Define Tollgate Review:

1. Has the Project Team has been developed? _____ (Yes or No)
   - Is the team and project sponsored by a champion or business leader? Yes / No
     - Who is the Champion? _____
   - Is the team comprised of SME's? _____ (Yes or No)
     - Who are the SME's

       _____

       _____

       _____

       _____

       _____

   - Have they had the Yellow Belt Training? _____ (Yes or No)

2. Has the "Project Charter" been developed? _____ (Yes or No)
   (The following questions should help determine the answer)?
   - Business Case:
     o What are the compelling business reasons for embarking on this project?

       _____

       _____

       _____

       _____

     o Is the project linked to key business goals and objectives? _____ (Yes or No)
     o What key business process output measure(s) will the project leverage and how?

       _____

       _____

       _____

       _____

     o What are the rough order estimates on cost savings/opportunities on this project?

       _____

       _____

       _____

   - Problem Statement (Starting Line):
     o What specifically is the problem?

       _____

       _____

       _____

       _____

     o Where does it occur?

       _____

       _____

- When does it occur?

    _____
    _____
    _____

- What is its extent?

    _____
    _____
    _____
    _____

- Goal Statement (Finish Line):
    - What is the goal or target for the improvement team's project?

        _____
        _____
        _____
        _____

    - Do the problem and goal statements meet the SMART criteria (specific, measurable, attainable, relevant, and time-bound)? _____ (Yes or No)
    - Has anyone else (internal or external to the organization) attempted to solve this problem or a similar one before? _____ (Yes or No)
        - If so, what knowledge can be leveraged from these previous efforts?

            _____
            _____
            _____
            _____

    - How will the project team and the organization measure complete success for this project?

        _____
        _____
        _____
        _____

- Project Scope:
    - What are the physical boundaries of the scope?

        _____
        _____
        _____
        _____

    - What is in bounds and what is not?

        _____
        _____
        _____

- How does the project manager ensure against scope creep?

  _____
  _____
  _____
  _____

- Is the project scope manageable? _____ (Yes or No)
  - What constraints exist that might impact the team?

  _____
  _____
  _____
  _____

- Milestones:
  - When was the project start date? _____
  - When is the estimated completion date? _____
  - Is the project currently on schedule according to the plan? _____ (Yes or No)
    - If No, Why?

    _____
    _____
    _____

  - Has a project plan with milestones been developed? _____ (Yes or No)
  - Is there a critical path (due dates to each phase of the DMAIC) to complete the project? _____ (Yes or No)
  - How will variation in the actual durations of each activity be dealt with to ensure that the expected project completion date is met?

    _____
    _____
    _____

3. Do we understand the Customers' Requirements? _____ (Yes or No)

   - Have the customers been identified? _____ (Yes or No)
     - Who are the customers:

     _____
     _____
     _____

   - Has the improvement team collected the 'voice of the customer' (obtained feedback - qualitative and quantitative)? _____ (Yes or No)
   - What customer feedback methods were used to solicit their input?

     _____
     _____
     _____

   - Have the customer needs been translated into specific, measurable requirements? _____ (Yes or No)

4. Has a SIPOC diagram been produced describing the Suppliers, Inputs, Process, Outputs, and Customers? _____ (Yes or No)
5. Have you used a Lean tool like the Value Stream Map to Identify Waste in the Process and to help in the Project Scoping process? _____ (Yes or No)

Define Stage Deliverables:
- Project Team has been developed and is sponsored by a champion or business leader.
- Project management charter, including business case, problem and goal statements, project scope, milestones, roles and responsibilities, communication plan.
- Completed SIPOC representation, describing the Suppliers, Inputs, Process, Outputs, and Customers.
- Completed Value Stream Map to show "present state" of Waste in the process and to further scope (If applicable)
- Red flags and recommendations for resolving them defined
- Next steps documented
- Approval of report out signed by Project Champion

Project Champion Approval:

_____   _____
Project Champions Name   Project Champions Signature

Measure Tollgate Review:

Has the Team Identified the Key Measures (Input's and Y's)? _____ (Yes or No)
- Has a detailed Process Flow Chart/Map been developed to show Quick Wins (redundancies, Lean Improvements)? _____ (Yes or No)
  - What are Quick Wins?

    _____
    _____
    _____
    _____

- Has the "Input Map" been developed? _____ (Yes or No)
  - How much time was spent on the development of the Input Map? _____ (In # of minutes)
  - Is the team confident that they have identified most of KPIV's (Key Process Input Variables)? _____ (Yes or No)
  - Are the KPOV's (Key Process Output Variables) described in measureable terms? _____ (Yes or No)
- What key measures identified indicate the performance of the business process (The Big Y's and Little Y's)?

    _____
    _____
    _____
    _____

- What are the agreed upon definitions (specifications) of the high impact characteristics (CTQs), defect(s), unit(s), and opportunities that will figure into the process capability metrics?

    _____
    _____
    _____
    _____

Was the Measurement System and the Data Verified? _____ (Yes or No)
- Has the team verified the stability and accuracy of the measurement process? _____ (Yes or No)
- Was a gauge R&R conducted? _____ (Yes or No)
  - If not, how was the Measurement System Verified?

    _____
    _____
    _____
    _____

Process Variation Displayed and Communicated
- Has the team used control charts to display and communicate baseline variation in the KPIV's? _____ (Yes or No)

- Is there "Out of Control" situations? _____ (Yes or No)
  If so, how are they being dealt with?
  _____
  _____
  _____
  _____

Performance Baseline

- What is the current process performance baseline?
  _____
  _____
  _____
  _____

- How large is the gap between current performance and the customer-specified (goal) performance?
  _____
  _____
  _____
  _____

Multi-Vari Data

- Has the team determined the potential data that can be collected on the KPIV's?
  _____ (Yes or No)

Define Stage Deliverables:

- Flow of the Process Charted through a detailed Flow Map/Chart
- Input Map developed to show KPIV's
- C&E Matrix developed to Pareto Input's to "Critical Few"
- Project "Y" tracked using Run Chart, Time Series Chart, or Individuals Chart
- Baseline variation in KPIV's displayed
- Measurement System Verified through a Gauge R&R, Audit, or other method
- Baseline Capability Determined through Capability Study, or other method
- Low hanging fruit actions assigned to team
- Red flags and recommendations for resolving them defined
- Next steps documented
- Approval of report out signed by Project Champion

Project Champion Approval:

_____   _____
Project Champions Name   Project Champions Signature

Analyse Tollgate Review:

Failure Modes and Effects Analysis (FMEA) (Qualitative Analysis)

- Has the Preliminary FMEA been developed? _____ (Yes or No)
    - Has the Team drilled down on at least the five Key Inputs determined through the C&E Matrix _____ (Yes or No)
- Has the team discovered any quick wins from the FMEA? _____ (Yes or No)
    - If so, how are they being dealt with?

        _____
        _____
        _____
        _____
        _____

Quantitative Analysis

- What Statistical Tools were used to analyse the data?

    _____
    _____
    _____
    _____
    _____

- Has the team gathered data for a Mult-Vari Analysis to determine the "Critical Few" Variables? _____ (Yes or No)
- Has the team used the Basic Quality Tools to graphically analyse the data? _____ (Yes or No)
- Has a Hypothesis statement(s), null hypothesis and alternative hypothesis has been developed for the data analyzed? _____ (Yes or No)

Quantifying the Gap/Opportunity

- What is the cost of poor quality (COPQ) as supported by the team's analysis?

    _____
    _____
    _____
    _____
    _____

- What are the revised rough order estimates of the financial savings/opportunity for the improvement project?

  _____
  _____
  _____
  _____

- Have the problem and goal statements been updated to reflect the additional knowledge gained from the analyse phase? _____ (Yes or No)
- Have any additional benefits been identified that will result from closing all or most of the gaps? _____ (Yes or No)
    - If yes, what were those additional benefits?

      _____
      _____
      _____
      _____

- What were the financial benefits resulting from any 'ground fruit or low-hanging fruit' (quick fixes)?

  _____
  _____
  _____

Analyze Stage Deliverables:

- Revised Charter problem statement reflecting an <u>increased understanding</u> of the problem
- Additional <u>Sources of Variation</u> statistically quantified and prioritized
- Use and display Multi-Vari tools to identify and verify the "Vital few" (Knob Variable) factors
- Graphical analysis and interpretation of data using Basic Quality Tools
- Correlation and Regression Analysis (if Applicable)
- Hypothesis statement(s), null hypothesis and alternative hypothesis has been developed for the data analyzed
- Hypothesis test output, p value and interpretation of the data
- Any red flags with project or project scope and recommendations to resolve
- Red flags and recommendations for resolving them defined
- Next steps documented
- Approval of report out signed by Project Champion

Project Champion Approval:

_____   _____
Project Champions Name   Project Champions Signature

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Improve Tollgate Review:

1. Have Lean Improvements been implemented to streamline the Process before any optimization efforts take place? _____ (Yes or No)
   - If Yes, What Lean Improvements been implemented?
     _____
     _____
     _____
     _____

2. Generating (And Testing) Possible Solutions
   - How did the team generate the list of possible solutions?
     _____
     _____
     _____
     _____

   - What tools were used to tap into the creativity and encourage 'outside the box' thinking?
     _____
     _____
     _____
     _____

1. Selecting the Best Solution(s)
   - What tools were used to evaluate the potential solutions?
     _____
     _____
     _____
     _____

   - Were any criteria developed to assist the team in testing and evaluating potential solutions?
     _____
     _____
     _____
     _____

   - Are there any constraints (technical, political, cultural, or otherwise) that would inhibit certain solutions?
     _____
     _____
     _____
     _____

   - Was a pilot designed for the proposed solution(s)?
     o Describe the design of the pilot and what tests were conducted, if any?
       _____
       _____
       _____
       _____

o What conclusions were drawn from the outcomes of the pilot?

_____
_____
_____
_____

- What lessons, if any, from the pilot were incorporated into the design of the full-scale solution?

_____
_____
_____
_____

Designing the "Implementation Plan"
- Has the team developed an implementation plan? _____ (Yes or No)
- What poka-yoke or error proofing will be done to address some of the discrepancies observed in the 'as is' process?

_____
_____
_____
_____

- How does the solution remove the key sources of variation discovered in the analyse phase?

_____
_____
_____
_____

- What communications are necessary to support the implementation of the solution?

_____
_____
_____
_____

- How will the team or the process owner(s) monitor the implementation plan to see that it is working as intended?

_____
_____
_____
_____

- What is the team's contingency plan for potential problems occurring in implementation?

_____
_____
_____
_____

- How will the organization know that the solution worked?

_____
_____
_____
_____

Improve Stage Deliverables:

- Revised problem statement reflecting an increased understanding of the problem
- Implementation plan developed and communicated
- Optimal solution selected based on <u>testing and analysis</u>.
- Small-scale pilot for proposed improvement(s).
- Pilot data collected and analyzed.
- Solution implementation plan established, including schedule/work breakdown structure, resources, risk management plan, cost/budget, and control plan.
- Contingency plan established.
- Validate improvements via capability studies
- Red flags and recommendations for resolving them defined
- Next steps documented
- Approval of report out signed by Project Champion

Project Champion Approval:

_____   _____
Project Champions Name   Project Champions Signature

Control Tollgate Review:

Monitoring Plan
- Is there a control plan in place for this project? _____ (Yes or No)
- What key inputs and outputs are being measured?

  _____
  _____
  _____
  _____

- How will input, process, and output variables be checked to detect for sub-optimal conditions?

  _____
  _____
  _____
  _____

- How will new or emerging customer needs/requirements be checked or communicated to orient the process toward meeting the new specifications?

  _____
  _____
  _____
  _____

- Are control charts being used?
  - If "No", then why? _____ (Yes or No)

    _____
    _____
    _____
    _____

- How will the SME effectively monitor performance over time?

  _____
  _____
  _____
  _____

Documented Procedures
- Is there documented procedures to define the "New Best Practice"? _____ (Yes or No)
- Are corrective restorative actions indicated on the response plan for known causes to problems that might surface? _____ (Yes or No)

Transfer of Ownership (Project Closure)
- Who is or are the process owners?

  _____
  _____
  _____
  _____

- How will the day-to-day responsibilities for monitoring and continual improvement be transferred from the improvement team to the process owner?

  _____
  _____
  _____
  _____

- Is there a recommended audit plan for routine surveillance inspections of the DMAIC project's gains? _____ (Yes or No)

Integrating and Institutionalizing Improvements, Knowledge and Learnings

- What other areas of the organization might benefit from the project team's improvements, knowledge, and learning?

  _____
  _____
  _____
  _____

- How might the organization capture best practices and lessons learned so as to leverage improvements across the business?

  _____
  _____
  _____
  _____

Control Stage Deliverables:

- Completed and approved Control Plan
- Solution to verify process is in control
- New process steps, standards, and documentation are ingrained into normal operations.
- Operating procedures are consistent.
- Training schedule outlined
- Completed audit plan to ensure results are sustained and process remains in control
- Reaction plan completed (part of the Control Plan)
- Improvement transfer opportunities identified (Can you translate this to other areas?)
- Any red flags with project or implementation of new process and recommendations to resolve
- Signed approval of report out by Project Champion

Project Champion Approval:

_____   _____
Project Champions Name   Project Champions Signature