## INEIGHT®

# InEight Estimate Benchmarking with Data from InEight Control Supplement guide to Benchmarking





## Changelog

This changelog contains only significant or other notable changes to the document revision. Editorial or minor changes that do not affect the context of the document are not included in the changelog.

Rev	Date	Description
1.0	11-June-2022	Initial publication
1.1	12/22/2022	Revised by AC



## Contents

Benchmarking Actual Costs from InEight Control	4
Benchmarking and Unit Costs	4
Subordinate Cost Items	4
Superior Cost Item As-built quantities	5
Setting up Benchmarking from InEight Control	6
Benchmark using data from Control	10



## **Benchmarking Actual Costs from InEight Control**

Benchmarking is the process of leveraging a company's past experiences to provide a level of assurance that any scope of work being estimated is either within an acceptable range of confidence or identifies a unit cost or productivity rate exceeding an acceptable value. Estimate can benchmark using asestimated or as-built data. For users of Control, Estimate can pull as-built data points directly from Control, so estimators can more easily leverage information on productivity rates and unit costs achieved on past projects.



#### **Benchmarking and Unit Costs**

When benchmarking on as-built data from Control, cost items must have both actual cost and quantities claimed. Estimate uses unit costs for benchmark data points. Data points for Control cost items that incur costs with no quantities, or quantities claimed with no corresponding actual costs, have a unit cost of zero and cannot be benchmarked.

#### **Subordinate Cost Items**

In Control, you should claim both costs and quantities at the lowest benchmark level you intend to use, so the cost items produce benchmarkable unit rates. Benchmark data points are generated for both subordinate and superior cost items in Control, and actual costs and man-hours automatically roll up to the superior cost items.





CB	S	ACS		PAY ITEMS	CHANGE REGIST	ER AUD	IT LOG	
								<b></b>
Task details	< •••• >		:	Actuals 12/22/20	022 to 12/28/2022	5	< ••• >	
Resources	Forecast (T/O)	UoM	Ŧ	Actual qty (to date)	Actual unit cost (to date)	Actual cost (to date)	Actual MHrs (to date)	Actual MHrs/unit (to date)
	1.00	Each		1.00	\$ 1,254.00	\$ 1,254.00	12.26	12.26
2	50.00	Lb		50.00	\$ 8.50	\$ 425.00	4.00	0.08
1	4.00	Ft		4.00	\$131.25	\$ 525.00	5.00	1.25

#### **Superior Cost Item As-built quantities**

As-built quantities for superior cost items are automatically calculated based on the percent complete of the subordinate cost items. If actual costs and quantities are being claimed on the subordinate cost items, no option is available to claim quantities on the superior cost item. The image below shows the Allow as-built option is unavailable for a superior cost item where claiming of both actual costs and quantities is being done on subordinate cost items.

≡	ଜ	Oakview Facility Improveme	ents   INPL-2_ / Control / Workspaces								QA	T01 22.12	0	<b>P</b> (	3	
			CBS	ACS	PA	AY ITEMS (	HANGE REGISTER	AUDIT LOG				View :	Unsaved (Be	enchmari	(AC))	•
A	tions	• 🕑 🗹 (	8							5	\$	Π,	C7		‡≣	Q
•	Tael	/0	:	A 19/22/2022 t	12/22/202	1027										×
			Description -	Actual qty (to	Actual unit cost (to dat	PS# 15 FOUNDATION	DETAILS	ATTRIBUTES	COST CATEG	ORIES		CURREN' RESC	T ESTIMATE DURCES			
		v 5	PS#15 FOUNDATION	0.00		Forecast T/O qty	UoM	CE unit cost	CE total cost		CBS po	sition				
<u> </u>		5.1	W CUT CONCRETE	20.00		1.00	Each	\$ 2,671.33	\$ 2,671.33		5					
$J_z^{\rm A}$		5.2	DEMO CONCRETE	0.25	ş	Last changed on	Last changed by									
		5.3	TRANSPORT CONDECTE TO #1 WATER BASIN	0.25		12/22/2022 04:10 PM	InEight Service Account									
		5.4	HAND EXCAVATE	0.25		Description		Account code			• Cost	source				
		5.5	TRANSPORT SOIL TO HILL ST.	0.00		PS# 15 FOUNDATION	4				Deta	I				•
		5.6	FORMWORK (COMBINED FABRICATION, INSTALLATION AND RE	0.00		Forecast T/O qty		• UoM			0 Li	ve forecast	t method			
		5.7	INSTALL REBAR	0.00			1.00	Each		•	Rollu	p				•
		5.8	EPOXY DOWELS WITH INSPECTION	0.00		CE total cost		CE unit cost			Avera	ge perform	nance settin	gs		-
		5.9	PLACE CONCRETE	0.00		0 2,011.00		0 2,011.00								÷
		5.10	FINISH CONCRETE	0.00		CE total MHrs 28.95		CE total equipment Hrs 0.00			CE lab \$ 92.1	or cost/M 16	Hrs			
		<b>√</b> 6	PS# 30 FOUNDATION	0.00		CE MHr/Linit		CE Units/MHrs			+ Cost	segment				
		~ 7	PS# 34 FOUNDATION	0.00		28.95		0.03			Direc	t Cost				•
		<b>∨</b> 8	PS# 31 FOUNDATION	0.00		Allow as-built		Pay item assignment			• Curr	ency				
		<b>∨</b> 9	SUPPORT CRAFTS	0.00		None	-				USD	s				•
		✓ 10	MATERIALS INCLUDES TAX 9.50% & 6% MARK UP	0.00		None	Đ	Quantity driver				8S contrib	bute qty			
		✓ 11	EQUIPMENT INCLUDES TAX 9.50%, 6% MARK UP & 25% FUEL	0.00		Quantities		Superior CI		•						
		✓ 12	INDIRECT COSTS	0.00		Costs										
	Subtot	als 45 (1 rows selected)														
	_															_
<b>Q</b> 20	22 InEight	Inc. Privacy Statement	Terms & Conditions v 22.12												INEI	ант®

If a superior cost item quantity is not being calculated, then no unit cost can be calculated and no benchmarkable data point can be sent to Estimate. This can be the result of the items budget not being set. To resolve this issue, ensure the budget is locked for the cost items in question.



							CBS				ACS				PAY ITEM
	Actions -	(+)		$\otimes$											
T	Global forecast	method						•	Tas	sk deta	ails	<	••••	>	
_	Set forecast m	ethod			Ŧ	Descripti	on	-	Reso	ources	-	Forecas qty	t (T/O)	Ŧ	UoM
	Time phased fo	precasting				PIPE SUF	PORT #1	5						1.00	Each
	Claim multiple	CBS quantiti	es		FAB & INSTALL S			2					50.00	Lb	
_	Budget move a	nd contract	adjustmer	nt 🕨		3/16" FIL	LET WEL		1					4.00	Ft
↓ <sup>A</sup>	Lock/unlock bu	ıdget		•	Loc	k budget								4.00 4.00	Each Each
	Add required co	ost items			Loc			Lock	current	and origi	nal budg	et values fo	or selec	ted cos	t items
	Supo				Uni	ock budget								1.00	Each
	Sync	Sync				k project b	udget and	l price						26.00	Lb
	Reverse estima	•		.,								1.00	Ft		
	U	2.3				DRILL 5/	8" 4 EA.		1					4.00	Each

The cost item's quantity is now derived based on Control's quantity roll up calculation settings and a unit cost is automatically calculated.

CE	3S	ACS		PAY ITEMS	CHANGE REGIST	ER AUD	NT LOG	
								<b></b>
Task details	< •••• >		:	Actuals 12/22/20	022 to 12/28/2022	۳ ۲	< ••• >	_
Resources 🚽	Forecast (T/O)	UoM		Actual qty (to	Actual unit	Actual cost (to date)	Actual MHrs (to date)	Actual MHrs/unit (to date)
	1.00	Each		1.00	\$ 1,254.00	\$ 1,254.00	12.26	12.26
2	50.00	Lb		50.00	\$ 8.50	\$ 425.00	4.00	0.08
1	4.00	Ft		4.00	\$ 131.25	\$ 525.00	5.00	1.25

### Setting up Benchmarking from InEight Control

Projects must be set to *Active* in InEight Platform > Project Details > **Status**. Projects that are set to *New* will not be available in Estimate.

jects & organizations > Edit project DETAILS INFORMATION ATTRIBUTES
---

#### Project details

	* Project ID		* External project ID 💡	
	INPL-210326-BM		INPL-210326-BM	
	* Name		* Status	
	Oakview Facility Improvements		New	•
			1	Q
	* Phase 🚱		New	
Θ	Execution	T	Active	
			Closed	



Unit costs need to be present on Control cost items for benchmark data points to be useful in Estimate. To accomplish this, set the Allow as-built setting to *All* for the cost items that you want to generate benchmark data points for, and make sure actual costs, man-hours and quantities are claimed on the cost item.

Task	(S	:	Task details	1033 FORMWORK (COMBINED FABRICAT	ION, INSTALLATION AND REMOVAL)
	⊗ CBS position	Description	Resources 🚽	DETAILS	ATTRIBUTES COST
	4.5	RECEIVE MATERI	1		
	4.6	DEMOB OF BACK	2	CE total cost	CE unit cost
	✓ 5	PS# 15 FOUNDAT		\$ 1,253.25	\$ 69.63
	5.1	SAW CUT CONCR	1		
	5.2	DEMO CONCRETE	1	CE total MHrs	CE total equipment Hrs
	5.3	TRANSPORT CON	1	13.48	0.00
	5.4	HAND EXCAVATE	1	OF MU-/Unit	CE Unite (MUre
	5.5	TRANSPORT SOIL	1		CE ONIS/MATS
	5.6	FORMWORK (CO	1	0.75	1.34
	5.7	INSTALL REBAR	1	* Allow as-built	Pay item assignment
	5.8	EPOXY DOWELS	1	All	▼
	5.9	PLACE CONCRETE	1		
	5.10	FINISH CONCRETE	1	None	* Quantity driver
	<b>∨</b> 6	PS# 30 FOUNDAT		All	Superior CI
	6.1	SAW CUT CONCR	1	Quantities	
	6.2	DEMO CONCRETE	1	Costs	
Subtot	als 89 (1 rows selected)				

In Control, select a field to use as the benchmark matching criteria. This field is used by Estimate in identifying the cost items to be used in generating the benchmark data points. The same key value can be used on multiple cost items and the benchmark data point produced will be a weighted average unit cost of all the items.

Tasl	(S		:	1001 FAB & INSTALL SUPPORT 50 LBS					
	℅ CBS position	Ŧ	Description	DETAILS	ATTRIBUTE	es c	COST CATEGORIES	CURRE	ENT ESTIMATE ESOURCES
	✓ 1		PIPE SUPPORT #15	CBS tag 22		CBS tag 23			CBS tag 24
	1.1		FAB & INSTALL S		•			•	
	1.2		3/16" FILLET WEL						
	1.3		DRILL 5/8" 4 EA.	CBS tag 25		CBS user defined 1	1		CBS user defined 2
	1.4		BOLT UP 1/2" BAS		•	10015			
	1.5		GROUT BASE SUP	000		000			000
	✓ 2		PIPE SUPPORT #19	CDS user defined 3		CBS user defined 4	+		CBS user defined 5
	2.1		FAB & INSTALL S						

The following fields can be used as matching criteria:

- CBS Position
- Description
- WBS Phase Code
- Account Code
- Any CBS tag field, 1-25
- Any CBS user defined field, 1-15



The matching criteria field will be designated in Estimate. Fill in the applicable values to distinguish the cost items to be used as benchmarkable data point. Cost items with no values in the designated matching criteria field are not used in benchmarking.

		CBS		ACS	PAY ITE	MS CHANG	EREGISTER	AUDIT LOG		View :	Benchmark (AC)	
s •	• 🕑 🗹 🤅	8								ים \$ מ	D D	‡≣
Task	S		:	Task Details (A	C)	<•	*** >		;	12/22/2022 to 1	12/22/2022 📋	
	⊗ CBS position	Description		Forecast (T/O)	UoM	😑 CE unit cost 👳	CE total cost	CE total MHrs	CBS user	Actual qty (to	Actual unit cost (to date)	d
	× 1	PIPE SUPPORT #15		1.00	Each	\$ 1,038.63	\$ 1,038.63	9.95	PIP_SPT	1.00	\$ 1,254.00	>
0	1.1	FAB & INSTALL SUPPORT 50 LBS		50.00	Lb	\$ 7.58	\$ 378.89	3.64	7746	50.00	\$ 8.50	)
	1.2	3/16" FILLET WELDS STIFFINENERS		4.00	Ft	\$ 111.87	\$ 447.49	4.21	7642	4.00	\$ 131.25	5
0	1.3	DRILL 5/8" 4 EA.		4.00	Each	\$ 26.52	\$ 106.09	1.04	7768	4.00	\$ 25.50	)
	1.4	BOLT UP 1/2" BASE SUPPORT 4 EA.		4.00	Each	\$ 20.42	\$ 81.69	0.80	7786	4.00	\$ 25.25	5
	1.5	GROUT BASE SUPPORT		1.00	FT2	\$ 24.47	\$ 24.47	0.26	10015	1.00	\$ 101.00	)
	✓ 2	PIPE SUPPORT #19		1.00	Each	\$ 725.36	\$ 725.36	7.05	PIP_SPT	0.72	\$ 828.16	5
	2.1	FAB & INSTALL SUPPORT 26 LBS		26.00	Lb	\$ 7.58	\$197.02	1.89	7746	26.00	\$ 8.46	5
	2.2	1/4" FILLET WELDS L3 TO 1/2" PL		1.00	Ft	\$ 111.87	\$ 111.87	1.05	7642	1.00	\$ 115.00	)
	2.3	DRILL 5/8" 4 EA.		4.00	Each	\$ 26.52	\$ 106.09	1.04	7768	4.00	\$ 27.50	)
	2.4	INSTALL 1/2" HILITI KWIK ANCHOR BOLTS 4 EA.		4.00	Each	\$ 51.06	\$ 204.22	2.00		0.00	\$ 0.00	)
	2.5	BOLT UP 1/2" BASE SUPPORT 4 EA.		4.00	Each	\$ 20.42	\$ 81.69	0.80	7786	4.00	\$ 24.50	)
	2.6	GROUT BASE SUPPORT		1.00	FT2	\$ 24.47	\$ 24.47	0.26	10015	1.00	\$ 52.00	)
0	<b>∨</b> 3	PIPE SUPPORT #22		1.00	Each	\$ 1,394.40	\$ 1,394.40	13.40	PIP_SPT	0.85	\$ 1,724.58	3
	3.1	FAB & INSTALL SUPPORT 70 LBS		70.00	Lb	\$ 7.58	\$ 530.45	5.09	7746	70.00	\$ 7.50	)
0	3.2	1/4" FILLET WELDS L3 TO 1/2" PL		4.00	Ft	\$ 111.87	\$ 447.49	4.21	7642	4.00	\$ 171.25	5
	3.3	DRILL 5/8" 4 EA.		4.00	Each	\$ 26.52	\$ 106.09	1.04	7768	4.00	\$ 28.75	5
0	3.4	INSTALL 1/2" HILITI KWIK ANCHOR BOLTS 4 EA.		4.00	Each	\$ 51.06	\$ 204.22	2.00		0.00	\$ 0.00	)
ubtoti	als 89 (1 rows selected)						\$ 32,058.82	243.21				
_												

In Estimate, benchmarking from Control can be activated by selecting Job Properties > Benchmarking > As-Built > Historical Data Source > InEight Control. This step is not needed for Estimate in the Cloud.



Job Proper	rties 🛛 Co	ost Breakdowr	Structure (CBS)	) Register								
Overview	Cover Sheet	Cost Basis	Minority Setup	Fuel Cost	Job Fold	ler Tags	Pricing	Schedule	Cash Flow	Equipment Maintenance	Benchmarking	Alternat
As-Estimate	ed					As-Buil	t					
Historical	Data Source:		None		•	Histor	ical Data S	ource:		InEight Control	-	
Default Co	ost Item Matchir	ng Criteria:	Edit			Defaul	t Cost Iten	n Matching C	riteria:	None InEight Control		
Default Ac	count Code Ma	tching Criteria:	Edit			Defaul	t Account (	Code Matchir	ng Criteria:	Edit	45	
Default Jo	bs Filter:		Edit ALL JO	DBS		Defaul	t Jobs Filte	er:	[	Edit [Project ID] CONT	AINS BM	
Benchmark	Graph Display (	Options:	X-Axis: Item Qu	antity (Primary	)		*	Y-Axis:	Cost/Primar	y Unit	•	
Calculate "A	verage" as: (	Average	○ Weighted	Avg (weighte	d by curre	ent Qty)						
Benchmark:	E	🛛 Cost per Uni	t 🔽 Man-Hour	s / Unit 🔽	] Units / N	4an-Hour						
Flag an iten	n's variance rela	itive to the ben	chmark data when	:	Low	Medium	High					
	۲	) Its % varianc	e from the average	e exceeds: 0	-	1 📫	3					
	C	) Its standard o (using STDEV	leviations from the P method) exceeds	norm 0 s:	.0	0.5	1.0					
Don't bench	nmark items wit	h fewer than	) 🛉 historica	al data points								

Next, define the Control projects that will be sources of benchmark data. For the Default Jobs filter, click **Edit**. In the Edit Filter dialog box, you can either specify the project IDs and or project names of the benchmarkable projects or create a filter criteria. It is good practice to modify either the project IDs or project names in Platform to designate them as benchmarkable projects.

In this example, the letters **BM** have been appended to the end of every benchmarkable project in Platform and a filter can be used to include all projects where the project IDs contains the characters BM.

Job Proper	rties © Cos	st Breakdowi	Structure (CBS)	) Register												
Overview	Cover Sheet	Cost Basis	Minority Setup	Fuel Cost	Job Fold	ler Tags	Pricing	Schedule	Cash Flow	Equipment Maintenance	Benchmarking	Alternates				
As-Estimat	ed					As-Bui	t									
Historical	Data Source:		None		-	Histor	Historical Data Source: InEight Control -									
Default Co	Default Cost Item Matching Criteria: Edit						Default Cost Item Matching Criteria: Edit [Benchmark Code] EQUAL									
Default Ac	count Code Mate	ching Criteria:	Edit			Defaul	t Account	Code Matchir	ng Criteria:	Edit						
Default Jo	bs Filter:		Edit ALL JO	OBS	6					Ed	it Filter			-		×
Benchmark	Graph Display O	ptions:	X-Axis: Item Qu	iantity <mark>(</mark> Primar	y) C	ombine	Col	ımn		Operator	Value					
					A	ND	Proj	ect ID	~	CONTAINS	✓ BM				*	*
Calculate "A	werage" as: 🧕	) Average	Weighted	Avg (weighte	d by	ND	$\sim$		~	EQUAL	~				•	*
Benchmark:		Cost per Uni	t 🔽 Man-Hour	s / Unit 🛛	Uni											
Flag an iten	n's variance relat	ive to the ben	chmark data when	:	Lov											
	۲	Its % varianc	e from the average	e exceeds: 0												
	0	Its standard o (using STDEV	leviations from the P method) exceeds	enorm () s:	1.0											
Don't bench	ımark items with	fewer than	) 🔶 historica	al data points										ОК	Ca	ncel



**NOTE**: As-Estimated benchmark data comes from a data warehouse, where you can explicitly control the timing of updates to As-Estimated data. As-Built data from Control is live data and might change based on how frequently actual costs, man-hours and quantities are being updated in Control, and how often the benchmark data points in the estimate are refreshed.

To set the Default Cost Item Matching Criteria, click Edit. This designates the fields used between both Control and Estimate in determining which Control benchmark data points map to the Estimate cost items.

Job Proper	ties 🛛 Co	ost Breakdown	Structure (CBS)	Register											
Overview	Cover Sheet	Cost Basis	Minority Setup	Fuel Cost	Job Folde	er Tags	Pricing	Schedule	Cash Flow	Equipment	Maintenance	Benchmark	ding	Altern	ates
Job Proper Overview As-Estimate Historical II Default Co Default Acc Default Job Benchmark C Calculate "A Benchmark: Flag an item	ties O Co Cover Sheet ad Data Source: st Item Matchin count Code Mat bs Filter: Graph Display ( verage" as: ( 's variance rela ( C	St Breakdown Cost Basis Cost Basis Cost Basis Criteria: tching Criteria: tching Criteria: Options: Average Cost per Unit stive to the ben tive to the ben tiv	Structure (CBS) Minority Setup None Edit Edit Edit Edit ALL JC X-Axis: Item Qu OWeighted Man-Hour chmark data when from the average leviations from the P method) exceeds	Register       Fuel Cost       Fuel Cost       DBS       antity (Primary       Avg (weighter       s / Unit       exceeds:       enorm       enorm	y) Low Low () () () () () () () () () ()	rr Tags As-Buil Histor Defaul Defaul Defaul an-Hour Medium 1 €€	Pricing It ical Data S It Cost Iten It Account ( It Jobs Filte High	Schedule ource: n Matching C Code Matchi er: Y-Axis:	Cash Flow riteria: ng Criteria: Cost/Primar	Equipment	Maintenance  Inchmark Code;  Column CBS Positi Description CBS Positive	Benchmark	ing [		× ×
Durt Beich	indik items wit	n rewei than b	, instance	n data ponis							Tag 15 Tag 16 Tag 17 Tag 18 Tag 19 Tag 20 Tag 21 Tag 22 Tag 23 Tag 24 Tag 25 <b>Bendhine</b> User Def	rk Code ned 2		~	

The ACS in Control does not generate benchmarkable data points from as-built data. Benchmarking on account codes in Estimate is not possible when using as-built data from Control, and the Edit button for Define Account Code Matching Criteria is disabled.

#### Benchmark using data from Control

In Estimate, after you create a cost estimate, ensure the field defined as a matching criteria field is populated with a value corresponding to the benchmarkable data points to be pulled from Control.



Job Prop	erties	0	ost Breakdown Structure (CBS) Register 🛛 🕲								
Drag columns here to group											
CBS Positie	ion Code	<u> </u>	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	Benchmark Code (UDF 1)			
<b>=</b> 1			STRUCTURAL GENERAL	1.00	Each	\$1,051.60	\$1,051.60				
+ 1.	.1		MOBILIZE & DEMOBILIZE EQUIPMENT, TO	1.00	Each	Each \$1,051.60					
/ 🗆 2	1		PIPE SUPPORT #1	1.00	Each	\$526.30	\$526.30	PIP_SPT			
+ 2.	.1		FAB & INSTALL SUPPORT 10 LBS (SD-153	10.00	LB	\$7.65	\$76.52	7746			
+ 2.	.2		1/4" FILLET WELDS (FIELD WELDS) "	2.00	FT	\$224.89	\$449.78	7649			
■ 3			PIPE SUPPORT #2	1.00	Each	\$353.42	\$353.42	PIP_SPT			
+ 3.	.1		FAB & INSTALL SUPPORT 16 LBS	16.00	LB	\$7.50	\$120.03	7746			
+ 3.	.2		1/4 FILLET WELDS (FIELD WELDS)	2.00	FT	\$116.70	\$233.39	7642			
□ 4	t i		PIPE SUPPORT #7	1.00	Each	\$4,829.05	\$4,829.05	PIP_SPT			
+ 4.	.1		FAB & INSTALL SUPPORT 105 LBS	105.00	LB	\$8.10	\$850.50	7746			
+ 4.	.2		3/16 TO 1/4" FILLET WELDS FAB	11.00	FT	\$116.70	\$1,283.65	7642			
+ 4.	.3		CUT OFF & PREP AREA- EXISTING PIPE ST	1.00	Each	\$212.56	\$212.56				
+ 4.	.4		T&B FLG. FILLET FULL PEN W8X31 TO EXI	4.00	FT	\$620.59	\$2,482.34	7651			
<b>5</b>	;		PIPE SUPPORT #15	1.00	Each	\$1,092.01	\$1,092.01	PIP_SPT			
+ 5.	.1		FAB & INSTALL SUPPORT 50 LBS	50.00	LB	\$8.25	\$412.61	7746			
+ 5.	.2		3/16" FILLET WELDS STIFFINENERS	4.00	FT	\$116.70	\$466.78	7642			
+ 5.	.3		DRILL 5/8" 4 EA.	4.00	Each	\$26.55	\$106.19	7768			
+ 5.	.4		BOLT UP 1/2" BASE SUPPORT 4 EA.	4.00	Each	\$20.42	\$81.69	7786			
+ 5.	.5		GROUT BASE SUPPORT	1.00	FT2	\$24.73	\$24.73	10015			
<b>6</b>	<b>i</b>		PIPE SUPPORT #19	1.00	Each	\$728.58	\$728.58	PIP_SPT			
+ 6.	.1		FAB & INSTALL SUPPORT 26 LBS	26.00	LB	\$7.50	\$195.05	7746			
+ 6.	.2		1/4" FILLET WELDS L3 TO 1/2" PL	1.00	FT	\$116.70	\$116.70	7642			
+ 6.	.3		DRILL 5/8" 4 EA.	4.00	Each	\$26.55	\$106.19	7768			
+ 6.	.4		INSTALL 1/2" HILITI KWIK ANCHOR BOLTS	4.00	Each	\$51.06	\$204.22				
+ 6.	.5		BOLT UP 1/2" BASE SUPPORT 4 EA.	4.00	Each	\$20.42	\$81.69	7786			
+ 6.	.6		GROUT BASE SUPPORT	1.00	FT2	\$24.73	\$24.73	10015			
= 7	'		PIPE SUPPORT #22	1.00	Each	\$1,408.76	\$1,408.76	PIP_SPT			
+ 7.	.1		FAB & INSTALL SUPPORT 70 LBS	70.00	LB	\$7.50	\$525.14	7746			
+ 7.	.2		1/4" FILLET WELDS L3 TO 1/2" PL	4.00	FT	\$116.70	\$466.78	7642			
+ 7.	.3		DRILL 5/8" 4 EA.	4.00	Each	\$26.55	\$106.19	7768			
+ 7.	.4		INSTALL 1/2" HILITI KWIK ANCHOR BOLTS	4.00	Each	\$51.06	\$204.22				
+ 7.	.5		BOLT UP 1/2" BASE SUPPORT 4 EA.	4.00	Each	\$20.42	\$81.69	7786			
		10	13				\$38,943.27				

From the More Actions tab of the CBS register, click the **Refresh Benchmarks** button. The Refresh Benchmarks dialog box indicates the number of jobs found that meet the job matching criteria defined in Job Properties > Benchmarking. If this looks accurate, click **Refresh Now**; otherwise, click **Cancel**, and refine the Default Job Matching Criteria.



Ξ	-	Ð,	,							Trair	iing Job - Estimat	æ	
File		Setup	Estin	nate Quote	Price Execution	n System	Actions	More Actions					
ß	Sche	dule Selec	tion	∢⊧ Swap +	🛗 Bid Wizard	∑ Unit / Tot	al Confirma	ation   🕀 Add Qu	uote	+			
<b>6</b> -	Unsc	hedule Sel	ection	😑 Remove 👻	Subtotal Calcu	ulator 💮 Refresh B	enchmarks	5					
	Calcu	ulate Plug I	Days	C Update 🕶	Quantity Chee	cking 📋 Roll Up Q	uantities	7		Import / Update CBS 🔻			
	S	chedule		Batch Operations		Tools				Data Source			
			and the second se						and the second division of the second divisio				
1		4.1.1.2			Con La			30 ×,				U.U.	
	+ -	4.1.1.3		Blended Mate	erials Tanks	3	.00 Each	8		Ref	resh Benchmarks		
		4.1.2		Refining Area		1	.00 Each						
	+ -	4.1.2.1		Install Heatin	g System	1	.00 Each			La	st refresh: N/A		
	+ -	4.1.2.2		Separater Ta	nk	2	.00 Each			Jobs matching fil	ter criteria: 2		1
	+ -	4.1.3.2		Install Cooling	g Columns	1	.00 Each	1			Refresh Now	Cancel	1
		4.2		Removal of Under	ground Storage Tanks	2	.00 Each					Concer	
	+ •	4.2.1		Remove & Dispo	ose Contents	2	.00 Each	1 \$4,	797.71		0.02	0.02	0.02

Change the CBS Rregister view to Benchmark. Benchmark data is now populated for the cost items where the matching criteria fields matched in the benchmarkable jobs.

CBS Position Code	Description STRUCTURAL GENERAL MOBILIZE & DEMORSLIZE EV LEMENT T	Forecast (T/O) Quantity	Unit of							Sav	ed views: Benchmark Vie	··· · P
CBS Position Code	Description STRUCTURAL GENERAL MOBILIZE & DEMORE IZE ECUTEMENT. T.	Forecast (T/O) Quantity	Unit of									
<b>□</b> 1	STRUCTURAL GENERAL		Measure	Unit Cost	iark Units/ variance)	Benchmark Units/ MH (std. dev.)	Benchmark Unit Cost (low)	Benchmark Unit Cost (high)	Benchmark Unit Cost (average)	Benchmark Unit Cost (% variance)	Benchmark Unit Cost (std. dev.)	Benchmark Ber Data Points Las
	MOBILIZE & DEMOBILIZE FOLITIMENT. T	1.00	Each	\$1,051.60	0.00	0.00	\$0.00	\$0.00	\$0.00	0.00	0.00	0 *
+ 1.1	HODILLE COLHODILLE EQUITERTY I	1.00	Each	\$1,051.60	0.00	0.00	\$0.00	\$0.00	\$0.00	0.00	0.00	0
₽ 2	PIPE SUPPORT #1	1.00	Each	\$526.30	560.44	23.15	\$1,291.21	\$2,372.52	\$1,923.99		3.04	3
+ 2.1	FAB & INSTALL SUPPORT 10 LBS ( SD-15	10.00	LB	\$7.65	100.54	7.45	\$8.01	\$8.40	\$8.15	-6.16	2.92	3
+ 2.2	1/4" FILLET WELDS (FIELD WELDS) "	2.00	FT	\$224.89	110.08	9.89	\$251.00	\$262.50	\$256.75	-12.41	5.54	2
<b>3</b>	PIPE SUPPORT #2	1.00	Each	\$353.42	876.85	36.23	\$1,291.21	\$2,372.52	\$1,923.99	-81.63	3.41	3
+ 3.1	FAB & INSTALL SUPPORT 16 LBS	16.00	LB	\$7.50	100.54	7.45	\$8.01	\$8.40	\$8.15	-8.00	3.79	3
+ 3.2	1/4 FILLET WELDS (FIELD WELDS)	2.00	FT	\$116.70	110.56	11.73	\$110.45	\$147.22	\$130.87	-10.83	0.93	3
<b>4</b>	PIPE SUPPORT #7	1.00	Each	\$4,829.05	-33.22	1.37	\$1,291.21	\$2,372.52	\$1,923.99	150.99	6.31	3
+ 4.1	FAB & INSTALL SUPPORT 105 LBS	105.00	LB	\$8.10	67.16	4.98	\$8.01	\$8.40	\$8.15	-0.67	0.32	3
+ 4.2	3/16 TO 1/4" FILLET WELDS FAB	11.00	FT	\$116.70	110.56	11.73	\$110.45	\$147.22	\$130.87	-10.83	0.93	3
+ 4.3	CUT OFF & PREP AREA- EXISTING PIPE S	1.00	Each	\$212.56	0.00	0.00	\$0.00	\$0.00	\$0.00	0.00	0.00	0
+ 4.4	T&B FLG. FILLET FULL PEN W8X31 TO EX	4.00	FT	\$620.59	101.48	0.00	\$662.50	\$718.75	\$690.63	-10.14	2.49	2
B 5	PIPE SUPPORT #15	1.00	Each	\$1,092.01	223.87	9.25	\$1,291.21	\$2,372.52	\$1,923.99	-43.24	1.81	3
+ 5.1	FAB & INSTALL SUPPORT 50 LBS	50.00	LB	\$8.25	100.54	7.45	\$8.01	\$8.40	\$8.15	1.20	0.57	3
+ 5.2	3/16" FILLET WELDS STIFFINENERS	4.00	FT	\$116.70	110.56	11.73	\$110.45	\$147.22	\$130.87	-10.83	0.93	3
+ 5.3	DRILL 5/8" 4 EA.	4.00	Each	\$26.55	92.31	0.00	\$27.25	\$27.25	\$27.25	-2.57	0.00	1
+ 5.4	BOLT UP 1/2" BASE SUPPORT 4 EA.	4.00	Each	\$20.42	216.67	0.00	\$24.75	\$24.75	\$24.75	-17.49	0.00	1
+ 5.5	GROUT BASE SUPPORT	1.00	FT2	\$24.73	467.21	0.00	\$67.33	\$67.33	\$67.33	-63.27	0.00	1
<b>=</b> 6	PIPE SUPPORT #19	1.00	Each	\$728.58	260.34	10.76	\$1,291.21	\$2,372.52	\$1,923.99	-62.13	2.60	3
+ 6.1	FAB & INSTALL SUPPORT 26 LBS	26.00	LB	\$7.50	100.54	7.45	\$8.01	\$8.40	\$8.15	-8.00	3.79	3
+ 6.2	1/4" FILLET WELDS L3 TO 1/2" PL	1.00	FT	\$116.70	110.56	11.73	\$110.45	\$147.22	\$130.87	-10.83	0.93	3
+ 6.3	DRILL 5/8" 4 EA.	4.00	Each	\$26.55	92.31	0.00	\$27.25	\$27.25	\$27.25	-2.57	0.00	1
+ 6.4	INSTALL 1/2" HILITI KWIK ANCHOR BOLT	4.00	Each	\$51.06	0.00	0.00	\$0.00	\$0.00	\$0.00	0.00	0.00	0
+ 6.5	BOLT UP 1/2" BASE SUPPORT 4 EA.	4.00	Each	\$20.42	216.67	0.00	\$24.75	\$24.75	\$24.75	-17.49	0.00	1
+ 6.6	GROUT BASE SUPPORT	1.00	FT2	\$24.73	467.21	0.00	\$67.33	\$67.33	\$67.33	-63.27	0.00	1
<b>7</b>	PIPE SUPPORT #22	1.00	Each	\$1,408.76	110.48	4.56	\$1,291.21	\$2,372.52	\$1,923.99	-26.78	1.12	3
+ 7.1	FAB & INSTALL SUPPORT 70 LBS	70.00	LB	\$7.50	100.54	7.45	\$8.01	\$8.40	\$8.15	-8.00	3.79	3
+ 7.2	1/4" FILLET WELDS L3 TO 1/2" PL	4.00	FT	\$116.70	110.56	11.73	\$110.45	\$147.22	\$130.87	-10.83	0.93	3
+ 7.3	DRILL 5/8" 4 EA.	4.00	Each	\$26.55	92.31	0.00	\$27.25	\$27.25	\$27.25	-2.57	0.00	1
+ 7.4	INSTALL 1/2" HILITI KWIK ANCHOR BOLT	4.00	Each	\$51.06	0.00	0.00	\$0.00	\$0.00	\$0.00	0.00	0.00	0 🚽
	103											
												•

Open a cost item and navigate to the Benchmark data block to view the scatter plot that shows various as-built data points designated with a blue triangle. Hover over the data point for a tool tip indicating further information about the data point, such as the name of the project, the date of the data, total quantity, and cost per unit.



ost Breakdown	Structure (CBS	) Register	Cost Ite	m Record O									•
BS Code:	Optional Code:	Description	12					Forecast (T/O) Qty:	Unit of Measure:	Unit Cost:	Total Cost:	Currency:	
									~				Ŧ
5		PIPE SUPPO	ORT #15					1.00	Each	\$1,092.01	\$1,092.01	U.S. Dollar	Ŧ
5.1		FAB & INST	ALL SUPPORT	50 LBS				50.00	LB *	\$8.25	\$412.61	U.S. Dollar	•
Assignment:	PI Line Number:	PI Descripti	ion:						Cost Segment:	Pay Quantity:	Cost Source:	Alternate:	
									Direct Cost -	50.00	Detail -	BASE	•
oost Item Summar	y 💁 Detail :	\$8.25 <b>#</b> P	lug : \$0.00	Quote : \$0.00	Benchn	marking							×
ag columns here	to group					\$8.44							
R :=	Code	Description		Quantity							<b>*</b>		
+ 1	IWWWSTN-SHU	Ironworker, W	Velder, N	1.00							Item Qu	antity (Primary	) = 131
+ 2	IWJJSTN-SHU	Ironworker, 3	ourneyman, N	1.00		\$8.34 -					Date = 1	12/22/2022	
											Code = Descript	tion = Glendale	M Indus
					CostPrim	\$8.16 — \$8.07 —					•	•	
						\$7.98 40.4	10 55 <sup>1</sup> 40	70.40 • Avera % variance from a	85.40 100 LB (Primary nge 🔺 As-Built sverage 🥅 0-1%	.40 115.40 • Unit) ◇ Current	130.40	145.40	_
					Setting	gs Re	eset Zoom Last L	Jpdated: 12/22/2022 4:	:39:30 PM	Pesource -	Schadula 📍 Licar Du	Print.	
					Re chip		- Hores - 12- COS						
										< Prev Ne	xt > OK	Cance	el 🔤

In the Benchmarking data block, click **Settings** to further refine the chart options.

Benchmarking				×
\$27,790.69-	<u> </u>			
	erage 🔺	- As-Estimo	ent -10%	
Settings Res	et Zoom Last Up	dated:		Print
🍃 Em 🗐 Not.	💽 Cos 🎰 I	>ro	🔁 Sch 🎍 Use ОК	Cancel

Settings include choosing which values to show on the horizontal or vertical axis, or manually choosing which data points to include in the scatter plot by removing any jobs that could potentially skew the range of reasonable values.



File	S	8	P-Mar - An	Outer Dalas Procession	Cost Item	1.2' Benchm	ark Settings	- BM 1		-	o x				金田(	?		
Ķ	1	As-8	Estimated			As-Built												
Spl	tc	Inho (Fro	erited Jobs Filter: om Job Properties)	ALL JOBS		Inherite (From J	d Jobs Filter: ob Properties)	ALL	JOBS									
Edi	t t Brea	Ove	erride Jobs Filter:	Edit NO	OVERRIDE	Overrid	e Jobs Filter:		Edit	NO OVERRIDE						•		
CBS	Code:													Total Cost:	Currency:			
	_	Iter	ms Filter:	[CBS Position Code]EQ	JAL 1.2	Items F	ilter:	[CB:	S Position Code	e] EQUAL 1.2		×				Ŧ		
H	1									٣	\$4.46	\$178,523.55	U.S. Dollar	Ŧ				
	1.2											•	\$0.00	\$0.00	U.S. Dollar	•		
PIA	ssignm	Disp	play Options:	X-Axis: Item C	uantity (Primar	ry)		<ul> <li>Y-Axis: Co</li> </ul>	ost/Primary Unit		*		Pay Quantity:	Cost Source:	Alternate:			
[En	ter Pay											•	50,000.00	Detail 👻	BASE	•		
Co	t Item	Inclu	ided Historical Da	ta: 🔽 Auto include all match	ing data point:	s									×			
Drag	colum	Drag	g columns here to g	group					Saved views:	Previous View	. ک							
*	Numb		Code 📄	Description	Include	Туре	Date	Item Quantity (Primary)	Unit (Primary)	Cost/Primary Unit	Man-Hrs/ Primary Unit							
-		<i>→</i>	BM 2	Benchmarking for Account and CBS items	<b>v</b>	As-Estimated	1/6/2014	23,750.00	CY	\$5.97	0.07							
			BM 2	Benchmarking for Account and CBS items	$\checkmark$	As-Built	11/5/2021	50,000.00	CY	\$1.86	0.01			^				
		4	_							ок	► Cancel		CY (Primary As-Built • As-Er	39,500.00 y Unit) stimated	t.			
		_								Settings	Reset Zoom L	astU	pdated: 12/29/2022	9:20:54 AM	Print	1		
4			_						<b>\$0.0</b>	0 2 Em 📮	Not 💽 Cos	20	Pro 🕵 Ma	Res Sch	🛓 Use 🔀 Ben	1		

Click the **Print** button in the data block to produce a report or export the data.

