/s)	1.22	3.01	1.52
Max Chl Dpth (m)	3.84	Hydr. Depth (m)	0.86	3.57	1.40
Conv. Total (m3/s)	1036.4	Conv. (m3/s)	22.5	963.0	51.0
Length Wtd. (m)	7.96	Wetted Per. (m)	2.40	10.79	3.13
Min Ch El (m)	8.88	Shear (N/m2)	28.49	110.17	39.72
Alpha	1.10	Stream Power (N/m s)	34.80	331.53	60.54
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.85	15.71	1.24
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.98	4.20	0.66

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.63 Profile: PF 1

E.G. Elev (m)	12.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.56	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	12.33	Reach Len. (m)	9.26	9.15	8.93
Crit W.S. (m)		Flow Area (m2)		21.04	2.25
E.G. Slope (m/m)	0.007786	Area (m2)		21.04	2.25
Q Total (m3/s)	75.00	Flow (m3/s)		71.28	3.72
Top Width (m)	6.59	Top Width (m)		5.48	1.11
Vel Total (m/s)	3.22	Avg. Vel. (m/s)		3.39	1.65
Max Chl Dpth (m)	4.19	Hydr. Depth (m)		3.84	2.03
Conv. Total (m3/s)	850.0	Conv. (m3/s)		807.8	42.2
Length Wtd. (m)	9.14	Wetted Per. (m)		11.06	3.48
Min Ch El (m)	8.14	Shear (N/m2)		145.26	49.47
Alpha	1.07	Stream Power (N/m s)		492.02	81.70
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.84	15.04	1.17
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.96	4.00	0.62

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.59 Profile: PF 1

E.G. Elev (m)	12.36	Element	Left OB	Channel	Right OB
Vel Head (m)	1.10	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	11.27	Reach Len. (m)	7.33	7.18	6.54
Crit W.S. (m)	11.27	Flow Area (m2)	1.92	14.70	
E.G. Slope (m/m)	0.019335	Area (m2)	1.92	14.70	
Q Total (m3/s)	75.00	Flow (m3/s)	5.17	69.83	
Top Width (m)	7.63	Top Width (m)	1.68	5.95	
Vel Total (m/s)	4.51	Avg. Vel. (m/s)	2.69	4.75	
Max Chl Dpth (m)	3.27	Hydr. Depth (m)	1.14	2.47	
Conv. Total (m3/s)	539.4	Conv. (m3/s)	37.2	502.2	
Length Wtd. (m)	7.19	Wetted Per. (m)	2.82	9.19	
Min Ch El (m)	8.00	Shear (N/m2)	129.18	303.05	
Alpha	1.06	Stream Power (N/m s)	347.71	1440.14	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	1.82	14.38	1.13
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.93	3.79	0.58

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.57 Profile: PF 1

E.G. Elev (m)	11.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.28	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.29	Flow Area (m2)	1.33	32.46	1.06
E.G. Slope (m/m)	0.002379	Area (m2)	1.33	32.46	1.06
Q Total (m3/s)	75.00	Flow (m3/s)	1.13	73.03	0.83
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.15	Avg. Vel. (m/s)	0.85	2.25	0.79
Max Chl Dpth (m)	4.42	Hydr. Depth (m)	1.07	3.98	1.08
Conv. Total (m3/s)	1537.6	Conv. (m3/s)	23.2	1497.3	17.1
Length Wtd. (m)	5.00	Wetted Per. (m)	2.29	12.95	2.04
Min Ch El (m)	6.86	Shear (N/m2)	13.56	58.49	12.10
Alpha	1.07	Stream Power (N/m s)	11.52	131.62	9.53
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.80	13.95	1.12
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.90	3.64	0.57

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.565 BR U Profile: PF 1

E.G. Elev (m)	11.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.23	Reach Len. (m)	8.16	8.16	8.16
Crit W.S. (m)	9.29	Flow Area (m2)	1.27	30.14	1.01
E.G. Slope (m/m)	0.008309	Area (m2)	1.27	30.14	1.01
Q Total (m3/s)	75.00	Flow (m3/s)	1.98	71.56	1.46
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.31	Avg. Vel. (m/s)	1.56	2.37	1.45
Max Chl Dpth (m)	4.37	Hydr. Depth (m)	1.02	3.69	1.03
Conv. Total (m3/s)	822.8	Conv. (m3/s)	21.7	785.0	16.1
Length Wtd. (m)	8.16	Wetted Per. (m)	2.24	28.34	1.99
Min Ch El (m)	6.86	Shear (N/m2)	46.14	86.65	41.32
Alpha	1.02	Stream Power (N/m s)	71.98	205.74	59.89
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.79	13.79	1.12
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.90	3.60	0.57

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.565 BR D Profile: PF 1

E.G. Elev (m)	11.43	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.27	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.78	Flow Area (m2)	4.48	36.82	2.45
E.G. Slope (m/m)	0.004031	Area (m2)	4.48	36.82	2.45
Q Total (m3/s)	75.00	Flow (m3/s)	6.96	64.75	3.28
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.71	Avg. Vel. (m/s)	1.55	1.76	1.34
Max Chl Dpth (m)	4.70	Hydr. Depth (m)	1.38	4.16	1.38
Conv. Total (m3/s)	1181.3	Conv. (m3/s)	109.7	1019.9	51.7
Length Wtd. (m)	5.00	Wetted Per. (m)	4.63	31.56	3.15
Min Ch El (m)	6.57	Shear (N/m2)	38.25	46.11	30.69
Alpha	1.01	Stream Power (N/m s)	59.39	81.10	41.14
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	1.77	13.52	1.10
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.88	3.53	0.56

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.56 Profile: PF 1

E.G. Elev (m)	11.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.26	Reach Len. (m)	9.69	10.00	10.27
Crit W.S. (m)		Flow Area (m2)	4.51	38.85	2.51
E.G. Slope (m/m)	0.001337	Area (m2)	4.51	38.85	2.51
Q Total (m3/s)	75.00	Flow (m3/s)	4.05	69.00	1.96
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.64	Avg. Vel. (m/s)	0.90	1.78	0.78
Max Chl Dpth (m)	4.69	Hydr. Depth (m)	1.38	4.39	1.42
Conv. Total (m3/s)	2050.9	Conv. (m3/s)	110.6	1886.8	53.5
Length Wtd. (m)	9.99	Wetted Per. (m)	4.64	14.34	3.19
Min Ch El (m)	6.57	Shear (N/m2)	12.74	35.51	10.31
Alpha	1.11	Stream Power (N/m s)	11.43	63.08	8.03
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	1.75	13.33	1.09
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.86	3.49	0.55

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.51 Profile: PF 1

E.G. Elev (m)	11.30	Element	Left OB	Channel	Right OB
Vel Head (m)	0.38	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.92	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.14	Flow Area (m2)	2.53	25.38	0.69
E.G. Slope (m/m)	0.004374	Area (m2)	2.53	25.38	0.69
Q Total (m3/s)	75.00	Flow (m3/s)	3.58	70.80	0.62
Top Width (m)	8.27	Top Width (m)	1.72	5.92	0.63
Vel Total (m/s)	2.62	Avg. Vel. (m/s)	1.42	2.79	0.90
Max Chl Dpth (m)	4.65	Hydr. Depth (m)	1.47	4.29	1.10
Conv. Total (m3/s)	1134.0	Conv. (m3/s)	54.1	1070.5	9.4
Length Wtd. (m)	5.00	Wetted Per. (m)	3.19	11.58	1.73
Min Ch El (m)	6.27	Shear (N/m2)	33.99	93.99	17.18
Alpha	1.08	Stream Power (N/m s)	48.13	262.15	15.43
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.61	12.04	1.02
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.77	3.19	0.50

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.505 BR U Profile: PF 1

E.G. Elev (m)	11.11	Element	Left OB	Channel	Right OB
Vel Head (m)	1.72	Wt. n-Val.		0.040	
W.S. Elev (m)	9.39	Reach Len. (m)	2.00	2.00	2.00
Crit W.S. (m)	8.76	Flow Area (m2)		12.90	
E.G. Slope (m/m)	0.069564	Area (m2)		12.90	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	5.82	Avg. Vel. (m/s)		5.82	
Max Chl Dpth (m)	3.12	Hydr. Depth (m)			
Conv. Total (m3/s)	284.4	Conv. (m3/s)		284.4	
Length Wtd. (m)	2.00	Wetted Per. (m)		15.57	
Min Ch El (m)	6.27	Shear (N/m2)		564.98	
Alpha	1.00	Stream Power (N/m s)		3285.44	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	1.60	11.94	1.02
C & E Loss (m)	0.05	Cum SA (1000 m2)	0.76	3.18	0.50

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.505 BR D Profile: PF 1

E.G. Elev (m)	10.93	Element	Left OB	Channel	Right OB
Vel Head (m)	1.57	Wt. n-Val.	0.000	0.040	
W.S. Elev (m)	9.37	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.75	Flow Area (m2)	0.00	13.52	
E.G. Slope (m/m)	0.060680	Area (m2)	0.00	13.52	
Q Total (m3/s)	75.00	Flow (m3/s)	0.00	75.00	
Top Width (m)	0.12	Top Width (m)	0.12		
Vel Total (m/s)	5.55	Avg. Vel. (m/s)	0.11	5.55	
Max Chl Dpth (m)	3.21	Hydr. Depth (m)	0.00		
Conv. Total (m3/s)	304.5	Conv. (m3/s)	0.0	304.5	
Length Wtd. (m)	5.00	Wetted Per. (m)	0.13	15.83	
Min Ch El (m)	6.16	Shear (N/m2)		508.49	
Alpha	1.00	Stream Power (N/m s)		2819.86	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)	1.60	11.91	1.02
C & E Loss (m)	0.26	Cum SA (1000 m2)	0.76	3.18	0.50

Plan: RANZI 500 RIO RANZI Reach 1 RS: .5 Profile: PF 1

E.G. Elev (m)	10.56	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.87	Reach Len. (m)	6.82	7.50	7.93
Crit W.S. (m)		Flow Area (m2)	0.91	19.83	0.10
E.G. Slope (m/m)	0.010775	Area (m2)	0.91	19.83	0.10
Q Total (m3/s)	75.00	Flow (m3/s)	1.30	73.63	0.07
Top Width (m)	8.27	Top Width (m)	1.72	5.92	0.63
Vel Total (m/s)	3.60	Avg. Vel. (m/s)	1.42	3.71	0.66
Max Chl Dpth (m)	3.71	Hydr. Depth (m)	0.53	3.35	0.16
Conv. Total (m3/s)	722.5	Conv. (m3/s)	12.5	709.3	0.6
Length Wtd. (m)	7.48	Wetted Per. (m)	2.25	11.58	0.79
Min Ch El (m)	6.16	Shear (N/m2)	42.89	180.87	13.57
Alpha	1.05	Stream Power (N/m s)	61.02	671.62	8.96
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.60	11.83	1.02
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.76	3.16	0.50

Plan: RANZI 500 RIO RANZI Reach 1 RS: .49 Profile: PF 1

E.G. Elev (m)	10.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.63	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.85	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.01	Flow Area (m2)	1.83	19.67	0.84
E.G. Slope (m/m)	0.007923	Area (m2)	1.83	19.67	0.84
Q Total (m3/s)	75.00	Flow (m3/s)	3.24	70.69	1.08
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	3.36	Avg. Vel. (m/s)	1.77	3.59	1.28
Max Chl Dpth (m)	3.77	Hydr. Depth (m)	1.03	3.62	1.28
Conv. Total (m3/s)	842.6	Conv. (m3/s)	36.4	794.1	12.1
Length Wtd. (m)	5.00	Wetted Per. (m)	2.57	9.59	1.94
Min Ch El (m)	6.08	Shear (N/m2)	55.22	159.40	33.80
Alpha	1.09	Stream Power (N/m s)	97.86	572.70	43.19
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.59	11.68	1.02
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.75	3.12	0.49

Plan: RANZI 500 RIO RANZI Reach 1 RS: .485 BR U Profile: PF 1

E.G. Elev (m)	10.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.89	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.49	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.27	Flow Area (m2)	1.19	16.38	0.60
E.G. Slope (m/m)	0.037045	Area (m2)	1.19	16.38	0.60
Q Total (m3/s)	75.00	Flow (m3/s)	3.78	69.69	1.53
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	4.13	Avg. Vel. (m/s)	3.18	4.25	2.54
Max Chl Dpth (m)	3.41	Hydr. Depth (m)	0.67	3.02	0.92
Conv. Total (m3/s)	389.7	Conv. (m3/s)	19.6	362.1	8.0
Length Wtd. (m)	5.00	Wetted Per. (m)	2.21	19.72	1.58
Min Ch El (m)	6.08	Shear (N/m2)	195.25	301.91	139.32
Alpha	1.02	Stream Power (N/m s)	621.04	1284.10	353.86
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	1.58	11.59	1.01
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.74	3.09	0.49

Plan: RANZI 500 RIO RANZI Reach 1 RS: .485 BR D Profile: PF 1

E.G. Elev (m)	10.17	Element	Left OB	Channel	Right OB
Vel Head (m)	0.77	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.41	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.02	Flow Area (m2)	1.48	17.35	0.72
E.G. Slope (m/m)	0.030135	Area (m2)	1.48	17.35	0.72
Q Total (m3/s)	75.00	Flow (m3/s)	4.72	68.54	1.74
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	3.84	Avg. Vel. (m/s)	3.20	3.95	2.40
Max Chl Dpth (m)	3.59	Hydr. Depth (m)	0.83	3.20	1.09
Conv. Total (m3/s)	432.0	Conv. (m3/s)	27.2	394.8	10.0
Length Wtd. (m)	5.00	Wetted Per. (m)	2.33	19.98	1.75
Min Ch El (m)	5.82	Shear (N/m2)	187.31	256.62	121.68
Alpha	1.02	Stream Power (N/m s)	599.81	1013.70	292.27
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.58	11.51	1.01
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.73	3.07	0.49

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.48 Profile: PF 1

E.G. Elev (m)	10.08	Element	Left OB	Channel	Right OB
Vel Head (m)	0.75	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.33	Reach Len. (m)	2.61	2.58	2.90
Crit W.S. (m)		Flow Area (m2)	1.38	18.30	0.68
E.G. Slope (m/m)	0.010349	Area (m2)	1.38	18.30	0.68
Q Total (m3/s)	75.00	Flow (m3/s)	2.48	71.59	0.93
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	3.69	Avg. Vel. (m/s)	1.80	3.91	1.38
Max Chl Dpth (m)	3.51	Hydr. Depth (m)	0.78	3.37	1.02
Conv. Total (m3/s)	737.2	Conv. (m3/s)	24.4	703.7	9.2
Length Wtd. (m)	2.59	Wetted Per. (m)	2.32	9.59	1.68
Min Ch El (m)	5.82	Shear (N/m2)	60.36	193.64	40.71
Alpha	1.09	Stream Power (N/m s)	108.57	757.59	56.32
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.57	11.42	1.01
C & E Loss (m)	0.10	Cum SA (1000 m2)	0.72	3.04	0.48

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.472 Profile: PF 1

E.G. Elev (m)	9.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.41	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.55	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.34	Flow Area (m2)	1.02	25.14	1.12
E.G. Slope (m/m)	0.004688	Area (m2)	1.02	25.14	1.12
Q Total (m3/s)	75.00	Flow (m3/s)	1.11	72.65	1.25
Top Width (m)	9.83	Top Width (m)	1.11	7.47	1.25
Vel Total (m/s)	2.75	Avg. Vel. (m/s)	1.08	2.89	1.11
Max Chl Dpth (m)	3.79	Hydr. Depth (m)	0.92	3.37	0.90
Conv. Total (m3/s)	1095.4	Conv. (m3/s)	16.2	1061.1	18.2
Length Wtd. (m)	5.00	Wetted Per. (m)	2.03	11.47	2.14
Min Ch El (m)	5.76	Shear (N/m2)	23.15	100.81	24.06
Alpha	1.08	Stream Power (N/m s)	25.08	291.27	26.74
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.57	11.36	1.01
C & E Loss (m)	0.05	Cum SA (1000 m2)	0.72	3.02	0.48

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.471 BR U Profile: PF 1

E.G. Elev (m)	9.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.91	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.95	Reach Len. (m)	4.79	4.79	4.79
Crit W.S. (m)	8.95	Flow Area (m2)	0.35	17.21	0.37
E.G. Slope (m/m)	0.048086	Area (m2)	0.35	17.21	0.37
Q Total (m3/s)	75.00	Flow (m3/s)	0.76	73.47	0.77
Top Width (m)	9.83	Top Width (m)	1.11	7.47	1.25
Vel Total (m/s)	4.18	Avg. Vel. (m/s)	2.16	4.27	2.10
Max Chl Dpth (m)	3.19	Hydr. Depth (m)	0.32	2.30	0.29
Conv. Total (m3/s)	342.0	Conv. (m3/s)	3.5	335.1	3.5
Length Wtd. (m)	4.79	Wetted Per. (m)	1.43	25.05	1.54
Min Ch El (m)	5.76	Shear (N/m2)	116.34	324.02	112.10
Alpha	1.03	Stream Power (N/m s)	250.88	1383.20	235.82
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	1.56	11.26	1.00
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.71	2.99	0.47

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.471 BR D Profile: PF 1

E.G. Elev (m)	9.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.03	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.70	Flow Area (m2)	1.37	22.33	0.96
E.G. Slope (m/m)	0.020469	Area (m2)	1.37	22.33	0.96
Q Total (m3/s)	75.00	Flow (m3/s)	2.91	69.96	2.13
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	3.04	Avg. Vel. (m/s)	2.13	3.13	2.21
Max Chl Dpth (m)	3.69	Hydr. Depth (m)	0.56	2.76	0.85
Conv. Total (m3/s)	524.2	Conv. (m3/s)	20.3	489.0	14.9
Length Wtd. (m)	5.00	Wetted Per. (m)	2.98	27.23	1.98
Min Ch El (m)	5.34	Shear (N/m2)	91.97	164.59	97.75
Alpha	1.02	Stream Power (N/m s)	195.49	515.72	216.40
Frctn Loss (m)	0.26	Cum Volume (1000 m3)	1.56	11.16	1.00
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.70	2.95	0.47

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.47 Profile: PF 1

E.G. Elev (m)	9.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.39	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.05	Reach Len. (m)	9.95	9.81	9.26
Crit W.S. (m)		Flow Area (m2)	1.43	25.97	0.99
E.G. Slope (m/m)	0.004531	Area (m2)	1.43	25.97	0.99
Q Total (m3/s)	75.00	Flow (m3/s)	1.47	72.49	1.04
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	2.64	Avg. Vel. (m/s)	1.02	2.79	1.05
Max Chl Dpth (m)	3.71	Hydr. Depth (m)	0.58	3.21	0.88
Conv. Total (m3/s)	1114.3	Conv. (m3/s)	21.8	1076.9	15.5
Length Wtd. (m)	9.80	Wetted Per. (m)	3.01	12.15	2.00
Min Ch El (m)	5.34	Shear (N/m2)	21.12	94.94	22.00
Alpha	1.08	Stream Power (N/m s)	21.65	265.05	23.18
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.55	11.04	0.99
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.69	2.91	0.46

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.42 Profile: PF 1

E.G. Elev (m)	9.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.82	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.24	Reach Len. (m)	14.28	14.89	15.52
Crit W.S. (m)	8.06	Flow Area (m2)	1.76	17.39	
E.G. Slope (m/m)	0.013589	Area (m2)	1.76	17.39	
Q Total (m3/s)	75.00	Flow (m3/s)	3.76	71.24	
Top Width (m)	9.10	Top Width (m)	1.40	7.70	
Vel Total (m/s)	3.92	Avg. Vel. (m/s)	2.14	4.10	
Max Chl Dpth (m)	2.42	Hydr. Depth (m)	1.25	2.26	
Conv. Total (m3/s)	643.4	Conv. (m3/s)	32.3	611.1	
Length Wtd. (m)	14.86	Wetted Per. (m)	2.79	10.44	
Min Ch El (m)	5.82	Shear (N/m2)	84.00	222.03	
Alpha	1.05	Stream Power (N/m s)	179.97	909.37	
Frctn Loss (m)	0.18	Cum Volume (1000 m3)	1.48	10.20	0.98
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.61	2.60	0.45

Plan: RANZI 500 RIO RANZI Reach 1 RS: .35 Profile: PF 1

E.G. Elev (m)	8.54	Element	Left OB	Channel	Right OB
Vel Head (m)	0.50	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.03	Reach Len. (m)	19.82	19.91	20.18
Crit W.S. (m)		Flow Area (m2)	2.58	21.95	
E.G. Slope (m/m)	0.006611	Area (m2)	2.58	21.95	
Q Total (m3/s)	75.00	Flow (m3/s)	4.39	70.61	
Top Width (m)	9.16	Top Width (m)	1.40	7.76	
Vel Total (m/s)	3.06	Avg. Vel. (m/s)	1.70	3.22	
Max Chl Dpth (m)	3.01	Hydr. Depth (m)	1.84	2.83	
Conv. Total (m3/s)	922.4	Conv. (m3/s)	54.0	868.4	
Length Wtd. (m)	19.91	Wetted Per. (m)	3.38	11.03	
Min Ch El (m)	5.02	Shear (N/m2)	49.59	129.03	
Alpha	1.06	Stream Power (N/m s)	84.31	414.97	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	1.39	9.33	0.98
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.55	2.25	0.45

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.26 Profile: PF 1

E.G. Elev (m)	7.84	Element	Left OB	Channel	Right OB
Vel Head (m)	0.27	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.57	Reach Len. (m)	9.46	9.83	9.75
Crit W.S. (m)		Flow Area (m2)	8.51	20.08	5.99
E.G. Slope (m/m)	0.004235	Area (m2)	8.51	20.08	5.99
Q Total (m3/s)	75.00	Flow (m3/s)	16.29	50.49	8.22
Top Width (m)	10.13	Top Width (m)	2.98	4.72	2.43
Vel Total (m/s)	2.17	Avg. Vel. (m/s)	1.91	2.51	1.37
Max Chl Dpth (m)	4.45	Hydr. Depth (m)	2.86	4.25	2.47
Conv. Total (m3/s)	1152.5	Conv. (m3/s)	250.3	775.9	126.3
Length Wtd. (m)	9.76	Wetted Per. (m)	6.68	10.45	7.74
Min Ch El (m)	3.12	Shear (N/m2)	52.95	79.80	32.15
Alpha	1.12	Stream Power (N/m s)	101.29	200.66	44.11
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.76	6.75	0.72
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.29	1.50	0.27

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.22 Profile: PF 1

E.G. Elev (m)	7.63	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.25	Reach Len. (m)	8.67	8.67	8.67
Crit W.S. (m)		Flow Area (m2)	1.09	25.07	2.91
E.G. Slope (m/m)	0.004748	Area (m2)	1.09	25.07	2.91
Q Total (m3/s)	75.00	Flow (m3/s)	0.83	69.65	4.51
Top Width (m)	8.95	Top Width (m)	1.28	5.77	1.90
Vel Total (m/s)	2.58	Avg. Vel. (m/s)	0.76	2.78	1.55
Max Chl Dpth (m)	4.81	Hydr. Depth (m)	0.85	4.35	1.53
Conv. Total (m3/s)	1088.5	Conv. (m3/s)	12.1	1010.9	65.5
Length Wtd. (m)	8.67	Wetted Per. (m)	3.68	12.24	3.41
Min Ch El (m)	2.44	Shear (N/m2)	13.78	95.35	39.72
Alpha	1.10	Stream Power (N/m s)	10.54	264.88	61.55
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.60	5.88	0.56
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.21	1.30	0.19

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.16 Profile: PF 1

E.G. Elev (m)	7.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.25	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.05	Flow Area (m2)	4.70	34.94	3.23
E.G. Slope (m/m)	0.001221	Area (m2)	4.70	34.94	3.23
Q Total (m3/s)	75.00	Flow (m3/s)	4.05	68.68	2.27
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.75	Avg. Vel. (m/s)	0.86	1.97	0.70
Max Chl Dpth (m)	6.00	Hydr. Depth (m)	3.43	5.85	3.59
Conv. Total (m3/s)	2146.6	Conv. (m3/s)	115.9	1965.7	64.9
Length Wtd. (m)	5.00	Wetted Per. (m)	4.80	10.35	4.49
Min Ch El (m)	1.25	Shear (N/m2)	11.72	40.41	8.61
Alpha	1.17	Stream Power (N/m s)	10.10	79.42	6.04
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.46	4.35	0.38
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	0.99	0.12

Plan: RANZI 500 RIO RANZI Reach 1 RS: .12 BR U Profile: PF 1

E.G. Elev (m)	7.42	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.25	Reach Len. (m)	69.57	69.57	69.57
Crit W.S. (m)	4.29	Flow Area (m2)	4.70	33.44	3.23
E.G. Slope (m/m)	0.003335	Area (m2)	4.70	33.44	3.23
Q Total (m3/s)	75.00	Flow (m3/s)	6.68	64.57	3.74
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.81	Avg. Vel. (m/s)	1.42	1.93	1.16
Max Chl Dpth (m)	6.00	Hydr. Depth (m)	3.43	5.60	3.59
Conv. Total (m3/s)	1298.7	Conv. (m3/s)	115.8	1118.2	64.8
Length Wtd. (m)	69.57	Wetted Per. (m)	4.80	21.63	4.49
Min Ch El (m)	1.25	Shear (N/m2)	32.01	50.58	23.53
Alpha	1.05	Stream Power (N/m s)	45.56	97.65	27.27
Frctn Loss (m)	0.21	Cum Volume (1000 m3)	0.43	4.18	0.36
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.14	0.96	0.11

Plan: RANZI 500 RIO RANZI Reach 1 RS: .12 BR D Profile: PF 1

E.G. Elev (m)	7.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.06	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.62	Flow Area (m2)	5.29	35.68	4.91
E.G. Slope (m/m)	0.002830	Area (m2)	5.29	35.68	4.91
Q Total (m3/s)	75.00	Flow (m3/s)	7.53	60.72	6.75
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.64	Avg. Vel. (m/s)	1.42	1.70	1.38
Max Chl Dpth (m)	5.47	Hydr. Depth (m)	3.02	4.62	3.07
Conv. Total (m3/s)	1409.9	Conv. (m3/s)	141.5	1141.5	126.9
Length Wtd. (m)	5.00	Wetted Per. (m)	4.77	24.64	4.66
Min Ch El (m)	1.59	Shear (N/m2)	30.75	40.18	29.21
Alpha	1.02	Stream Power (N/m s)	43.79	68.38	40.19
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.09	1.77	0.08
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.03	0.49	0.02

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.09 Profile: PF 1

E.G. Elev (m)	7.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.05	Reach Len. (m)	6.97	6.96	6.97
Crit W.S. (m)		Flow Area (m2)	5.27	38.65	4.89
E.G. Slope (m/m)	0.000851	Area (m2)	5.27	38.65	4.89
Q Total (m3/s)	75.00	Flow (m3/s)	4.11	67.20	3.69
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.54	Avg. Vel. (m/s)	0.78	1.74	0.75
Max Chl Dpth (m)	5.46	Hydr. Depth (m)	3.01	5.00	3.06
Conv. Total (m3/s)	2570.6	Conv. (m3/s)	140.9	2303.2	126.4
Length Wtd. (m)	6.96	Wetted Per. (m)	4.76	10.50	4.65
Min Ch El (m)	1.59	Shear (N/m2)	9.24	30.72	8.78
Alpha	1.17	Stream Power (N/m s)	7.21	53.41	6.62
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.06	1.59	0.06
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.02	0.45	0.02

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.06 Profile: PF 1

E.G. Elev (m)	7.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.		0.040	
W.S. Elev (m)	6.74	Reach Len. (m)	29.96	28.30	25.61
Crit W.S. (m)	4.56	Flow Area (m2)		26.92	
E.G. Slope (m/m)	0.005804	Area (m2)		26.92	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.60	Top Width (m)		5.60	
Vel Total (m/s)	2.79	Avg. Vel. (m/s)		2.79	
Max Chl Dpth (m)	4.92	Hydr. Depth (m)		4.81	
Conv. Total (m3/s)	984.5	Conv. (m3/s)		984.5	
Length Wtd. (m)	28.30	Wetted Per. (m)		15.21	
Min Ch El (m)	1.82	Shear (N/m2)		100.72	
Alpha	1.00	Stream Power (N/m s)		280.66	
Frctn Loss (m)		Cum Volume (1000 m3)		0.91	
C & E Loss (m)		Cum SA (1000 m2)		0.31	

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.04 Profile: PF 1

E.G. Elev (m)	5.40	Element	Left OB	Channel	Right OB
Vel Head (m)	1.33	Wt. n-Val.		0.040	
W.S. Elev (m)	4.07	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.07	Flow Area (m2)		14.69	
E.G. Slope (m/m)	0.027499	Area (m2)		14.69	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.10	Avg. Vel. (m/s)		5.10	
Max Chl Dpth (m)	2.72	Hydr. Depth (m)		2.66	
Conv. Total (m3/s)	452.3	Conv. (m3/s)		452.3	
Length Wtd. (m)	5.00	Wetted Per. (m)		10.75	
Min Ch El (m)	1.35	Shear (N/m2)		368.44	
Alpha	1.00	Stream Power (N/m s)		1880.68	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		0.32	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.15	

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.02 Profile: PF 1

E.G. Elev (m)	4.96	Element	Left OB	Channel	Right OB
Vel Head (m)	2.12	Wt. n-Val.		0.040	
W.S. Elev (m)	2.83	Reach Len. (m)	8.68	8.68	8.68
Crit W.S. (m)	3.39	Flow Area (m2)		11.62	
E.G. Slope (m/m)	0.047489	Area (m2)		11.62	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	6.46	Avg. Vel. (m/s)		6.46	
Max Chl Dpth (m)	2.24	Hydr. Depth (m)		2.10	
Conv. Total (m3/s)	344.2	Conv. (m3/s)		344.2	
Length Wtd. (m)	8.68	Wetted Per. (m)		9.00	
Min Ch El (m)	0.59	Shear (N/m2)		600.87	
Alpha	1.00	Stream Power (N/m s)		3879.74	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		0.19	
C & E Loss (m)	0.04	Cum SA (1000 m2)		0.10	

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.00 Profile: PF 1

E.G. Elev (m)	3.93	Element	Left OB	Channel	Right OB
Vel Head (m)	2.63	Wt. n-Val.		0.040	
W.S. Elev (m)	1.30	Reach Len. (m)			
Crit W.S. (m)	2.07	Flow Area (m2)		10.44	
E.G. Slope (m/m)	0.063555	Area (m2)		10.44	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	7.18	Avg. Vel. (m/s)		7.18	
Max Chl Dpth (m)	2.03	Hydr. Depth (m)		1.89	
Conv. Total (m3/s)	297.5	Conv. (m3/s)		297.5	
Length Wtd. (m)		Wetted Per. (m)		8.58	
Min Ch El (m)	-0.73	Shear (N/m2)		758.56	
Alpha	1.00	Stream Power (N/m s)		5449.94	
Frctn Loss (m)	0.52	Cum Volume (1000 m3)			
C & E Loss (m)	0.02	Cum SA (1000 m2)			

Plan: RANZI 500 RIO RANZI Reach 1 RS: .825 Profile: PF 1

E.G. US. (m)	16.69	Element	Inside BR US	Inside BR DS
W.S. US. (m)	16.23	E.G. Elev (m)	16.58	16.26
Q Total (m3/s)	75.00	W.S. Elev (m)	15.55	14.93
Q Bridge (m3/s)	48.23	Crit W.S. (m)	15.55	15.19
Q Weir (m3/s)		Max Chl Dpth (m)	3.78	3.58
Weir Sta Lft (m)		Vel Total (m/s)	4.43	5.04
Weir Sta Rgt (m)		Flow Area (m2)	16.94	14.89
Weir Submerg		Froude # Chl	0.76	0.90
Weir Max Depth (m)		Specif Force (m3)	63.46	65.96
Min El Weir Flow (m)	14.74	Hydr Depth (m)	2.08	1.82
Min El Prs (m)	14.08	W.P. Total (m)	23.90	23.65
Delta EG (m)	0.70	Conv. Total (m3/s)	344.0	283.9
Delta WS (m)	2.39	Top Width (m)	8.14	8.16
BR Open Area (m2)	10.69	Frctn Loss (m)	0.24	0.29
BR Open Vel (m/s)	4.51	C & E Loss (m)	0.00	0.03
Coef of Q		Shear Total (N/m2)	330.48	430.69
Br Sel Method	Energy only	Power Total (N/m s)	1462.89	2170.04

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.695 Profile: PF 1

E.G. US. (m)	13.46	Element	Inside BR US	Inside BR DS
W.S. US. (m)	13.03	E.G. Elev (m)	13.42	13.32
Q Total (m3/s)	75.00	W.S. Elev (m)	12.99	12.95
Q Bridge (m3/s)	24.65	Crit W.S. (m)	12.03	11.78
Q Weir (m3/s)		Max Chl Dpth (m)	4.16	4.37
Weir Sta Lft (m)		Vel Total (m/s)	2.88	2.69
Weir Sta Rgt (m)		Flow Area (m2)	26.05	27.93
Weir Submerg		Froude # Chl	0.47	0.43
Weir Max Depth (m)		Specif Force (m3)	67.09	71.60
Min El Weir Flow (m)	11.23	Hydr Depth (m)	2.92	3.13
Min El Prs (m)	11.07	W.P. Total (m)	27.16	27.86
Delta EG (m)	0.17	Conv. Total (m3/s)	638.9	707.5
Delta WS (m)	0.14	Top Width (m)	8.92	8.91
BR Open Area (m2)	11.01	Frctn Loss (m)	0.08	0.03
BR Open Vel (m/s)	2.24	C & E Loss (m)	0.02	0.00
Coef of Q		Shear Total (N/m2)	129.59	110.49
Br Sel Method	Energy only	Power Total (N/m s)	373.07	296.69

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.565 Profile: PF 1

E.G. US. (m)	11.53	Element	Inside BR US	Inside BR DS
W.S. US. (m)	11.28	E.G. Elev (m)	11.51	11.43
Q Total (m3/s)	75.00	W.S. Elev (m)	11.23	11.27
Q Bridge (m3/s)	42.87	Crit W.S. (m)	9.29	8.78
Q Weir (m3/s)		Max Chl Dpth (m)	4.37	4.70
Weir Sta Lft (m)		Vel Total (m/s)	2.31	1.71
Weir Sta Rgt (m)		Flow Area (m2)	32.42	43.75
Weir Submerg		Froude # Chl	0.37	0.26
Weir Max Depth (m)		Specif Force (m3)	81.63	101.73
Min El Weir Flow (m)	9.90	Hydr Depth (m)	3.12	3.15
Min El Prs (m)	9.66	W.P. Total (m)	32.57	39.35
Delta EG (m)	0.12	Conv. Total (m3/s)	822.8	1181.3
Delta WS (m)	0.02	Top Width (m)	10.39	13.88
BR Open Area (m2)	19.26	Frctn Loss (m)	0.05	0.01
BR Open Vel (m/s)	2.23	C & E Loss (m)	0.04	0.00
Coef of Q		Shear Total (N/m2)	81.09	43.95
Br Sel Method	Energy only	Power Total (N/m s)	187.62	75.34

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.505 Profile: PF 1

E.G. US. (m)	11.30	Element	Inside BR US	Inside BR DS
W.S. US. (m)	10.92	E.G. Elev (m)	11.11	10.93
Q Total (m3/s)	75.00	W.S. Elev (m)	9.39	9.37
Q Bridge (m3/s)	75.00	Crit W.S. (m)	8.76	8.75
Q Weir (m3/s)		Max Chl Dpth (m)	3.12	3.21
Weir Sta Lft (m)		Vel Total (m/s)	5.82	5.55
Weir Sta Rgt (m)		Flow Area (m2)	12.90	13.52
Weir Submerg		Froude # Chl	1.10	1.03
Weir Max Depth (m)		Specif Force (m3)	67.29	66.78
Min El Weir Flow (m)	9.72	Hydr Depth (m)		112.96
Min El Prs (m)	8.92	W.P. Total (m)	15.57	15.95
Delta EG (m)	0.74	Conv. Total (m3/s)	284.4	304.5
Delta WS (m)	1.05	Top Width (m)		0.12
BR Open Area (m2)	12.90	Frctn Loss (m)	0.13	0.11
BR Open Vel (m/s)	5.82	C & E Loss (m)	0.05	0.26
Coef of Q		Shear Total (N/m2)	564.98	504.52
Br Sel Method	Energy only	Power Total (N/m s)	3285.44	2797.76

Plan: RANZI 500 RIO RANZI Reach 1 RS: .485 Profile: PF 1

E.G. US. (m)	10.47	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.85	E.G. Elev (m)	10.37	10.17
Q Total (m3/s)	75.00	W.S. Elev (m)	9.49	9.41
Q Bridge (m3/s)	32.57	Crit W.S. (m)	9.27	9.02
Q Weir (m3/s)		Max Chl Dpth (m)	3.41	3.59
Weir Sta Lft (m)		Vel Total (m/s)	4.13	3.84
Weir Sta Rgt (m)		Flow Area (m2)	18.18	19.55
Weir Submerg		Froude # Chl	0.72	0.66
Weir Max Depth (m)		Specif Force (m3)	60.05	61.46
Min El Weir Flow (m)	8.19	Hydr Depth (m)	2.31	2.49
Min El Prs (m)	7.94	W.P. Total (m)	23.50	24.06
Delta EG (m)	0.39	Conv. Total (m3/s)	389.7	432.0
Delta WS (m)	0.51	Top Width (m)	7.86	7.86
BR Open Area (m2)	9.28	Frctn Loss (m)	0.17	0.08
BR Open Vel (m/s)	3.51	C & E Loss (m)	0.04	0.00
Coef of Q		Shear Total (N/m2)	280.98	240.08
Br Sel Method	Energy only	Power Total (N/m s)	1159.42	921.05

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.471 Profile: PF 1

E.G. US. (m)	9.97	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.55	E.G. Elev (m)	9.86	9.51
Q Total (m3/s)	75.00	W.S. Elev (m)	8.95	9.03
Q Bridge (m3/s)	58.41	Crit W.S. (m)	8.95	7.70
Q Weir (m3/s)		Max Chl Dpth (m)	3.19	3.69
Weir Sta Lft (m)		Vel Total (m/s)	4.18	3.04
Weir Sta Rgt (m)		Flow Area (m2)	17.93	24.66
Weir Submerg		Froude # Chl	0.79	0.54
Weir Max Depth (m)		Specif Force (m3)	59.32	62.51
Min El Weir Flow (m)	8.39	Hydr Depth (m)	1.82	2.11
Min El Prs (m)	7.92	W.P. Total (m)	28.01	32.19
Delta EG (m)	0.53	Conv. Total (m3/s)	342.0	524.2
Delta WS (m)	0.50	Top Width (m)	9.83	11.69
BR Open Area (m2)	12.99	Frctn Loss (m)	0.14	0.26
BR Open Vel (m/s)	4.50	C & E Loss (m)	0.13	0.13
Coef of Q		Shear Total (N/m2)	301.81	153.75
Br Sel Method	Energy only	Power Total (N/m s)	1262.53	467.65

Plan: RANZI 500 RIO RANZI Reach 1 RS: .12 Profile: PF 1

E.G. US. (m)	7.44	Element	Inside BR US	Inside BR DS
W.S. US. (m)	7.25	E.G. Elev (m)	7.42	7.20
Q Total (m3/s)	75.00	W.S. Elev (m)	7.25	7.06
Q Bridge (m3/s)	9.89	Crit W.S. (m)	4.29	4.62
Q Weir (m3/s)		Max Chl Dpth (m)	6.00	5.47
Weir Sta Lft (m)		Vel Total (m/s)	1.81	1.64
Weir Sta Rgt (m)		Flow Area (m2)	41.37	45.87
Weir Submerg		Froude # Chl	0.24	0.23
Weir Max Depth (m)		Specif Force (m3)	124.88	116.34
Min El Weir Flow (m)	3.94	Hydr Depth (m)	5.02	4.14
Min El Prs (m)	3.25	W.P. Total (m)	30.91	34.07
Delta EG (m)	0.24	Conv. Total (m3/s)	1298.7	1409.9
Delta WS (m)	0.20	Top Width (m)	8.24	11.08
BR Open Area (m2)	11.06	Frctn Loss (m)	0.21	0.01
BR Open Vel (m/s)	0.89	C & E Loss (m)	0.01	0.00
Coef of Q		Shear Total (N/m2)	43.77	37.36
Br Sel Method	Energy only	Power Total (N/m s)	79.35	61.08

Plan: RANZI 500 RIO RANZI Reach 1 RS: 0.05 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (m3/s)	45.92	Culv Full Len (m)	18.30
# Barrels	1	Culv Vel US (m/s)	5.24
Q Barrel (m3/s)	45.92	Culv Vel DS (m/s)	5.24
E.G. US. (m)	7.13	Culv Inv El Up (m)	1.88
W.S. US. (m)	6.74	Culv Inv El Dn (m)	1.68
E.G. DS (m)	5.40	Culv Frctn Ls (m)	1.38
W.S. DS (m)	4.07	Culv Exit Loss (m)	0.07
Delta EG (m)	1.73	Culv Entr Loss (m)	0.28
Delta WS (m)	2.66	Q Weir (m3/s)	29.08
E.G. IC (m)	7.00	Weir Sta Lft (m)	0.00
E.G. OC (m)	7.13	Weir Sta Rgt (m)	5.60
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (m)	3.88	Weir Max Depth (m)	2.35
Culv WS Outlet (m)	3.68	Weir Avg Depth (m)	2.35
Culv Nml Depth (m)		Weir Flow Area (m2)	13.16
Culv Crt Depth (m)	1.76	Min El Weir Flow (m)	4.78

RIO RANZI
CONDIZIONE CON PORTO TURISTICO
CANTIERI NAVALI RODRIGUEZ

Tempo di ritorno 50 anni

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.84 Profile: PF 1

E.G. Elev (m)	14.95	Element	Left OB	Channel	Right OB
Vel Head (m)	0.26	Wt. n-Val.		0.040	
W.S. Elev (m)	14.69	Reach Len. (m)	6.83	6.82	6.82
Crit W.S. (m)	13.74	Flow Area (m2)		17.64	
E.G. Slope (m/m)	0.005013	Area (m2)		17.64	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.52	Top Width (m)		7.52	
Vel Total (m/s)	2.27	Avg. Vel. (m/s)		2.27	
Max Chl Dpth (m)	2.58	Hydr. Depth (m)		2.35	
Conv. Total (m3/s)	565.0	Conv. (m3/s)		565.0	
Length Wtd. (m)	6.82	Wetted Per. (m)		12.16	
Min Ch El (m)	12.11	Shear (N/m2)		71.29	
Alpha	1.00	Stream Power (N/m s)		161.66	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.65	12.74	0.43
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.74	5.32	0.55

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.83 Profile: PF 1

E.G. Elev (m)	14.87	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.		0.040	
W.S. Elev (m)	14.30	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	13.86	Flow Area (m2)		11.96	
E.G. Slope (m/m)	0.012568	Area (m2)		11.96	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.57	Top Width (m)		5.57	
Vel Total (m/s)	3.35	Avg. Vel. (m/s)		3.35	
Max Chl Dpth (m)	2.53	Hydr. Depth (m)		2.15	
Conv. Total (m3/s)	356.8	Conv. (m3/s)		356.8	
Length Wtd. (m)	5.00	Wetted Per. (m)		9.17	
Min Ch El (m)	11.77	Shear (N/m2)		160.75	
Alpha	1.00	Stream Power (N/m s)		537.85	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	0.65	12.64	0.43
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.74	5.27	0.55

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .825 BR U Profile: PF 1

E.G. Elev (m)	14.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.89	Wt. n-Val.		0.040	
W.S. Elev (m)	13.87	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	13.87	Flow Area (m2)		9.59	
E.G. Slope (m/m)	0.022929	Area (m2)		9.59	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.41	Top Width (m)		5.41	
Vel Total (m/s)	4.17	Avg. Vel. (m/s)		4.17	
Max Chl Dpth (m)	2.10	Hydr. Depth (m)		1.77	
Conv. Total (m3/s)	264.2	Conv. (m3/s)		264.2	
Length Wtd. (m)	5.00	Wetted Per. (m)		8.29	
Min Ch El (m)	11.77	Shear (N/m2)		260.11	
Alpha	1.00	Stream Power (N/m s)		1085.08	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.65	12.59	0.43
C & E Loss (m)	0.08	Cum SA (1000 m2)	0.74	5.25	0.55

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .825 BR D Profile: PF 1

E.G. Elev (m)	14.54	Element	Left OB	Channel	Right OB
Vel Head (m)	1.47	Wt. n-Val.		0.040	
W.S. Elev (m)	13.07	Reach Len. (m)	3.20	3.20	3.20
Crit W.S. (m)	13.46	Flow Area (m2)		7.45	
E.G. Slope (m/m)	0.046215	Area (m2)		7.45	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.15	Top Width (m)		5.15	
Vel Total (m/s)	5.37	Avg. Vel. (m/s)		5.37	
Max Chl Dpth (m)	1.72	Hydr. Depth (m)		1.44	
Conv. Total (m3/s)	186.1	Conv. (m3/s)		186.1	
Length Wtd. (m)	3.20	Wetted Per. (m)		7.45	
Min Ch El (m)	11.35	Shear (N/m2)		452.76	
Alpha	1.00	Stream Power (N/m s)		2431.70	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)	0.65	12.55	0.43
C & E Loss (m)	0.06	Cum SA (1000 m2)	0.74	5.22	0.55

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.82 Profile: PF 1

E.G. Elev (m)	14.40	Element	Left OB	Channel	Right OB
Vel Head (m)	1.12	Wt. n-Val.		0.040	
W.S. Elev (m)	13.28	Reach Len. (m)	11.17	12.17	12.21
Crit W.S. (m)	13.46	Flow Area (m2)		8.53	
E.G. Slope (m/m)	0.031671	Area (m2)		8.53	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.22	Top Width (m)		5.22	
Vel Total (m/s)	4.69	Avg. Vel. (m/s)		4.69	
Max Chl Dpth (m)	1.93	Hydr. Depth (m)		1.63	
Conv. Total (m3/s)	224.8	Conv. (m3/s)		224.8	
Length Wtd. (m)	12.17	Wetted Per. (m)		7.88	
Min Ch El (m)	11.35	Shear (N/m2)		336.24	
Alpha	1.00	Stream Power (N/m s)		1577.23	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)	0.65	12.52	0.43
C & E Loss (m)	0.17	Cum SA (1000 m2)	0.74	5.20	0.55

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.77 Profile: PF 1

E.G. Elev (m)	13.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.35	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.81	Reach Len. (m)	42.11	41.59	40.95
Crit W.S. (m)		Flow Area (m2)	0.63	14.57	0.66
E.G. Slope (m/m)	0.007846	Area (m2)	0.63	14.57	0.66
Q Total (m3/s)	40.00	Flow (m3/s)	0.59	38.77	0.64
Top Width (m)	8.05	Top Width (m)	1.44	5.51	1.10
Vel Total (m/s)	2.52	Avg. Vel. (m/s)	0.94	2.66	0.97
Max Chl Dpth (m)	3.03	Hydr. Depth (m)	0.44	2.64	0.60
Conv. Total (m3/s)	451.6	Conv. (m3/s)	6.7	437.7	7.2
Length Wtd. (m)	41.59	Wetted Per. (m)	2.28	11.05	2.28
Min Ch El (m)	9.78	Shear (N/m2)	21.25	101.39	22.26
Alpha	1.08	Stream Power (N/m s)	19.96	269.86	21.57
Frctn Loss (m)	0.49	Cum Volume (1000 m3)	0.64	12.01	0.42
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.74	4.94	0.54

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.73 Profile: PF 1

E.G. Elev (m)	12.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.73	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.90	Reach Len. (m)	7.94	7.74	6.73
Crit W.S. (m)	11.78	Flow Area (m2)		10.51	0.15
E.G. Slope (m/m)	0.019527	Area (m2)		10.51	0.15
Q Total (m3/s)	40.00	Flow (m3/s)		39.87	0.13
Top Width (m)	6.49	Top Width (m)		5.62	0.86
Vel Total (m/s)	3.75	Avg. Vel. (m/s)		3.79	0.87
Max Chl Dpth (m)	1.89	Hydr. Depth (m)		1.87	0.17
Conv. Total (m3/s)	286.2	Conv. (m3/s)		285.3	0.9
Length Wtd. (m)	7.73	Wetted Per. (m)		9.28	1.19
Min Ch El (m)	10.01	Shear (N/m2)		216.78	23.89
Alpha	1.02	Stream Power (N/m s)		822.58	20.84
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	0.63	11.49	0.41
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.71	4.71	0.50

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.70 Profile: PF 1

E.G. Elev (m)	12.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	10.84	Flow Area (m2)	0.69	16.44	0.57
E.G. Slope (m/m)	0.004530	Area (m2)	0.69	16.44	0.57
Q Total (m3/s)	40.00	Flow (m3/s)	0.59	38.97	0.44
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.26	Avg. Vel. (m/s)	0.85	2.37	0.78
Max Chl Dpth (m)	3.12	Hydr. Depth (m)	0.47	2.73	0.40
Conv. Total (m3/s)	594.3	Conv. (m3/s)	8.7	579.0	6.6
Length Wtd. (m)	5.00	Wetted Per. (m)	1.93	9.84	1.82
Min Ch El (m)	8.83	Shear (N/m2)	15.94	74.26	13.90
Alpha	1.08	Stream Power (N/m s)	13.54	176.01	10.78
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.63	11.20	0.40
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.69	4.57	0.47

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.695 BR U Profile: PF 1

E.G. Elev (m)	12.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.85	Reach Len. (m)	6.40	6.40	6.40
Crit W.S. (m)	10.84	Flow Area (m2)	0.55	14.94	0.43
E.G. Slope (m/m)	0.017193	Area (m2)	0.55	14.94	0.43
Q Total (m3/s)	40.00	Flow (m3/s)	0.81	38.63	0.56
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.51	Avg. Vel. (m/s)	1.47	2.59	1.30
Max Chl Dpth (m)	3.02	Hydr. Depth (m)	0.37	2.48	0.30
Conv. Total (m3/s)	305.1	Conv. (m3/s)	6.2	294.6	4.3
Length Wtd. (m)	6.40	Wetted Per. (m)	1.83	21.33	1.72
Min Ch El (m)	8.83	Shear (N/m2)	50.54	118.09	42.21
Alpha	1.03	Stream Power (N/m s)	74.21	305.29	54.96
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.62	11.12	0.40
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.68	4.54	0.47

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.695 BR D Profile: PF 1

E.G. Elev (m)	12.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.27	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.81	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	10.59	Flow Area (m2)	0.92	16.36	0.48
E.G. Slope (m/m)	0.012655	Area (m2)	0.92	16.36	0.48
Q Total (m3/s)	40.00	Flow (m3/s)	1.43	37.94	0.63
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.25	Avg. Vel. (m/s)	1.56	2.32	1.32
Max Chl Dpth (m)	3.23	Hydr. Depth (m)	0.54	2.65	0.47
Conv. Total (m3/s)	355.6	Conv. (m3/s)	12.7	337.2	5.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.24	21.84	1.50
Min Ch El (m)	8.58	Shear (N/m2)	51.07	92.94	39.83
Alpha	1.03	Stream Power (N/m s)	79.45	215.55	52.50
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	0.62	11.02	0.40
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.67	4.51	0.46

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.69 Profile: PF 1

E.G. Elev (m)	12.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.26	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.78	Reach Len. (m)	8.42	8.28	8.14
Crit W.S. (m)		Flow Area (m2)	0.87	17.11	0.45
E.G. Slope (m/m)	0.004011	Area (m2)	0.87	17.11	0.45
Q Total (m3/s)	40.00	Flow (m3/s)	0.75	38.93	0.33
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.17	Avg. Vel. (m/s)	0.85	2.28	0.72
Max Chl Dpth (m)	3.20	Hydr. Depth (m)	0.51	2.77	0.44
Conv. Total (m3/s)	631.6	Conv. (m3/s)	11.8	614.7	5.2
Length Wtd. (m)	8.28	Wetted Per. (m)	2.21	9.93	1.47
Min Ch El (m)	8.58	Shear (N/m2)	15.57	67.77	12.11
Alpha	1.07	Stream Power (N/m s)	13.29	154.22	8.74
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.61	10.94	0.39
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.67	4.47	0.45

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.66 Profile: PF 1

E.G. Elev (m)	11.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.56	Reach Len. (m)	8.12	7.98	7.71
Crit W.S. (m)		Flow Area (m2)		15.66	0.42
E.G. Slope (m/m)	0.006037	Area (m2)		15.66	0.42
Q Total (m3/s)	40.00	Flow (m3/s)		39.71	0.29
Top Width (m)	8.16	Top Width (m)		6.43	1.73
Vel Total (m/s)	2.49	Avg. Vel. (m/s)		2.54	0.69
Max Chl Dpth (m)	2.68	Hydr. Depth (m)		2.44	0.24
Conv. Total (m3/s)	514.8	Conv. (m3/s)		511.1	3.7
Length Wtd. (m)	7.97	Wetted Per. (m)		10.50	1.97
Min Ch El (m)	8.88	Shear (N/m2)		88.31	12.50
Alpha	1.03	Stream Power (N/m s)		223.92	8.61
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.61	10.54	0.38
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.64	4.32	0.42

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.63 Profile: PF 1

E.G. Elev (m)	11.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.33	Reach Len. (m)	9.26	9.15	8.93
Crit W.S. (m)		Flow Area (m2)		15.69	1.15
E.G. Slope (m/m)	0.005387	Area (m2)		15.69	1.15
Q Total (m3/s)	40.00	Flow (m3/s)		38.74	1.26
Top Width (m)	6.41	Top Width (m)		5.30	1.11
Vel Total (m/s)	2.38	Avg. Vel. (m/s)		2.47	1.10
Max Chl Dpth (m)	3.19	Hydr. Depth (m)		2.96	1.04
Conv. Total (m3/s)	545.0	Conv. (m3/s)		527.8	17.2
Length Wtd. (m)	9.15	Wetted Per. (m)		10.05	2.48
Min Ch El (m)	8.14	Shear (N/m2)		82.45	24.47
Alpha	1.05	Stream Power (N/m s)		203.56	26.87
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.61	10.08	0.36
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.64	4.13	0.38

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.59 Profile: PF 1

E.G. Elev (m)	11.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.78	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	10.43	Reach Len. (m)	7.33	7.18	6.54
Crit W.S. (m)	10.43	Flow Area (m2)	0.51	9.96	
E.G. Slope (m/m)	0.019065	Area (m2)	0.51	9.96	
Q Total (m3/s)	40.00	Flow (m3/s)	0.71	39.29	
Top Width (m)	7.01	Top Width (m)	1.68	5.33	
Vel Total (m/s)	3.82	Avg. Vel. (m/s)	1.40	3.94	
Max Chl Dpth (m)	2.43	Hydr. Depth (m)	0.30	1.87	
Conv. Total (m3/s)	289.7	Conv. (m3/s)	5.1	284.5	
Length Wtd. (m)	7.18	Wetted Per. (m)	1.98	8.15	
Min Ch El (m)	8.00	Shear (N/m2)	48.11	228.39	
Alpha	1.05	Stream Power (N/m s)	67.18	900.93	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	0.60	9.60	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.64	3.93	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.57 Profile: PF 1

E.G. Elev (m)	9.78	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.040	
W.S. Elev (m)	9.53	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.51	Flow Area (m2)		18.31	
E.G. Slope (m/m)	0.004147	Area (m2)		18.31	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.83	Top Width (m)		7.83	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	2.67	Hydr. Depth (m)		2.34	
Conv. Total (m3/s)	621.1	Conv. (m3/s)		621.1	
Length Wtd. (m)	5.00	Wetted Per. (m)		11.58	
Min Ch El (m)	6.86	Shear (N/m2)		64.30	
Alpha	1.00	Stream Power (N/m s)		140.51	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	9.40	0.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.63	3.80	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.565 BR U Profile: PF 1

E.G. Elev (m)	9.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.		0.040	
W.S. Elev (m)	9.51	Reach Len. (m)	8.16	8.16	8.16
Crit W.S. (m)	8.51	Flow Area (m2)		18.09	
E.G. Slope (m/m)	0.004285	Area (m2)		18.09	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.81	Top Width (m)		7.81	
Vel Total (m/s)	2.21	Avg. Vel. (m/s)		2.21	
Max Chl Dpth (m)	2.65	Hydr. Depth (m)		2.32	
Conv. Total (m3/s)	611.1	Conv. (m3/s)		611.1	
Length Wtd. (m)	8.16	Wetted Per. (m)		11.52	
Min Ch El (m)	6.86	Shear (N/m2)		65.99	
Alpha	1.00	Stream Power (N/m s)		145.90	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	9.31	0.35
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.63	3.76	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.565 BR D Profile: PF 1

E.G. Elev (m)	9.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.040	
W.S. Elev (m)	9.55	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.08	Flow Area (m2)		23.73	
E.G. Slope (m/m)	0.002189	Area (m2)		23.73	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	8.77	Top Width (m)		8.77	
Vel Total (m/s)	1.69	Avg. Vel. (m/s)		1.69	
Max Chl Dpth (m)	2.98	Hydr. Depth (m)		2.71	
Conv. Total (m3/s)	855.0	Conv. (m3/s)		855.0	
Length Wtd. (m)	5.00	Wetted Per. (m)		13.72	
Min Ch El (m)	6.57	Shear (N/m2)		37.13	
Alpha	1.00	Stream Power (N/m s)		62.59	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.60	9.14	0.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.63	3.69	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.56 Profile: PF 1

E.G. Elev (m)	9.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.		0.040	
W.S. Elev (m)	9.54	Reach Len. (m)	9.69	10.00	10.27
Crit W.S. (m)		Flow Area (m2)		23.62	
E.G. Slope (m/m)	0.002217	Area (m2)		23.62	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	8.76	Top Width (m)		8.76	
Vel Total (m/s)	1.69	Avg. Vel. (m/s)		1.69	
Max Chl Dpth (m)	2.97	Hydr. Depth (m)		2.70	
Conv. Total (m3/s)	849.5	Conv. (m3/s)		849.5	
Length Wtd. (m)	10.00	Wetted Per. (m)		13.69	
Min Ch El (m)	6.57	Shear (N/m2)		37.51	
Alpha	1.00	Stream Power (N/m s)		63.52	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	9.02	0.35
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.63	3.64	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.51 Profile: PF 1

E.G. Elev (m)	9.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.040	
W.S. Elev (m)	9.15	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.22	Flow Area (m2)		14.92	
E.G. Slope (m/m)	0.007293	Area (m2)		14.92	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.79	Top Width (m)		5.79	
Vel Total (m/s)	2.68	Avg. Vel. (m/s)		2.68	
Max Chl Dpth (m)	2.88	Hydr. Depth (m)		2.57	
Conv. Total (m3/s)	468.4	Conv. (m3/s)		468.4	
Length Wtd. (m)	5.00	Wetted Per. (m)		10.60	
Min Ch El (m)	6.27	Shear (N/m2)		100.67	
Alpha	1.00	Stream Power (N/m s)		269.95	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.60	8.24	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.35	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.505 BR U Profile: PF 1

E.G. Elev (m)	9.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.49	Wt. n-Val.		0.040	
W.S. Elev (m)	8.95	Reach Len. (m)	2.00	2.00	2.00
Crit W.S. (m)	8.22	Flow Area (m2)		12.90	
E.G. Slope (m/m)	0.019787	Area (m2)		12.90	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	3.10	Avg. Vel. (m/s)		3.10	
Max Chl Dpth (m)	2.68	Hydr. Depth (m)			
Conv. Total (m3/s)	284.4	Conv. (m3/s)		284.4	
Length Wtd. (m)	2.00	Wetted Per. (m)		15.57	
Min Ch El (m)	6.27	Shear (N/m2)		160.71	
Alpha	1.00	Stream Power (N/m s)		498.41	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.60	8.17	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.34	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.505 BR D Profile: PF 1

E.G. Elev (m)	9.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.45	Wt. n-Val.		0.040	
W.S. Elev (m)	8.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.11	Flow Area (m2)		13.52	
E.G. Slope (m/m)	0.017260	Area (m2)		13.52	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	2.96	Avg. Vel. (m/s)		2.96	
Max Chl Dpth (m)	2.79	Hydr. Depth (m)			
Conv. Total (m3/s)	304.5	Conv. (m3/s)		304.5	
Length Wtd. (m)	5.00	Wetted Per. (m)		15.83	
Min Ch El (m)	6.16	Shear (N/m2)		144.64	
Alpha	1.00	Stream Power (N/m s)		427.78	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.60	8.15	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.34	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .5 Profile: PF 1

E.G. Elev (m)	9.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.		0.040	
W.S. Elev (m)	8.92	Reach Len. (m)	6.82	7.50	7.93
Crit W.S. (m)		Flow Area (m2)		14.25	
E.G. Slope (m/m)	0.008244	Area (m2)		14.25	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.76	Top Width (m)		5.76	
Vel Total (m/s)	2.81	Avg. Vel. (m/s)		2.81	
Max Chl Dpth (m)	2.76	Hydr. Depth (m)		2.47	
Conv. Total (m3/s)	440.5	Conv. (m3/s)		440.5	
Length Wtd. (m)	7.50	Wetted Per. (m)		10.36	
Min Ch El (m)	6.16	Shear (N/m2)		111.16	
Alpha	1.00	Stream Power (N/m s)		312.01	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.60	8.08	0.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.63	3.32	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .49 Profile: PF 1

E.G. Elev (m)	9.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.38	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.88	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.96	Flow Area (m2)	0.32	14.42	0.20
E.G. Slope (m/m)	0.006994	Area (m2)	0.32	14.42	0.20
Q Total (m3/s)	40.00	Flow (m3/s)	0.28	39.56	0.15
Top Width (m)	7.07	Top Width (m)	0.98	5.43	0.66
Vel Total (m/s)	2.68	Avg. Vel. (m/s)	0.88	2.74	0.74
Max Chl Dpth (m)	2.80	Hydr. Depth (m)	0.33	2.66	0.31
Conv. Total (m3/s)	478.3	Conv. (m3/s)	3.4	473.1	1.8
Length Wtd. (m)	5.00	Wetted Per. (m)	1.18	9.59	0.97
Min Ch El (m)	6.08	Shear (N/m2)	18.75	103.12	14.43
Alpha	1.04	Stream Power (N/m s)	16.52	282.95	10.68
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	0.60	7.97	0.34
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.63	3.28	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .485 BR U Profile: PF 1

E.G. Elev (m)	9.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.46	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.91	Flow Area (m2)	0.04	10.83	
E.G. Slope (m/m)	0.048031	Area (m2)	0.04	10.83	
Q Total (m3/s)	40.00	Flow (m3/s)	0.05	39.95	
Top Width (m)	5.73	Top Width (m)	0.36	5.37	
Vel Total (m/s)	3.68	Avg. Vel. (m/s)	1.18	3.69	
Max Chl Dpth (m)	2.38	Hydr. Depth (m)	0.12	2.02	
Conv. Total (m3/s)	182.5	Conv. (m3/s)	0.2	182.3	
Length Wtd. (m)	5.00	Wetted Per. (m)	0.43	19.59	
Min Ch El (m)	6.08	Shear (N/m2)	47.17	260.30	
Alpha	1.00	Stream Power (N/m s)	55.74	960.46	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)	0.60	7.91	0.34
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.62	3.26	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .485 BR D Profile: PF 1

E.G. Elev (m)	8.91	Element	Left OB	Channel	Right OB
Vel Head (m)	0.66	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.25	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.71	Flow Area (m2)	0.03	11.07	
E.G. Slope (m/m)	0.045574	Area (m2)	0.03	11.07	
Q Total (m3/s)	40.00	Flow (m3/s)	0.03	39.97	
Top Width (m)	5.82	Top Width (m)	0.43	5.40	
Vel Total (m/s)	3.60	Avg. Vel. (m/s)	0.92	3.61	
Max Chl Dpth (m)	2.43	Hydr. Depth (m)	0.08	2.05	
Conv. Total (m3/s)	187.4	Conv. (m3/s)	0.1	187.2	
Length Wtd. (m)	5.00	Wetted Per. (m)	0.46	19.91	
Min Ch El (m)	5.82	Shear (N/m2)	32.02	248.56	
Alpha	1.00	Stream Power (N/m s)	29.48	897.16	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)	0.60	7.85	0.34
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.62	3.23	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.48 Profile: PF 1

E.G. Elev (m)	8.77	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.23	Reach Len. (m)	2.61	2.58	2.90
Crit W.S. (m)		Flow Area (m2)	0.06	12.34	
E.G. Slope (m/m)	0.011860	Area (m2)	0.06	12.34	
Q Total (m3/s)	40.00	Flow (m3/s)	0.04	39.96	
Top Width (m)	5.80	Top Width (m)	0.41	5.39	
Vel Total (m/s)	3.23	Avg. Vel. (m/s)	0.64	3.24	
Max Chl Dpth (m)	2.42	Hydr. Depth (m)	0.14	2.29	
Conv. Total (m3/s)	367.3	Conv. (m3/s)	0.3	367.0	
Length Wtd. (m)	2.58	Wetted Per. (m)	0.49	9.50	
Min Ch El (m)	5.82	Shear (N/m2)	13.28	150.97	
Alpha	1.01	Stream Power (N/m s)	8.51	489.08	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	0.60	7.79	0.34
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.62	3.20	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.472 Profile: PF 1

E.G. Elev (m)	8.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.		0.040	
W.S. Elev (m)	8.37	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.55	Flow Area (m2)		16.37	
E.G. Slope (m/m)	0.005575	Area (m2)		16.37	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	7.36	Top Width (m)		7.36	
Vel Total (m/s)	2.44	Avg. Vel. (m/s)		2.44	
Max Chl Dpth (m)	2.61	Hydr. Depth (m)		2.22	
Conv. Total (m3/s)	535.7	Conv. (m3/s)		535.7	
Length Wtd. (m)	5.00	Wetted Per. (m)		10.92	
Min Ch El (m)	5.76	Shear (N/m2)		81.91	
Alpha	1.00	Stream Power (N/m s)		200.18	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.60	7.76	0.34
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.62	3.19	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.471 BR U Profile: PF 1

E.G. Elev (m)	8.61	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	Wt. n-Val.		0.040	
W.S. Elev (m)	8.13	Reach Len. (m)	4.79	4.79	4.79
Crit W.S. (m)	7.56	Flow Area (m2)		12.99	
E.G. Slope (m/m)	0.021998	Area (m2)		12.99	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	3.08	Avg. Vel. (m/s)		3.08	
Max Chl Dpth (m)	2.37	Hydr. Depth (m)			
Conv. Total (m3/s)	269.7	Conv. (m3/s)		269.7	
Length Wtd. (m)	4.79	Wetted Per. (m)		17.15	
Min Ch El (m)	5.76	Shear (N/m2)		163.33	
Alpha	1.00	Stream Power (N/m s)		503.11	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.60	7.68	0.34
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.62	3.17	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.471 BR D Profile: PF 1

E.G. Elev (m)	8.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	Wt. n-Val.		0.040	
W.S. Elev (m)	8.14	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.16	Flow Area (m2)		15.46	
E.G. Slope (m/m)	0.016683	Area (m2)		15.46	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	2.56	Top Width (m)		2.56	
Vel Total (m/s)	2.59	Avg. Vel. (m/s)		2.59	
Max Chl Dpth (m)	2.80	Hydr. Depth (m)		6.04	
Conv. Total (m3/s)	309.7	Conv. (m3/s)		309.7	
Length Wtd. (m)	5.00	Wetted Per. (m)		21.57	
Min Ch El (m)	5.34	Shear (N/m2)		117.29	
Alpha	1.00	Stream Power (N/m s)		303.38	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.60	7.61	0.34
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.62	3.16	0.35

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.47 Profile: PF 1

E.G. Elev (m)	8.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.23	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	8.18	Reach Len. (m)	9.95	9.81	9.26
Crit W.S. (m)		Flow Area (m2)		18.90	0.01
E.G. Slope (m/m)	0.003892	Area (m2)		18.90	0.01
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	0.00
Top Width (m)	9.22	Top Width (m)		8.09	1.13
Vel Total (m/s)	2.12	Avg. Vel. (m/s)		2.12	0.05
Max Chl Dpth (m)	2.84	Hydr. Depth (m)		2.34	0.01
Conv. Total (m3/s)	641.2	Conv. (m3/s)		641.2	0.0
Length Wtd. (m)	9.81	Wetted Per. (m)		11.95	1.13
Min Ch El (m)	5.34	Shear (N/m2)		60.35	0.19
Alpha	1.00	Stream Power (N/m s)		127.75	0.01
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.60	7.53	0.34
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.62	3.13	0.34

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.42 Profile: PF 1

E.G. Elev (m)	8.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.65	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	7.40	Reach Len. (m)	14.28	14.89	15.52
Crit W.S. (m)	7.40	Flow Area (m2)	0.57	10.90	
E.G. Slope (m/m)	0.017402	Area (m2)	0.57	10.90	
Q Total (m3/s)	40.00	Flow (m3/s)	0.83	39.17	
Top Width (m)	9.02	Top Width (m)	1.40	7.62	
Vel Total (m/s)	3.49	Avg. Vel. (m/s)	1.46	3.59	
Max Chl Dpth (m)	1.58	Hydr. Depth (m)	0.41	1.43	
Conv. Total (m3/s)	303.2	Conv. (m3/s)	6.3	296.9	
Length Wtd. (m)	14.88	Wetted Per. (m)	1.94	9.59	
Min Ch El (m)	5.82	Shear (N/m2)	50.20	194.03	
Alpha	1.04	Stream Power (N/m s)	73.22	697.10	
Frctn Loss (m)	0.26	Cum Volume (1000 m3)	0.59	6.95	0.34
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.58	2.83	0.34

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .35 Profile: PF 1

E.G. Elev (m)	7.30	Element	Left OB	Channel	Right OB
Vel Head (m)	0.46	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	6.84	Reach Len. (m)	19.82	19.91	20.18
Crit W.S. (m)		Flow Area (m2)	0.91	12.75	
E.G. Slope (m/m)	0.010428	Area (m2)	0.91	12.75	
Q Total (m3/s)	40.00	Flow (m3/s)	1.29	38.71	
Top Width (m)	9.05	Top Width (m)	1.40	7.65	
Vel Total (m/s)	2.93	Avg. Vel. (m/s)	1.42	3.04	
Max Chl Dpth (m)	1.82	Hydr. Depth (m)	0.65	1.67	
Conv. Total (m3/s)	391.7	Conv. (m3/s)	12.7	379.0	
Length Wtd. (m)	19.91	Wetted Per. (m)	2.18	9.83	
Min Ch El (m)	5.02	Shear (N/m2)	42.63	132.61	
Alpha	1.05	Stream Power (N/m s)	60.72	402.60	
Frctn Loss (m)	0.20	Cum Volume (1000 m3)	0.56	6.44	0.34
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.52	2.49	0.34

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.26 Profile: PF 1

E.G. Elev (m)	6.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.23	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.06	Reach Len. (m)	9.46	9.83	9.75
Crit W.S. (m)		Flow Area (m2)	4.01	12.98	2.74
E.G. Slope (m/m)	0.005527	Area (m2)	4.01	12.98	2.74
Q Total (m3/s)	40.00	Flow (m3/s)	6.28	30.17	3.55
Top Width (m)	9.68	Top Width (m)	2.98	4.65	2.05
Vel Total (m/s)	2.03	Avg. Vel. (m/s)	1.57	2.32	1.29
Max Chl Dpth (m)	2.94	Hydr. Depth (m)	1.34	2.79	1.33
Conv. Total (m3/s)	538.1	Conv. (m3/s)	84.5	405.8	47.7
Length Wtd. (m)	9.79	Wetted Per. (m)	5.16	9.28	4.71
Min Ch El (m)	3.12	Shear (N/m2)	42.03	75.79	31.51
Alpha	1.12	Stream Power (N/m s)	65.93	176.14	40.80
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	0.30	4.87	0.28
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.26	1.75	0.24

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.22 Profile: PF 1

E.G. Elev (m)	5.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.		0.040	
W.S. Elev (m)	5.61	Reach Len. (m)	8.67	8.67	8.67
Crit W.S. (m)		Flow Area (m2)		15.60	
E.G. Slope (m/m)	0.006343	Area (m2)		15.60	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.75	Top Width (m)		5.75	
Vel Total (m/s)	2.56	Avg. Vel. (m/s)		2.56	
Max Chl Dpth (m)	3.17	Hydr. Depth (m)		2.72	
Conv. Total (m3/s)	502.3	Conv. (m3/s)		502.3	
Length Wtd. (m)	8.67	Wetted Per. (m)		10.68	
Min Ch El (m)	2.44	Shear (N/m2)		90.87	
Alpha	1.00	Stream Power (N/m s)		232.93	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.26	4.34	0.24
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.20	1.55	0.18

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.16 Profile: PF 1

E.G. Elev (m)	5.71	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.61	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.03	Flow Area (m2)	2.45	25.11	1.75
E.G. Slope (m/m)	0.001081	Area (m2)	2.45	25.11	1.75
Q Total (m3/s)	40.00	Flow (m3/s)	1.70	37.26	1.04
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.36	Avg. Vel. (m/s)	0.69	1.48	0.59
Max Chl Dpth (m)	4.36	Hydr. Depth (m)	1.79	4.21	1.95
Conv. Total (m3/s)	1216.4	Conv. (m3/s)	51.6	1133.2	31.7
Length Wtd. (m)	5.00	Wetted Per. (m)	3.16	10.35	2.85
Min Ch El (m)	1.25	Shear (N/m2)	8.22	25.72	6.52
Alpha	1.12	Stream Power (N/m s)	5.70	38.16	3.88
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.22	3.31	0.18
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	1.24	0.12

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .12 BR U Profile: PF 1

E.G. Elev (m)	5.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.59	Reach Len. (m)	69.57	69.57	69.57
Crit W.S. (m)	3.04	Flow Area (m2)	2.43	23.57	1.74
E.G. Slope (m/m)	0.003205	Area (m2)	2.43	23.57	1.74
Q Total (m3/s)	40.00	Flow (m3/s)	2.90	35.32	1.78
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.44	Avg. Vel. (m/s)	1.19	1.50	1.02
Max Chl Dpth (m)	4.34	Hydr. Depth (m)	1.77	3.95	1.93
Conv. Total (m3/s)	706.6	Conv. (m3/s)	51.2	624.0	31.4
Length Wtd. (m)	69.57	Wetted Per. (m)	3.14	21.63	2.83
Min Ch El (m)	1.25	Shear (N/m2)	24.29	34.25	19.30
Alpha	1.03	Stream Power (N/m s)	28.96	51.34	19.73
Frctn Loss (m)	0.26	Cum Volume (1000 m3)	0.20	3.19	0.17
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	1.21	0.11

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .12 BR D Profile: PF 1

E.G. Elev (m)	5.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.33	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.40	Flow Area (m2)	2.26	22.30	2.14
E.G. Slope (m/m)	0.004286	Area (m2)	2.26	22.30	2.14
Q Total (m3/s)	40.00	Flow (m3/s)	3.03	34.14	2.83
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.50	Avg. Vel. (m/s)	1.34	1.53	1.33
Max Chl Dpth (m)	3.74	Hydr. Depth (m)	1.29	2.88	1.34
Conv. Total (m3/s)	611.0	Conv. (m3/s)	46.3	521.4	43.3
Length Wtd. (m)	5.00	Wetted Per. (m)	3.04	24.64	2.93
Min Ch El (m)	1.59	Shear (N/m2)	31.21	38.03	30.64
Alpha	1.01	Stream Power (N/m s)	41.89	58.23	40.63
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.04	1.59	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.03	0.74	0.02

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.09 Profile: PF 1

E.G. Elev (m)	5.43	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	5.33	Reach Len. (m)	6.97	6.96	6.97
Crit W.S. (m)		Flow Area (m2)	2.26	25.34	2.13
E.G. Slope (m/m)	0.001059	Area (m2)	2.26	25.34	2.13
Q Total (m3/s)	40.00	Flow (m3/s)	1.50	37.09	1.41
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.35	Avg. Vel. (m/s)	0.67	1.46	0.66
Max Chl Dpth (m)	3.74	Hydr. Depth (m)	1.29	3.28	1.33
Conv. Total (m3/s)	1229.0	Conv. (m3/s)	46.2	1139.5	43.2
Length Wtd. (m)	6.96	Wetted Per. (m)	3.04	10.50	2.93
Min Ch El (m)	1.59	Shear (N/m2)	7.71	25.06	7.57
Alpha	1.12	Stream Power (N/m s)	5.14	36.68	4.99
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.03	1.48	0.03
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.02	0.70	0.02

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.06 Profile: PF 1

E.G. Elev (m)	5.38	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.		0.040	
W.S. Elev (m)	5.12	Reach Len. (m)	29.96	28.30	25.61
Crit W.S. (m)	3.66	Flow Area (m2)		17.88	
E.G. Slope (m/m)	0.004695	Area (m2)		17.88	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.60	Top Width (m)		5.60	
Vel Total (m/s)	2.24	Avg. Vel. (m/s)		2.24	
Max Chl Dpth (m)	3.30	Hydr. Depth (m)		3.19	
Conv. Total (m3/s)	583.8	Conv. (m3/s)		583.8	
Length Wtd. (m)	28.30	Wetted Per. (m)		11.98	
Min Ch El (m)	1.82	Shear (N/m2)		68.70	
Alpha	1.00	Stream Power (N/m s)		153.68	
Frctn Loss (m)		Cum Volume (1000 m3)		1.03	
C & E Loss (m)		Cum SA (1000 m2)		0.56	

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.04 Profile: PF 1

E.G. Elev (m)	4.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.87	Wt. n-Val.		0.040	
W.S. Elev (m)	3.16	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.16	Flow Area (m2)		9.66	
E.G. Slope (m/m)	0.024726	Area (m2)		9.66	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	4.14	Avg. Vel. (m/s)		4.14	
Max Chl Dpth (m)	1.81	Hydr. Depth (m)		1.75	
Conv. Total (m3/s)	254.4	Conv. (m3/s)		254.4	
Length Wtd. (m)	5.00	Wetted Per. (m)		8.93	
Min Ch El (m)	1.35	Shear (N/m2)		262.16	
Alpha	1.00	Stream Power (N/m s)		1085.63	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)		0.64	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.40	

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.02 Profile: PF 1

E.G. Elev (m)	3.60	Element	Left OB	Channel	Right OB
Vel Head (m)	1.56	Wt. n-Val.		0.040	
W.S. Elev (m)	2.04	Reach Len. (m)	7.80	7.80	7.80
Crit W.S. (m)	2.48	Flow Area (m2)		7.23	
E.G. Slope (m/m)	0.050609	Area (m2)		7.23	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.53	Avg. Vel. (m/s)		5.53	
Max Chl Dpth (m)	1.45	Hydr. Depth (m)		1.31	
Conv. Total (m3/s)	177.8	Conv. (m3/s)		177.8	
Length Wtd. (m)	7.80	Wetted Per. (m)		7.42	
Min Ch El (m)	0.59	Shear (N/m2)		483.95	
Alpha	1.00	Stream Power (N/m s)		2676.43	
Frctn Loss (m)	0.22	Cum Volume (1000 m3)		0.56	
C & E Loss (m)	0.03	Cum SA (1000 m2)		0.34	

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.00 Profile: PF 1

E.G. Elev (m)	2.05	Element	Left OB	Channel	Right OB
Vel Head (m)	1.04	Wt. n-Val.		0.040	
W.S. Elev (m)	1.02	Reach Len. (m)			
Crit W.S. (m)	1.16	Flow Area (m2)		8.87	
E.G. Slope (m/m)	0.028368	Area (m2)		8.87	
Q Total (m3/s)	40.00	Flow (m3/s)		40.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	4.51	Avg. Vel. (m/s)		4.51	
Max Chl Dpth (m)	1.75	Hydr. Depth (m)		1.60	
Conv. Total (m3/s)	237.5	Conv. (m3/s)		237.5	
Length Wtd. (m)		Wetted Per. (m)		8.01	
Min Ch El (m)	-0.73	Shear (N/m2)		308.15	
Alpha	1.00	Stream Power (N/m s)		1389.07	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)			
C & E Loss (m)	0.05	Cum SA (1000 m2)			

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .825 Profile: PF 1

E.G. US. (m)	14.87	Element	Inside BR US	Inside BR DS
W.S. US. (m)	14.30	E.G. Elev (m)	14.75	14.54
Q Total (m3/s)	40.00	W.S. Elev (m)	13.87	13.07
Q Bridge (m3/s)	40.00	Crit W.S. (m)	13.87	13.46
Q Weir (m3/s)		Max Chl Dpth (m)	2.10	1.72
Weir Sta Lft (m)		Vel Total (m/s)	4.17	5.37
Weir Sta Rgt (m)		Flow Area (m2)	9.59	7.45
Weir Submerg		Froude # Chl	1.00	1.43
Weir Max Depth (m)		Specif Force (m3)	25.91	27.48
Min El Weir Flow (m)	14.74	Hydr Depth (m)	1.77	1.44
Min El Prs (m)	14.08	W.P. Total (m)	8.29	7.45
Delta EG (m)	0.47	Conv. Total (m3/s)	264.2	186.1
Delta WS (m)	1.02	Top Width (m)	5.41	5.15
BR Open Area (m2)	10.69	Frctn Loss (m)	0.09	0.16
BR Open Vel (m/s)	5.37	C & E Loss (m)	0.08	0.06
Coef of Q		Shear Total (N/m2)	260.11	452.76
Br Sel Method	Energy only	Power Total (N/m s)	1085.08	2431.70

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.695 Profile: PF 1

E.G. US. (m)	12.23	Element	Inside BR US	Inside BR DS
W.S. US. (m)	11.95	E.G. Elev (m)	12.19	12.07
Q Total (m3/s)	40.00	W.S. Elev (m)	11.85	11.81
Q Bridge (m3/s)	29.50	Crit W.S. (m)	10.84	10.59
Q Weir (m3/s)		Max Chl Dpth (m)	3.02	3.23
Weir Sta Lft (m)		Vel Total (m/s)	2.51	2.25
Weir Sta Rgt (m)		Flow Area (m2)	15.92	17.76
Weir Submerg		Froude # Chl	0.49	0.43
Weir Max Depth (m)		Specif Force (m3)	31.51	34.13
Min El Weir Flow (m)	11.23	Hydr Depth (m)	1.79	1.99
Min El Prs (m)	11.07	W.P. Total (m)	24.89	25.57
Delta EG (m)	0.19	Conv. Total (m3/s)	305.1	355.6
Delta WS (m)	0.17	Top Width (m)	8.92	8.91
BR Open Area (m2)	11.01	Frctn Loss (m)	0.09	0.03
BR Open Vel (m/s)	2.68	C & E Loss (m)	0.02	0.00
Coef of Q		Shear Total (N/m2)	107.86	86.17
Br Sel Method	Energy only	Power Total (N/m s)	270.93	194.11

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.565 Profile: PF 1

E.G. US. (m)	9.78	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.53	E.G. Elev (m)	9.76	9.70
Q Total (m3/s)	40.00	W.S. Elev (m)	9.51	9.55
Q Bridge (m3/s)	40.00	Crit W.S. (m)	8.51	8.08
Q Weir (m3/s)		Max Chl Dpth (m)	2.65	2.98
Weir Sta Lft (m)		Vel Total (m/s)	2.21	1.69
Weir Sta Rgt (m)		Flow Area (m2)	18.09	23.73
Weir Submerg		Froude # Chl	0.46	0.33
Weir Max Depth (m)		Specif Force (m3)	31.25	39.97
Min El Weir Flow (m)	9.90	Hydr Depth (m)	2.32	2.71
Min El Prs (m)	9.66	W.P. Total (m)	11.52	13.72
Delta EG (m)	0.09	Conv. Total (m3/s)	611.1	855.0
Delta WS (m)	-0.01	Top Width (m)	7.81	8.77
BR Open Area (m2)	19.26	Frctn Loss (m)	0.02	0.01
BR Open Vel (m/s)	2.21	C & E Loss (m)	0.03	0.00
Coef of Q		Shear Total (N/m2)	65.99	37.13
Br Sel Method	Energy only	Power Total (N/m s)	145.90	62.59

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.505 Profile: PF 1

E.G. US. (m)	9.51	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.15	E.G. Elev (m)	9.44	9.39
Q Total (m3/s)	40.00	W.S. Elev (m)	8.95	8.95
Q Bridge (m3/s)	40.00	Crit W.S. (m)	8.22	8.11
Q Weir (m3/s)		Max Chl Dpth (m)	2.68	2.79
Weir Sta Lft (m)		Vel Total (m/s)	3.10	2.96
Weir Sta Rgt (m)		Flow Area (m2)	12.90	13.52
Weir Submerg		Froude # Chl	0.64	0.59
Weir Max Depth (m)		Specif Force (m3)	29.92	30.80
Min El Weir Flow (m)	9.72	Hydr Depth (m)		
Min El Prs (m)	8.92	W.P. Total (m)	15.57	15.83
Delta EG (m)	0.19	Conv. Total (m3/s)	284.4	304.5
Delta WS (m)	0.23	Top Width (m)		
BR Open Area (m2)	12.90	Frctn Loss (m)	0.04	0.06
BR Open Vel (m/s)	3.10	C & E Loss (m)	0.01	0.01
Coef of Q		Shear Total (N/m2)	160.71	144.64
Br Sel Method	Energy only	Power Total (N/m s)	498.41	427.78

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .485 Profile: PF 1

E.G. US. (m)	9.26	Element	Inside BR US	Inside BR DS
W.S. US. (m)	8.88	E.G. Elev (m)	9.15	8.91
Q Total (m3/s)	40.00	W.S. Elev (m)	8.46	8.25
Q Bridge (m3/s)	36.60	Crit W.S. (m)	7.91	7.71
Q Weir (m3/s)		Max Chl Dpth (m)	2.38	2.43
Weir Sta Lft (m)		Vel Total (m/s)	3.68	3.60
Weir Sta Rgt (m)		Flow Area (m2)	10.87	11.11
Weir Submerg		Froude # Chl	0.78	0.75
Weir Max Depth (m)		Specif Force (m3)	28.54	29.08
Min El Weir Flow (m)	8.19	Hydr Depth (m)	1.90	1.91
Min El Prs (m)	7.94	W.P. Total (m)	20.02	20.37
Delta EG (m)	0.49	Conv. Total (m3/s)	182.5	187.4
Delta WS (m)	0.64	Top Width (m)	5.73	5.82
BR Open Area (m2)	9.28	Frctn Loss (m)	0.23	0.10
BR Open Vel (m/s)	3.94	C & E Loss (m)	0.01	0.04
Coef of Q		Shear Total (N/m2)	255.70	243.70
Br Sel Method	Energy only	Power Total (N/m s)	940.92	877.67

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.471 Profile: PF 1

E.G. US. (m)	8.68	Element	Inside BR US	Inside BR DS
W.S. US. (m)	8.37	E.G. Elev (m)	8.61	8.48
Q Total (m3/s)	40.00	W.S. Elev (m)	8.13	8.14
Q Bridge (m3/s)	40.00	Crit W.S. (m)	7.56	7.16
Q Weir (m3/s)		Max Chl Dpth (m)	2.37	2.80
Weir Sta Lft (m)		Vel Total (m/s)	3.08	2.59
Weir Sta Rgt (m)		Flow Area (m2)	12.99	15.46
Weir Submerg		Froude # Chl	0.69	0.54
Weir Max Depth (m)		Specif Force (m3)	27.64	32.12
Min El Weir Flow (m)	8.39	Hydr Depth (m)		6.04
Min El Prs (m)	7.92	W.P. Total (m)	17.15	21.57
Delta EG (m)	0.27	Conv. Total (m3/s)	269.7	309.7
Delta WS (m)	0.19	Top Width (m)		2.56
BR Open Area (m2)	12.99	Frctn Loss (m)	0.09	0.04
BR Open Vel (m/s)	3.08	C & E Loss (m)	0.04	0.03
Coef of Q		Shear Total (N/m2)	163.33	117.29
Br Sel Method	Energy only	Power Total (N/m s)	503.11	303.38

Plan: RANZI 50 P RIO RANZI Reach 1 RS: .12 Profile: PF 1

E.G. US. (m)	5.71	Element	Inside BR US	Inside BR DS
W.S. US. (m)	5.61	E.G. Elev (m)	5.70	5.45
Q Total (m3/s)	40.00	W.S. Elev (m)	5.59	5.33
Q Bridge (m3/s)	11.24	Crit W.S. (m)	3.04	3.40
Q Weir (m3/s)		Max Chl Dpth (m)	4.34	3.74
Weir Sta Lft (m)		Vel Total (m/s)	1.44	1.50
Weir Sta Rgt (m)		Flow Area (m2)	27.74	26.69
Weir Submerg		Froude # Chl	0.22	0.26
Weir Max Depth (m)		Specif Force (m3)	59.53	47.09
Min El Weir Flow (m)	3.94	Hydr Depth (m)	3.37	2.41
Min El Prs (m)	3.25	W.P. Total (m)	27.60	30.61
Delta EG (m)	0.28	Conv. Total (m3/s)	706.6	611.0
Delta WS (m)	0.28	Top Width (m)	8.24	11.08
BR Open Area (m2)	11.06	Frctn Loss (m)	0.26	0.01
BR Open Vel (m/s)	1.02	C & E Loss (m)	0.00	0.00
Coef of Q		Shear Total (N/m2)	31.58	36.65
Br Sel Method	Energy only	Power Total (N/m s)	45.54	54.93

Plan: RANZI 50 P RIO RANZI Reach 1 RS: 0.05 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (m3/s)	36.28	Culv Full Len (m)	12.35
# Barrels	1	Culv Vel US (m/s)	4.14
Q Barrel (m3/s)	36.28	Culv Vel DS (m/s)	4.68
E.G. US. (m)	5.38	Culv Inv El Up (m)	1.88
W.S. US. (m)	5.12	Culv Inv El Dn (m)	1.68
E.G. DS (m)	4.04	Culv Frctn Ls (m)	0.84
W.S. DS (m)	3.16	Culv Exit Loss (m)	0.33
Delta EG (m)	1.34	Culv Entr Loss (m)	0.17
Delta WS (m)	1.96	Q Weir (m3/s)	3.72
E.G. IC (m)	5.38	Weir Sta Lft (m)	0.00
E.G. OC (m)	5.38	Weir Sta Rgt (m)	5.60
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (m)	3.88	Weir Max Depth (m)	0.60
Culv WS Outlet (m)	3.25	Weir Avg Depth (m)	0.60
Culv Nml Depth (m)	2.00	Weir Flow Area (m2)	3.34
Culv Crt Depth (m)	1.57	Min El Weir Flow (m)	4.78

RIO RANZI

CONDIZIONE CON PORTO TURISTICO

CANTIERI NAVALI RODRIGUEZ

Tempo di ritorno 200 anni

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.84 Profile: PF 1

E.G. Elev (m)	16.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	16.02	Reach Len. (m)	6.83	6.82	6.82
Crit W.S. (m)	14.09	Flow Area (m2)	6.32	27.66	1.38
E.G. Slope (m/m)	0.001630	Area (m2)	6.32	27.66	1.38
Q Total (m3/s)	55.00	Flow (m3/s)	6.40	47.62	0.98
Top Width (m)	13.80	Top Width (m)	5.04	7.54	1.22
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	1.01	1.72	0.71
Max Chl Dpth (m)	3.91	Hydr. Depth (m)	1.25	3.67	1.13
Conv. Total (m3/s)	1362.1	Conv. (m3/s)	158.6	1179.3	24.3
Length Wtd. (m)	6.82	Wetted Per. (m)	6.28	12.41	2.35
Min Ch El (m)	12.11	Shear (N/m2)	16.09	35.62	9.41
Alpha	1.11	Stream Power (N/m s)	16.30	61.33	6.68
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.24	15.77	0.85
C & E Loss (m)	0.02	Cum SA (1000 m2)	1.10	5.39	0.74

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.83 Profile: PF 1

E.G. Elev (m)	16.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	15.79	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	14.29	Flow Area (m2)	0.90	20.54	0.92
E.G. Slope (m/m)	0.004421	Area (m2)	0.90	20.54	0.92
Q Total (m3/s)	55.00	Flow (m3/s)	0.91	53.17	0.92
Top Width (m)	8.14	Top Width (m)	1.13	5.83	1.18
Vel Total (m/s)	2.46	Avg. Vel. (m/s)	1.01	2.59	1.00
Max Chl Dpth (m)	4.02	Hydr. Depth (m)	0.80	3.52	0.78
Conv. Total (m3/s)	827.2	Conv. (m3/s)	13.7	799.7	13.8
Length Wtd. (m)	5.00	Wetted Per. (m)	1.91	10.57	1.96
Min Ch El (m)	11.77	Shear (N/m2)	20.47	84.24	20.32
Alpha	1.08	Stream Power (N/m s)	20.63	218.04	20.37
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.21	15.61	0.84
C & E Loss (m)	0.07	Cum SA (1000 m2)	1.07	5.34	0.73

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .825 BR U Profile: PF 1

E.G. Elev (m)	15.99	Element	Left OB	Channel	Right OB
Vel Head (m)	1.05	Wt. n-Val.		0.040	
W.S. Elev (m)	14.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	14.95	Flow Area (m2)		12.14	
E.G. Slope (m/m)	0.065664	Area (m2)		12.14	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.82	Top Width (m)		5.82	
Vel Total (m/s)	4.53	Avg. Vel. (m/s)		4.53	
Max Chl Dpth (m)	3.18	Hydr. Depth (m)		2.09	
Conv. Total (m3/s)	214.6	Conv. (m3/s)		214.6	
Length Wtd. (m)	5.00	Wetted Per. (m)		20.42	
Min Ch El (m)	11.77	Shear (N/m2)		382.90	
Alpha	1.00	Stream Power (N/m s)		1734.57	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	1.21	15.53	0.84
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.07	5.31	0.73

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .825 BR D Profile: PF 1

E.G. Elev (m)	15.53	Element	Left OB	Channel	Right OB
Vel Head (m)	2.33	Wt. n-Val.		0.040	
W.S. Elev (m)	13.20	Reach Len. (m)	3.20	3.20	3.20
Crit W.S. (m)	13.90	Flow Area (m2)		8.14	
E.G. Slope (m/m)	0.068210	Area (m2)		8.14	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.20	Top Width (m)		5.20	
Vel Total (m/s)	6.76	Avg. Vel. (m/s)		6.76	
Max Chl Dpth (m)	1.85	Hydr. Depth (m)		1.57	
Conv. Total (m3/s)	210.6	Conv. (m3/s)		210.6	
Length Wtd. (m)	3.20	Wetted Per. (m)		7.72	
Min Ch El (m)	11.35	Shear (N/m2)		704.57	
Alpha	1.00	Stream Power (N/m s)		4762.48	
Frctn Loss (m)	0.33	Cum Volume (1000 m3)	1.21	15.48	0.84
C & E Loss (m)	0.13	Cum SA (1000 m2)	1.07	5.29	0.73

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.82 Profile: PF 1

E.G. Elev (m)	15.17	Element	Left OB	Channel	Right OB
Vel Head (m)	1.71	Wt. n-Val.		0.040	
W.S. Elev (m)	13.46	Reach Len. (m)	11.17	12.17	12.21
Crit W.S. (m)	13.90	Flow Area (m2)		9.50	
E.G. Slope (m/m)	0.044476	Area (m2)		9.50	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.28	Top Width (m)		5.28	
Vel Total (m/s)	5.79	Avg. Vel. (m/s)		5.79	
Max Chl Dpth (m)	2.11	Hydr. Depth (m)		1.80	
Conv. Total (m3/s)	260.8	Conv. (m3/s)		260.8	
Length Wtd. (m)	12.17	Wetted Per. (m)		8.25	
Min Ch El (m)	11.35	Shear (N/m2)		502.05	
Alpha	1.00	Stream Power (N/m s)		2907.27	
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	1.21	15.45	0.84
C & E Loss (m)	0.19	Cum SA (1000 m2)	1.07	5.27	0.73

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.77 Profile: PF 1

E.G. Elev (m)	13.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.41	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	13.33	Reach Len. (m)	42.11	41.59	40.95
Crit W.S. (m)		Flow Area (m2)	1.64	17.45	1.31
E.G. Slope (m/m)	0.007794	Area (m2)	1.64	17.45	1.31
Q Total (m3/s)	55.00	Flow (m3/s)	2.23	51.20	1.56
Top Width (m)	8.90	Top Width (m)	2.00	5.54	1.36
Vel Total (m/s)	2.70	Avg. Vel. (m/s)	1.36	2.93	1.19
Max Chl Dpth (m)	3.55	Hydr. Depth (m)	0.82	3.15	0.96
Conv. Total (m3/s)	623.0	Conv. (m3/s)	25.3	580.0	17.7
Length Wtd. (m)	41.59	Wetted Per. (m)	3.39	11.38	3.29
Min Ch El (m)	9.78	Shear (N/m2)	37.01	117.17	30.37
Alpha	1.12	Stream Power (N/m s)	50.38	343.83	36.22
Frctn Loss (m)	0.49	Cum Volume (1000 m3)	1.20	14.83	0.83
C & E Loss (m)	0.05	Cum SA (1000 m2)	1.05	5.00	0.71

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.73 Profile: PF 1

E.G. Elev (m)	13.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.87	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	12.34	Reach Len. (m)	7.94	7.74	6.73
Crit W.S. (m)	12.23	Flow Area (m2)		12.98	0.61
E.G. Slope (m/m)	0.019455	Area (m2)		12.98	0.61
Q Total (m3/s)	55.00	Flow (m3/s)		54.09	0.91
Top Width (m)	6.87	Top Width (m)		5.64	1.23
Vel Total (m/s)	4.05	Avg. Vel. (m/s)		4.17	1.49
Max Chl Dpth (m)	2.33	Hydr. Depth (m)		2.30	0.50
Conv. Total (m3/s)	394.3	Conv. (m3/s)		387.8	6.5
Length Wtd. (m)	7.72	Wetted Per. (m)		9.94	2.19
Min Ch El (m)	10.01	Shear (N/m2)		249.22	53.40
Alpha	1.05	Stream Power (N/m s)		1038.46	79.68
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	1.16	14.20	0.79
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.00	4.77	0.66

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.70 Profile: PF 1

E.G. Elev (m)	12.80	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.45	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.25	Flow Area (m2)	1.43	19.48	1.28
E.G. Slope (m/m)	0.004559	Area (m2)	1.43	19.48	1.28
Q Total (m3/s)	55.00	Flow (m3/s)	1.70	51.84	1.46
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.48	Avg. Vel. (m/s)	1.19	2.66	1.14
Max Chl Dpth (m)	3.62	Hydr. Depth (m)	0.97	3.23	0.90
Conv. Total (m3/s)	814.6	Conv. (m3/s)	25.2	767.8	21.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.43	9.84	2.32
Min Ch El (m)	8.83	Shear (N/m2)	26.31	88.53	24.70
Alpha	1.10	Stream Power (N/m s)	31.18	235.64	28.08
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.15	13.84	0.77
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.98	4.64	0.63

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.695 BR U Profile: PF 1

E.G. Elev (m)	12.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.39	Reach Len. (m)	6.40	6.40	6.40
Crit W.S. (m)	11.03	Flow Area (m2)	1.34	18.18	1.20
E.G. Slope (m/m)	0.014864	Area (m2)	1.34	18.18	1.20
Q Total (m3/s)	55.00	Flow (m3/s)	2.79	49.83	2.38
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.65	Avg. Vel. (m/s)	2.08	2.74	1.99
Max Chl Dpth (m)	3.56	Hydr. Depth (m)	0.91	3.02	0.84
Conv. Total (m3/s)	451.1	Conv. (m3/s)	22.9	408.7	19.5
Length Wtd. (m)	6.40	Wetted Per. (m)	2.37	21.33	2.26
Min Ch El (m)	8.83	Shear (N/m2)	82.37	124.24	77.02
Alpha	1.02	Stream Power (N/m s)	171.59	340.43	153.45
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.14	13.74	0.76
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.98	4.61	0.62

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.695 BR D Profile: PF 1

E.G. Elev (m)	12.66	Element	Left OB	Channel	Right OB
Vel Head (m)	0.31	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.35	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.00	Flow Area (m2)	1.84	19.71	1.04
E.G. Slope (m/m)	0.011549	Area (m2)	1.84	19.71	1.04
Q Total (m3/s)	55.00	Flow (m3/s)	3.76	49.45	1.78
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.43	Avg. Vel. (m/s)	2.04	2.51	1.71
Max Chl Dpth (m)	3.77	Hydr. Depth (m)	1.08	3.19	1.01
Conv. Total (m3/s)	511.8	Conv. (m3/s)	35.0	460.2	16.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.78	21.84	2.04
Min Ch El (m)	8.58	Shear (N/m2)	75.10	102.21	57.72
Alpha	1.02	Stream Power (N/m s)	153.44	256.45	98.95
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	1.13	13.62	0.76
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.96	4.57	0.61

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.69 Profile: PF 1

E.G. Elev (m)	12.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.32	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.31	Reach Len. (m)	8.42	8.28	8.14
Crit W.S. (m)		Flow Area (m2)	1.77	20.38	1.00
E.G. Slope (m/m)	0.003981	Area (m2)	1.77	20.38	1.00
Q Total (m3/s)	55.00	Flow (m3/s)	2.10	51.91	0.99
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.38	Avg. Vel. (m/s)	1.18	2.55	0.99
Max Chl Dpth (m)	3.73	Hydr. Depth (m)	1.04	3.30	0.97
Conv. Total (m3/s)	871.7	Conv. (m3/s)	33.2	822.8	15.7
Length Wtd. (m)	8.28	Wetted Per. (m)	2.74	9.93	2.00
Min Ch El (m)	8.58	Shear (N/m2)	25.29	80.14	19.49
Alpha	1.10	Stream Power (N/m s)	29.87	204.16	19.34
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.12	13.52	0.75
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.96	4.54	0.61

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.66 Profile: PF 1

E.G. Elev (m)	12.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.38	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.11	Reach Len. (m)	8.12	7.98	7.71
Crit W.S. (m)		Flow Area (m2)	0.39	19.21	1.37
E.G. Slope (m/m)	0.005654	Area (m2)	0.39	19.21	1.37
Q Total (m3/s)	55.00	Flow (m3/s)	0.26	53.03	1.71
Top Width (m)	9.76	Top Width (m)	1.55	6.48	1.73
Vel Total (m/s)	2.62	Avg. Vel. (m/s)	0.68	2.76	1.25
Max Chl Dpth (m)	3.23	Hydr. Depth (m)	0.25	2.96	0.79
Conv. Total (m3/s)	731.4	Conv. (m3/s)	3.5	705.3	22.7
Length Wtd. (m)	7.97	Wetted Per. (m)	1.79	10.79	2.52
Min Ch El (m)	8.88	Shear (N/m2)	11.97	98.68	30.06
Alpha	1.07	Stream Power (N/m s)	8.10	272.42	37.56
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.10	13.05	0.72
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.92	4.38	0.57

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.63 Profile: PF 1

E.G. Elev (m)	12.24	Element	Left OB	Channel	Right OB
Vel Head (m)	0.41	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	11.83	Reach Len. (m)	9.26	9.15	8.93
Crit W.S. (m)		Flow Area (m2)		18.35	1.70
E.G. Slope (m/m)	0.006308	Area (m2)		18.35	1.70
Q Total (m3/s)	55.00	Flow (m3/s)		52.67	2.33
Top Width (m)	6.50	Top Width (m)		5.39	1.11
Vel Total (m/s)	2.74	Avg. Vel. (m/s)		2.87	1.37
Max Chl Dpth (m)	3.69	Hydr. Depth (m)		3.40	1.53
Conv. Total (m3/s)	692.5	Conv. (m3/s)		663.2	29.3
Length Wtd. (m)	9.15	Wetted Per. (m)		10.56	2.98
Min Ch El (m)	8.14	Shear (N/m2)		107.51	35.33
Alpha	1.06	Stream Power (N/m s)		308.60	48.28
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.10	12.48	0.68
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.91	4.19	0.53

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.59 Profile: PF 1

E.G. Elev (m)	11.74	Element	Left OB	Channel	Right OB
Vel Head (m)	0.92	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	10.83	Reach Len. (m)	7.33	7.18	6.54
Crit W.S. (m)	10.83	Flow Area (m2)	1.18	12.14	
E.G. Slope (m/m)	0.018985	Area (m2)	1.18	12.14	
Q Total (m3/s)	55.00	Flow (m3/s)	2.54	52.46	
Top Width (m)	7.30	Top Width (m)	1.68	5.62	
Vel Total (m/s)	4.13	Avg. Vel. (m/s)	2.16	4.32	
Max Chl Dpth (m)	2.83	Hydr. Depth (m)	0.70	2.16	
Conv. Total (m3/s)	399.2	Conv. (m3/s)	18.5	380.7	
Length Wtd. (m)	7.19	Wetted Per. (m)	2.38	8.65	
Min Ch El (m)	8.00	Shear (N/m2)	92.33	261.44	
Alpha	1.06	Stream Power (N/m s)	199.28	1129.34	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	1.09	11.92	0.65
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.89	3.98	0.51

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.57 Profile: PF 1

E.G. Elev (m)	10.63	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.39	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.86	Flow Area (m2)	0.22	25.21	0.19
E.G. Slope (m/m)	0.003112	Area (m2)	0.22	25.21	0.19
Q Total (m3/s)	55.00	Flow (m3/s)	0.09	54.83	0.08
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.15	Avg. Vel. (m/s)	0.41	2.17	0.42
Max Chl Dpth (m)	3.53	Hydr. Depth (m)	0.18	3.09	0.19
Conv. Total (m3/s)	985.9	Conv. (m3/s)	1.6	982.8	1.4
Length Wtd. (m)	5.00	Wetted Per. (m)	1.40	12.95	1.15
Min Ch El (m)	6.86	Shear (N/m2)	4.83	59.43	5.00
Alpha	1.02	Stream Power (N/m s)	1.97	129.26	2.09
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	1.09	11.66	0.65
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.88	3.84	0.50

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.565 BR U Profile: PF 1

E.G. Elev (m)	10.60	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.30	Reach Len. (m)	8.16	8.16	8.16
Crit W.S. (m)	8.87	Flow Area (m2)	0.10	22.52	0.09
E.G. Slope (m/m)	0.012919	Area (m2)	0.10	22.52	0.09
Q Total (m3/s)	55.00	Flow (m3/s)	0.05	54.89	0.05
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.42	Avg. Vel. (m/s)	0.52	2.44	0.57
Max Chl Dpth (m)	3.44	Hydr. Depth (m)	0.08	2.76	0.10
Conv. Total (m3/s)	483.9	Conv. (m3/s)	0.5	483.0	0.5
Length Wtd. (m)	8.16	Wetted Per. (m)	1.31	28.34	1.06
Min Ch El (m)	6.86	Shear (N/m2)	9.89	100.67	11.36
Alpha	1.01	Stream Power (N/m s)	5.14	245.39	6.47
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.08	11.54	0.65
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.87	3.80	0.50

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.565 BR D Profile: PF 1

E.G. Elev (m)	10.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.32	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.40	Flow Area (m2)	1.36	28.33	0.75
E.G. Slope (m/m)	0.006435	Area (m2)	1.36	28.33	0.75
Q Total (m3/s)	55.00	Flow (m3/s)	1.40	52.86	0.74
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.81	Avg. Vel. (m/s)	1.03	1.87	0.98
Max Chl Dpth (m)	3.75	Hydr. Depth (m)	0.42	3.20	0.42
Conv. Total (m3/s)	685.6	Conv. (m3/s)	17.5	659.0	9.2
Length Wtd. (m)	5.00	Wetted Per. (m)	3.68	31.56	2.19
Min Ch El (m)	6.57	Shear (N/m2)	23.30	56.64	21.59
Alpha	1.04	Stream Power (N/m s)	24.05	105.70	21.18
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.08	11.33	0.65
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.85	3.73	0.49

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.56 Profile: PF 1

E.G. Elev (m)	10.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.16	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.31	Reach Len. (m)	9.69	10.00	10.27
Crit W.S. (m)		Flow Area (m2)	1.40	30.41	0.82
E.G. Slope (m/m)	0.001836	Area (m2)	1.40	30.41	0.82
Q Total (m3/s)	55.00	Flow (m3/s)	0.79	53.76	0.45
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.69	Avg. Vel. (m/s)	0.56	1.77	0.55
Max Chl Dpth (m)	3.74	Hydr. Depth (m)	0.43	3.44	0.47
Conv. Total (m3/s)	1283.6	Conv. (m3/s)	18.4	1254.6	10.6
Length Wtd. (m)	10.00	Wetted Per. (m)	3.69	14.34	2.24
Min Ch El (m)	6.57	Shear (N/m2)	6.85	38.17	6.63
Alpha	1.08	Stream Power (N/m s)	3.85	67.47	3.64
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.07	11.19	0.64
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.84	3.69	0.48

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.51 Profile: PF 1

E.G. Elev (m)	10.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.39	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.93	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.64	Flow Area (m2)	0.82	19.52	0.07
E.G. Slope (m/m)	0.006138	Area (m2)	0.82	19.52	0.07
Q Total (m3/s)	55.00	Flow (m3/s)	0.84	54.13	0.03
Top Width (m)	8.27	Top Width (m)	1.72	5.92	0.63
Vel Total (m/s)	2.69	Avg. Vel. (m/s)	1.02	2.77	0.40
Max Chl Dpth (m)	3.66	Hydr. Depth (m)	0.48	3.30	0.11
Conv. Total (m3/s)	702.0	Conv. (m3/s)	10.7	691.0	0.4
Length Wtd. (m)	5.00	Wetted Per. (m)	2.20	11.58	0.74
Min Ch El (m)	6.27	Shear (N/m2)	22.55	101.42	5.59
Alpha	1.04	Stream Power (N/m s)	22.95	281.26	2.25
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.02	10.18	0.62
C & E Loss (m)	0.05	Cum SA (1000 m2)	0.74	3.39	0.43

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.505 BR U Profile: PF 1

E.G. Elev (m)	10.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.93	Wt. n-Val.		0.040	
W.S. Elev (m)	9.27	Reach Len. (m)	2.00	2.00	2.00
Crit W.S. (m)	8.64	Flow Area (m2)		12.90	
E.G. Slope (m/m)	0.037410	Area (m2)		12.90	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	4.26	Avg. Vel. (m/s)		4.26	
Max Chl Dpth (m)	3.00	Hydr. Depth (m)			
Conv. Total (m3/s)	284.4	Conv. (m3/s)		284.4	
Length Wtd. (m)	2.00	Wetted Per. (m)		15.57	
Min Ch El (m)	6.27	Shear (N/m2)		303.84	
Alpha	1.00	Stream Power (N/m s)		1295.68	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.02	10.10	0.62
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.73	3.38	0.43

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.505 BR D Profile: PF 1

E.G. Elev (m)	10.10	Element	Left OB	Channel	Right OB
Vel Head (m)	0.84	Wt. n-Val.		0.040	
W.S. Elev (m)	9.26	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.53	Flow Area (m2)		13.52	
E.G. Slope (m/m)	0.032633	Area (m2)		13.52	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	4.07	Avg. Vel. (m/s)		4.07	
Max Chl Dpth (m)	3.10	Hydr. Depth (m)			
Conv. Total (m3/s)	304.5	Conv. (m3/s)		304.5	
Length Wtd. (m)	5.00	Wetted Per. (m)		15.83	
Min Ch El (m)	6.16	Shear (N/m2)		273.46	
Alpha	1.00	Stream Power (N/m s)		1112.07	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.02	10.07	0.62
C & E Loss (m)	0.09	Cum SA (1000 m2)	0.73	3.38	0.43

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .5 Profile: PF 1

E.G. Elev (m)	9.93	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	9.40	Reach Len. (m)	6.82	7.50	7.93
Crit W.S. (m)		Flow Area (m2)	0.10	17.05	
E.G. Slope (m/m)	0.009579	Area (m2)	0.10	17.05	
Q Total (m3/s)	55.00	Flow (m3/s)	0.04	54.96	
Top Width (m)	7.61	Top Width (m)	1.72	5.89	
Vel Total (m/s)	3.21	Avg. Vel. (m/s)	0.37	3.22	
Max Chl Dpth (m)	3.24	Hydr. Depth (m)	0.06	2.90	
Conv. Total (m3/s)	562.0	Conv. (m3/s)	0.4	561.6	
Length Wtd. (m)	7.49	Wetted Per. (m)	1.78	11.27	
Min Ch El (m)	6.16	Shear (N/m2)	5.52	142.06	
Alpha	1.01	Stream Power (N/m s)	2.04	457.95	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.02	9.99	0.62
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.73	3.36	0.43

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .49 Profile: PF 1

E.G. Elev (m)	9.85	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.38	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.40	Flow Area (m2)	0.99	17.11	0.53
E.G. Slope (m/m)	0.007128	Area (m2)	0.99	17.11	0.53
Q Total (m3/s)	55.00	Flow (m3/s)	1.28	53.15	0.57
Top Width (m)	7.81	Top Width (m)	1.72	5.43	0.66
Vel Total (m/s)	2.95	Avg. Vel. (m/s)	1.29	3.11	1.07
Max Chl Dpth (m)	3.30	Hydr. Depth (m)	0.58	3.15	0.81
Conv. Total (m3/s)	651.5	Conv. (m3/s)	15.2	629.5	6.8
Length Wtd. (m)	5.00	Wetted Per. (m)	2.07	9.59	1.47
Min Ch El (m)	6.08	Shear (N/m2)	33.51	124.74	25.35
Alpha	1.08	Stream Power (N/m s)	43.32	387.35	27.22
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.02	9.87	0.62
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.72	3.32	0.42

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .485 BR U Profile: PF 1

E.G. Elev (m)	9.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.74	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.02	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.76	Flow Area (m2)	0.47	13.84	0.29
E.G. Slope (m/m)	0.038066	Area (m2)	0.47	13.84	0.29
Q Total (m3/s)	55.00	Flow (m3/s)	1.10	53.31	0.59
Top Width (m)	7.27	Top Width (m)	1.18	5.43	0.66
Vel Total (m/s)	3.77	Avg. Vel. (m/s)	2.33	3.85	2.02
Max Chl Dpth (m)	2.94	Hydr. Depth (m)	0.40	2.55	0.45
Conv. Total (m3/s)	281.9	Conv. (m3/s)	5.6	273.2	3.0
Length Wtd. (m)	5.00	Wetted Per. (m)	1.43	19.72	1.11
Min Ch El (m)	6.08	Shear (N/m2)	123.37	262.00	99.42
Alpha	1.02	Stream Power (N/m s)	287.63	1009.27	200.72
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	1.01	9.79	0.62
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.71	3.29	0.42

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .485 BR D Profile: PF 1

E.G. Elev (m)	9.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.64	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.92	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.51	Flow Area (m2)	0.65	14.71	0.40
E.G. Slope (m/m)	0.030829	Area (m2)	0.65	14.71	0.40
Q Total (m3/s)	55.00	Flow (m3/s)	1.54	52.64	0.82
Top Width (m)	7.52	Top Width (m)	1.43	5.43	0.66
Vel Total (m/s)	3.49	Avg. Vel. (m/s)	2.36	3.58	2.04
Max Chl Dpth (m)	3.10	Hydr. Depth (m)	0.46	2.71	0.61
Conv. Total (m3/s)	313.2	Conv. (m3/s)	8.8	299.8	4.7
Length Wtd. (m)	5.00	Wetted Per. (m)	1.66	19.98	1.27
Min Ch El (m)	5.82	Shear (N/m2)	119.27	222.55	95.69
Alpha	1.02	Stream Power (N/m s)	281.61	796.43	195.09
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.01	9.72	0.62
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.70	3.27	0.42

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.48 Profile: PF 1

E.G. Elev (m)	9.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.88	Reach Len. (m)	2.61	2.58	2.90
Crit W.S. (m)		Flow Area (m2)	0.64	15.86	0.38
E.G. Slope (m/m)	0.009404	Area (m2)	0.64	15.86	0.38
Q Total (m3/s)	55.00	Flow (m3/s)	0.81	53.77	0.42
Top Width (m)	7.46	Top Width (m)	1.37	5.43	0.66
Vel Total (m/s)	3.26	Avg. Vel. (m/s)	1.28	3.39	1.10
Max Chl Dpth (m)	3.06	Hydr. Depth (m)	0.46	2.92	0.57
Conv. Total (m3/s)	567.2	Conv. (m3/s)	8.4	554.5	4.3
Length Wtd. (m)	2.58	Wetted Per. (m)	1.66	9.59	1.23
Min Ch El (m)	5.82	Shear (N/m2)	35.37	152.50	28.31
Alpha	1.06	Stream Power (N/m s)	45.26	517.03	31.24
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.01	9.64	0.62
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.70	3.24	0.41

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.472 Profile: PF 1

E.G. Elev (m)	9.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.04	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.91	Flow Area (m2)	0.46	21.33	0.48
E.G. Slope (m/m)	0.004529	Area (m2)	0.46	21.33	0.48
Q Total (m3/s)	55.00	Flow (m3/s)	0.34	54.29	0.36
Top Width (m)	9.83	Top Width (m)	1.11	7.47	1.25
Vel Total (m/s)	2.47	Avg. Vel. (m/s)	0.75	2.55	0.75
Max Chl Dpth (m)	3.28	Hydr. Depth (m)	0.41	2.86	0.39
Conv. Total (m3/s)	817.3	Conv. (m3/s)	5.1	806.8	5.4
Length Wtd. (m)	5.00	Wetted Per. (m)	1.52	11.47	1.63
Min Ch El (m)	5.76	Shear (N/m2)	13.33	82.64	13.15
Alpha	1.05	Stream Power (N/m s)	10.06	210.32	9.83
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.01	9.59	0.61
C & E Loss (m)	0.06	Cum SA (1000 m2)	0.69	3.22	0.41

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.471 BR U Profile: PF 1

E.G. Elev (m)	9.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.91	Wt. n-Val.		0.040	
W.S. Elev (m)	8.34	Reach Len. (m)	4.79	4.79	4.79
Crit W.S. (m)	7.91	Flow Area (m2)		12.99	
E.G. Slope (m/m)	0.041590	Area (m2)		12.99	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	4.24	Avg. Vel. (m/s)		4.24	
Max Chl Dpth (m)	2.58	Hydr. Depth (m)			
Conv. Total (m3/s)	269.7	Conv. (m3/s)		269.7	
Length Wtd. (m)	4.79	Wetted Per. (m)		17.15	
Min Ch El (m)	5.76	Shear (N/m2)		308.80	
Alpha	1.00	Stream Power (N/m s)		1307.89	
Frctn Loss (m)	0.15	Cum Volume (1000 m3)	1.01	9.51	0.61
C & E Loss (m)	0.14	Cum SA (1000 m2)	0.69	3.20	0.41

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.471 BR D Profile: PF 1

E.G. Elev (m)	8.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.45	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.52	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.50	Flow Area (m2)	0.12	18.23	0.39
E.G. Slope (m/m)	0.024243	Area (m2)	0.12	18.23	0.39
Q Total (m3/s)	55.00	Flow (m3/s)	0.06	54.31	0.63
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	2.93	Avg. Vel. (m/s)	0.53	2.98	1.61
Max Chl Dpth (m)	3.18	Hydr. Depth (m)	0.05	2.25	0.35
Conv. Total (m3/s)	353.2	Conv. (m3/s)	0.4	348.8	4.0
Length Wtd. (m)	5.00	Wetted Per. (m)	2.48	27.23	1.47
Min Ch El (m)	5.34	Shear (N/m2)	11.81	159.16	63.21
Alpha	1.02	Stream Power (N/m s)	6.21	474.10	101.73
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.01	9.43	0.61
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.69	3.19	0.41

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.47 Profile: PF 1

E.G. Elev (m)	8.88	Element	Left OB	Channel	Right OB
Vel Head (m)	0.31	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.58	Reach Len. (m)	9.95	9.81	9.26
Crit W.S. (m)		Flow Area (m2)	0.26	22.10	0.45
E.G. Slope (m/m)	0.004397	Area (m2)	0.26	22.10	0.45
Q Total (m3/s)	55.00	Flow (m3/s)	0.09	54.57	0.33
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	2.41	Avg. Vel. (m/s)	0.36	2.47	0.74
Max Chl Dpth (m)	3.24	Hydr. Depth (m)	0.10	2.73	0.40
Conv. Total (m3/s)	829.4	Conv. (m3/s)	1.4	823.0	5.0
Length Wtd. (m)	9.80	Wetted Per. (m)	2.53	12.15	1.53
Min Ch El (m)	5.34	Shear (N/m2)	4.36	78.41	12.79
Alpha	1.04	Stream Power (N/m s)	1.57	193.67	9.43
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.00	9.33	0.61
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.67	3.14	0.40

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.42 Profile: PF 1

E.G. Elev (m)	8.50	Element	Left OB	Channel	Right OB
Vel Head (m)	0.79	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	7.71	Reach Len. (m)	14.28	14.89	15.52
Crit W.S. (m)	7.70	Flow Area (m2)	1.01	13.28	
E.G. Slope (m/m)	0.017275	Area (m2)	1.01	13.28	
Q Total (m3/s)	55.00	Flow (m3/s)	1.93	53.07	
Top Width (m)	9.05	Top Width (m)	1.40	7.65	
Vel Total (m/s)	3.85	Avg. Vel. (m/s)	1.92	4.00	
Max Chl Dpth (m)	1.89	Hydr. Depth (m)	0.72	1.74	
Conv. Total (m3/s)	418.5	Conv. (m3/s)	14.7	403.8	
Length Wtd. (m)	14.87	Wetted Per. (m)	2.25	9.90	
Min Ch El (m)	5.82	Shear (N/m2)	75.74	227.21	
Alpha	1.05	Stream Power (N/m s)	145.52	907.99	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	0.97	8.64	0.61
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.60	2.84	0.39

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .35 Profile: PF 1

E.G. Elev (m)	7.83	Element	Left OB	Channel	Right OB
Vel Head (m)	0.49	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	7.33	Reach Len. (m)	19.82	19.91	20.18
Crit W.S. (m)		Flow Area (m2)	1.60	16.55	
E.G. Slope (m/m)	0.008548	Area (m2)	1.60	16.55	
Q Total (m3/s)	55.00	Flow (m3/s)	2.63	52.37	
Top Width (m)	9.09	Top Width (m)	1.40	7.69	
Vel Total (m/s)	3.03	Avg. Vel. (m/s)	1.64	3.16	
Max Chl Dpth (m)	2.31	Hydr. Depth (m)	1.14	2.15	
Conv. Total (m3/s)	594.9	Conv. (m3/s)	28.5	566.4	
Length Wtd. (m)	19.91	Wetted Per. (m)	2.68	10.33	
Min Ch El (m)	5.02	Shear (N/m2)	50.19	134.29	
Alpha	1.05	Stream Power (N/m s)	82.42	425.00	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)	0.91	7.98	0.61
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.54	2.49	0.39

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.26 Profile: PF 1

E.G. Elev (m)	6.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.72	Reach Len. (m)	9.46	9.83	9.75
Crit W.S. (m)		Flow Area (m2)	6.00	16.11	4.12
E.G. Slope (m/m)	0.004878	Area (m2)	6.00	16.11	4.12
Q Total (m3/s)	55.00	Flow (m3/s)	10.68	38.76	5.56
Top Width (m)	9.74	Top Width (m)	2.98	4.69	2.07
Vel Total (m/s)	2.10	Avg. Vel. (m/s)	1.78	2.41	1.35
Max Chl Dpth (m)	3.60	Hydr. Depth (m)	2.01	3.44	1.99
Conv. Total (m3/s)	787.5	Conv. (m3/s)	152.8	555.0	79.7
Length Wtd. (m)	9.77	Wetted Per. (m)	5.83	9.95	6.05
Min Ch El (m)	3.12	Shear (N/m2)	49.20	77.40	32.56
Alpha	1.11	Stream Power (N/m s)	87.53	186.28	44.00
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	0.50	5.98	0.47
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.28	1.75	0.27

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.22 Profile: PF 1

E.G. Elev (m)	6.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.33	Reach Len. (m)	8.67	8.67	8.67
Crit W.S. (m)		Flow Area (m2)	0.29	19.74	1.15
E.G. Slope (m/m)	0.005717	Area (m2)	0.29	19.74	1.15
Q Total (m3/s)	55.00	Flow (m3/s)	0.18	53.51	1.31
Top Width (m)	8.42	Top Width (m)	0.75	5.76	1.90
Vel Total (m/s)	2.60	Avg. Vel. (m/s)	0.63	2.71	1.13
Max Chl Dpth (m)	3.89	Hydr. Depth (m)	0.38	3.43	0.61
Conv. Total (m3/s)	727.4	Conv. (m3/s)	2.4	707.7	17.3
Length Wtd. (m)	8.67	Wetted Per. (m)	1.51	11.49	2.49
Min Ch El (m)	2.44	Shear (N/m2)	10.70	96.31	26.00
Alpha	1.07	Stream Power (N/m s)	6.71	261.12	29.44
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.41	5.30	0.38
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.20	1.55	0.19

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.16 Profile: PF 1

E.G. Elev (m)	6.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.33	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.44	Flow Area (m2)	3.44	29.45	2.40
E.G. Slope (m/m)	0.001176	Area (m2)	3.44	29.45	2.40
Q Total (m3/s)	55.00	Flow (m3/s)	2.72	50.69	1.58
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	0.79	1.72	0.66
Max Chl Dpth (m)	5.08	Hydr. Depth (m)	2.51	4.93	2.67
Conv. Total (m3/s)	1603.6	Conv. (m3/s)	79.4	1478.0	46.2
Length Wtd. (m)	5.00	Wetted Per. (m)	3.88	10.35	3.57
Min Ch El (m)	1.25	Shear (N/m2)	10.23	32.81	7.76
Alpha	1.14	Stream Power (N/m s)	8.09	56.48	5.11
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.32	4.05	0.27
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	1.24	0.12

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .12 BR U Profile: PF 1

E.G. Elev (m)	6.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.32	Reach Len. (m)	69.57	69.57	69.57
Crit W.S. (m)	3.76	Flow Area (m2)	3.43	27.93	2.40
E.G. Slope (m/m)	0.003331	Area (m2)	3.43	27.93	2.40
Q Total (m3/s)	55.00	Flow (m3/s)	4.56	47.78	2.65
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.63	Avg. Vel. (m/s)	1.33	1.71	1.11
Max Chl Dpth (m)	5.07	Hydr. Depth (m)	2.50	4.68	2.66
Conv. Total (m3/s)	953.0	Conv. (m3/s)	79.1	827.9	46.0
Length Wtd. (m)	69.57	Wetted Per. (m)	3.87	21.63	3.56
Min Ch El (m)	1.25	Shear (N/m2)	28.92	42.18	21.97
Alpha	1.04	Stream Power (N/m s)	38.48	72.16	24.33
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	0.31	3.91	0.26
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	1.21	0.11

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .12 BR D Profile: PF 1

E.G. Elev (m)	6.22	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.10	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.31	Flow Area (m2)	3.60	28.24	3.37
E.G. Slope (m/m)	0.003431	Area (m2)	3.60	28.24	3.37
Q Total (m3/s)	55.00	Flow (m3/s)	5.08	45.29	4.63
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	1.41	1.60	1.38
Max Chl Dpth (m)	4.51	Hydr. Depth (m)	2.06	3.65	2.10
Conv. Total (m3/s)	939.0	Conv. (m3/s)	86.8	773.1	79.0
Length Wtd. (m)	5.00	Wetted Per. (m)	3.81	24.64	3.70
Min Ch El (m)	1.59	Shear (N/m2)	31.83	38.56	30.62
Alpha	1.01	Stream Power (N/m s)	44.91	61.83	42.11
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.06	1.96	0.06
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.03	0.74	0.02

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.09 Profile: PF 1

E.G. Elev (m)	6.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	6.09	Reach Len. (m)	6.97	6.96	6.97
Crit W.S. (m)		Flow Area (m2)	3.59	31.25	3.36
E.G. Slope (m/m)	0.000953	Area (m2)	3.59	31.25	3.36
Q Total (m3/s)	55.00	Flow (m3/s)	2.67	49.90	2.43
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.44	Avg. Vel. (m/s)	0.74	1.60	0.72
Max Chl Dpth (m)	4.50	Hydr. Depth (m)	2.05	4.04	2.10
Conv. Total (m3/s)	1781.8	Conv. (m3/s)	86.5	1616.5	78.8
Length Wtd. (m)	6.96	Wetted Per. (m)	3.80	10.50	3.69
Min Ch El (m)	1.59	Shear (N/m2)	8.83	27.80	8.50
Alpha	1.14	Stream Power (N/m s)	6.56	44.39	6.15
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.04	1.81	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.02	0.70	0.02

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.06 Profile: PF 1

E.G. Elev (m)	6.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.32	Wt. n-Val.		0.040	
W.S. Elev (m)	5.84	Reach Len. (m)	29.96	28.30	25.61
Crit W.S. (m)	4.07	Flow Area (m2)		21.87	
E.G. Slope (m/m)	0.005271	Area (m2)		21.87	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.60	Top Width (m)		5.60	
Vel Total (m/s)	2.52	Avg. Vel. (m/s)		2.52	
Max Chl Dpth (m)	4.02	Hydr. Depth (m)		3.90	
Conv. Total (m3/s)	757.6	Conv. (m3/s)		757.6	
Length Wtd. (m)	28.30	Wetted Per. (m)		13.41	
Min Ch El (m)	1.82	Shear (N/m2)		84.32	
Alpha	1.00	Stream Power (N/m s)		212.06	
Frctn Loss (m)		Cum Volume (1000 m3)		1.26	
C & E Loss (m)		Cum SA (1000 m2)		0.56	

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.04 Profile: PF 1

E.G. Elev (m)	4.66	Element	Left OB	Channel	Right OB
Vel Head (m)	1.08	Wt. n-Val.		0.040	
W.S. Elev (m)	3.57	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	3.57	Flow Area (m2)		11.93	
E.G. Slope (m/m)	0.026018	Area (m2)		11.93	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	4.61	Avg. Vel. (m/s)		4.61	
Max Chl Dpth (m)	2.22	Hydr. Depth (m)		2.16	
Conv. Total (m3/s)	341.0	Conv. (m3/s)		341.0	
Length Wtd. (m)	5.00	Wetted Per. (m)		9.75	
Min Ch El (m)	1.35	Shear (N/m2)		312.00	
Alpha	1.00	Stream Power (N/m s)		1438.69	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		0.78	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.40	

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.02 Profile: PF 1

E.G. Elev (m)	4.22	Element	Left OB	Channel	Right OB
Vel Head (m)	1.82	Wt. n-Val.		0.040	
W.S. Elev (m)	2.40	Reach Len. (m)	7.80	7.80	7.80
Crit W.S. (m)	2.89	Flow Area (m2)		9.20	
E.G. Slope (m/m)	0.048515	Area (m2)		9.20	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.98	Avg. Vel. (m/s)		5.98	
Max Chl Dpth (m)	1.81	Hydr. Depth (m)		1.66	
Conv. Total (m3/s)	249.7	Conv. (m3/s)		249.7	
Length Wtd. (m)	7.80	Wetted Per. (m)		8.13	
Min Ch El (m)	0.59	Shear (N/m2)		538.38	
Alpha	1.00	Stream Power (N/m s)		3219.37	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		0.68	
C & E Loss (m)	0.04	Cum SA (1000 m2)		0.34	

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.00 Profile: PF 1

E.G. Elev (m)	2.68	Element	Left OB	Channel	Right OB
Vel Head (m)	1.28	Wt. n-Val.		0.040	
W.S. Elev (m)	1.39	Reach Len. (m)			
Crit W.S. (m)	1.57	Flow Area (m2)		10.95	
E.G. Slope (m/m)	0.029949	Area (m2)		10.95	
Q Total (m3/s)	55.00	Flow (m3/s)		55.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.02	Avg. Vel. (m/s)		5.02	
Max Chl Dpth (m)	2.12	Hydr. Depth (m)		1.98	
Conv. Total (m3/s)	317.8	Conv. (m3/s)		317.8	
Length Wtd. (m)		Wetted Per. (m)		8.76	
Min Ch El (m)	-0.73	Shear (N/m2)		367.14	
Alpha	1.00	Stream Power (N/m s)		1843.22	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)			
C & E Loss (m)	0.06	Cum SA (1000 m2)			

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .825 Profile: PF 1

E.G. US. (m)	16.12	Element	Inside BR US	Inside BR DS
W.S. US. (m)	15.79	E.G. Elev (m)	15.99	15.53
Q Total (m3/s)	55.00	W.S. Elev (m)	14.95	13.20
Q Bridge (m3/s)	51.78	Crit W.S. (m)	14.95	13.90
Q Weir (m3/s)		Max Chl Dpth (m)	3.18	1.85
Weir Sta Lft (m)		Vel Total (m/s)	4.53	6.76
Weir Sta Rgt (m)		Flow Area (m2)	12.14	8.14
Weir Submerg		Froude # Chl	0.86	1.72
Weir Max Depth (m)		Specif Force (m3)	45.90	44.51
Min El Weir Flow (m)	14.74	Hydr Depth (m)	2.09	1.57
Min El Prs (m)	14.08	W.P. Total (m)	20.42	7.72
Delta EG (m)	0.95	Conv. Total (m3/s)	214.6	210.6
Delta WS (m)	2.33	Top Width (m)	5.82	5.20
BR Open Area (m2)	10.69	Frctn Loss (m)	0.24	0.33
BR Open Vel (m/s)	6.36	C & E Loss (m)	0.03	0.13
Coef of Q		Shear Total (N/m2)	382.90	704.57
Br Sel Method	Energy only	Power Total (N/m s)	1734.57	4762.48

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.695 Profile: PF 1

E.G. US. (m)	12.80	Element	Inside BR US	Inside BR DS
W.S. US. (m)	12.45	E.G. Elev (m)	12.76	12.66
Q Total (m3/s)	55.00	W.S. Elev (m)	12.39	12.35
Q Bridge (m3/s)	27.09	Crit W.S. (m)	11.03	11.00
Q Weir (m3/s)		Max Chl Dpth (m)	3.56	3.77
Weir Sta Lft (m)		Vel Total (m/s)	2.65	2.43
Weir Sta Rgt (m)		Flow Area (m2)	20.72	22.59
Weir Submerg		Froude # Chl	0.47	0.42
Weir Max Depth (m)		Specif Force (m3)	45.97	49.54
Min El Weir Flow (m)	11.23	Hydr Depth (m)	2.32	2.54
Min El Prs (m)	11.07	W.P. Total (m)	25.97	26.66
Delta EG (m)	0.17	Conv. Total (m3/s)	451.1	511.8
Delta WS (m)	0.15	Top Width (m)	8.92	8.91
BR Open Area (m2)	11.01	Frctn Loss (m)	0.08	0.03
BR Open Vel (m/s)	2.46	C & E Loss (m)	0.02	0.00
Coef of Q		Shear Total (N/m2)	116.30	95.98
Br Sel Method	Energy only	Power Total (N/m s)	308.72	233.67

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.565 Profile: PF 1

E.G. US. (m)	10.63	Element	Inside BR US	Inside BR DS
W.S. US. (m)	10.39	E.G. Elev (m)	10.60	10.49
Q Total (m3/s)	55.00	W.S. Elev (m)	10.30	10.32
Q Bridge (m3/s)	50.38	Crit W.S. (m)	8.87	8.40
Q Weir (m3/s)		Max Chl Dpth (m)	3.44	3.75
Weir Sta Lft (m)		Vel Total (m/s)	2.42	1.81
Weir Sta Rgt (m)		Flow Area (m2)	22.72	30.44
Weir Submerg		Froude # Chl	0.44	0.31
Weir Max Depth (m)		Specif Force (m3)	51.69	63.26
Min El Weir Flow (m)	9.90	Hydr Depth (m)	2.19	2.19
Min El Prs (m)	9.66	W.P. Total (m)	30.70	37.43
Delta EG (m)	0.17	Conv. Total (m3/s)	483.9	685.6
Delta WS (m)	0.08	Top Width (m)	10.39	13.88
BR Open Area (m2)	19.26	Frctn Loss (m)	0.07	0.02
BR Open Vel (m/s)	2.62	C & E Loss (m)	0.04	0.00
Coef of Q		Shear Total (N/m2)	93.72	51.31
Br Sel Method	Energy only	Power Total (N/m s)	226.93	92.73

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.505 Profile: PF 1

E.G. US. (m)	10.32	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.93	E.G. Elev (m)	10.20	10.10
Q Total (m3/s)	55.00	W.S. Elev (m)	9.27	9.26
Q Bridge (m3/s)	55.00	Crit W.S. (m)	8.64	8.53
Q Weir (m3/s)		Max Chl Dpth (m)	3.00	3.10
Weir Sta Lft (m)		Vel Total (m/s)	4.26	4.07
Weir Sta Rgt (m)		Flow Area (m2)	12.90	13.52
Weir Submerg		Froude # Chl	0.82	0.77
Weir Max Depth (m)		Specif Force (m3)	45.30	45.79
Min El Weir Flow (m)	9.72	Hydr Depth (m)		
Min El Prs (m)	8.92	W.P. Total (m)	15.57	15.83
Delta EG (m)	0.39	Conv. Total (m3/s)	284.4	304.5
Delta WS (m)	0.53	Top Width (m)		
BR Open Area (m2)	12.90	Frctn Loss (m)	0.07	0.08
BR Open Vel (m/s)	4.26	C & E Loss (m)	0.03	0.09
Coef of Q		Shear Total (N/m2)	303.84	273.46
Br Sel Method	Energy only	Power Total (N/m s)	1295.68	1112.07

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .485 Profile: PF 1

E.G. US. (m)	9.85	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.38	E.G. Elev (m)	9.76	9.55
Q Total (m3/s)	55.00	W.S. Elev (m)	9.02	8.92
Q Bridge (m3/s)	34.46	Crit W.S. (m)	8.76	8.51
Q Weir (m3/s)		Max Chl Dpth (m)	2.94	3.10
Weir Sta Lft (m)		Vel Total (m/s)	3.77	3.49
Weir Sta Rgt (m)		Flow Area (m2)	14.60	15.76
Weir Submerg		Froude # Chl	0.71	0.64
Weir Max Depth (m)		Specif Force (m3)	41.85	43.06
Min El Weir Flow (m)	8.19	Hydr Depth (m)	2.01	2.10
Min El Prs (m)	7.94	W.P. Total (m)	22.25	22.91
Delta EG (m)	0.39	Conv. Total (m3/s)	281.9	313.2
Delta WS (m)	0.49	Top Width (m)	7.27	7.52
BR Open Area (m2)	9.28	Frctn Loss (m)	0.17	0.08
BR Open Vel (m/s)	3.71	C & E Loss (m)	0.03	0.02
Coef of Q		Shear Total (N/m2)	245.02	208.05
Br Sel Method	Energy only	Power Total (N/m s)	922.76	725.89

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.471 Profile: PF 1

E.G. US. (m)	9.37	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.04	E.G. Elev (m)	9.26	8.97
Q Total (m3/s)	55.00	W.S. Elev (m)	8.34	8.52
Q Bridge (m3/s)	55.00	Crit W.S. (m)	7.91	7.50
Q Weir (m3/s)		Max Chl Dpth (m)	2.58	3.18
Weir Sta Lft (m)		Vel Total (m/s)	4.24	2.93
Weir Sta Rgt (m)		Flow Area (m2)	12.99	18.74
Weir Submerg		Froude # Chl	0.90	0.57
Weir Max Depth (m)		Specif Force (m3)	41.62	44.67
Min El Weir Flow (m)	8.39	Hydr Depth (m)		1.60
Min El Prs (m)	7.92	W.P. Total (m)	17.15	31.18
Delta EG (m)	0.48	Conv. Total (m3/s)	269.7	353.2
Delta WS (m)	0.47	Top Width (m)		11.69
BR Open Area (m2)	12.99	Frctn Loss (m)	0.15	0.04
BR Open Vel (m/s)	4.24	C & E Loss (m)	0.14	0.04
Coef of Q		Shear Total (N/m2)	308.80	142.91
Br Sel Method	Energy only	Power Total (N/m s)	1307.89	419.34

Plan: RANZI 200 P RIO RANZI Reach 1 RS: .12 Profile: PF 1

E.G. US. (m)	6.47	Element	Inside BR US	Inside BR DS
W.S. US. (m)	6.33	E.G. Elev (m)	6.46	6.22
Q Total (m3/s)	55.00	W.S. Elev (m)	6.32	6.10
Q Bridge (m3/s)	10.66	Crit W.S. (m)	3.76	4.31
Q Weir (m3/s)		Max Chl Dpth (m)	5.07	4.51
Weir Sta Lft (m)		Vel Total (m/s)	1.63	1.56
Weir Sta Rgt (m)		Flow Area (m2)	33.75	35.21
Weir Submerg		Froude # Chl	0.23	0.25
Weir Max Depth (m)		Specif Force (m3)	85.29	73.55
Min El Weir Flow (m)	3.94	Hydr Depth (m)	4.10	3.18
Min El Prs (m)	3.25	W.P. Total (m)	29.06	32.15
Delta EG (m)	0.26	Conv. Total (m3/s)	953.0	939.0
Delta WS (m)	0.24	Top Width (m)	8.24	11.08
BR Open Area (m2)	11.06	Frctn Loss (m)	0.24	0.01
BR Open Vel (m/s)	0.96	C & E Loss (m)	0.00	0.00
Coef of Q		Shear Total (N/m2)	37.93	36.85
Br Sel Method	Energy only	Power Total (N/m s)	61.81	57.56

Plan: RANZI 200 P RIO RANZI Reach 1 RS: 0.05 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (m3/s)	41.99	Culv Full Len (m)	16.79
# Barrels	1	Culv Vel US (m/s)	4.79
Q Barrel (m3/s)	41.99	Culv Vel DS (m/s)	4.86
E.G. US. (m)	6.16	Culv Inv El Up (m)	1.88
W.S. US. (m)	5.84	Culv Inv El Dn (m)	1.68
E.G. DS (m)	4.66	Culv Frctn Ls (m)	1.15
W.S. DS (m)	3.57	Culv Exit Loss (m)	0.12
Delta EG (m)	1.50	Culv Entr Loss (m)	0.23
Delta WS (m)	2.26	Q Weir (m3/s)	13.01
E.G. IC (m)	6.14	Weir Sta Lft (m)	0.00
E.G. OC (m)	6.16	Weir Sta Rgt (m)	5.60
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (m)	3.88	Weir Max Depth (m)	1.38
Culv WS Outlet (m)	3.57	Weir Avg Depth (m)	1.38
Culv Nml Depth (m)	2.00	Weir Flow Area (m2)	7.70
Culv Crt Depth (m)	1.69	Min El Weir Flow (m)	4.78

RIO RANZI

CONDIZIONE CON PORTO TURISTICO

CANTIERI NAVALI RODRIGUEZ

Tempo di ritorno 500 anni

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.84 Profile: PF 1

E.G. Elev (m)	16.74	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	16.57	Reach Len. (m)	6.83	6.82	6.82
Crit W.S. (m)	14.50	Flow Area (m2)	9.10	31.82	2.06
E.G. Slope (m/m)	0.001724	Area (m2)	9.10	31.82	2.06
Q Total (m3/s)	75.00	Flow (m3/s)	11.44	61.86	1.70
Top Width (m)	13.80	Top Width (m)	5.04	7.54	1.22
Vel Total (m/s)	1.75	Avg. Vel. (m/s)	1.26	1.94	0.83
Max Chl Dpth (m)	4.46	Hydr. Depth (m)	1.81	4.22	1.69
Conv. Total (m3/s)	1806.2	Conv. (m3/s)	275.4	1489.8	40.9
Length Wtd. (m)	6.82	Wetted Per. (m)	6.83	12.41	2.90
Min Ch El (m)	12.11	Shear (N/m2)	22.53	43.34	11.99
Alpha	1.11	Stream Power (N/m s)	28.31	84.26	9.90
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	2.11	19.63	1.47
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.21	5.46	0.87

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.83 Profile: PF 1

E.G. Elev (m)	16.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.47	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	16.23	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	14.81	Flow Area (m2)	1.40	23.12	1.44
E.G. Slope (m/m)	0.005365	Area (m2)	1.40	23.12	1.44
Q Total (m3/s)	75.00	Flow (m3/s)	1.81	71.31	1.87
Top Width (m)	8.14	Top Width (m)	1.13	5.83	1.18
Vel Total (m/s)	2.89	Avg. Vel. (m/s)	1.30	3.08	1.30
Max Chl Dpth (m)	4.46	Hydr. Depth (m)	1.24	3.97	1.22
Conv. Total (m3/s)	1024.0	Conv. (m3/s)	24.8	973.6	25.6
Length Wtd. (m)	5.00	Wetted Per. (m)	2.35	10.57	2.40
Min Ch El (m)	11.77	Shear (N/m2)	31.34	115.04	31.54
Alpha	1.09	Stream Power (N/m s)	40.64	354.87	41.06
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	2.07	19.45	1.46
C & E Loss (m)	0.06	Cum SA (1000 m2)	1.19	5.41	0.86

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .825 BR U Profile: PF 1

E.G. Elev (m)	16.58	Element	Left OB	Channel	Right OB
Vel Head (m)	1.03	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	15.55	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	15.55	Flow Area (m2)	0.63	15.67	0.64
E.G. Slope (m/m)	0.047538	Area (m2)	0.63	15.67	0.64
Q Total (m3/s)	75.00	Flow (m3/s)	1.81	71.39	1.80
Top Width (m)	8.14	Top Width (m)	1.13	5.83	1.18
Vel Total (m/s)	4.43	Avg. Vel. (m/s)	2.86	4.56	2.82
Max Chl Dpth (m)	3.78	Hydr. Depth (m)	0.56	2.69	0.54
Conv. Total (m3/s)	344.0	Conv. (m3/s)	8.3	327.4	8.3
Length Wtd. (m)	5.00	Wetted Per. (m)	1.67	20.51	1.72
Min Ch El (m)	11.77	Shear (N/m2)	176.95	356.22	173.11
Alpha	1.03	Stream Power (N/m s)	505.65	1622.87	487.51
Frctn Loss (m)	0.24	Cum Volume (1000 m3)	2.06	19.35	1.46
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.18	5.39	0.86

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .825 BR D Profile: PF 1

E.G. Elev (m)	16.26	Element	Left OB	Channel	Right OB
Vel Head (m)	1.33	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	14.93	Reach Len. (m)	3.20	3.20	3.20
Crit W.S. (m)	15.19	Flow Area (m2)	0.30	14.25	0.34
E.G. Slope (m/m)	0.069790	Area (m2)	0.30	14.25	0.34
Q Total (m3/s)	75.00	Flow (m3/s)	0.68	73.50	0.82
Top Width (m)	8.16	Top Width (m)	1.29	5.65	1.22
Vel Total (m/s)	5.04	Avg. Vel. (m/s)	2.25	5.16	2.44
Max Chl Dpth (m)	3.58	Hydr. Depth (m)	0.23	2.52	0.28
Conv. Total (m3/s)	283.9	Conv. (m3/s)	2.6	278.2	3.1
Length Wtd. (m)	3.20	Wetted Per. (m)	1.52	20.63	1.50
Min Ch El (m)	11.35	Shear (N/m2)	136.01	472.53	153.89
Alpha	1.03	Stream Power (N/m s)	305.92	2437.86	375.84
Frctn Loss (m)	0.29	Cum Volume (1000 m3)	2.06	19.27	1.45
C & E Loss (m)	0.03	Cum SA (1000 m2)	1.17	5.36	0.85

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.82 Profile: PF 1

E.G. Elev (m)	16.00	Element	Left OB	Channel	Right OB
Vel Head (m)	2.16	Wt. n-Val.		0.040	
W.S. Elev (m)	13.84	Reach Len. (m)	11.17	12.17	12.21
Crit W.S. (m)	14.42	Flow Area (m2)		11.53	
E.G. Slope (m/m)	0.048798	Area (m2)		11.53	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.41	Top Width (m)		5.41	
Vel Total (m/s)	6.50	Avg. Vel. (m/s)		6.50	
Max Chl Dpth (m)	2.49	Hydr. Depth (m)		2.13	
Conv. Total (m3/s)	339.5	Conv. (m3/s)		339.5	
Length Wtd. (m)	12.17	Wetted Per. (m)		9.02	
Min Ch El (m)	11.35	Shear (N/m2)		611.63	
Alpha	1.00	Stream Power (N/m s)		3978.12	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)	2.06	19.23	1.45
C & E Loss (m)	0.08	Cum SA (1000 m2)	1.17	5.34	0.85

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.77 Profile: PF 1

E.G. Elev (m)	14.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.50	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	13.91	Reach Len. (m)	42.11	41.59	40.95
Crit W.S. (m)		Flow Area (m2)	2.80	20.65	2.09
E.G. Slope (m/m)	0.007639	Area (m2)	2.80	20.65	2.09
Q Total (m3/s)	75.00	Flow (m3/s)	4.84	67.12	3.04
Top Width (m)	8.90	Top Width (m)	2.00	5.54	1.36
Vel Total (m/s)	2.94	Avg. Vel. (m/s)	1.73	3.25	1.45
Max Chl Dpth (m)	4.13	Hydr. Depth (m)	1.40	3.73	1.54
Conv. Total (m3/s)	858.1	Conv. (m3/s)	55.4	767.9	34.8
Length Wtd. (m)	41.58	Wetted Per. (m)	3.97	11.38	3.87
Min Ch El (m)	9.78	Shear (N/m2)	52.82	135.91	40.52
Alpha	1.13	Stream Power (N/m s)	91.43	441.77	58.78
Frctn Loss (m)	0.47	Cum Volume (1000 m3)	2.03	18.47	1.42
C & E Loss (m)	0.05	Cum SA (1000 m2)	1.12	5.07	0.80

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.73 Profile: PF 1

E.G. Elev (m)	13.88	Element	Left OB	Channel	Right OB
Vel Head (m)	1.04	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.84	Reach Len. (m)	7.94	7.74	6.73
Crit W.S. (m)	12.70	Flow Area (m2)	0.15	15.76	1.22
E.G. Slope (m/m)	0.018561	Area (m2)	0.15	15.76	1.22
Q Total (m3/s)	75.00	Flow (m3/s)	0.17	72.37	2.46
Top Width (m)	7.29	Top Width (m)	0.42	5.64	1.23
Vel Total (m/s)	4.38	Avg. Vel. (m/s)	1.14	4.59	2.01
Max Chl Dpth (m)	2.83	Hydr. Depth (m)	0.36	2.80	0.99
Conv. Total (m3/s)	550.5	Conv. (m3/s)	1.3	531.2	18.0
Length Wtd. (m)	7.70	Wetted Per. (m)	0.78	10.07	2.68
Min Ch El (m)	10.01	Shear (N/m2)	35.11	284.84	82.80
Alpha	1.07	Stream Power (N/m s)	39.92	1307.65	166.81
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	1.97	17.71	1.35
C & E Loss (m)	0.05	Cum SA (1000 m2)	1.07	4.84	0.75

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.70 Profile: PF 1

E.G. Elev (m)	13.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.43	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	13.03	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.88	Flow Area (m2)	2.27	22.92	2.10
E.G. Slope (m/m)	0.004679	Area (m2)	2.27	22.92	2.10
Q Total (m3/s)	75.00	Flow (m3/s)	3.22	68.89	2.89
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.75	Avg. Vel. (m/s)	1.42	3.01	1.38
Max Chl Dpth (m)	4.20	Hydr. Depth (m)	1.55	3.80	1.48
Conv. Total (m3/s)	1096.4	Conv. (m3/s)	47.1	1007.1	42.2
Length Wtd. (m)	5.00	Wetted Per. (m)	3.01	9.84	2.90
Min Ch El (m)	8.83	Shear (N/m2)	34.69	106.93	33.20
Alpha	1.12	Stream Power (N/m s)	49.22	321.40	45.77
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.94	17.28	1.32
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.05	4.70	0.72

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.695 BR U Profile: PF 1

E.G. Elev (m)	13.42	Element	Left OB	Channel	Right OB
Vel Head (m)	0.43	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.99	Reach Len. (m)	6.40	6.40	6.40
Crit W.S. (m)	12.03	Flow Area (m2)	2.22	21.79	2.04
E.G. Slope (m/m)	0.013778	Area (m2)	2.22	21.79	2.04
Q Total (m3/s)	75.00	Flow (m3/s)	5.36	64.84	4.79
Top Width (m)	8.92	Top Width (m)	1.47	6.03	1.42
Vel Total (m/s)	2.88	Avg. Vel. (m/s)	2.42	2.98	2.35
Max Chl Dpth (m)	4.16	Hydr. Depth (m)	1.51	3.61	1.44
Conv. Total (m3/s)	638.9	Conv. (m3/s)	45.7	552.4	40.8
Length Wtd. (m)	6.40	Wetted Per. (m)	2.97	21.33	2.86
Min Ch El (m)	8.83	Shear (N/m2)	100.96	137.99	96.58
Alpha	1.02	Stream Power (N/m s)	243.96	410.67	226.58
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.93	17.17	1.31
C & E Loss (m)	0.02	Cum SA (1000 m2)	1.04	4.67	0.71

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.695 BR D Profile: PF 1

E.G. Elev (m)	13.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.95	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	11.78	Flow Area (m2)	2.86	23.41	1.66
E.G. Slope (m/m)	0.011238	Area (m2)	2.86	23.41	1.66
Q Total (m3/s)	75.00	Flow (m3/s)	6.79	64.99	3.22
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.69	Avg. Vel. (m/s)	2.37	2.78	1.94
Max Chl Dpth (m)	4.37	Hydr. Depth (m)	1.68	3.79	1.61
Conv. Total (m3/s)	707.5	Conv. (m3/s)	64.0	613.1	30.4
Length Wtd. (m)	5.00	Wetted Per. (m)	3.38	21.84	2.64
Min Ch El (m)	8.58	Shear (N/m2)	93.34	118.13	69.19
Alpha	1.02	Stream Power (N/m s)	221.44	327.93	134.44
Frctn Loss (m)	0.03	Cum Volume (1000 m3)	1.92	17.03	1.30
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.03	4.63	0.70

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.69 Profile: PF 1

E.G. Elev (m)	13.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.89	Reach Len. (m)	8.42	8.28	8.14
Crit W.S. (m)		Flow Area (m2)	2.76	23.96	1.59
E.G. Slope (m/m)	0.004125	Area (m2)	2.76	23.96	1.59
Q Total (m3/s)	75.00	Flow (m3/s)	3.92	69.22	1.86
Top Width (m)	8.91	Top Width (m)	1.70	6.18	1.03
Vel Total (m/s)	2.65	Avg. Vel. (m/s)	1.42	2.89	1.17
Max Chl Dpth (m)	4.31	Hydr. Depth (m)	1.62	3.88	1.55
Conv. Total (m3/s)	1167.8	Conv. (m3/s)	61.0	1077.8	28.9
Length Wtd. (m)	8.28	Wetted Per. (m)	3.32	9.93	2.58
Min Ch El (m)	8.58	Shear (N/m2)	33.64	97.62	25.02
Alpha	1.12	Stream Power (N/m s)	47.77	282.03	29.16
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	1.90	16.91	1.29
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.02	4.60	0.70

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.66 Profile: PF 1

E.G. Elev (m)	13.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.44	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	12.72	Reach Len. (m)	8.12	7.98	7.71
Crit W.S. (m)		Flow Area (m2)	1.33	23.16	2.42
E.G. Slope (m/m)	0.005237	Area (m2)	1.33	23.16	2.42
Q Total (m3/s)	75.00	Flow (m3/s)	1.63	69.69	3.69
Top Width (m)	9.76	Top Width (m)	1.55	6.48	1.73
Vel Total (m/s)	2.79	Avg. Vel. (m/s)	1.22	3.01	1.52
Max Chl Dpth (m)	3.84	Hydr. Depth (m)	0.86	3.57	1.40
Conv. Total (m3/s)	1036.4	Conv. (m3/s)	22.5	963.0	51.0
Length Wtd. (m)	7.96	Wetted Per. (m)	2.40	10.79	3.13
Min Ch El (m)	8.88	Shear (N/m2)	28.49	110.17	39.72
Alpha	1.10	Stream Power (N/m s)	34.80	331.53	60.54
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.85	16.34	1.24
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.98	4.44	0.66

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.63 Profile: PF 1

E.G. Elev (m)	12.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.56	Wt. n-Val.		0.040	0.040
W.S. Elev (m)	12.33	Reach Len. (m)	9.26	9.15	8.93
Crit W.S. (m)		Flow Area (m2)		21.04	2.25
E.G. Slope (m/m)	0.007786	Area (m2)		21.04	2.25
Q Total (m3/s)	75.00	Flow (m3/s)		71.28	3.72
Top Width (m)	6.59	Top Width (m)		5.48	1.11
Vel Total (m/s)	3.22	Avg. Vel. (m/s)		3.39	1.65
Max Chl Dpth (m)	4.19	Hydr. Depth (m)		3.84	2.03
Conv. Total (m3/s)	850.0	Conv. (m3/s)		807.8	42.2
Length Wtd. (m)	9.14	Wetted Per. (m)		11.06	3.48
Min Ch El (m)	8.14	Shear (N/m2)		145.26	49.47
Alpha	1.07	Stream Power (N/m s)		492.02	81.70
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.84	15.67	1.17
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.96	4.25	0.62

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.59 Profile: PF 1

E.G. Elev (m)	12.36	Element	Left OB	Channel	Right OB
Vel Head (m)	1.10	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	11.27	Reach Len. (m)	7.33	7.18	6.54
Crit W.S. (m)	11.27	Flow Area (m2)	1.92	14.70	
E.G. Slope (m/m)	0.019335	Area (m2)	1.92	14.70	
Q Total (m3/s)	75.00	Flow (m3/s)	5.17	69.83	
Top Width (m)	7.63	Top Width (m)	1.68	5.95	
Vel Total (m/s)	4.51	Avg. Vel. (m/s)	2.69	4.75	
Max Chl Dpth (m)	3.27	Hydr. Depth (m)	1.14	2.47	
Conv. Total (m3/s)	539.4	Conv. (m3/s)	37.2	502.2	
Length Wtd. (m)	7.19	Wetted Per. (m)	2.82	9.19	
Min Ch El (m)	8.00	Shear (N/m2)	129.18	303.05	
Alpha	1.06	Stream Power (N/m s)	347.71	1440.14	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	1.82	15.01	1.13
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.93	4.04	0.58

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.57 Profile: PF 1

E.G. Elev (m)	11.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.28	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.29	Flow Area (m2)	1.33	32.46	1.06
E.G. Slope (m/m)	0.002379	Area (m2)	1.33	32.46	1.06
Q Total (m3/s)	75.00	Flow (m3/s)	1.13	73.03	0.83
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.15	Avg. Vel. (m/s)	0.85	2.25	0.79
Max Chl Dpth (m)	4.42	Hydr. Depth (m)	1.07	3.98	1.08
Conv. Total (m3/s)	1537.6	Conv. (m3/s)	23.2	1497.3	17.1
Length Wtd. (m)	5.00	Wetted Per. (m)	2.29	12.95	2.04
Min Ch El (m)	6.86	Shear (N/m2)	13.56	58.49	12.10
Alpha	1.07	Stream Power (N/m s)	11.52	131.62	9.53
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.80	14.58	1.12
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.90	3.89	0.57

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.565 BR U Profile: PF 1

E.G. Elev (m)	11.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.23	Reach Len. (m)	8.16	8.16	8.16
Crit W.S. (m)	9.29	Flow Area (m2)	1.27	30.14	1.01
E.G. Slope (m/m)	0.008309	Area (m2)	1.27	30.14	1.01
Q Total (m3/s)	75.00	Flow (m3/s)	1.98	71.56	1.46
Top Width (m)	10.39	Top Width (m)	1.25	8.16	0.98
Vel Total (m/s)	2.31	Avg. Vel. (m/s)	1.56	2.37	1.45
Max Chl Dpth (m)	4.37	Hydr. Depth (m)	1.02	3.69	1.03
Conv. Total (m3/s)	822.8	Conv. (m3/s)	21.7	785.0	16.1
Length Wtd. (m)	8.16	Wetted Per. (m)	2.24	28.34	1.99
Min Ch El (m)	6.86	Shear (N/m2)	46.14	86.65	41.32
Alpha	1.02	Stream Power (N/m s)	71.98	205.74	59.89
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.79	14.42	1.12
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.90	3.85	0.57

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.565 BR D Profile: PF 1

E.G. Elev (m)	11.43	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.27	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.78	Flow Area (m2)	4.48	36.82	2.45
E.G. Slope (m/m)	0.004031	Area (m2)	4.48	36.82	2.45
Q Total (m3/s)	75.00	Flow (m3/s)	6.96	64.75	3.28
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.71	Avg. Vel. (m/s)	1.55	1.76	1.34
Max Chl Dpth (m)	4.70	Hydr. Depth (m)	1.38	4.16	1.38
Conv. Total (m3/s)	1181.3	Conv. (m3/s)	109.7	1019.9	51.7
Length Wtd. (m)	5.00	Wetted Per. (m)	4.63	31.56	3.15
Min Ch El (m)	6.57	Shear (N/m2)	38.25	46.11	30.69
Alpha	1.01	Stream Power (N/m s)	59.39	81.10	41.14
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	1.77	14.15	1.10
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.88	3.78	0.56

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.56 Profile: PF 1

E.G. Elev (m)	11.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	11.26	Reach Len. (m)	9.69	10.00	10.27
Crit W.S. (m)		Flow Area (m2)	4.51	38.85	2.51
E.G. Slope (m/m)	0.001337	Area (m2)	4.51	38.85	2.51
Q Total (m3/s)	75.00	Flow (m3/s)	4.05	69.00	1.96
Top Width (m)	13.88	Top Width (m)	3.26	8.85	1.77
Vel Total (m/s)	1.64	Avg. Vel. (m/s)	0.90	1.78	0.78
Max Chl Dpth (m)	4.69	Hydr. Depth (m)	1.38	4.39	1.42
Conv. Total (m3/s)	2050.9	Conv. (m3/s)	110.6	1886.8	53.5
Length Wtd. (m)	9.99	Wetted Per. (m)	4.64	14.34	3.19
Min Ch El (m)	6.57	Shear (N/m2)	12.74	35.51	10.31
Alpha	1.11	Stream Power (N/m s)	11.43	63.08	8.03
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	1.75	13.96	1.09
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.86	3.74	0.55

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.51 Profile: PF 1

E.G. Elev (m)	11.30	Element	Left OB	Channel	Right OB
Vel Head (m)	0.38	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	10.92	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.14	Flow Area (m2)	2.53	25.38	0.69
E.G. Slope (m/m)	0.004374	Area (m2)	2.53	25.38	0.69
Q Total (m3/s)	75.00	Flow (m3/s)	3.58	70.80	0.62
Top Width (m)	8.27	Top Width (m)	1.72	5.92	0.63
Vel Total (m/s)	2.62	Avg. Vel. (m/s)	1.42	2.79	0.90
Max Chl Dpth (m)	4.65	Hydr. Depth (m)	1.47	4.29	1.10
Conv. Total (m3/s)	1134.0	Conv. (m3/s)	54.1	1070.5	9.4
Length Wtd. (m)	5.00	Wetted Per. (m)	3.19	11.58	1.73
Min Ch El (m)	6.27	Shear (N/m2)	33.99	93.99	17.18
Alpha	1.08	Stream Power (N/m s)	48.13	262.15	15.43
Frctn Loss (m)	0.06	Cum Volume (1000 m3)	1.61	12.67	1.02
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.77	3.44	0.50

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.505 BR U Profile: PF 1

E.G. Elev (m)	11.11	Element	Left OB	Channel	Right OB
Vel Head (m)	1.72	Wt. n-Val.		0.040	
W.S. Elev (m)	9.39	Reach Len. (m)	2.00	2.00	2.00
Crit W.S. (m)	8.76	Flow Area (m2)		12.90	
E.G. Slope (m/m)	0.069564	Area (m2)		12.90	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)		Top Width (m)			
Vel Total (m/s)	5.82	Avg. Vel. (m/s)		5.82	
Max Chl Dpth (m)	3.12	Hydr. Depth (m)			
Conv. Total (m3/s)	284.4	Conv. (m3/s)		284.4	
Length Wtd. (m)	2.00	Wetted Per. (m)		15.57	
Min Ch El (m)	6.27	Shear (N/m2)		564.98	
Alpha	1.00	Stream Power (N/m s)		3285.44	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	1.60	12.57	1.02
C & E Loss (m)	0.05	Cum SA (1000 m2)	0.76	3.43	0.50

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.505 BR D Profile: PF 1

E.G. Elev (m)	10.93	Element	Left OB	Channel	Right OB
Vel Head (m)	1.57	Wt. n-Val.	0.000	0.040	
W.S. Elev (m)	9.37	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.75	Flow Area (m2)	0.00	13.52	
E.G. Slope (m/m)	0.060680	Area (m2)	0.00	13.52	
Q Total (m3/s)	75.00	Flow (m3/s)	0.00	75.00	
Top Width (m)	0.12	Top Width (m)	0.12		
Vel Total (m/s)	5.55	Avg. Vel. (m/s)	0.11	5.55	
Max Chl Dpth (m)	3.21	Hydr. Depth (m)	0.00		
Conv. Total (m3/s)	304.5	Conv. (m3/s)	0.0	304.5	
Length Wtd. (m)	5.00	Wetted Per. (m)	0.13	15.83	
Min Ch El (m)	6.16	Shear (N/m2)		508.49	
Alpha	1.00	Stream Power (N/m s)		2819.86	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)	1.60	12.54	1.02
C & E Loss (m)	0.26	Cum SA (1000 m2)	0.76	3.43	0.50

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .5 Profile: PF 1

E.G. Elev (m)	10.56	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.87	Reach Len. (m)	6.82	7.50	7.93
Crit W.S. (m)		Flow Area (m2)	0.91	19.83	0.10
E.G. Slope (m/m)	0.010775	Area (m2)	0.91	19.83	0.10
Q Total (m3/s)	75.00	Flow (m3/s)	1.30	73.63	0.07
Top Width (m)	8.27	Top Width (m)	1.72	5.92	0.63
Vel Total (m/s)	3.60	Avg. Vel. (m/s)	1.42	3.71	0.66
Max Chl Dpth (m)	3.71	Hydr. Depth (m)	0.53	3.35	0.16
Conv. Total (m3/s)	722.5	Conv. (m3/s)	12.5	709.3	0.6
Length Wtd. (m)	7.48	Wetted Per. (m)	2.25	11.58	0.79
Min Ch El (m)	6.16	Shear (N/m2)	42.89	180.87	13.57
Alpha	1.05	Stream Power (N/m s)	61.02	671.62	8.96
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.60	12.46	1.02
C & E Loss (m)	0.02	Cum SA (1000 m2)	0.76	3.41	0.50

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .49 Profile: PF 1

E.G. Elev (m)	10.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.63	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.85	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.01	Flow Area (m2)	1.83	19.67	0.84
E.G. Slope (m/m)	0.007923	Area (m2)	1.83	19.67	0.84
Q Total (m3/s)	75.00	Flow (m3/s)	3.24	70.69	1.08
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	3.36	Avg. Vel. (m/s)	1.77	3.59	1.28
Max Chl Dpth (m)	3.77	Hydr. Depth (m)	1.03	3.62	1.28
Conv. Total (m3/s)	842.6	Conv. (m3/s)	36.4	794.1	12.1
Length Wtd. (m)	5.00	Wetted Per. (m)	2.57	9.59	1.94
Min Ch El (m)	6.08	Shear (N/m2)	55.22	159.40	33.80
Alpha	1.09	Stream Power (N/m s)	97.86	572.70	43.19
Frctn Loss (m)	0.07	Cum Volume (1000 m3)	1.59	12.31	1.02
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.75	3.37	0.49

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .485 BR U Profile: PF 1

E.G. Elev (m)	10.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.89	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.49	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.27	Flow Area (m2)	1.19	16.38	0.60
E.G. Slope (m/m)	0.037045	Area (m2)	1.19	16.38	0.60
Q Total (m3/s)	75.00	Flow (m3/s)	3.78	69.69	1.53
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	4.13	Avg. Vel. (m/s)	3.18	4.25	2.54
Max Chl Dpth (m)	3.41	Hydr. Depth (m)	0.67	3.02	0.92
Conv. Total (m3/s)	389.7	Conv. (m3/s)	19.6	362.1	8.0
Length Wtd. (m)	5.00	Wetted Per. (m)	2.21	19.72	1.58
Min Ch El (m)	6.08	Shear (N/m2)	195.25	301.91	139.32
Alpha	1.02	Stream Power (N/m s)	621.04	1284.10	353.86
Frctn Loss (m)	0.17	Cum Volume (1000 m3)	1.58	12.22	1.01
C & E Loss (m)	0.04	Cum SA (1000 m2)	0.74	3.34	0.49

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .485 BR D Profile: PF 1

E.G. Elev (m)	10.17	Element	Left OB	Channel	Right OB
Vel Head (m)	0.77	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.41	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	9.02	Flow Area (m2)	1.48	17.35	0.72
E.G. Slope (m/m)	0.030135	Area (m2)	1.48	17.35	0.72
Q Total (m3/s)	75.00	Flow (m3/s)	4.72	68.54	1.74
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	3.84	Avg. Vel. (m/s)	3.20	3.95	2.40
Max Chl Dpth (m)	3.59	Hydr. Depth (m)	0.83	3.20	1.09
Conv. Total (m3/s)	432.0	Conv. (m3/s)	27.2	394.8	10.0
Length Wtd. (m)	5.00	Wetted Per. (m)	2.33	19.98	1.75
Min Ch El (m)	5.82	Shear (N/m2)	187.31	256.62	121.68
Alpha	1.02	Stream Power (N/m s)	599.81	1013.70	292.27
Frctn Loss (m)	0.08	Cum Volume (1000 m3)	1.58	12.14	1.01
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.73	3.32	0.49

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.48 Profile: PF 1

E.G. Elev (m)	10.08	Element	Left OB	Channel	Right OB
Vel Head (m)	0.75	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.33	Reach Len. (m)	2.61	2.58	2.90
Crit W.S. (m)		Flow Area (m2)	1.38	18.30	0.68
E.G. Slope (m/m)	0.010349	Area (m2)	1.38	18.30	0.68
Q Total (m3/s)	75.00	Flow (m3/s)	2.48	71.59	0.93
Top Width (m)	7.86	Top Width (m)	1.77	5.43	0.66
Vel Total (m/s)	3.69	Avg. Vel. (m/s)	1.80	3.91	1.38
Max Chl Dpth (m)	3.51	Hydr. Depth (m)	0.78	3.37	1.02
Conv. Total (m3/s)	737.2	Conv. (m3/s)	24.4	703.7	9.2
Length Wtd. (m)	2.59	Wetted Per. (m)	2.32	9.59	1.68
Min Ch El (m)	5.82	Shear (N/m2)	60.36	193.64	40.71
Alpha	1.09	Stream Power (N/m s)	108.57	757.59	56.32
Frctn Loss (m)	0.02	Cum Volume (1000 m3)	1.57	12.05	1.01
C & E Loss (m)	0.10	Cum SA (1000 m2)	0.72	3.29	0.48

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.472 Profile: PF 1

E.G. Elev (m)	9.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.41	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.55	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	8.34	Flow Area (m2)	1.02	25.14	1.12
E.G. Slope (m/m)	0.004688	Area (m2)	1.02	25.14	1.12
Q Total (m3/s)	75.00	Flow (m3/s)	1.11	72.65	1.25
Top Width (m)	9.83	Top Width (m)	1.11	7.47	1.25
Vel Total (m/s)	2.75	Avg. Vel. (m/s)	1.08	2.89	1.11
Max Chl Dpth (m)	3.79	Hydr. Depth (m)	0.92	3.37	0.90
Conv. Total (m3/s)	1095.4	Conv. (m3/s)	16.2	1061.1	18.2
Length Wtd. (m)	5.00	Wetted Per. (m)	2.03	11.47	2.14
Min Ch El (m)	5.76	Shear (N/m2)	23.15	100.81	24.06
Alpha	1.08	Stream Power (N/m s)	25.08	291.27	26.74
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.57	11.99	1.01
C & E Loss (m)	0.05	Cum SA (1000 m2)	0.72	3.27	0.48

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.471 BR U Profile: PF 1

E.G. Elev (m)	9.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.91	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	8.95	Reach Len. (m)	4.79	4.79	4.79
Crit W.S. (m)	8.95	Flow Area (m2)	0.35	17.21	0.37
E.G. Slope (m/m)	0.048086	Area (m2)	0.35	17.21	0.37
Q Total (m3/s)	75.00	Flow (m3/s)	0.76	73.47	0.77
Top Width (m)	9.83	Top Width (m)	1.11	7.47	1.25
Vel Total (m/s)	4.18	Avg. Vel. (m/s)	2.16	4.27	2.10
Max Chl Dpth (m)	3.19	Hydr. Depth (m)	0.32	2.30	0.29
Conv. Total (m3/s)	342.0	Conv. (m3/s)	3.5	335.1	3.5
Length Wtd. (m)	4.79	Wetted Per. (m)	1.43	25.05	1.54
Min Ch El (m)	5.76	Shear (N/m2)	116.34	324.02	112.10
Alpha	1.03	Stream Power (N/m s)	250.88	1383.20	235.82
Frctn Loss (m)	0.14	Cum Volume (1000 m3)	1.56	11.89	1.00
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.71	3.23	0.47

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.471 BR D Profile: PF 1

E.G. Elev (m)	9.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.03	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	7.70	Flow Area (m2)	1.37	22.33	0.96
E.G. Slope (m/m)	0.020469	Area (m2)	1.37	22.33	0.96
Q Total (m3/s)	75.00	Flow (m3/s)	2.91	69.96	2.13
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	3.04	Avg. Vel. (m/s)	2.13	3.13	2.21
Max Chl Dpth (m)	3.69	Hydr. Depth (m)	0.56	2.76	0.85
Conv. Total (m3/s)	524.2	Conv. (m3/s)	20.3	489.0	14.9
Length Wtd. (m)	5.00	Wetted Per. (m)	2.98	27.23	1.98
Min Ch El (m)	5.34	Shear (N/m2)	91.97	164.59	97.75
Alpha	1.02	Stream Power (N/m s)	195.49	515.72	216.40
Frctn Loss (m)	0.26	Cum Volume (1000 m3)	1.56	11.79	1.00
C & E Loss (m)	0.13	Cum SA (1000 m2)	0.70	3.20	0.47

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.47 Profile: PF 1

E.G. Elev (m)	9.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.39	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	9.05	Reach Len. (m)	9.95	9.81	9.26
Crit W.S. (m)		Flow Area (m2)	1.43	25.97	0.99
E.G. Slope (m/m)	0.004531	Area (m2)	1.43	25.97	0.99
Q Total (m3/s)	75.00	Flow (m3/s)	1.47	72.49	1.04
Top Width (m)	11.69	Top Width (m)	2.46	8.10	1.13
Vel Total (m/s)	2.64	Avg. Vel. (m/s)	1.02	2.79	1.05
Max Chl Dpth (m)	3.71	Hydr. Depth (m)	0.58	3.21	0.88
Conv. Total (m3/s)	1114.3	Conv. (m3/s)	21.8	1076.9	15.5
Length Wtd. (m)	9.80	Wetted Per. (m)	3.01	12.15	2.00
Min Ch El (m)	5.34	Shear (N/m2)	21.12	94.94	22.00
Alpha	1.08	Stream Power (N/m s)	21.65	265.05	23.18
Frctn Loss (m)	0.05	Cum Volume (1000 m3)	1.55	11.67	0.99
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.69	3.16	0.46

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.42 Profile: PF 1

E.G. Elev (m)	9.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.82	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.24	Reach Len. (m)	14.28	14.89	15.52
Crit W.S. (m)	8.06	Flow Area (m2)	1.76	17.39	
E.G. Slope (m/m)	0.013589	Area (m2)	1.76	17.39	
Q Total (m3/s)	75.00	Flow (m3/s)	3.76	71.24	
Top Width (m)	9.10	Top Width (m)	1.40	7.70	
Vel Total (m/s)	3.92	Avg. Vel. (m/s)	2.14	4.10	
Max Chl Dpth (m)	2.42	Hydr. Depth (m)	1.25	2.26	
Conv. Total (m3/s)	643.4	Conv. (m3/s)	32.3	611.1	
Length Wtd. (m)	14.86	Wetted Per. (m)	2.79	10.44	
Min Ch El (m)	5.82	Shear (N/m2)	84.00	222.03	
Alpha	1.05	Stream Power (N/m s)	179.97	909.37	
Frctn Loss (m)	0.18	Cum Volume (1000 m3)	1.48	10.83	0.98
C & E Loss (m)	0.03	Cum SA (1000 m2)	0.61	2.85	0.45

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .35 Profile: PF 1

E.G. Elev (m)	8.54	Element	Left OB	Channel	Right OB
Vel Head (m)	0.50	Wt. n-Val.	0.040	0.040	
W.S. Elev (m)	8.03	Reach Len. (m)	19.82	19.91	20.18
Crit W.S. (m)		Flow Area (m2)	2.58	21.95	
E.G. Slope (m/m)	0.006611	Area (m2)	2.58	21.95	
Q Total (m3/s)	75.00	Flow (m3/s)	4.39	70.61	
Top Width (m)	9.16	Top Width (m)	1.40	7.76	
Vel Total (m/s)	3.06	Avg. Vel. (m/s)	1.70	3.22	
Max Chl Dpth (m)	3.01	Hydr. Depth (m)	1.84	2.83	
Conv. Total (m3/s)	922.4	Conv. (m3/s)	54.0	868.4	
Length Wtd. (m)	19.91	Wetted Per. (m)	3.38	11.03	
Min Ch El (m)	5.02	Shear (N/m2)	49.59	129.03	
Alpha	1.06	Stream Power (N/m s)	84.31	414.97	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)	1.39	9.96	0.98
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.55	2.50	0.45

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.26 Profile: PF 1

E.G. Elev (m)	7.84	Element	Left OB	Channel	Right OB
Vel Head (m)	0.27	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.57	Reach Len. (m)	9.46	9.83	9.75
Crit W.S. (m)		Flow Area (m2)	8.51	20.08	5.99
E.G. Slope (m/m)	0.004235	Area (m2)	8.51	20.08	5.99
Q Total (m3/s)	75.00	Flow (m3/s)	16.29	50.49	8.22
Top Width (m)	10.13	Top Width (m)	2.98	4.72	2.43
Vel Total (m/s)	2.17	Avg. Vel. (m/s)	1.91	2.51	1.37
Max Chl Dpth (m)	4.45	Hydr. Depth (m)	2.86	4.25	2.47
Conv. Total (m3/s)	1152.5	Conv. (m3/s)	250.3	775.9	126.3
Length Wtd. (m)	9.76	Wetted Per. (m)	6.68	10.45	7.74
Min Ch El (m)	3.12	Shear (N/m2)	52.95	79.80	32.15
Alpha	1.12	Stream Power (N/m s)	101.29	200.66	44.11
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.76	7.38	0.72
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.29	1.75	0.27

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.22 Profile: PF 1

E.G. Elev (m)	7.63	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.25	Reach Len. (m)	8.67	8.67	8.67
Crit W.S. (m)		Flow Area (m2)	1.09	25.07	2.91
E.G. Slope (m/m)	0.004748	Area (m2)	1.09	25.07	2.91
Q Total (m3/s)	75.00	Flow (m3/s)	0.83	69.65	4.51
Top Width (m)	8.95	Top Width (m)	1.28	5.77	1.90
Vel Total (m/s)	2.58	Avg. Vel. (m/s)	0.76	2.78	1.55
Max Chl Dpth (m)	4.81	Hydr. Depth (m)	0.85	4.35	1.53
Conv. Total (m3/s)	1088.5	Conv. (m3/s)	12.1	1010.9	65.5
Length Wtd. (m)	8.67	Wetted Per. (m)	3.68	12.24	3.41
Min Ch El (m)	2.44	Shear (N/m2)	13.78	95.35	39.72
Alpha	1.10	Stream Power (N/m s)	10.54	264.88	61.55
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	0.60	6.51	0.56
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.21	1.55	0.19

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.16 Profile: PF 1

E.G. Elev (m)	7.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.25	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.05	Flow Area (m2)	4.70	34.94	3.23
E.G. Slope (m/m)	0.001221	Area (m2)	4.70	34.94	3.23
Q Total (m3/s)	75.00	Flow (m3/s)	4.05	68.68	2.27
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.75	Avg. Vel. (m/s)	0.86	1.97	0.70
Max Chl Dpth (m)	6.00	Hydr. Depth (m)	3.43	5.85	3.59
Conv. Total (m3/s)	2146.6	Conv. (m3/s)	115.9	1965.7	64.9
Length Wtd. (m)	5.00	Wetted Per. (m)	4.80	10.35	4.49
Min Ch El (m)	1.25	Shear (N/m2)	11.72	40.41	8.61
Alpha	1.17	Stream Power (N/m s)	10.10	79.42	6.04
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.46	4.98	0.38
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.14	1.24	0.12

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .12 BR U Profile: PF 1

E.G. Elev (m)	7.42	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.25	Reach Len. (m)	69.57	69.57	69.57
Crit W.S. (m)	4.29	Flow Area (m2)	4.70	33.44	3.23
E.G. Slope (m/m)	0.003335	Area (m2)	4.70	33.44	3.23
Q Total (m3/s)	75.00	Flow (m3/s)	6.68	64.57	3.74
Top Width (m)	8.24	Top Width (m)	1.37	5.97	0.90
Vel Total (m/s)	1.81	Avg. Vel. (m/s)	1.42	1.93	1.16
Max Chl Dpth (m)	6.00	Hydr. Depth (m)	3.43	5.60	3.59
Conv. Total (m3/s)	1298.7	Conv. (m3/s)	115.8	1118.2	64.8
Length Wtd. (m)	69.57	Wetted Per. (m)	4.80	21.63	4.49
Min Ch El (m)	1.25	Shear (N/m2)	32.01	50.58	23.53
Alpha	1.05	Stream Power (N/m s)	45.56	97.65	27.27
Frctn Loss (m)	0.21	Cum Volume (1000 m3)	0.43	4.81	0.36
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.14	1.21	0.11

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .12 BR D Profile: PF 1

E.G. Elev (m)	7.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.06	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.62	Flow Area (m2)	5.29	35.68	4.91
E.G. Slope (m/m)	0.002830	Area (m2)	5.29	35.68	4.91
Q Total (m3/s)	75.00	Flow (m3/s)	7.53	60.72	6.75
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.64	Avg. Vel. (m/s)	1.42	1.70	1.38
Max Chl Dpth (m)	5.47	Hydr. Depth (m)	3.02	4.62	3.07
Conv. Total (m3/s)	1409.9	Conv. (m3/s)	141.5	1141.5	126.9
Length Wtd. (m)	5.00	Wetted Per. (m)	4.77	24.64	4.66
Min Ch El (m)	1.59	Shear (N/m2)	30.75	40.18	29.21
Alpha	1.02	Stream Power (N/m s)	43.79	68.38	40.19
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.09	2.40	0.08
C & E Loss (m)	0.00	Cum SA (1000 m2)	0.03	0.74	0.02

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.09 Profile: PF 1

E.G. Elev (m)	7.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (m)	7.05	Reach Len. (m)	6.97	6.96	6.97
Crit W.S. (m)		Flow Area (m2)	5.27	38.65	4.89
E.G. Slope (m/m)	0.000851	Area (m2)	5.27	38.65	4.89
Q Total (m3/s)	75.00	Flow (m3/s)	4.11	67.20	3.69
Top Width (m)	11.08	Top Width (m)	1.75	7.73	1.60
Vel Total (m/s)	1.54	Avg. Vel. (m/s)	0.78	1.74	0.75
Max Chl Dpth (m)	5.46	Hydr. Depth (m)	3.01	5.00	3.06
Conv. Total (m3/s)	2570.6	Conv. (m3/s)	140.9	2303.2	126.4
Length Wtd. (m)	6.96	Wetted Per. (m)	4.76	10.50	4.65
Min Ch El (m)	1.59	Shear (N/m2)	9.24	30.72	8.78
Alpha	1.17	Stream Power (N/m s)	7.21	53.41	6.62
Frctn Loss (m)	0.01	Cum Volume (1000 m3)	0.06	2.22	0.06
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.02	0.70	0.02

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.06 Profile: PF 1

E.G. Elev (m)	7.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.		0.040	
W.S. Elev (m)	6.74	Reach Len. (m)	29.96	28.30	25.61
Crit W.S. (m)	4.56	Flow Area (m2)		26.92	
E.G. Slope (m/m)	0.005804	Area (m2)		26.92	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.60	Top Width (m)		5.60	
Vel Total (m/s)	2.79	Avg. Vel. (m/s)		2.79	
Max Chl Dpth (m)	4.92	Hydr. Depth (m)		4.81	
Conv. Total (m3/s)	984.5	Conv. (m3/s)		984.5	
Length Wtd. (m)	28.30	Wetted Per. (m)		15.21	
Min Ch El (m)	1.82	Shear (N/m2)		100.72	
Alpha	1.00	Stream Power (N/m s)		280.66	
Frctn Loss (m)		Cum Volume (1000 m3)		1.54	
C & E Loss (m)		Cum SA (1000 m2)		0.56	

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.04 Profile: PF 1

E.G. Elev (m)	5.40	Element	Left OB	Channel	Right OB
Vel Head (m)	1.33	Wt. n-Val.		0.040	
W.S. Elev (m)	4.07	Reach Len. (m)	5.00	5.00	5.00
Crit W.S. (m)	4.07	Flow Area (m2)		14.69	
E.G. Slope (m/m)	0.027499	Area (m2)		14.69	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.10	Avg. Vel. (m/s)		5.10	
Max Chl Dpth (m)	2.72	Hydr. Depth (m)		2.66	
Conv. Total (m3/s)	452.3	Conv. (m3/s)		452.3	
Length Wtd. (m)	5.00	Wetted Per. (m)		10.75	
Min Ch El (m)	1.35	Shear (N/m2)		368.44	
Alpha	1.00	Stream Power (N/m s)		1880.68	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		0.95	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.40	

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.02 Profile: PF 1

E.G. Elev (m)	4.96	Element	Left OB	Channel	Right OB
Vel Head (m)	2.12	Wt. n-Val.		0.040	
W.S. Elev (m)	2.83	Reach Len. (m)	7.80	7.80	7.80
Crit W.S. (m)	3.39	Flow Area (m2)		11.62	
E.G. Slope (m/m)	0.047489	Area (m2)		11.62	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	6.46	Avg. Vel. (m/s)		6.46	
Max Chl Dpth (m)	2.24	Hydr. Depth (m)		2.10	
Conv. Total (m3/s)	344.2	Conv. (m3/s)		344.2	
Length Wtd. (m)	7.80	Wetted Per. (m)		9.00	
Min Ch El (m)	0.59	Shear (N/m2)		600.87	
Alpha	1.00	Stream Power (N/m s)		3879.74	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		0.82	
C & E Loss (m)	0.04	Cum SA (1000 m2)		0.34	

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.00 Profile: PF 1

E.G. Elev (m)	3.43	Element	Left OB	Channel	Right OB
Vel Head (m)	1.60	Wt. n-Val.		0.040	
W.S. Elev (m)	1.83	Reach Len. (m)			
Crit W.S. (m)	2.07	Flow Area (m2)		13.38	
E.G. Slope (m/m)	0.032457	Area (m2)		13.38	
Q Total (m3/s)	75.00	Flow (m3/s)		75.00	
Top Width (m)	5.53	Top Width (m)		5.53	
Vel Total (m/s)	5.60	Avg. Vel. (m/s)		5.60	
Max Chl Dpth (m)	2.56	Hydr. Depth (m)		2.42	
Conv. Total (m3/s)	416.3	Conv. (m3/s)		416.3	
Length Wtd. (m)		Wetted Per. (m)		9.64	
Min Ch El (m)	-0.73	Shear (N/m2)		441.79	
Alpha	1.00	Stream Power (N/m s)		2475.91	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)			
C & E Loss (m)	0.10	Cum SA (1000 m2)			

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .825 Profile: PF 1

E.G. US. (m)	16.69	Element	Inside BR US	Inside BR DS
W.S. US. (m)	16.23	E.G. Elev (m)	16.58	16.26
Q Total (m3/s)	75.00	W.S. Elev (m)	15.55	14.93
Q Bridge (m3/s)	48.23	Crit W.S. (m)	15.55	15.19
Q Weir (m3/s)		Max Chl Dpth (m)	3.78	3.58
Weir Sta Lft (m)		Vel Total (m/s)	4.43	5.04
Weir Sta Rgt (m)		Flow Area (m2)	16.94	14.89
Weir Submerg		Froude # Chl	0.76	0.90
Weir Max Depth (m)		Specif Force (m3)	63.46	65.96
Min El Weir Flow (m)	14.74	Hydr Depth (m)	2.08	1.82
Min El Prs (m)	14.08	W.P. Total (m)	23.90	23.65
Delta EG (m)	0.70	Conv. Total (m3/s)	344.0	283.9
Delta WS (m)	2.39	Top Width (m)	8.14	8.16
BR Open Area (m2)	10.69	Frctn Loss (m)	0.24	0.29
BR Open Vel (m/s)	4.51	C & E Loss (m)	0.00	0.03
Coef of Q		Shear Total (N/m2)	330.48	430.69
Br Sel Method	Energy only	Power Total (N/m s)	1462.89	2170.04

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.695 Profile: PF 1

E.G. US. (m)	13.46	Element	Inside BR US	Inside BR DS
W.S. US. (m)	13.03	E.G. Elev (m)	13.42	13.32
Q Total (m3/s)	75.00	W.S. Elev (m)	12.99	12.95
Q Bridge (m3/s)	24.65	Crit W.S. (m)	12.03	11.78
Q Weir (m3/s)		Max Chl Dpth (m)	4.16	4.37
Weir Sta Lft (m)		Vel Total (m/s)	2.88	2.69
Weir Sta Rgt (m)		Flow Area (m2)	26.05	27.93
Weir Submerg		Froude # Chl	0.47	0.43
Weir Max Depth (m)		Specif Force (m3)	67.09	71.60
Min El Weir Flow (m)	11.23	Hydr Depth (m)	2.92	3.13
Min El Prs (m)	11.07	W.P. Total (m)	27.16	27.86
Delta EG (m)	0.17	Conv. Total (m3/s)	638.9	707.5
Delta WS (m)	0.14	Top Width (m)	8.92	8.91
BR Open Area (m2)	11.01	Frctn Loss (m)	0.08	0.03
BR Open Vel (m/s)	2.24	C & E Loss (m)	0.02	0.00
Coef of Q		Shear Total (N/m2)	129.59	110.49
Br Sel Method	Energy only	Power Total (N/m s)	373.07	296.69

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.565 Profile: PF 1

E.G. US. (m)	11.53	Element	Inside BR US	Inside BR DS
W.S. US. (m)	11.28	E.G. Elev (m)	11.51	11.43
Q Total (m3/s)	75.00	W.S. Elev (m)	11.23	11.27
Q Bridge (m3/s)	42.87	Crit W.S. (m)	9.29	8.78
Q Weir (m3/s)		Max Chl Dpth (m)	4.37	4.70
Weir Sta Lft (m)		Vel Total (m/s)	2.31	1.71
Weir Sta Rgt (m)		Flow Area (m2)	32.42	43.75
Weir Submerg		Froude # Chl	0.37	0.26
Weir Max Depth (m)		Specif Force (m3)	81.63	101.73
Min El Weir Flow (m)	9.90	Hydr Depth (m)	3.12	3.15
Min El Prs (m)	9.66	W.P. Total (m)	32.57	39.35
Delta EG (m)	0.12	Conv. Total (m3/s)	822.8	1181.3
Delta WS (m)	0.02	Top Width (m)	10.39	13.88
BR Open Area (m2)	19.26	Frctn Loss (m)	0.05	0.01
BR Open Vel (m/s)	2.23	C & E Loss (m)	0.04	0.00
Coef of Q		Shear Total (N/m2)	81.09	43.95
Br Sel Method	Energy only	Power Total (N/m s)	187.62	75.34

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.505 Profile: PF 1

E.G. US. (m)	11.30	Element	Inside BR US	Inside BR DS
W.S. US. (m)	10.92	E.G. Elev (m)	11.11	10.93
Q Total (m3/s)	75.00	W.S. Elev (m)	9.39	9.37
Q Bridge (m3/s)	75.00	Crit W.S. (m)	8.76	8.75
Q Weir (m3/s)		Max Chl Dpth (m)	3.12	3.21
Weir Sta Lft (m)		Vel Total (m/s)	5.82	5.55
Weir Sta Rgt (m)		Flow Area (m2)	12.90	13.52
Weir Submerg		Froude # Chl	1.10	1.03
Weir Max Depth (m)		Specif Force (m3)	67.29	66.78
Min El Weir Flow (m)	9.72	Hydr Depth (m)		112.96
Min El Prs (m)	8.92	W.P. Total (m)	15.57	15.95
Delta EG (m)	0.74	Conv. Total (m3/s)	284.4	304.5
Delta WS (m)	1.05	Top Width (m)		0.12
BR Open Area (m2)	12.90	Frctn Loss (m)	0.13	0.11
BR Open Vel (m/s)	5.82	C & E Loss (m)	0.05	0.26
Coef of Q		Shear Total (N/m2)	564.98	504.52
Br Sel Method	Energy only	Power Total (N/m s)	3285.44	2797.76

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .485 Profile: PF 1

E.G. US. (m)	10.47	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.85	E.G. Elev (m)	10.37	10.17
Q Total (m3/s)	75.00	W.S. Elev (m)	9.49	9.41
Q Bridge (m3/s)	32.57	Crit W.S. (m)	9.27	9.02
Q Weir (m3/s)		Max Chl Dpth (m)	3.41	3.59
Weir Sta Lft (m)		Vel Total (m/s)	4.13	3.84
Weir Sta Rgt (m)		Flow Area (m2)	18.18	19.55
Weir Submerg		Froude # Chl	0.72	0.66
Weir Max Depth (m)		Specif Force (m3)	60.05	61.46
Min El Weir Flow (m)	8.19	Hydr Depth (m)	2.31	2.49
Min El Prs (m)	7.94	W.P. Total (m)	23.50	24.06
Delta EG (m)	0.39	Conv. Total (m3/s)	389.7	432.0
Delta WS (m)	0.51	Top Width (m)	7.86	7.86
BR Open Area (m2)	9.28	Frctn Loss (m)	0.17	0.08
BR Open Vel (m/s)	3.51	C & E Loss (m)	0.04	0.00
Coef of Q		Shear Total (N/m2)	280.98	240.08
Br Sel Method	Energy only	Power Total (N/m s)	1159.42	921.05

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.471 Profile: PF 1

E.G. US. (m)	9.97	Element	Inside BR US	Inside BR DS
W.S. US. (m)	9.55	E.G. Elev (m)	9.86	9.51
Q Total (m3/s)	75.00	W.S. Elev (m)	8.95	9.03
Q Bridge (m3/s)	58.41	Crit W.S. (m)	8.95	7.70
Q Weir (m3/s)		Max Chl Dpth (m)	3.19	3.69
Weir Sta Lft (m)		Vel Total (m/s)	4.18	3.04
Weir Sta Rgt (m)		Flow Area (m2)	17.93	24.66
Weir Submerg		Froude # Chl	0.79	0.54
Weir Max Depth (m)		Specif Force (m3)	59.32	62.51
Min El Weir Flow (m)	8.39	Hydr Depth (m)	1.82	2.11
Min El Prs (m)	7.92	W.P. Total (m)	28.01	32.19
Delta EG (m)	0.53	Conv. Total (m3/s)	342.0	524.2
Delta WS (m)	0.50	Top Width (m)	9.83	11.69
BR Open Area (m2)	12.99	Frctn Loss (m)	0.14	0.26
BR Open Vel (m/s)	4.50	C & E Loss (m)	0.13	0.13
Coef of Q		Shear Total (N/m2)	301.81	153.75
Br Sel Method	Energy only	Power Total (N/m s)	1262.53	467.65

Plan: RANZI 500 P RIO RANZI Reach 1 RS: .12 Profile: PF 1

E.G. US. (m)	7.44	Element	Inside BR US	Inside BR DS
W.S. US. (m)	7.25	E.G. Elev (m)	7.42	7.20
Q Total (m3/s)	75.00	W.S. Elev (m)	7.25	7.06
Q Bridge (m3/s)	9.89	Crit W.S. (m)	4.29	4.62
Q Weir (m3/s)		Max Chl Dpth (m)	6.00	5.47
Weir Sta Lft (m)		Vel Total (m/s)	1.81	1.64
Weir Sta Rgt (m)		Flow Area (m2)	41.37	45.87
Weir Submerg		Froude # Chl	0.24	0.23
Weir Max Depth (m)		Specif Force (m3)	124.88	116.34
Min El Weir Flow (m)	3.94	Hydr Depth (m)	5.02	4.14
Min El Prs (m)	3.25	W.P. Total (m)	30.91	34.07
Delta EG (m)	0.24	Conv. Total (m3/s)	1298.7	1409.9
Delta WS (m)	0.20	Top Width (m)	8.24	11.08
BR Open Area (m2)	11.06	Frctn Loss (m)	0.21	0.01
BR Open Vel (m/s)	0.89	C & E Loss (m)	0.01	0.00
Coef of Q		Shear Total (N/m2)	43.77	37.36
Br Sel Method	Energy only	Power Total (N/m s)	79.35	61.08

Plan: RANZI 500 P RIO RANZI Reach 1 RS: 0.05 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (m3/s)	45.92	Culv Full Len (m)	18.30
# Barrels	1	Culv Vel US (m/s)	5.24
Q Barrel (m3/s)	45.92	Culv Vel DS (m/s)	5.24
E.G. US. (m)	7.13	Culv Inv El Up (m)	1.88
W.S. US. (m)	6.74	Culv Inv El Dn (m)	1.68
E.G. DS (m)	5.40	Culv Frctn Ls (m)	1.38
W.S. DS (m)	4.07	Culv Exit Loss (m)	0.07
Delta EG (m)	1.73	Culv Entr Loss (m)	0.28
Delta WS (m)	2.66	Q Weir (m3/s)	29.08
E.G. IC (m)	7.00	Weir Sta Lft (m)	0.00
E.G. OC (m)	7.13	Weir Sta Rgt (m)	5.60
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (m)	3.88	Weir Max Depth (m)	2.35
Culv WS Outlet (m)	3.68	Weir Avg Depth (m)	2.35
Culv Nml Depth (m)		Weir Flow Area (m2)	13.16
Culv Crt Depth (m)	1.76	Min El Weir Flow (m)	4.78