Runway-Taxiway Construction Best Practices & Lessons Learned

No.	Best Practice / Lesson Learned	Loc.
1	Construction equipment shall not be staged for overnight parking or non-operational use on the edge of active runways. This facilitates the need to have associated support equipment and personnel also operating in the vicinity increasing the likelihood of an incursion. By staging equipment in a benign midfield area, any danger of a movement area transgression was minimized.	BDL
2	Runway guard lights were utilized under all meteorological conditions to serve as an additional warning mechanism to construction operators to be mindful of potential "hot spots" of high traffic zones.	BDL
3	Isolate construction area: Turning construction area into "landside" property reduces interface with "airside" operations; active control of adjacent roadways with flagmen and active barricading systems reduces the likelihood of errant vehicles entering the movement area; lit jersey barriers and barricades were placed at taxiway and runway intersections beyond which no vehicle could proceed beyond; it was emphasized with great fervor to all contractors that this was the "point of no return" - any vehicle driver that crossed beyond this point without direct approval would be immediately removed from the construction site.	BDL JFK
4	ASDE-X configuration map filtered to eliminate safety logic processing of construction vehicles located within barricaded areas.	BDL JFK
5	To avoid jet-blast to workers/equipment, all engine run-ups shall be coordinated with Airport Operations prior to the aircraft accessing the movement area; all aircraft operators have been informed that they shall coordinate with Ops prior to calling GC.	BDL
6	ARFF access must be considered when planning construction activities	BDL
7	Planning as far as possible in advance allows for input and ideas to be incorporated before the sponsor signs contracts. Define project, restrictions. It is important to involve the air traffic personnel, airport operator, airline representatives, and airport certification personnel. A diverse group (pilots, dispatchers, FAA groups, adjacent facilities) yields diverse ideas.	ORD JFK

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8	Refine operating concept, and break projects down into phases. Integrating projects into single plan ensures that the cumulative effect of projects is considered, rather than projects being evaluated as stand alone. Matrix/Timelines provide a good visual reference of project overlap and/or influence on other projects. Identify critical stages needing completion prior to next phase: i.e. a taxi route needed for completion of one phase might be eliminated by the next phase; always look into each construction phase carefully to identify critical events that could ripple into the next phase(s)	ORD JFK
9	Once the phases and timeline have been broken down, involve Sys Ops. Start to develop impact statement.	ORD
10	Airlines and airport operator work together on publicity campaign; start of the communications campaign is driven by the ability to get the information out to the aircraft operators; typically, information is published about 1 month prior to actual work; make sure to involve air carrier Certificate Management Offices (CMO); Begin outreach with customers at least one year in advance, sooner if possible. They also have a tremendous amount of planning to do, especially if they are planning to adjust schedules and marketing plans for the construction period. This involves major airlines, dispatchers, chief pilots, scheduling, marketing, and user groups such as ALPA, NBAA and AOPA.	ORD MSP
11	Conduct hands on classroom and simulator training. Simulator modeling of runway/taxiway closures allows development of safe options and is significantly more effective than R&I briefings; We worked with airport authority Engineers developed simulations of ground movement and provided SIMMOD showing what normal surface traffic movements look like. This allows us to see where bottlenecks may develop with the impacted construction areas. Have Tower personnel provide suggestions and allow engineers to update. (same type of modeling is available at the Technical Center in Atlantic City). If feasible, have subject matter experts from the CPC ranks provide the construction training with management oversight. Keep a list of Frequently Asked Questions from the training. Use the FAQs as training continues and also publish the QAs in the R&I for all employees.	JFK MSP
12	We typically try to brief controllers/operational staff on all changes anticipated as far in advance as possible; this offers front-line employees their first peek at what is coming on a broad scale.	ORD
13	Start final briefing to controllers prior to construction commencing about 1 month prior to change; face-to-face whenever possible, mandatory briefing item, read-and-initial	ORD

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14	Publicity campaign in tower about 2 weeks before change.	ORD
15	Personnel in tower to remind controllers the day of change.	ORD
16	Identify a single P.O.C. for Air Traffic. Using multiple contacts increases chance of "I cleared it with ____". Single point of contact maintains single point of accountability.	JFK
17	ATM needs to be involved and show presence. Let's other entities know how serious we take these issues. If it is important to the ATM, it will be important to all.	JFK
18	Schedule "FAA only" meeting prior to attending first construction meeting with others. Any disagreement between Air Traffic and Airports, Tech Ops etc needs to be resolved prior to meeting with external entities. FAA presents one unified position.	JFK
19	Schedule frequent follow up meetings during project. This allows for modifications to op plan as needed; recommend weekly during the beginning and ending segments; as required during the construction periods where no reconfigurations are occurring	JFK
20	Short-notice or immediate projects/closures require increased scrutiny. Changing starting dates and spot closures need to be looked at with the same level of assessment as a planned project. Same risk being introduced without planning meetings; **"just say, NO"**	JFK
21	The number one ingredient for a successful closure is communication both internally and externally (with the customers). We have worked for many years to solidify relationships with customers (both pilots and dispatchers), the airport authority, airport authority's engineers and consultants, adjoining Air Traffic facilities; Transparent, open communications and a good working knowledge of everyone's role is essential for a successful outcome.	MSP
22	Work with airport authority and their contractors to determine best time of year to complete the work based on traffic levels and historical weather data. Also discuss and determine the general scope of the project including potential impact to traffic flows in the air and on the ground.	MSP
23	If there will be special requirements for aircraft such as LAHSO, this is the time to get engaged with the individual carriers. We were able to get one air carrier to change their LAHSO procedures in time for our construction. Be prepared to show them the impact on them and also the overall system.	MSP

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24	Get AJW onboard. They will be a major player, especially when you near the end of construction and the final work is needed to restore navaids and get the runways flight checked; When will Flight Check take place, what are the requirements and timeframe, when will NAVAIDS and other facilities will be returned, when will runway painting take place, etc. The runway/taxiway will open on a specific date but it may be only for VFR operations. Cat I, II, and III will be dependent on the flight-check outcomes	MSP
25	Form airspace working groups comprised of Managers, FLMs, Support Staff, and CPCs. The Tower, TRACON, and Center generally meet separately and start to determine required airspace and procedural changes, i.e. develop potential taxi routes to accommodate construction impacts or develop traffic patterns and airspace to accommodate new airborne flow patterns.	MSP
26	Have joint Tower/TRACON/Center meetings when airspace/procedural issues are identified which impact all concerned. Have these on a regular basis---monthly at a minimum.	MSP
27	Develop AARs and ADRs for the potential runway configurations to be used. Look at any impacting issues surrounding configurations such as weather minimums, converging approaches, LAHSO, etc. Also identify any required equipment, automation, or procedural concerns that may have long-term resolutions.	MSP JFK
28	If tools such as Converging Runway Display Aid (CRDA), Arrival Distance Window (ADW), or Departure Decision Aid (DDA) are needed, now is the time to get started on those procedures. They have very specific parameters and it takes time to get the ARTS/STARS updates, maps changed, and the preciseness figured perfectly. MITRE was a great help in assisting with our timing/distance issues on the ADW.	MSP
29	Take every opportunity to share the basic plan and information with the customers. Do it as often as possible. Runway configurations, LAHSO, AARs/ADRS, etc. If you do not get an invitation, send them the information and stress how important it is to get the word out to their employees, groups, and membership. Include power point presentations so they can self-brief their employees internally, such as Dispatcher groups; Outreach is extremely important – be as transparent as possible – do it often!	MSP

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30	Prior to the runway closing we "practiced/tested" the ADW procedures on live traffic. It gave the FLMs and CPCs an opportunity to become familiar with the RADAR maps and get comfortable with the timing that was necessary to be successful; TRACON had to use Converging Runway Display Aid (CRDA) for the first time on both the north and south operation. We provided ETG training four months prior to construction and then a brief ETG refresher just prior to the closing of the runway.	MSP
31	Also advise the air carriers that they need to fuel for unusual circumstances. Any minor hiccup can cause major airborne or ground delays and the additional fuel may be necessary for holding.	MSP
32	Develop an Operational Impact Statement (Significant Impact Statement) to be shared with Center, The ATCSCC, and the Customers. Send the initial OIS 4-6 months in advance. Resend an updated version of the OIS or SIR 2-3 weeks prior to the closure. In 2009 we included a power-point presentation along with the OIS to be used by the ATCSCC and the customers for internal training and briefings.	MSP
33	Make sure you have completed the SRM process and have the SRMD's that you need complete and in place; don't hesitate to request assistance	MSP
34	Consider quick reference cards or "cheat sheets" as necessary to depict changes in airspace, frequencies, and other operational items. Have these laminated and posted at the affected positions. Again, update as needed.	MSP
35	Staff additional coordinator/oversight positions for the "extra set of eyes." We employed a crossing coordinator and a local assist in the Tower. These positions saved a number of potential OEs.	MSP
36	Consider a moratorium on developmental training. MSP/M98 curtailed training for the construction period. In addition, work with the FLMs on keeping positions split for longer periods to alleviate volume and complexity.	MSP
37	Be flexible and available. Operationally we need to be very flexible. If the plan is not working don't stop! Just slow the problem down, make the necessary adjustments, and move one. Be transparent, open, and honest will all entities concerning changes and adjustments. It could very well impact their planning processes as well.	MSP

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38	Hold daily telcons with local facilities and customers. We held a brief telcon at 0730 and 1330 each day to cover weather forecasts, runway configurations, general outlook, and unusual operations, etc. This does not take long, but reaps huge benefits. It also keeps phone calls and operational communications that may come later to a minimum.	MSP
39	Do regular R&I updates for the CPCs. Include construction progress, good practices, pitfalls to look out for, etc. This can also be fodder for team meetings. (airport authority had a website that updated construction progress on a regular basis – including pictures.) Employees like to see this---it makes what they are doing real and meaningful.	MSP
40	Construction normally happens during the summer when many of our employees are on leave. Be prepared to re-brief these employees when they return from one to two weeks away from the operation. It is very easy to let this slip through the cracks.	MSP
41	Don't be too anxious to get to your full expected capacity. Go slow and advance in increments until everyone is comfortable and has adjusted to the new flows. BE SAFE!	MSP
42	Anticipate runway/taxiway name changes: • Allow at least 2 charting cycles <u>before re-using</u> a runway designation (e.g. 9R changes to 10, 112 days later, 9L changes to 9R) • Allow taxiway names to be out of service for 1 year <u>before re-using</u> them in a different location on the airport.	ORD
43	Make sure that contractors are aware of lateral limits of the runway safety areas; Flags, signs, or snow fence are examples of markers which are intended to prevent incursions into the lateral RSAs	MLI
44	Make sure that vehicle operators are aware of surface limits of the runway safety areas, including other closed movement areas. While a runway or taxiway is closed, movement on the closed surface may penetrate the safety area of another movement area. Training and diagrams in vehicles of some type are needed to prevent incursions into the RSAs; (Technical Operations, airport authority, contractor, Airports, Terminal Services)	MLI
45	Continue weekly meetings throughout the construction period to validate and ensure cooperation with airport authority, Technical Operations, and NATCA	MLI
46	"Sim-Fast" can be a good training aid for construction driven configuration change training	MLI

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47	State and county may support communications of any planned construction closure(s) and opening(s)	MLI