

Luciana Burdi, Director, Capital Programs and Environmental Affairs

Massport Capital Programs – Vision and Mission



CAPITAL PROGRAMS & ENVIRONMENTAL AFFAIRS

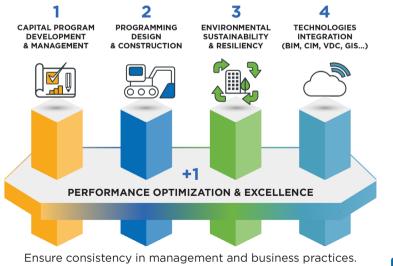
VISION

Transform our industry through innovation; create value for our clients and deliver "best-in-class" infrastructure projects for our customers.

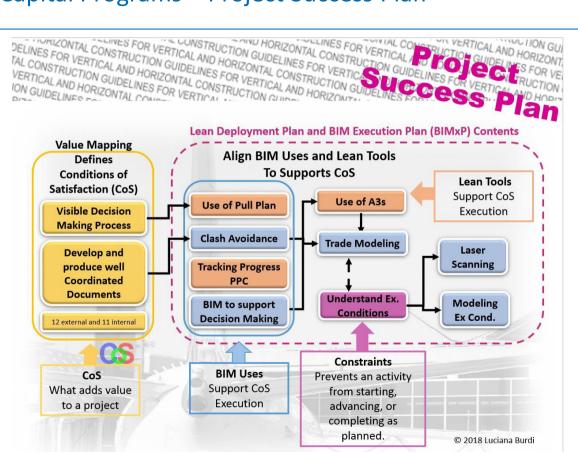
MISSION

Excel in delivering projects that enhance our customers' experience by programming, designing and building safe, efficient and sustainable infrastructure. We commit to doing this by being **inclusive, leveraging technology** and finding opportunities to **continuously improve** in our project management and delivery.

4+1 *VALUE STREAMS*



Massport Capital Programs – Project Success Plan





3

- 1. Introductory Retrospective/Expected Outcomes
- 2. Last Planner[®] System: Milestone and Phase Pull Planning
- 3. Last Planner[®] System: Lookahead, Weekly Work Planning and Dashboard
- 4. Last Planner[®] System: Learning/Improving
- 5. A3 Decision-Making Process
- 6. Choosing By Advantages





LEAN INTRODUCTION, ORIGIN, AND BENEFITS



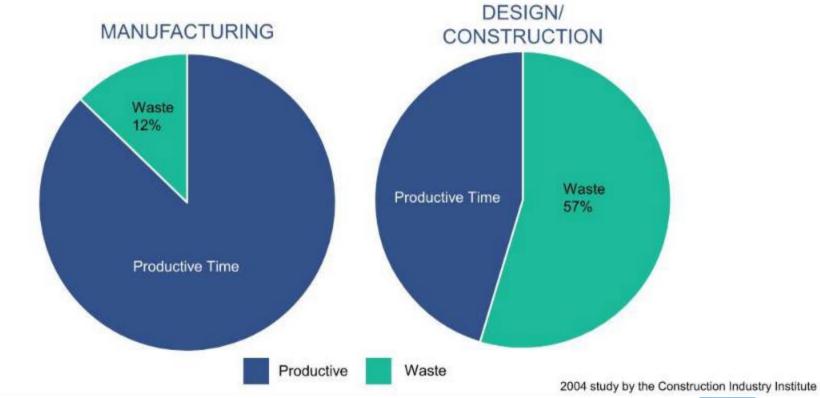




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The Opportunity...



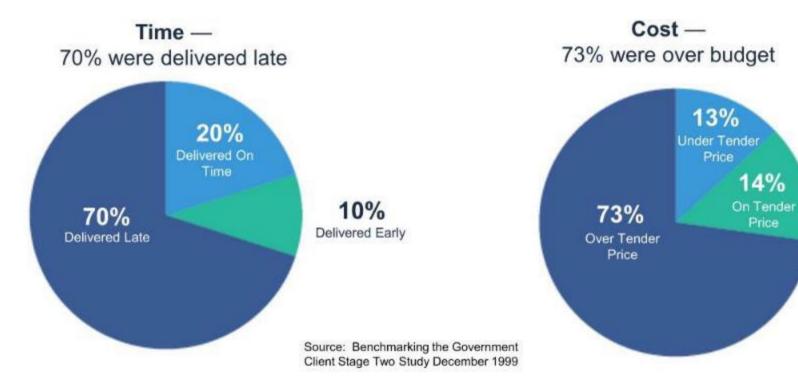




INTRODUCTION TO LEAN PROJECT DELIVERY

Why Use Last Planner System®?











Lean

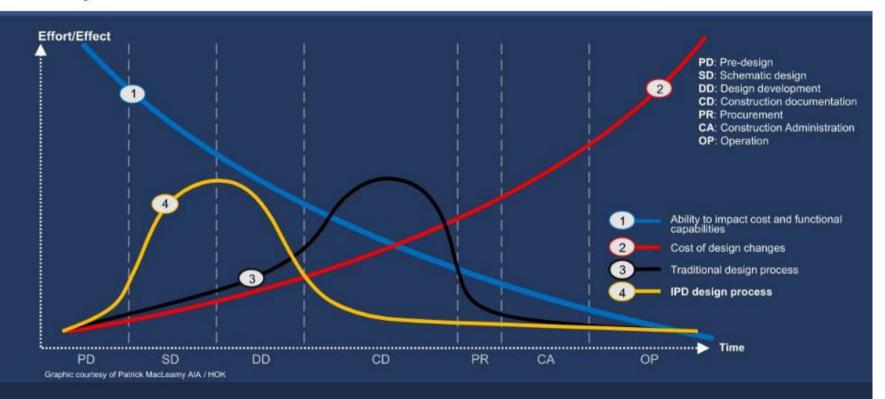
Lean project delivery creates value, efficiency, and effectiveness through streamlined workflow and continuous improvement.



INTRODUCTION TO LEAN PROJECT DELIVERY

Early Team Involvement







LCI Tenets





TYPES OF LEAN TOOLS INTRODUCTION



Lean Tool Box - Focuses on Three Areas

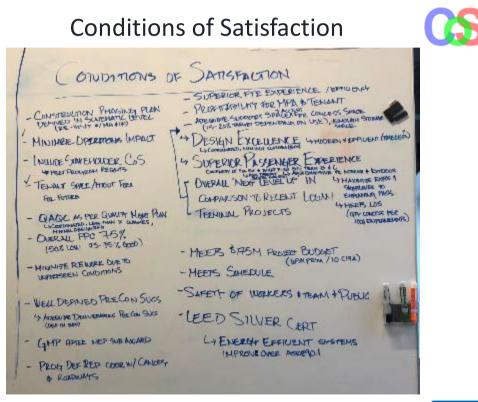




Collaborative Work Planning

Decision Making

Continuous Improvement





Collaborative Work Planning

Decision Making

Last Planner[®] System



Continuous Improvement



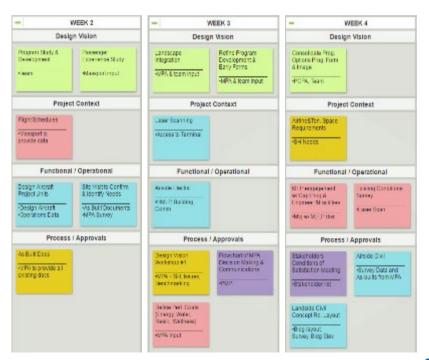


Pull Planning

Collaborative Work Planning

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Continuous Improvement



Weekly Work Plan



Collaborative Work Planning

Decision Making

Dashboard

Project	ashboard							L1548 Terminal O	C Canopy										July 2	27, 2018	
Weekly Percent Plan Complete												Constraint Log									
100%			(As of 7/3	27/18)				- mean rec	Average PPC	Weekly PPC				Description		most	Action Plan	Los.	Date Added	Impact Date	keaphed
100					-				[As of 7/27/18]	(7/23 - 7/27)	1			or preconstruction services		Procure crit path elevators	have BIQ on time	MPA/Gension	3/7/2018	4/31/2008	
60%						-		~ ~ ~	be or 1/27/16		2		otal Project Co			Design progress	Cestreview	MPA/Gentler	3/7/2018	5/31/2018	1.00
405											3			al and utility site survey et feedback on Canopy Options	_	Design progress Design progress	Nitsch scope Xey Der blan Mites	Gensier MPA	3/7/2018	5/51/2008	
205									83.29%	91.67%	4	Massport Sen	ior Manageme	nt Feedback on Canopy Options	_	Design progress	Key Decision Mitga	A/PA	5/11/2018	5/31/2008	5/31/20
100.0									83.29%	91.07%											-
2/2	3/2 3/9	3/14 3/23 3/30 4/5 4/13 4/20 4/27	5/4 5	01 508 9	116 2012	6/8 6/2	6/22 6	19 7/6 7/13 7/20 2/27 8/3													-
																	Ont	ions Sum	mary		
																		1			
_		Current Production Pla	an Snans	hot					MPA	Senior Mana	agement [lecisions				Concert	Form				-
																• Learch	[Glass]				
		Previous Week (as of	7/27/18]							Decisi	on Log					+ Laund	(ETTE)				
Terr					Completed?	Beason	New Date	Item		Eese/IK	Date Added		Exclued On	Feachtion/Comment	Priority	Valley Cu					
330 234	4 18				765			1 Gensler to develop Saddle and Shiplop option		MPA	3/7/2018	2/6/2018	2/6/2018		•	 Skylight (Solid) 	Sis/ight combo)			ofing Material	
331 234	CCCC R	80 20% Code Report			YES			2 Do not investigate extending new elevators up	o to a future APM	MPA	3/7/2018	2/27/2008	2/27/2038		•				• (Glass	
212 22-0	d STANT	Submit 22% Draft Submittel Plans			YES			3 Plan locations for APM sufficient, do not deve	dan further	MPA	3/7/2018	2/27/2608	3/1/2018	re. Lep+Elliot planning services		Unveter	(mast)			ETFE	
212 23-					755			4 Overall phasing strategy approved (detailed to		MPA	3/7/2418	2/27/2658	2/27/2038			• Ac		-			-
234 23-					755		-	5 APM consultant will not be salected until after		MPA	4/17/2018	4/17/2018	4/17/2018	Geroler re-engage w/Lea-Elliot	-	1 548		-	German Au	rivel: Levent	-
335 23-					705	· ·	-	6 Delete 'Valley Straight' canopy option		MPA	5/1/2018	5/1/2018	5/1/2018	Close in cost to "valley curved"		- Sout		1		Snear	-
335 23-					75			 Delete "Valley Straight" canopy option Proceed with development of "Split Core" elet 		567A	5/1/2018	5/1/2018	5/1/2018			• 504	LATE	-		(1999) (1999)	-
			6											Other options too costly/th/suptive					•54	46936	
227 23.					YES			8 Massport Senior Menagement Feedback on Co	anopy Options	MPA	5/11/2038	5/31/2018	5/31/2038	Launch option selected	•	-		-			-
338 234					Y15			9 South Core Elevator Option Chases Option		MPA	5/18/2015		5/18/2038								
339 23-	WSP N	Temp. Bridge, 20% Fiaming Plan, Foundation Plan, Sect	ce		Y85												Conditio	ons of Sat	isfaction		
343 23-	4 WSP	20% Initial M/P/PP Pricing Package to Gensler														tians					Stakehol
341 23-1	A MPA	EOA for 7/24 Sam Meeting			785											1 Improved Traffic Flow /	Capacity / Sofety / Pa	ssenger Level ef	Service		Tean
342 23-	d MPA	ECA for 7/26 Fire Dept. Meeting			YES																
343 244	d MPA				YES											2 Improved Passenger Ex	eriesre as Measured i	by Bre / Bost Co	ramatery Day Surve	<i>(11)</i>	Team
344 24					NO.	3	180		0	rent Project Dra	wines / Ren	derines									
10 25		ER Comments on 20% to WSP			775											3 Improved Architectural	image as measured by	Dre / Best Orra	manny Pay Survey	v	Team
346 25-					715	-										and Design Awards	inage as measured of	The / Feat Occa	9869 FB 20163	,	1021
M2 25-					785				0 2 0 0	and a second second			100			and Design Materios					-
347 25-					785				0000000			1000	100								Tear
					Canceleo			- VP				-				4 Informed Stakeholders	Proughest Design & C	centructies Pro	cess		Tear
348 25-1			staction		755							1000									-
243 27-					Y55				- <u>DOI</u>		100			63 A		5 Sustainable Design Mee	ting or Exceeding MP/	Sustainability	Suidelines		Tean
338 27-		LR Determine Glass for Holstway & Lobby									1000		C PB	C- 20							
351 274		EX Prepare and Package 20% Review Set			785						STREET, STREET	1000	22 200	and the second se		8 Coordinated Design with					Tear
352 27-		FR 60% "Poncils Dowe" for Elevators & Garage Annuals			90	4	180	B	The state		1000 B	ALC: NO.	10112			Design Deadlines, and a	minimum of 80% Ove	rall Percent Plac	• Complete		
353 27.4	4 GENSLI	5 Sand 30% Package to Client			YES			6 -						Statement of the local division of the local							
-		Upcoming Weeks (as o	f 7/27/18)									1.00	HAT MEL		1	7 Coordinated Design with	h Future Projects, inclu	iding APM			Team
Isia.	artx	Description	Max	Tues	Wed	Dars	Eri														
254 MF	Fage Turr	ter	30-1#1													8 On-budget design within	n 1 Round of Value Eng	pineering			Team
255 GEN		FQ for Shortlist Meeting				2-hog															
216 W2		wer Roquirements to Joo F				-	3 Ave									3 Maintain Continuous O	perations During Const	rucies			Tear
217 GEN	R. Dutribute	en Strategy far Canopy (Air, Powor)		1			3 Aug	"SOUTH CORE" ELEVATOR LAY	OUT OPTION		"LAUNCH"	CANOPY OF	TION WITH	H ETFE (STREET VIEW)				WBE Comp	liance		
214 GEN	ER Fravido R	CP to WSP		1			3.448									Team Member				% of total fee	•
114 107	A DARK IT AS	leeting Week of 8/6	6-Aug											-		Keville (Scheduling/Res	dant Engineering)			0.09	
335 MP		Recurg week in the U7 Som Moeting	6-Aug	-			-						_			HLB (Lighting Design)	and the second			1.05	-
261 102		V7 Sen Meeting MPA GTU Meeting	6-Aug 6-Aug	-			-					-	of the sure of							1.0	
													STATISTICS.	A with the second second		Nitsch Engineering (Sur				0.0	
352 W3		ers für Garage (TNC Wiff/Bluetooth, CCTV, PA System)	G-Aug								Contraction of the		-	C. STATERATING TOTAL		XB Environ Sciences (Ai					
353 MP		Meeting with HS		7.Asg							-	-	-			Total to date based on-				2.03	5
214 10	EQA for 8	/9 Stakeholder Meeting			8 A.M.							-		and the second se			No	ext Big Meet	ing		
205 W.S	Provide U	Ipdated Utility Locations to Stantec - Devotor Package - 60%					10 Aug				-	-	-	2		1 Progress Meeting with	6		_	_	8/7/2
214 6610		0% "Final" Elevator Package to Team					10-Aug				-		and the second								1
312 GZN		e Lobby Finishes		1			10 Aug						-			-					
				-							-			ATT CONTRACTOR				ter Bellerer	h le c		
344 GENS	AR prostigat	to ETHE PRIT Finishes					10-Aug						14	A COLORED OF A			Ma	jor Delivera	DOGS		
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_																1 60% Elevator and Garag	e Pockage			180	6CN5
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ŧ											"LAUNCH"	CANOPY OI	PTION WITH	H ETFE (OVERVIEW)							

Continuous Improvement



Collaborative Work Planning

Decision Making

Continuous Improvement

A3 Decision Making Process

A3 No	Title	Revision	Champion	Date Started	Colla		rs				Review	er		Approve	d by:	Approv	ed date		Status	
4	L1428 FAA NEXGEN ATCT Tower	2	R. Couto, WSP	08/16/2019	D. Eric	son, W	ISP			R	Couto		S. Harr	is-Long,	мра	08/1	5/2019	ı	⊠Developm 2 Collaborative 2 Implement	review
Section	1 – Background				Sect	tion 5 -	– Prop	osal/C	ptions C	onsidered										
control feasibilit Baseline Addition	ssport-operated and FAA-leased Control Towe equipment to NEXGEN equipment. In order to ty of meeting the following: 6005 For datisfaction 6005 For datisfaction 610 Considerations of Future Value Expand administrative and training spaces Relocate the existing simulator space consolidate employee spaces from adjuent b	accommodate t	the NEXGEN equipm	nent, the study team assesse			A CHIMMAN A	A THE WAR	Rea 173 Mes Sati OPTIO Buil	ior Renovati locates Towe 19 ets Baseline C sfaction	r Space a ondition	of Y5	11 11 11 11 11 11 11 12 12 2 2 2		AH HA	a a a a a a a a a a a a a a a a a a a	Betw Real 19 Exce Satis Prog Leve OPTIOI	structs Ner ween the P locates To eds Baseli ifaction by grammable d N 4A weds Baseli	wer Space at I ne Condition (~2000 SF Space at Nev ne Condition (Levels 17 of v Elevate
e	a. b. 11				16.11	-		11	• Rea 178	locates Towe 19	r Space a	t Levels	al.h			1/2		faction by rammable	* 2900 SF Space at Gar	age Level
WSP P	section 2 - Problem Statement/Current State VSP [PS] stam performed the following: Server and Full subble existing documentation of the Control Tower Structure and the adjacent Central Garage Structure, including all recoursions and additions Serveral Field visits to the Control Tower, the Central Garage, the FAA Equipment Boom, and the FAA Office Space Instrain meetings on a regular basis to produce value options to meet Massport's goals and to coordinate our investigation analysis efforts Weekly meetings with the Massport Project Manager external Total State/Conditions of Satisfaction • Control Cost excluded from Initial advantage assessment. Included in analysis for reference only.					A Van Barry Van	THE R		Sati Spa Offi Add Spa OPTIO • Buil • Excr Sati Spa • Add add Spa	dout of Towe reds Baseline sfaction by ~1 e at Levels 2 Alternate: Pc titional ~750 S ce at Level 1 8	S0 SF Eq nd ~100 vel 2 tential fo F Equipm a 4 Walkwa Conditio S0 SF Eq & 3 tential fo F Equipm a 4	iipment) SF ir ent i of iipment ir ent	How & 2. W. C. Million				Satis	eds Baseli faction by rammable	ne Condition ~7400 SF Space above	
•	Construction Logistics/Phasing: Less construction	tion phasing com	plexity is more desir	rable.	Sect	tion 6 -	– Impa	ict Sun	nmary an	d/or Recon	mende	d Actio	ns							
•	Permitting/Code: Less code complexity is mor	e desirable.								AL IMPACT SUM								MNGTELMN		
•	Feasibility & Technical Complexity: Less techn	ical complexity i	s more desirable.		Option	TOWER	NAMES NO.	eta Towre		Fastage E Program Ad lenge Genge TOMES L4 L3 L17		EALLOCATION		12544	Option	Actor Budy Ext	matic Sprin	kler System Ins System Resulted	Restriction of Land	
•	Impacts to Tenants: Less impact to tenants is	more desirable.			1	0	u u	2 1.4	U U	14 15 1.17	400 SF	MALE 600 ST	A ST	BUTONO DAMUNE	- 1	an Local	(
•	Potential for Program Growth: (beyond Basel	ne Conditions of	Satisfaction) Higher	r square footage is more	24		100.57 250				NC.9			1220 16	2A 28		/	4	~	~
	desirable.				28	-	077105 899. 800 89 20649 710 500 39				THE .				3		(Ý	1	×.
•	Unknowns/Risk: Less risk/unknowns is more of	lesirable.					400 JF 2017 201					+ SF	1350 SF	794 SF	4A 4B	-		~		
					3		-		2000 SF 0.5%ER		000.54 000.04	600 SF	2000 SF	2000 55			ATRICT	URAL IMPACT OF	MINARY	
Section	4 – Investigations and Analyses				4A					10.04		0.56	1500 SF	2900 56	Onter 1	and all and	GAU	MITY	WND SEISA	RG Lateral D
						+	-			1046 R							Regranato	Upgrade Respired	Requirements Requirements Trappenent's Trappen	ants Arrent
	B's team performed the following:				48					2904 7406-0F		0 SF	8000 SF	7400 55	1 · 2A ·	Heration (, avril 2 Benation (, avril 2		- A0 - A0	1 1	N0
	Review of all available existing documentation		ower Structure and	the adjacent Central Garage						[control				-	28	iberation (.mmil 2	4	40	1 1	50
	Structure, including all renovations and addition					omme	nded (Option	: OPTION	28				- F	3 4A	Addiox		10 10	· ·	N0 N0
	Several field visits to the Control Tower, the C	entral Garage, th	e FAA Equipment Ro												48	Addition	1	10		10
•						ion 7 -														
:	Internal meetings on a regular basis to produc	e viable options	to meet Massport's	goals and to coordinate our	Sect	10117-	- 10110	wop												
:		e viable options	to meet Massport's	goals and to coordinate our		• Pu	iblish A	3 Decis		ary internally										
:	Internal meetings on a regular basis to produc		to meet Massport's	goals and to coordinate our		• Pu • Co	iblish A	3 Decis te with								le discipi	lines to	incorpora	te appropriat	te change



Collaborative Work Planning

Decision Making

Continuous Improvement

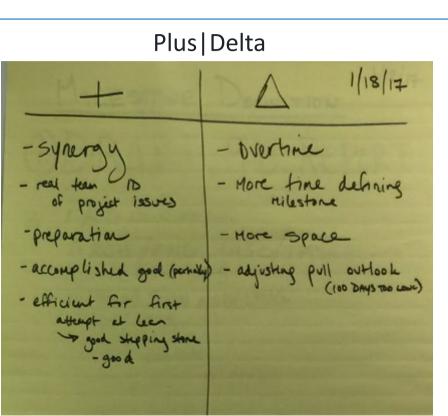
Choosing By Advantages Decision Making Process

Factor	Criterion	Opti	ion 1	Optic	on 2A	Optic	on 2B		
Cost	cost es chides (non seba) edice topo da es ener.		93 TOTAL HÅ F		IO TOTAL	\$1,617,A19 TOTAL \$813,67			
	Acciladed here for systemacy only.	Adv. \$5,837,813	0.4	44-25,656,978	AUG	Adv: 56,671,587	8.4		
	Silverter schedule desetige is deser	APPROX.	S MONTHS	APPROX. 0	S MONTHS	APPROX.	S MONTHS		
Schedule	des/rable advartage	Adv. 3.5 membra	1910: 310	Adv: 2 months	Mig.: 50	Asia 3.5 meeting	NH#: 300		
Construction Logistics/Phasing	Casa construction sharing complexity in more derivable	existing town	ecours within or featprint and elops	existing towe parking-area larger area t	r, existing no- of garage, but here 1 and 28	Wark same occurs w objecting tower, existin parking-area of garag larger area than			
	advorting?	Ade Maar nasphana pitening	1915: JUZ	Adv: More Eventure phoning	Nogi Na	Adv. More inseptence alterating	NH,#1 97		
Permitting/Code	Los a control complexity to prove the builds active lays	Molmalia			omplex, due la ajectarea	Minimal code impact, bat larger area than 3			
		Ashe Marti Magabisha angka Mata	ing. 20	Adv: Dilyhily mare stepfisis code rea.	herja i 182	daler Marre Amplifalle andre 1919:	lay: 72		
Feasibility & Technical	Lour makeical complexity is more	N1+	mat		out of tower structure	Basic build-out of tower walkway clearbare, larger footprint than 2A			
C omplexity	des/rable edvarange	Auto: Artoure recitor/cally story/Valia	ing: 60	Aduc Missie Sector Locify Marginatia	http://50	dale: Technically dasplicate	krus: 49		
impacts to Tenants	Las a report for beneate a more derivable eductioner		from LE2 to ty Traffers	without reloc still requires m	cts swing space ating FAA, but redifications to 19th floors	Option constructs riving spa without relocating FAA			
		late Ma	eng: O	Adv: Mangloolly less impact to lesses	http://20	Adv. 3-nour Import to Import Is	kny: 65		
Potential for Program	Maher savare (solage is				nd telco floor I350 S F	Adds telco floor area, 759 5 F			
Growth*	mere des habits acture top-	tala Nija	Cargo O	44- Some potential for program grants	herge: 30	kde Some potential for program growth	lage 25		
Unknowns/Risk	Louis statifications a more decadate	MB	Inel		d-out of tower walkways		d-out of towe elkweys, but teles space		
	advoci la po	Adv. Least risk meatoor	549. JU	Adv: all ploty loss sisk sevel and	heye: 28	Adv. Morginally less risk in solved	bage: 30		
MOST PREFERRED ATTRIBUTE LEAST PREFERRED ATTRIBUTE EUTRAL/TRANSITIONAL		Totai Imp Advo	ion 1 artance of nloges		on 2A ortance of otoges	Option 2B Total Importance of Advantages			
ATTRIBUTE		Imp:	365	Imp:	310	Imp:	390		

Collaborative Work Planning

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Collaborative Work Planning

Decision Making

Retrospective

ST/	KEEP DOING						
		Responsible Party					
Issue	Action	Primary Resp.	Secondary Resp.				
1- Develop & share RMP (Risk Management Plan)	Formalize RMP and incorporate in PMP	Consultant	MPA PM	1- Analyze & Mitigate Risks			
2- Establish Lean principles and tools and obtain buy-in	Develop LDP (Lean Deployment Plan) template	LB		2- Work Orders: PD, Design, CA, RE			
3- Obtain Prior Approval on Program Changes	PM to provide written approval for any add'l scope investigation or program/schedule change	Consultant	MPA PM	2- WORK Orders: PD, Design, CA, NE			
4- Track Weekly Schedule, Budget, Issues, Risks	Ledger to be kept by Consultant as part of weekly agenda items with MPA PM	Consultant	MPA PM				
5- Track conflict and issue resolution plans	Implement in PMP	Consultant					
6- Upper Mgmt. Buy-In & Commitment on Lean Process	Present Production Plan to Senior Mgmt.	Consultant	MPA PM				
	Set meeting schedule at the beginning of the project	Consultant	MPA PM				
, Develop meeting schedule with specific agenda, expected outcome & list of key	Incorporate meetings in Prod. Plan with key attendees & topics	MPA PM	Consultant	1			
/- individuals that must attend	Share Agenda 48hrs ahead of every mtg	MPA PM	Consultant				
	Incorporate in Consultants Manual	LB		1			
8- Perform Plus/Delta at each meeting	-	ALL	-	1			

STOP DOING								
		Respons	ible Party					
Issue	Action	Primary Resp.	Secondary Resp.					
1- Communicating design and budget changes late								
2- Performing additional scope prior to written approval	Obtain written (email) approval by PM (including Ledger)	Consultant	Consultant -					

Continuous Improvement

22

HIGH-PERFORMING TEAM FORMATION

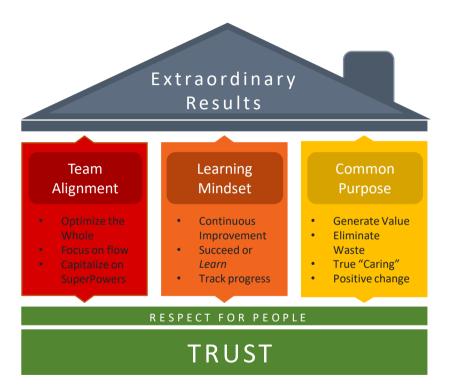


High-Performing Team

Framework

Creating High-Performing teams is crucial for success.

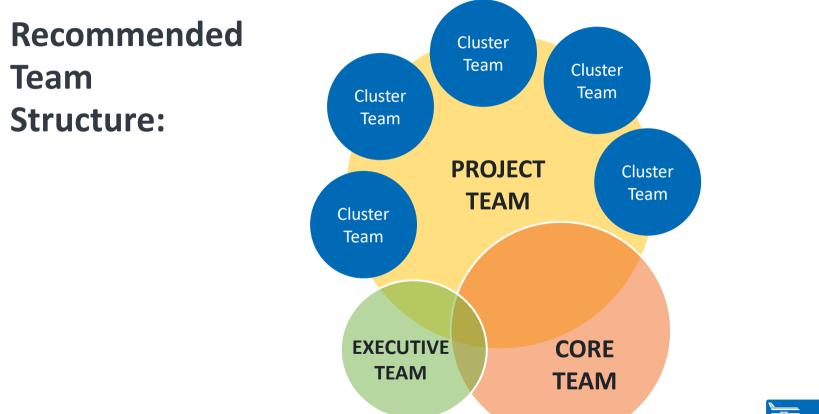
Cultivating a *culture of excellence*, will deliver Innovation, Creativity and Extraordinary Results.





24

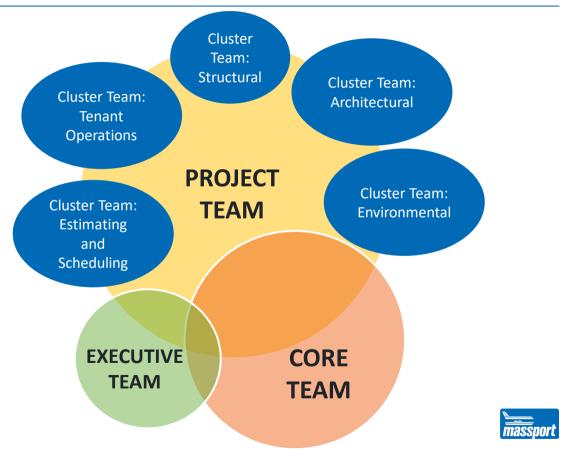
High-Performing Team Formation





High-Performing Team Formation

Sample Team Structure:



SESSION Q&A AND PLUS-DELTA



Plus | Delta

Plus	Delta

