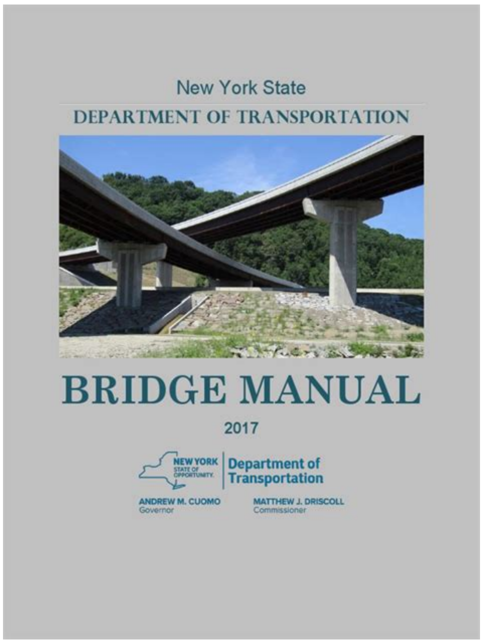

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This manual is intended to provide guidance for decisions in the bridge project process, to document or reference policies and standards that need to be considered and to provide a commentary discussing good bridge engineering practice. This manual is intended to provide guidance for decisions in the bridge project process, to document or reference policies and standards that need to be considered and to provide a commentary discussing good bridge engineering practice. The Metric version should be used for reference purposes only. The latest edition of the US Customary Bridge Manual is the current version in effect. It must be used when inspecting any publicly owned, operated or maintained bridge or large culvert in New York State that is open to vehicular traffic. There are a small number of bridges that do not carry traffic but are routinely inspected and have their data entered into the New York State Bridge Inventory and Inspection System. This manual is also used when inspecting these nonmandated bridges. BDIS is a webbased application for maintaining bridge structure data and the associated data from the business processes that manage those assets. Included in the work is removal and replacement of the bridge deck, steel beams, bridge guide railing, and asneeded concrete repairs. The bridge will be widened to meet current standards and to accommodate possible future road construction. During construction, the road will be closed at the bridge and a detour will be in place. Read more in pdf format, click here. Ulster County is covering the remaining 5% of the project cost. The project is being progressed under the oversight of the New York State Department of Transportation NYSDOT. Application of these standards is mandated by the NYSDOT and the FHWA, and it is a condition of the project funding. Design services are being provided by the County’s design consultant, HVEA Engineers.http://www.hotelvasto.it/img/crestron-tps-6lb-t-manual.xml

- **bridge manual nysdot, nysdot bridge inspection manual, nysdot bridge inventory manual, bridge design manual nysdot.**

Several of them are in highvolume corridors where maintenance and protection of traffic and congestion management were the primary concern. McLaren’s indepth and expansive experience in public transportation and bridge engineering greatly reduced traffic impacts to the region during construction. The project was named Tappan Zee Large Project of the Year in 2017 by the American Society of Civil Engineers, New York Metropolitan Section Lower Hudson Valley Branch. We look forward to sharing company news, exciting projects and upcoming events with you. Emails are serviced by Constant Contact. All elements of the bridge structure were inspected as required and described in the NYSDOT Bridge Inspection Manual, NYSDOT Bridge Inventory manual, applicable codes and engineering instructions, and technical advisories. A 100 percent handson inspection within 1ft. 6 in. of the component was utilized for fracture critical elements such as nonredundant steel girders, truss members and their gusset plate connections, category D, E and E’ welds and other bridge elements that required special emphasis or were susceptible to fatigue cracking. Bridge elements were rated and flag conditions were processed in accordance with the NYSDOT procedural guidelines for bridge inspection. Analysis of bridge structure was conducted where and when required or as requested by the client. The work involved inspecting bridges over creeks, rivers, highways and railroads. It also required specialized areal equipment like trackers and boat mounted aerial lifts. Discover everything Scribd has to offer, including books and audiobooks from major publishers. Start Free Trial Cancel anytime.Browse Books Site Directory Site Language English Change Language English Change Language. It is held in the Syracuse area and runs for 1 days. Consultants, contractors, and suppliers are also welcome.http://www.fotobielsko.pl/_upload/crestron-tps-6x-manual.xml

The Conference is intended to actively foster partnerships between local agencies with bridge responsibility and the NYSDOT. Conference participants include NYS county, city, town, and village highway officials; representatives of state and federal agencies; and private sector personnel. KC performed the structural design of the two structures, geotechnical work, environmental permitting, surveying, roadway design, and hydraulic analysis. This project was completed one month ahead of schedule. Next Article in Special Issue The Science behind Scour at Bridge Foundations A Review Previous Article in Special Issue Characteristics of Flow Structure around Cylindrical Bridge Piers in PressureFlow Conditions Please note that many of the page functionalities wont work as expected without javascript enabled.GEV estimates, including the site numbers, are given in Table 1. The return periods are derived from GEV, GP, and PP analysis for the 42 bridge collapse sites. In this study, fortytwo bridge collapse sites were analyzed to find any trend in the peak flows. Flood frequency and other statistical analyses were used to derive peak flow distribution parameters, identify trends linked to flood magnitude and flood behavior how extreme, quantify the return periods of peak flows, and compare different approaches of flood frequency in deriving the return periods. The results indicate that most of the bridge collapse sites exhibit heavy tail distribution and flood magnitudes that are well consistent when regressed over the drainage area. A comparison of different flood frequency analyses reveals that there is no single approach that is best generally for the dataset studied. These results indicate a commonality in flood behavior outliers are expected, not random; heavytail property for the collapse dataset studied and provides some basis for extending the findings obtained for the 42 collapsed bridges to other sites to assess the risk of future collapses.

Regardless of the types of methods chosen, analyzing peak flow distribution parameters is not a common practice in bridge design procedures. Nonetheless, the analysis of peak flow distribution parameters provides some basis to reason formally about the counterintuitive properties of flood events and to identify trends or commonalities among the critical bridge sites. Peak flow distribution analysis requires the selection of an applicable extreme value distribution fitting approach. Fitting the GP distribution to exceedances over a high threshold and also estimating the frequency of exceeding the threshold by fitting a Poisson distribution allows for the simultaneous fitting of parameters concerning both the frequency and intensity of extreme events. Compared to the annual maxima approach, therefore, the main advantage of POT modeling is that it allows for a more rational selection of events to be considered as “floods” and is not confined to only one event per year. The POT approach considers a wide range of events and provides the possibility of controlling the number of flood occurrences to be included in the analysis by appropriate selection of the threshold. The objectives of this study are 1 To derive peak flow distribution parameters, 2 to identify trends linked to flood magnitude and flood behavior, and 3 to compare different approaches in deriving return periods for bridge collapse sites. To attain the objectives, this paper presents an analysis of the derived GEV distribution parameters for 42 bridge collapse sites Figure 1 and also present a comparison of GEV and POT GP and Poisson approaches, with a focus on the associated capabilities and uncertainties. Obtained results can reveal any existing trends in the statistical behavior of peak floods in bridge collapse sites, and can support the understanding of the mechanism behind the probabilistic generation of floods.

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Such analysis provides preliminary data to assess future collapse risk as it can be highlighted that the flood event emergence should be expected in a specific manner not as a surprising outlier. 2. Methods 2.1. Identification of Bridge Collapse Sites The New York State Department of Transportation NYSDOT bridge failure database NYSDOT 2014a is used here to identify 42 bridge collapse sites. NYSDOT is the only USwide database of bridge collapses. Totally or partially collapsed bridges are added to the database based on journalism databases and surveys of other state DOTs. The recorded information includes identifiers in the National Bridge Inventory, the location of the collapsed bridge, the feature under the bridge, the year of construction, the date or year of collapse, the bridge material and structure type, the type of collapse total or partial, the number of casualties related to the collapse, and other comments. For this work, the bridges were sought according to the following criteria Existence of a stream gauge listed in the US Geological Survey USGS National Water Information System Database. The gage station being at the bridge location, near the bridge location on the same tributary of the river, or at a further distance not the same tributary, but on the same river. Bridges were apparently collapsed complete or partial collapse due to floods. 2.2. Flood Frequency Analysis When conducting a flood frequency analysis, an initial step is to undertake basic analysis of the peak flow and daily flow time series to check for obvious errors that the data conforms to the assumptions used in the frequency analysis. This test checks the correlation between values in a onetime step and the value in a previous and future time step. This test uses Kendall's.Positive values for.After the initial analysis, three approaches GEV, GP, and PP were employed to perform the flood frequency analysis.

When multiple models are fitted to a specific dataset, each one including different predictor variables, then the model with lower values of AIC and BIC is preferable. It is, therefore, possible to draw conclusions about which approach is best in general or, at least, based on some site characteristics. 2.3. Fitting Distributions 2.3.1. Generalized Extreme Value GEV Whereas in practice, it is very difficult to choose which of the three families of extreme value distributions Gumbel, Frechet, and Weibull is the most appropriate for real data, GEV offers a better analysis of block maxima data as it combines three distributions into a single family of models.The shape parameter is of different nature and is related to the behavior of the upper tail of the distribution, and therefore, is of particular interest to reveal "how extreme" the floods are. Before fitting the GP distribution to the daily data, it is first necessary to choose a threshold. From literature reviews, three types of tests have been identified for proposing threshold selection. The Type III test is done when distributions are fit to both the frequency of floods above a threshold and their magnitudes, assuming a Poisson distribution of peak counts. Type III test checks the assumption of the Poisson process that the random variable should be independent and should be exponentially distributed. The implementation of GP in this study diagnosed an appropriate choice of threshold consistent with a Type II test. Two approaches in extRemes R package were used.The plots created are subjectively interpreted to select a threshold that appears to yield stable estimates within uncertainty bounds as the threshold increases further, while remaining low enough as to utilize as much of the data as possible. The plot is used to select a threshold whereby the graph is linear, again within uncertainty bounds, as the threshold increases Figure 3 .

Again, 6000 cfs appears to be a reasonable choice for the threshold as a reasonably straight line could be placed within the uncertainty bounds from this point up Figure 3 . The mean excess above threshold linearly changes with the height of the threshold for a GP distribution Figure 3 and is constant for an exponential distribution. The quantile plots check the validity of the corresponding GP distribution for only the data exceeding the threshold suitable for the Poison process. The density plot, on the other hand, shows the density for the equivalent GEV distribution. In Figure 4, all the fits appear reasonable except the Z plot. The quantiles of the GP and PP distribution cannot be as readily interpreted as return levels because the data no longer derives from blocks of equal length. An estimate of the probability of exceeding the threshold .In order to verify whether a scaling with drainage area is reasonable for the bridge collapse sites within a physiographic region, the scatter plot of the logarithm of the maximum likelihood estimates MLE of the GEV parameters scale and location parameters versus the logarithm of the drainage area was examined for a subset of 30 sites within Appalachian Highland region. Analysis of GEV parameters within each specific region was not performed because it was not possible to obtain an even distribution of bridges across different regions in the United States. There was a lack of comprehensiveness of the NYSDOT database with the relative overrepresentation of Appalachian Highland as well as the lack of a geographically uniform placement of stream gauges. The clustering of collapses in Appalachian Highland reflects not a higher rate of hydraulic collapses in this region but rather the limitation of data availability. In this study, 30 sites are located in the Appalachian Highland, 10 sites in the interior plains, 1 in Rocky Mountain, and 1 in the Atlantic plain.

Due to the small number of sample sizes, analysis of GEV parameters was not performed for the interior plains, Rocky Mountain, and the Atlantic plain. In line with expectations, the drainage area regression results for the shape parameter do not present strong evidence of a relationship, as shown in Figure 5. For the collapse sites, flood index values are calculated Table 2 and diagnostic plots of mean annual flow versus quantile flow Figure 8 and Figure 9 are created to check the homogeneity of the collapse sites. As expected, within certain physiographic regions, i.e., the Appalachian Highland, a power correlation is detected between the mean annual flow and flood quantiles Q100 and Q500 with an exponent value of 0.9 close to 1 Figure 8 . When considering all collapse sites within different physiographic regions, the exponent value decreases to 0.7 and 0.6 for 100 and 500year flood quantiles, respectively Figure 9 . It was found that the threshold level had often to be raised significantly above the GP set in order to meet exponentiallybased tests of the PP distribution Table 3 . Whereas it is important to choose a sufficiently high threshold in order that the theoretical justification applies, thereby reducing bias, a higher threshold also implies that fewer available data remain. For all larger flood events for return period 50 years, an outlier is identified in GP models, implying that an extremely high flood event can be expected for a return period higher than 50 years. GEV and PP models do not identify any outliers. The confidence interval is larger for the PP model as compared to GP and GEV models, indicating greater uncertainty when using the PP approach. 3.5. Calculating Return Periods for Maximum Flows in Collapse Year Using GEV, GP, and PP The return periods of maximum flows in the collapse year obtained using different types of flow data maximum daily mean flow, maximum peak flow are quantified in Table 4.

In the study, for daily mean data, the return period varies from 1 year to 9452.2 years; for annual peak data, the return period varies from 1 year to infinity. Plots highlighting the correlation between different estimates of max flow return periods in collapse year are provided in Figure 12 and Figure 13. In summary, GEV, GP, and PP mostly produced substantially different return periods for both annual peak and daily mean flow values. For the study sites, a nonsignificant difference was only detected for the GP versus PP estimates using peak flows. The poor correlation was also found for GP versus GEV and PP versus GEV estimates using peak flows. In river hydraulics, it implies that when sites with heavy tails exhibit big flows, it will be way bigger; in other words, outliers are expected and are not random. Another striking feature of heavy tails is that single big flow is expected at sites that are mostly exhibiting relatively low flows, which might convince the bridge engineers to ignore the outliers in a flood frequency analysis. Having a common mean for shape parameters with normal distribution across different physiographic regions the Appalachian Highland, interior plains, the Atlantic plain indicates a commonality in flood behavior i.e., heavy tail or extremeness, for the collapse dataset studied. Welldefined scaling of location and scale parameters with drainage areas provides some basis for extending the findings obtained for the 30 collapsed bridges in other sites to assess risk of future collapses in the Appalachian Highland. 4.2. GEV, GP, PP Based on the relatively lower values of AIC and BIC defines best fit or not, GEV is apparently preferable over the GP and PP approaches for the bridge collapse sites studied. However, shape parameters defining the behavior of floods derived from GP are with comparatively lower standard error. GP was also able to identify the outliers, which might be of importance for sites with heavy tail distributions.

The difficulty with using GP analysis, however, is that choosing a threshold might not possibly satisfy all the underlying assumptions of peak over threshold analysis, particularly for a poor dataset. It is, therefore, not possible to draw conclusions about which approach is best generally. Such a conclusion implies the decrepit approach of using only one flood frequency distribution when deciding the design flows of bridge structures. 4.3. Collapse Cause Although the sample size is too small to retrieve any conclusive information regarding bridge collapse causes in US, some findings appeared to be robust Maximum flow return periods in the collapse year were found to be in a significantly wide range. For these unprecedent events, annual peak flow data appear to be consistent with the recorded event by the United States Geological Survey USGS. The calculated extremely high return periods GP and PP estimates, 784.5 years to infinity also indicate unprecedented events with no such previous record at these sites. 5. Conclusions In this study, flood frequency analyses have been performed using peak flow data from 42 bridge collapse sites. Comparing the different approaches of flood frequency analysis, it is also derived that no single approach is generally best, considering its capability only GP can identify outliers and uncertainty GEV is the best fit. Major findings that might have important implication in the risk study of bridge collapse include the following The bridge collapse return period varies widely very low to very high although the apparent collapse cause is flood. Bridge collapses can be attributed to unprecedent events that could not have informed the bridge design. Bridge collapse due to scour can be expected even at low flows within the context of other hydraulic events, i.e., debris jam, icejam, high rate of channel migration, and destabilized channel due to channel modification.

Channels with mostly low flows throughout the year can experience an unprecedent extreme flow. Such incidents are not a surprising event but rather expected for peak flows with heavy tail distributions. Funding This research was funded by Caterpillar Fellowship at Bradley University, grant number 2511063. Earlier work on the project was performed while the lead author was a postdoctoral scholar at Virginia Tech, with funding from Virginia Tech's Institute of Critical Science and Technology. Conflicts of Interest The authors declare no conflict of interest. National Resources Conservation Service. Urban Hydrology for Small Watersheds; TR55; USDA Washington, DC, USA, 1986. Hydrology Subcommittee. In Hydrologic Analysis and Interpretation. ACM SIGMETRICS Perform. Eval. Rev. 2013, 41, 387, ISSN 01635999.Location of 42 bridge collapse sites in the US.Location of 42 bridge collapse sites in the US. Logarithm of GEV location a , scale b , and shape parameter c estimates versus logarithm of drainage area square miles for the sites in the Appalachian Highland region.Logarithm of GEV location a , scale b , and shape parameter c estimates versus logarithm of drainage area square miles for the sites in the Appalachian Highland region. Maximum likelihood estimates red dots of location a , scale b , and shape c GEV parameters, including the point estimates red circles and confidence intervals black lines. GEV estimates, including the site numbers, are given in Table 1.Maximum likelihood estimates red dots of location a , scale b , and shape c GEV parameters, including the point estimates red circles and confidence intervals black lines. GEV estimates, including the site numbers, are given in Table 1. Diagnostic plots of normal distributions of shape parameters derived from GEV estimates of the 42 sites across different physiographic regions.

Diagnostic plots of normal distributions of shape parameters derived from GEV estimates of the 42 sites across different physiographic regions. Diagnostic plot for homogeneity in the Appalachian Highland region.Diagnostic plot for homogeneity in the Appalachian Highland region. Diagnostic plot for homogeneity for all the collapse sites in different physiographic regions.Diagnostic plot for homogeneity for all the collapse sites in different physiographic regions. Standard error for the shape parameter as estimated through different methods.Standard error for the shape parameter as estimated through different methods. Box plots of flows in log scale corresponding to different return periods 2, 5, 10, 20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500. The return periods are derived from GEV, GP, and PP analysis for the 42 bridge collapse sites.Box plots of flows in log scale corresponding to different return periods 2, 5, 10, 20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500. The return periods are derived from GEV, GP, and PP analysis for the 42 bridge collapse sites. Correlation of return periods for daily mean flow values maximum in collapse year a GP versus PP 16 sites b GP vs GEV 22 sites c PP versus GEV 16 sites.Correlation of return periods for daily mean flow values maximum in collapse year a GP versus PP 16 sites b GP vs GEV 22 sites c PP versus GEV 16 sites. Correlation of return periods for annual peak flow values maximum in collapse year a GP versus PP 16 GP vs GEV 24 sites b GP versus GEV 13 sites c PP versus GEV 16 sites.Correlation of return periods for annual peak flow values maximum in collapse year a GP versus PP 16 GP vs GEV 24 sites b GP versus GEV 13 sites c PP versus GEV 16 sites. Generalized extreme value distribution GEV distribution parameters derived using annual peak flow data from the US Geological Survey USGS.

Generalized extreme value distribution GEV distribution parameters derived using annual peak flow data from the US Geological Survey USGS. Flood quantile estimation using annual peak flows fitted with GEV distribution.Flood quantile estimation using annual peak flows fitted with GEV distribution. Peaks over threshold analysis using daily flow data retrieved from USGS.Peaks over threshold analysis using daily flow data retrieved from USGS. Calculated return periods using daily mean and annual peakflow values maximum in collapse year.Calculated return periods using daily mean and annual peakflow values maximum in collapse year. C Snowmelt, hurricane, icejam, debris jam. Unprecedented event extremely high flow. Return period cannot be calculated because of the unavailability of data or invalidity of peak over threshold analysis. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution CC BY license . Read more about our cookies here. Upgrade your browser today or install Google Chrome Frame to better experience this site. Your browser does not support the video tag.Dougherty Park. Syosset, NY 11791Princeton, NJ 08540. Tel 609.375.2038. Fax 609.375.2039 Tel 518.687.1390. Fax 518.687.1489. All speakers must abide by the ACEC New York Speaker Code of Conduct. It also provides the opportunity for committee chairs to exchange information and learn about other committees. This meeting will be prior to the agency presentations that will occur later that day. This meeting will focus on key issues and updating the membership on committee activities. This session is for ACEC New York members only. It also provides the opportunity for committee chairs to exchange information and learn about other committees. This meeting will be prior to the agency presentations that will occur later that day. This meeting will focus on key issues and updating the membership on committee activities.

This session is for ACEC New York members only. DASNY, NYC DDC, NYC Housing Authority, NYC SCA, NYS OGS, SUCF committees will be represented Staff Coordinator Bill Murray ExCom Liaison Richard Rick Zottola, P.E., LERA. This presentation will be followed by an exclusive networking cocktail hour, featuring representatives from ACEC New York committees and senior ACEC New York staff. Ted’s unique skills are based on over thirty years of experience as an executive, consultant, trainer, mediator and coach. This has enabled him to assist executives to be more effective leaders by increasing their ability to negotiate, manage conflict and influence others more effectively. During the dinner, ACEC New York will also recognize a number of 2019 scholarship recipients. It also provides the opportunity for committee chairs to exchange information and learn about other committees. This meeting will be prior to the agency presentations that will occur later that day. This meeting will focus on key issues and updating the membership on committee activities. This session is for ACEC New York members only. It also provides the opportunity for committee chairs to exchange information and learn about other committees. This meeting will be prior to the agency presentations that will occur later that day. This meeting will focus on key issues and updating the membership on committee activities. This session is for ACEC New York members only. U.S. Army Corps, NYC DEP, NYS DEC, NYS EFC, and Energy Committees NYPA, NYSERDA will be represented.He is the creator, executive producer and cohost of Showtime’s realtime documentary series of the 2016 election and the Trump presidency, The Circus Inside the Greatest Political Show on Earth, the highest rated unscripted program ever on Showtime.

He was the chief media advisor to five successful presidential primary and general election campaigns, and is cofounder of No Labels, an organization dedicated to bipartisanship, civil dialogue and political problem solving. We anticipate that this will be a wellattended event. During the event, we will recognize the Legislators of the Year Assemblywoman Donna Lupardo, 123rd District and NYS Senator Timothy Kennedy, 63rd District.The owner of the railroad bridge stipulated a specific single 48hour weekend where the railroad could be completely shut down for construction. The DesignBuild team developed designs and construction methods, and an extremely comprehensive project schedule to coordinate the bridge replacement work. The board of directors will review current key issues facing the association. At approximately 1000 AM, NYS Senator Timothy Kennedy, 63rd District and Assemblyman William B. Magnarelli, Assembly District 129, will provide attendees with a legislative update. Be sure to get your final bids in! Havent registered yet The American Council of Engineering Companies of New York takes the security of your information seriously. To prevent unauthorized access, maintain data accuracy, and ensure the appropriate use of your information, ACEC New York has implemented numerous physical, electronic and administrative procedures to safeguard and secure the information we collect online. However, it is impossible for us to fully guarantee that these measures will prevent any or all unauthorized use of your information. Refund Policy It is the policy of ACEC New York to refund verified client overpayments within 30 days of receipt. Our experienced professionals are committed to excellence and sustainability in design by being clientfocused, flexible, innovative, and technologically advanced. PDG offers an exceptional benefits package that includes a competitive salary, medical, dental, vision and life insurance, and a 401k plan.

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